Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Volume 2 of 2
FINAL

PREPARED FOR:

Castaic Lake Water Agency and
Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan Task Force

December 8, 2016

GEOSCIENCE Support Services, Inc. Ground Water Resources Development
P.O. Box 220, Claremont, CA 91711 | P: 909.451.6650 | F: 909.451.6638 | www.gssiwater.com

APPENDIX A

Hydrographs

GEOSCIENCE

APPENDIX A:

HYDROGRAPHS

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Description **Page**

Management Zone 2 (Placerita Subunit)

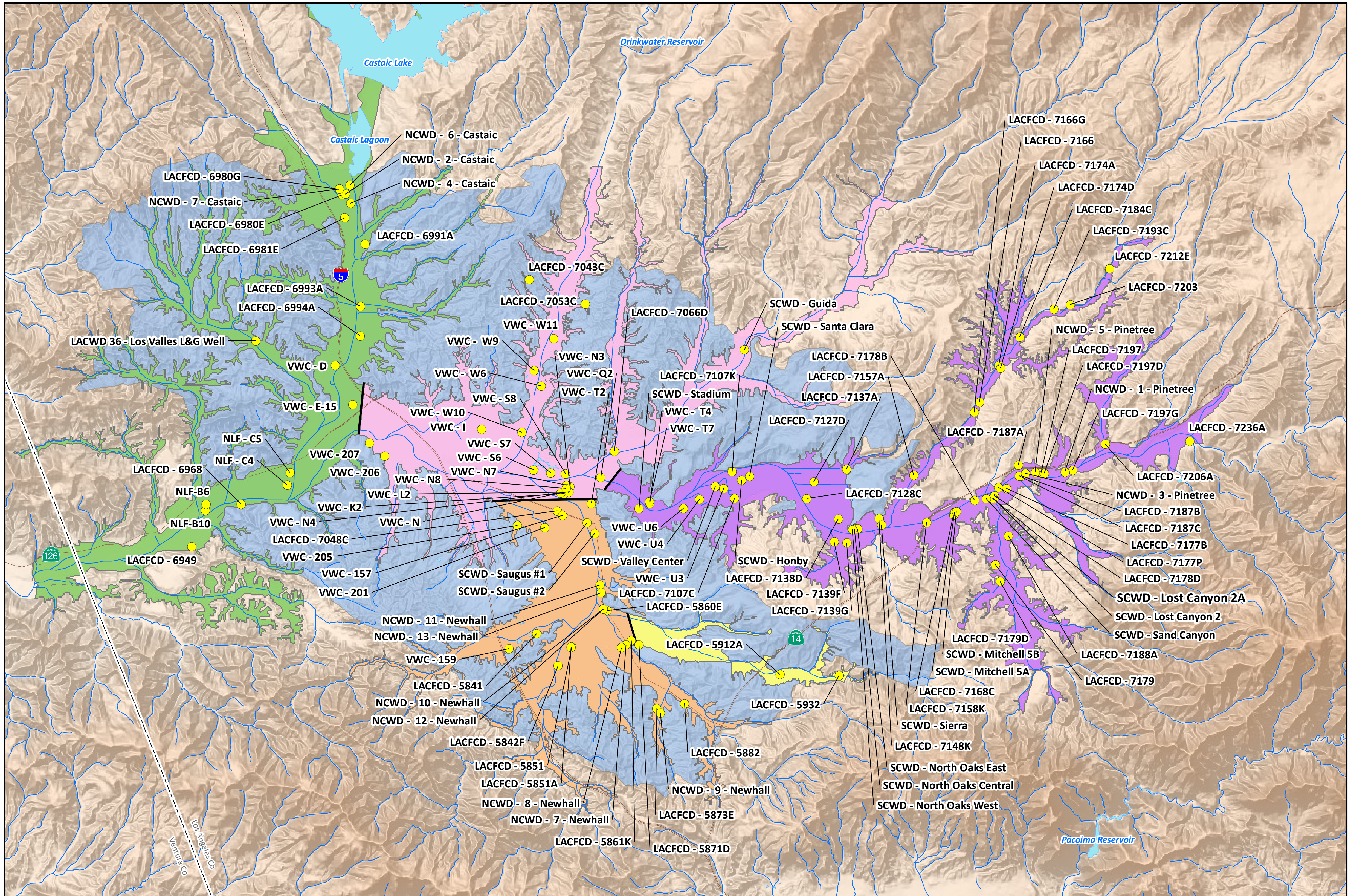
Management Zone 3 (South Fork)

Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)

CASTAIC LAKE WATER AGENCY

SALT AND NUTRIENT MANAGEMENT PLAN
SANTA CLARA RIVER VALLEY EAST SUBBASIN

HYDROGRAPH WELL LOCATIONS



EXPLANATION

Hydrograph Well Locations by Owner (shown in Appendix A)

LACFCD = LA County Flood Control District
LACWD = LA County Water District No. 36
NCWD = Newhall County Water District
NLF = Newhall Land and Farming
SCWD = Santa Clarita Water Division
VWC = Valencia Water Company

LARWQCB Groundwater Subunit

Management Zone 1 (Santa Clara - Mint Canyon)
Management Zone 2 (Placerita Canyon)
Management Zone 3 (South Fork)
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
Management Zone 5 (Castaic Valley)
Management Zone 6 (Saugus Formation)

Boundary Between Adjacent Management Zones

NORTH

0 1 2 4 Miles

8-Dec-16

Prepared by: DB. Map Projection: State Plane 1983, Zone V.

GEOSCIENCE
GEOSCIENCE Support Services, Inc.
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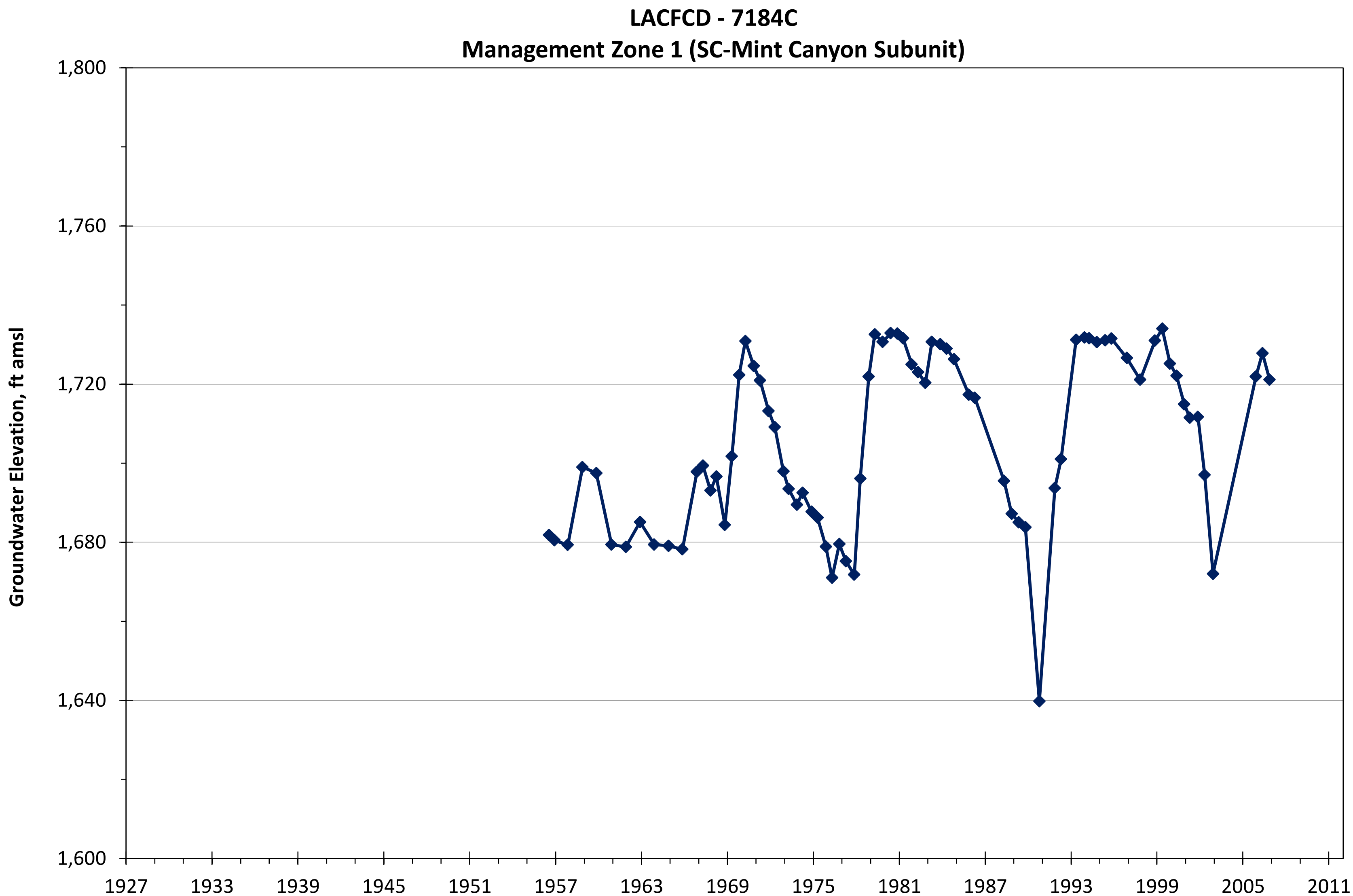
Figure A-1

GIS_proj/castaic_lake_SNMP_6-12/21_CastaicSNMP_Fig_A-1_hydrograph_wells_12-16.mxd


LACFCD - 7184C
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,800
1,760
1,720
1,680
1,640
1,600
1927
1933
1939
1945
1951
1957
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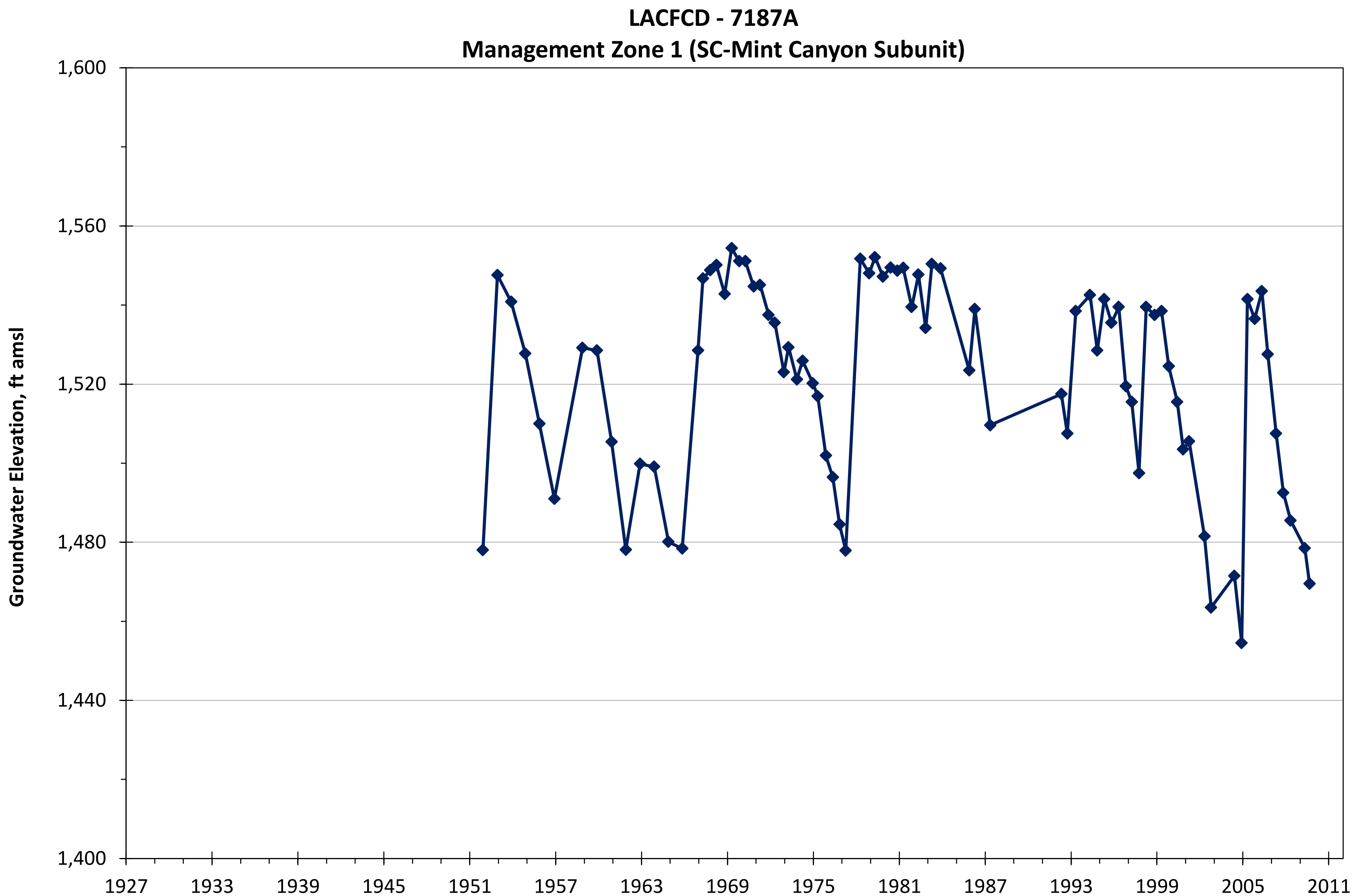
LACFCD - 7187A
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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1,520
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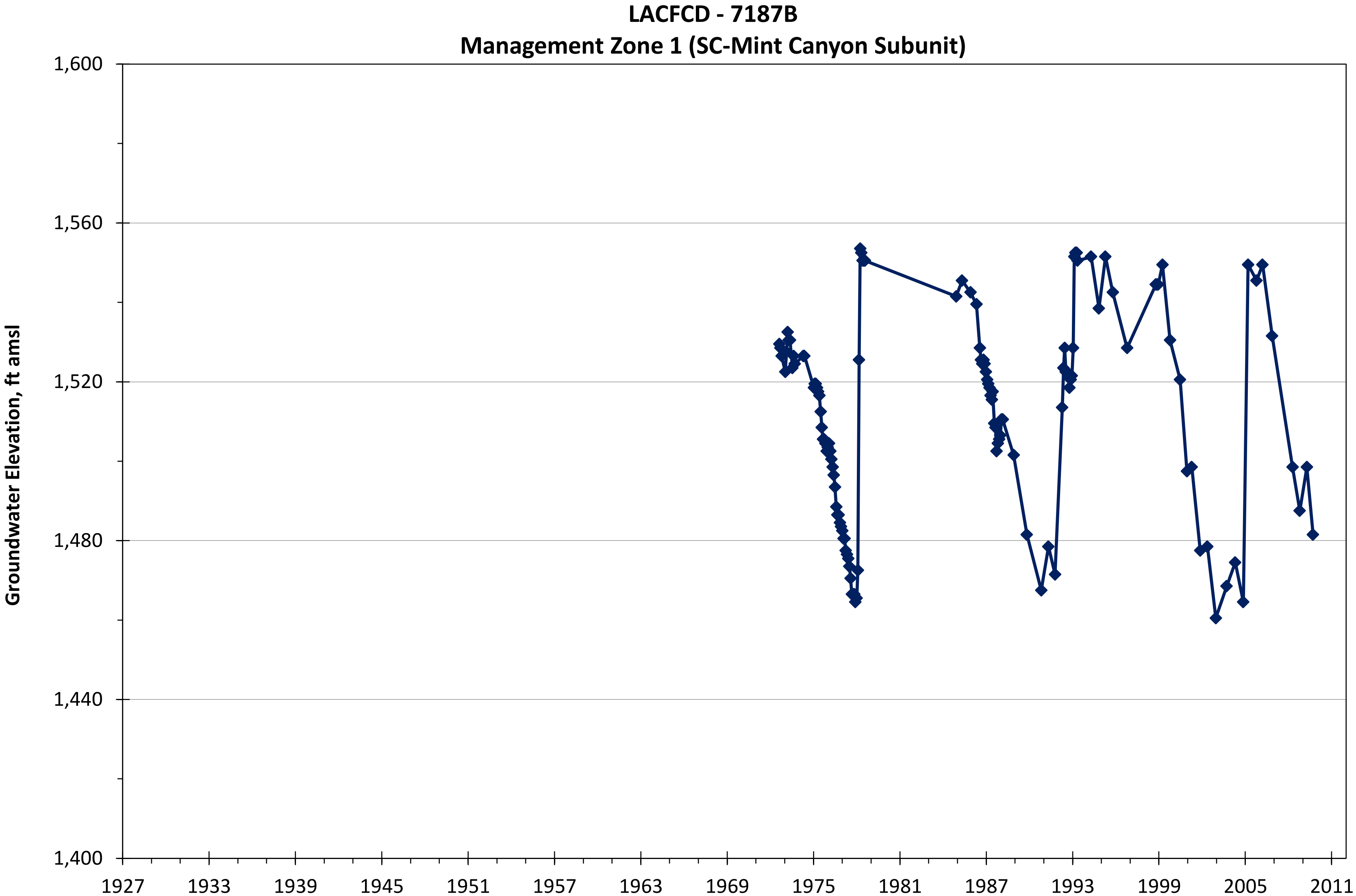
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Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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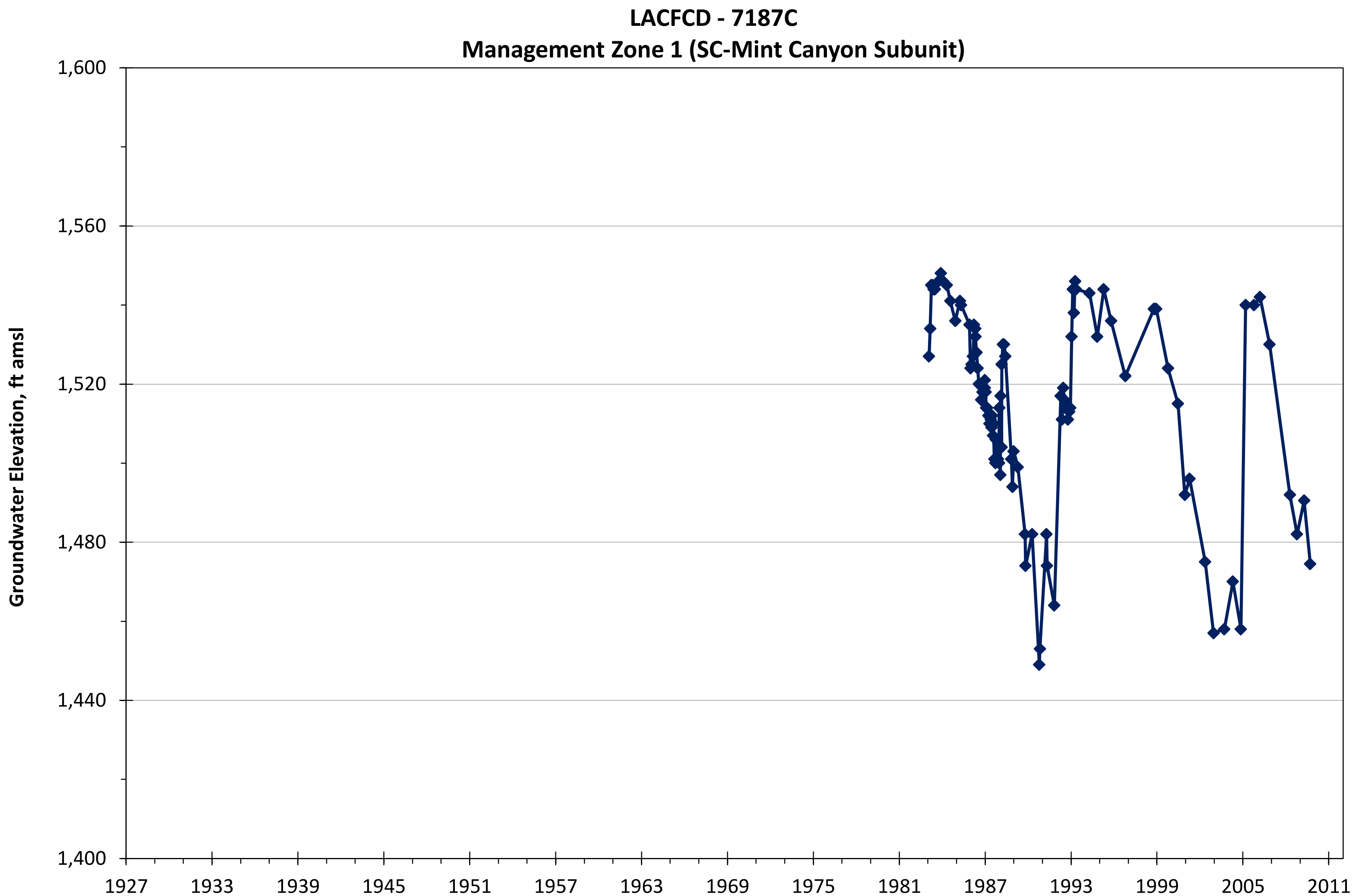
Appendix A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Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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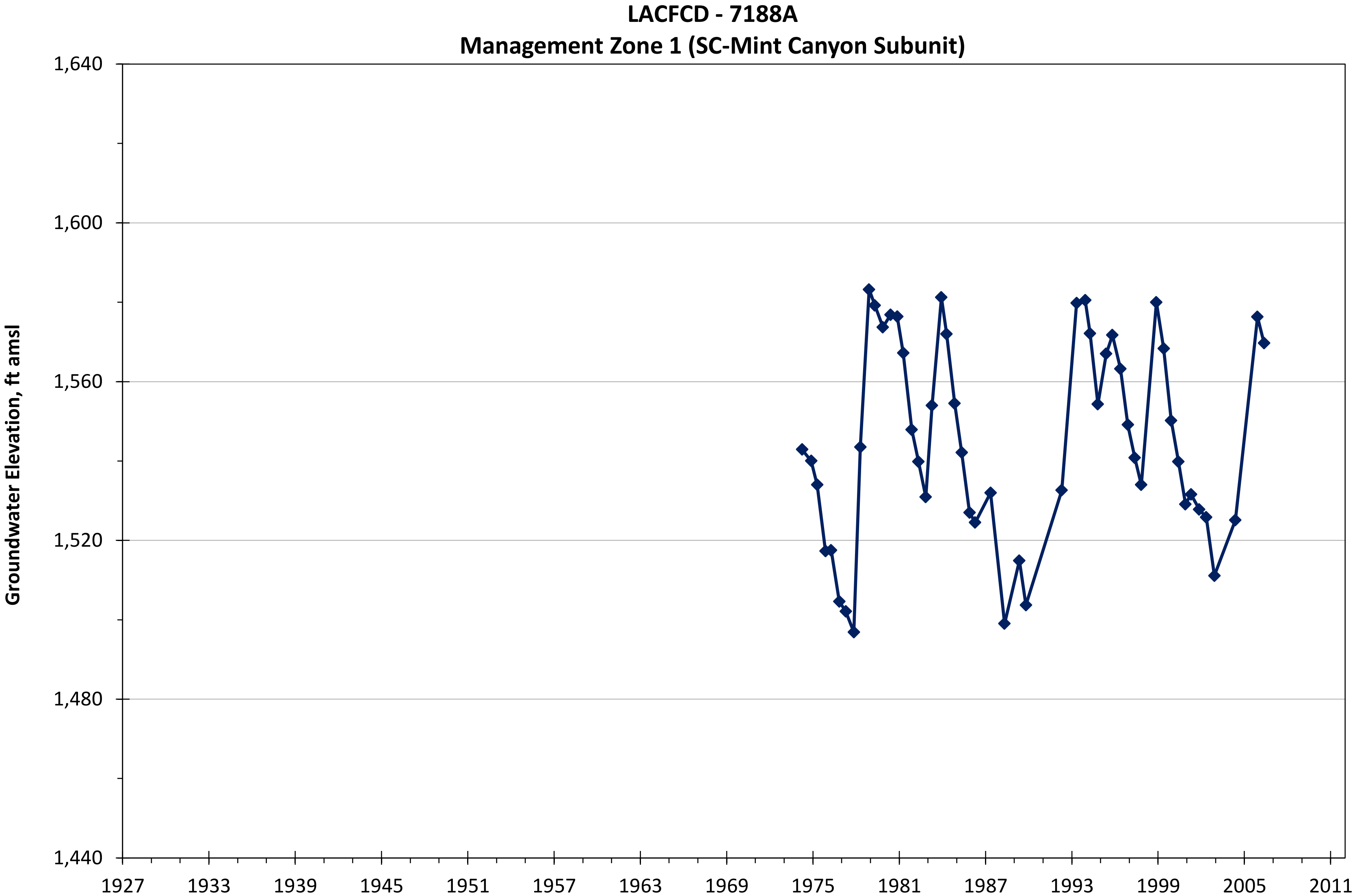
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Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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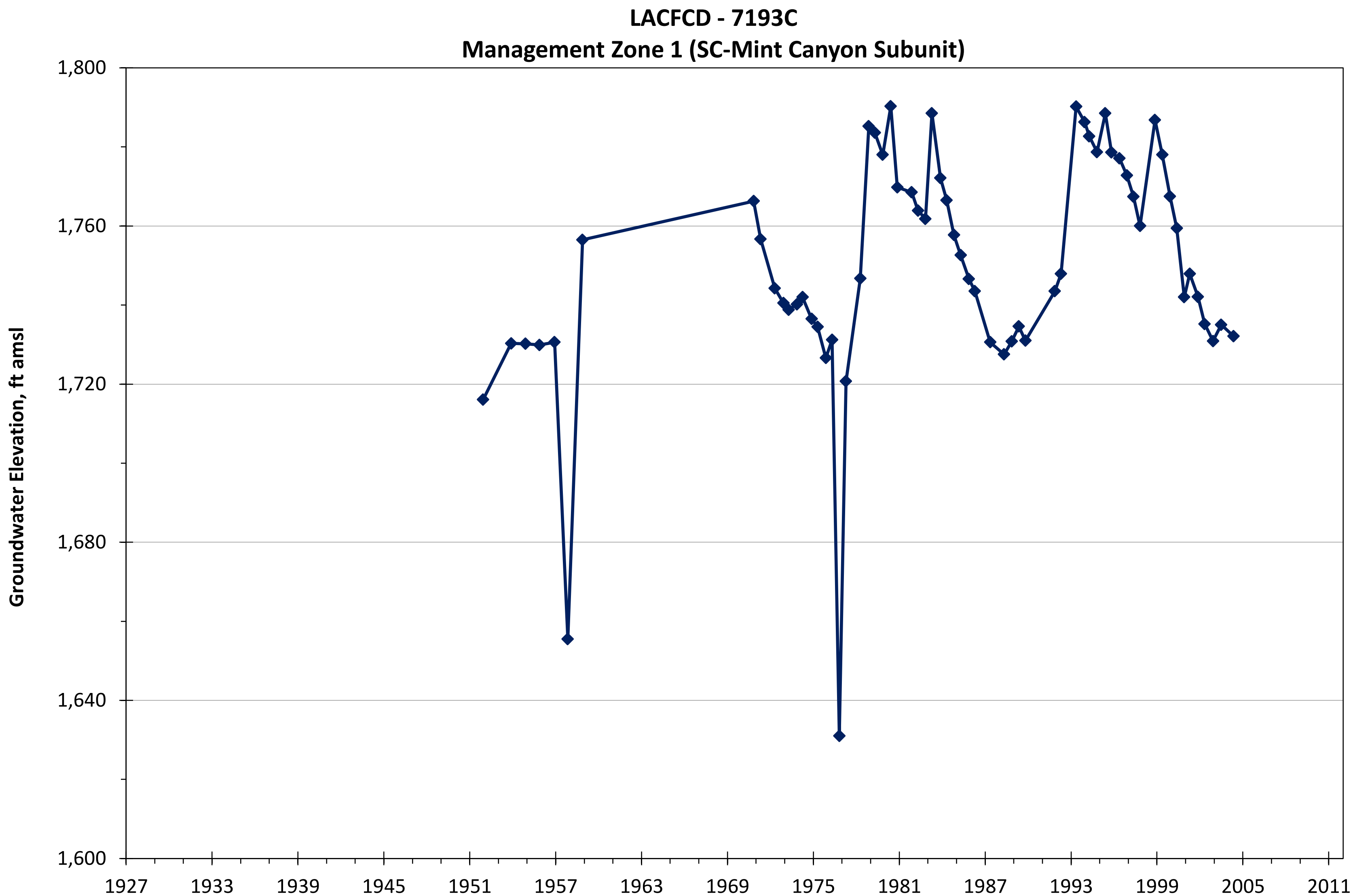
Appendix A


LACFCD - 7193C
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,800
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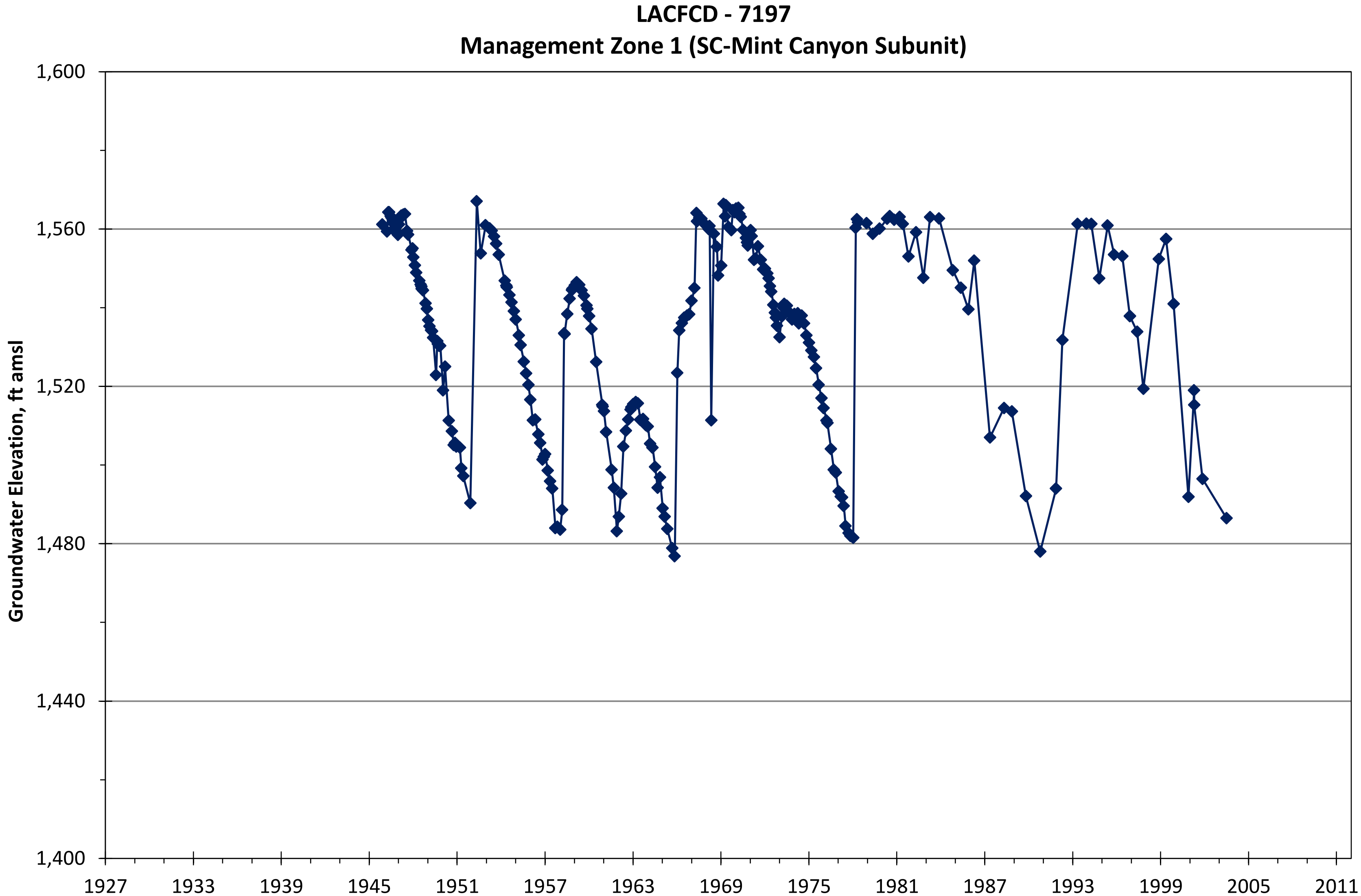
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Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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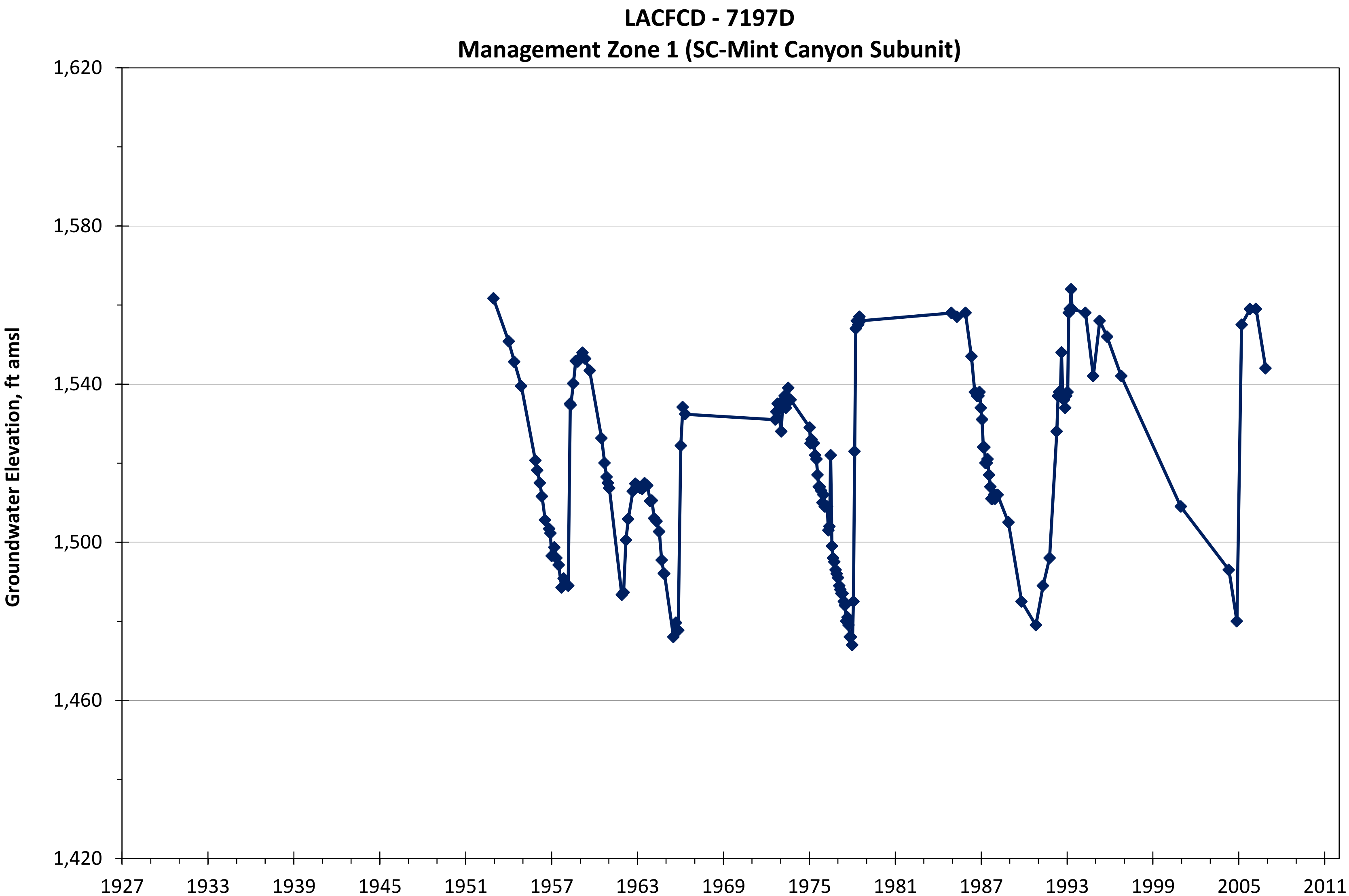
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Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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1,500
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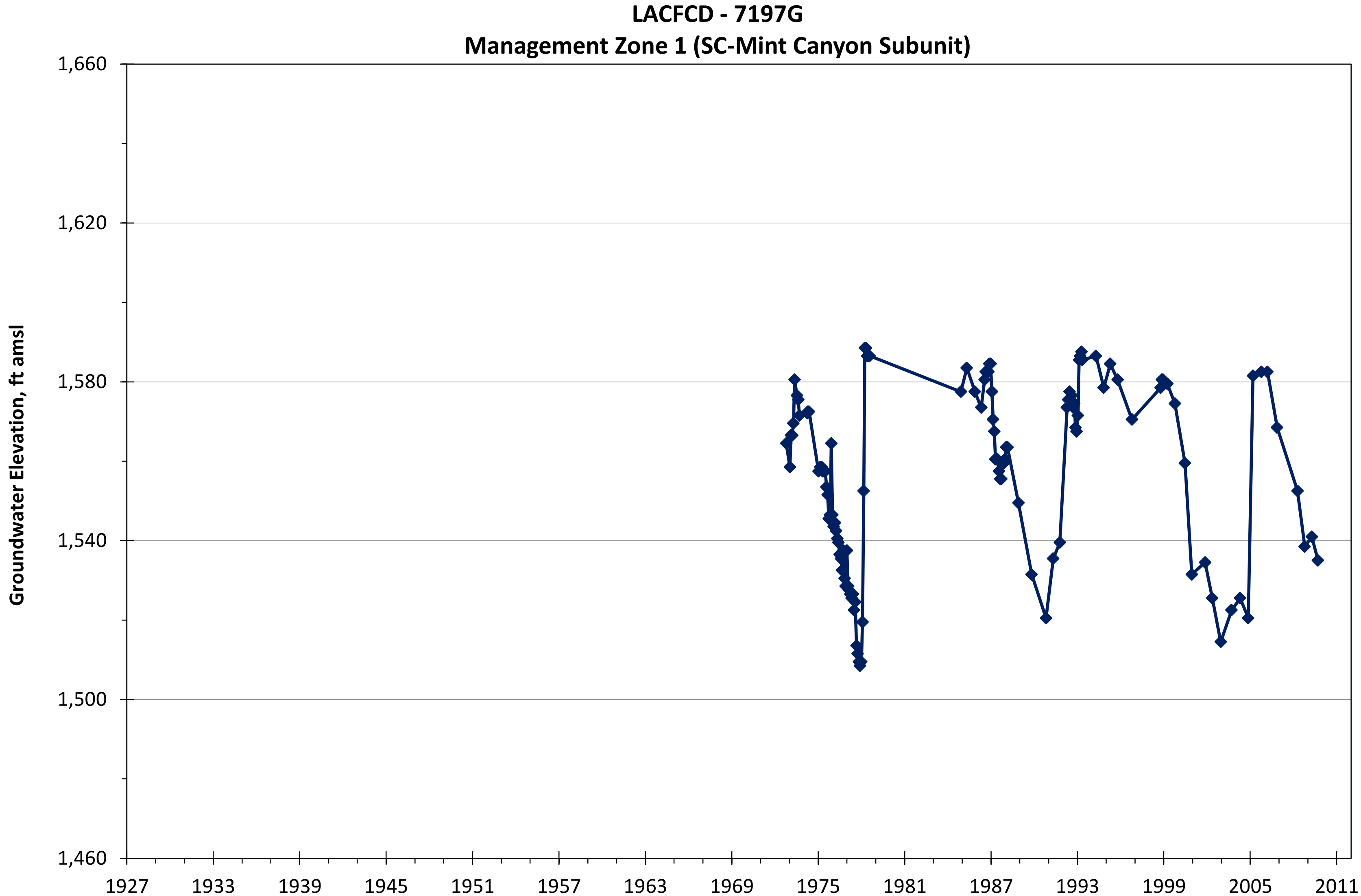
LACFCD - 7197G
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,660
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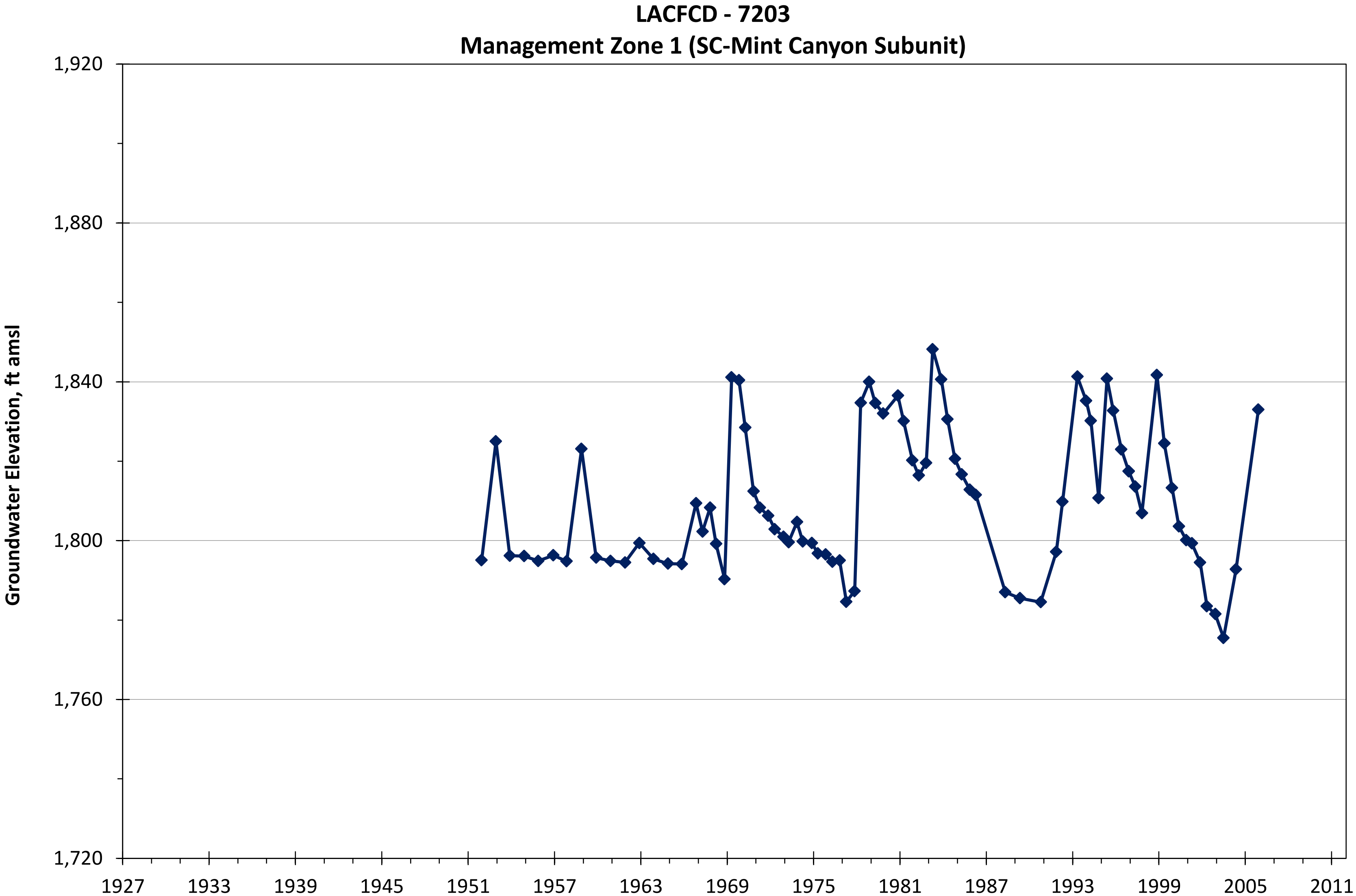
Appendix A


LACFCD - 7203
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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1,840
1,800
1,760
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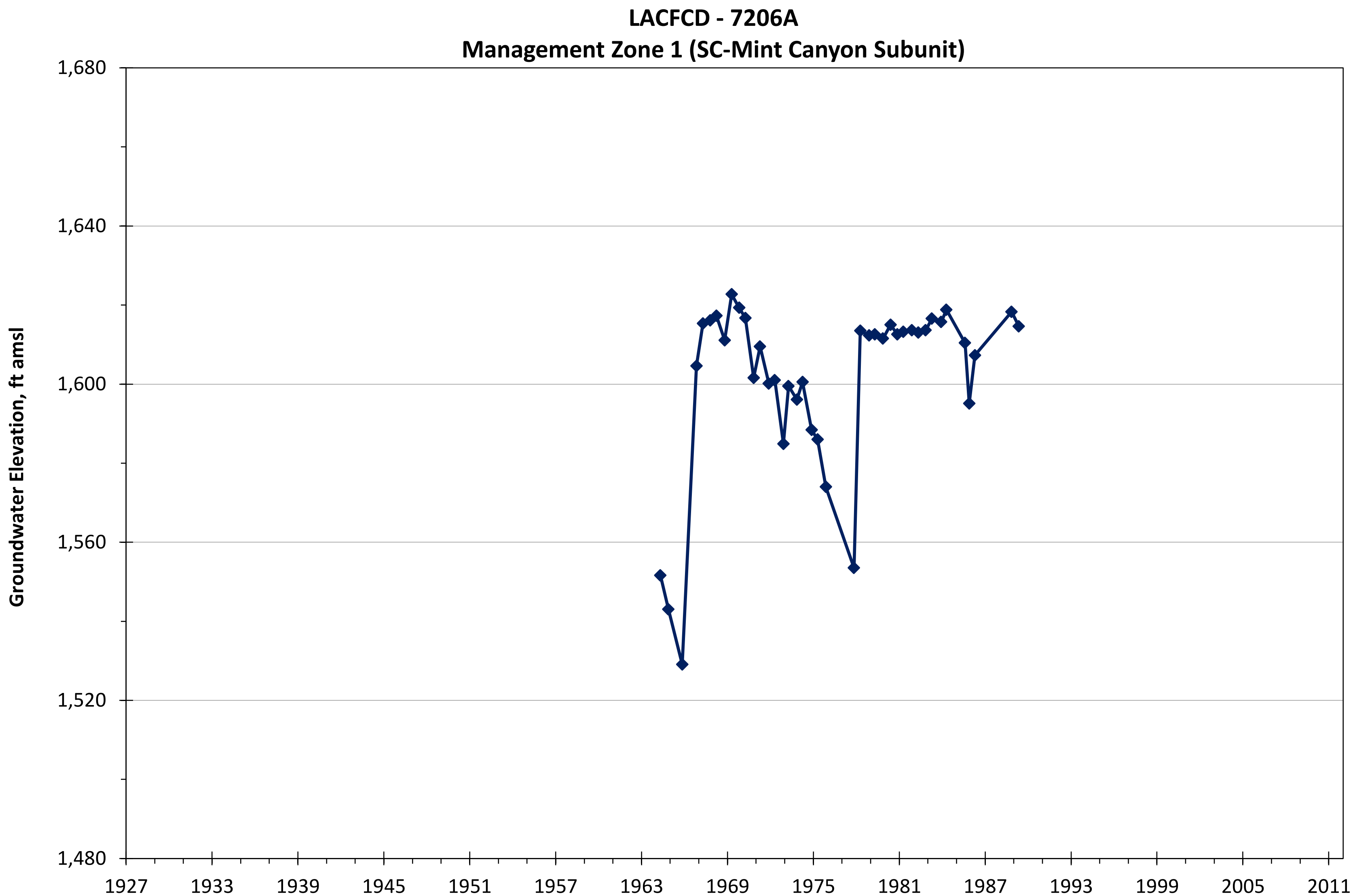
Appendix A


LACFCD - 7206A
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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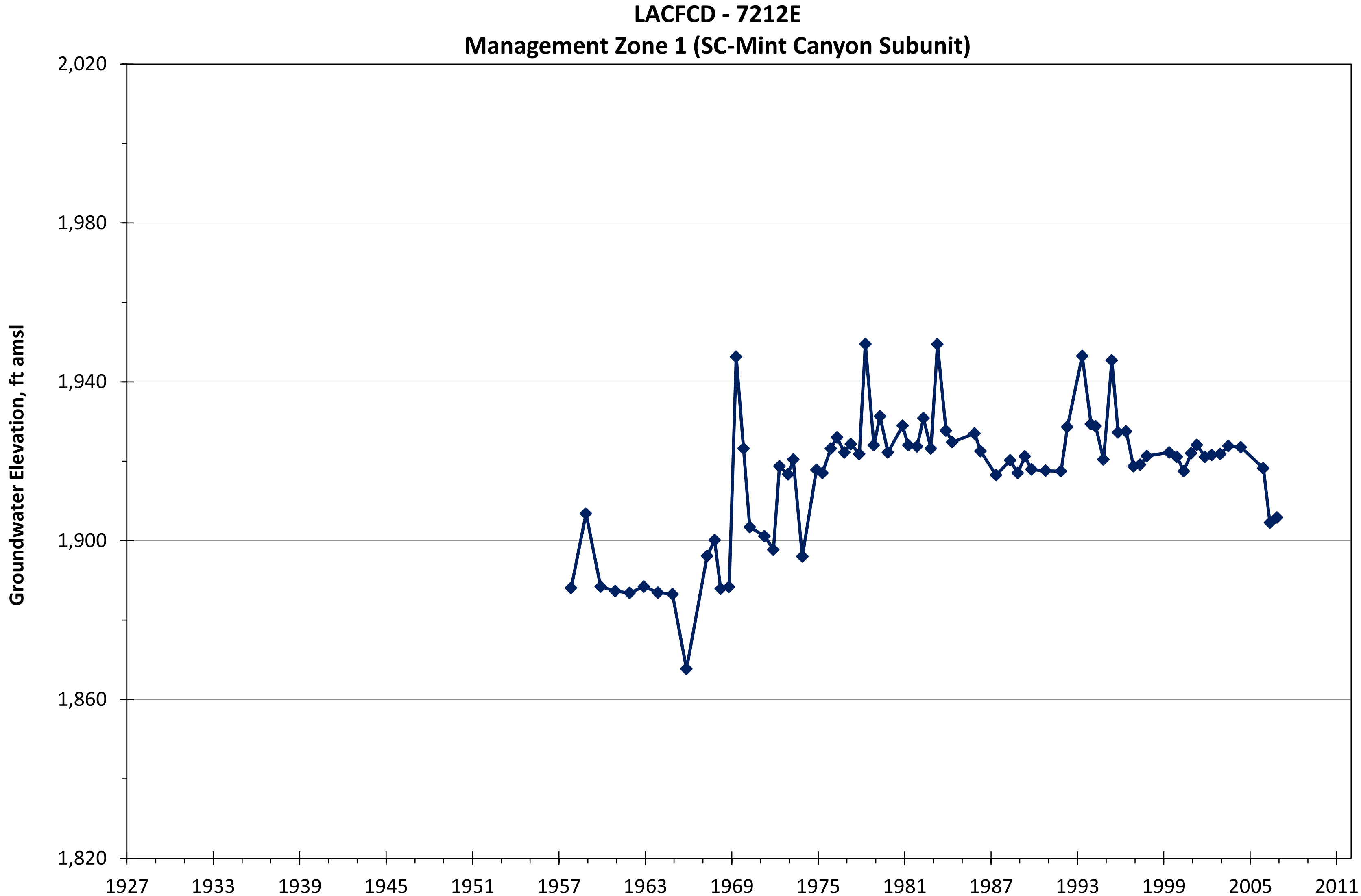
Appendix A


LACFCD - 7212E
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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1,940
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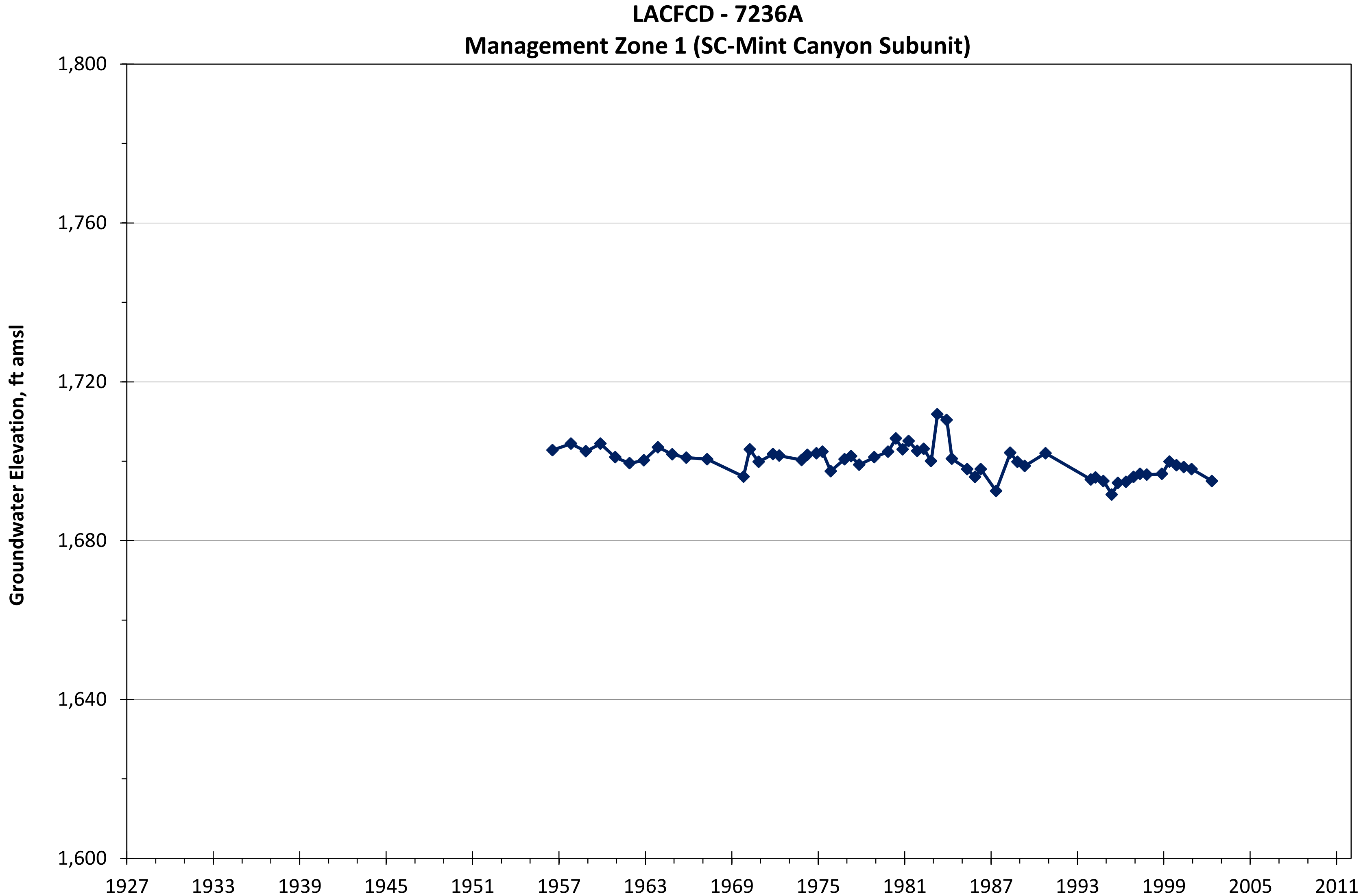
LACFCD - 7236A
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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1,680
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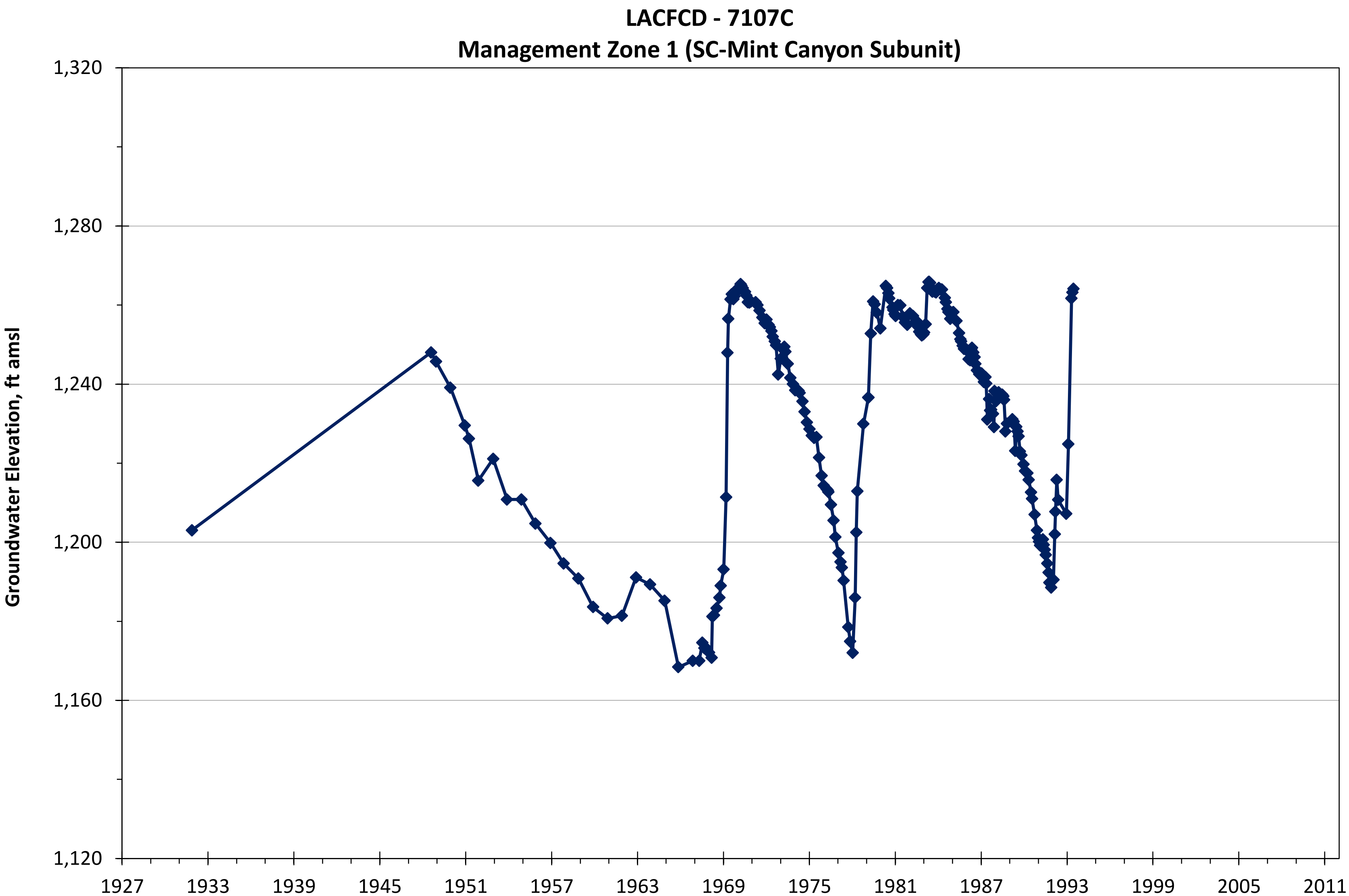
Appendix A


LACFCD - 7107C
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,320
1,280
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1,200
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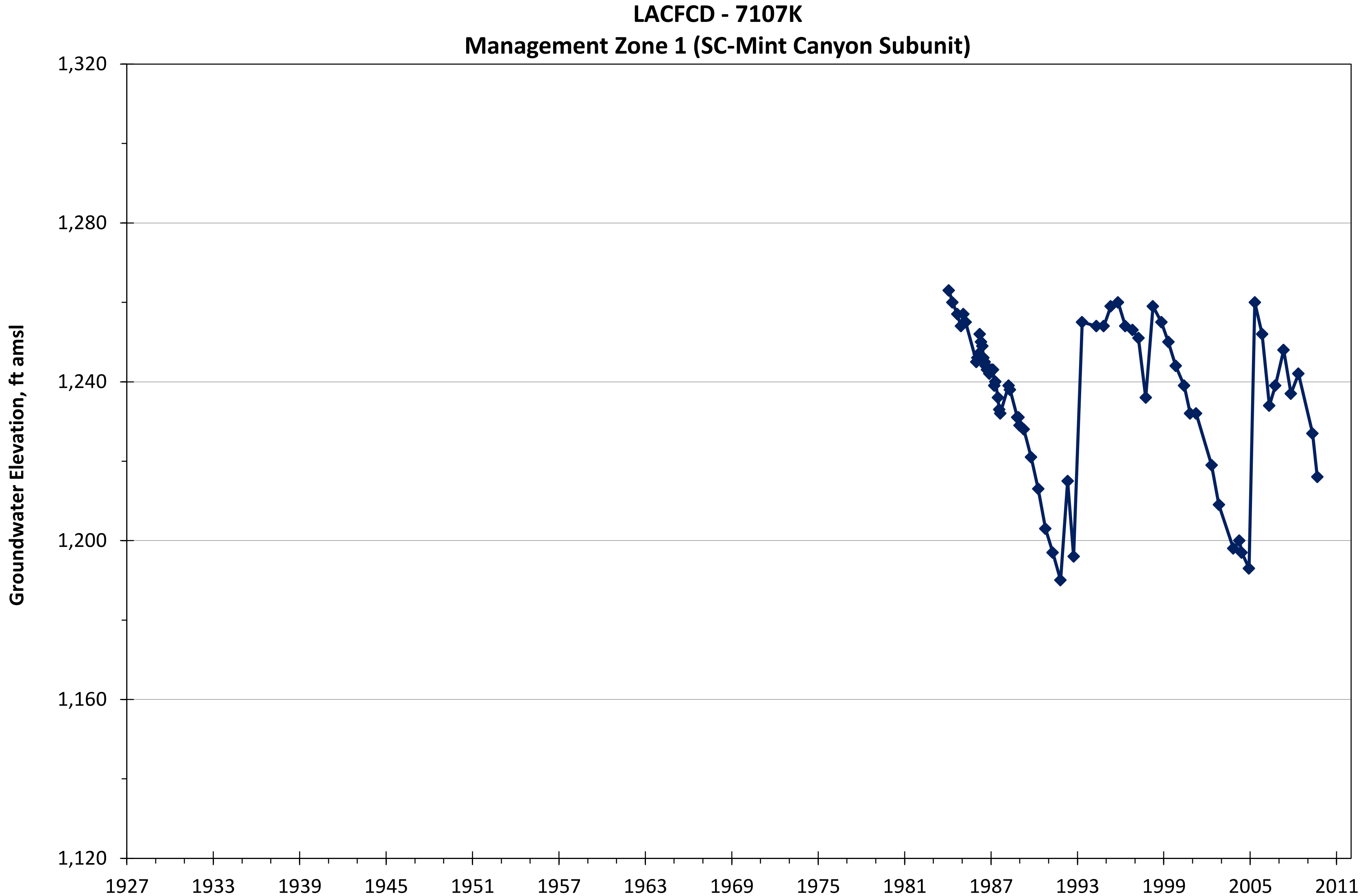
Appendix A


LACFCD - 7107K
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,320
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1,240
1,200
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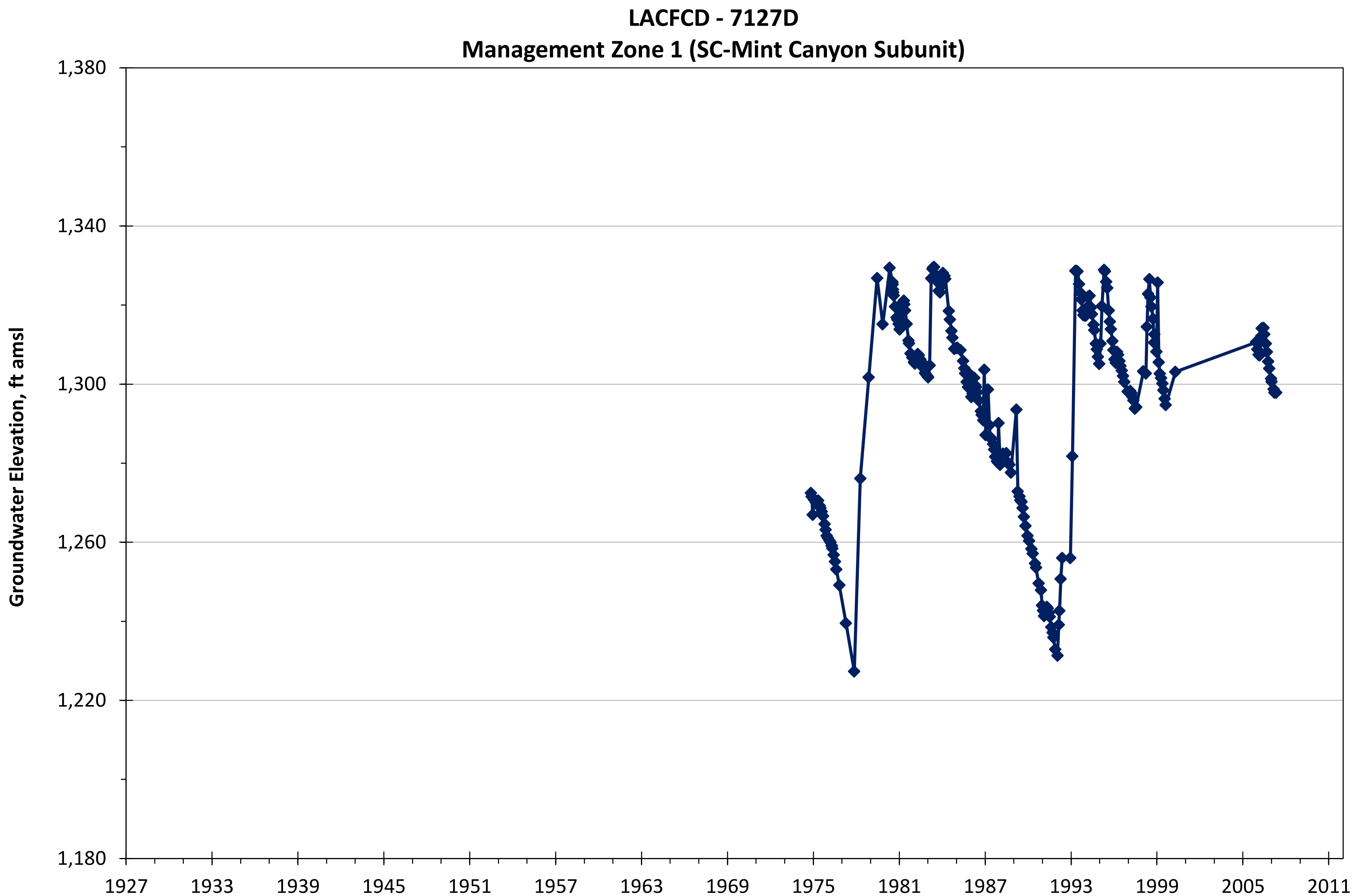
LACFCD - 7127D
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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1,340
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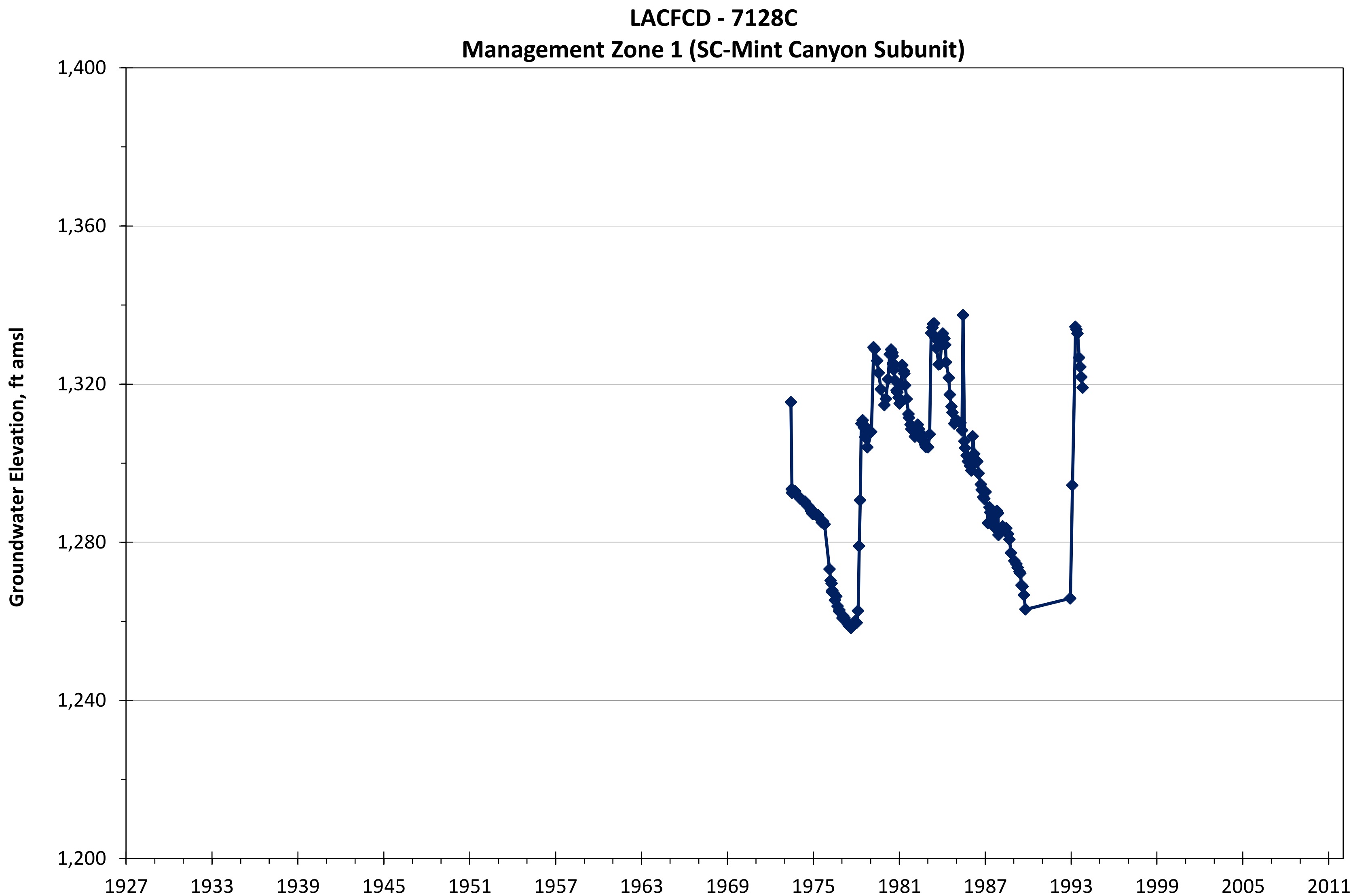
LACFCD - 7128C
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,400
1,360
1,320
1,280
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1,200
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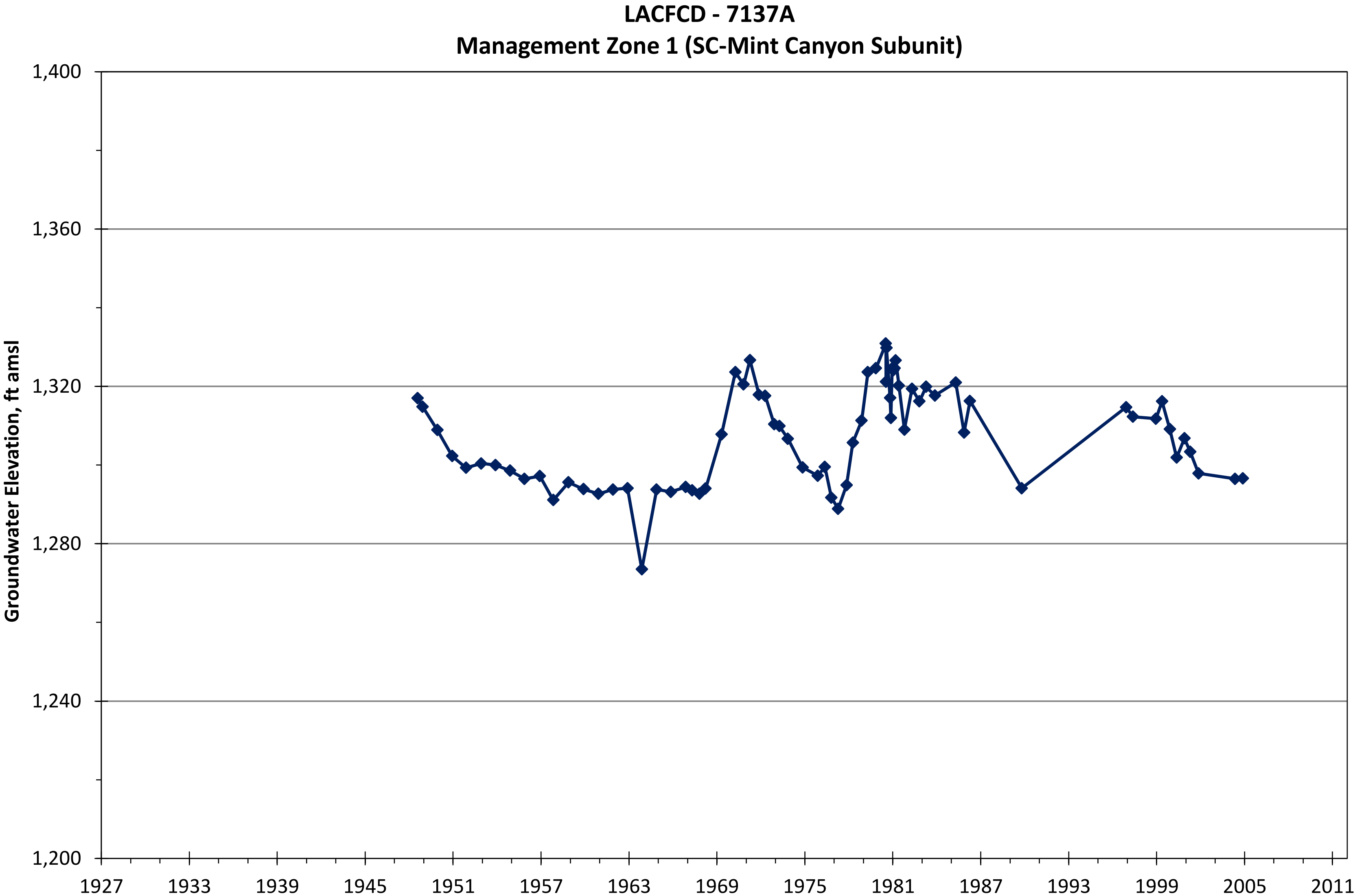
LACFCD - 7137A
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,400
1,360
1,320
1,280
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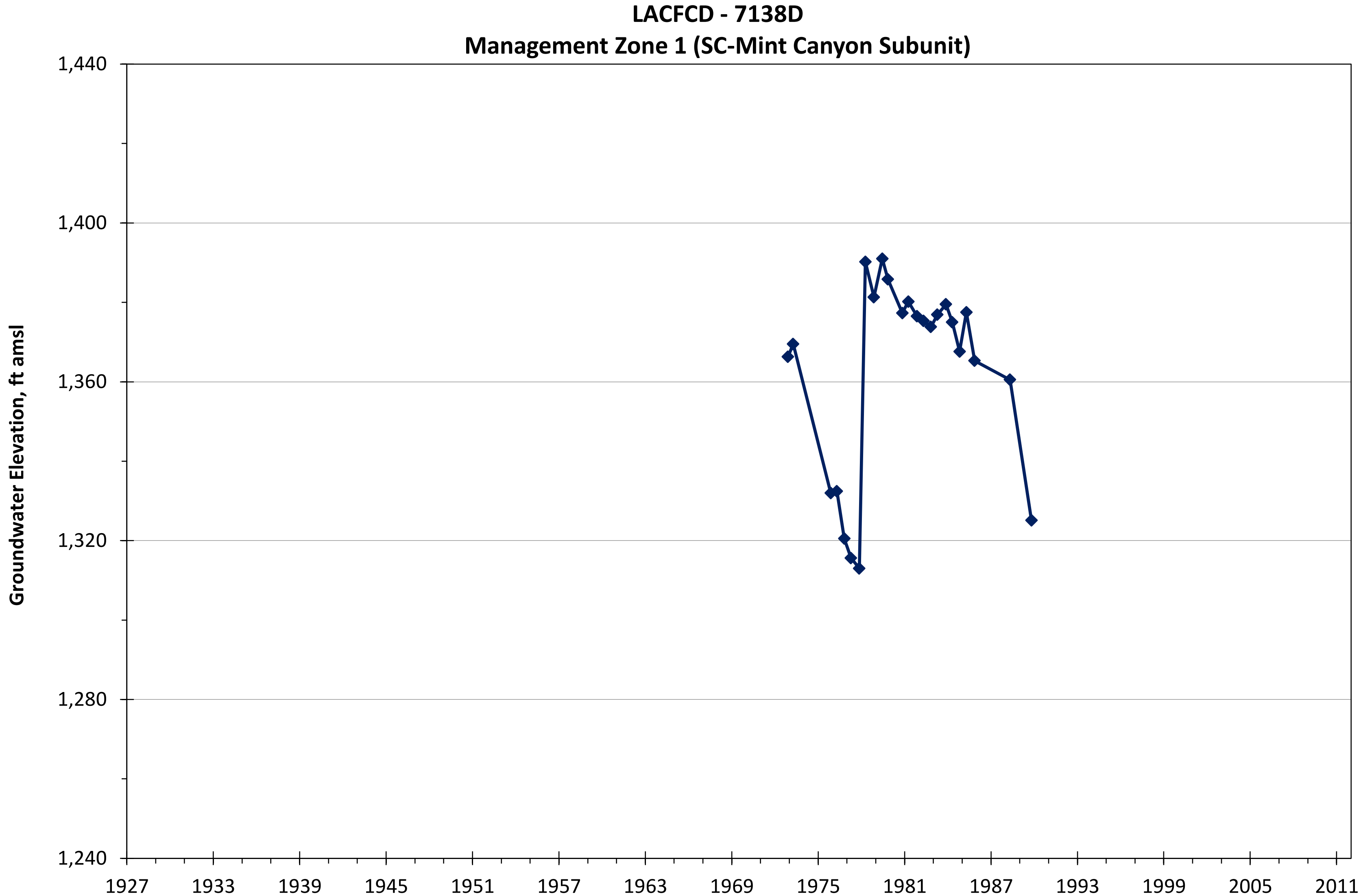
LACFCD - 7138D
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,440
1,400
1,360
1,320
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1,240
1927
1933
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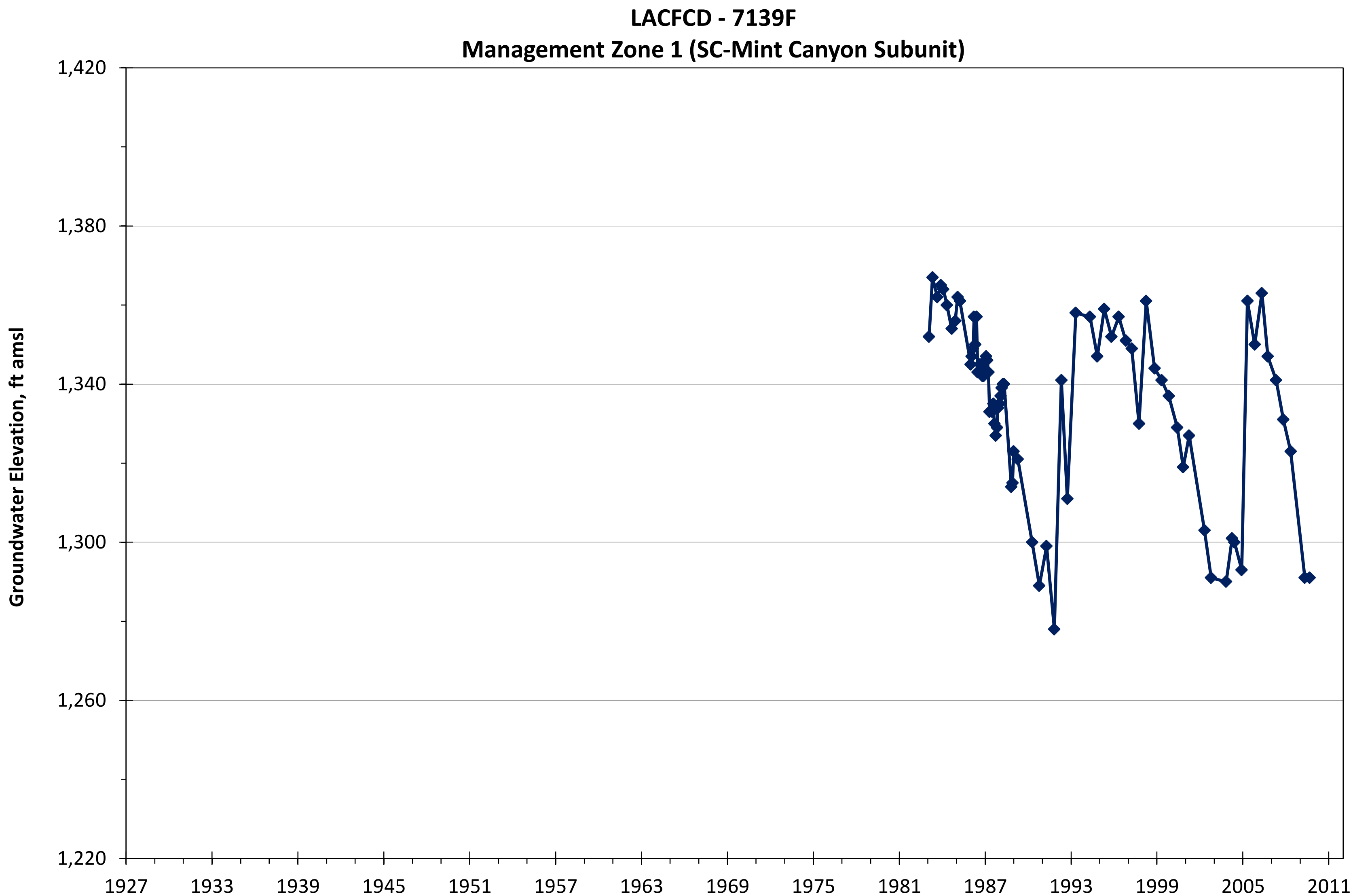
LACFCD - 7139F
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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1,340
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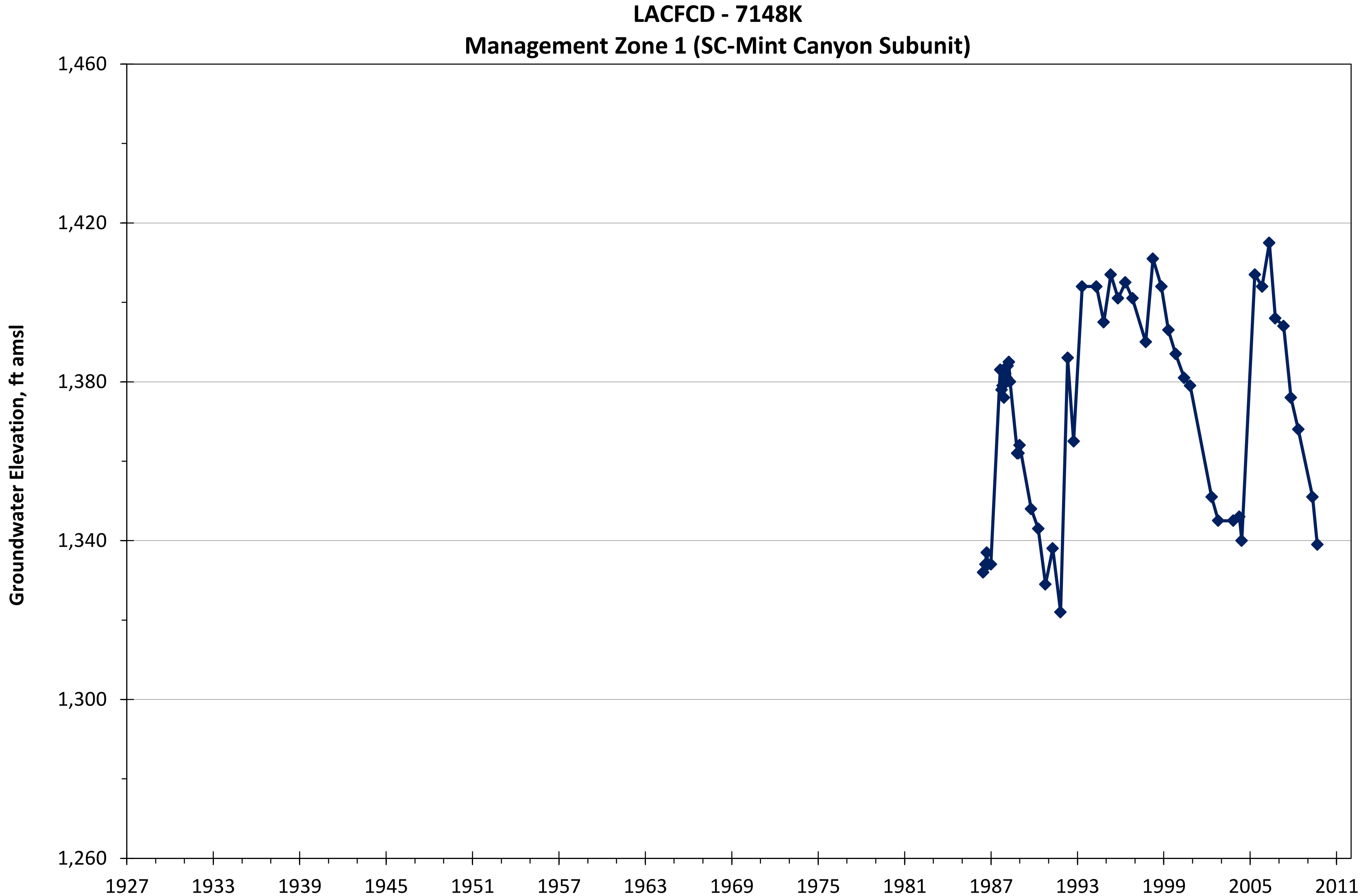
LACFCD - 7148K
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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1,340
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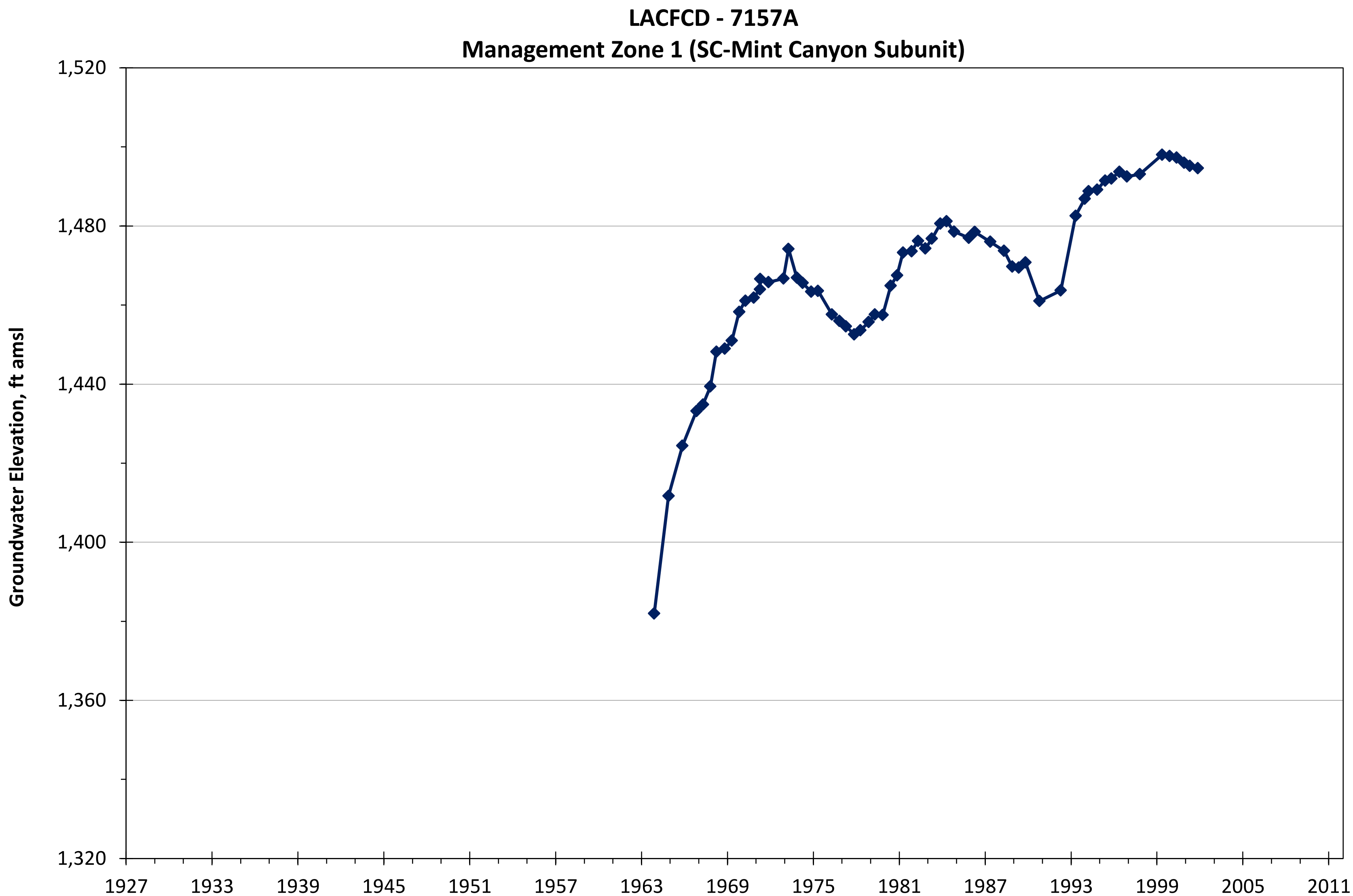
LACFCD - 7157A
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,520
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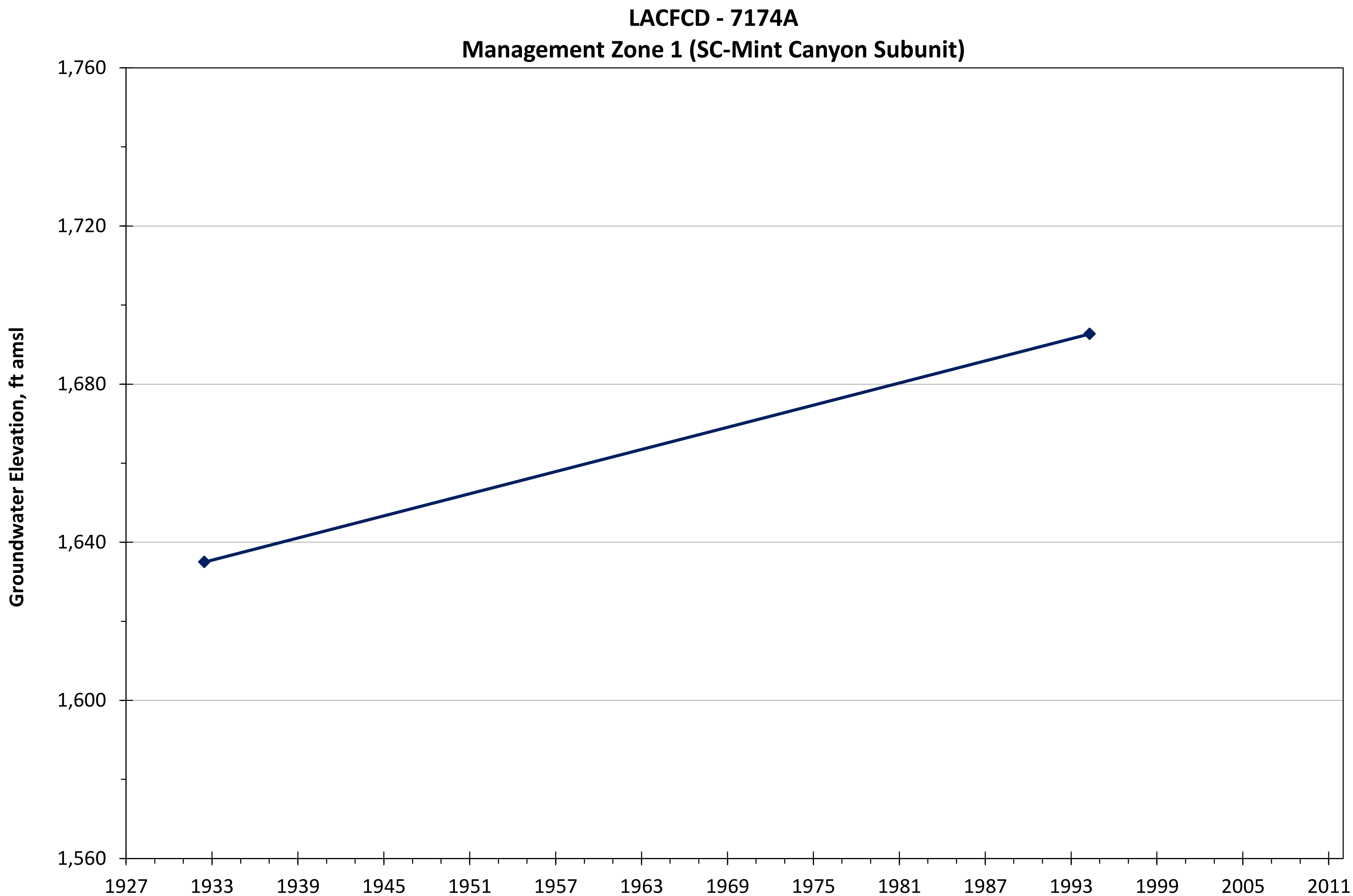
LACFCD - 7174A
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,760
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1,680
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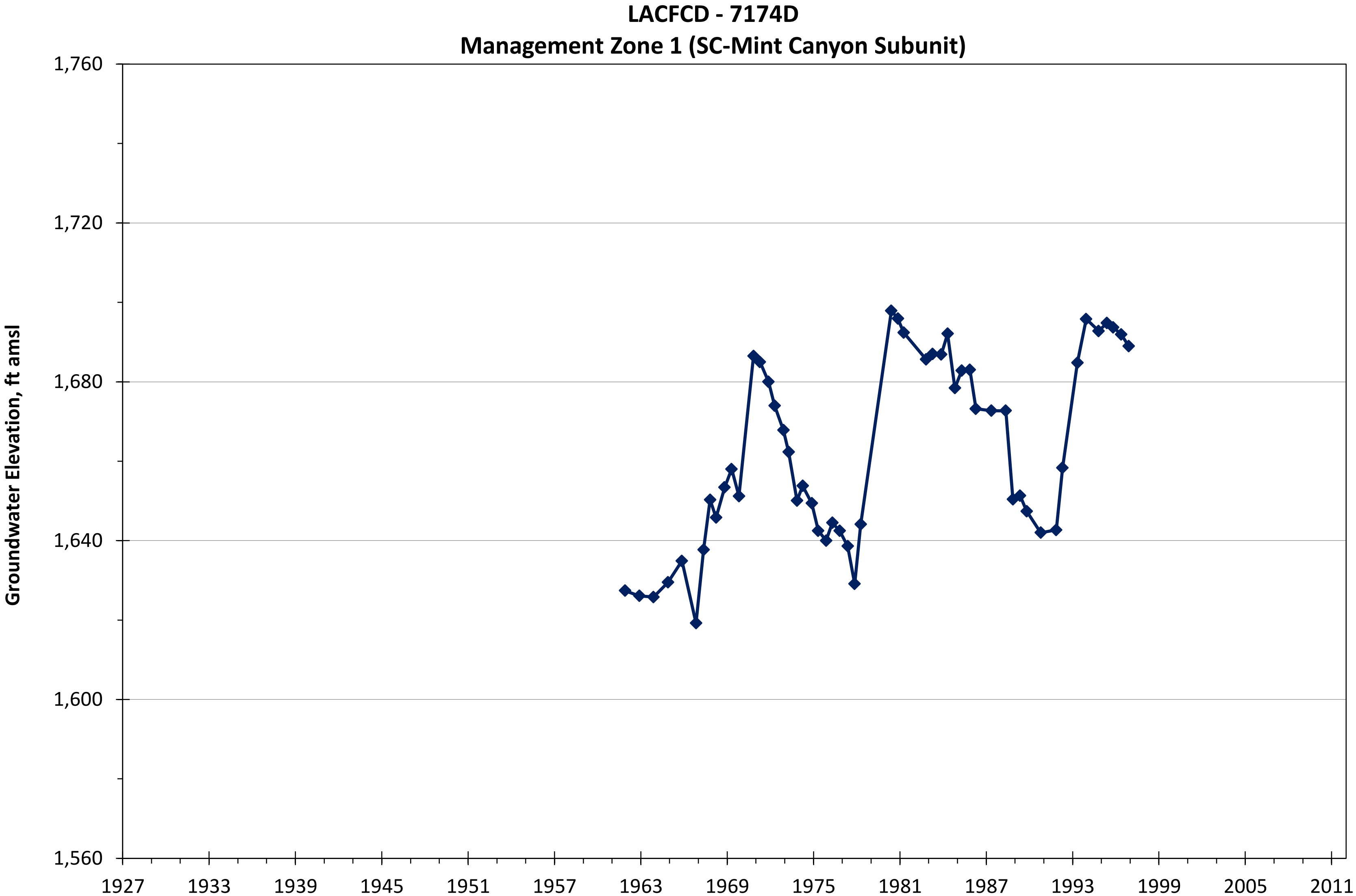
LACFCD - 7174D
Management Zone 1 (SC-Mint Canyon Subunit)
1,760
1,720
1,680
1,640
1,600
1,560
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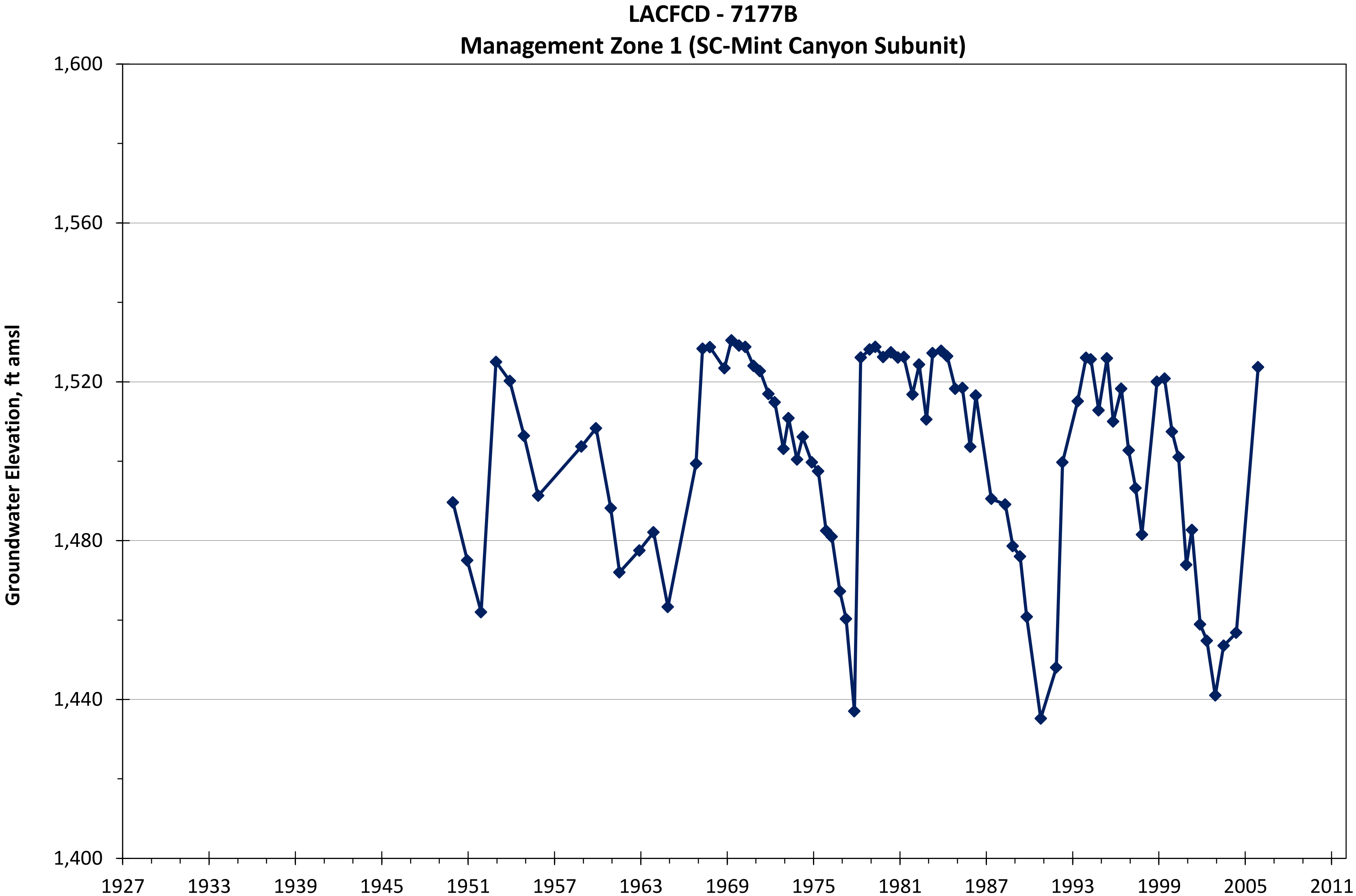
2011
Groundwater Elevation, ft amsl


LACFCD - 7177B
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,600
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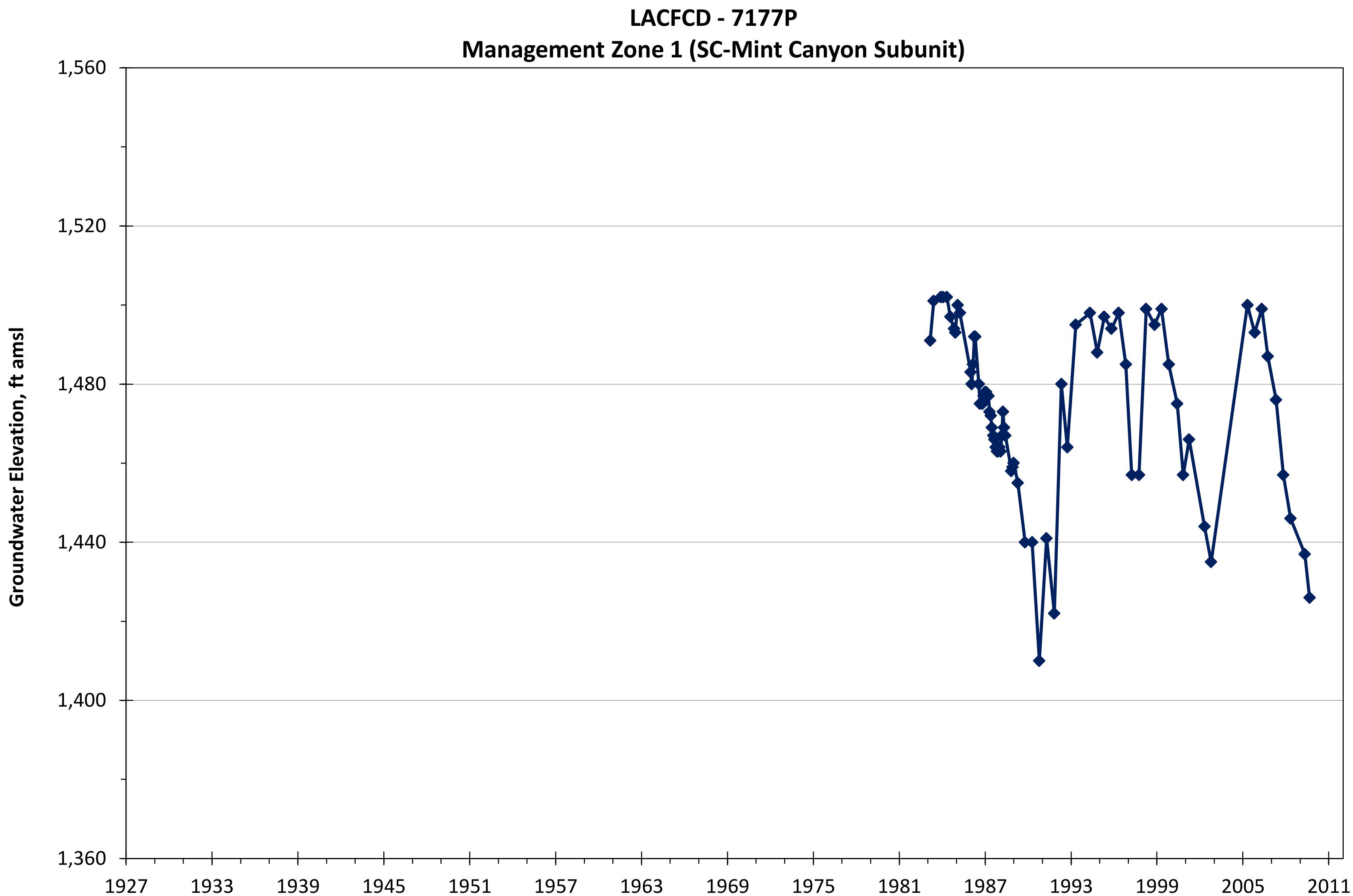
LACFCD - 7177P
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,560
1,520
1,480
1,440
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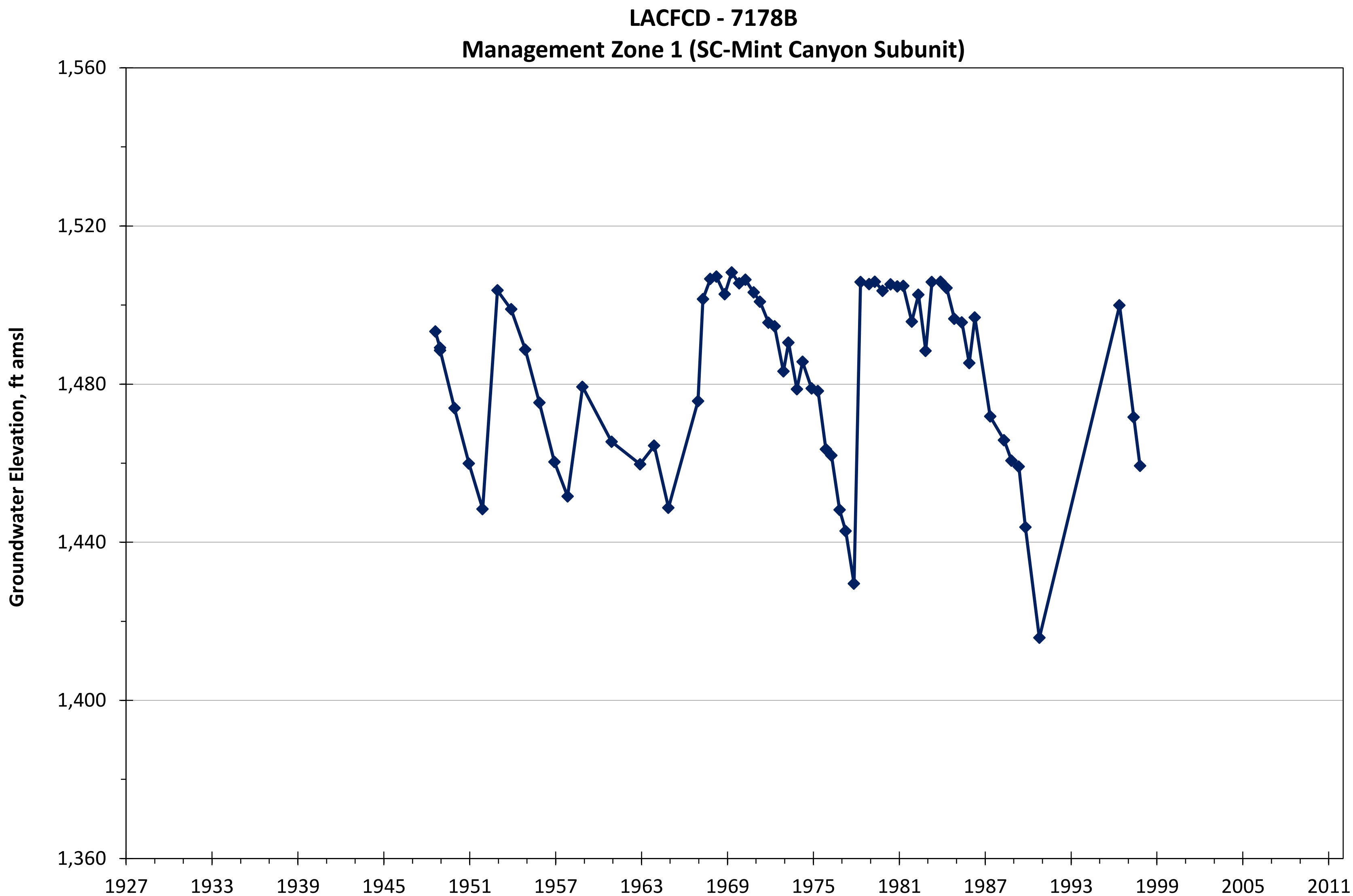
Appendix A


LACFCD - 7178B
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,560
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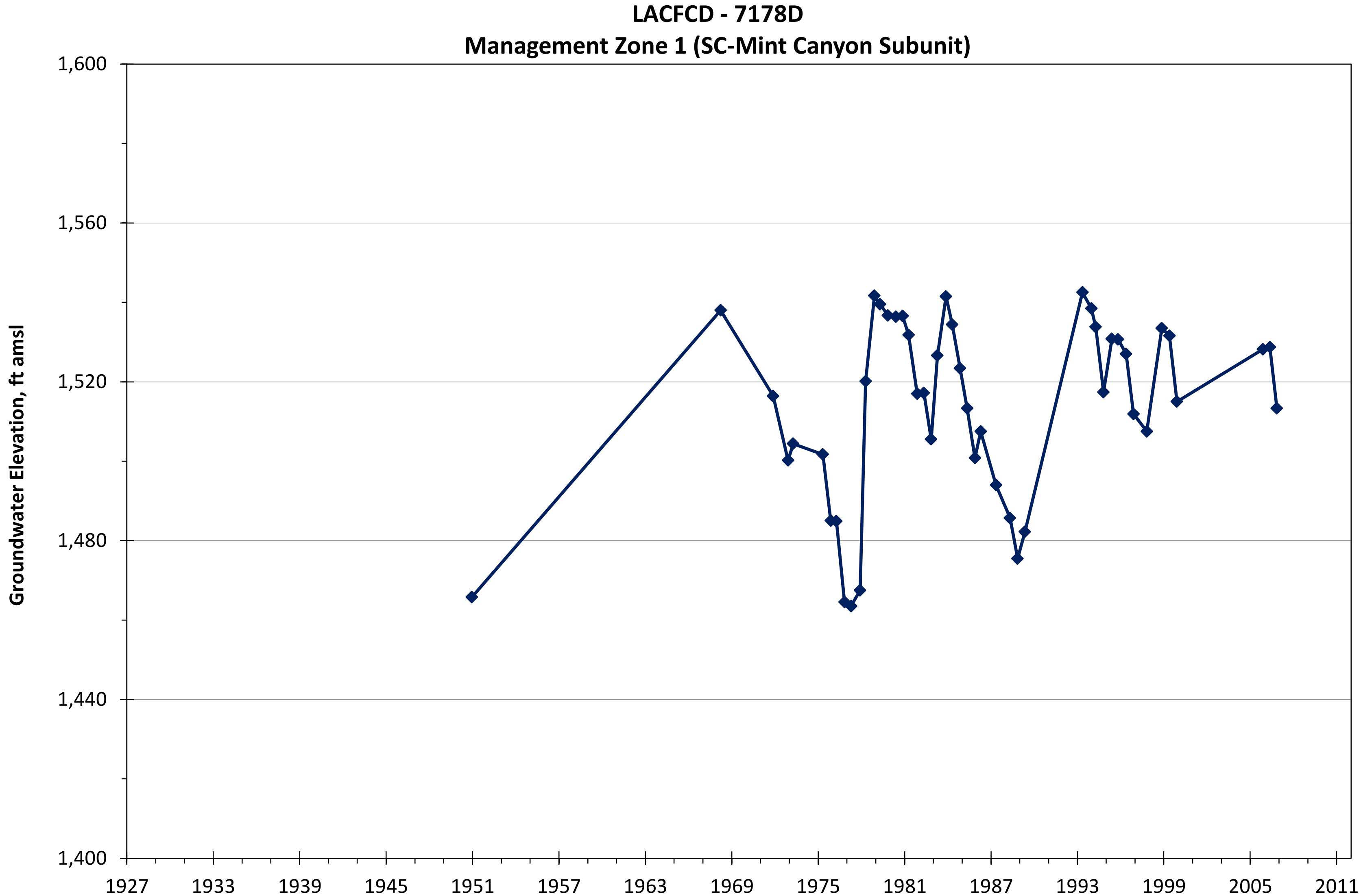
LACFCD - 7178D
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,600
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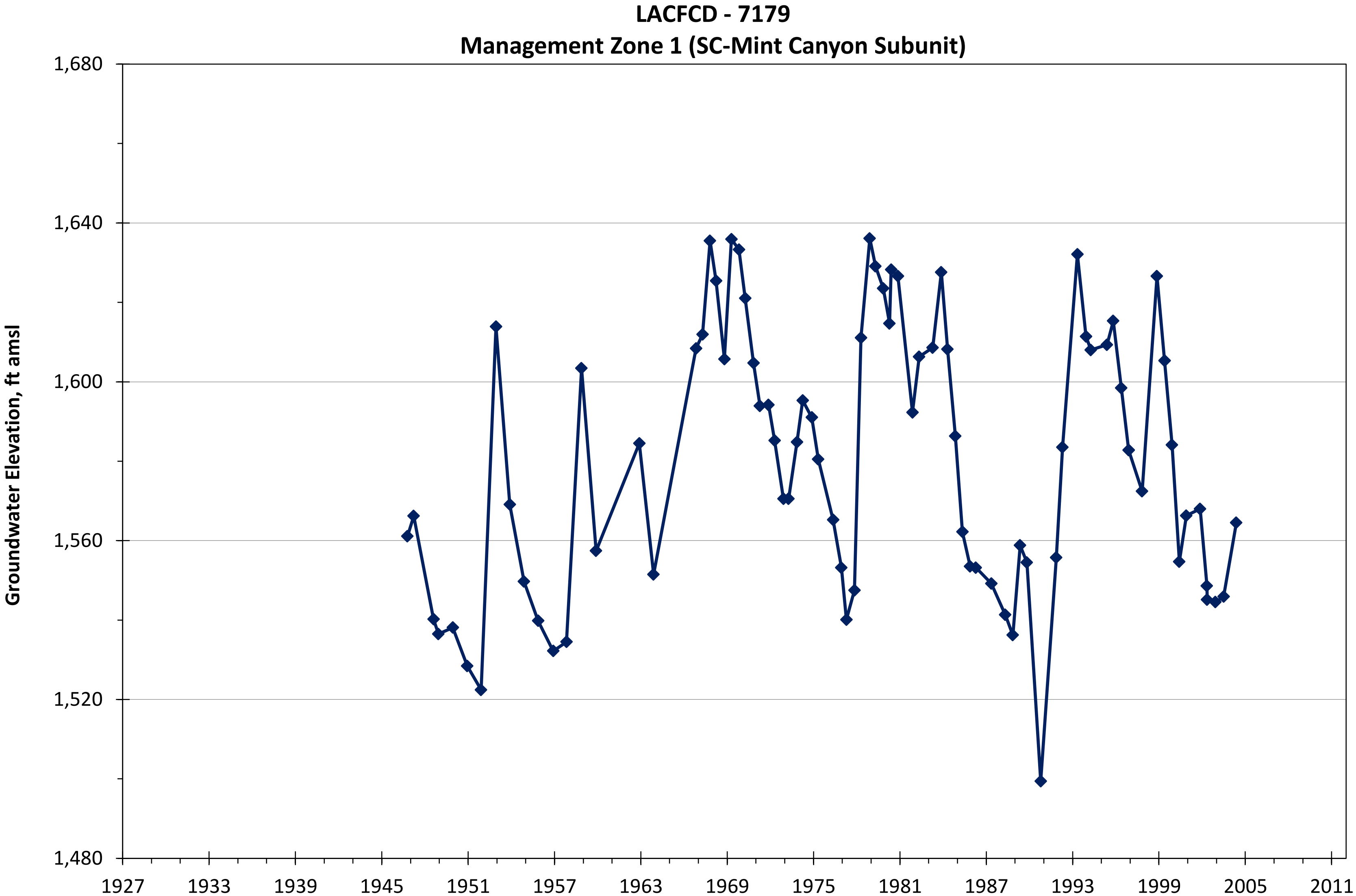
Appendix A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Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,680
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1,560
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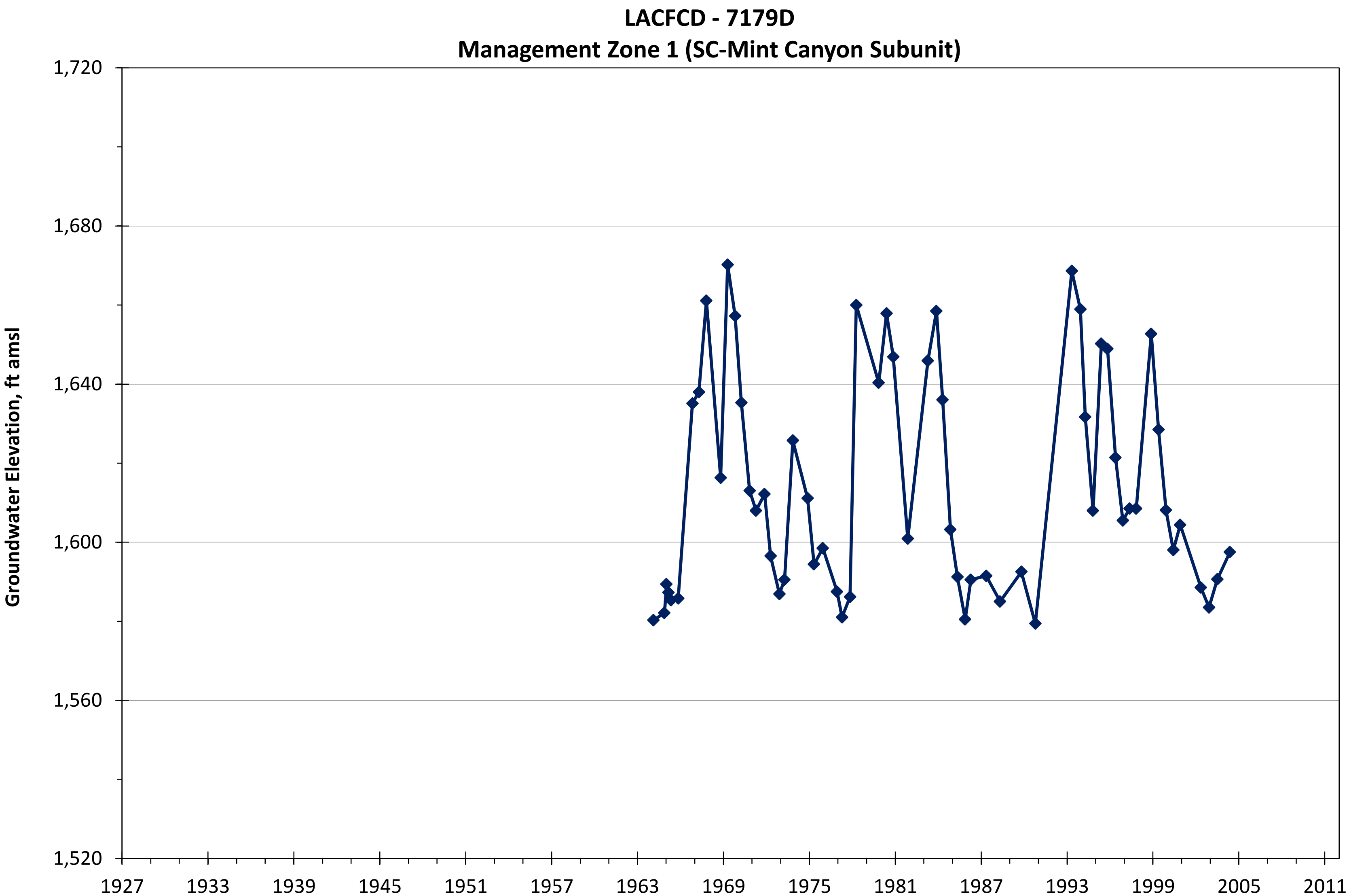
Appendix A


LACFCD - 7179D
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,720
1,680
1,640
1,600
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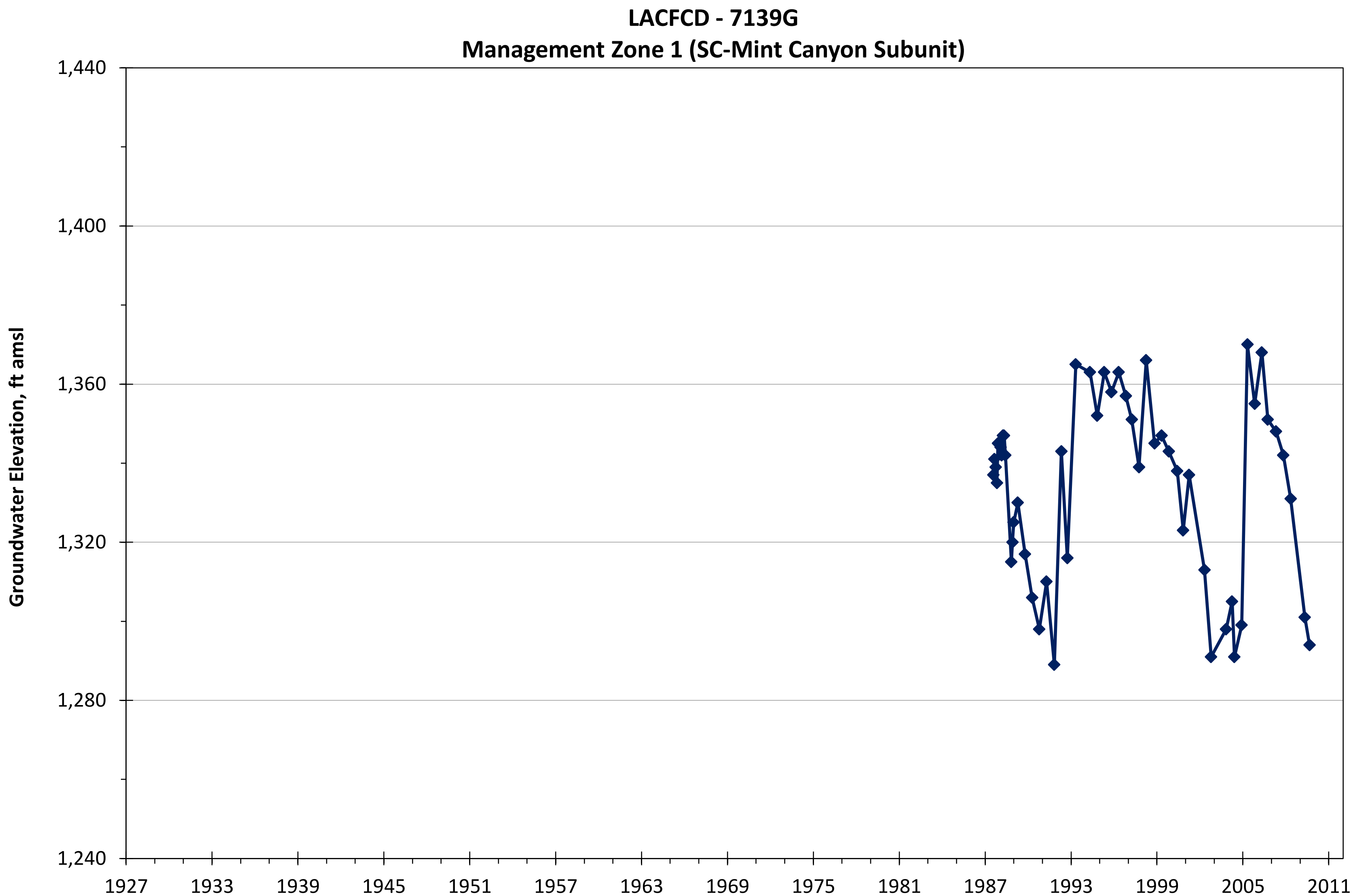
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Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,440
1,400
1,360
1,320
1,280
1,240
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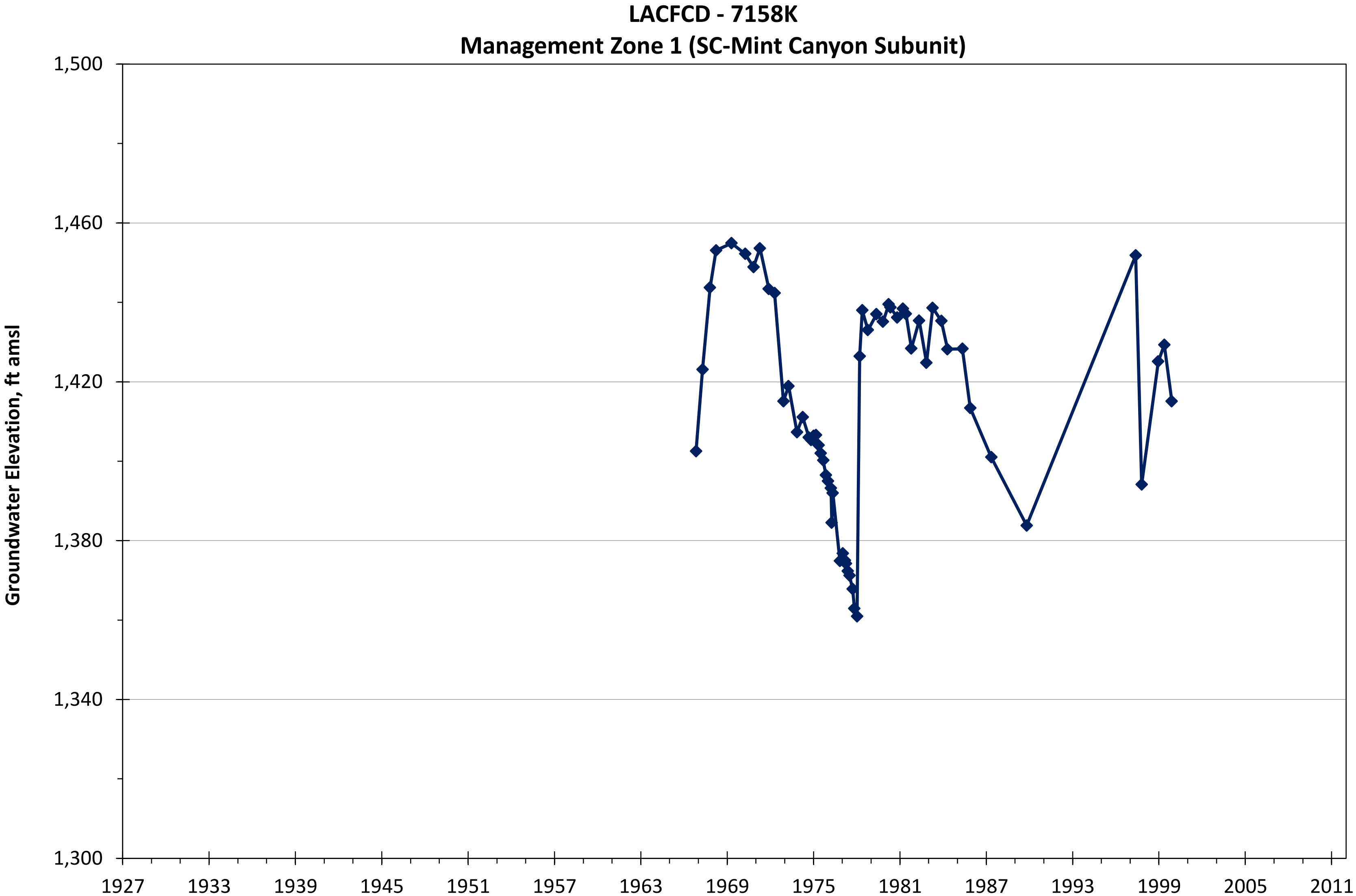
LACFCD - 7158K
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,500
1,460
1,420
1,380
1,340
1,300
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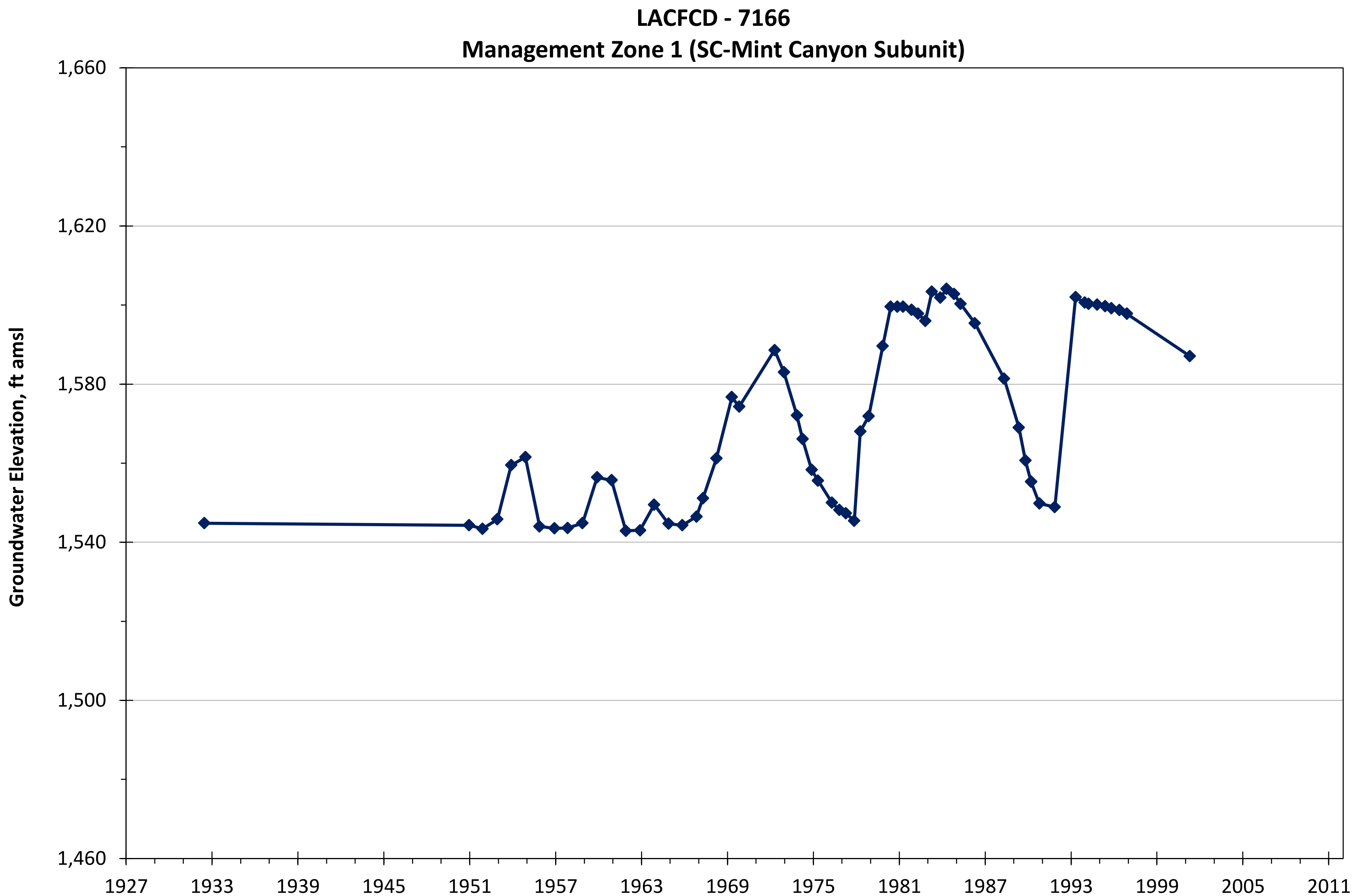
Appendix A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Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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1,580
1,540
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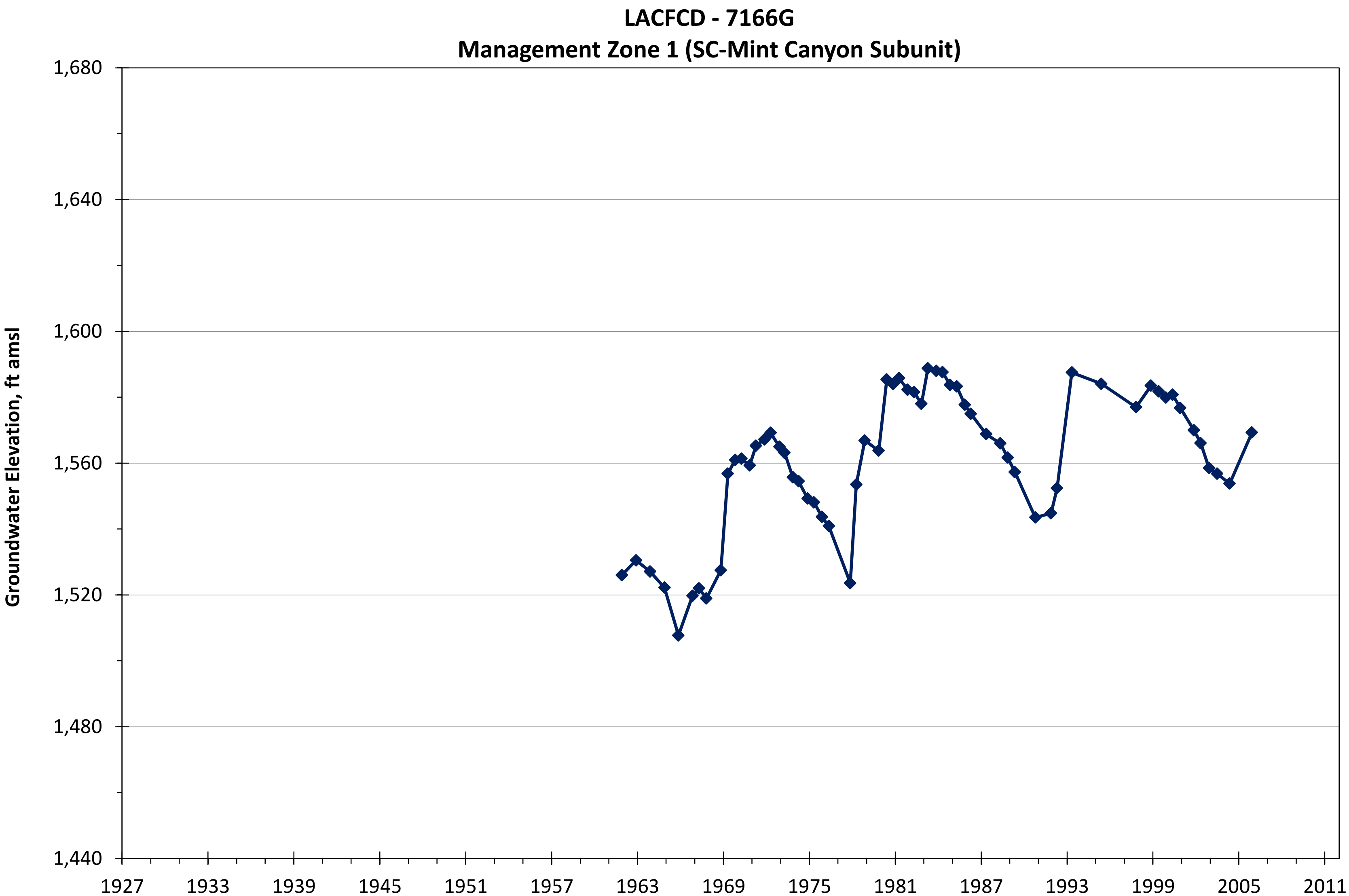
Appendix A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Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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1,640
1,600
1,560
1,520
1,480
1,440
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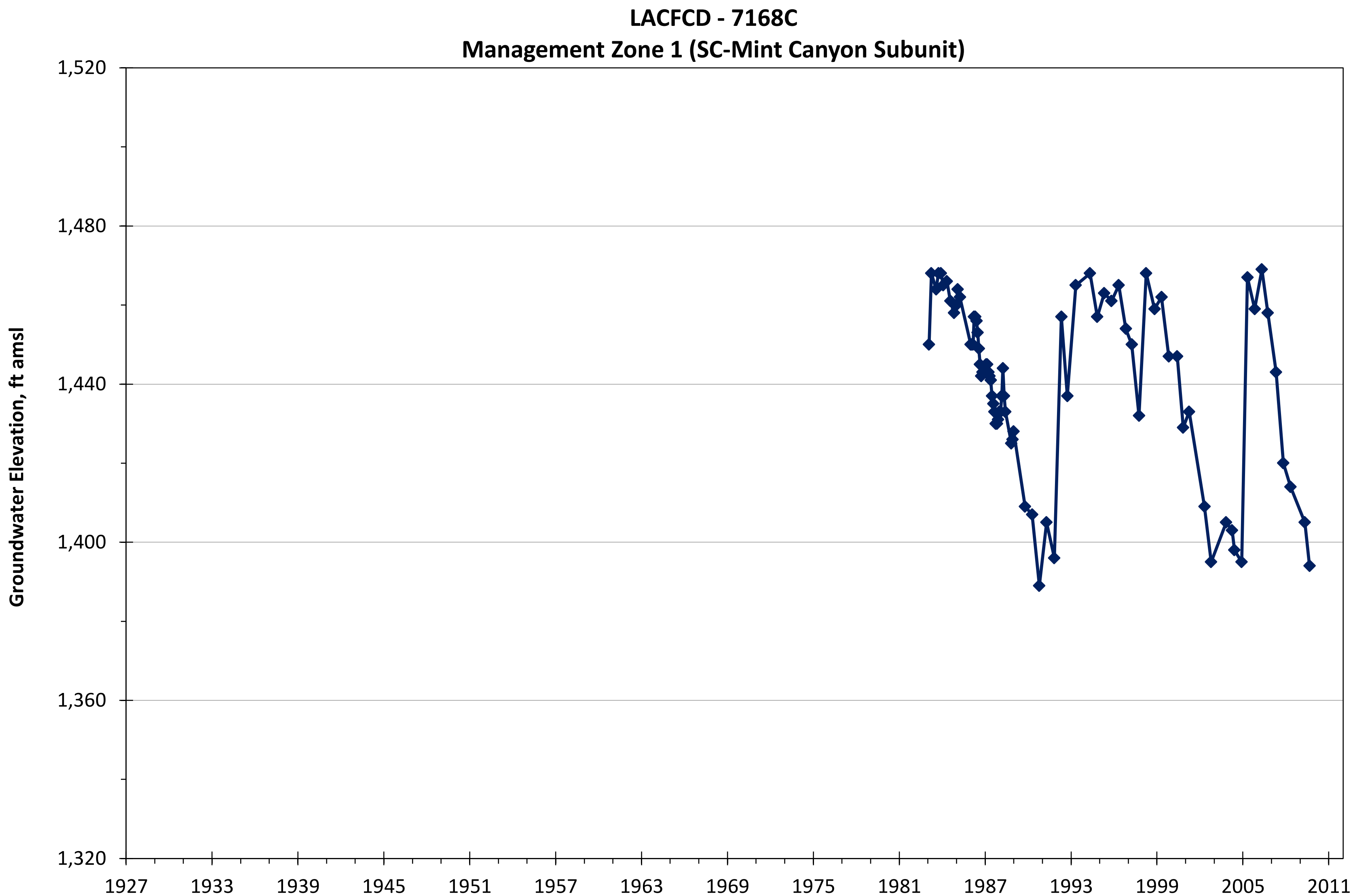
2011

Appendix A


LACFCD - 7168C
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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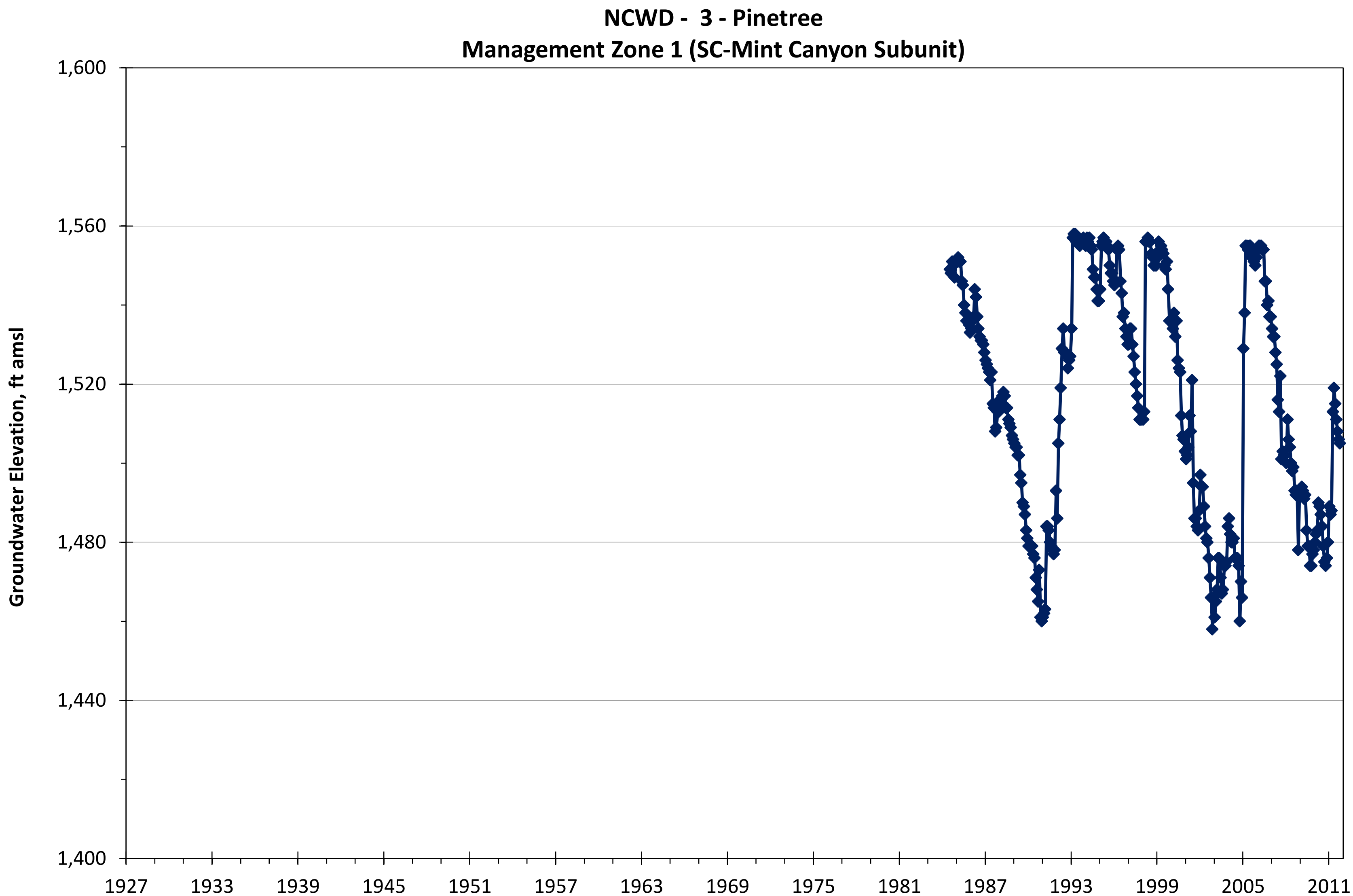
NCWD - 3 - Pinetree
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,600
1,560
1,520
1,480
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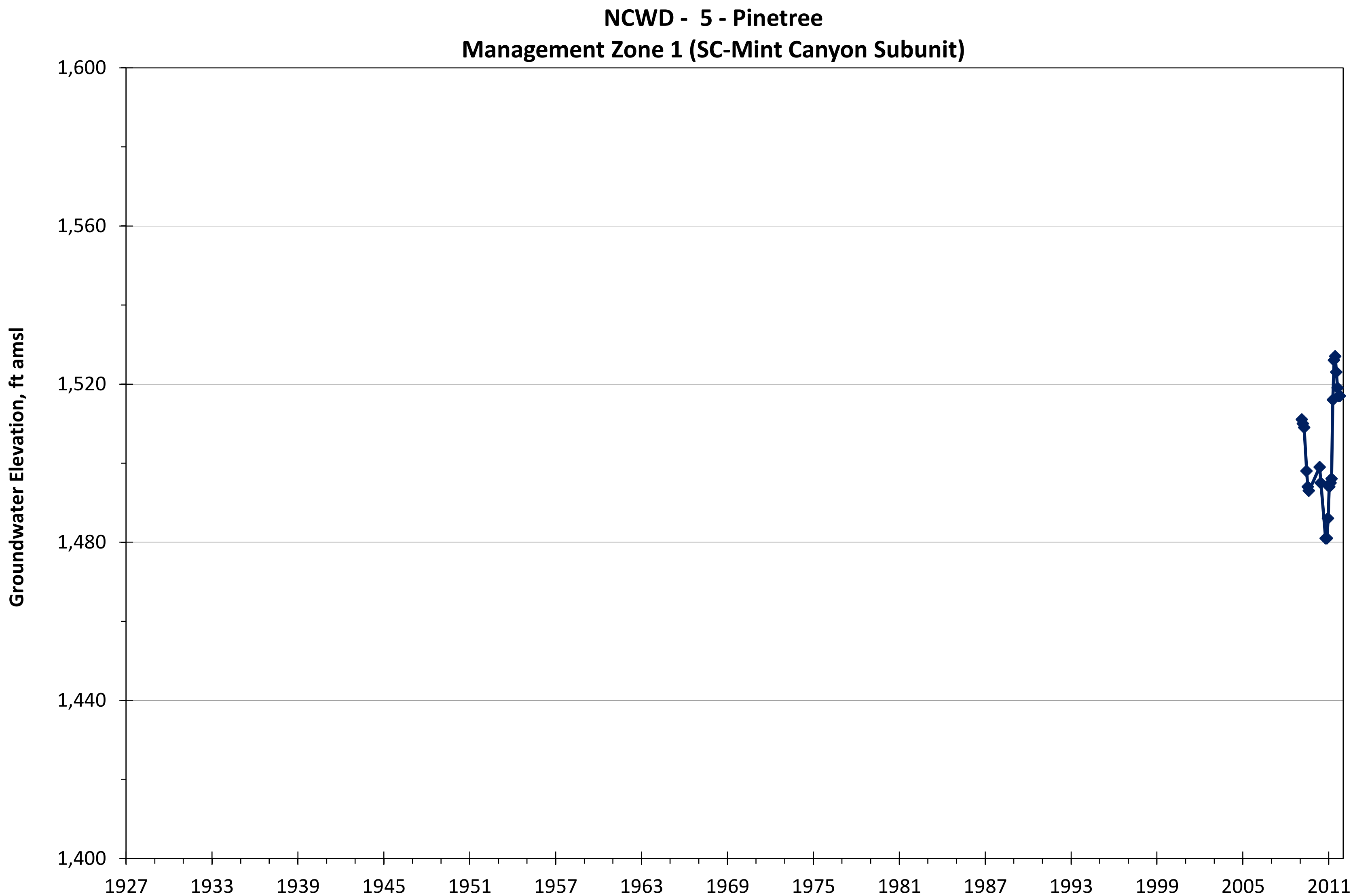
NCWD - 5 - Pinetree
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
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1,480
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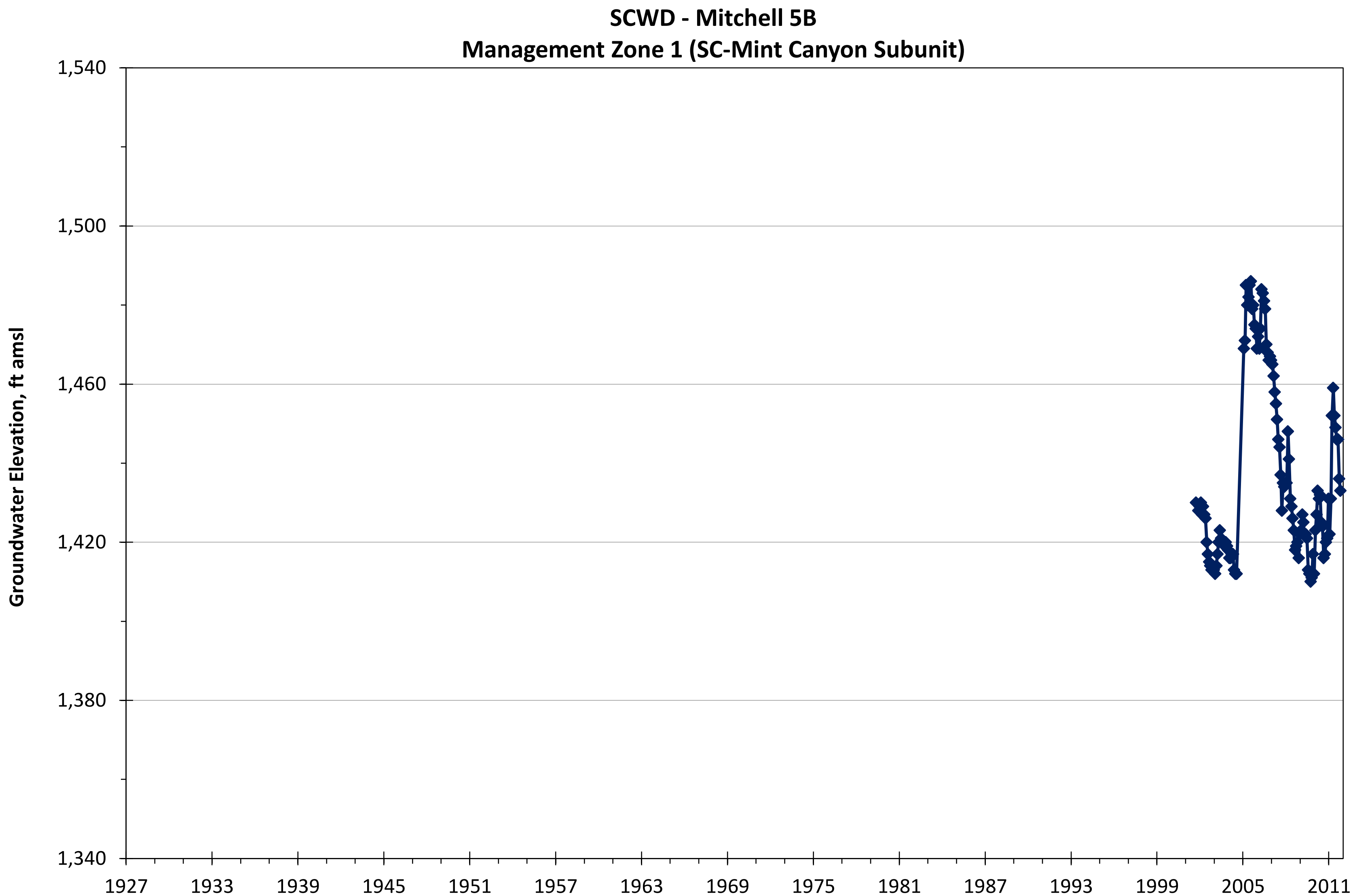
SCWD - Mitchell 5B
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,540
1,500
1,460
1,420
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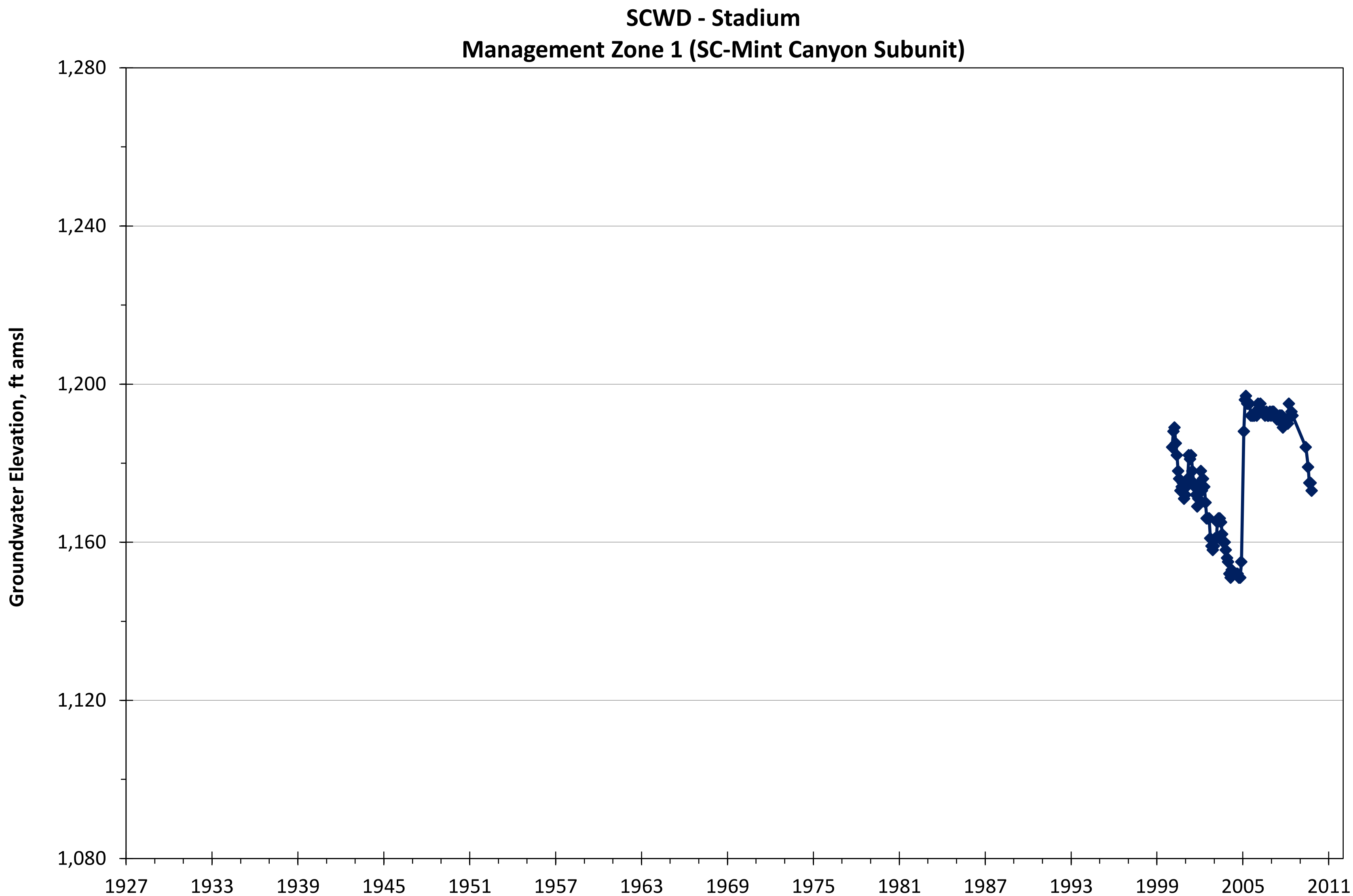
SCWD - Stadium
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,280
1,240
1,200
1,160
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1,080
1927
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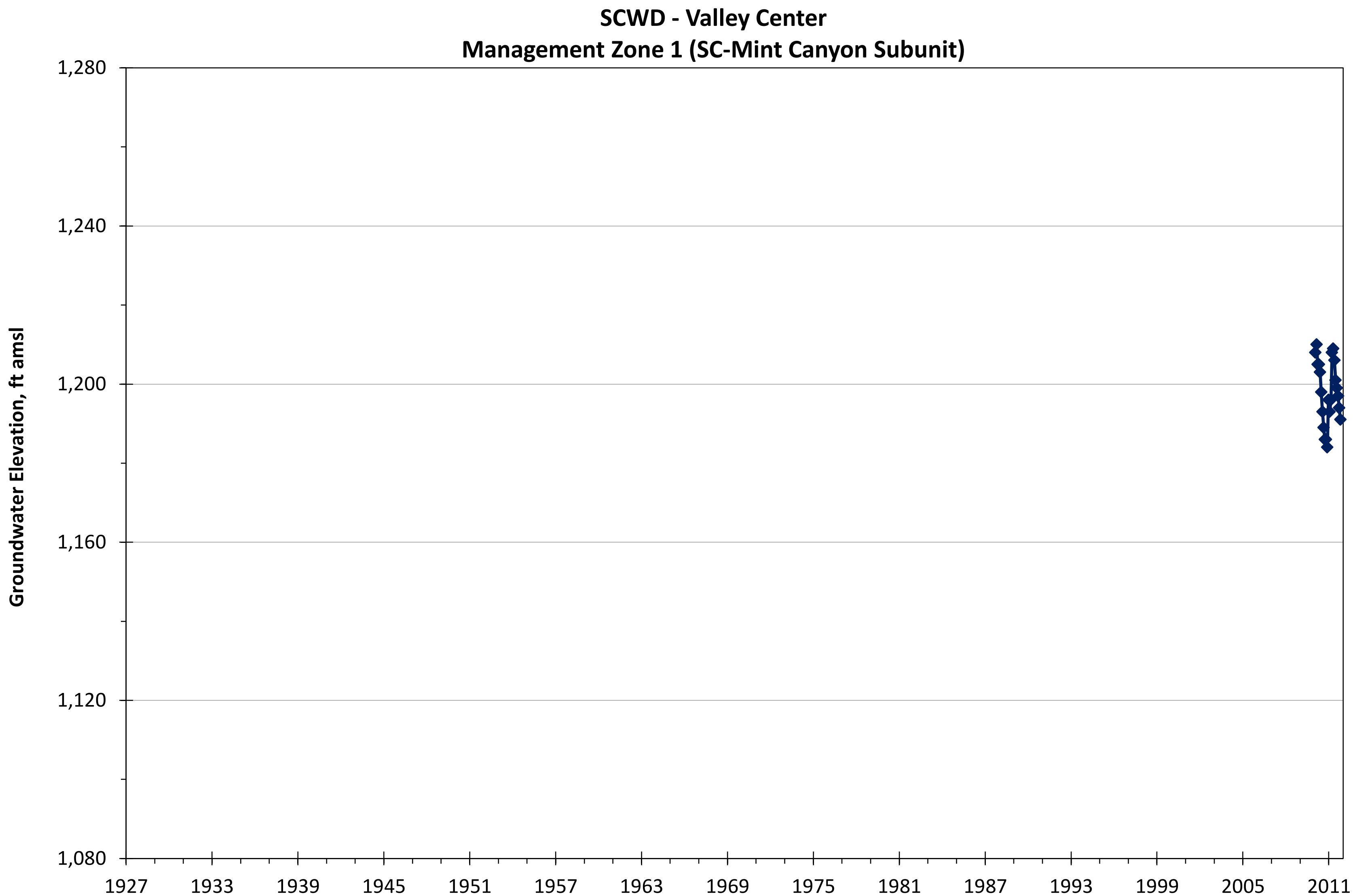
SCWD - Valley Center
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,280
1,240
1,200
1,160
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1,080
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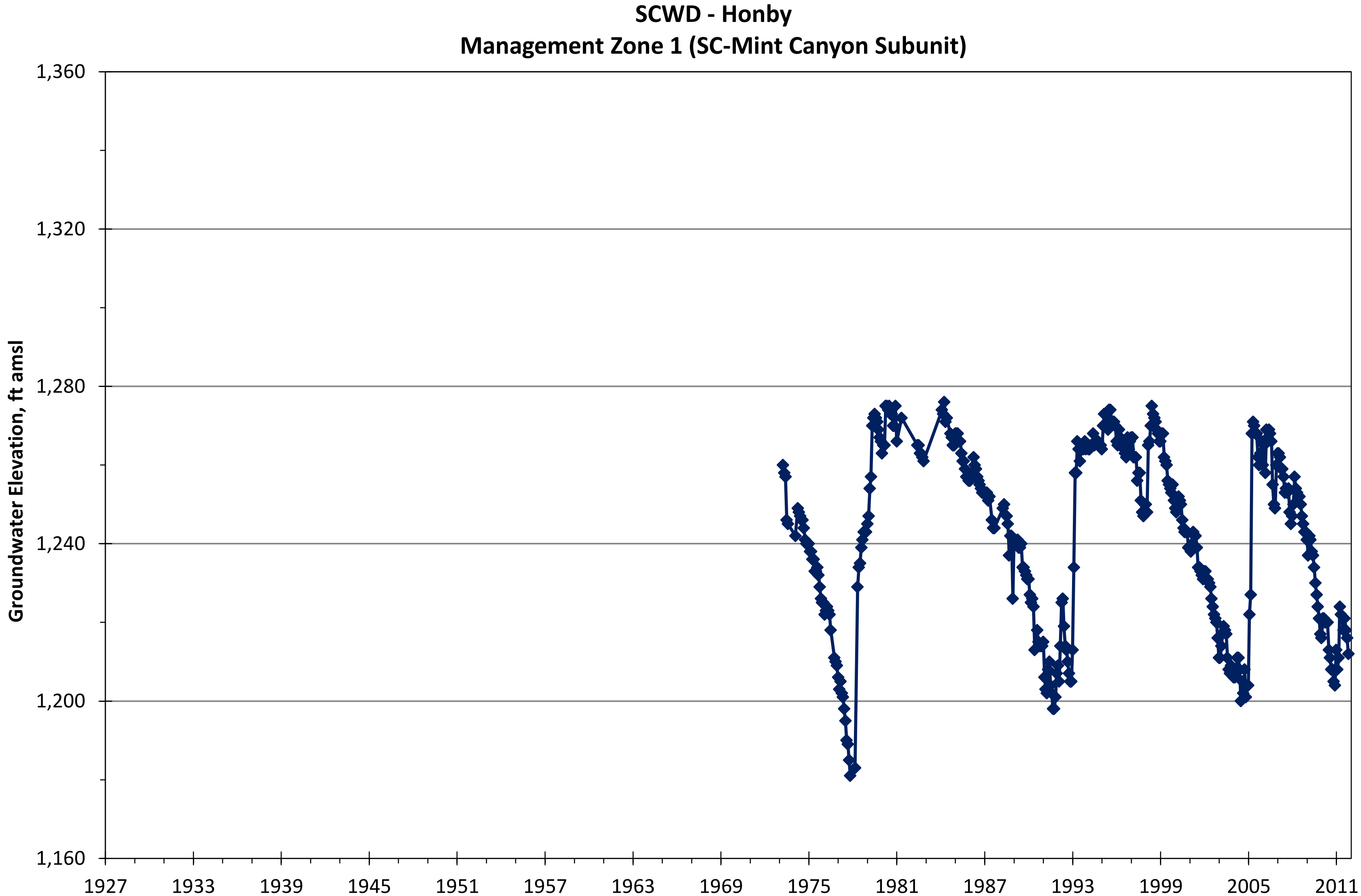
SCWD - Honby
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,360
1,320
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1,240
1,200
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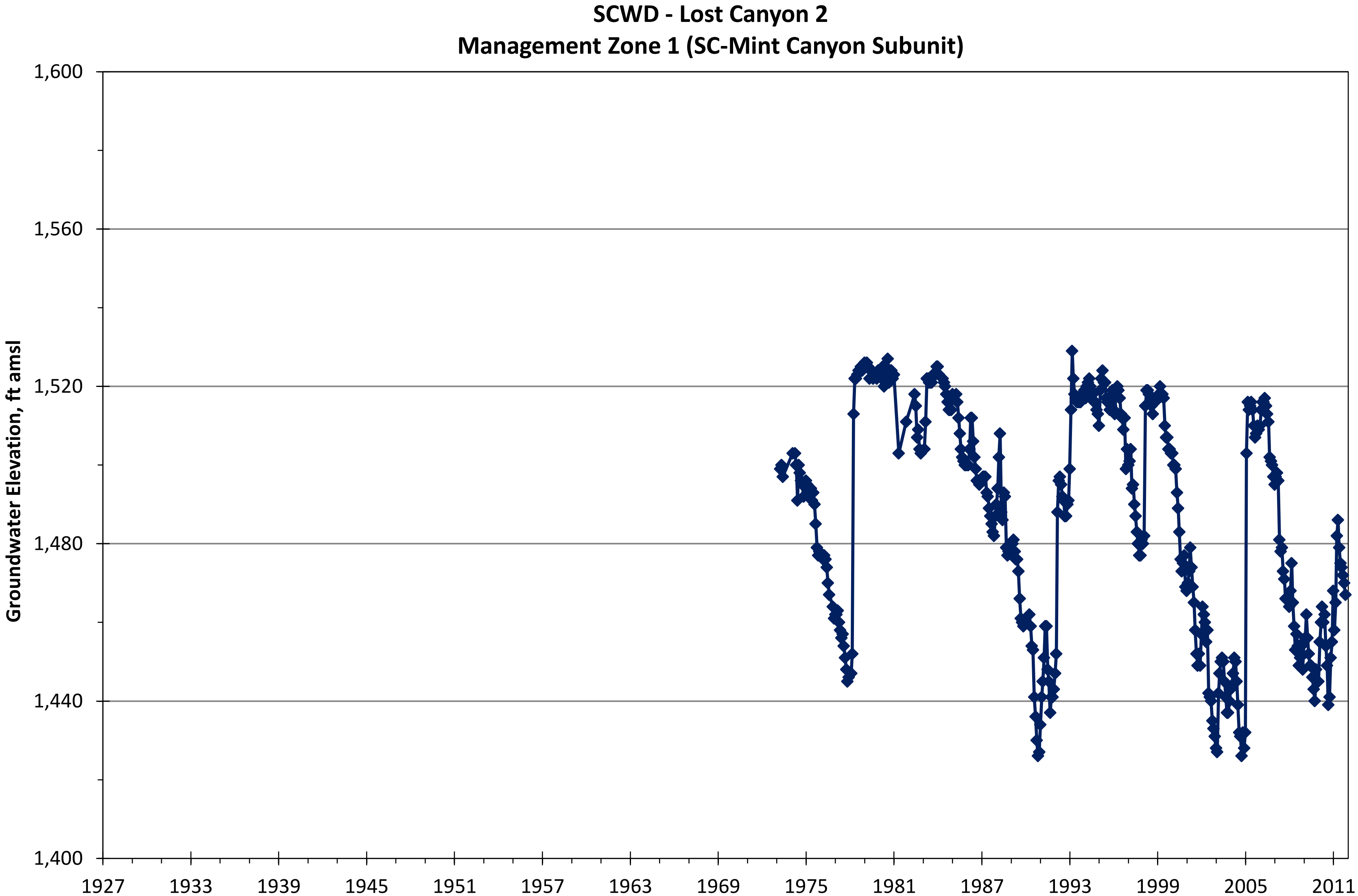
SCWD - Lost Canyon 2
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,600
1,560
1,520
1,480
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1,400
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1939
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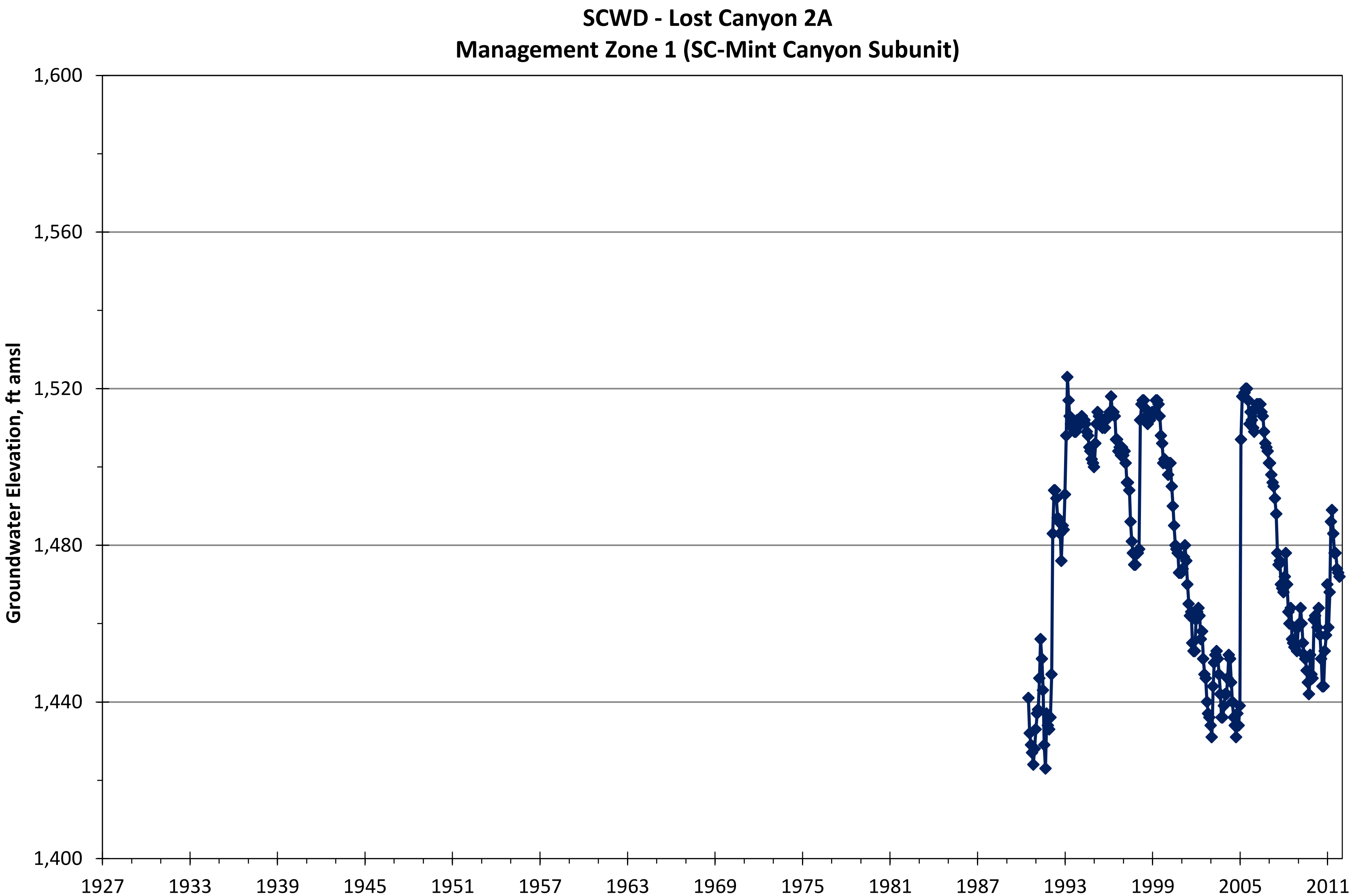
SCWD - Lost Canyon 2A
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,600
1,560
1,520
1,480
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1,400
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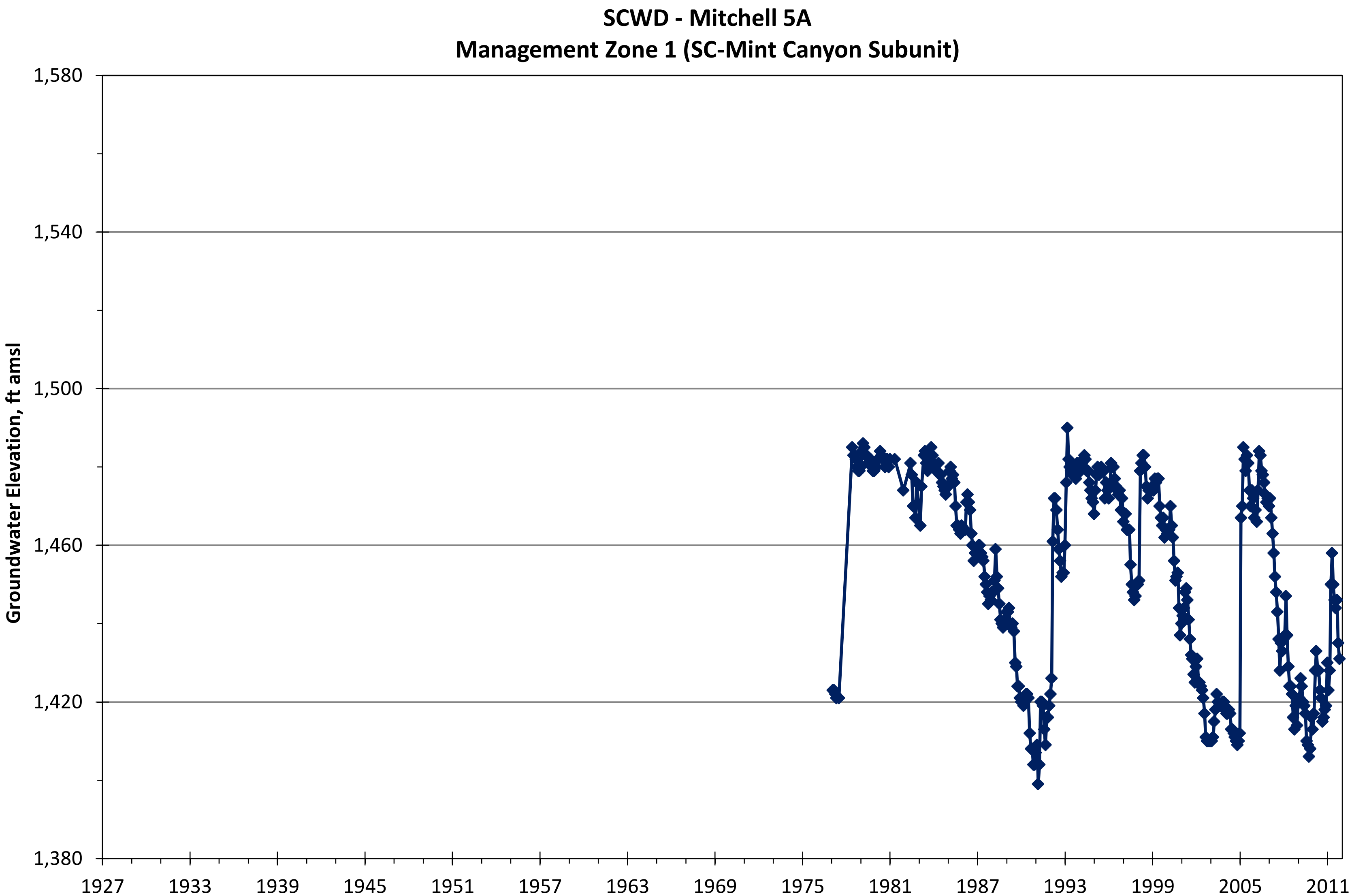
SCWD - Mitchell 5A
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,580
1,540
1,500
1,460
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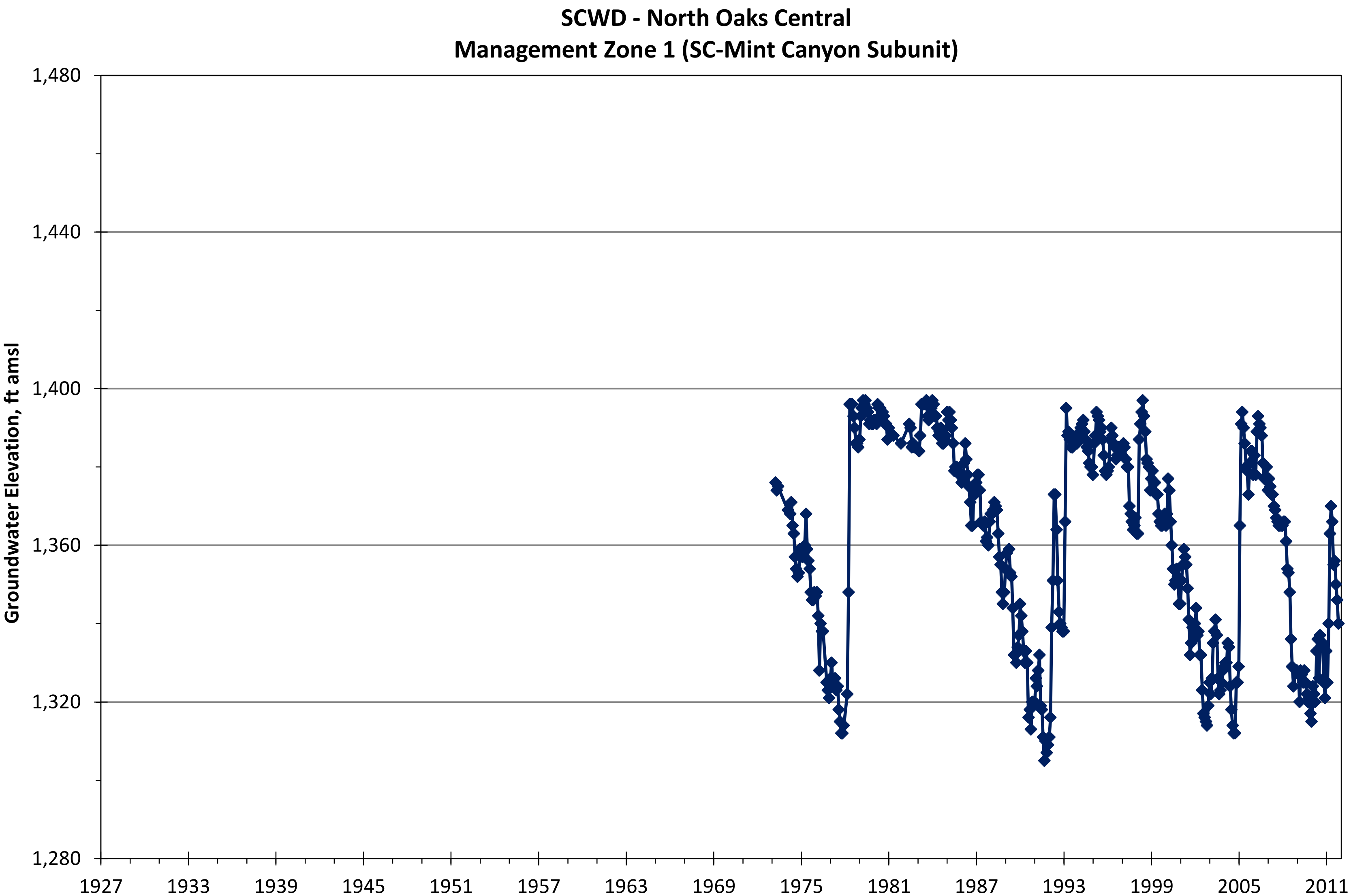
SCWD - North Oaks Central
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,480
1,440
1,400
1,360
1,320
1,280
1927
1933
1939
1945
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1969
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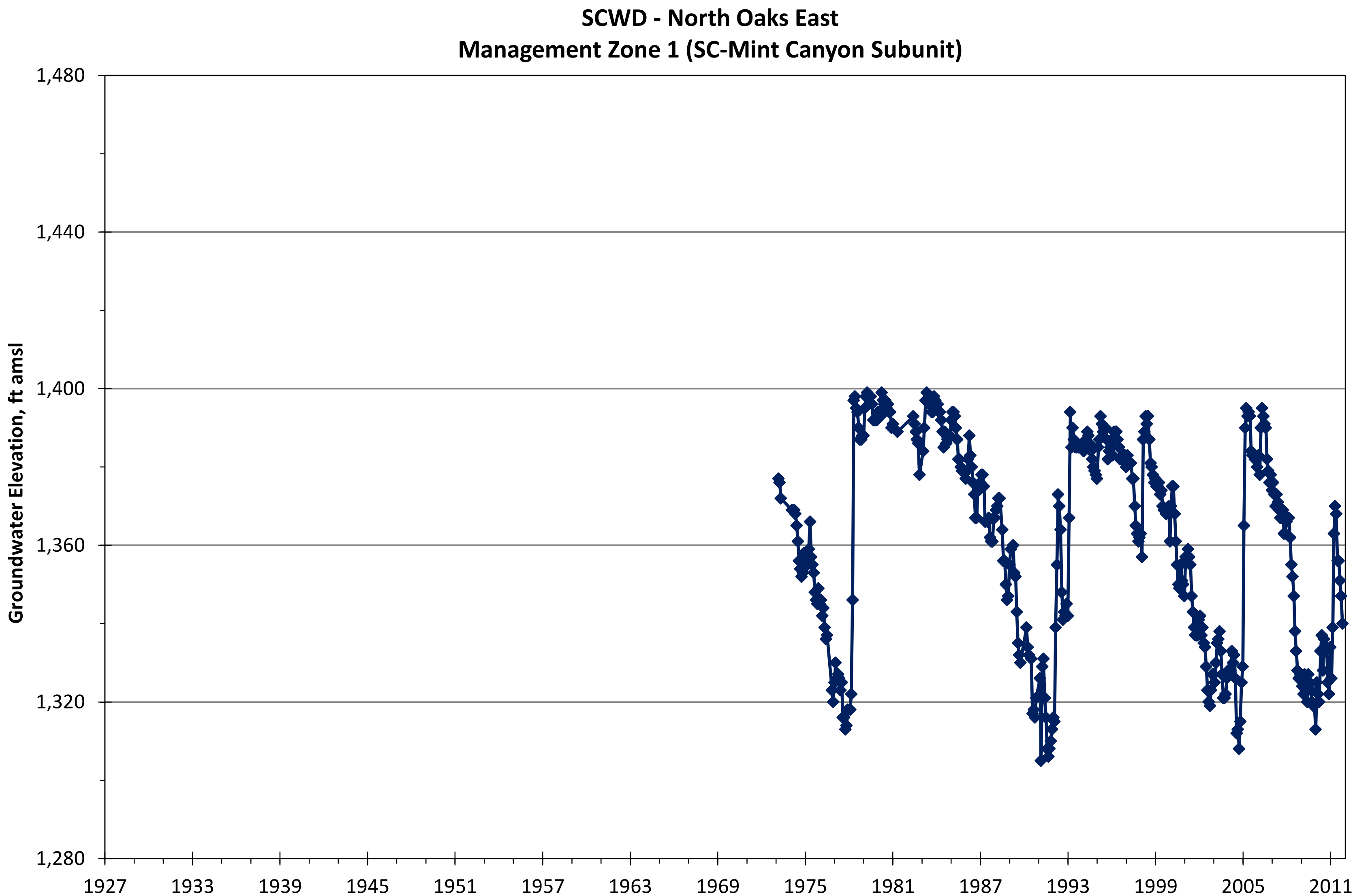
SCWD - North Oaks East
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,480
1,440
1,400
1,360
1,320
1,280
1927
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1939
1945
1951
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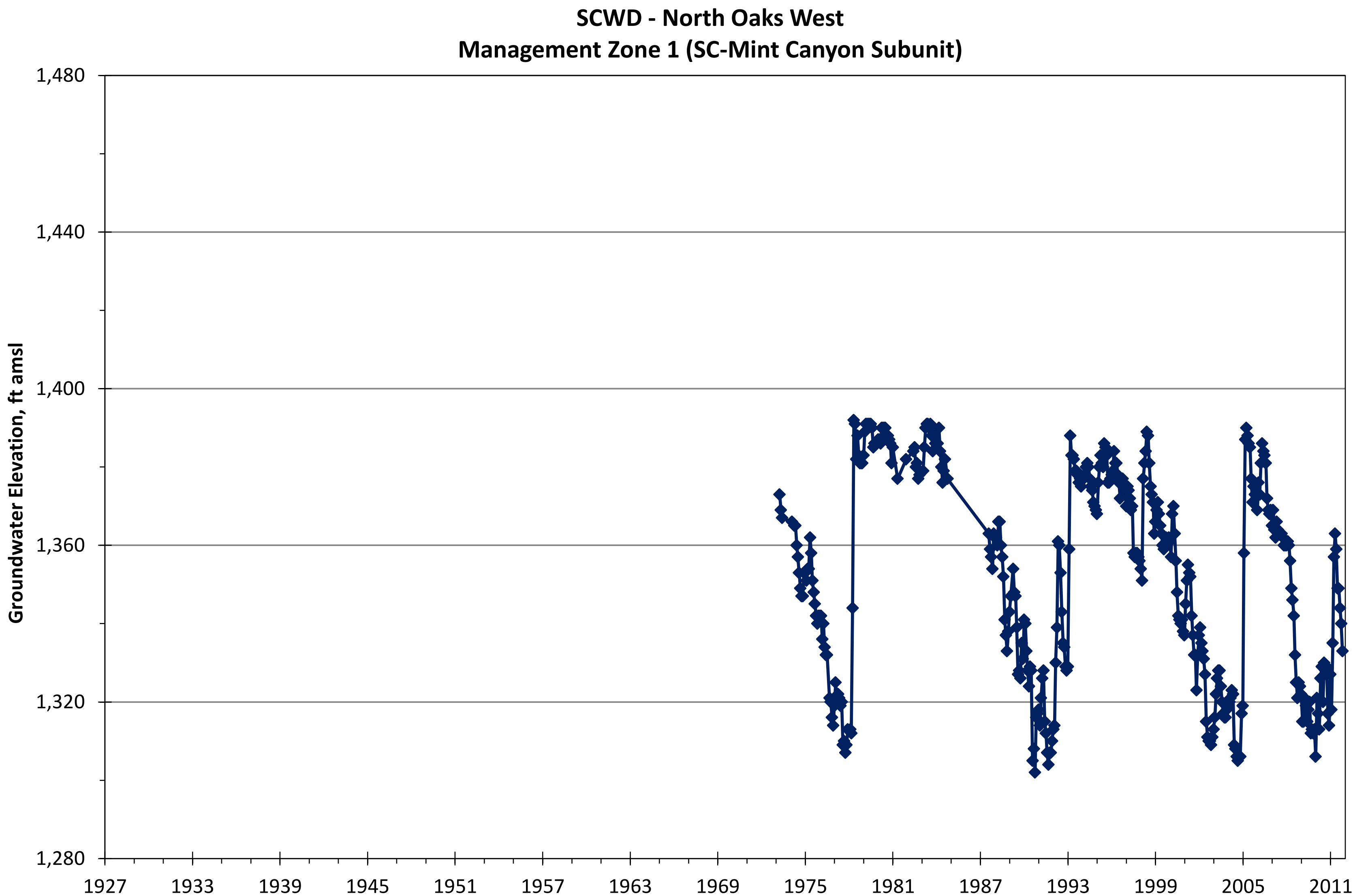
Appendix A


SCWD - North Oaks West
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,480
1,440
1,400
1,360
1,320
1,280
1927
1933
1939
1945
1951
1957
1963
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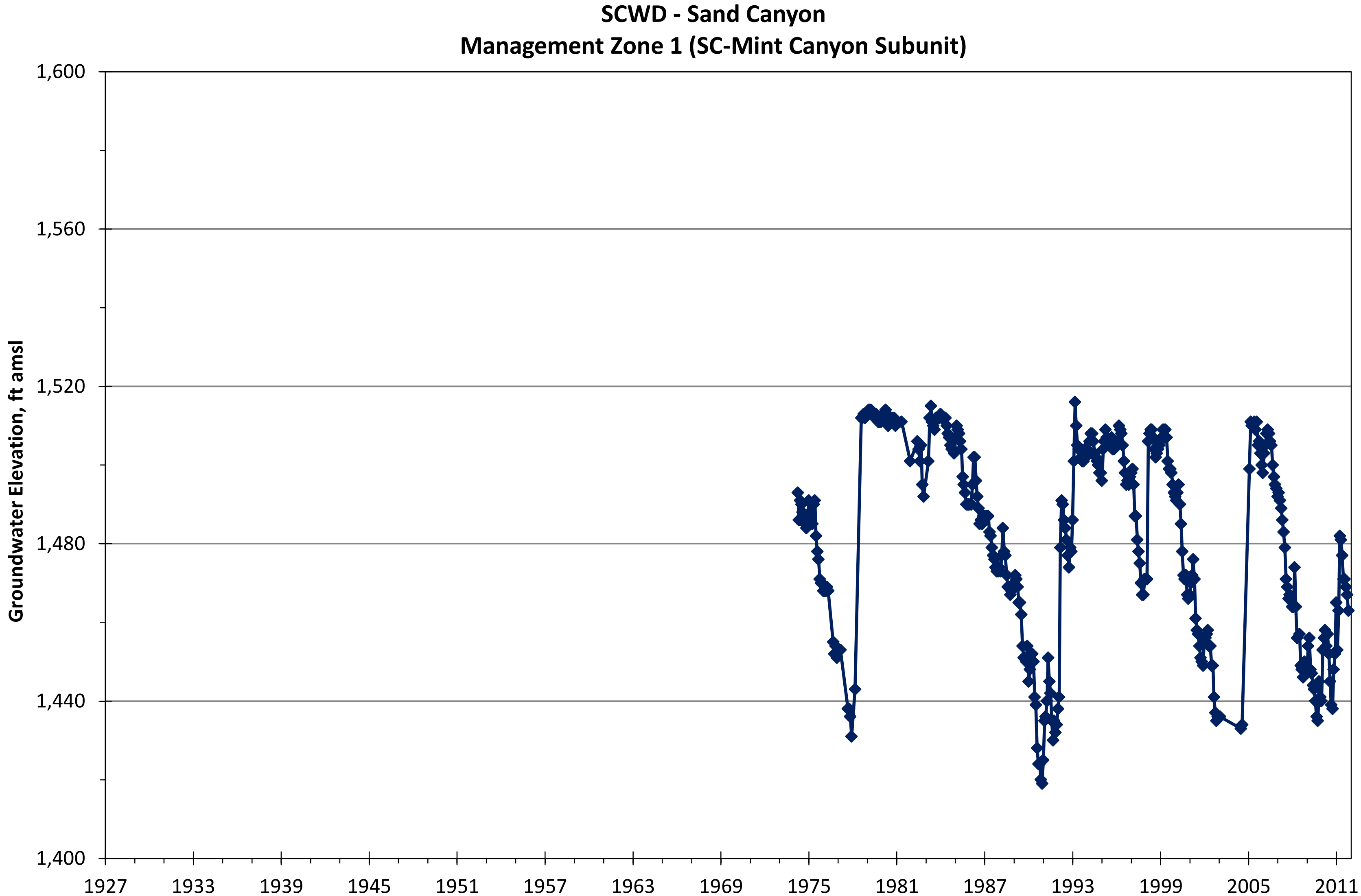
Appendix A


SCWD - Sand Canyon
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,600
1,560
1,520
1,480
1,440
1,400
1927
1933
1939
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1951
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1963
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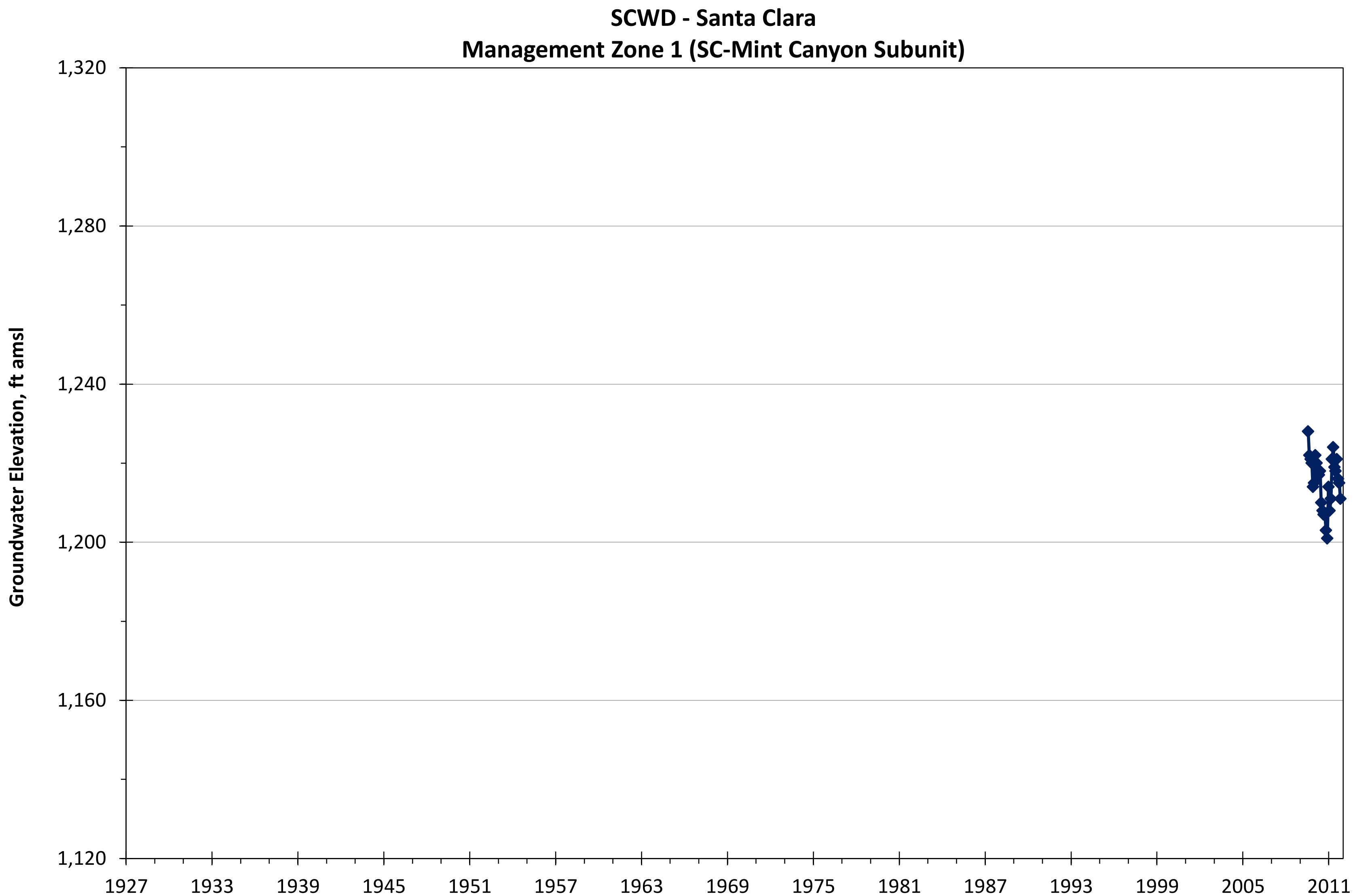
Appendix A


SCWD - Santa Clara
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,320
1,280
1,240
1,200
1,160
1,120
1927
1933
1939
1945
1951
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1963
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1981
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1999
2005
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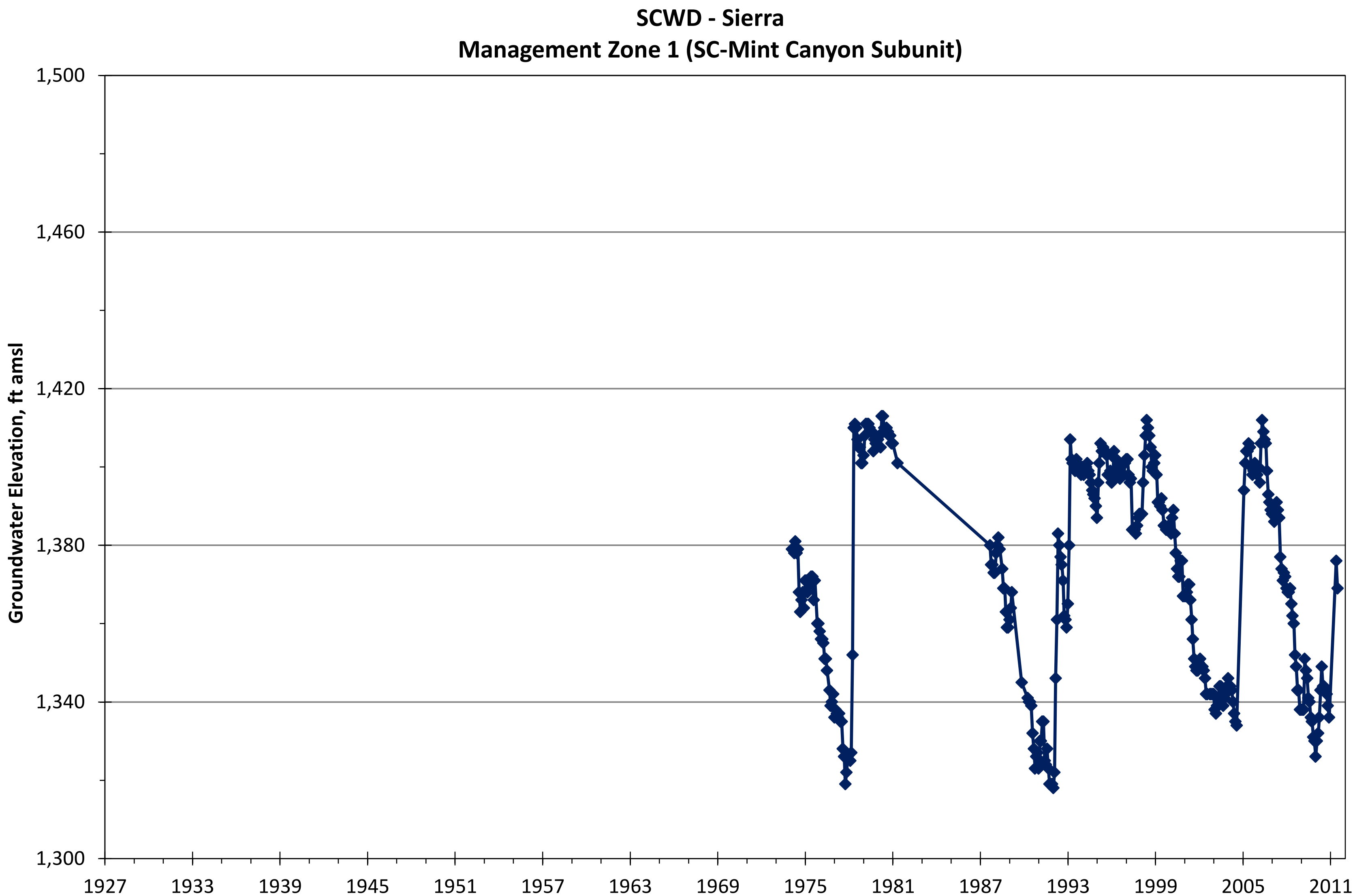
Appendix A


SCWD - Sierra
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,500
1,460
1,420
1,380
1,340
1,300
1927
1933
1939
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1951
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1963
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2005
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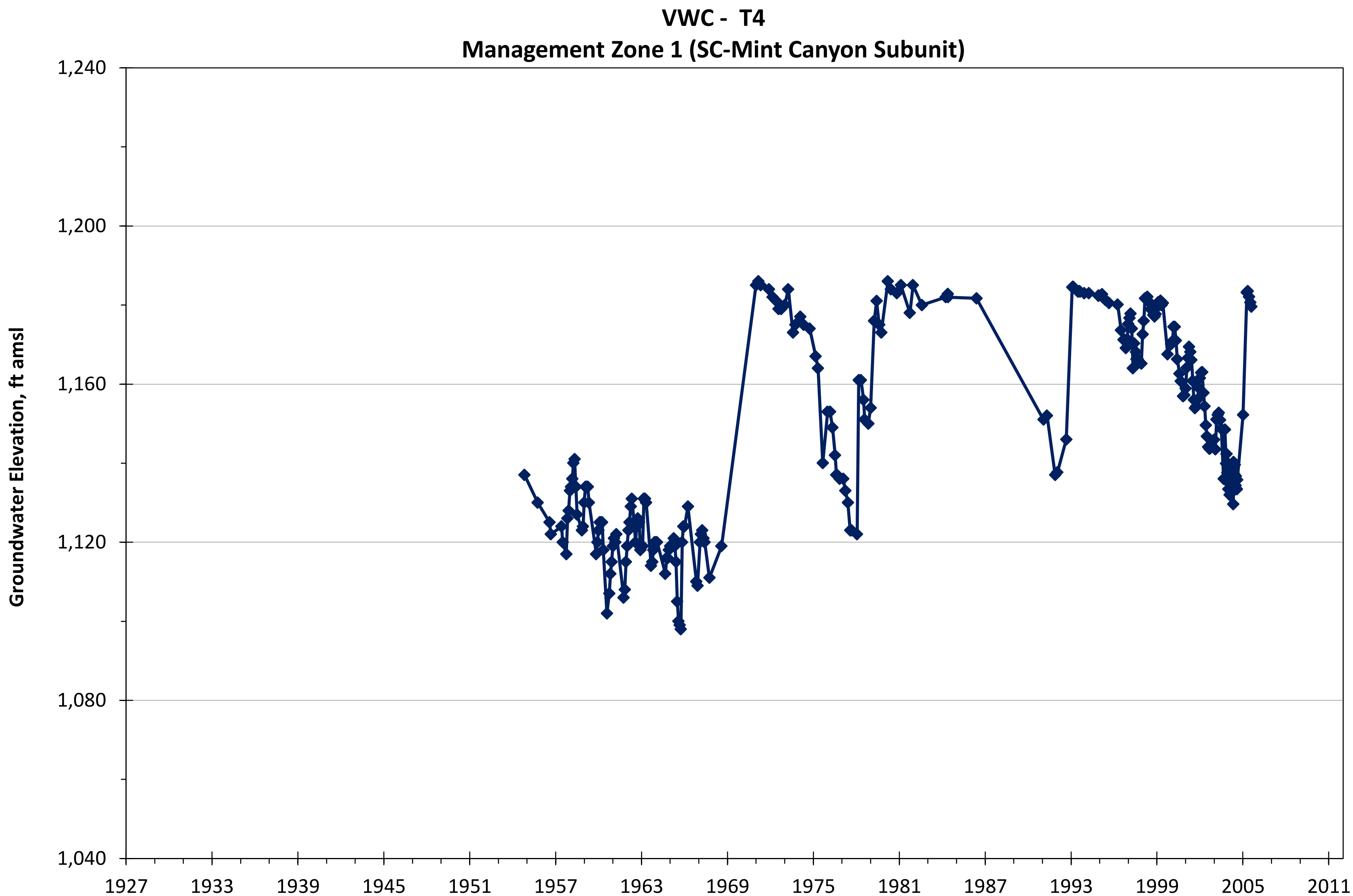
VWC - T4
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,240
1,200
1,160
1,120
1,080
1,040
1927
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1939
1945
1951
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1963
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1975
1981
1987
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1999
2005
2011

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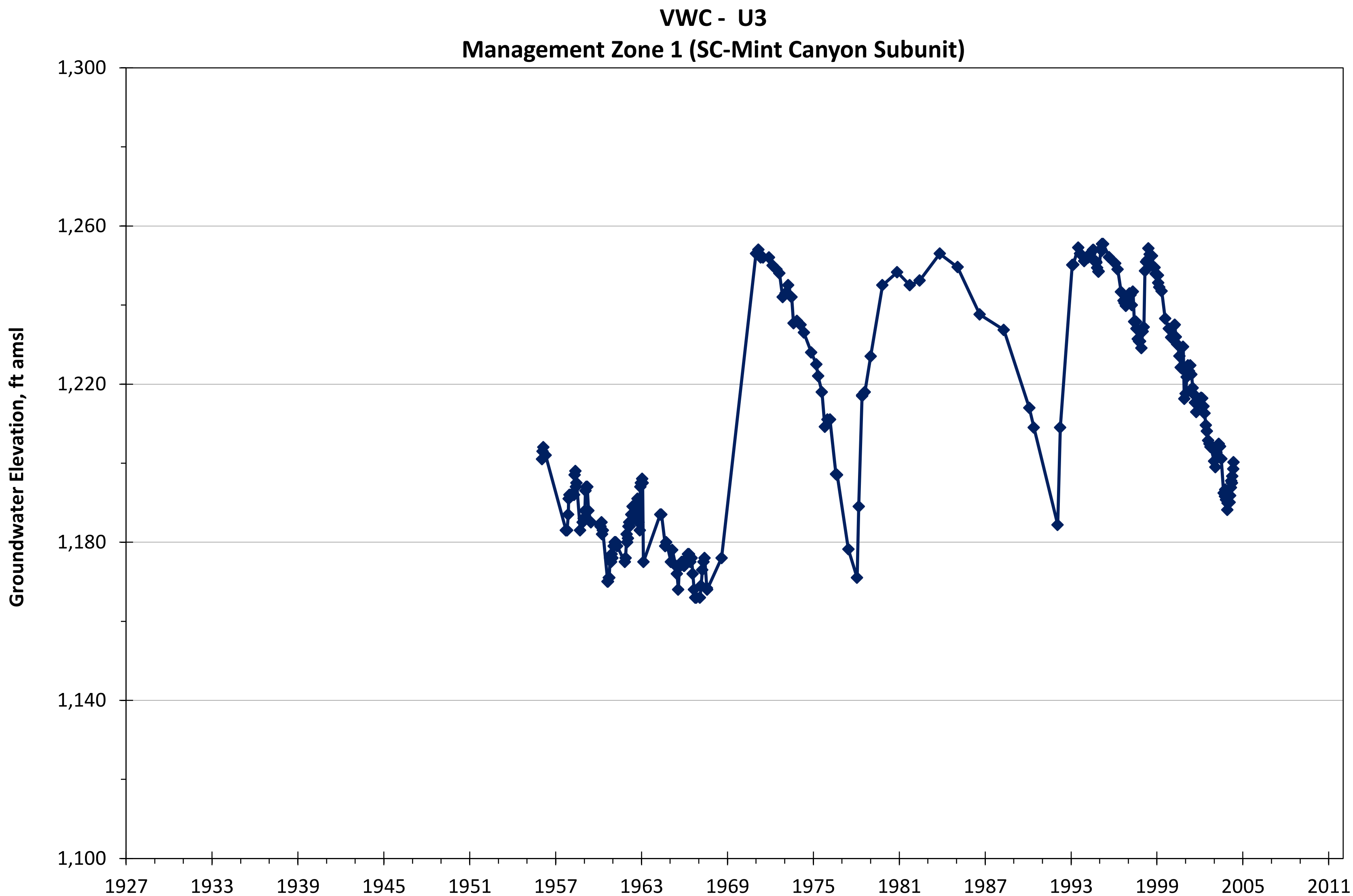
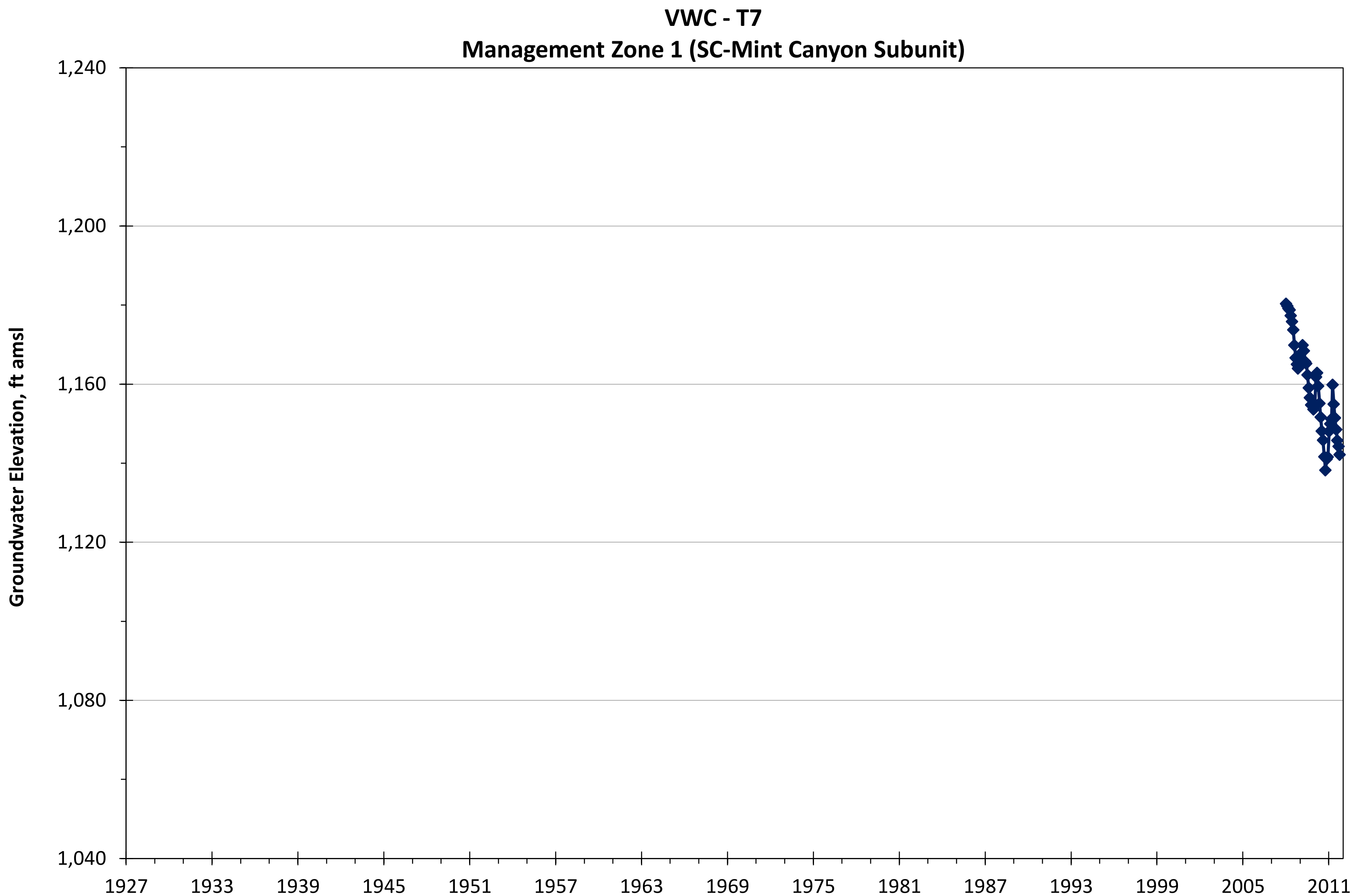

VWC - U3
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,300
1,260
1,220
1,180
1,140
1,100
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

Appendix A


VWC - T7
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,240
1,200
1,160
1,120
1,080
1,040
1927
1933
1939
1945
1951
1957
1963
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1975
1981
1987
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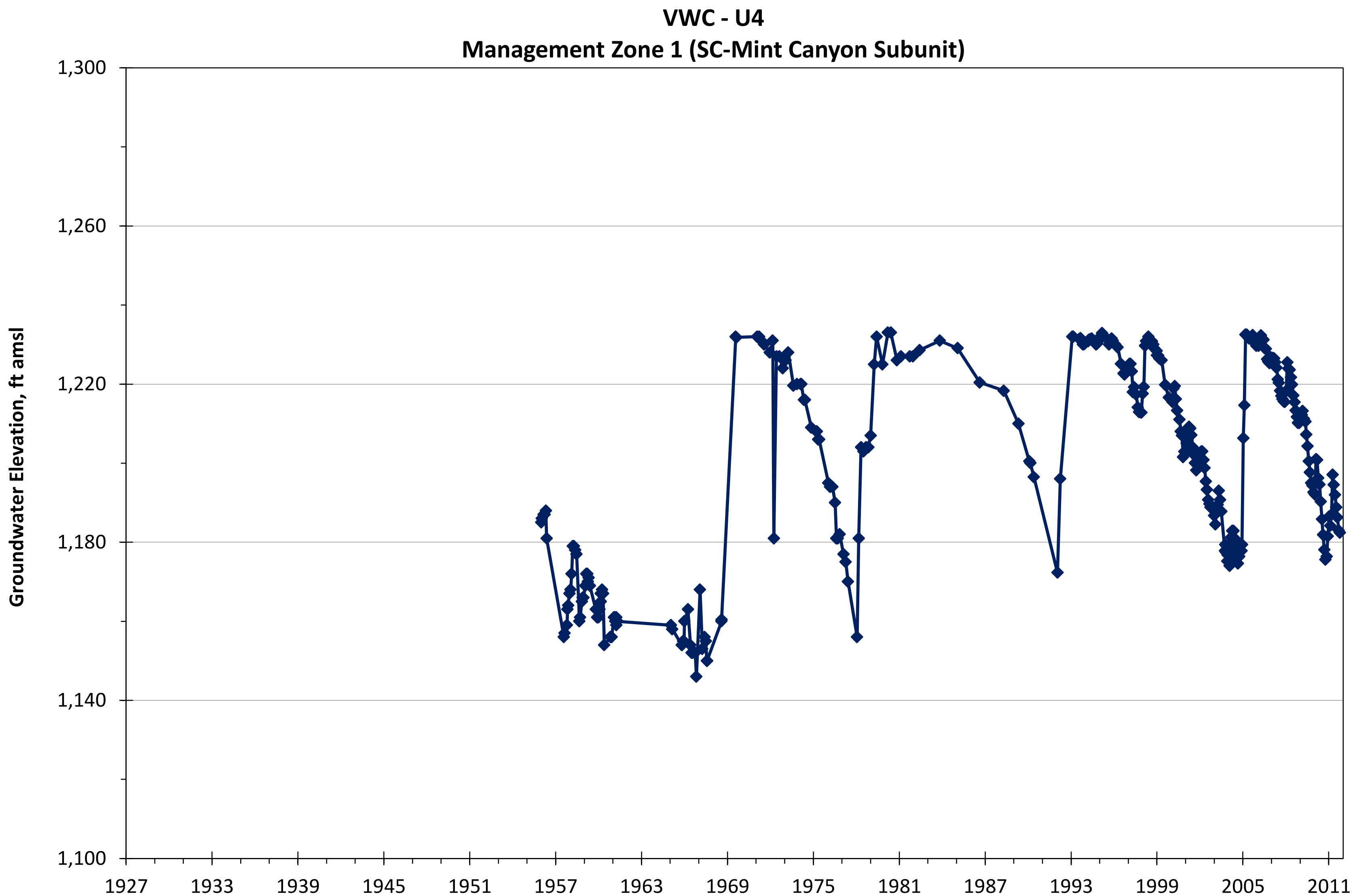
1999
2005
2011

Appendix A


VWC - U4
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,300
1,260
1,220
1,180
1,140
1,100
1927
1933
1939
1945
1951
1957
1963
1969
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1993
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2005
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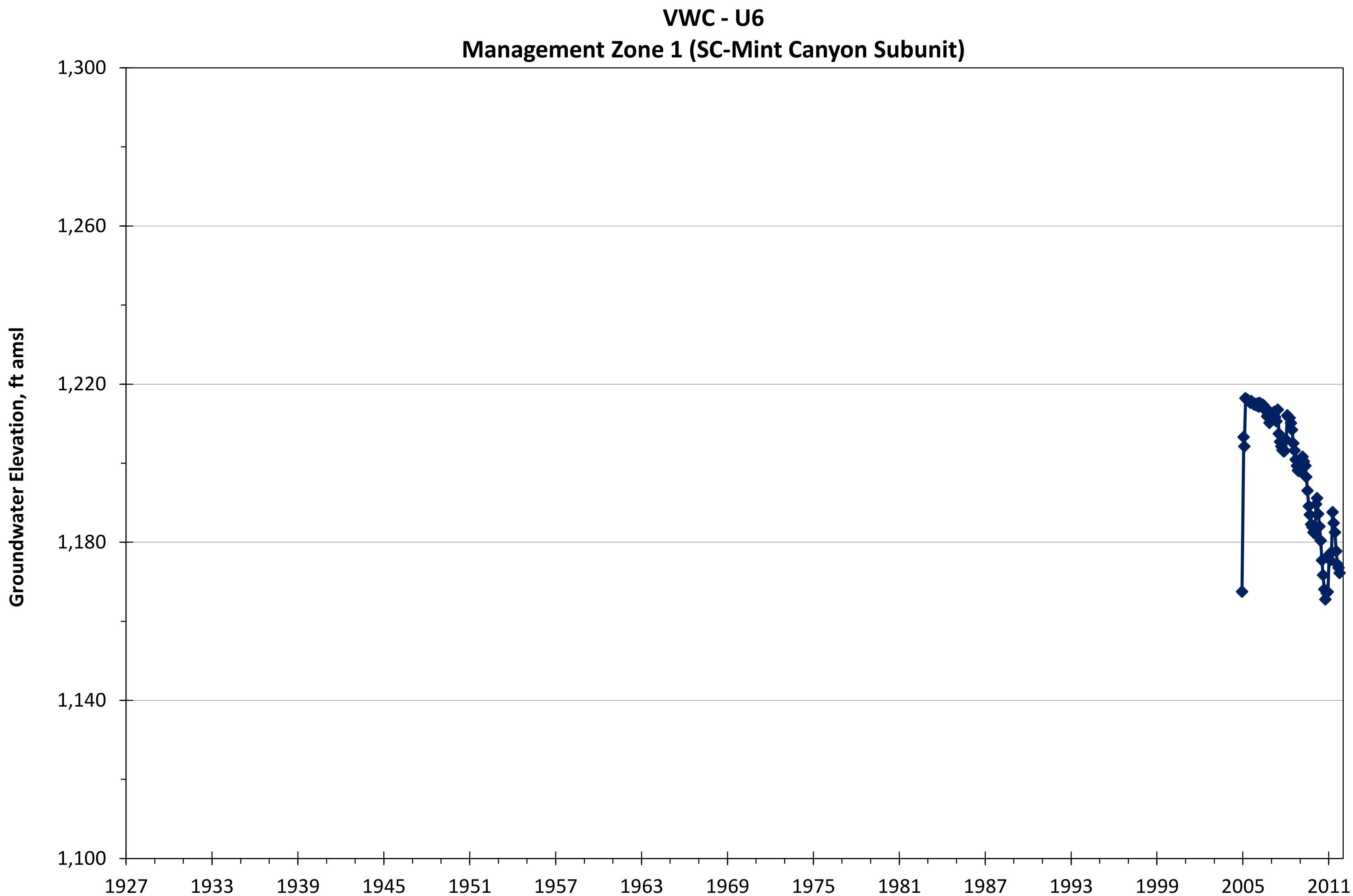
VWC - U6
Management Zone 1 (SC-Mint Canyon Subunit)
Groundwater Elevation, ft amsl
1,300
1,260
1,220
1,180
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1,100
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1933
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1945
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1957
1963
1969
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1999
2005
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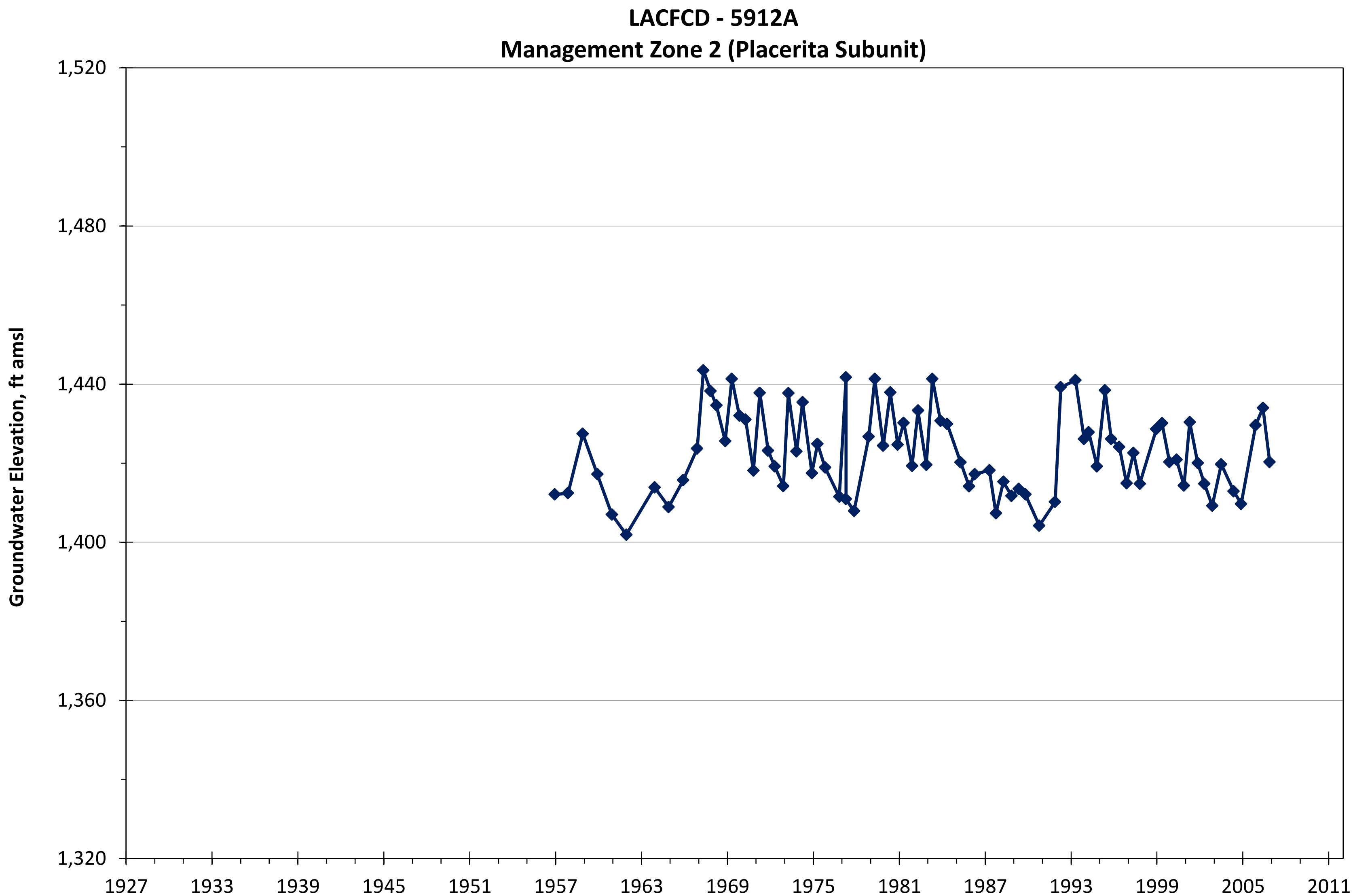
LACFCD - 5912A
Management Zone 2 (Placerita Subunit)
Groundwater Elevation, ft amsl
1,520
1,480
1,440
1,400
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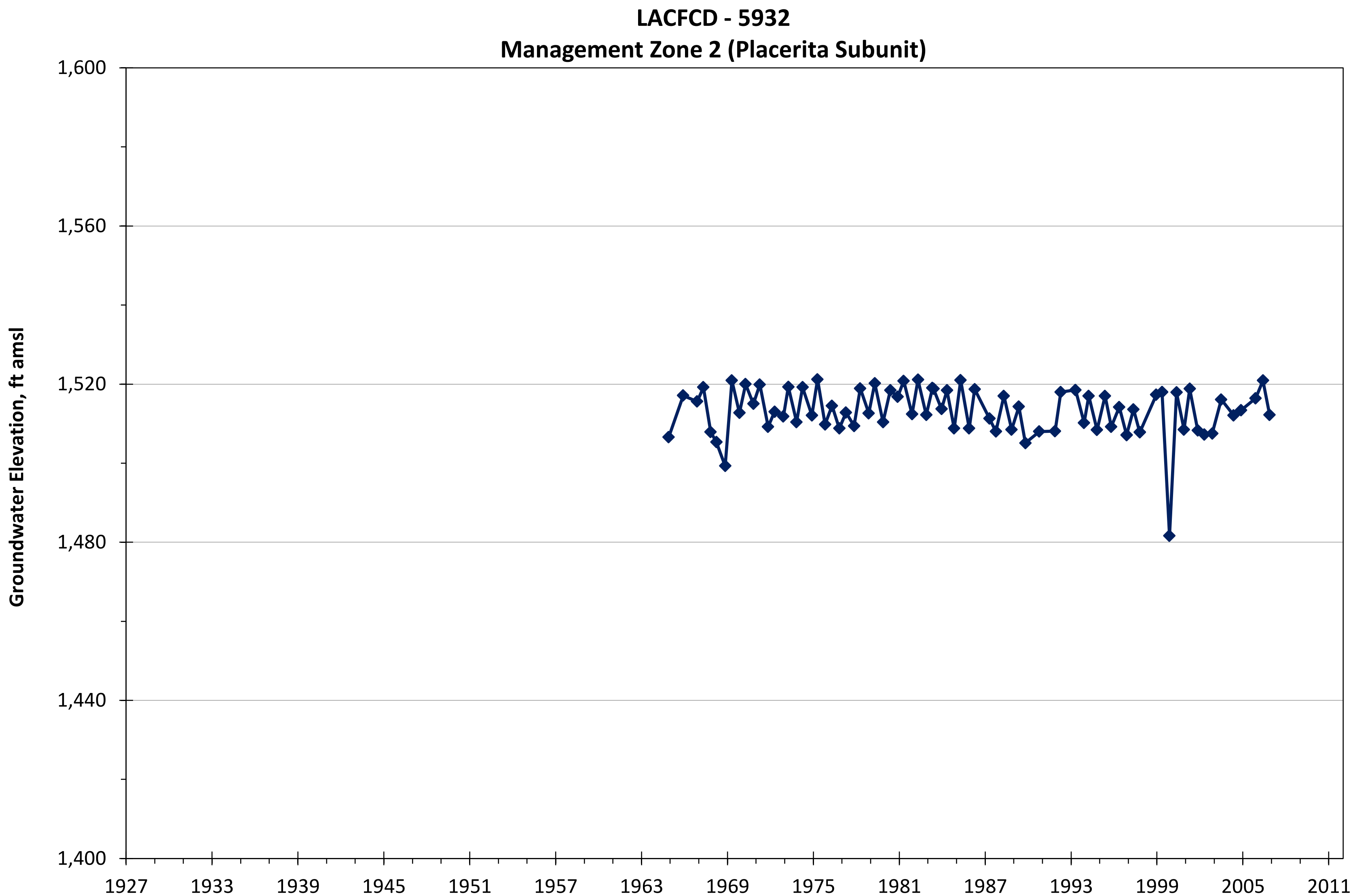
LACFCD - 5932
Management Zone 2 (Placerita Subunit)
Groundwater Elevation, ft amsl
1,600
1,560
1,520
1,480
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1,400
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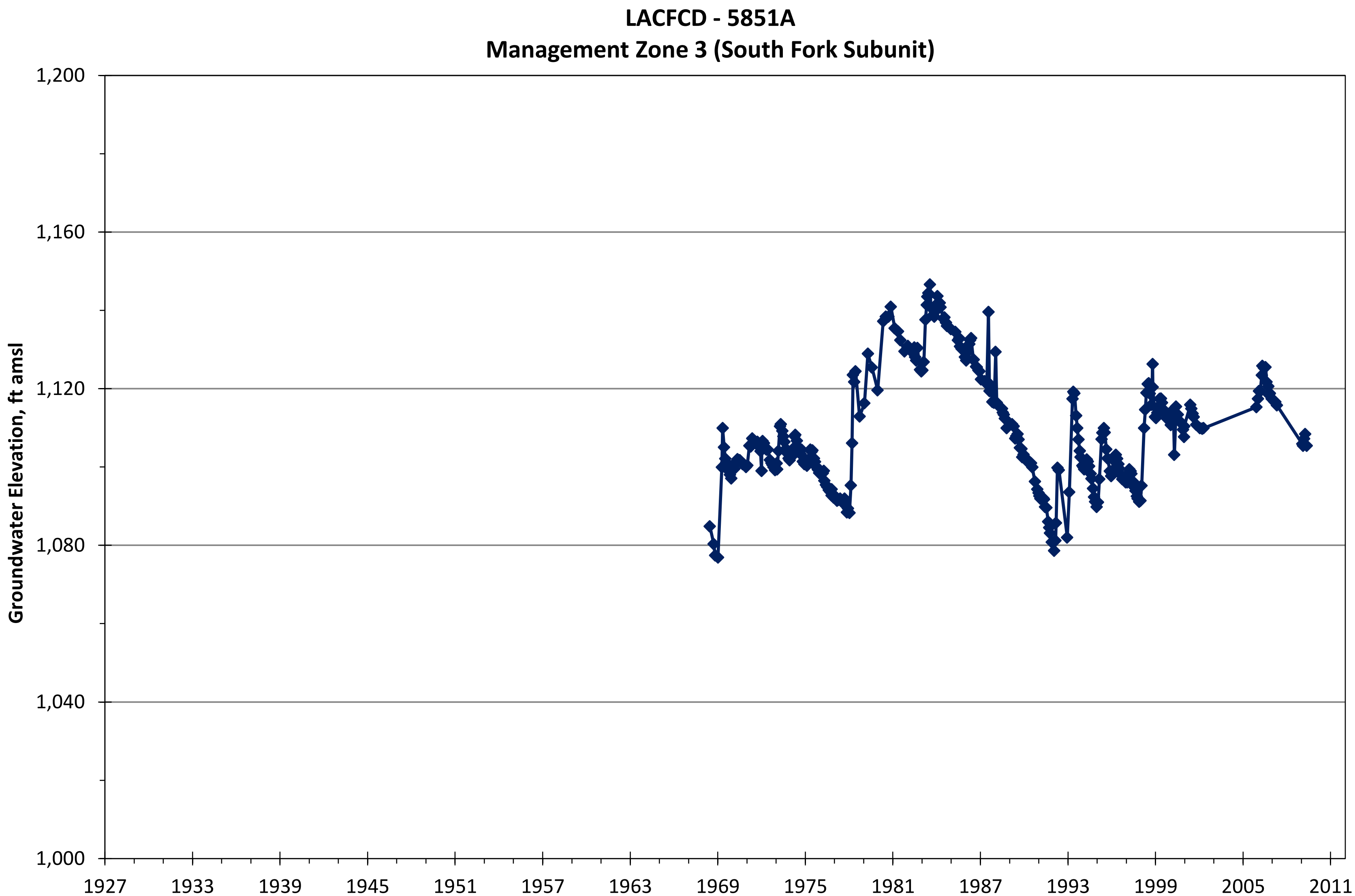
LACFCD - 5851A
Management Zone 3 (South Fork Subunit)
Groundwater Elevation, ft amsl
1,200
1,160
1,120
1,080
1,040
1,000
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1981
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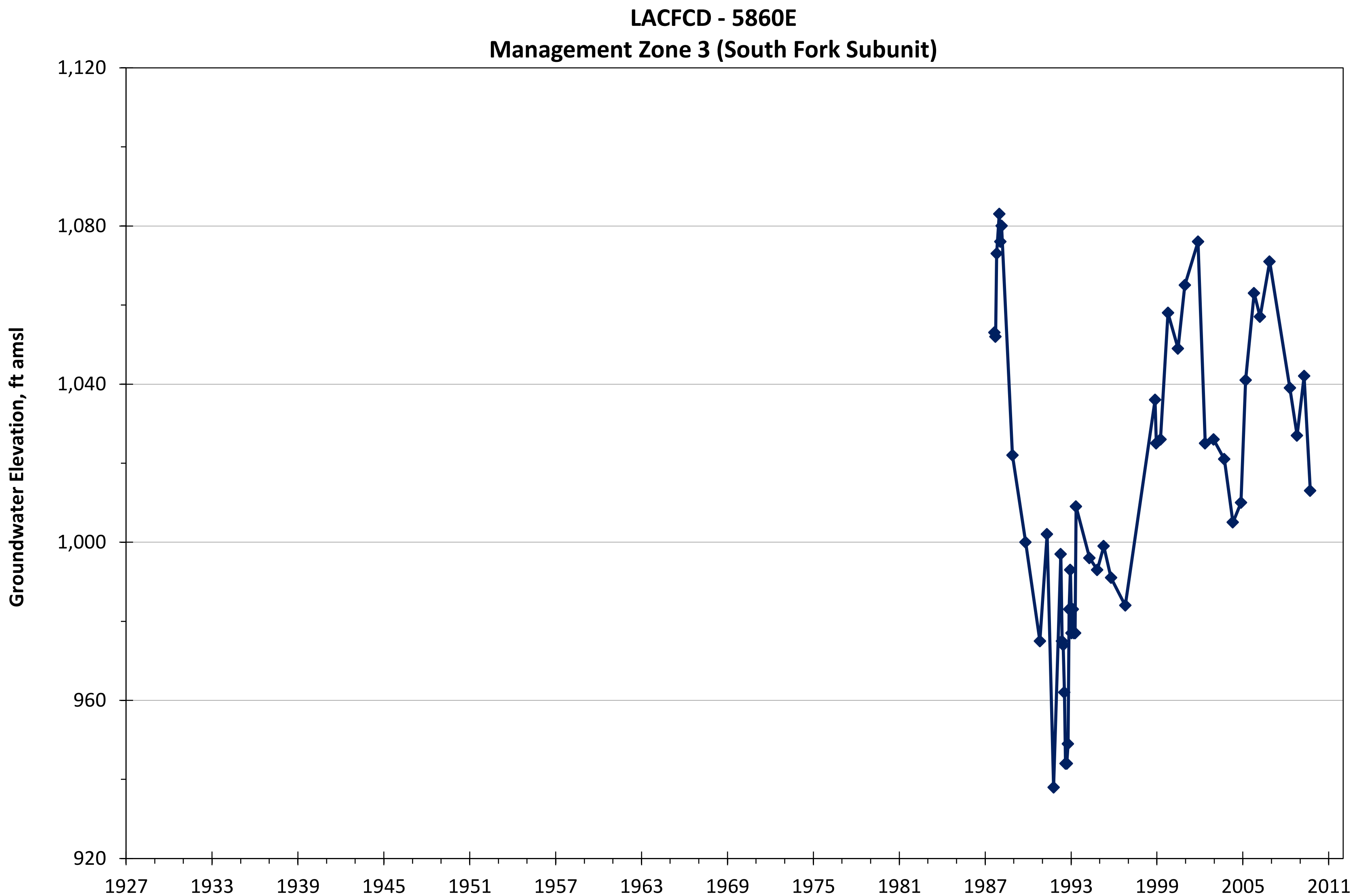
LACFCD - 5860E
Management Zone 3 (South Fork Subunit)
Groundwater Elevation, ft amsl
1,120
1,080
1,040
1,000
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1933
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1999
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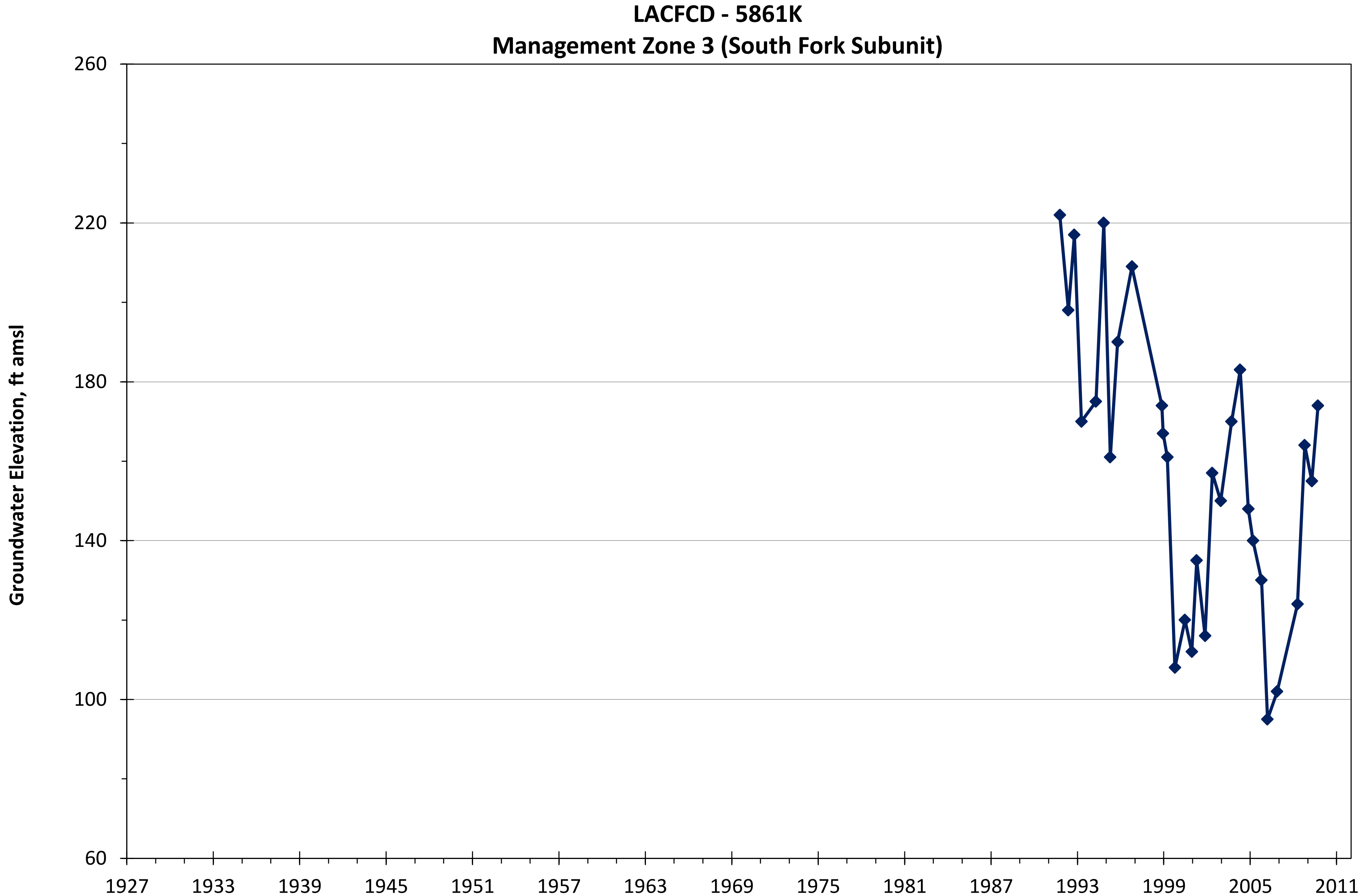
LACFCD - 5861K
Management Zone 3 (South Fork Subunit)
Groundwater Elevation, ft amsl
260
220
180
140
100
60
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1933
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1987
1993
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2005
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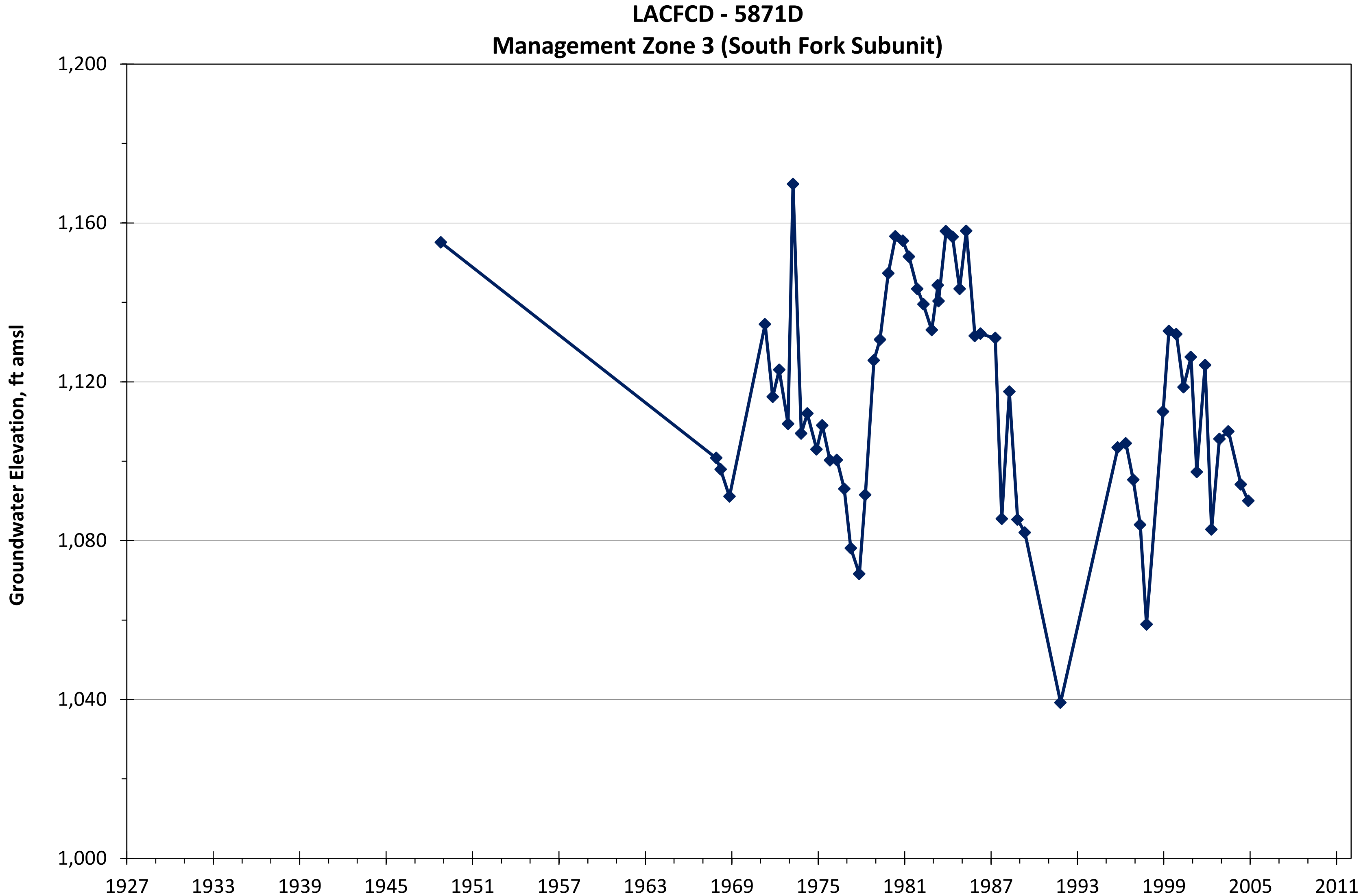
LACFCD - 5871D
Management Zone 3 (South Fork Subunit)
Groundwater Elevation, ft amsl
1,200
1,160
1,120
1,080
1,040
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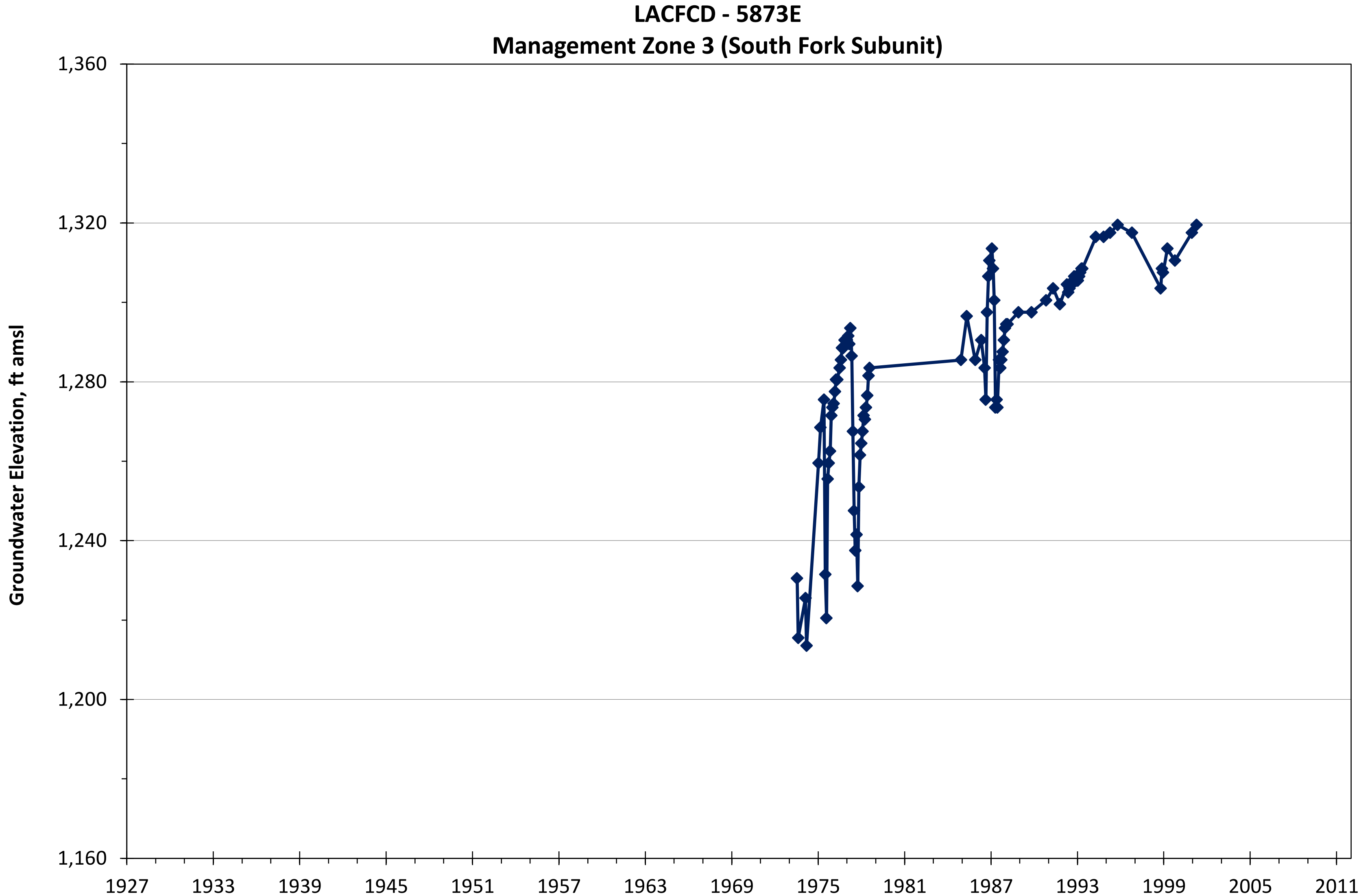
LACFCD - 5873E
Management Zone 3 (South Fork Subunit)
Groundwater Elevation, ft amsl
1,360
1,320
1,280
1,240
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1,160
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1939
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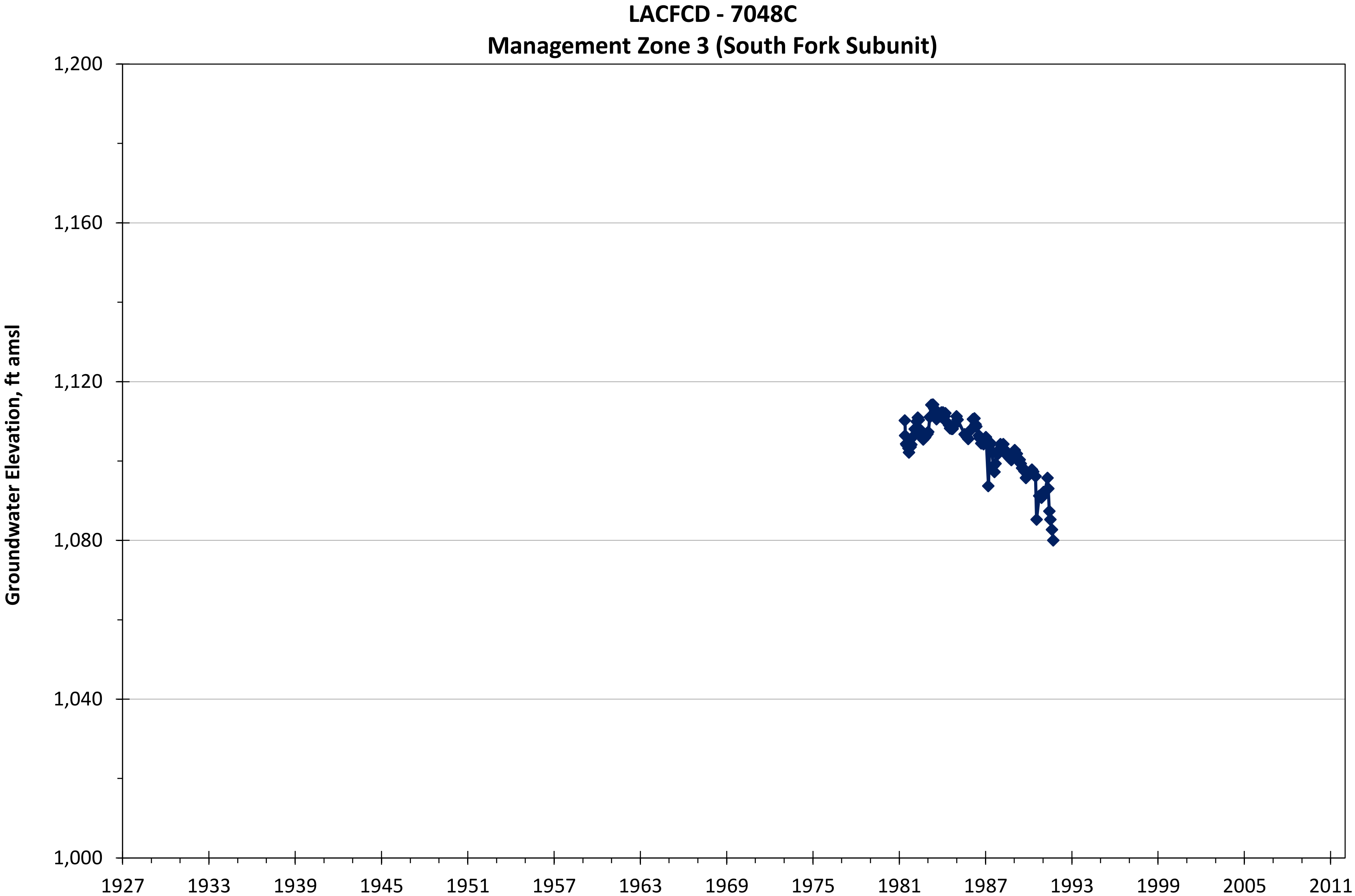
LACFCD - 7048C
Management Zone 3 (South Fork Subunit)
Groundwater Elevation, ft amsl
1,200
1,160
1,120
1,080
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1945
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2005
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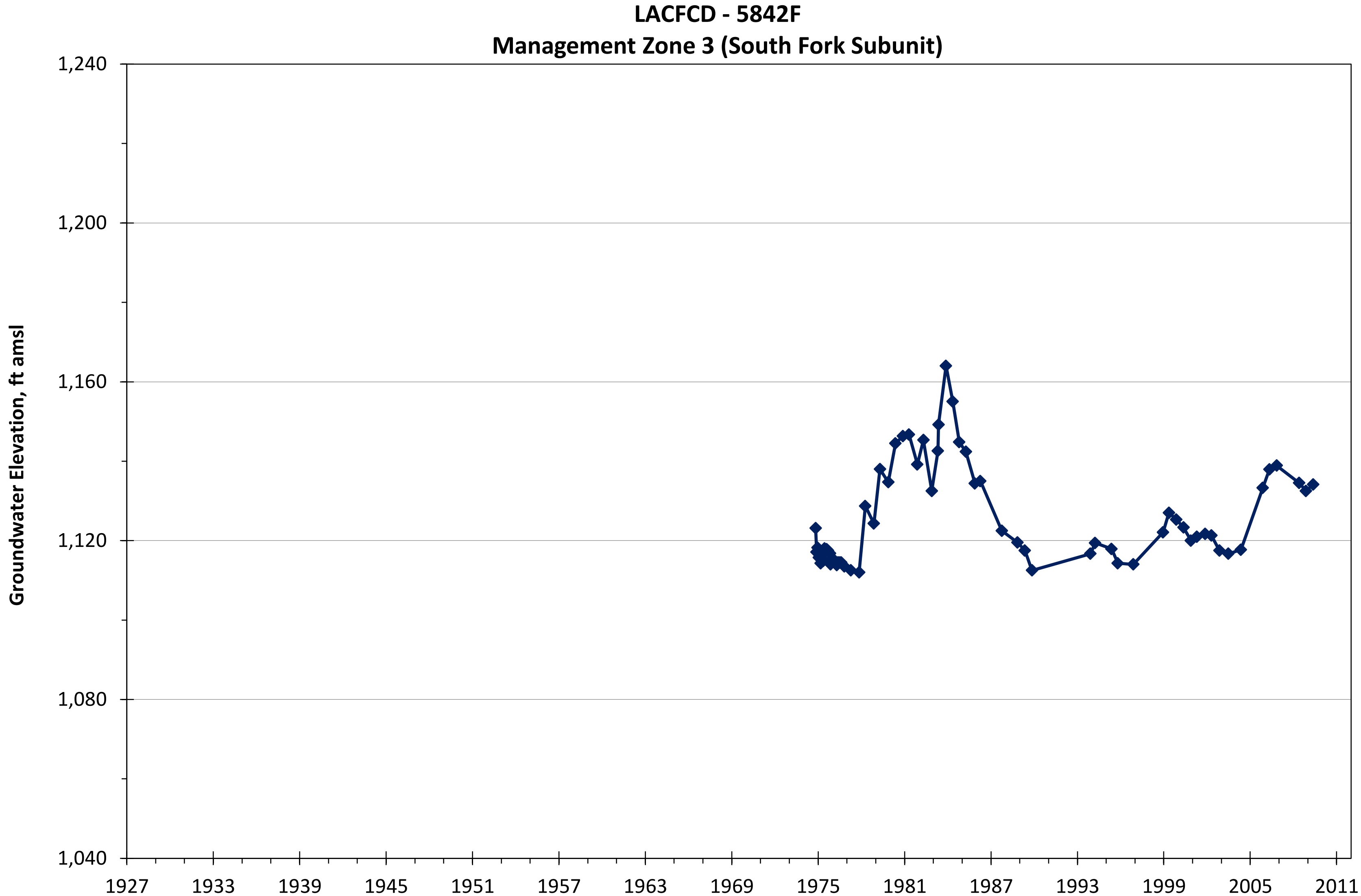
LACFCD - 5842F
Management Zone 3 (South Fork Subunit)
Groundwater Elevation, ft amsl
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1,200
1,160
1,120
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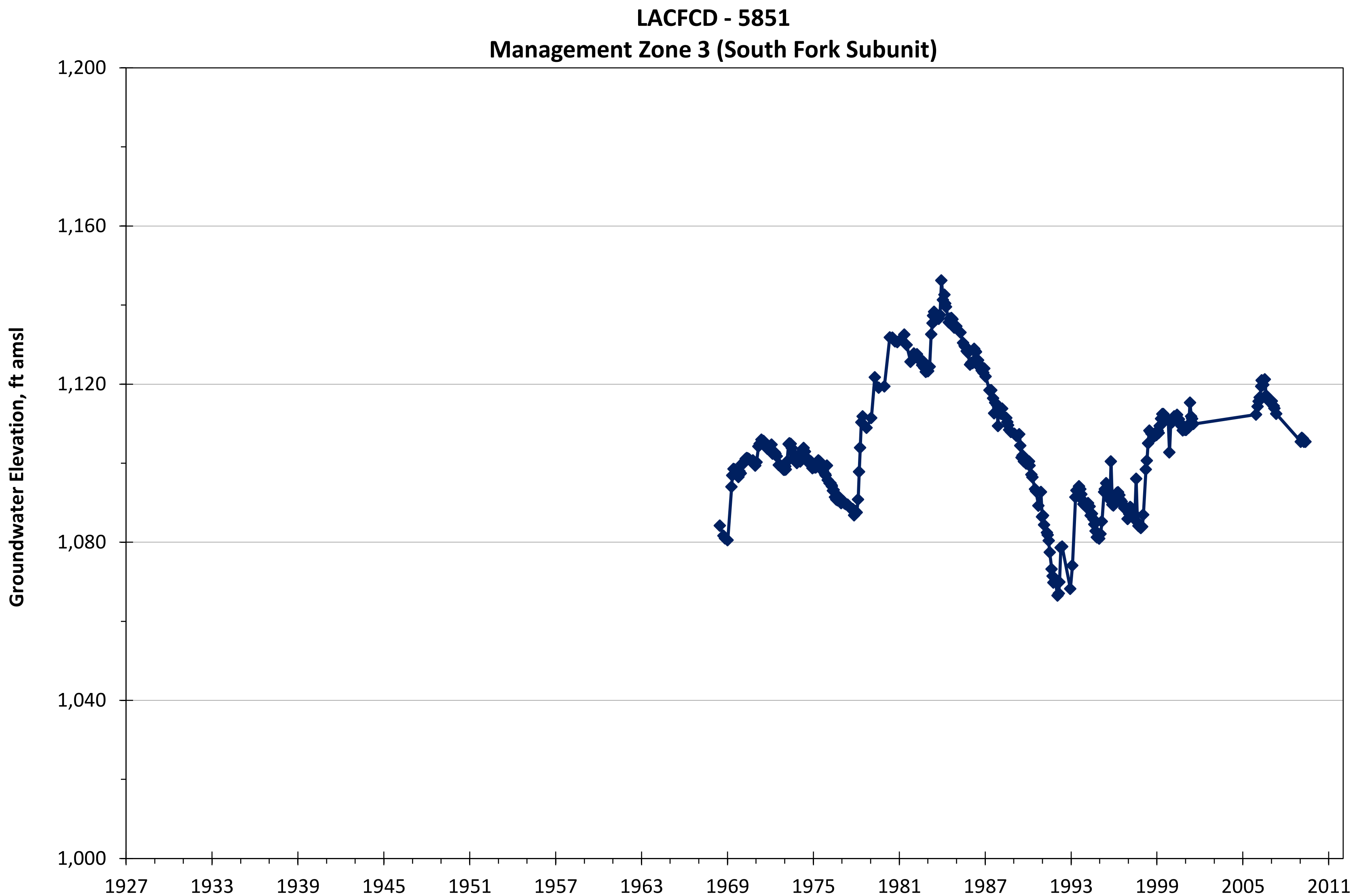
Appendix A


LACFCD - 5851
Management Zone 3 (South Fork Subunit)
Groundwater Elevation, ft amsl
1,200
1,160
1,120
1,080
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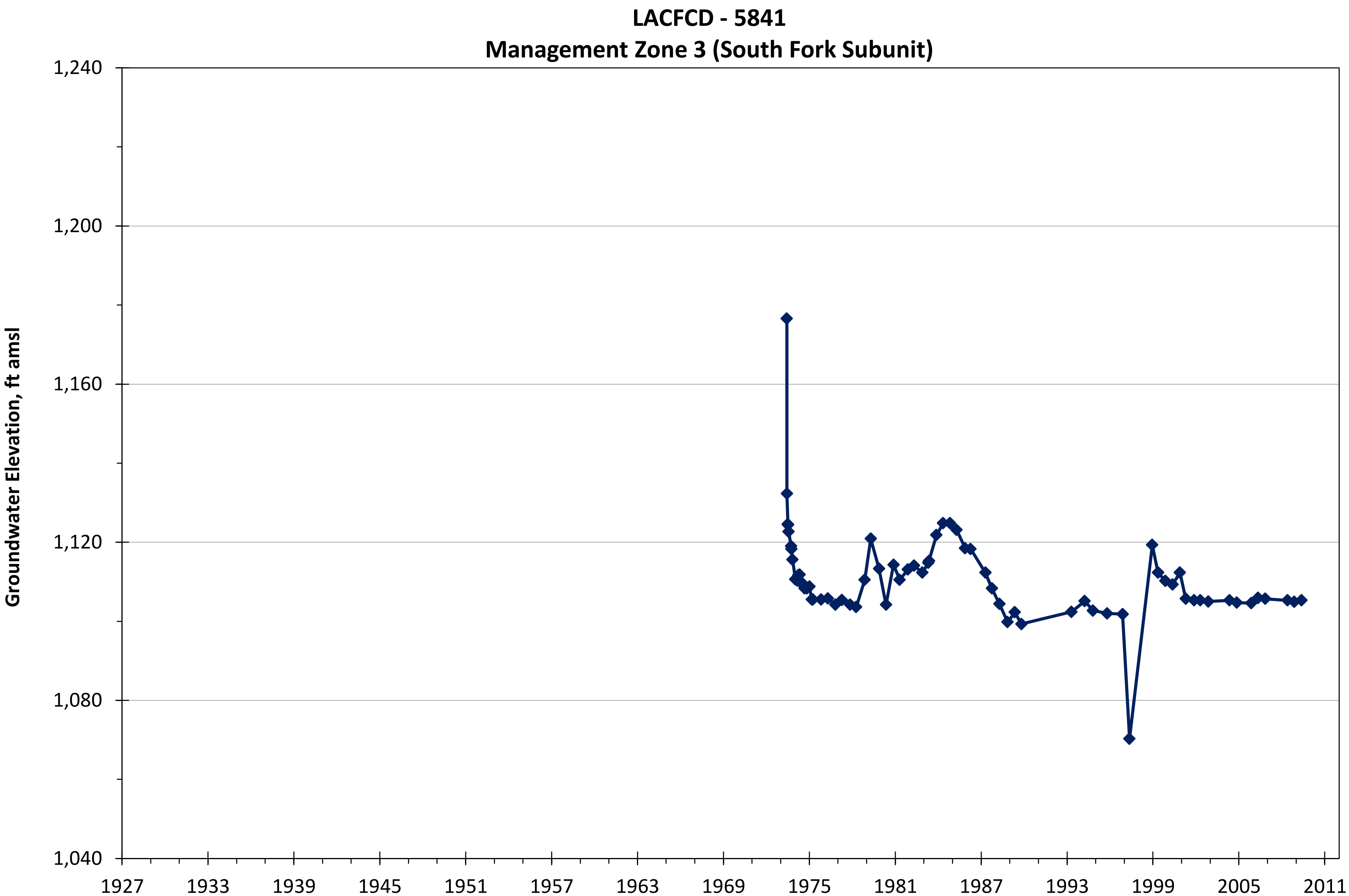
LACFCD - 5841
Management Zone 3 (South Fork Subunit)
Groundwater Elevation, ft amsl
1,240
1,200
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1,120
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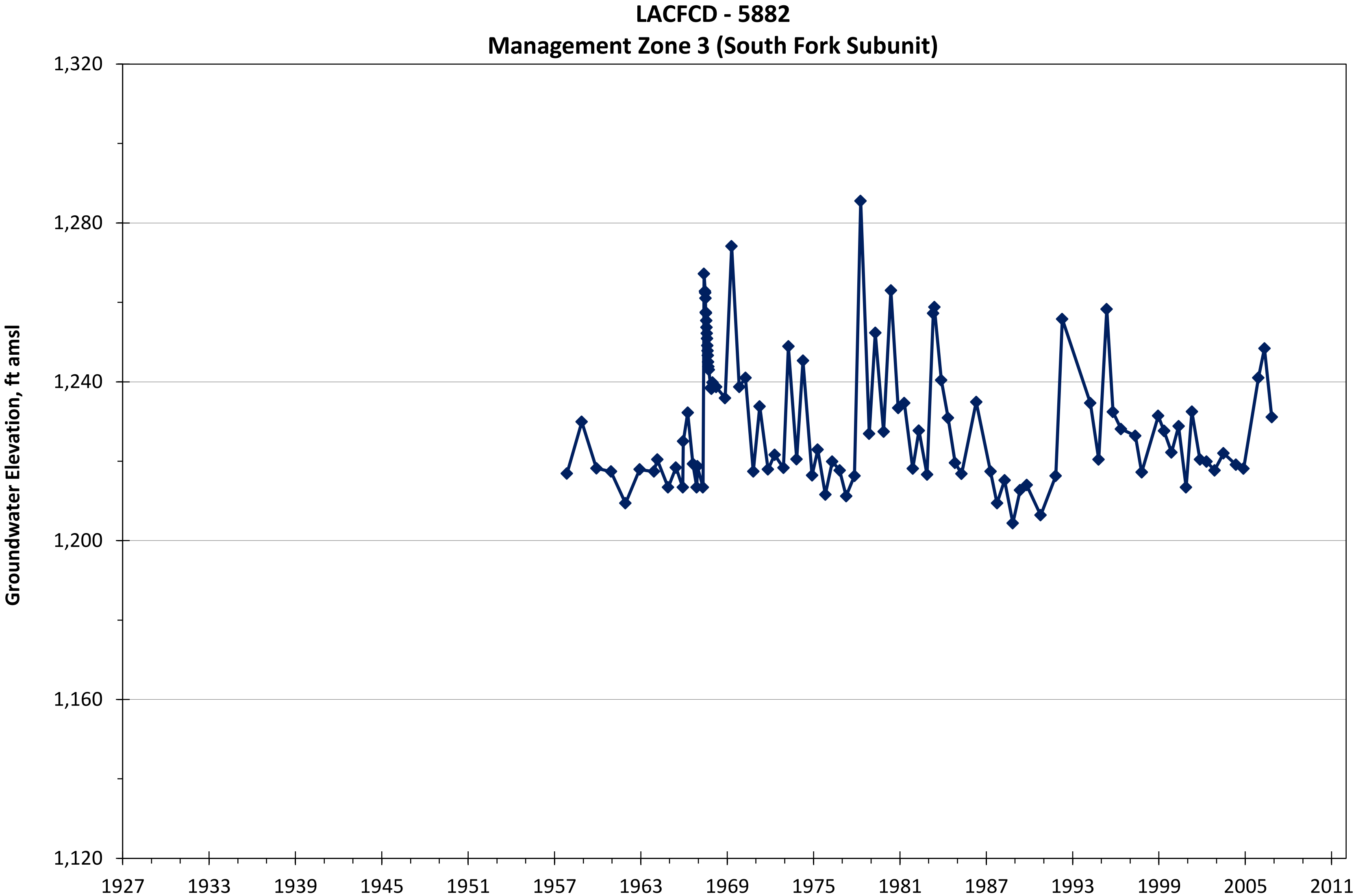
LACFCD - 5882
Management Zone 3 (South Fork Subunit)
Groundwater Elevation, ft amsl
1,320
1,280
1,240
1,200
1,160
1,120
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1933
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1945
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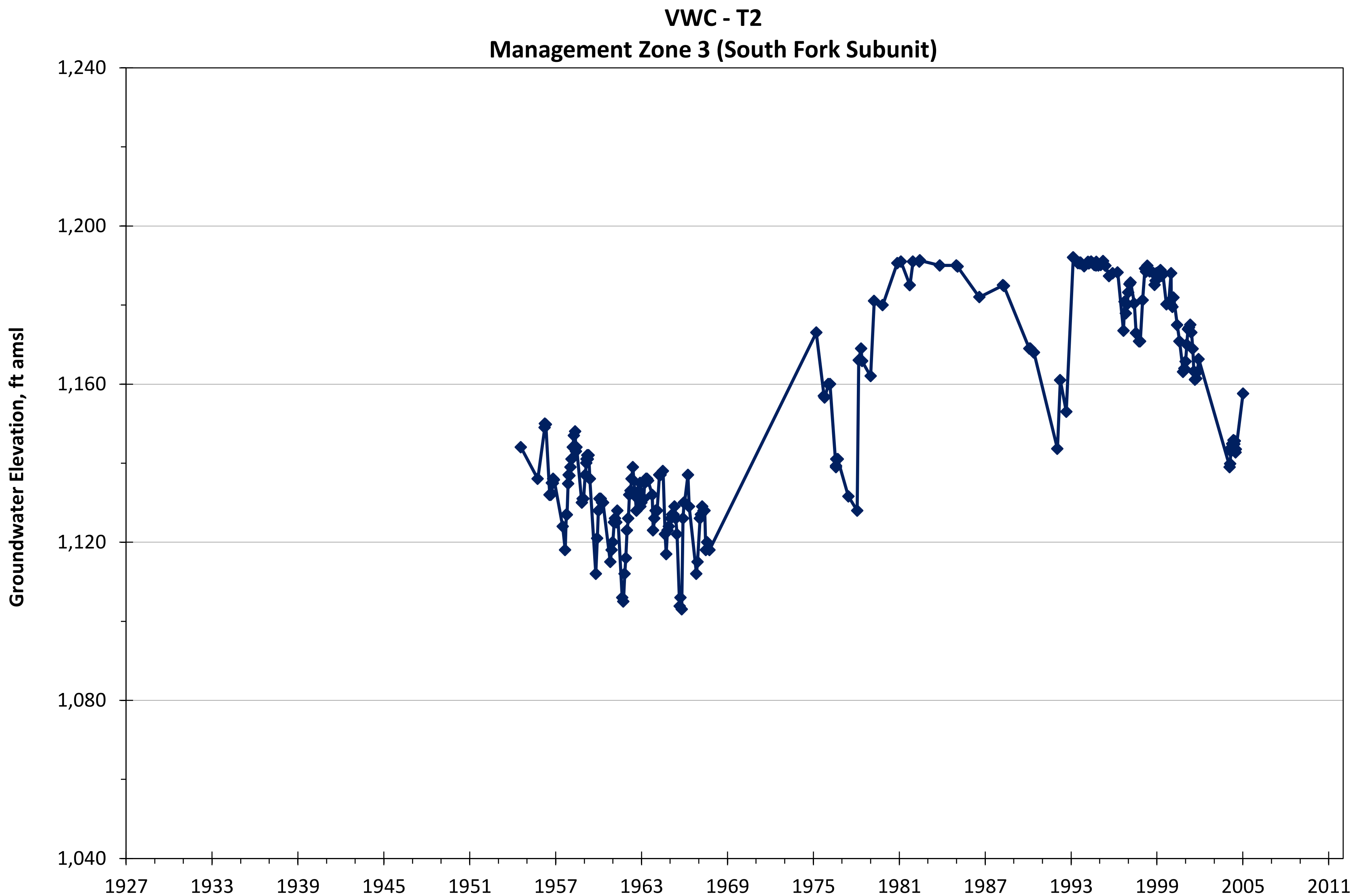
VWC - T2
Management Zone 3 (South Fork Subunit)
Groundwater Elevation, ft amsl
1,240
1,200
1,160
1,120
1,080
1,040
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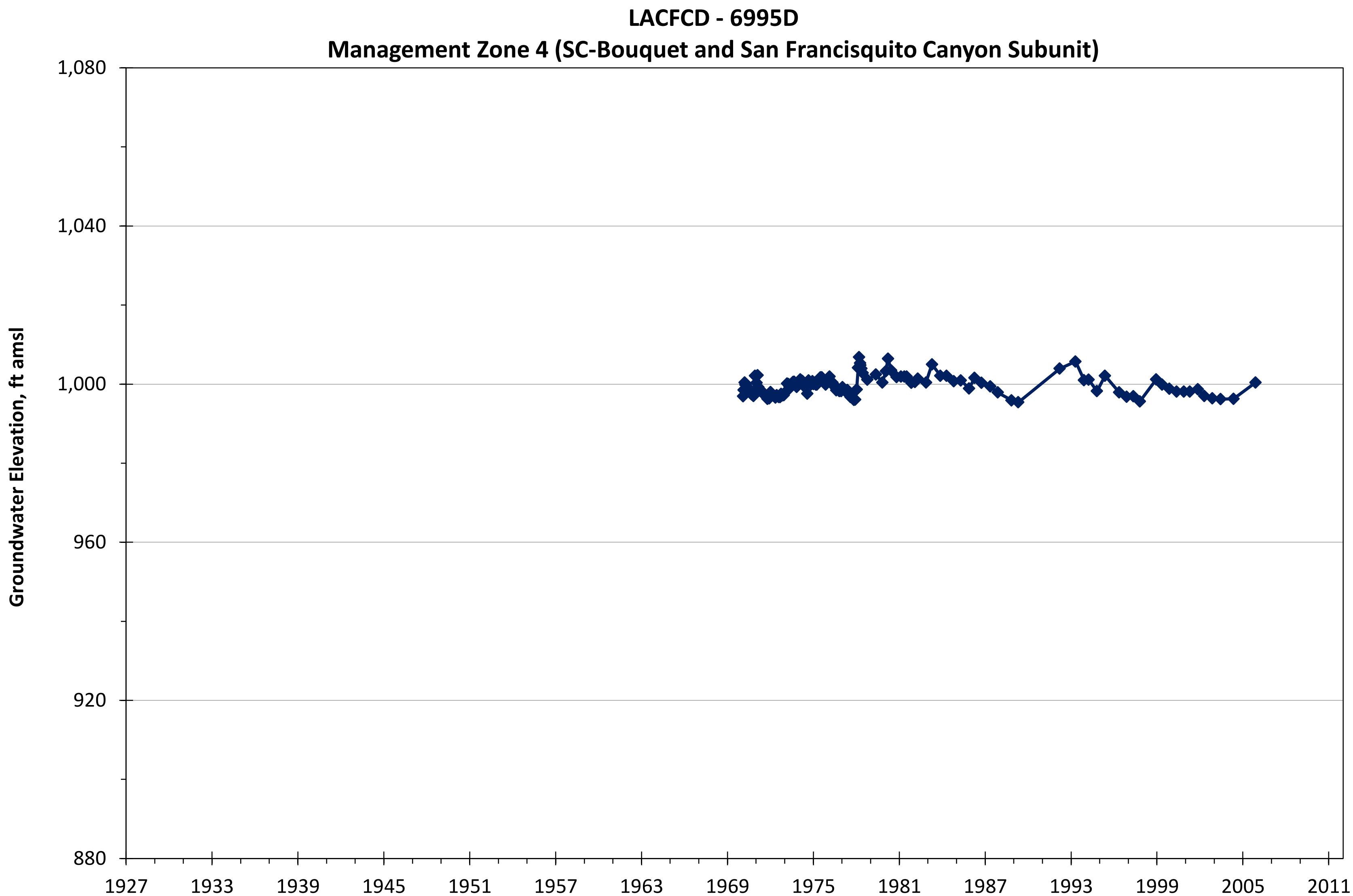
LACFCD - 6995D
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
1,080
1,040
1,000
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920
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1927
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1939
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1951
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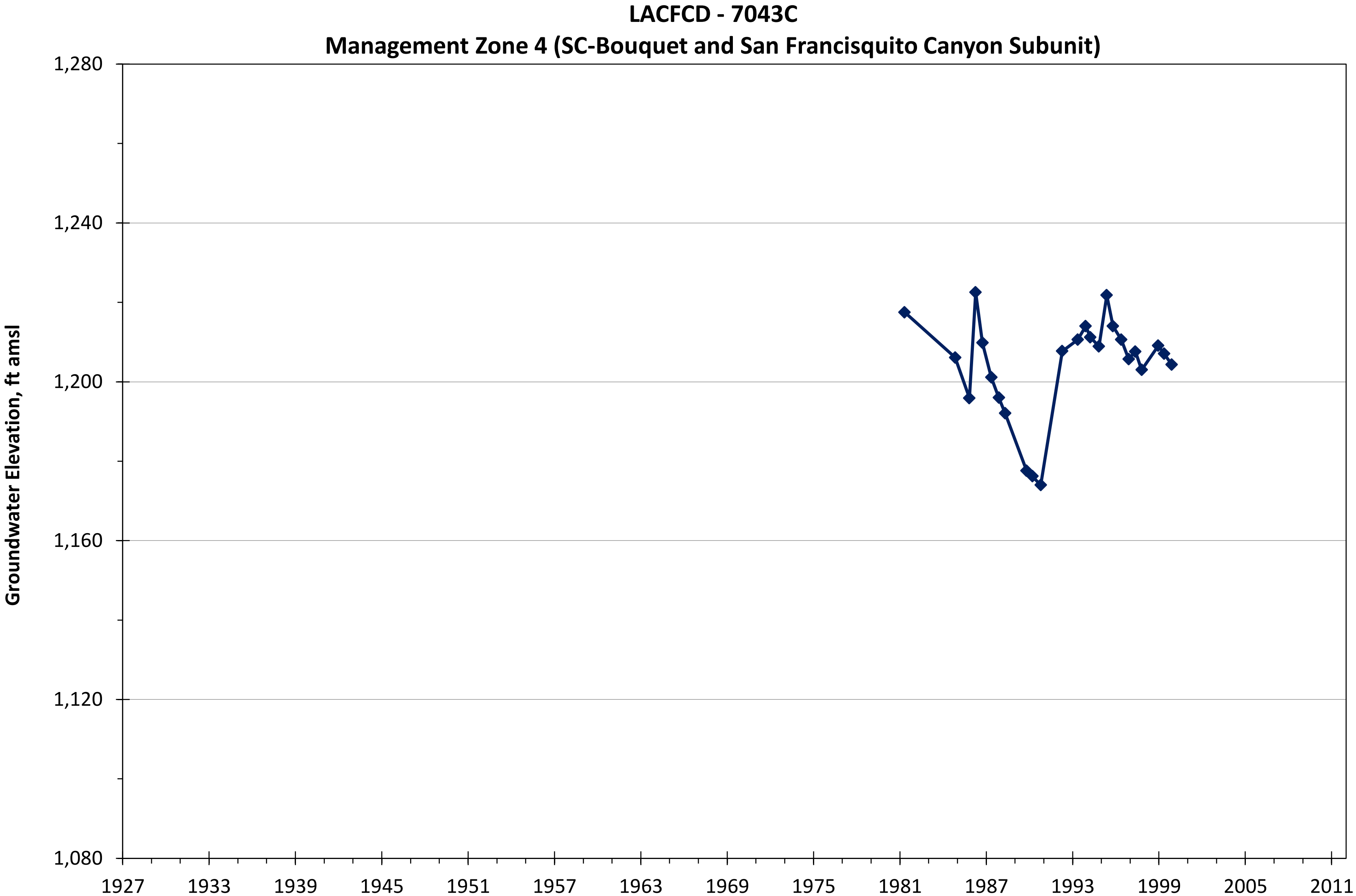
LACFCD - 7043C
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,200
1,160
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2011

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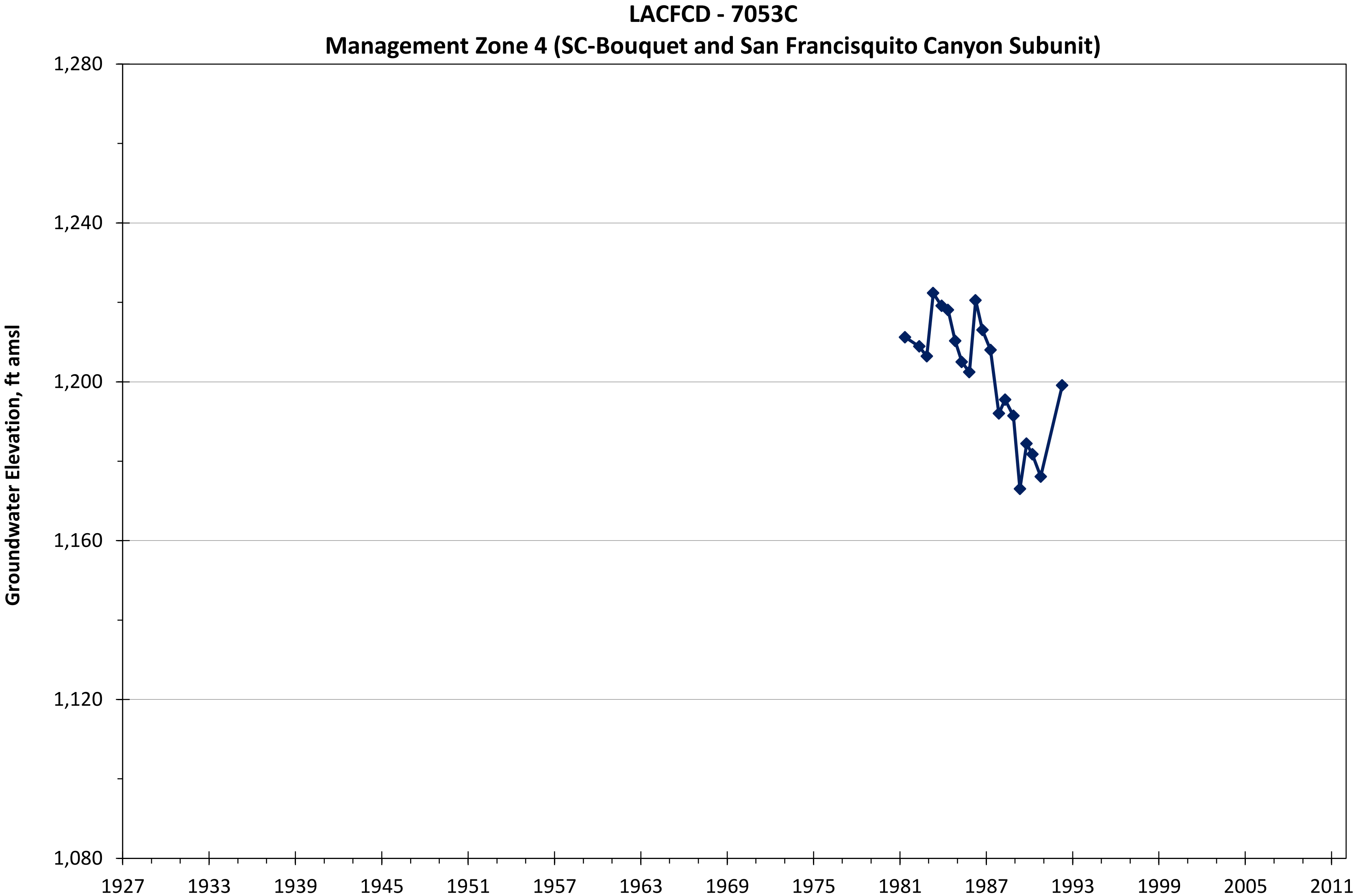
LACFCD - 7053C
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,200
1,160
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1,080
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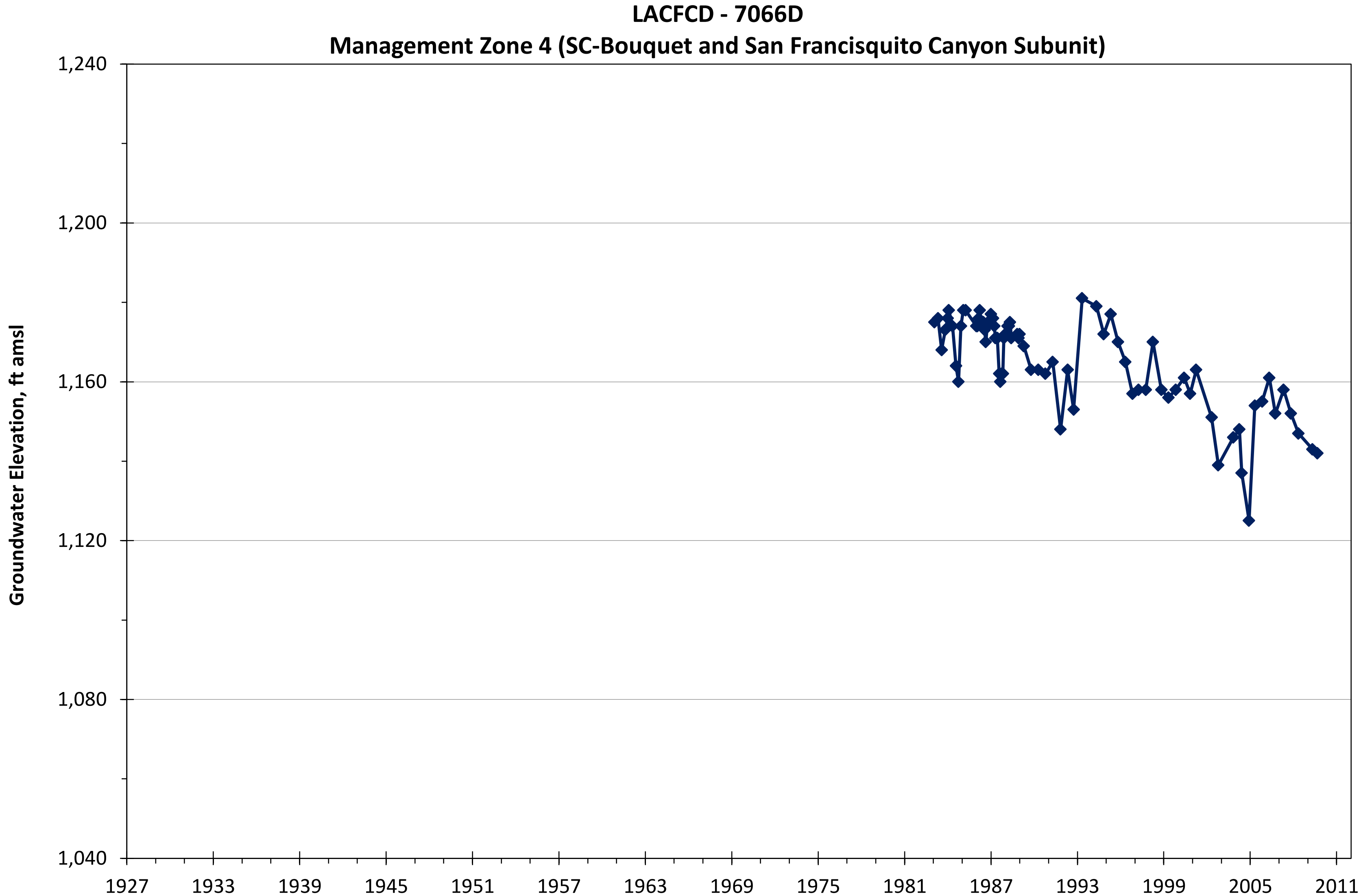
LACFCD - 7066D
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,200
1,160
1,120
1,080
1,040
1927
1933
1939
1945
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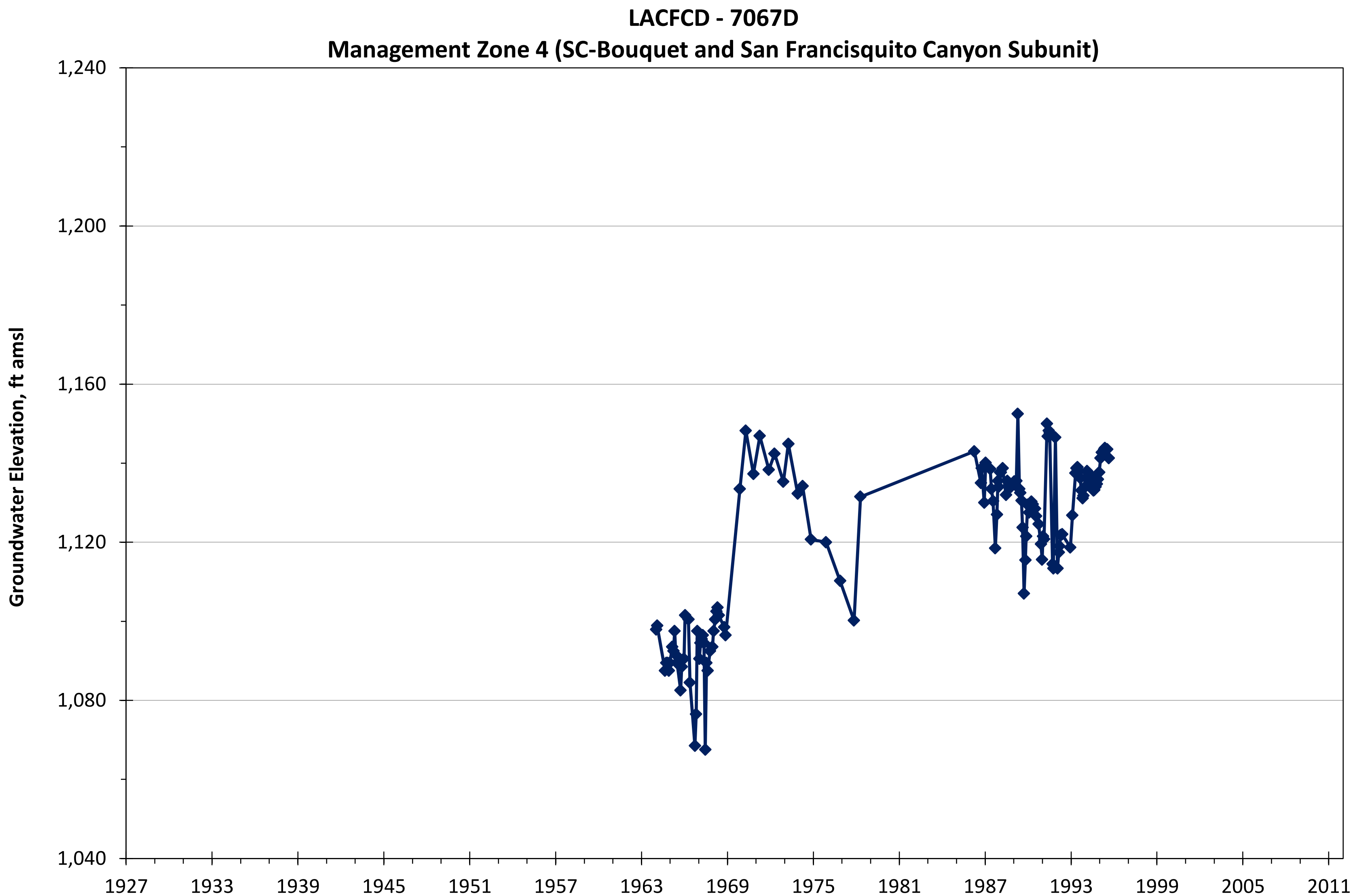
LACFCD - 7067D
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,160
1,120
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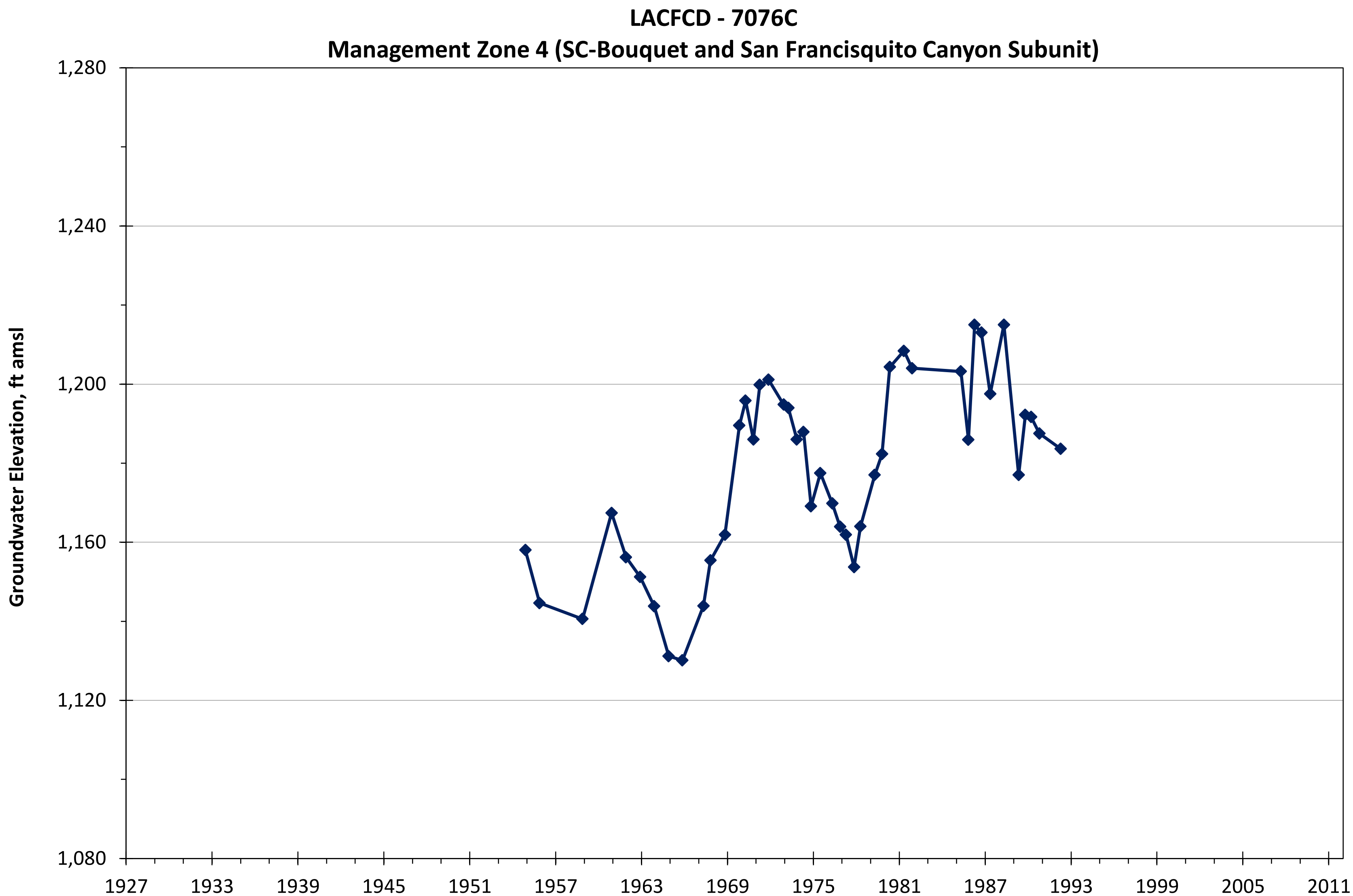
LACFCD - 7076C
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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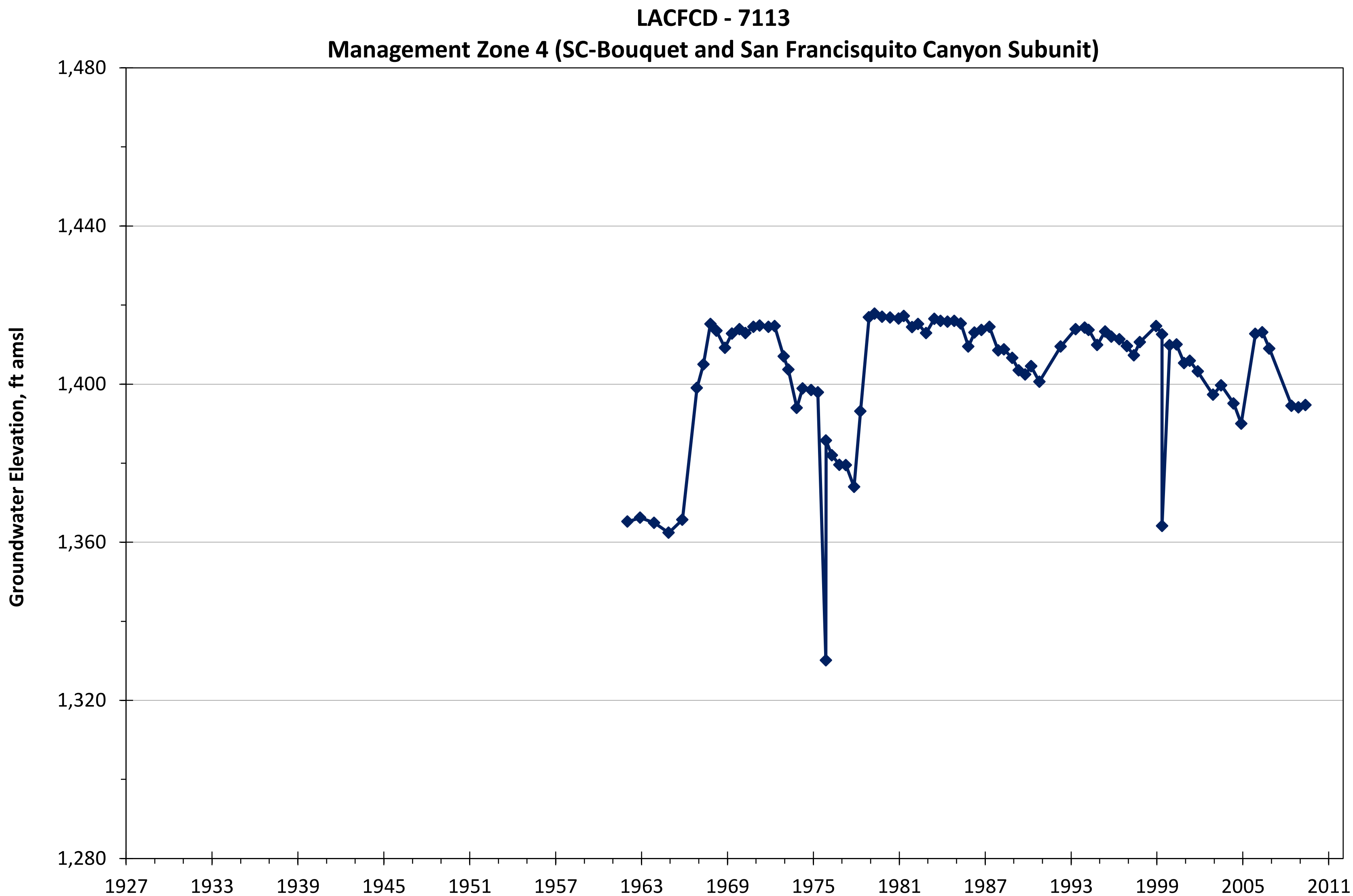
LACFCD - 7113
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
1,480
1,440
1,400
1,360
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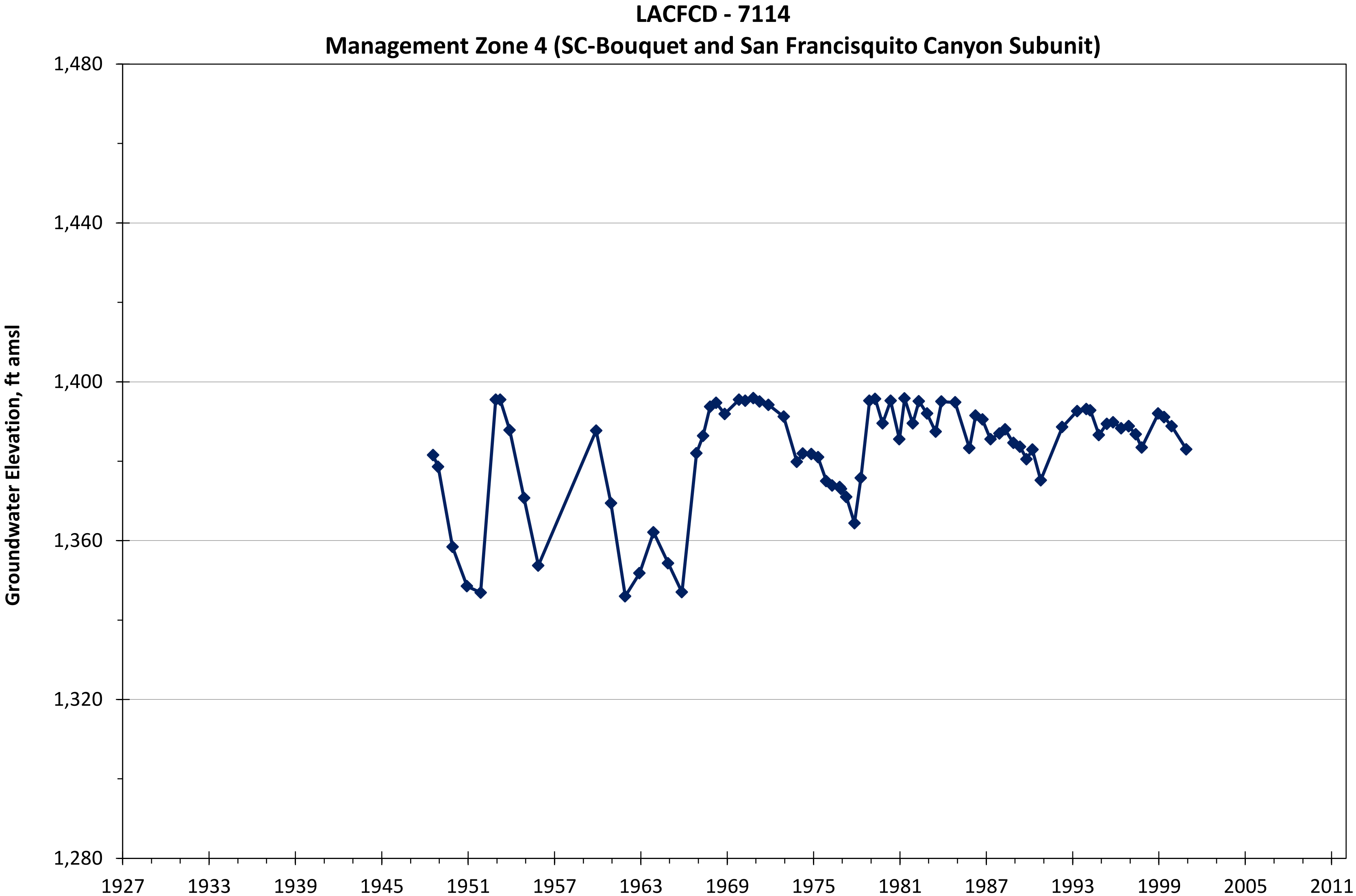
LACFCD - 7114
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,360
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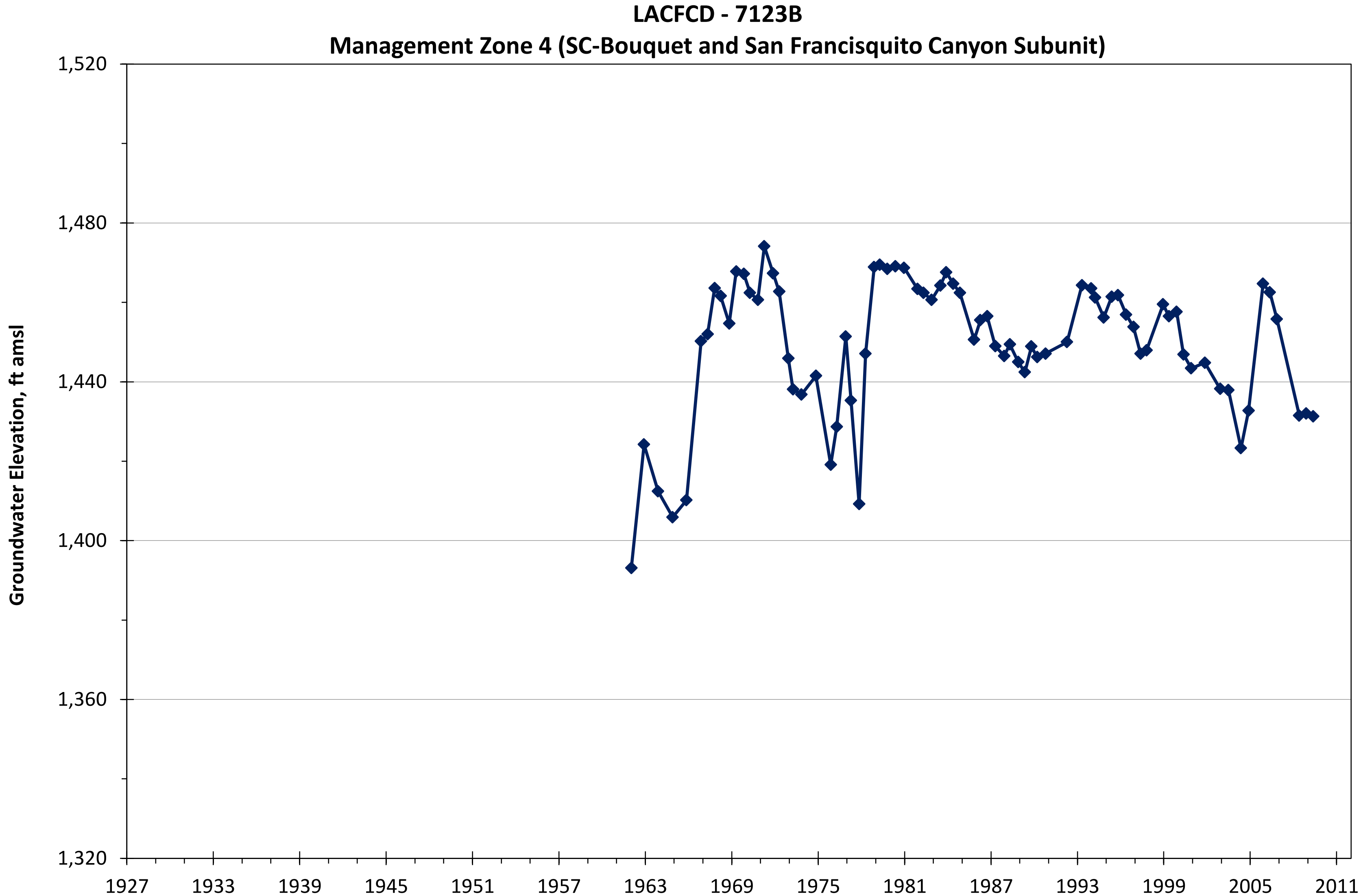
LACFCD - 7123B
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
1,520
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1,440
1,400
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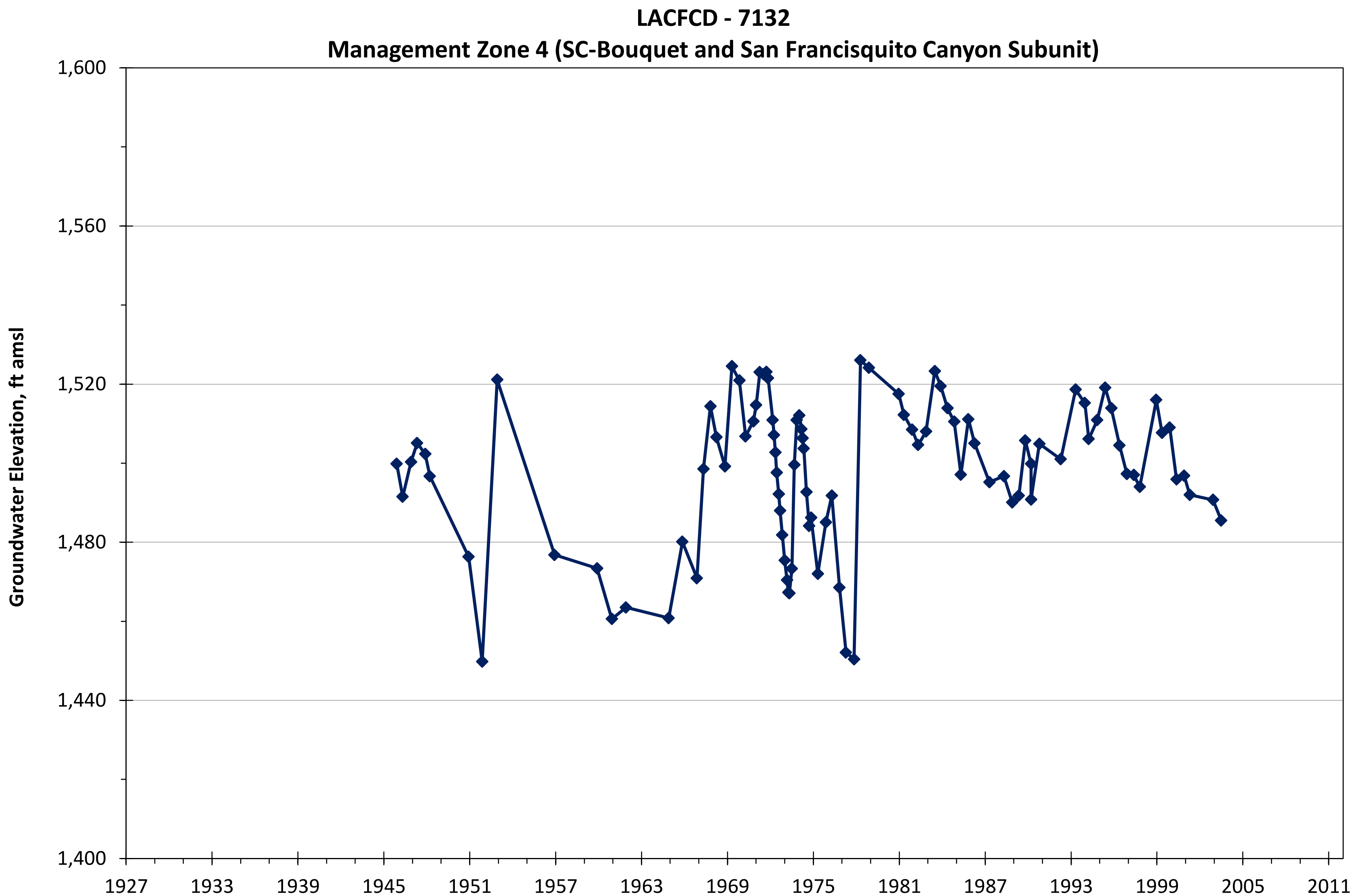
LACFCD - 7132
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
1,600
1,560
1,520
1,480
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1,400
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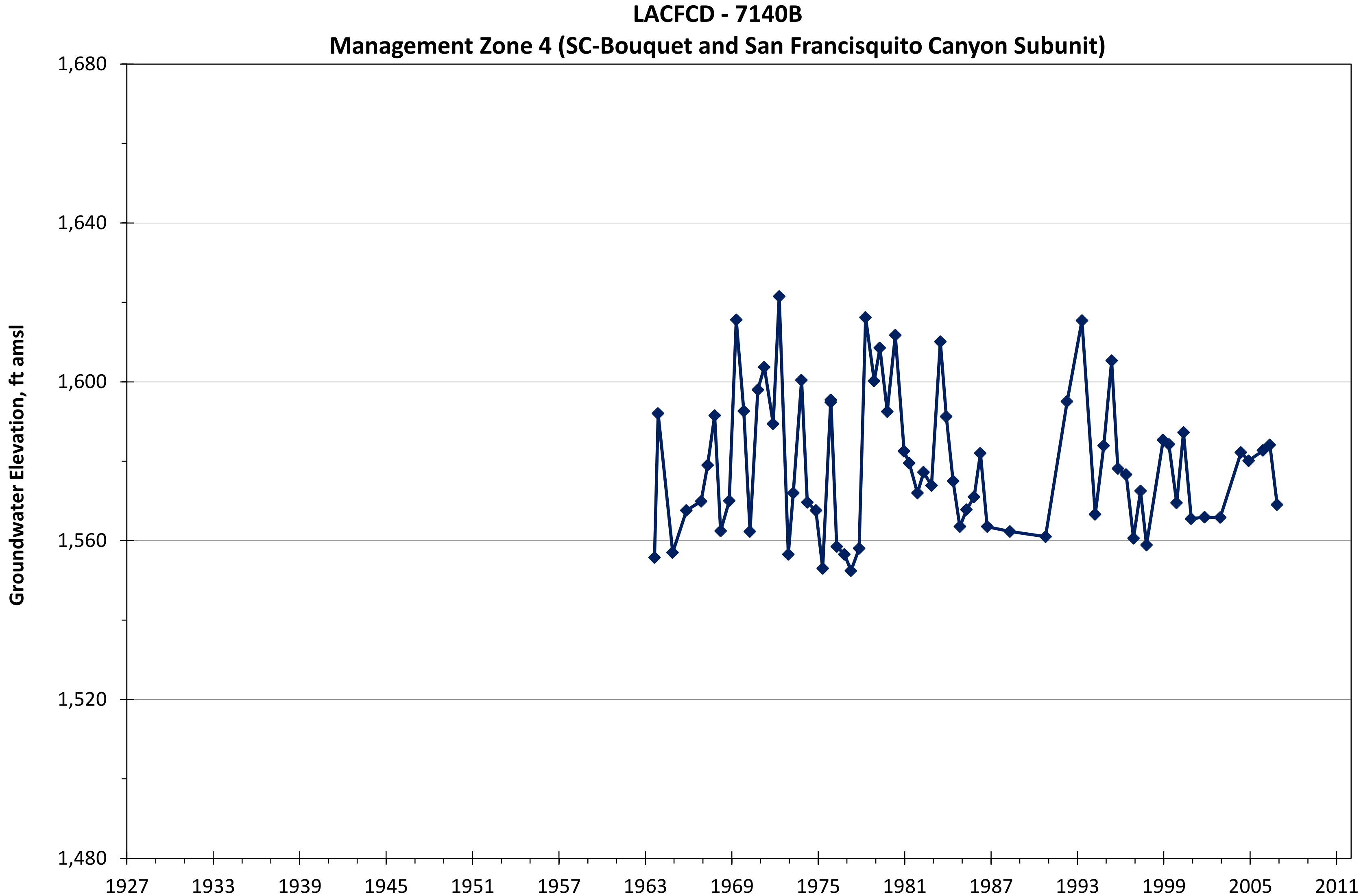
LACFCD - 7140B
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,640
1,600
1,560
1,520
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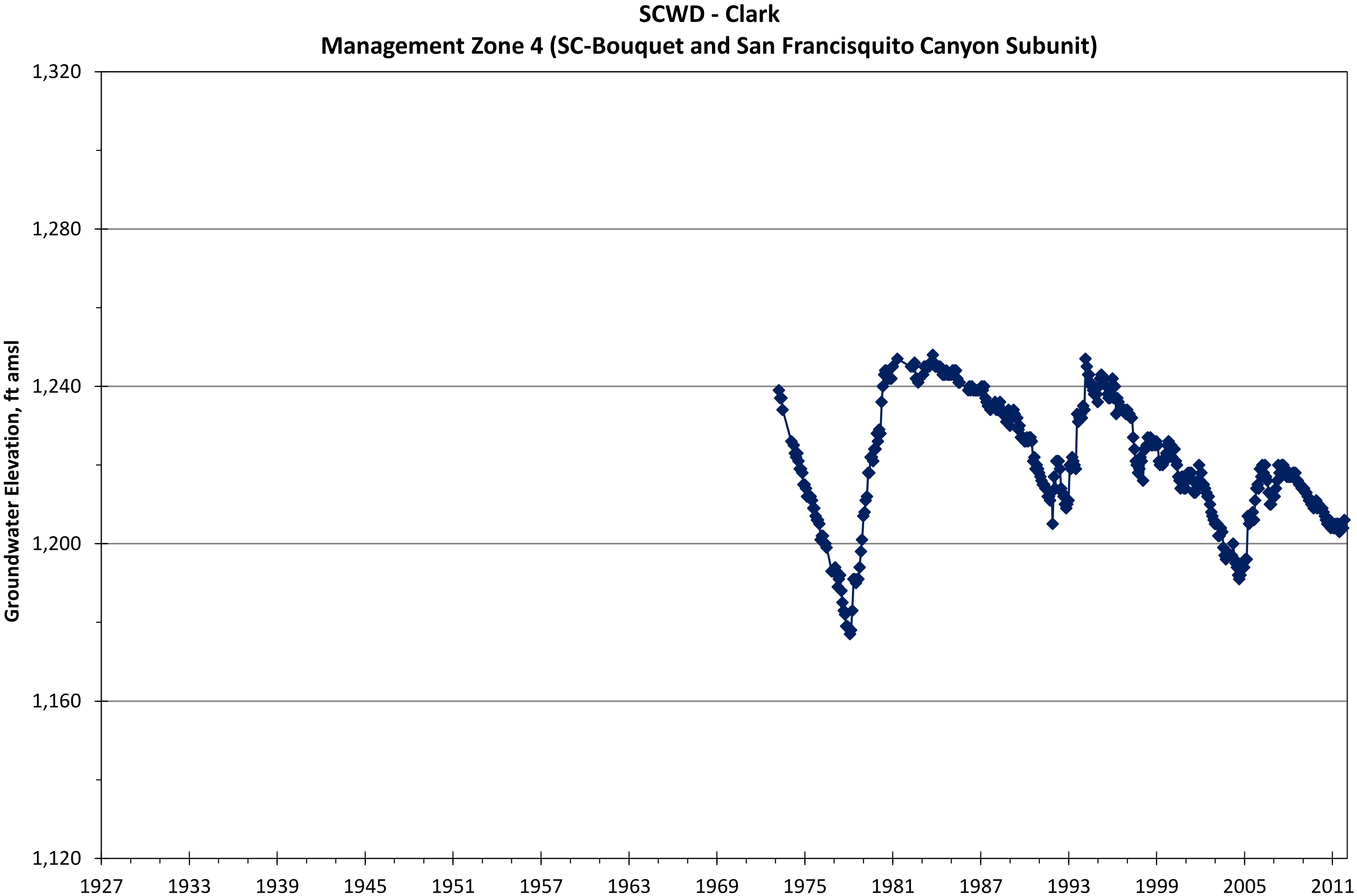
SCWD - Clark
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
1,320
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1,240
1,200
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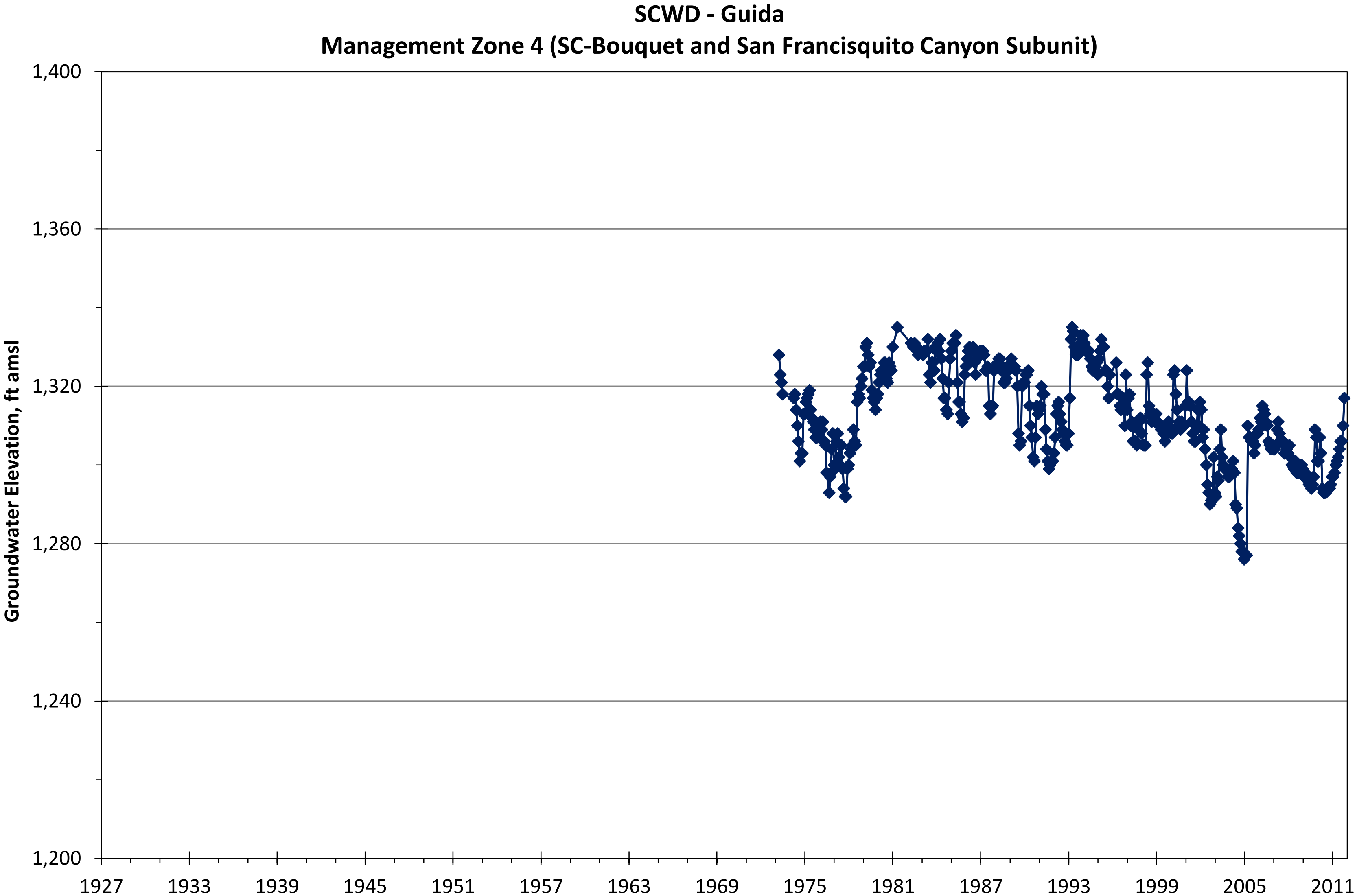
SCWD - Guida
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
1,400
1,360
1,320
1,280
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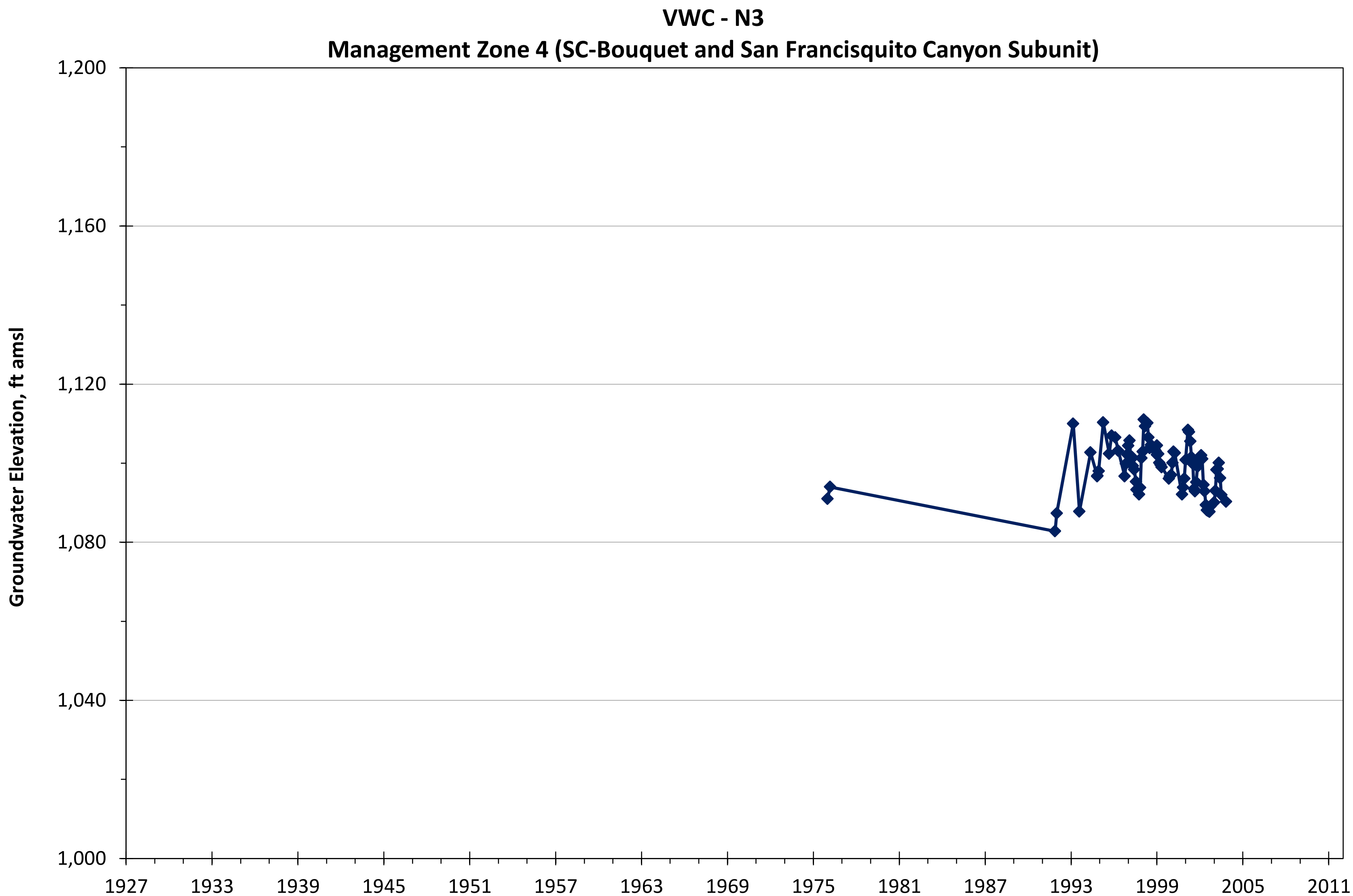
VWC - N3
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,080
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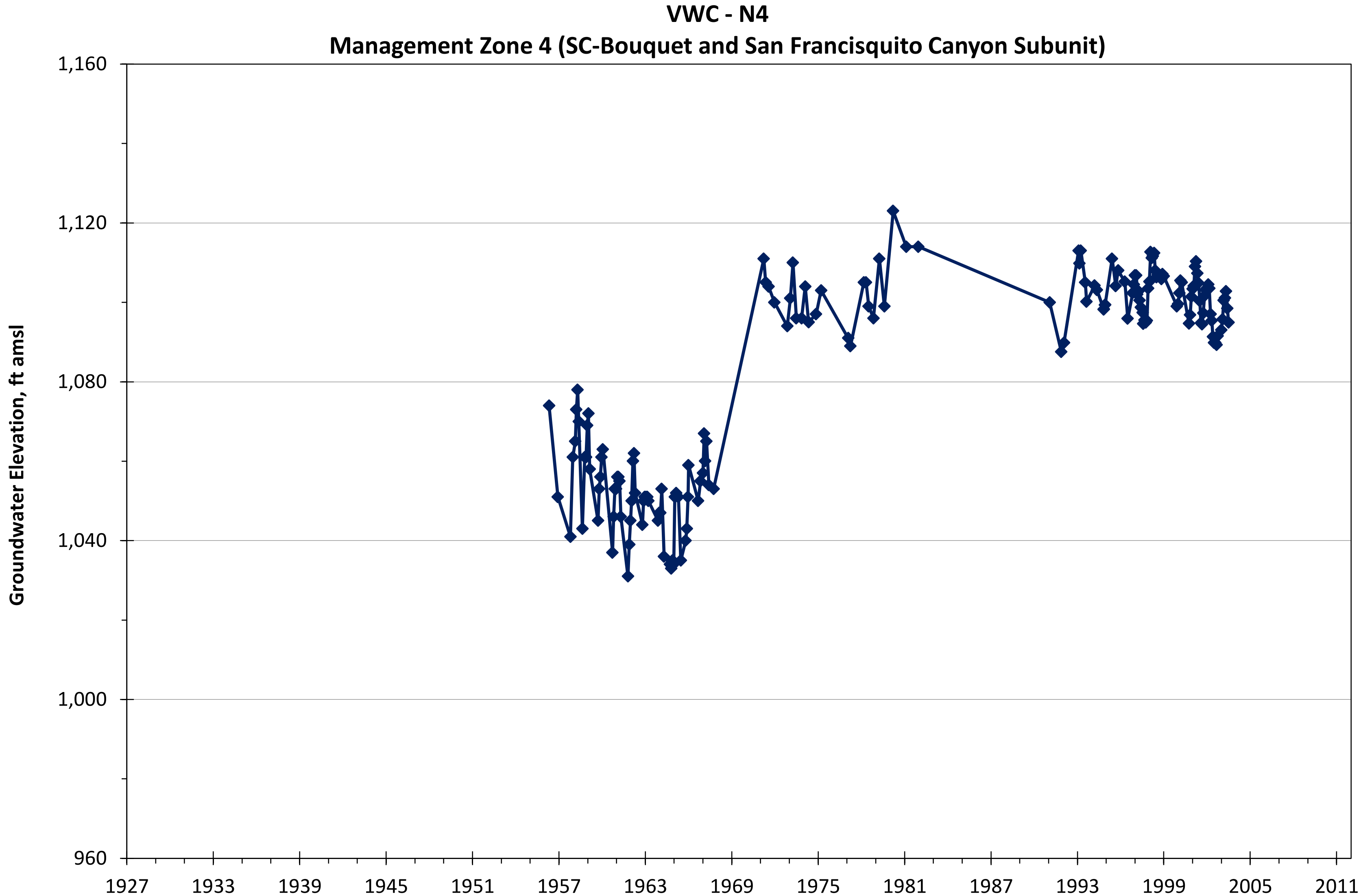
VWC - N4
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
1,160
1,120
1,080
1,040
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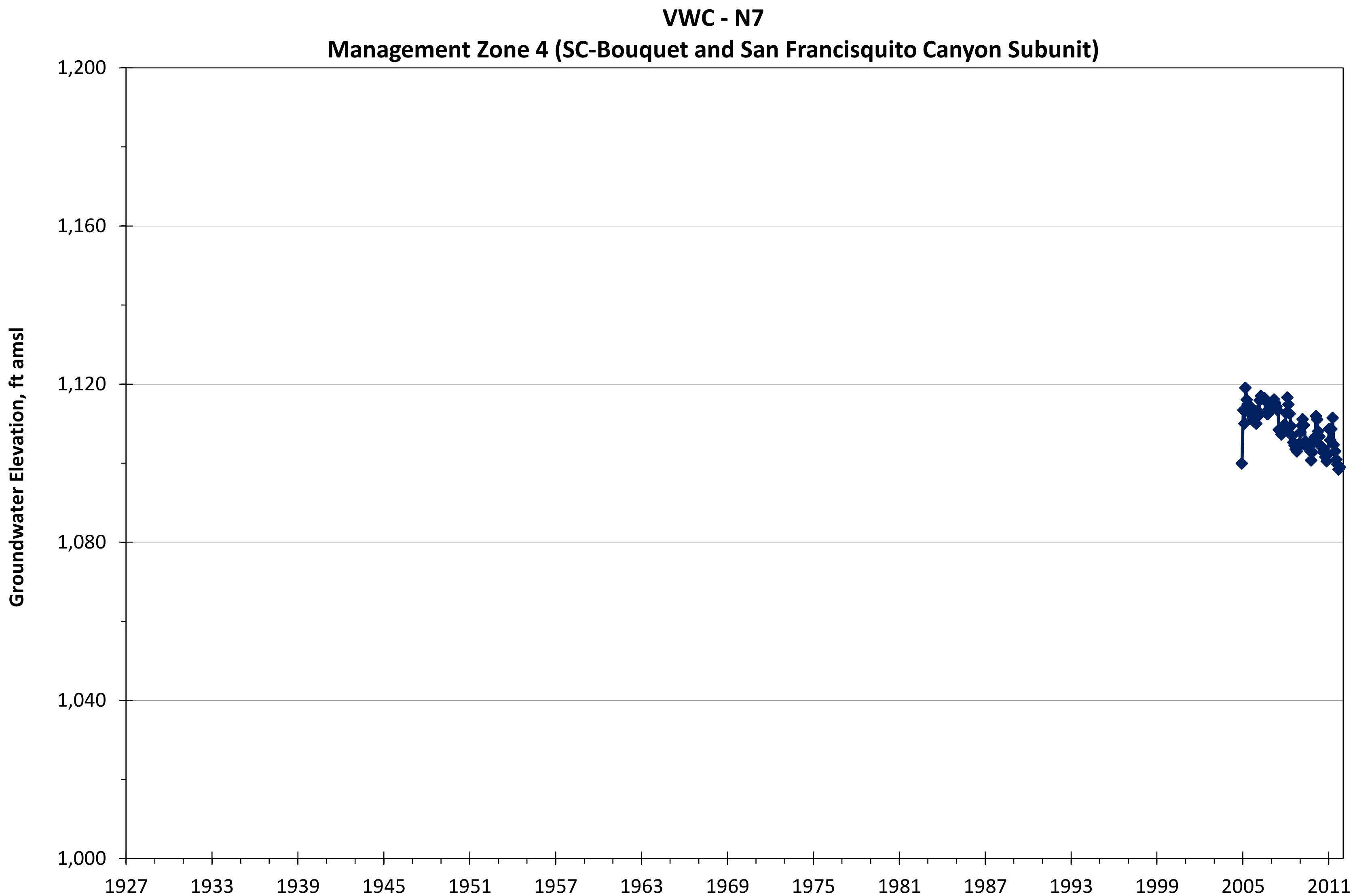
VWC - N7
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,160
1,120
1,080
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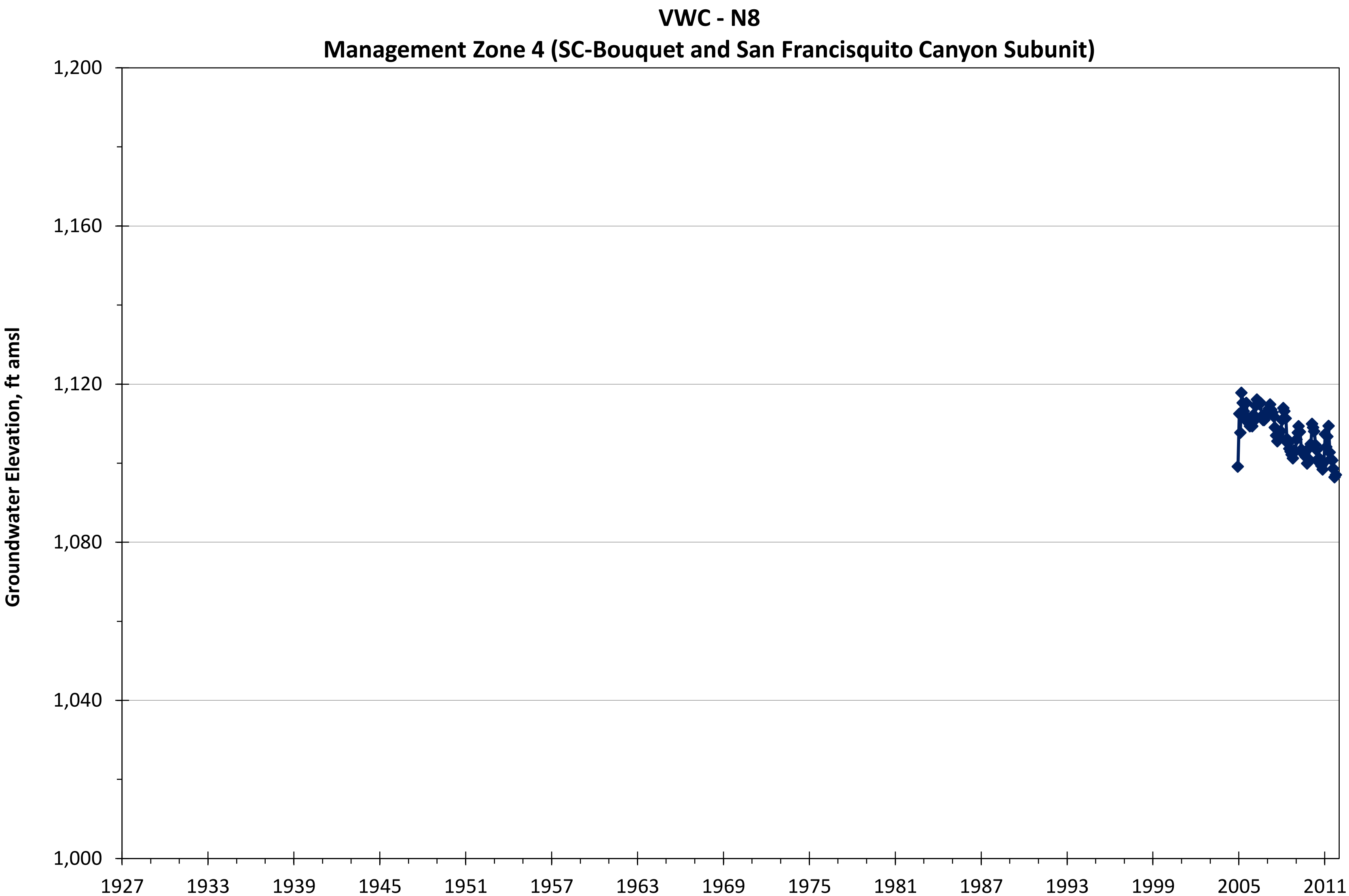
VWC - N8
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,120
1,080
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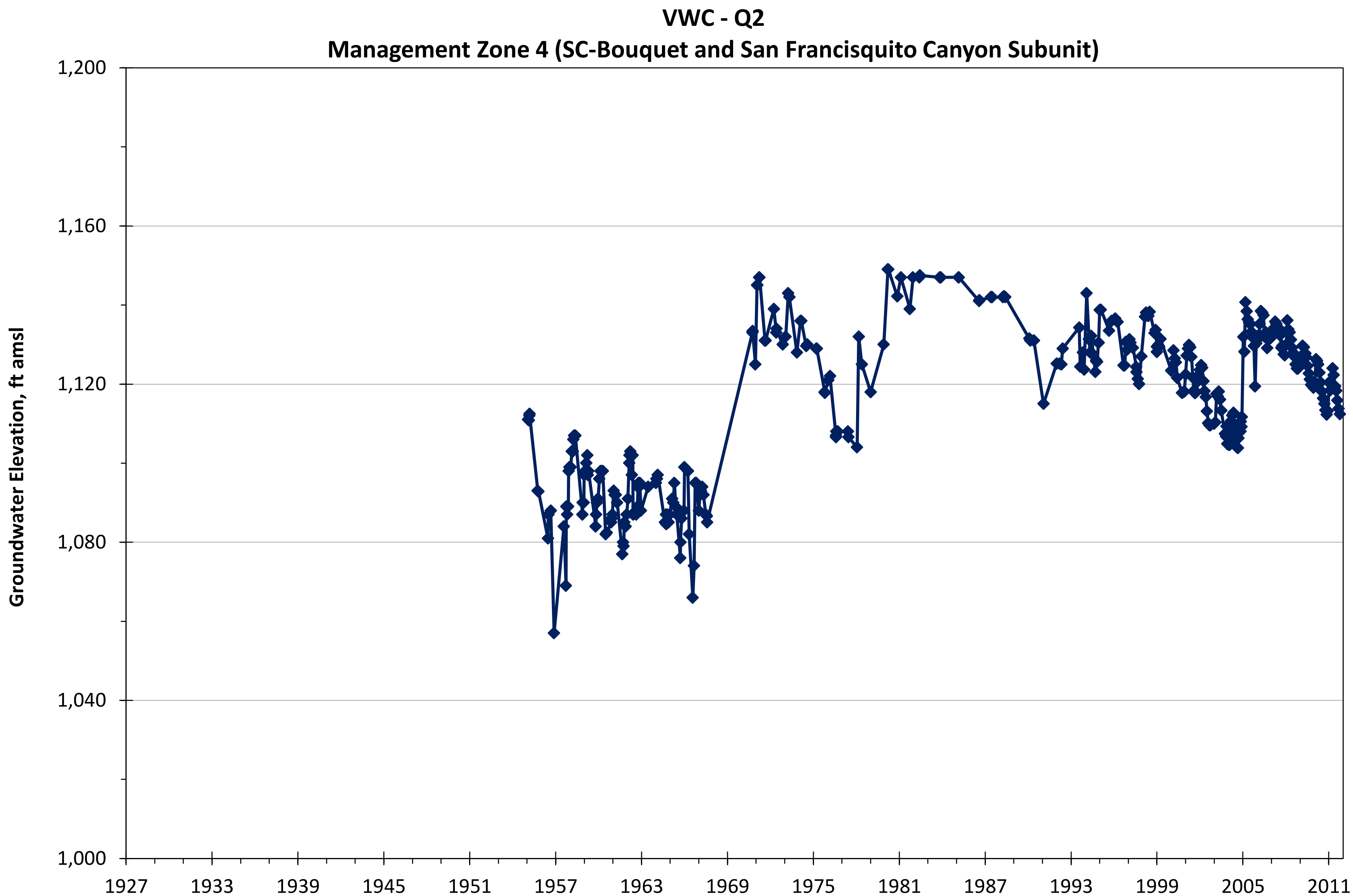
VWC - Q2
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,120
1,080
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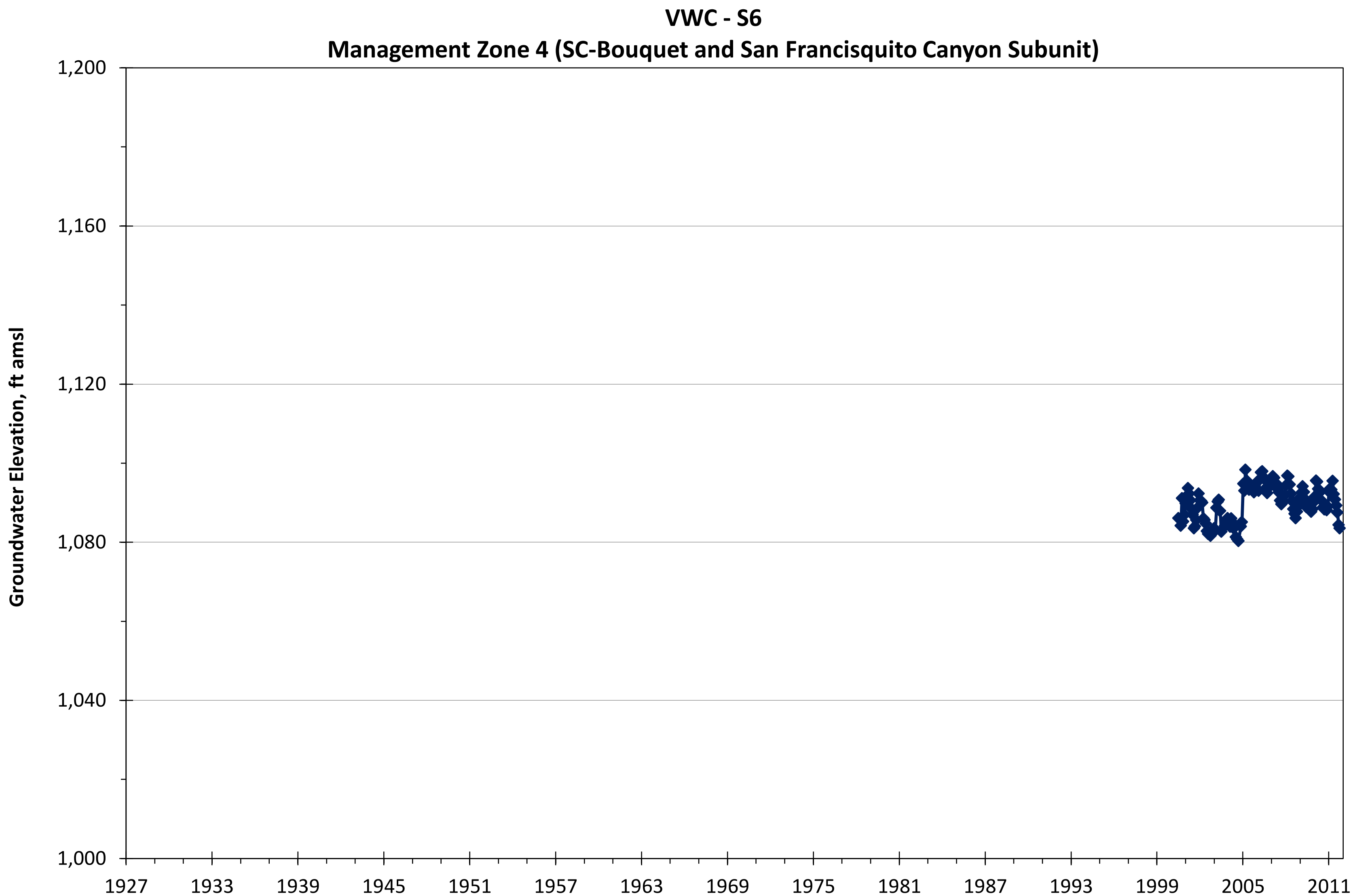
VWC - S6
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
1,200
1,160
1,120
1,080
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1,000
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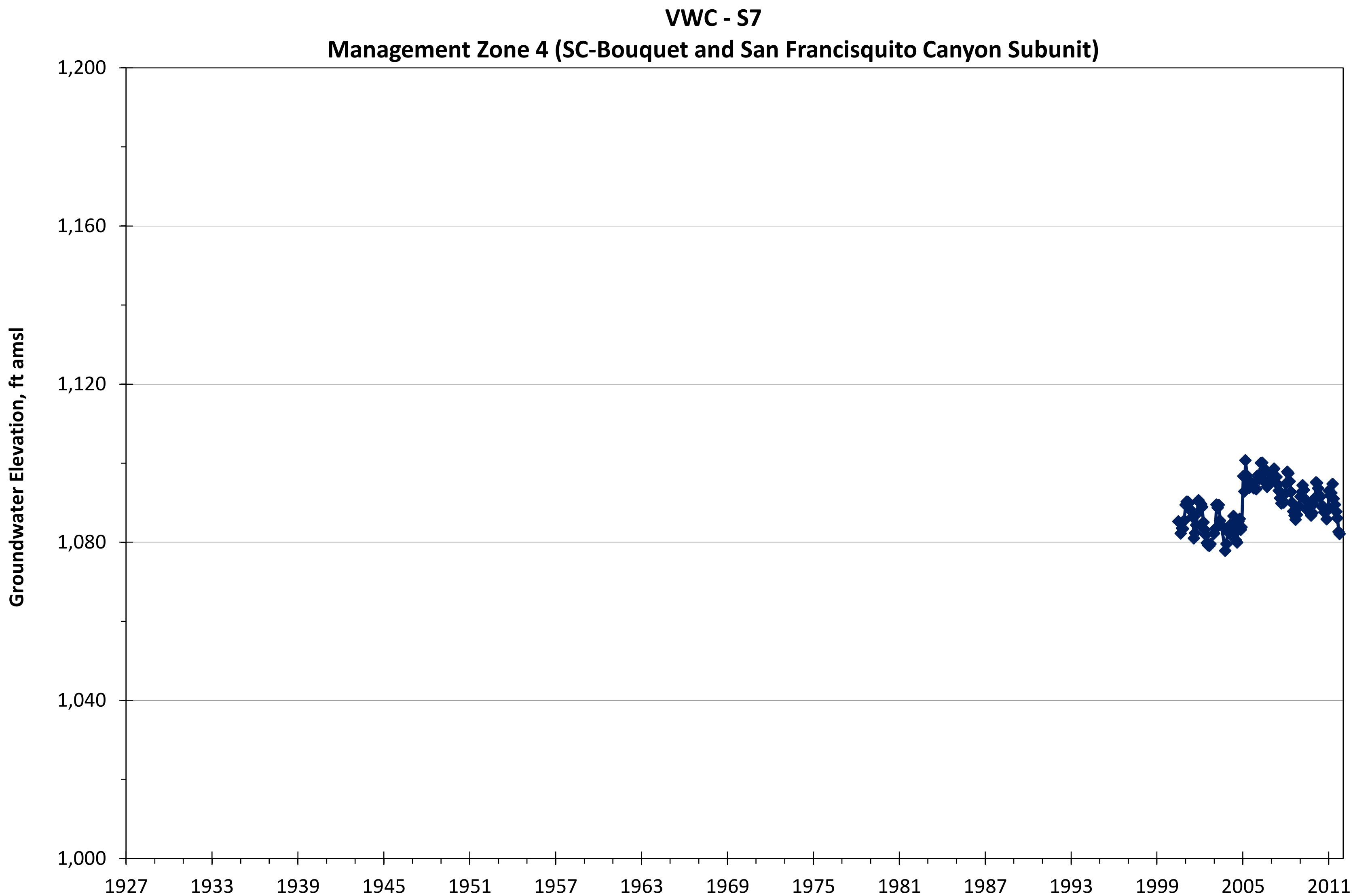
VWC - S7
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,160
1,120
1,080
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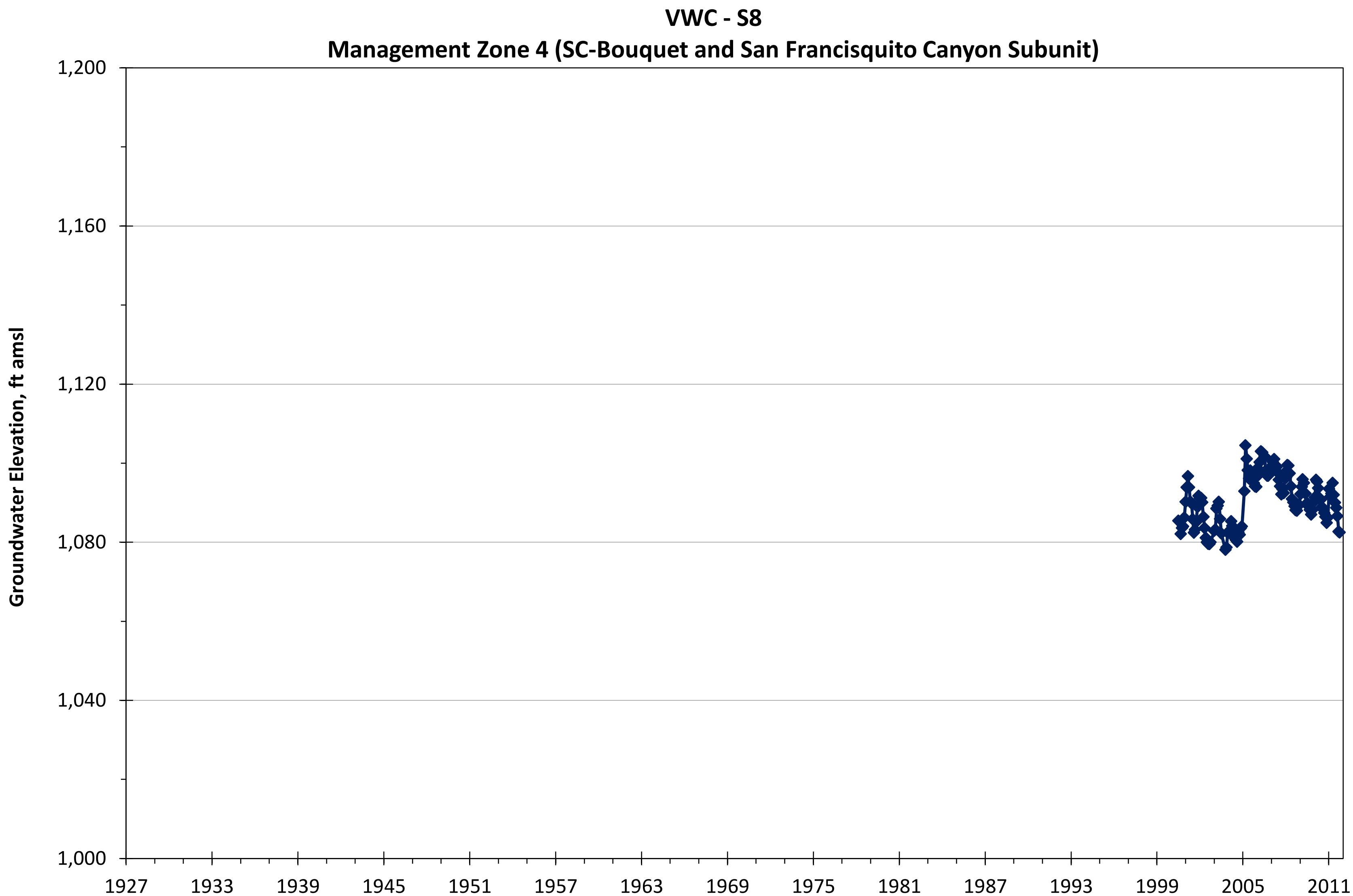
VWC - S8
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,160
1,120
1,080
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1,000
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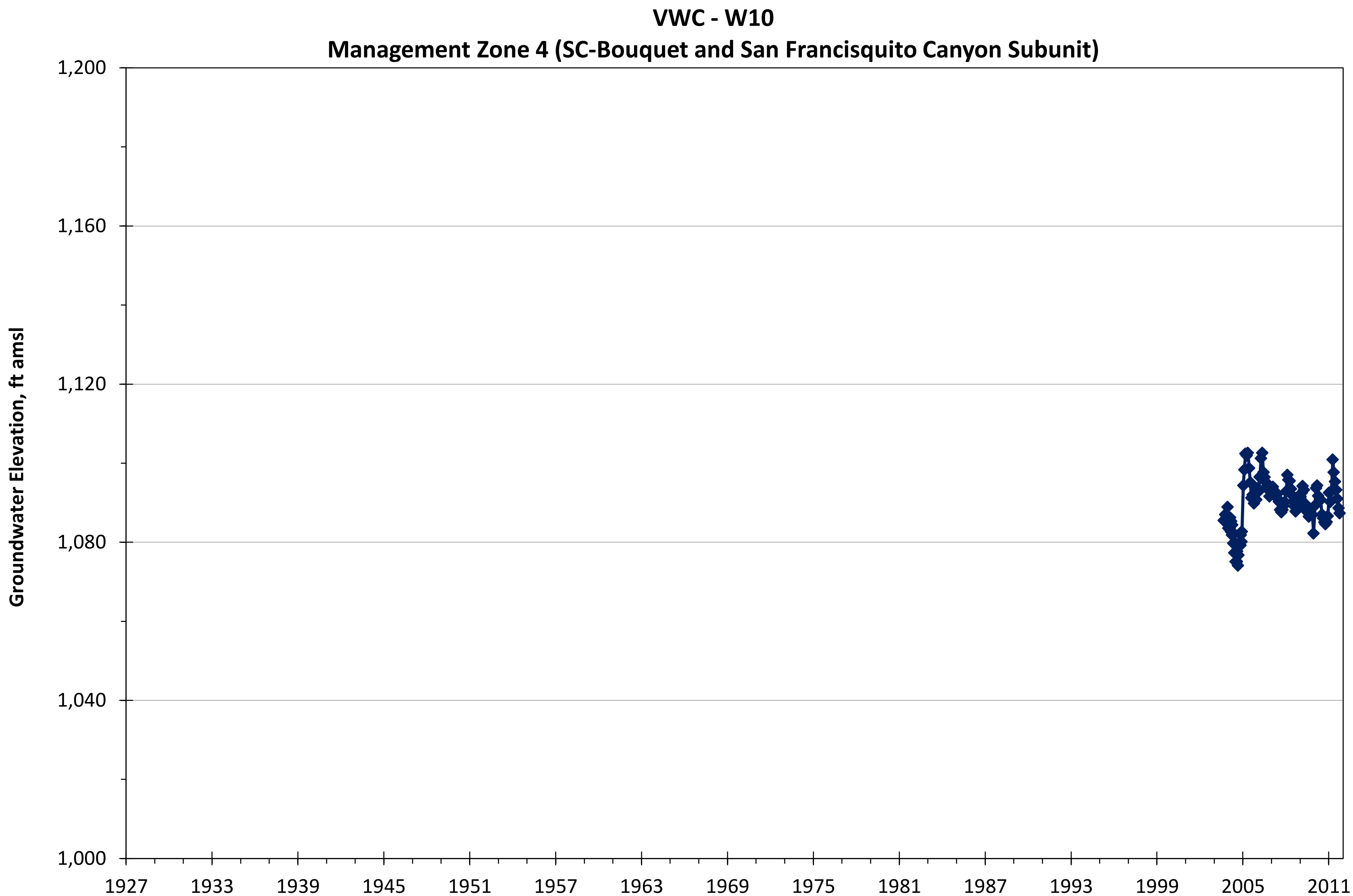
VWC - W10
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,160
1,120
1,080
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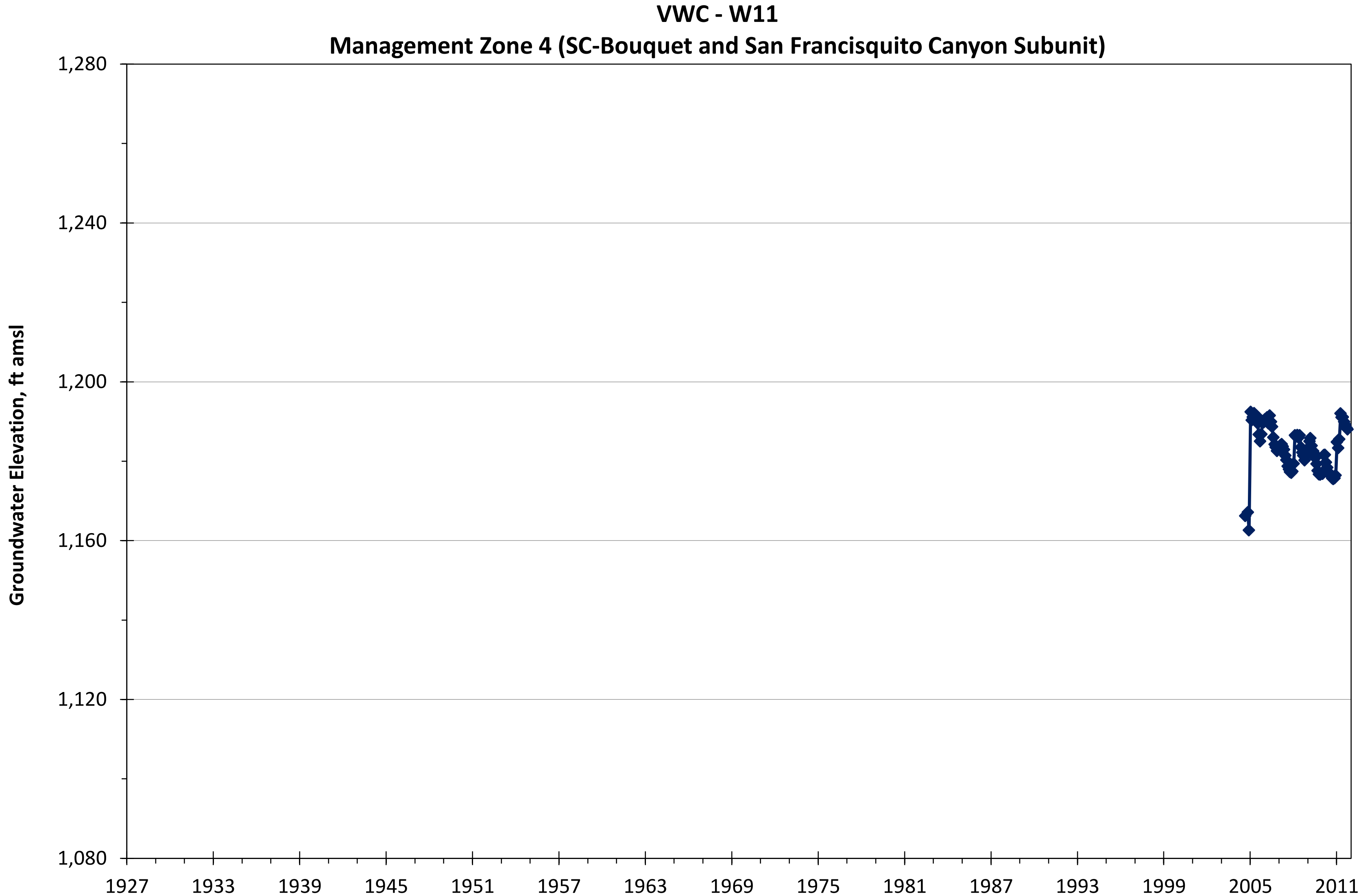
VWC - W11
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
1,280
1,240
1,200
1,160
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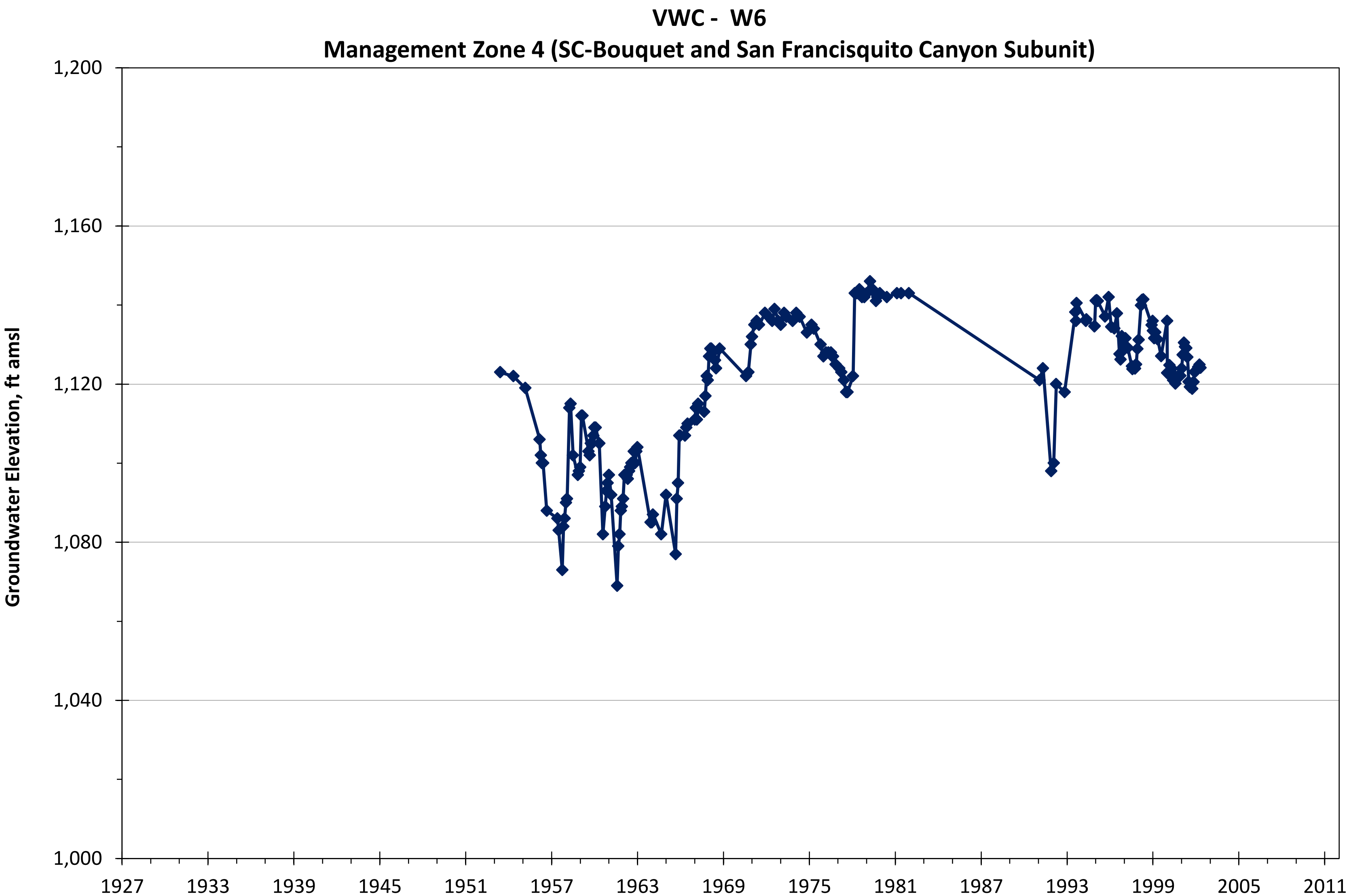
VWC - W6
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,160
1,120
1,080
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1,000
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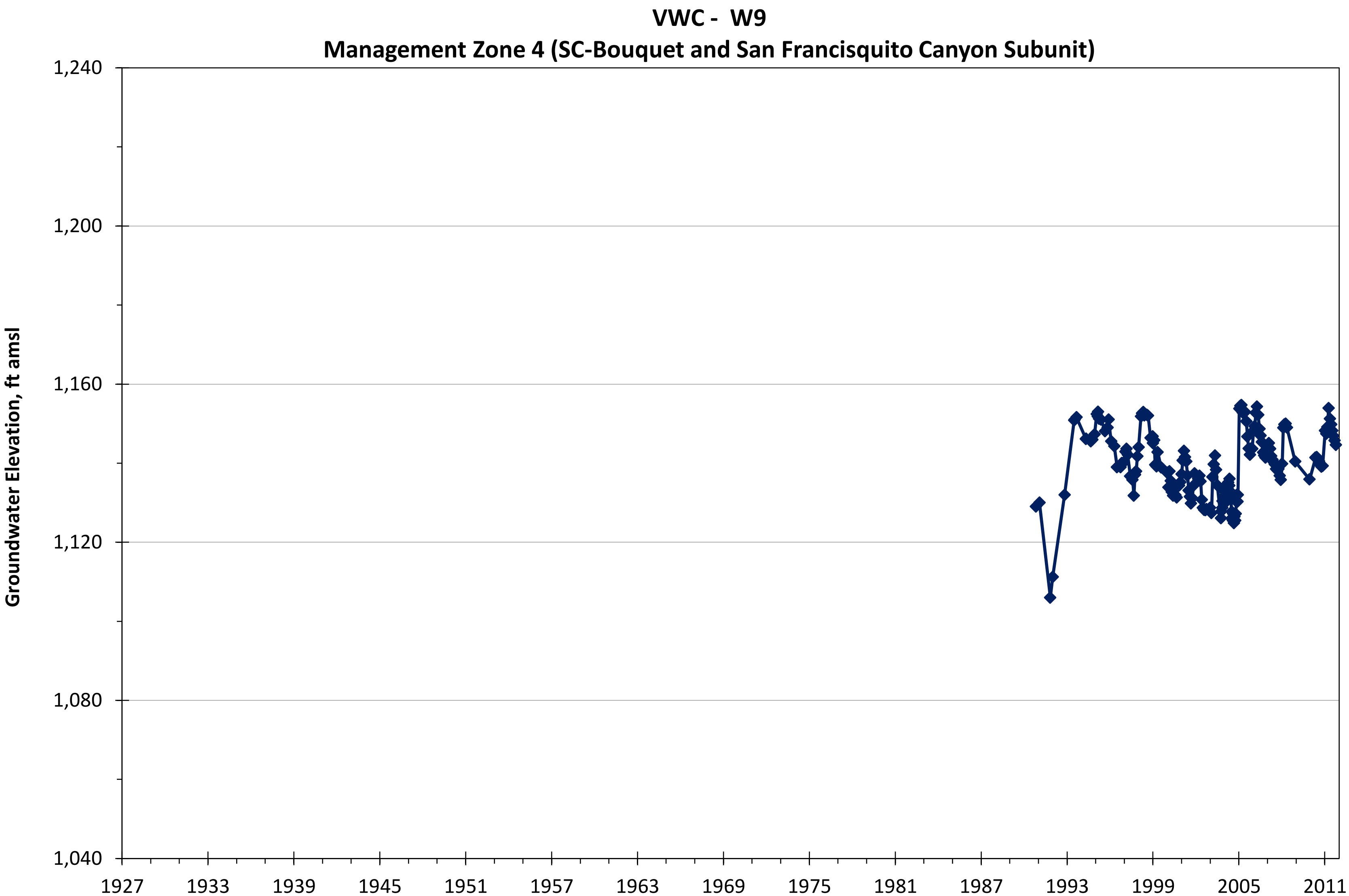
VWC - W9
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
1,240
1,200
1,160
1,120
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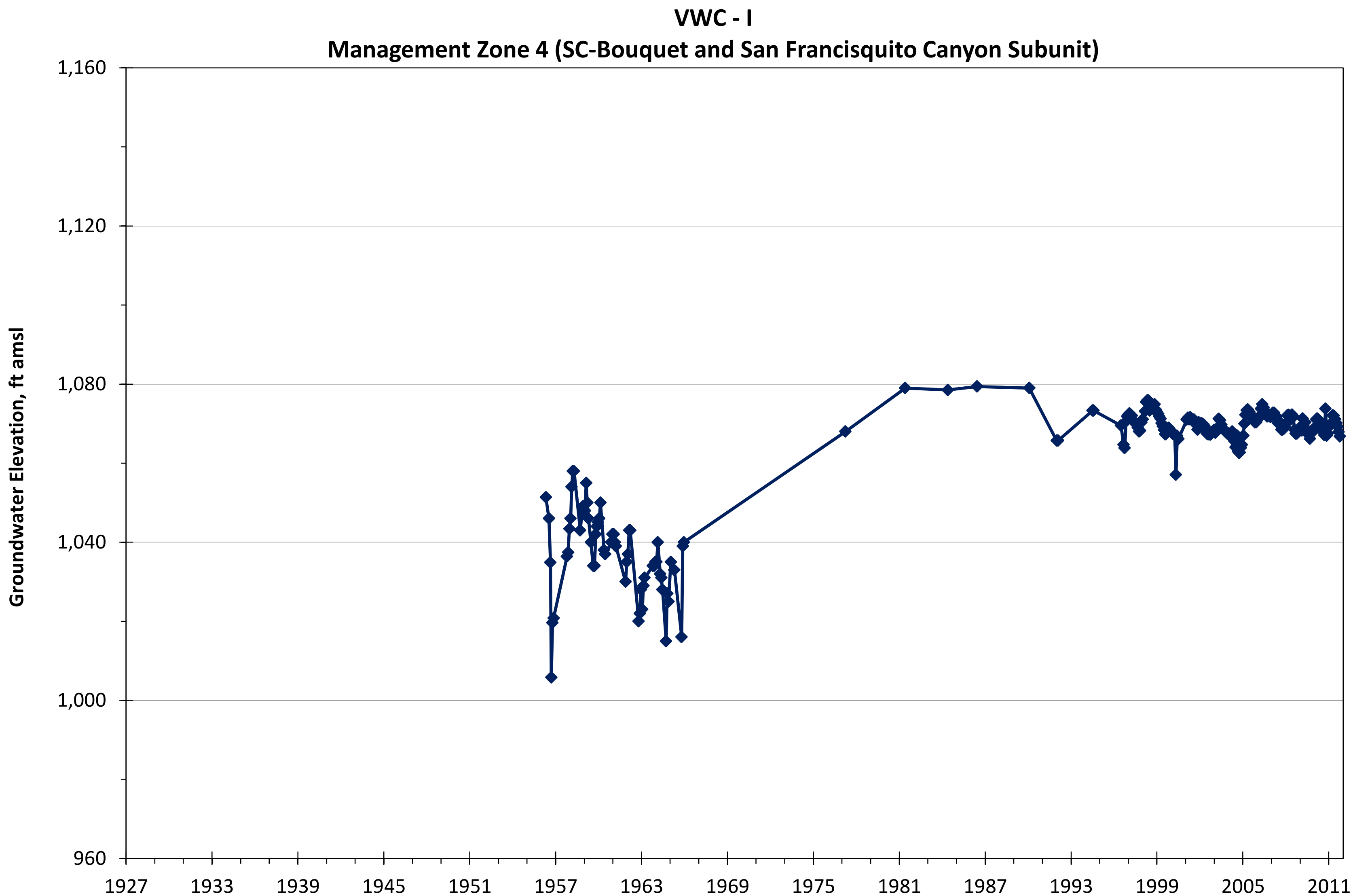
VWC - I
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,120
1,080
1,040
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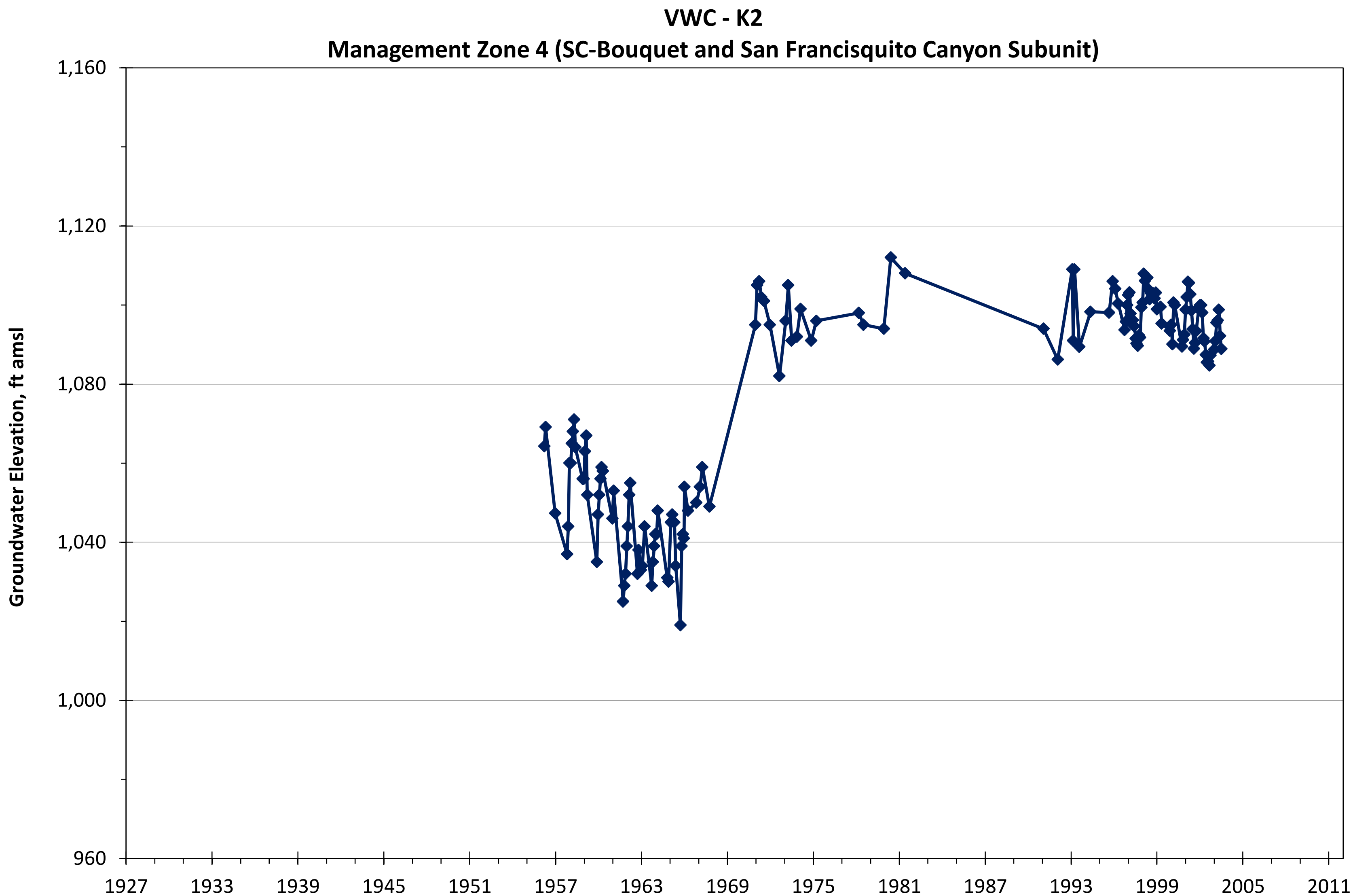
VWC - K2
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,080
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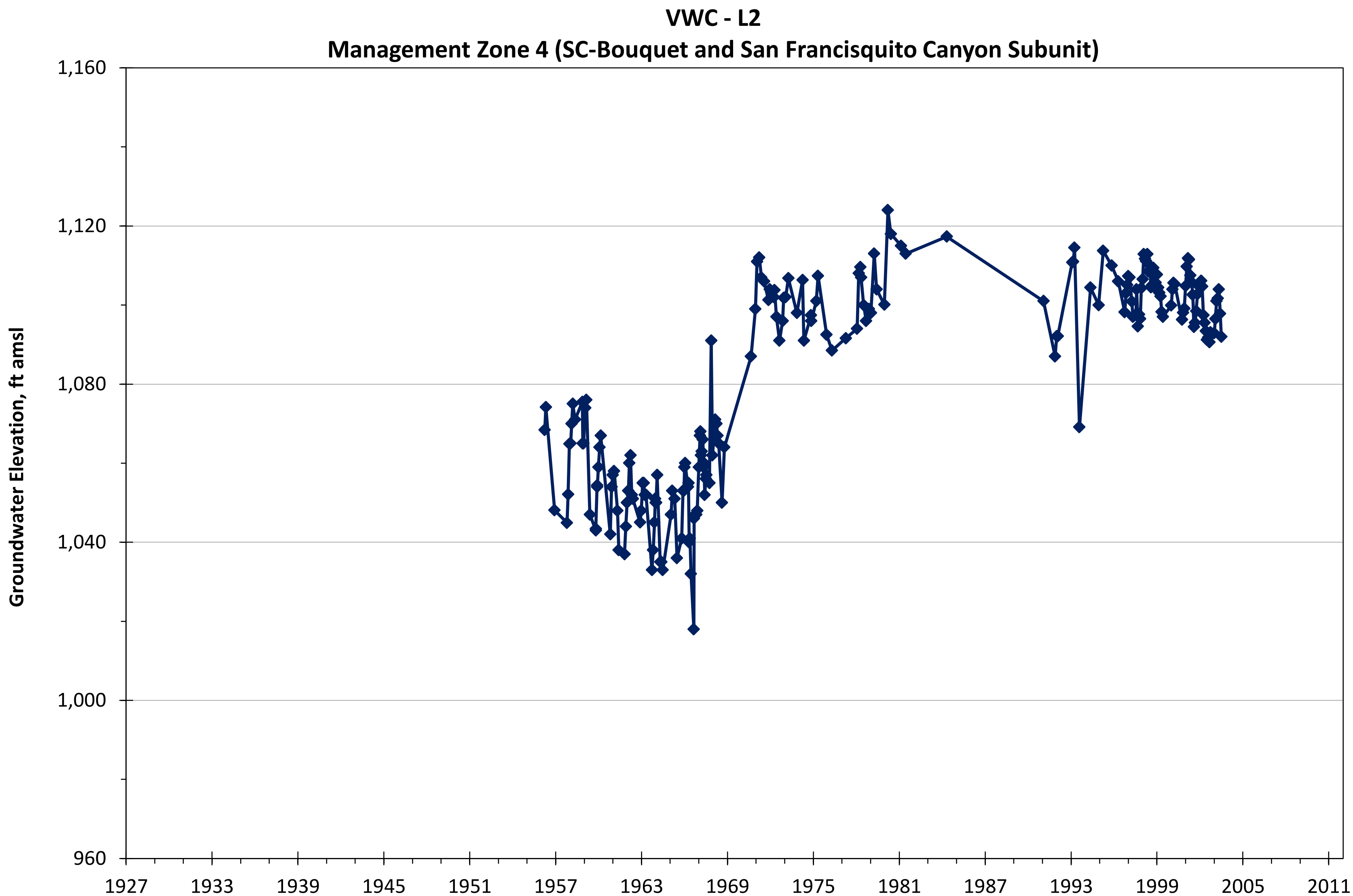
VWC - L2
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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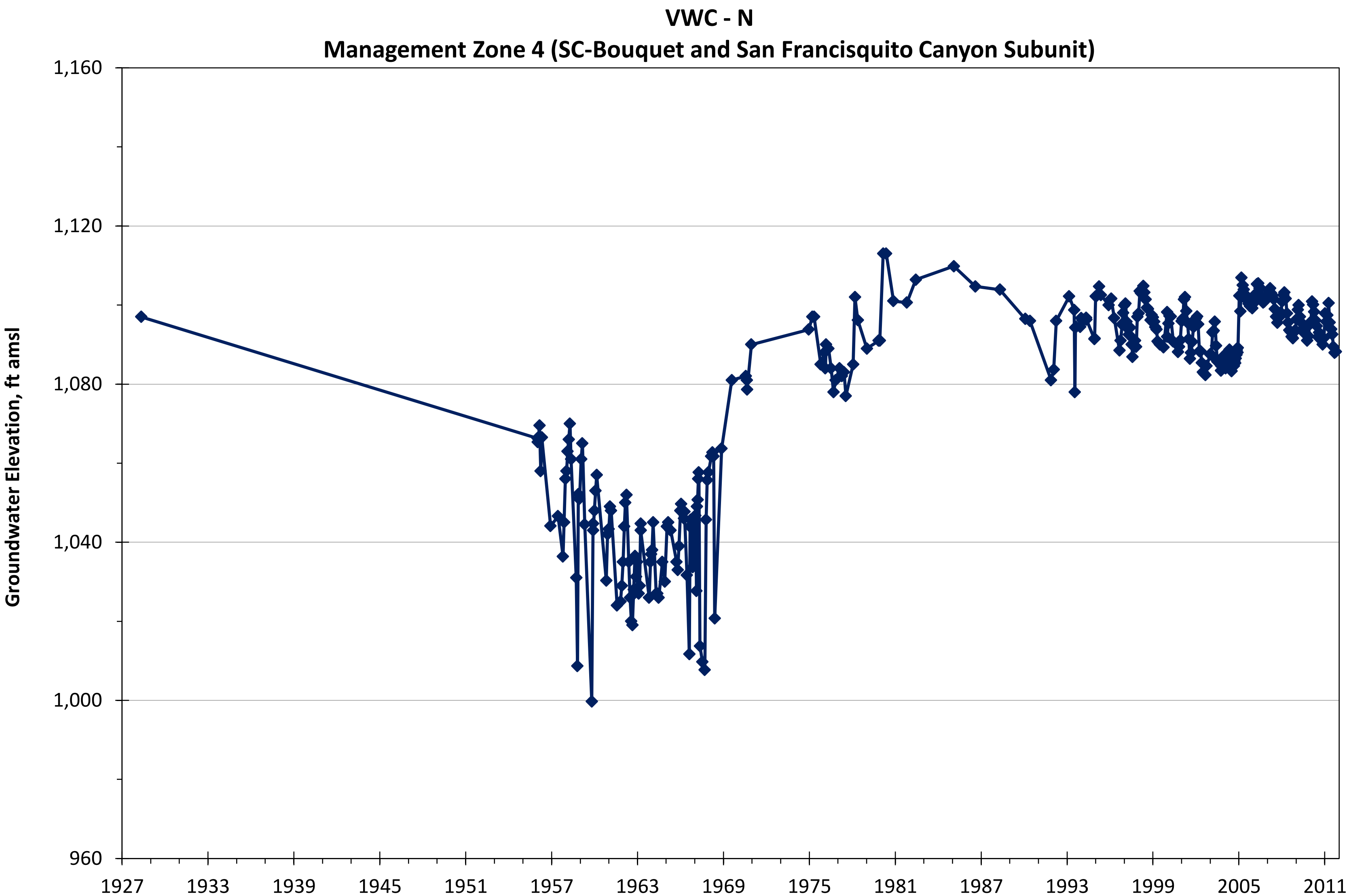
VWC - N
Management Zone 4 (SC-Bouquet and San Francisquito Canyon Subunit)
Groundwater Elevation, ft amsl
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1,080
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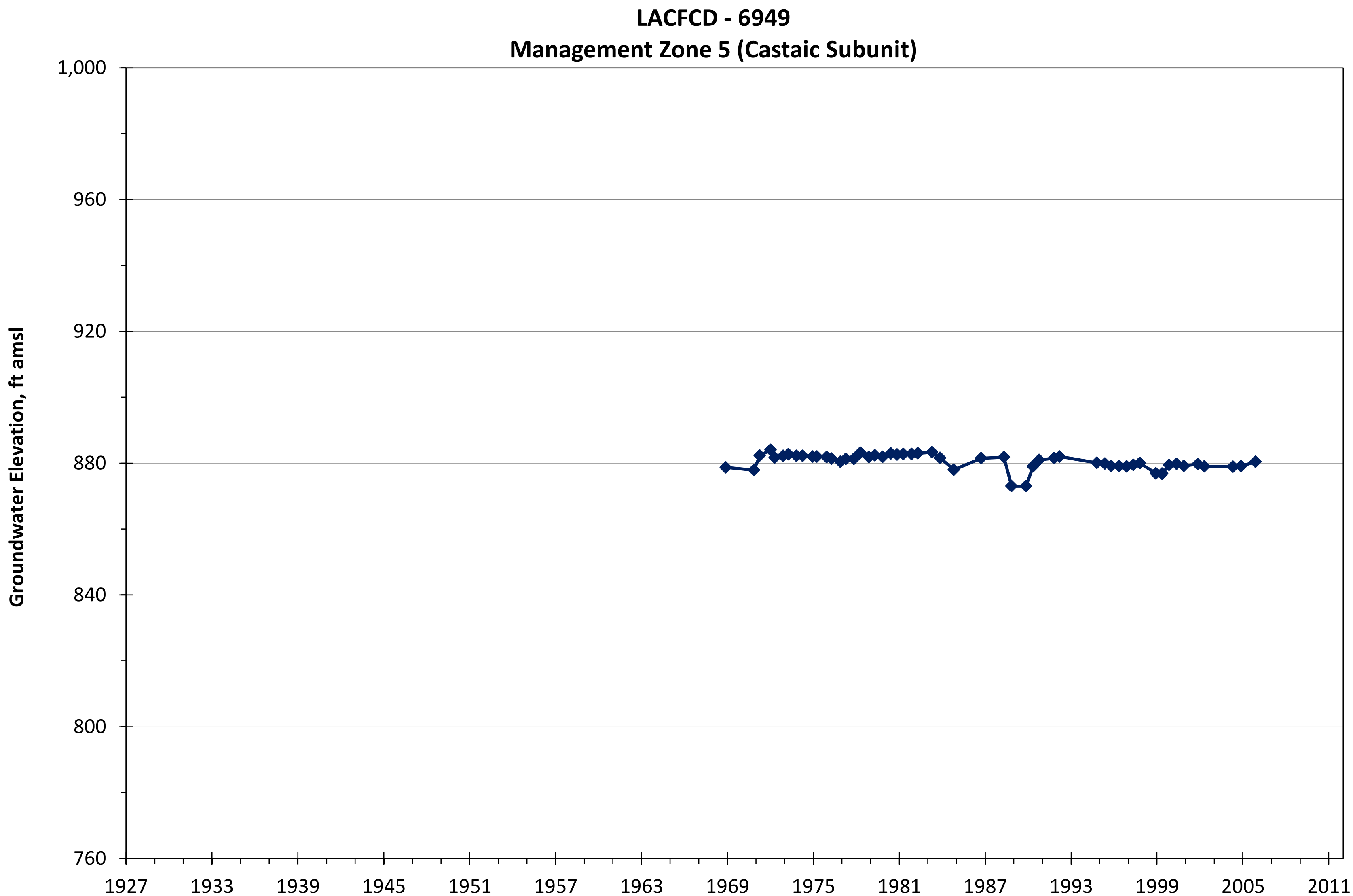
LACFCD - 6949
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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920
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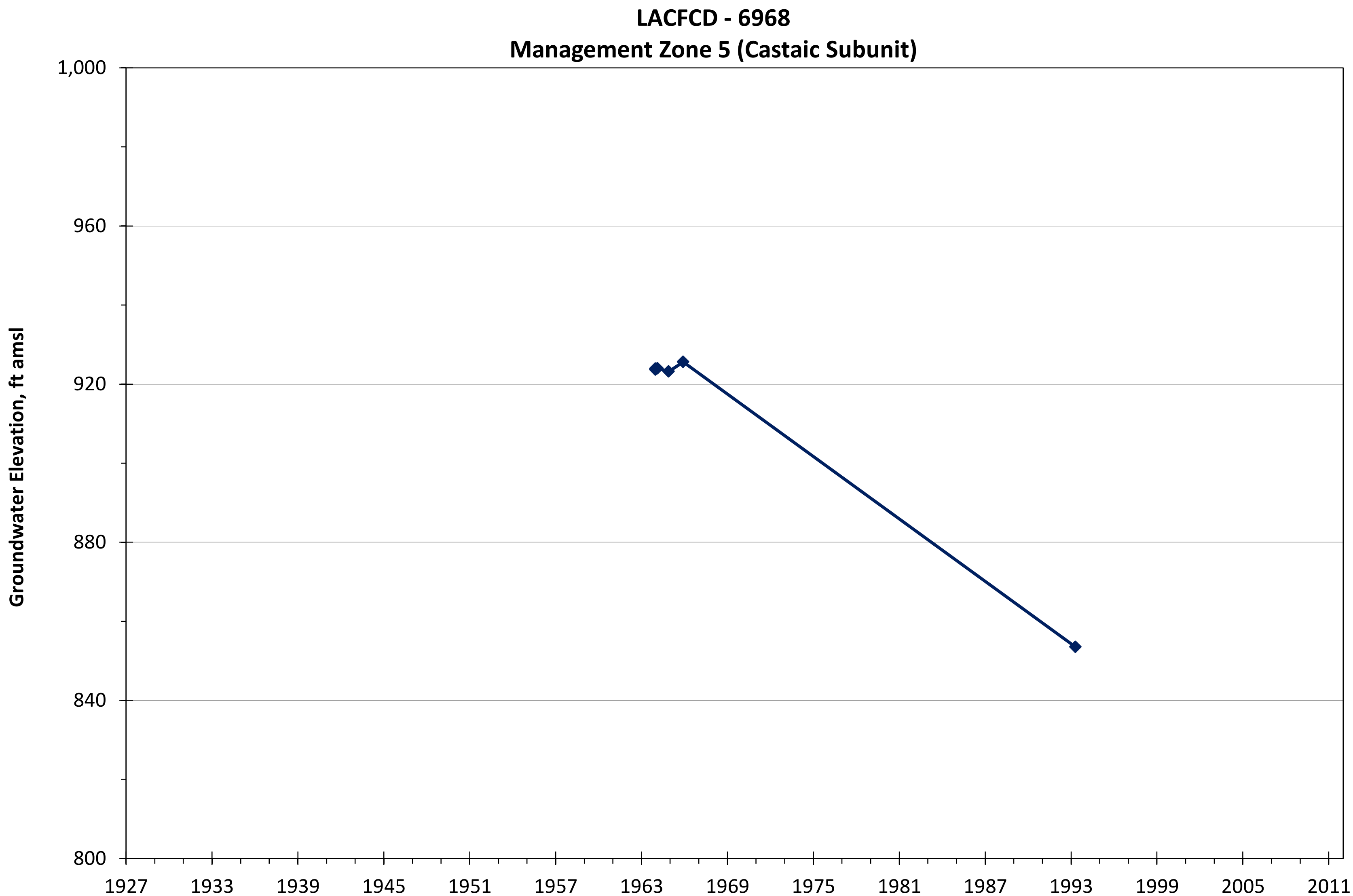
LACFCD - 6968
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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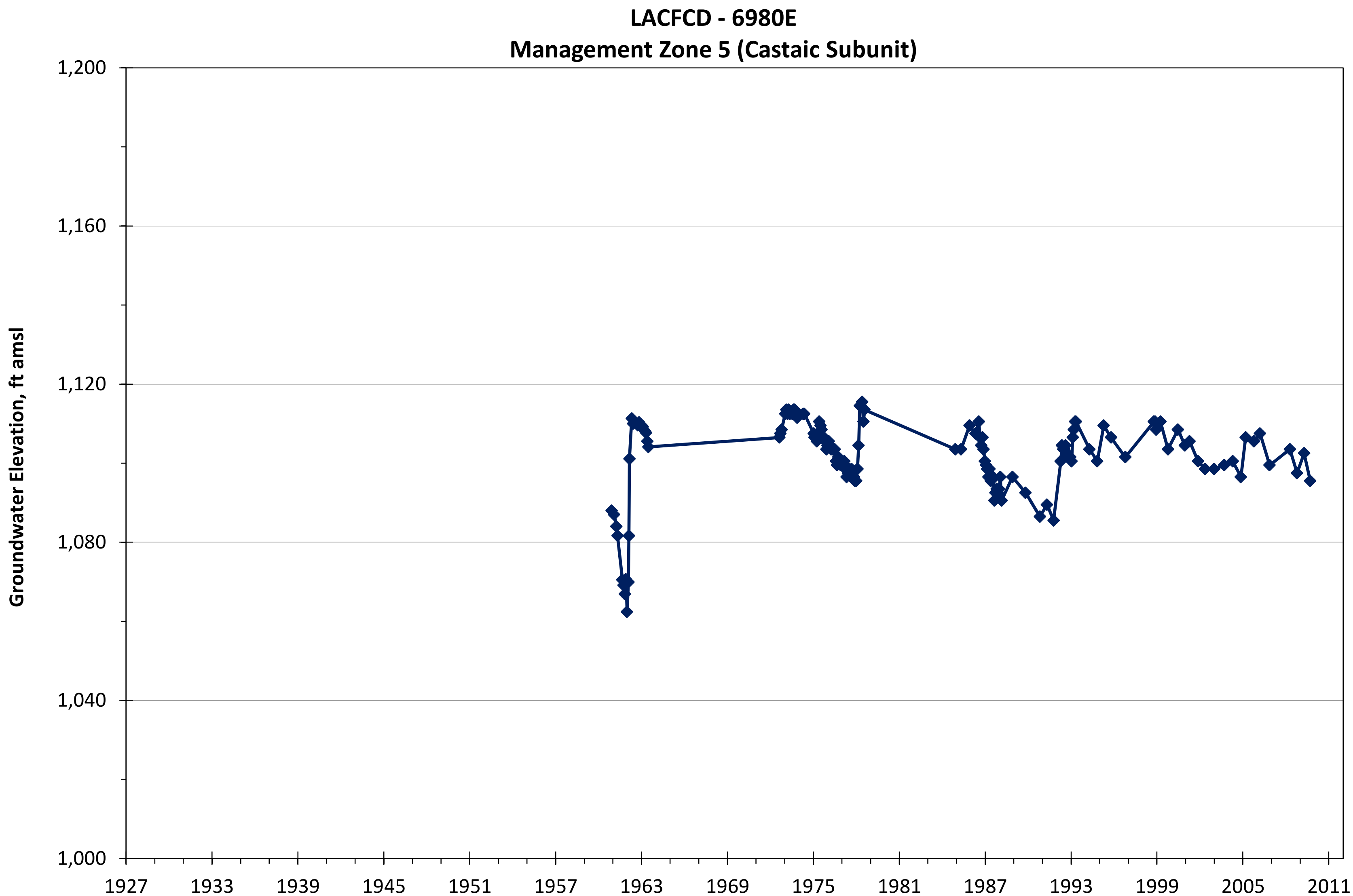
LACFCD - 6980E
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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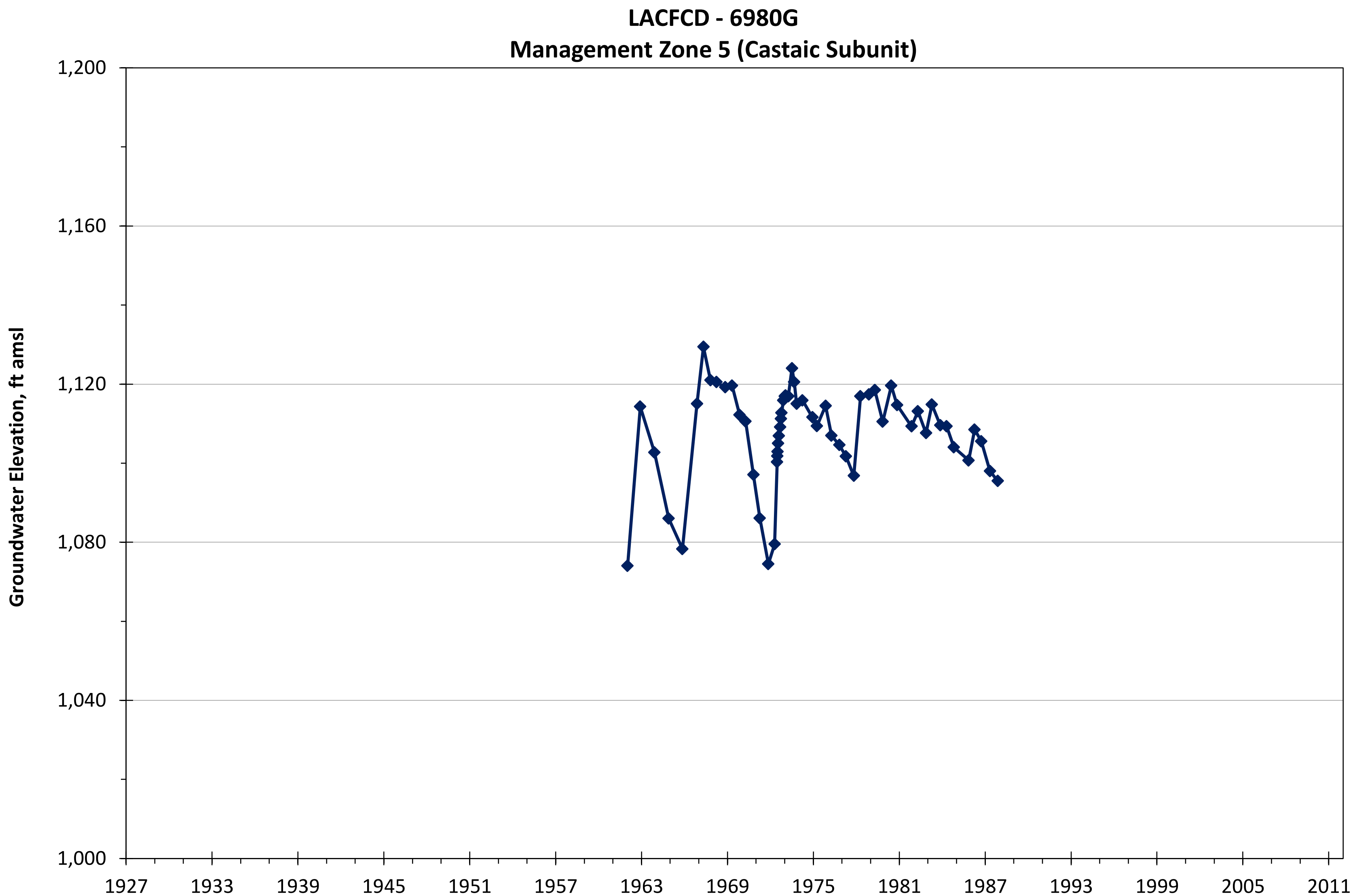
LACFCD - 6980G
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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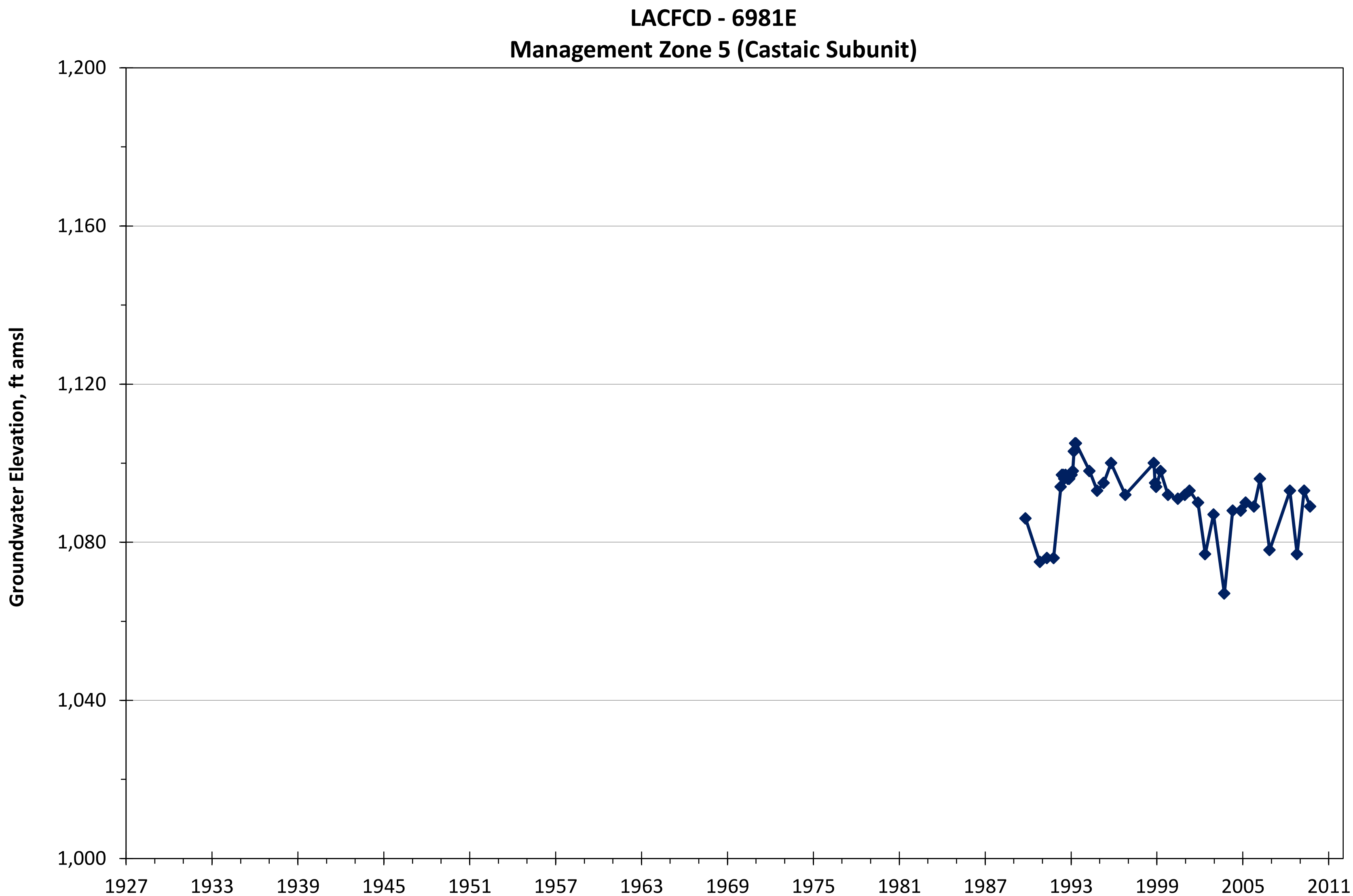
LACFCD - 6981E
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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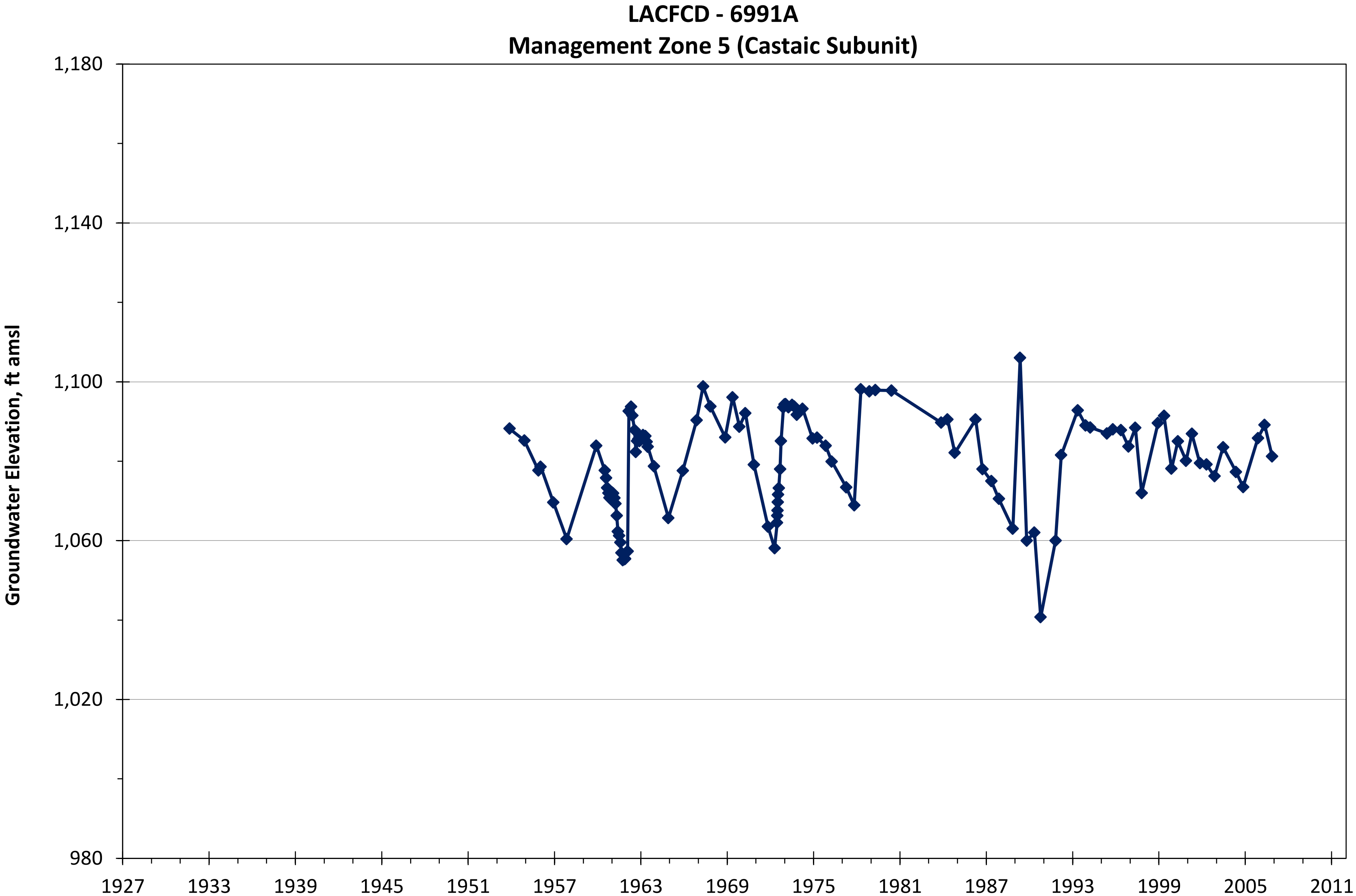
LACFCD - 6991A
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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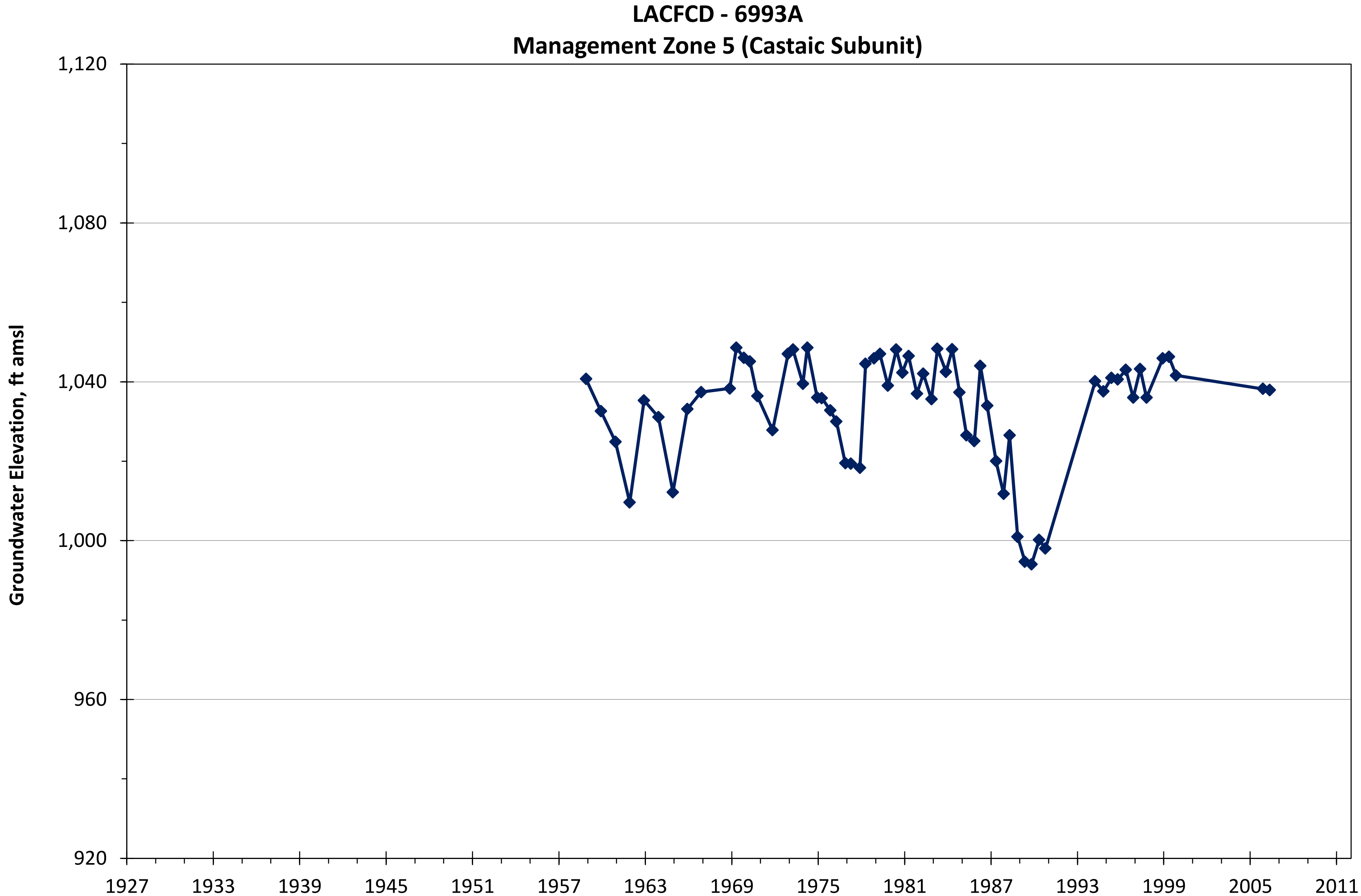
LACFCD - 6993A
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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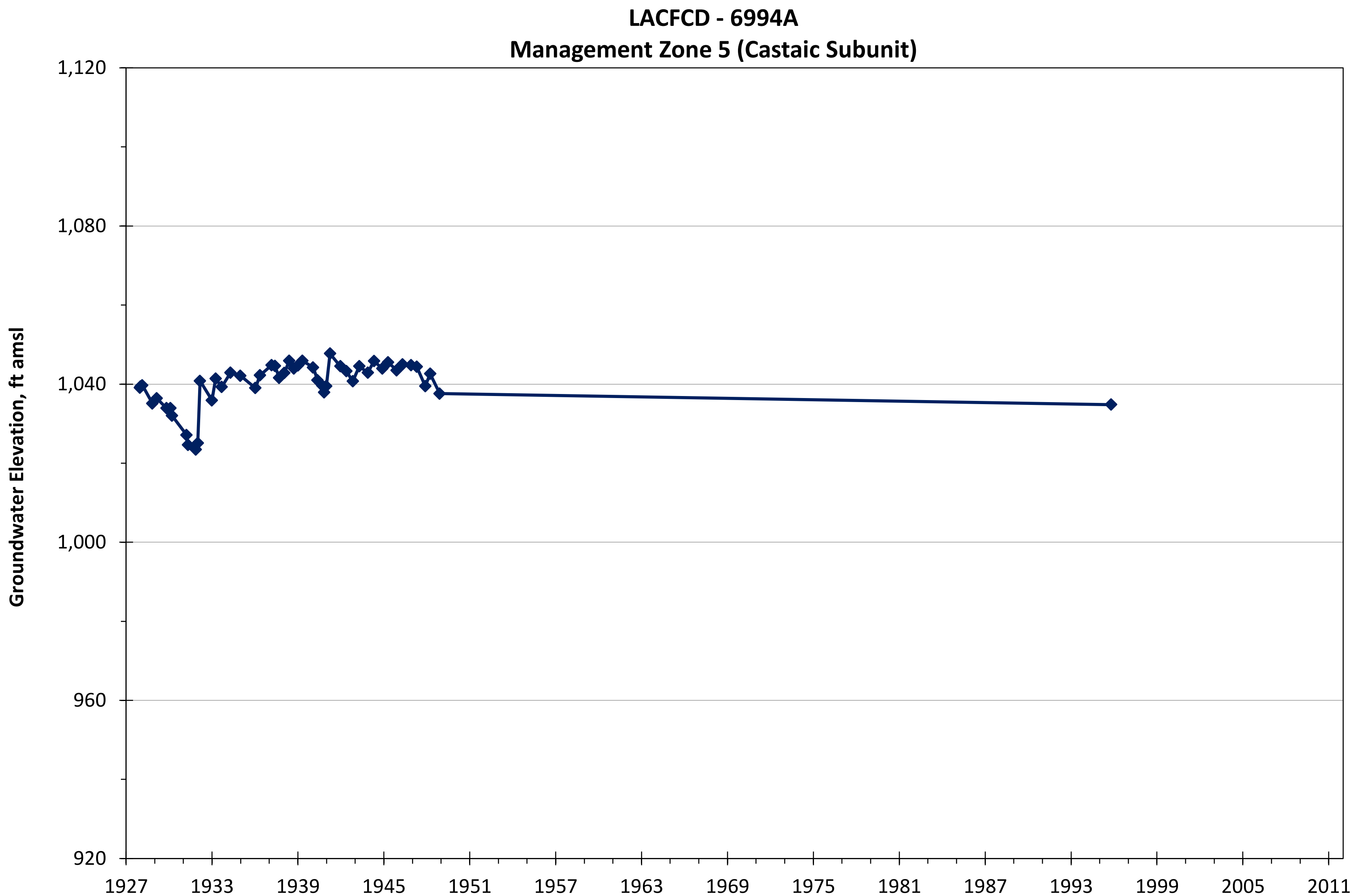
LACFCD - 6994A
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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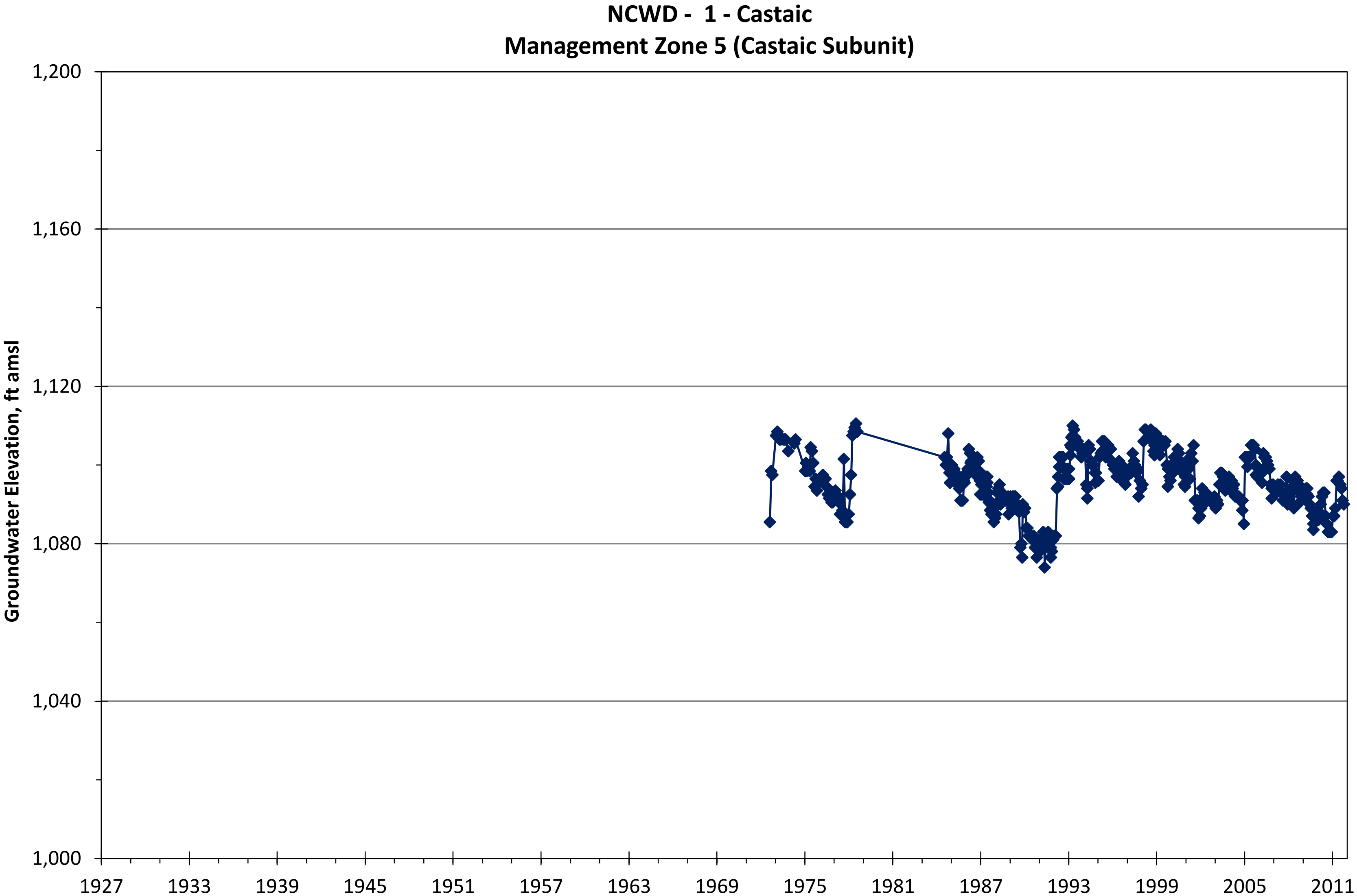
NCWD - 1 - Castaic
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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1,080
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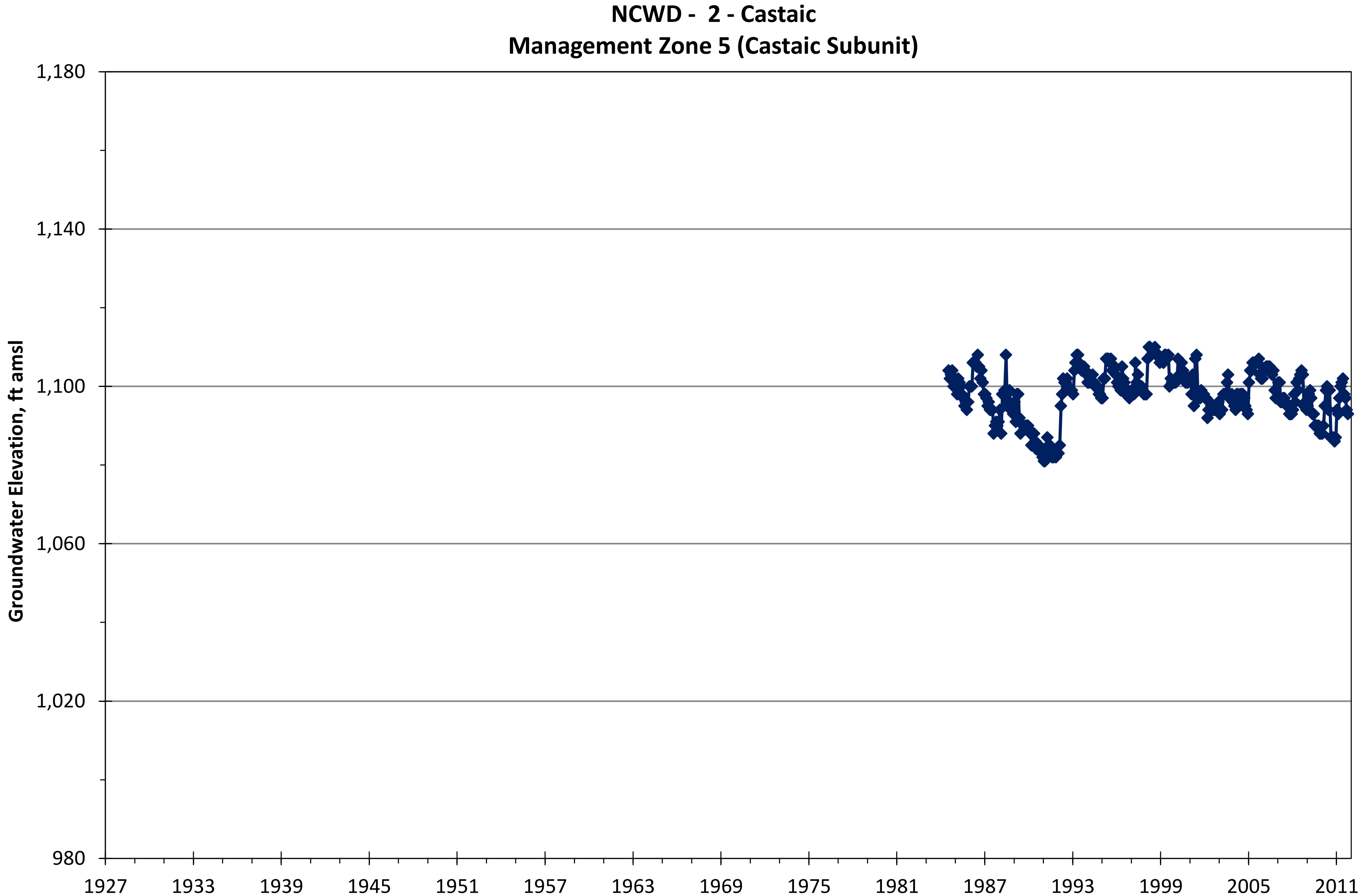
NCWD - 2 - Castaic
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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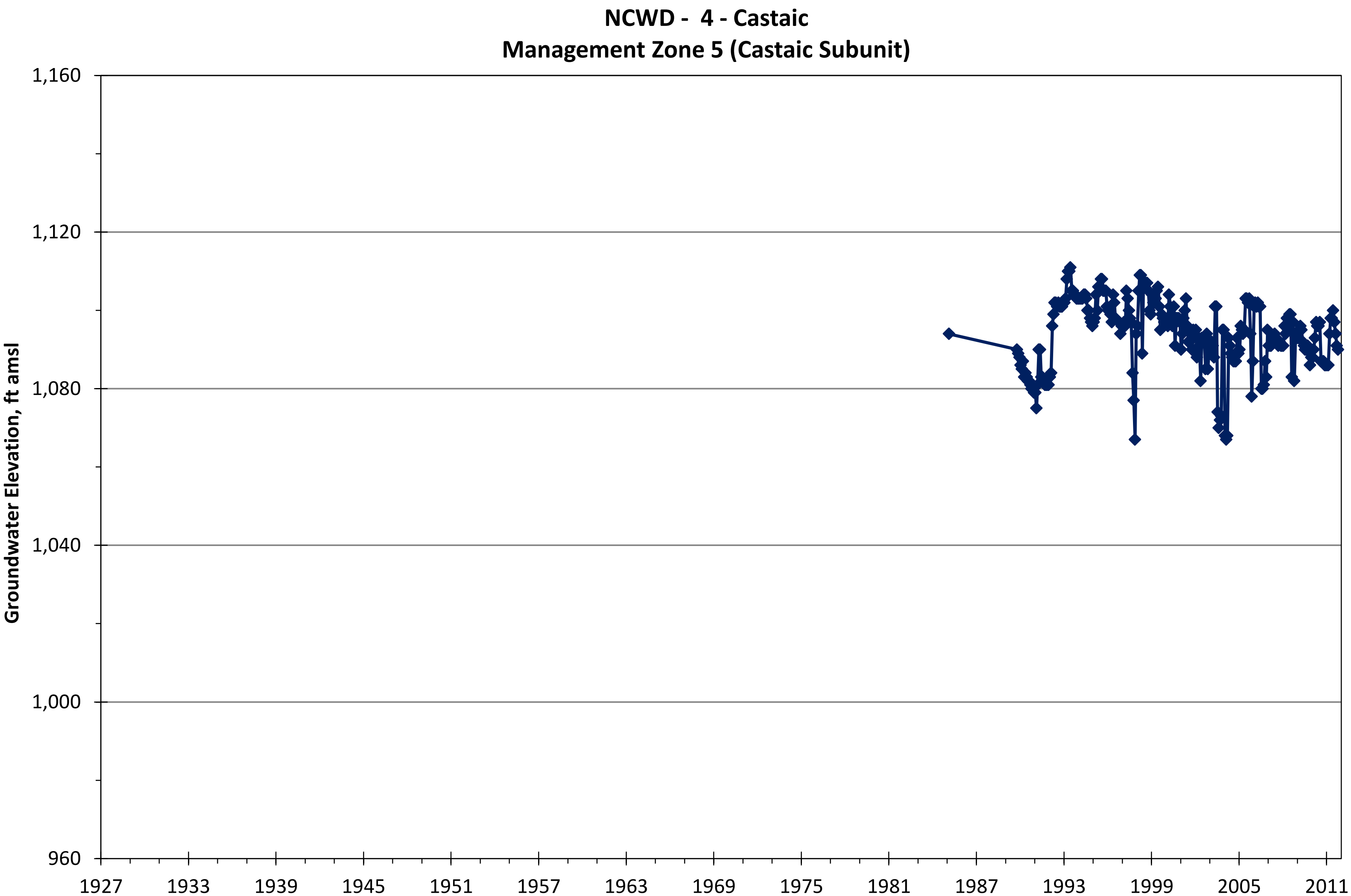
NCWD - 4 - Castaic
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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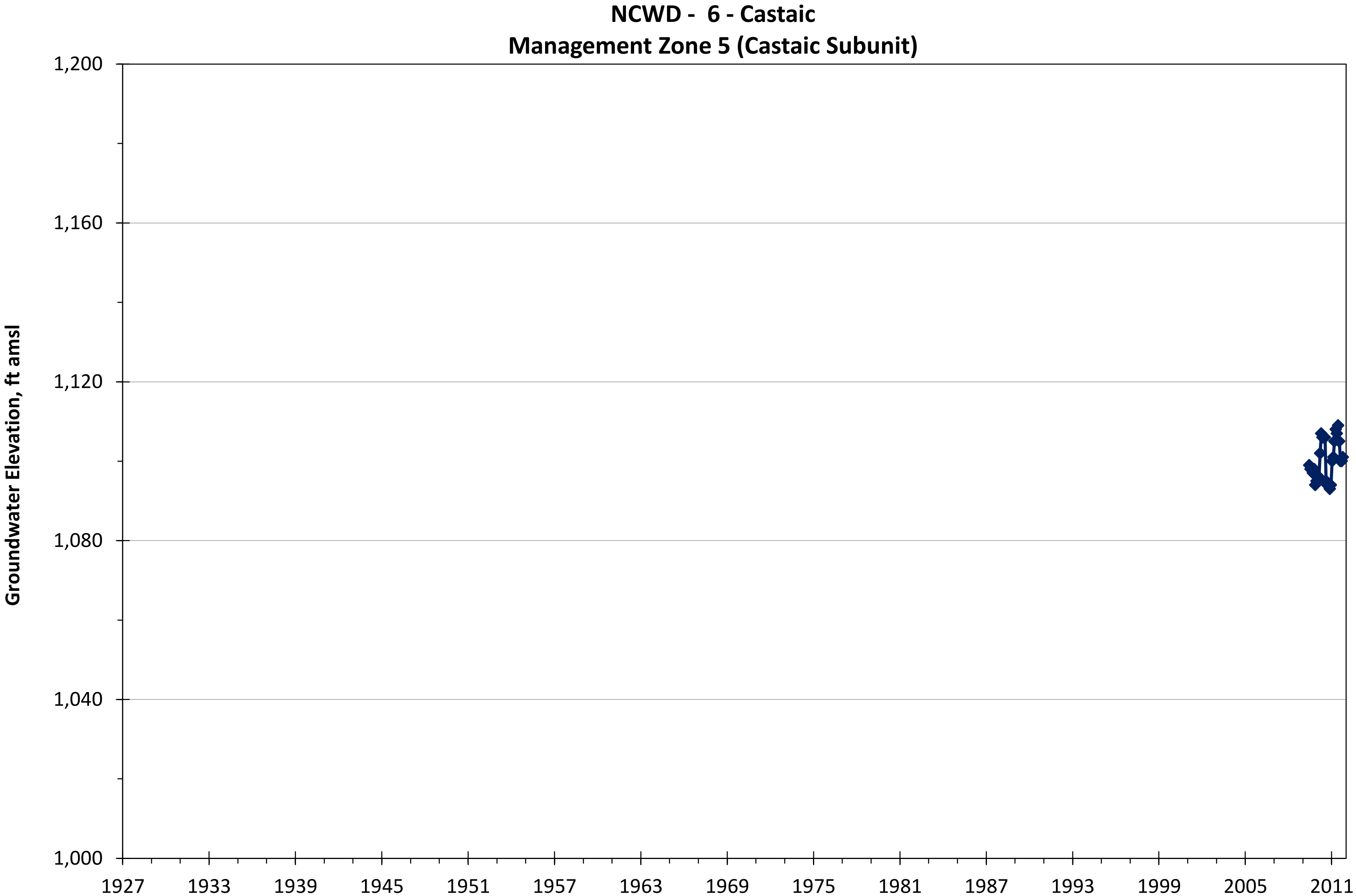
NCWD - 6 - Castaic
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
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1,080
1,040
1,000
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1939
1945
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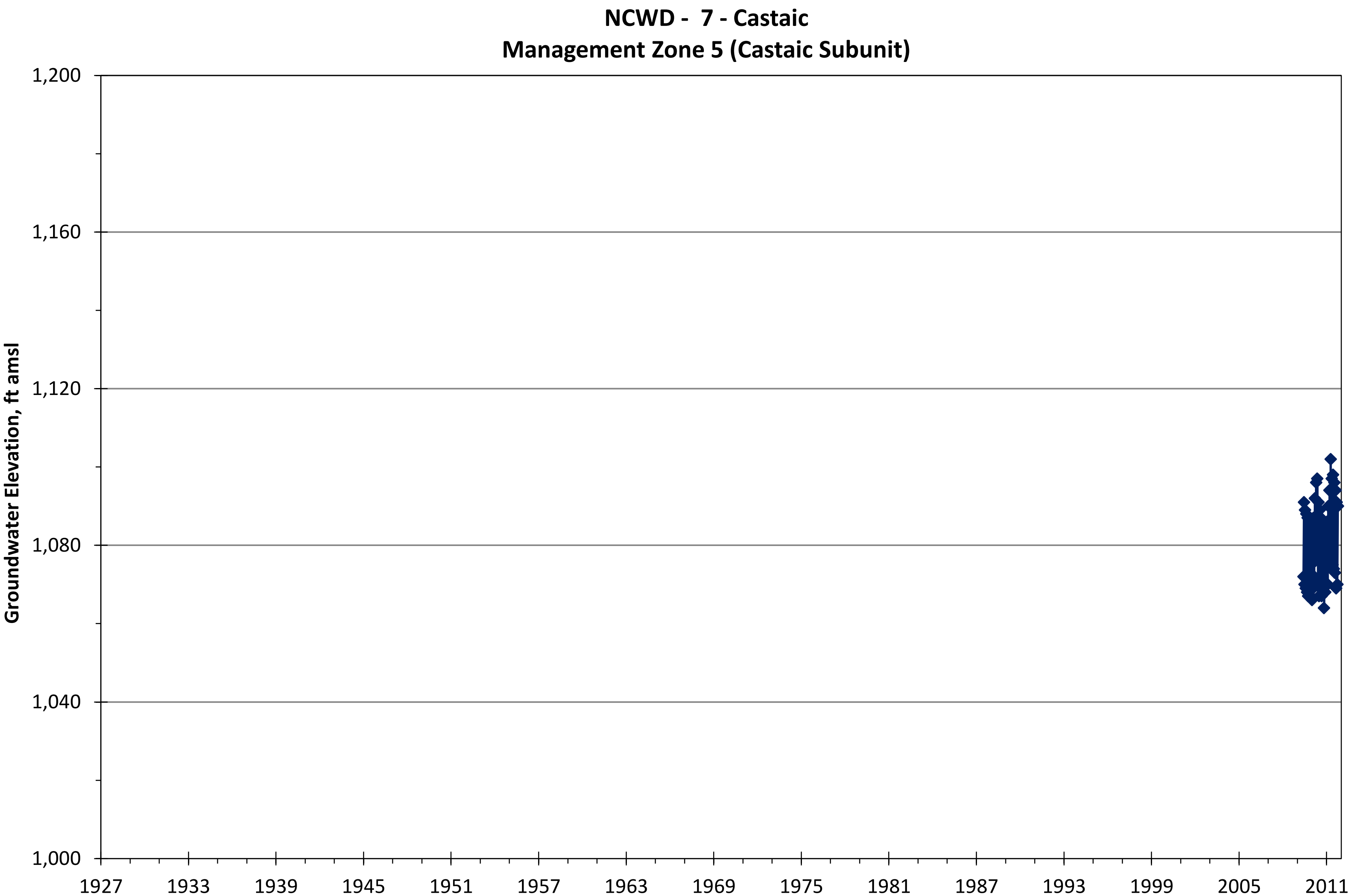
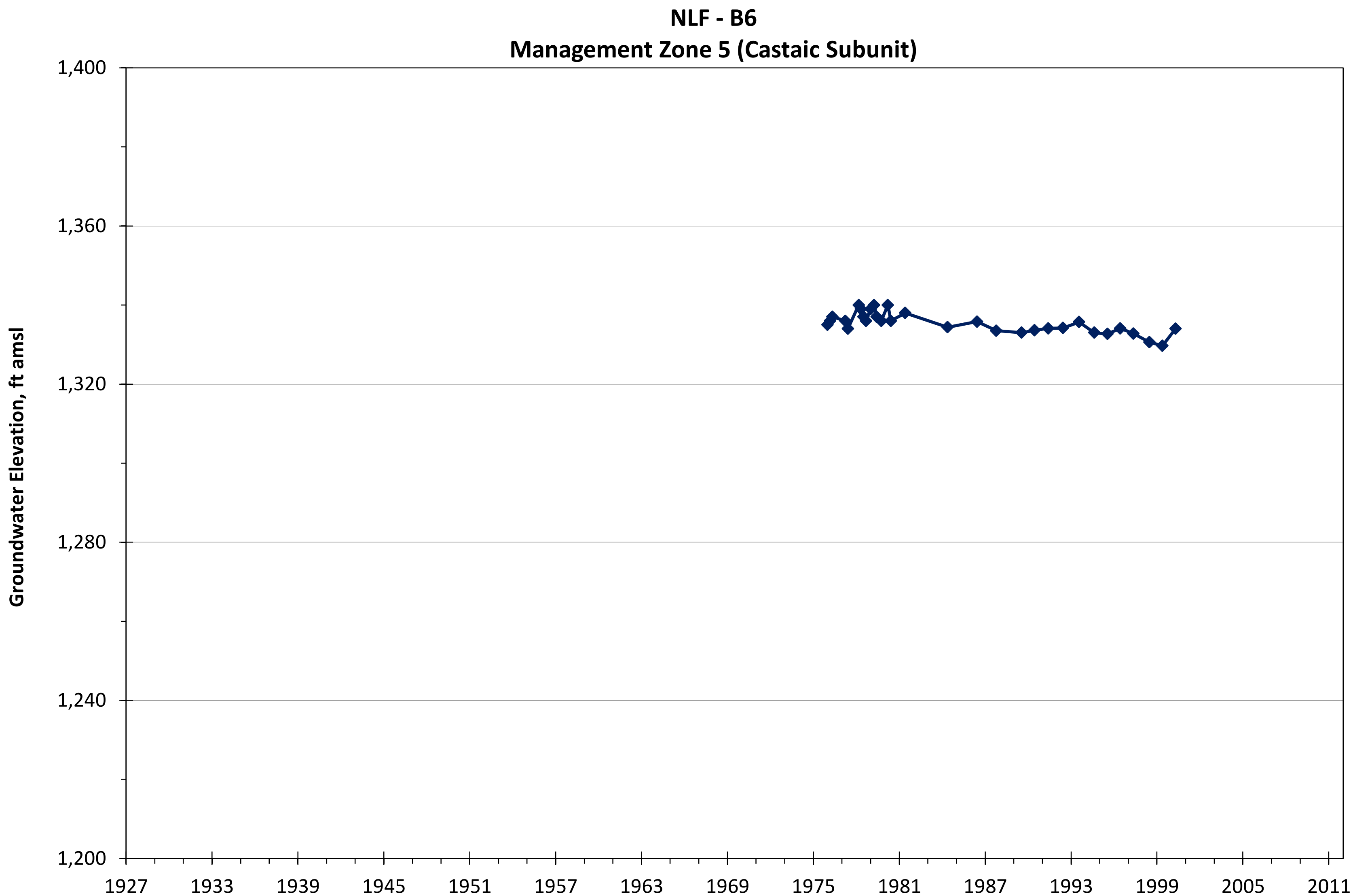
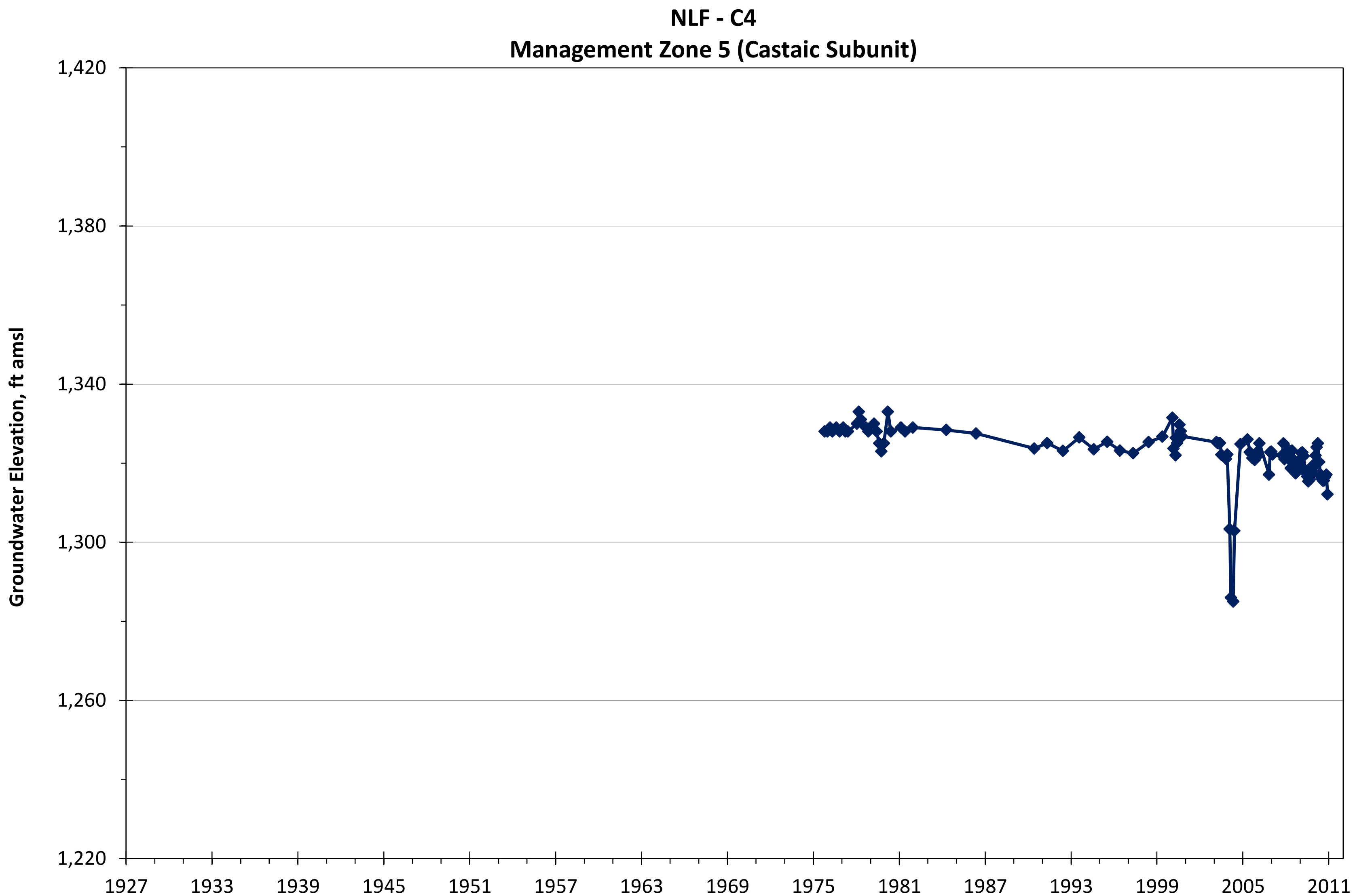
2005
2011

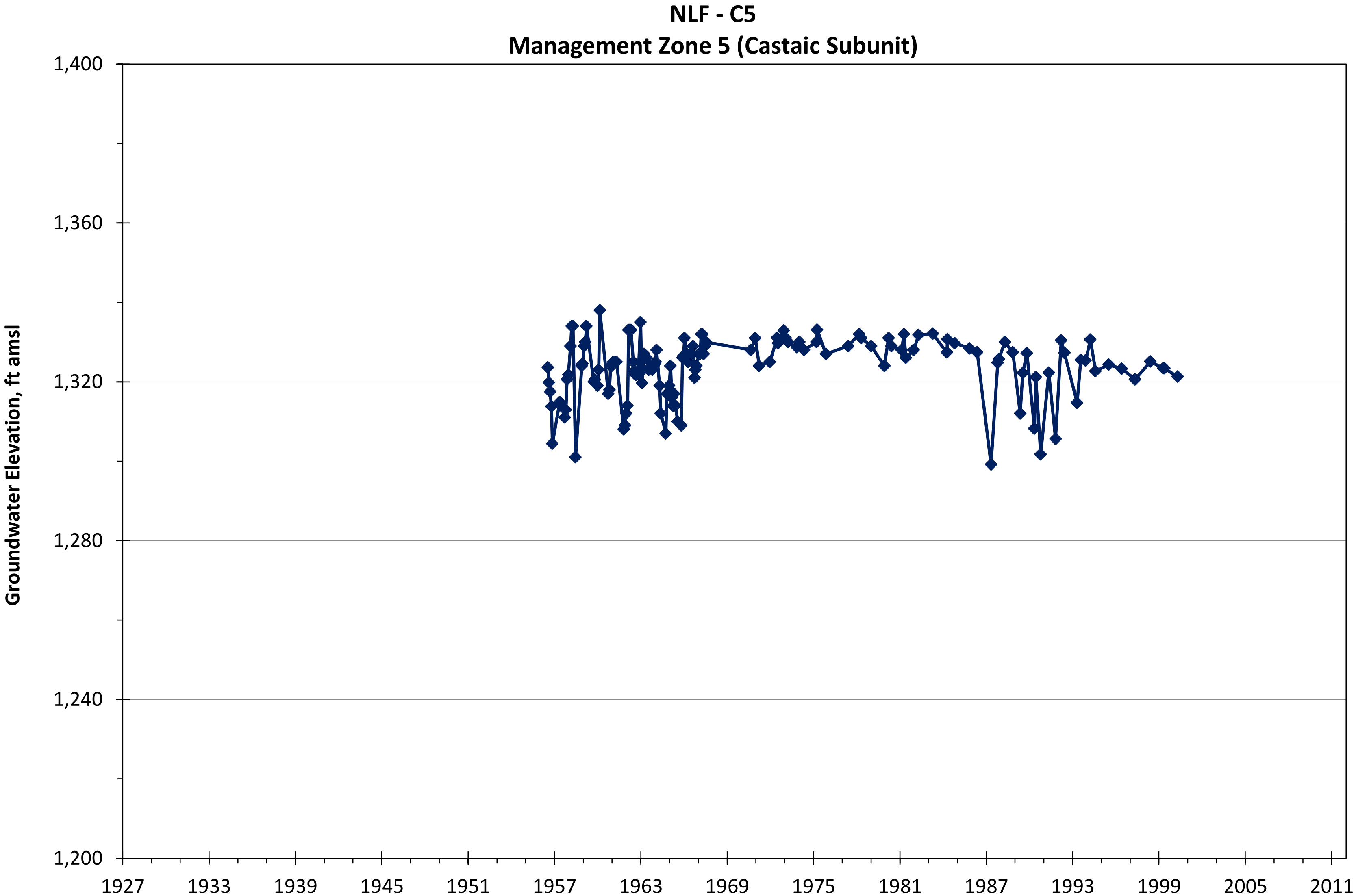

NCWD - 7 - Castaic
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
1,200
1,160
1,120
1,080
1,040
1,000
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

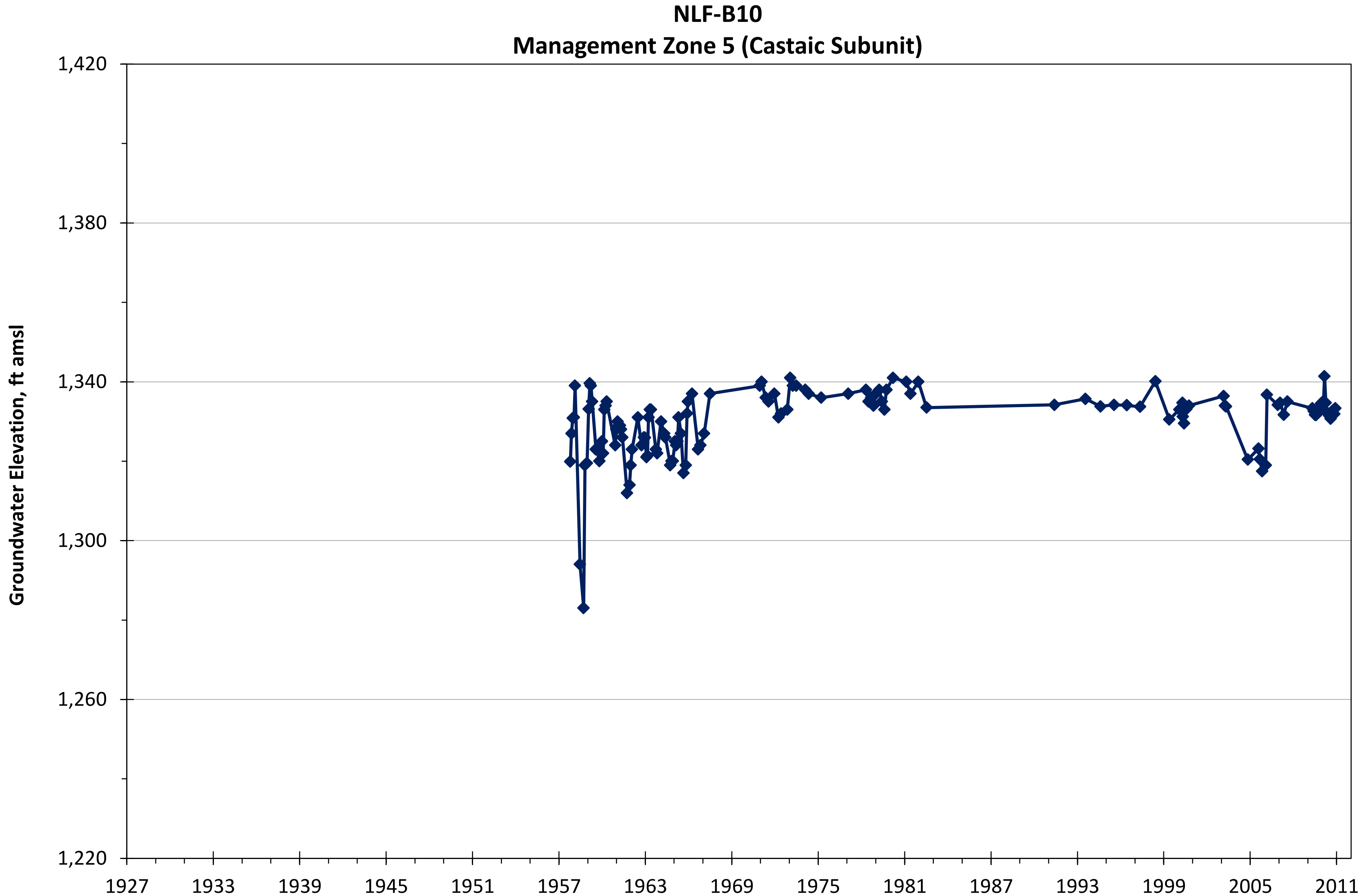

NLF - B6
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
1,400
1,360
1,320
1,280
1,240
1,200
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

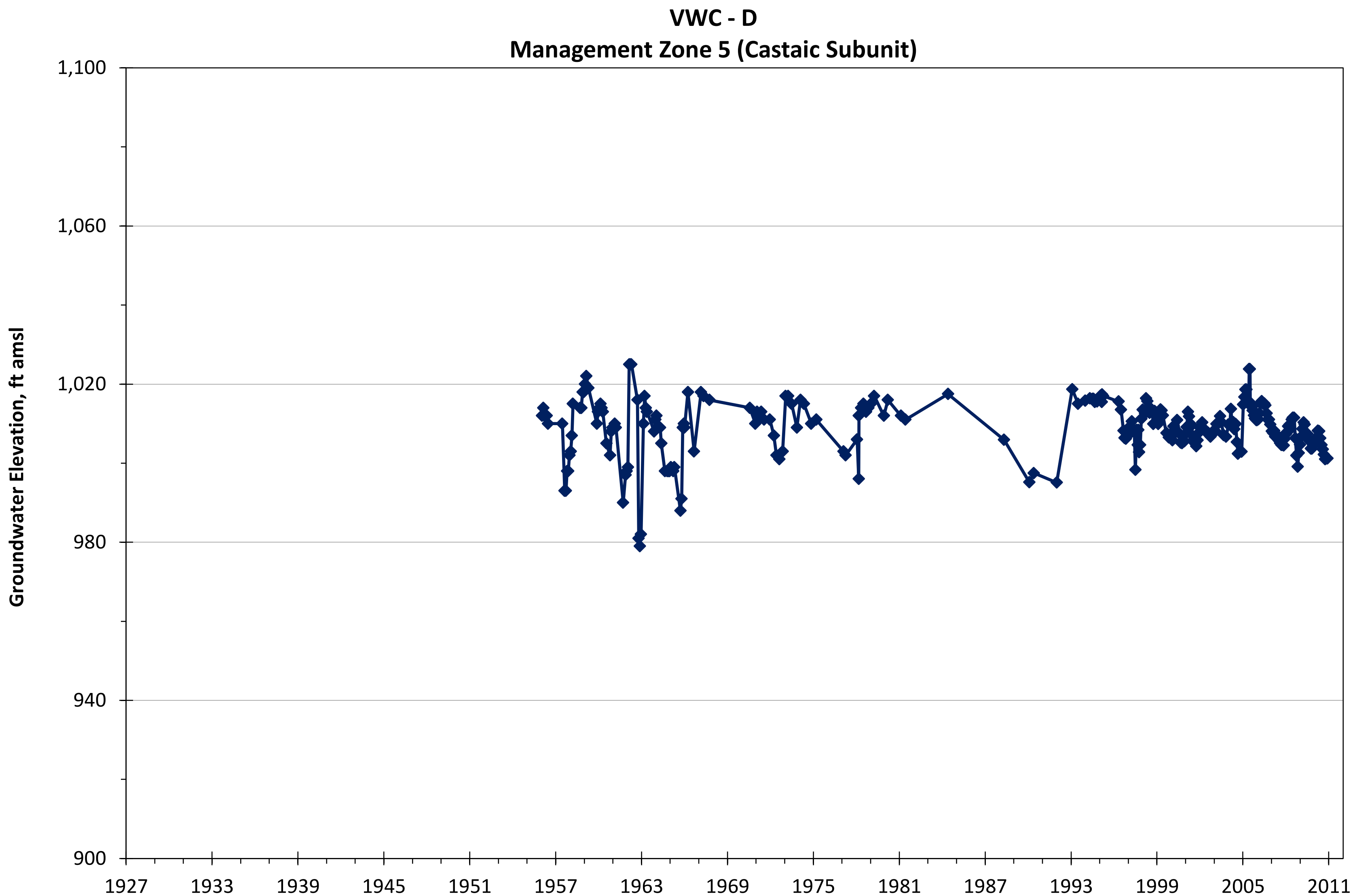
Appendix A


NLF - C4
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
1,420
1,380
1,340
1,300
1,260
1,220
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

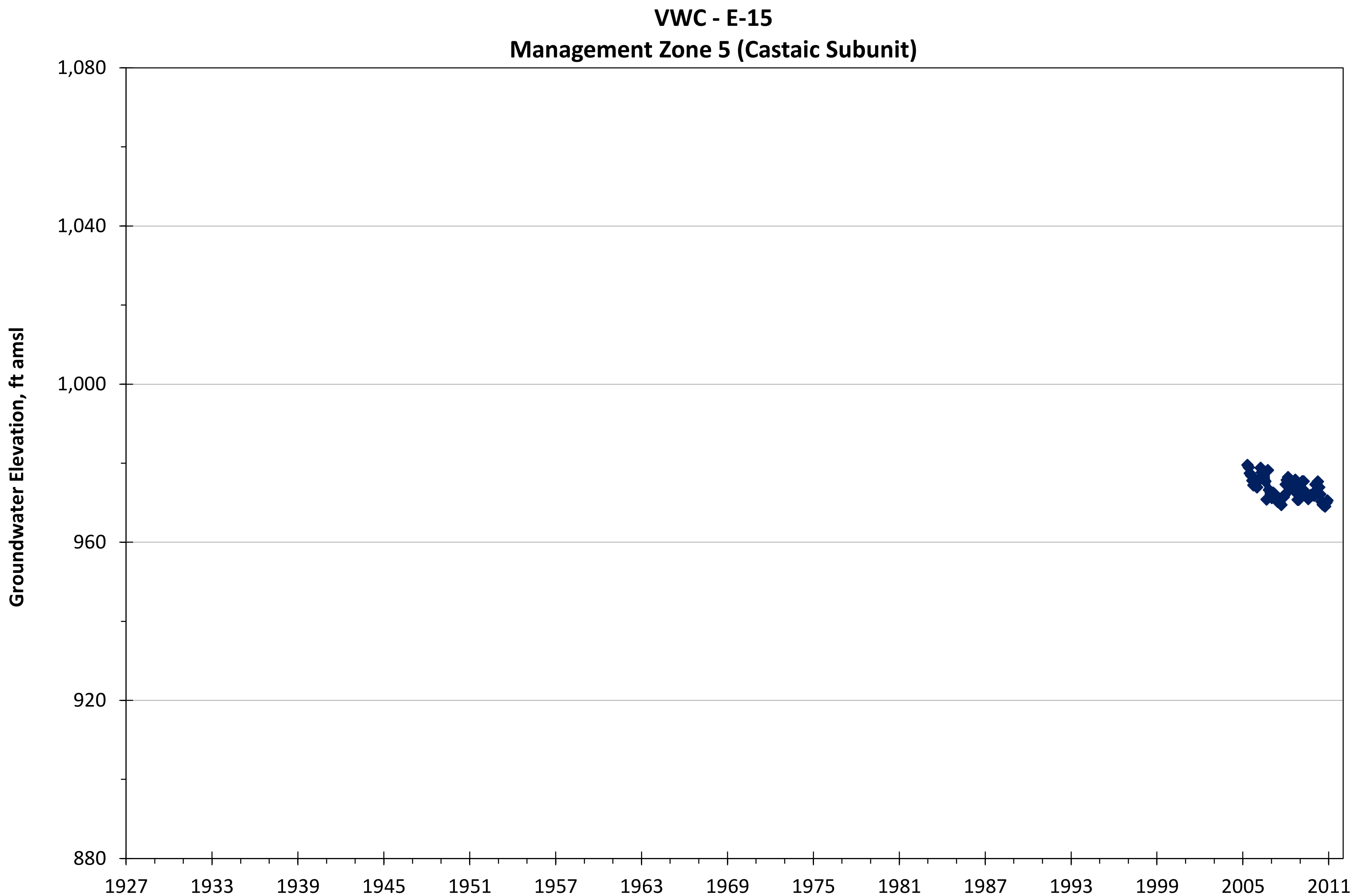
Appendix A

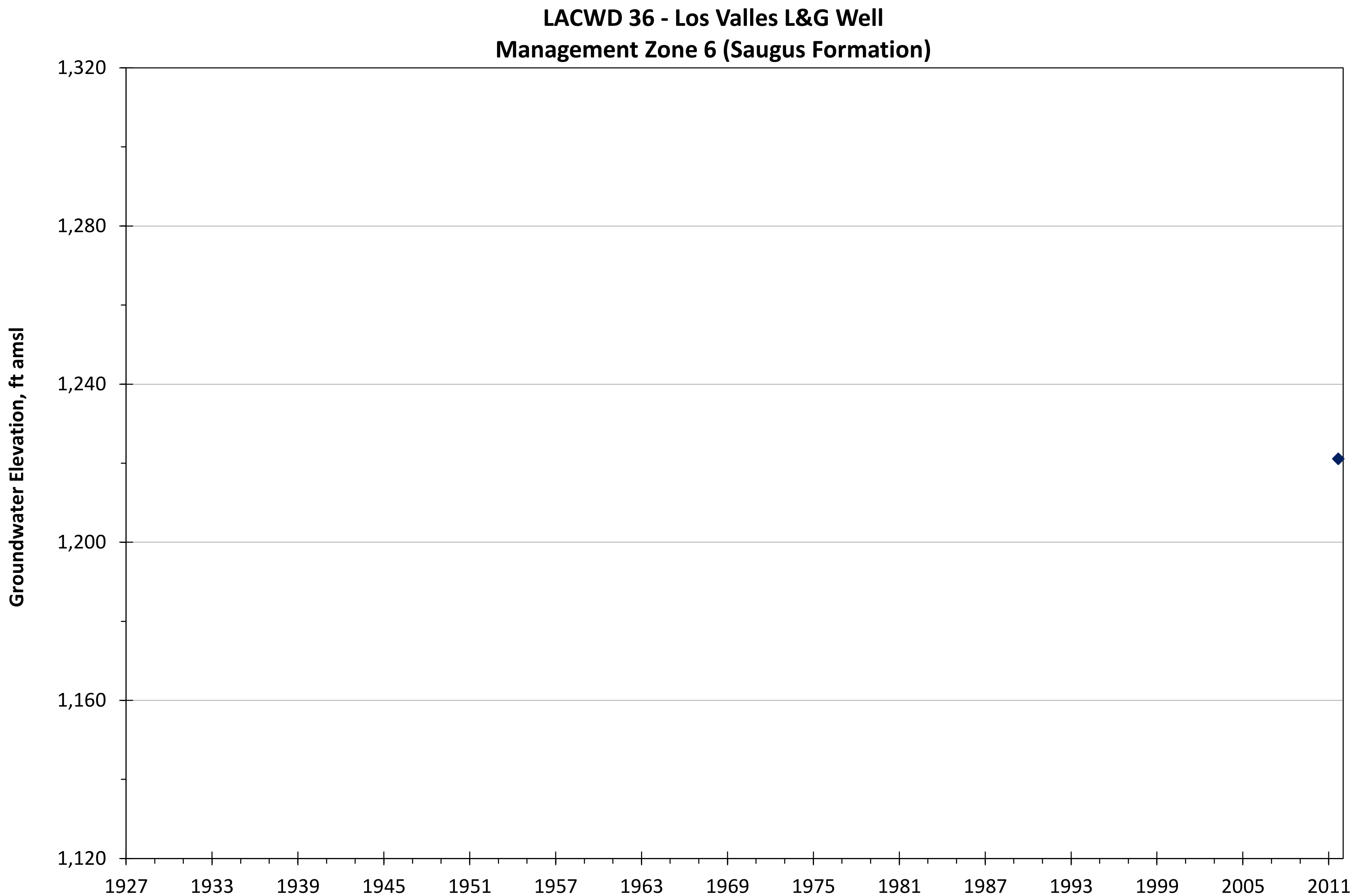

NLF - C5
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
1,400
1,360
1,320
1,280
1,240
1,200
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011


NLF-B10
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
1,420
1,380
1,340
1,300
1,260
1,220
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

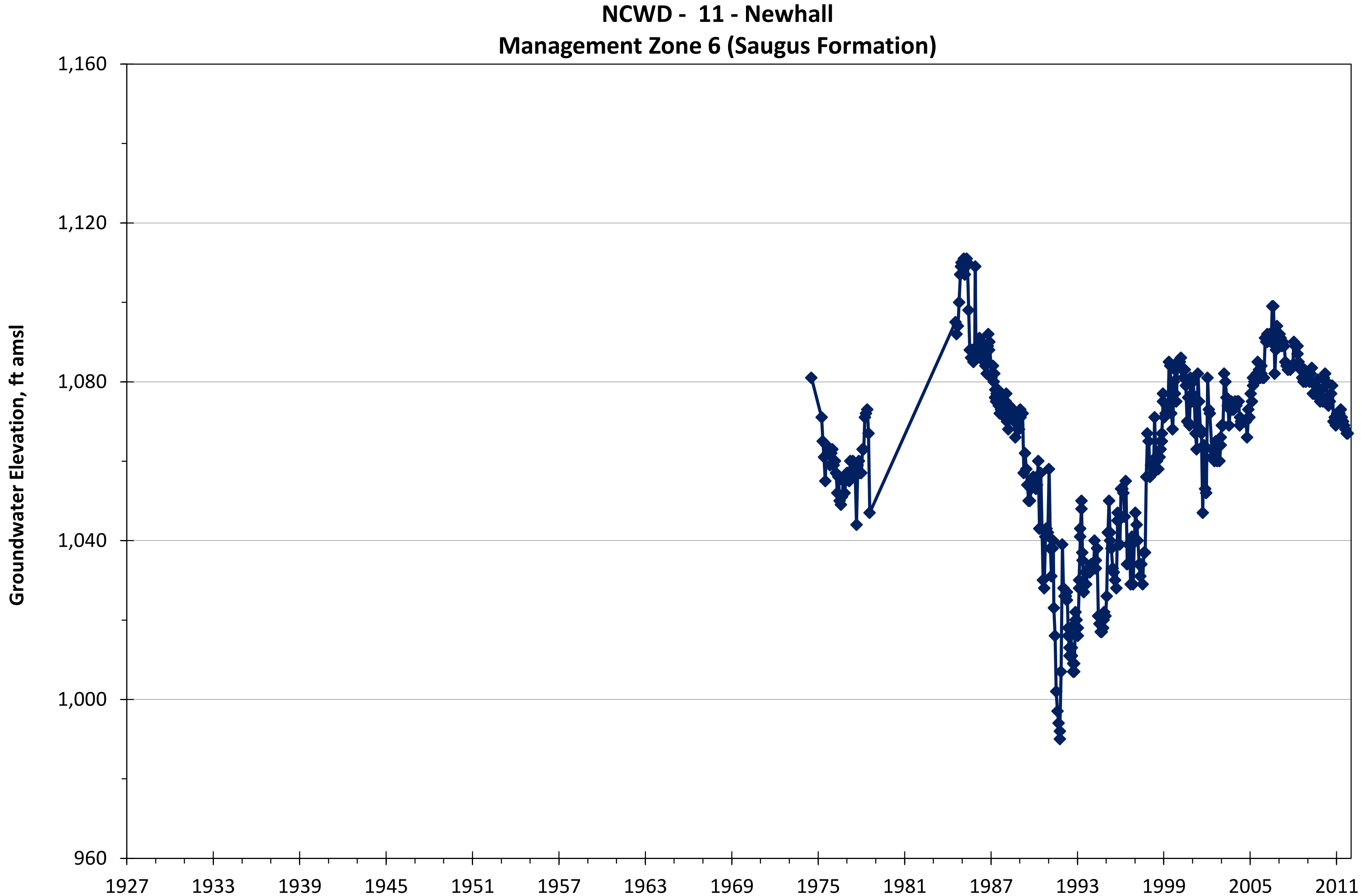

VWC - D
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
1,100
1,060
1,020
980
940
900
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

Appendix A

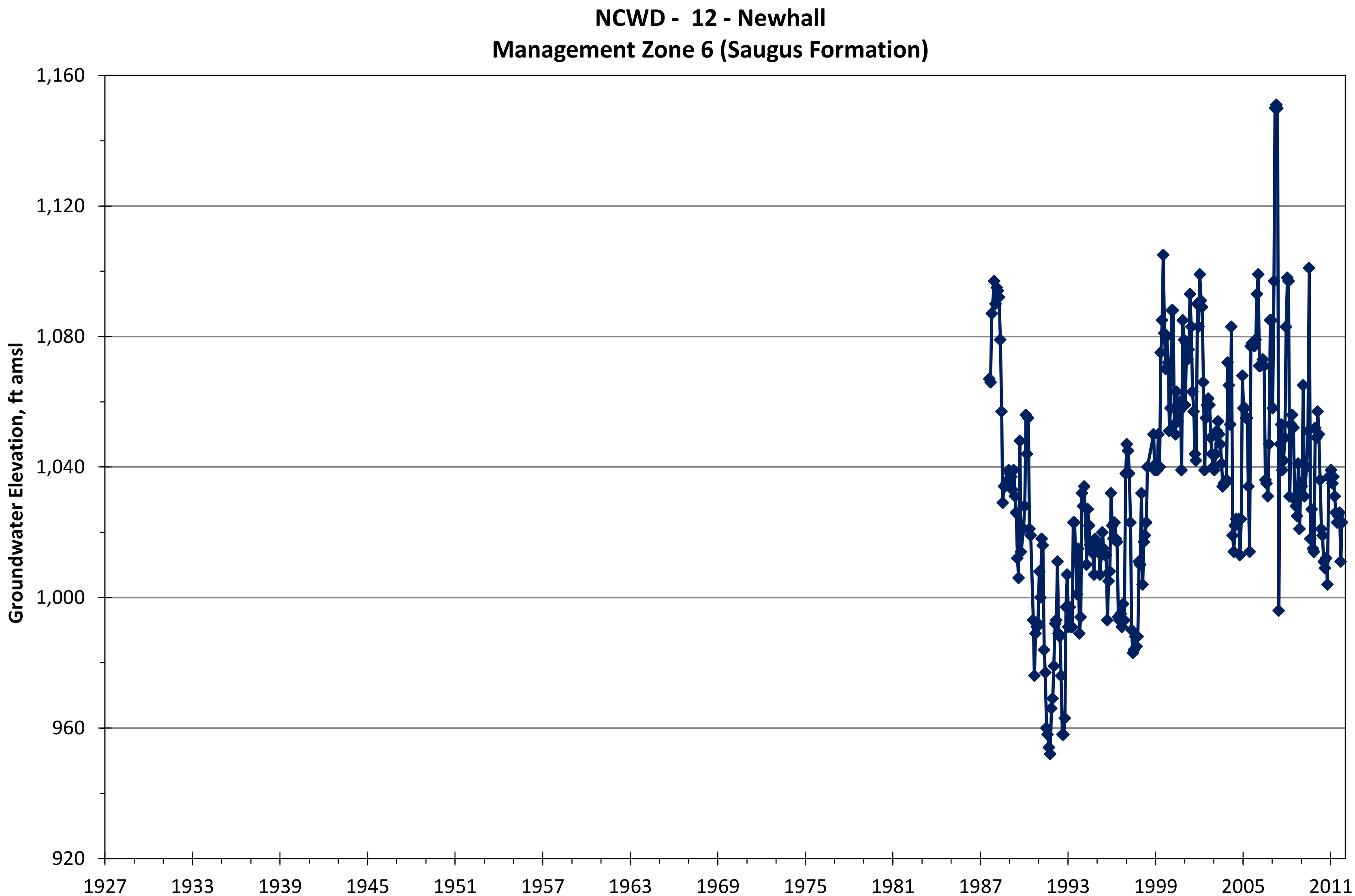

VWC - E-15
Management Zone 5 (Castaic Subunit)
Groundwater Elevation, ft amsl
1,080
1,040
1,000
960
920
880
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011


LACWD 36 - Los Valles L&G Well
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,320
1,280
1,240
1,200
1,160
1,120
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

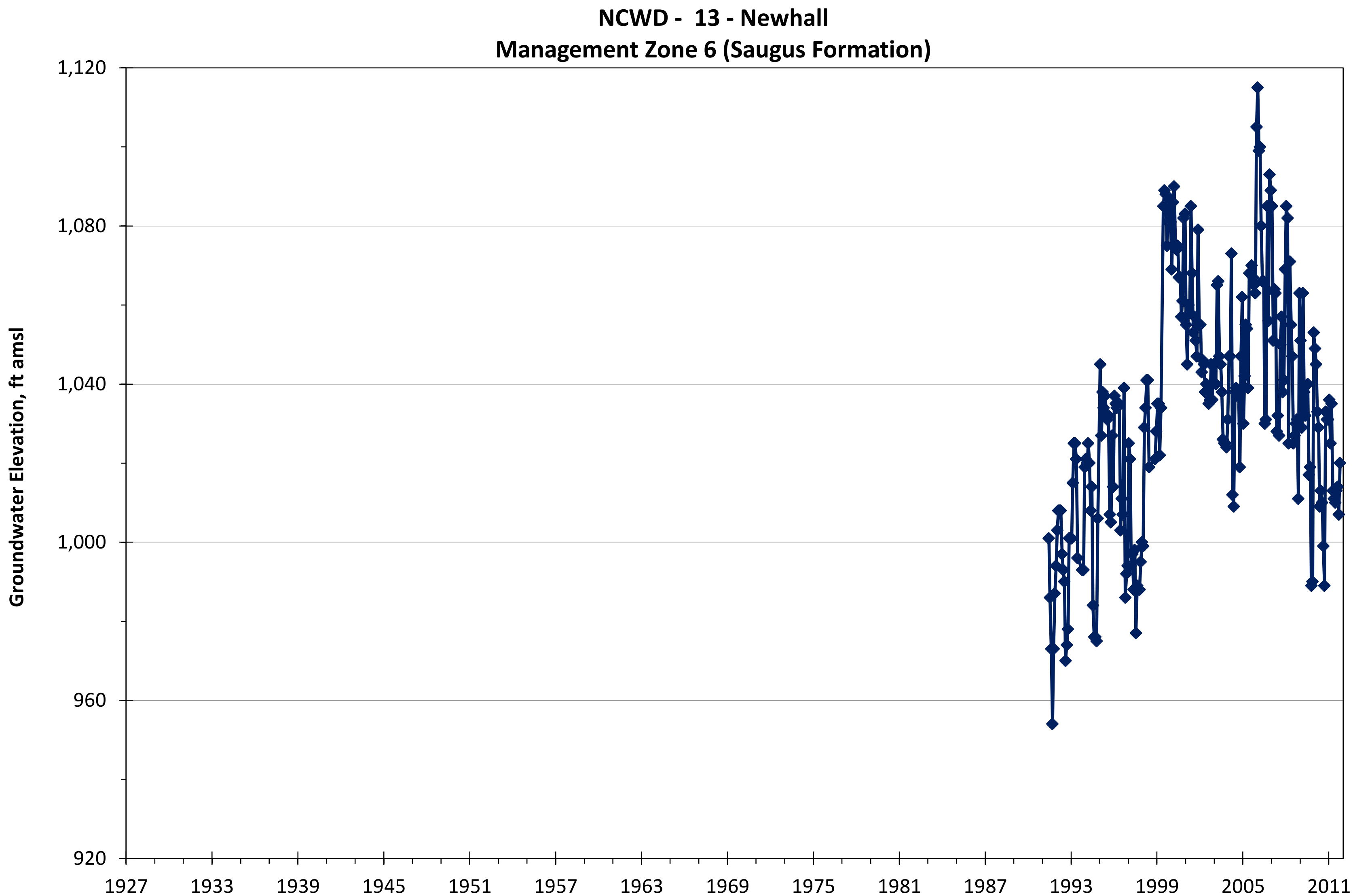
Appendix A


NCWD - 11 - Newhall
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,160
1,120
1,080
1,040
1,000
960
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

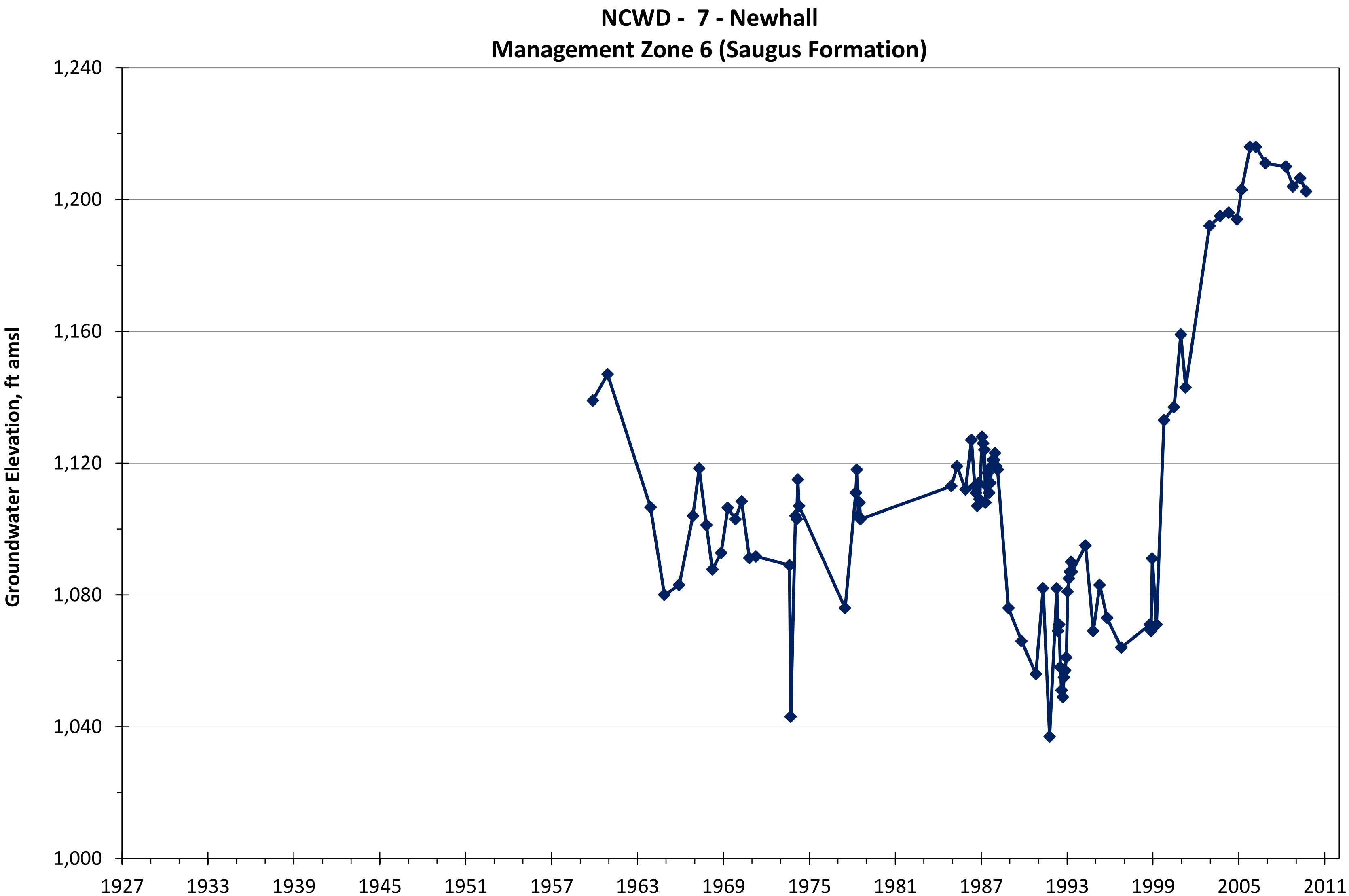
Appendix A


NCWD - 12 - Newhall
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,160
1,120
1,080
1,040
1,000
960
920
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

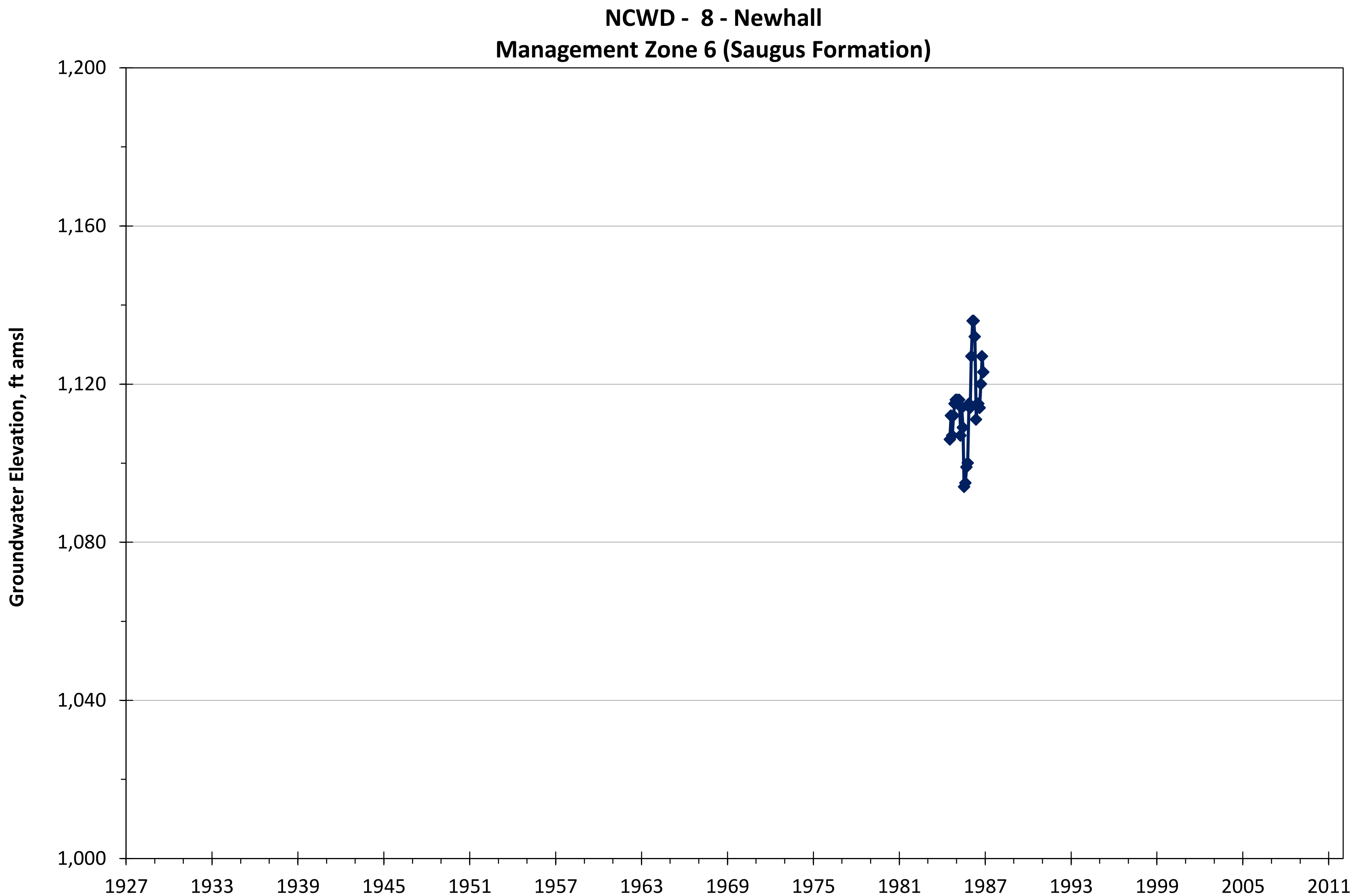
Appendix A


NCWD - 13 - Newhall
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,120
1,080
1,040
1,000
960
920
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

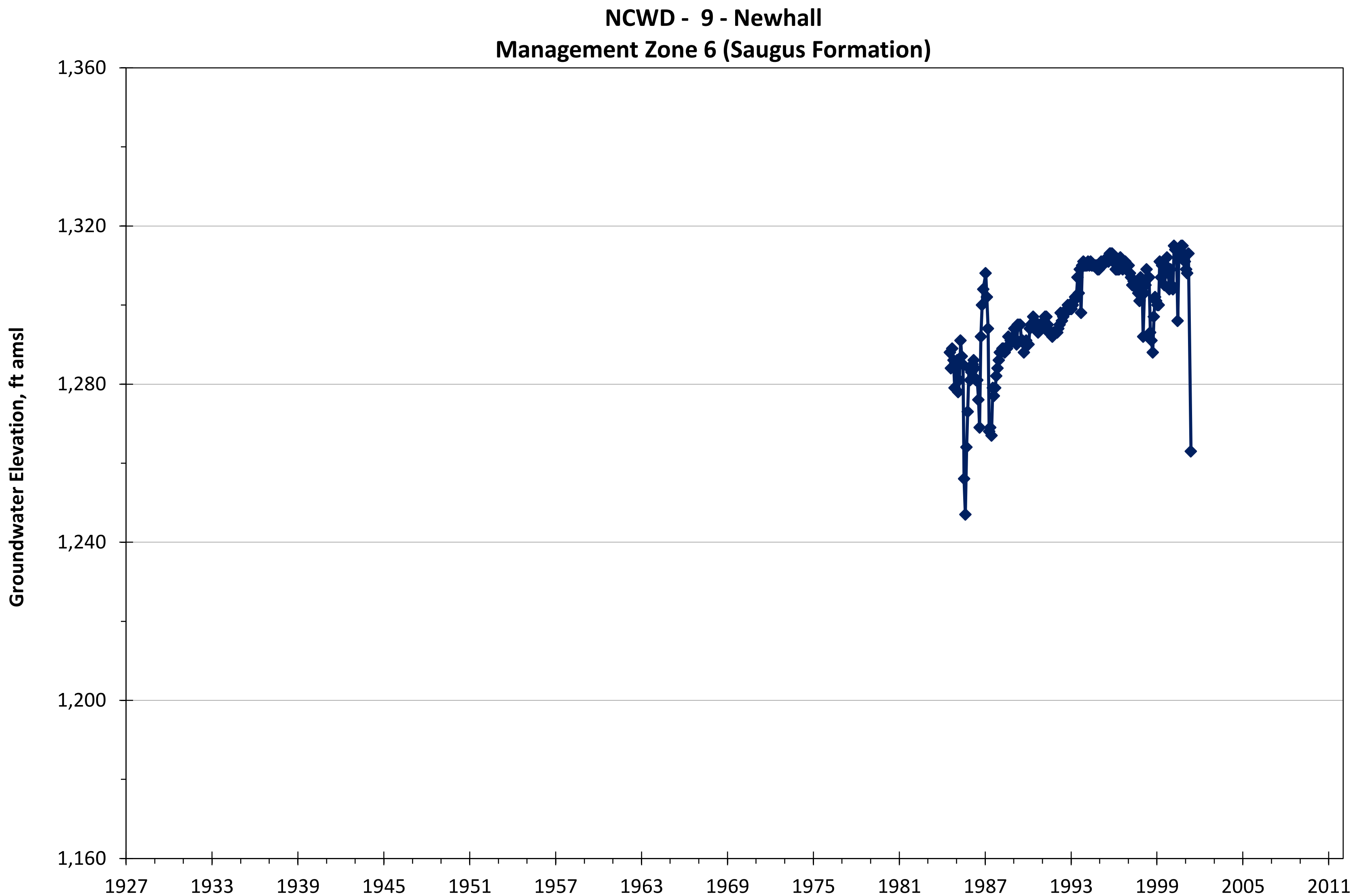
Appendix A

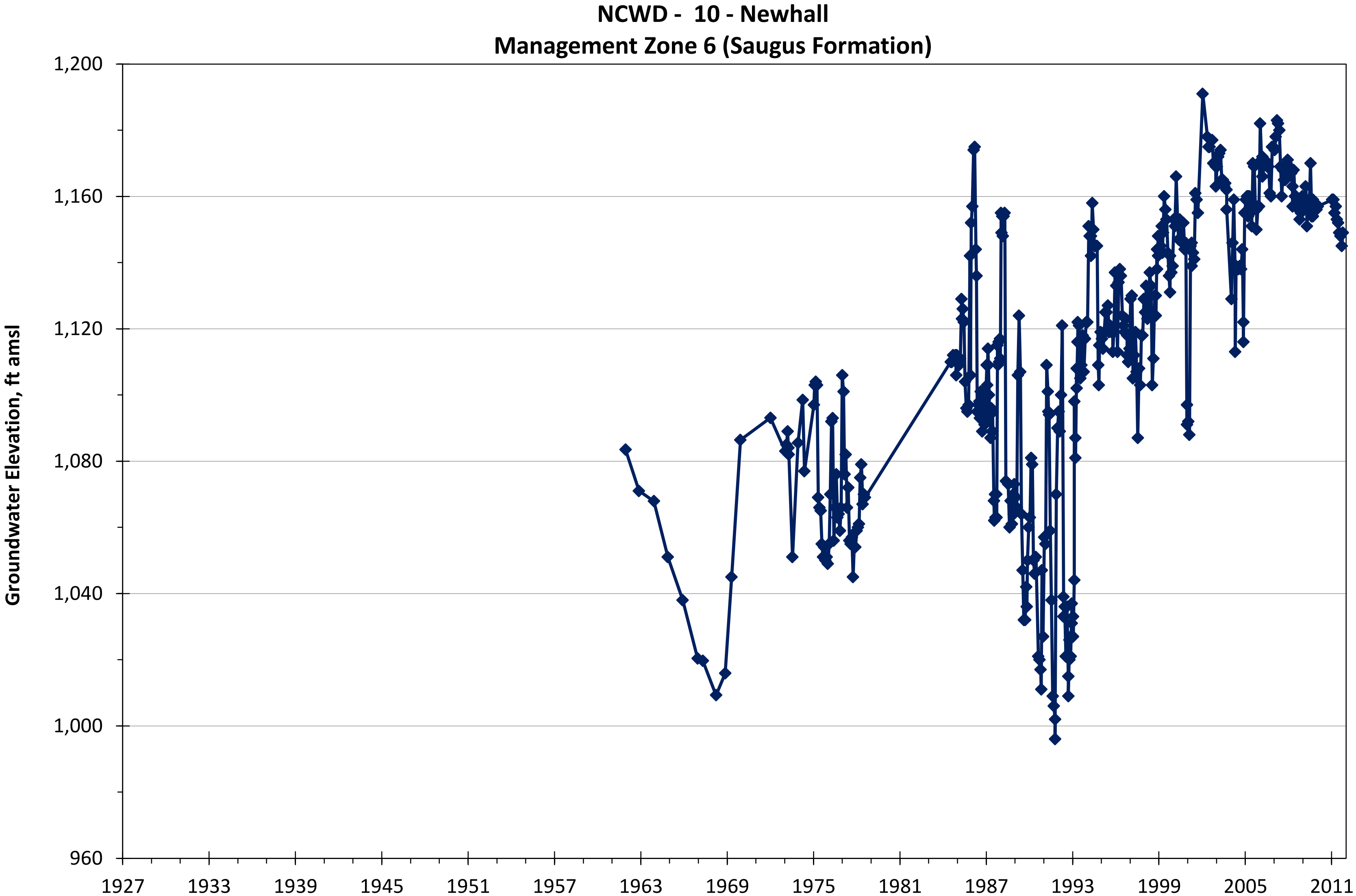

NCWD - 7 - Newhall
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,240
1,200
1,160
1,120
1,080
1,040
1,000
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

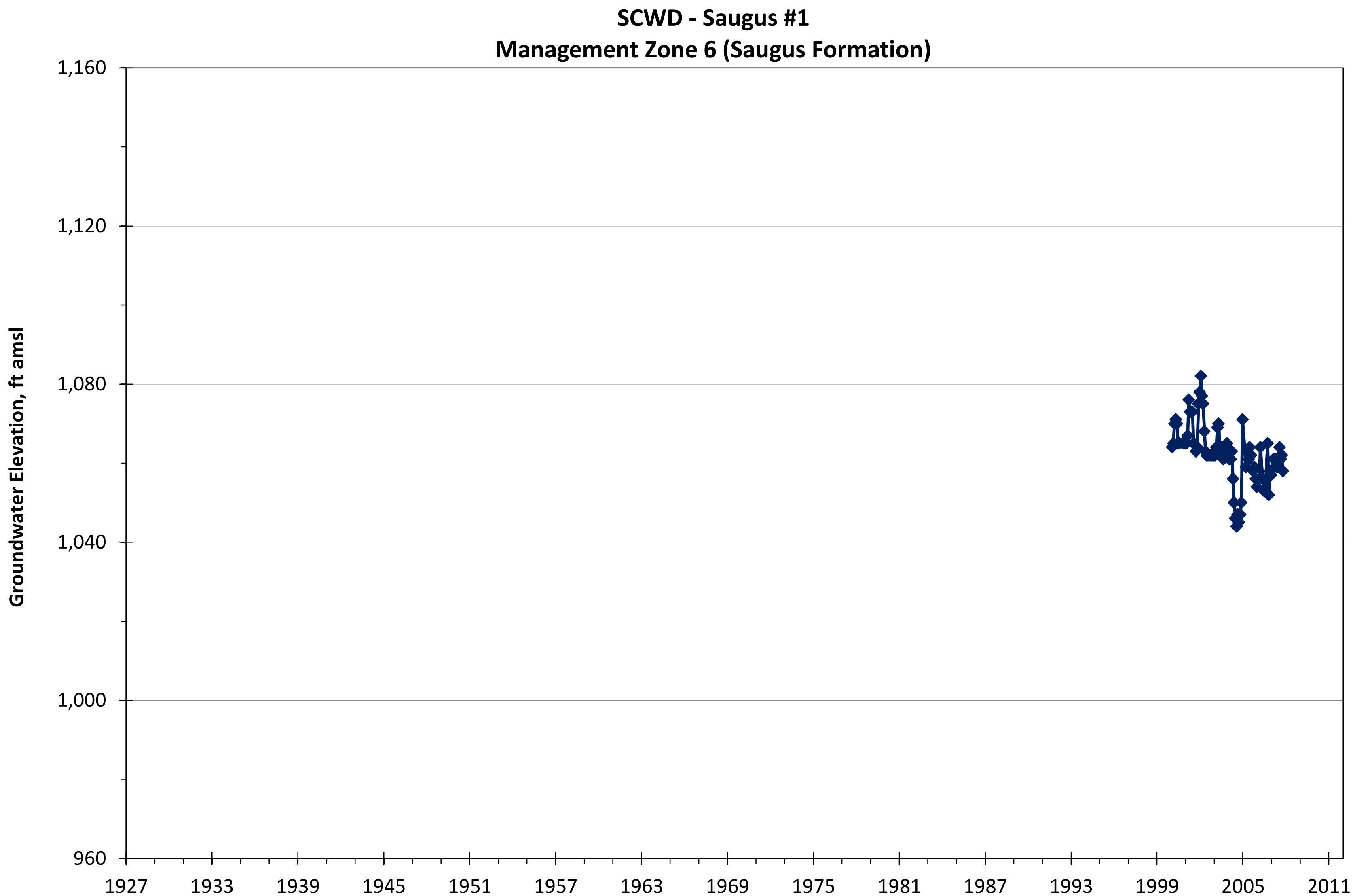
Appendix A


NCWD - 8 - Newhall
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,200
1,160
1,120
1,080
1,040
1,000
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

Appendix A


NCWD - 9 - Newhall
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,360
1,320
1,280
1,240
1,200
1,160
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011


NCWD - 10 - Newhall
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,200
1,160
1,120
1,080
1,040
1,000
960
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

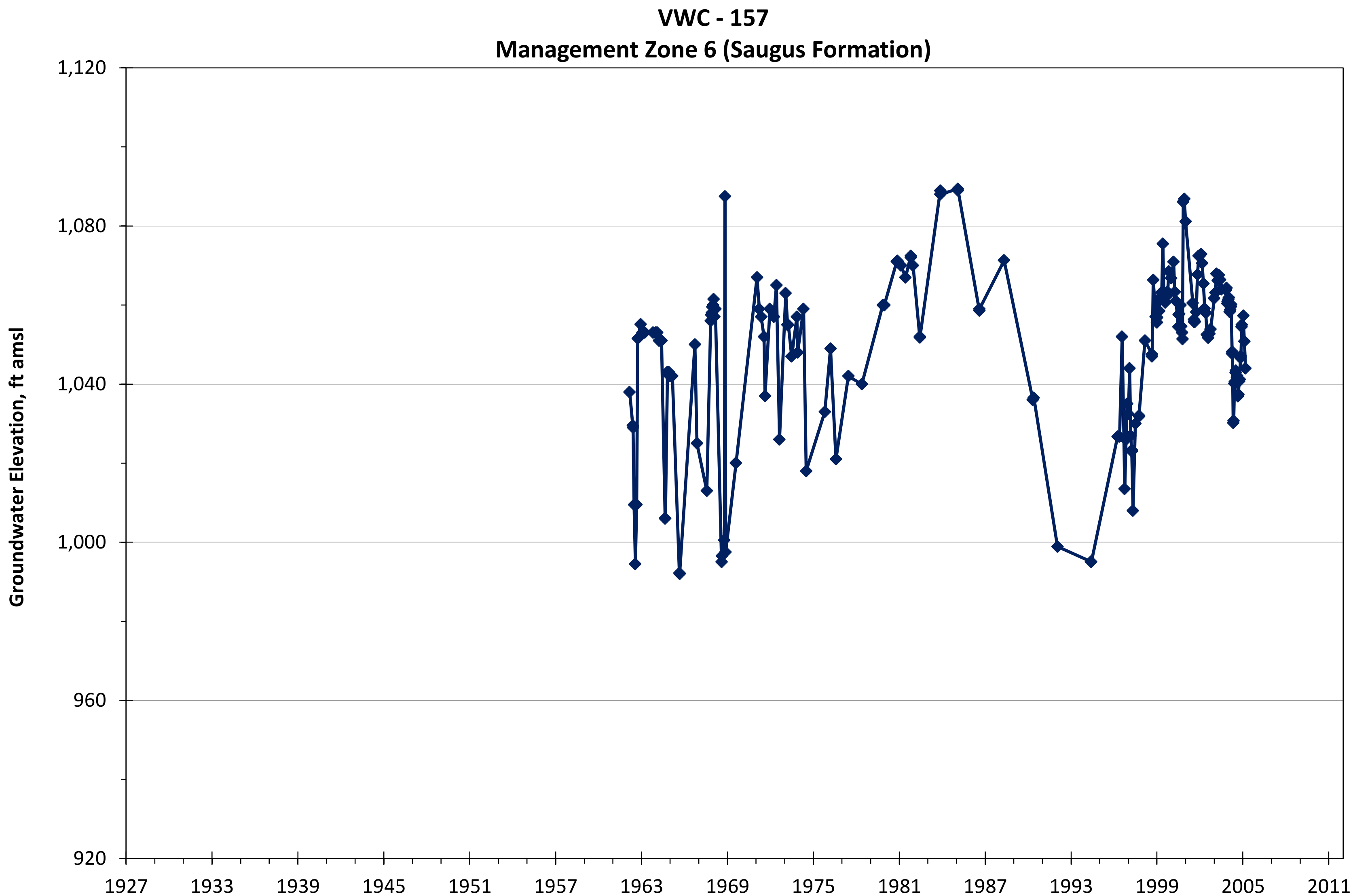

SCWD - Saugus #1
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,160
1,120
1,080
1,040
1,000
960
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

Appendix A


SCWD - Saugus #2
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,160
1,120
1,080
1,040
1,000
960
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

Appendix A

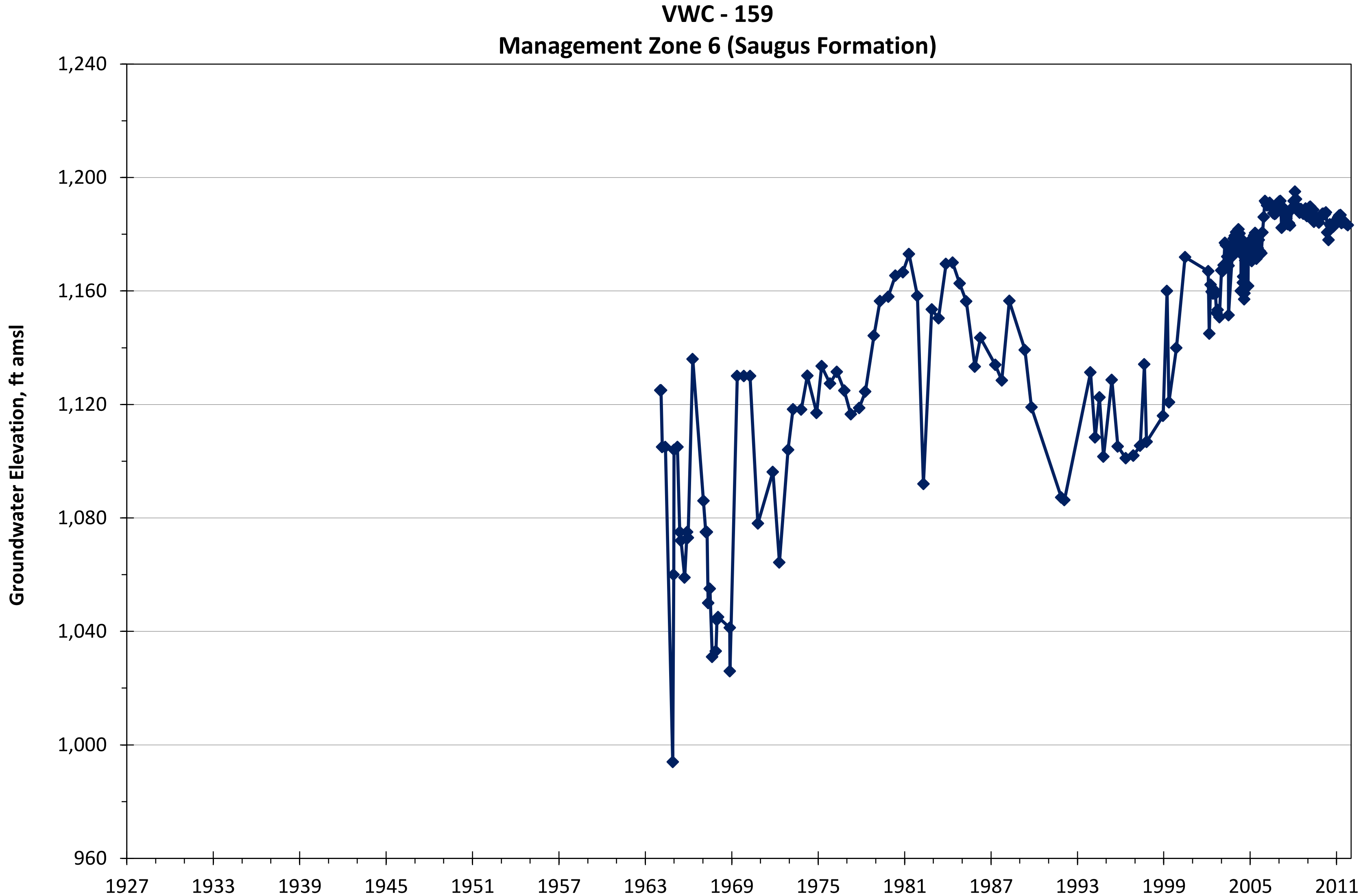
Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin



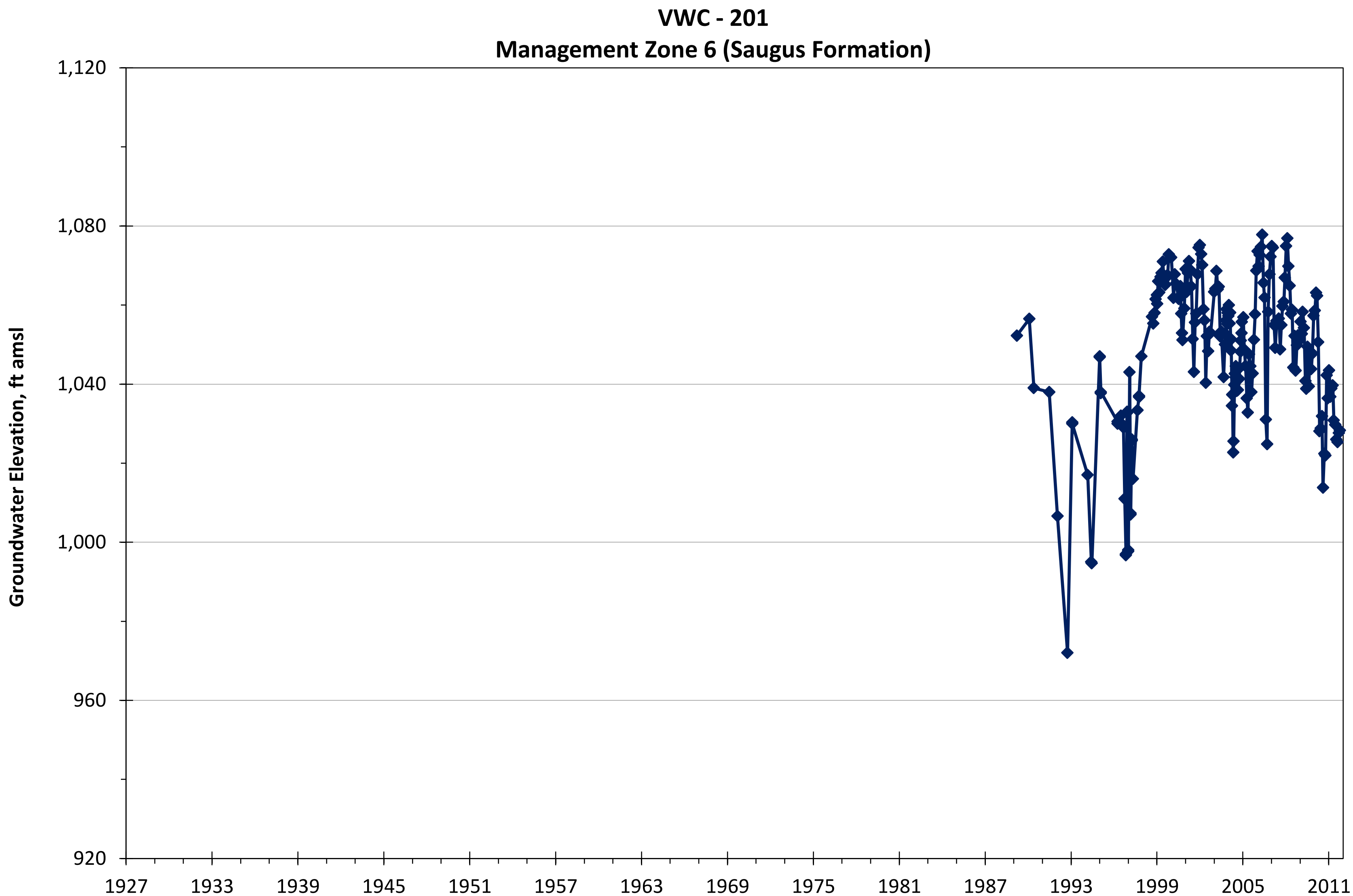
Appendix A

8-Dec-16

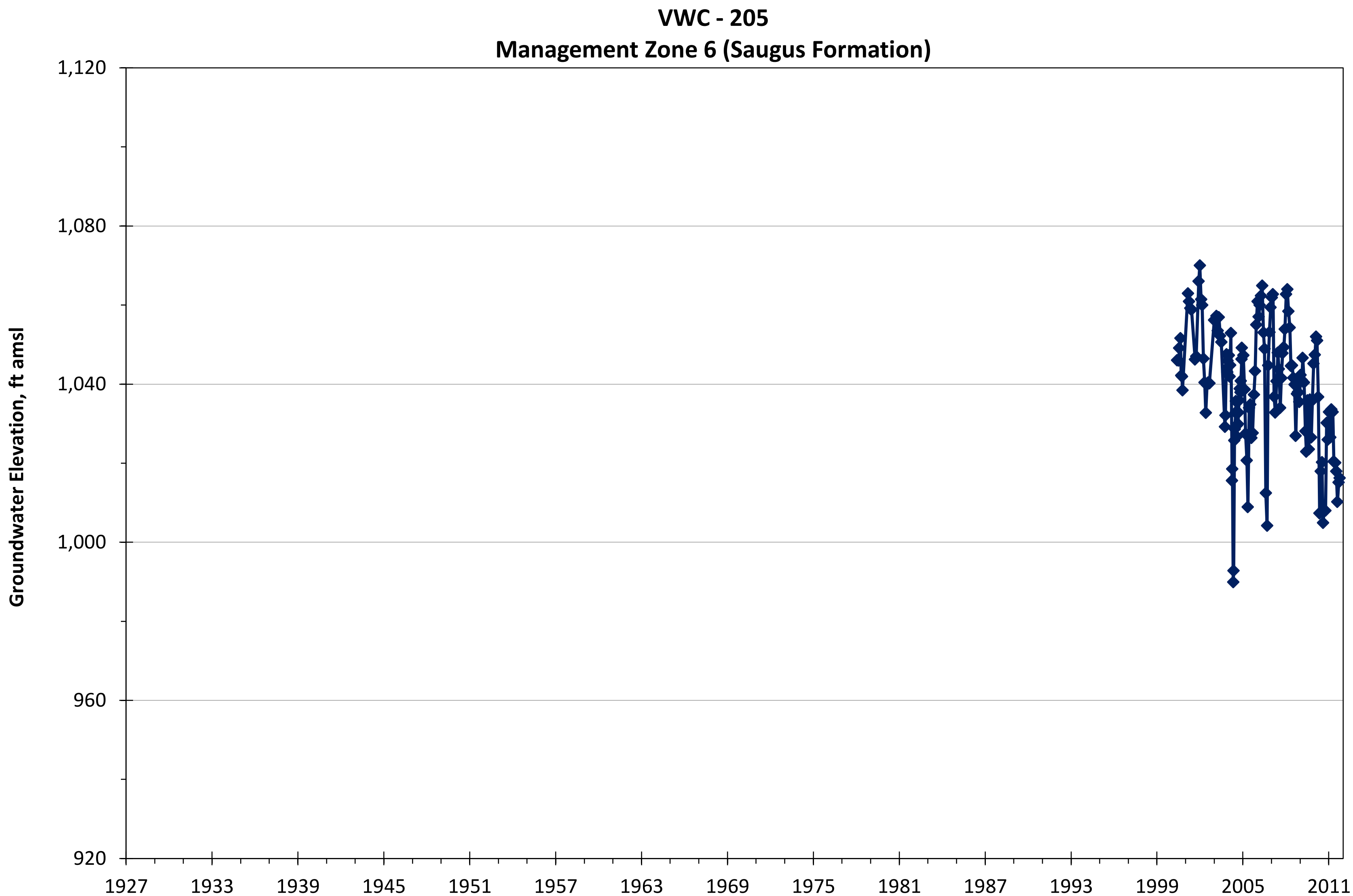
GEOSCIENCE Support Services, Inc.


VWC - 159
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,240
1,200
1,160
1,120
1,080
1,040
1,000
960
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

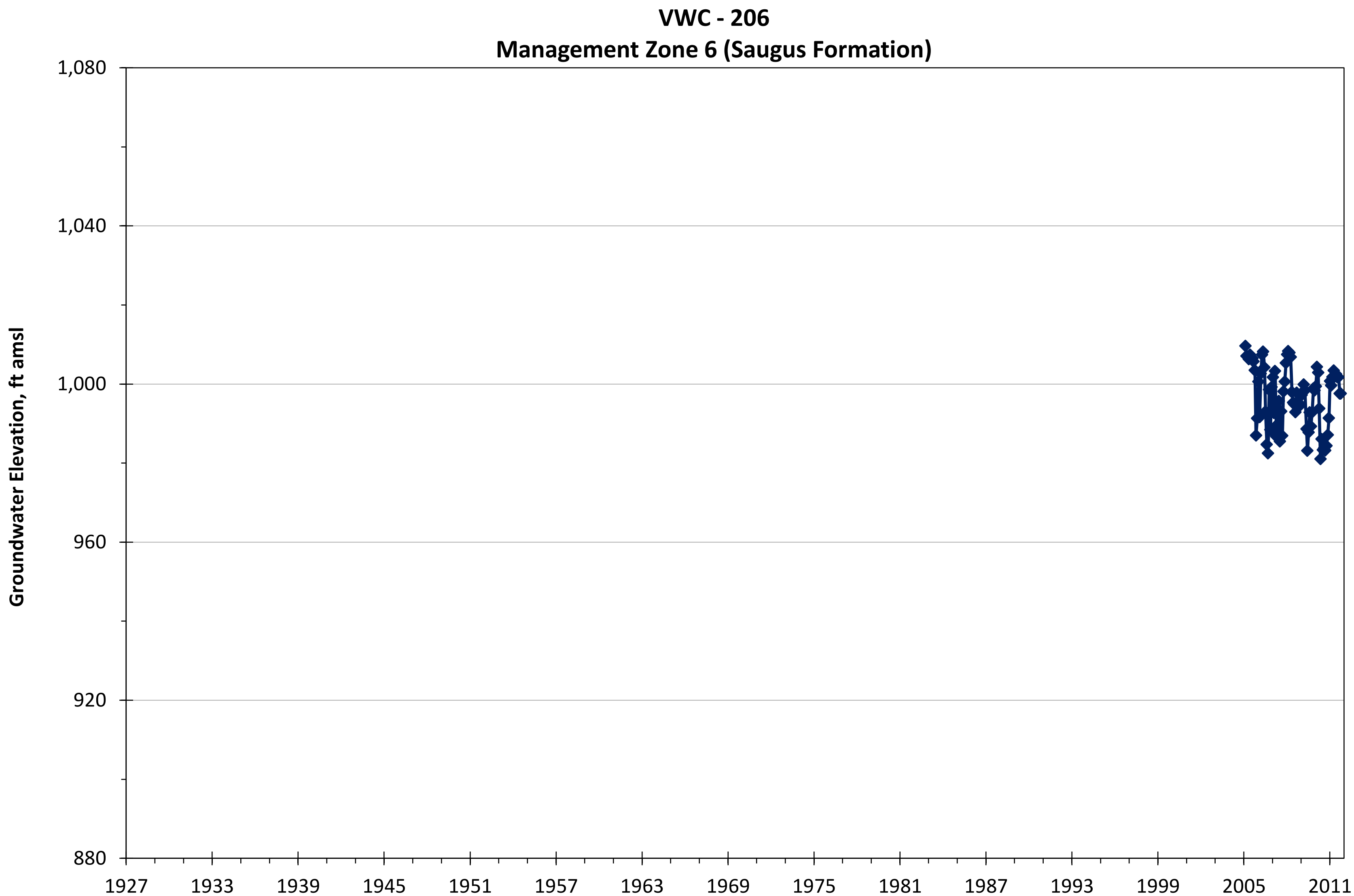
Appendix A


VWC - 201
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,120
1,080
1,040
1,000
960
920
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

Appendix A


VWC - 205
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,120
1,080
1,040
1,000
960
920
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

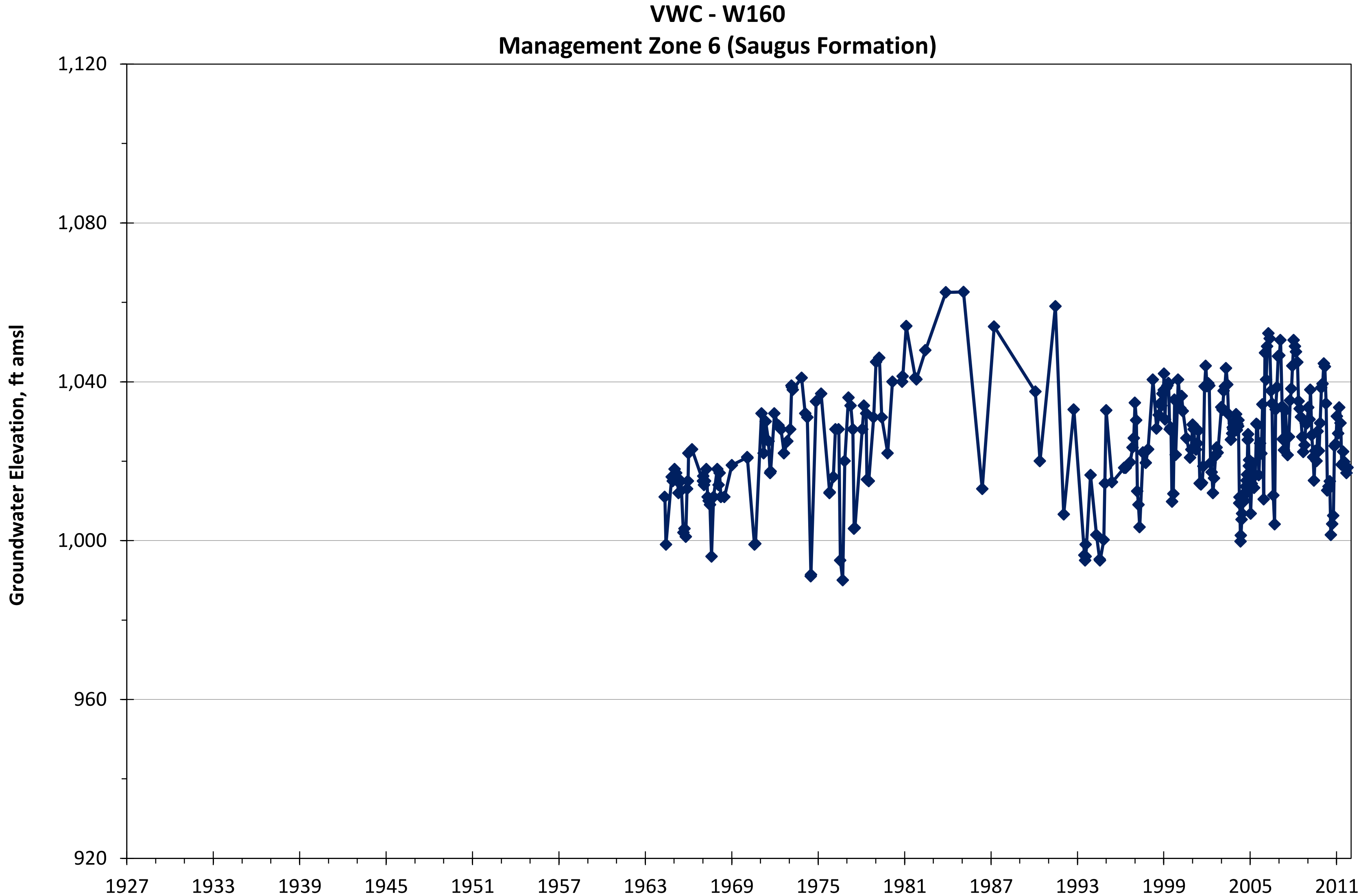
Appendix A


VWC - 206
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,080
1,040
1,000
960
920
880
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

Appendix A


VWC - 207
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,080
1,040
1,000
960
920
880
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

Appendix A


VWC - W160
Management Zone 6 (Saugus Formation)
Groundwater Elevation, ft amsl
1,120
1,080
1,040
1,000
960
920
1927
1933
1939
1945
1951
1957
1963
1969
1975
1981
1987
1993
1999
2005
2011

Appendix A

APPENDIX B

Water Quality Database

(See attached DVD)

GEOSCIENCE

APPENDIX C

Chemographs for Groundwater and Surface Water

GEOSCIENCE

APPENDIX C:

CHEMOGRAPHS

CONTENTS

Description **Page**

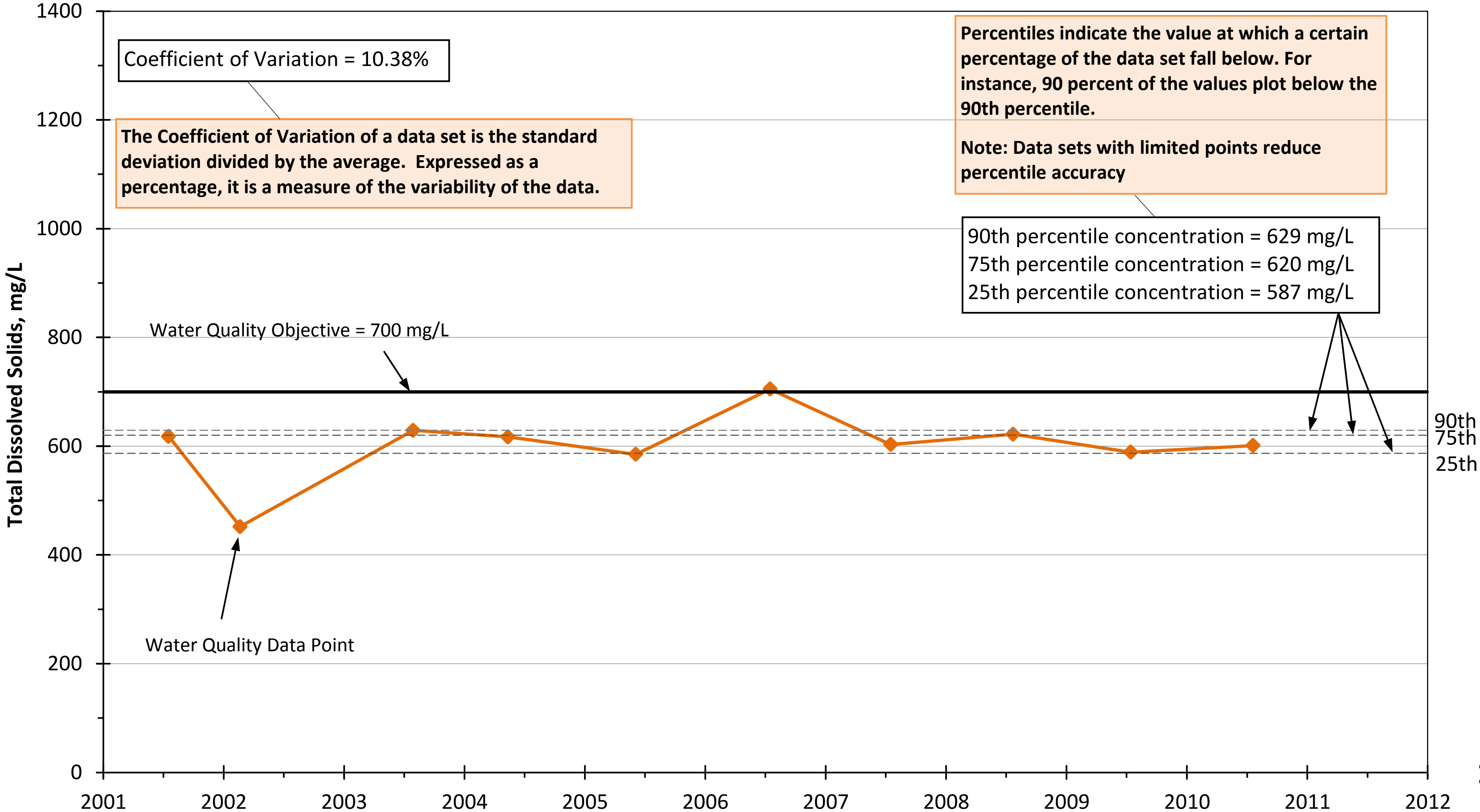
Surface Water

TDS

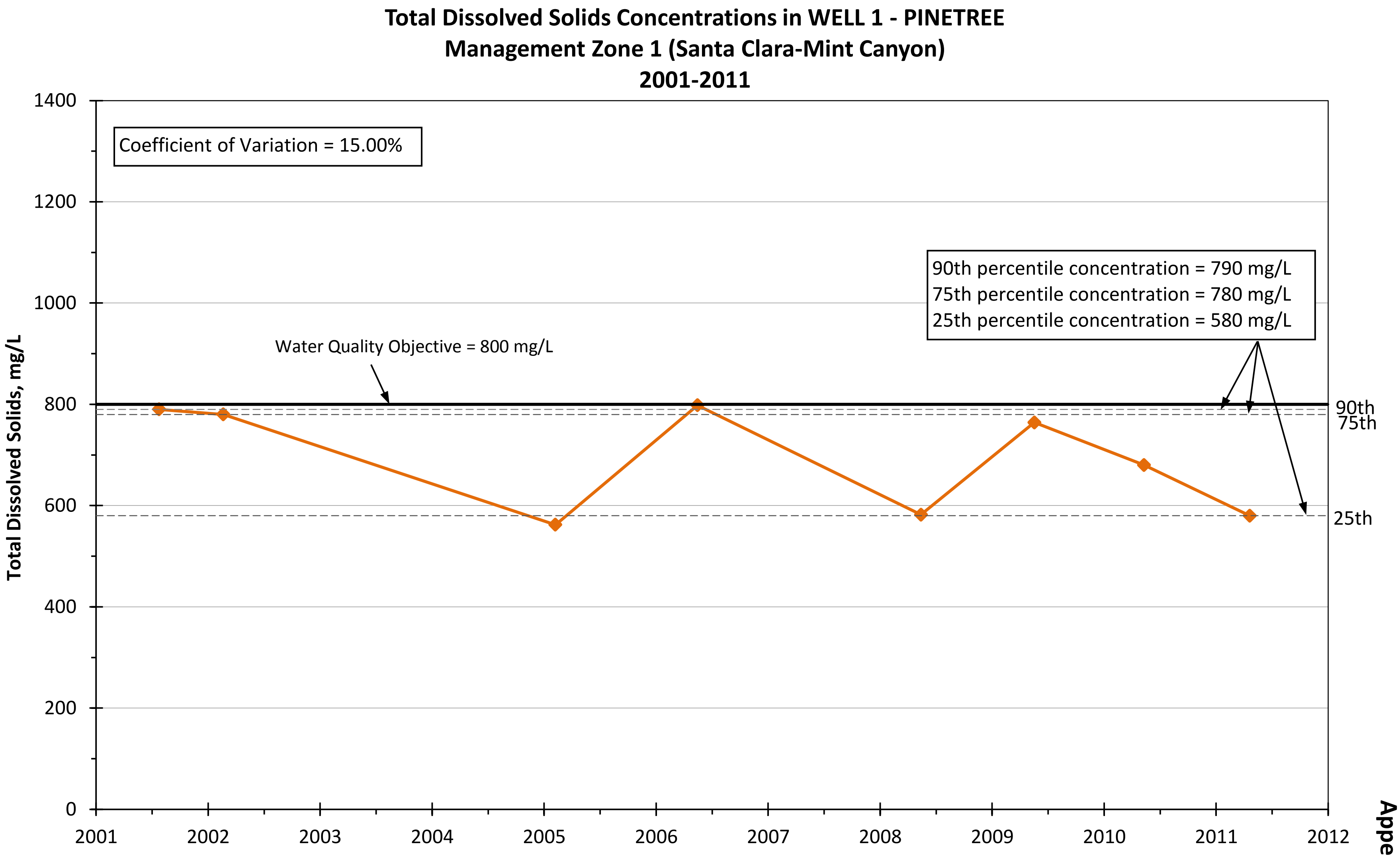
Chloride

Nitrate as NO3

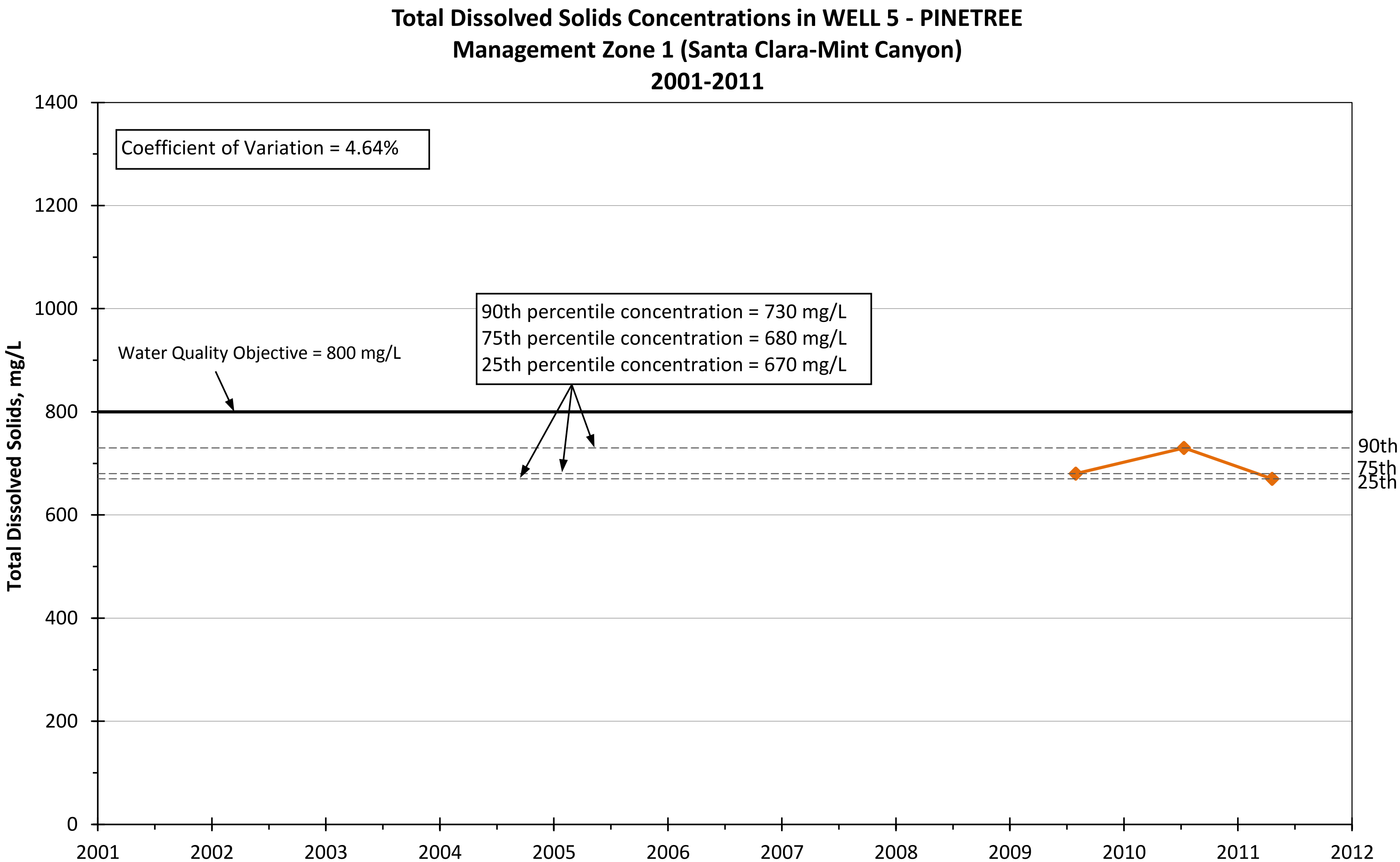
Chemograph Explanation



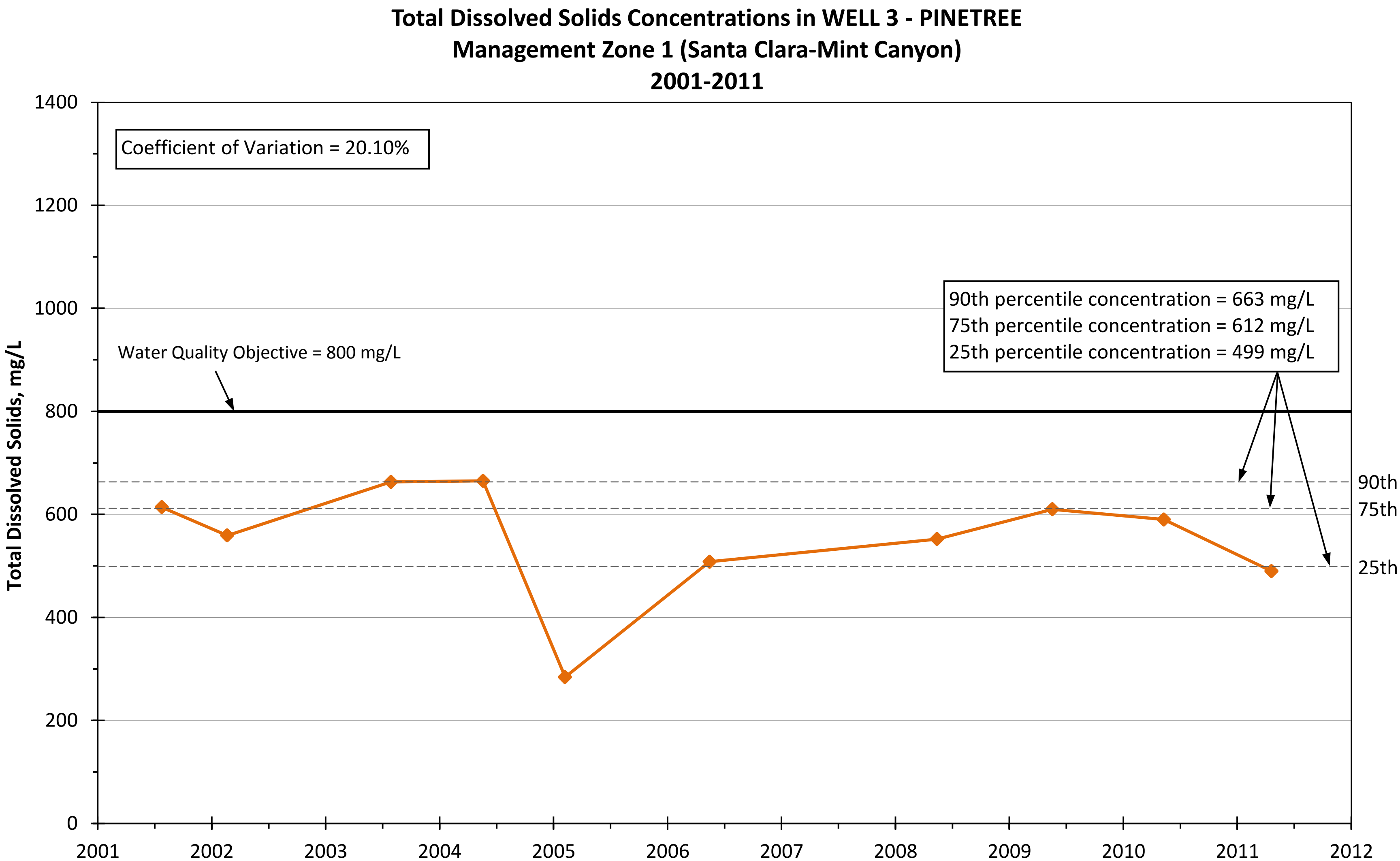
Appendix C


Total Dissolved Solids Concentrations in WELL 1 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 15.00%
90th percentile concentration = 790 mg/L
75th percentile concentration = 780 mg/L
25th percentile concentration = 580 mg/L
Water Quality Objective = 800 mg/L
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

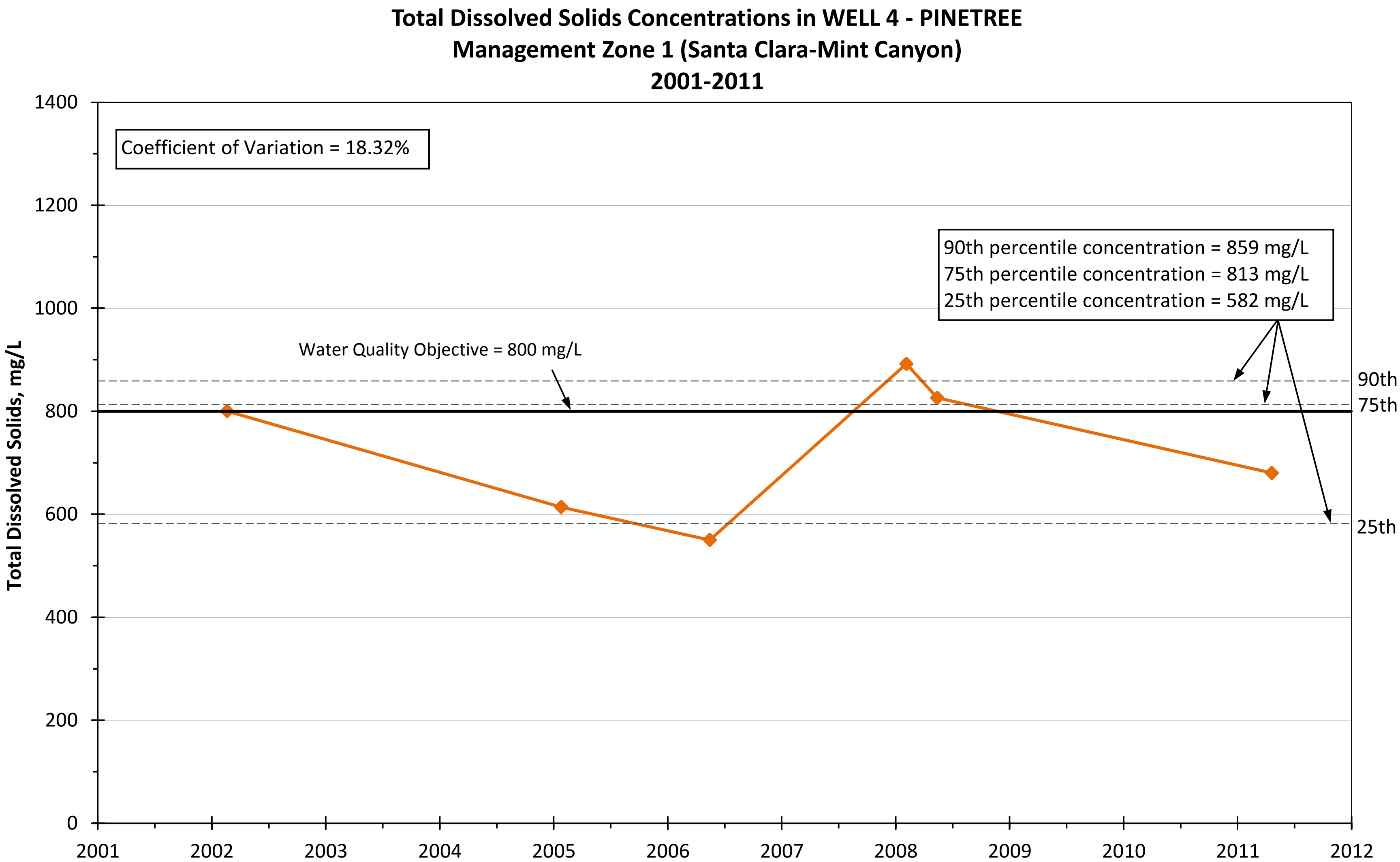
Appendix C


Total Dissolved Solids Concentrations in WELL 5 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 4.64%
Water Quality Objective = 800 mg/L
90th percentile concentration = 730 mg/L
75th percentile concentration = 680 mg/L
25th percentile concentration = 670 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

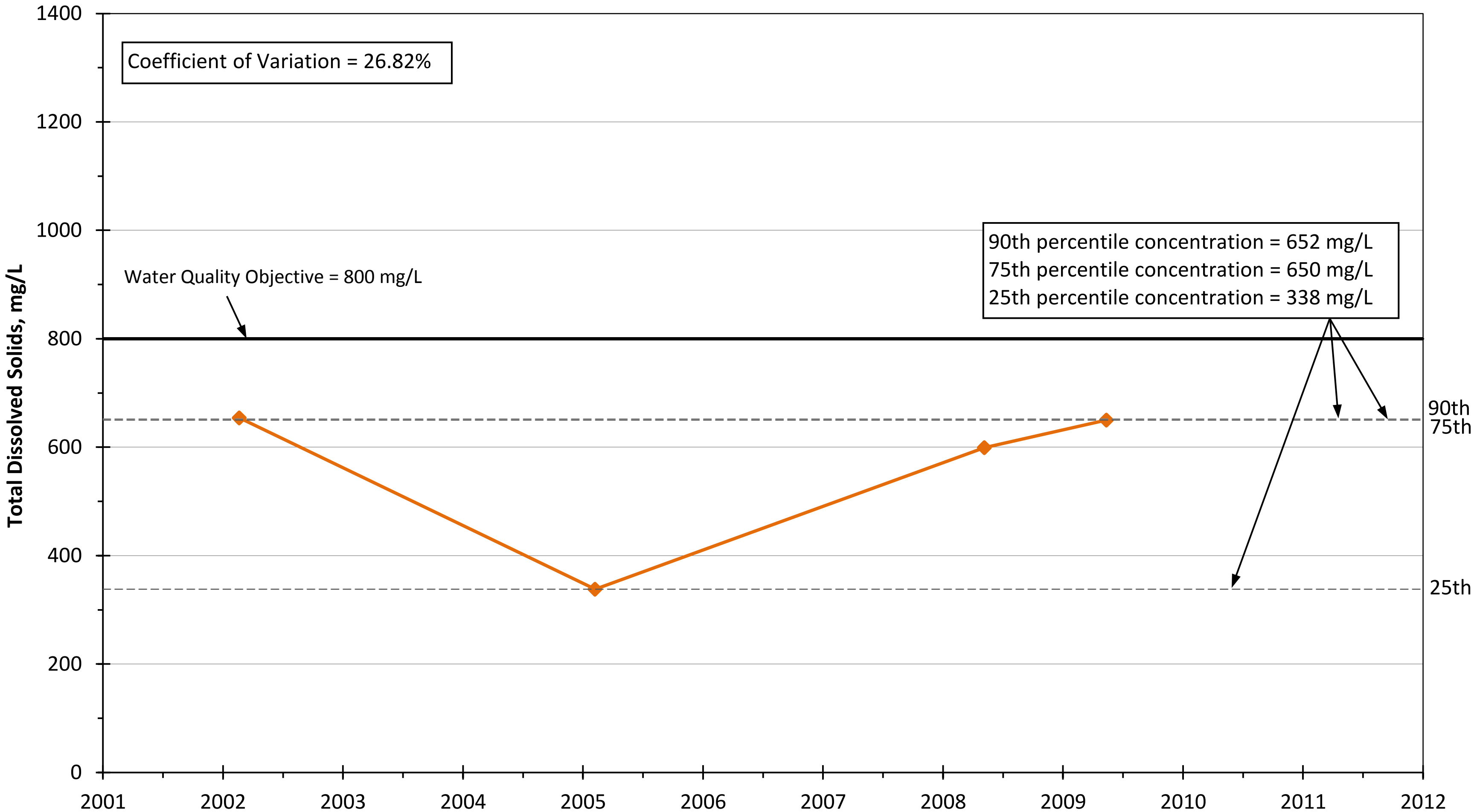

Total Dissolved Solids Concentrations in WELL 3 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 20.10%
Water Quality Objective = 800 mg/L
90th percentile concentration = 663 mg/L
75th percentile concentration = 612 mg/L
25th percentile concentration = 499 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

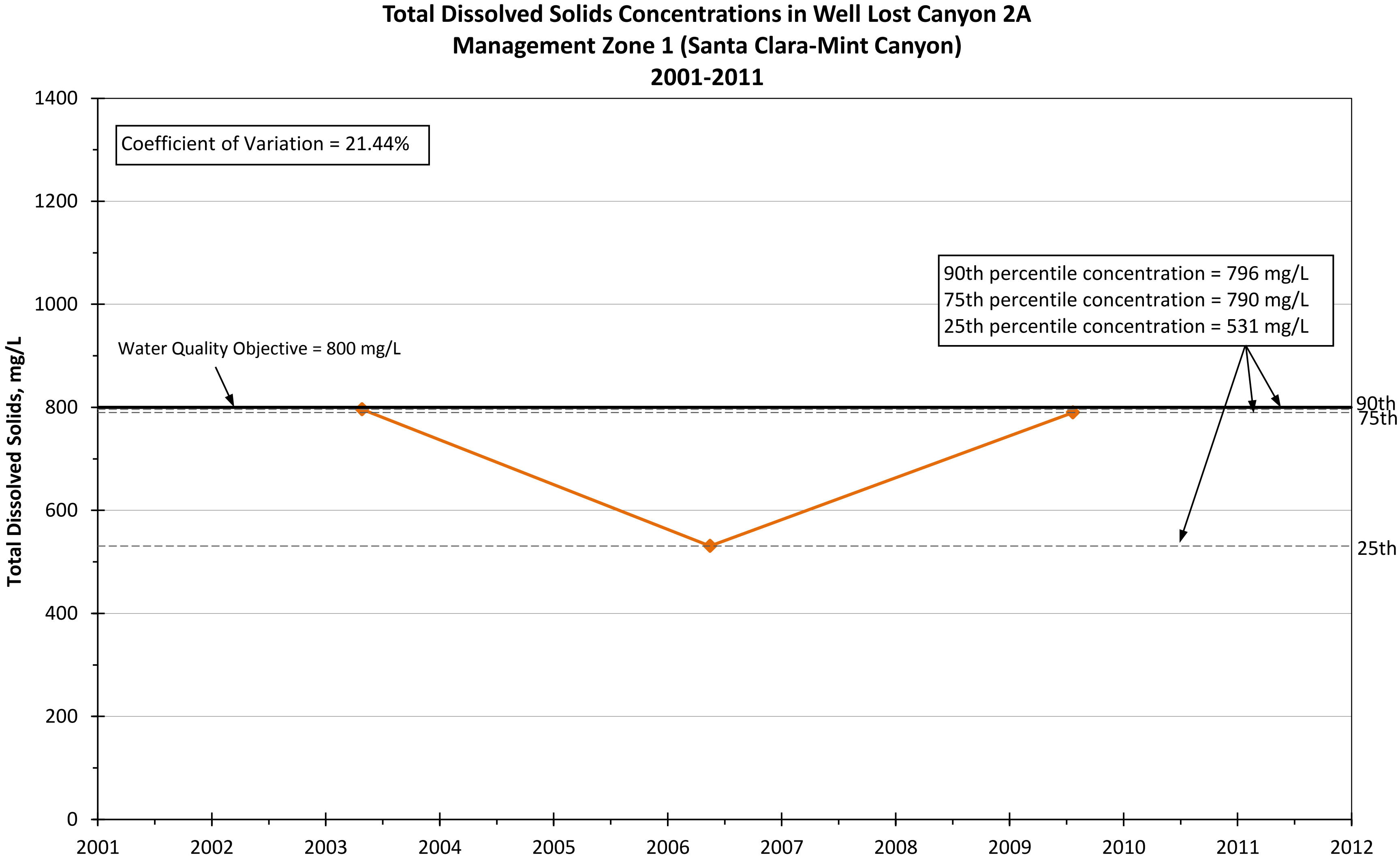
Appendix C

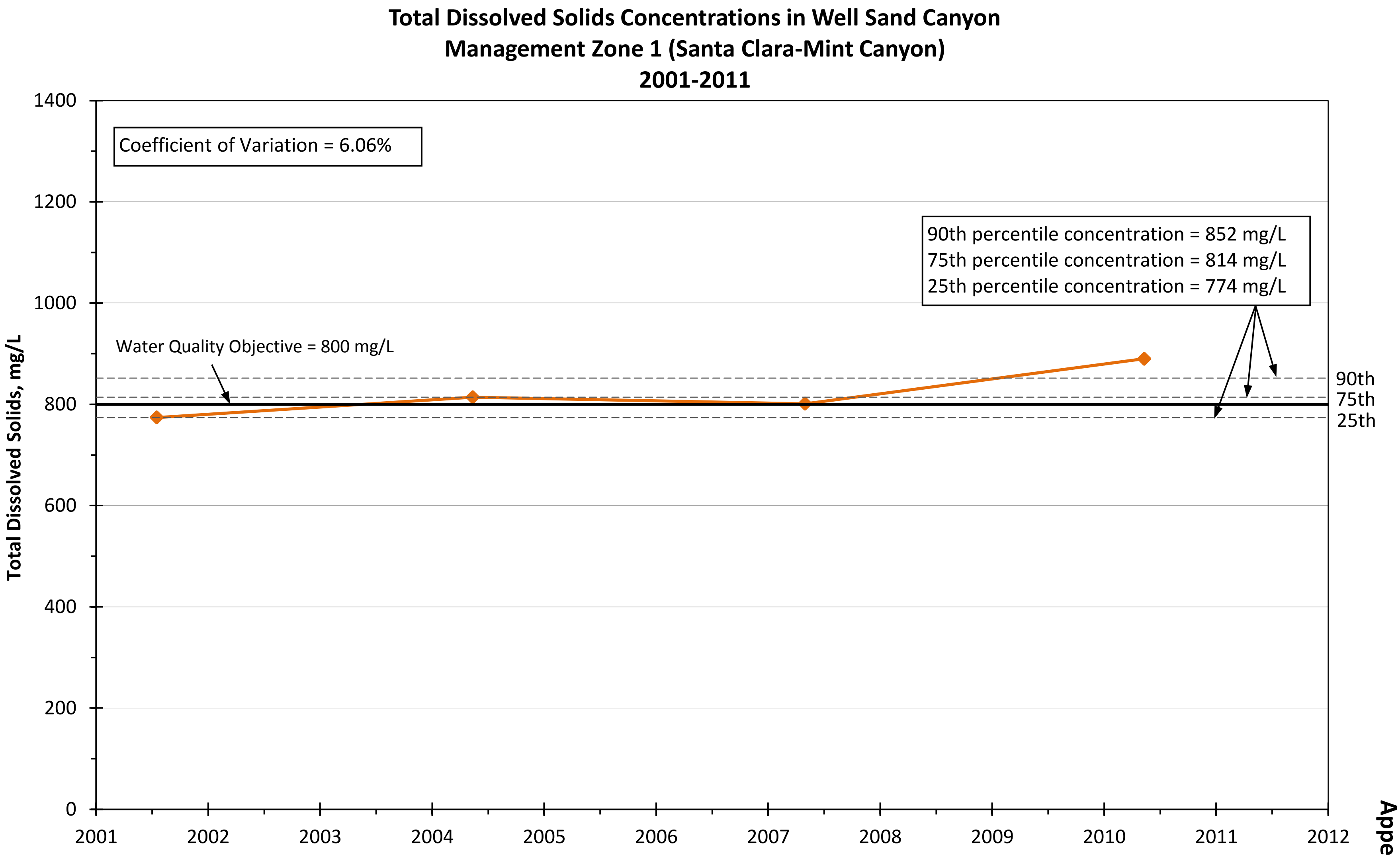

Total Dissolved Solids Concentrations in WELL 4 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 18.32%
90th percentile concentration = 859 mg/L
75th percentile concentration = 813 mg/L
25th percentile concentration = 582 mg/L
Water Quality Objective = 800 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

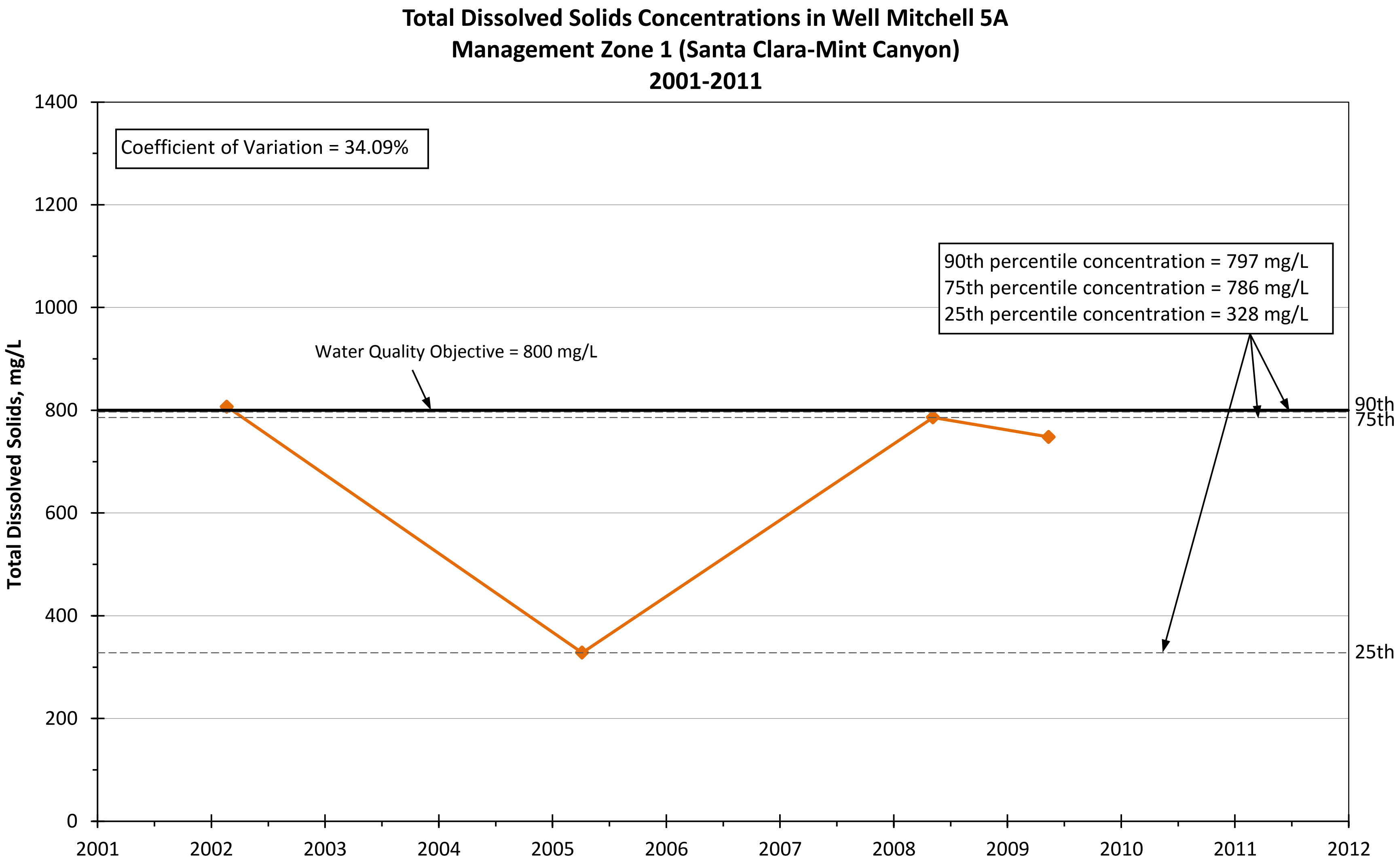
Appendix C

Total Dissolved Solids Concentrations in Well Lost Canyon 2
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011

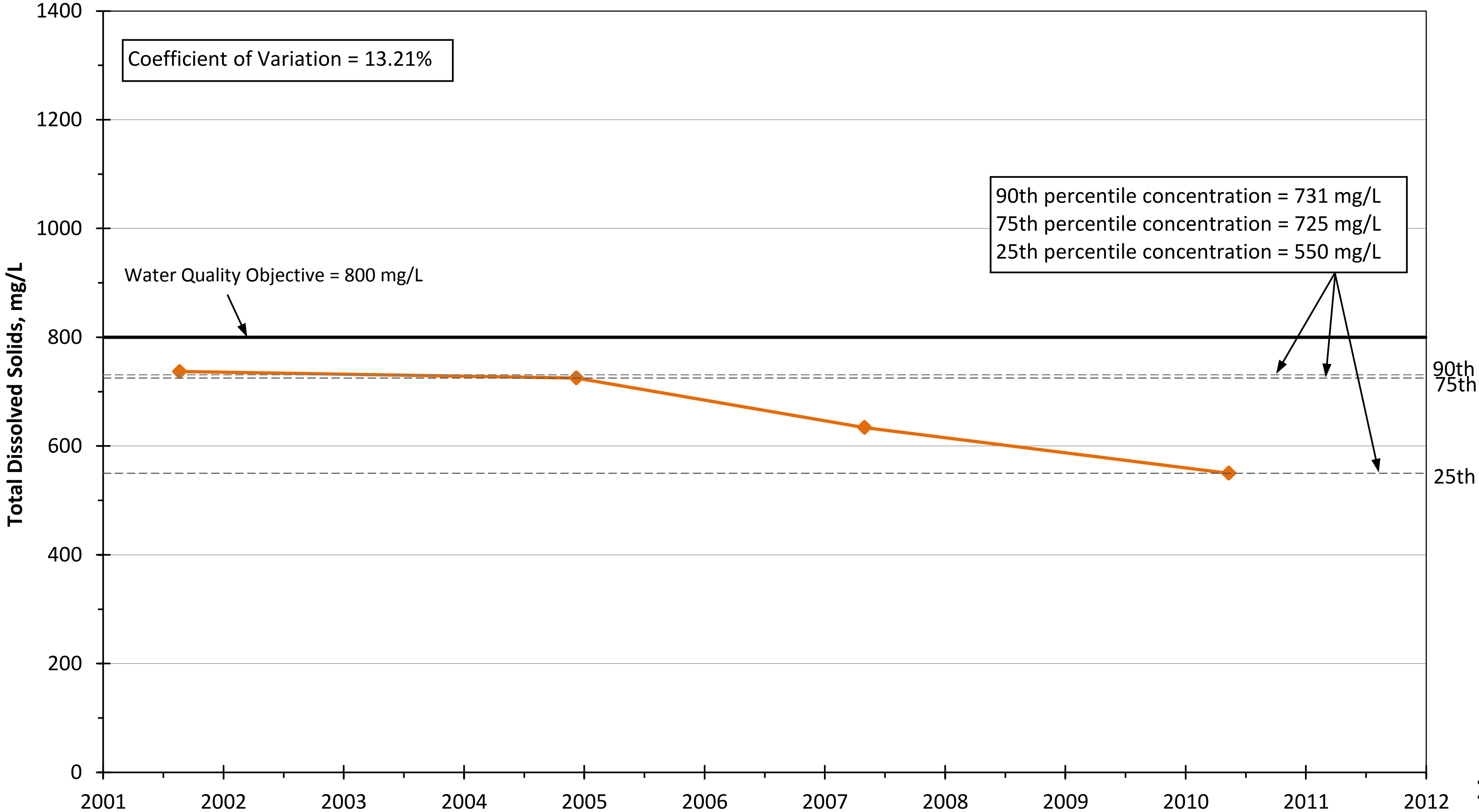



Total Dissolved Solids Concentrations in Well Lost Canyon 2A
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 21.44%
90th percentile concentration = 796 mg/L
75th percentile concentration = 790 mg/L
25th percentile concentration = 531 mg/L
Water Quality Objective = 800 mg/L
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

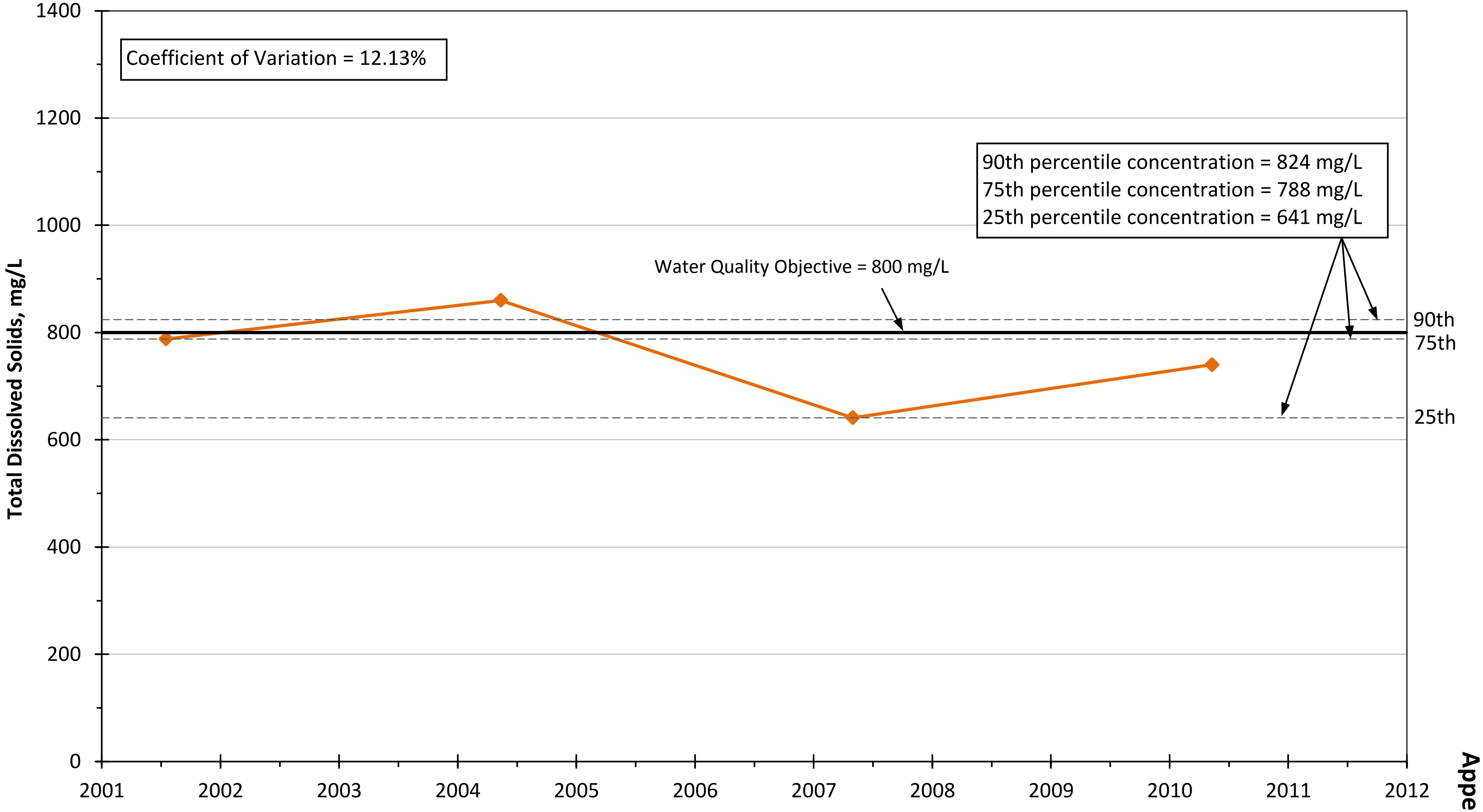

Total Dissolved Solids Concentrations in Well Sand Canyon
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 6.06%
90th percentile concentration = 852 mg/L
75th percentile concentration = 814 mg/L
25th percentile concentration = 774 mg/L
Water Quality Objective = 800 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Total Dissolved Solids Concentrations in Well Mitchell 5A
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 34.09%
90th percentile concentration = 797 mg/L
75th percentile concentration = 786 mg/L
25th percentile concentration = 328 mg/L
Water Quality Objective = 800 mg/L
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

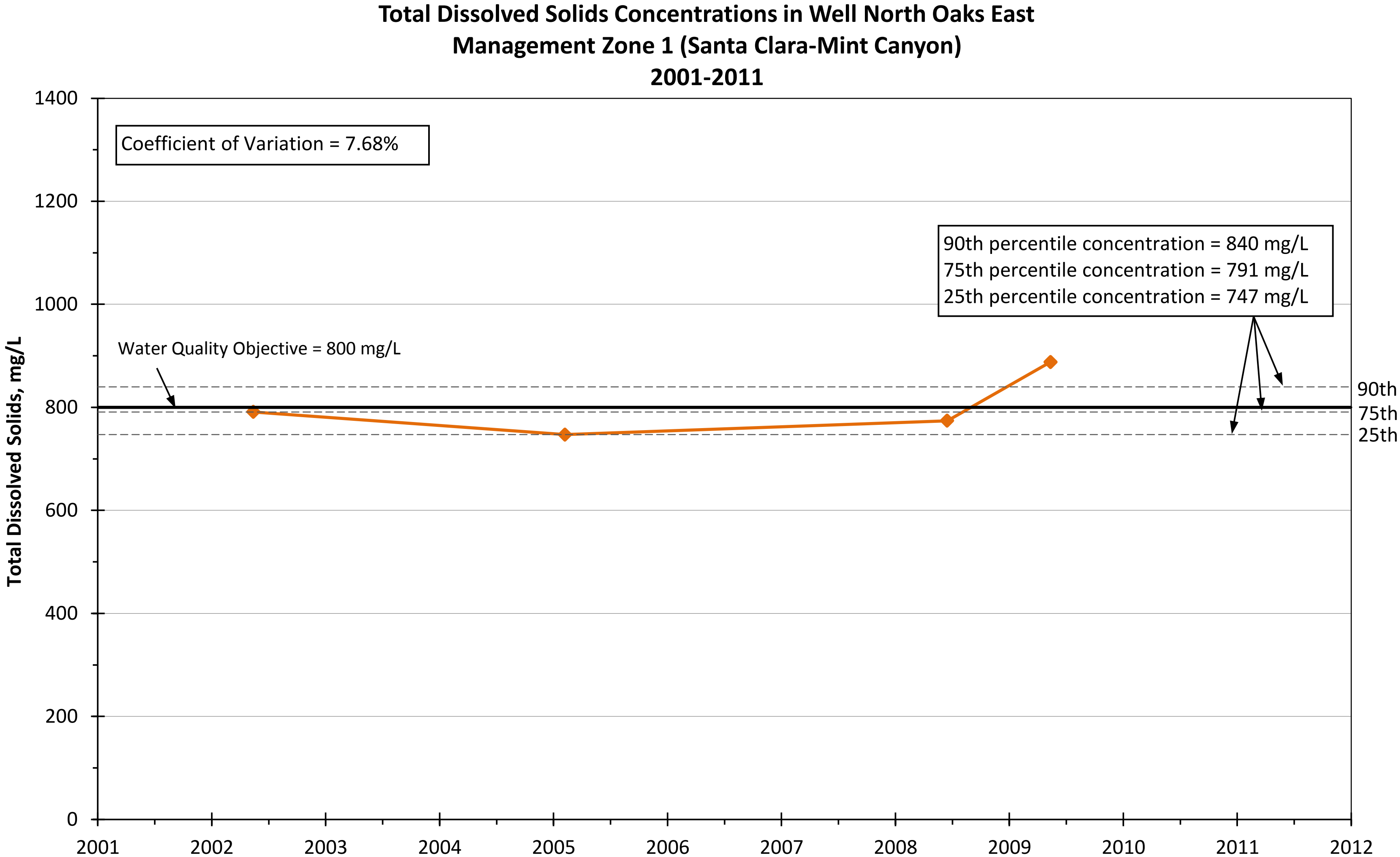
Total Dissolved Solids Concentrations in Well Mitchell 5B
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011

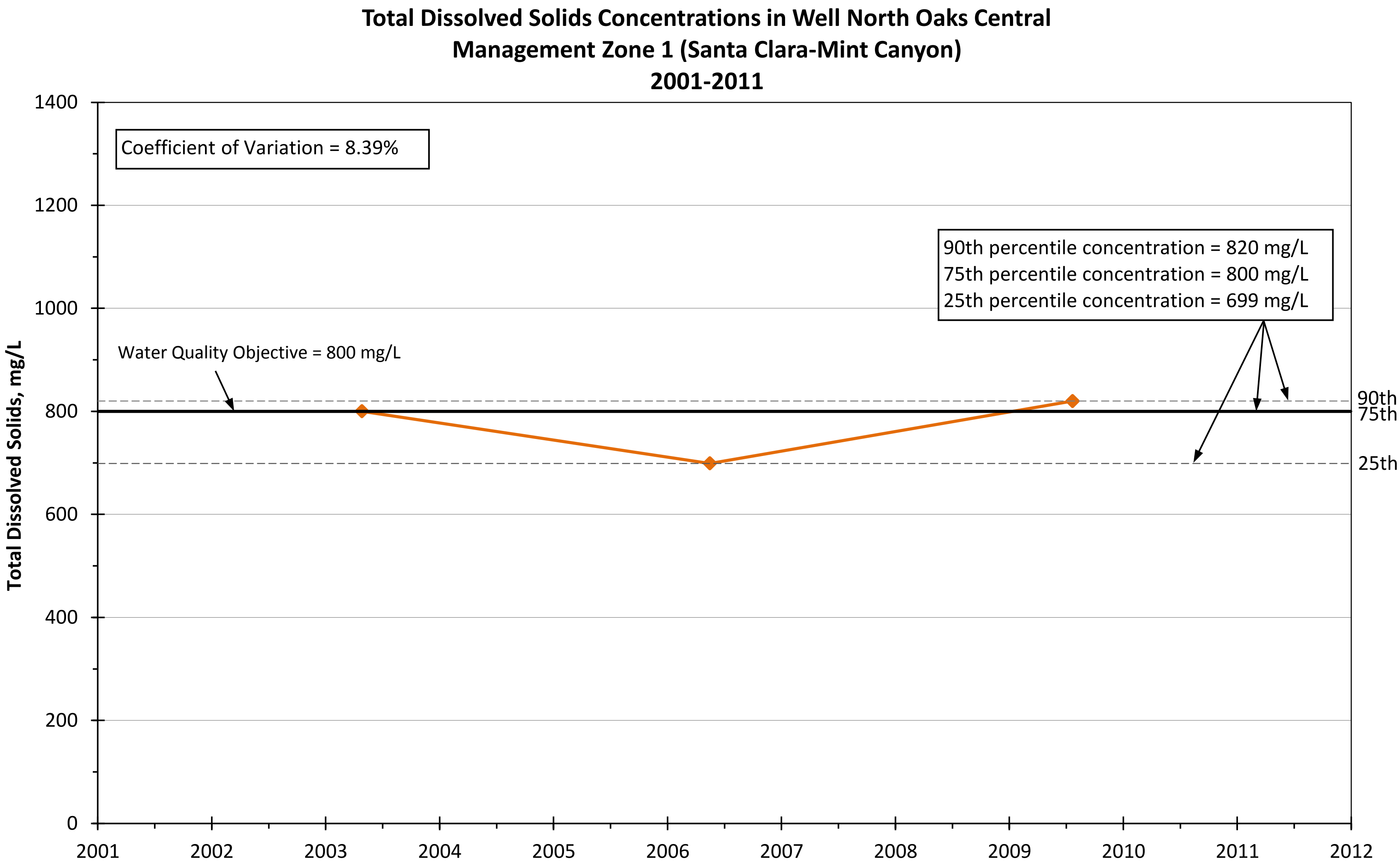


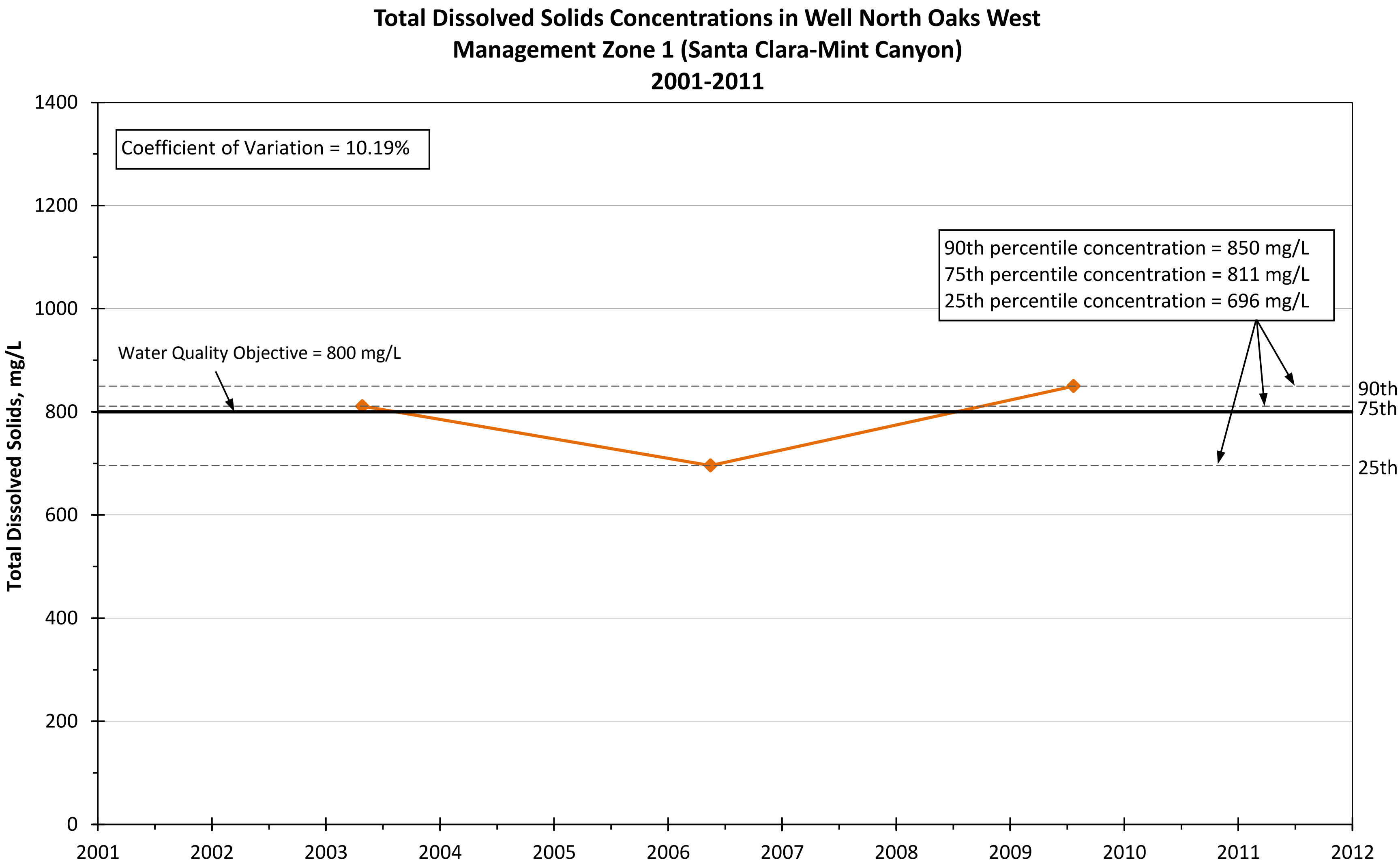
Total Dissolved Solids Concentrations in Well Sierra Management Zone 1 (Santa Clara-Mint Canyon) 2001-2011



Appendix C


Total Dissolved Solids Concentrations in Well North Oaks East
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 7.68%
90th percentile concentration = 840 mg/L
75th percentile concentration = 791 mg/L
25th percentile concentration = 747 mg/L
Water Quality Objective = 800 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Total Dissolved Solids Concentrations in Well North Oaks Central
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 8.39%
90th percentile concentration = 820 mg/L
75th percentile concentration = 800 mg/L
25th percentile concentration = 699 mg/L
Water Quality Objective = 800 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Total Dissolved Solids Concentrations in Well North Oaks West
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 10.19%
90th percentile concentration = 850 mg/L
75th percentile concentration = 811 mg/L
25th percentile concentration = 696 mg/L
Water Quality Objective = 800 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
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1000
1200
1400
2001
2002
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2004
2005
2006
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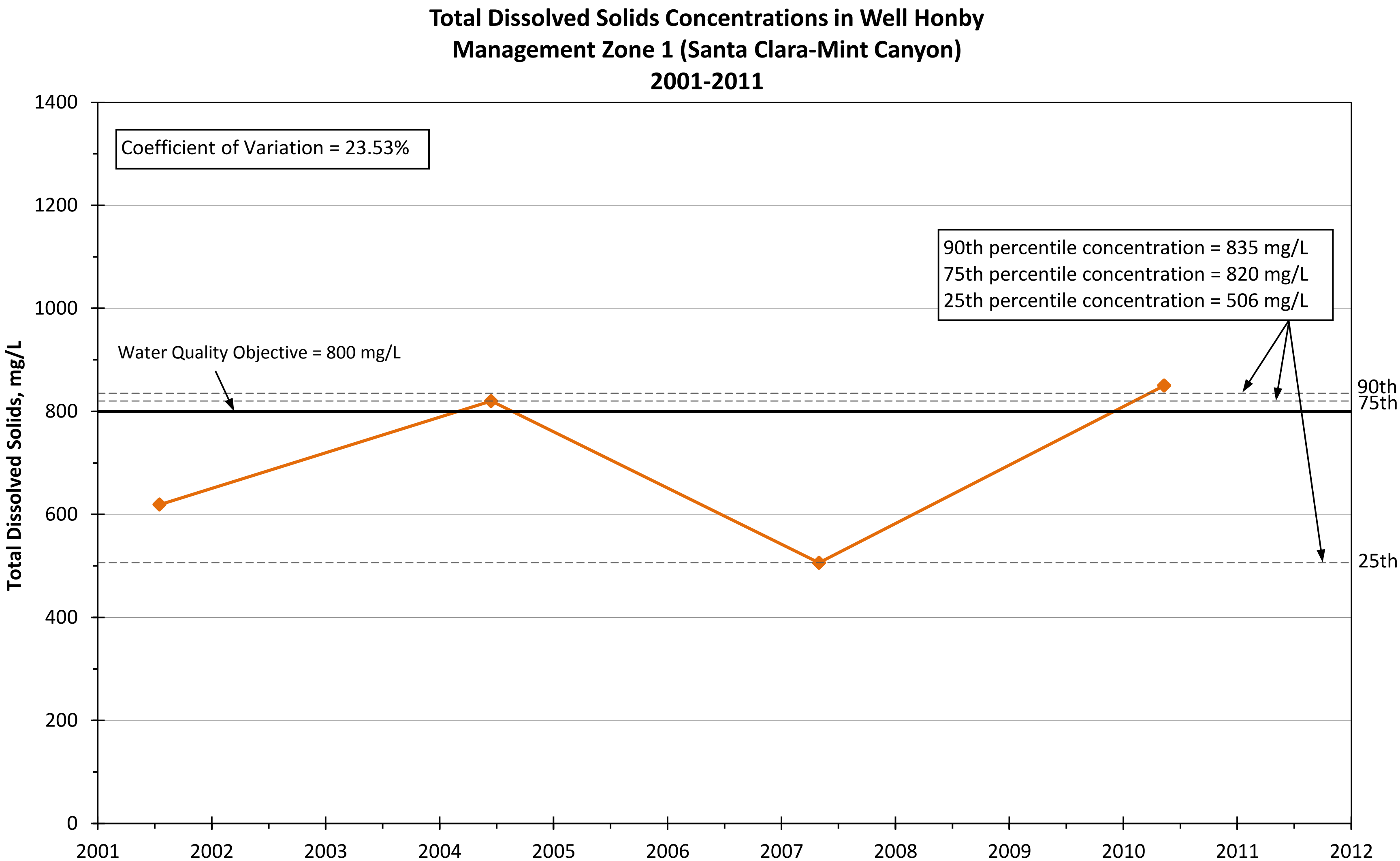
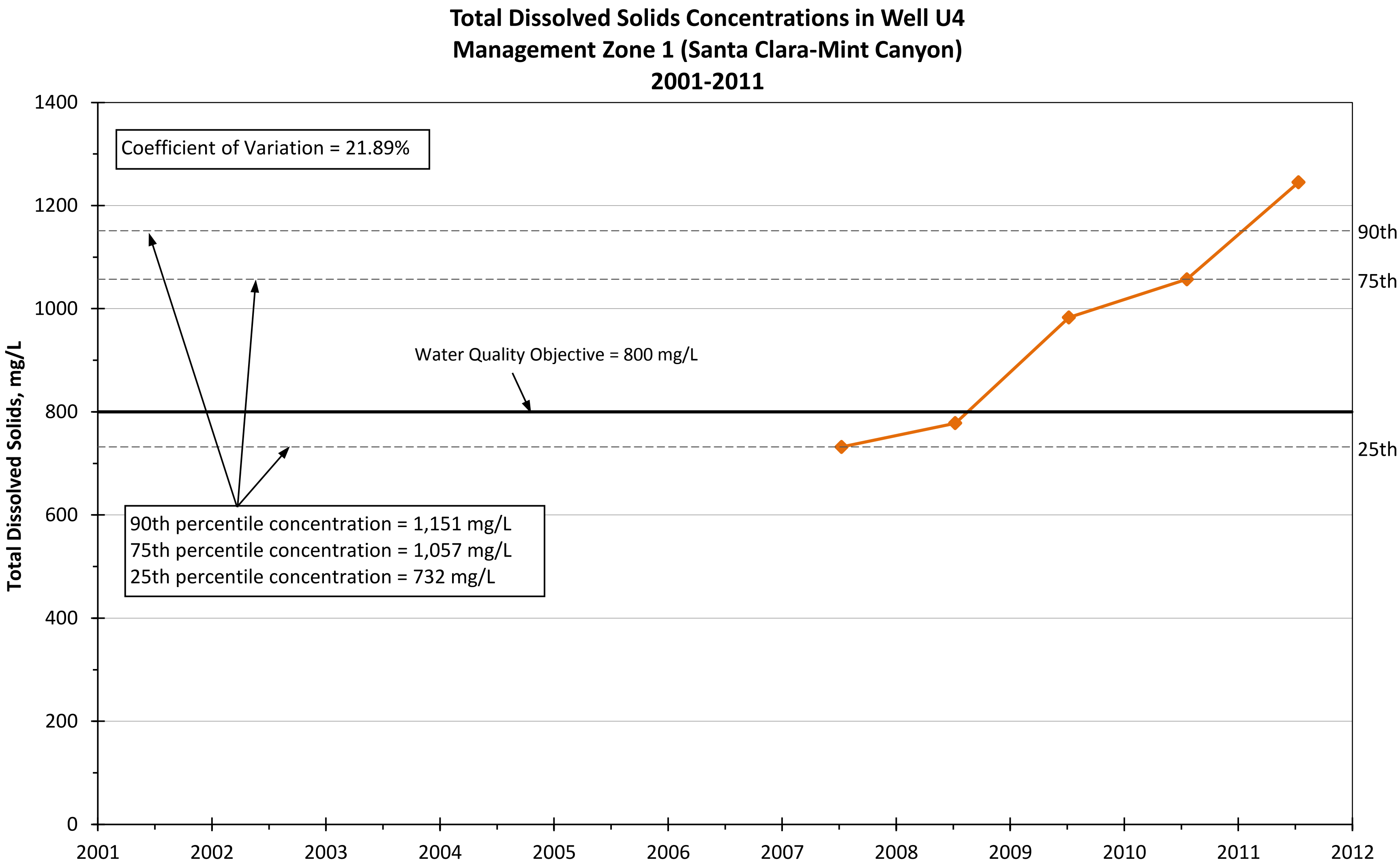
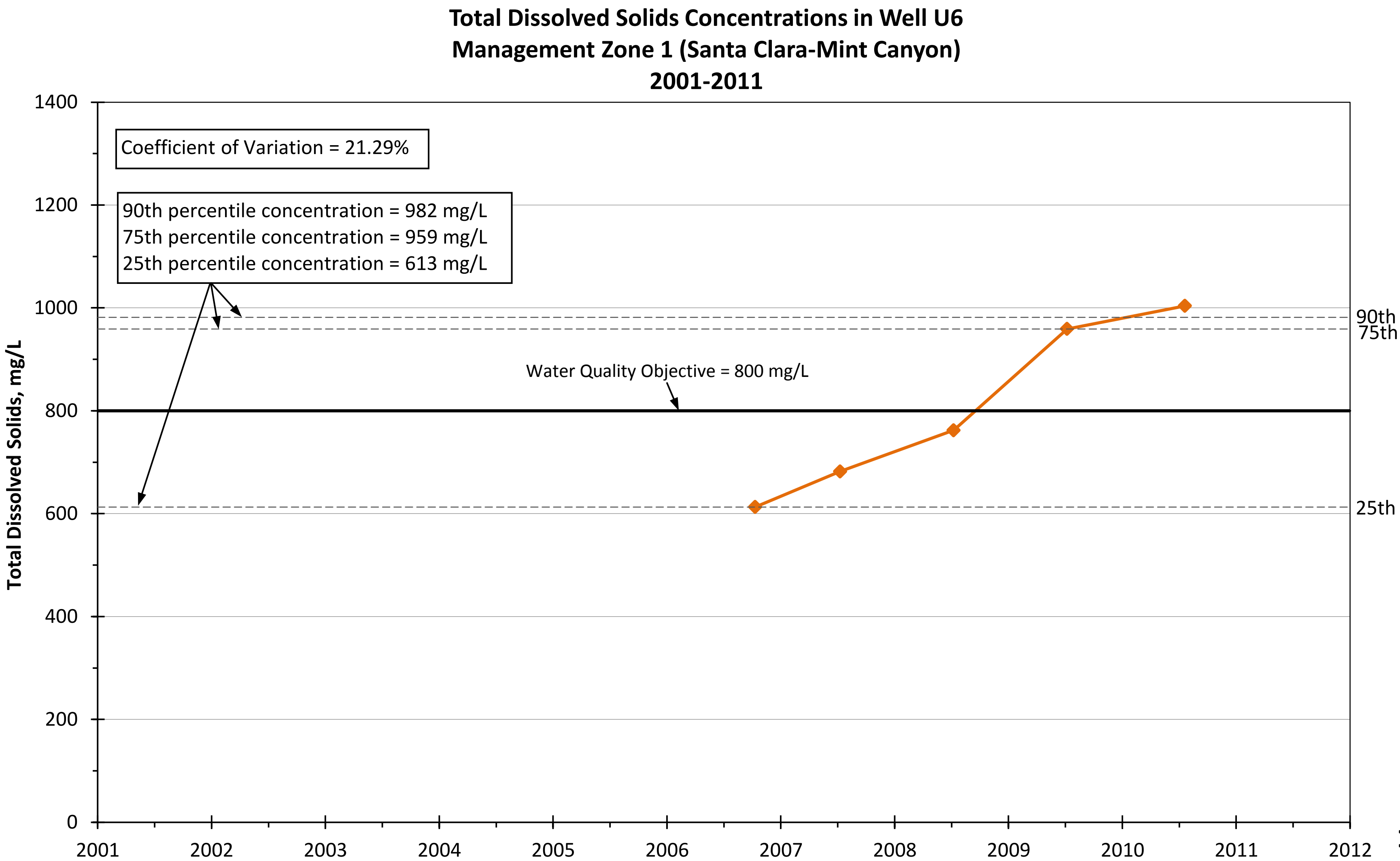
2009
2010
2011
2012

Appendix C

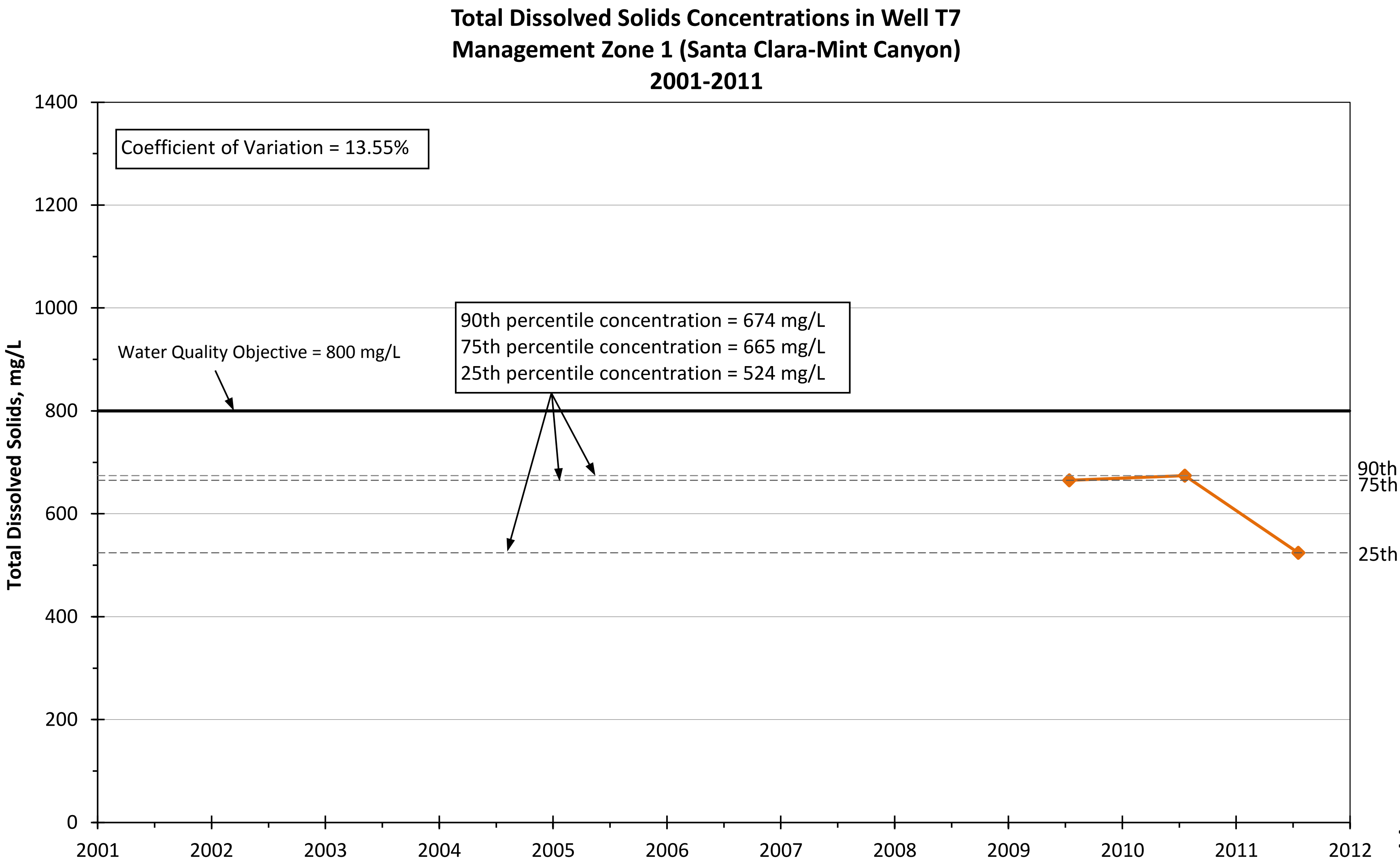

Total Dissolved Solids Concentrations in Well Honby
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 23.53%
90th percentile concentration = 835 mg/L
75th percentile concentration = 820 mg/L
25th percentile concentration = 506 mg/L
Water Quality Objective = 800 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

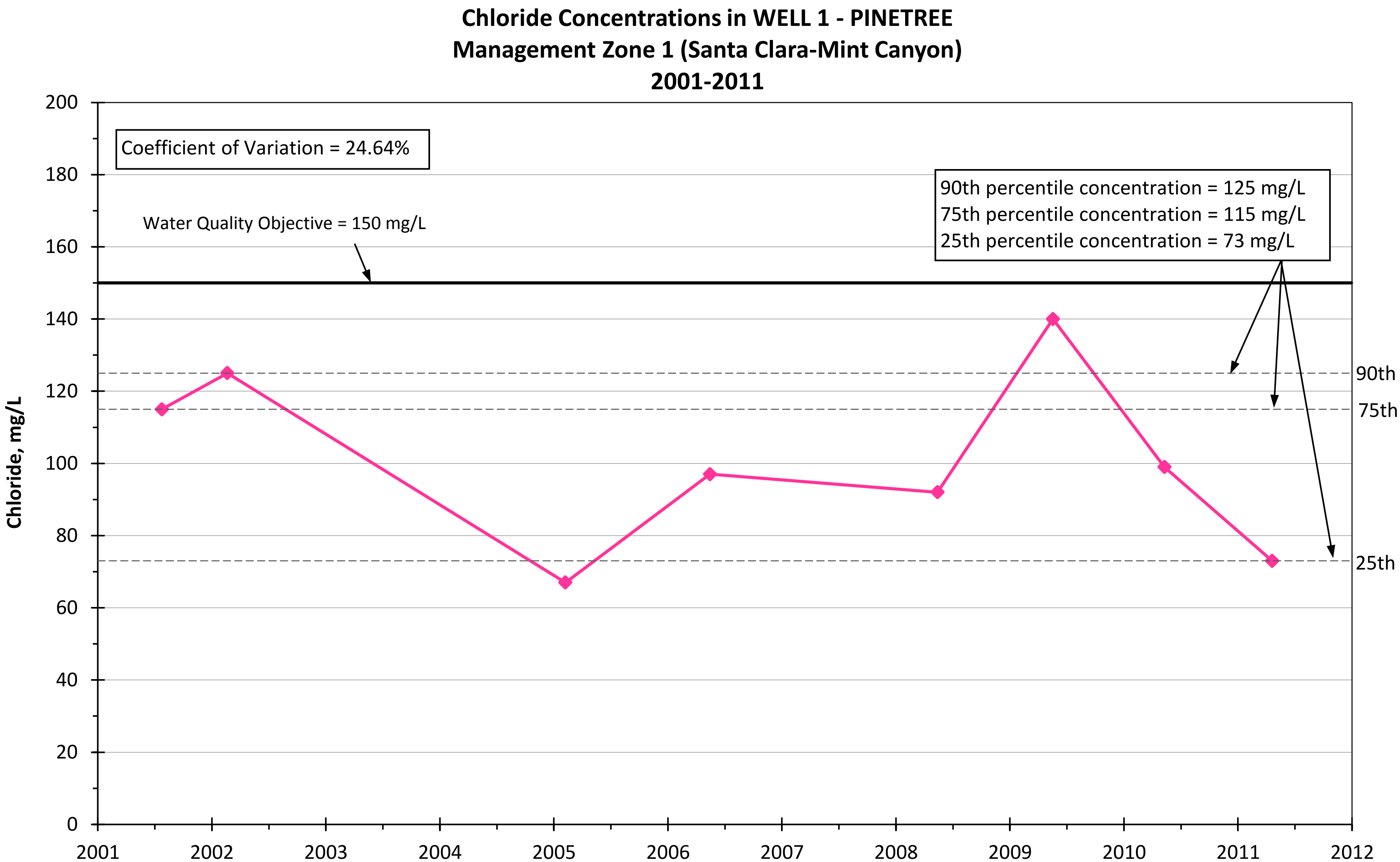

Total Dissolved Solids Concentrations in Well U4
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 21.89%
Water Quality Objective = 800 mg/L
90th percentile concentration = 1,151 mg/L
75th percentile concentration = 1,057 mg/L
25th percentile concentration = 732 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

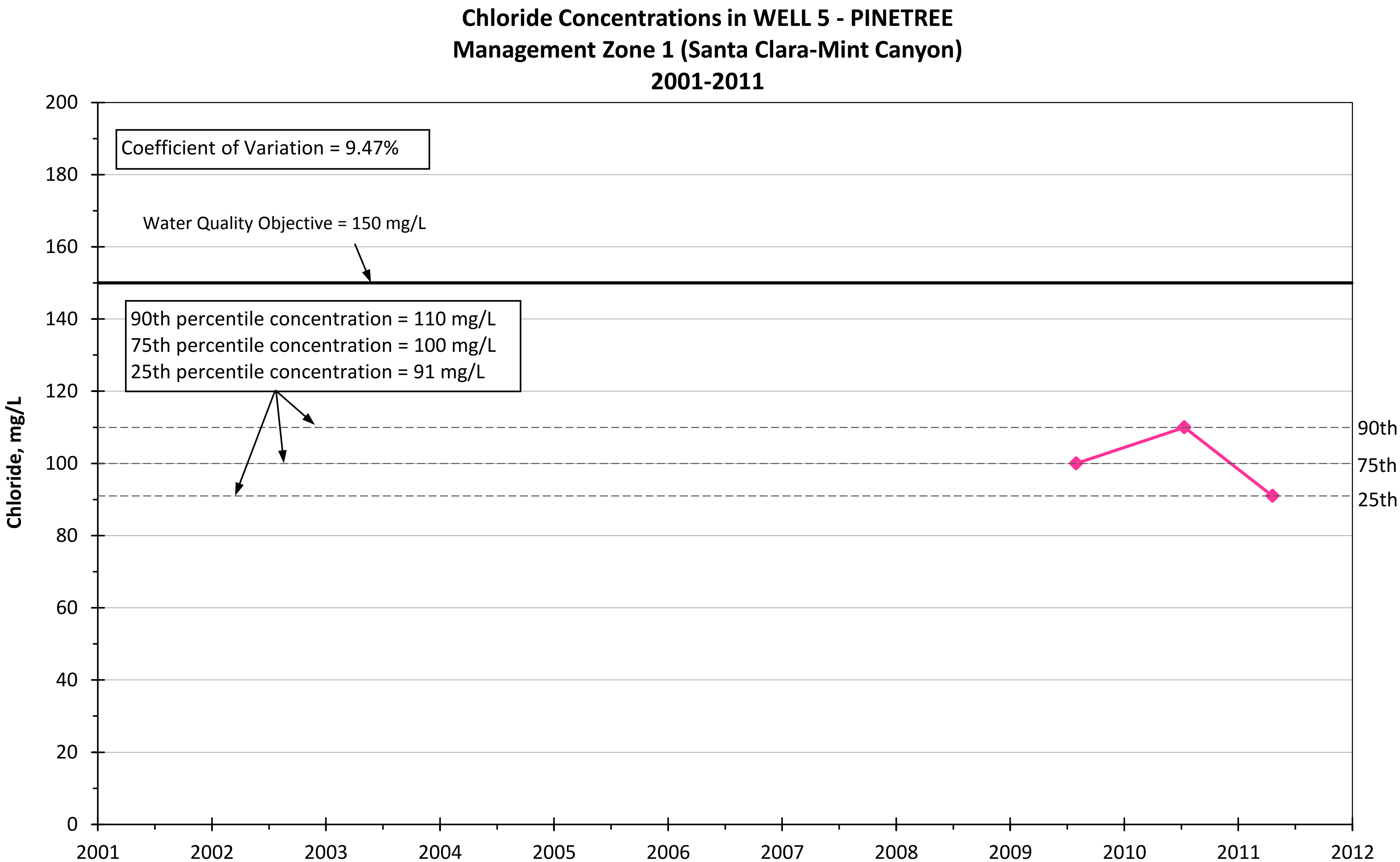

Total Dissolved Solids Concentrations in Well U6
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 21.29%
90th percentile concentration = 982 mg/L
75th percentile concentration = 959 mg/L
25th percentile concentration = 613 mg/L
Water Quality Objective = 800 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

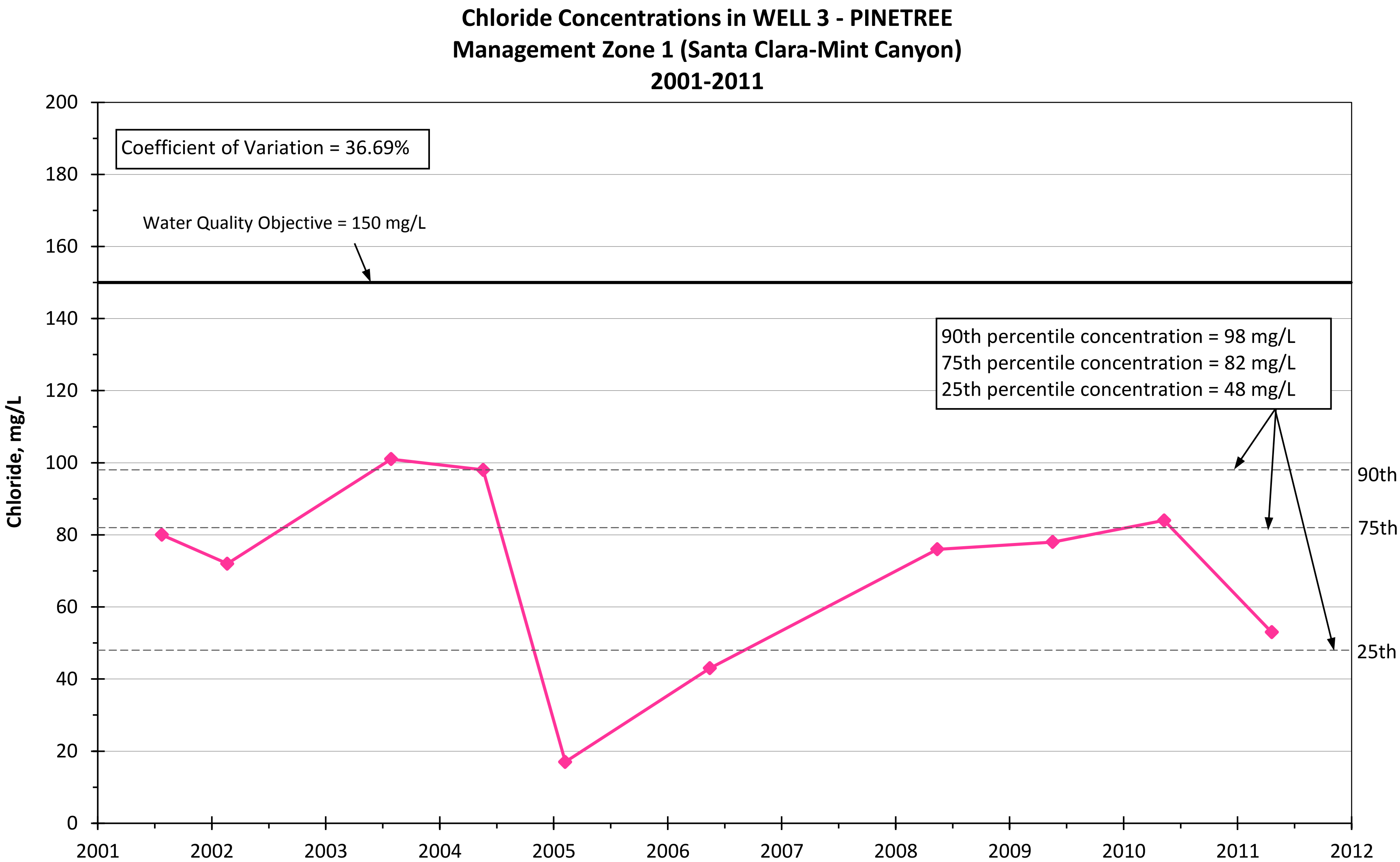
Appendix C


Total Dissolved Solids Concentrations in Well T7
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 13.55%
Water Quality Objective = 800 mg/L
90th percentile concentration = 674 mg/L
75th percentile concentration = 665 mg/L
25th percentile concentration = 524 mg/L
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

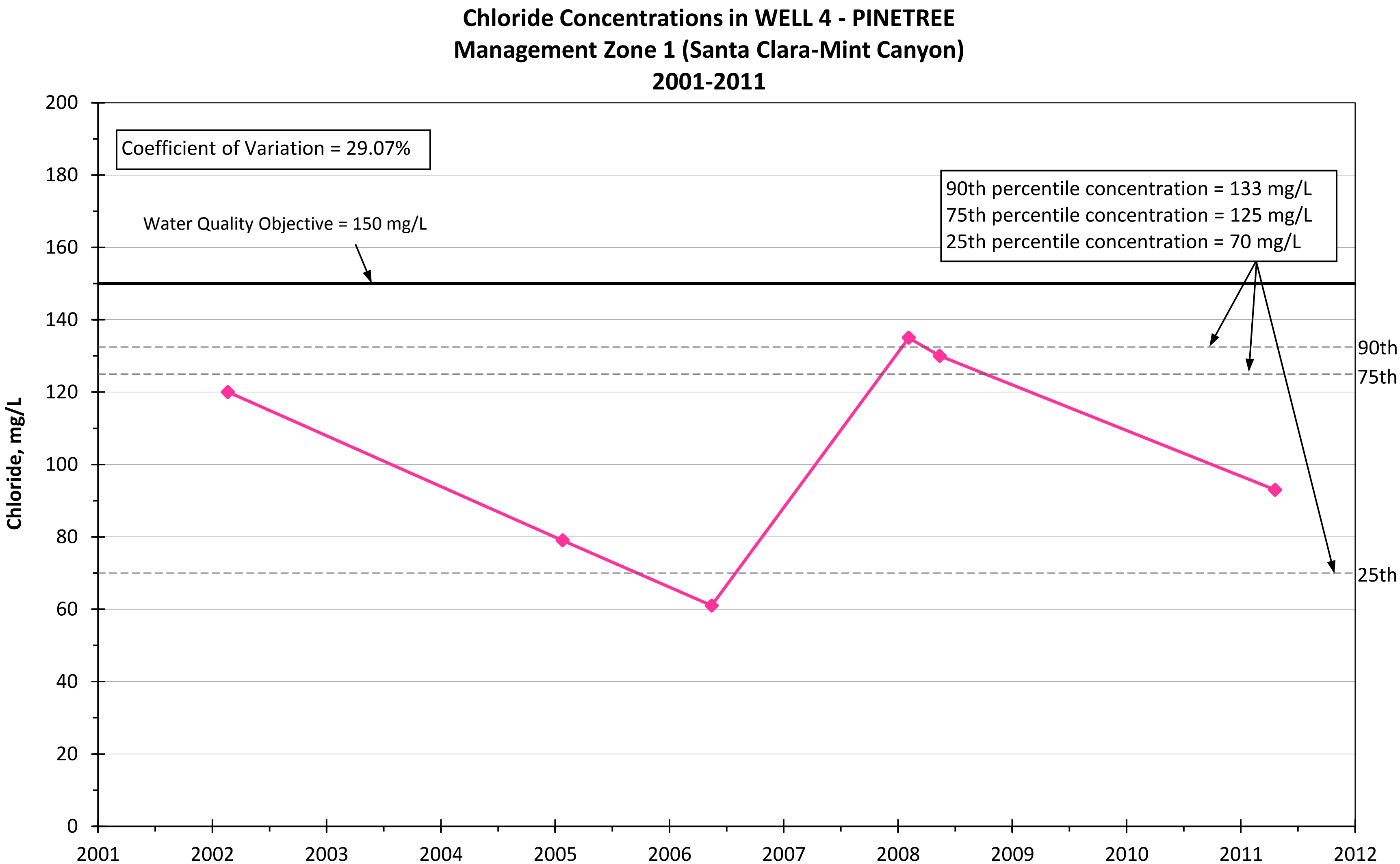

Chloride Concentrations in WELL 1 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 24.64%
Water Quality Objective = 150 mg/L
90th percentile concentration = 125 mg/L
75th percentile concentration = 115 mg/L
25th percentile concentration = 73 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C


Chloride Concentrations in WELL 5 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 9.47%
Water Quality Objective = 150 mg/L
90th percentile concentration = 110 mg/L
75th percentile concentration = 100 mg/L
25th percentile concentration = 91 mg/L
Chloride, mg/L
200
180
160
140
120
100
80
60
40
20
0
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

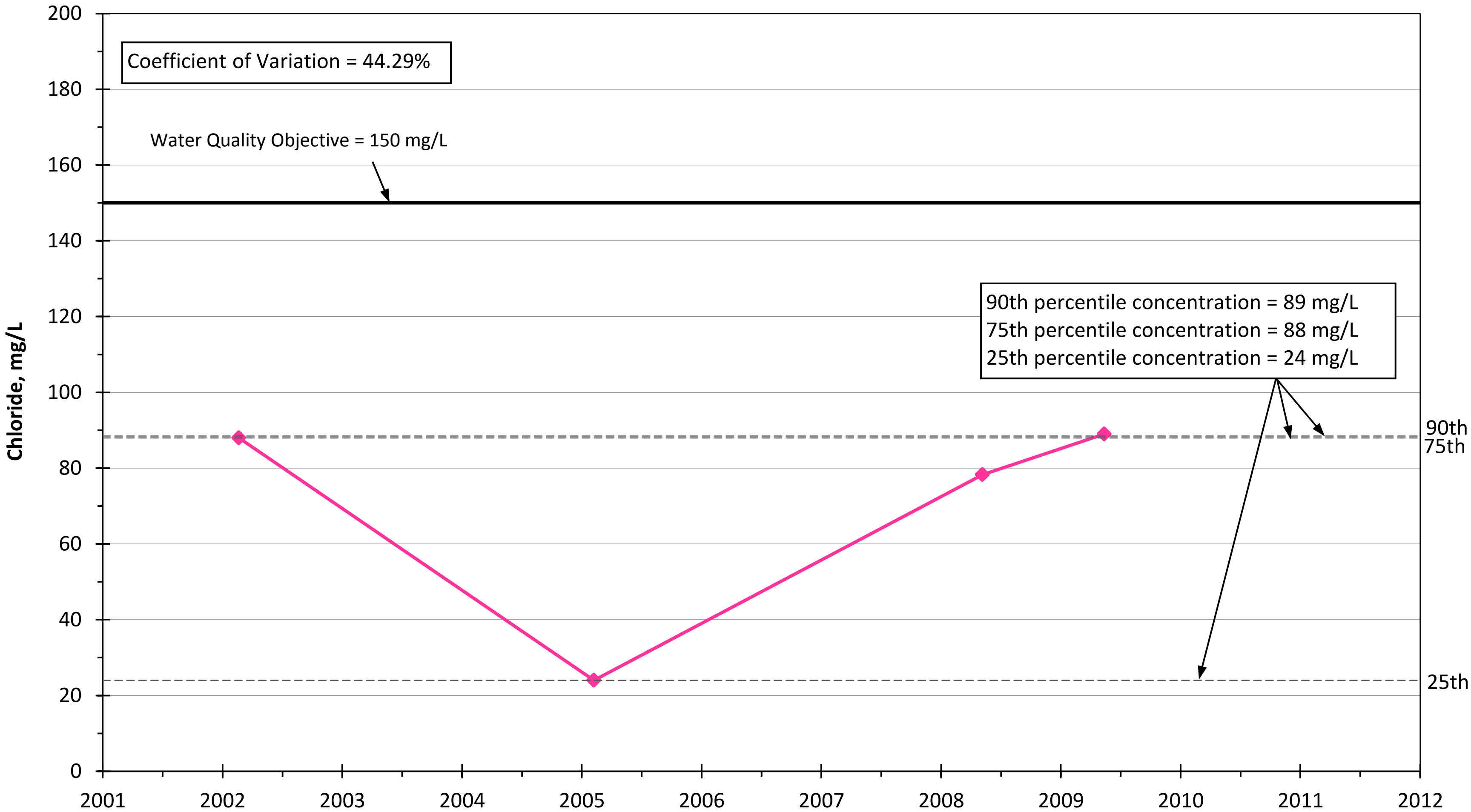

Chloride Concentrations in WELL 3 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 36.69%
Water Quality Objective = 150 mg/L
90th percentile concentration = 98 mg/L
75th percentile concentration = 82 mg/L
25th percentile concentration = 48 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

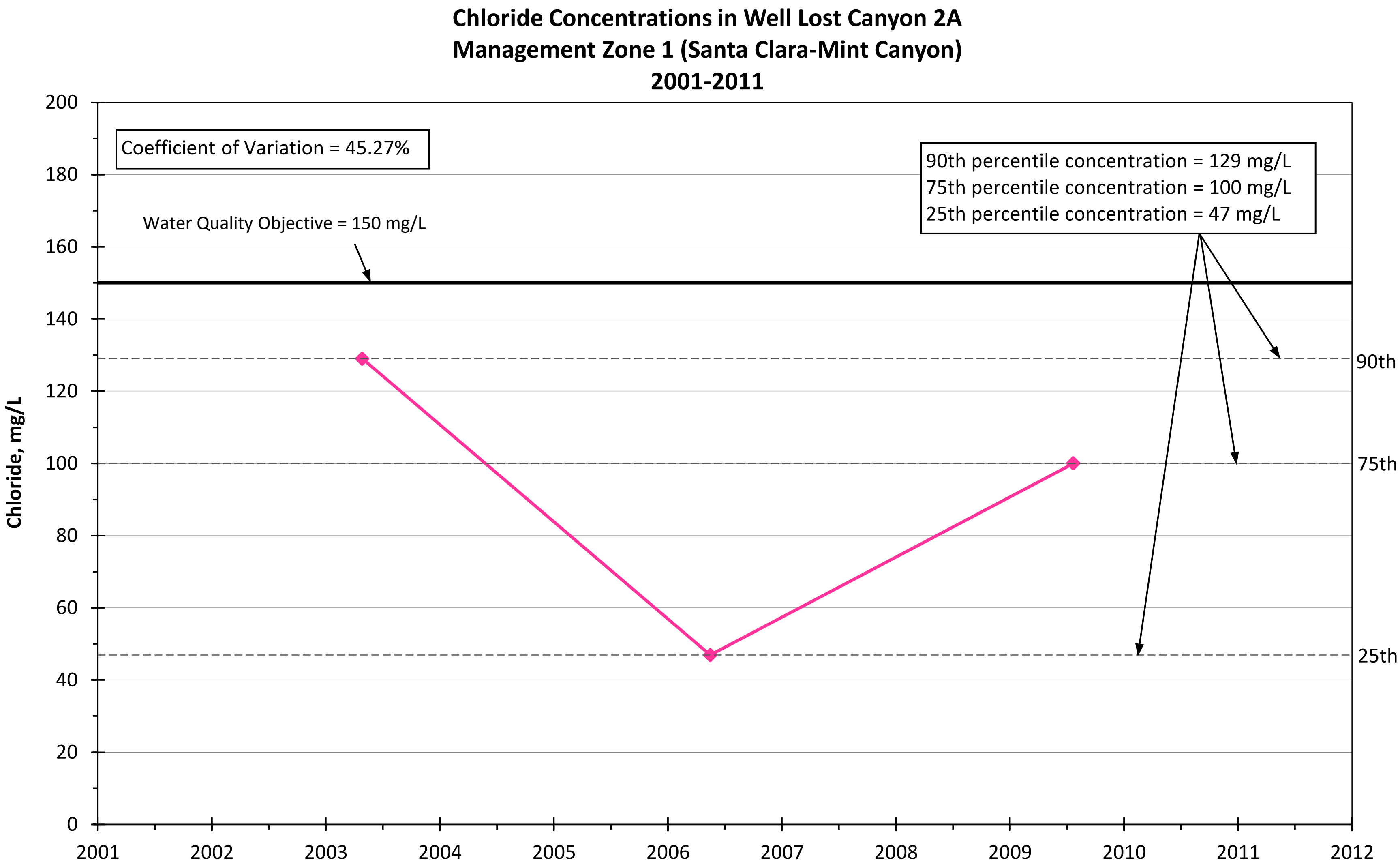
Appendix C


Chloride Concentrations in WELL 4 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 29.07%
Water Quality Objective = 150 mg/L
90th percentile concentration = 133 mg/L
75th percentile concentration = 125 mg/L
25th percentile concentration = 70 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

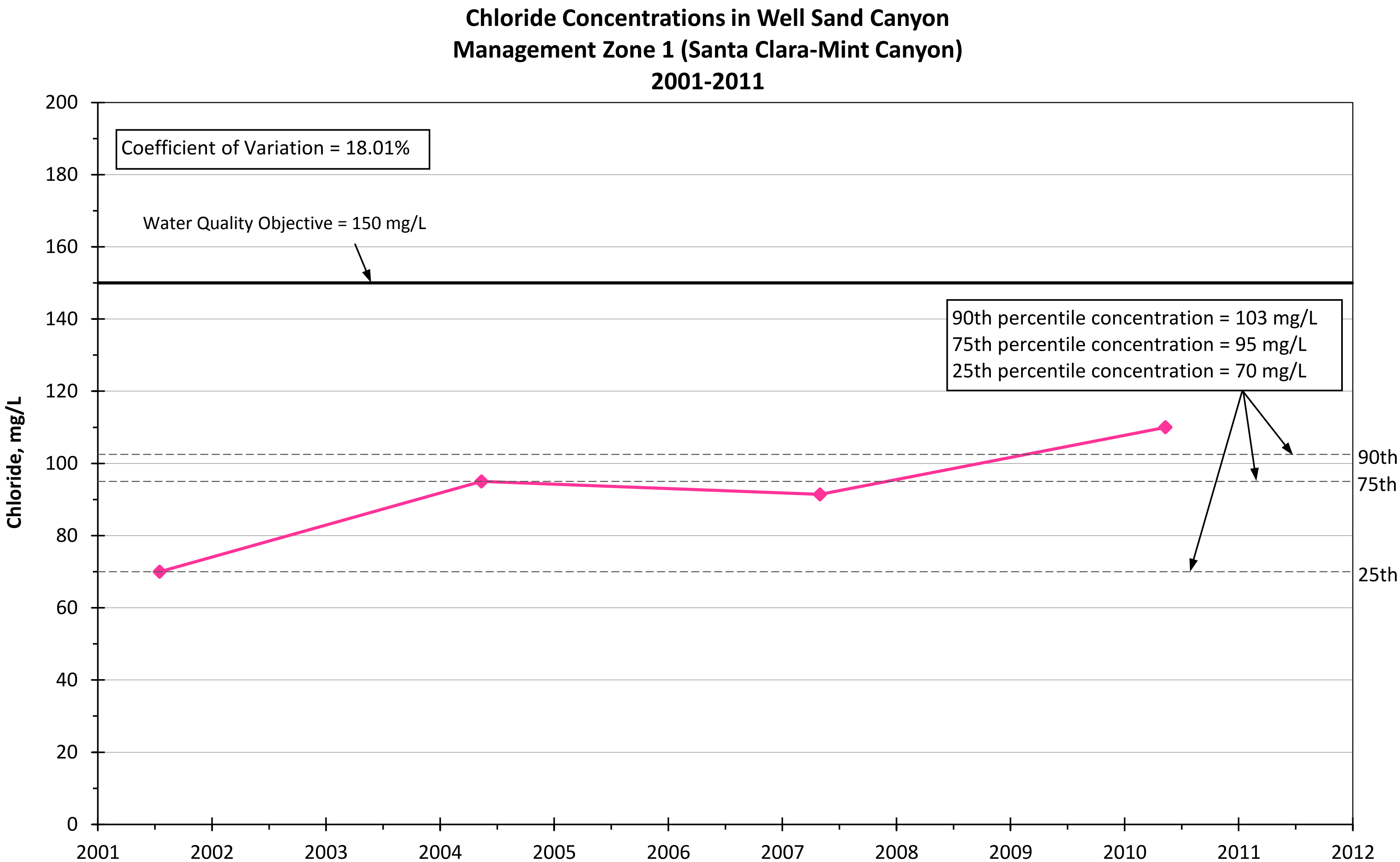
Appendix C

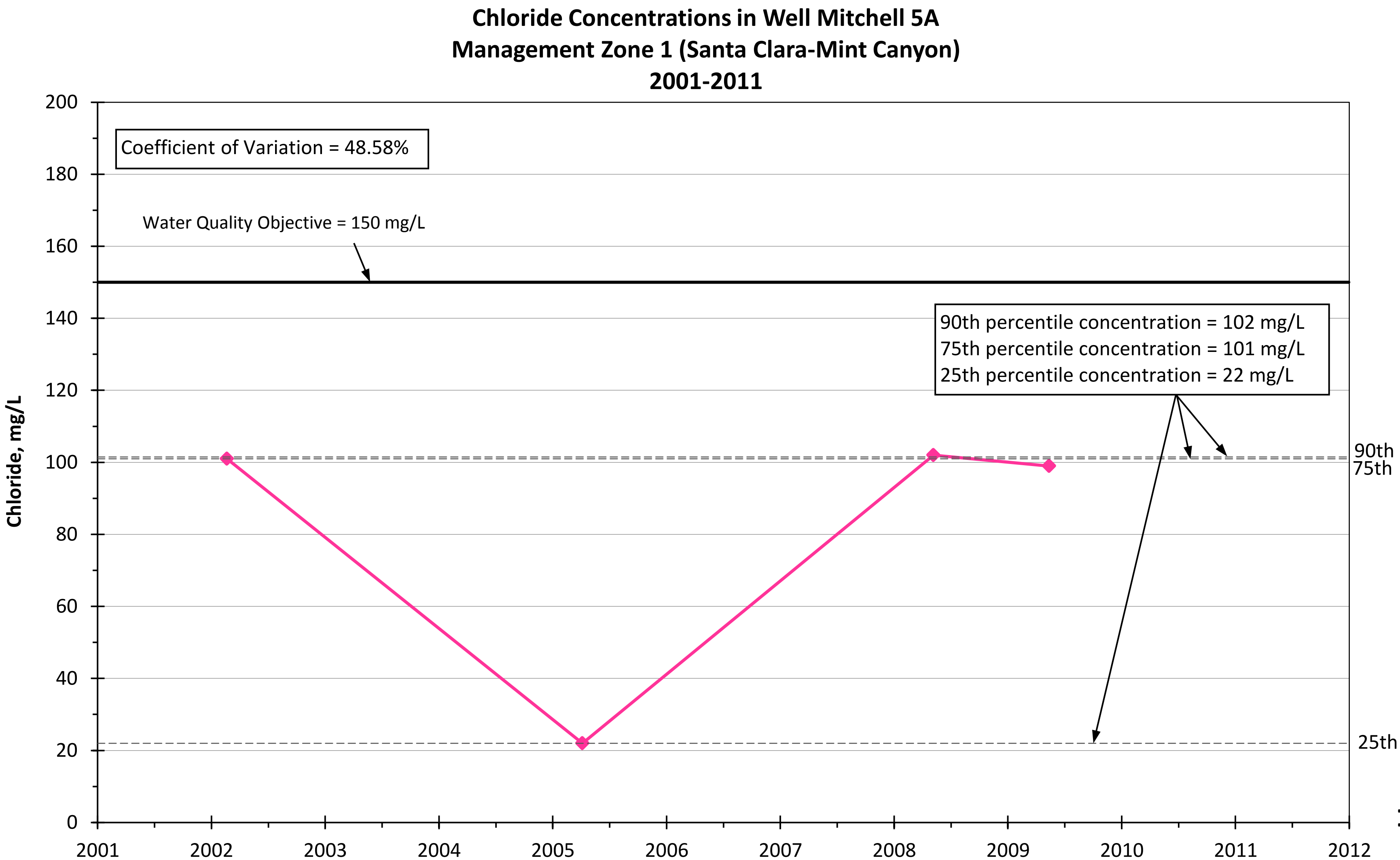
Chloride Concentrations in Well Lost Canyon 2
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011



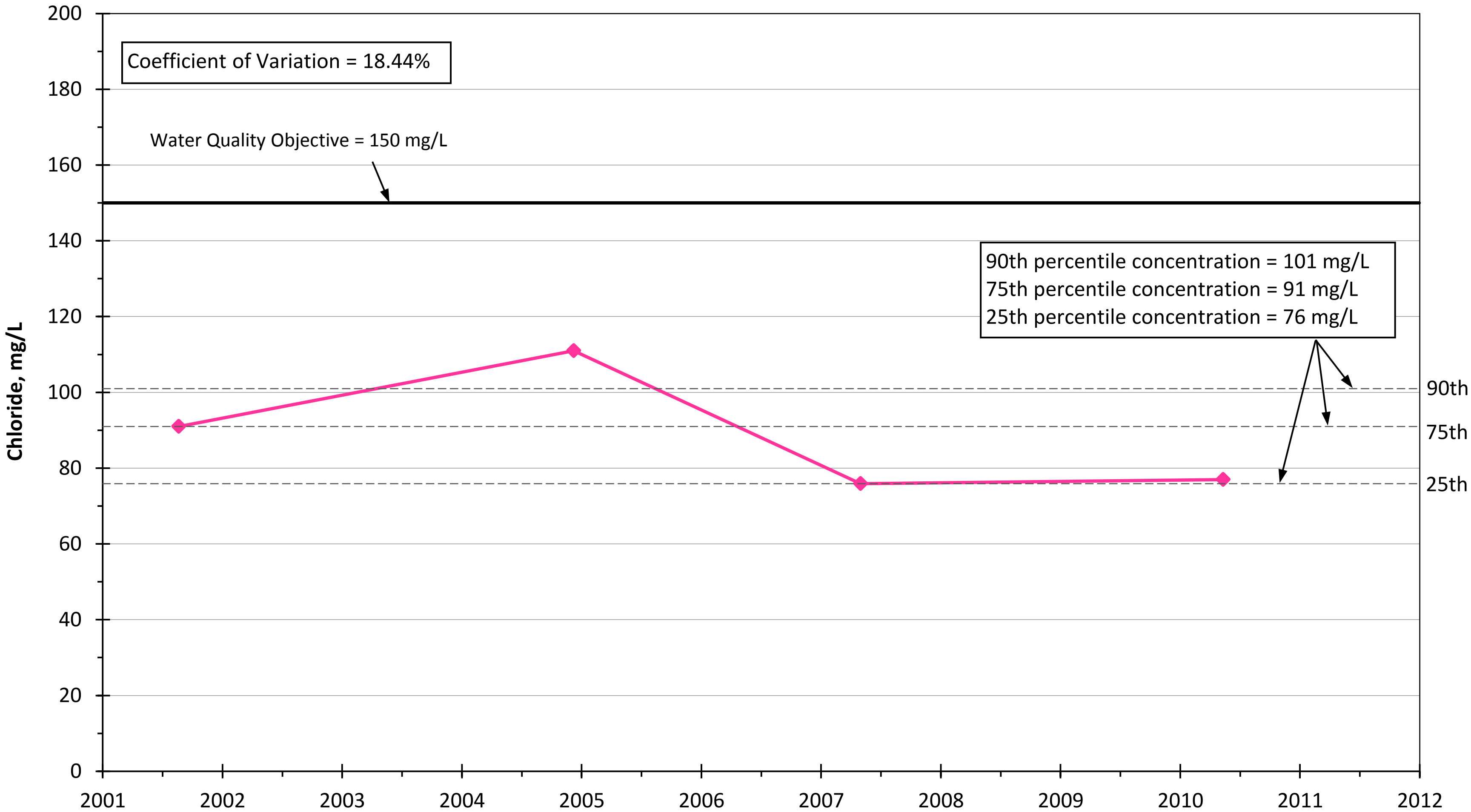

Chloride Concentrations in Well Lost Canyon 2A
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 45.27%
Water Quality Objective = 150 mg/L
90th percentile concentration = 129 mg/L
75th percentile concentration = 100 mg/L
25th percentile concentration = 47 mg/L
90th
75th
25th
Chloride, mg/L
200
180
160
140
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C


Chloride Concentrations in Well Sand Canyon
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 18.01%
Water Quality Objective = 150 mg/L
90th percentile concentration = 103 mg/L
75th percentile concentration = 95 mg/L
25th percentile concentration = 70 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Chloride Concentrations in Well Mitchell 5A
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 48.58%
Water Quality Objective = 150 mg/L
90th percentile concentration = 102 mg/L
75th percentile concentration = 101 mg/L
25th percentile concentration = 22 mg/L
Chloride, mg/L
200
180
160
140
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Chloride Concentrations in Well Mitchell 5B
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011



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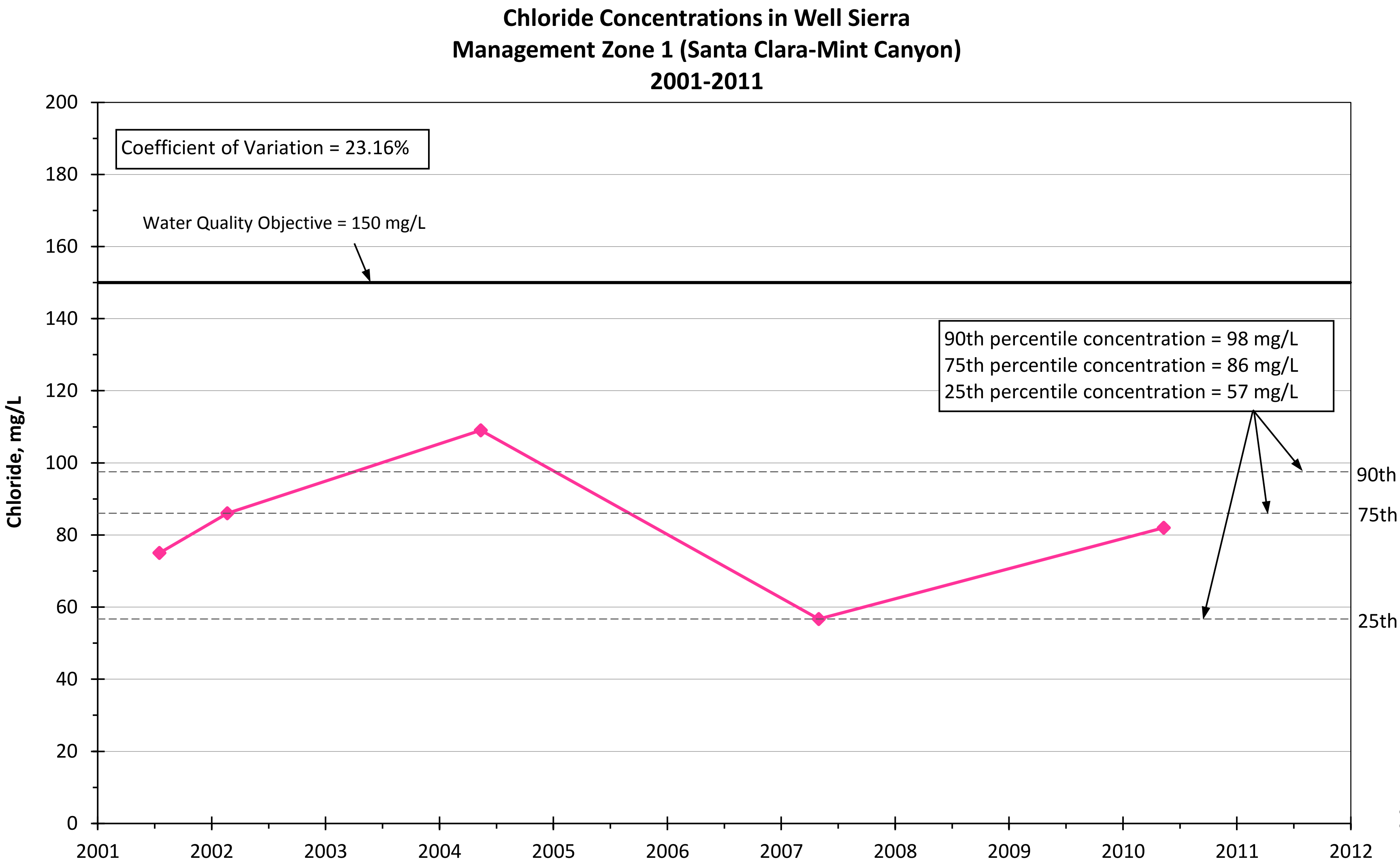
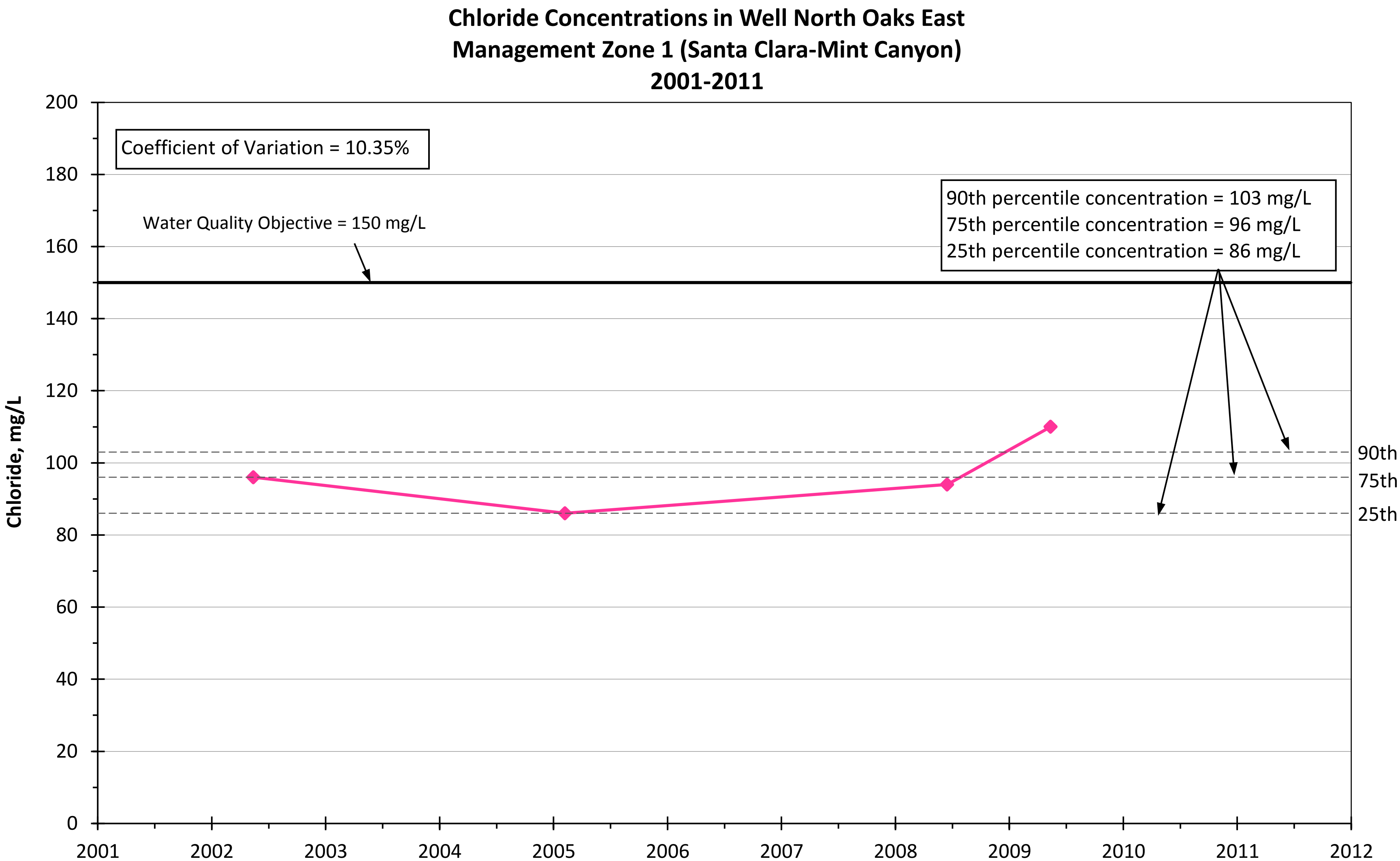
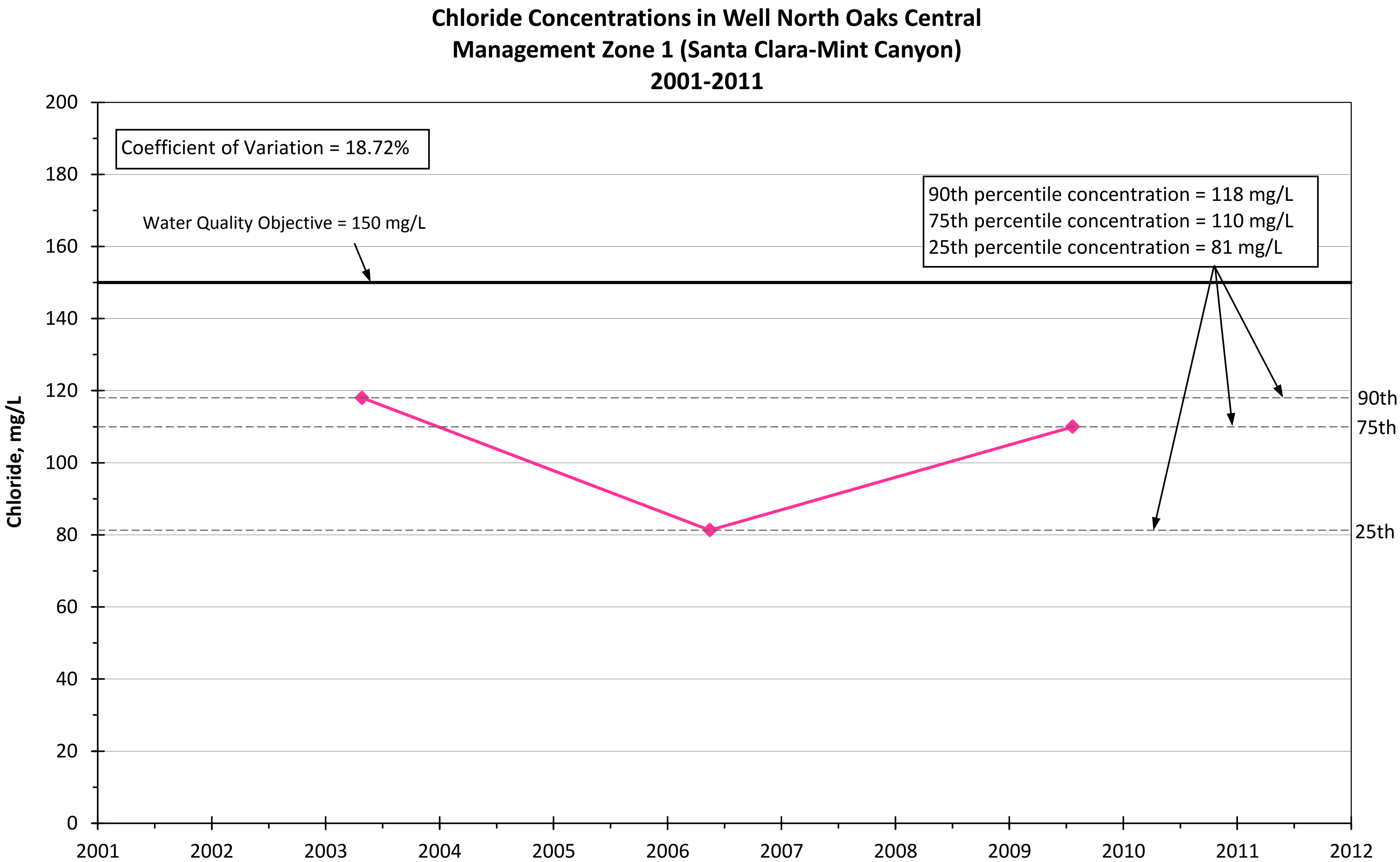
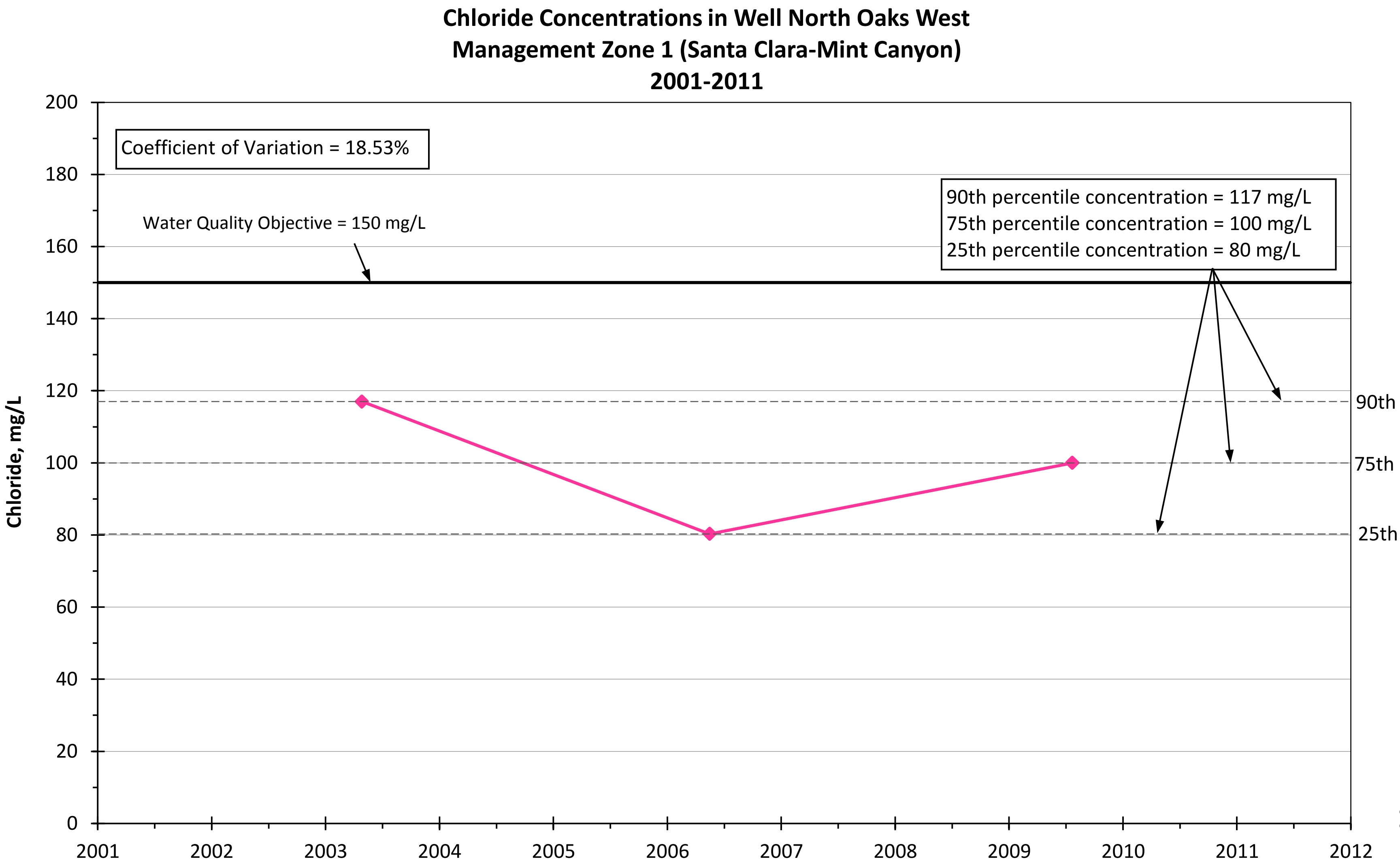

Chloride Concentrations in Well Sierra
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 23.16%
Water Quality Objective = 150 mg/L
90th percentile concentration = 98 mg/L
75th percentile concentration = 86 mg/L
25th percentile concentration = 57 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

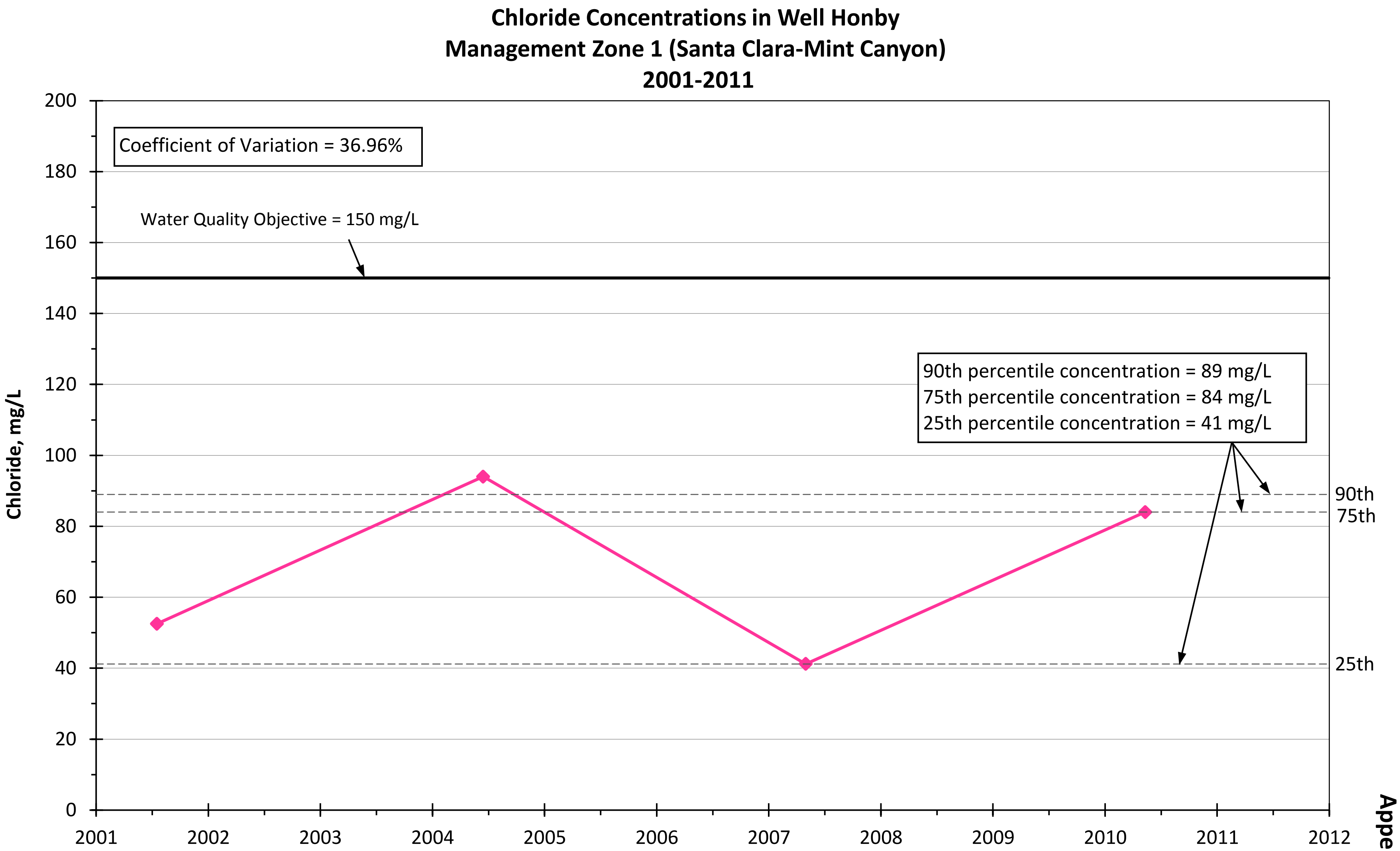

Chloride Concentrations in Well North Oaks East
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 10.35%
Water Quality Objective = 150 mg/L
90th percentile concentration = 103 mg/L
75th percentile concentration = 96 mg/L
25th percentile concentration = 86 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

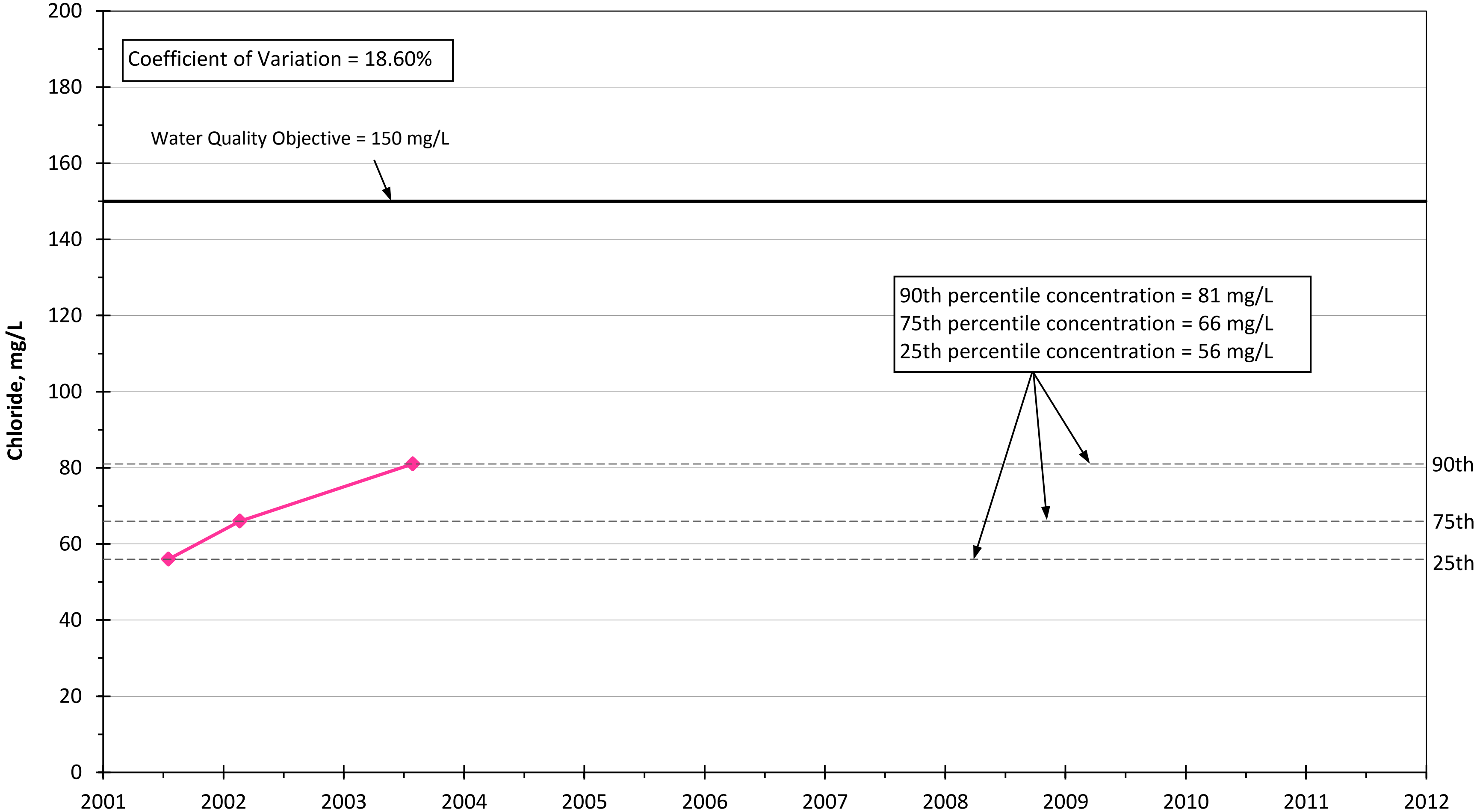

Chloride Concentrations in Well North Oaks Central
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 18.72%
Water Quality Objective = 150 mg/L
90th percentile concentration = 118 mg/L
75th percentile concentration = 110 mg/L
25th percentile concentration = 81 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

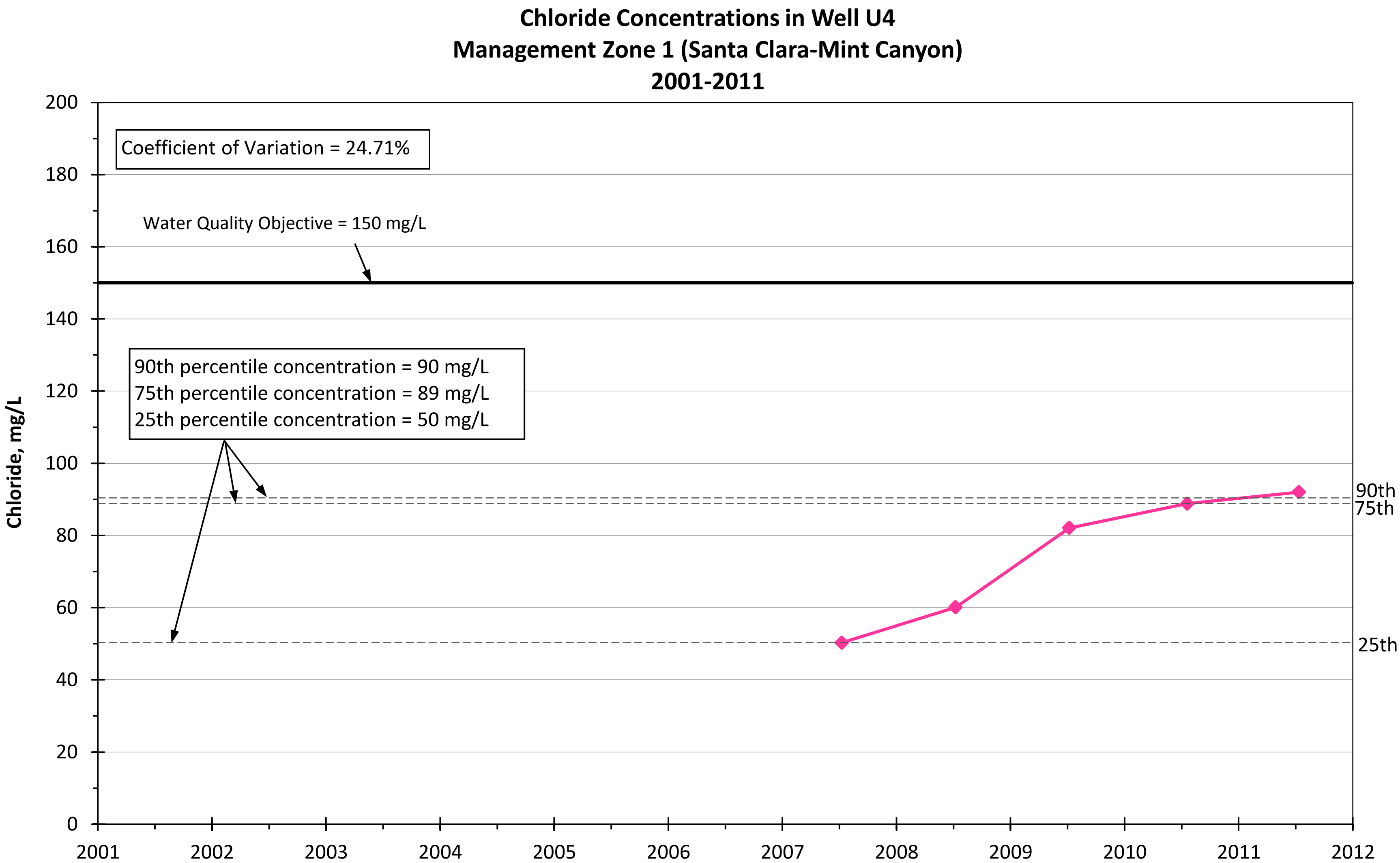

Chloride Concentrations in Well North Oaks West
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 18.53%
Water Quality Objective = 150 mg/L
90th percentile concentration = 117 mg/L
75th percentile concentration = 100 mg/L
25th percentile concentration = 80 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

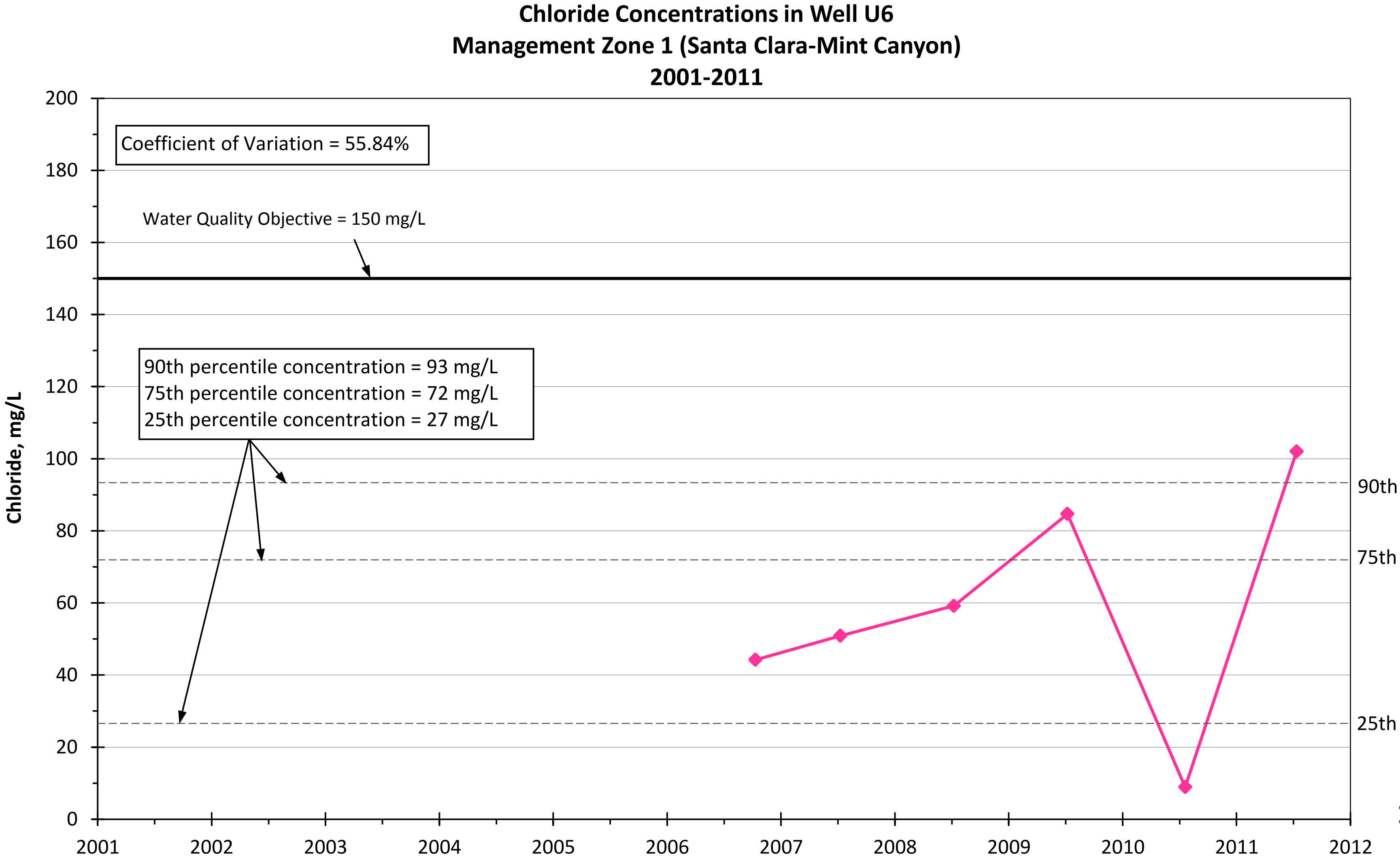
Appendix C

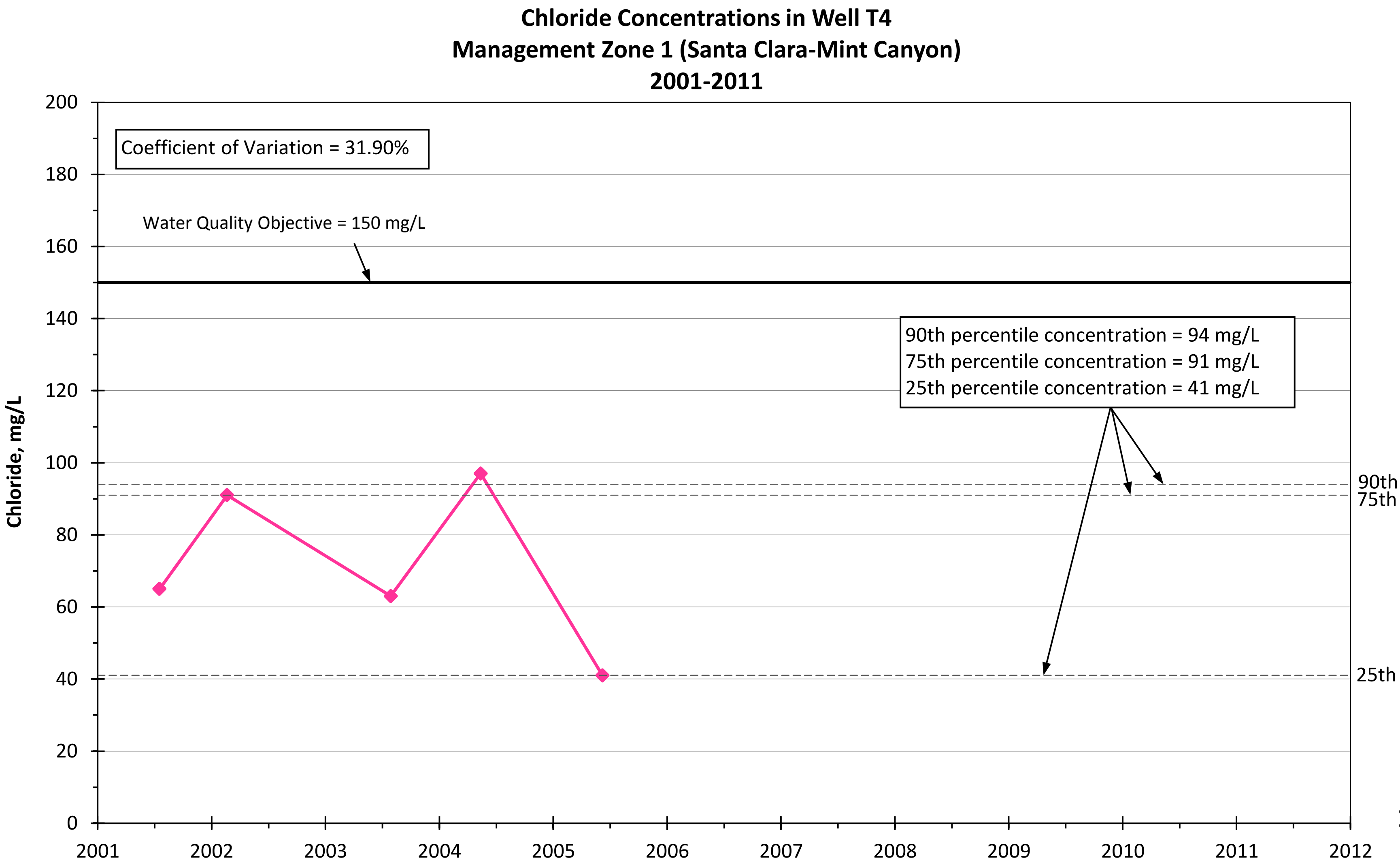

Chloride Concentrations in Well Honby
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 36.96%
Water Quality Objective = 150 mg/L
90th percentile concentration = 89 mg/L
75th percentile concentration = 84 mg/L
25th percentile concentration = 41 mg/L
90th
75th
25th
Chloride, mg/L
200
180
160
140
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

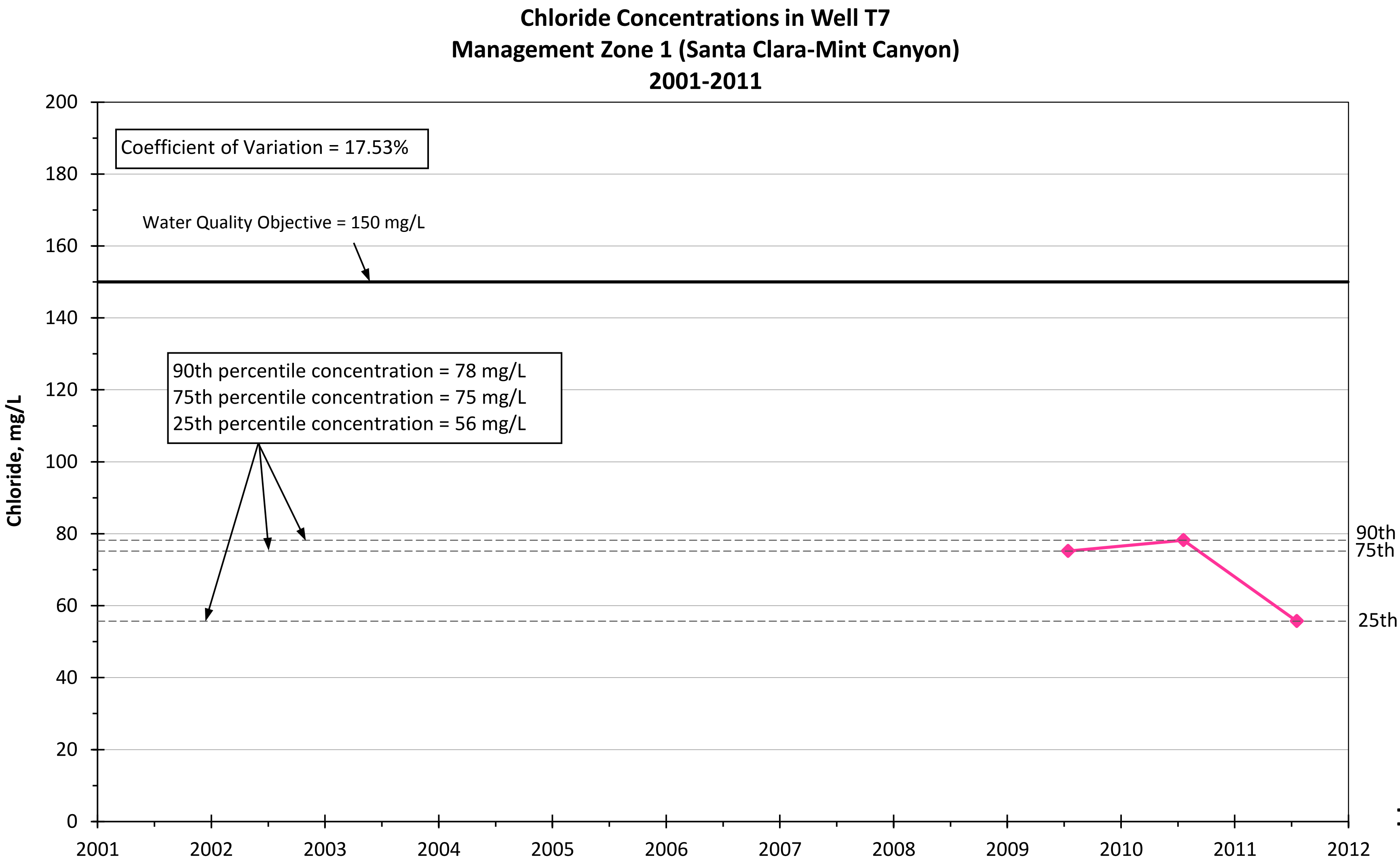
Chloride Concentrations in Well U3
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011



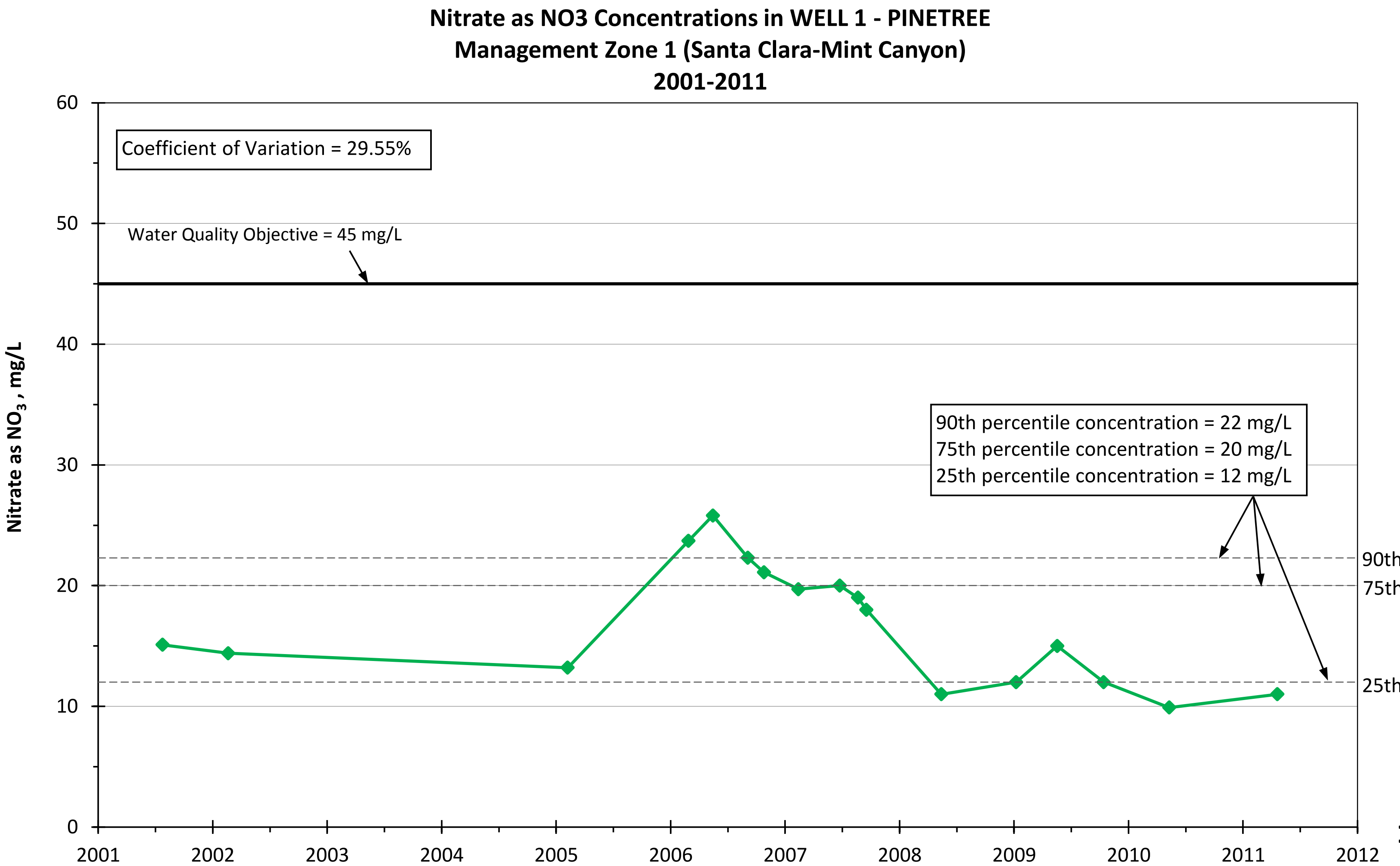

Chloride Concentrations in Well U4
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 24.71%
Water Quality Objective = 150 mg/L
90th percentile concentration = 90 mg/L
75th percentile concentration = 89 mg/L
25th percentile concentration = 50 mg/L
Chloride, mg/L
90th
75th
25th
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Chloride Concentrations in Well U6
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 55.84%
Water Quality Objective = 150 mg/L
90th percentile concentration = 93 mg/L
75th percentile concentration = 72 mg/L
25th percentile concentration = 27 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

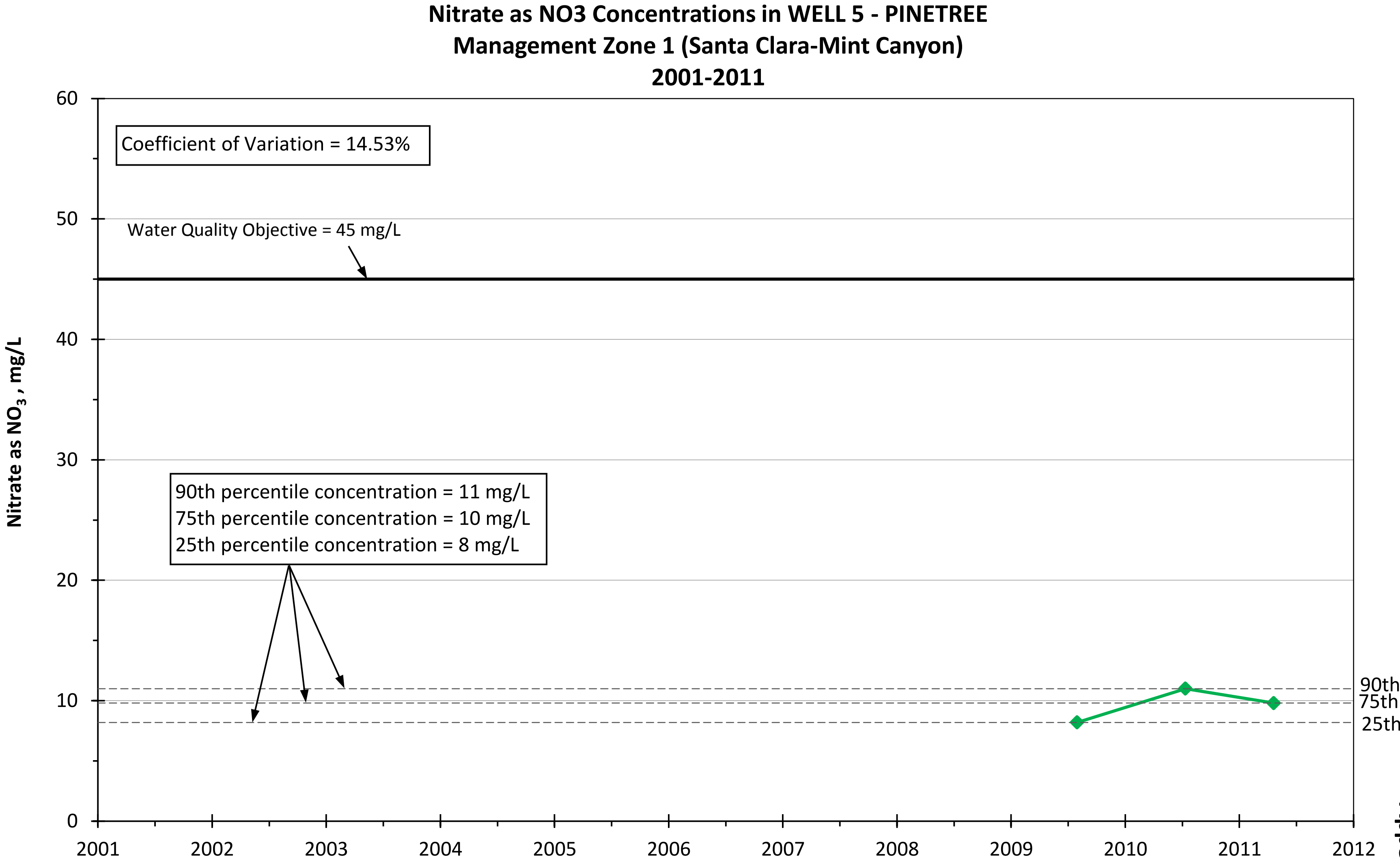

Chloride Concentrations in Well T4
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 31.90%
Water Quality Objective = 150 mg/L
90th percentile concentration = 94 mg/L
75th percentile concentration = 91 mg/L
25th percentile concentration = 41 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

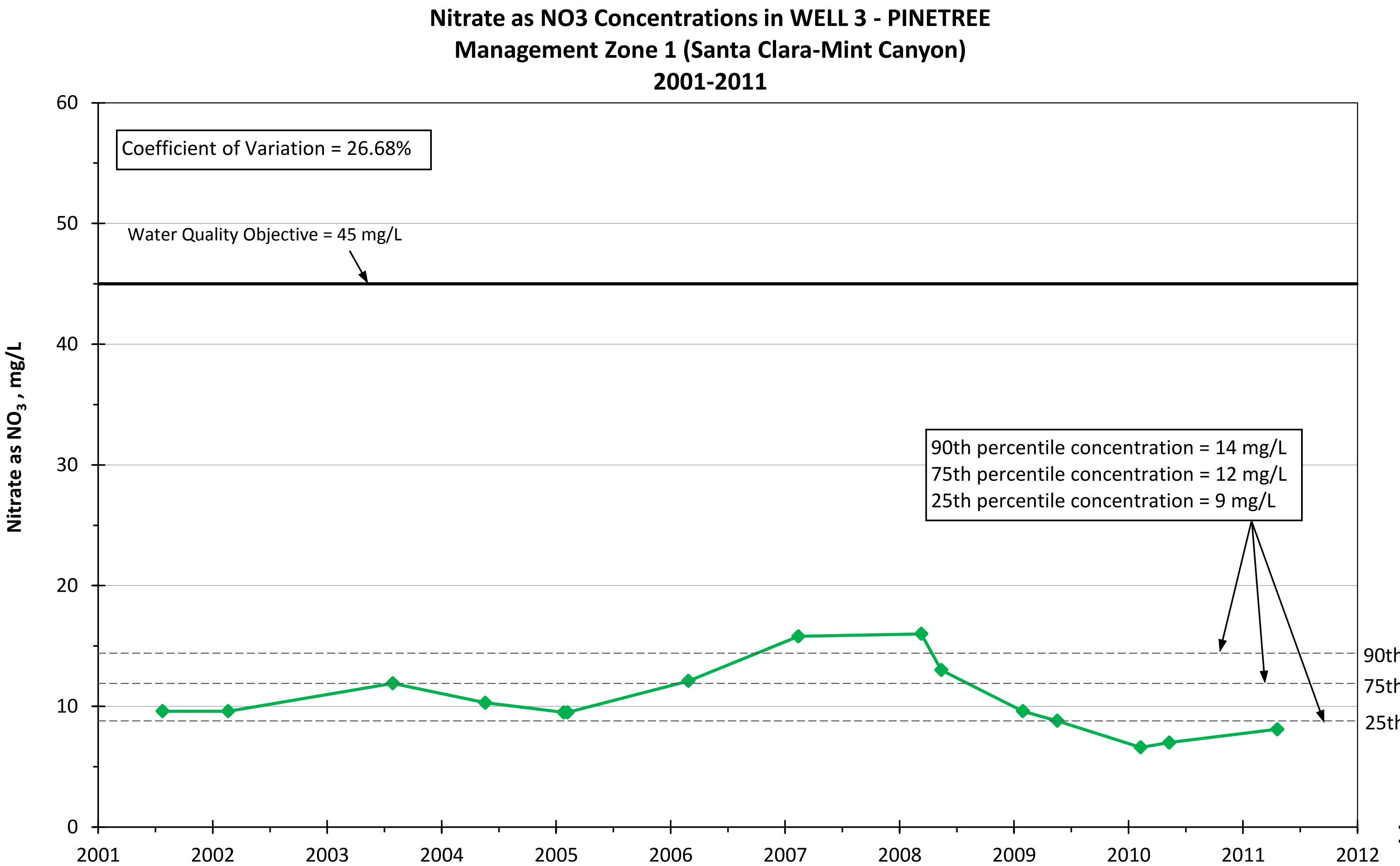

Chloride Concentrations in Well T7
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 17.53%
Water Quality Objective = 150 mg/L
90th percentile concentration = 78 mg/L
75th percentile concentration = 75 mg/L
25th percentile concentration = 56 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

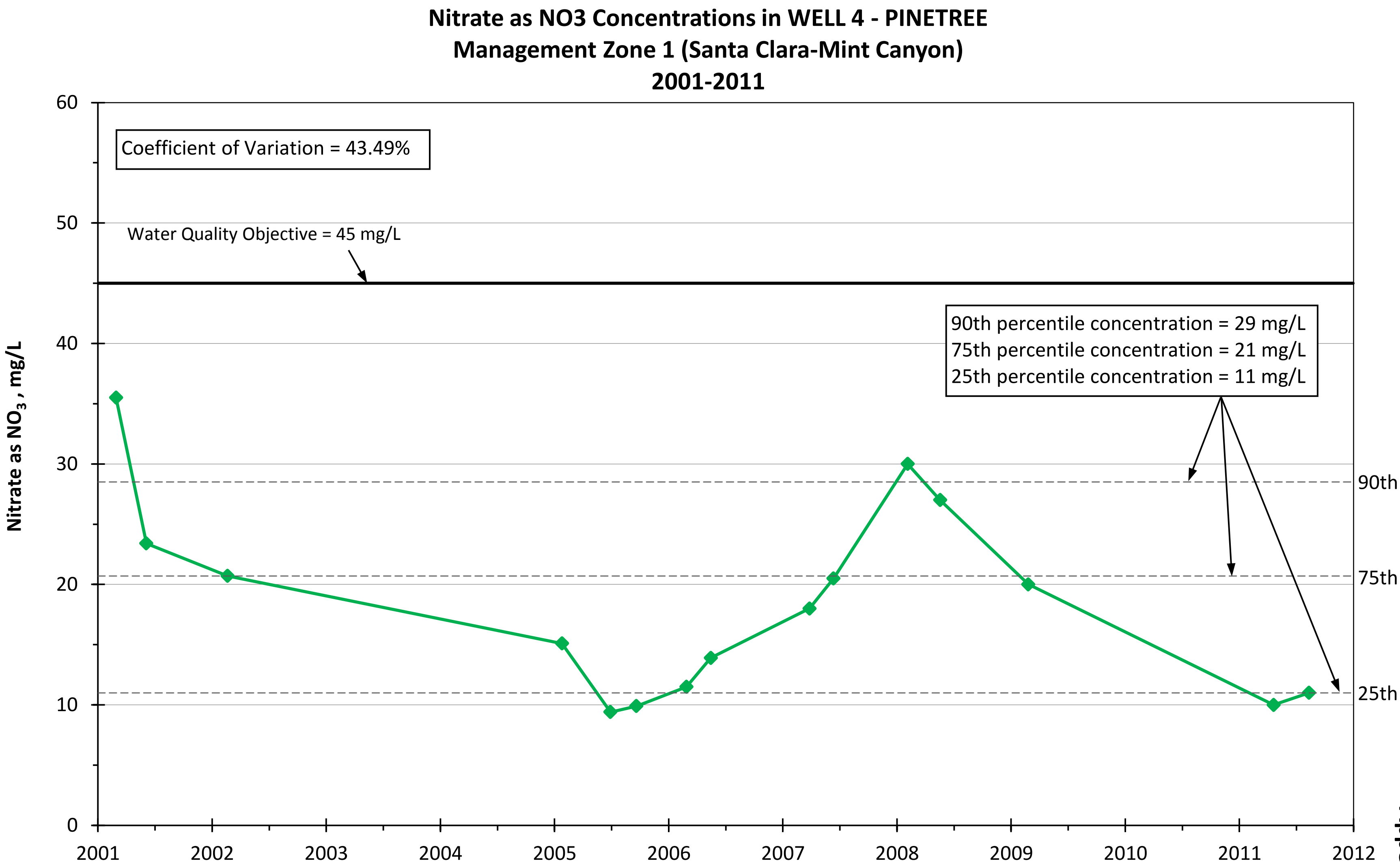

Nitrate as NO3 Concentrations in WELL 1 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 29.55%
Water Quality Objective = 45 mg/L
90th percentile concentration = 22 mg/L
75th percentile concentration = 20 mg/L
25th percentile concentration = 12 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

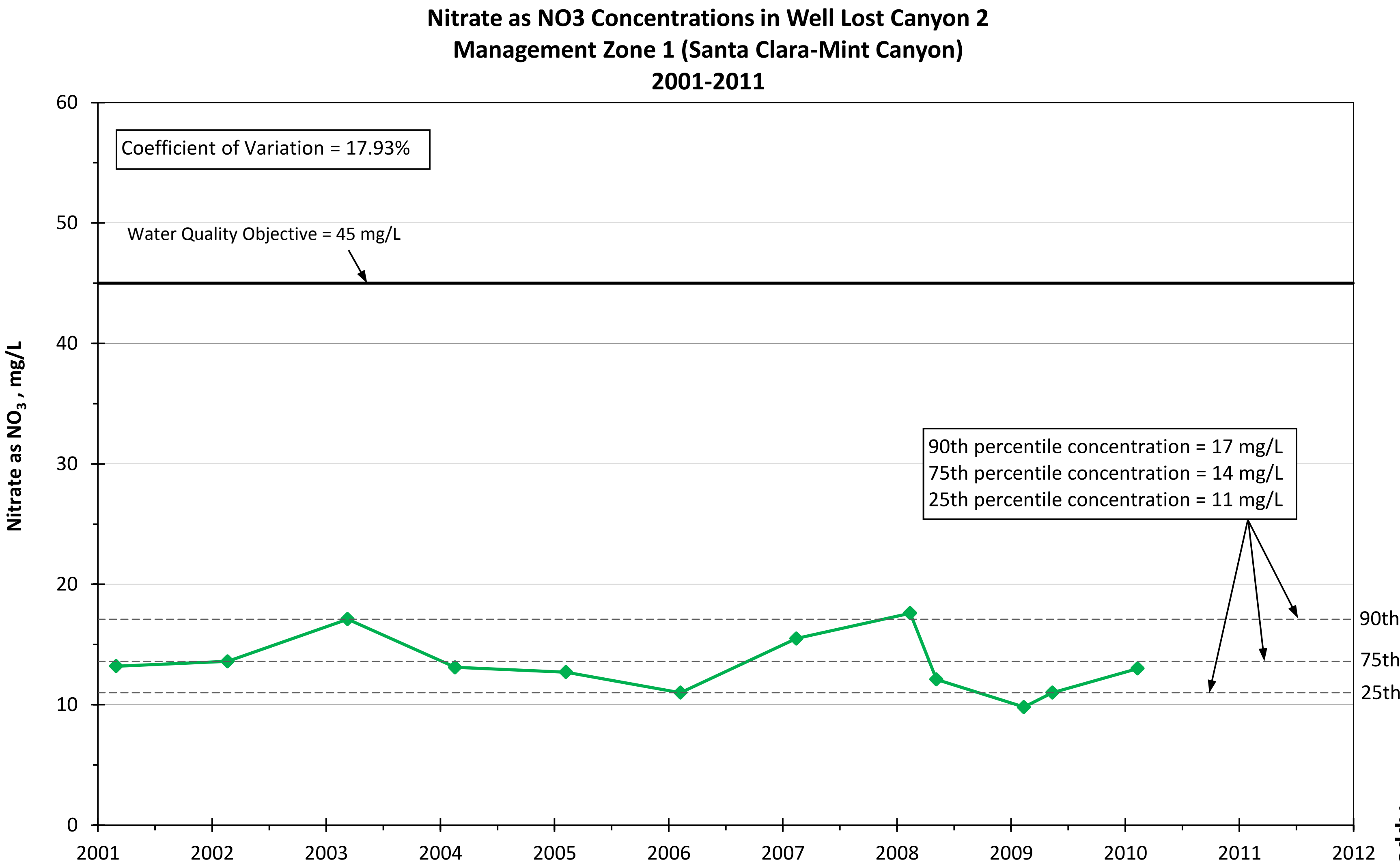
Appendix C


Nitrate as NO3 Concentrations in WELL 5 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 14.53%
Water Quality Objective = 45 mg/L
90th percentile concentration = 11 mg/L
75th percentile concentration = 10 mg/L
25th percentile concentration = 8 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

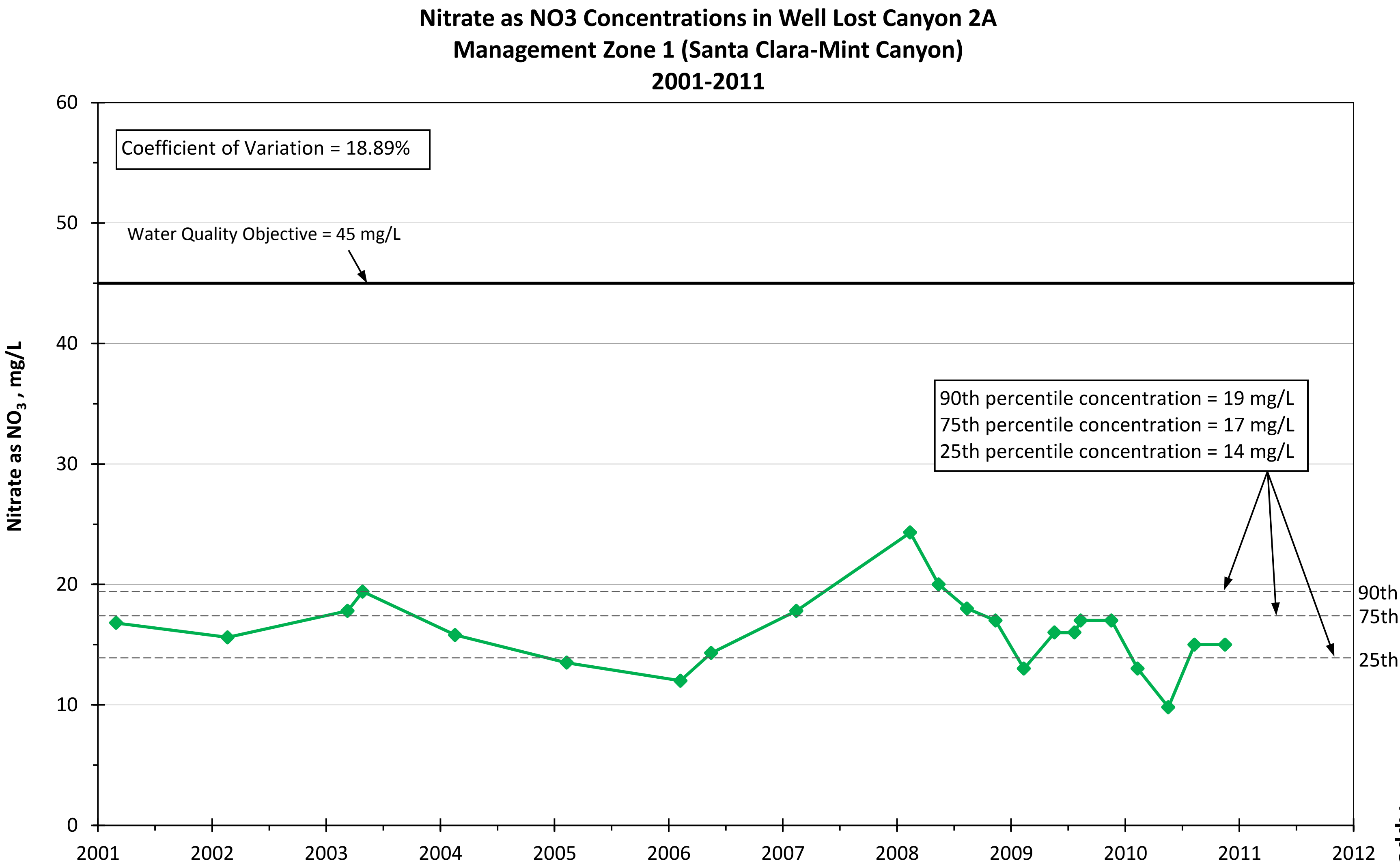

Nitrate as NO3 Concentrations in WELL 3 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 26.68%
Water Quality Objective = 45 mg/L
90th percentile concentration = 14 mg/L
75th percentile concentration = 12 mg/L
25th percentile concentration = 9 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

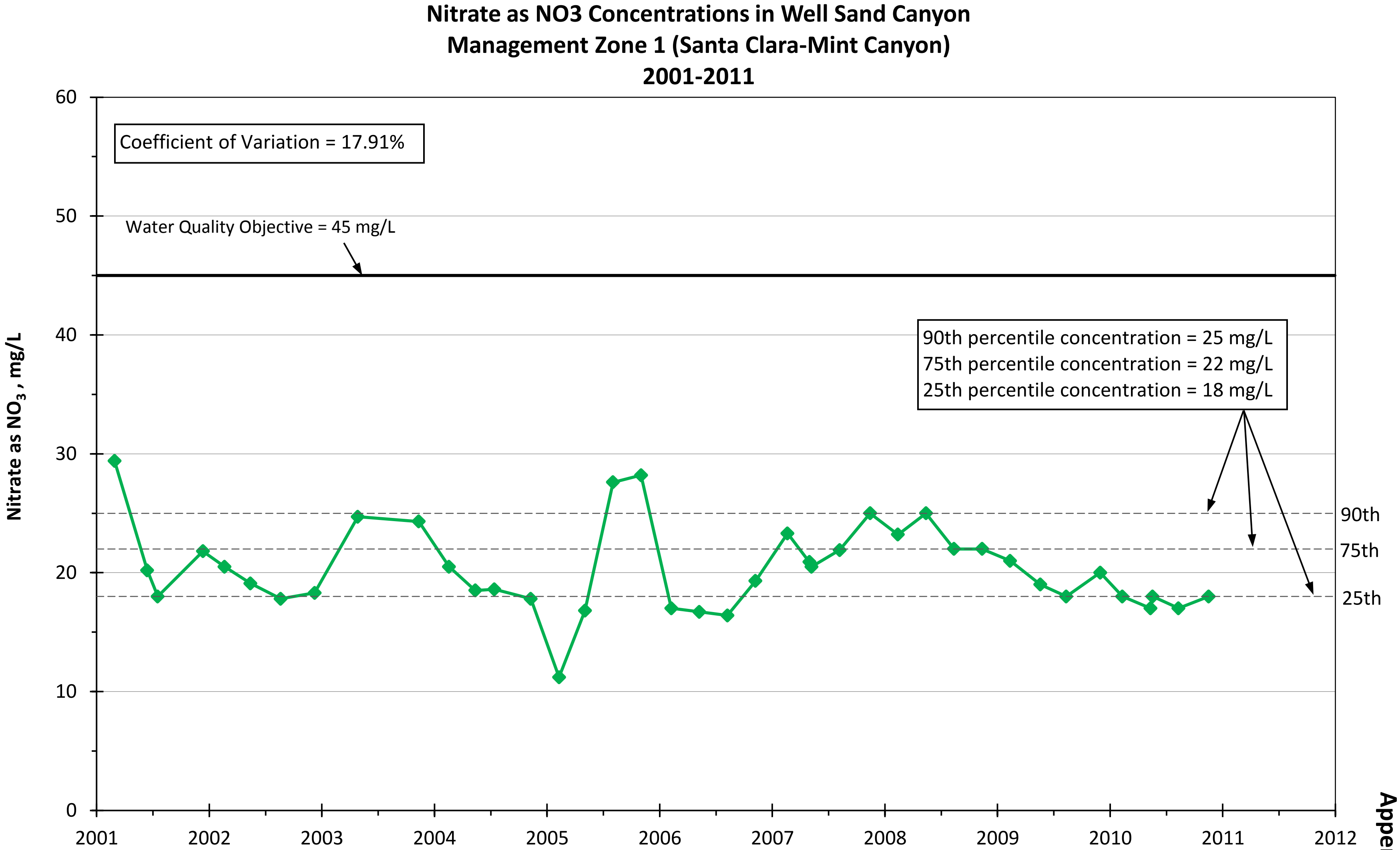
Appendix C

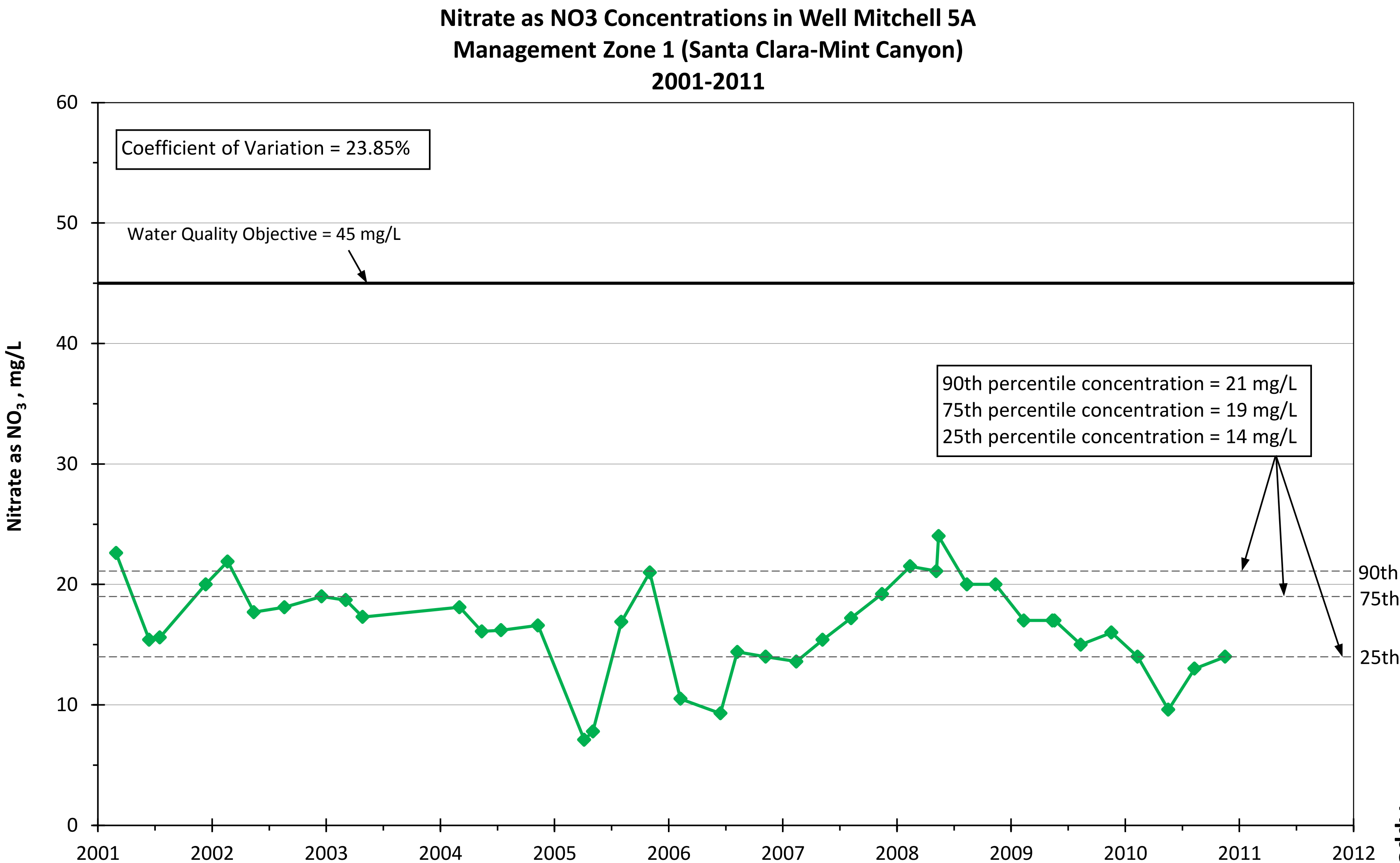

Nitrate as NO3 Concentrations in WELL 4 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 43.49%
Water Quality Objective = 45 mg/L
90th percentile concentration = 29 mg/L
75th percentile concentration = 21 mg/L
25th percentile concentration = 11 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Nitrate as NO3 Concentrations in Well Lost Canyon 2
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 17.93%
Water Quality Objective = 45 mg/L
90th percentile concentration = 17 mg/L
75th percentile concentration = 14 mg/L
25th percentile concentration = 11 mg/L
90th
75th
25th
Nitrate as NO3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

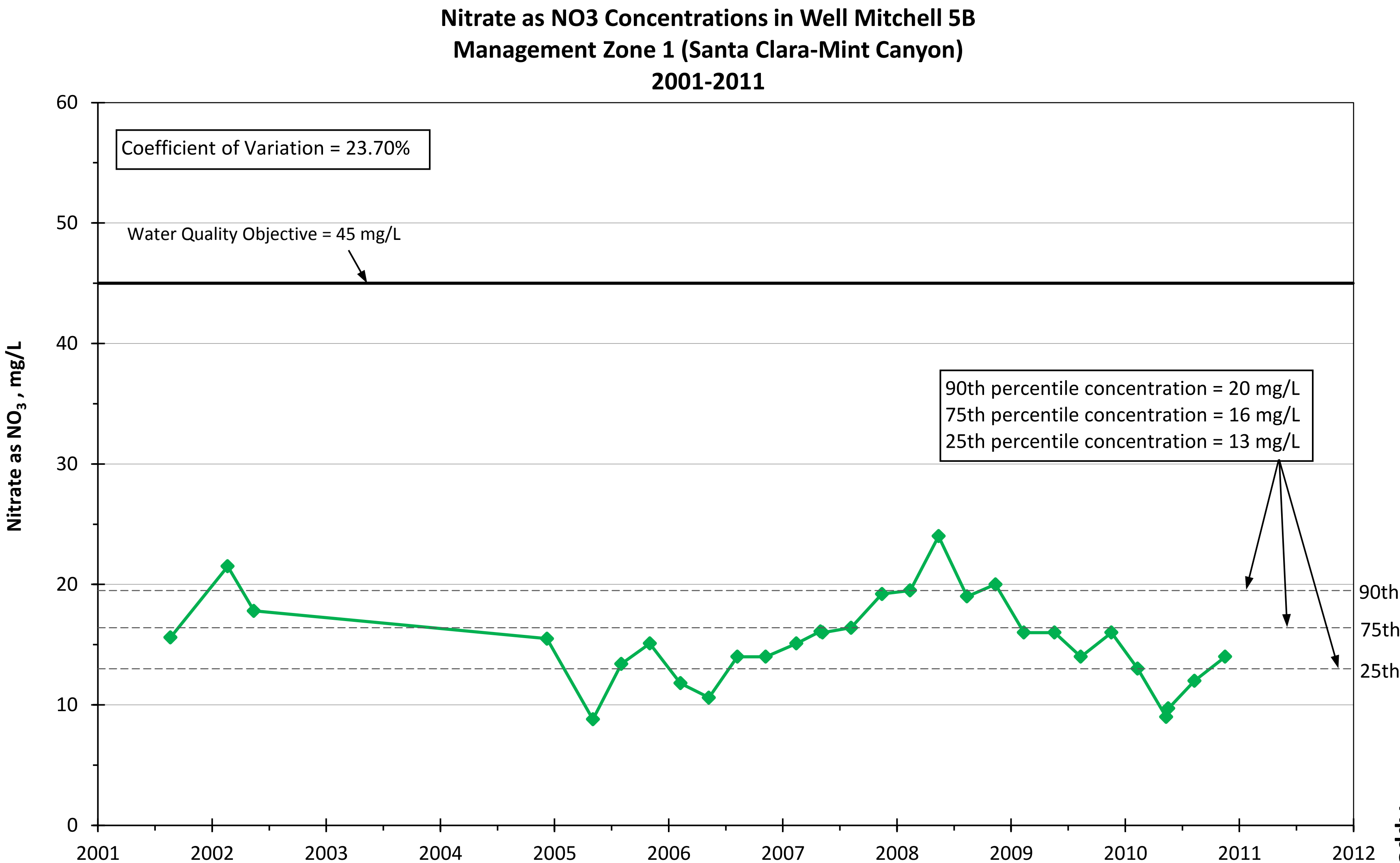
Appendix C


Nitrate as NO3 Concentrations in Well Lost Canyon 2A
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 18.89%
Water Quality Objective = 45 mg/L
90th percentile concentration = 19 mg/L
75th percentile concentration = 17 mg/L
25th percentile concentration = 14 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

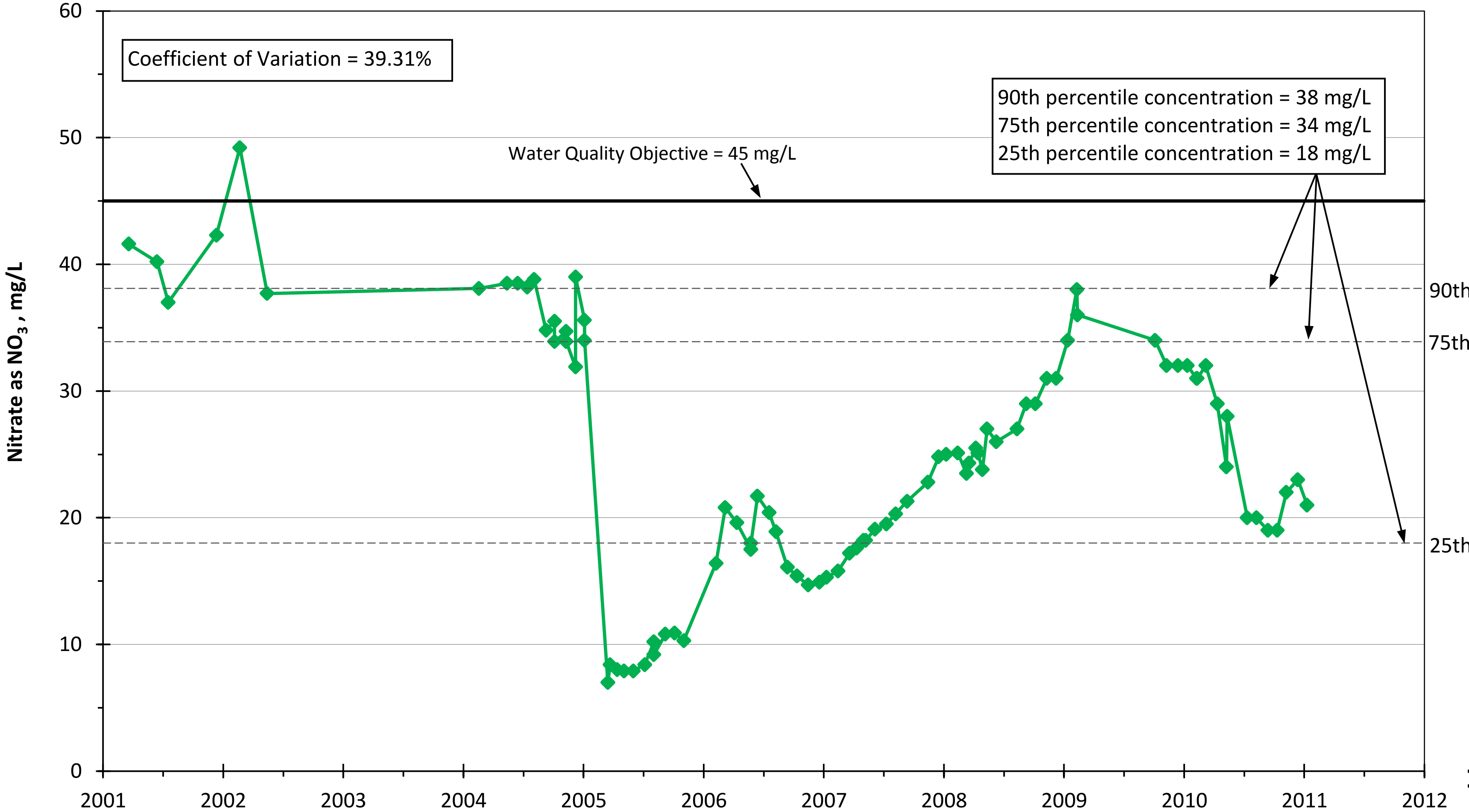

Nitrate as NO3 Concentrations in Well Sand Canyon
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 17.91%
Water Quality Objective = 45 mg/L
90th percentile concentration = 25 mg/L
75th percentile concentration = 22 mg/L
25th percentile concentration = 18 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Nitrate as NO3 Concentrations in Well Mitchell 5A
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 23.85%
Water Quality Objective = 45 mg/L
90th percentile concentration = 21 mg/L
75th percentile concentration = 19 mg/L
25th percentile concentration = 14 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C


Nitrate as NO3 Concentrations in Well Mitchell 5B
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 23.70%
Water Quality Objective = 45 mg/L
90th percentile concentration = 20 mg/L
75th percentile concentration = 16 mg/L
25th percentile concentration = 13 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Nitrate as NO3 Concentrations in Well Sierra
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011



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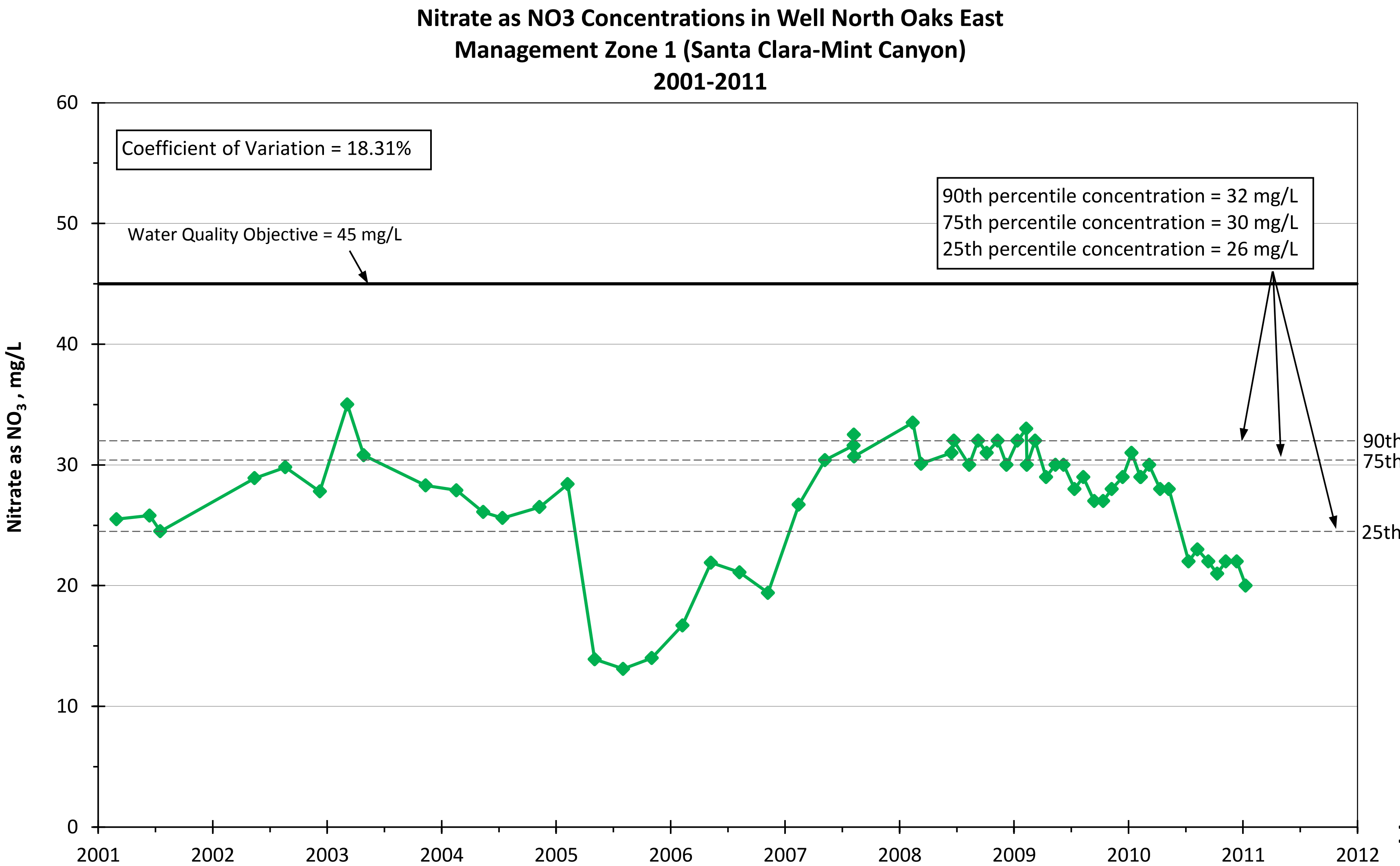
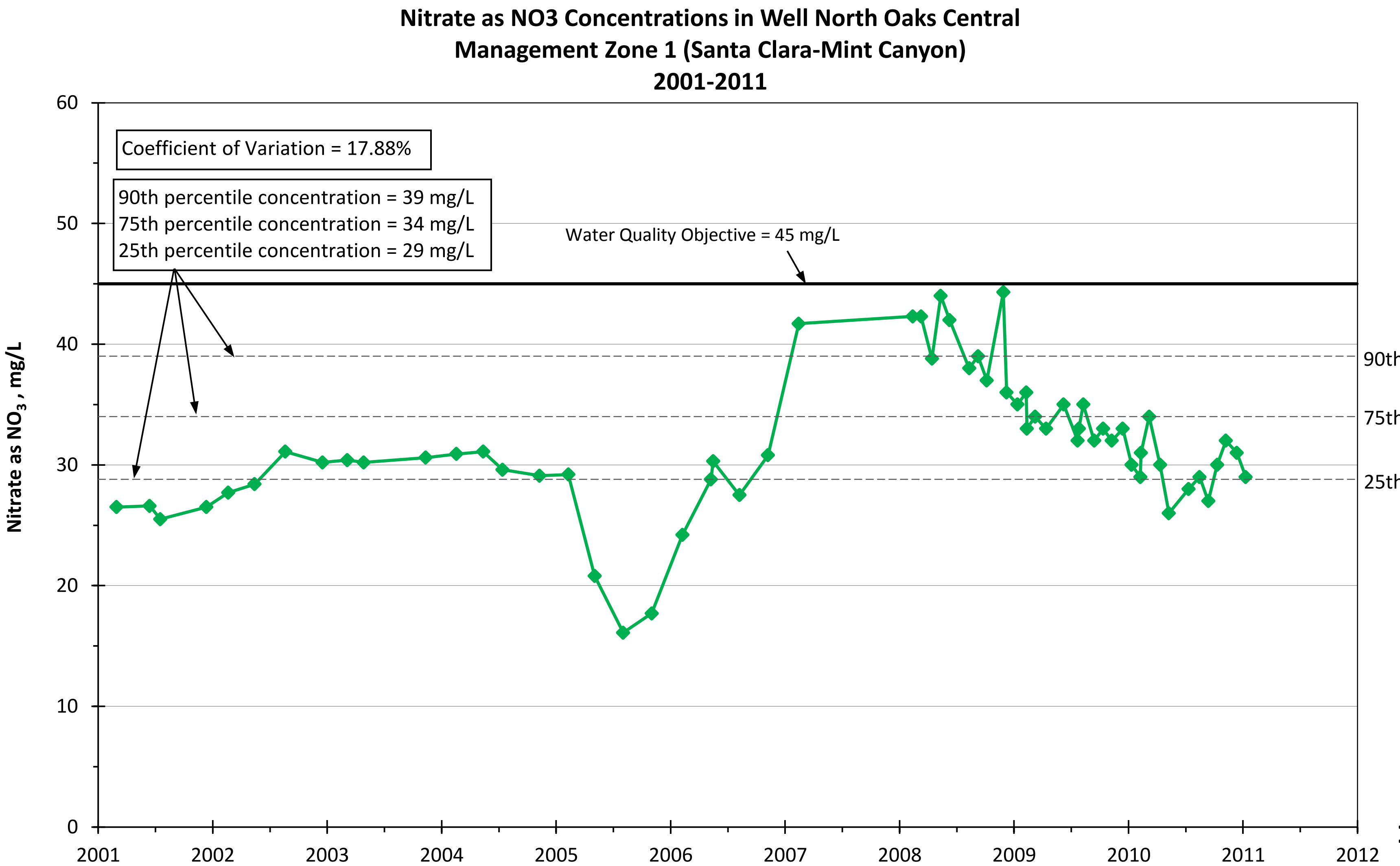
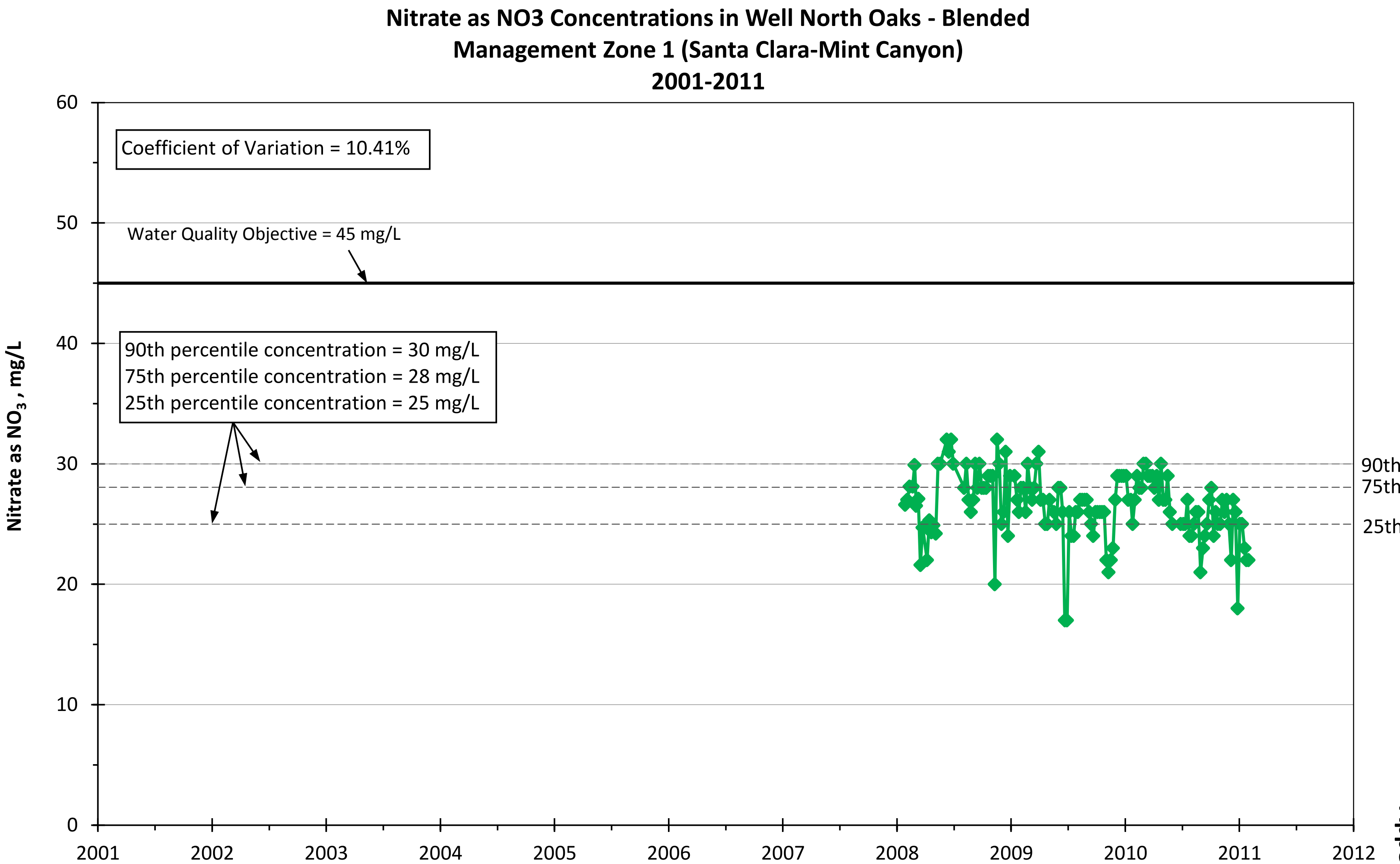
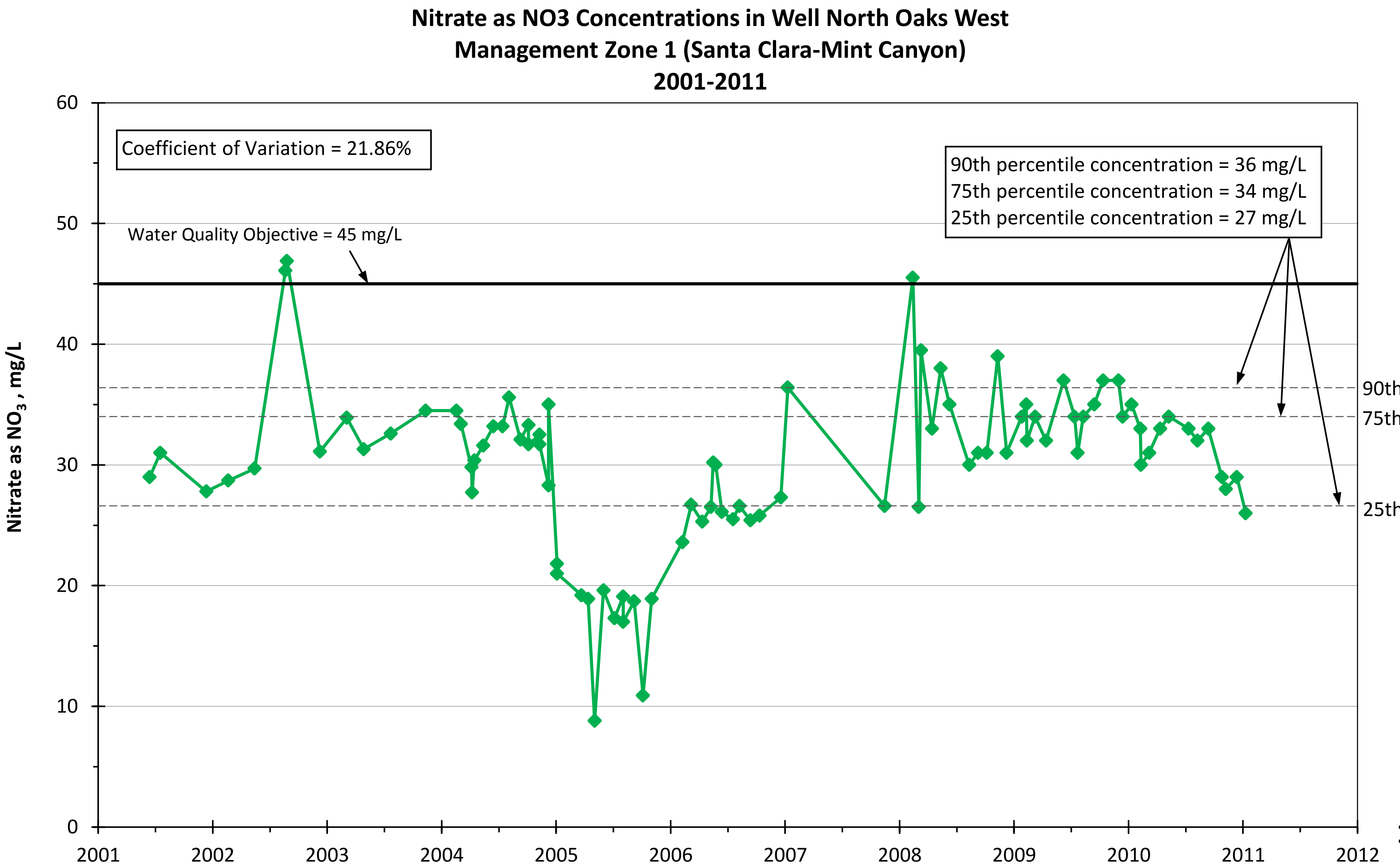

Nitrate as NO3 Concentrations in Well North Oaks East
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 18.31%
Water Quality Objective = 45 mg/L
90th percentile concentration = 32 mg/L
75th percentile concentration = 30 mg/L
25th percentile concentration = 26 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

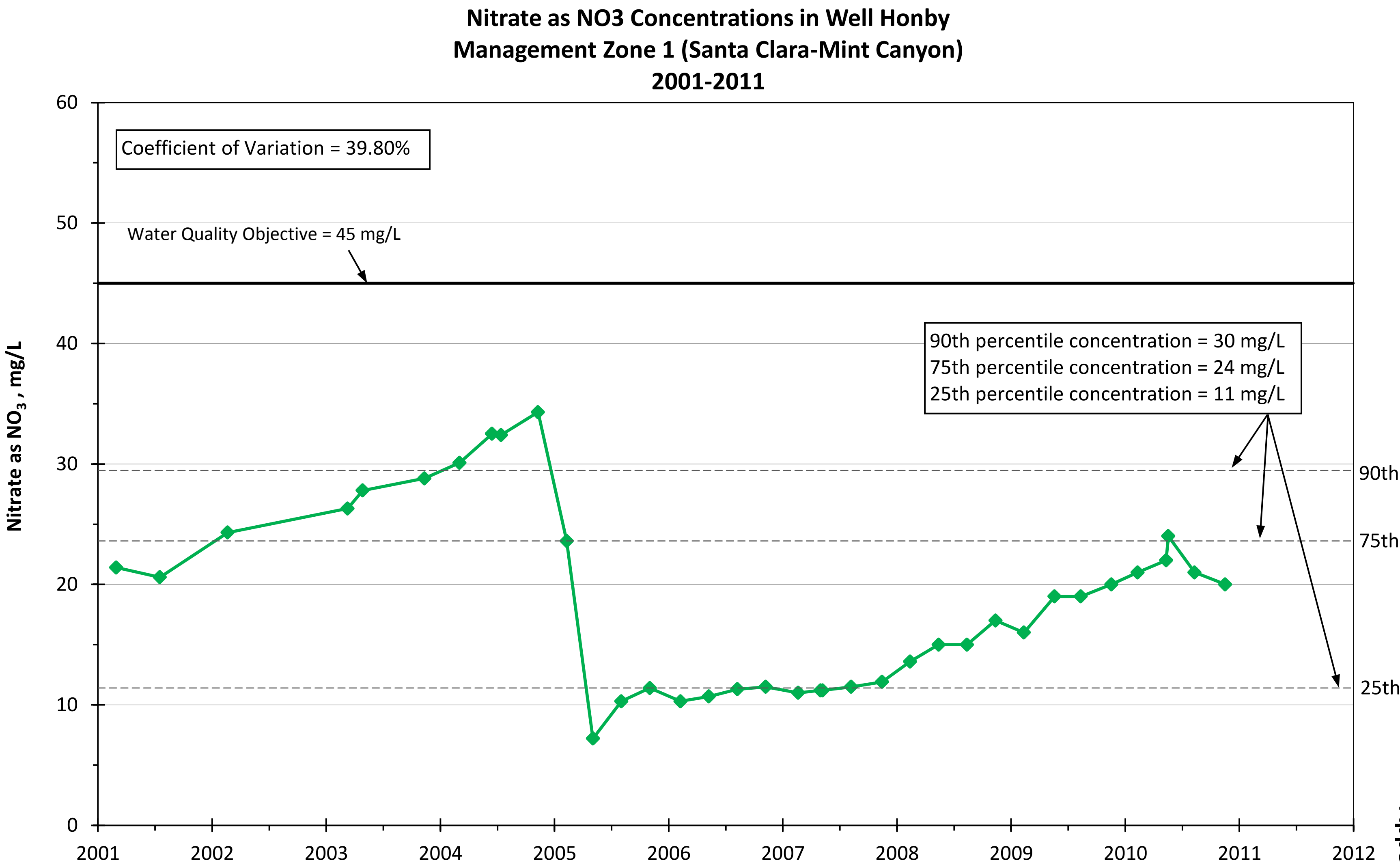

Nitrate as NO3 Concentrations in Well North Oaks Central
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 17.88%
90th percentile concentration = 39 mg/L
75th percentile concentration = 34 mg/L
25th percentile concentration = 29 mg/L
Water Quality Objective = 45 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

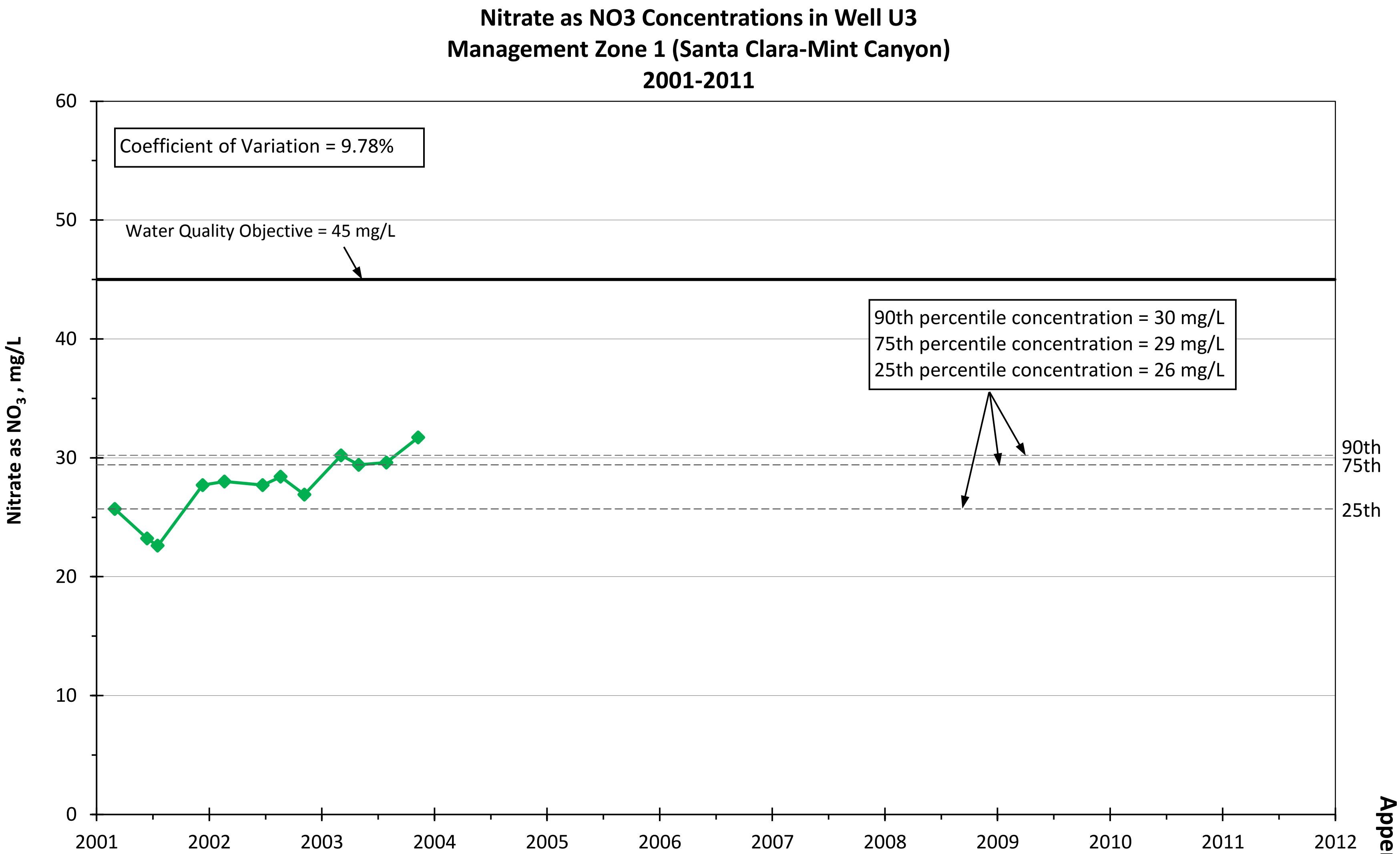

Nitrate as NO3 Concentrations in Well North Oaks - Blended
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 10.41%
Water Quality Objective = 45 mg/L
90th percentile concentration = 30 mg/L
75th percentile concentration = 28 mg/L
25th percentile concentration = 25 mg/L
Nitrate as NO_3 , mg/L
60
50
40
30
20
10
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C


Nitrate as NO3 Concentrations in Well North Oaks West
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 21.86%
90th percentile concentration = 36 mg/L
75th percentile concentration = 34 mg/L
25th percentile concentration = 27 mg/L
Water Quality Objective = 45 mg/L
Nitrate as NO_3 , mg/L
90th
75th
25th
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

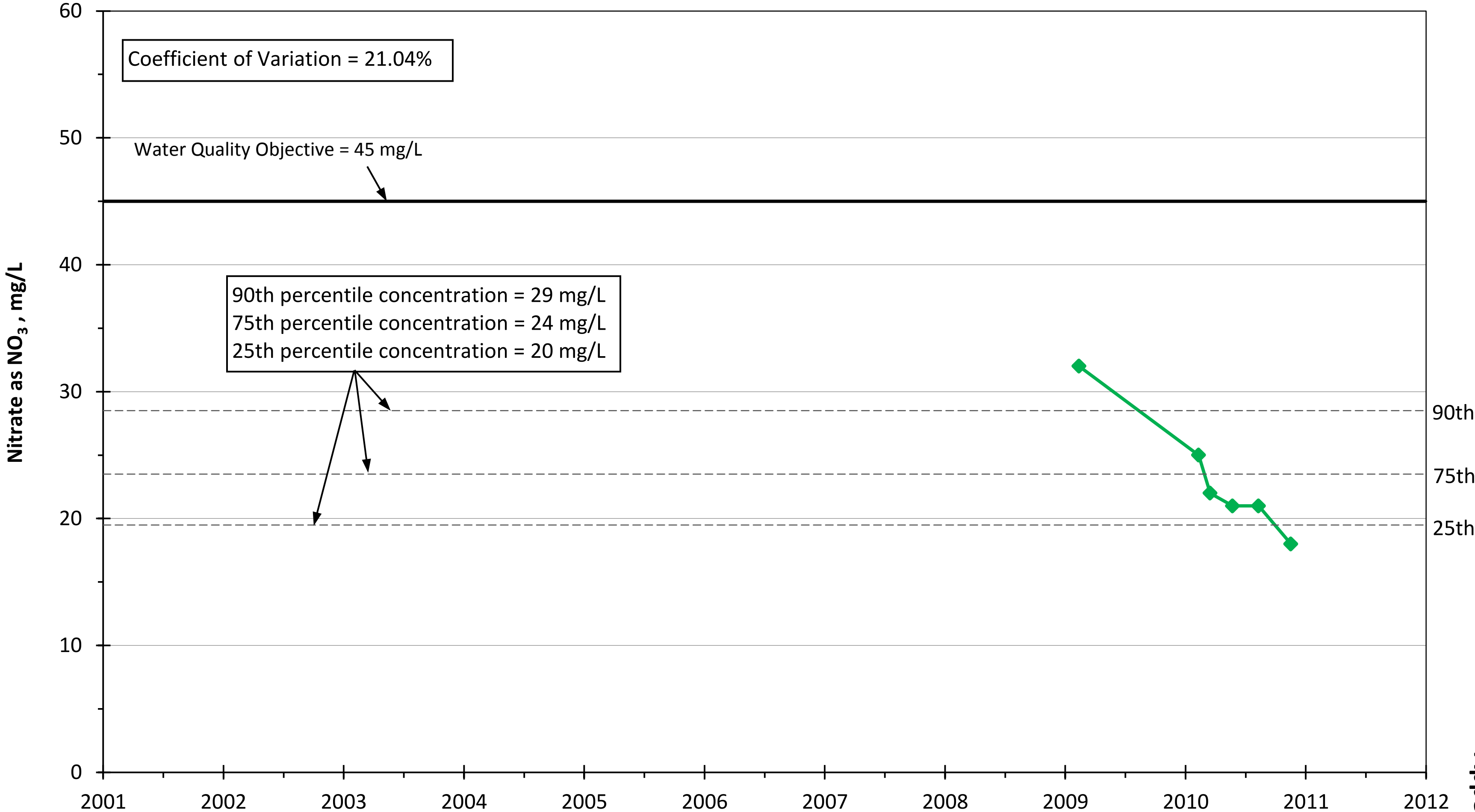

Nitrate as NO3 Concentrations in Well Honby
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 39.80%
Water Quality Objective = 45 mg/L
90th percentile concentration = 30 mg/L
75th percentile concentration = 24 mg/L
25th percentile concentration = 11 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C


Nitrate as NO3 Concentrations in Well U3
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 9.78%
Water Quality Objective = 45 mg/L
90th percentile concentration = 30 mg/L
75th percentile concentration = 29 mg/L
25th percentile concentration = 26 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

Nitrate as NO3 Concentrations in Well Valley Center
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011



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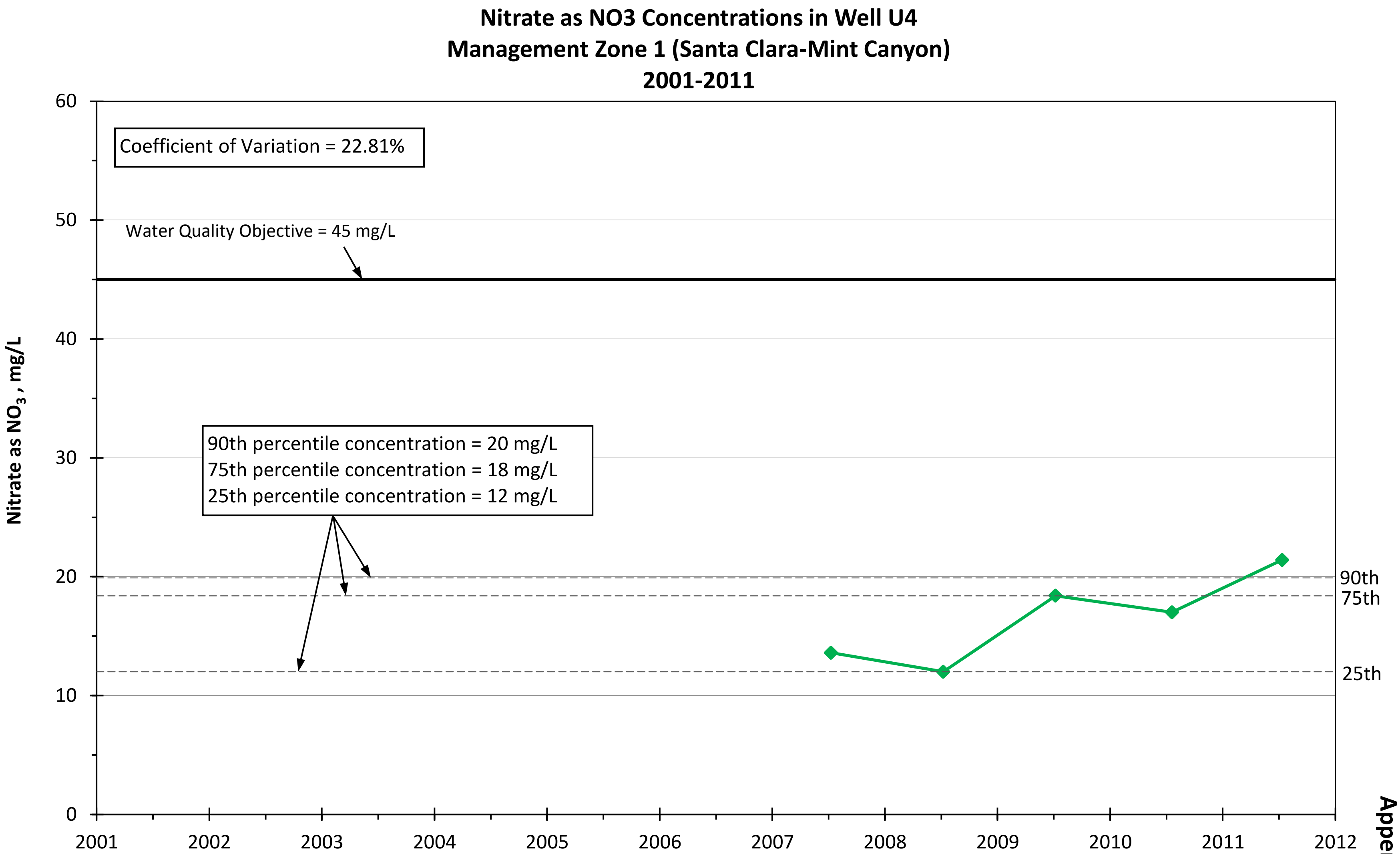
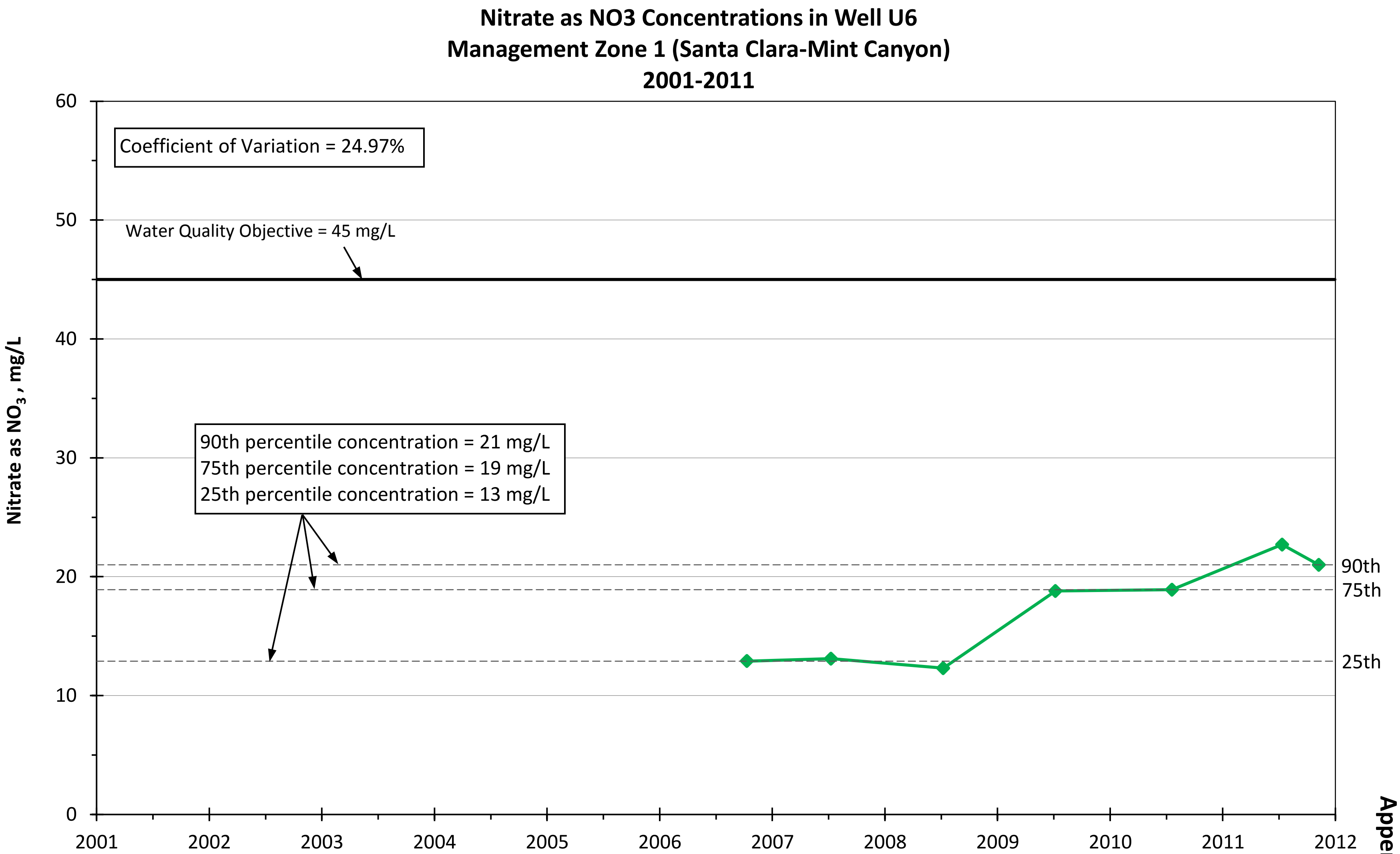
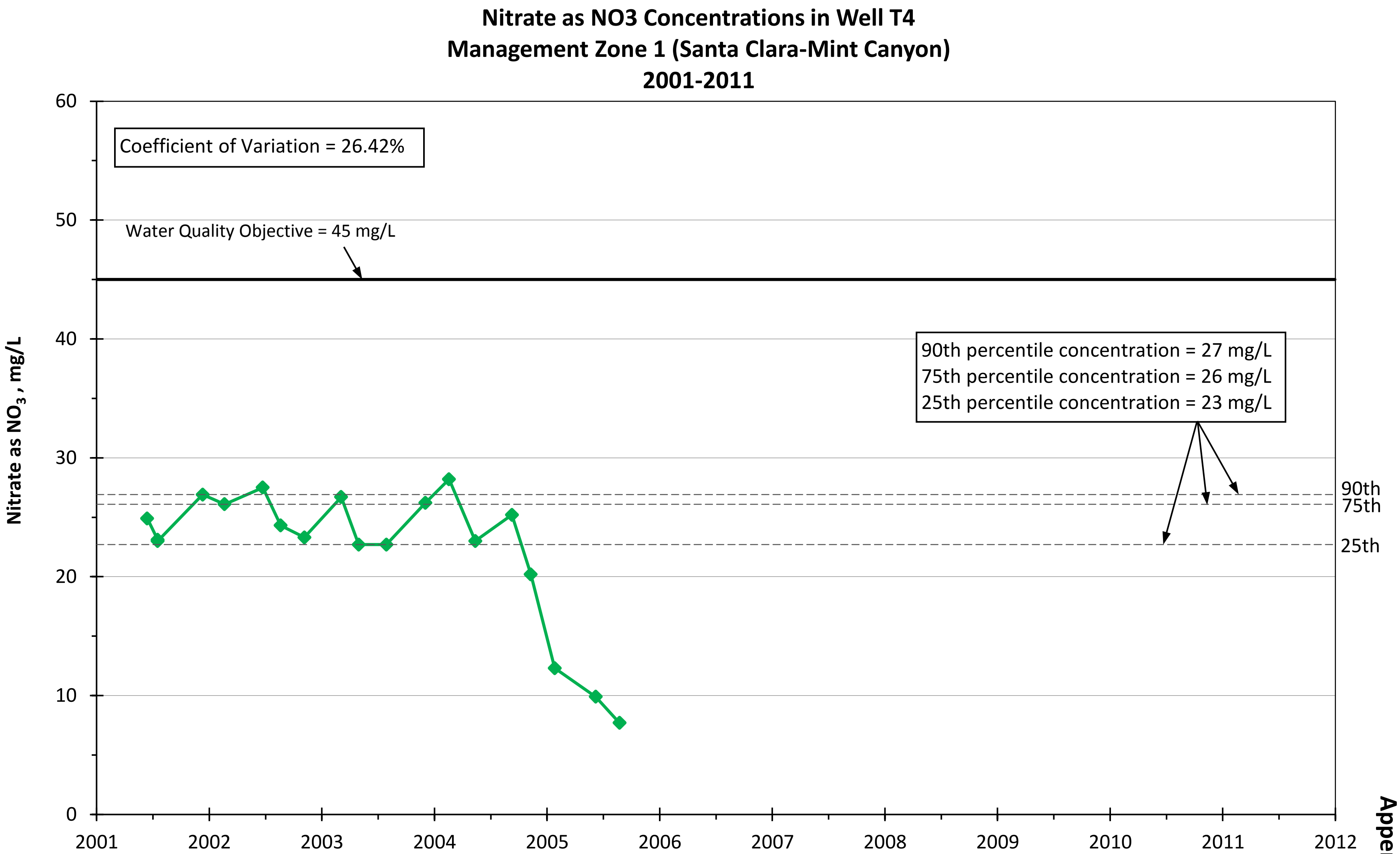
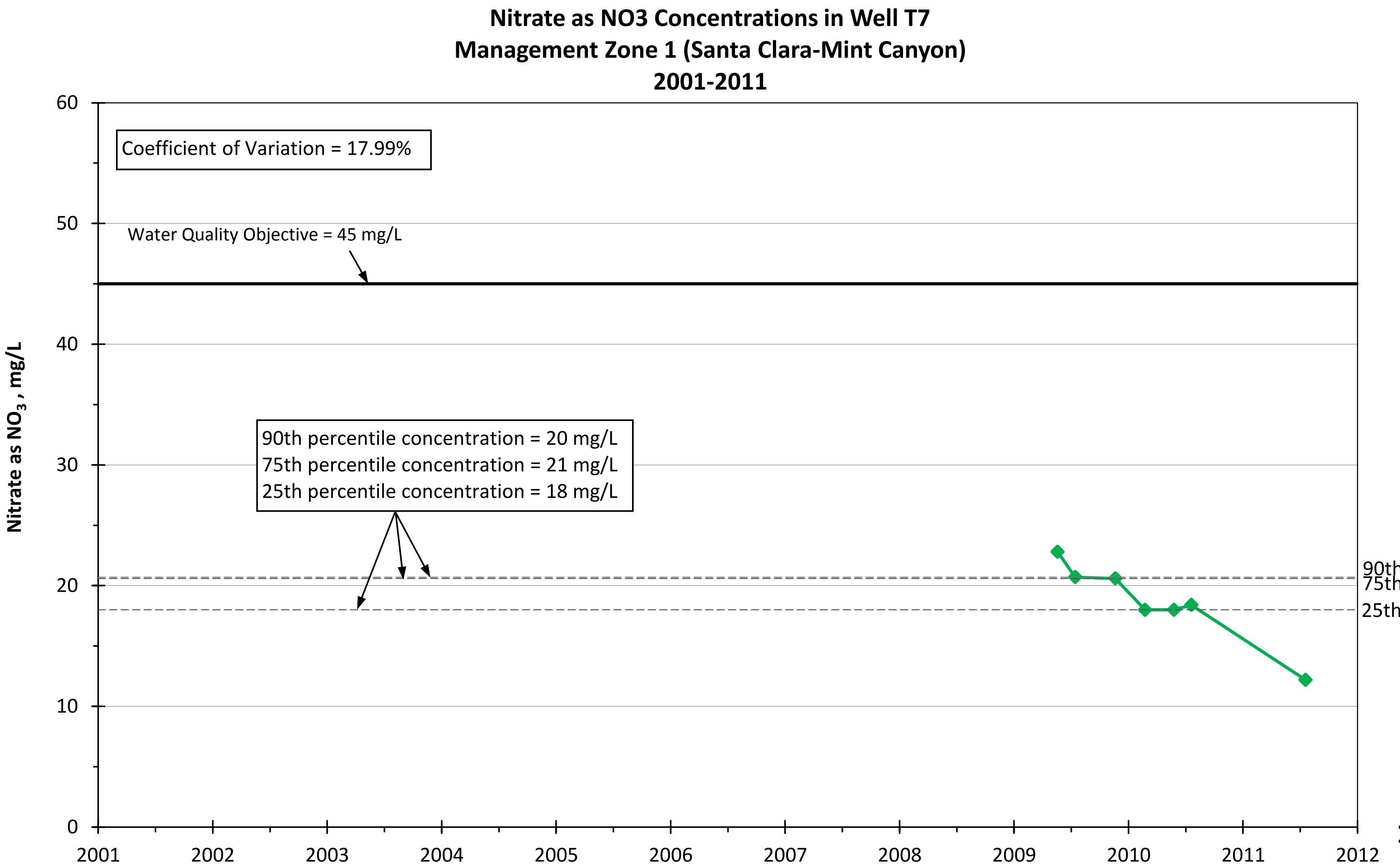

Nitrate as NO3 Concentrations in Well U4
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 22.81%
Water Quality Objective = 45 mg/L
90th percentile concentration = 20 mg/L
75th percentile concentration = 18 mg/L
25th percentile concentration = 12 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

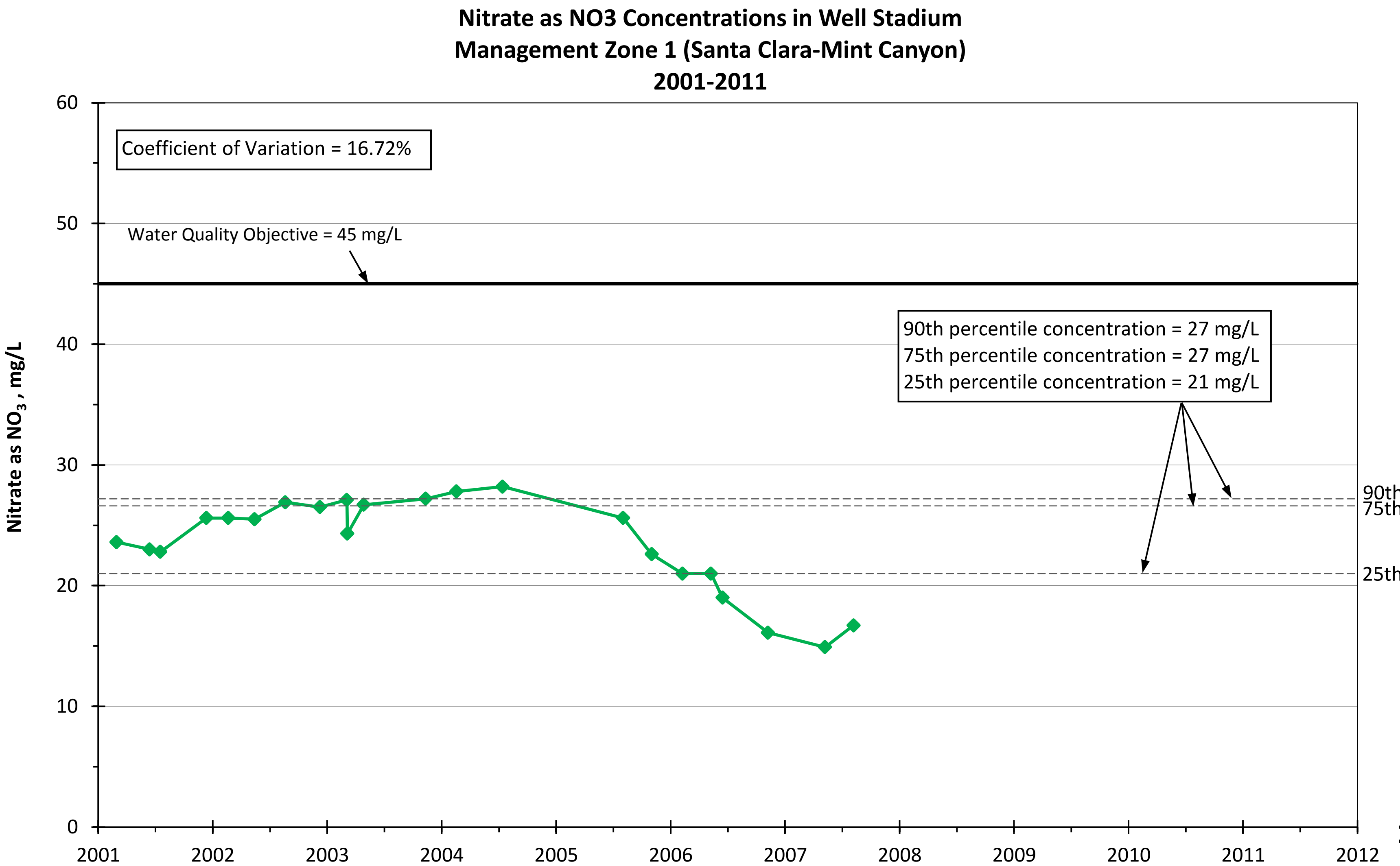

Nitrate as NO3 Concentrations in Well U6
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 24.97%
Water Quality Objective = 45 mg/L
90th percentile concentration = 21 mg/L
75th percentile concentration = 19 mg/L
25th percentile concentration = 13 mg/L
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C


Nitrate as NO3 Concentrations in Well T4
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 26.42%
Water Quality Objective = 45 mg/L
90th percentile concentration = 27 mg/L
75th percentile concentration = 26 mg/L
25th percentile concentration = 23 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

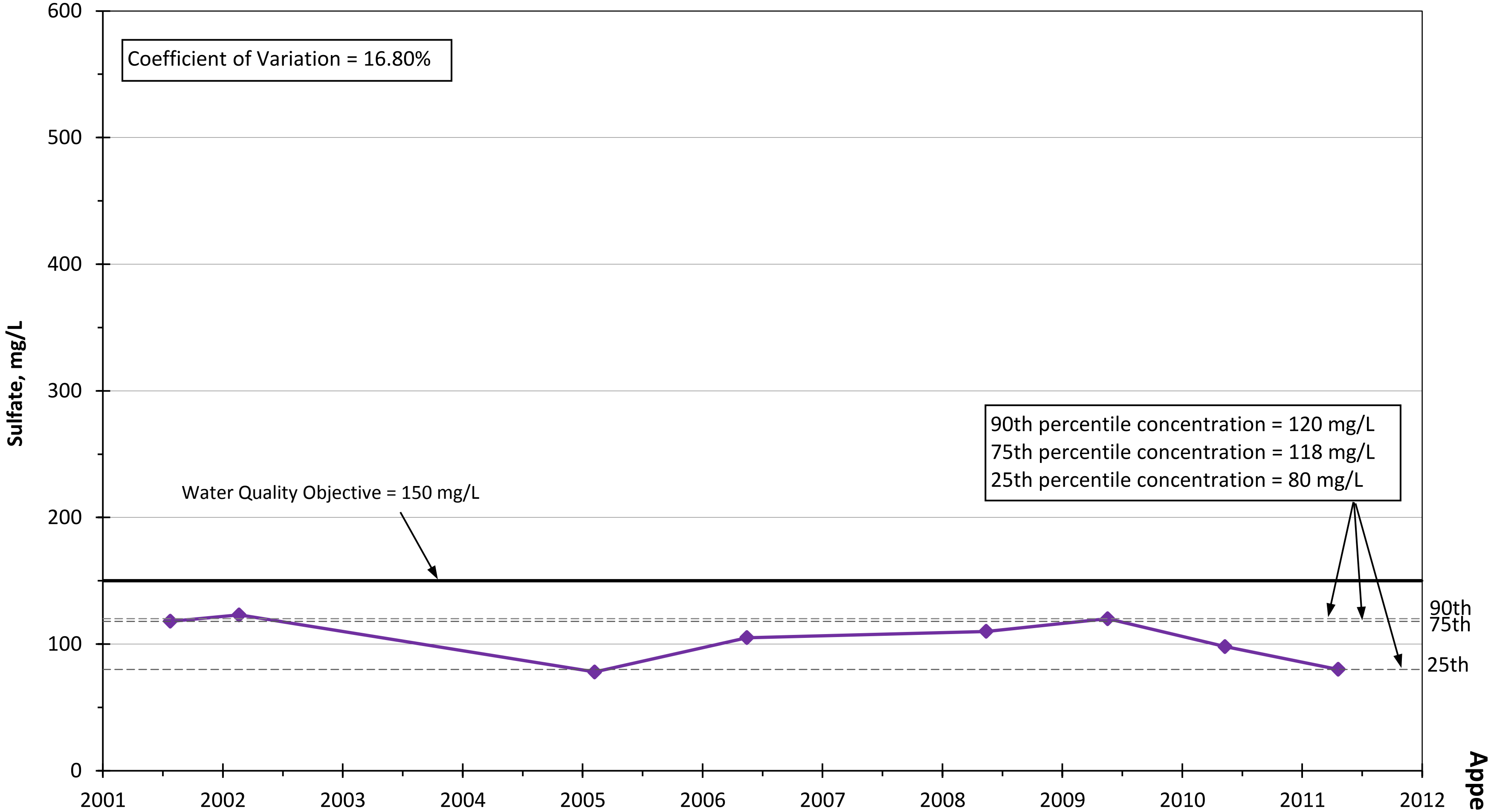

Nitrate as NO3 Concentrations in Well T7
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 17.99%
Water Quality Objective = 45 mg/L
90th percentile concentration = 20 mg/L
75th percentile concentration = 21 mg/L
25th percentile concentration = 18 mg/L
Nitrate as NO3 , mg/L
90th
75th
25th
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

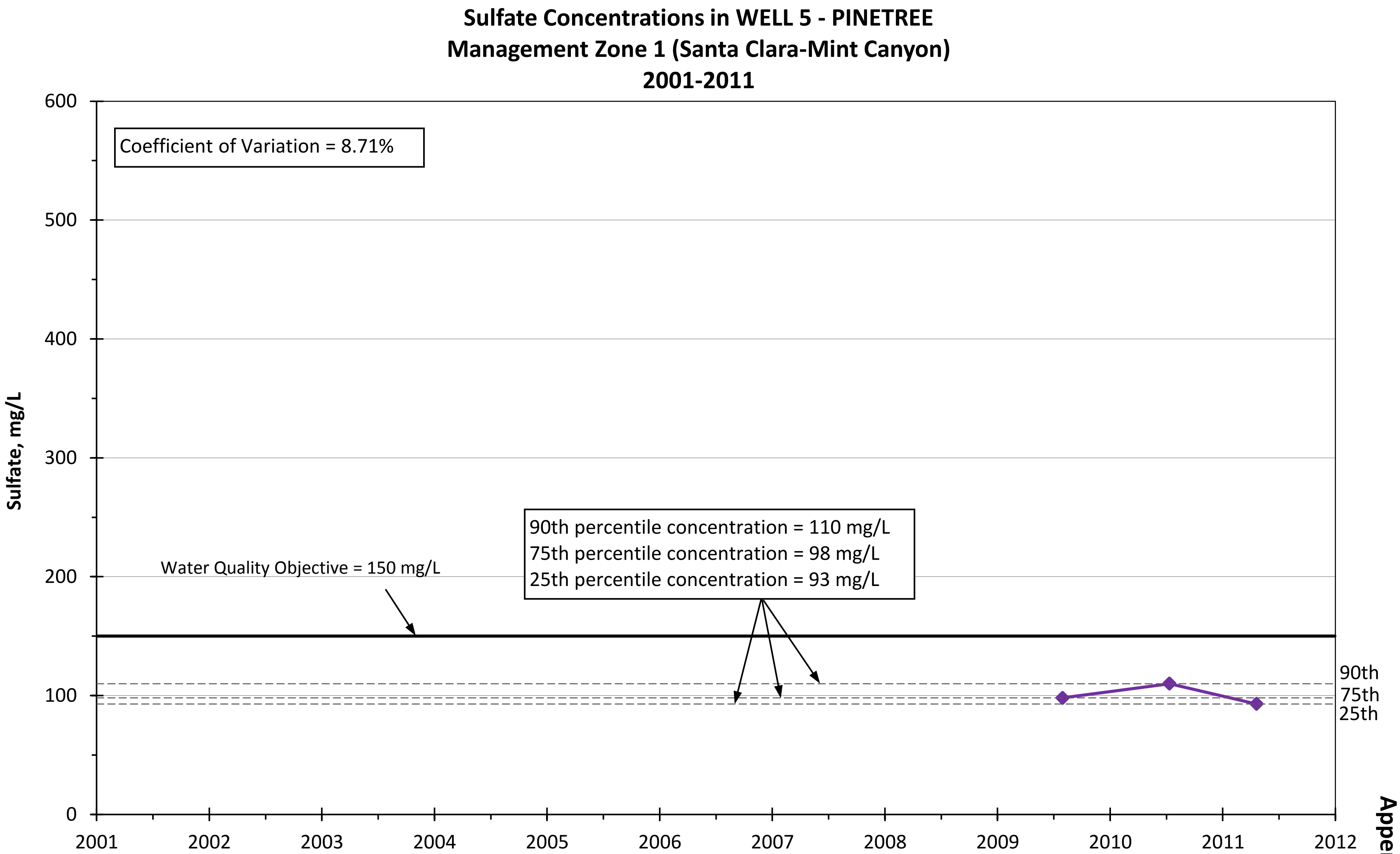
Appendix C


Nitrate as NO3 Concentrations in Well Stadium
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 16.72%
Water Quality Objective = 45 mg/L
90th percentile concentration = 27 mg/L
75th percentile concentration = 27 mg/L
25th percentile concentration = 21 mg/L
90th
75th
25th
Nitrate as NO3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

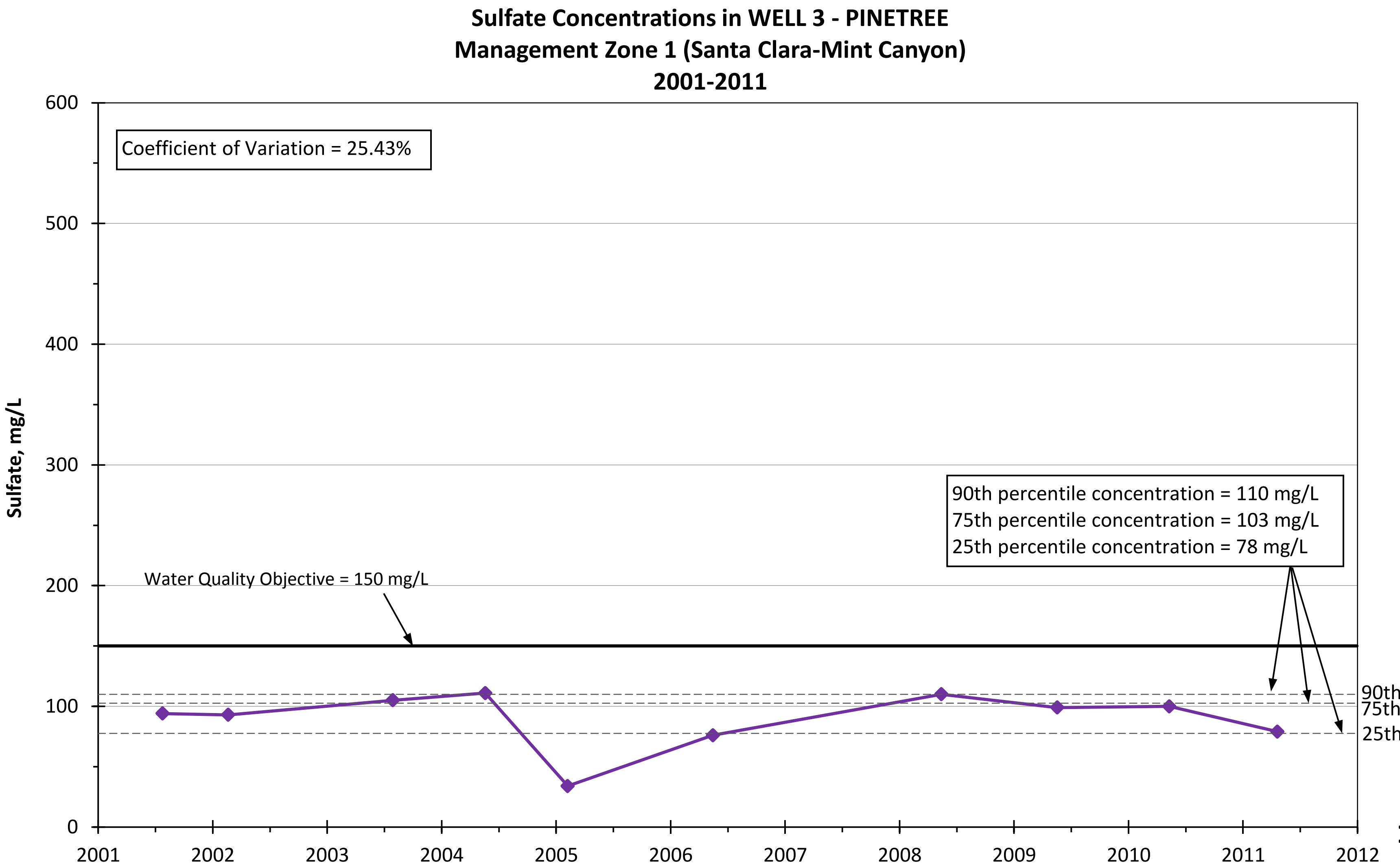
Appendix C

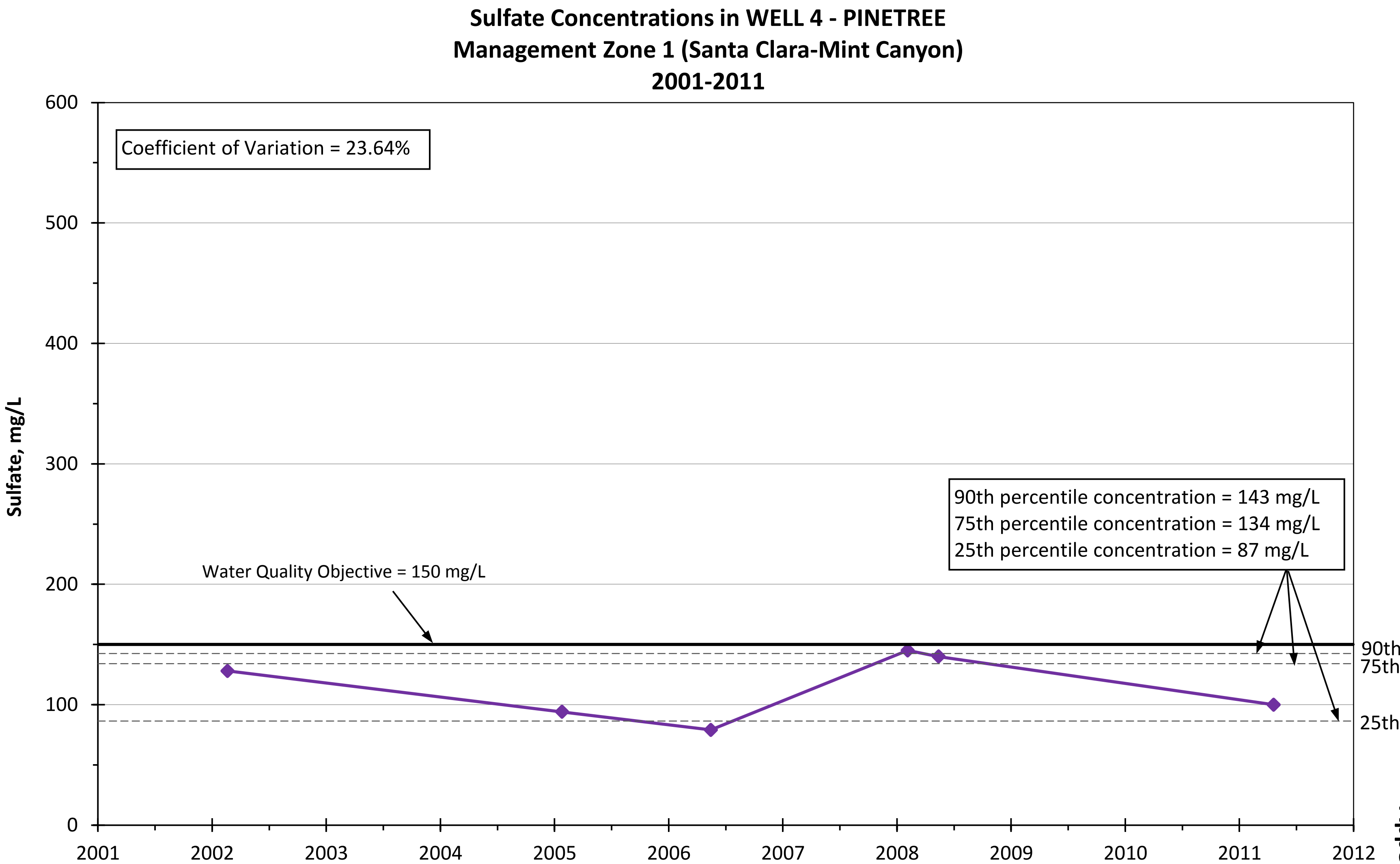
Sulfate Concentrations in WELL 1 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011




Sulfate Concentrations in WELL 5 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 8.71%
90th percentile concentration = 110 mg/L
75th percentile concentration = 98 mg/L
25th percentile concentration = 93 mg/L
Water Quality Objective = 150 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

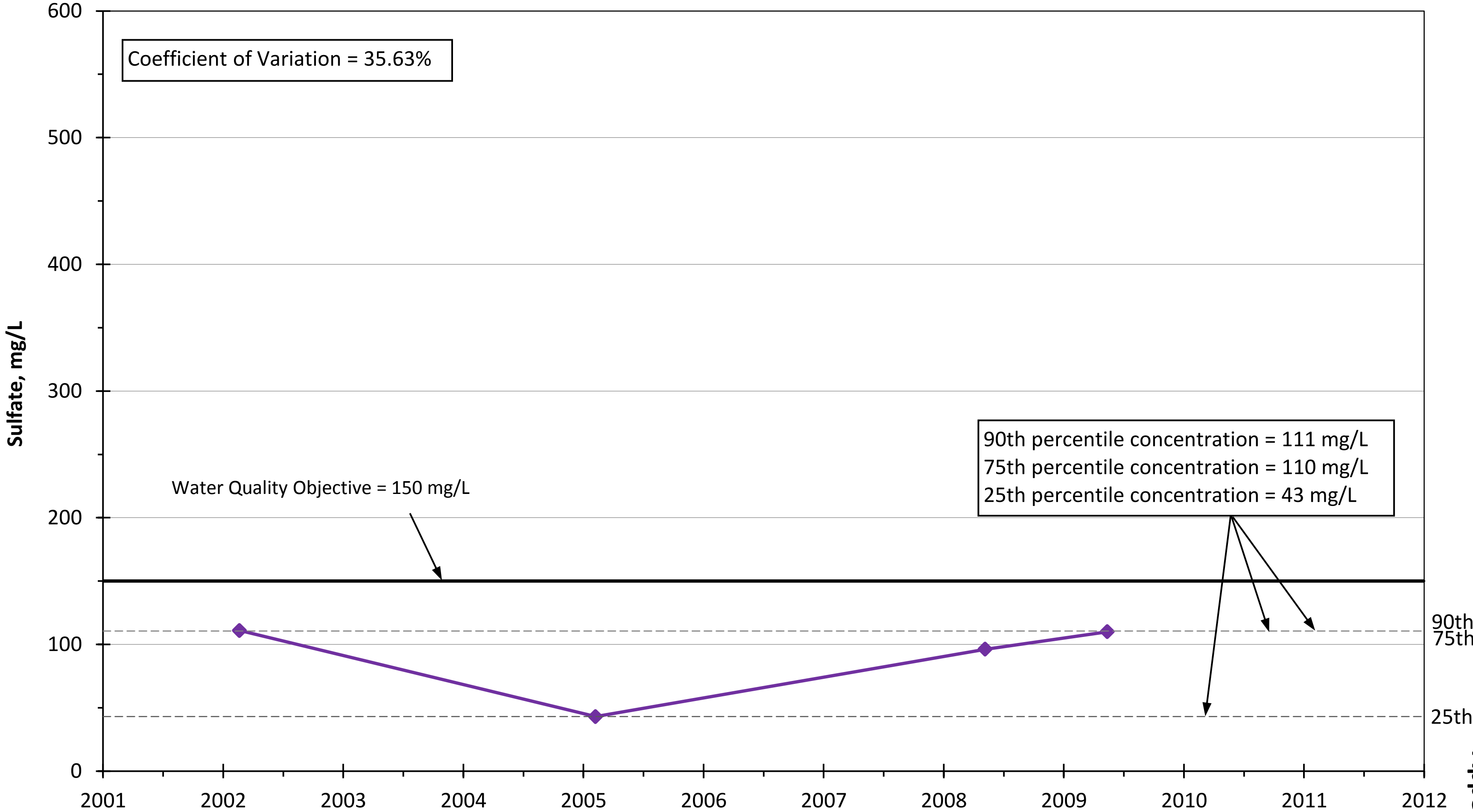
Appendix C


Sulfate Concentrations in WELL 3 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 25.43%
90th percentile concentration = 110 mg/L
75th percentile concentration = 103 mg/L
25th percentile concentration = 78 mg/L
Water Quality Objective = 150 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th


Sulfate Concentrations in WELL 4 - PINETREE
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 23.64%
90th percentile concentration = 143 mg/L
75th percentile concentration = 134 mg/L
25th percentile concentration = 87 mg/L
Water Quality Objective = 150 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

Sulfate Concentrations in Well Lost Canyon 2
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011



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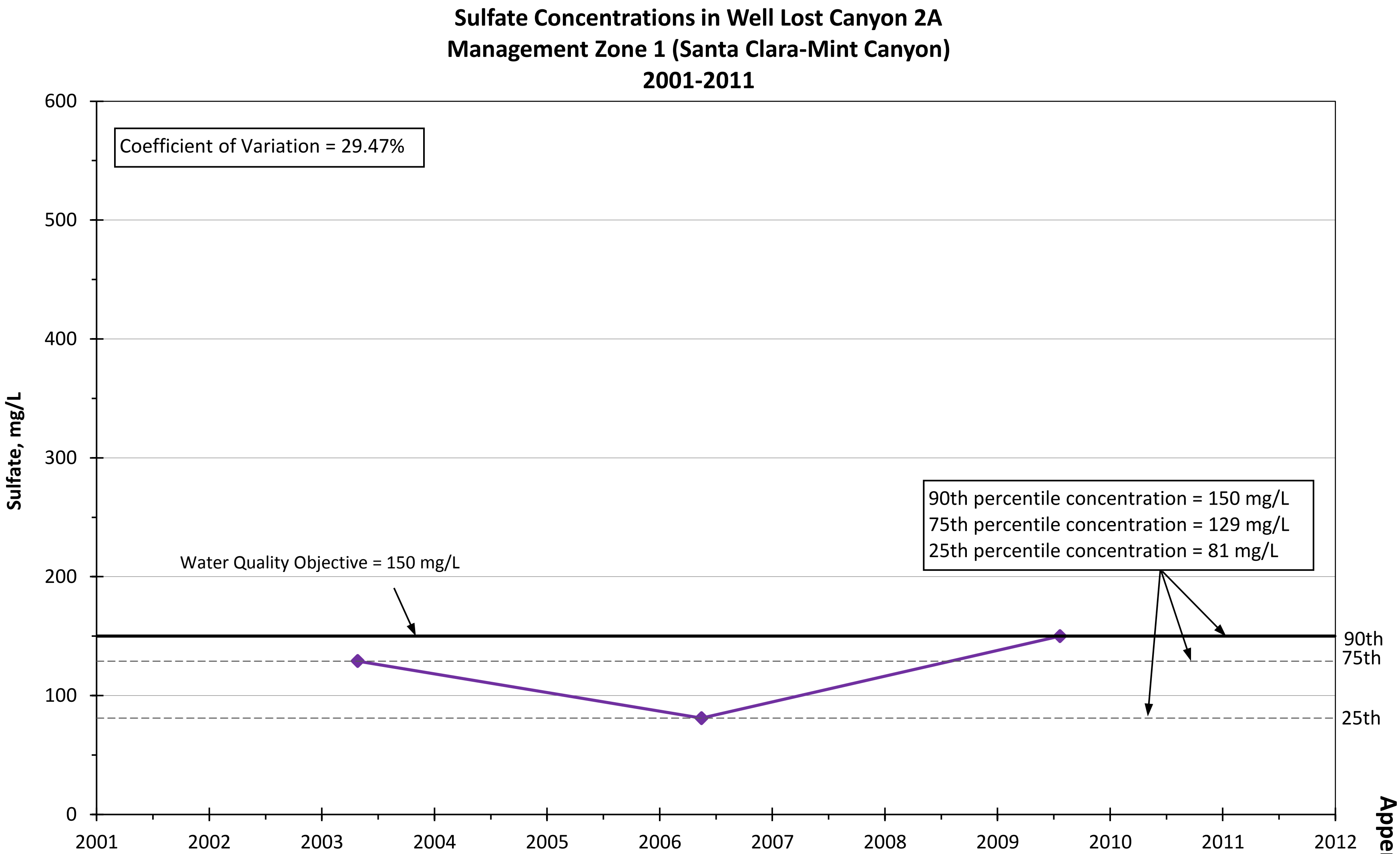
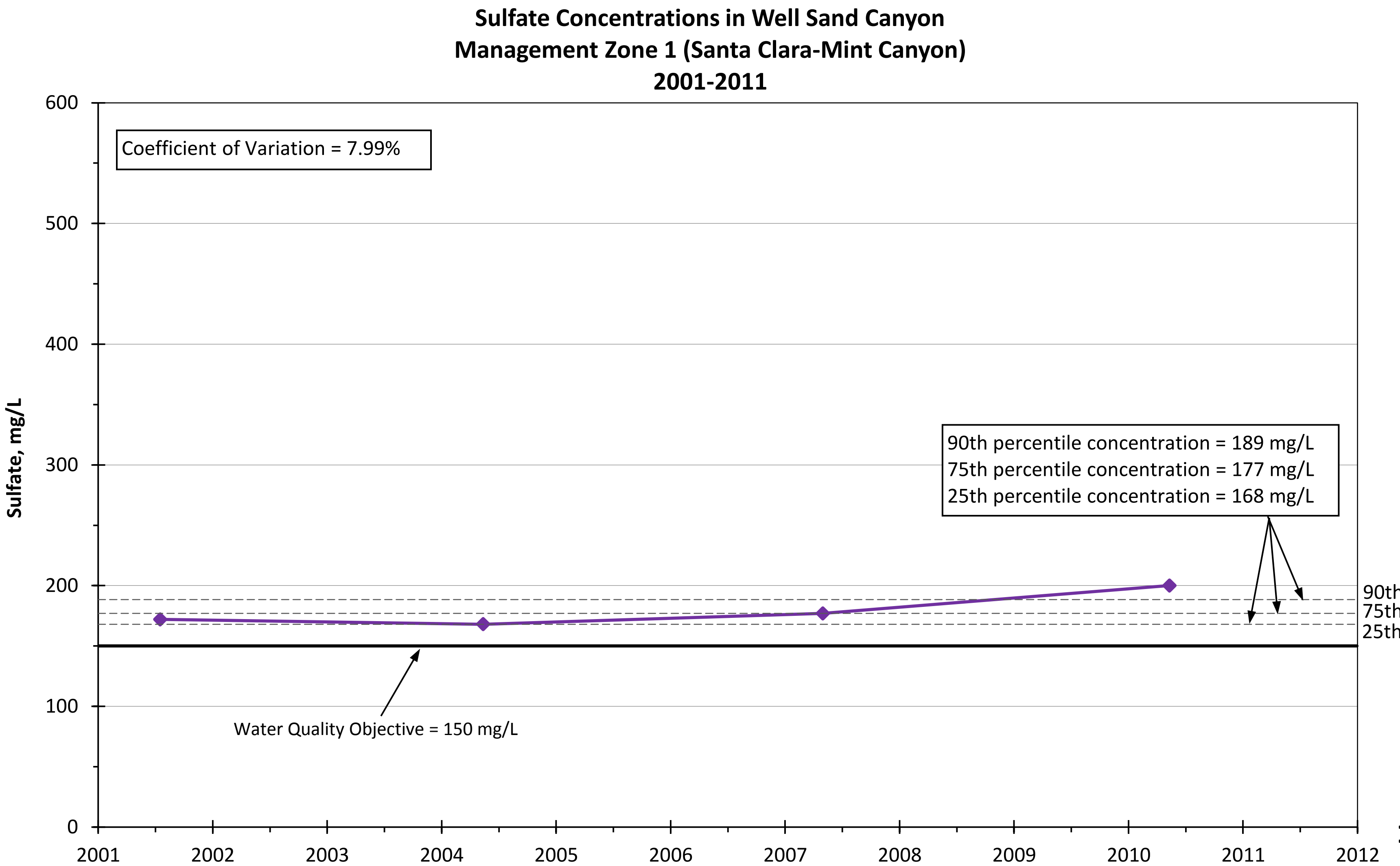
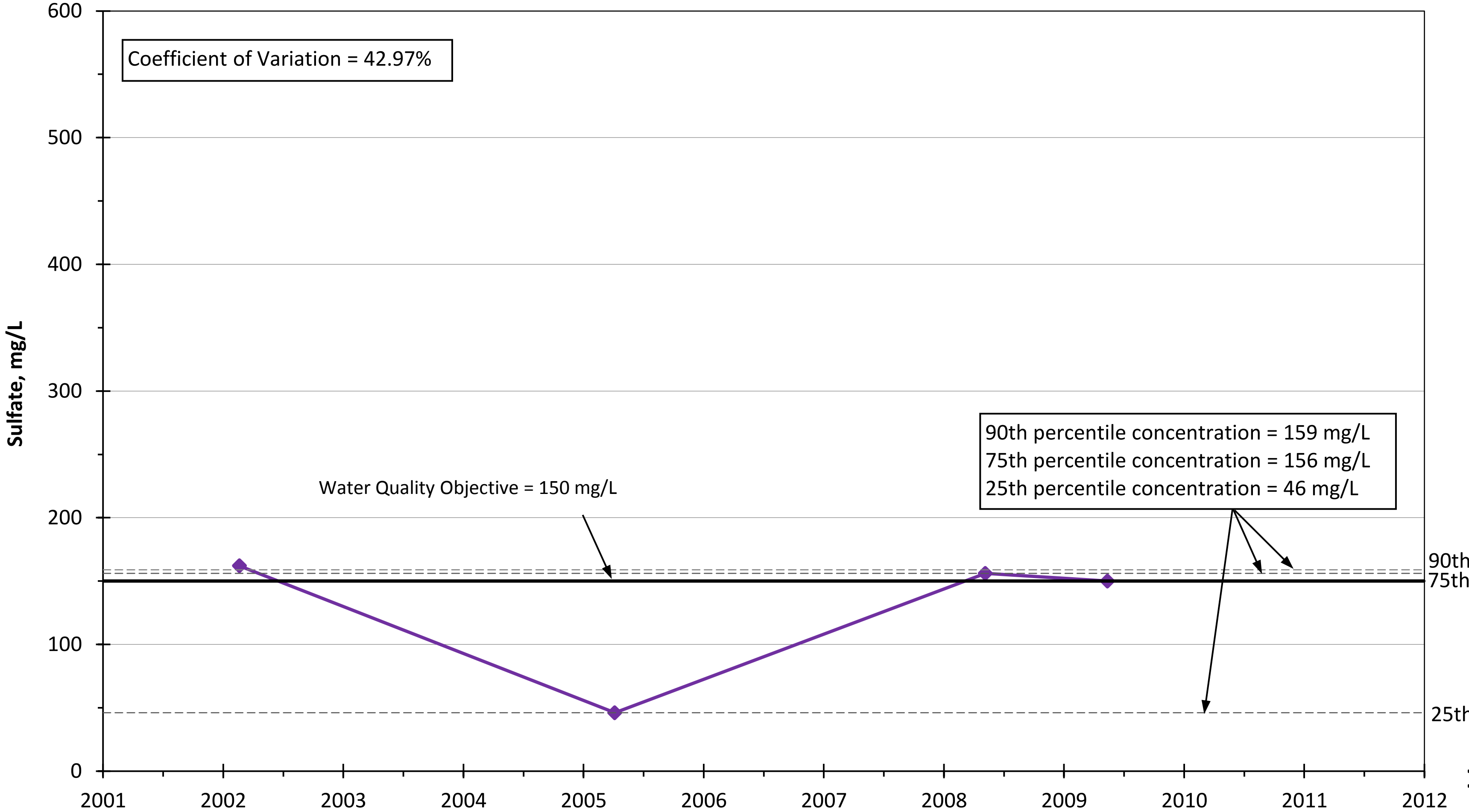

Sulfate Concentrations in Well Lost Canyon 2A
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 29.47%
90th percentile concentration = 150 mg/L
75th percentile concentration = 129 mg/L
25th percentile concentration = 81 mg/L
Water Quality Objective = 150 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th


Sulfate Concentrations in Well Sand Canyon
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 7.99%
90th percentile concentration = 189 mg/L
75th percentile concentration = 177 mg/L
25th percentile concentration = 168 mg/L
90th
75th
25th
Water Quality Objective = 150 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Sulfate Concentrations in Well Mitchell 5A
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011



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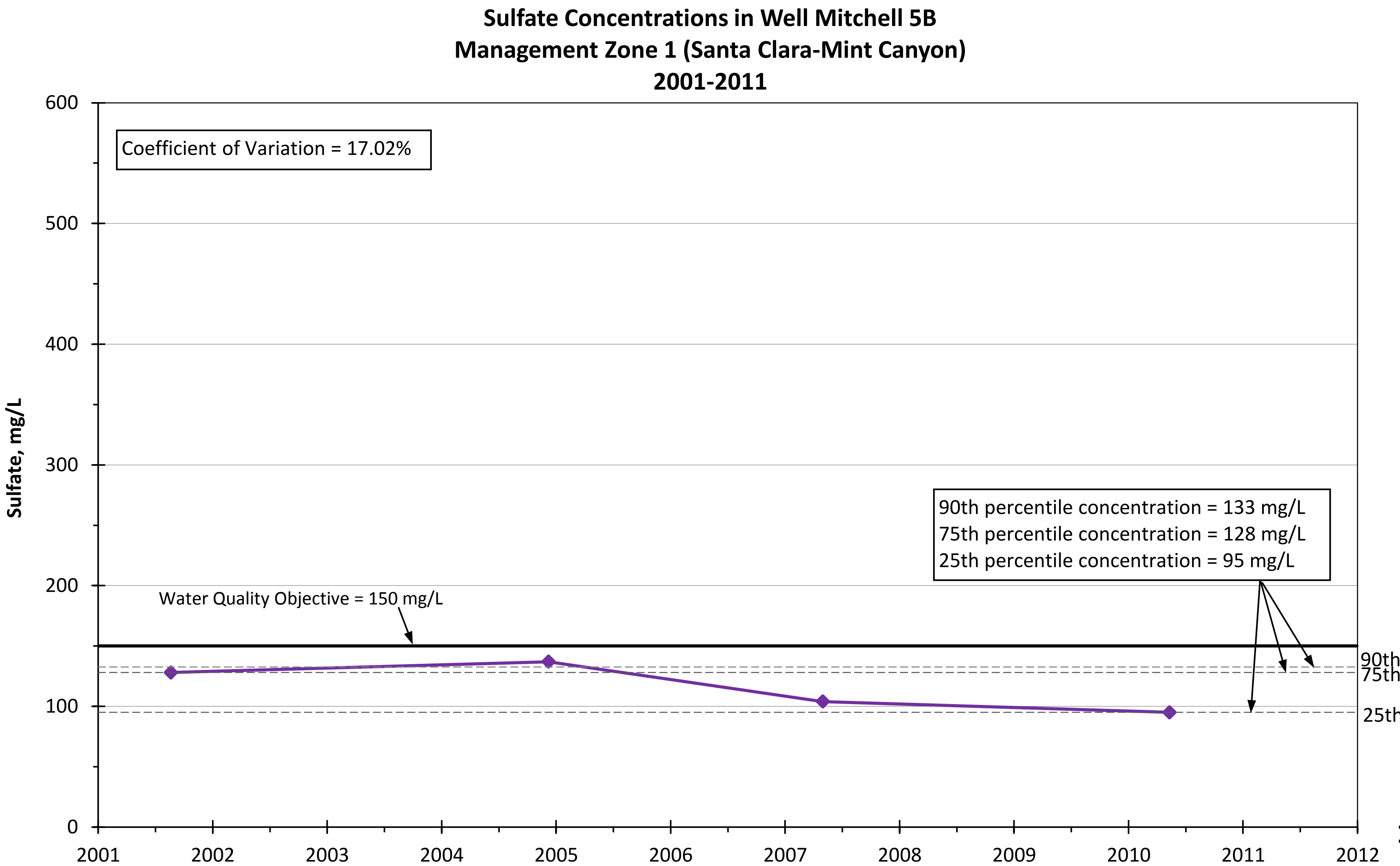
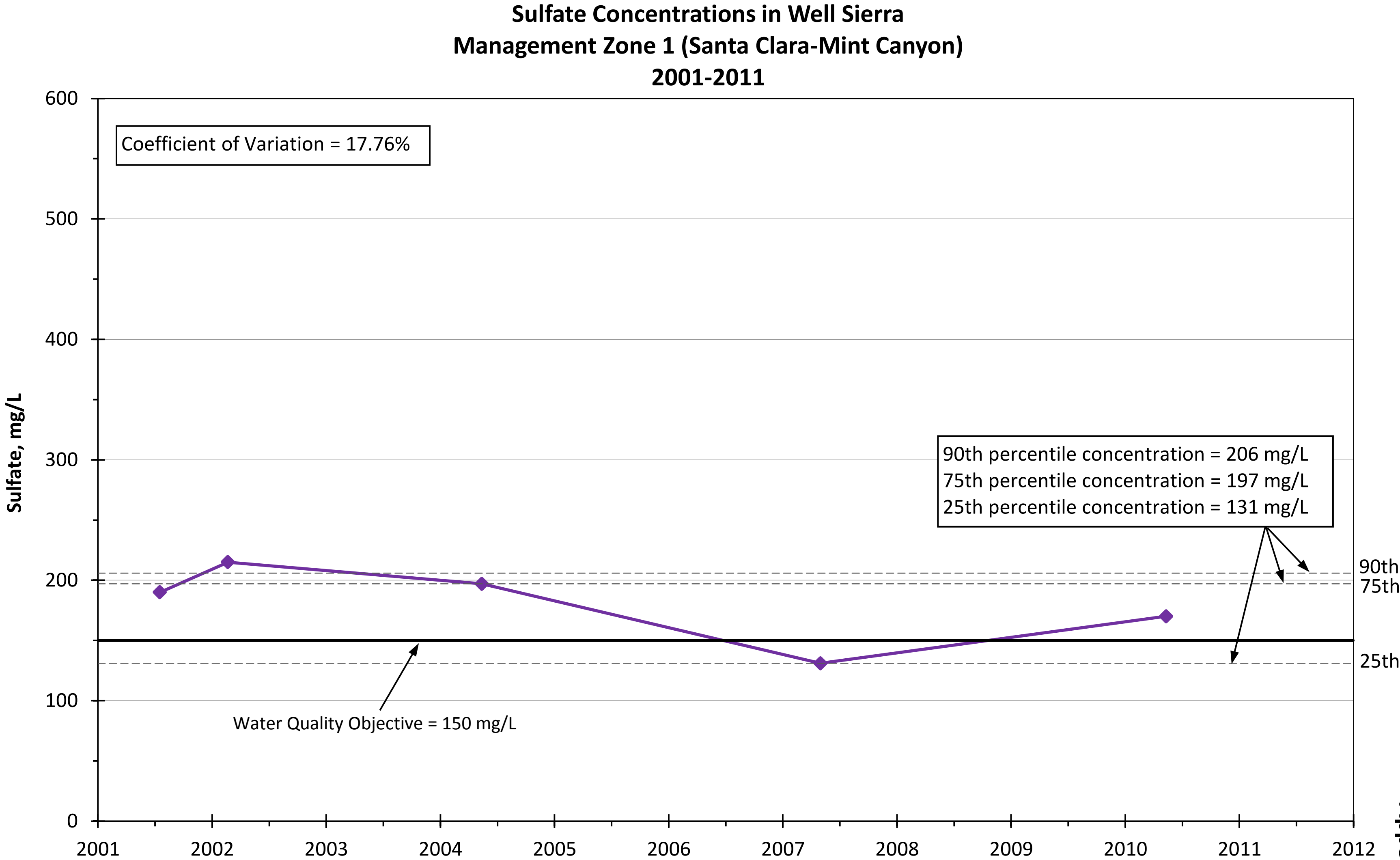
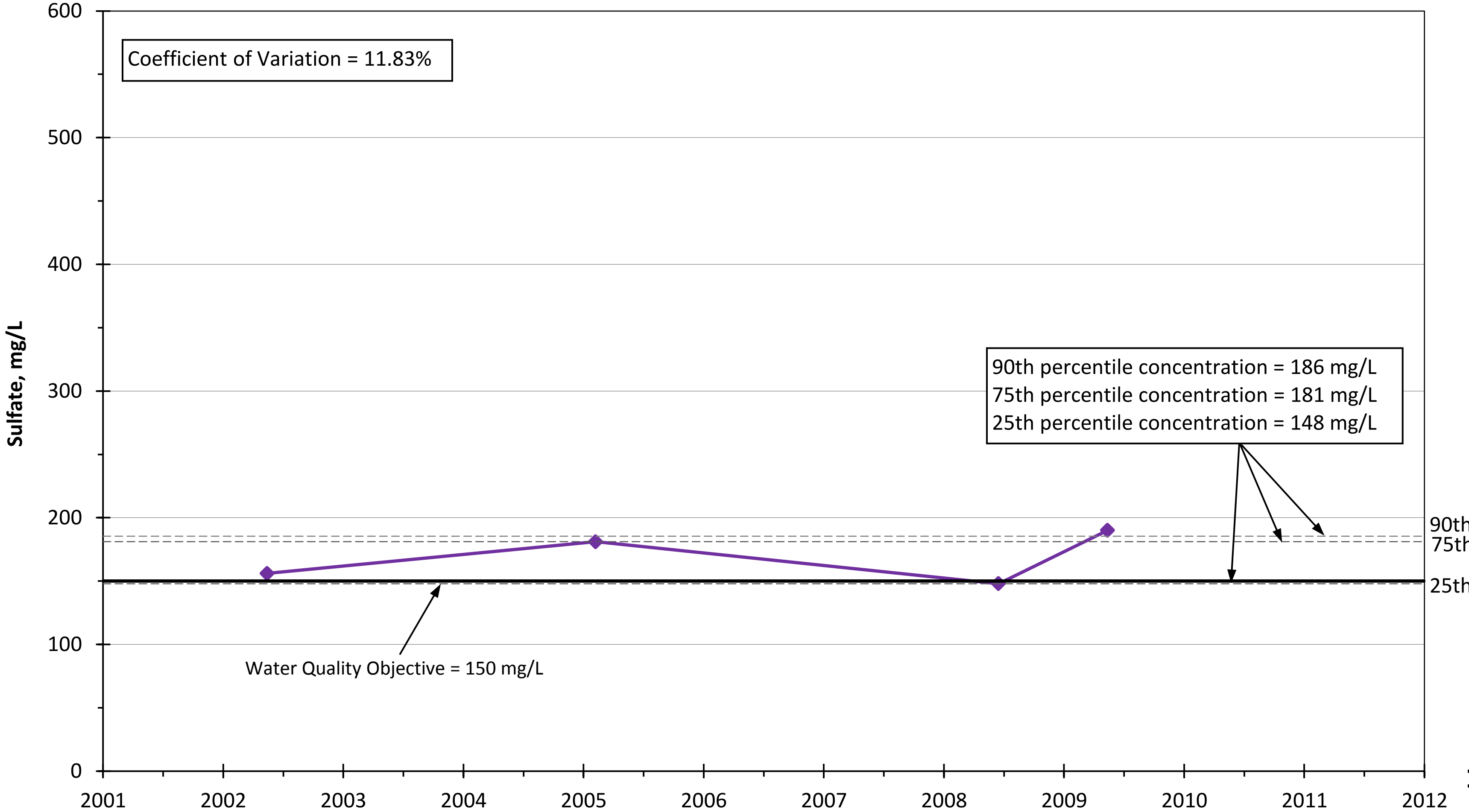

Sulfate Concentrations in Well Mitchell 5B
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 17.02%
90th percentile concentration = 133 mg/L
75th percentile concentration = 128 mg/L
25th percentile concentration = 95 mg/L
Water Quality Objective = 150 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th


Sulfate Concentrations in Well Sierra
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 17.76%
90th percentile concentration = 206 mg/L
75th percentile concentration = 197 mg/L
25th percentile concentration = 131 mg/L
90th
75th
25th
Water Quality Objective = 150 mg/L
Sulfate, mg/L
600
500
400
300
200
100
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Sulfate Concentrations in Well North Oaks East
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011



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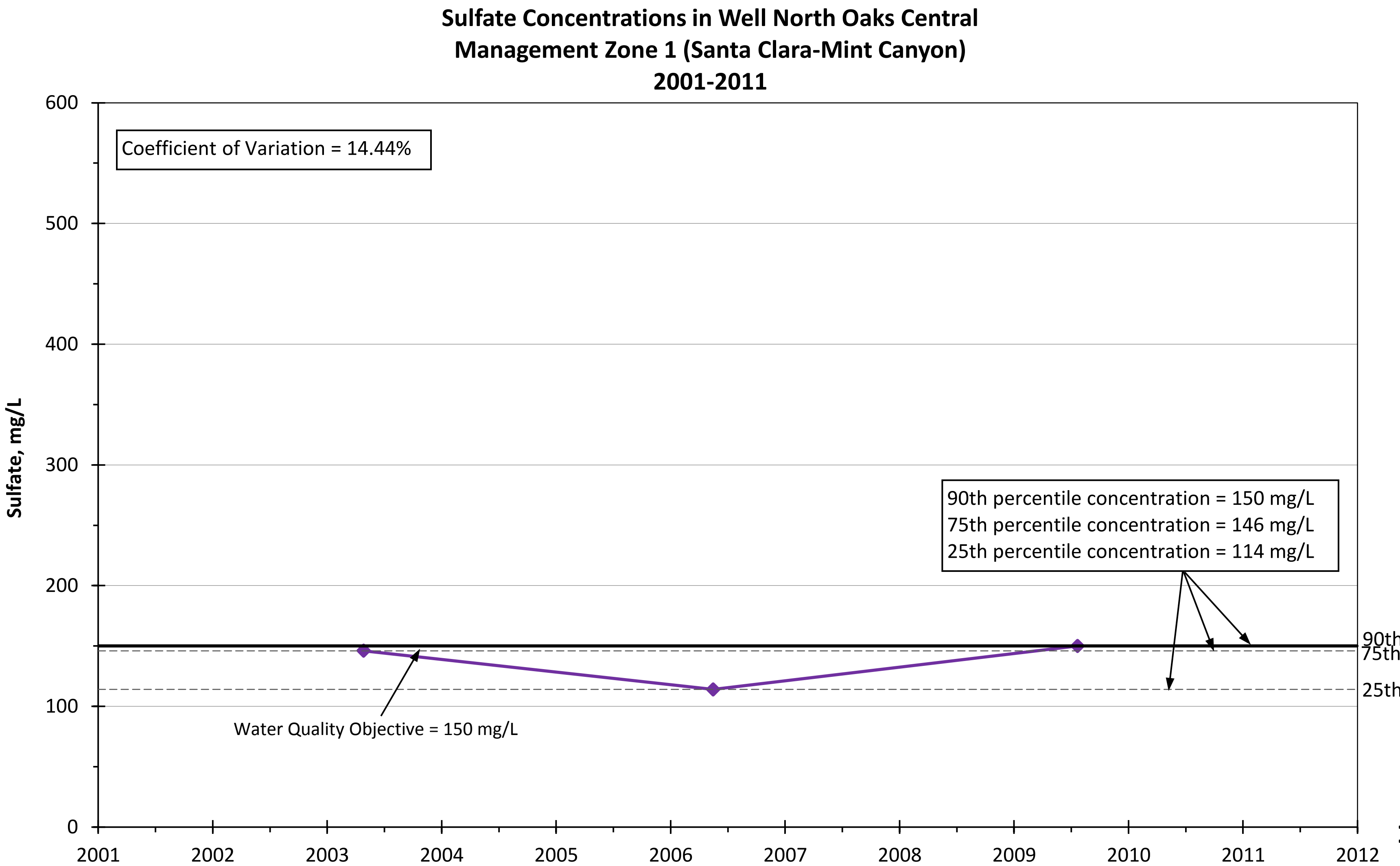
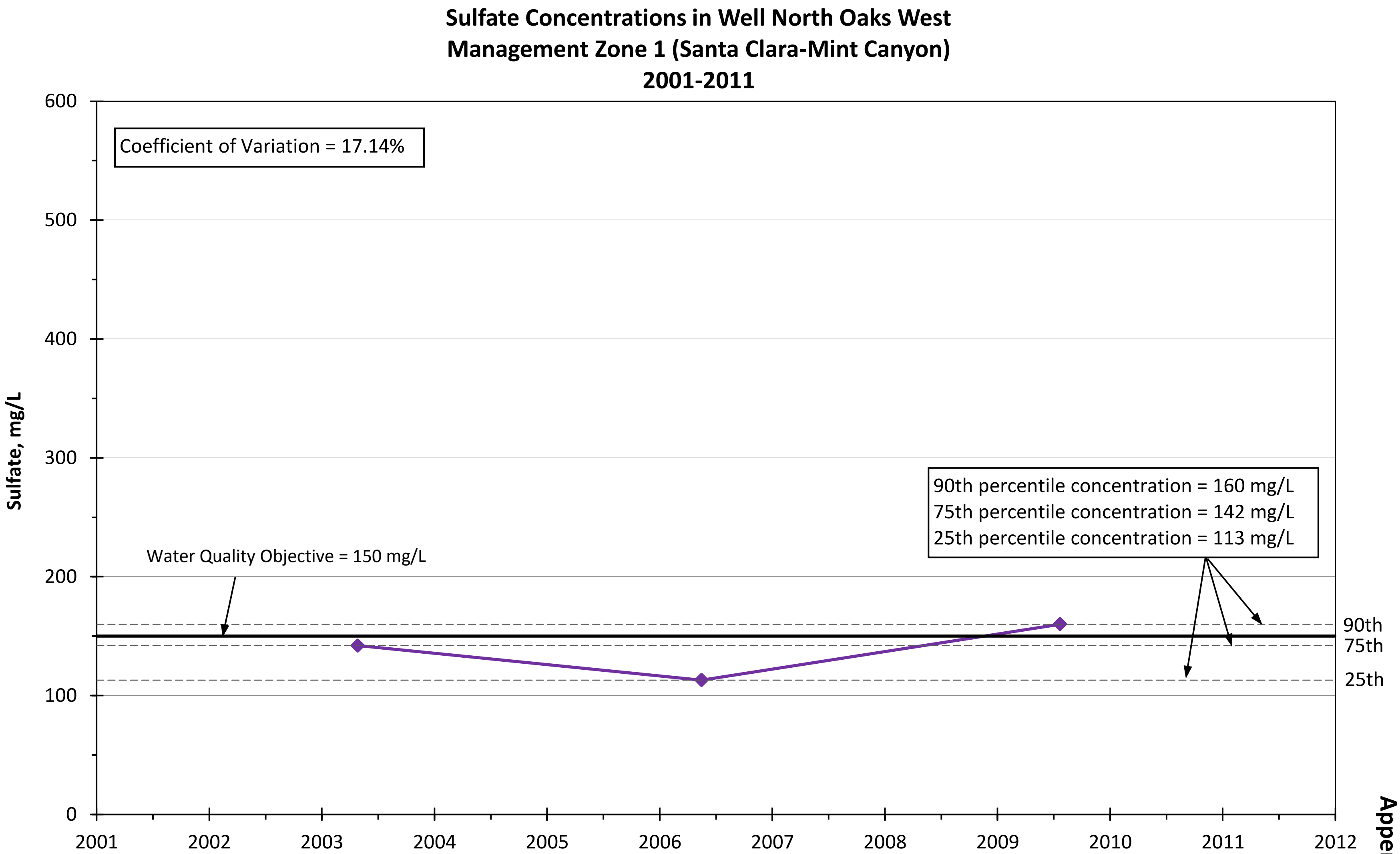
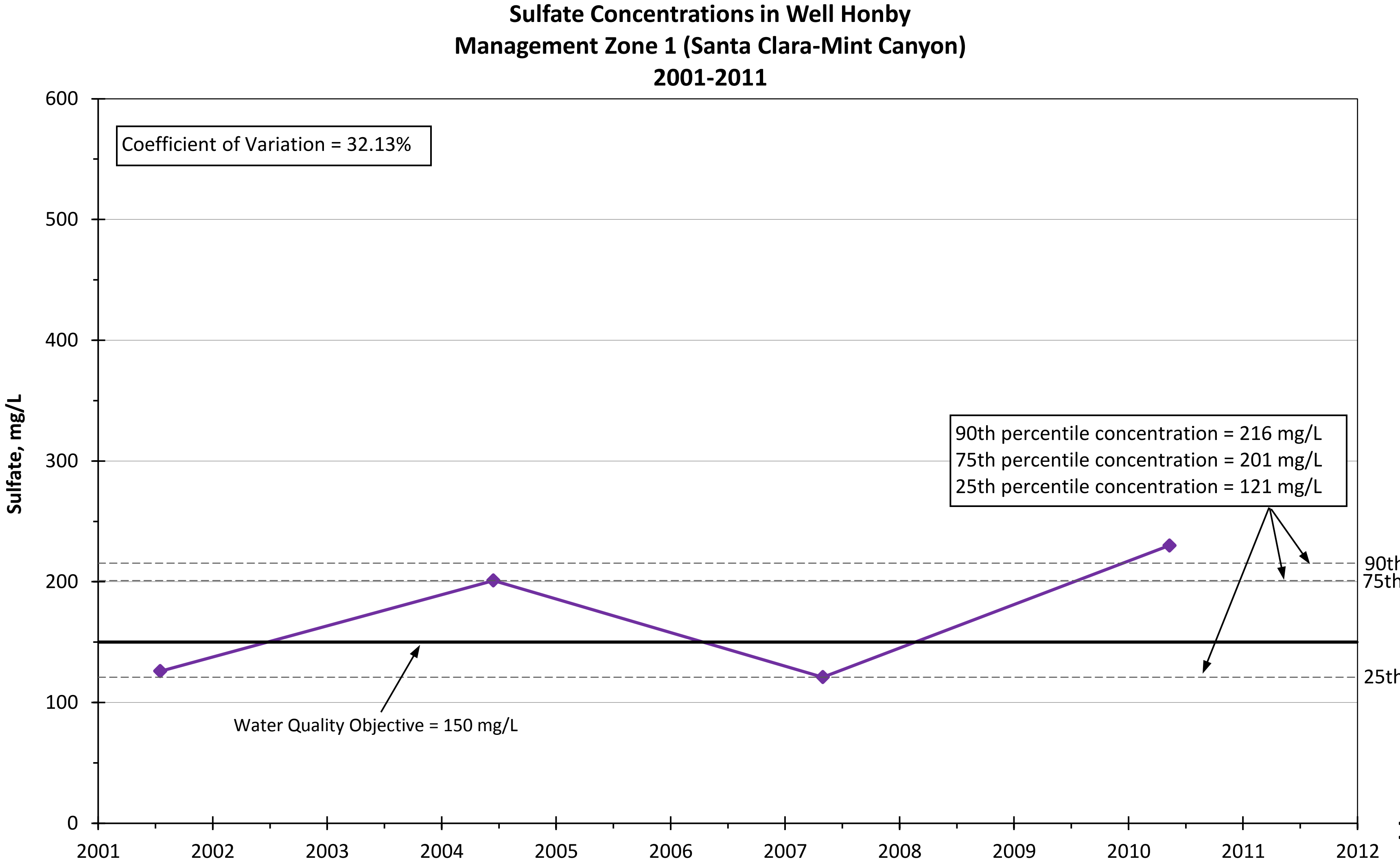

Sulfate Concentrations in Well North Oaks Central
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 14.44%
90th percentile concentration = 150 mg/L
75th percentile concentration = 146 mg/L
25th percentile concentration = 114 mg/L
Water Quality Objective = 150 mg/L
90th
75th
25th
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

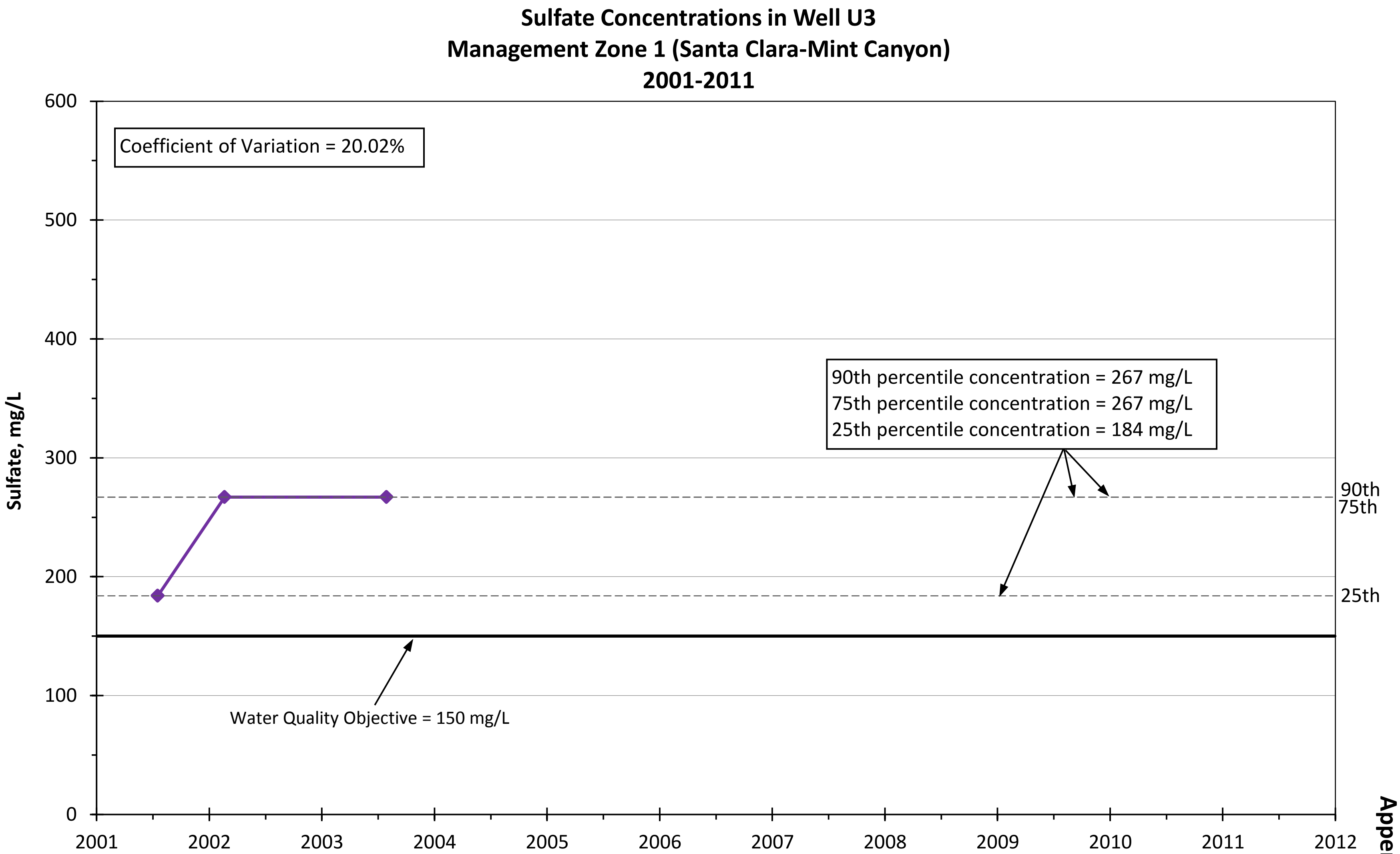
Appendix C


Sulfate Concentrations in Well North Oaks West
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 17.14%
90th percentile concentration = 160 mg/L
75th percentile concentration = 142 mg/L
25th percentile concentration = 113 mg/L
Water Quality Objective = 150 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

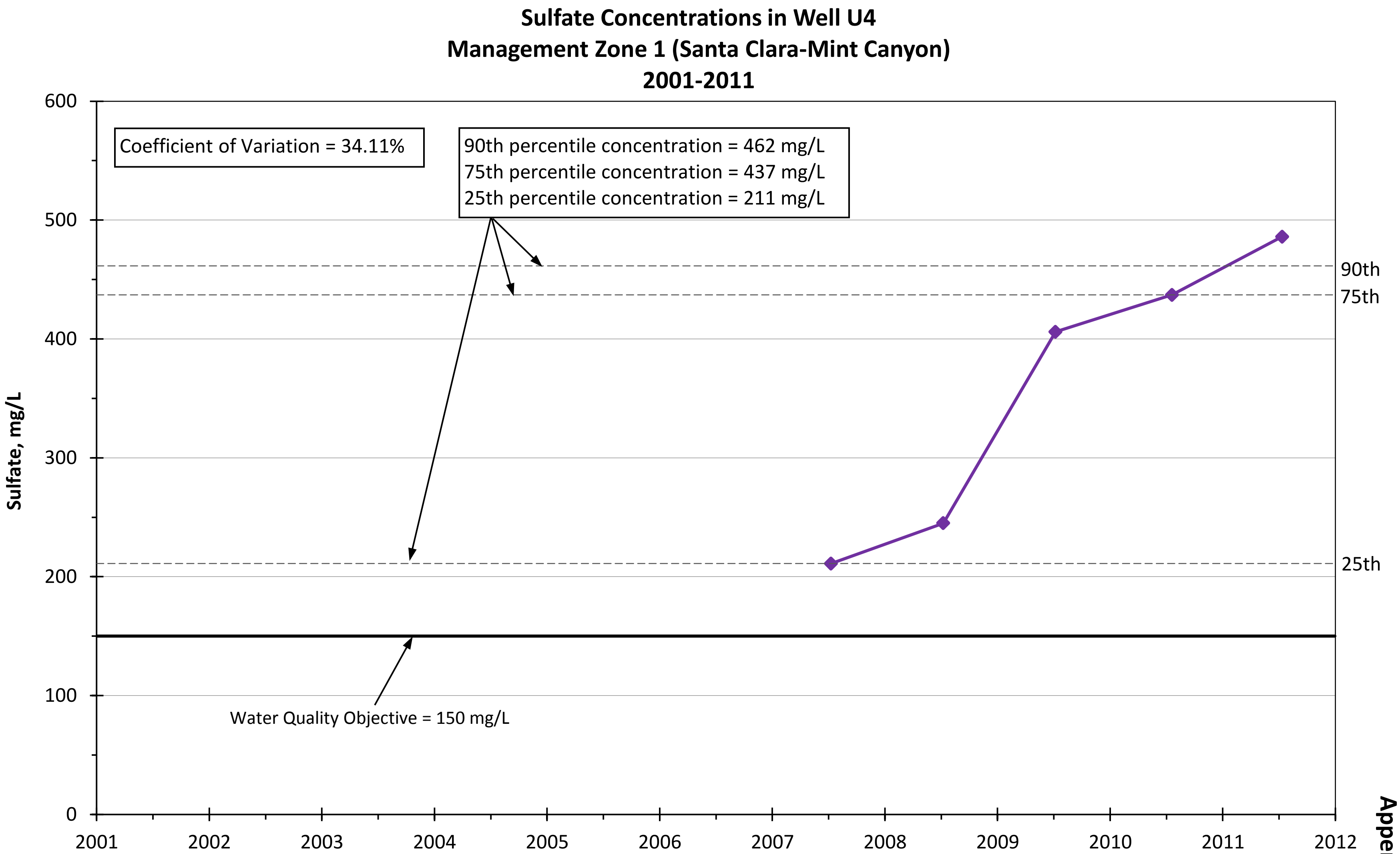
Appendix C


Sulfate Concentrations in Well Honby
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 32.13%
90th percentile concentration = 216 mg/L
75th percentile concentration = 201 mg/L
25th percentile concentration = 121 mg/L
90th
75th
25th
Water Quality Objective = 150 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

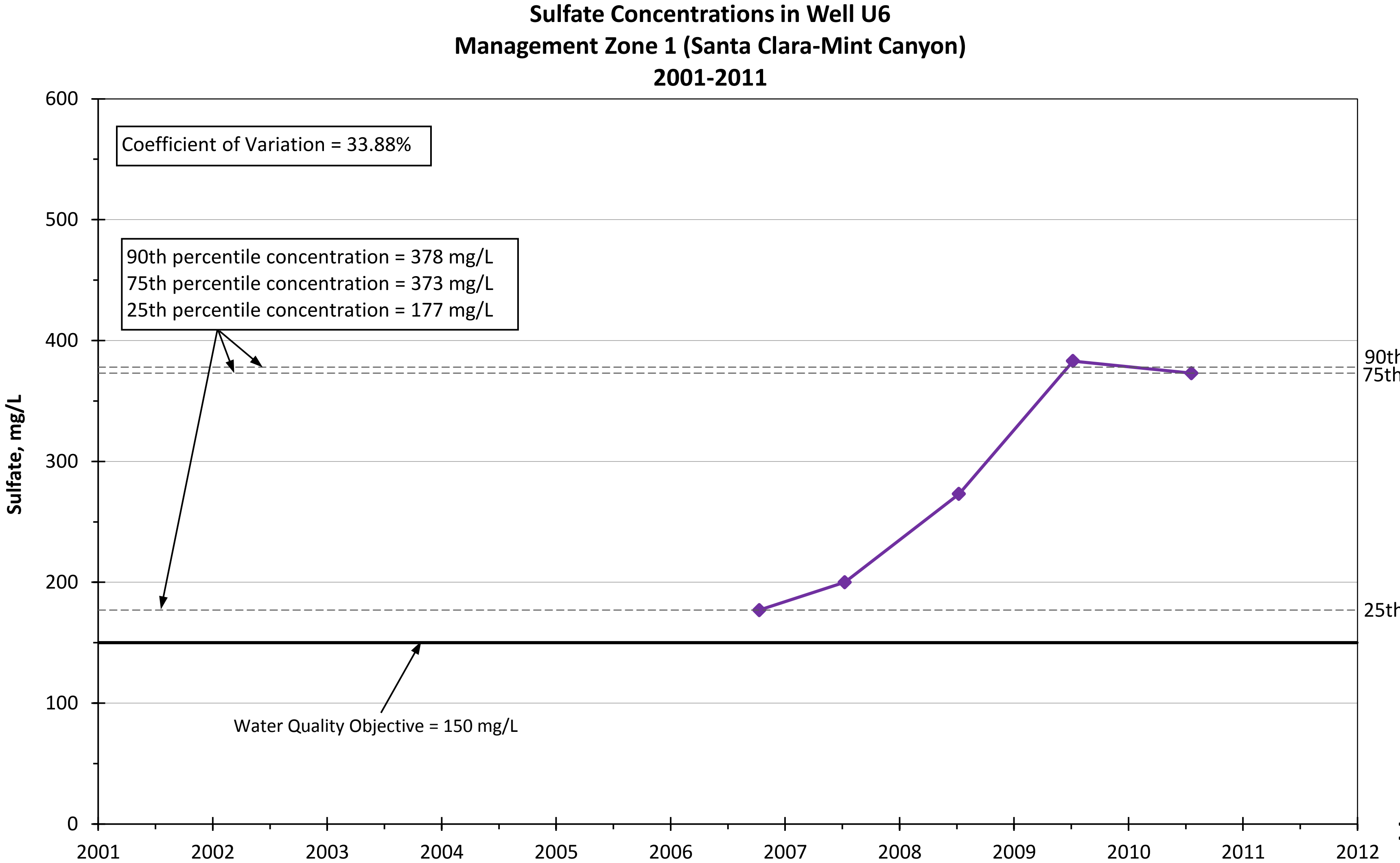
Appendix C

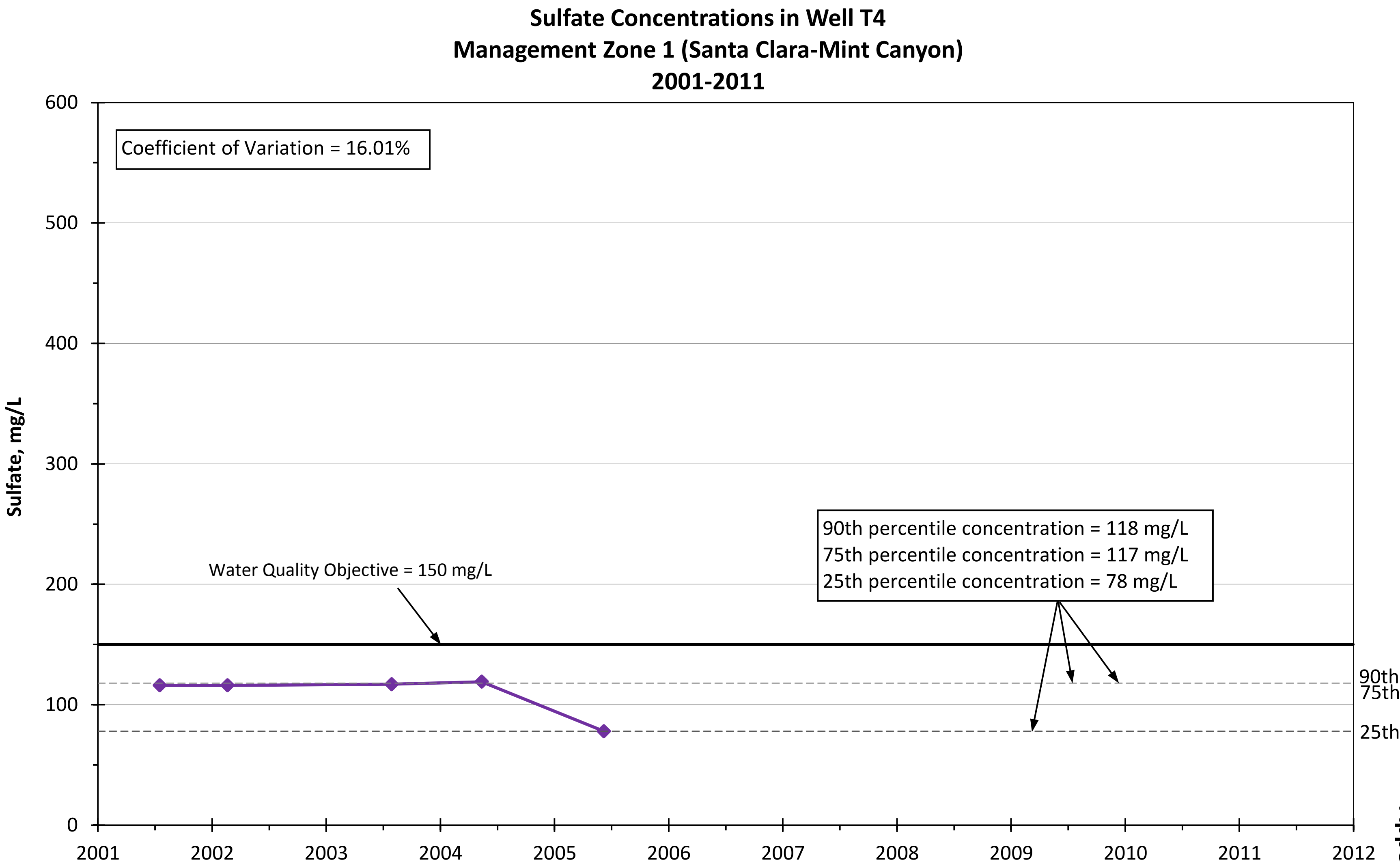

Sulfate Concentrations in Well U3
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 20.02%
90th percentile concentration = 267 mg/L
75th percentile concentration = 267 mg/L
25th percentile concentration = 184 mg/L
90th
75th
25th
Water Quality Objective = 150 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

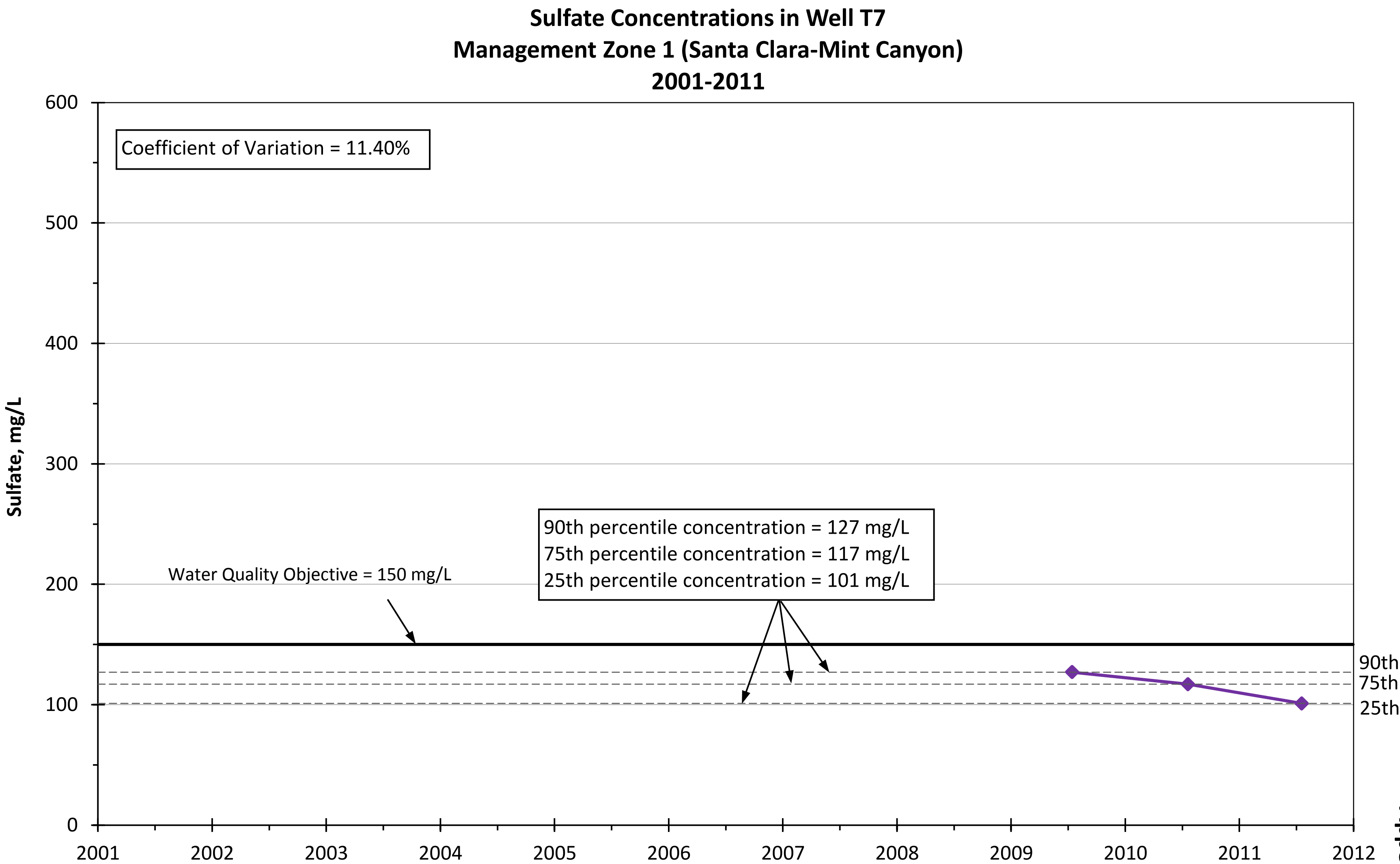

Sulfate Concentrations in Well U4
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 34.11%
90th percentile concentration = 462 mg/L
75th percentile concentration = 437 mg/L
25th percentile concentration = 211 mg/L
Water Quality Objective = 150 mg/L
Sulfate, mg/L
600
500
400
300
200
100
0
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

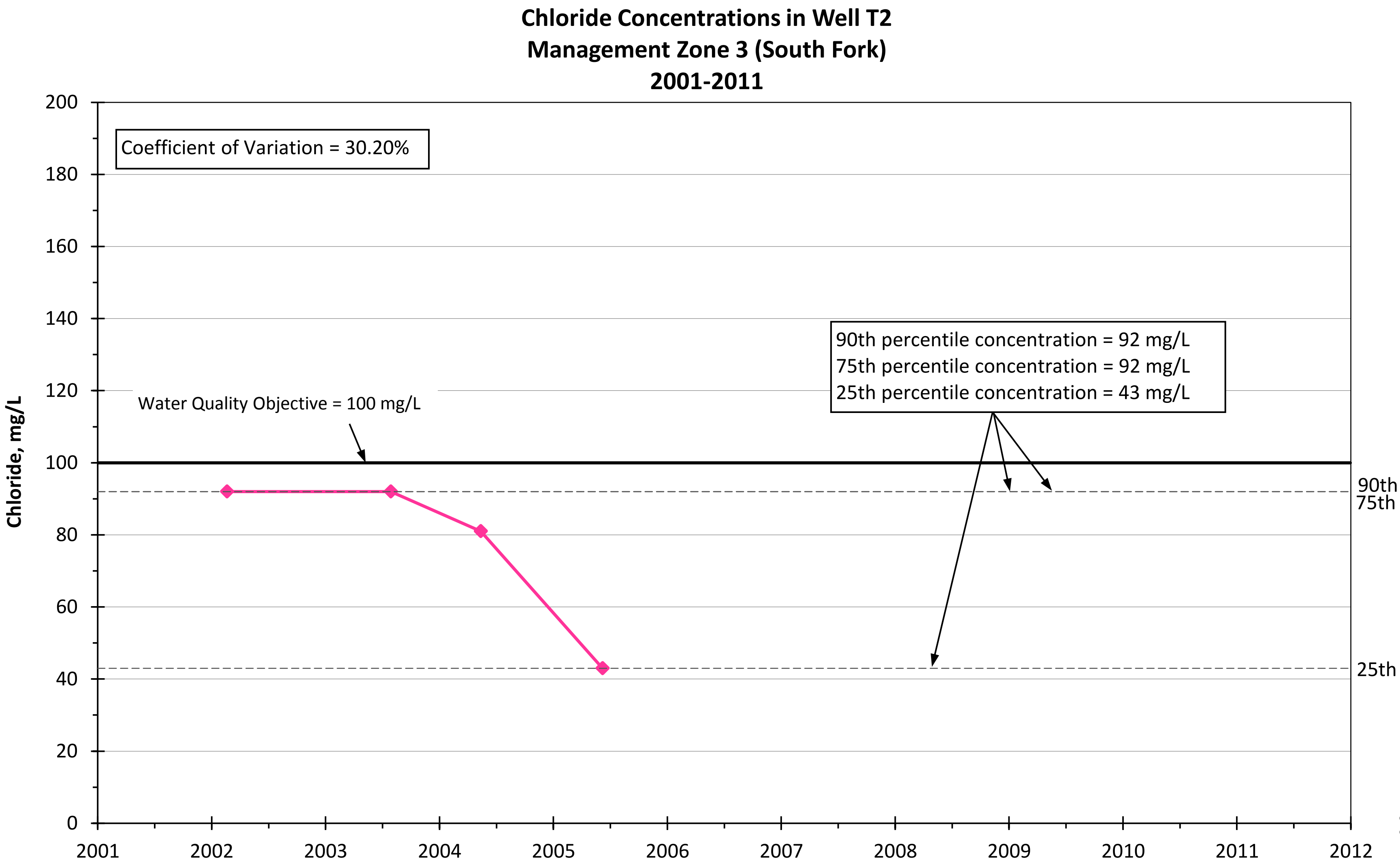

Sulfate Concentrations in Well U6
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 33.88%
90th percentile concentration = 378 mg/L
75th percentile concentration = 373 mg/L
25th percentile concentration = 177 mg/L
Water Quality Objective = 150 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Sulfate Concentrations in Well T4
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 16.01%
Water Quality Objective = 150 mg/L
90th percentile concentration = 118 mg/L
75th percentile concentration = 117 mg/L
25th percentile concentration = 78 mg/L
90th
75th
25th
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

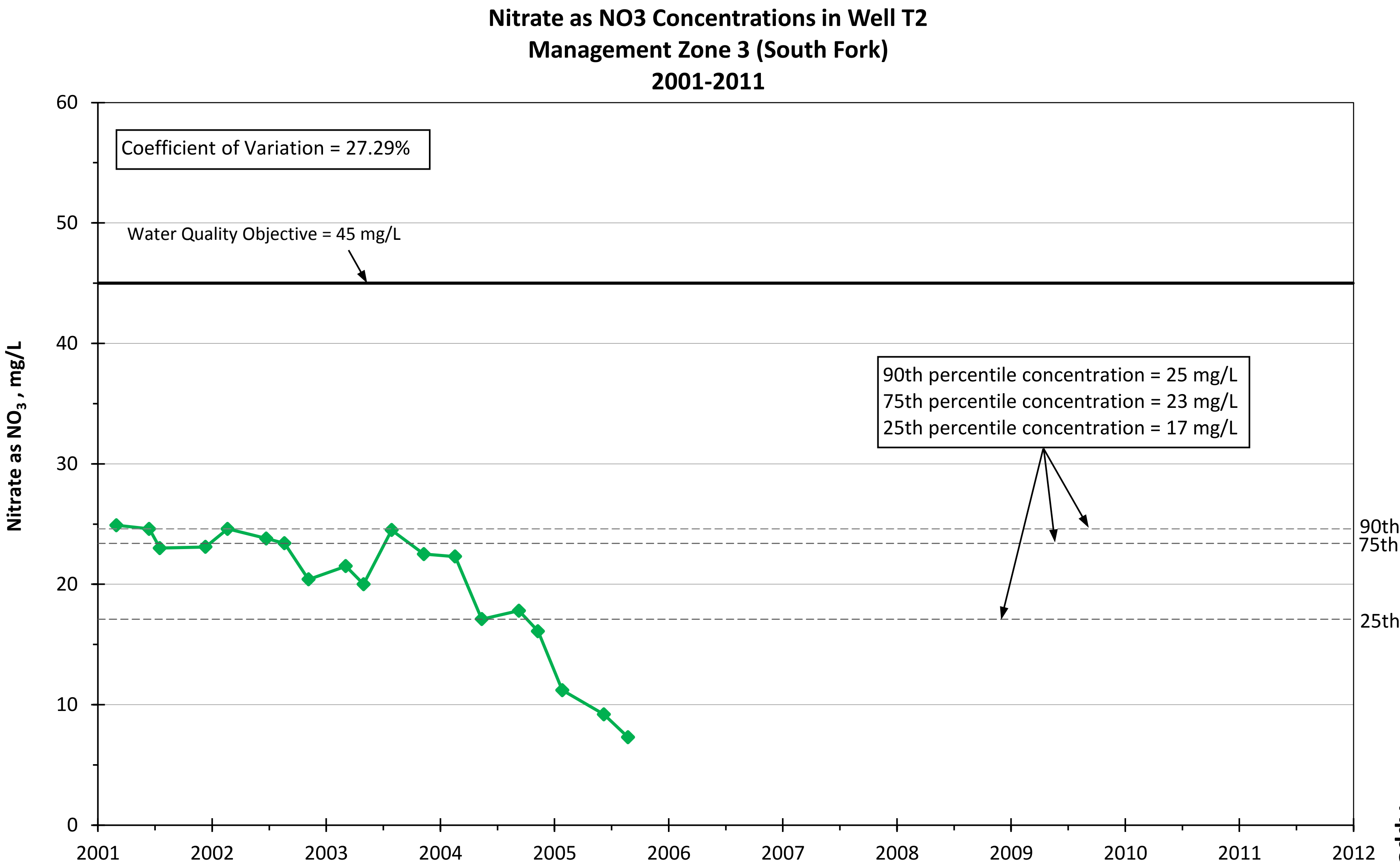
Appendix C

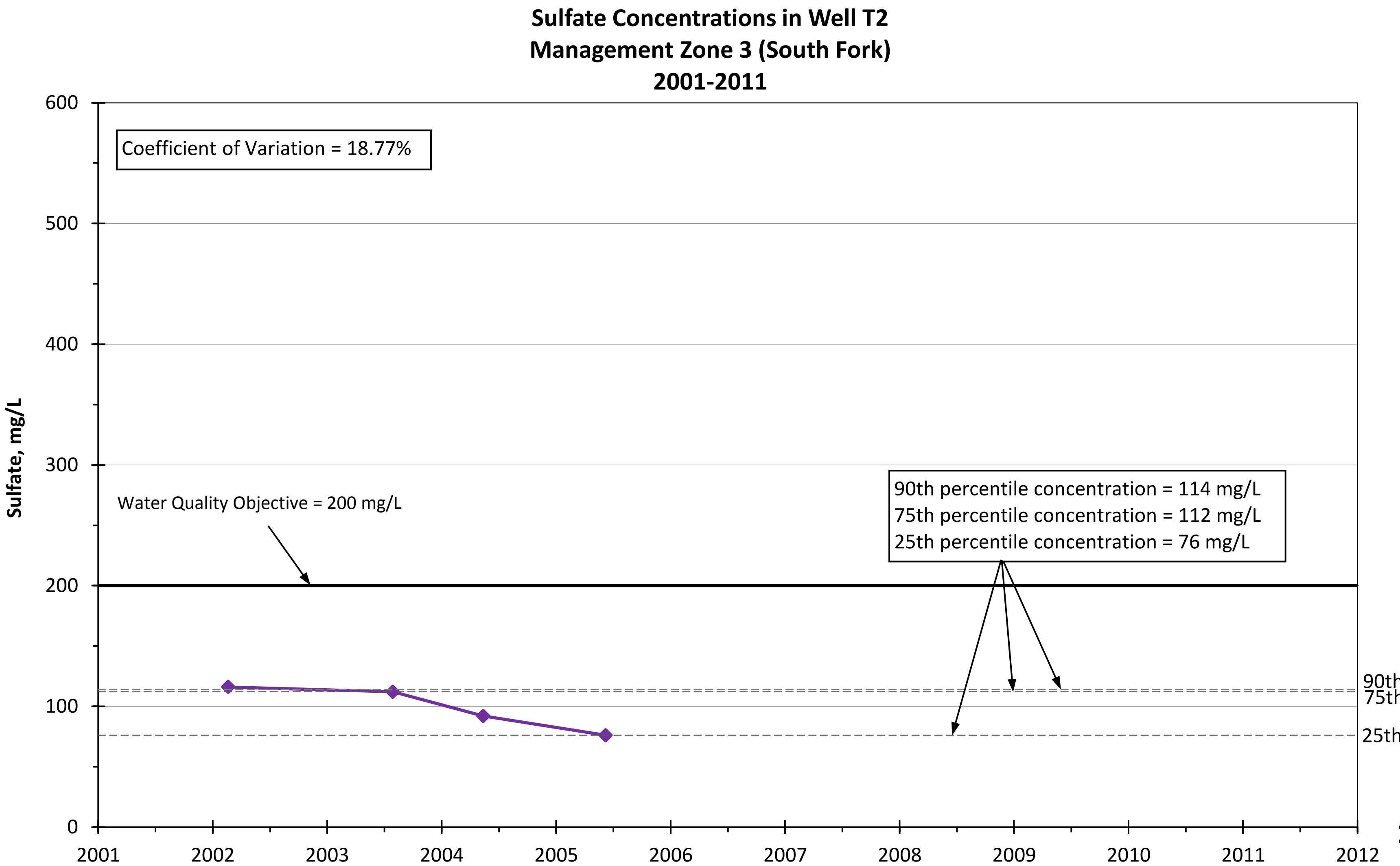

Sulfate Concentrations in Well T7
Management Zone 1 (Santa Clara-Mint Canyon)
2001-2011
Coefficient of Variation = 11.40%
90th percentile concentration = 127 mg/L
75th percentile concentration = 117 mg/L
25th percentile concentration = 101 mg/L
Water Quality Objective = 150 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C


Chloride Concentrations in Well T2
Management Zone 3 (South Fork)
2001-2011
Coefficient of Variation = 30.20%
90th percentile concentration = 92 mg/L
75th percentile concentration = 92 mg/L
25th percentile concentration = 43 mg/L
Water Quality Objective = 100 mg/L
Chloride, mg/L
200
180
160
140
120
100
80
60
40
20
0
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

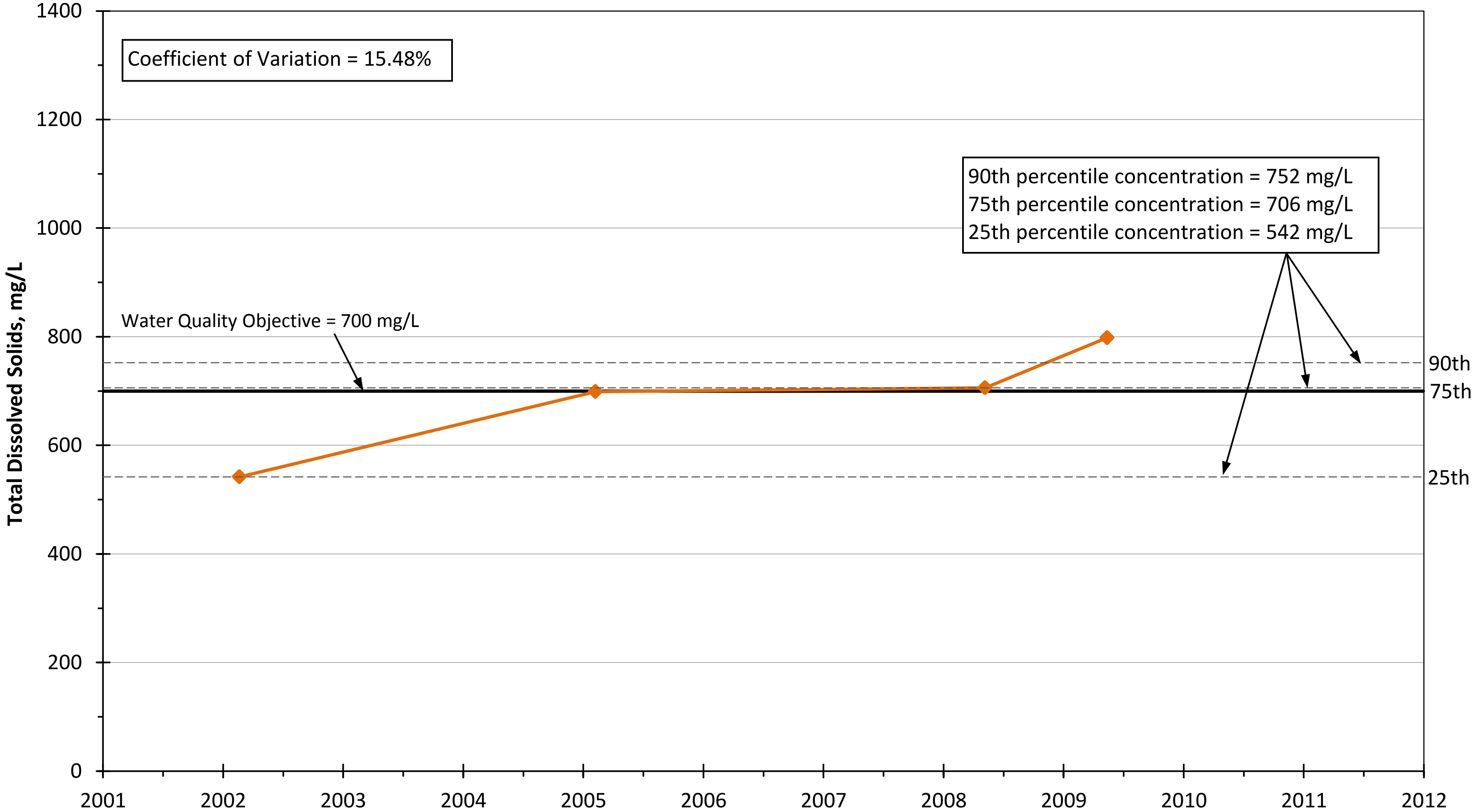
Appendix C


Nitrate as NO3 Concentrations in Well T2
Management Zone 3 (South Fork)
2001-2011
Coefficient of Variation = 27.29%
Water Quality Objective = 45 mg/L
90th percentile concentration = 25 mg/L
75th percentile concentration = 23 mg/L
25th percentile concentration = 17 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Sulfate Concentrations in Well T2
Management Zone 3 (South Fork)
2001-2011
Coefficient of Variation = 18.77%
Water Quality Objective = 200 mg/L
90th percentile concentration = 114 mg/L
75th percentile concentration = 112 mg/L
25th percentile concentration = 76 mg/L
90th
75th
25th
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

Total Dissolved Solids Concentrations in Well Guida
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011



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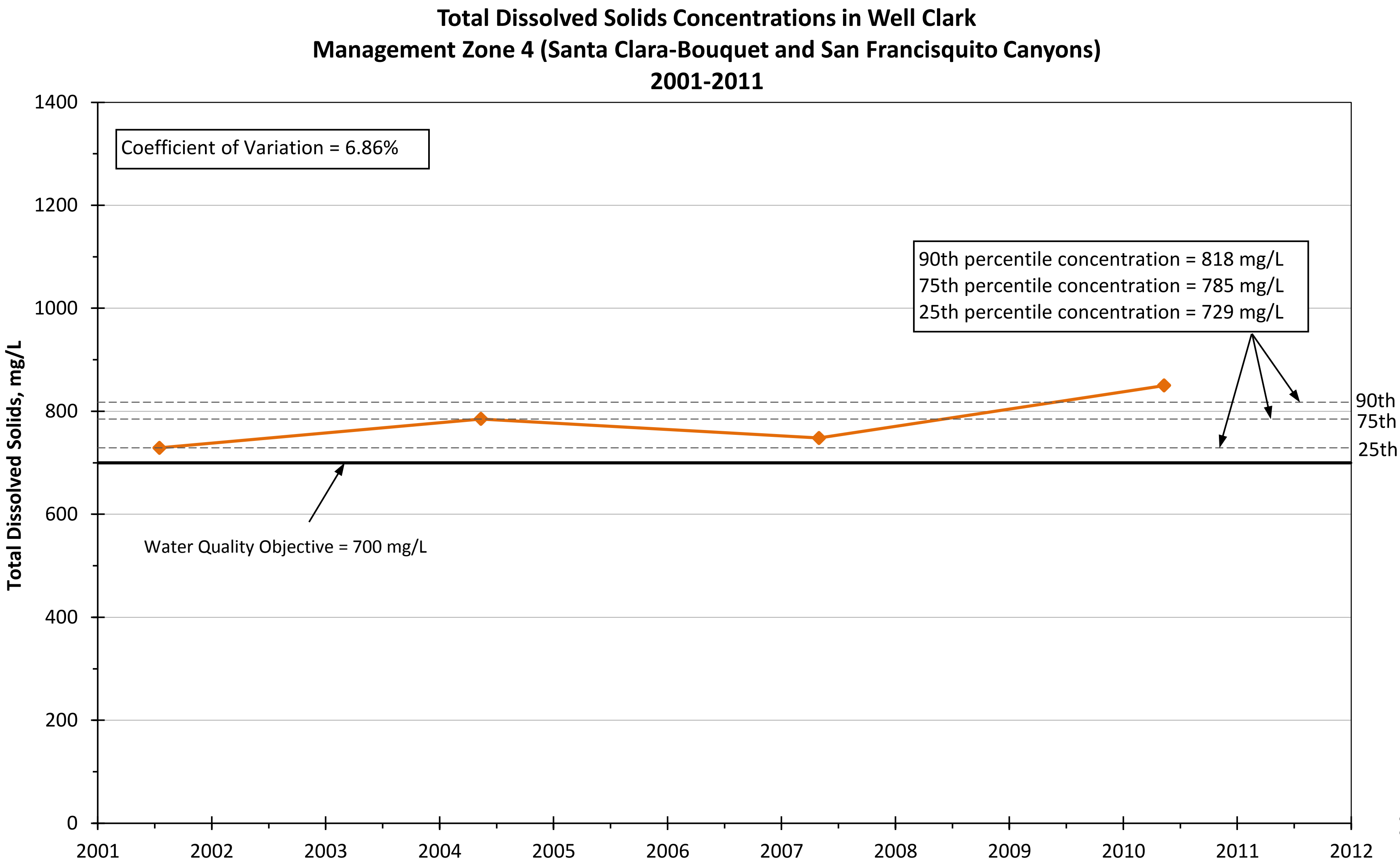
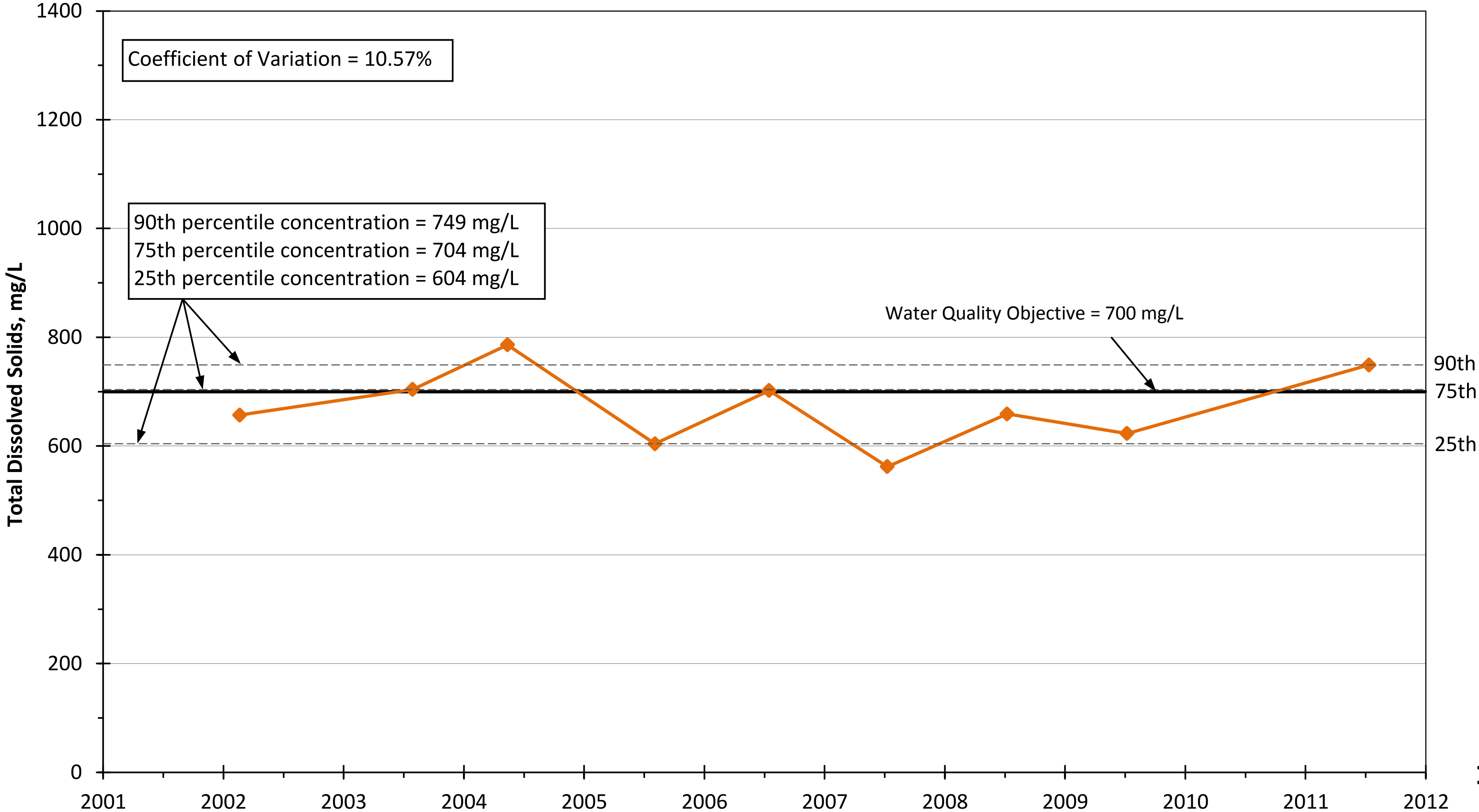
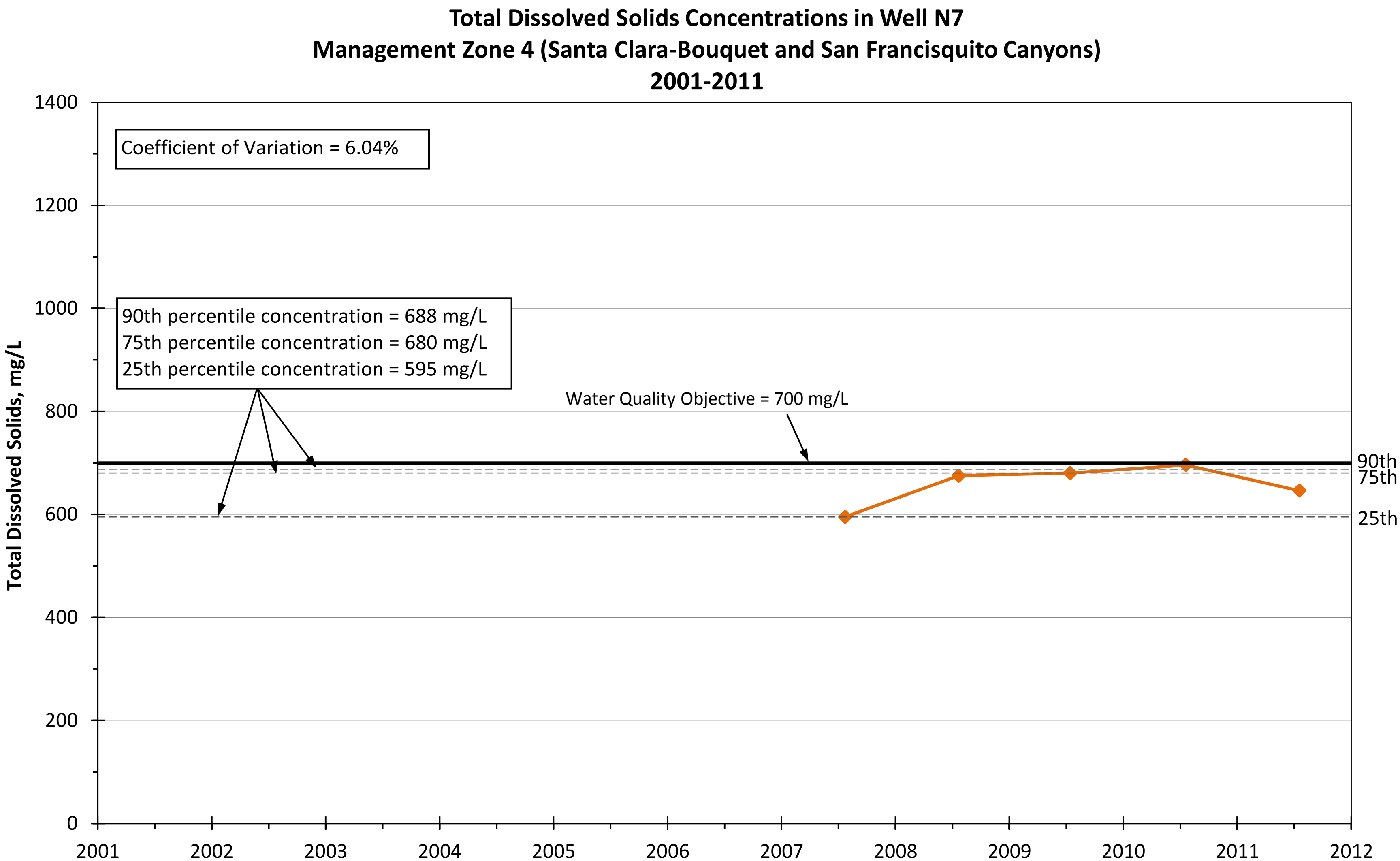

Total Dissolved Solids Concentrations in Well Clark
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 6.86%
90th percentile concentration = 818 mg/L
75th percentile concentration = 785 mg/L
25th percentile concentration = 729 mg/L
90th
75th
25th
Water Quality Objective = 700 mg/L
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

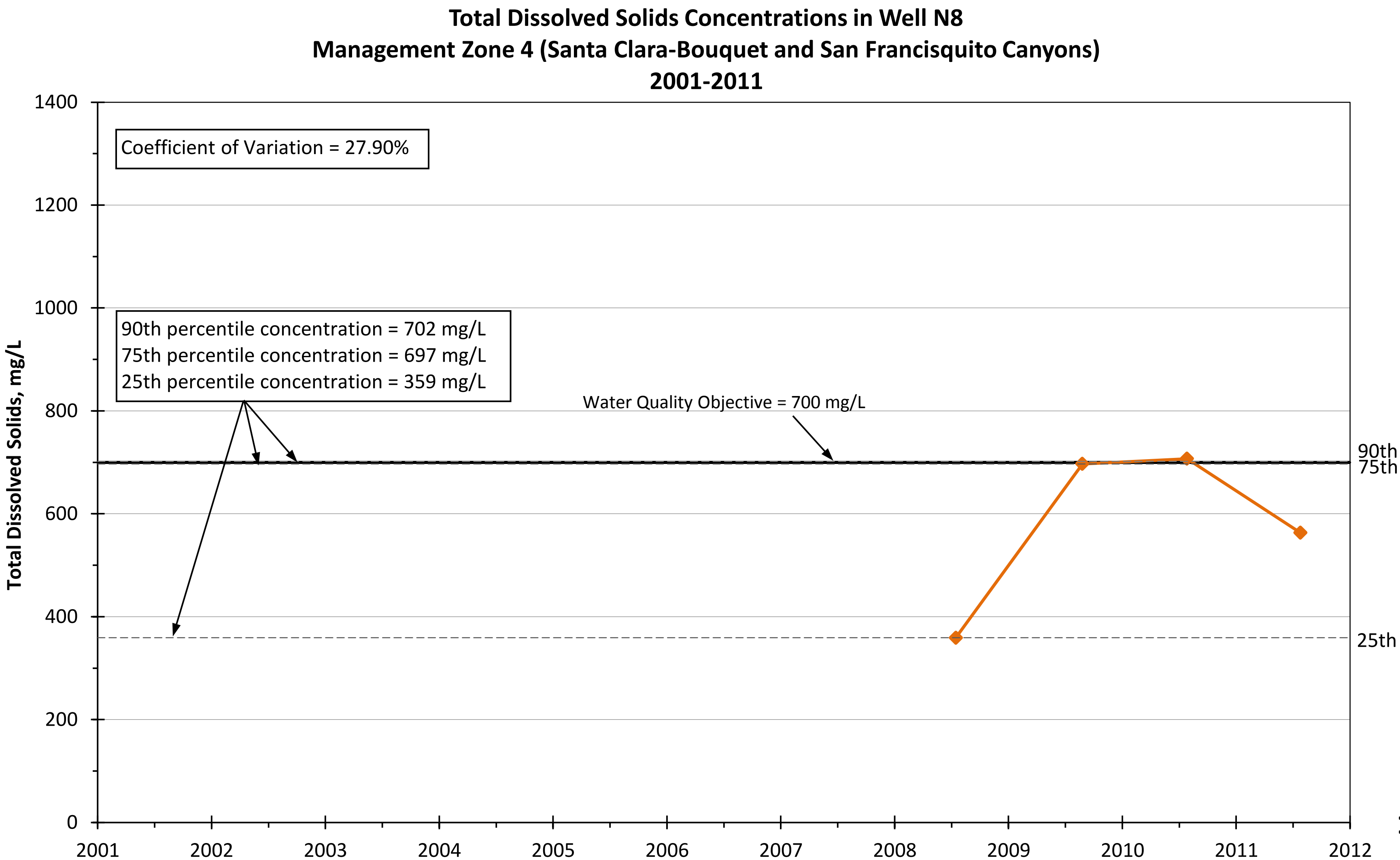
Total Dissolved Solids Concentrations in Well Q2
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011



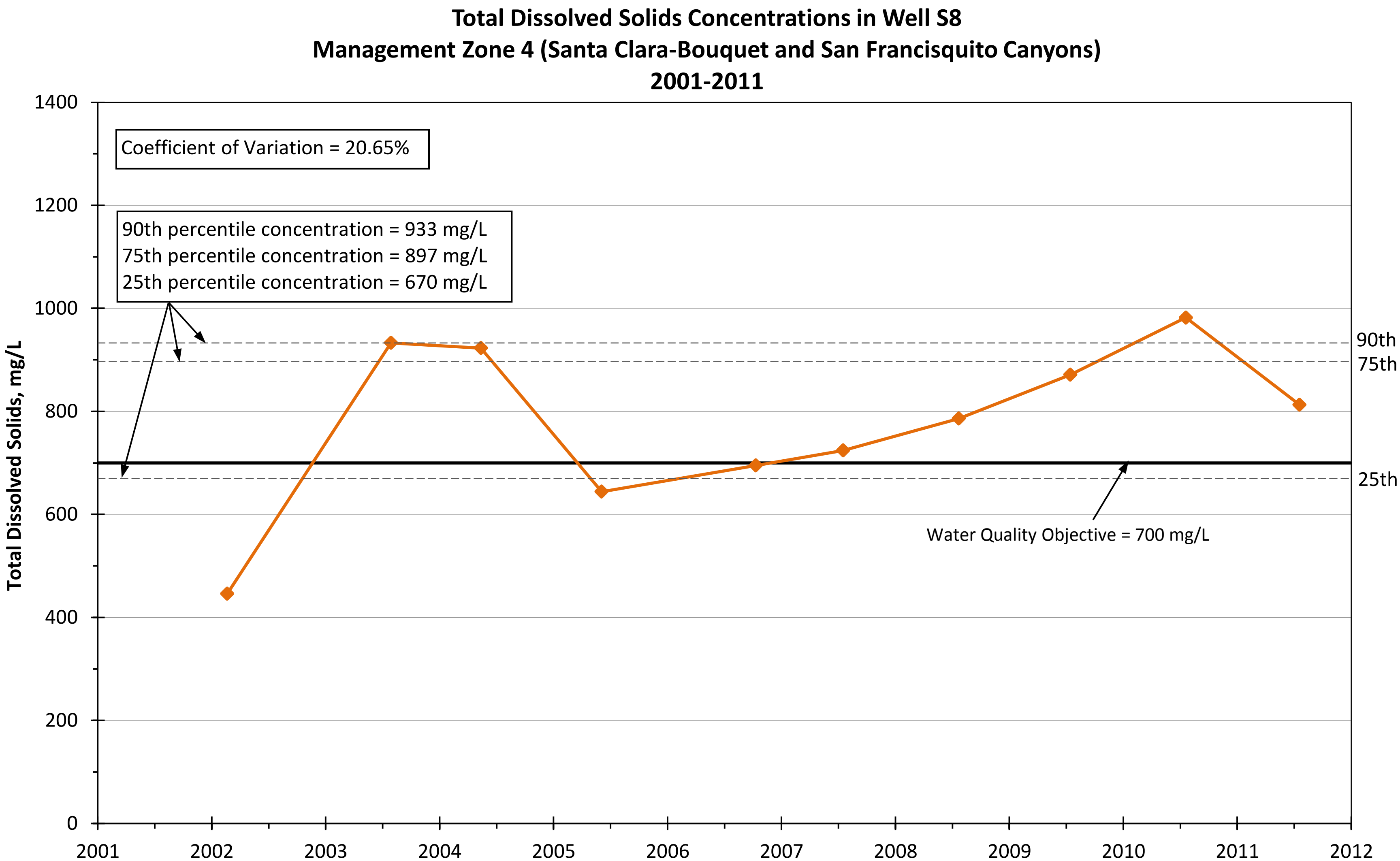
Appendix C

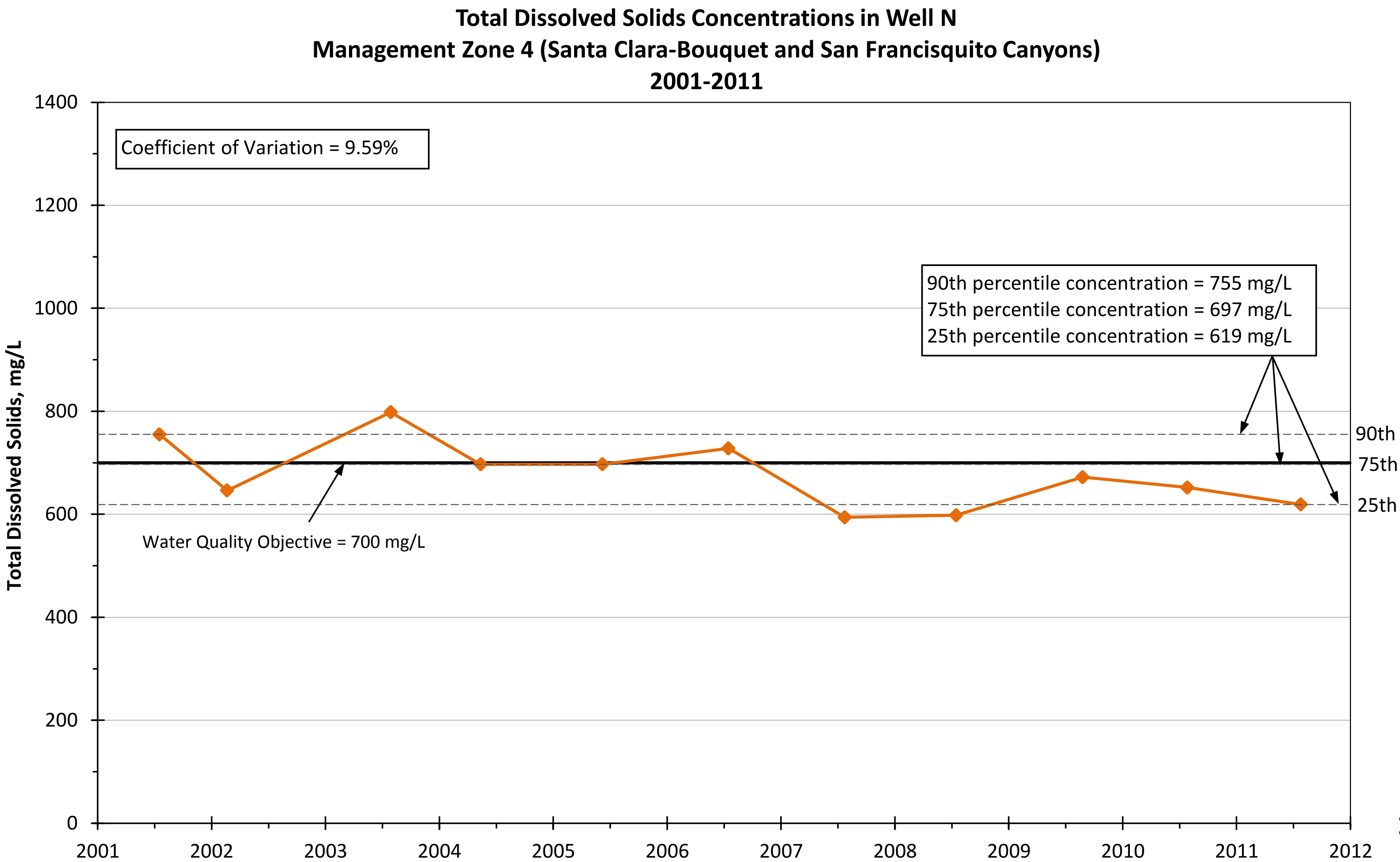

Total Dissolved Solids Concentrations in Well N7
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 6.04%
90th percentile concentration = 688 mg/L
75th percentile concentration = 680 mg/L
25th percentile concentration = 595 mg/L
Water Quality Objective = 700 mg/L
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

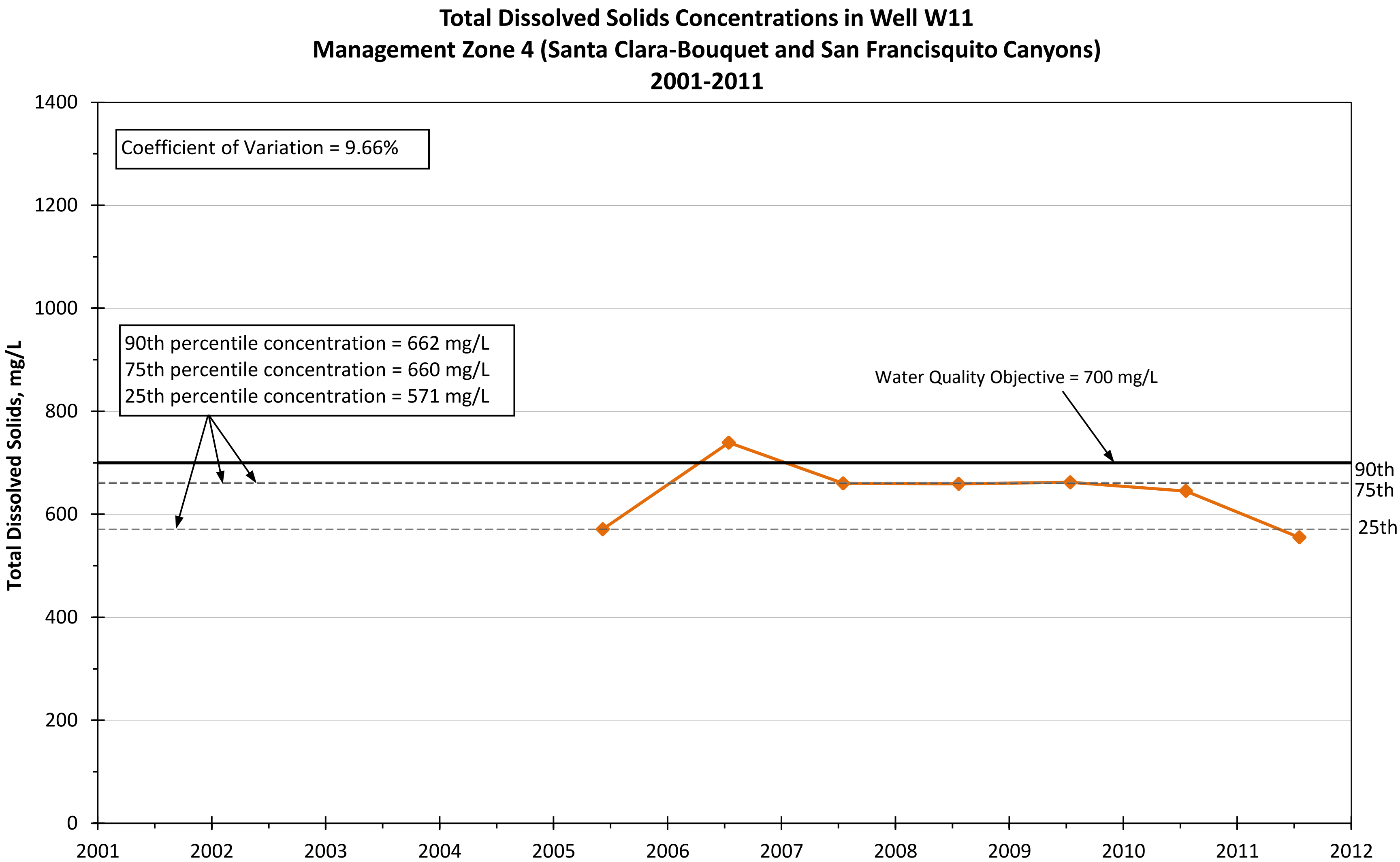
Appendix C


Total Dissolved Solids Concentrations in Well N8
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 27.90%
90th percentile concentration = 702 mg/L
75th percentile concentration = 697 mg/L
25th percentile concentration = 359 mg/L
Water Quality Objective = 700 mg/L
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

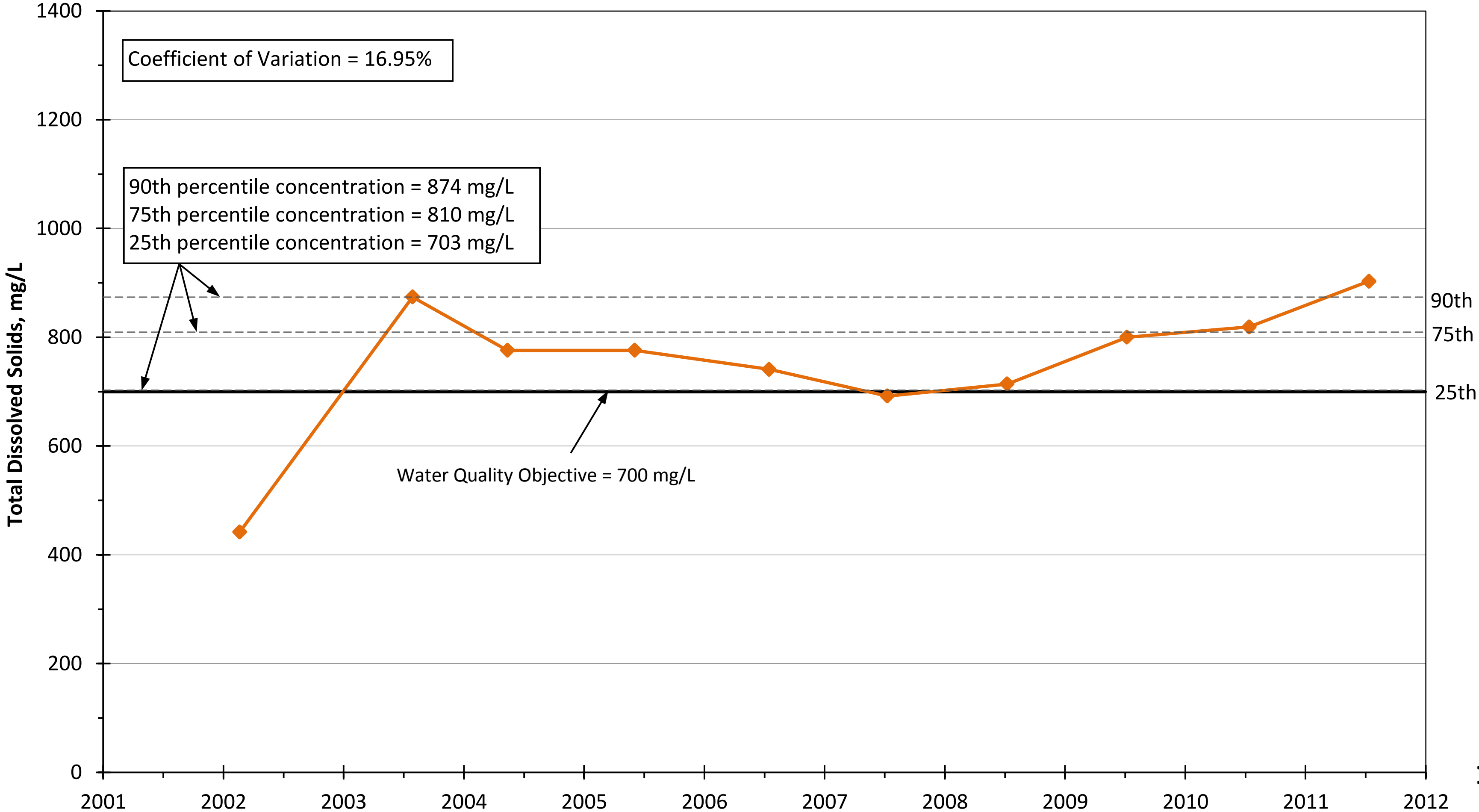

Total Dissolved Solids Concentrations in Well S8
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 20.65%
90th percentile concentration = 933 mg/L
75th percentile concentration = 897 mg/L
25th percentile concentration = 670 mg/L
Water Quality Objective = 700 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

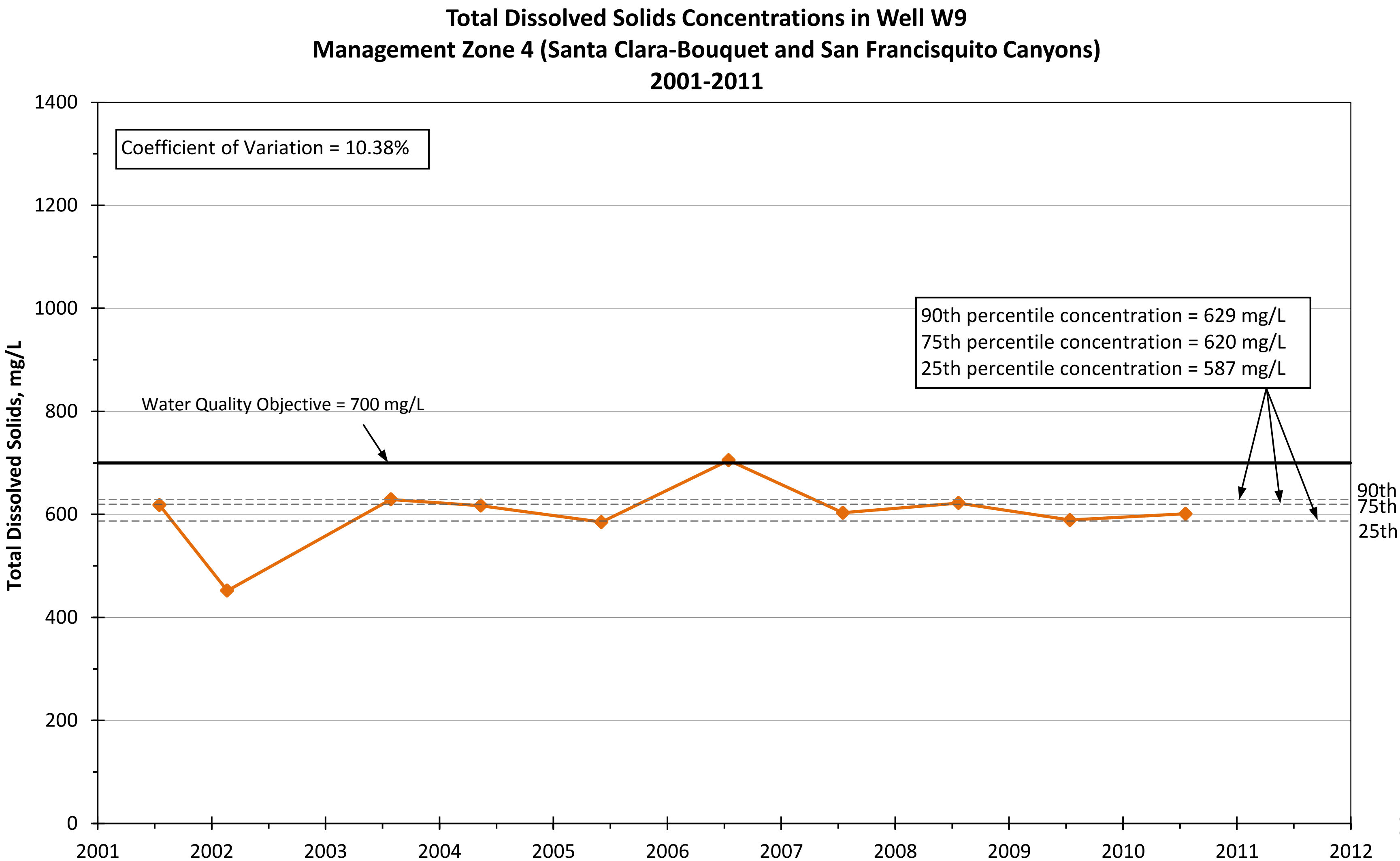

Total Dissolved Solids Concentrations in Well N
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 9.59%
90th percentile concentration = 755 mg/L
75th percentile concentration = 697 mg/L
25th percentile concentration = 619 mg/L
90th
75th
25th
Water Quality Objective = 700 mg/L
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Total Dissolved Solids Concentrations in Well W11
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 9.66%
90th percentile concentration = 662 mg/L
75th percentile concentration = 660 mg/L
25th percentile concentration = 571 mg/L
Water Quality Objective = 700 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

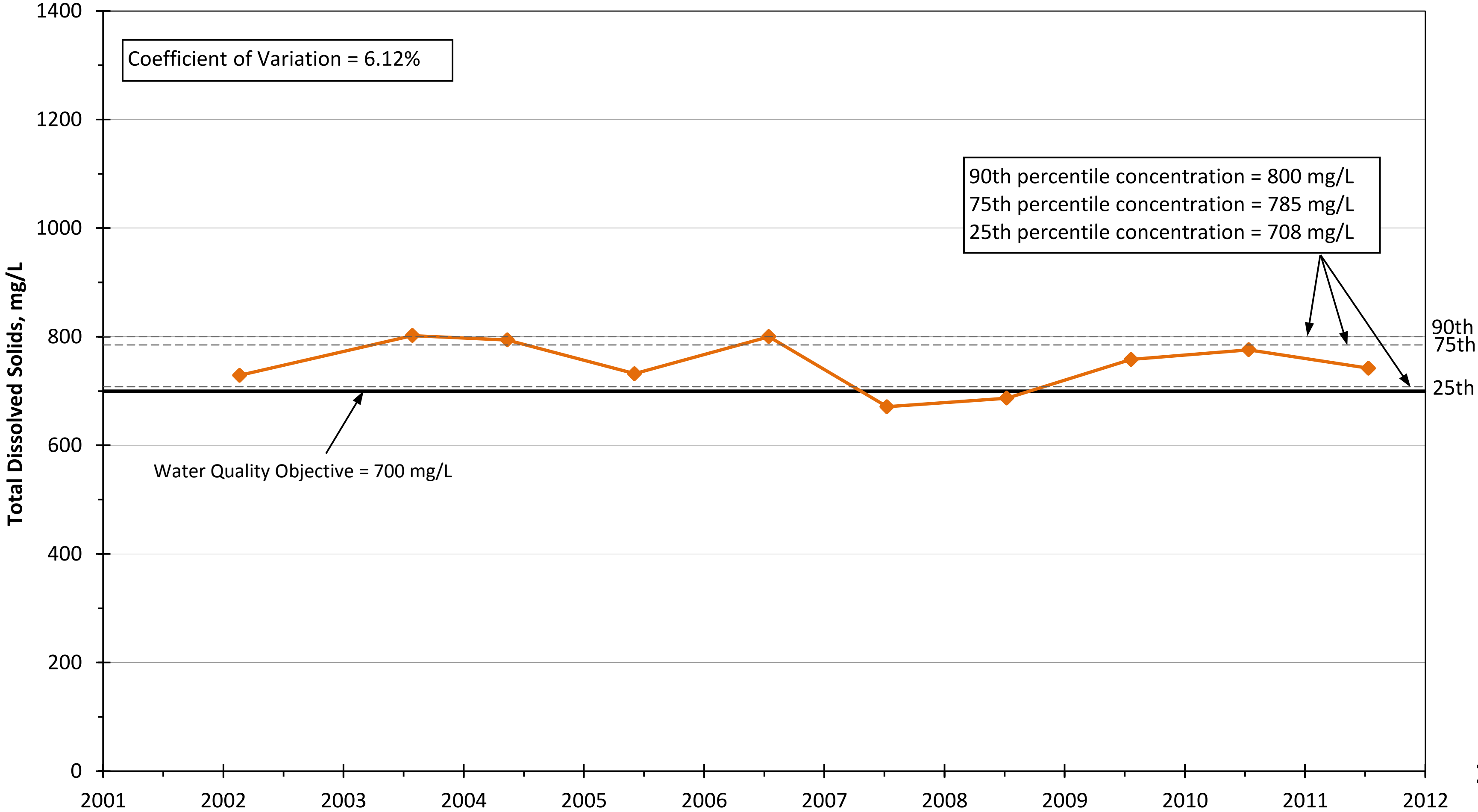
Appendix C

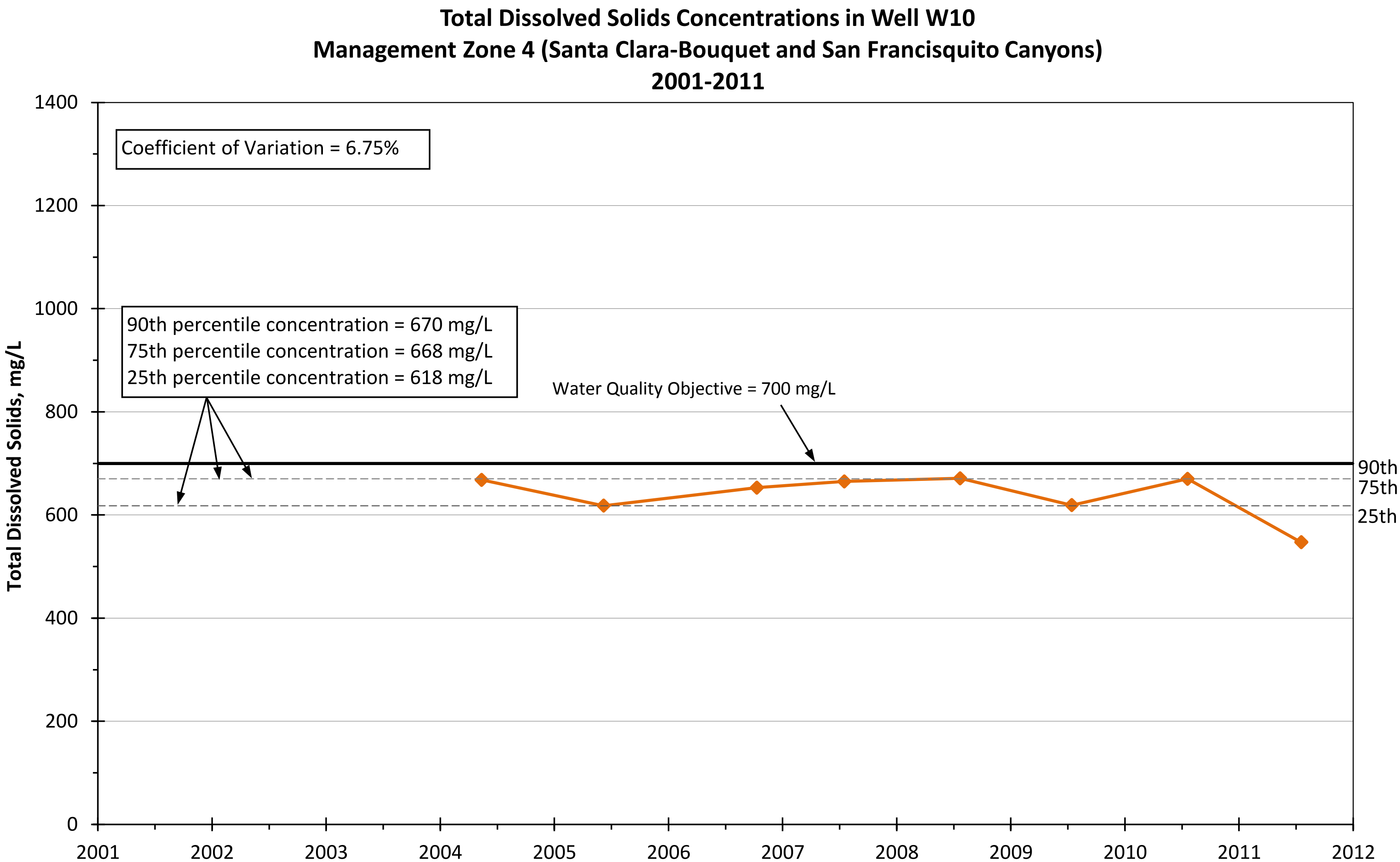
Total Dissolved Solids Concentrations in Well S7
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011



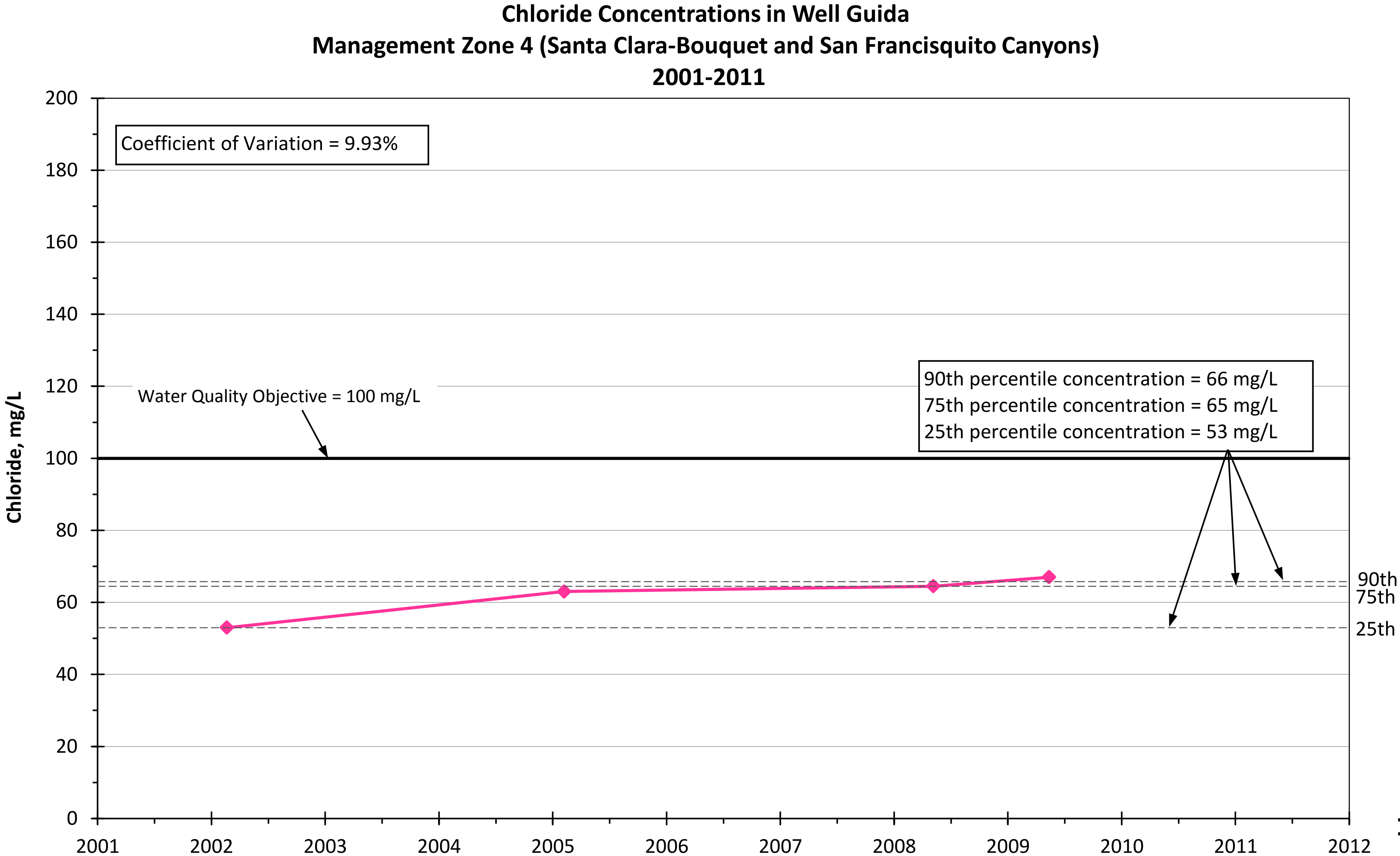

Total Dissolved Solids Concentrations in Well W9
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 10.38%
90th percentile concentration = 629 mg/L
75th percentile concentration = 620 mg/L
25th percentile concentration = 587 mg/L
Water Quality Objective = 700 mg/L
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Total Dissolved Solids Concentrations in Well S6
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011



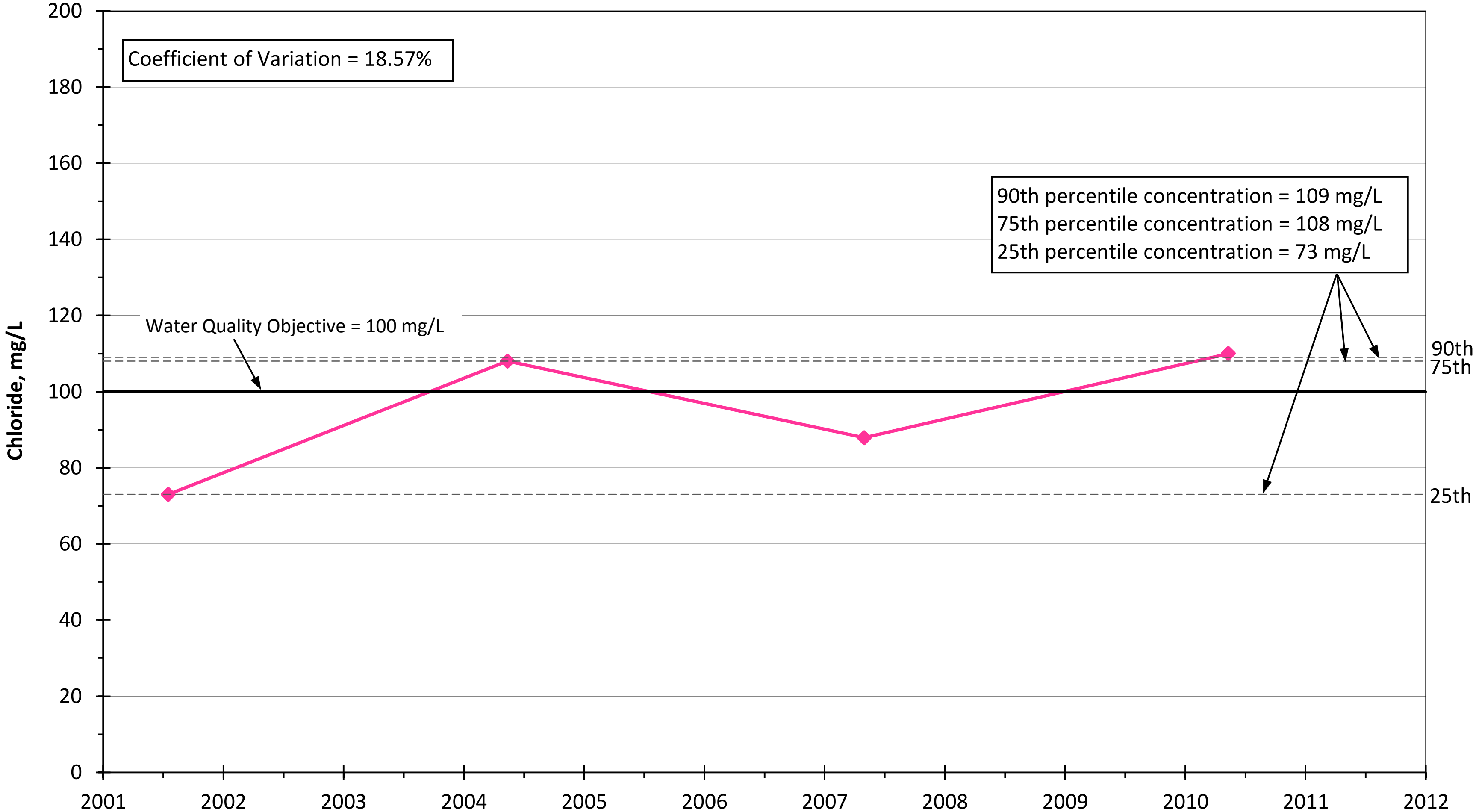

Total Dissolved Solids Concentrations in Well W10
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 6.75%
90th percentile concentration = 670 mg/L
75th percentile concentration = 668 mg/L
25th percentile concentration = 618 mg/L
Water Quality Objective = 700 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

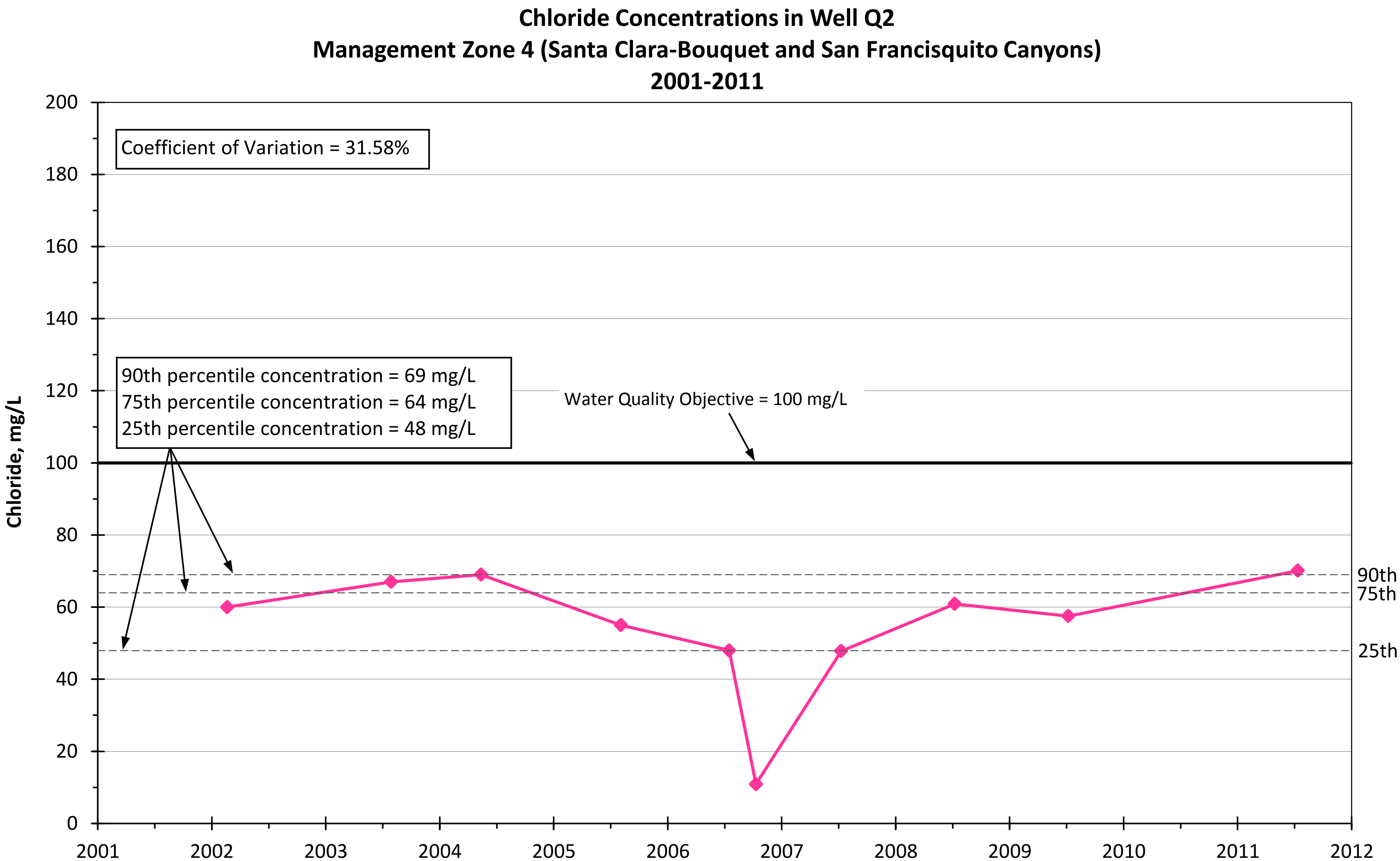
Appendix C

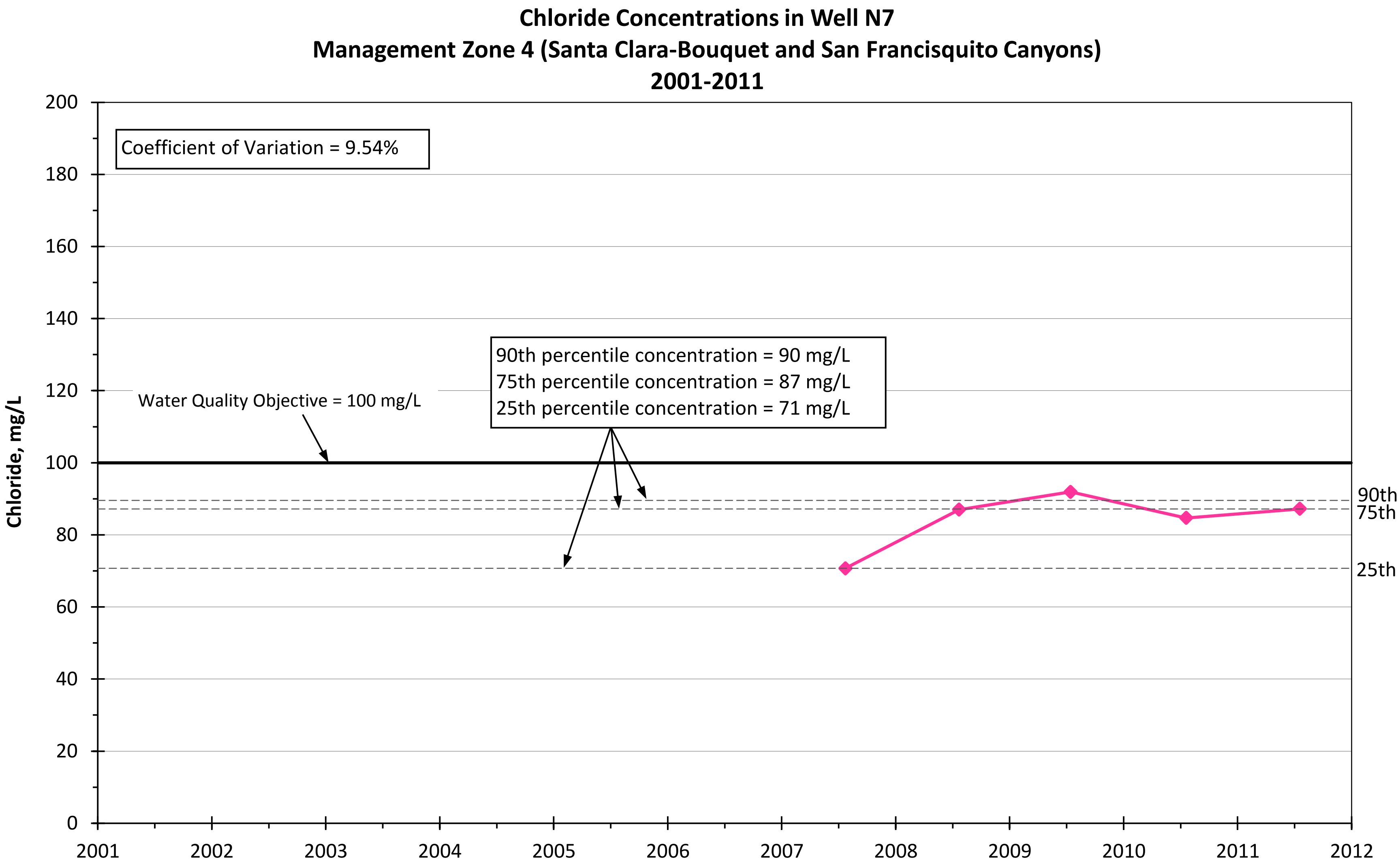

Chloride Concentrations in Well Guida
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 9.93%
Water Quality Objective = 100 mg/L
90th percentile concentration = 66 mg/L
75th percentile concentration = 65 mg/L
25th percentile concentration = 53 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

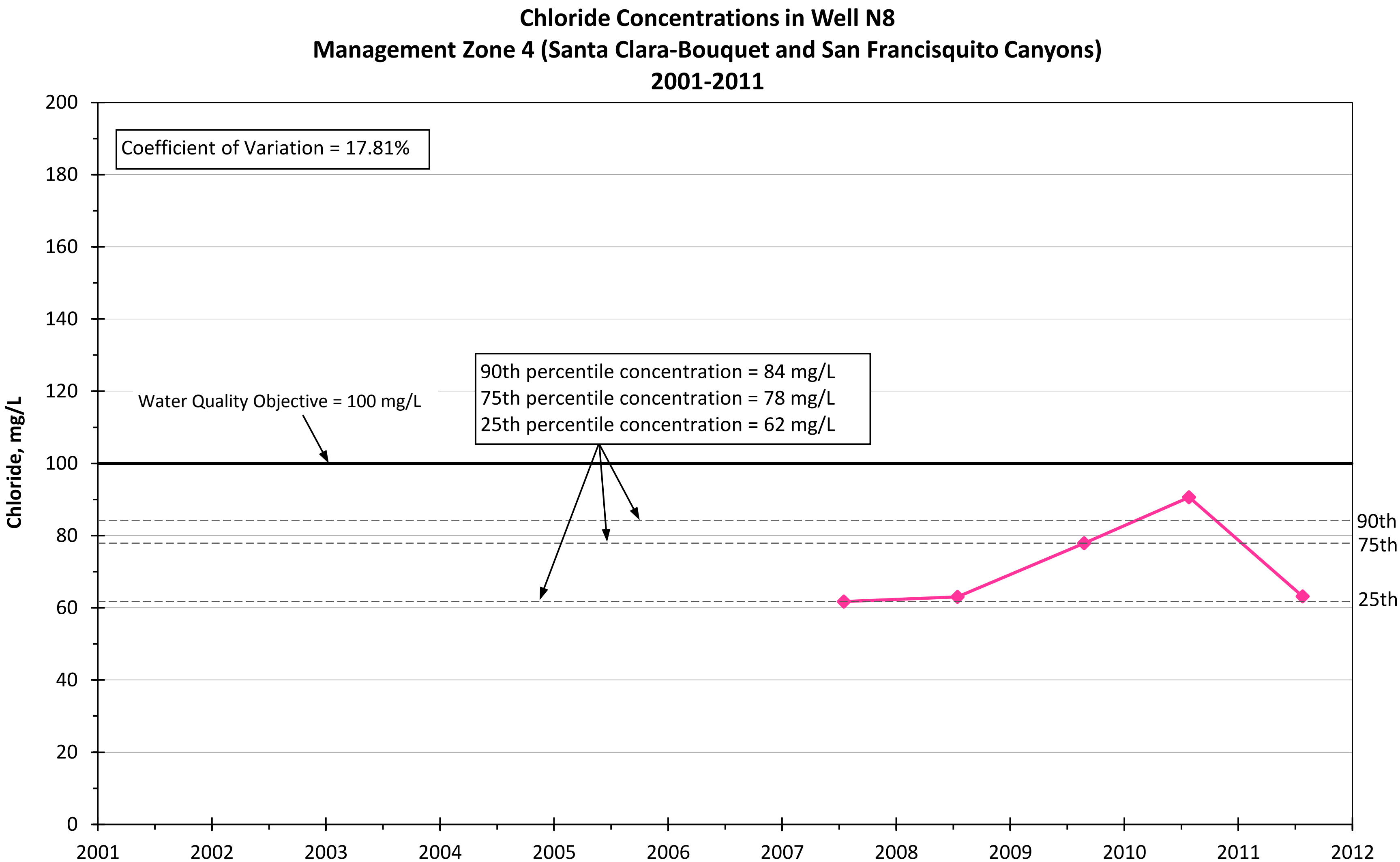
Chloride Concentrations in Well Clark
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011




Chloride Concentrations in Well Q2
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 31.58%
90th percentile concentration = 69 mg/L
75th percentile concentration = 64 mg/L
25th percentile concentration = 48 mg/L
Water Quality Objective = 100 mg/L
Chloride, mg/L
200
180
160
140
120
100
80
60
40
20
0
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

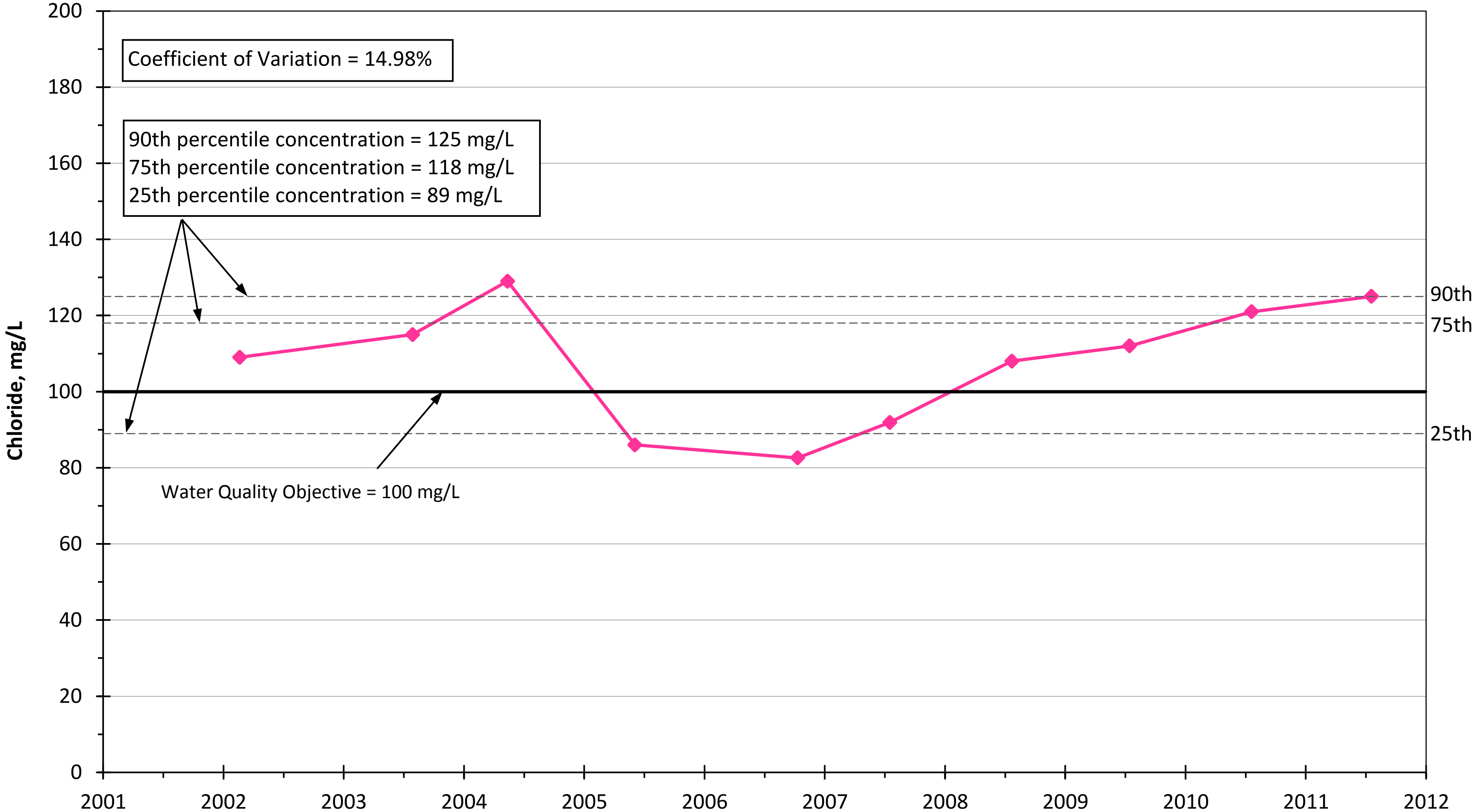

Chloride Concentrations in Well N7
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 9.54%
Water Quality Objective = 100 mg/L
90th percentile concentration = 90 mg/L
75th percentile concentration = 87 mg/L
25th percentile concentration = 71 mg/L
Chloride, mg/L
90th
75th
25th
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

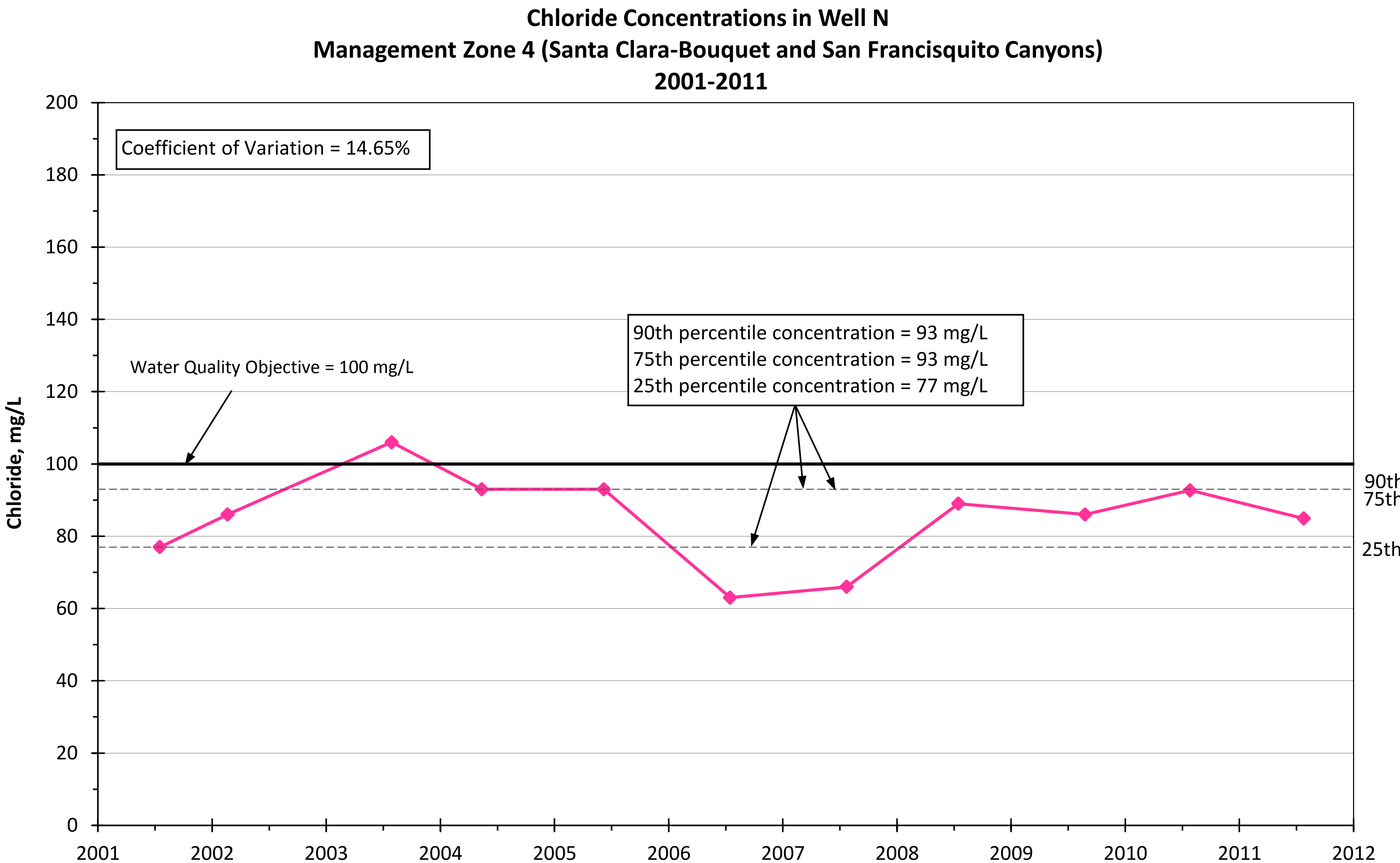
Appendix C


Chloride Concentrations in Well N8
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 17.81%
Water Quality Objective = 100 mg/L
90th percentile concentration = 84 mg/L
75th percentile concentration = 78 mg/L
25th percentile concentration = 62 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

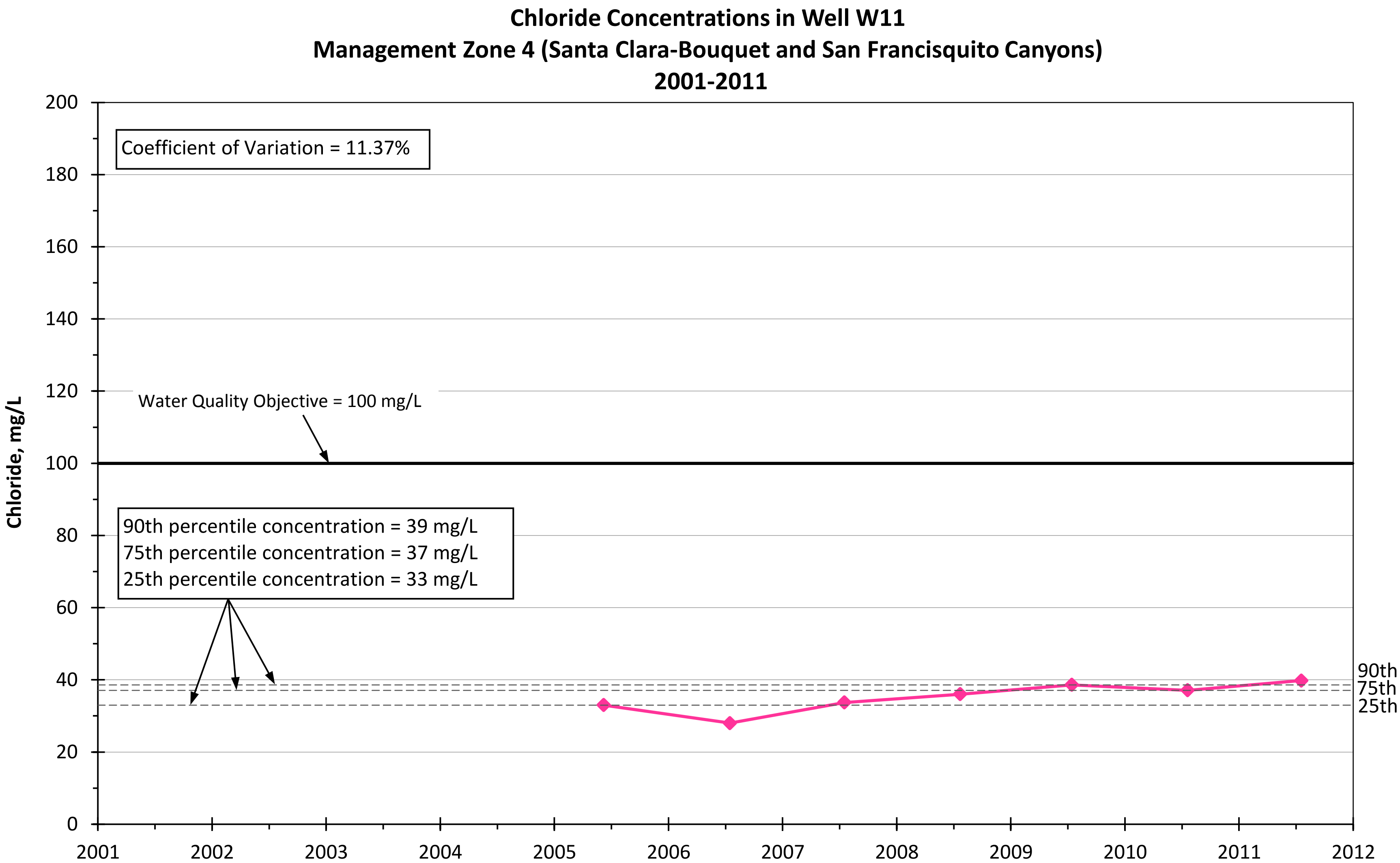
Appendix C

Chloride Concentrations in Well S8
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011

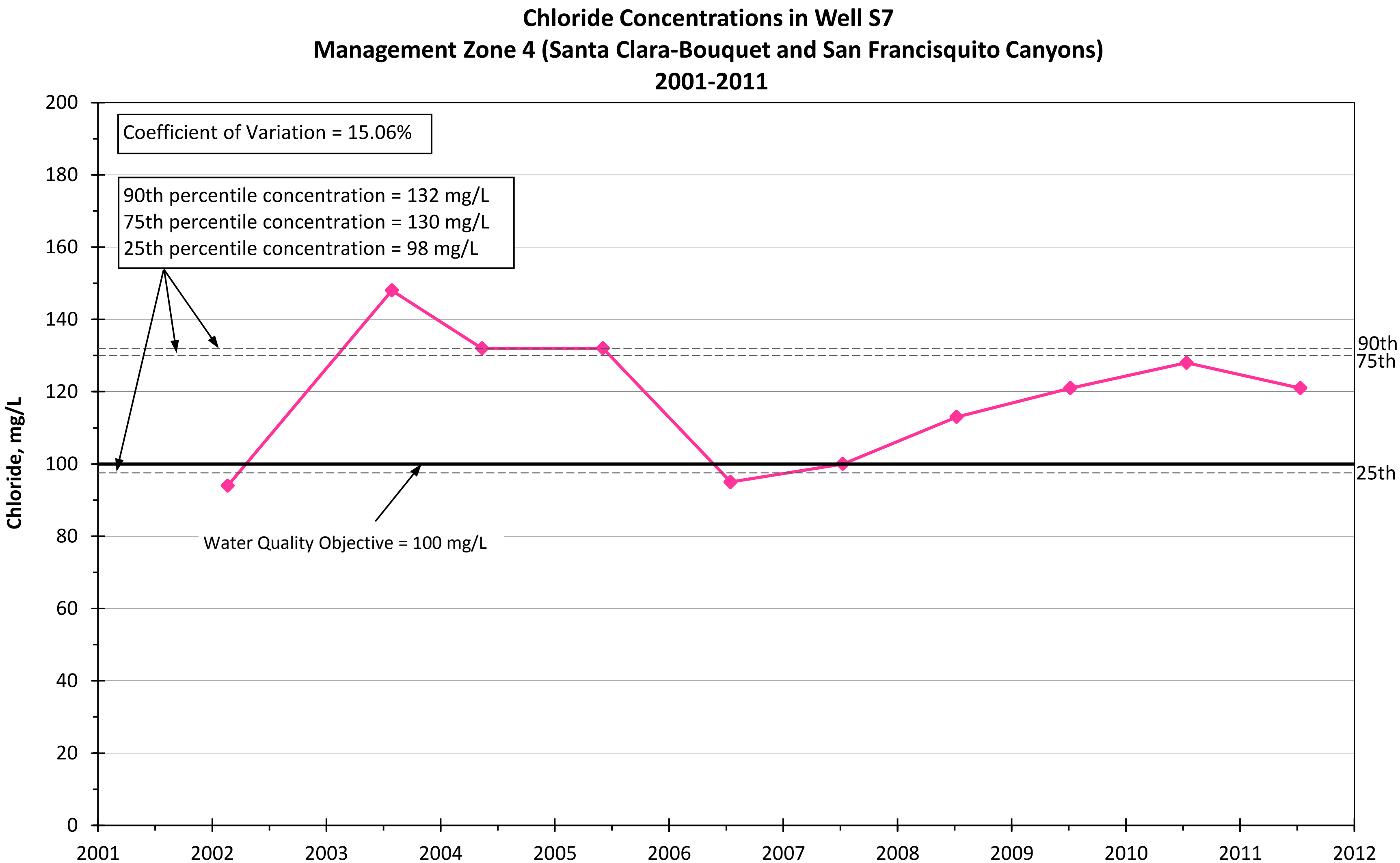



Chloride Concentrations in Well N
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 14.65%
Water Quality Objective = 100 mg/L
90th percentile concentration = 93 mg/L
75th percentile concentration = 93 mg/L
25th percentile concentration = 77 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

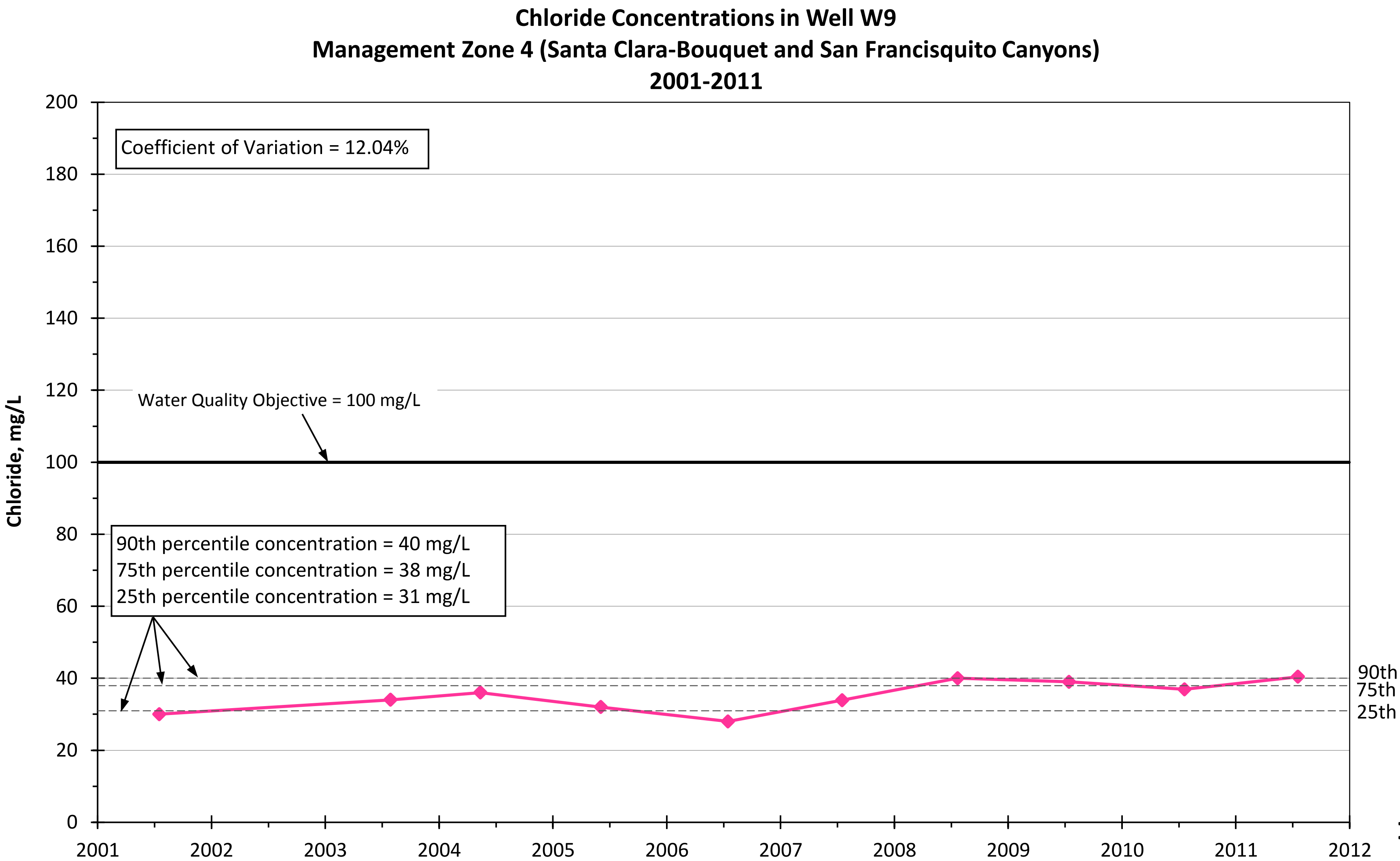
Appendix C


Chloride Concentrations in Well W11
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 11.37%
Water Quality Objective = 100 mg/L
90th percentile concentration = 39 mg/L
75th percentile concentration = 37 mg/L
25th percentile concentration = 33 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

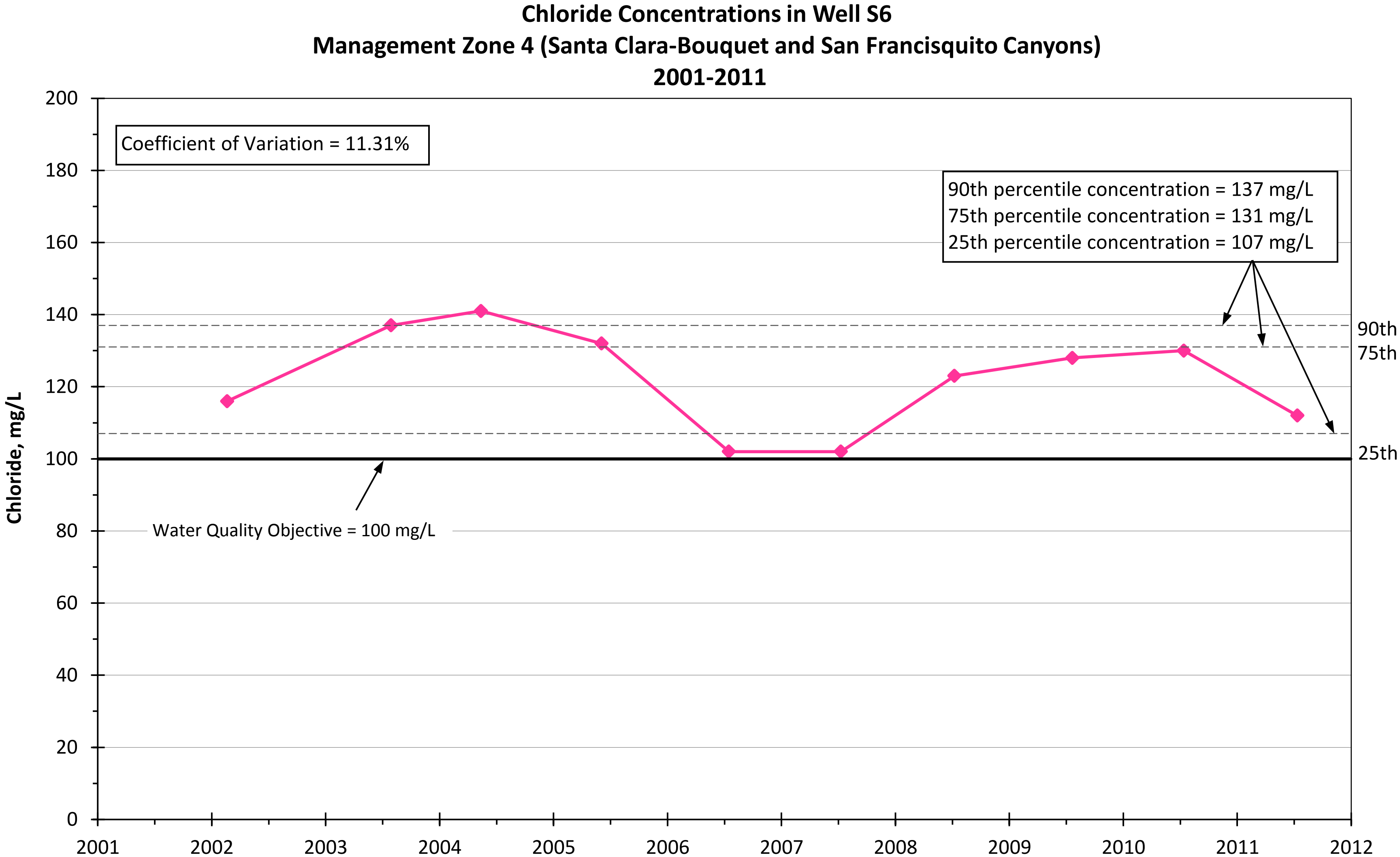
Appendix C


Chloride Concentrations in Well S7
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 15.06%
90th percentile concentration = 132 mg/L
75th percentile concentration = 130 mg/L
25th percentile concentration = 98 mg/L
Water Quality Objective = 100 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

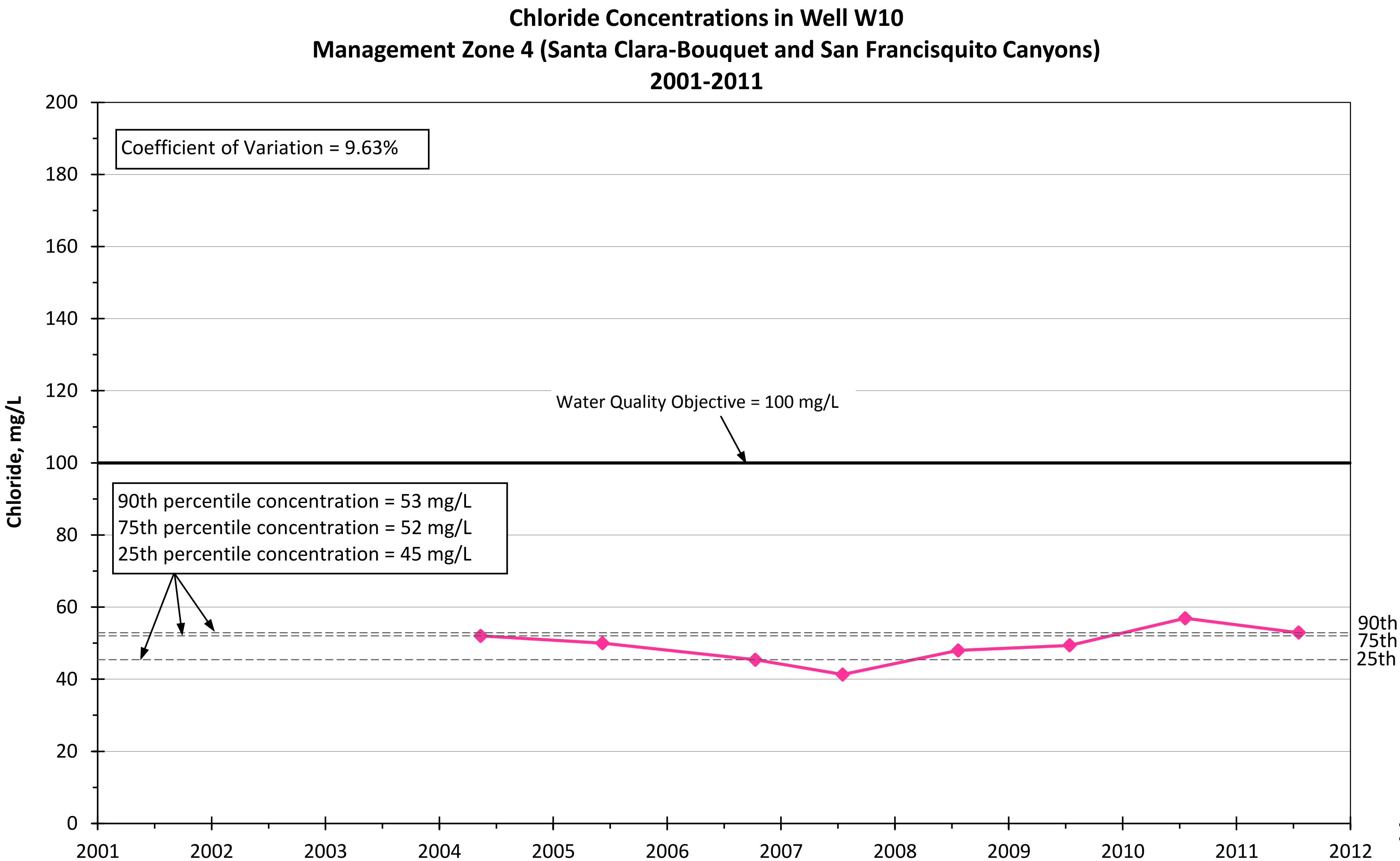
Appendix C


Chloride Concentrations in Well W9
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 12.04%
Water Quality Objective = 100 mg/L
90th percentile concentration = 40 mg/L
75th percentile concentration = 38 mg/L
25th percentile concentration = 31 mg/L
Chloride, mg/L
200
180
160
140
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

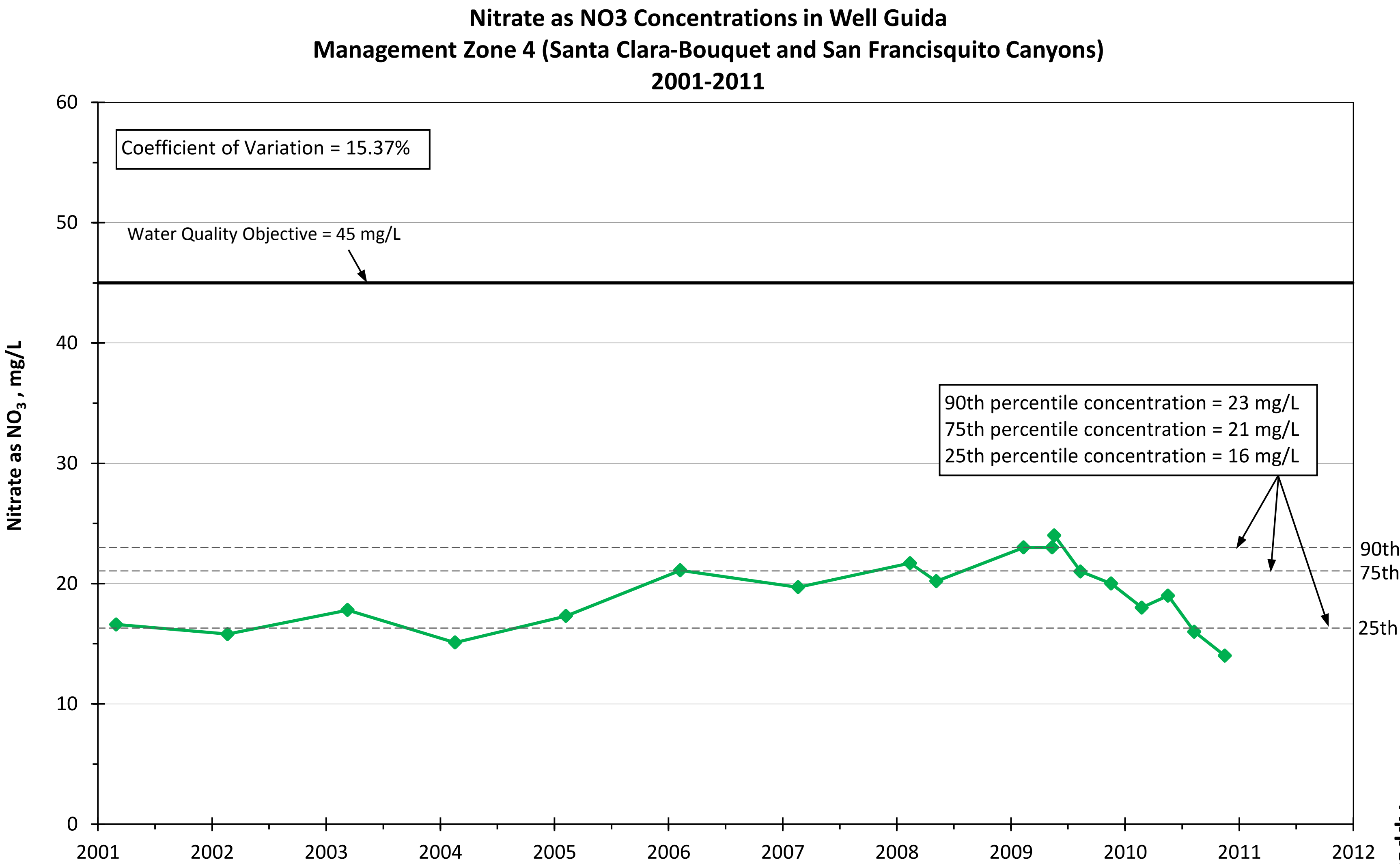
Appendix C


Chloride Concentrations in Well S6
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 11.31%
90th percentile concentration = 137 mg/L
75th percentile concentration = 131 mg/L
25th percentile concentration = 107 mg/L
90th
75th
25th
Water Quality Objective = 100 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

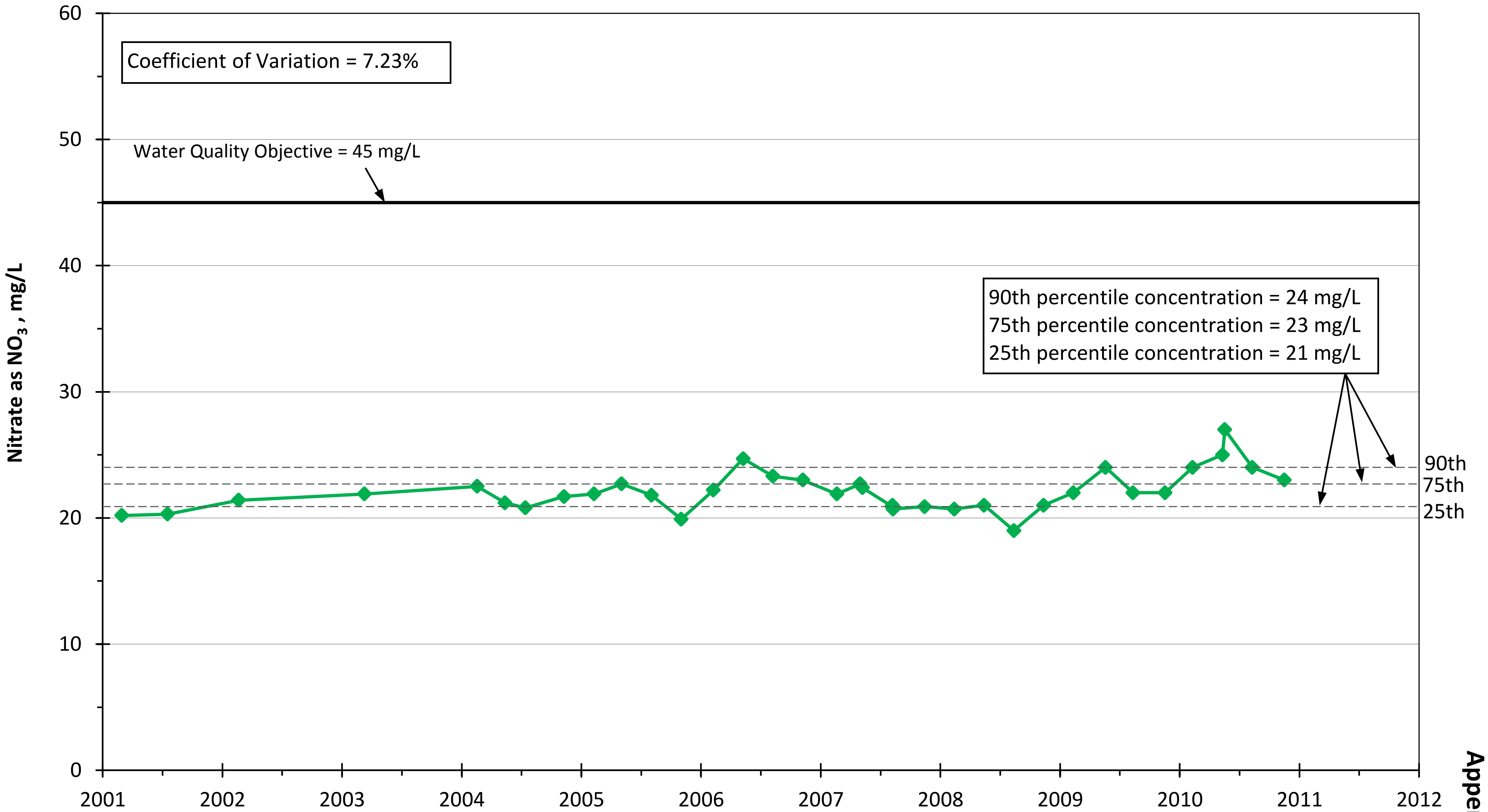
Appendix C


Chloride Concentrations in Well W10
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 9.63%
Water Quality Objective = 100 mg/L
90th percentile concentration = 53 mg/L
75th percentile concentration = 52 mg/L
25th percentile concentration = 45 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

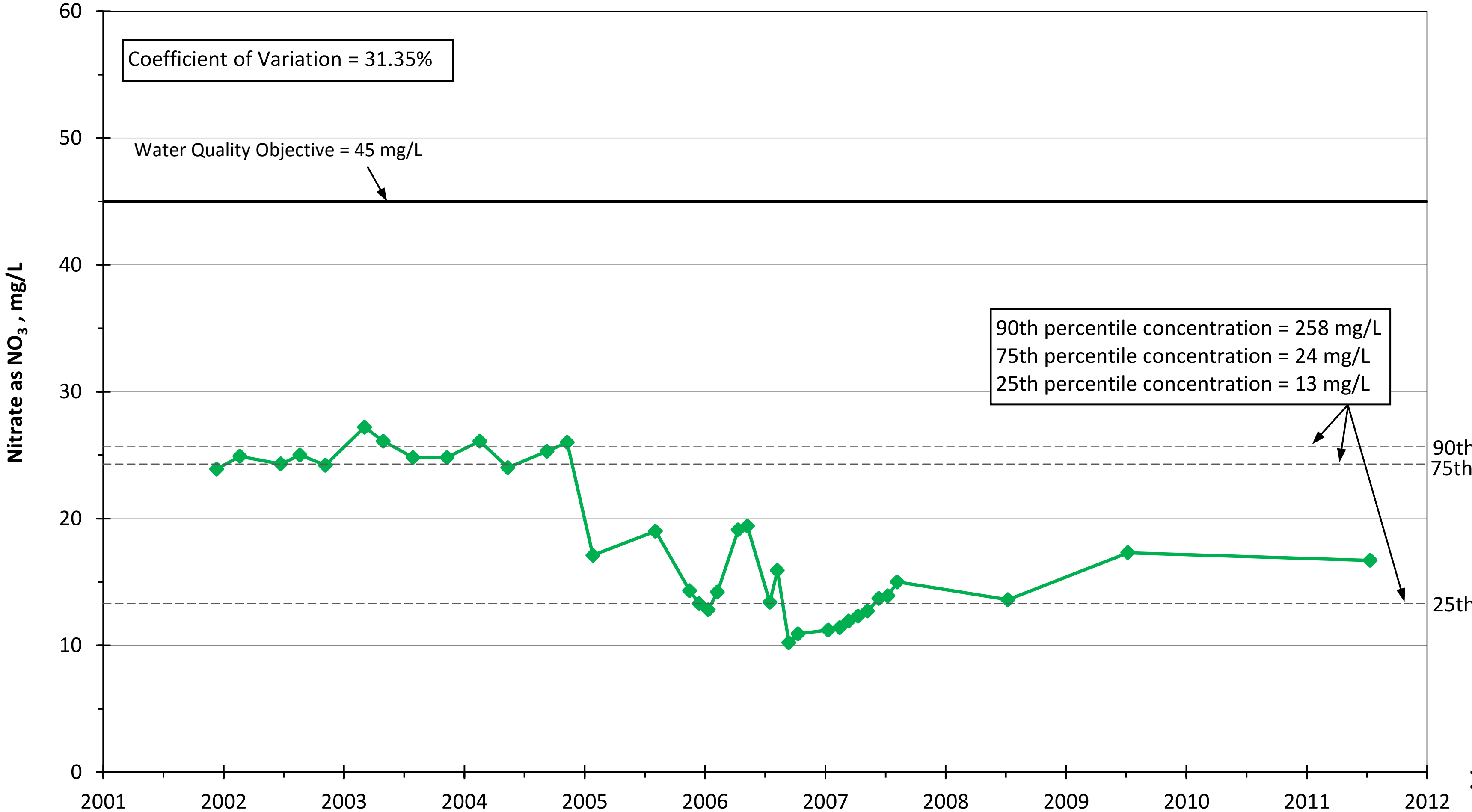

Nitrate as NO3 Concentrations in Well Guida
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 15.37%
Water Quality Objective = 45 mg/L
90th percentile concentration = 23 mg/L
75th percentile concentration = 21 mg/L
25th percentile concentration = 16 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

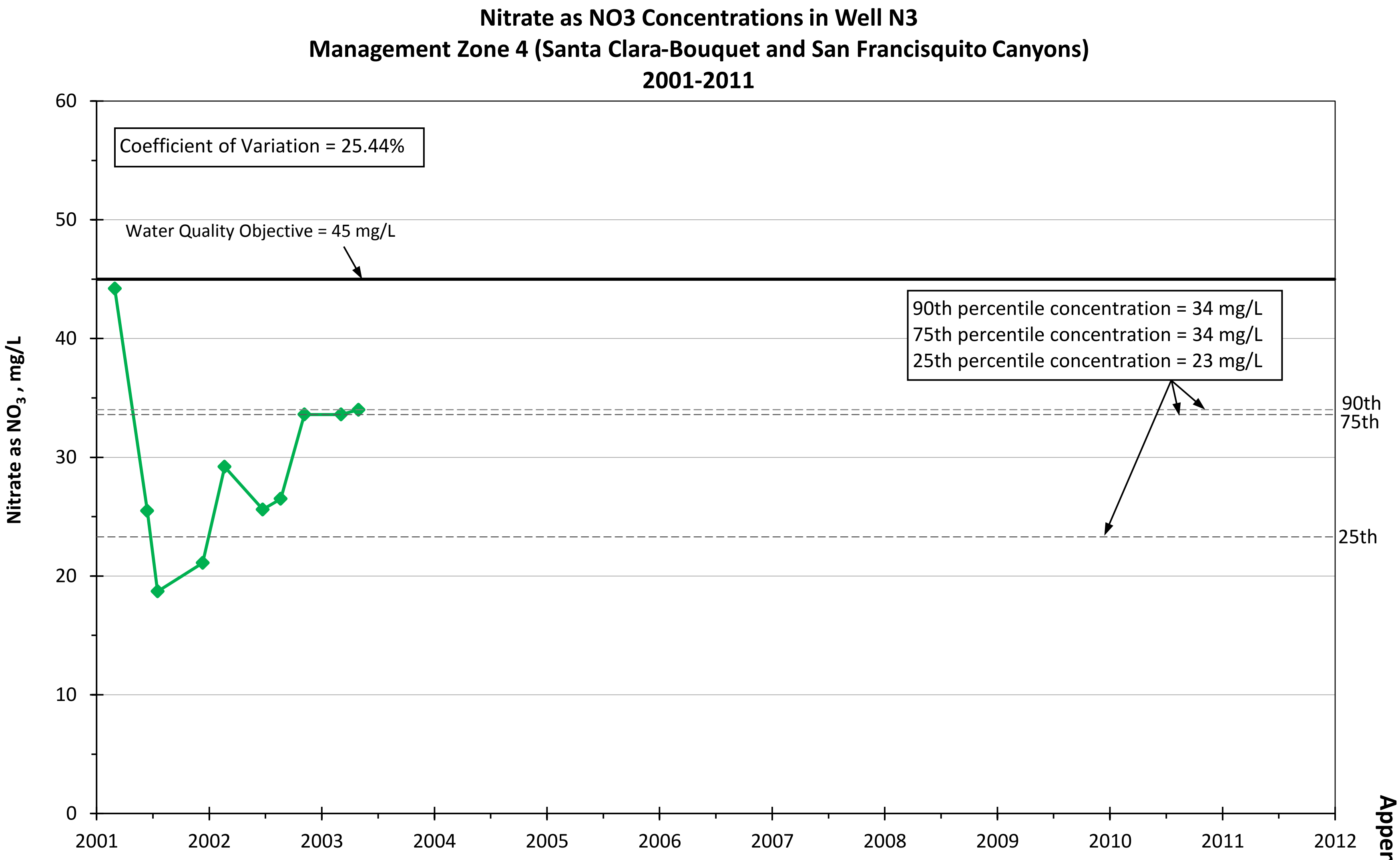
Nitrate as NO3 Concentrations in Well Clark
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011

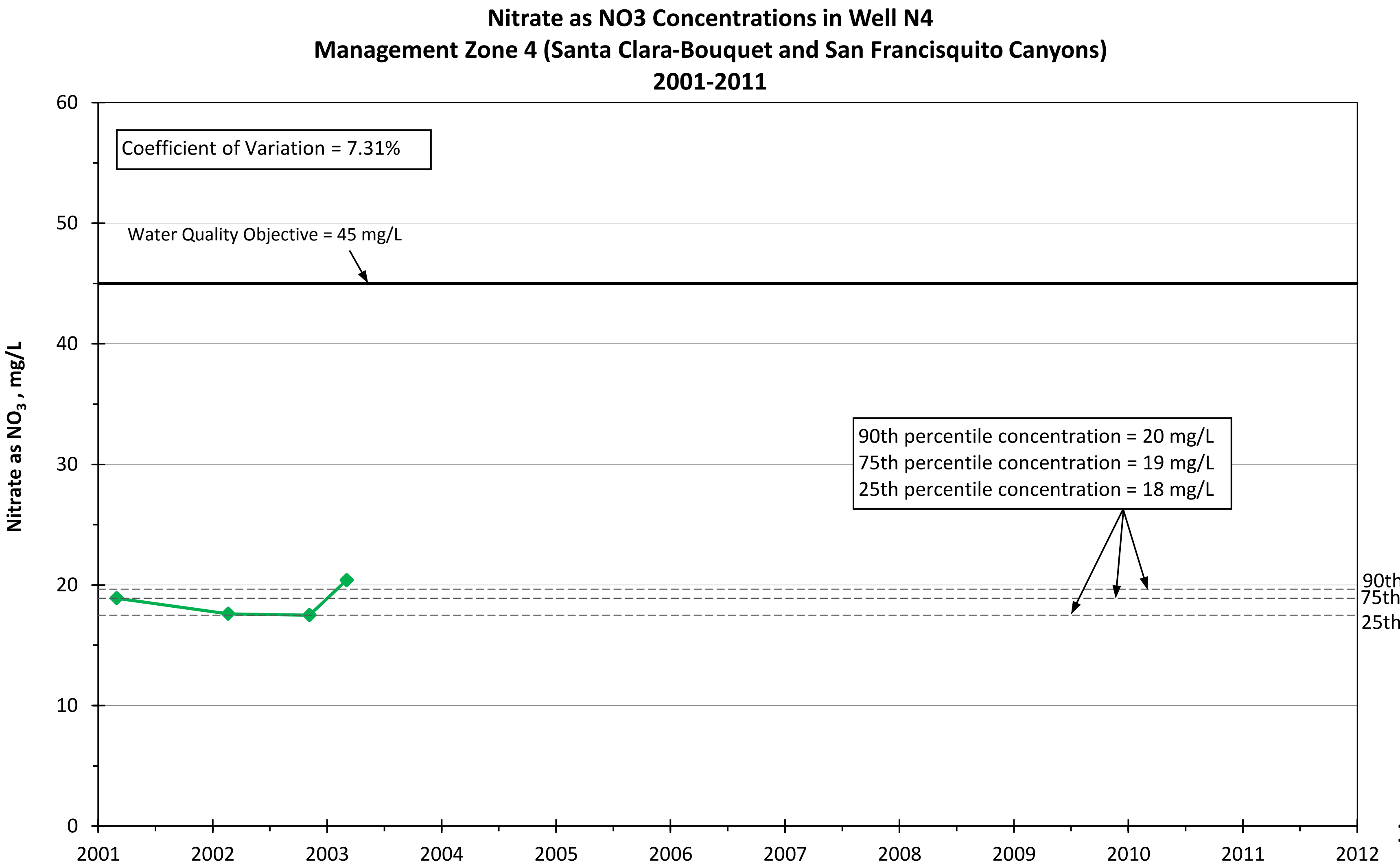


Appendix C

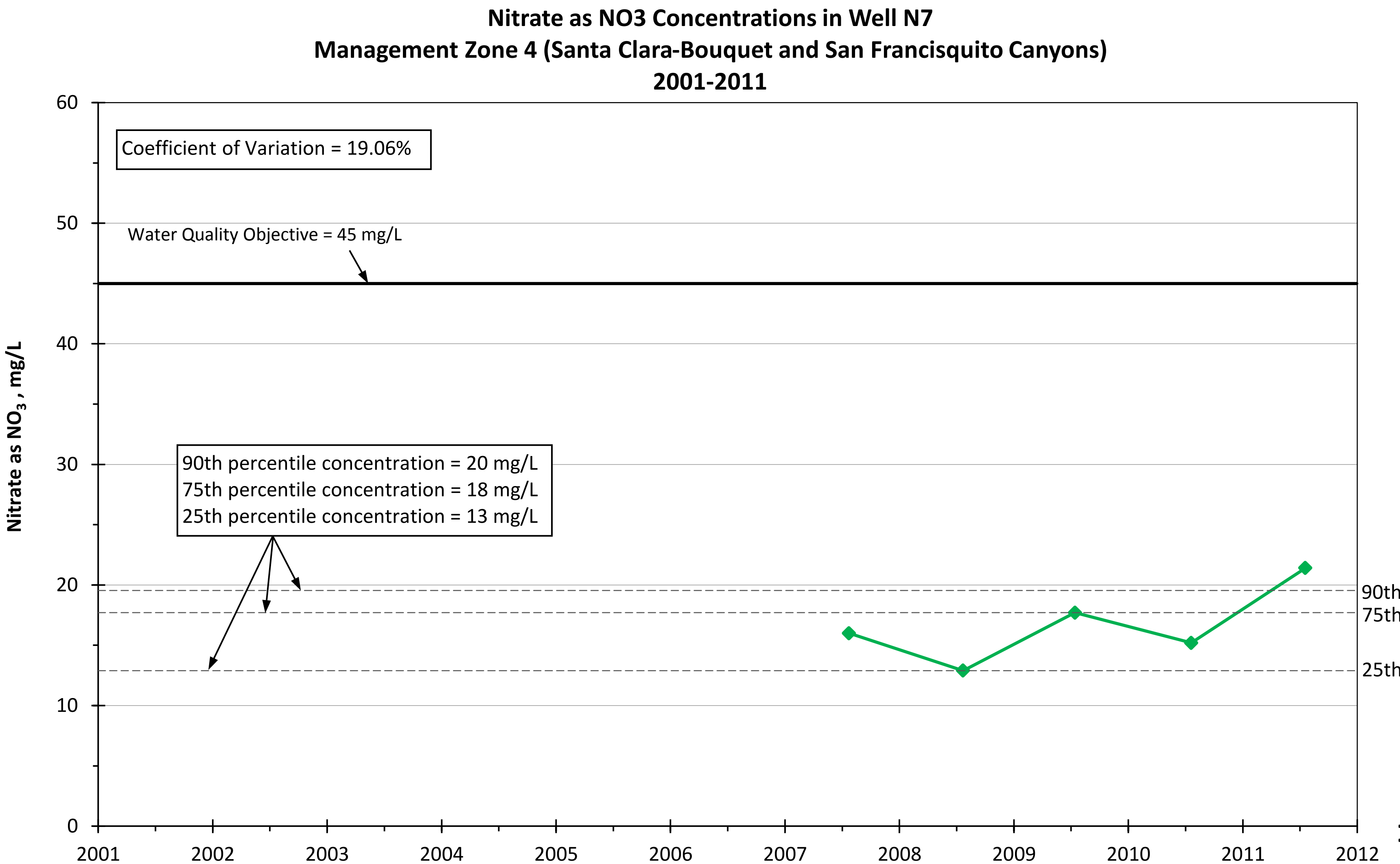
Nitrate as NO3 Concentrations in Well Q2
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011



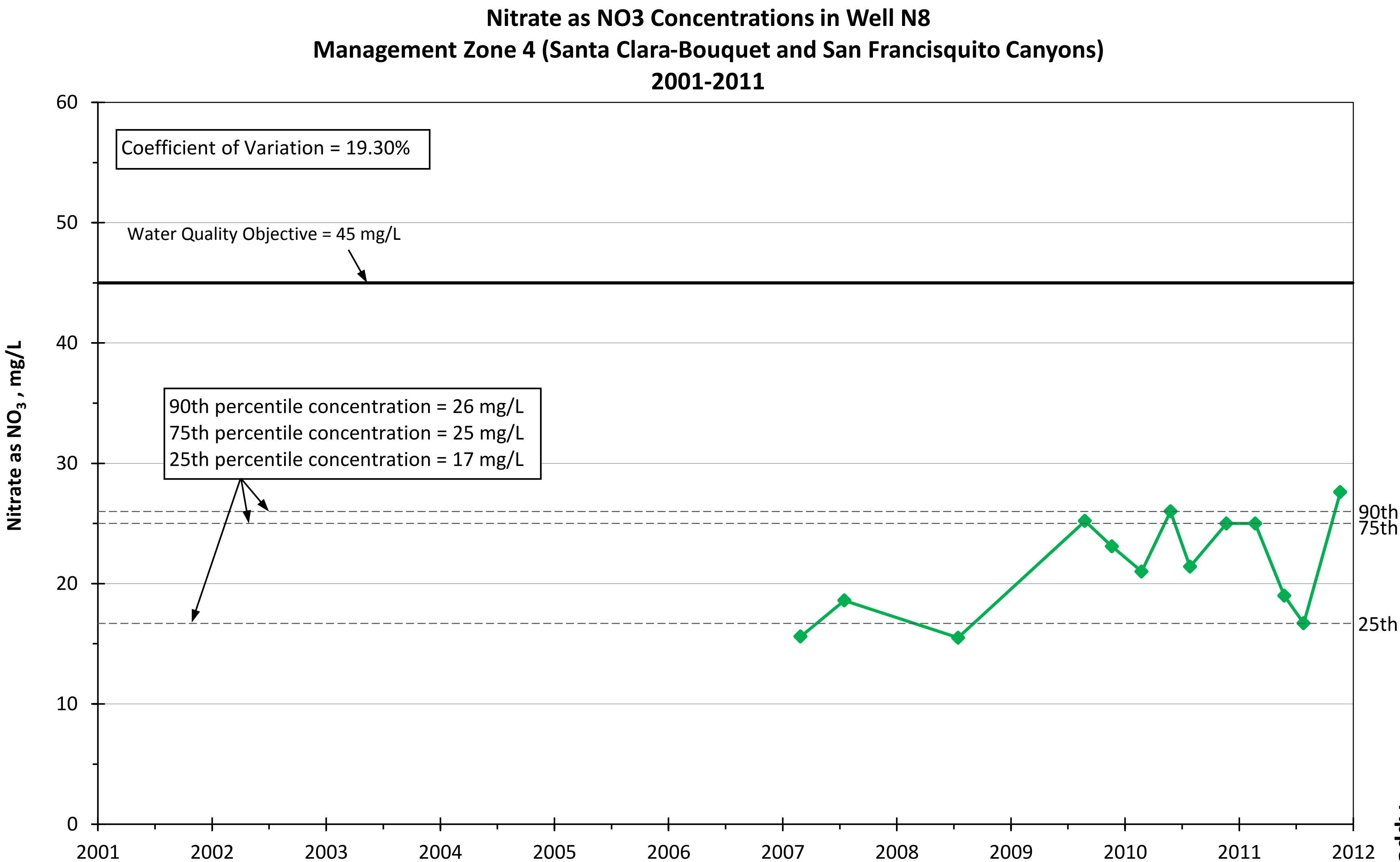

Nitrate as NO3 Concentrations in Well N3
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 25.44%
Water Quality Objective = 45 mg/L
90th percentile concentration = 34 mg/L
75th percentile concentration = 34 mg/L
25th percentile concentration = 23 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Nitrate as NO3 Concentrations in Well N4
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 7.31%
Water Quality Objective = 45 mg/L
90th percentile concentration = 20 mg/L
75th percentile concentration = 19 mg/L
25th percentile concentration = 18 mg/L
90th
75th
25th
Nitrate as NO_3, mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

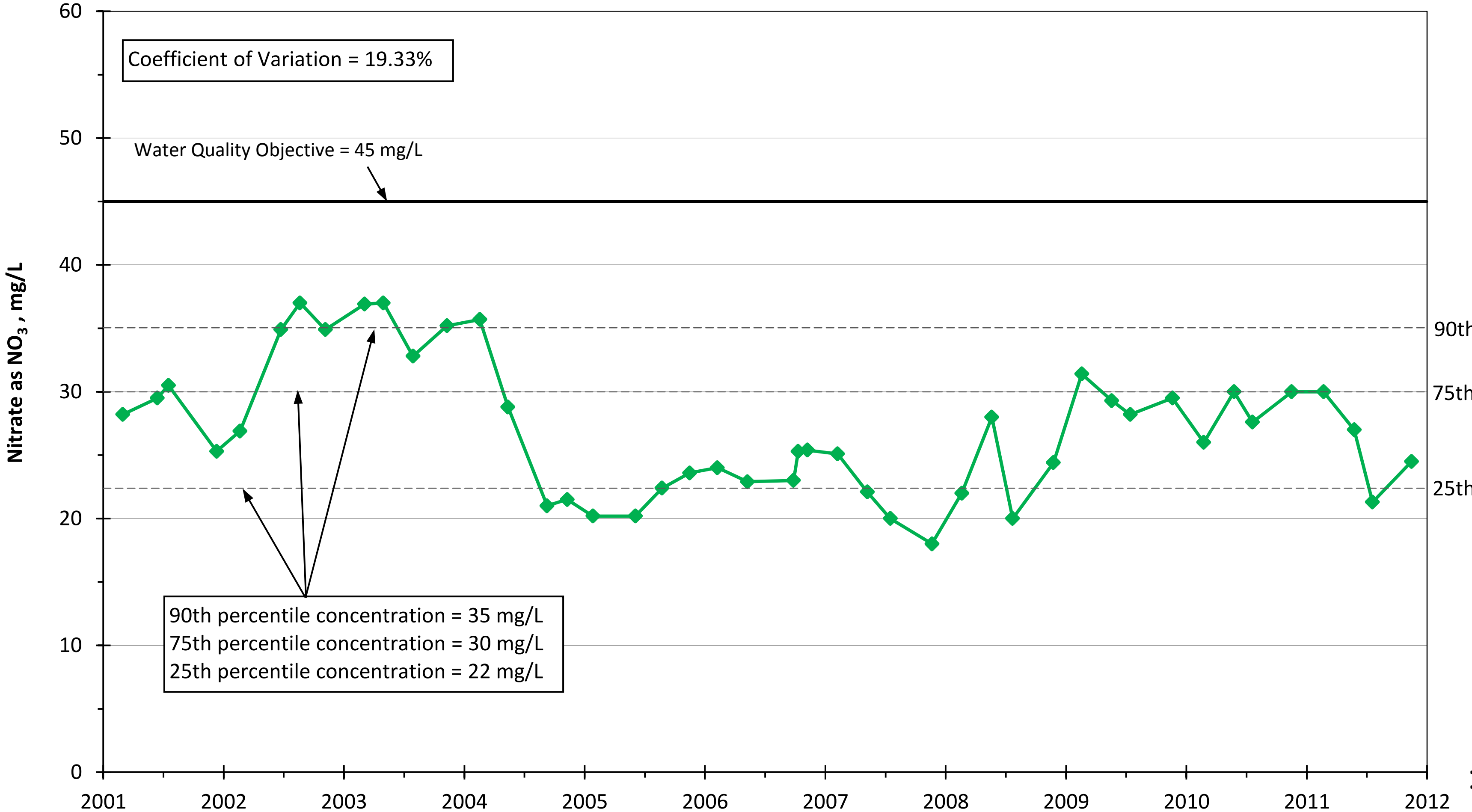
Appendix C


Nitrate as NO3 Concentrations in Well N7
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 19.06%
Water Quality Objective = 45 mg/L
90th percentile concentration = 20 mg/L
75th percentile concentration = 18 mg/L
25th percentile concentration = 13 mg/L
Nitrate as NO$_3$, mg/L
60
50
40
30
20
10
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

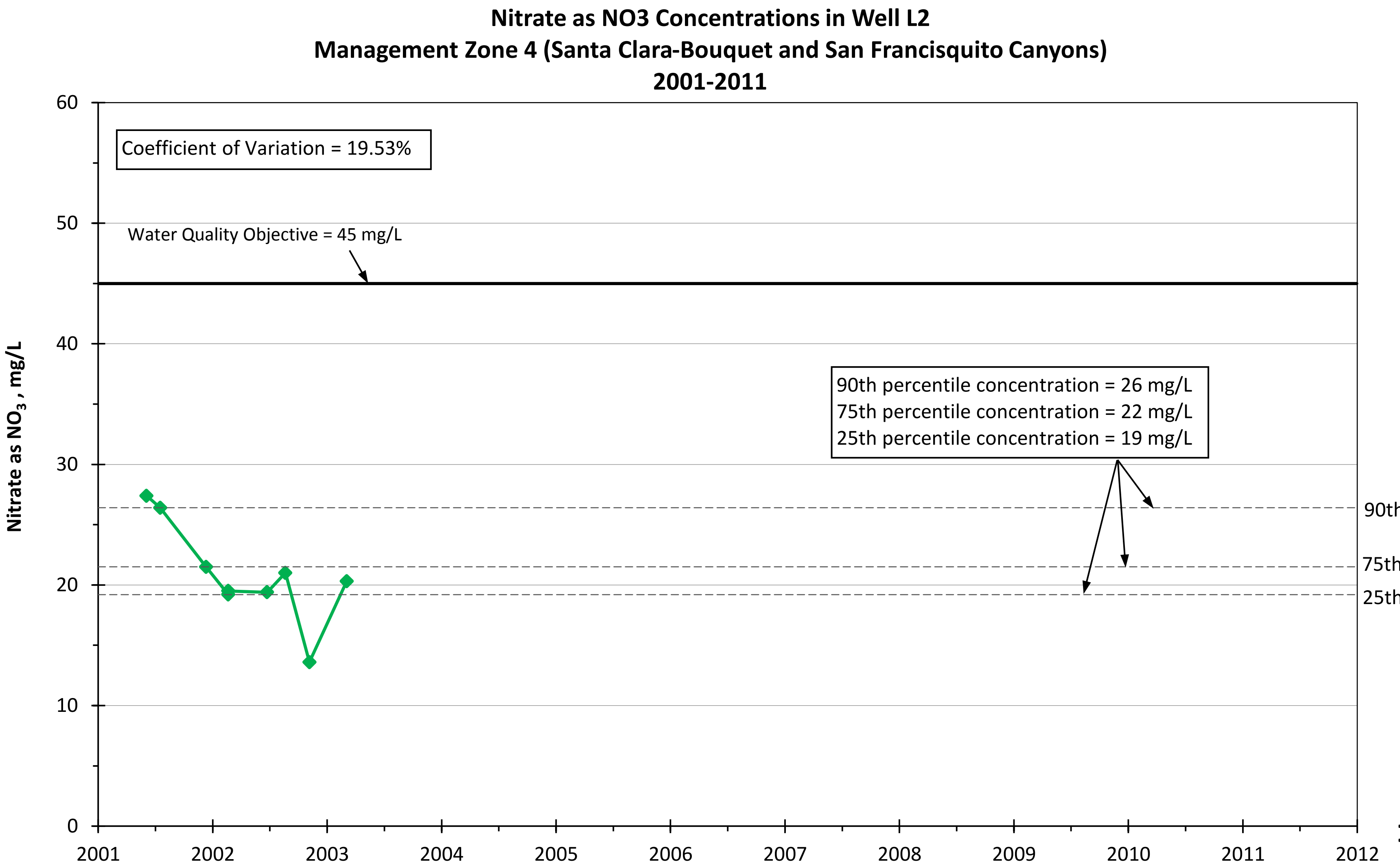
Appendix C


Nitrate as NO3 Concentrations in Well N8
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 19.30%
Water Quality Objective = 45 mg/L
90th percentile concentration = 26 mg/L
75th percentile concentration = 25 mg/L
25th percentile concentration = 17 mg/L
Nitrate as NO_3, mg/L
0
10
20
30
40
50
60
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

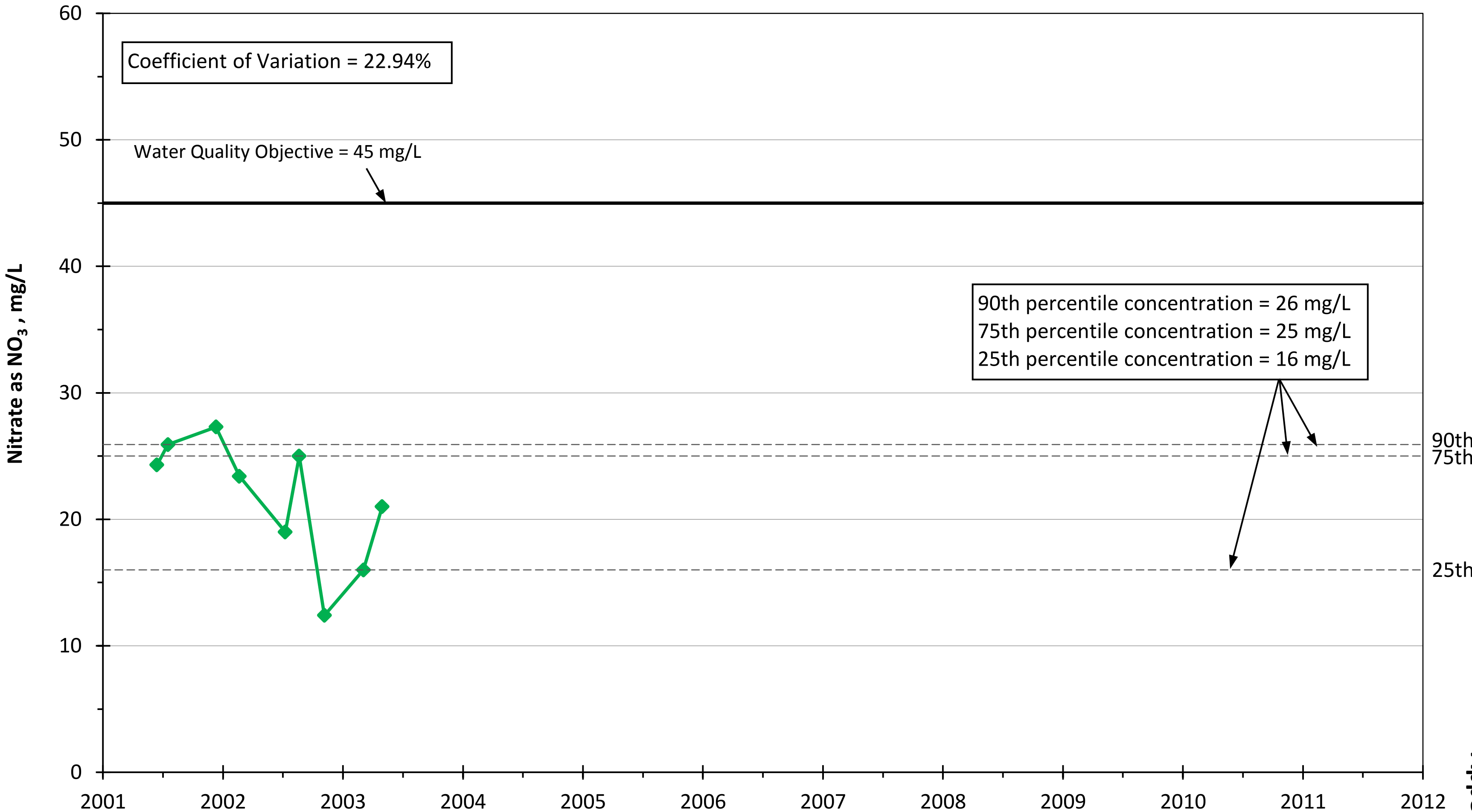
Nitrate as NO3 Concentrations in Well S8
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011



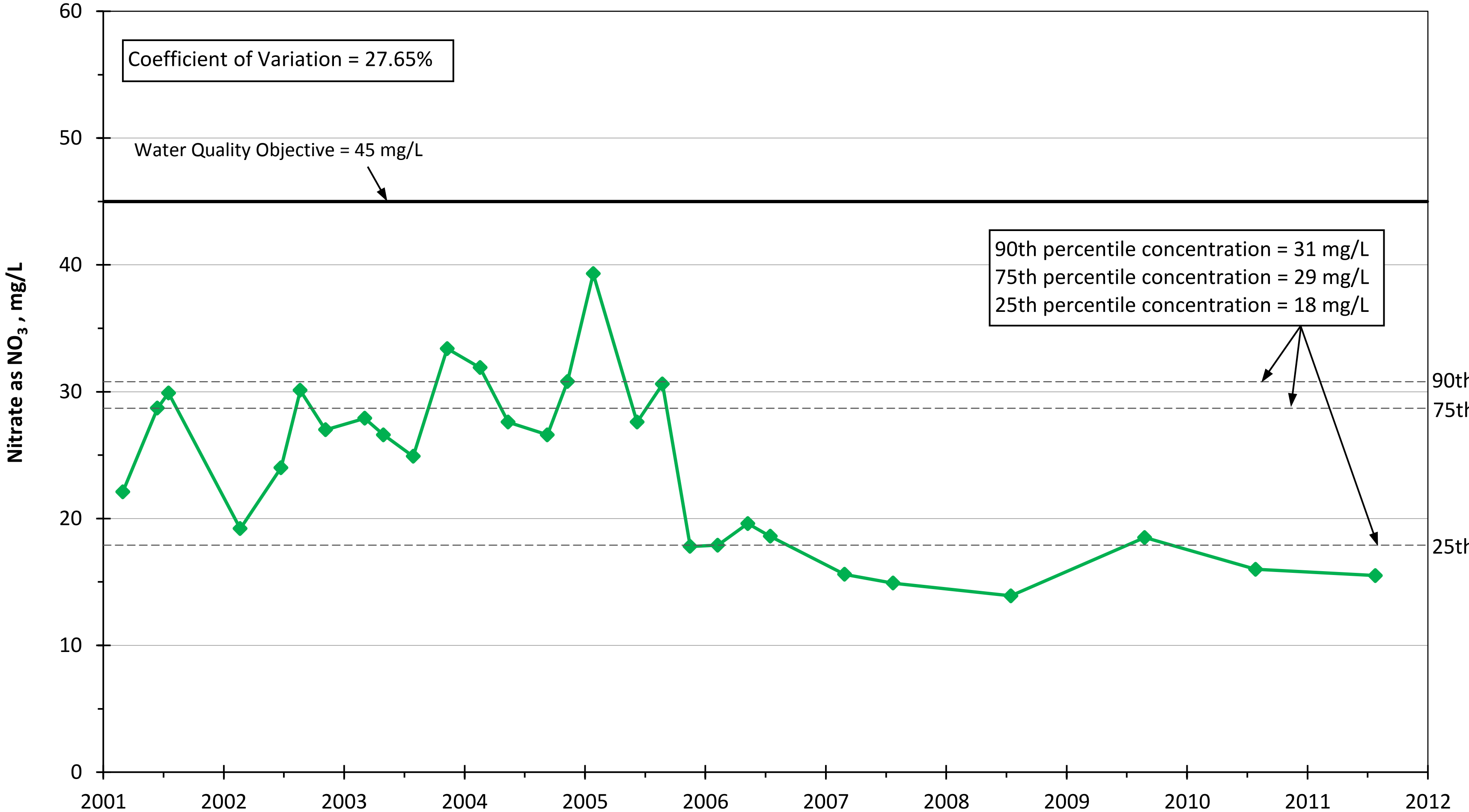
Appendix C

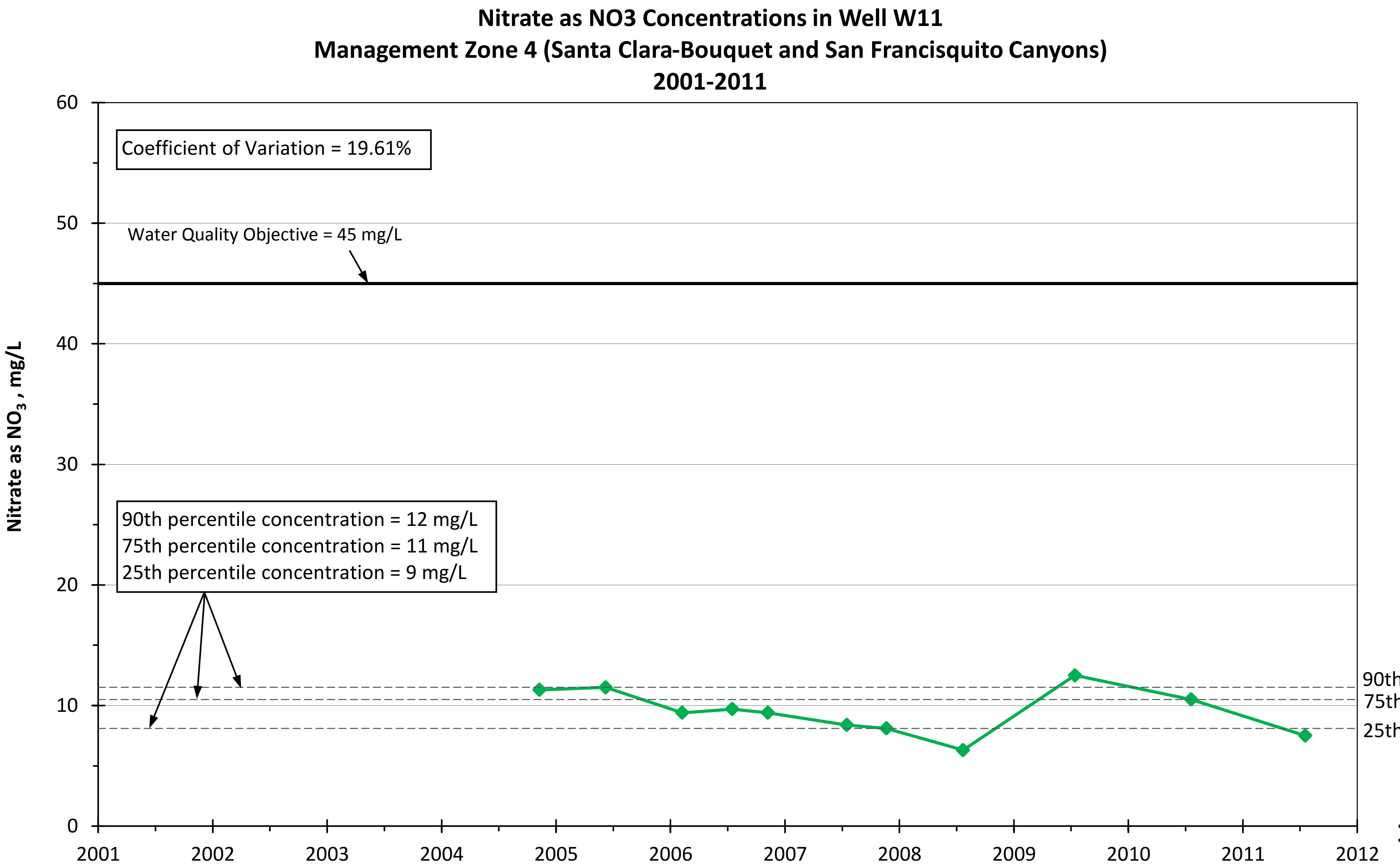

Nitrate as NO3 Concentrations in Well L2
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 19.53%
Water Quality Objective = 45 mg/L
90th percentile concentration = 26 mg/L
75th percentile concentration = 22 mg/L
25th percentile concentration = 19 mg/L
90th
75th
25th
Nitrate as NO3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Nitrate as NO3 Concentrations in Well K2
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011



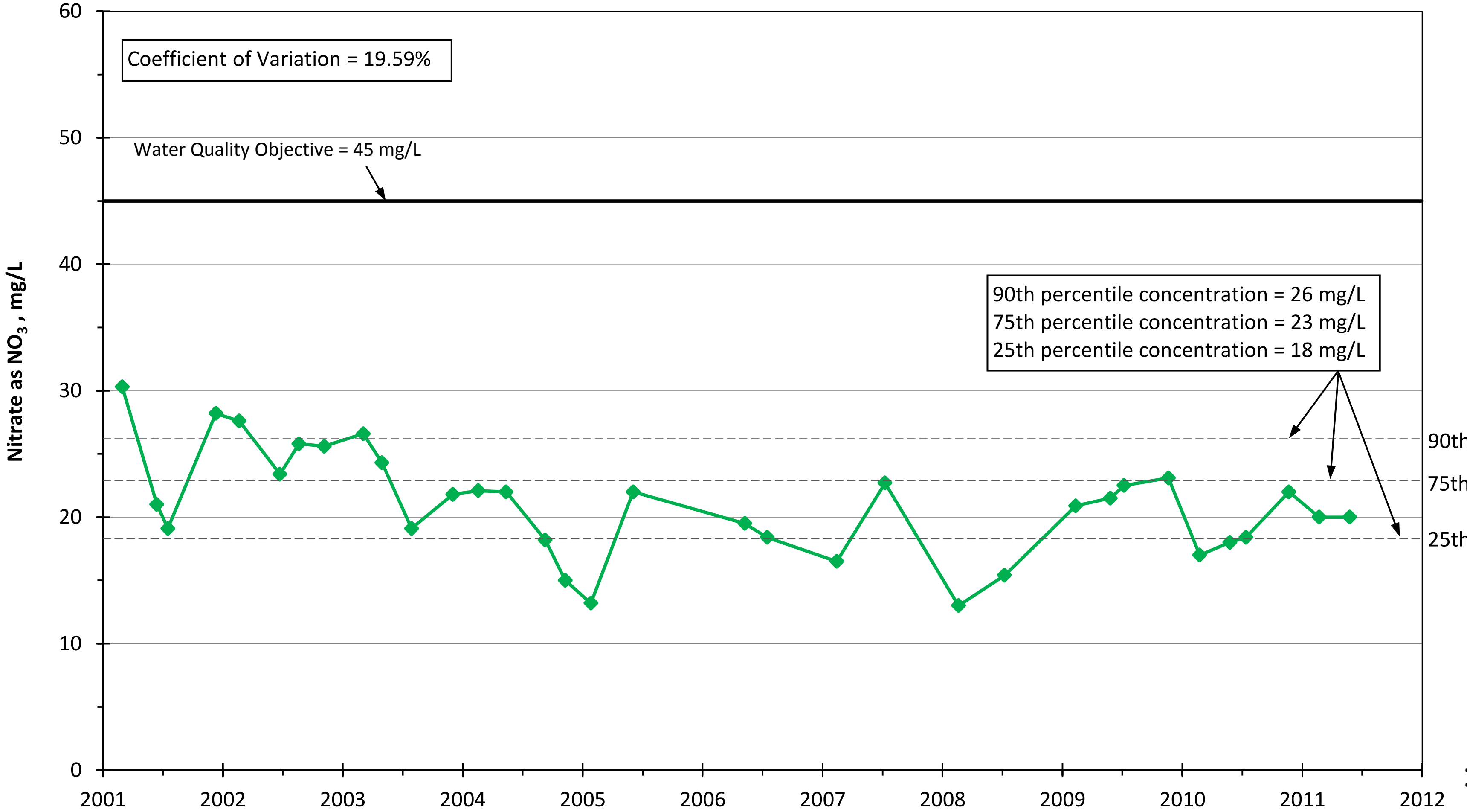
Nitrate as NO3 Concentrations in Well N
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011

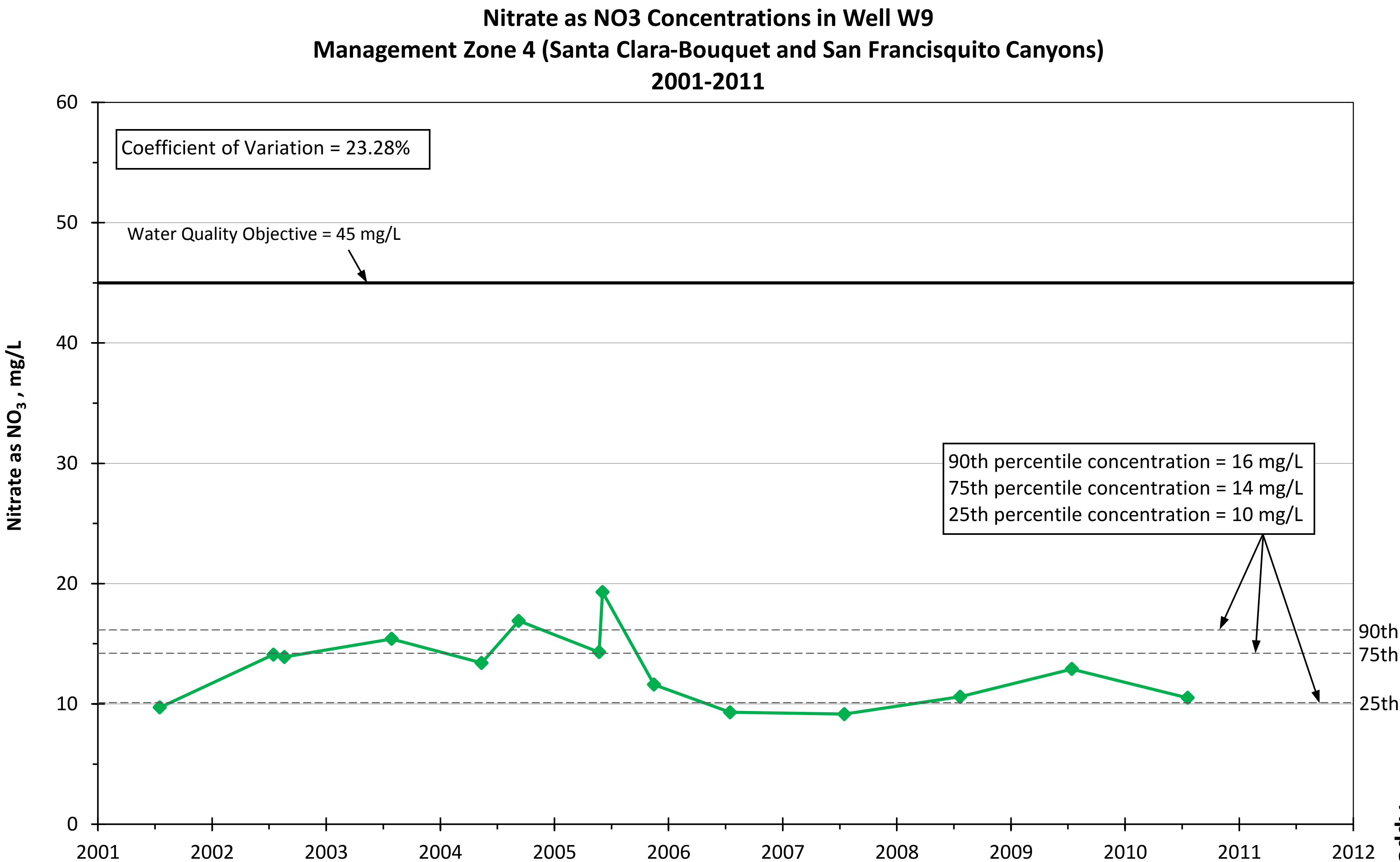



Nitrate as NO3 Concentrations in Well W11
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 19.61%
Water Quality Objective = 45 mg/L
90th percentile concentration = 12 mg/L
75th percentile concentration = 11 mg/L
25th percentile concentration = 9 mg/L
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

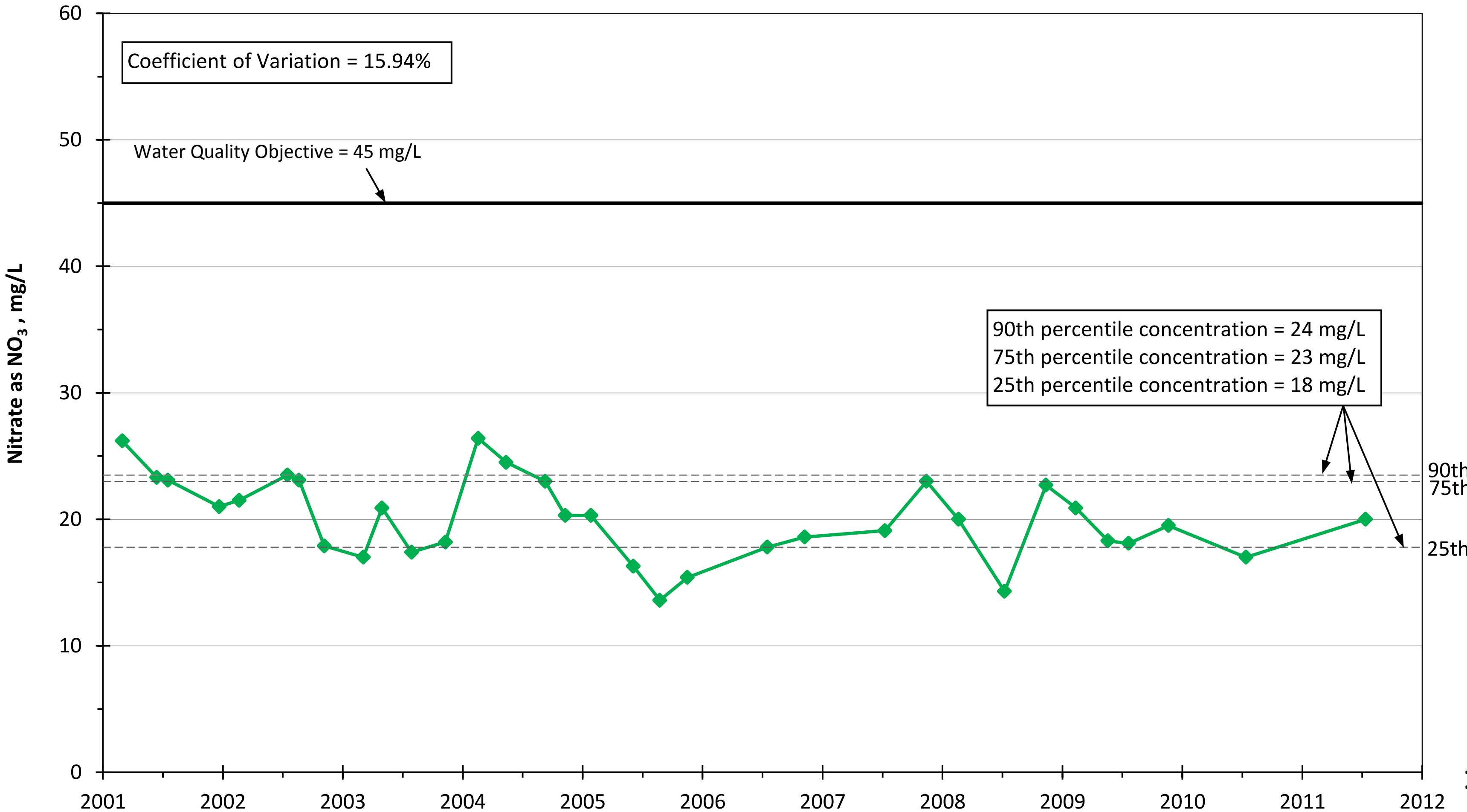
Appendix C

Nitrate as NO3 Concentrations in Well S7
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011

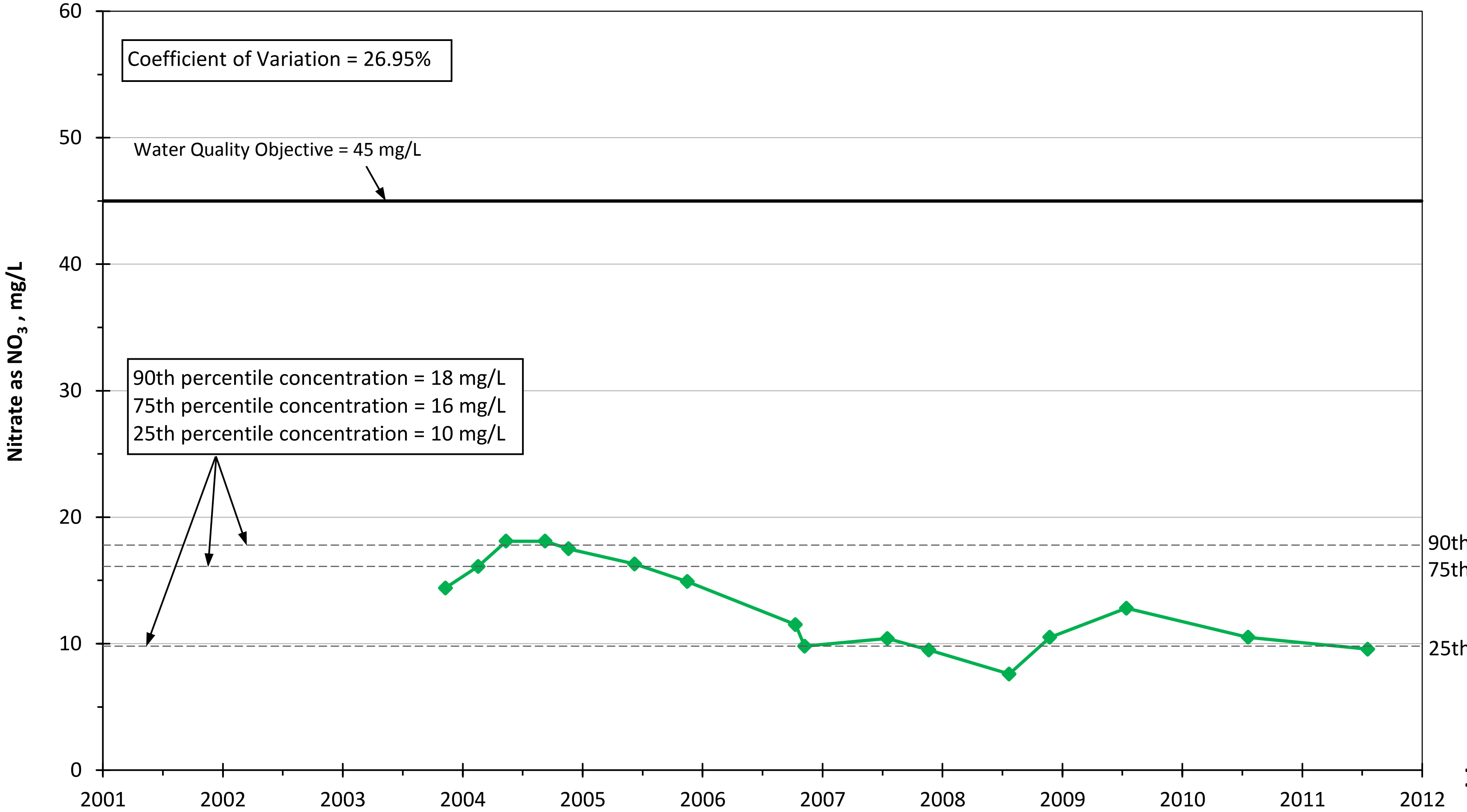


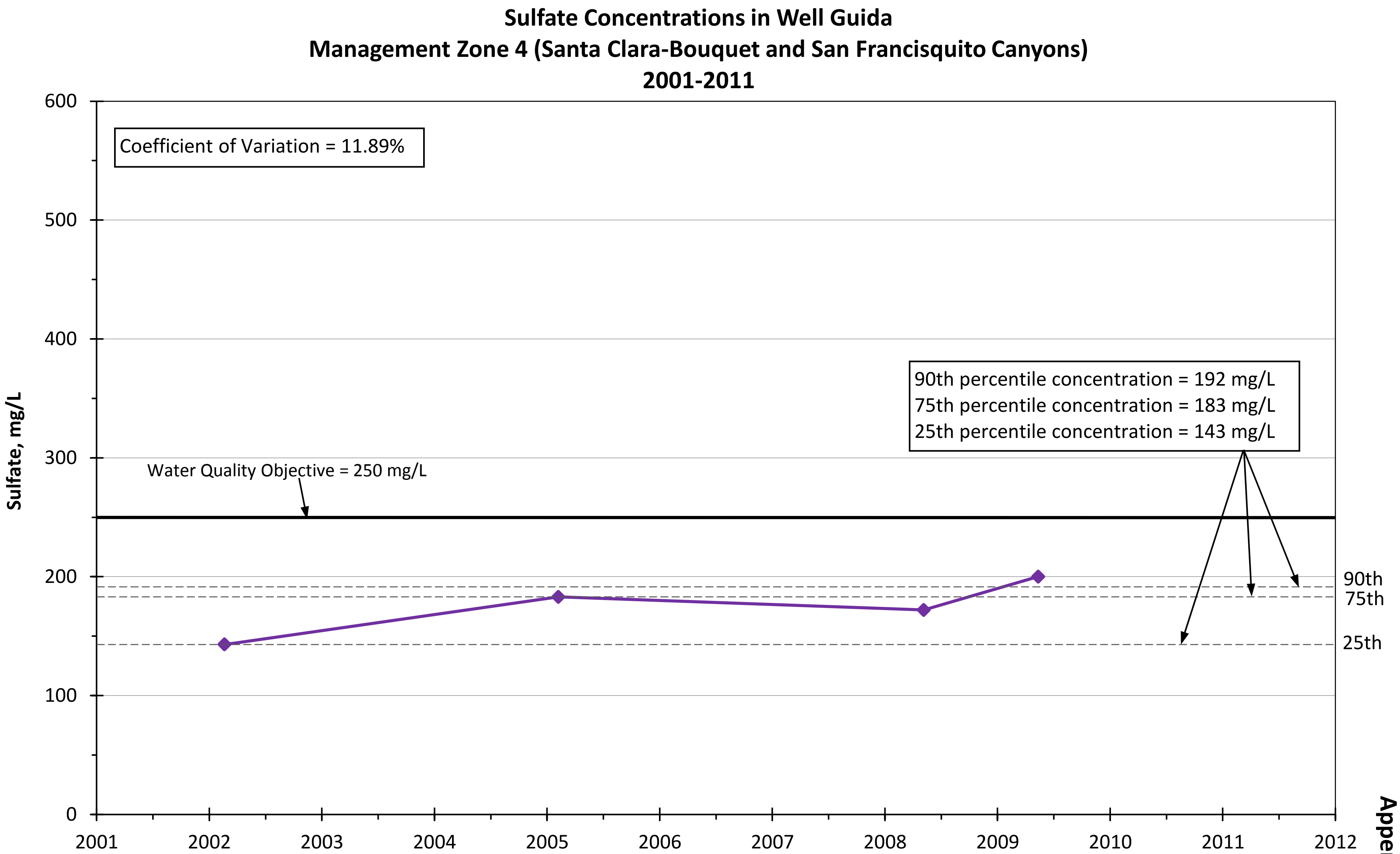

Nitrate as NO3 Concentrations in Well W9
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 23.28%
Water Quality Objective = 45 mg/L
90th percentile concentration = 16 mg/L
75th percentile concentration = 14 mg/L
25th percentile concentration = 10 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

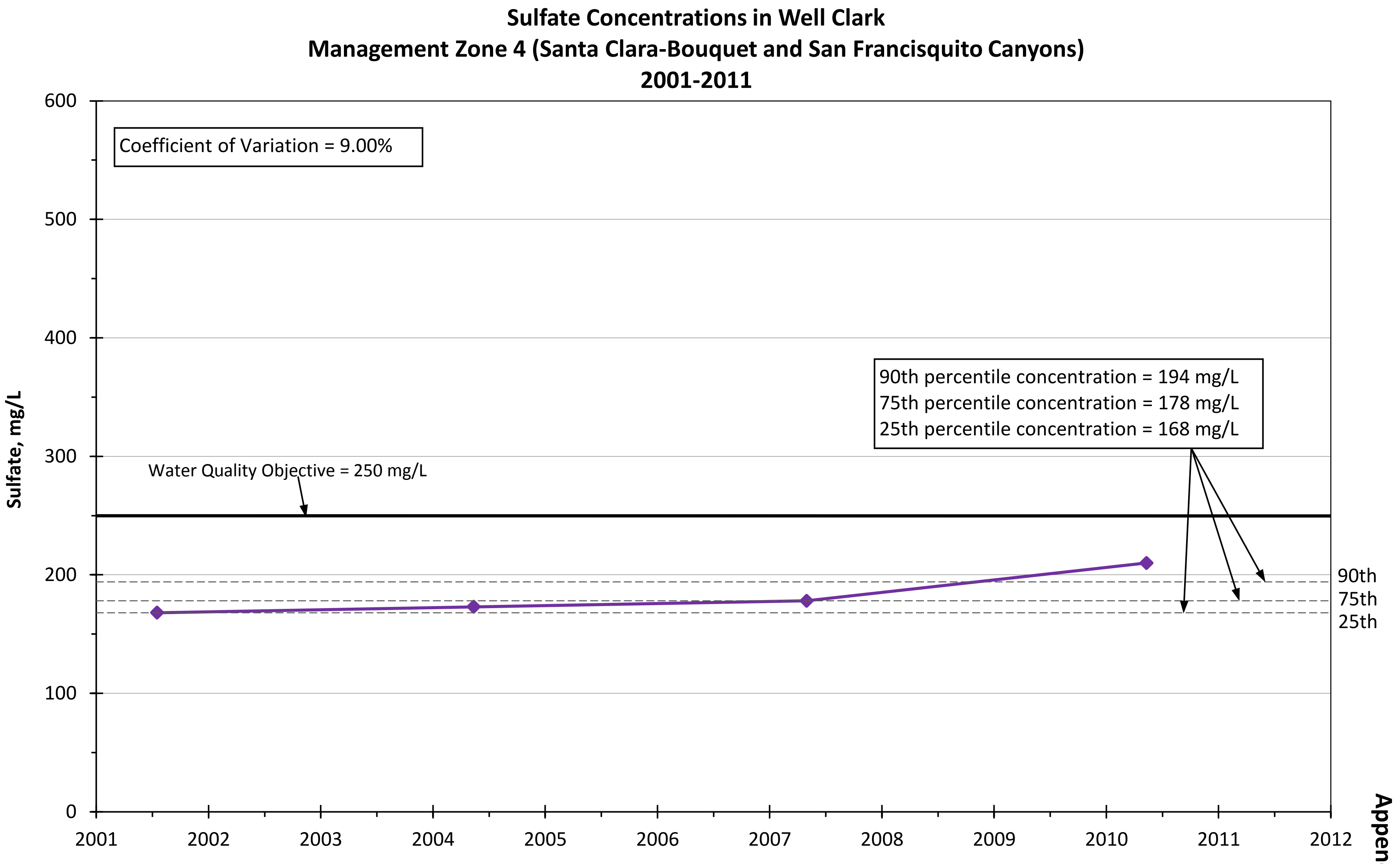
Nitrate as NO3 Concentrations in Well S6
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011



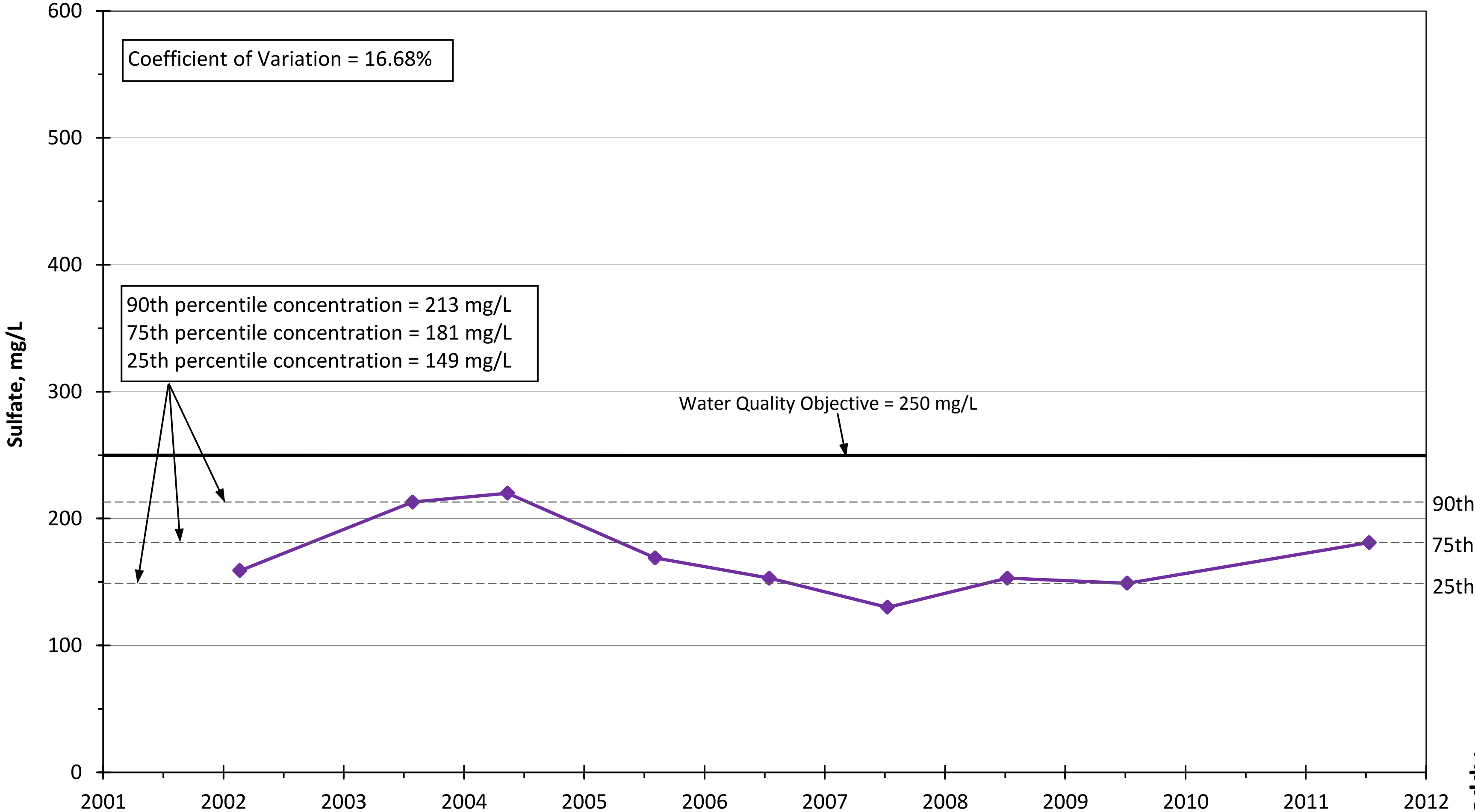
Nitrate as NO3 Concentrations in Well W10
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011



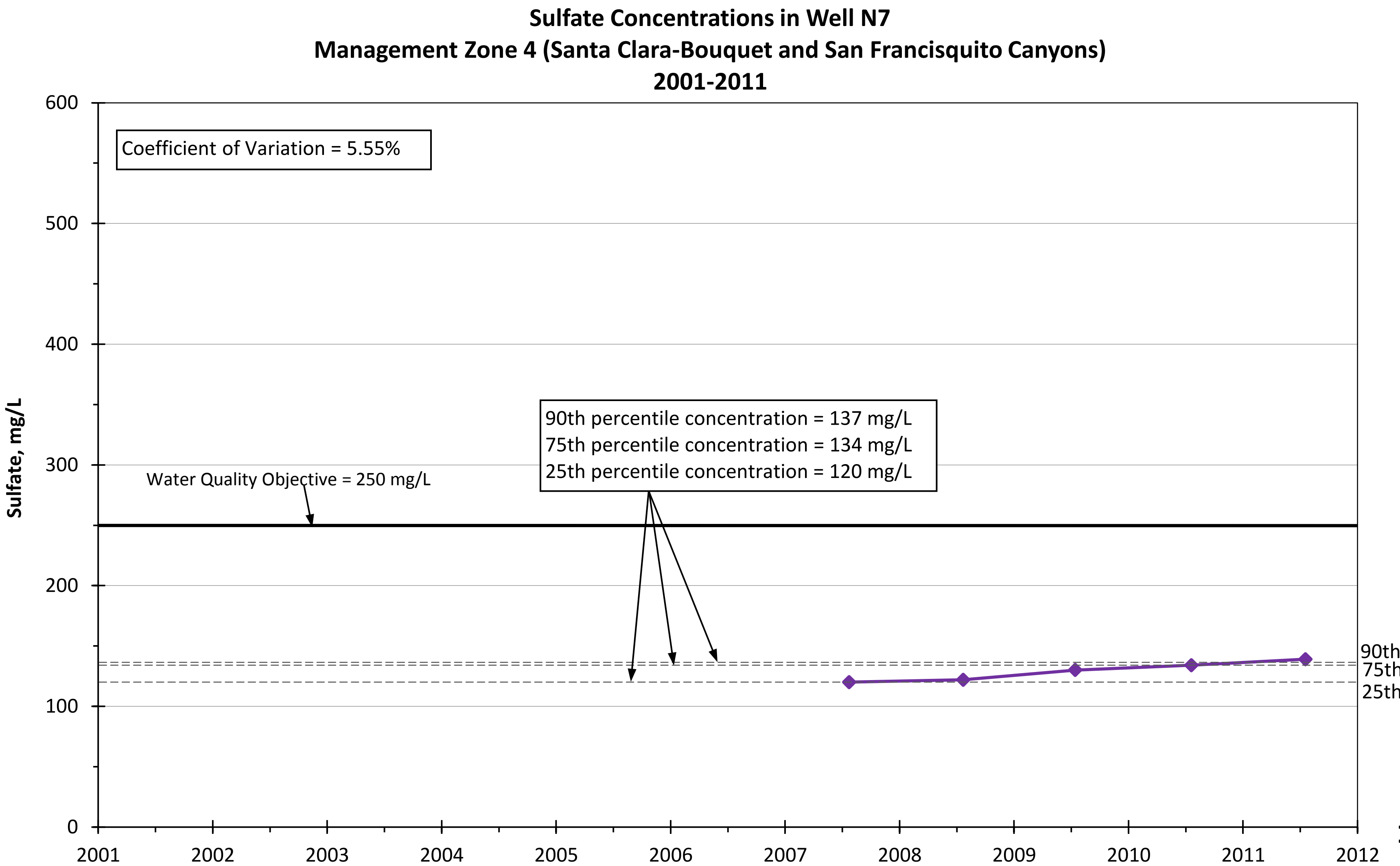

Sulfate Concentrations in Well Guida
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 11.89%
90th percentile concentration = 192 mg/L
75th percentile concentration = 183 mg/L
25th percentile concentration = 143 mg/L
Water Quality Objective = 250 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Sulfate Concentrations in Well Clark
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 9.00%
90th percentile concentration = 194 mg/L
75th percentile concentration = 178 mg/L
25th percentile concentration = 168 mg/L
Water Quality Objective = 250 mg/L
Sulfate, mg/L
600
500
400
300
200
100
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

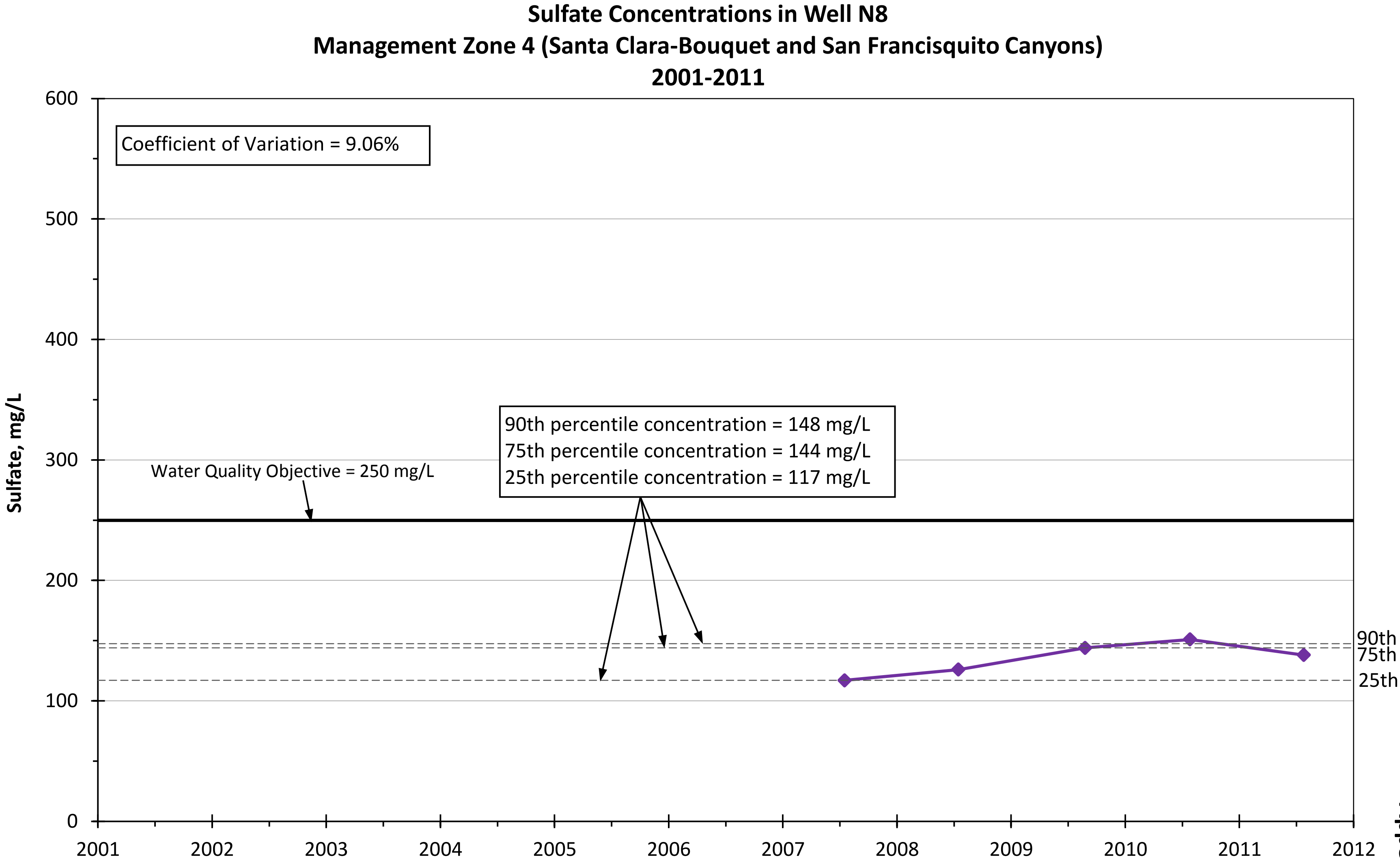
Sulfate Concentrations in Well Q2
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011



Appendix C

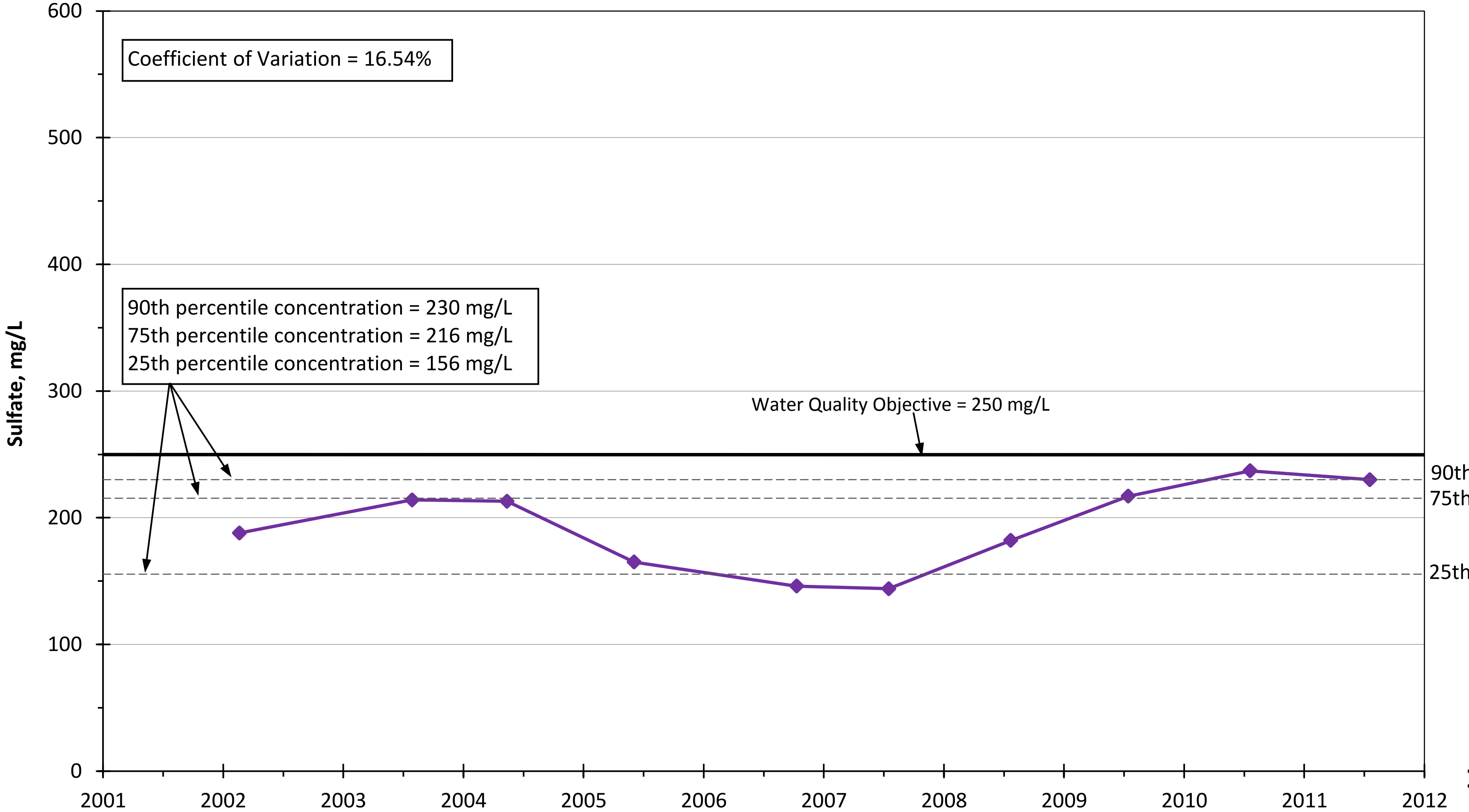

Sulfate Concentrations in Well N7
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 5.55%
90th percentile concentration = 137 mg/L
75th percentile concentration = 134 mg/L
25th percentile concentration = 120 mg/L
Water Quality Objective = 250 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

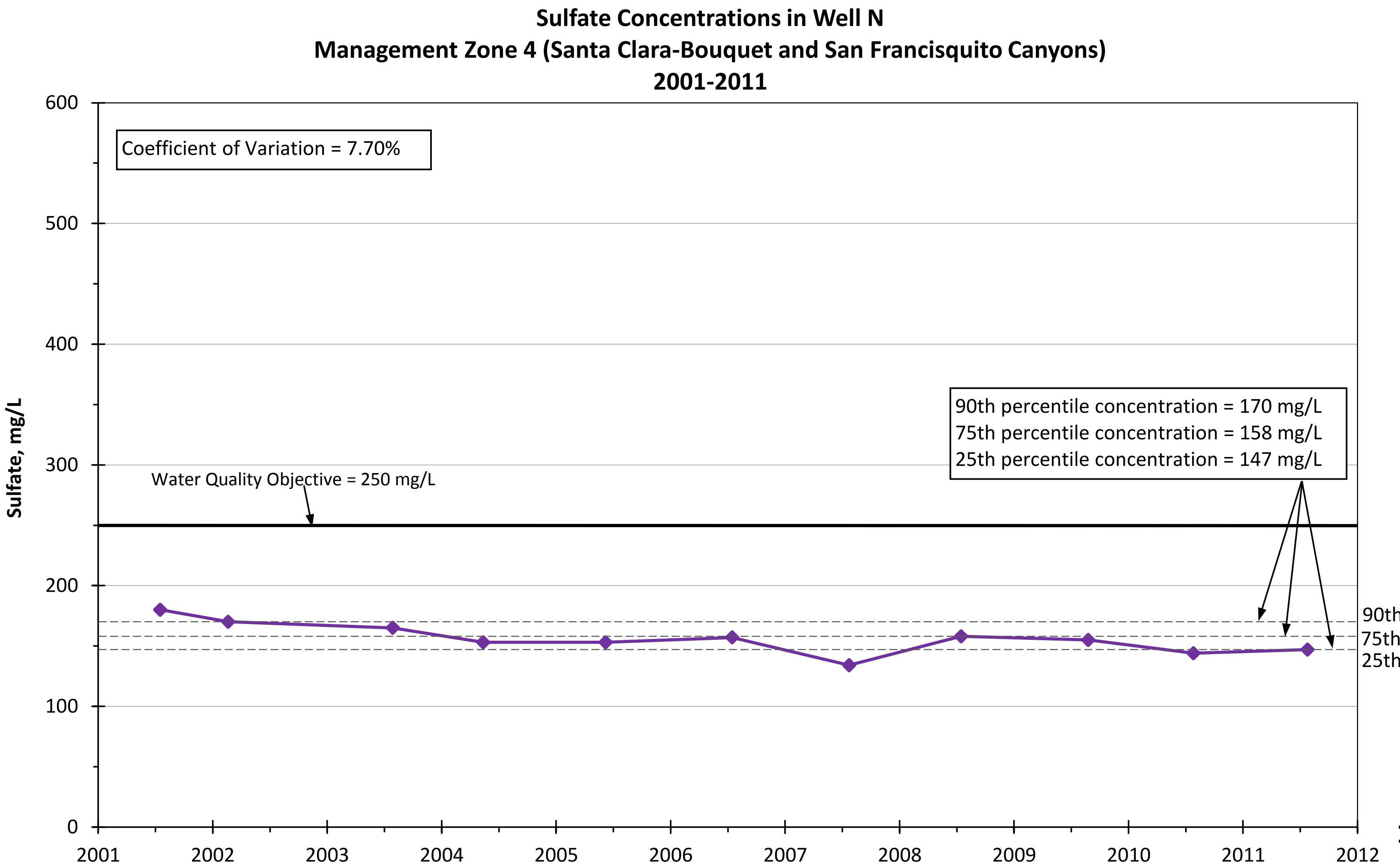
Appendix C


Sulfate Concentrations in Well N8
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 9.06%
90th percentile concentration = 148 mg/L
75th percentile concentration = 144 mg/L
25th percentile concentration = 117 mg/L
Water Quality Objective = 250 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

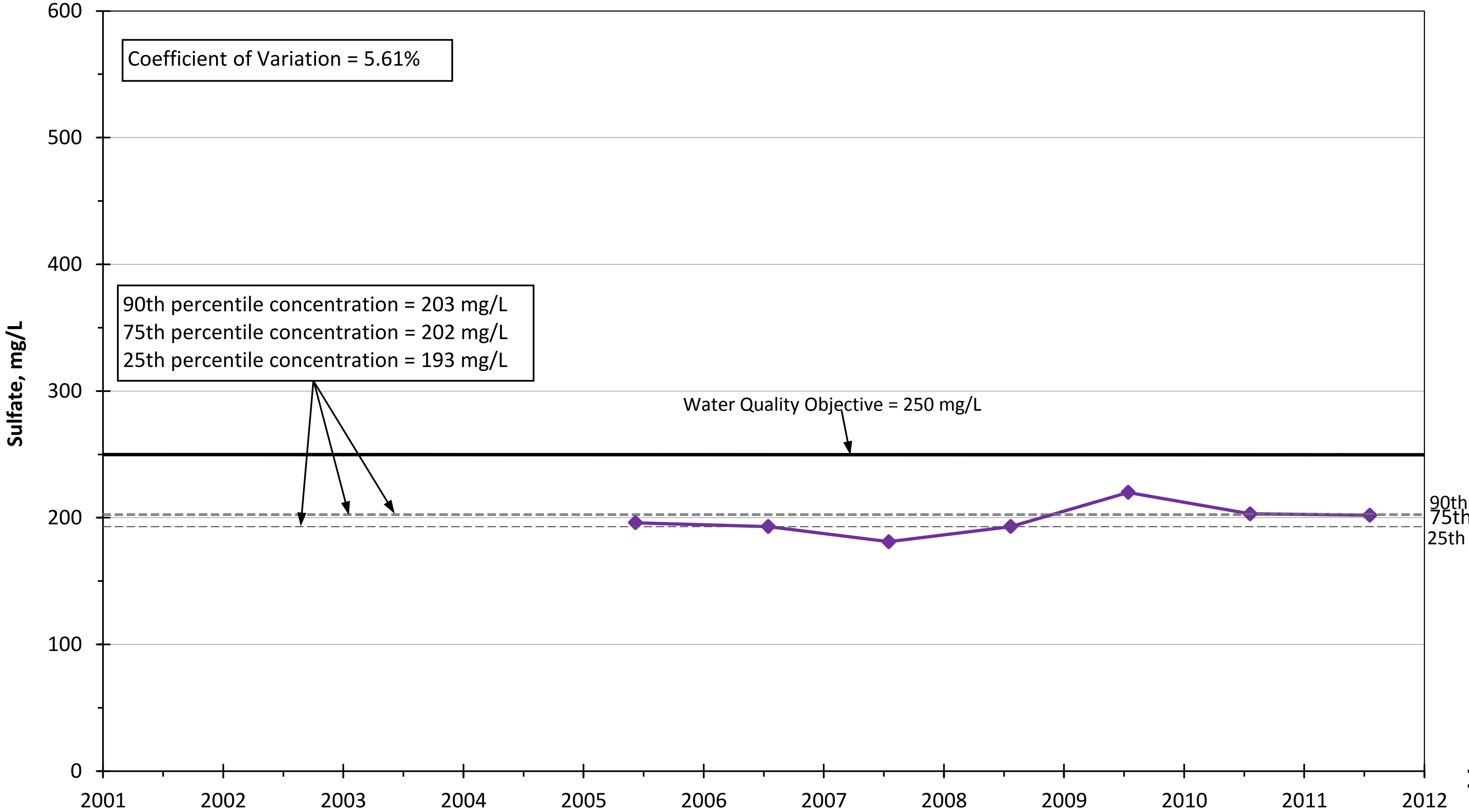
Appendix C

Sulfate Concentrations in Well S8
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011

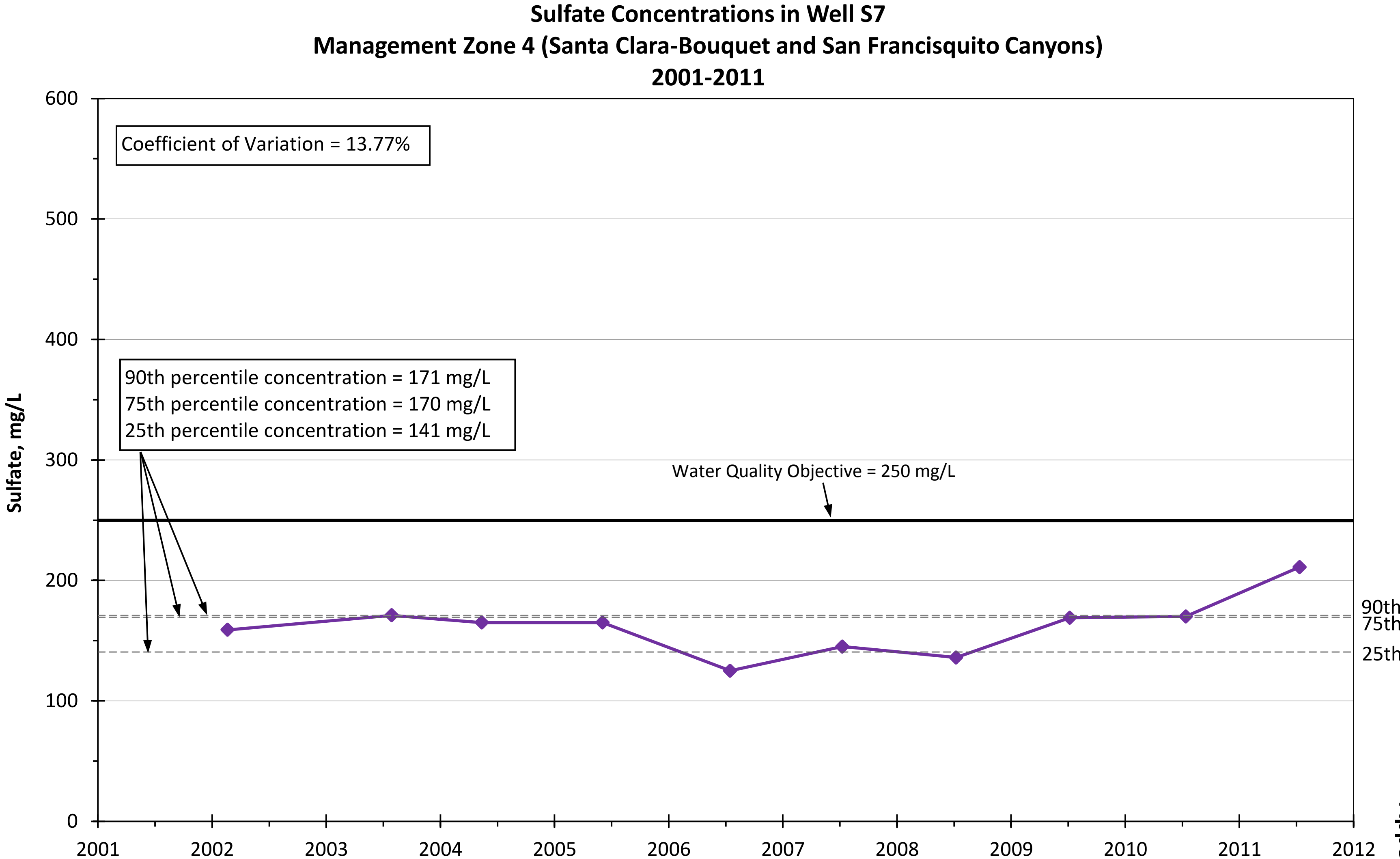


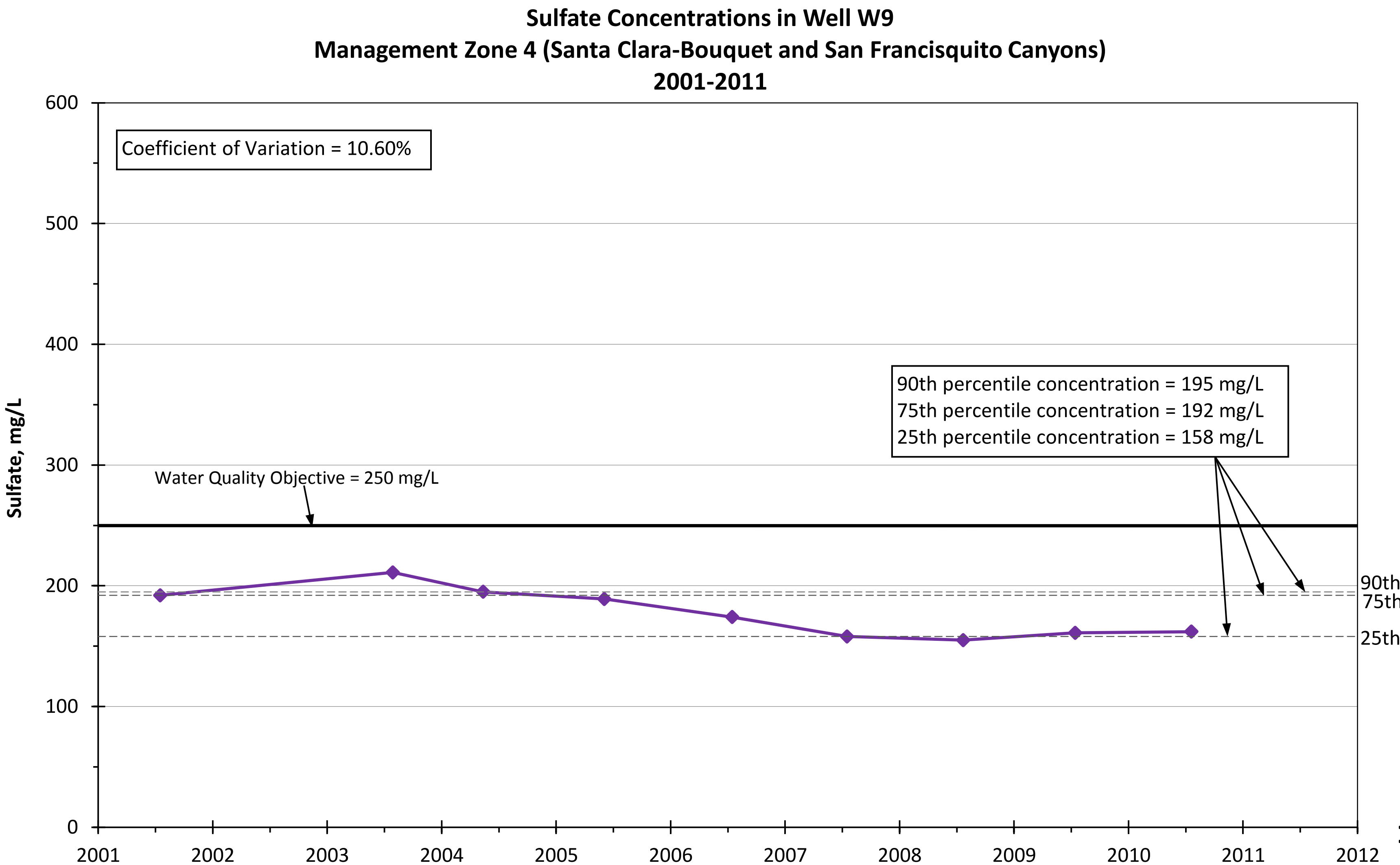

Sulfate Concentrations in Well N
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 7.70%
90th percentile concentration = 170 mg/L
75th percentile concentration = 158 mg/L
25th percentile concentration = 147 mg/L
Water Quality Objective = 250 mg/L
Sulfate, mg/L
600
500
400
300
200
100
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

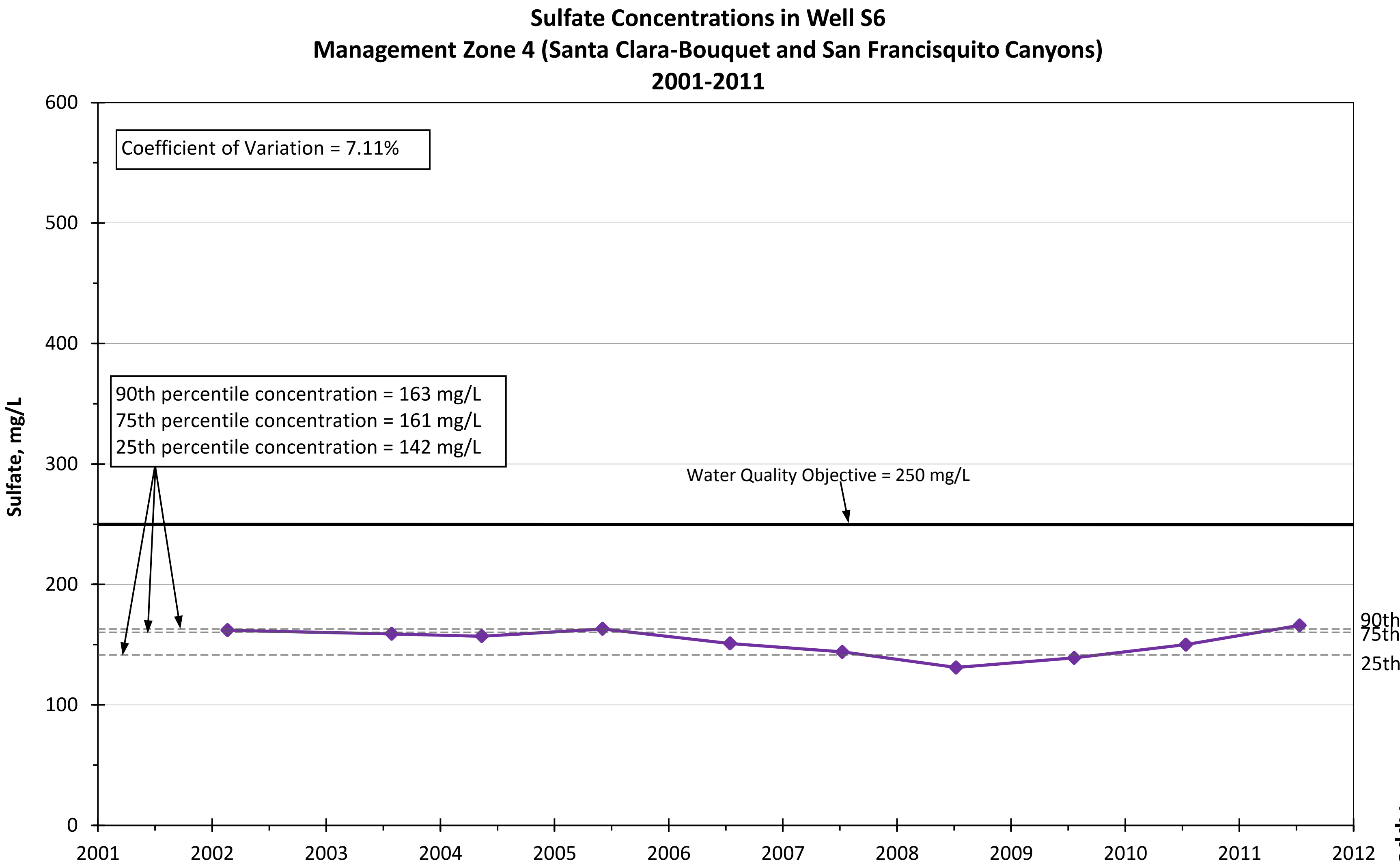
Sulfate Concentrations in Well W11
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011

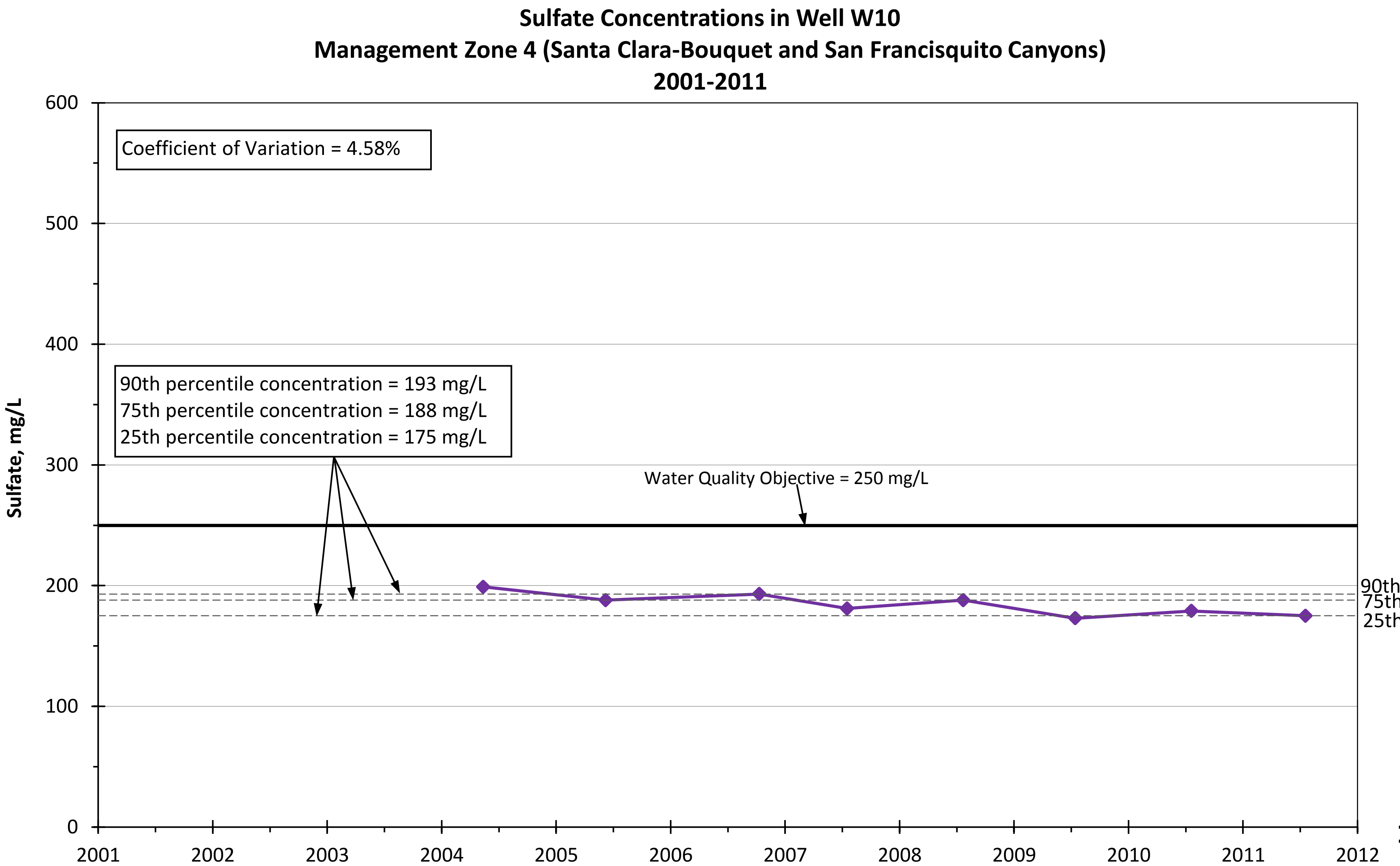


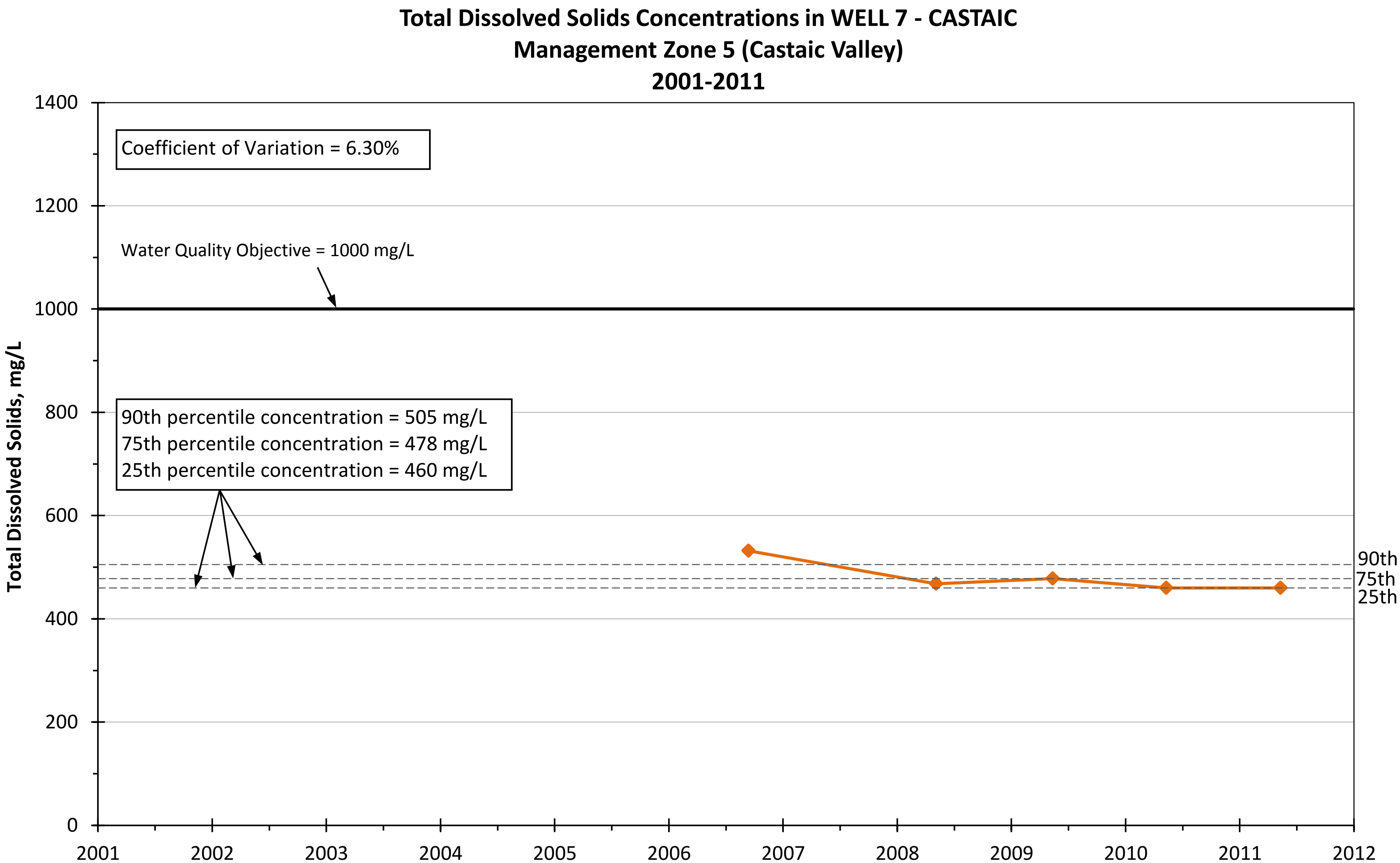
Appendix C


Sulfate Concentrations in Well S7
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 13.77%
90th percentile concentration = 171 mg/L
75th percentile concentration = 170 mg/L
25th percentile concentration = 141 mg/L
Water Quality Objective = 250 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

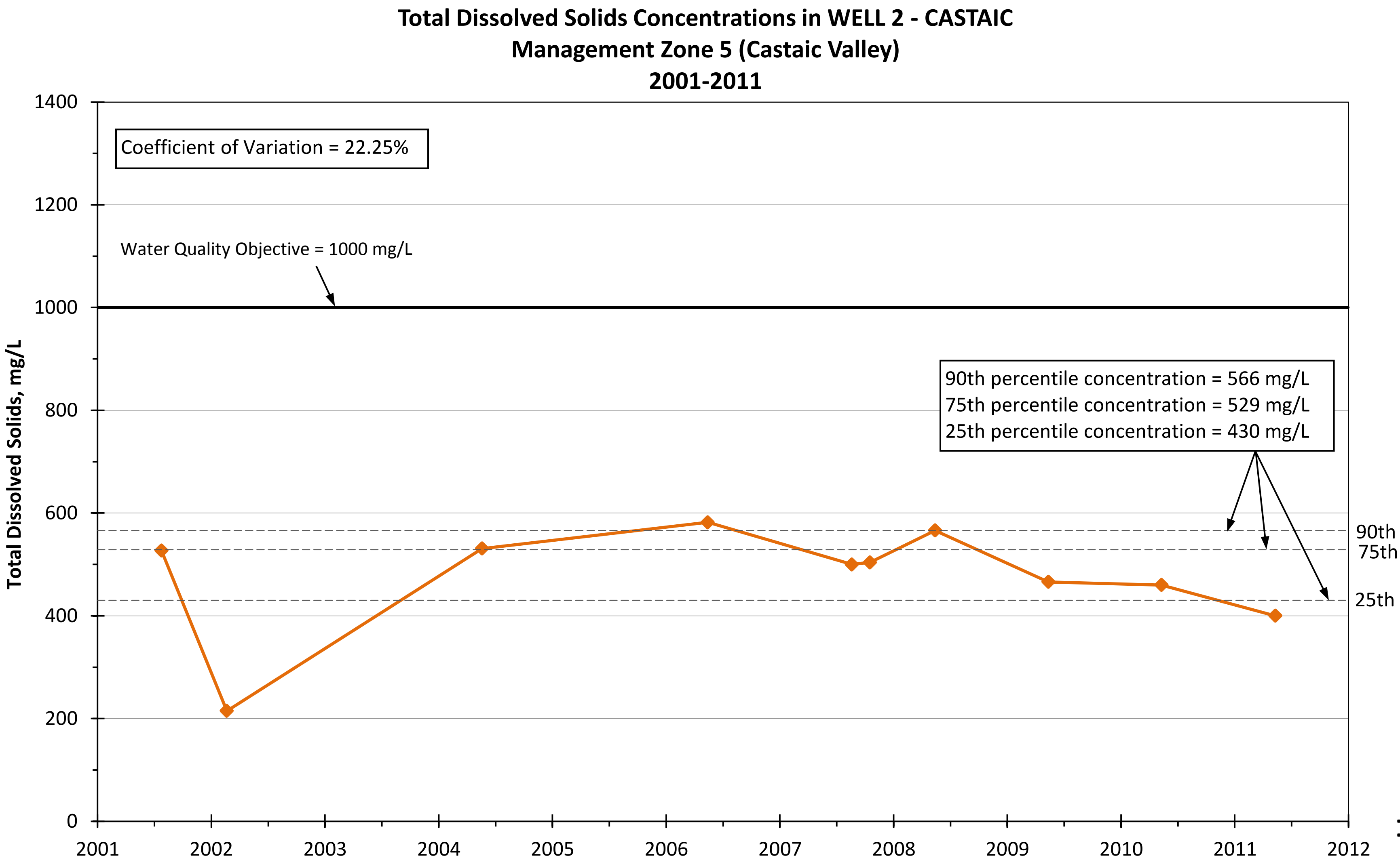

Sulfate Concentrations in Well W9
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 10.60%
90th percentile concentration = 195 mg/L
75th percentile concentration = 192 mg/L
25th percentile concentration = 158 mg/L
Water Quality Objective = 250 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th


Sulfate Concentrations in Well S6
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 7.11%
90th percentile concentration = 163 mg/L
75th percentile concentration = 161 mg/L
25th percentile concentration = 142 mg/L
Water Quality Objective = 250 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

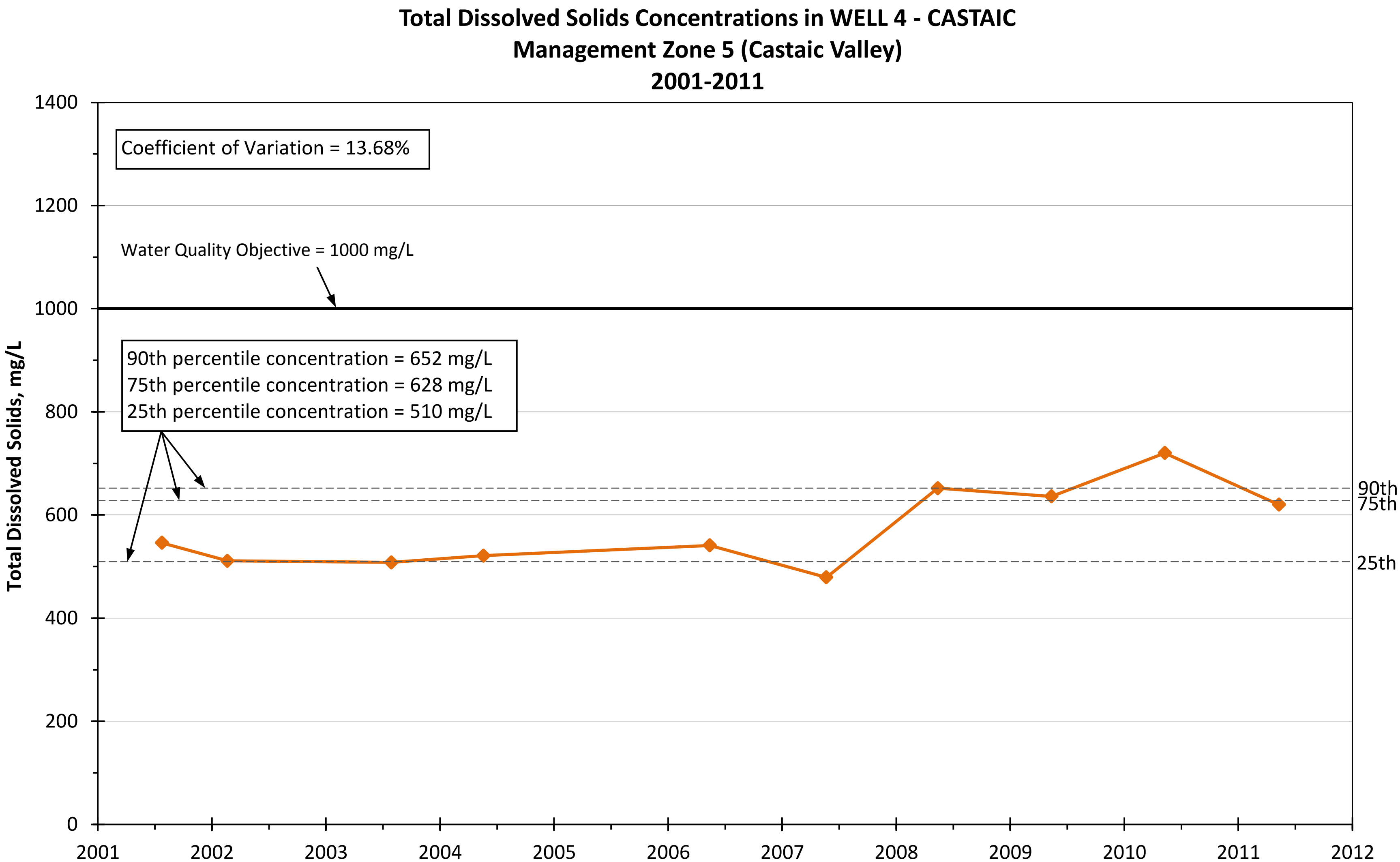

Sulfate Concentrations in Well W10
Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
2001-2011
Coefficient of Variation = 4.58%
90th percentile concentration = 193 mg/L
75th percentile concentration = 188 mg/L
25th percentile concentration = 175 mg/L
Water Quality Objective = 250 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th


Total Dissolved Solids Concentrations in WELL 7 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 6.30%
Water Quality Objective = 1000 mg/L
90th percentile concentration = 505 mg/L
75th percentile concentration = 478 mg/L
25th percentile concentration = 460 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

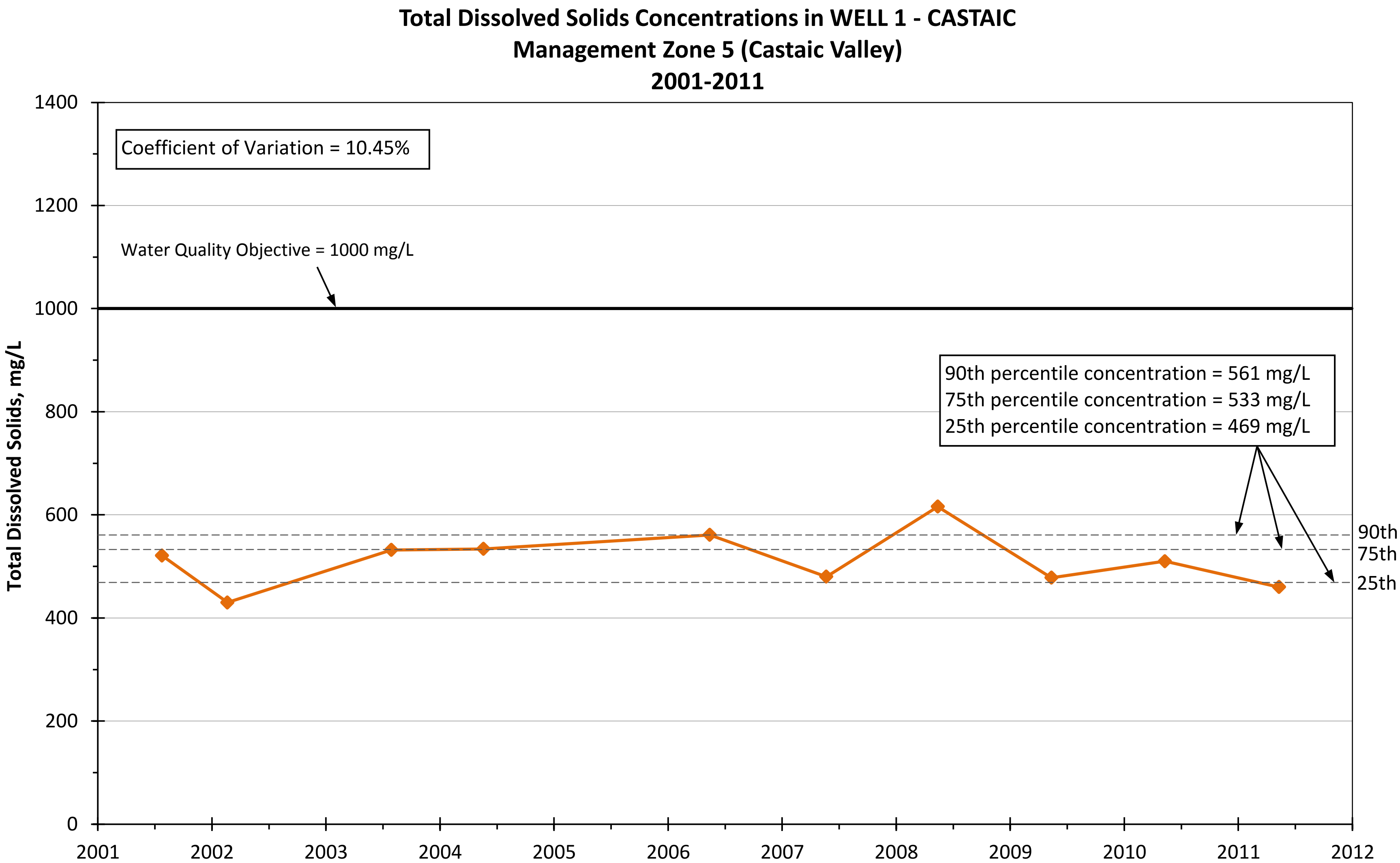
Appendix C

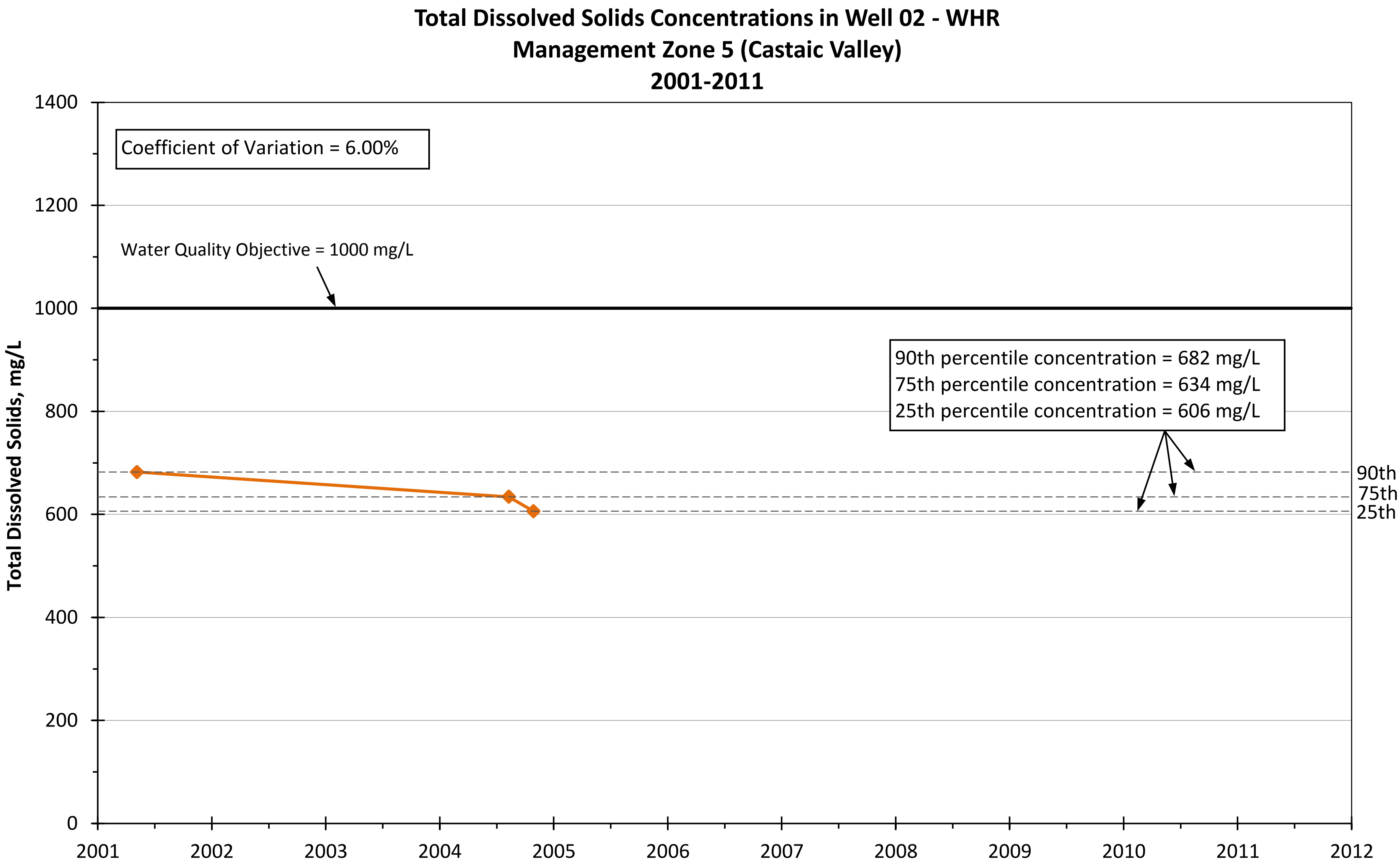

Total Dissolved Solids Concentrations in WELL 2 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 22.25%
Water Quality Objective = 1000 mg/L
90th percentile concentration = 566 mg/L
75th percentile concentration = 529 mg/L
25th percentile concentration = 430 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C


Total Dissolved Solids Concentrations in WELL 4 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 13.68%
Water Quality Objective = 1000 mg/L
90th percentile concentration = 652 mg/L
75th percentile concentration = 628 mg/L
25th percentile concentration = 510 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

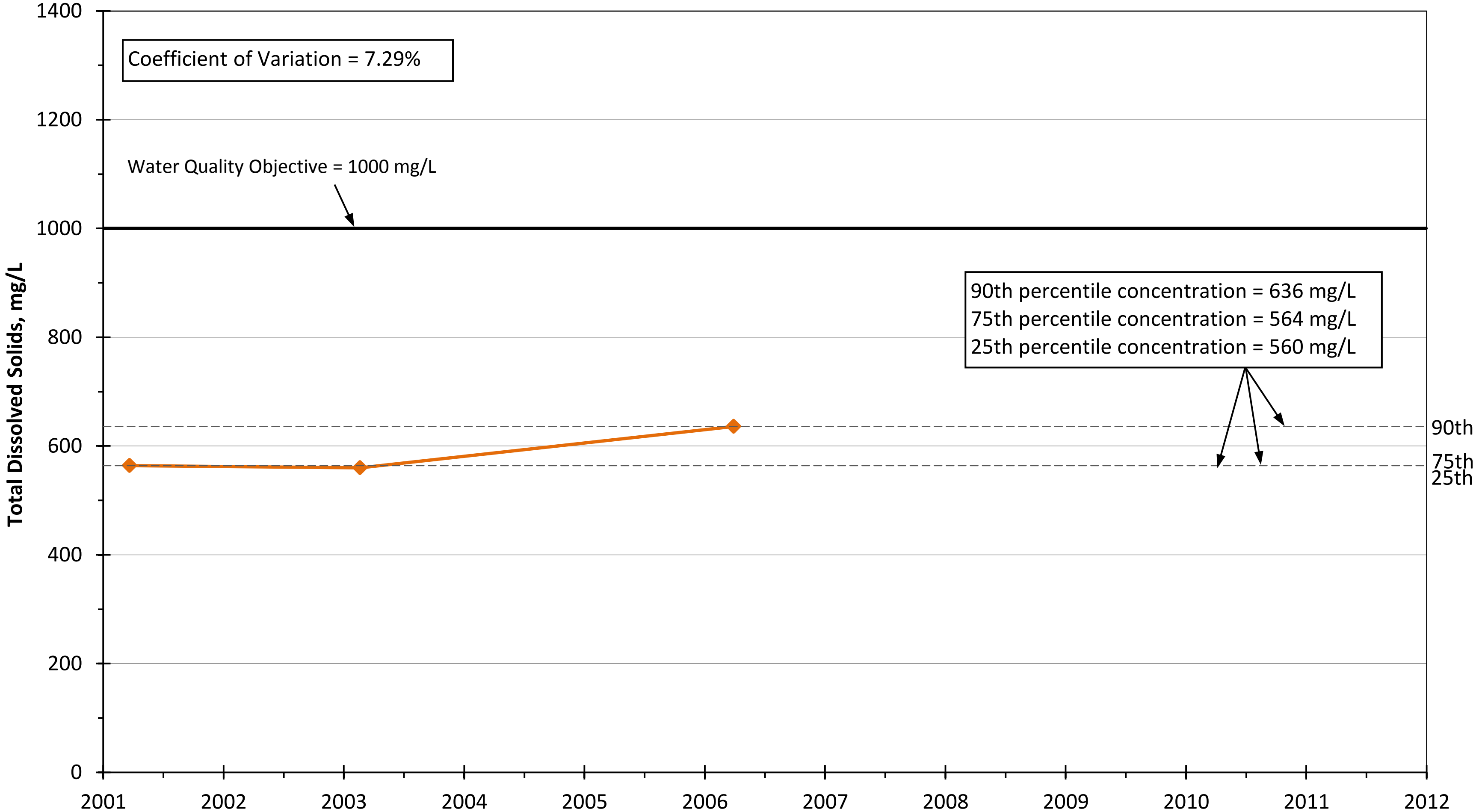
Appendix C


Total Dissolved Solids Concentrations in WELL 1 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 10.45%
Water Quality Objective = 1000 mg/L
90th percentile concentration = 561 mg/L
75th percentile concentration = 533 mg/L
25th percentile concentration = 469 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Total Dissolved Solids Concentrations in Well 02 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 6.00%
Water Quality Objective = 1000 mg/L
90th percentile concentration = 682 mg/L
75th percentile concentration = 634 mg/L
25th percentile concentration = 606 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

Total Dissolved Solids Concentrations in Well 15 - WHR
Management Zone 5 (Castaic Valley)
2001-2011



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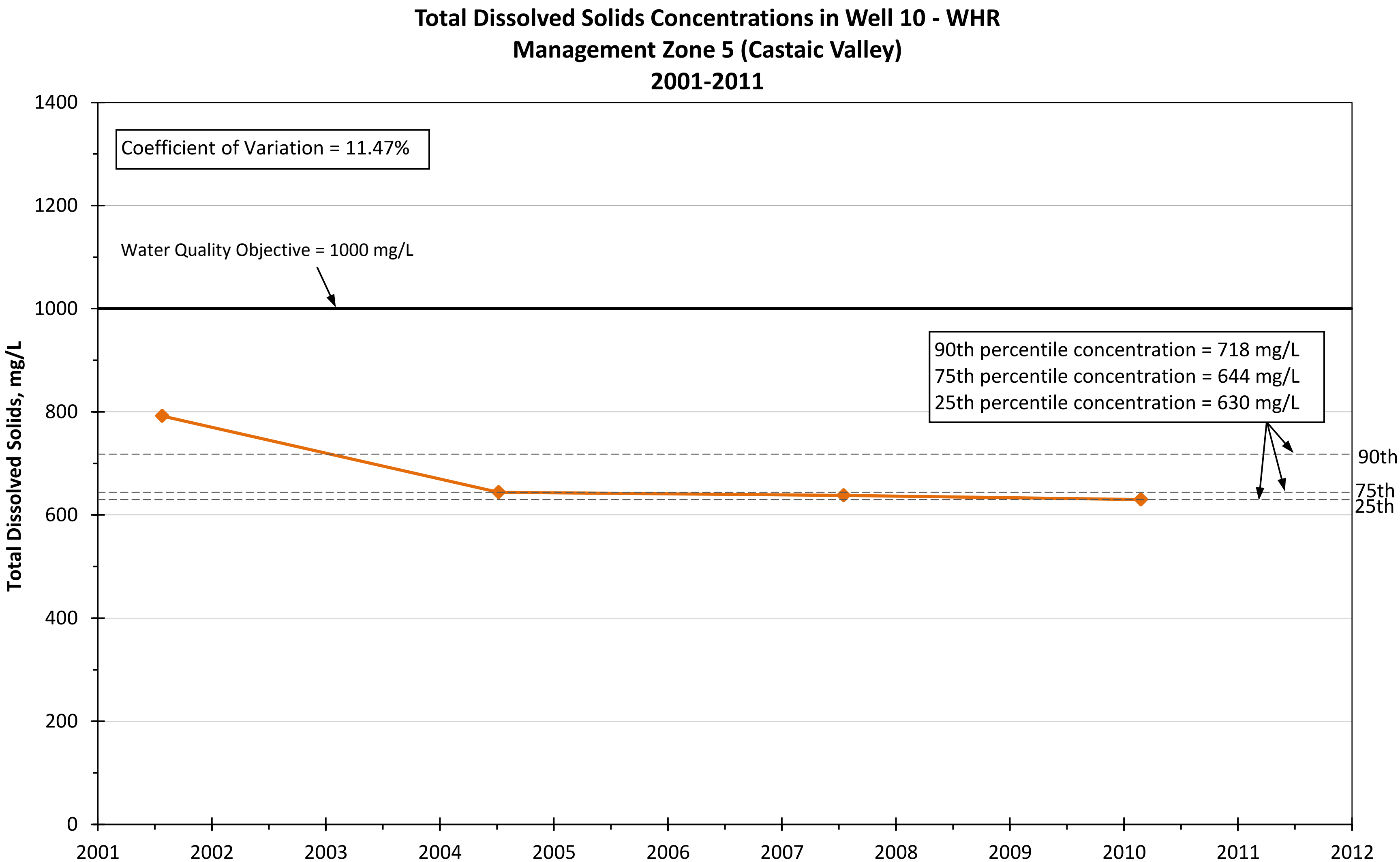
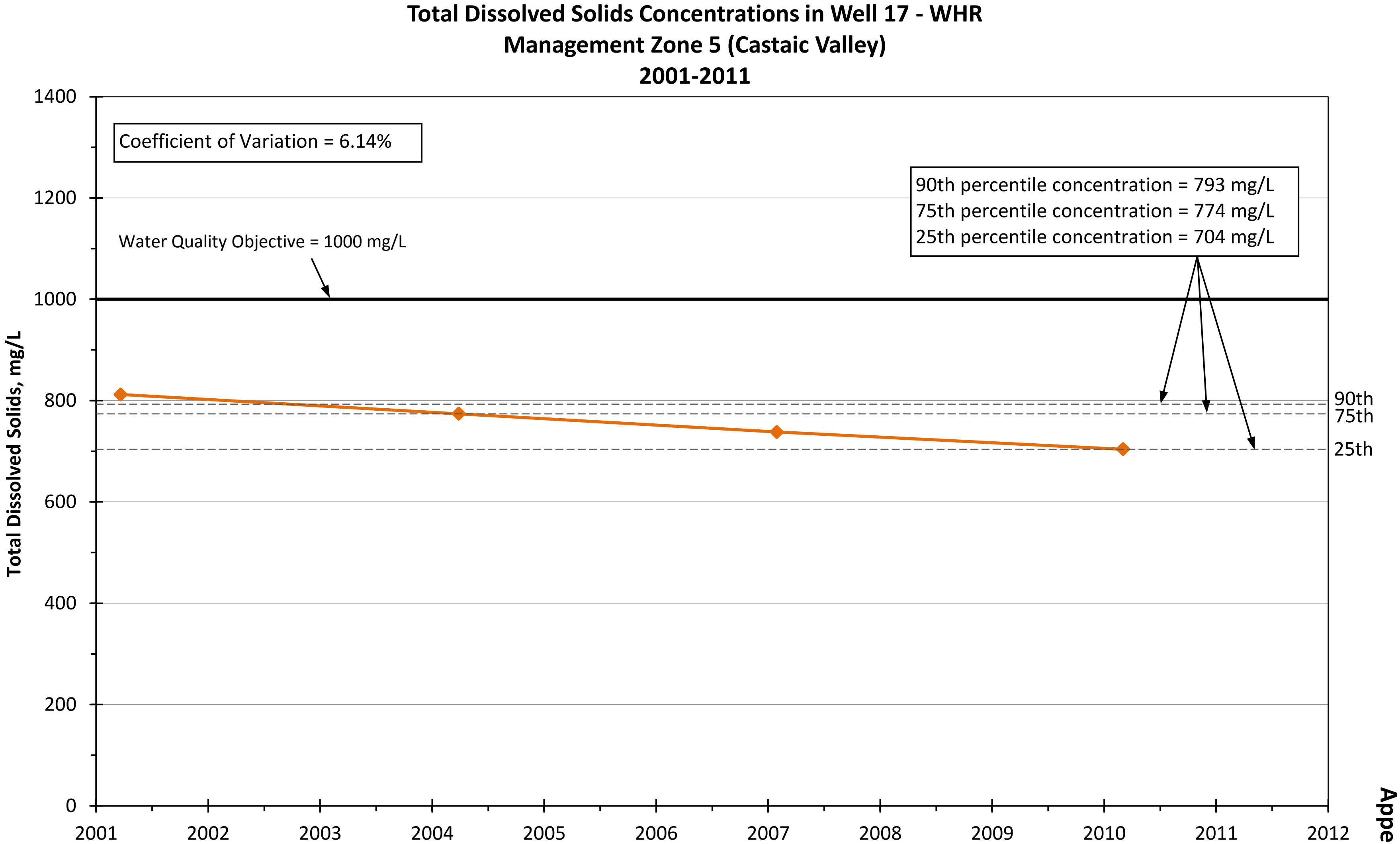
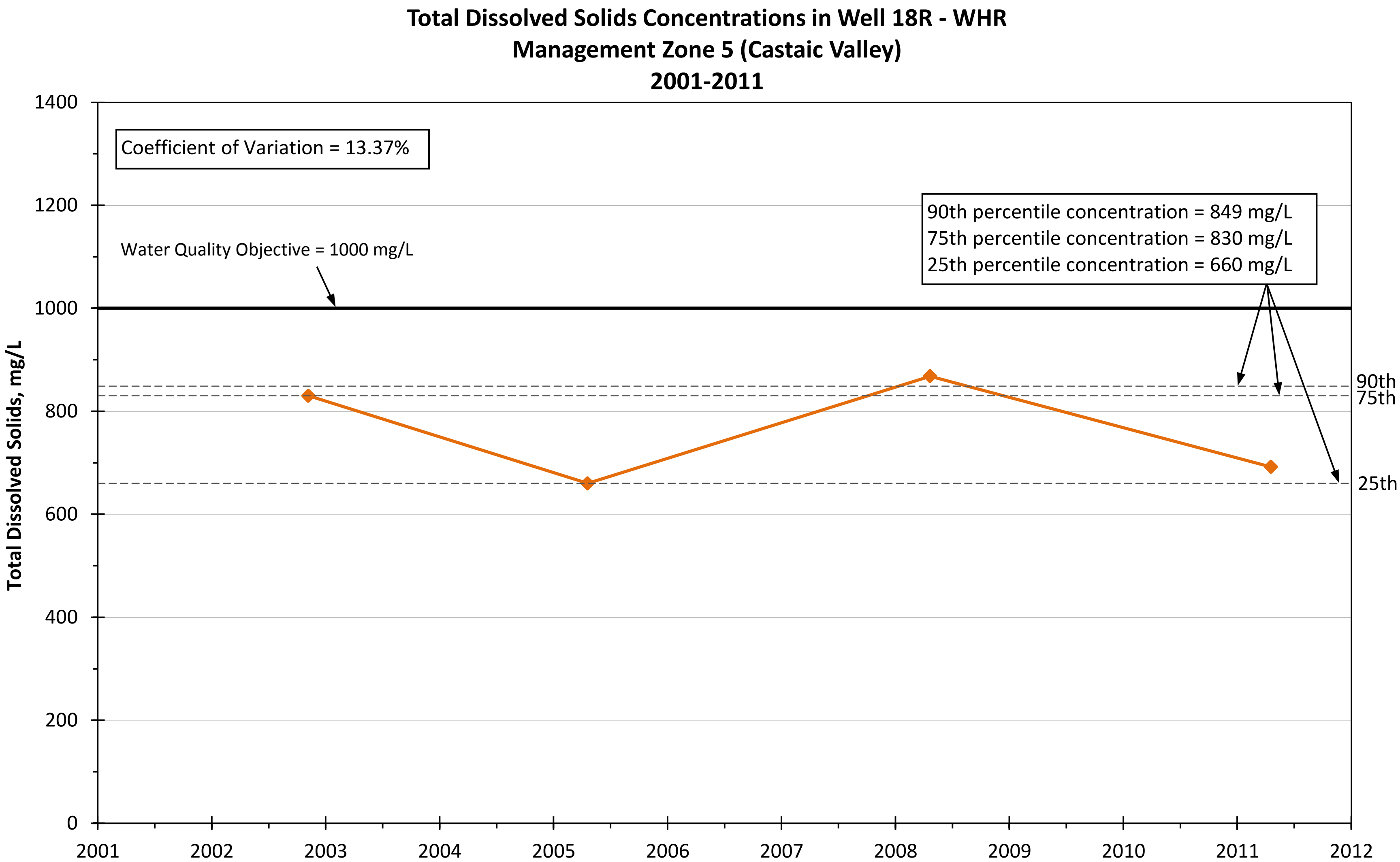
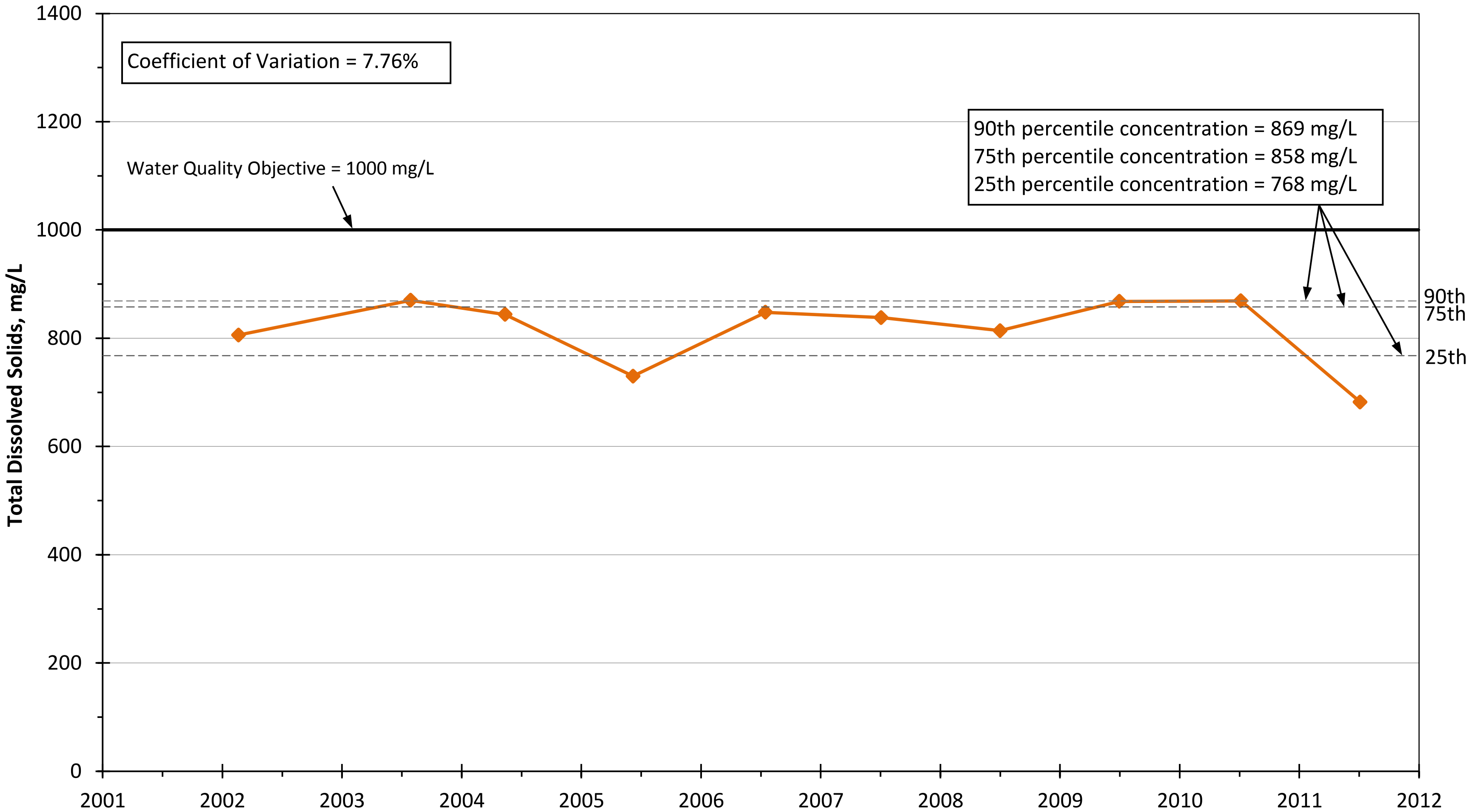

Total Dissolved Solids Concentrations in Well 10 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 11.47%
Water Quality Objective = 1000 mg/L
90th percentile concentration = 718 mg/L
75th percentile concentration = 644 mg/L
25th percentile concentration = 630 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Total Dissolved Solids Concentrations in Well 17 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 6.14%
90th percentile concentration = 793 mg/L
75th percentile concentration = 774 mg/L
25th percentile concentration = 704 mg/L
Water Quality Objective = 1000 mg/L
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

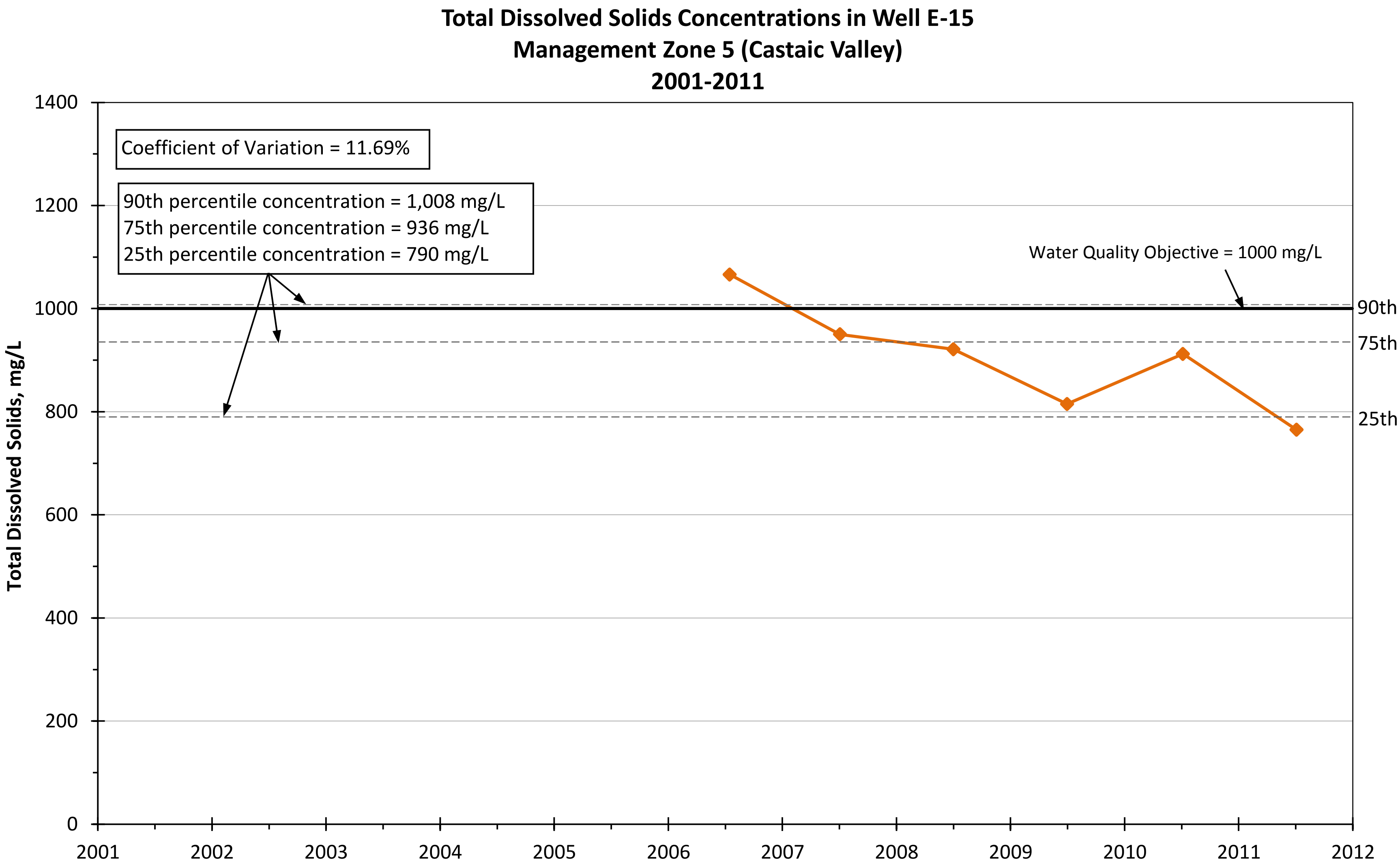
Appendix C


Total Dissolved Solids Concentrations in Well 18R - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 13.37%
90th percentile concentration = 849 mg/L
75th percentile concentration = 830 mg/L
25th percentile concentration = 660 mg/L
Water Quality Objective = 1000 mg/L
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

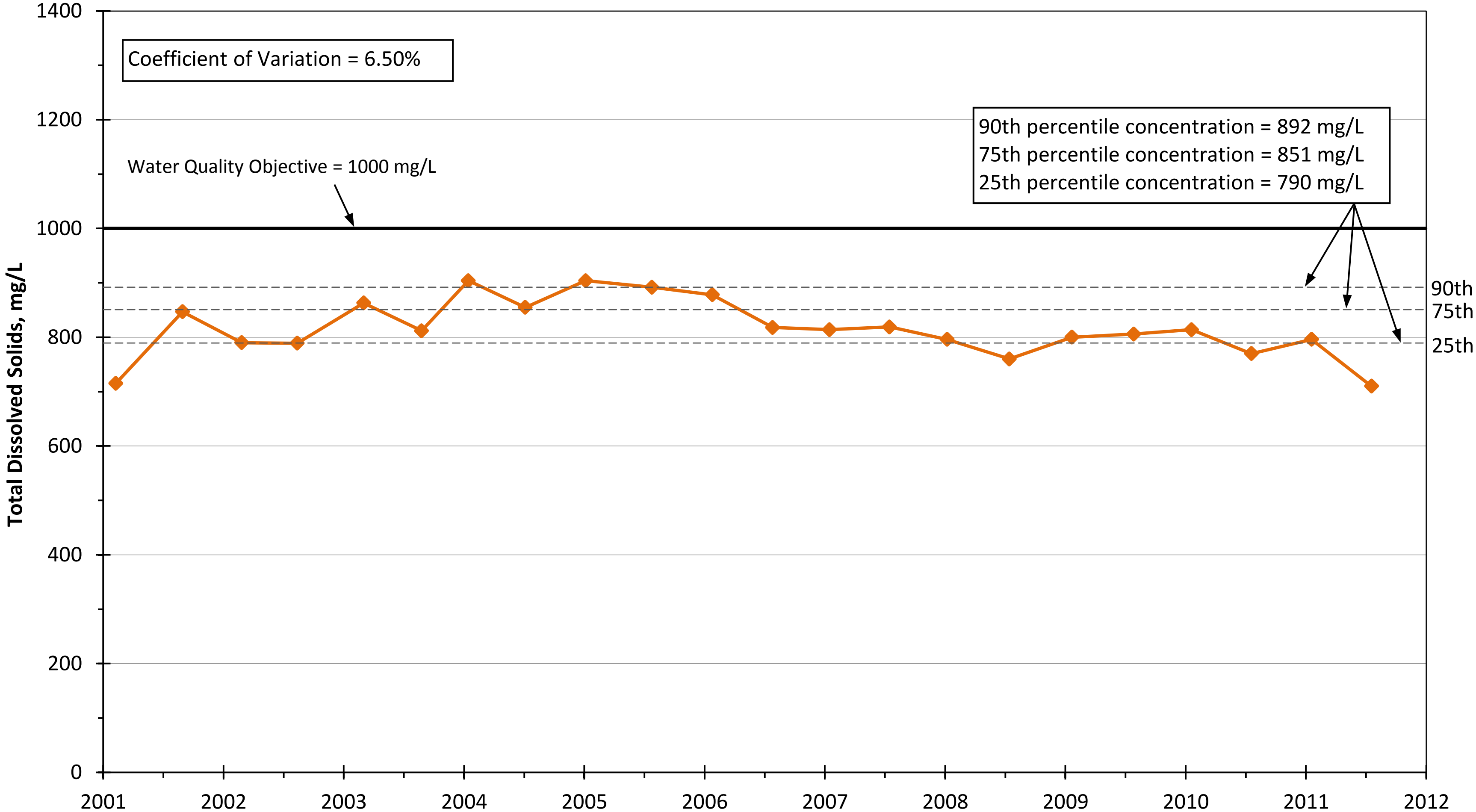
Total Dissolved Solids Concentrations in Well D
Management Zone 5 (Castaic Valley)
2001-2011

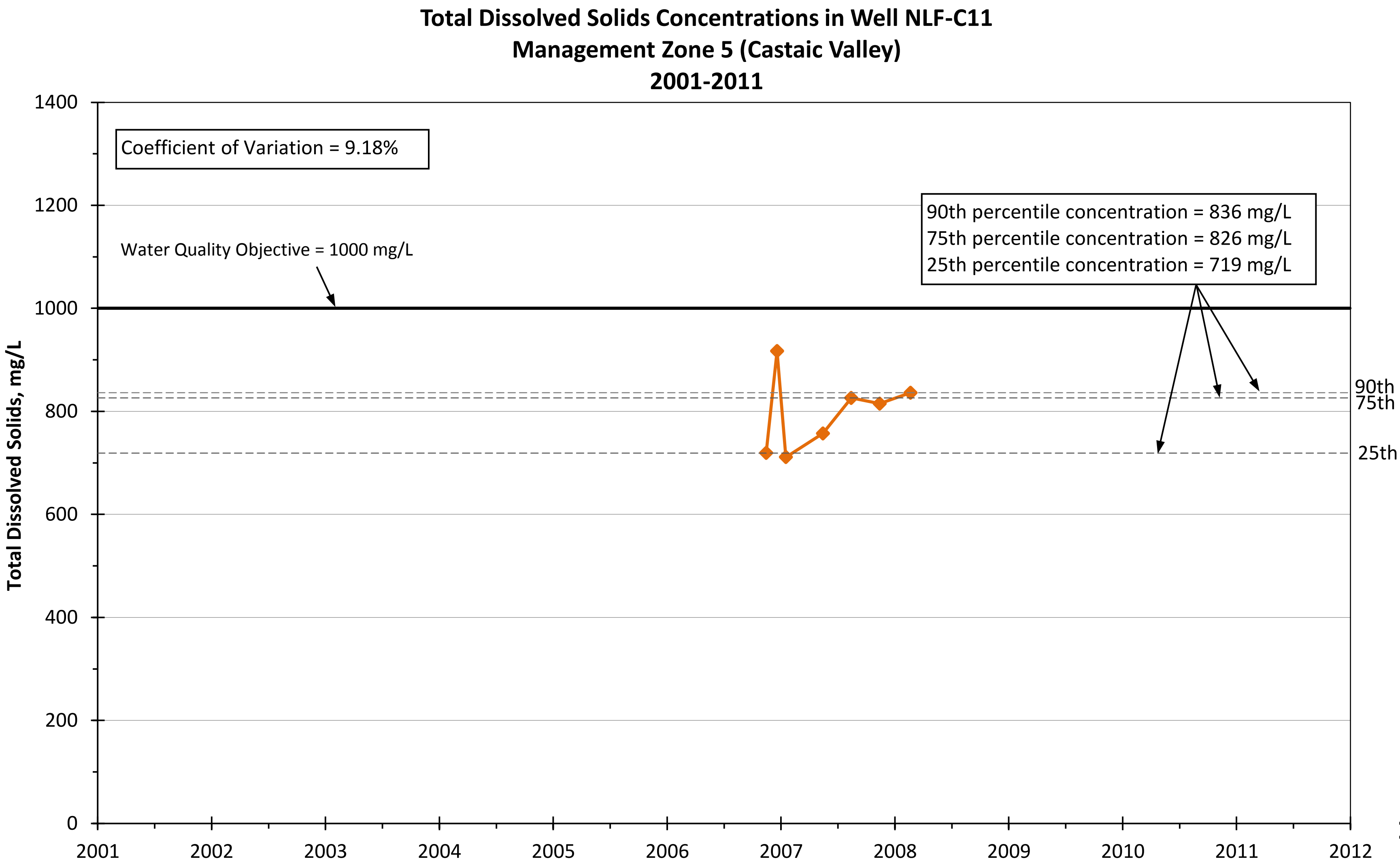


Appendix C

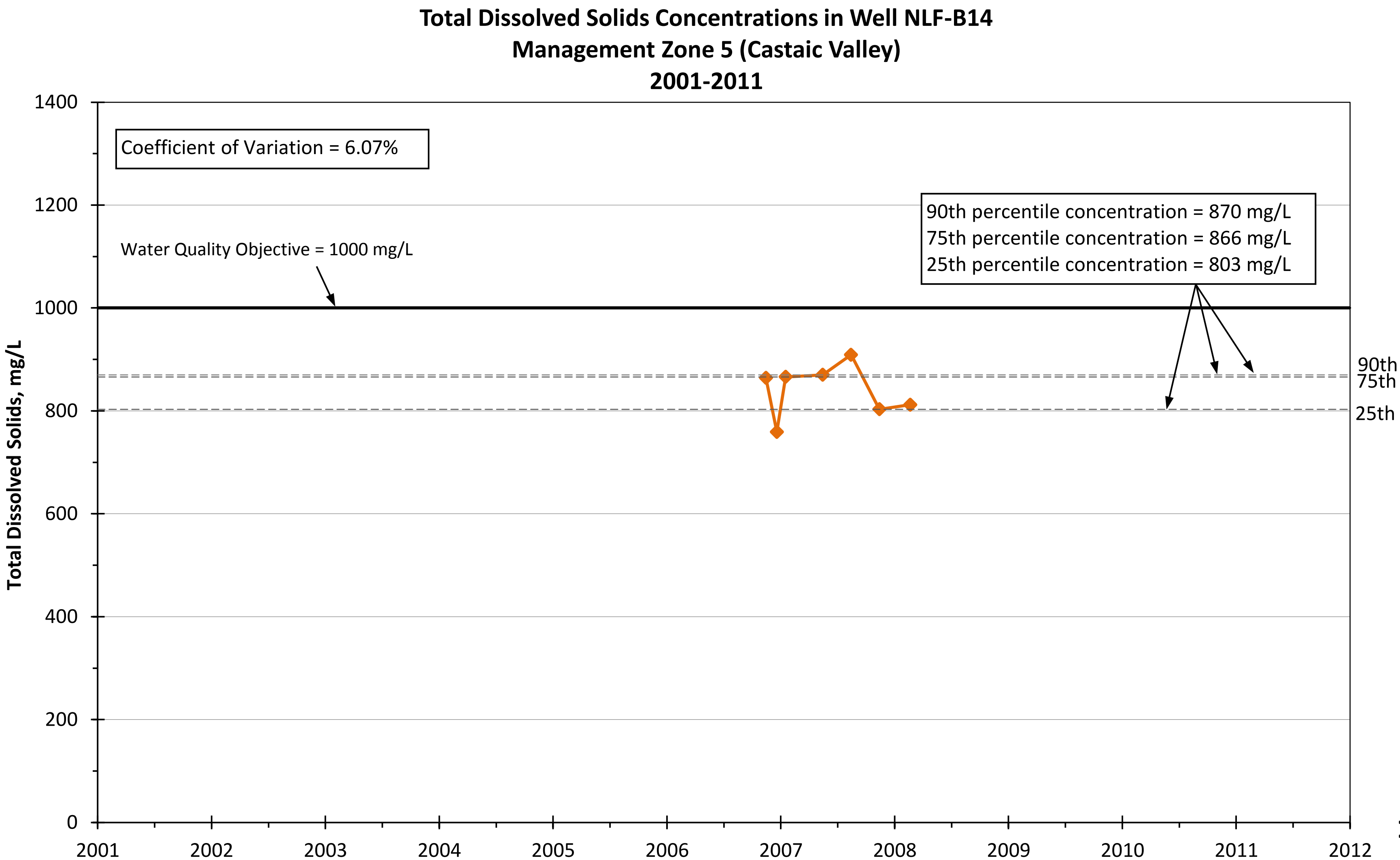

Total Dissolved Solids Concentrations in Well E-15
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 11.69%
90th percentile concentration = 1,008 mg/L
75th percentile concentration = 936 mg/L
25th percentile concentration = 790 mg/L
Water Quality Objective = 1000 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Total Dissolved Solids Concentrations in Well NLF - C5
Management Zone 5 (Castaic Valley)
2001-2011

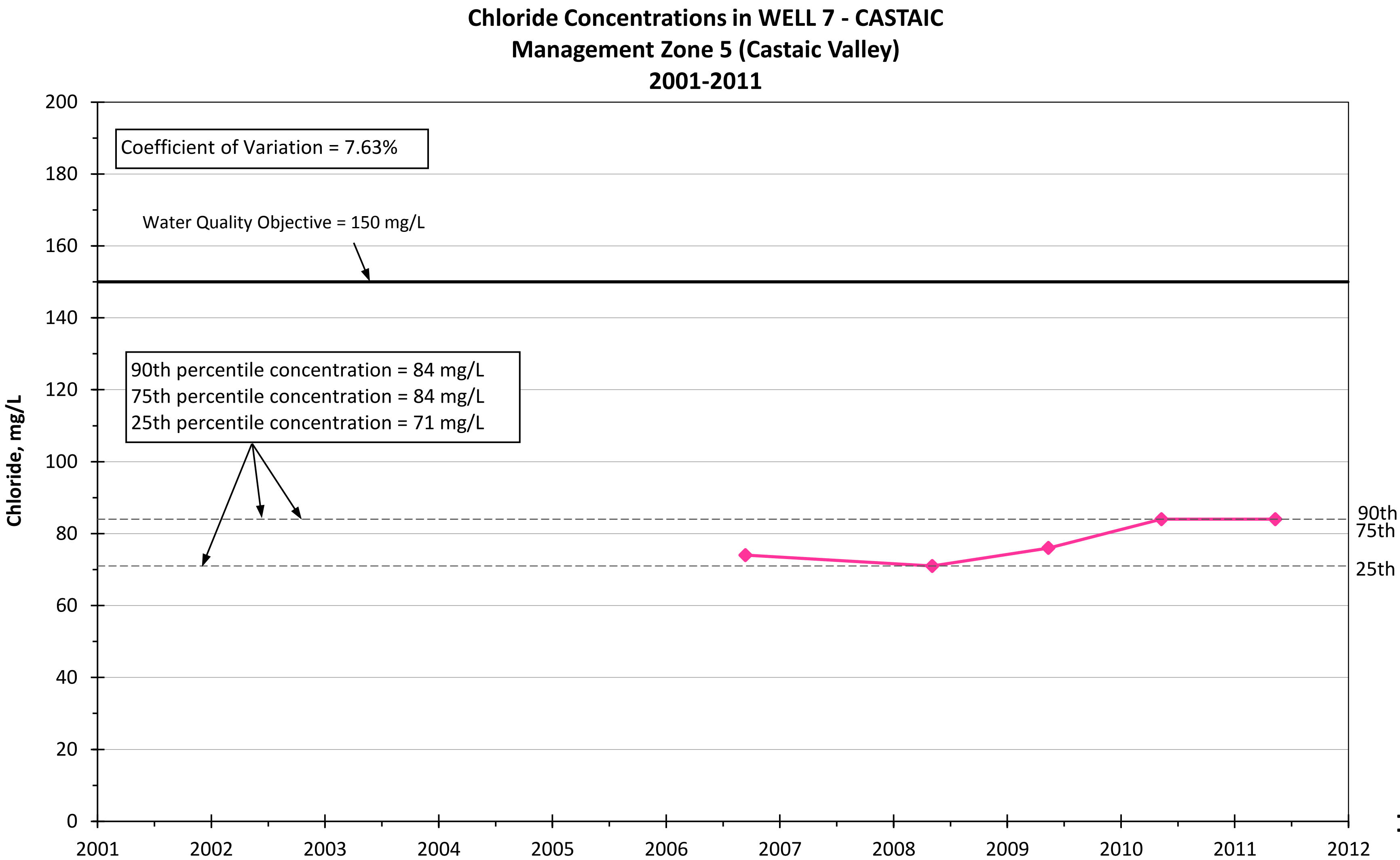


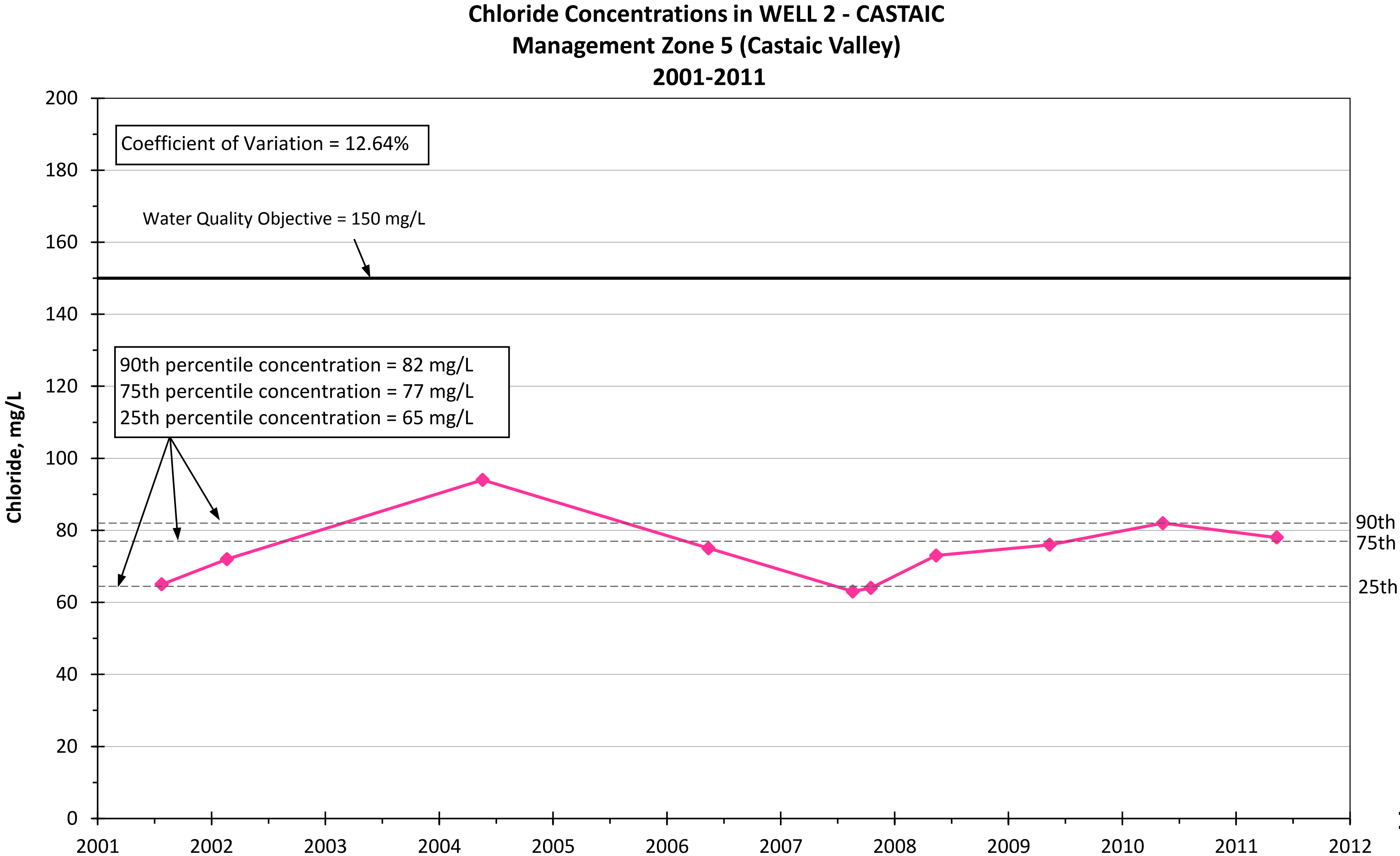

Total Dissolved Solids Concentrations in Well NLF-C11
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 9.18%
Water Quality Objective = 1000 mg/L
90th percentile concentration = 836 mg/L
75th percentile concentration = 826 mg/L
25th percentile concentration = 719 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

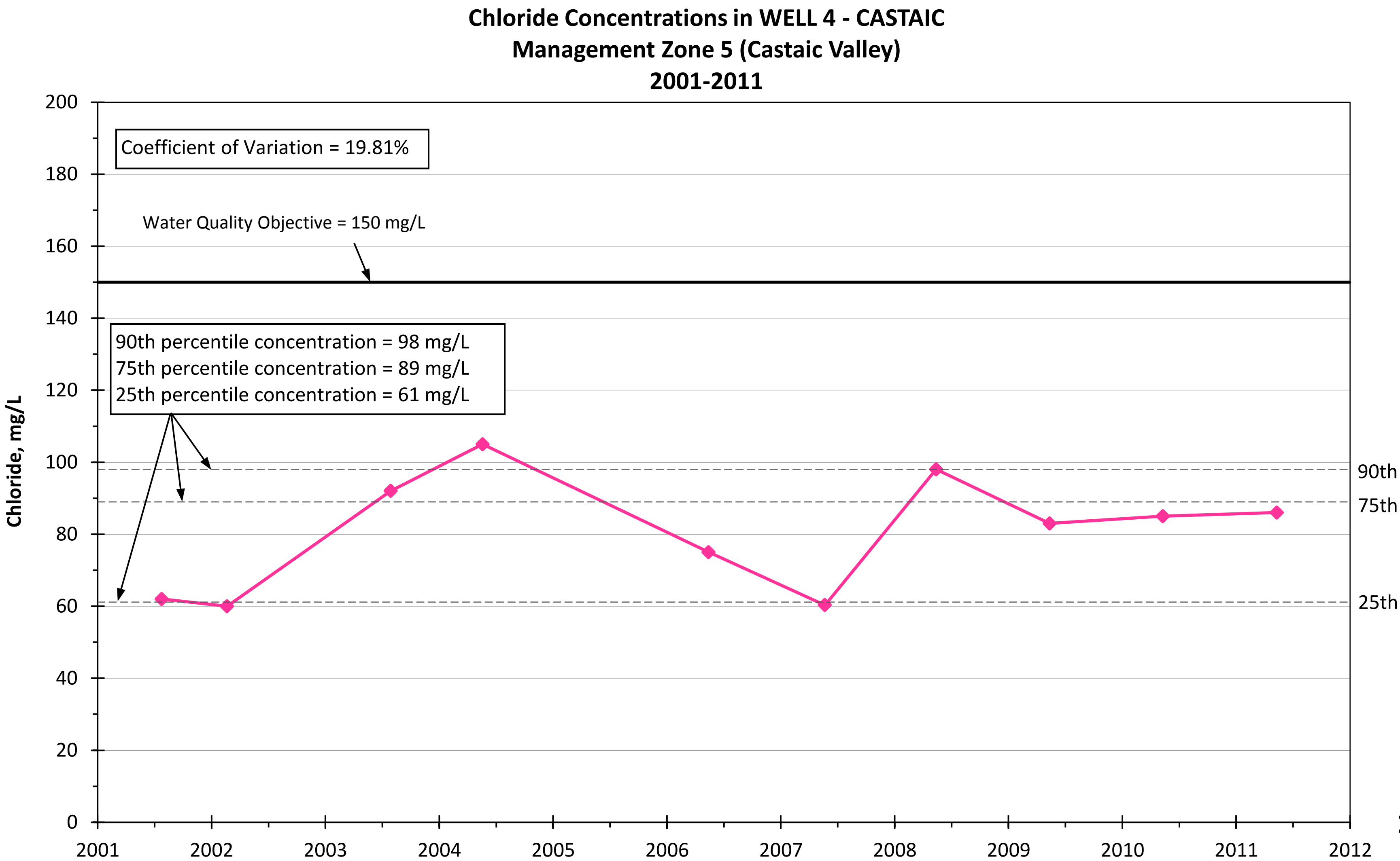

Total Dissolved Solids Concentrations in Well NLF-B14
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 6.07%
90th percentile concentration = 870 mg/L
75th percentile concentration = 866 mg/L
25th percentile concentration = 803 mg/L
Water Quality Objective = 1000 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

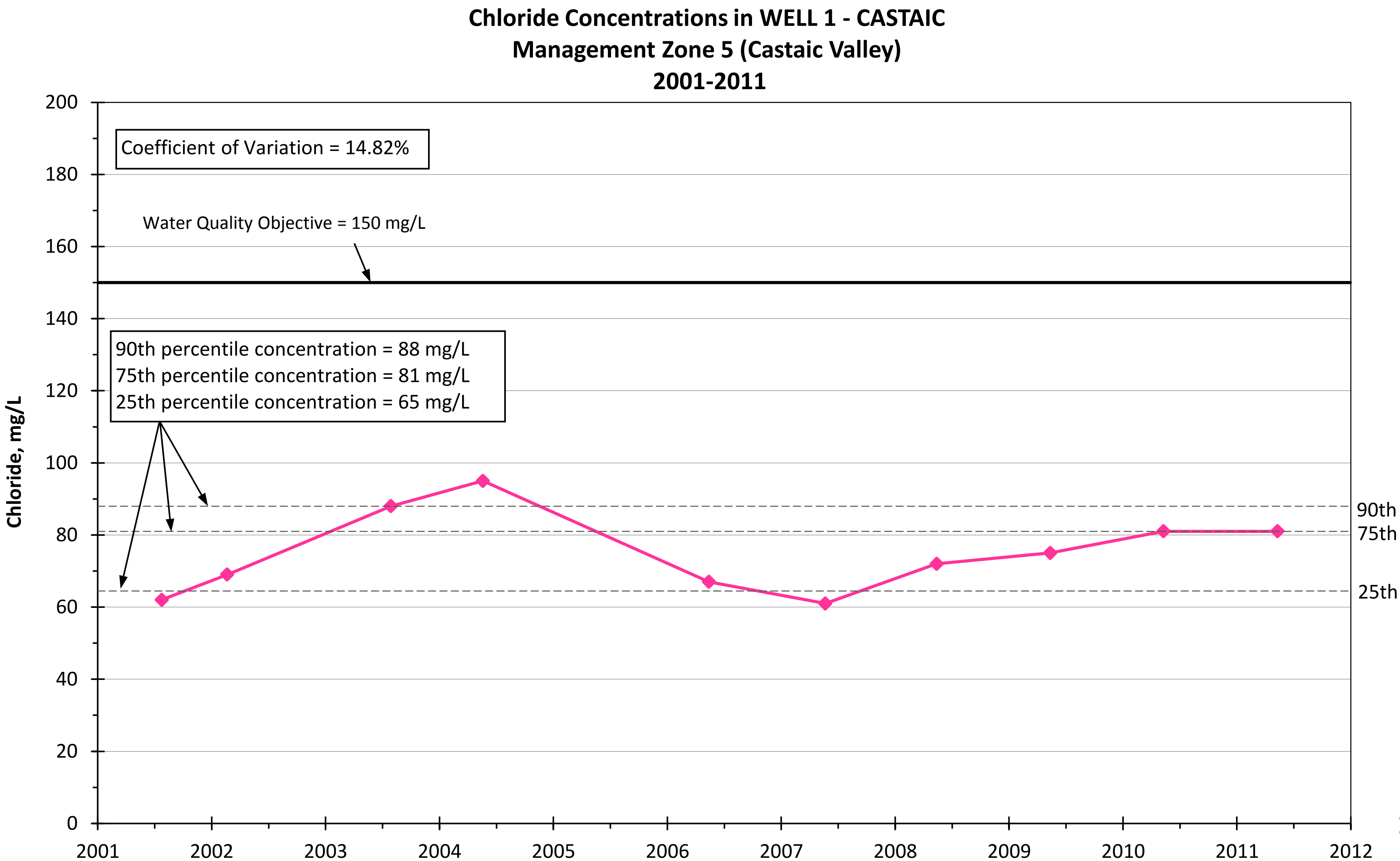

Chloride Concentrations in WELL 7 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 7.63%
Water Quality Objective = 150 mg/L
90th percentile concentration = 84 mg/L
75th percentile concentration = 84 mg/L
25th percentile concentration = 71 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th


Chloride Concentrations in WELL 2 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 12.64%
Water Quality Objective = 150 mg/L
90th percentile concentration = 82 mg/L
75th percentile concentration = 77 mg/L
25th percentile concentration = 65 mg/L
Chloride, mg/L
200
180
160
140
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

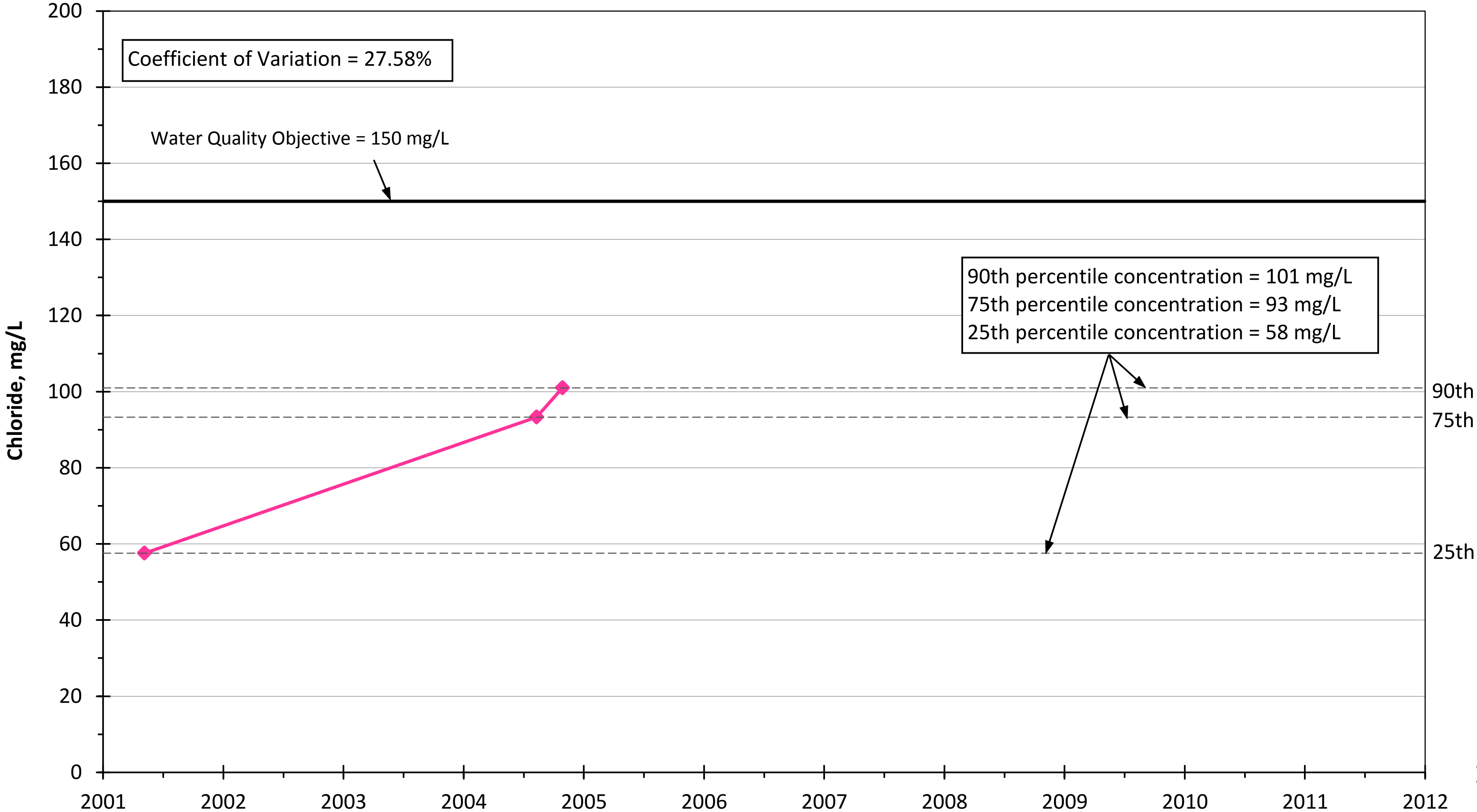

Chloride Concentrations in WELL 4 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 19.81%
Water Quality Objective = 150 mg/L
90th percentile concentration = 98 mg/L
75th percentile concentration = 89 mg/L
25th percentile concentration = 61 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

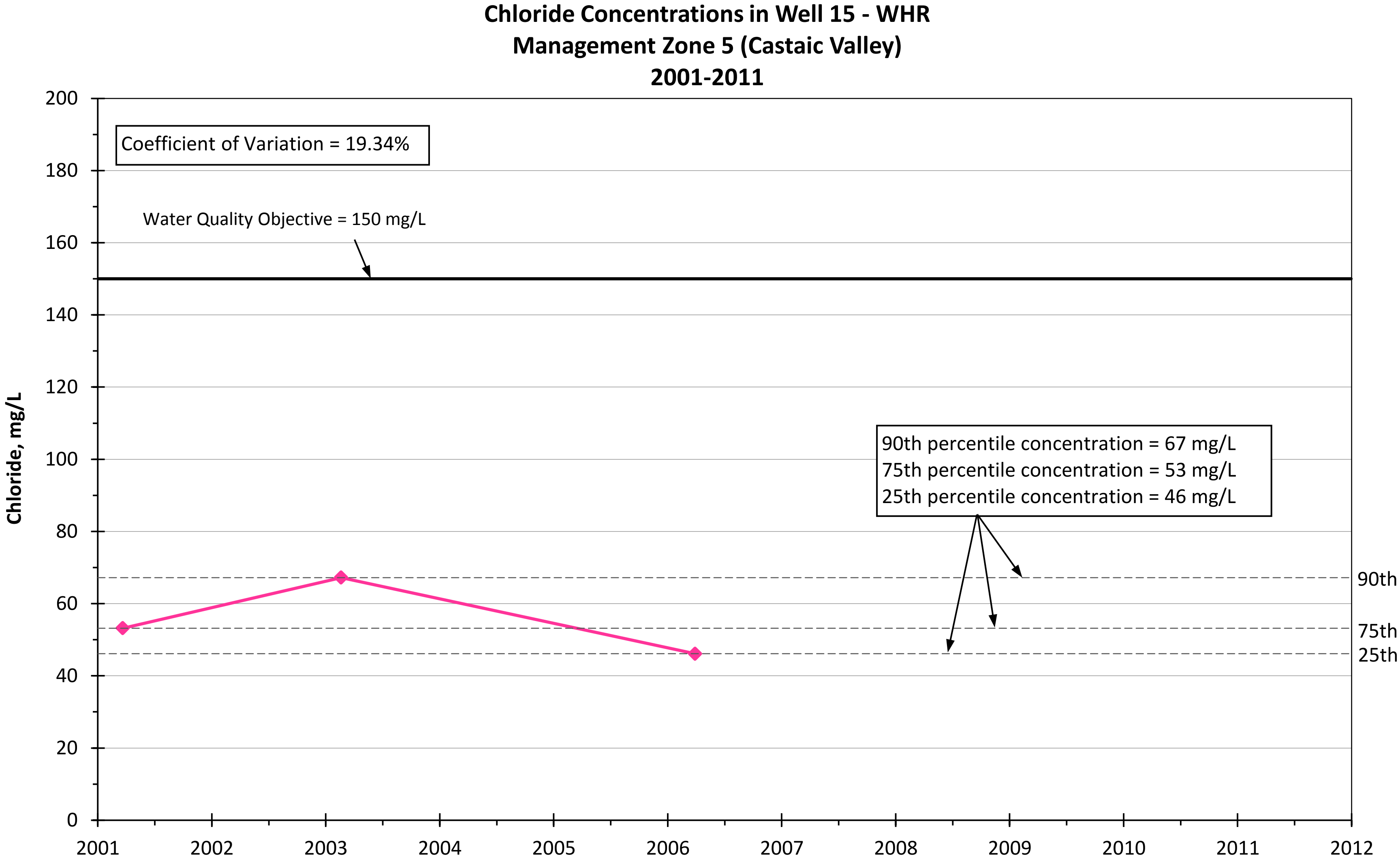
Appendix C

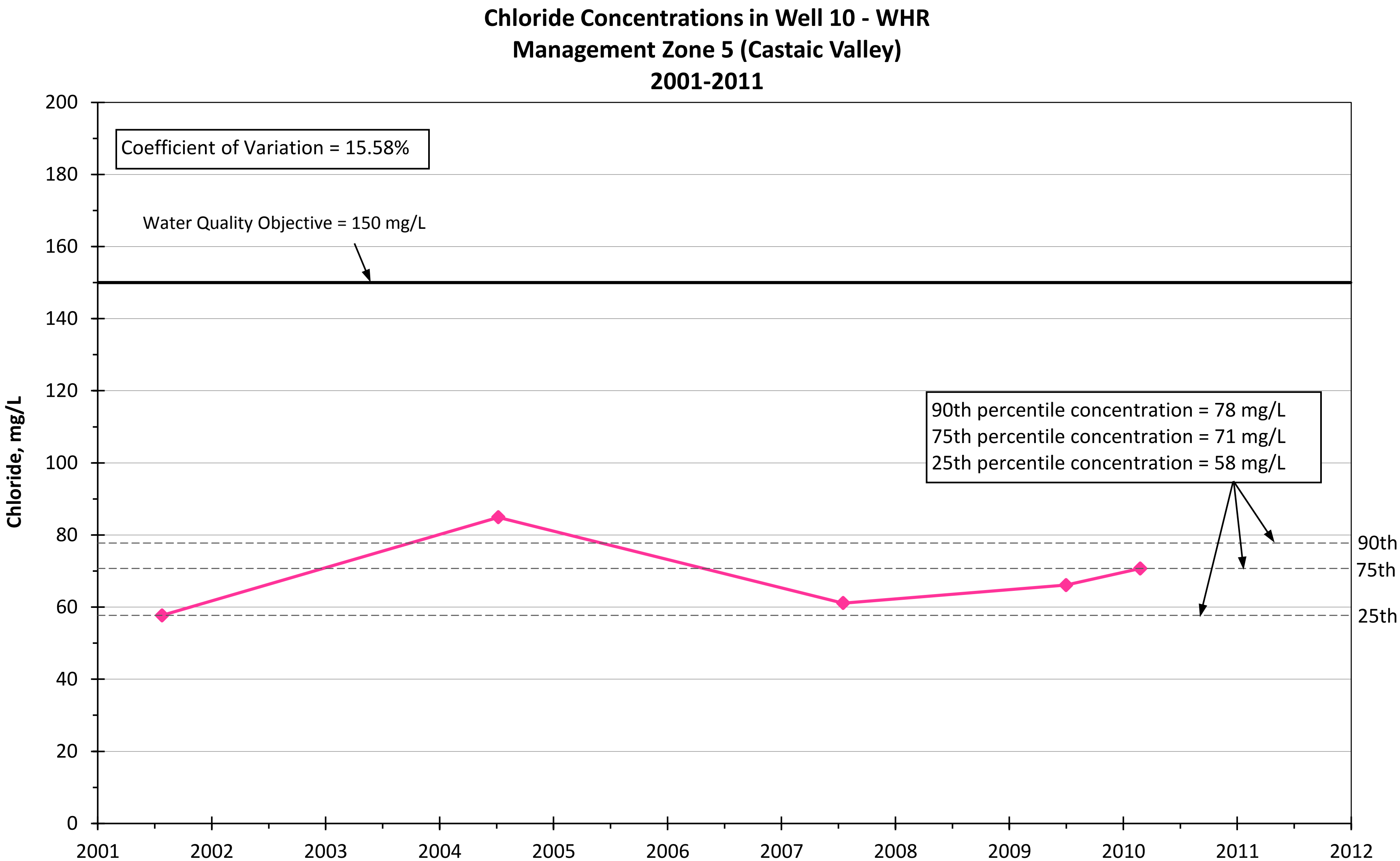

Chloride Concentrations in WELL 1 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 14.82%
Water Quality Objective = 150 mg/L
90th percentile concentration = 88 mg/L
75th percentile concentration = 81 mg/L
25th percentile concentration = 65 mg/L
Chloride, mg/L
200
180
160
140
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

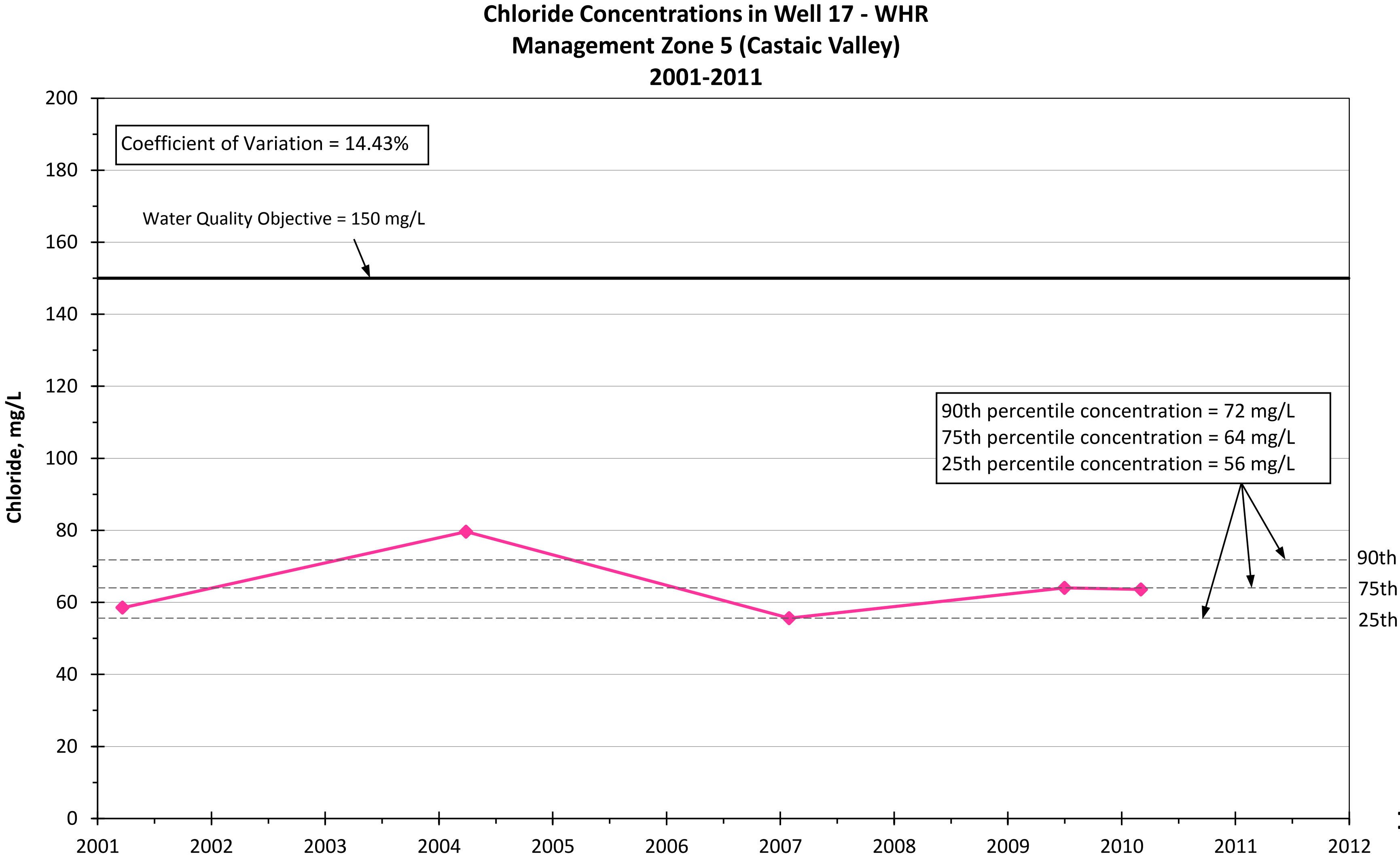
Chloride Concentrations in Well 02 - WHR
Management Zone 5 (Castaic Valley)
2001-2011

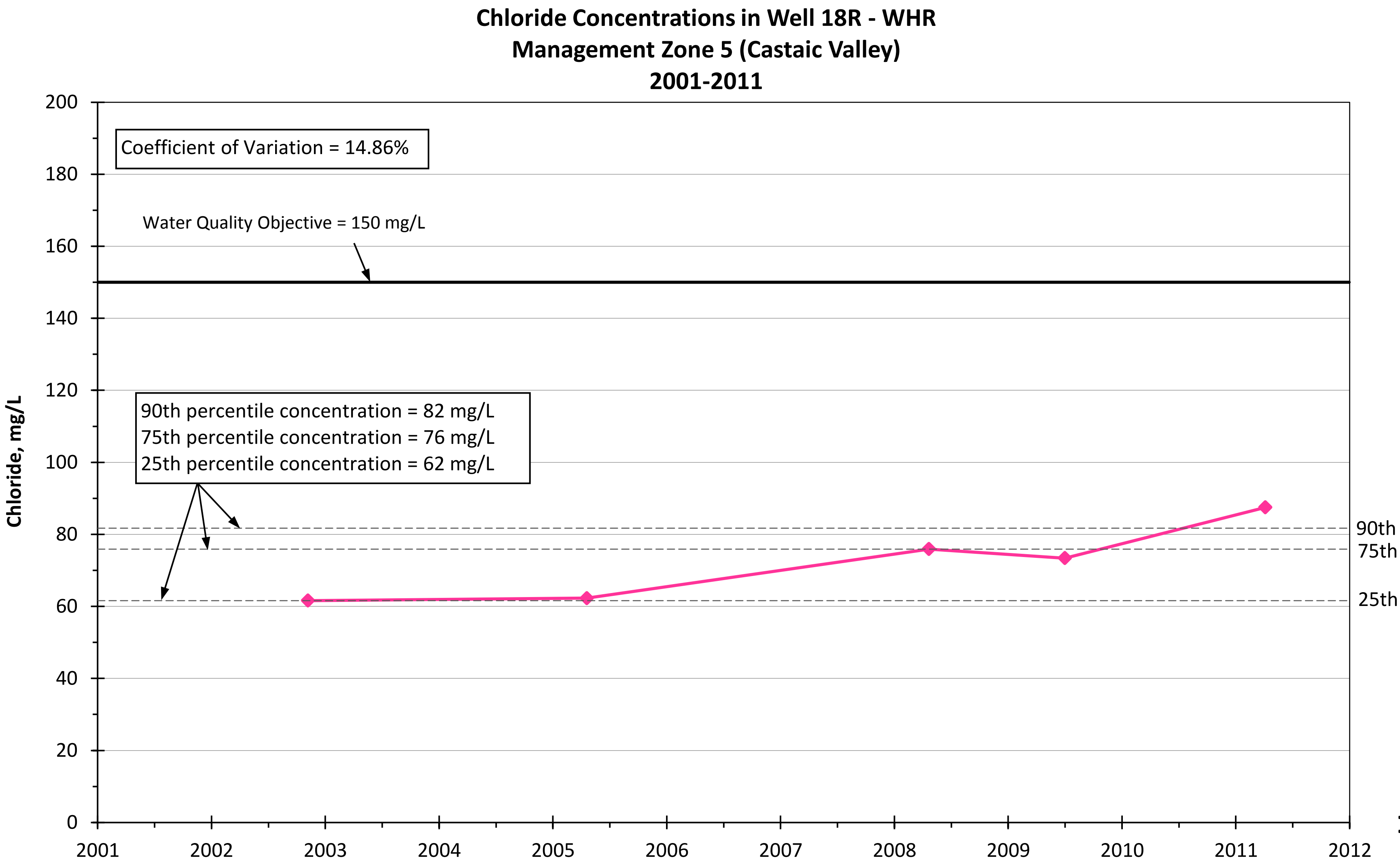



Chloride Concentrations in Well 15 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 19.34%
Water Quality Objective = 150 mg/L
90th percentile concentration = 67 mg/L
75th percentile concentration = 53 mg/L
25th percentile concentration = 46 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

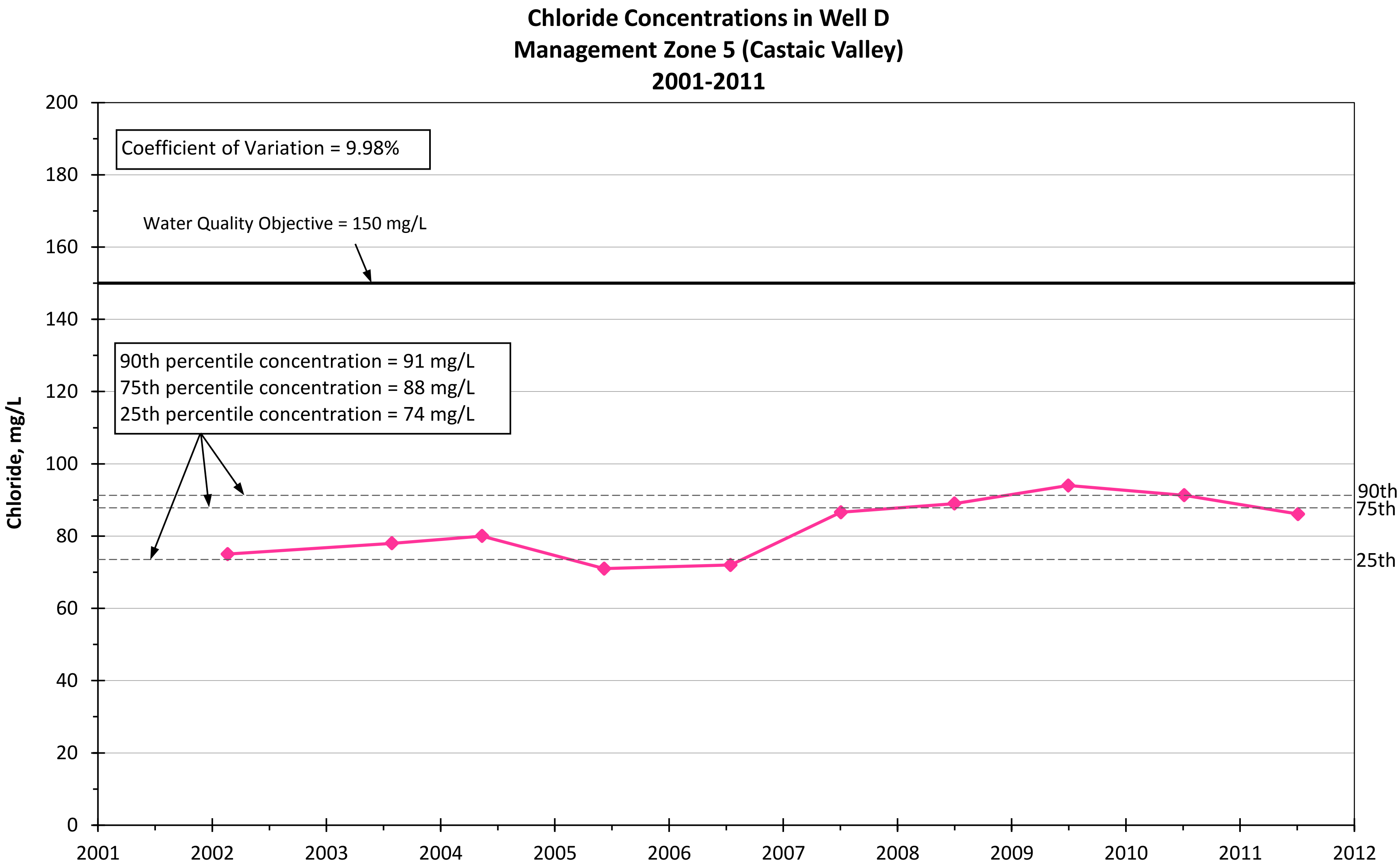

Chloride Concentrations in Well 10 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 15.58%
Water Quality Objective = 150 mg/L
90th percentile concentration = 78 mg/L
75th percentile concentration = 71 mg/L
25th percentile concentration = 58 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

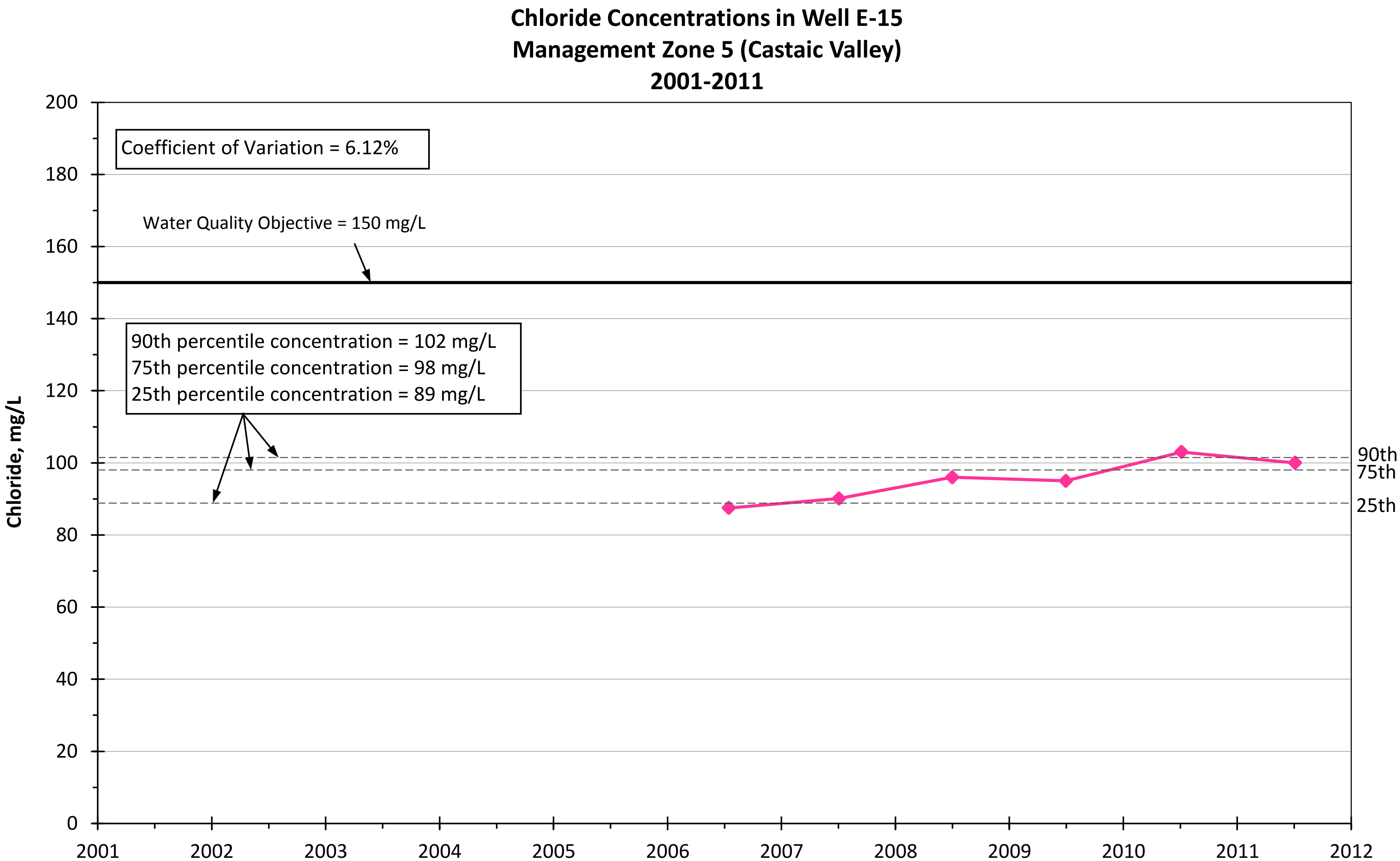

Chloride Concentrations in Well 17 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 14.43%
Water Quality Objective = 150 mg/L
90th percentile concentration = 72 mg/L
75th percentile concentration = 64 mg/L
25th percentile concentration = 56 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Chloride Concentrations in Well 18R - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 14.86%
Water Quality Objective = 150 mg/L
90th percentile concentration = 82 mg/L
75th percentile concentration = 76 mg/L
25th percentile concentration = 62 mg/L
Chloride, mg/L
200
180
160
140
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

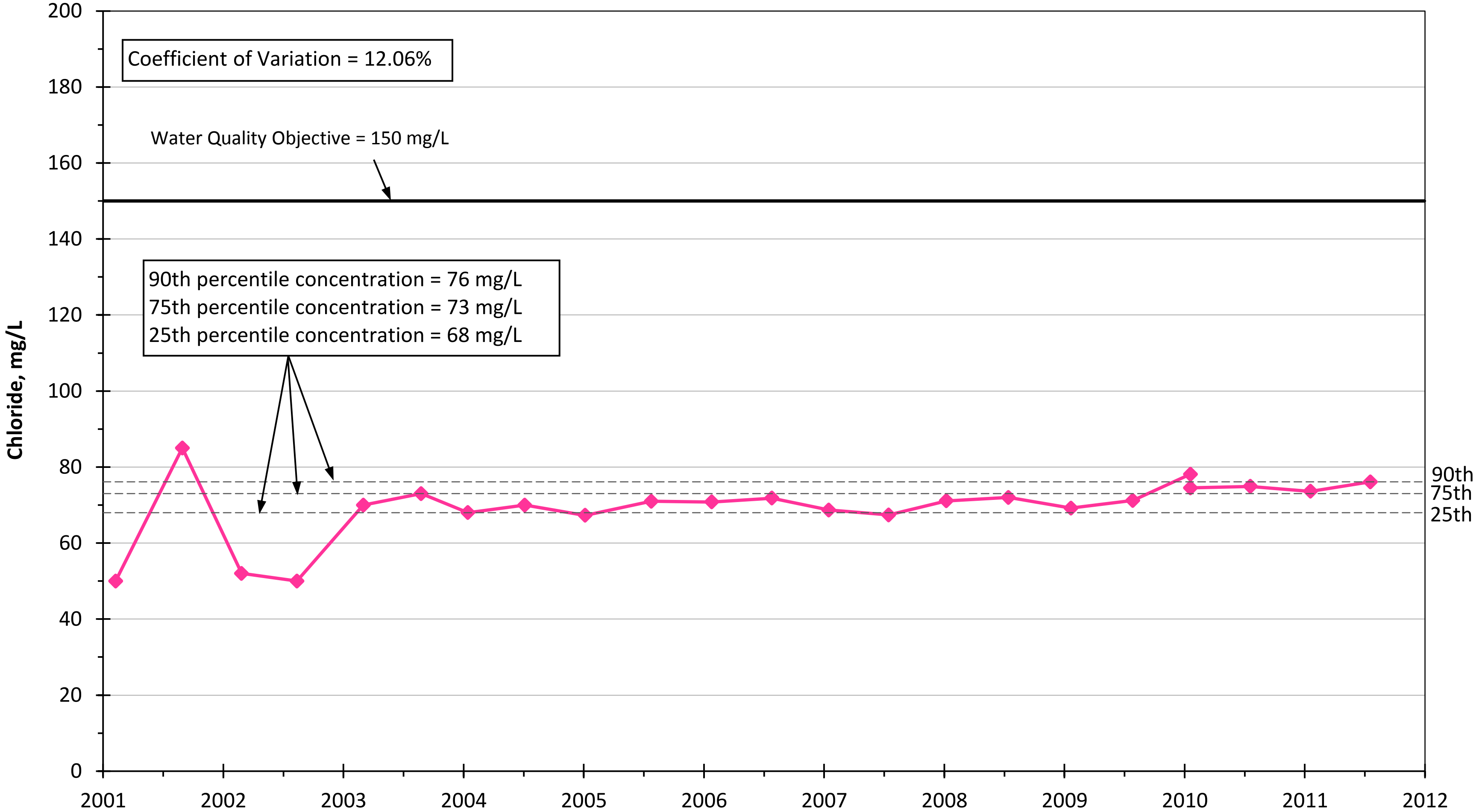
Appendix C


Chloride Concentrations in Well D
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 9.98%
Water Quality Objective = 150 mg/L
90th percentile concentration = 91 mg/L
75th percentile concentration = 88 mg/L
25th percentile concentration = 74 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

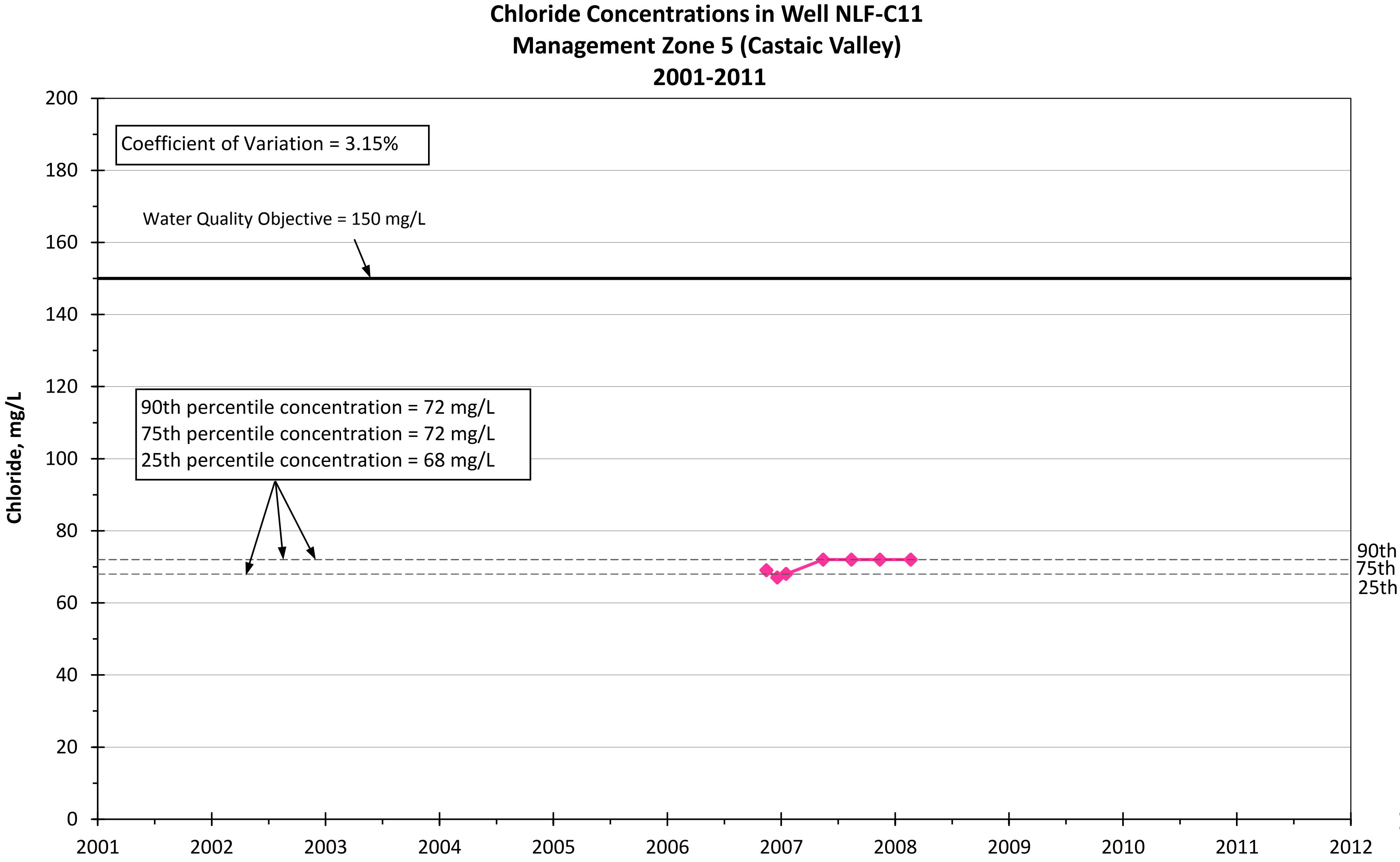
Appendix C

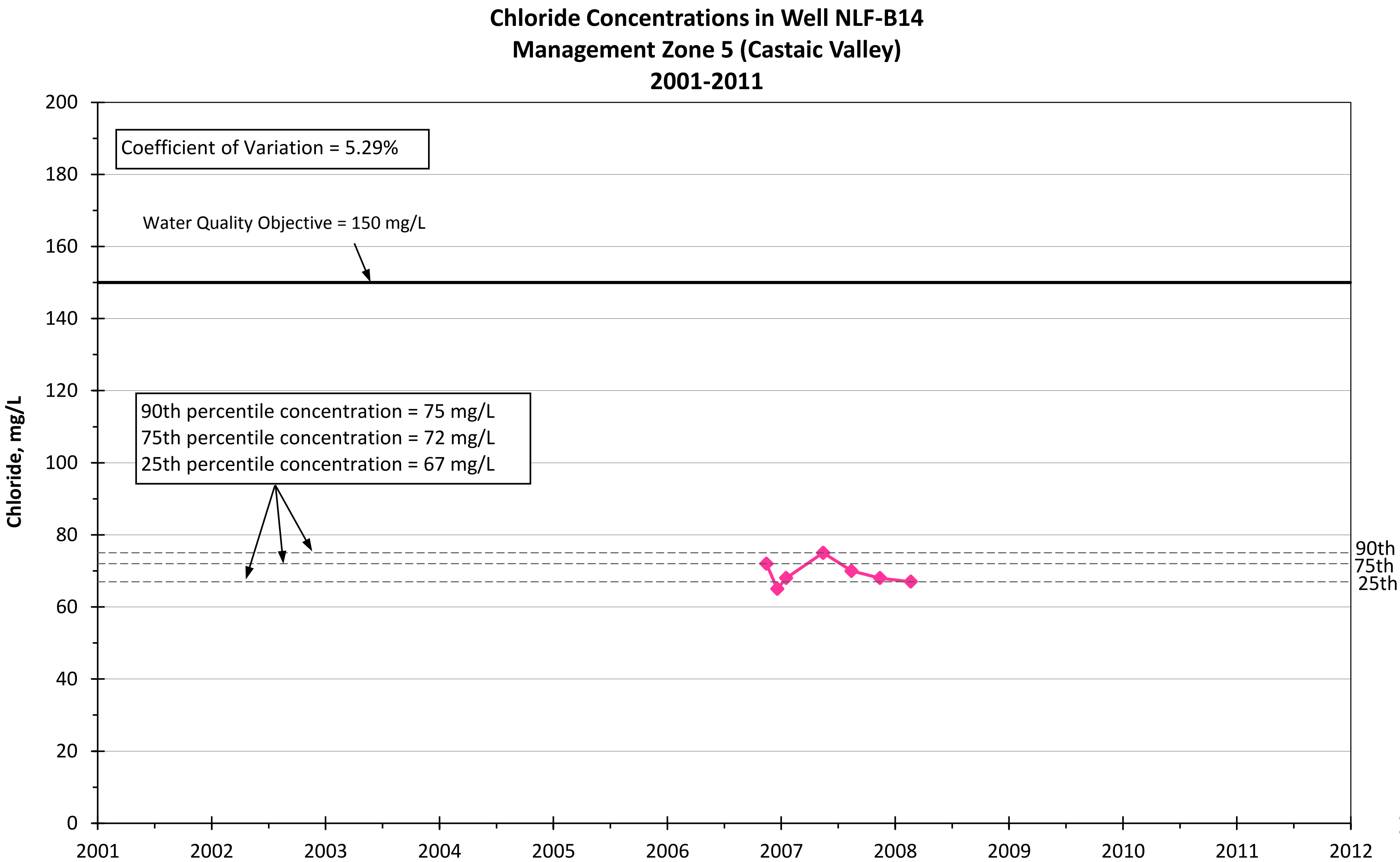

Chloride Concentrations in Well E-15
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 6.12%
Water Quality Objective = 150 mg/L
90th percentile concentration = 102 mg/L
75th percentile concentration = 98 mg/L
25th percentile concentration = 89 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Chloride Concentrations in Well NLF - C5
Management Zone 5 (Castaic Valley)
2001-2011

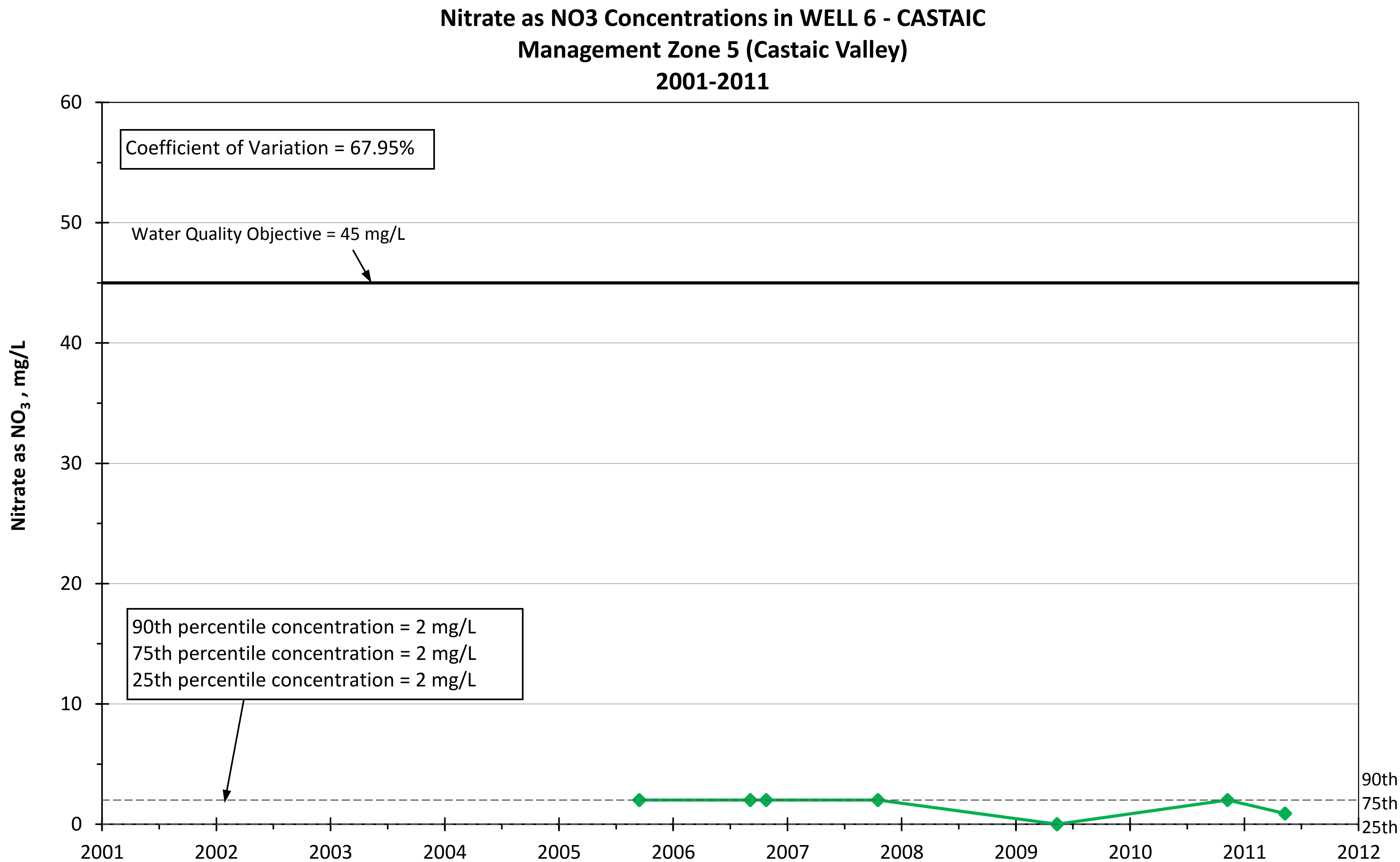


Appendix C

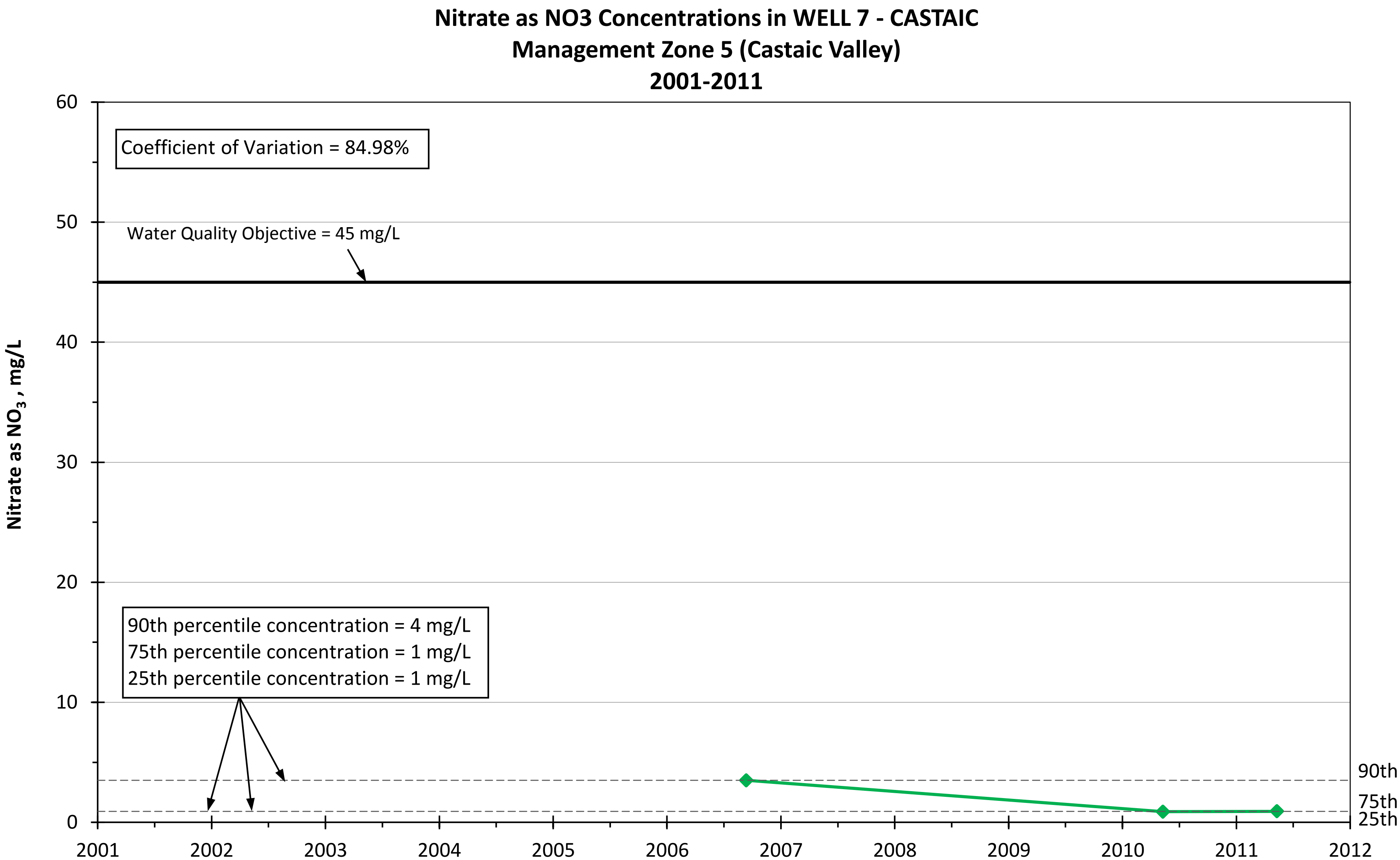

Chloride Concentrations in Well NLF-C11
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 3.15%
Water Quality Objective = 150 mg/L
90th percentile concentration = 72 mg/L
75th percentile concentration = 72 mg/L
25th percentile concentration = 68 mg/L
Chloride, mg/L
200
180
160
140
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th


Chloride Concentrations in Well NLF-B14
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 5.29%
Water Quality Objective = 150 mg/L
90th percentile concentration = 75 mg/L
75th percentile concentration = 72 mg/L
25th percentile concentration = 67 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

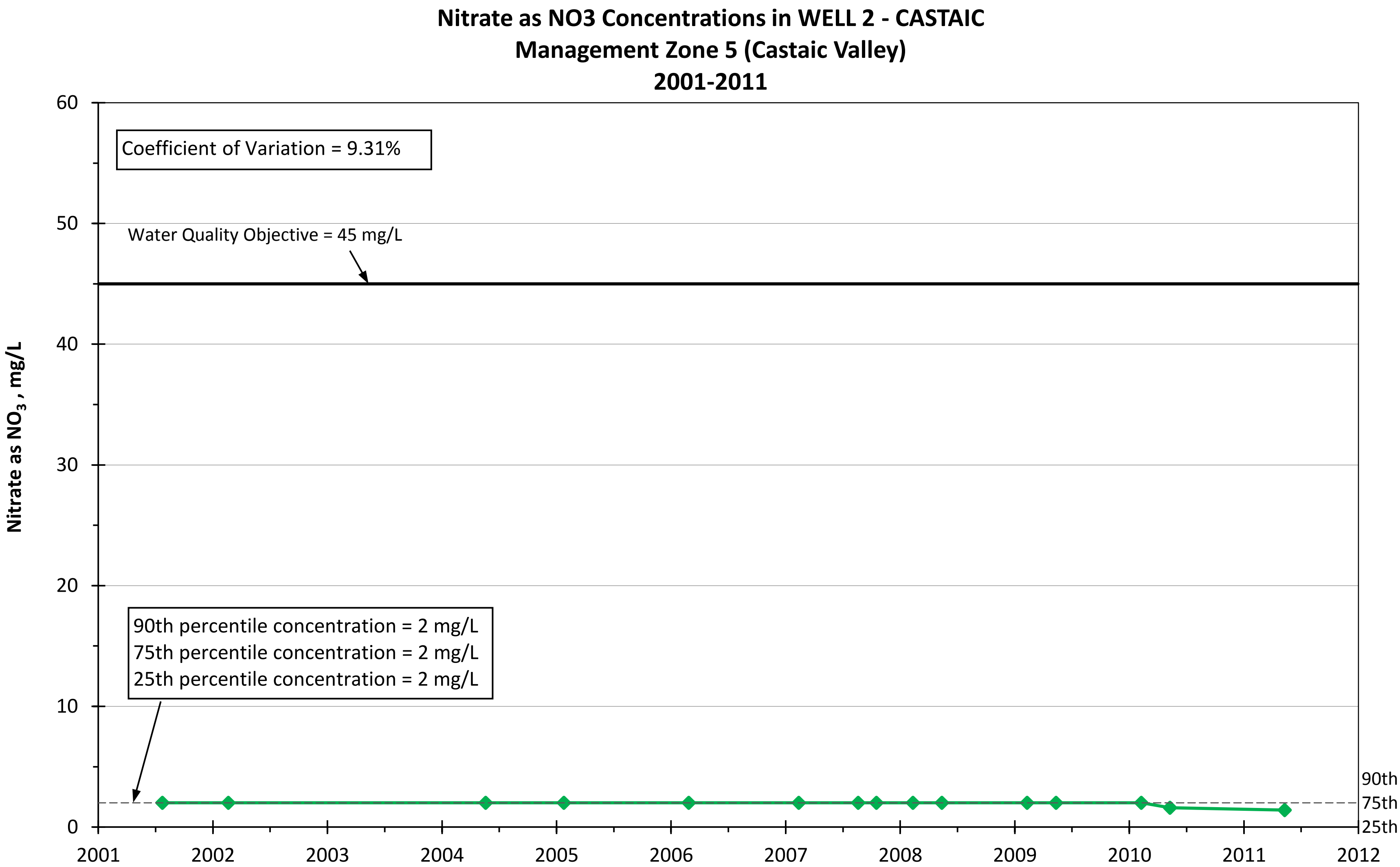
Appendix C


Nitrate as NO3 Concentrations in WELL 6 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 67.95%
Water Quality Objective = 45 mg/L
90th percentile concentration = 2 mg/L
75th percentile concentration = 2 mg/L
25th percentile concentration = 2 mg/L
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

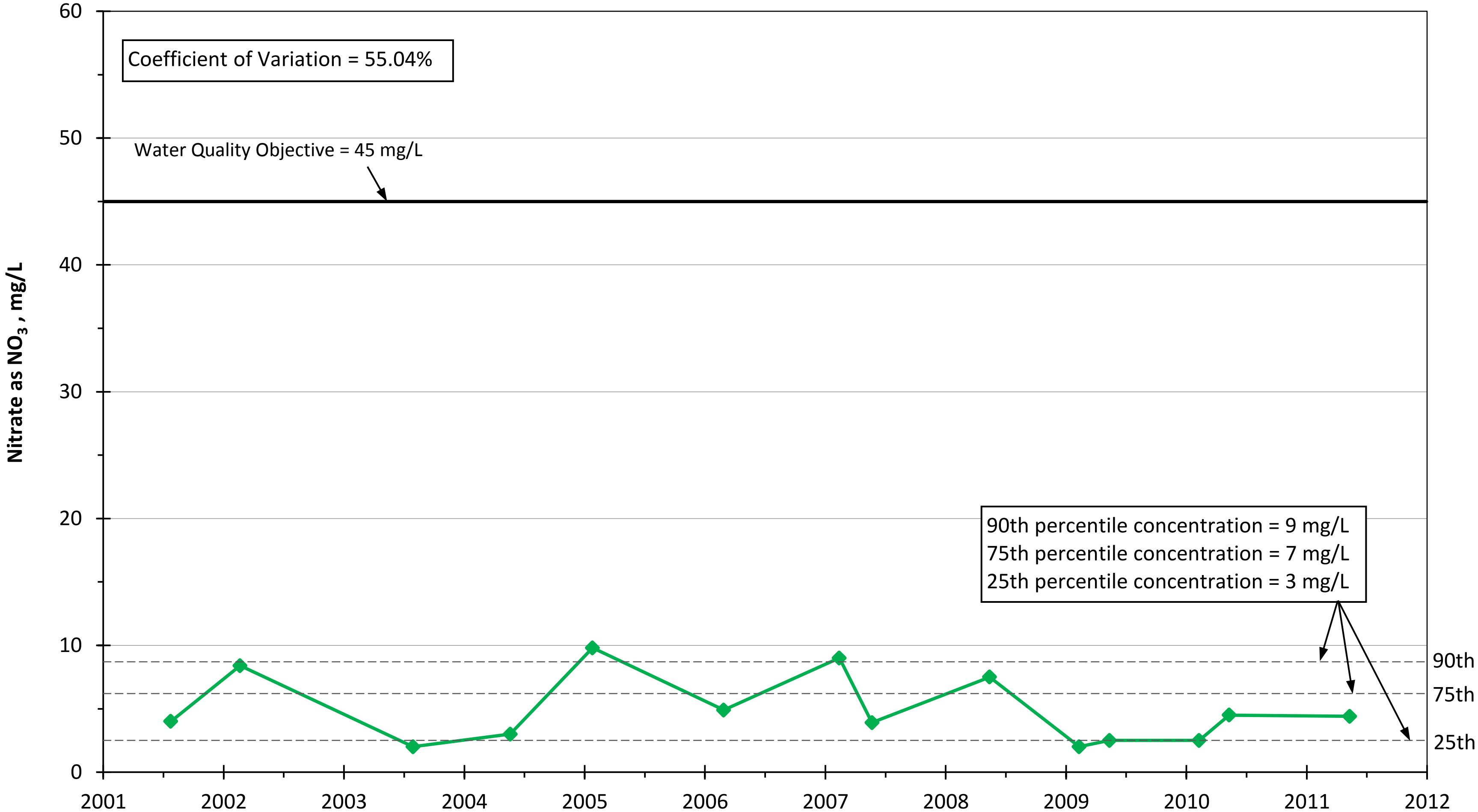
Appendix C


Nitrate as NO3 Concentrations in WELL 7 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 84.98%
Water Quality Objective = 45 mg/L
90th percentile concentration = 4 mg/L
75th percentile concentration = 1 mg/L
25th percentile concentration = 1 mg/L
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C


Nitrate as NO3 Concentrations in WELL 2 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 9.31%
Water Quality Objective = 45 mg/L
90th percentile concentration = 2 mg/L
75th percentile concentration = 2 mg/L
25th percentile concentration = 2 mg/L
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Nitrate as NO3 Concentrations in WELL 4 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011



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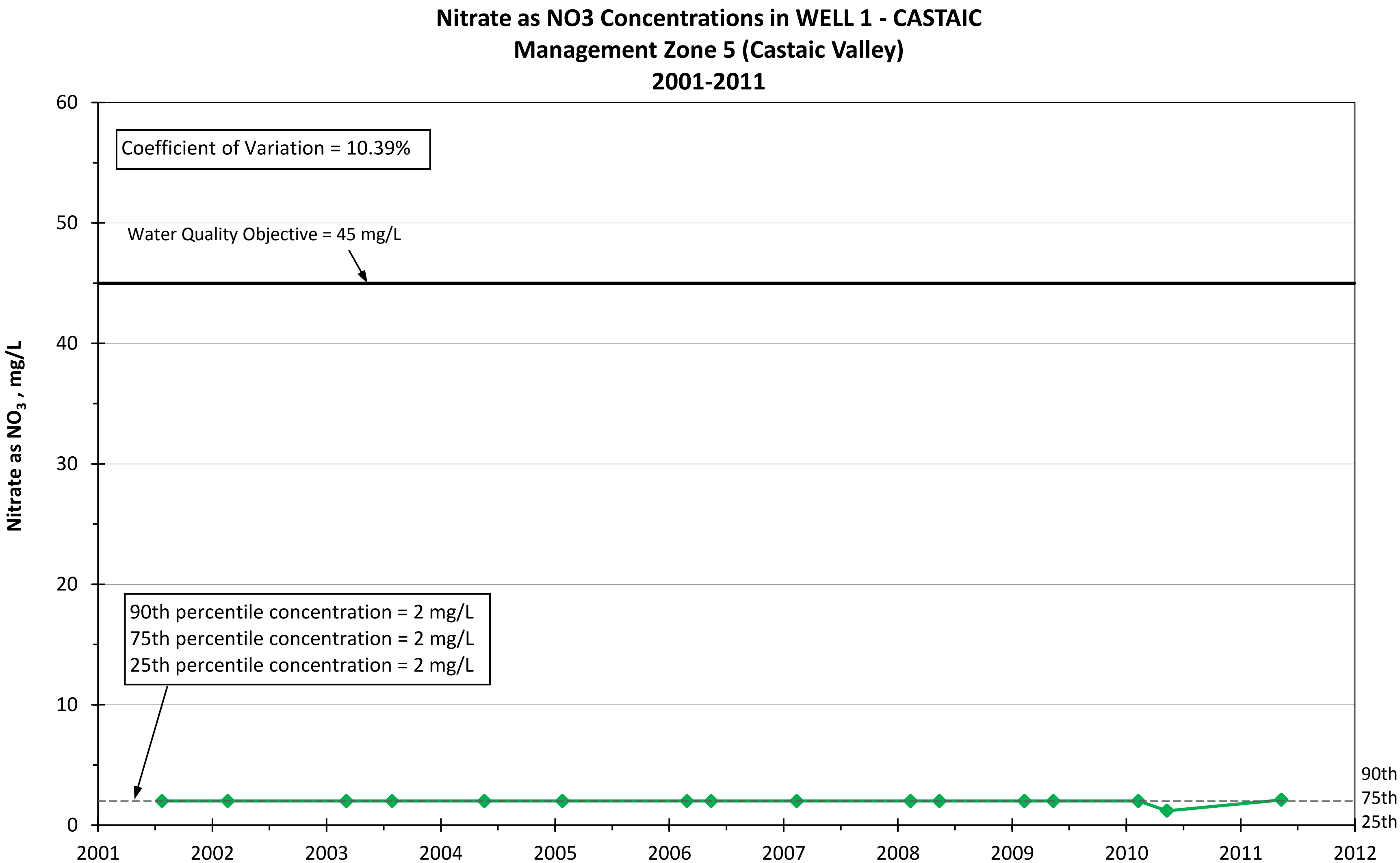
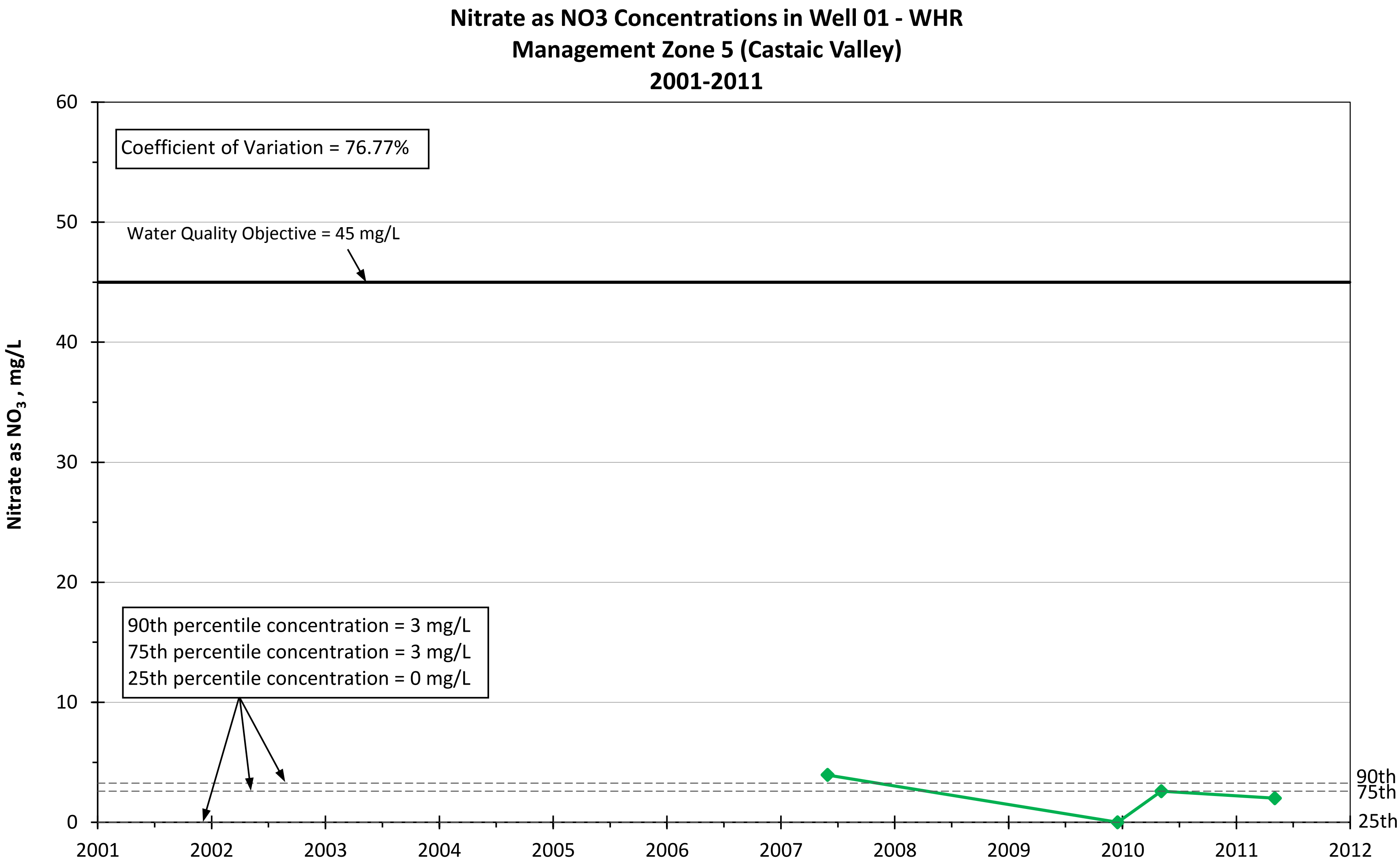
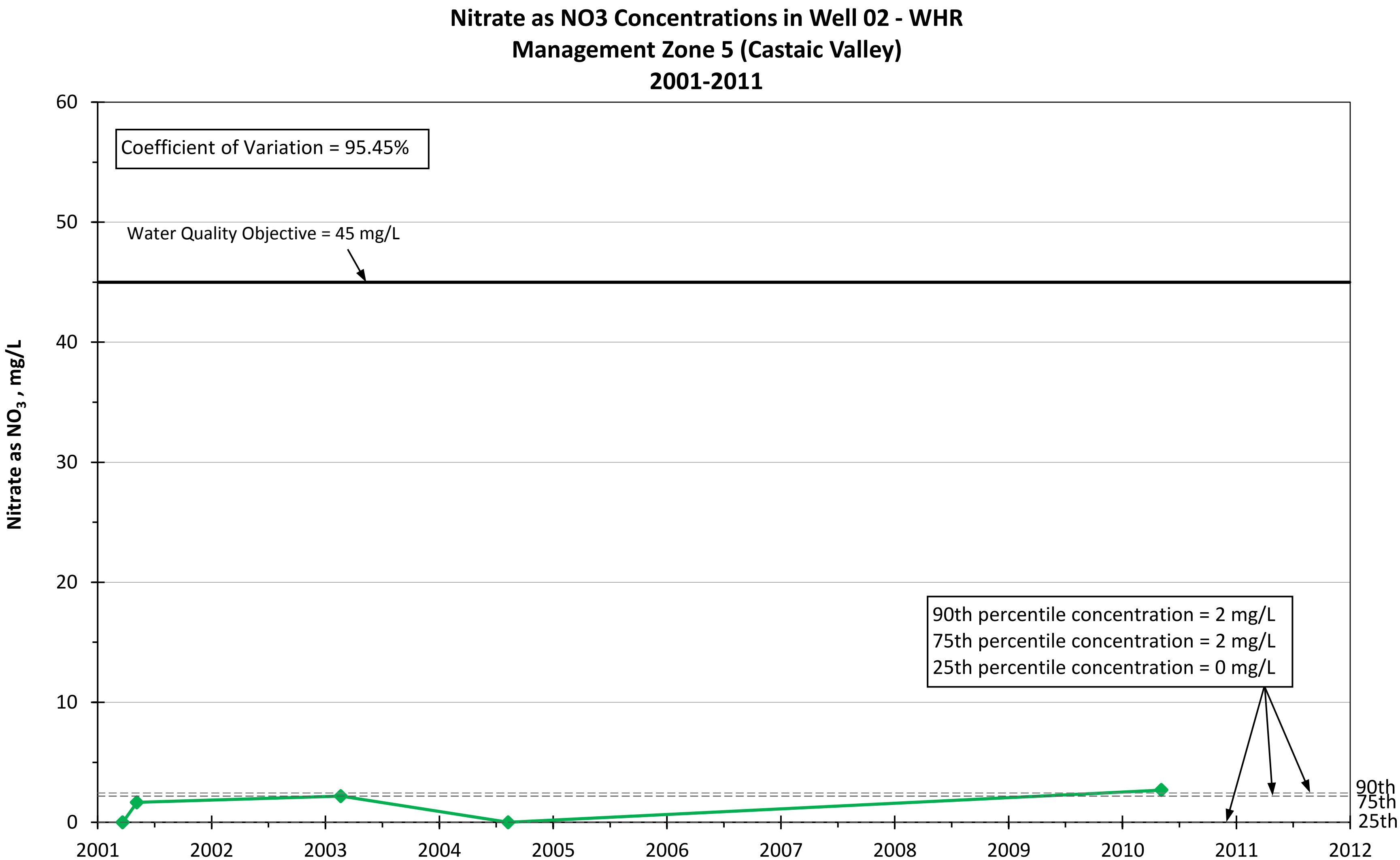

Nitrate as NO3 Concentrations in WELL 1 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 10.39%
Water Quality Objective = 45 mg/L
90th percentile concentration = 2 mg/L
75th percentile concentration = 2 mg/L
25th percentile concentration = 2 mg/L
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

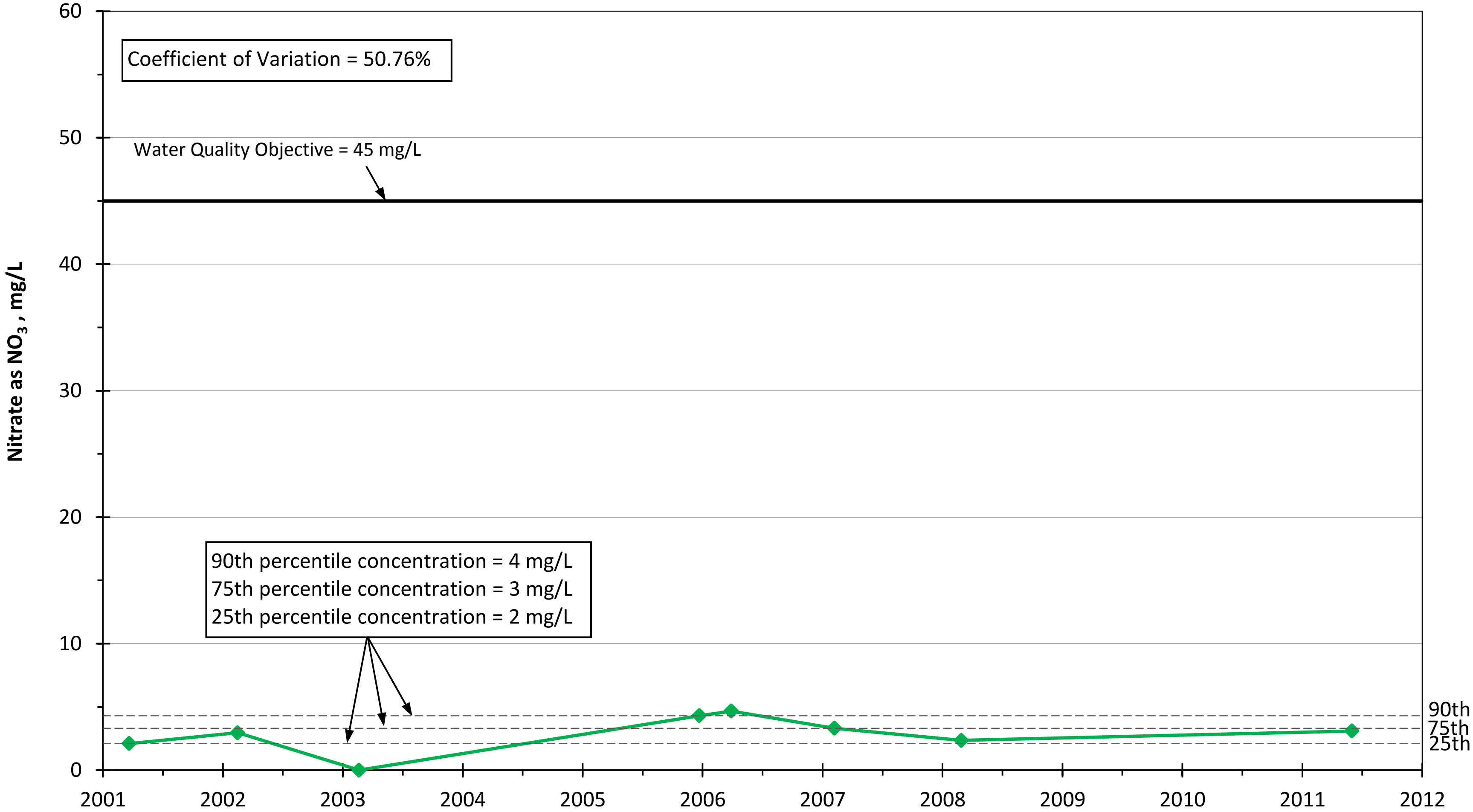

Nitrate as NO3 Concentrations in Well 01 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 76.77%
Water Quality Objective = 45 mg/L
90th percentile concentration = 3 mg/L
75th percentile concentration = 3 mg/L
25th percentile concentration = 0 mg/L
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C


Nitrate as NO3 Concentrations in Well 02 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 95.45%
Water Quality Objective = 45 mg/L
90th percentile concentration = 2 mg/L
75th percentile concentration = 2 mg/L
25th percentile concentration = 0 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

Nitrate as NO3 Concentrations in Well 15 - WHR
Management Zone 5 (Castaic Valley)
2001-2011



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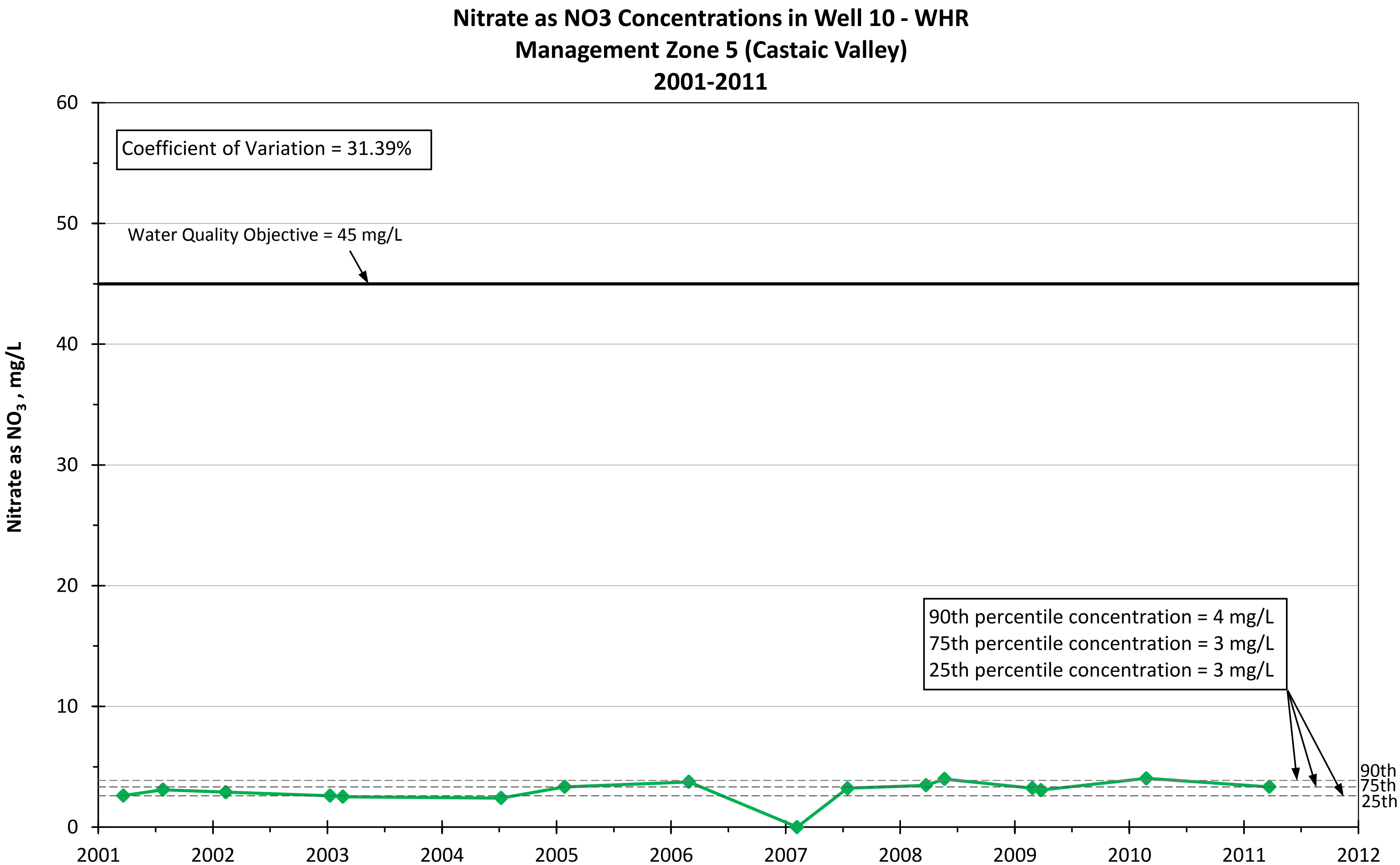
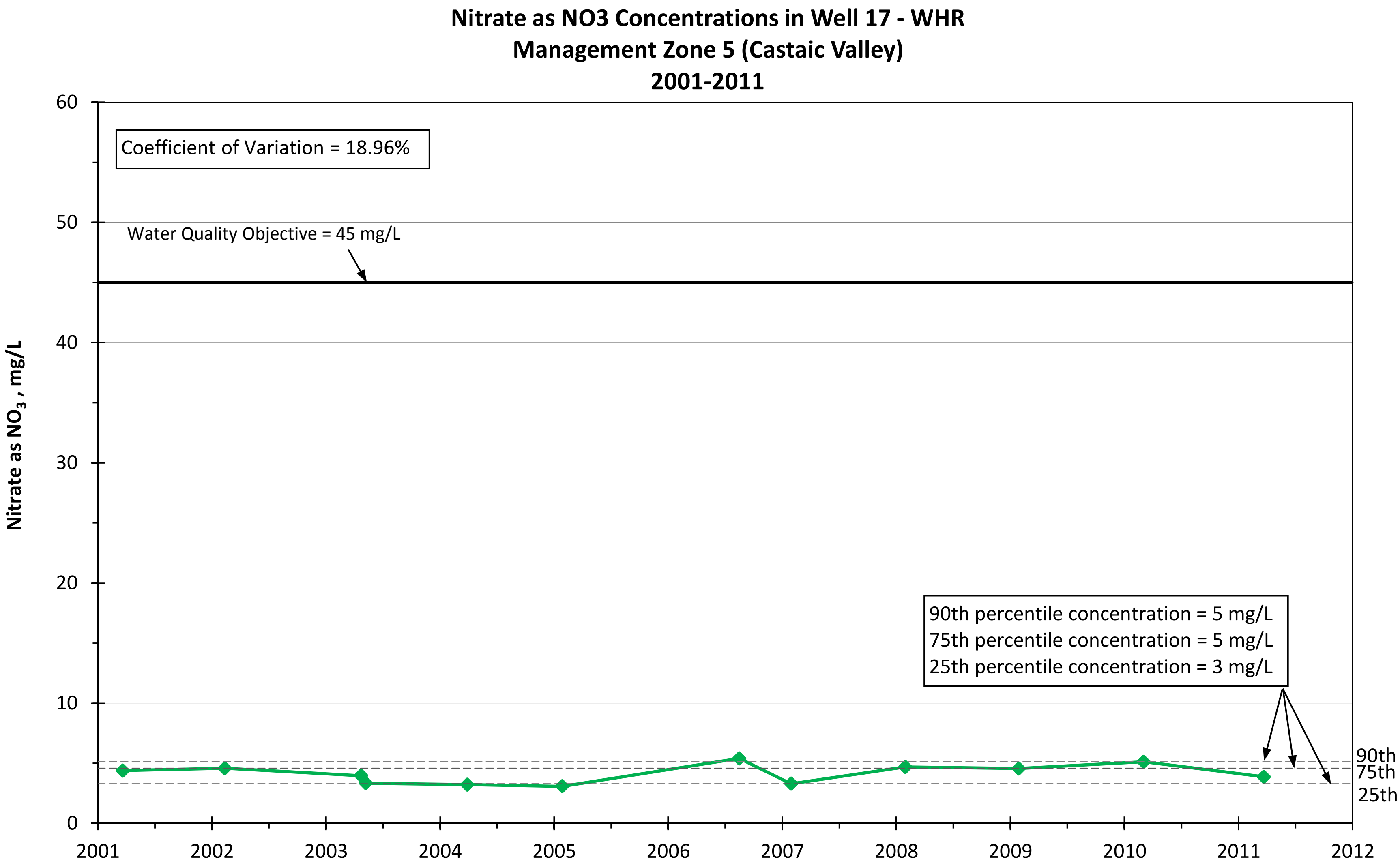
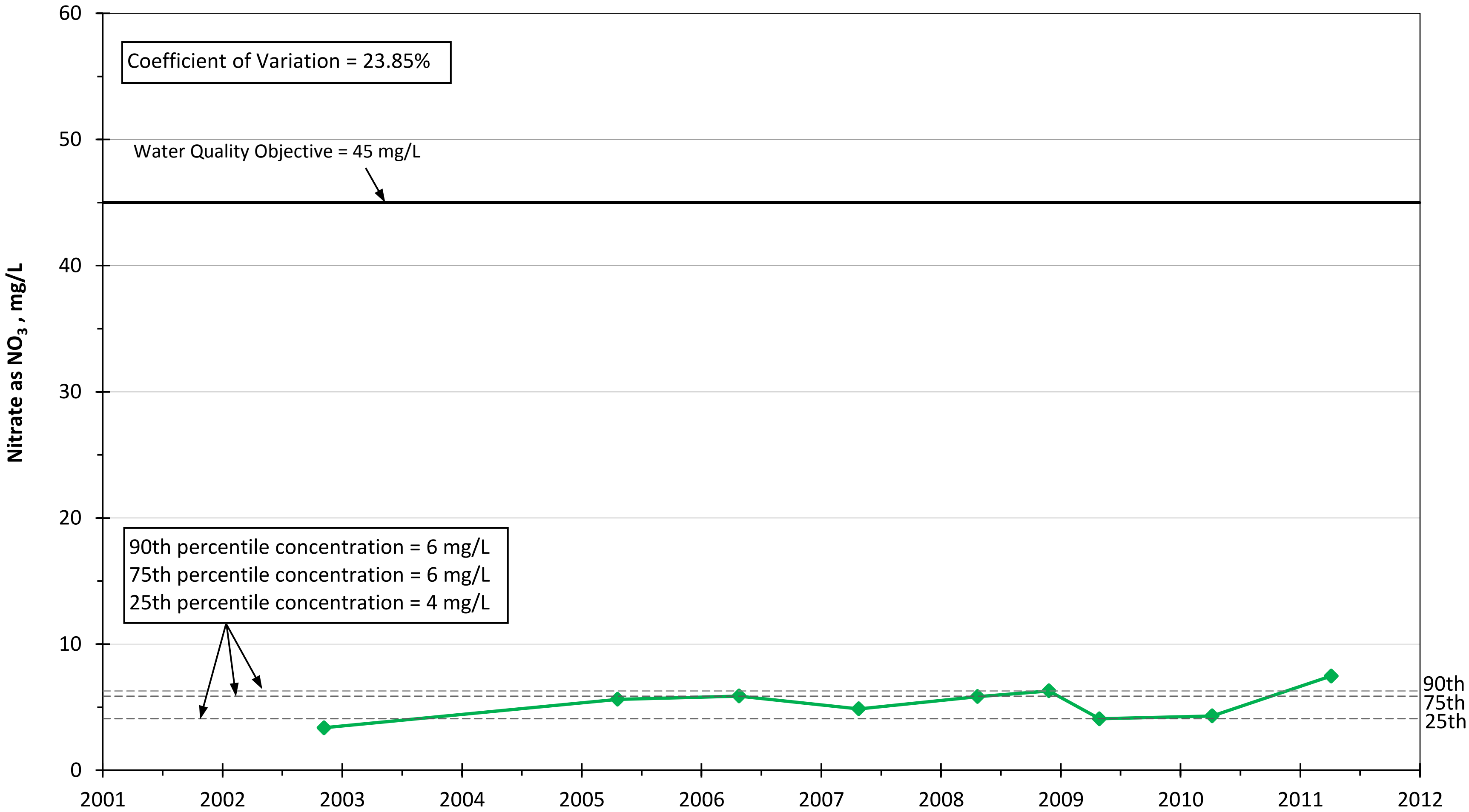

Nitrate as NO3 Concentrations in Well 10 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 31.39%
Water Quality Objective = 45 mg/L
90th percentile concentration = 4 mg/L
75th percentile concentration = 3 mg/L
25th percentile concentration = 3 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C


Nitrate as NO3 Concentrations in Well 17 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 18.96%
Water Quality Objective = 45 mg/L
90th percentile concentration = 5 mg/L
75th percentile concentration = 5 mg/L
25th percentile concentration = 3 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

Nitrate as NO3 Concentrations in Well 18R - WHR
Management Zone 5 (Castaic Valley)
2001-2011



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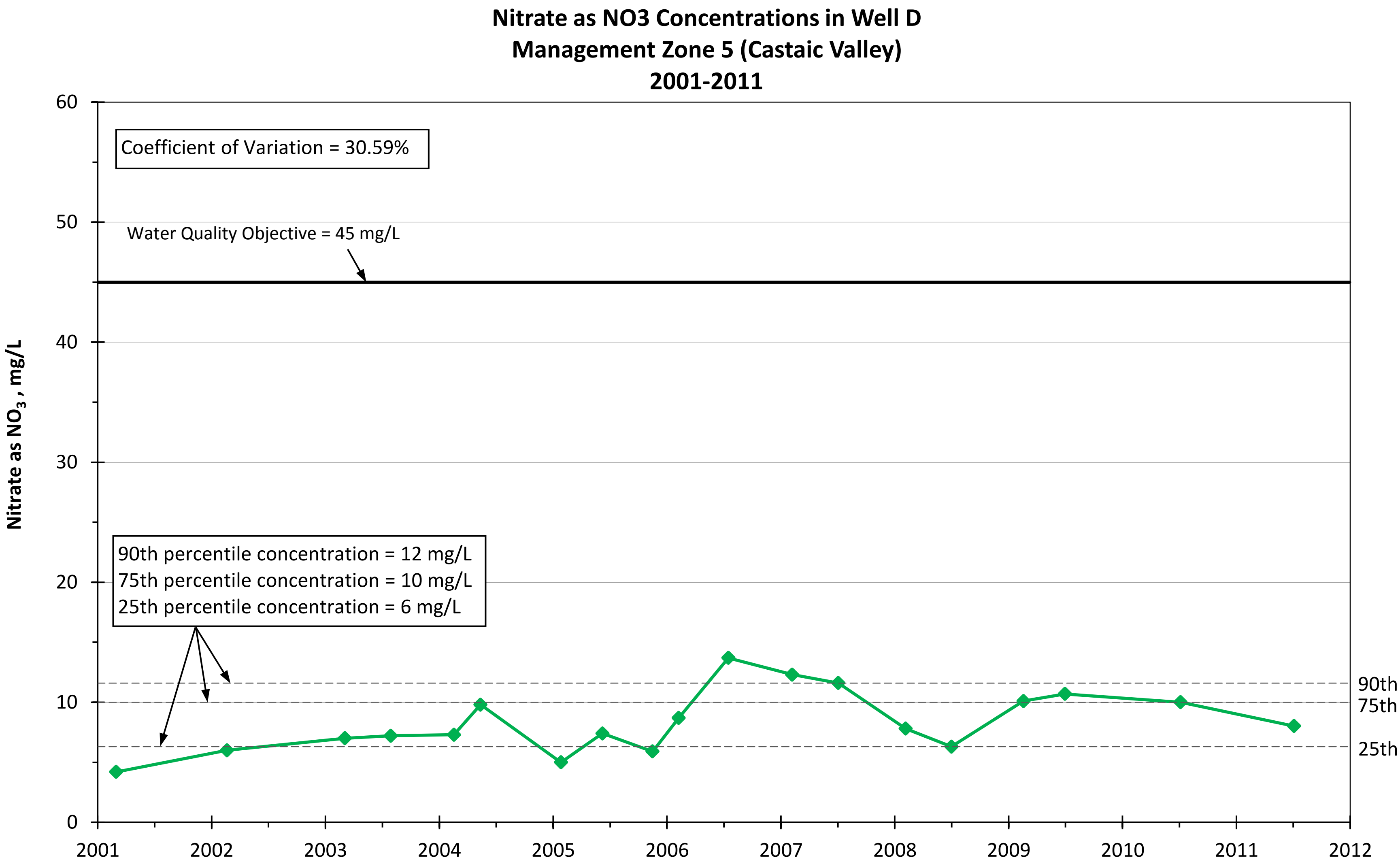
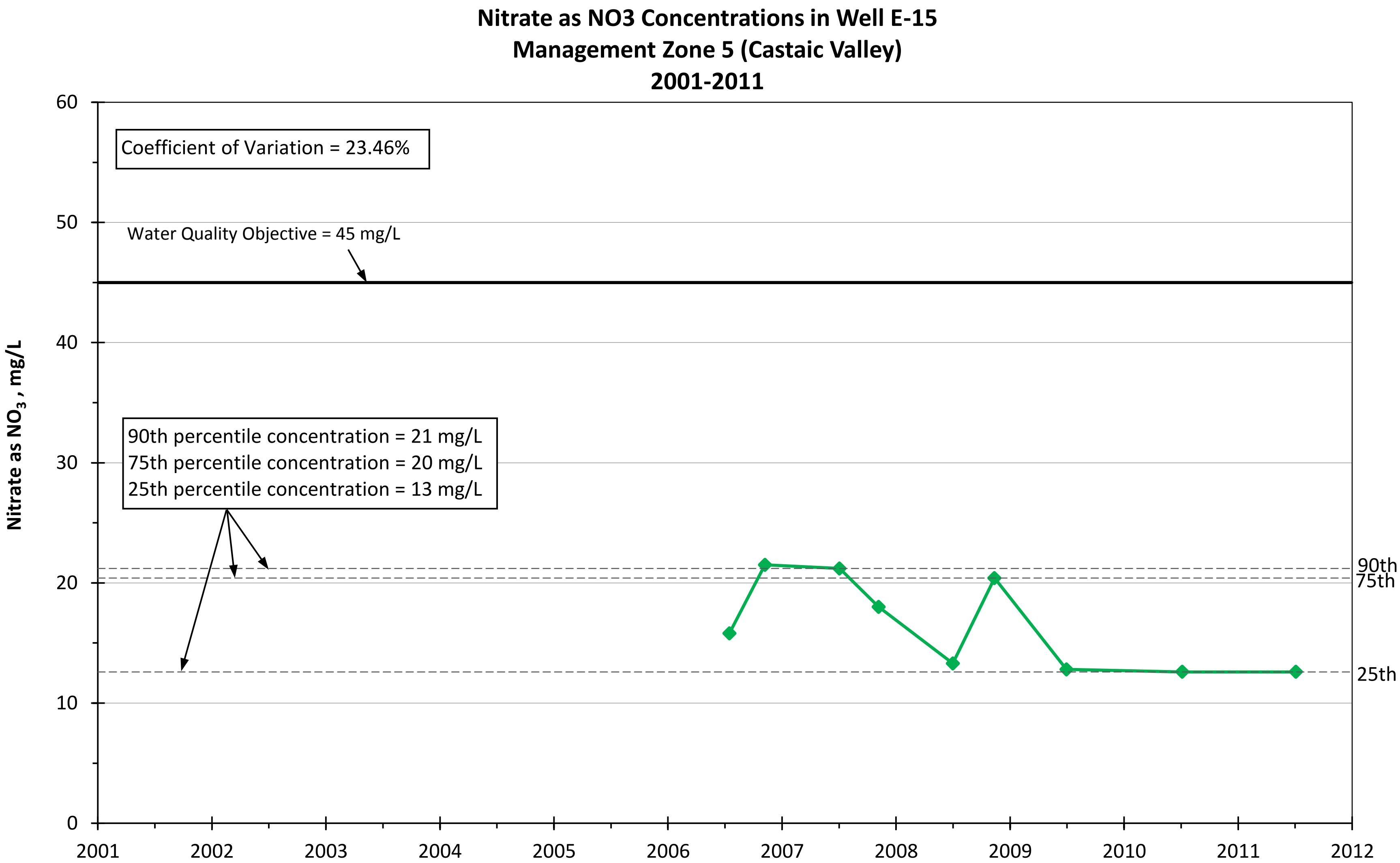
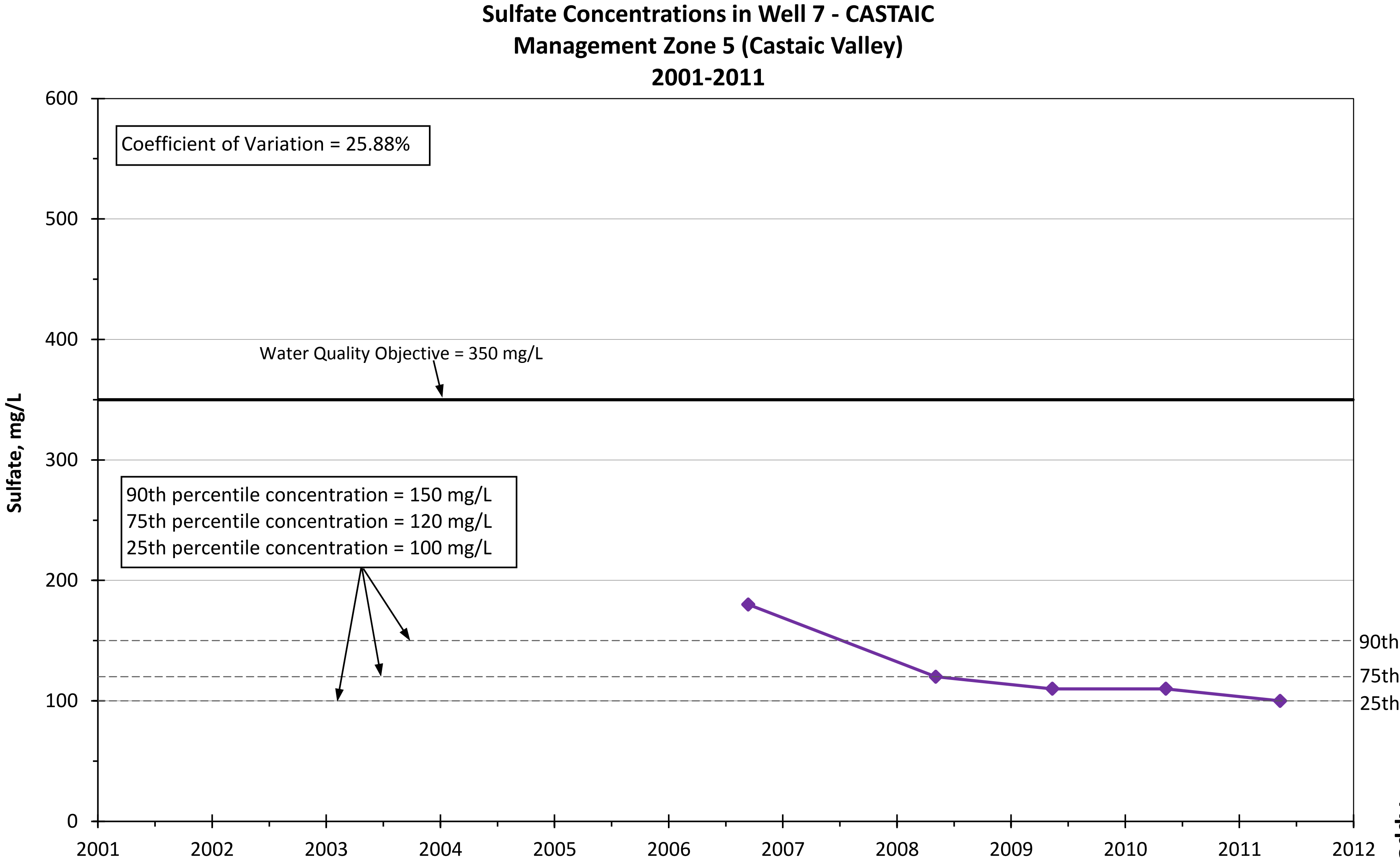

Nitrate as NO3 Concentrations in Well D
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 30.59%
Water Quality Objective = 45 mg/L
90th percentile concentration = 12 mg/L
75th percentile concentration = 10 mg/L
25th percentile concentration = 6 mg/L
Nitrate as NO_3 , mg/L
60
50
40
30
20
10
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

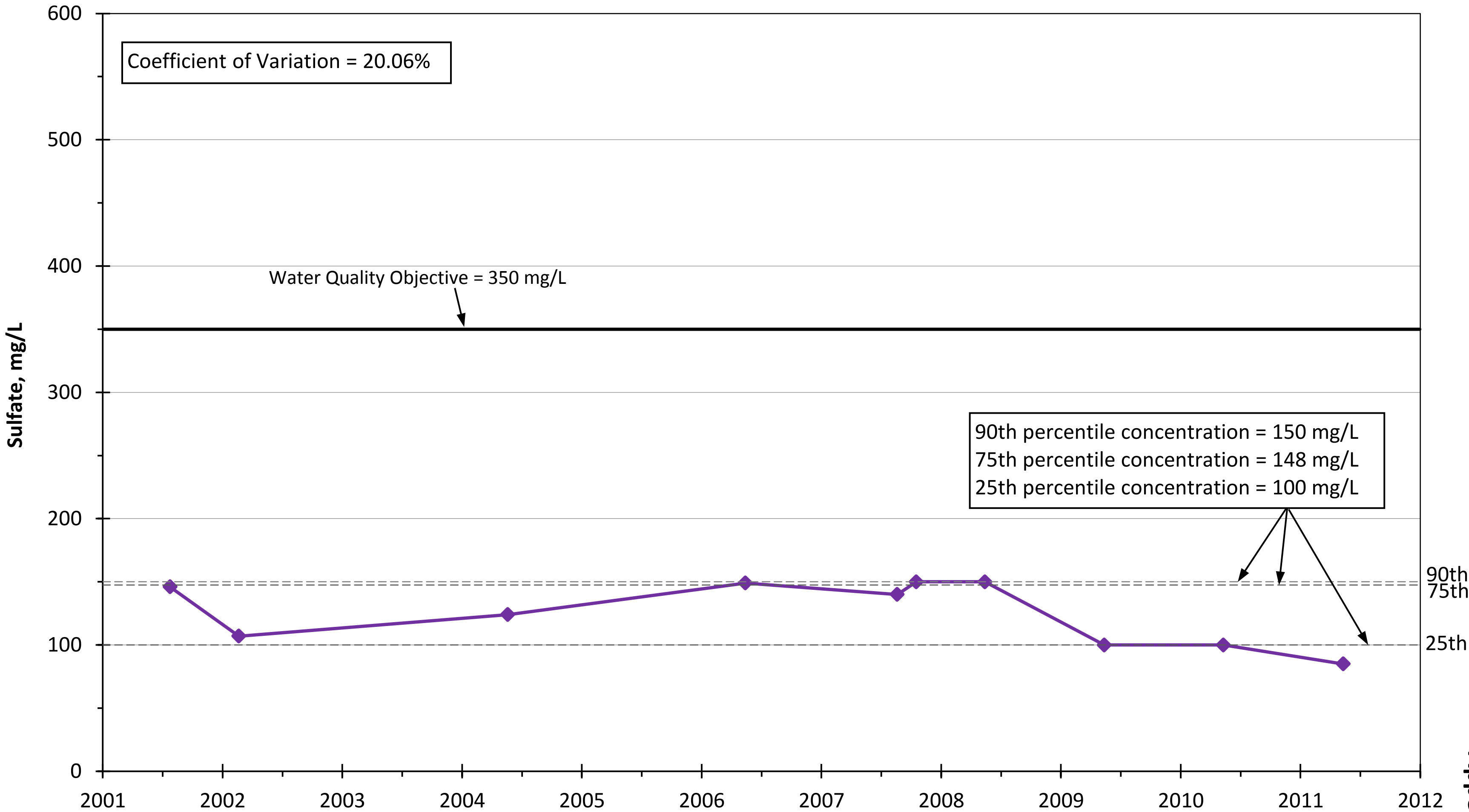
Appendix C


Nitrate as NO3 Concentrations in Well E-15
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 23.46%
Water Quality Objective = 45 mg/L
90th percentile concentration = 21 mg/L
75th percentile concentration = 20 mg/L
25th percentile concentration = 13 mg/L
Nitrate as NO_3 , mg/L
90th
75th
25th
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C


Sulfate Concentrations in Well 7 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 25.88%
Water Quality Objective = 350 mg/L
90th percentile concentration = 150 mg/L
75th percentile concentration = 120 mg/L
25th percentile concentration = 100 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Sulfate Concentrations in Well 2 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011



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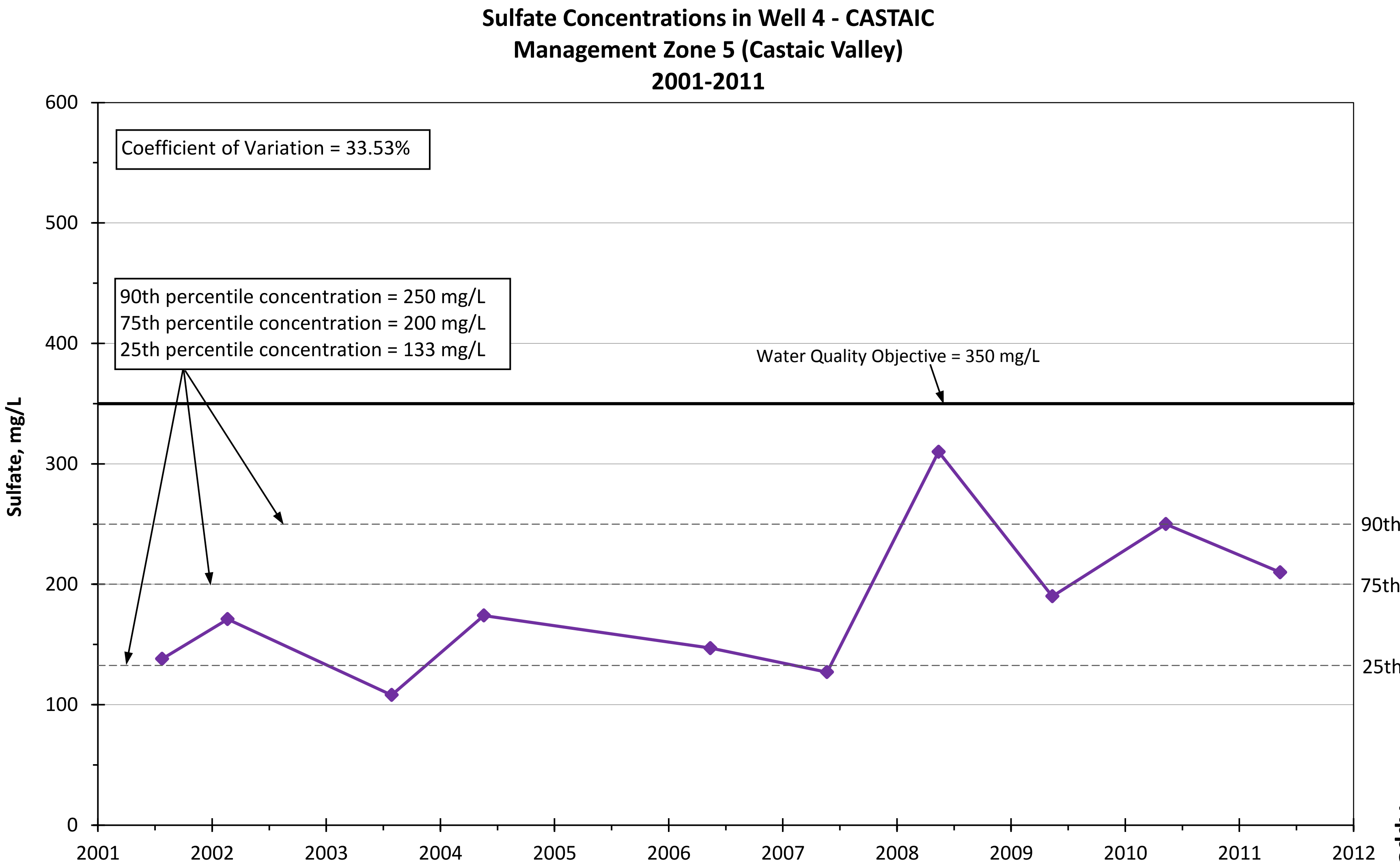
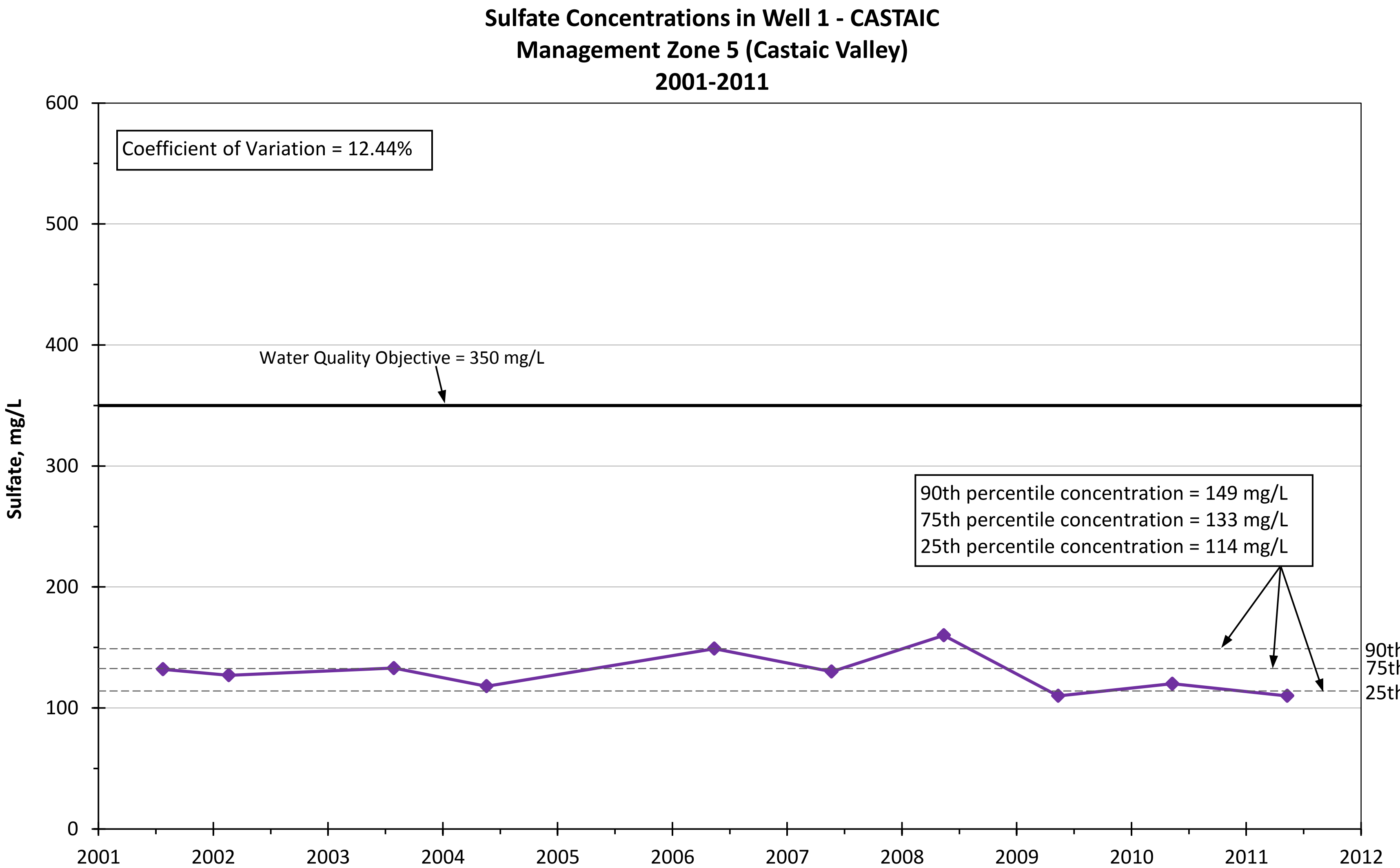
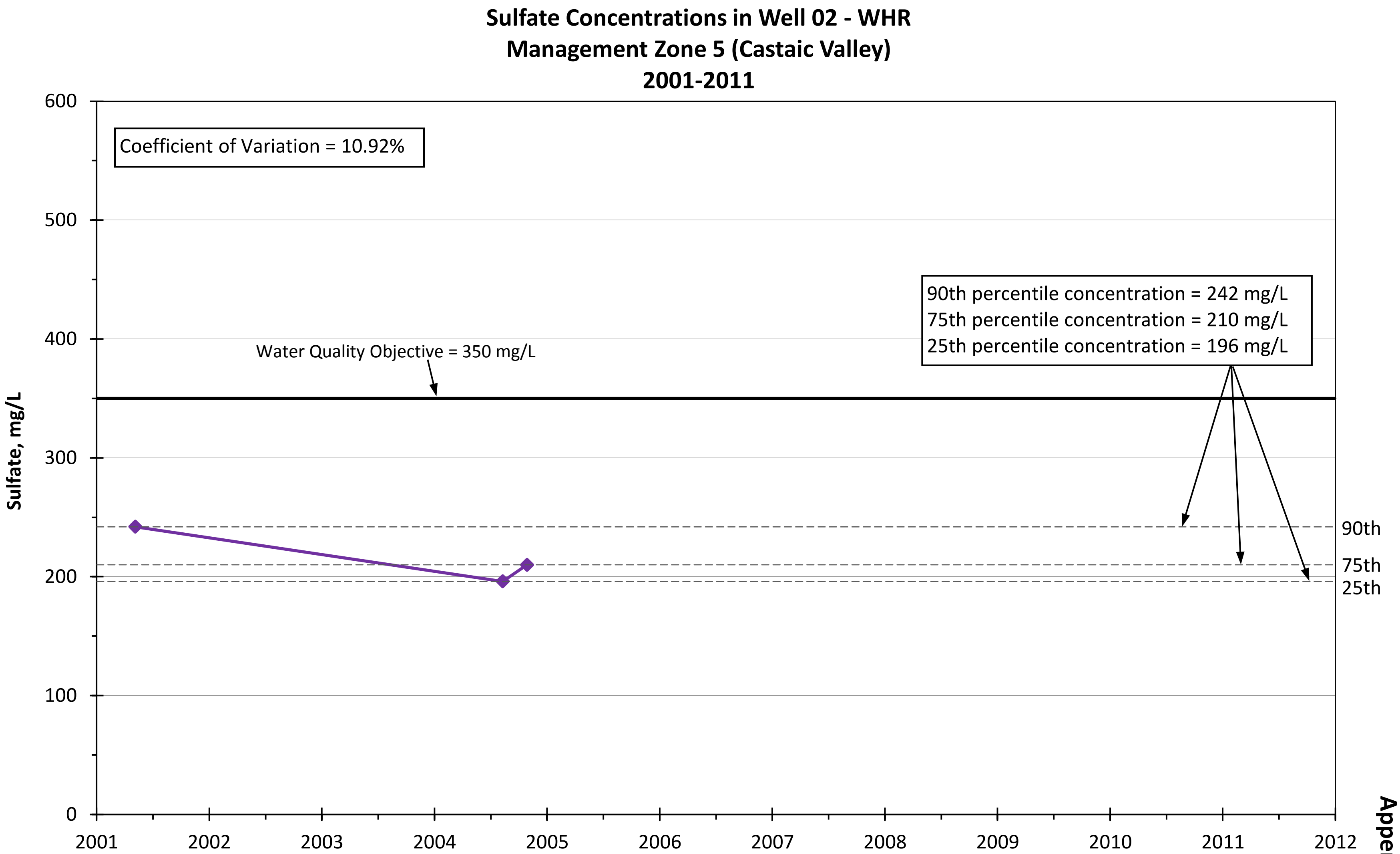

Sulfate Concentrations in Well 4 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 33.53%
90th percentile concentration = 250 mg/L
75th percentile concentration = 200 mg/L
25th percentile concentration = 133 mg/L
Water Quality Objective = 350 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

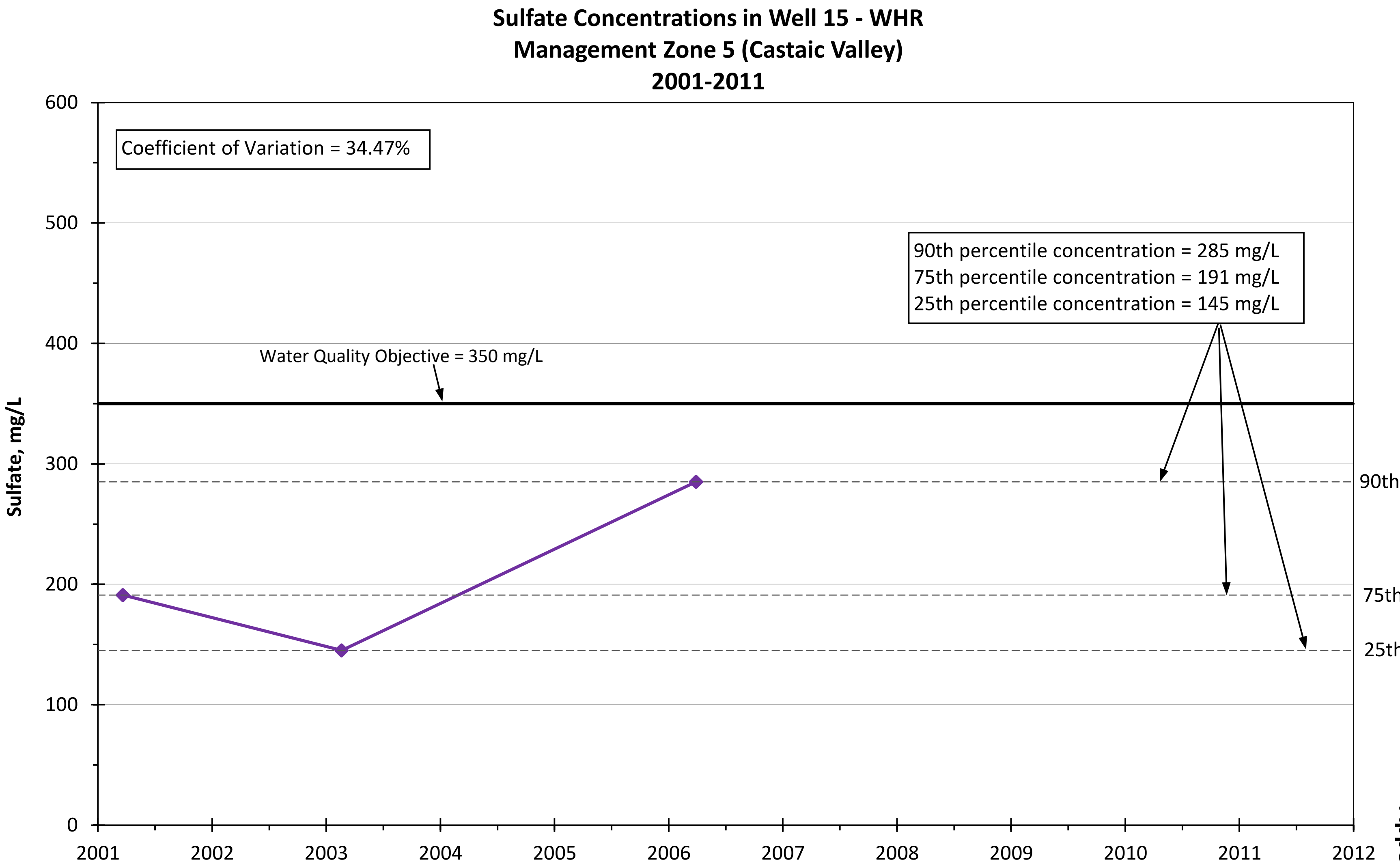
Appendix C


Sulfate Concentrations in Well 1 - CASTAIC
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 12.44%
Water Quality Objective = 350 mg/L
90th percentile concentration = 149 mg/L
75th percentile concentration = 133 mg/L
25th percentile concentration = 114 mg/L
90th
75th
25th
Sulfate, mg/L
600
500
400
300
200
100
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

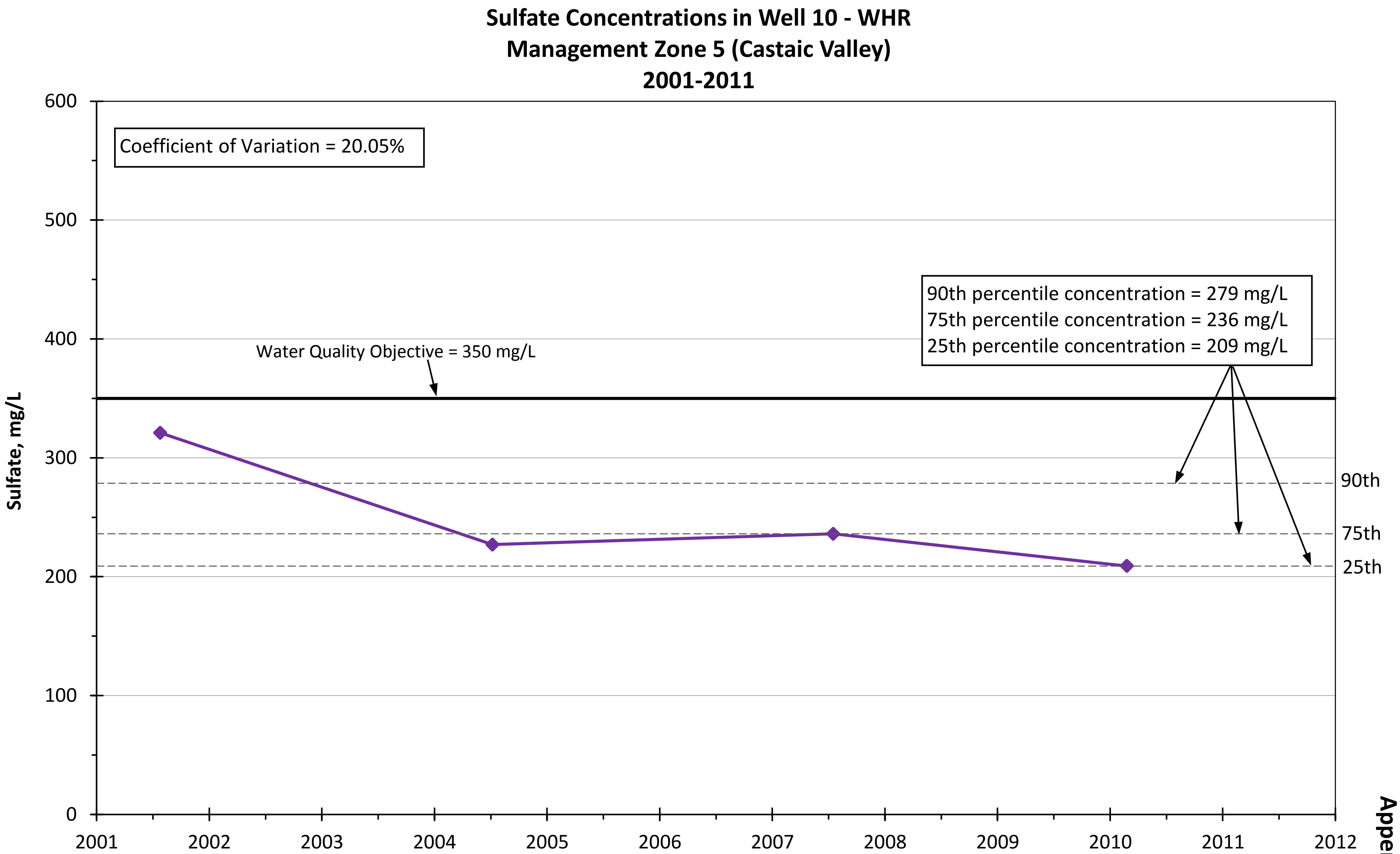
Appendix C


Sulfate Concentrations in Well 02 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 10.92%
90th percentile concentration = 242 mg/L
75th percentile concentration = 210 mg/L
25th percentile concentration = 196 mg/L
Water Quality Objective = 350 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

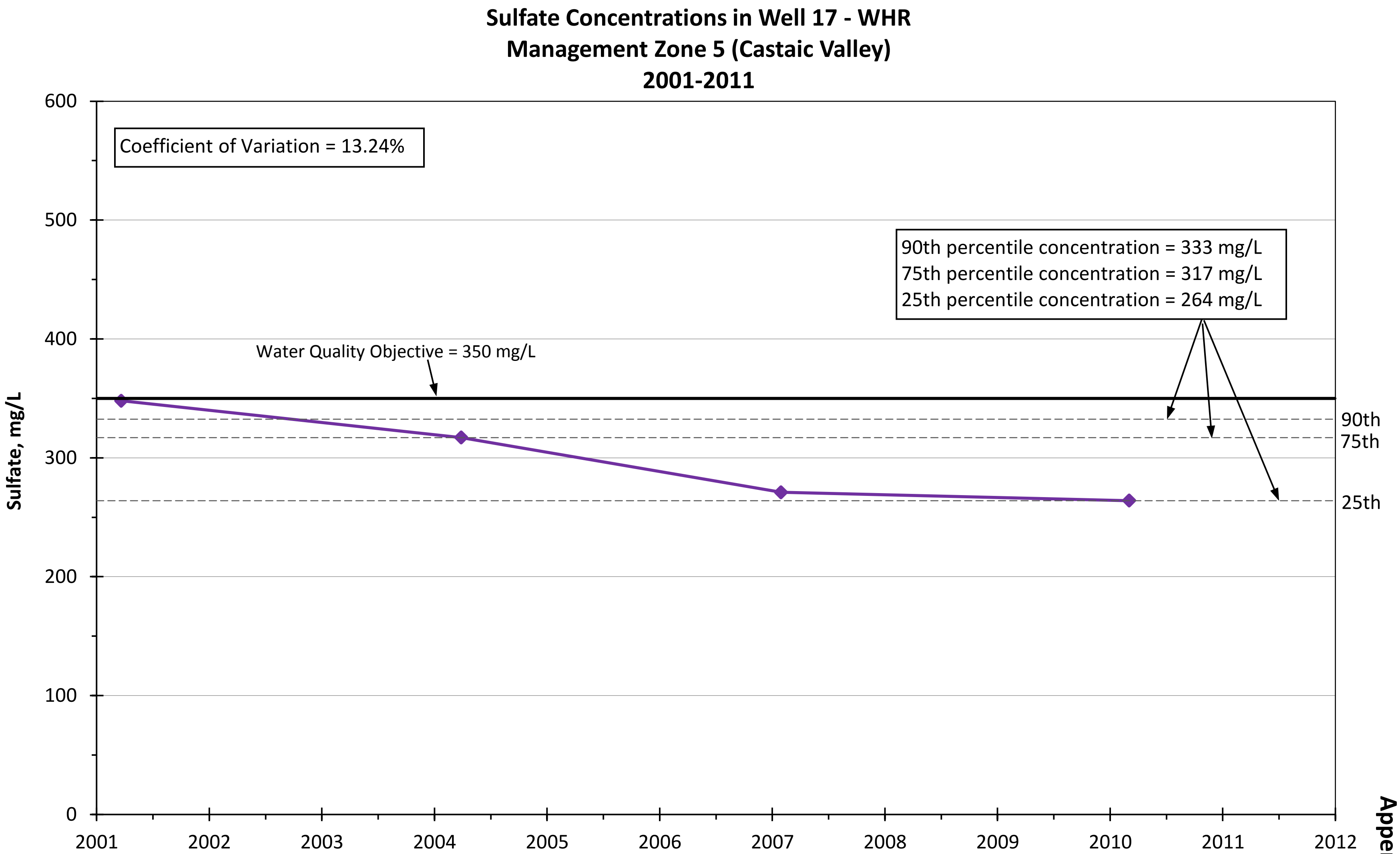
Appendix C


Sulfate Concentrations in Well 15 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 34.47%
90th percentile concentration = 285 mg/L
75th percentile concentration = 191 mg/L
25th percentile concentration = 145 mg/L
Water Quality Objective = 350 mg/L
Sulfate, mg/L
90th
75th
25th
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

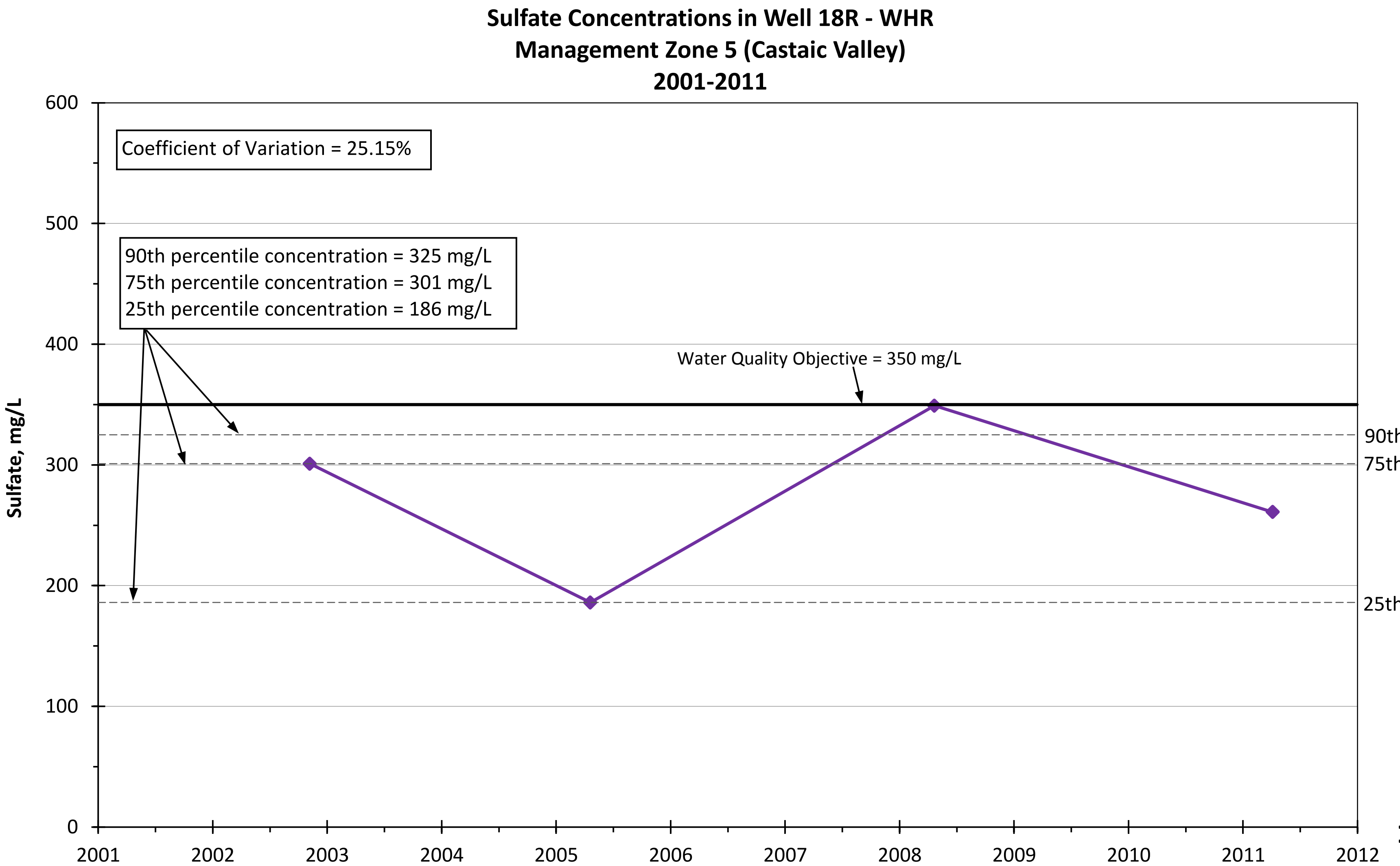
Appendix C


Sulfate Concentrations in Well 10 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 20.05%
90th percentile concentration = 279 mg/L
75th percentile concentration = 236 mg/L
25th percentile concentration = 209 mg/L
Water Quality Objective = 350 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

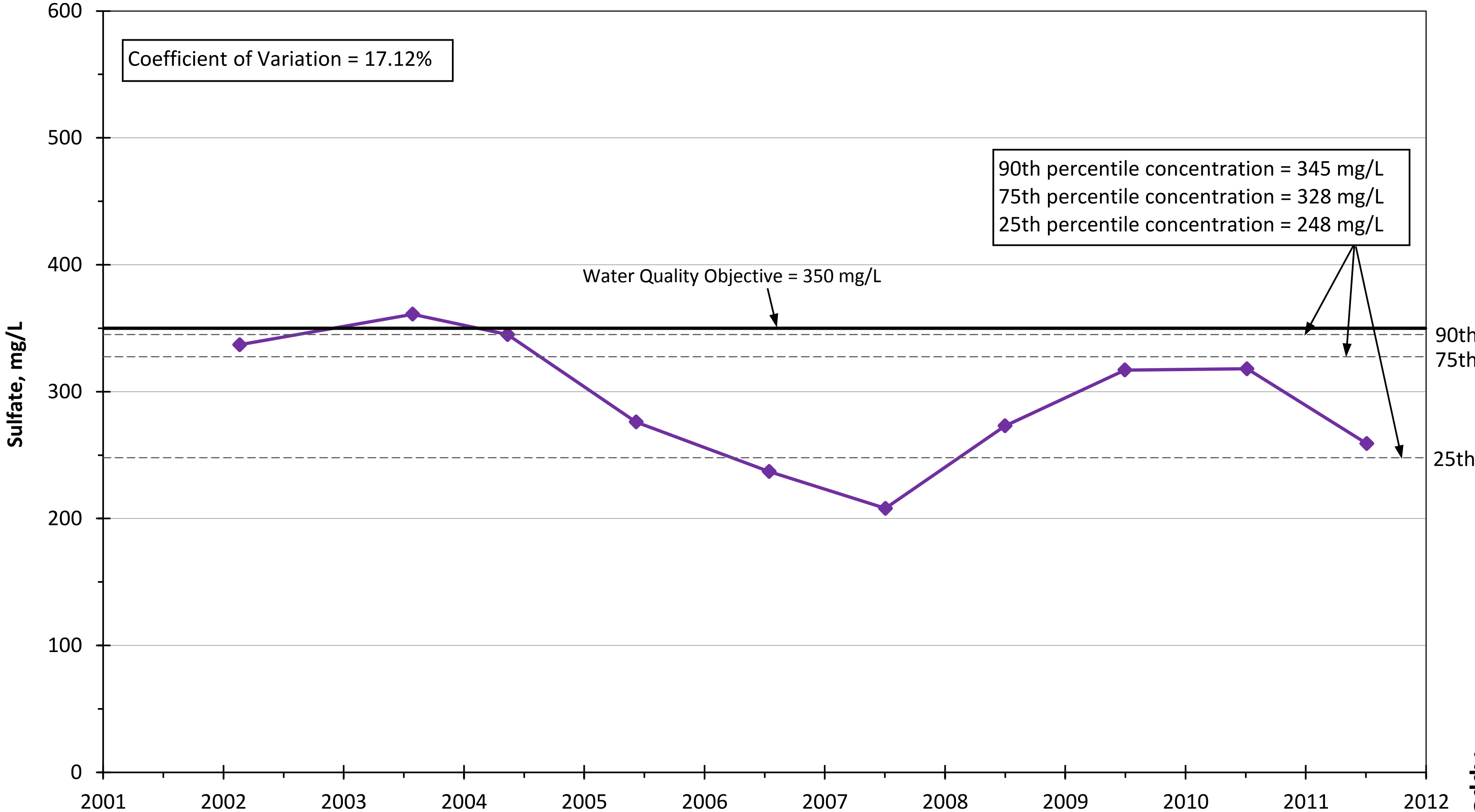

Sulfate Concentrations in Well 17 - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 13.24%
90th percentile concentration = 333 mg/L
75th percentile concentration = 317 mg/L
25th percentile concentration = 264 mg/L
Water Quality Objective = 350 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C


Sulfate Concentrations in Well 18R - WHR
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 25.15%
90th percentile concentration = 325 mg/L
75th percentile concentration = 301 mg/L
25th percentile concentration = 186 mg/L
Water Quality Objective = 350 mg/L
Sulfate, mg/L
600
500
400
300
200
100
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

Sulfate Concentrations in Well D
Management Zone 5 (Castaic Valley)
2001-2011



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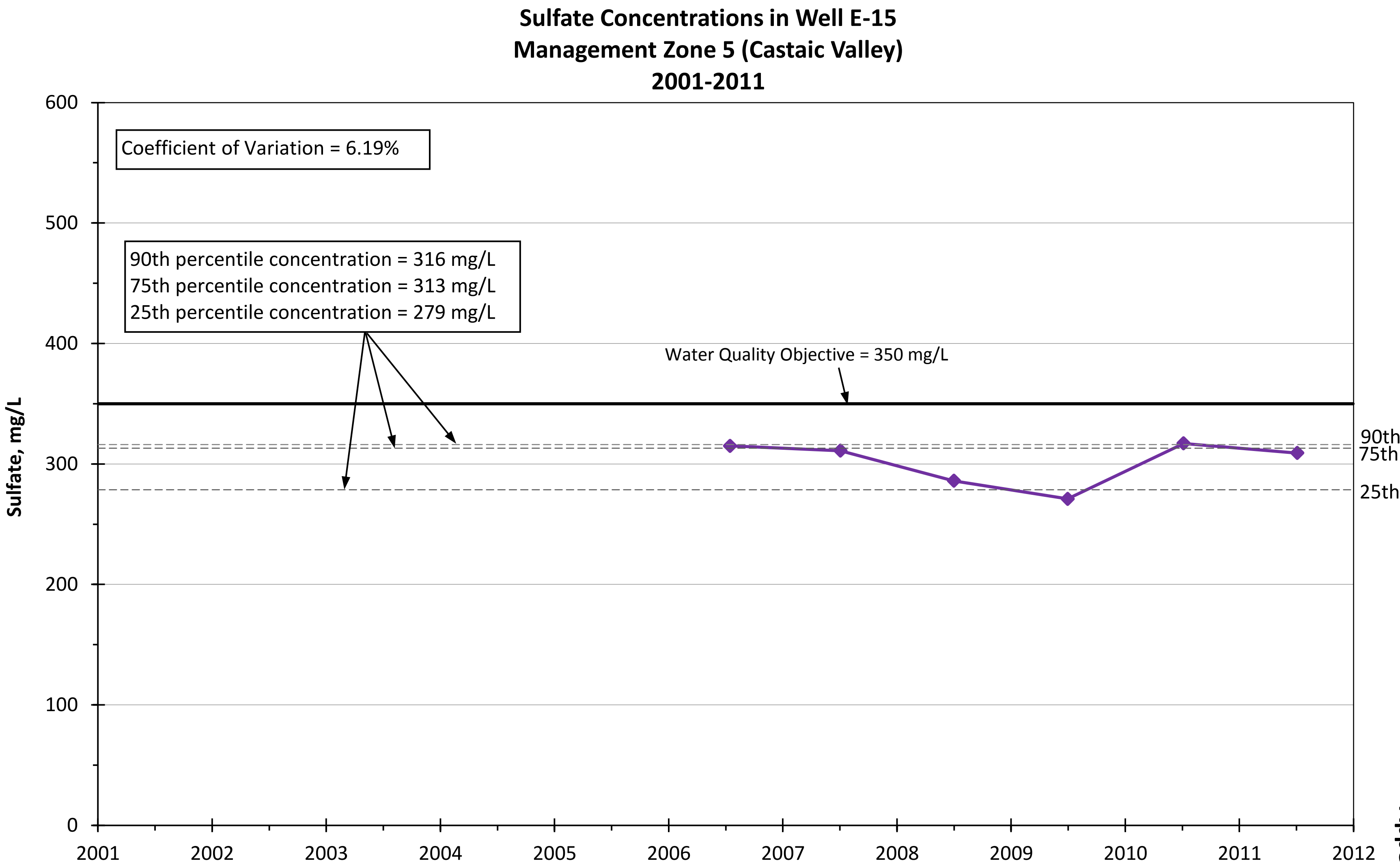
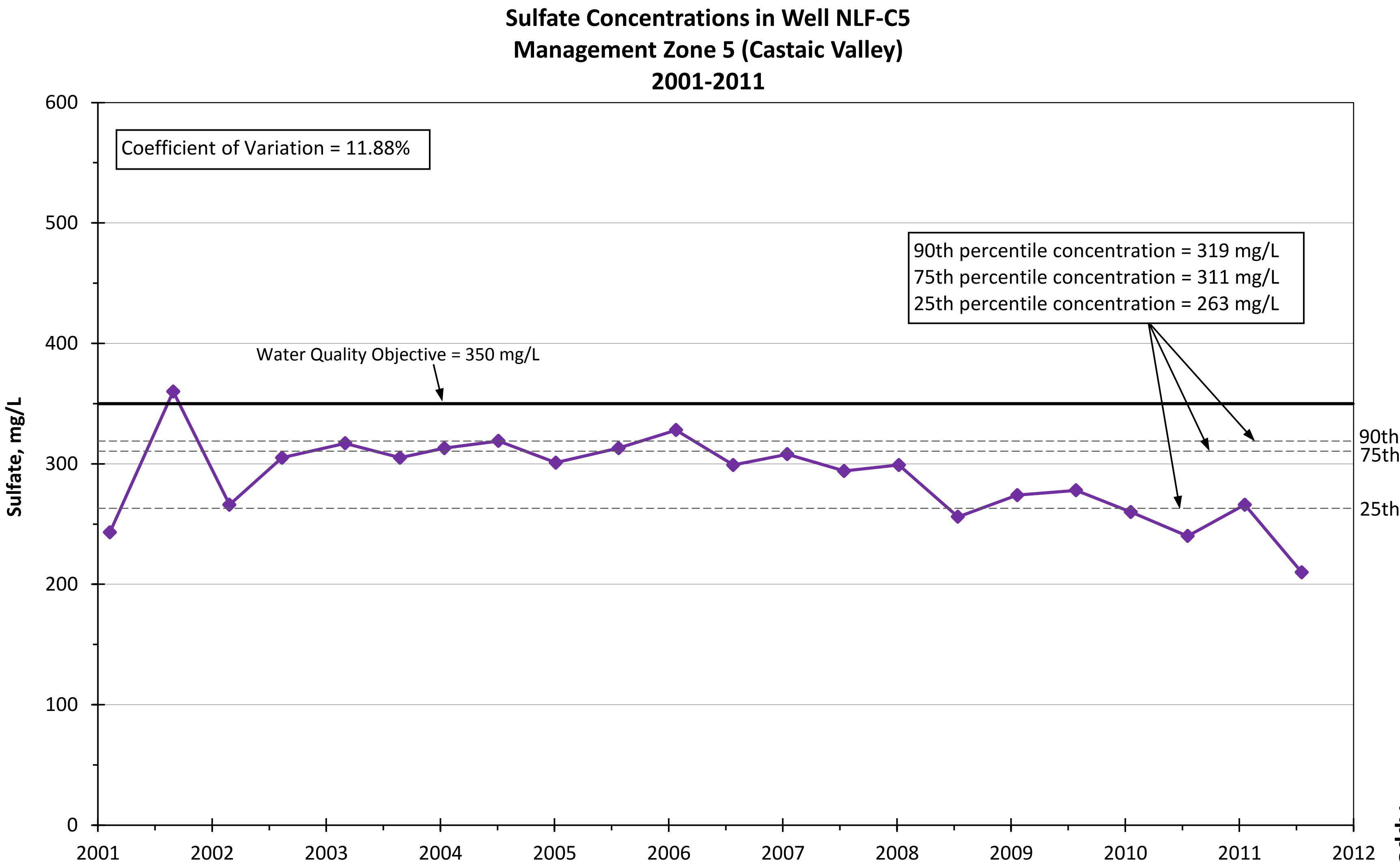
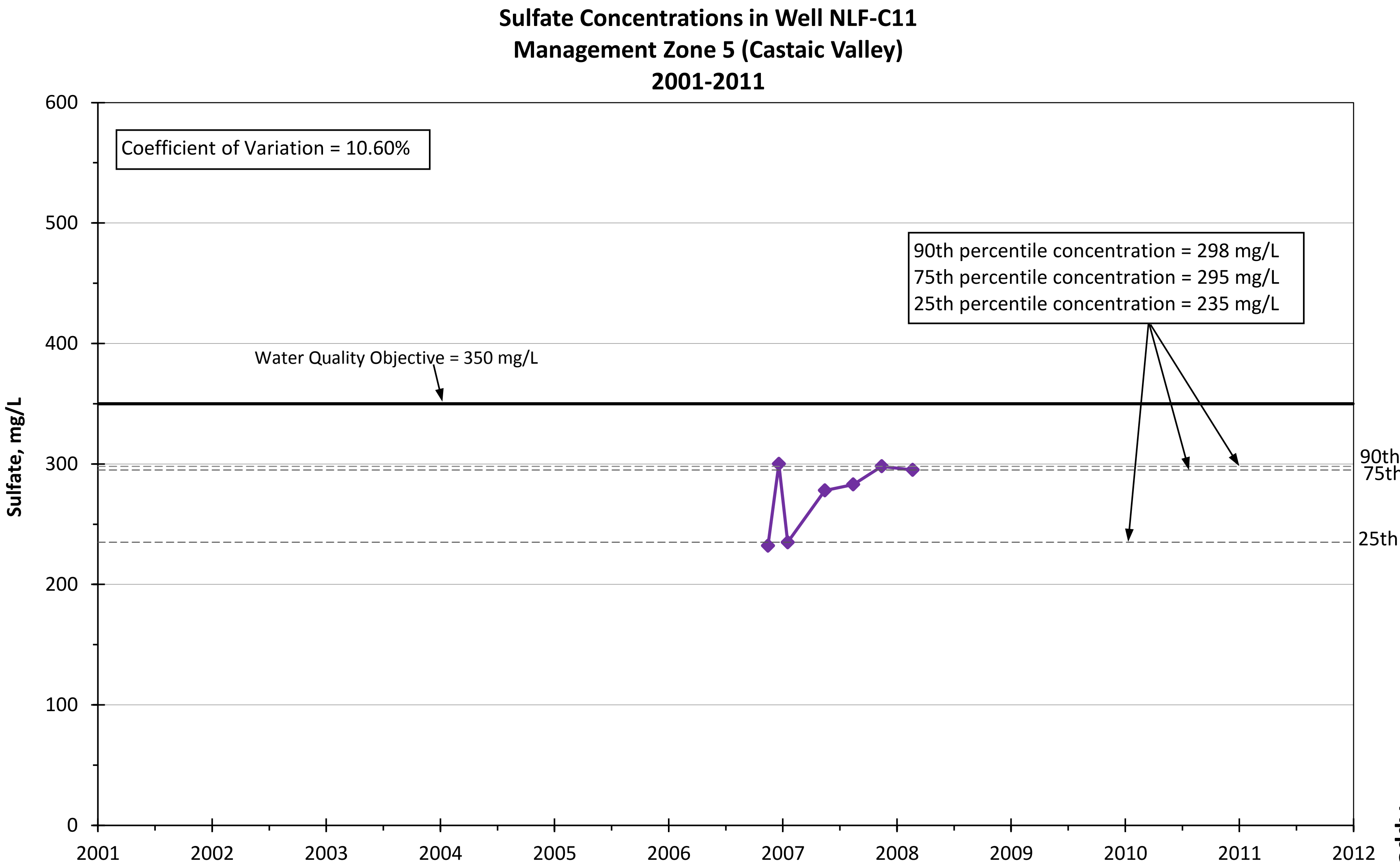
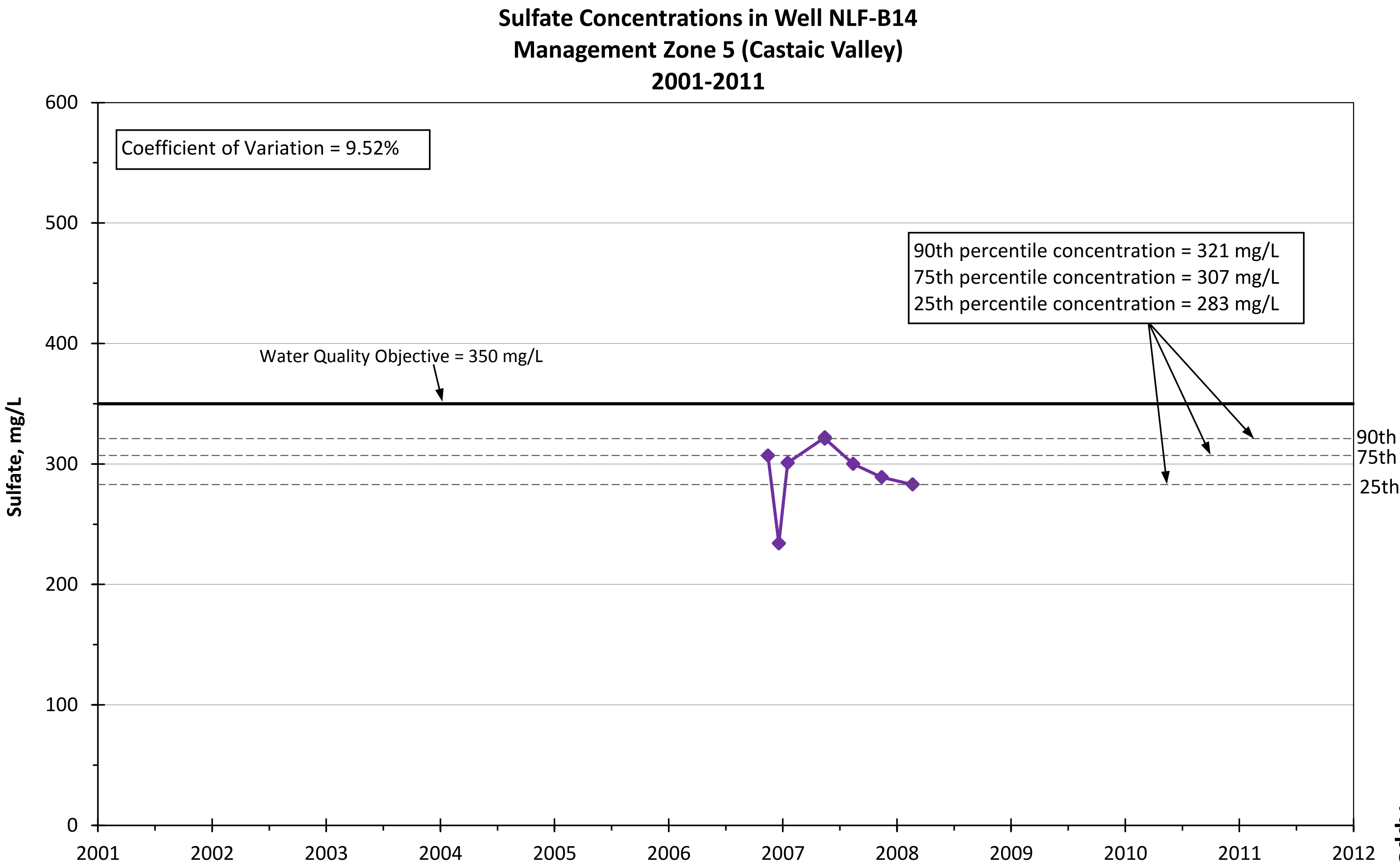

Sulfate Concentrations in Well E-15
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 6.19%
90th percentile concentration = 316 mg/L
75th percentile concentration = 313 mg/L
25th percentile concentration = 279 mg/L
Water Quality Objective = 350 mg/L
90th
75th
25th
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

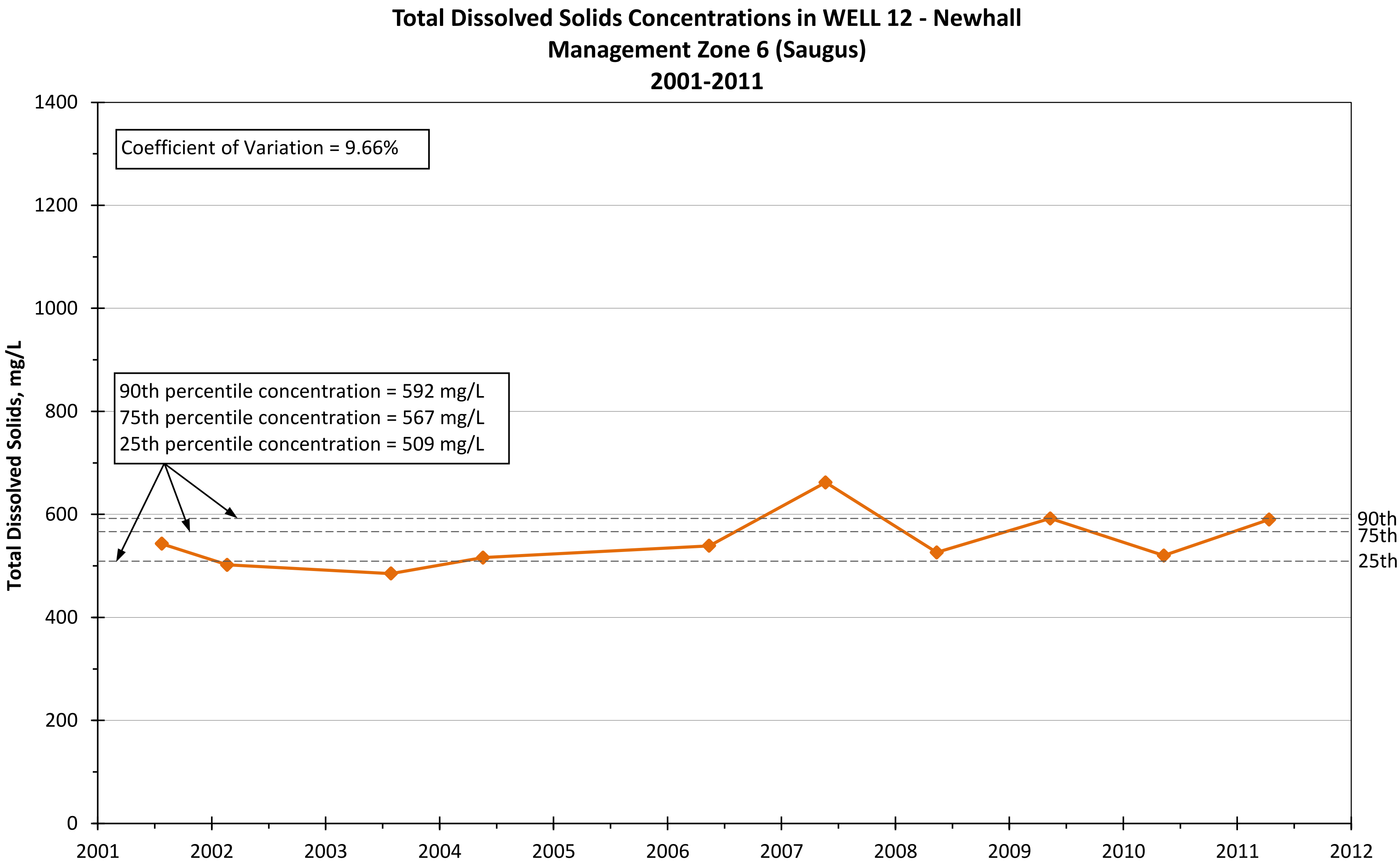

Sulfate Concentrations in Well NLF-C5
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 11.88%
90th percentile concentration = 319 mg/L
75th percentile concentration = 311 mg/L
25th percentile concentration = 263 mg/L
Water Quality Objective = 350 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th


Sulfate Concentrations in Well NLF-C11
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 10.60%
90th percentile concentration = 298 mg/L
75th percentile concentration = 295 mg/L
25th percentile concentration = 235 mg/L
Water Quality Objective = 350 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
90th
75th
25th
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

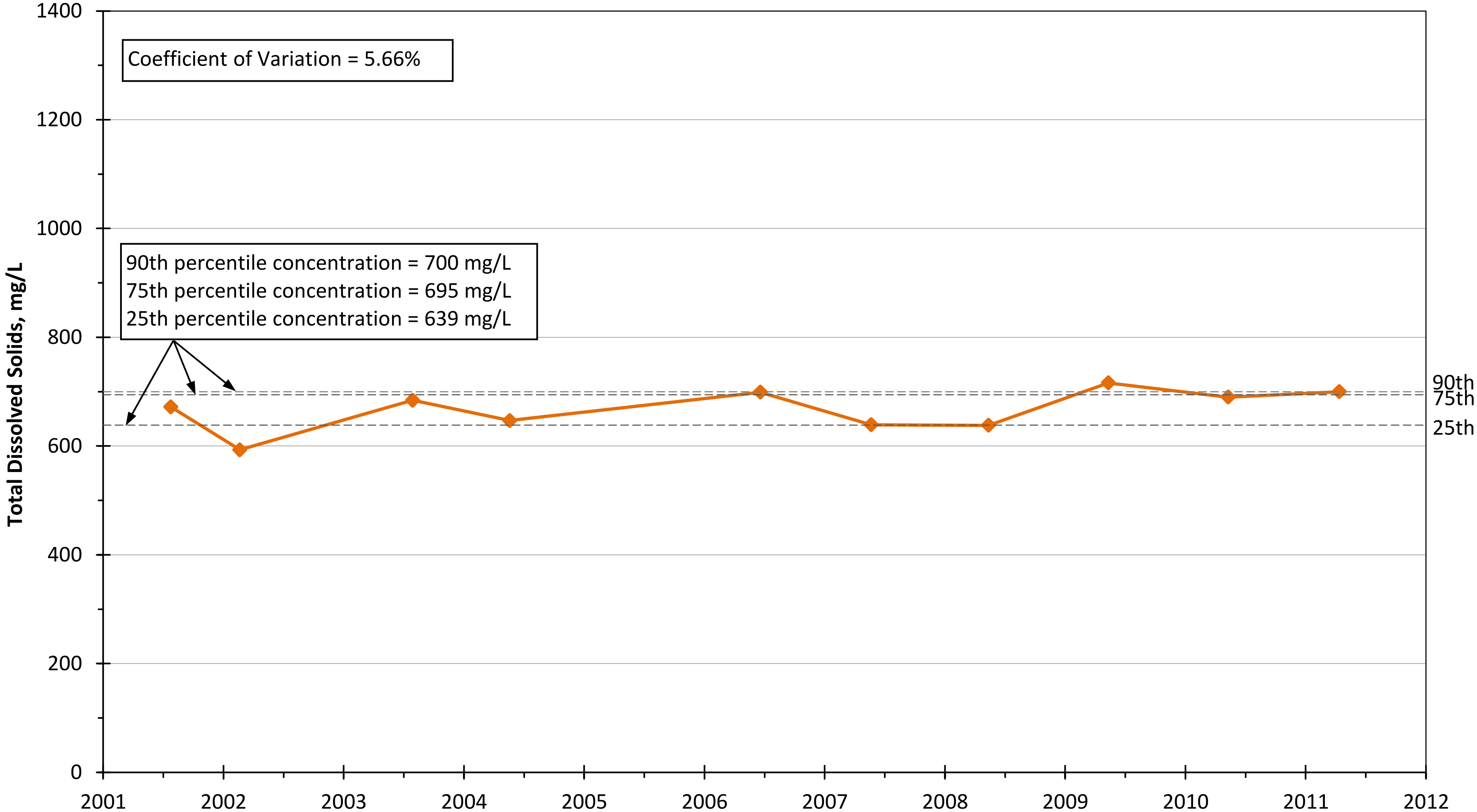

Sulfate Concentrations in Well NLF-B14
Management Zone 5 (Castaic Valley)
2001-2011
Coefficient of Variation = 9.52%
90th percentile concentration = 321 mg/L
75th percentile concentration = 307 mg/L
25th percentile concentration = 283 mg/L
Water Quality Objective = 350 mg/L
90th
75th
25th
Sulfate, mg/L
600
500
400
300
200
100
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C


Total Dissolved Solids Concentrations in WELL 12 - Newhall
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 9.66%
90th percentile concentration = 592 mg/L
75th percentile concentration = 567 mg/L
25th percentile concentration = 509 mg/L
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

Total Dissolved Solids Concentrations in WELL 13 - Newhall Management Zone 6 (Saugus) 2001-2011



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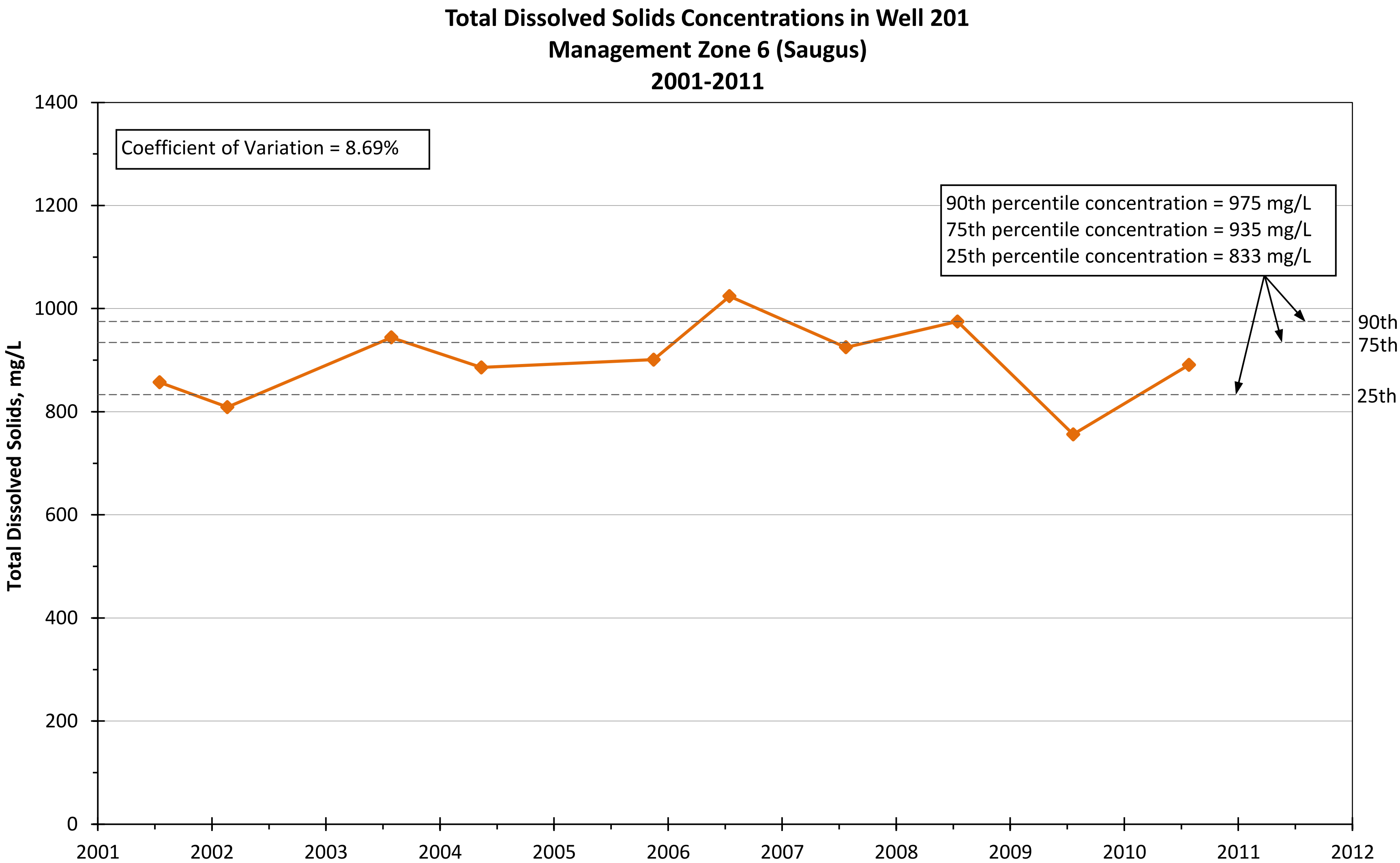
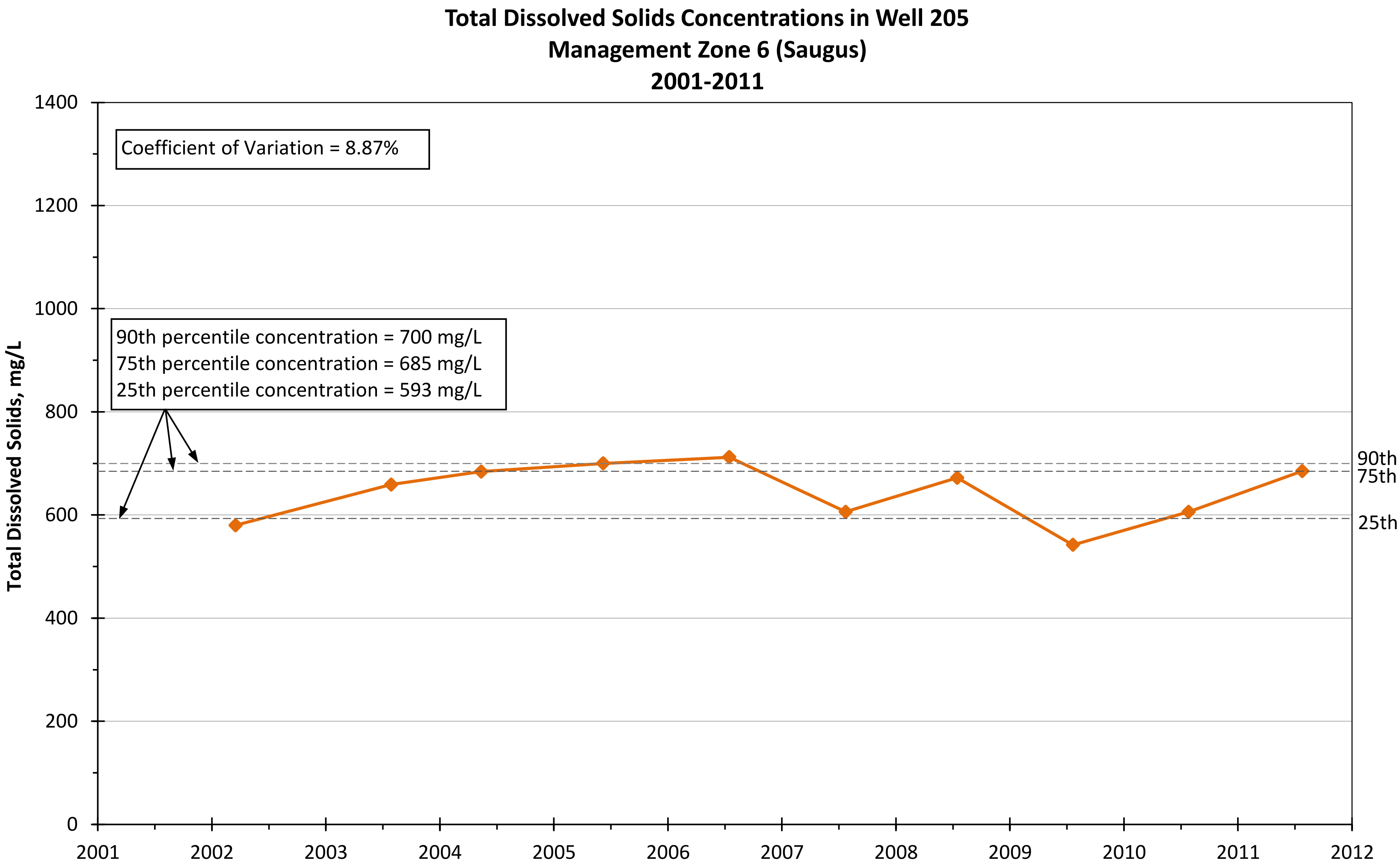
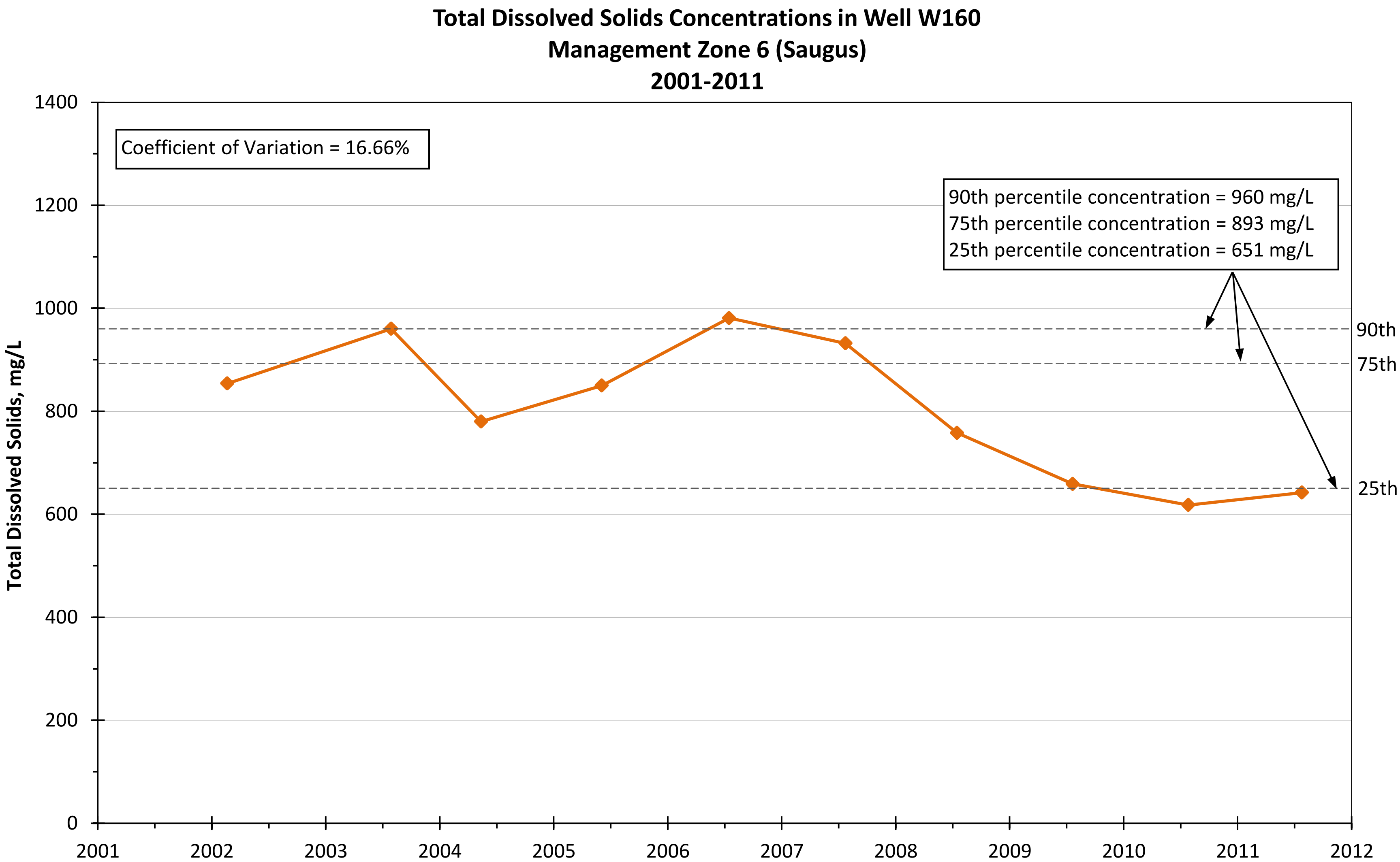
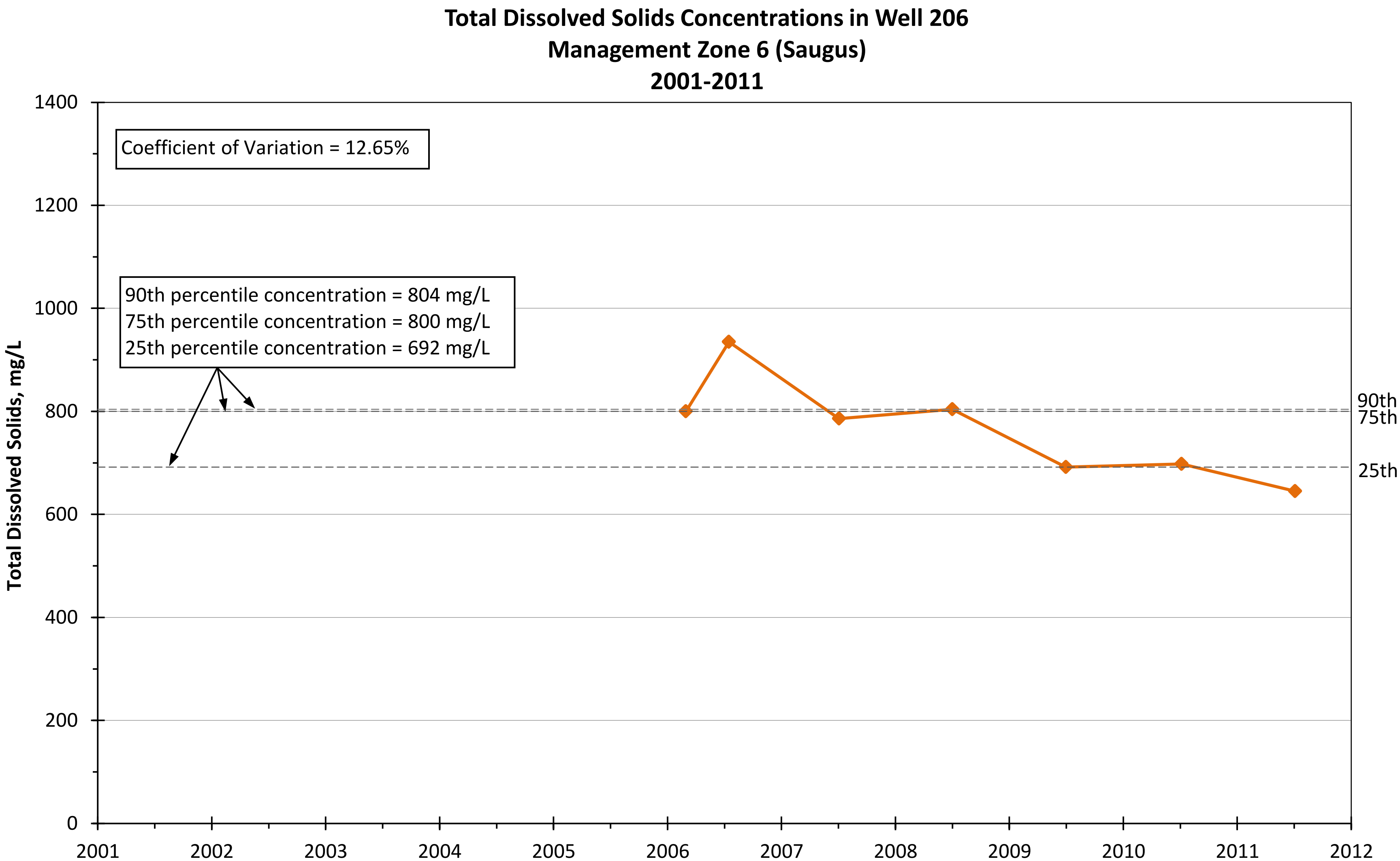

Total Dissolved Solids Concentrations in Well 201
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 8.69%
90th percentile concentration = 975 mg/L
75th percentile concentration = 935 mg/L
25th percentile concentration = 833 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012


Total Dissolved Solids Concentrations in Well 205
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 8.87%
90th percentile concentration = 700 mg/L
75th percentile concentration = 685 mg/L
25th percentile concentration = 593 mg/L
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

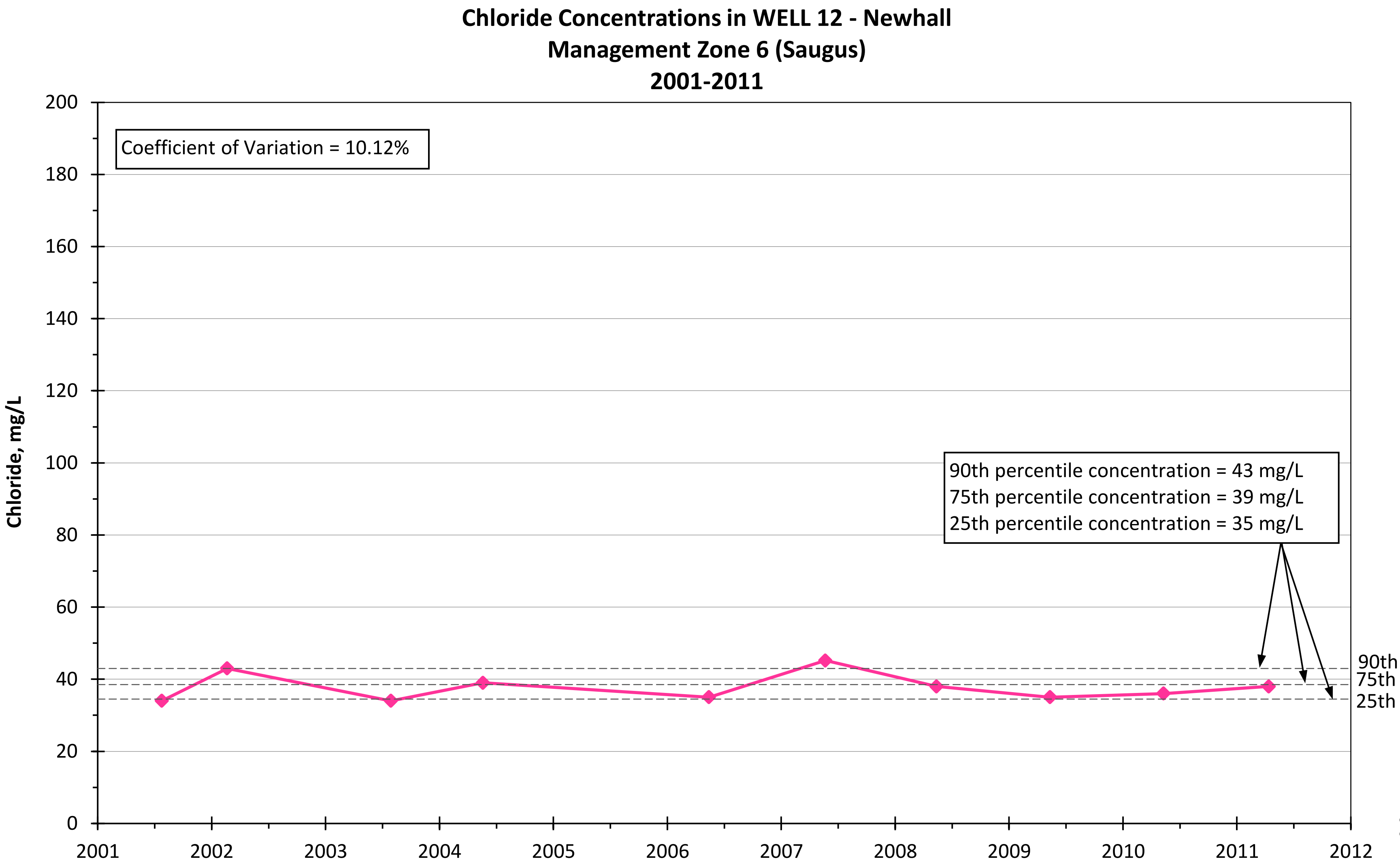
Appendix C


Total Dissolved Solids Concentrations in Well W160
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 16.66%
90th percentile concentration = 960 mg/L
75th percentile concentration = 893 mg/L
25th percentile concentration = 651 mg/L
90th
75th
25th
Total Dissolved Solids, mg/L
0
200
400
600
800
1000
1200
1400
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C


Total Dissolved Solids Concentrations in Well 206
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 12.65%
90th percentile concentration = 804 mg/L
75th percentile concentration = 800 mg/L
25th percentile concentration = 692 mg/L
Total Dissolved Solids, mg/L
1400
1200
1000
800
600
400
200
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

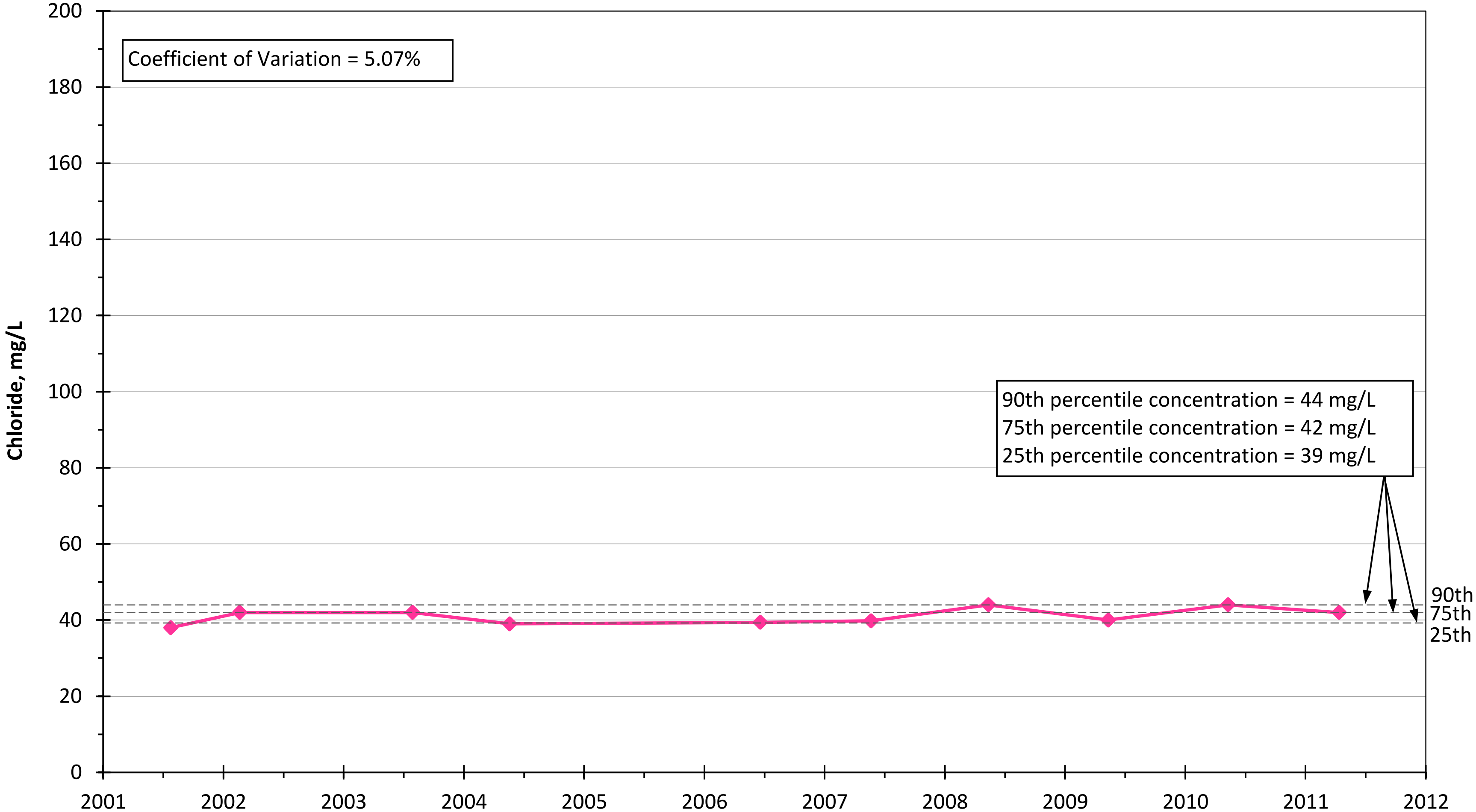
Appendix C


Chloride Concentrations in WELL 12 - Newhall
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 10.12%
90th percentile concentration = 43 mg/L
75th percentile concentration = 39 mg/L
25th percentile concentration = 35 mg/L
90th
75th
25th
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

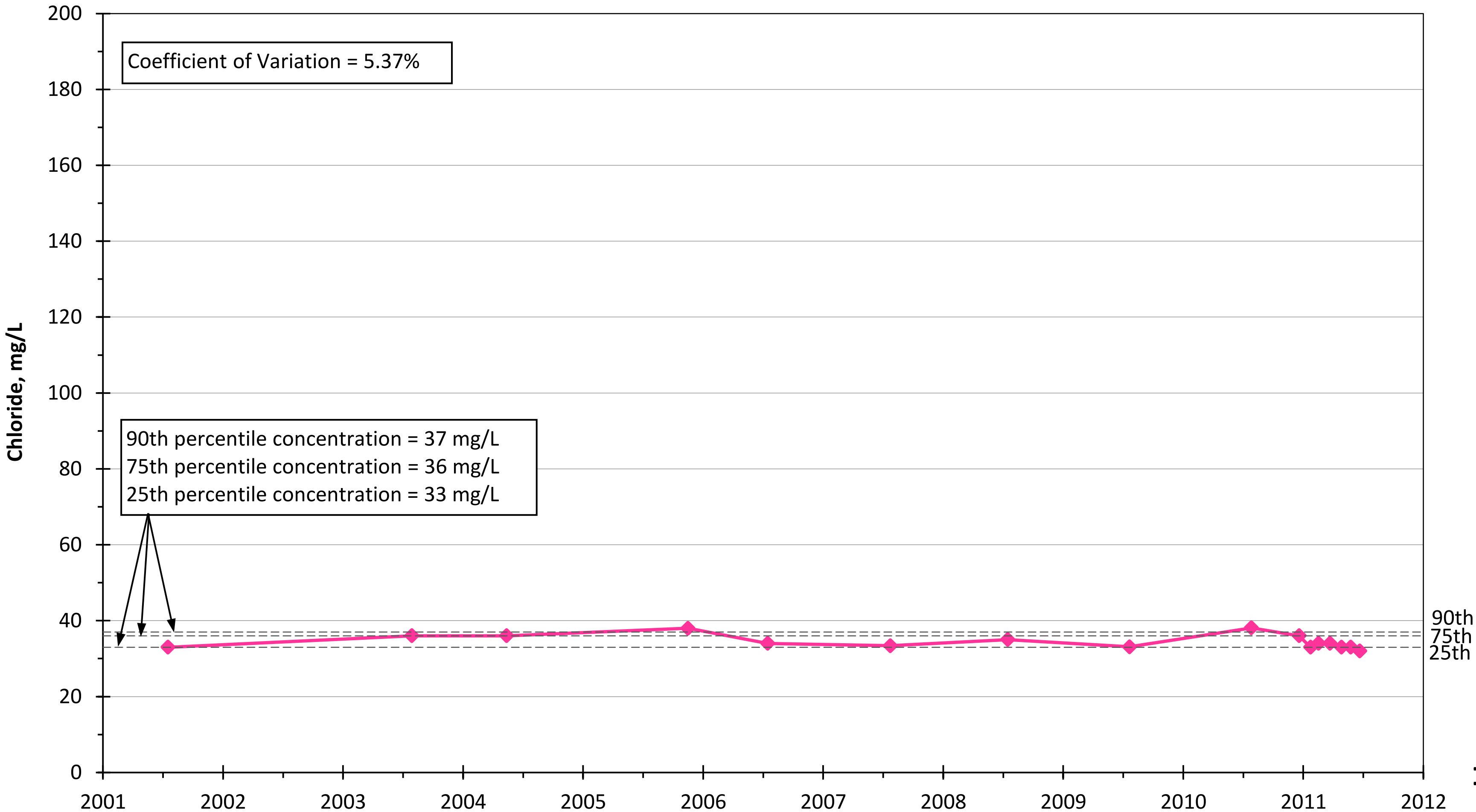
Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Chloride Concentrations in WELL 13 - Newhall
Management Zone 6 (Saugus)
2001-2011



Appendix C

Chloride Concentrations in Well 201
Management Zone 6 (Saugus)
2001-2011



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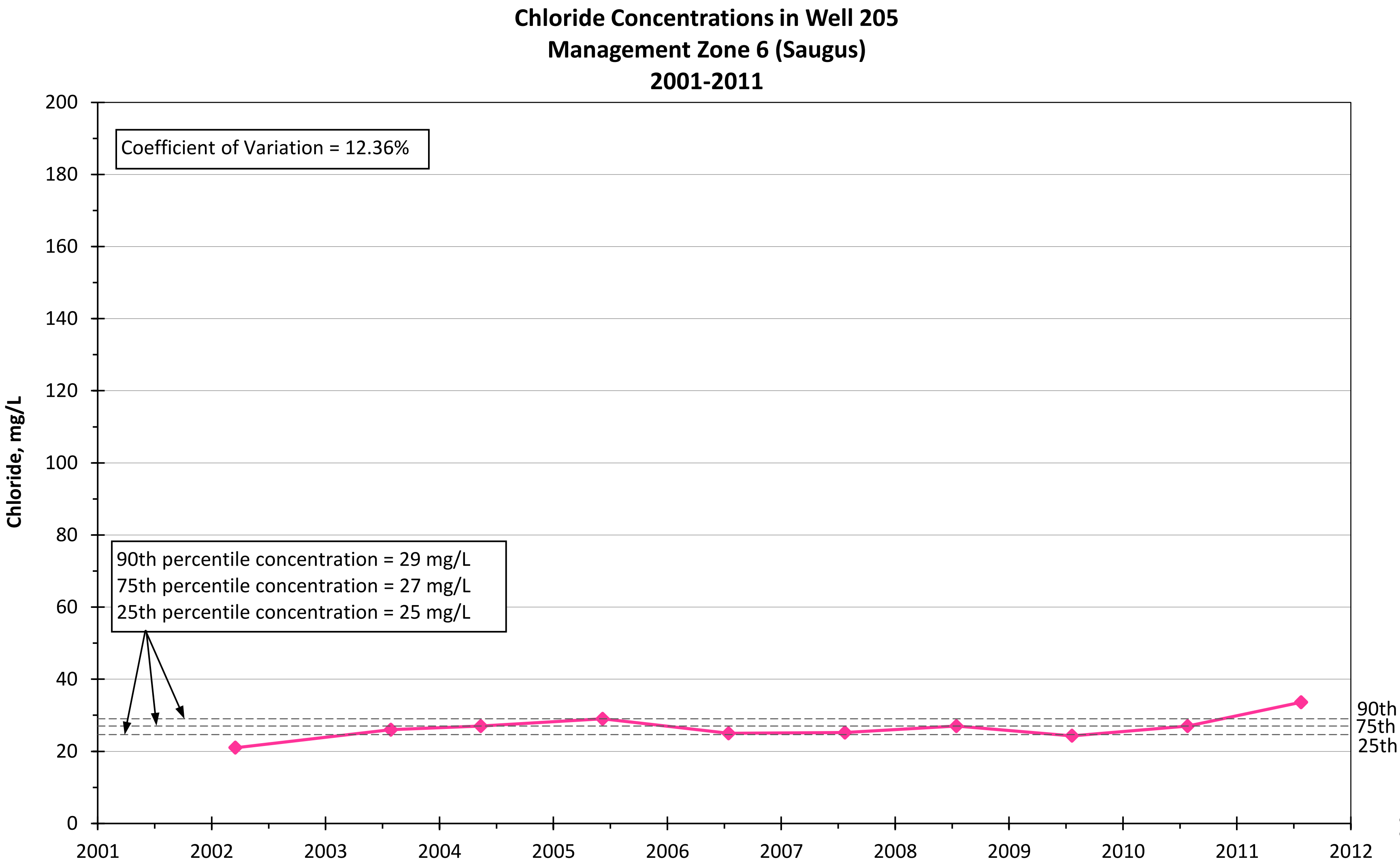
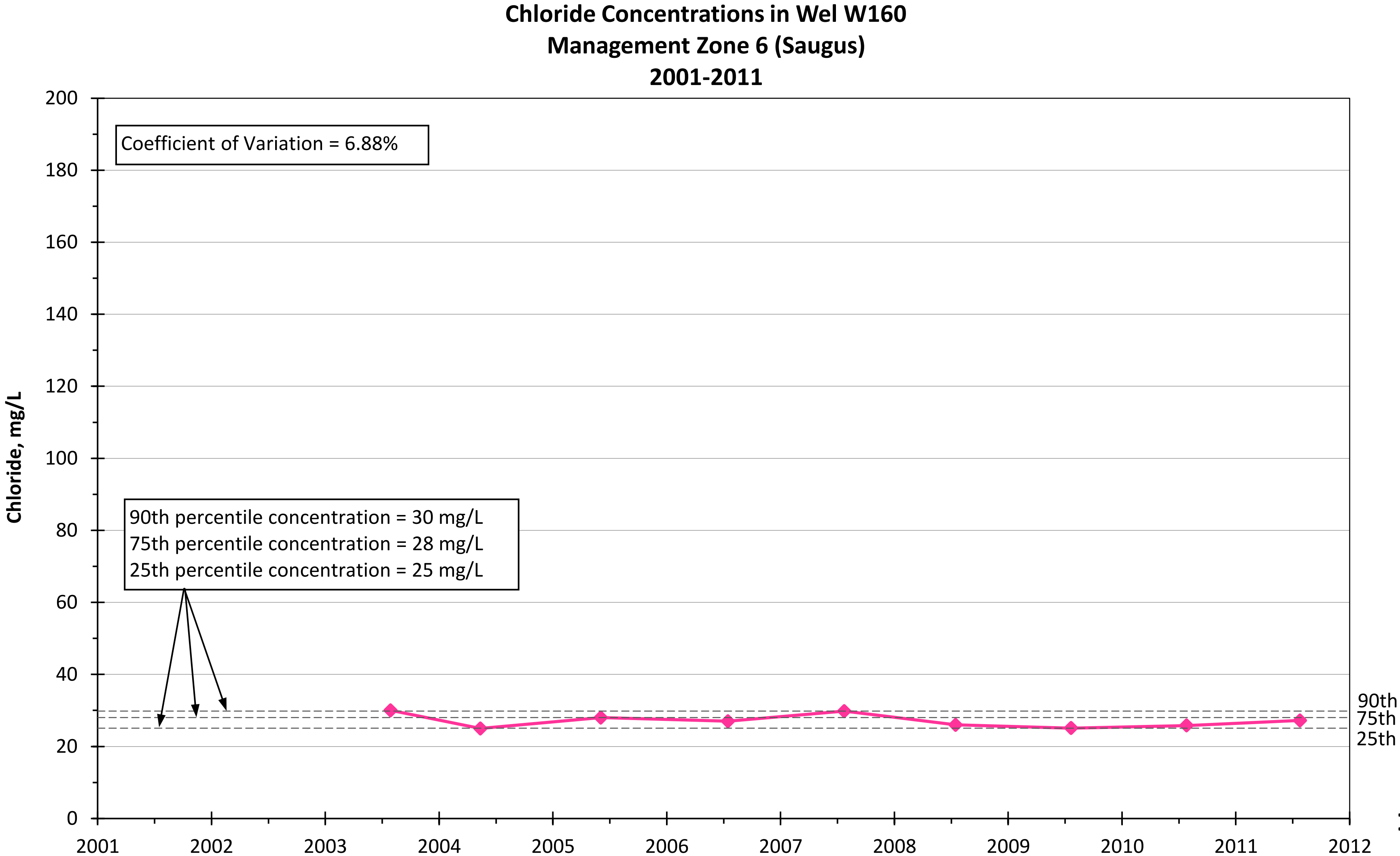
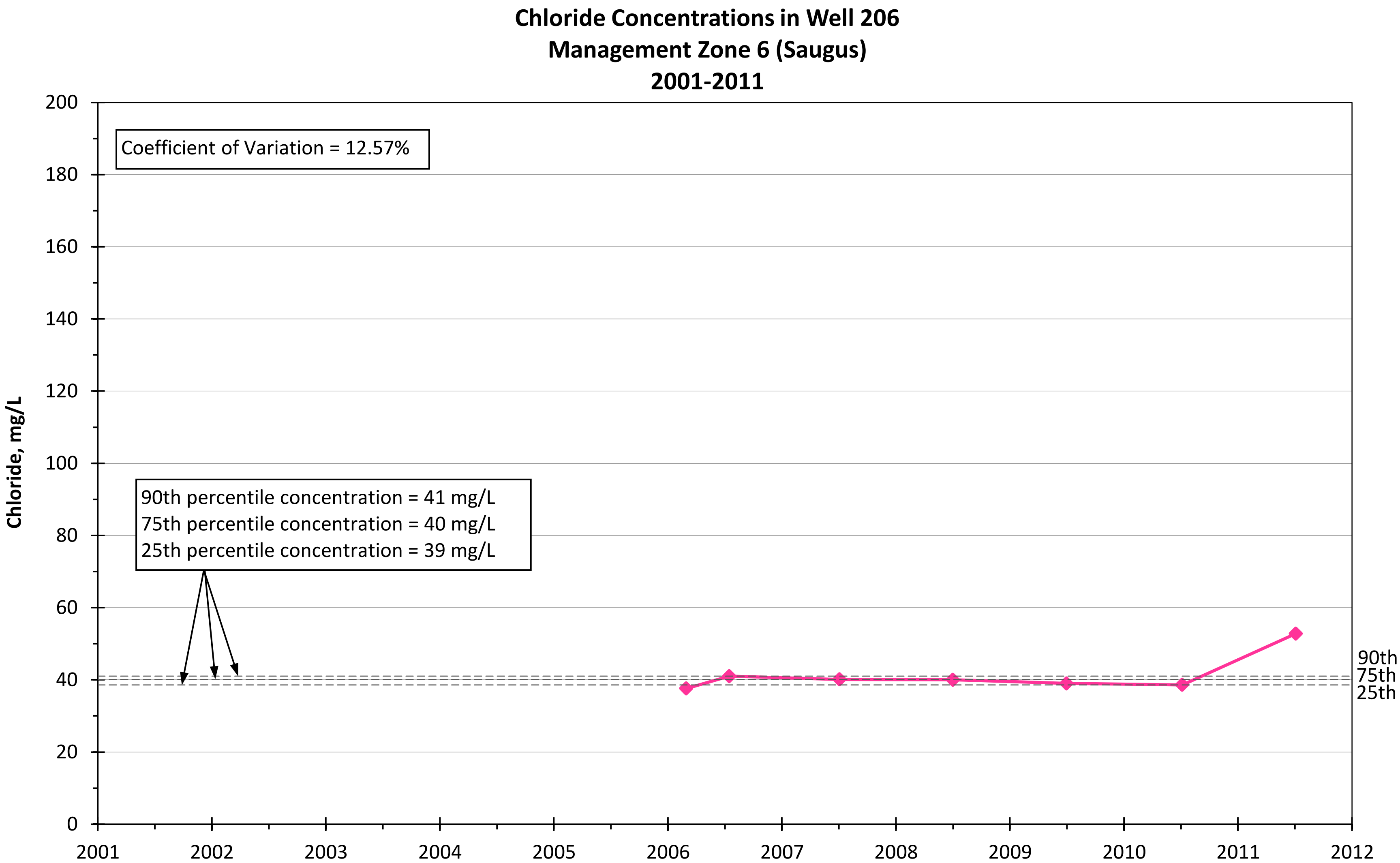
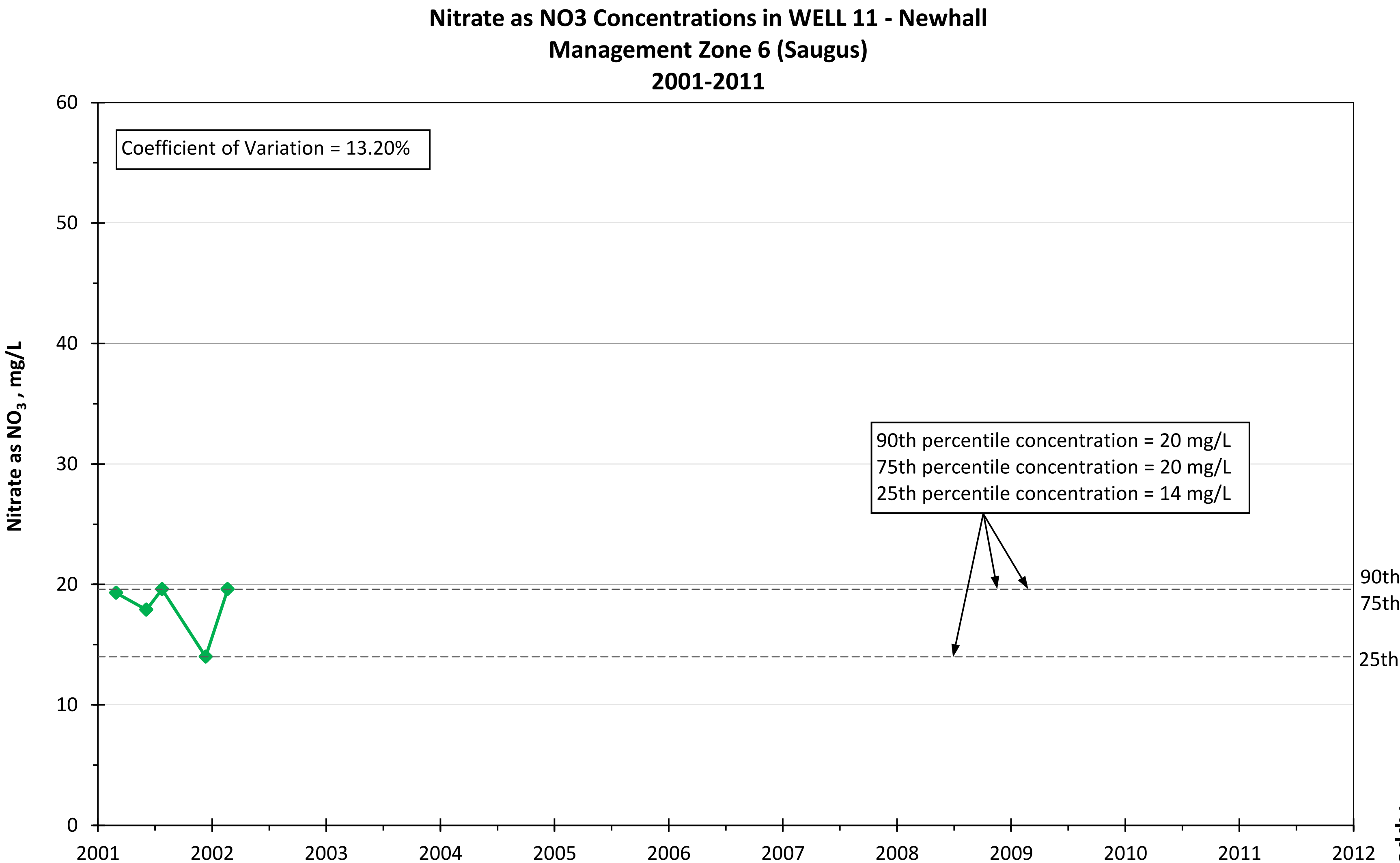

Chloride Concentrations in Well 205
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 12.36%
90th percentile concentration = 29 mg/L
75th percentile concentration = 27 mg/L
25th percentile concentration = 25 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

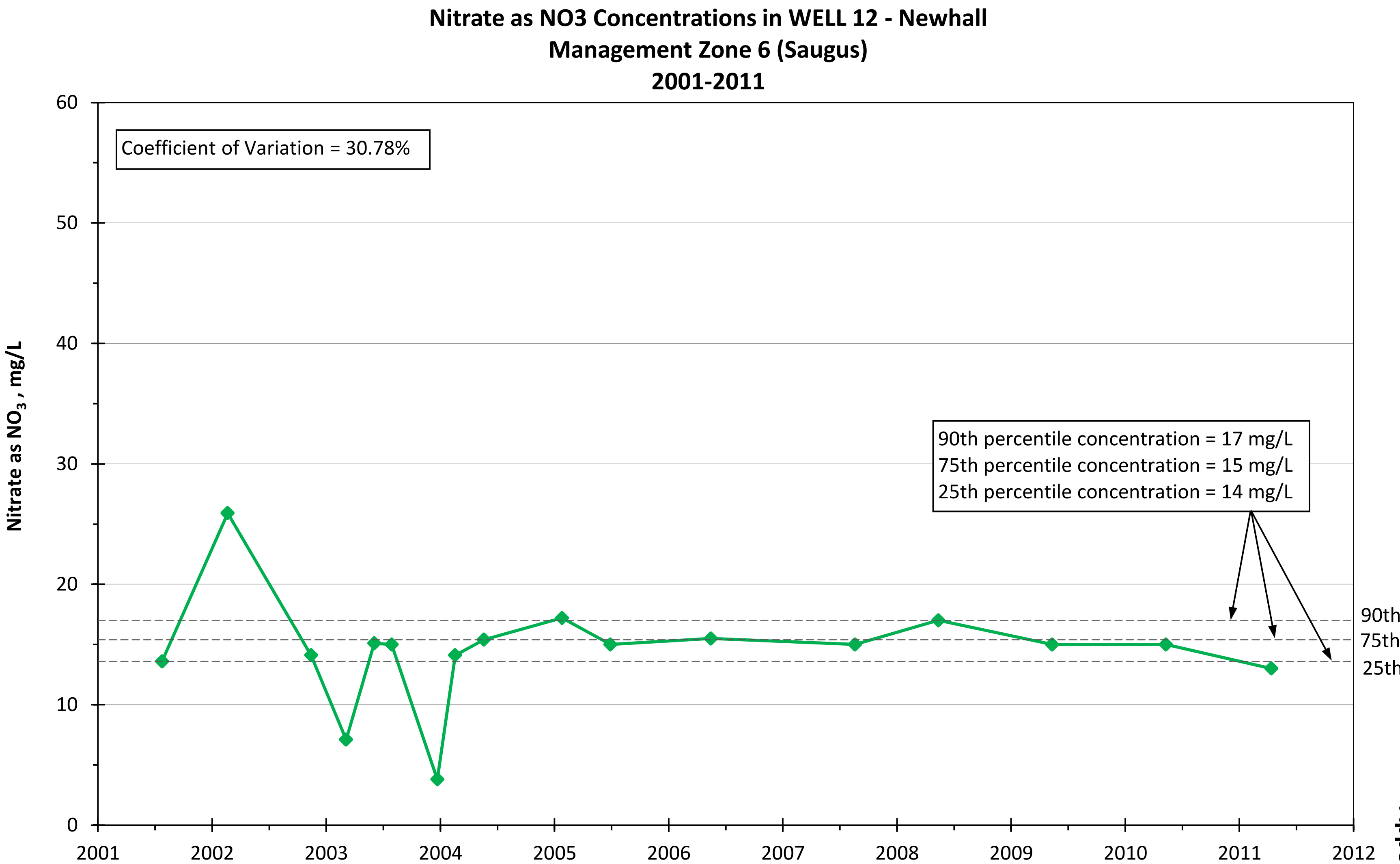

Chloride Concentrations in Wel W160
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 6.88%
90th percentile concentration = 30 mg/L
75th percentile concentration = 28 mg/L
25th percentile concentration = 25 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

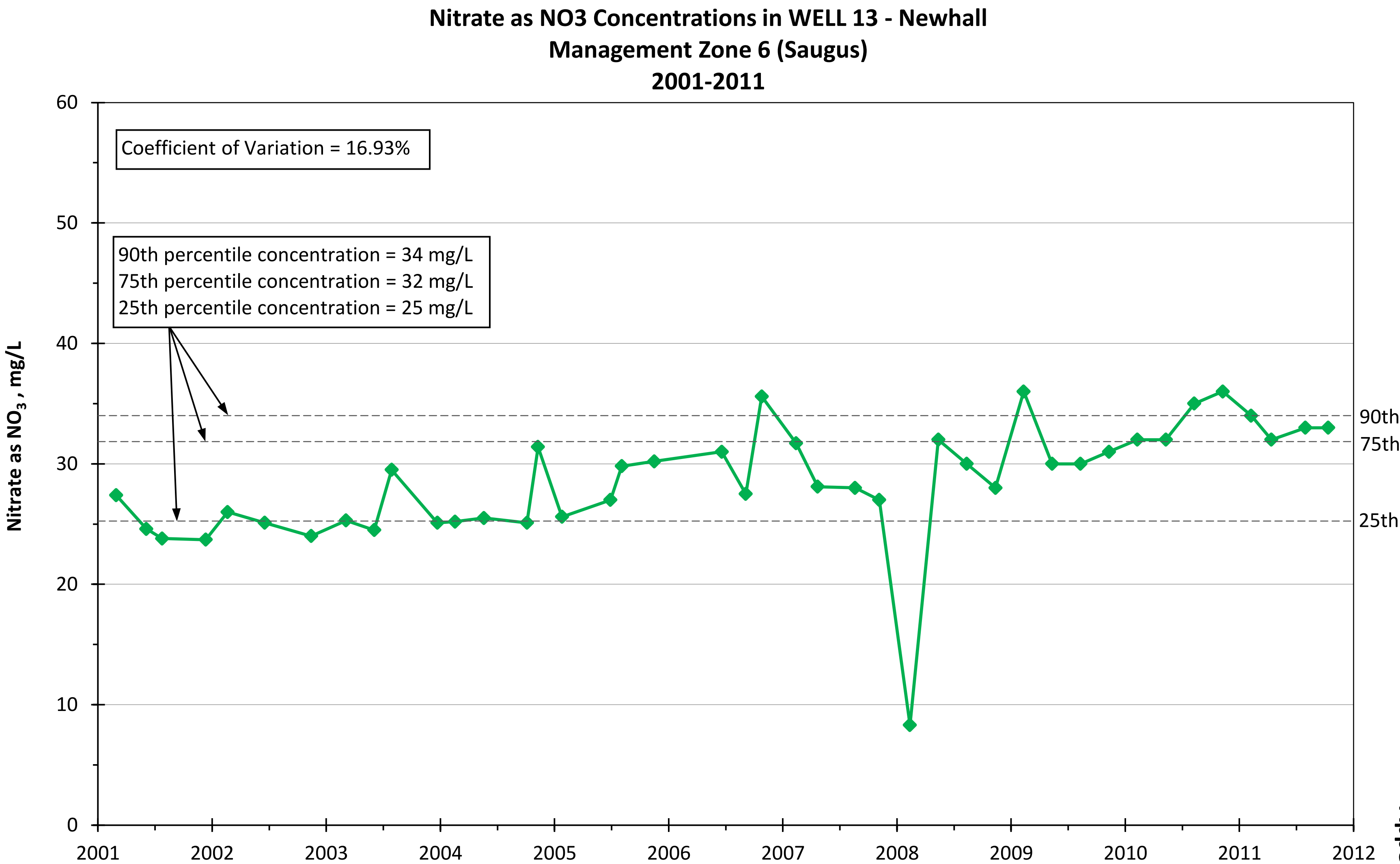
Appendix C


Chloride Concentrations in Well 206
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 12.57%
90th percentile concentration = 41 mg/L
75th percentile concentration = 40 mg/L
25th percentile concentration = 39 mg/L
Chloride, mg/L
0
20
40
60
80
100
120
140
160
180
200
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

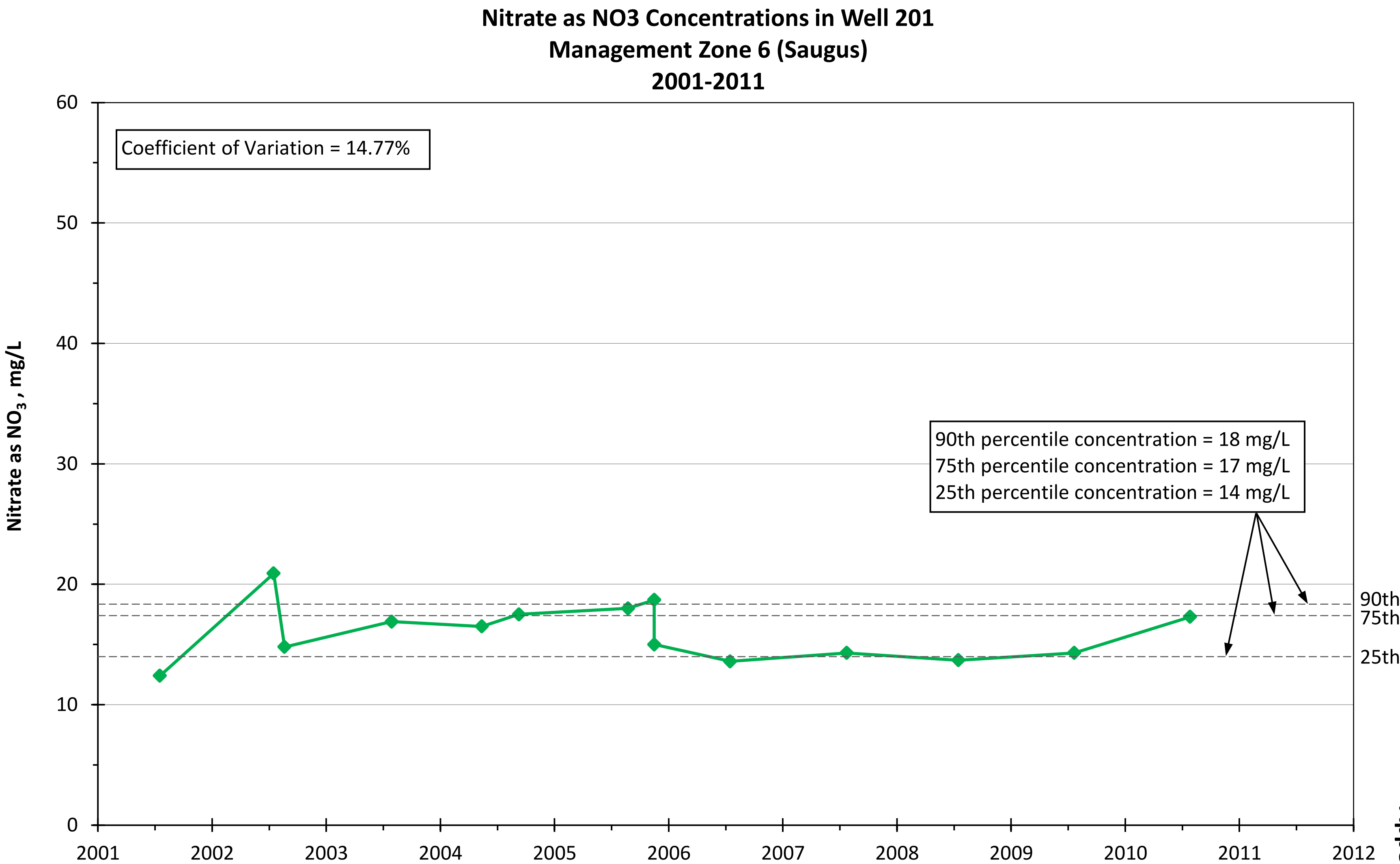

Nitrate as NO3 Concentrations in WELL 11 - Newhall
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 13.20%
90th percentile concentration = 20 mg/L
75th percentile concentration = 20 mg/L
25th percentile concentration = 14 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C


Nitrate as NO3 Concentrations in WELL 12 - Newhall
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 30.78%
90th percentile concentration = 17 mg/L
75th percentile concentration = 15 mg/L
25th percentile concentration = 14 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

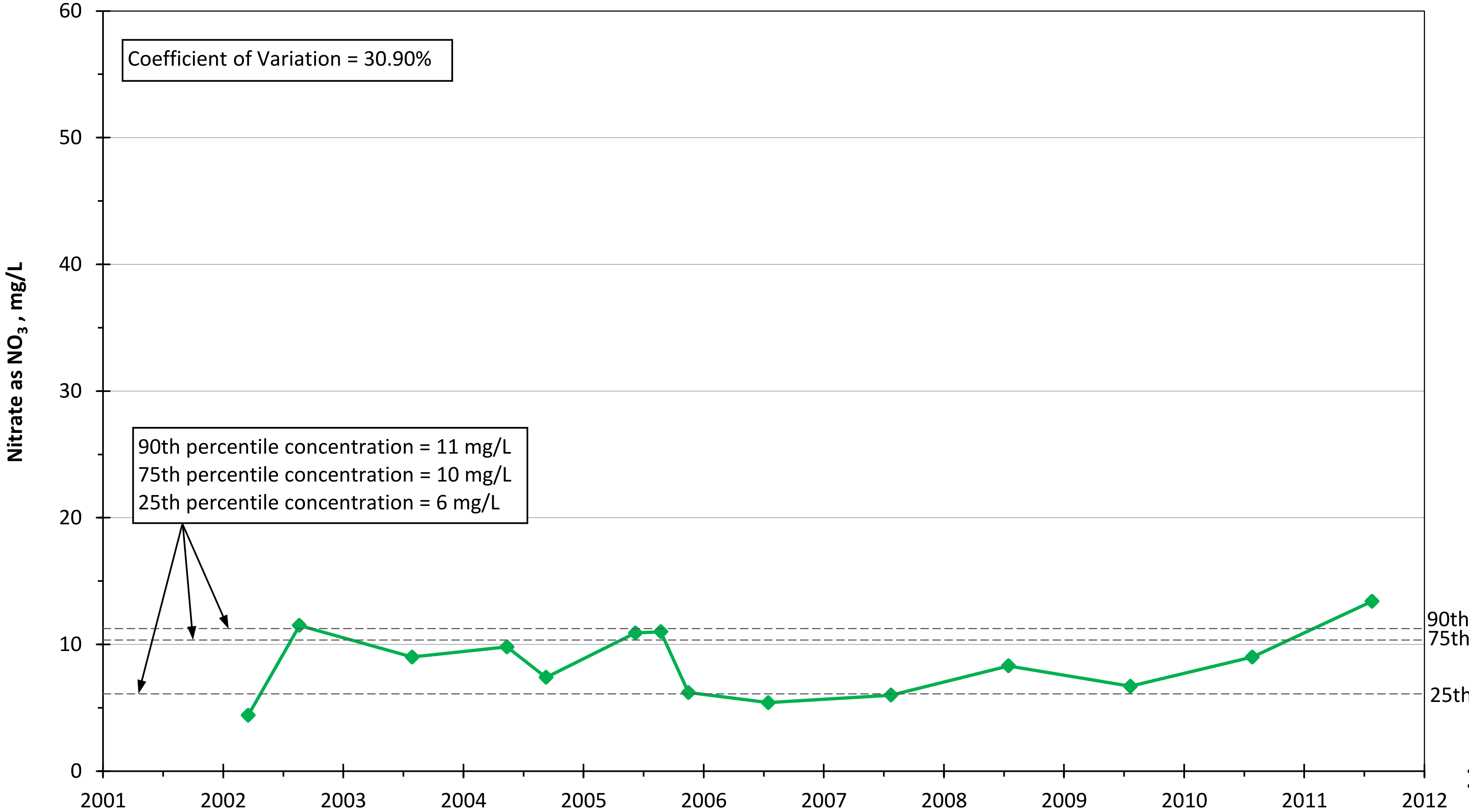

Nitrate as NO3 Concentrations in WELL 13 - Newhall
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 16.93%
90th percentile concentration = 34 mg/L
75th percentile concentration = 32 mg/L
25th percentile concentration = 25 mg/L
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C


Nitrate as NO3 Concentrations in Well 201
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 14.77%
90th percentile concentration = 18 mg/L
75th percentile concentration = 17 mg/L
25th percentile concentration = 14 mg/L
Nitrate as NO$_3$, mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

Nitrate as NO3 Concentrations in Well 205
Management Zone 6 (Saugus)
2001-2011



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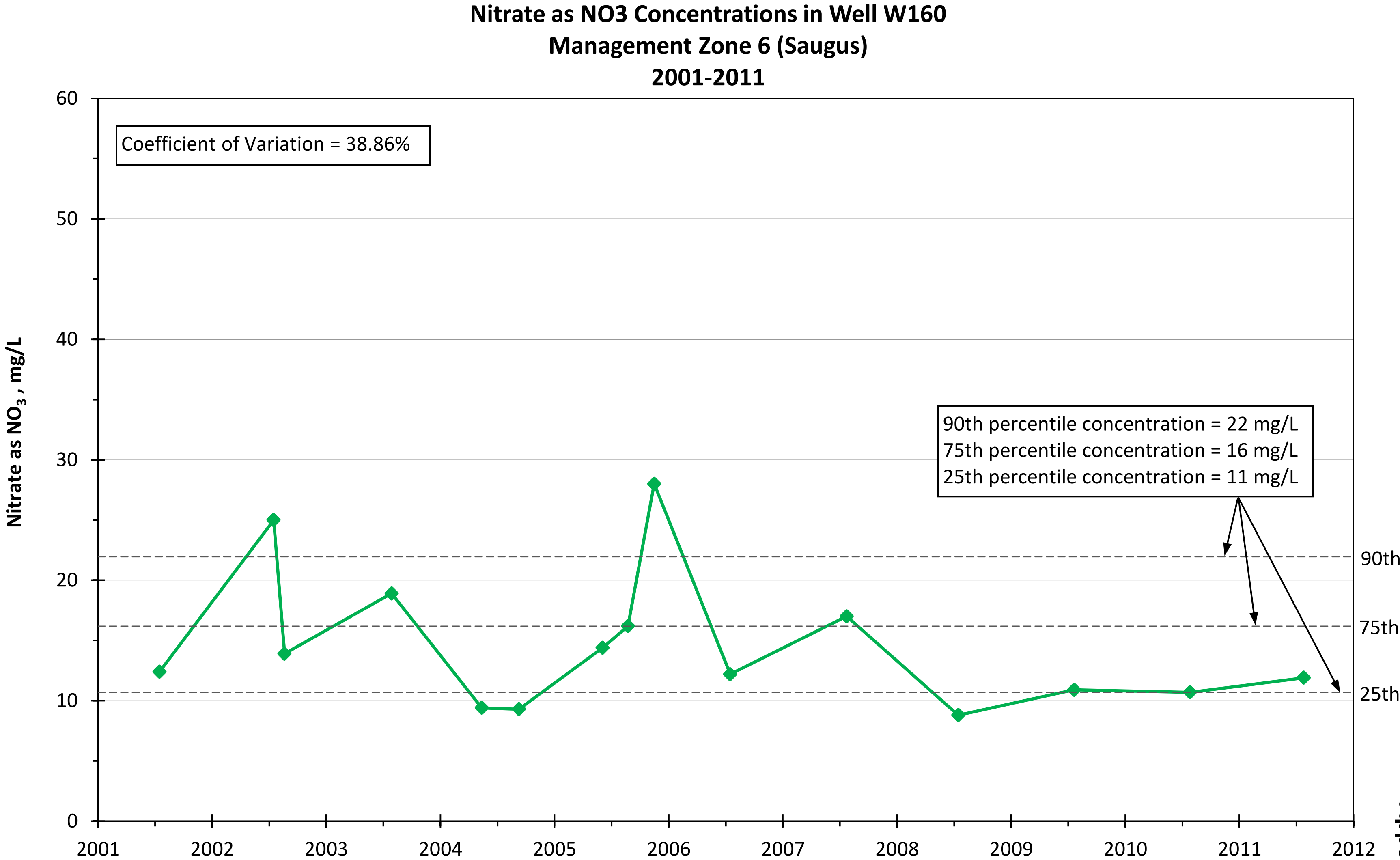
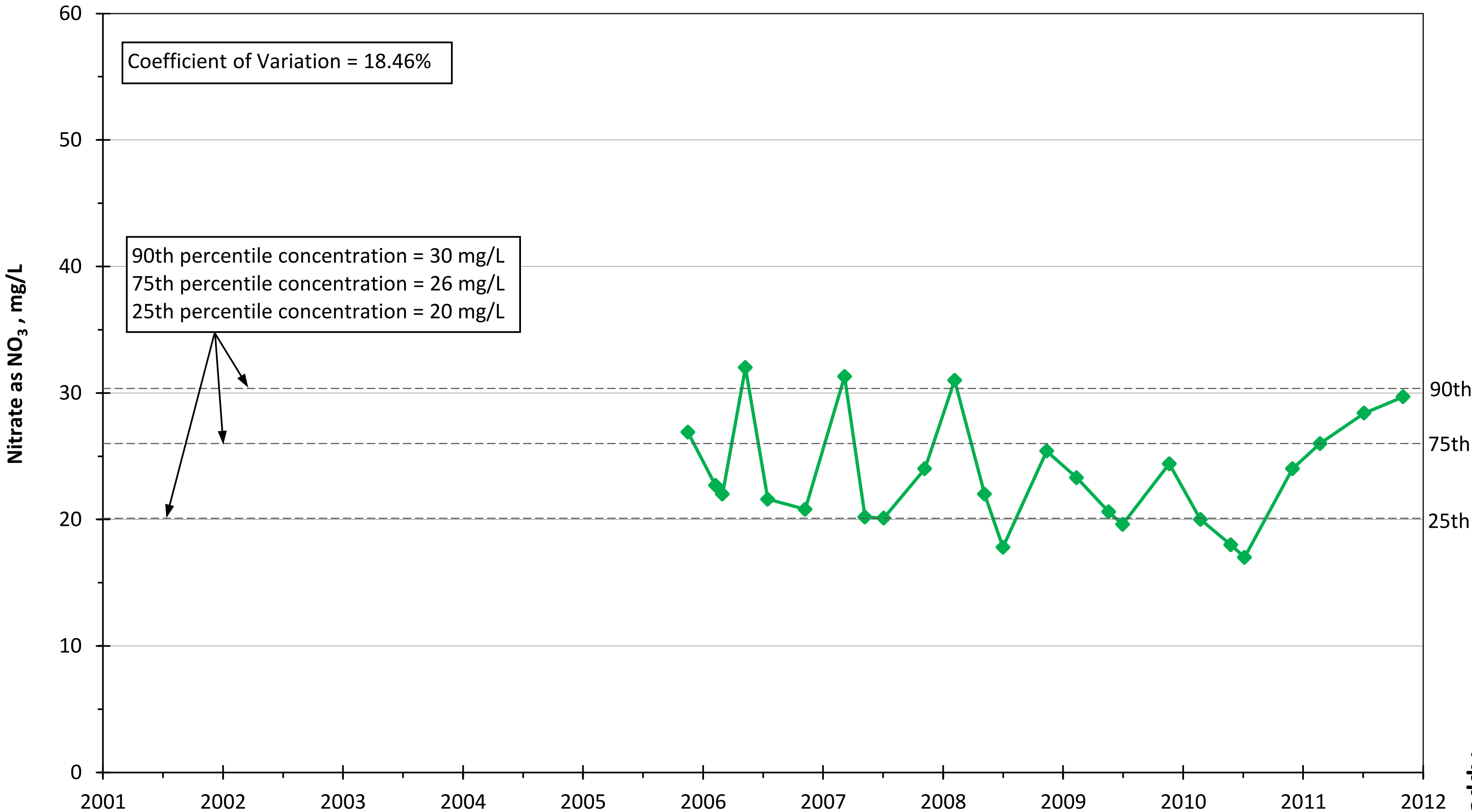

Nitrate as NO3 Concentrations in Well W160
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 38.86%
90th percentile concentration = 22 mg/L
75th percentile concentration = 16 mg/L
25th percentile concentration = 11 mg/L
90th
75th
25th
Nitrate as NO_3 , mg/L
0
10
20
30
40
50
60
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Appendix C

Nitrate as NO3 Concentrations in Well 206
Management Zone 6 (Saugus)
2001-2011



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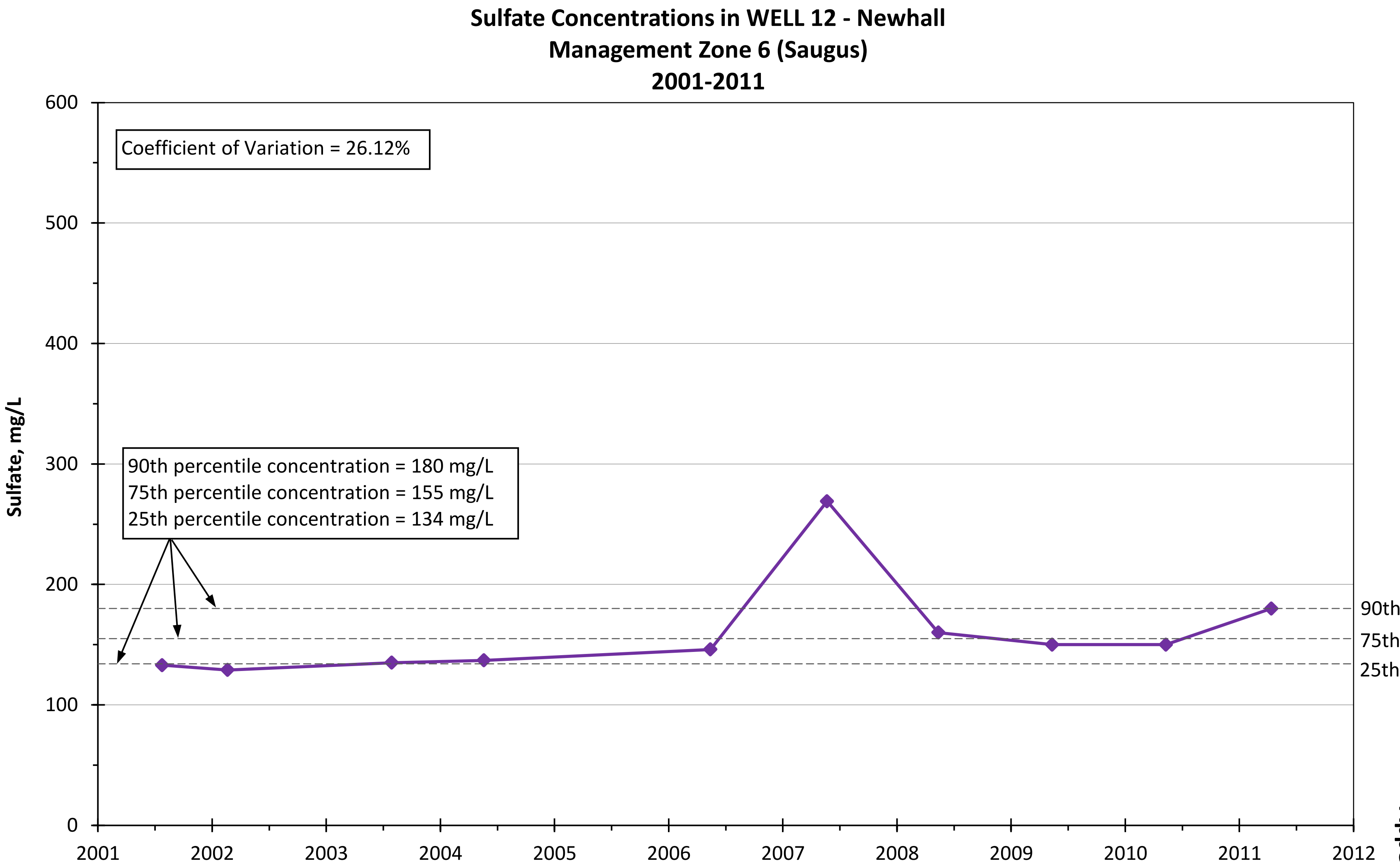
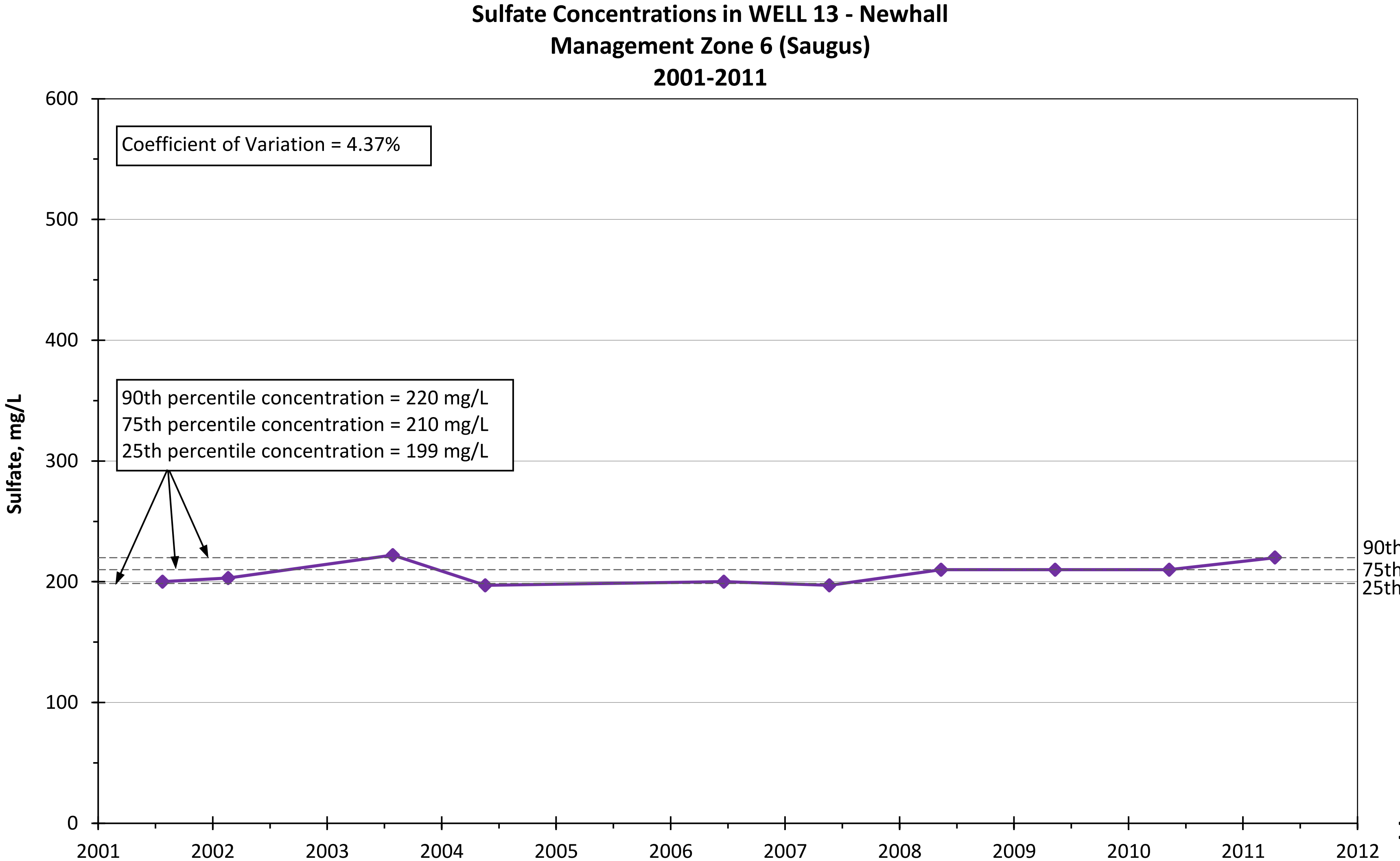
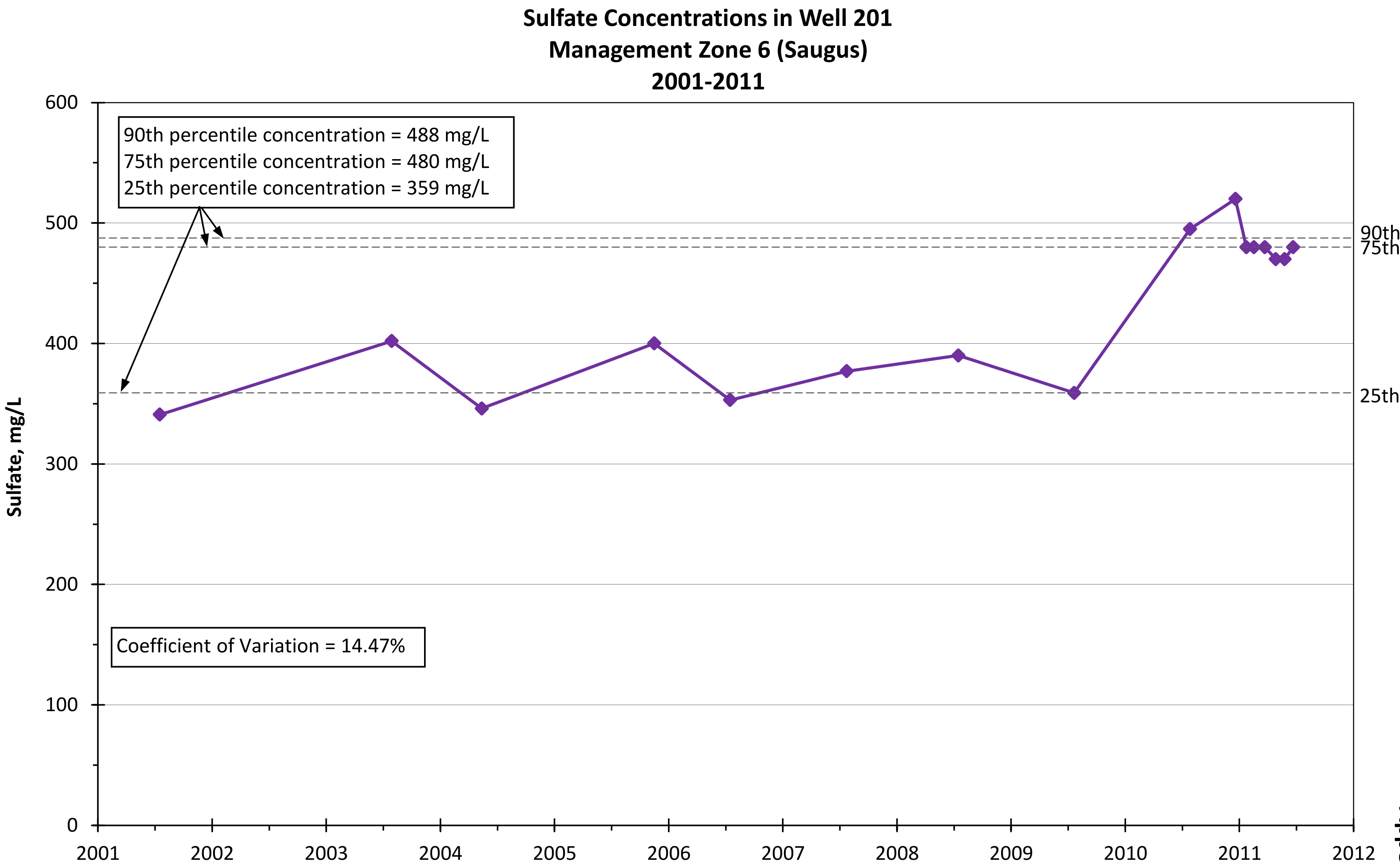
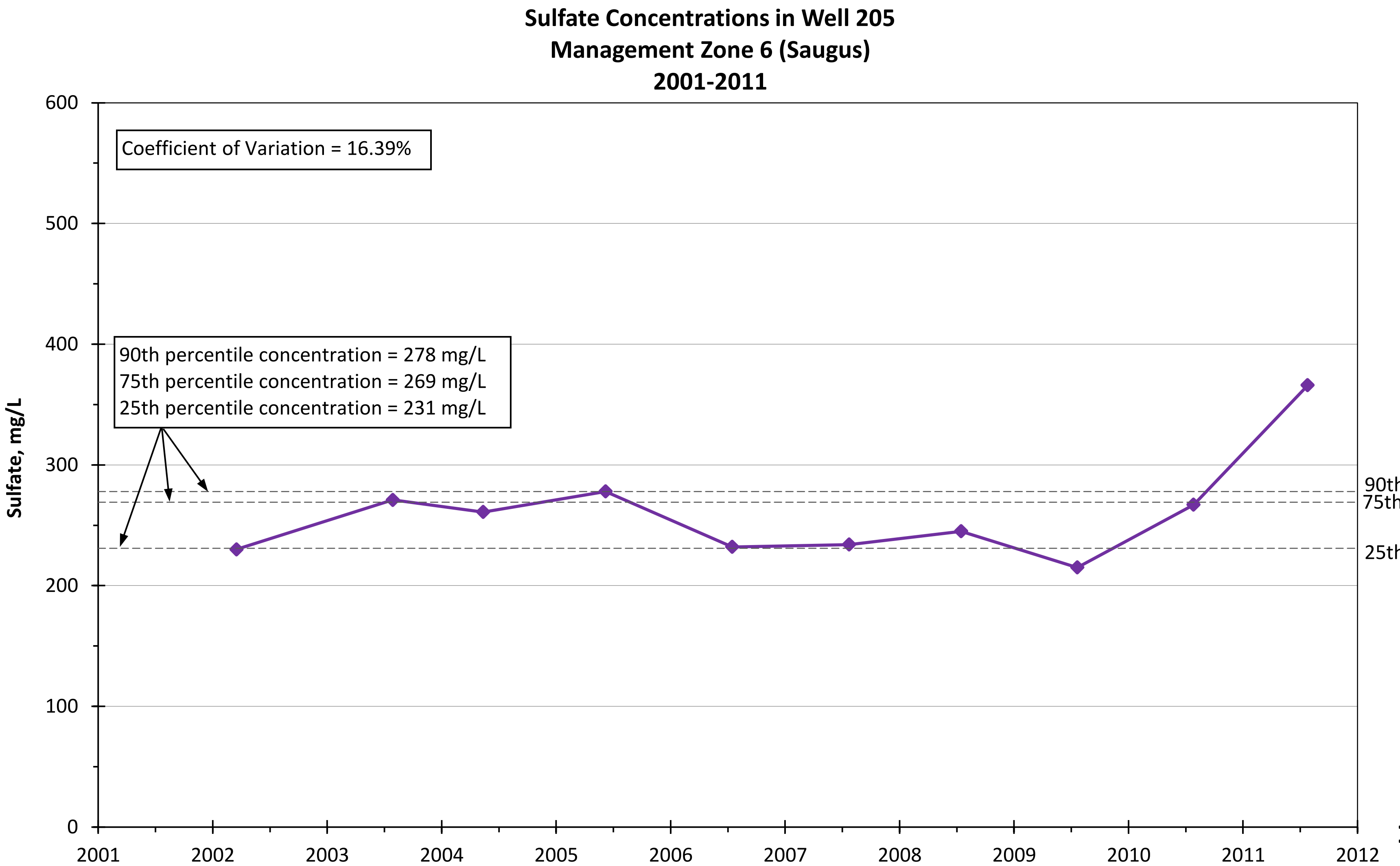

Sulfate Concentrations in WELL 12 - Newhall
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 26.12%
90th percentile concentration = 180 mg/L
75th percentile concentration = 155 mg/L
25th percentile concentration = 134 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

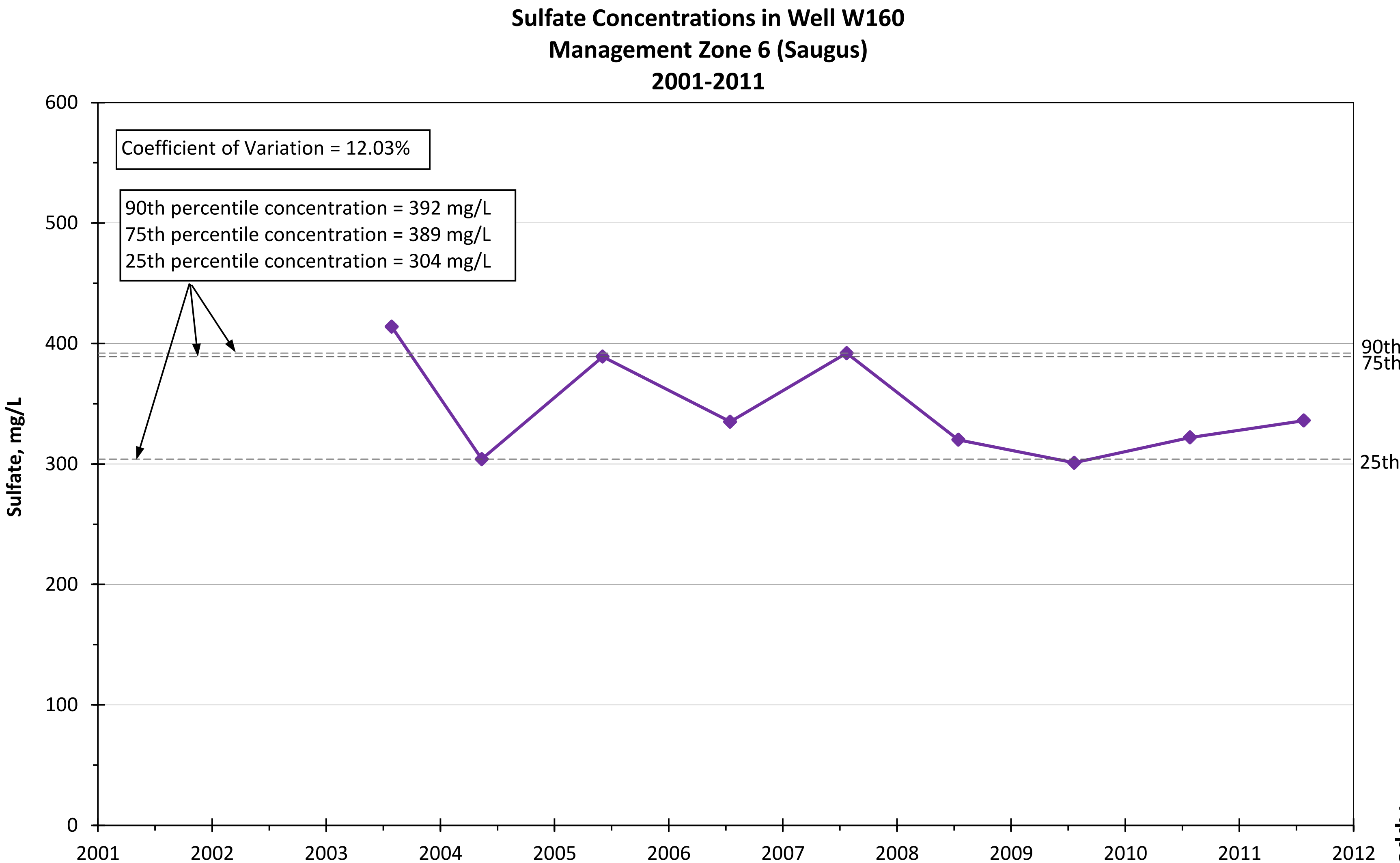

Sulfate Concentrations in WELL 13 - Newhall
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 4.37%
90th percentile concentration = 220 mg/L
75th percentile concentration = 210 mg/L
25th percentile concentration = 199 mg/L
Sulfate, mg/L
600
500
400
300
200
100
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

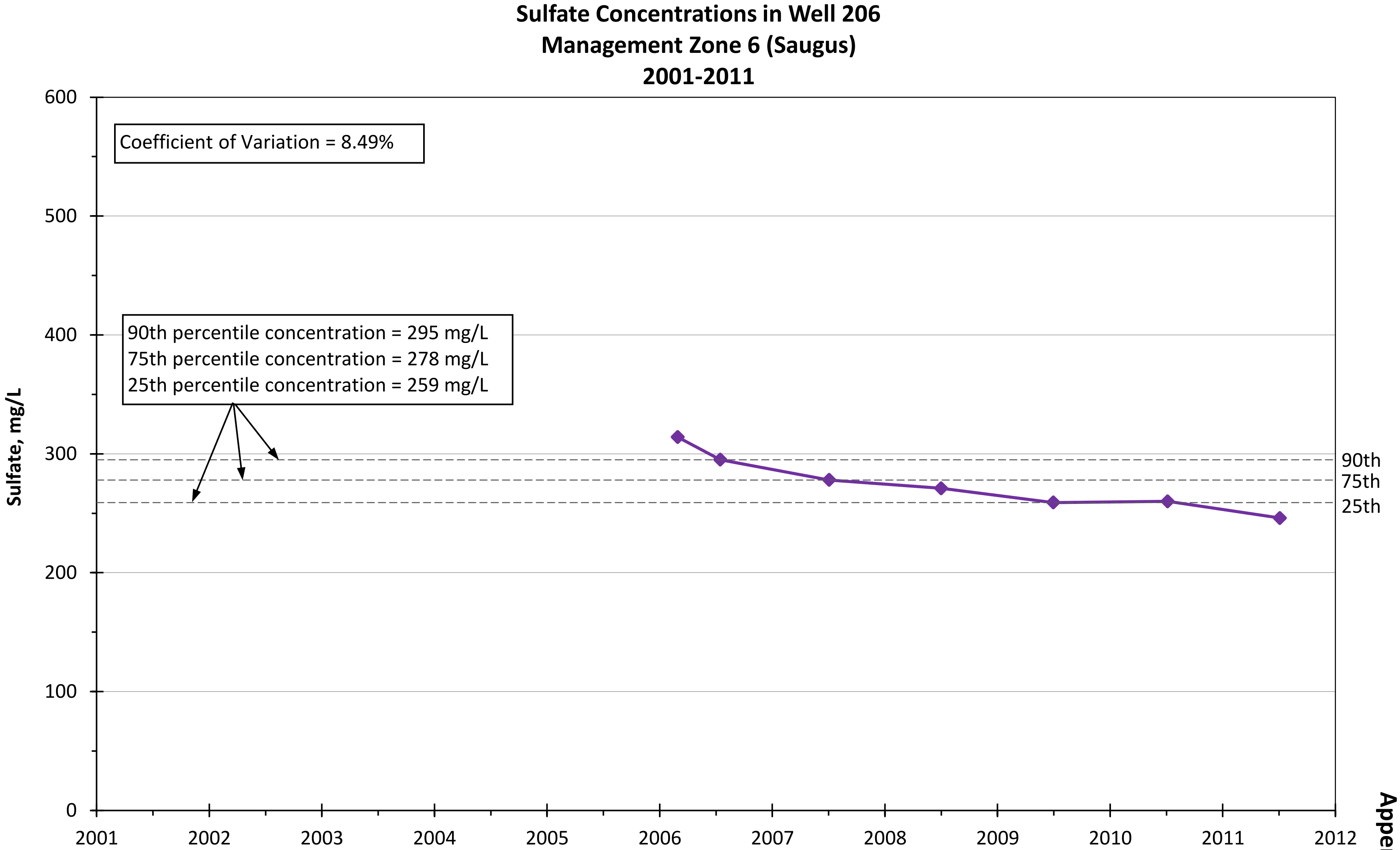
Appendix C


Sulfate Concentrations in Well 201
Management Zone 6 (Saugus)
2001-2011
90th percentile concentration = 488 mg/L
75th percentile concentration = 480 mg/L
25th percentile concentration = 359 mg/L
Coefficient of Variation = 14.47%
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

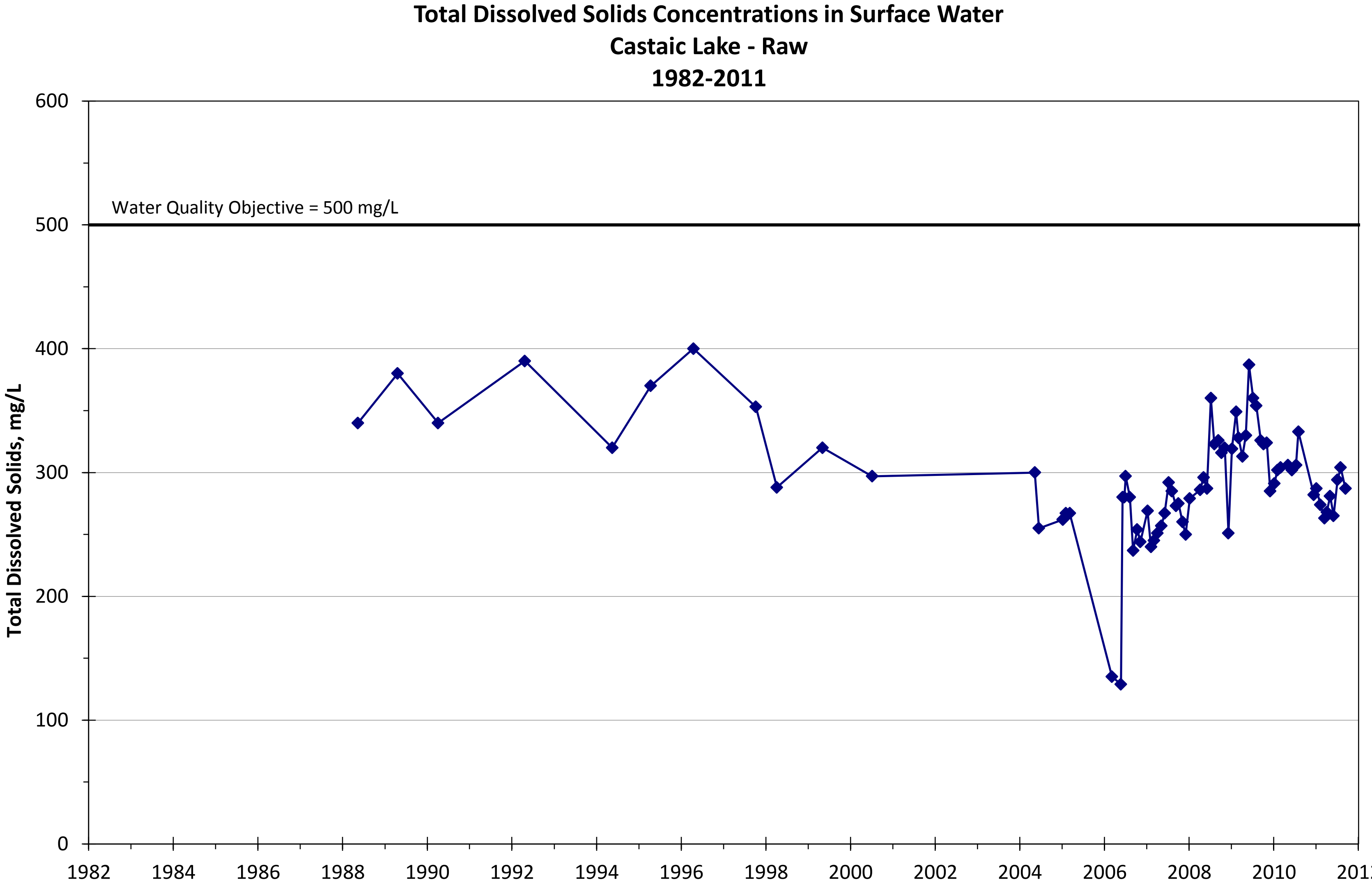

Sulfate Concentrations in Well 205
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 16.39%
90th percentile concentration = 278 mg/L
75th percentile concentration = 269 mg/L
25th percentile concentration = 231 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

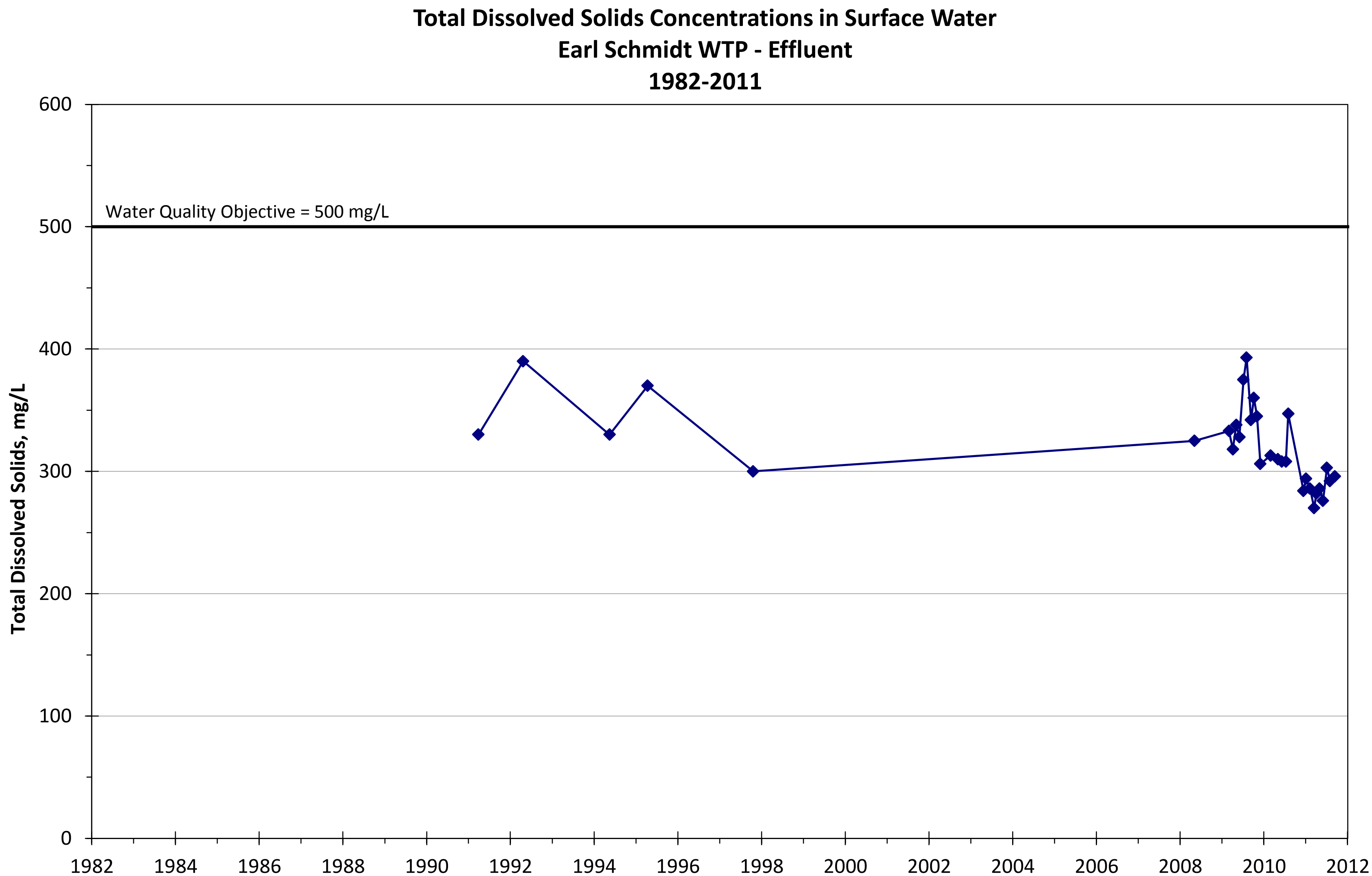
Appendix C


Sulfate Concentrations in Well W160
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 12.03%
90th percentile concentration = 392 mg/L
75th percentile concentration = 389 mg/L
25th percentile concentration = 304 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

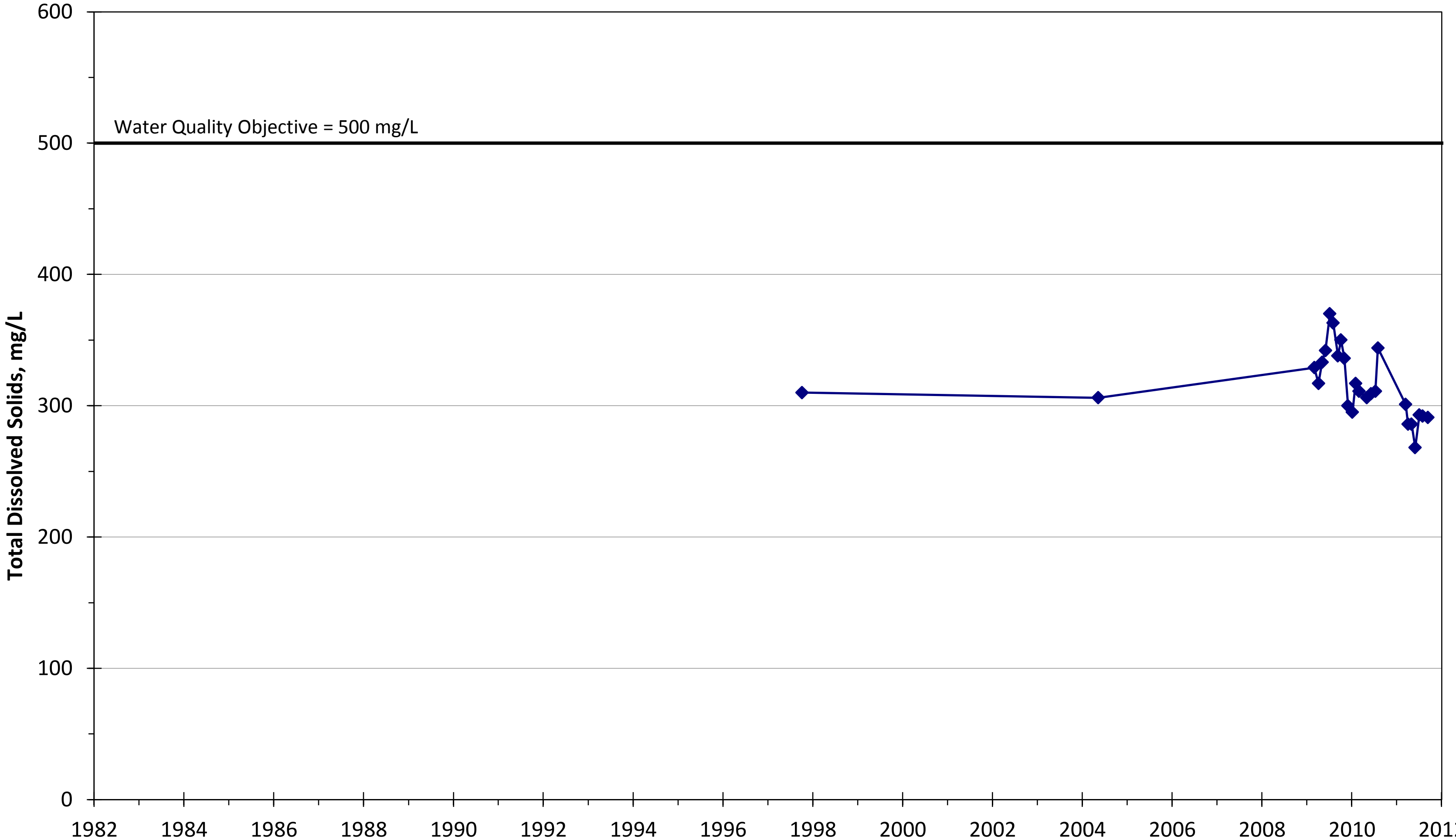

Sulfate Concentrations in Well 206
Management Zone 6 (Saugus)
2001-2011
Coefficient of Variation = 8.49%
90th percentile concentration = 295 mg/L
75th percentile concentration = 278 mg/L
25th percentile concentration = 259 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
90th
75th
25th

Appendix C

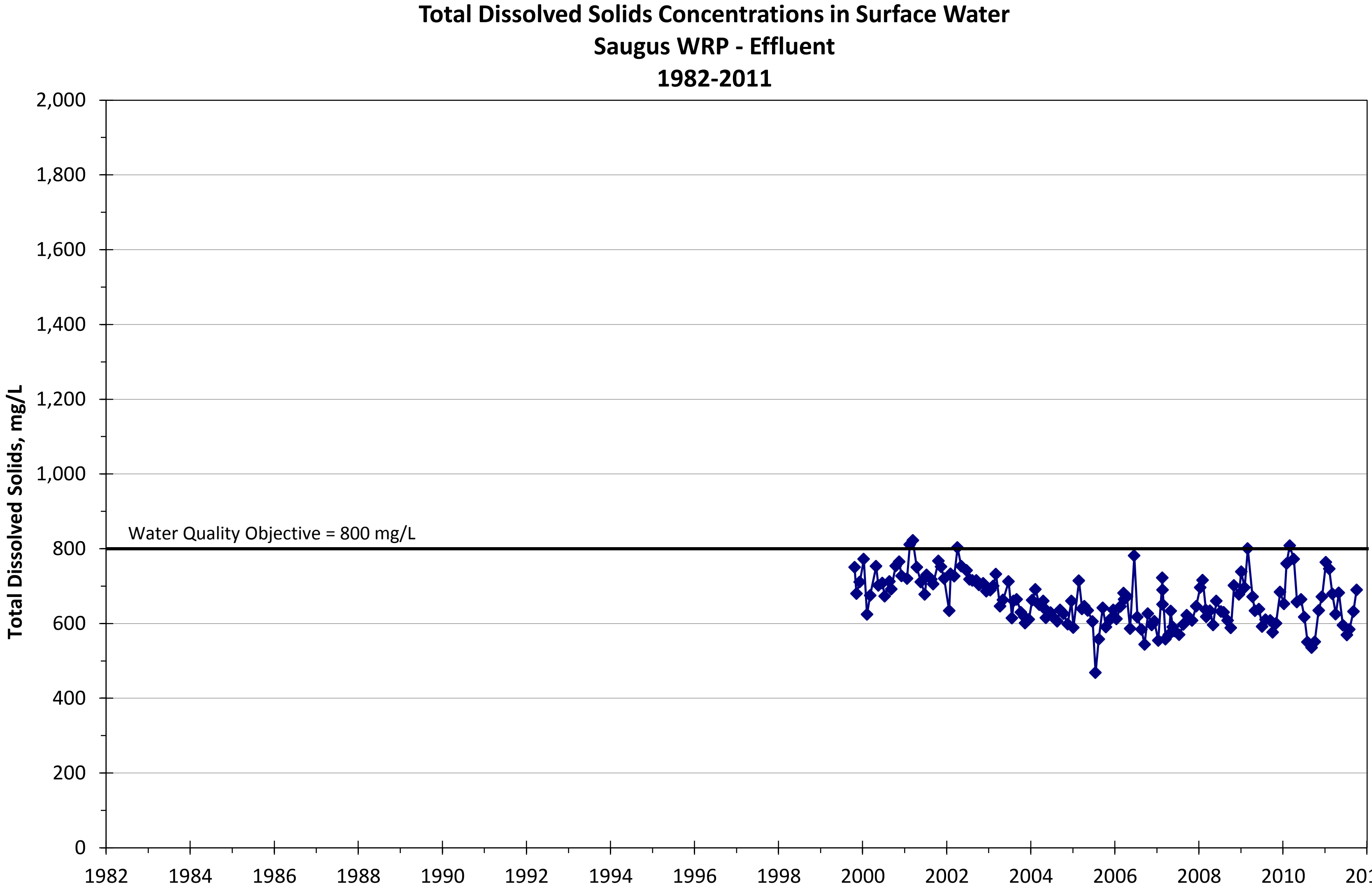

Total Dissolved Solids Concentrations in Surface Water
Castaic Lake - Raw
1982-2011
Water Quality Objective = 500 mg/L
Total Dissolved Solids, mg/L
0
100
200
300
400
500
600
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012


Total Dissolved Solids Concentrations in Surface Water
Earl Schmidt WTP - Effluent
1982-2011
Water Quality Objective = 500 mg/L
Total Dissolved Solids, mg/L
0
100
200
300
400
500
600
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

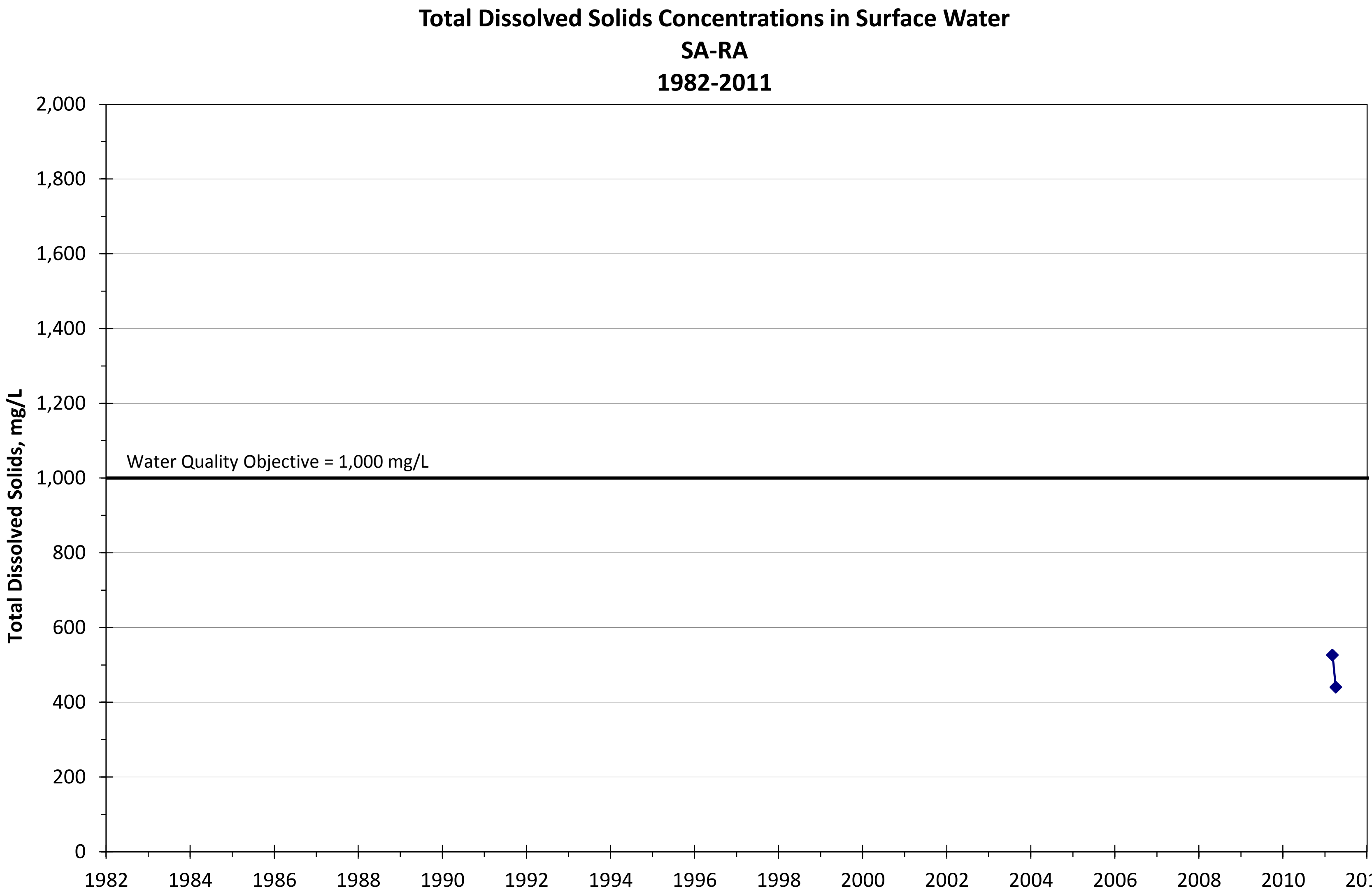
Total Dissolved Solids Concentrations in Surface Water
Rio Vista WTP - Effluent
1982-2011



Appendix C

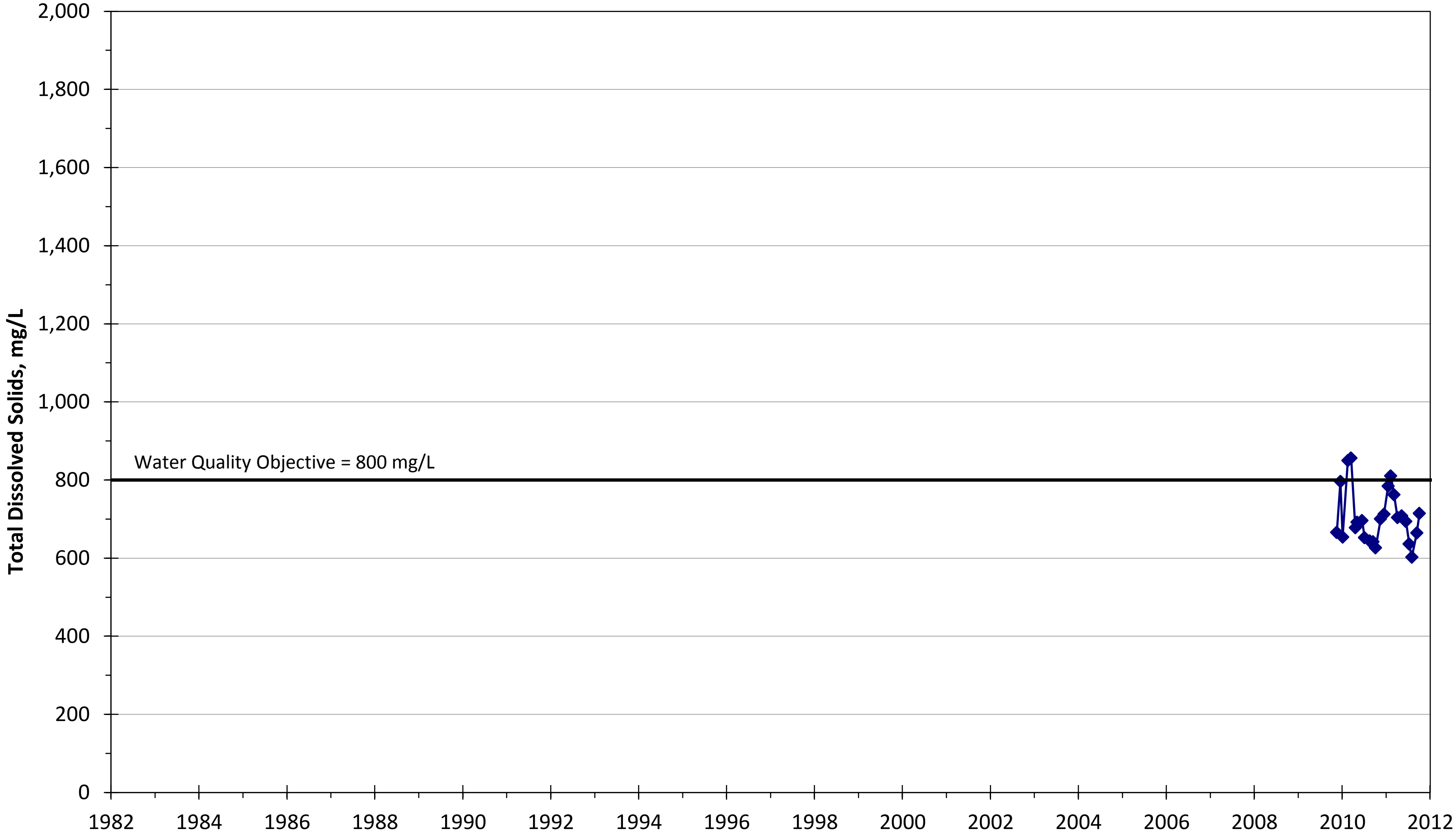

Total Dissolved Solids Concentrations in Surface Water
Saugus WRP - Effluent
1982-2011
Total Dissolved Solids, mg/L
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Water Quality Objective = 800 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

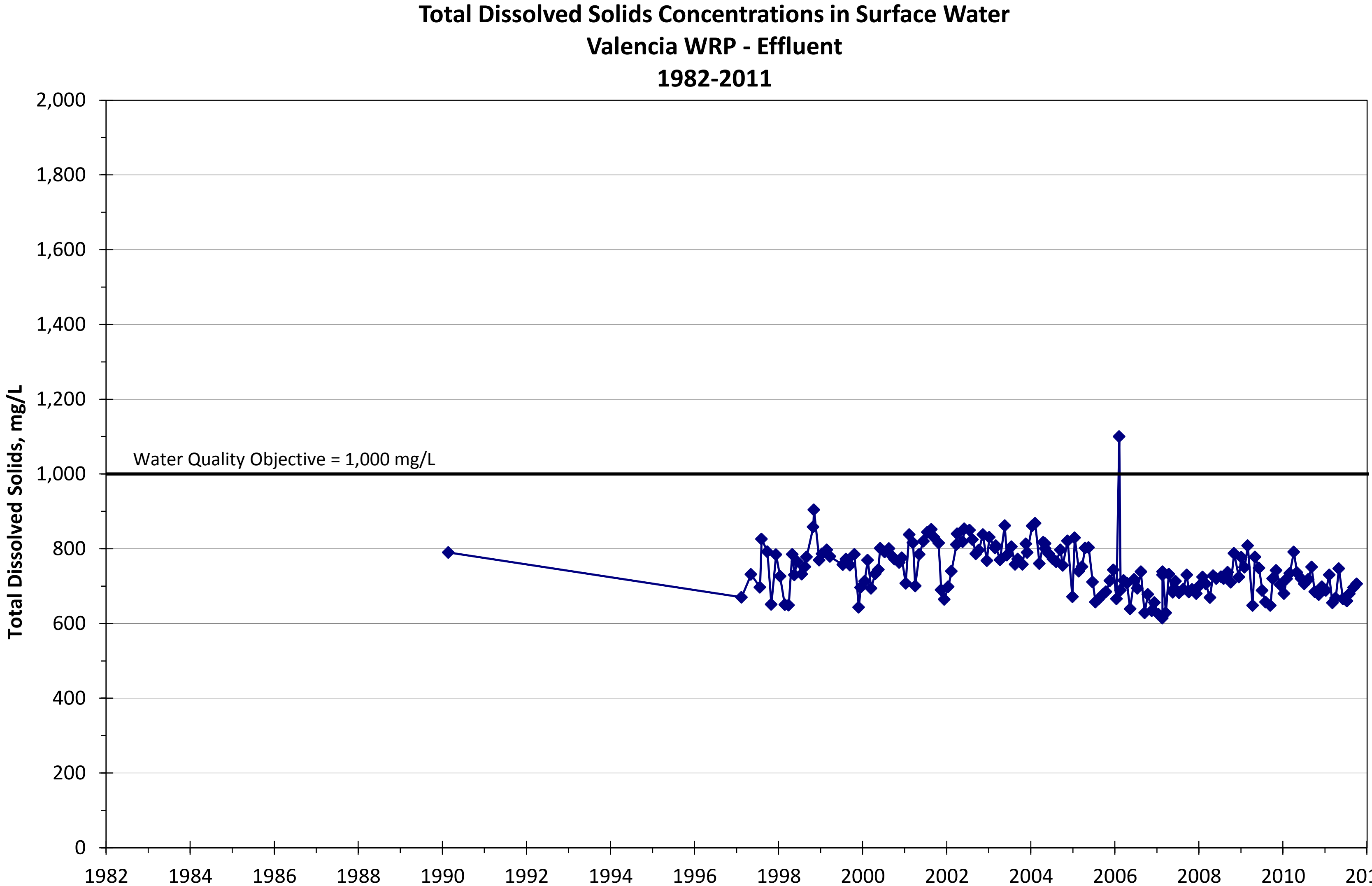
Appendix C


Total Dissolved Solids Concentrations in Surface Water
SA-RA
1982-2011
Total Dissolved Solids, mg/L
Water Quality Objective = 1,000 mg/L
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

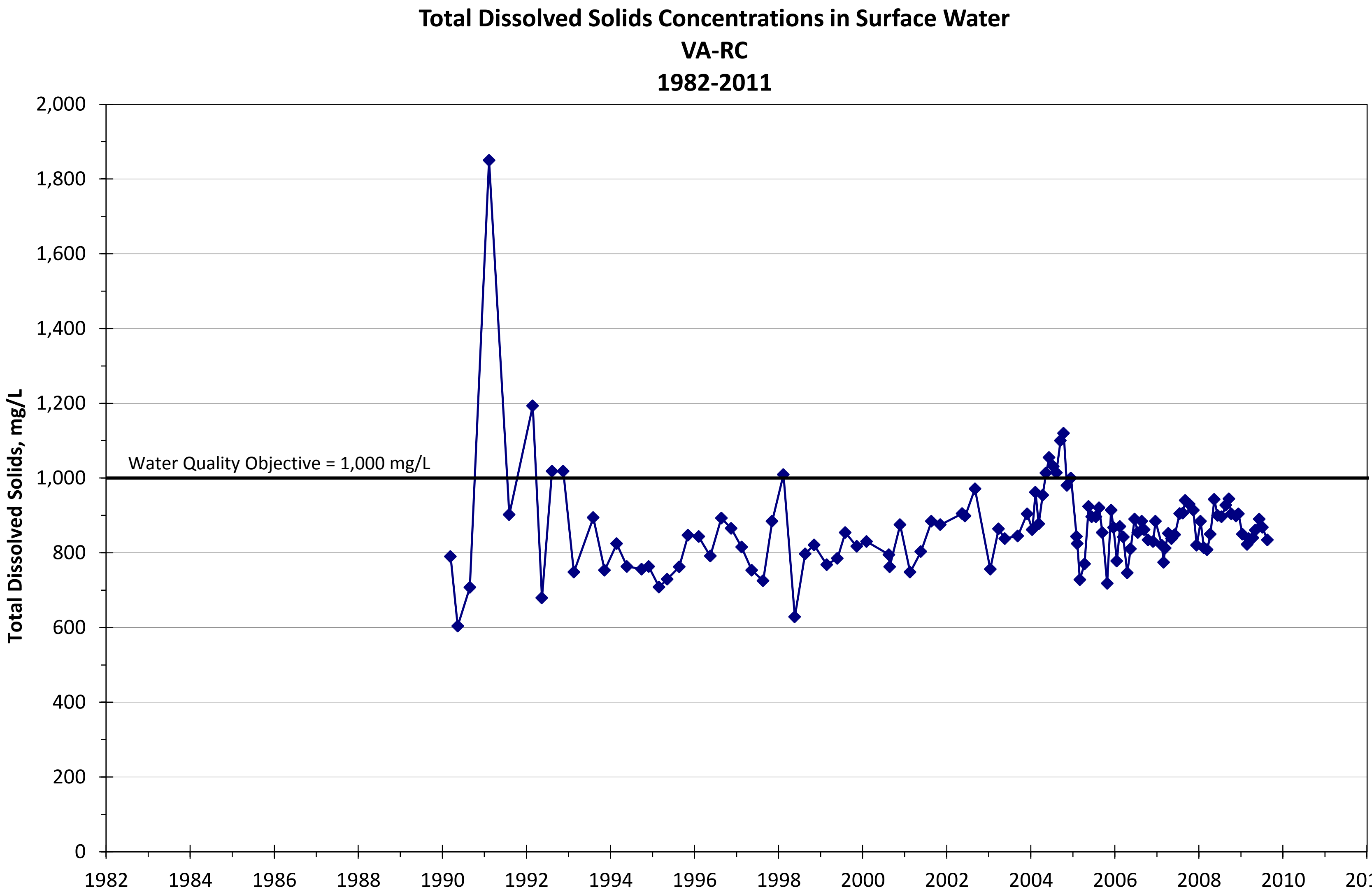
Appendix C

Total Dissolved Solids Concentrations in Surface Water
SA-RB
1982-2011

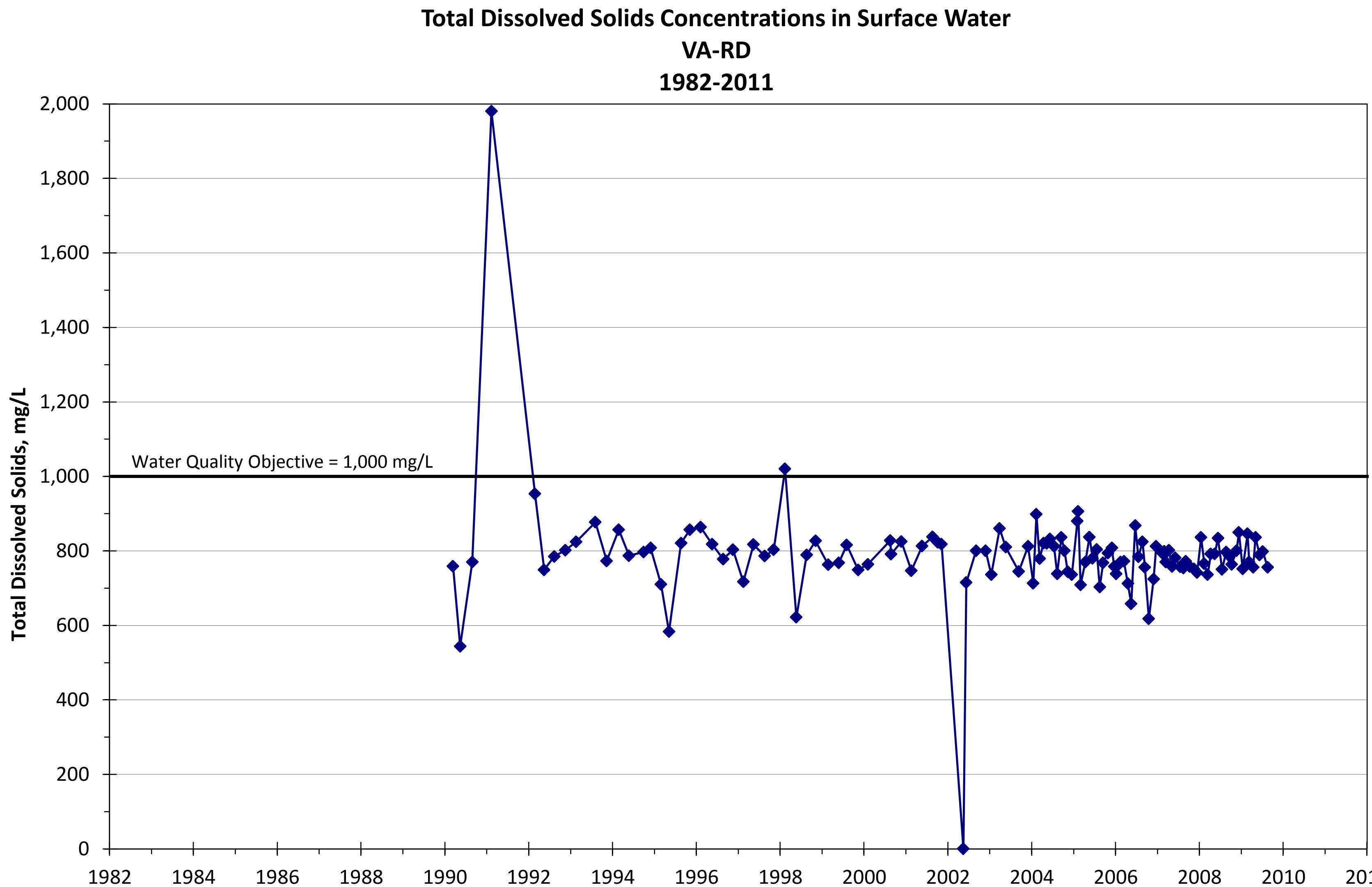



Total Dissolved Solids Concentrations in Surface Water
Valencia WRP - Effluent
1982-2011
Total Dissolved Solids, mg/L
Water Quality Objective = 1,000 mg/L
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

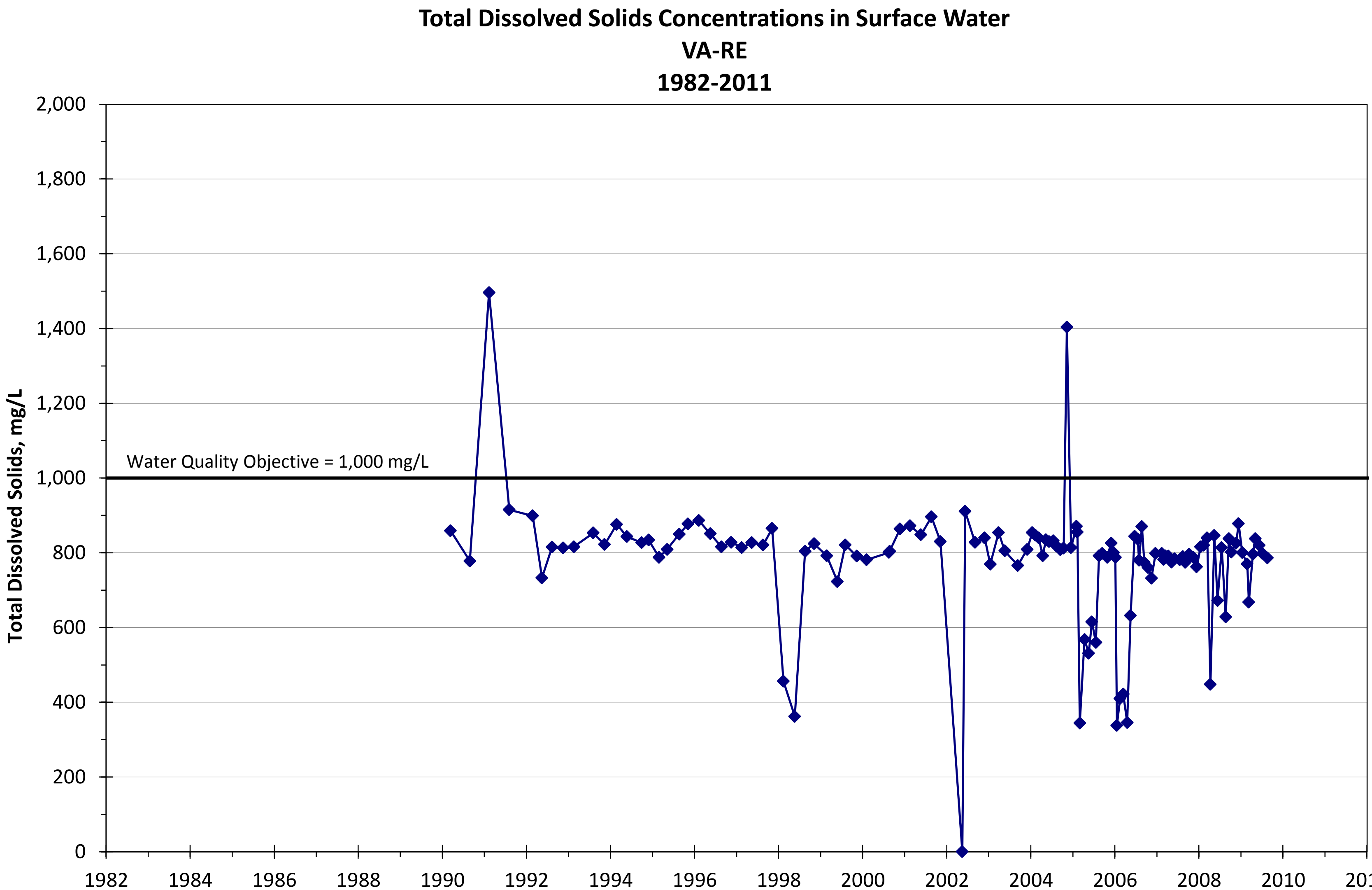
Appendix C

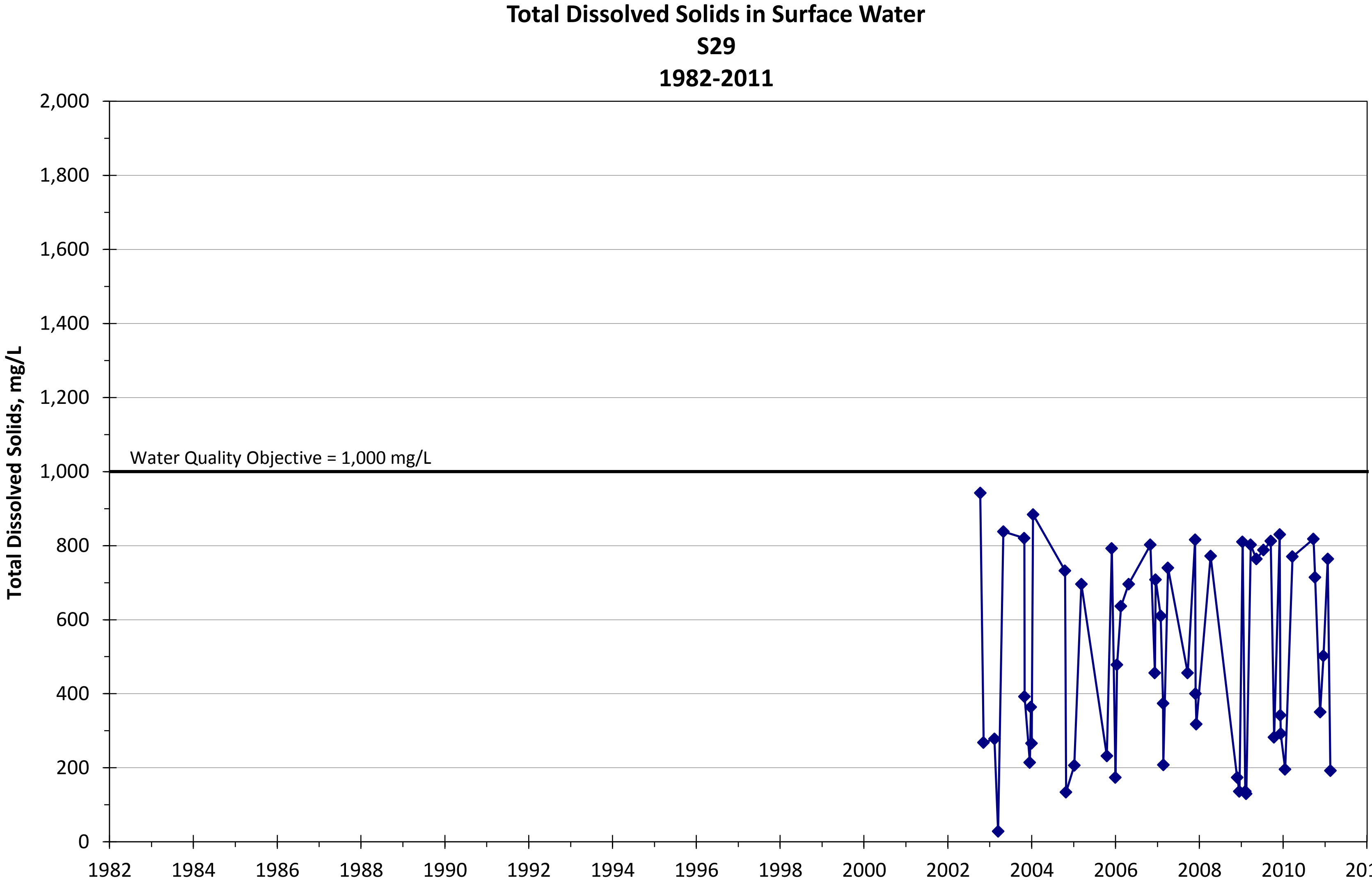

Total Dissolved Solids Concentrations in Surface Water
VA-RC
1982-2011
Total Dissolved Solids, mg/L
Water Quality Objective = 1,000 mg/L
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

Appendix C

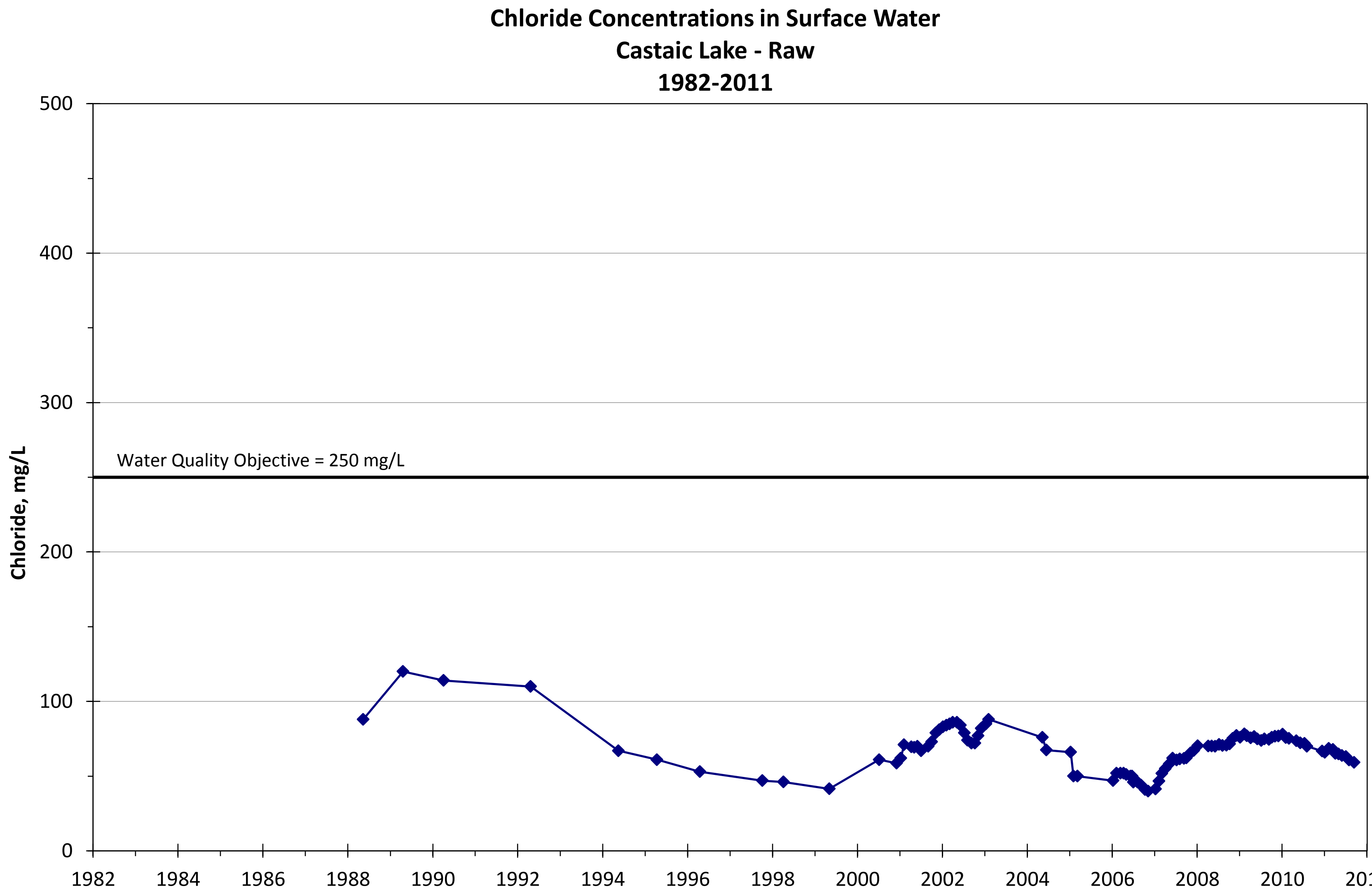

Total Dissolved Solids Concentrations in Surface Water
VA-RD
1982-2011
Total Dissolved Solids, mg/L
Water Quality Objective = 1,000 mg/L
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

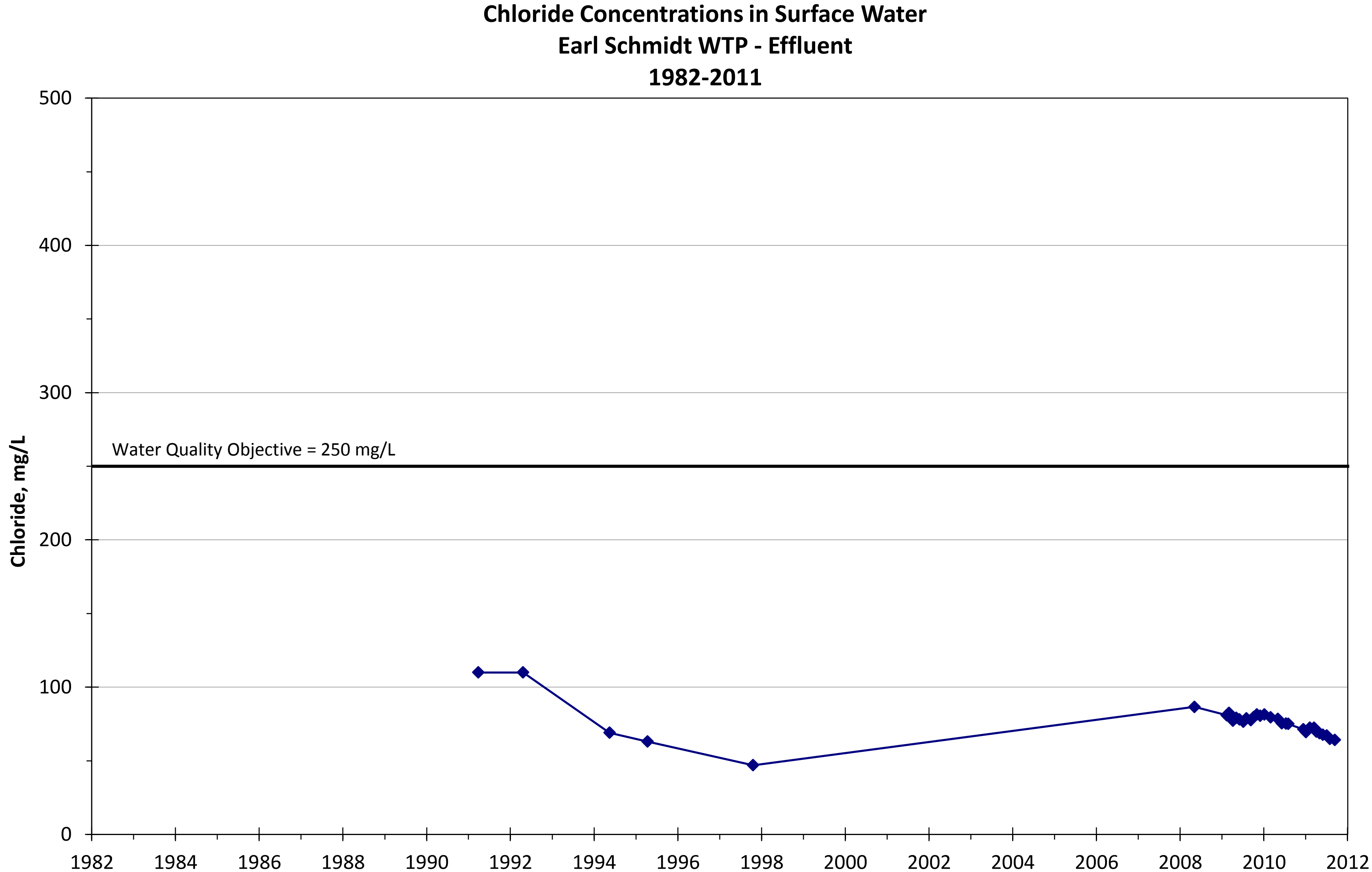
Appendix C

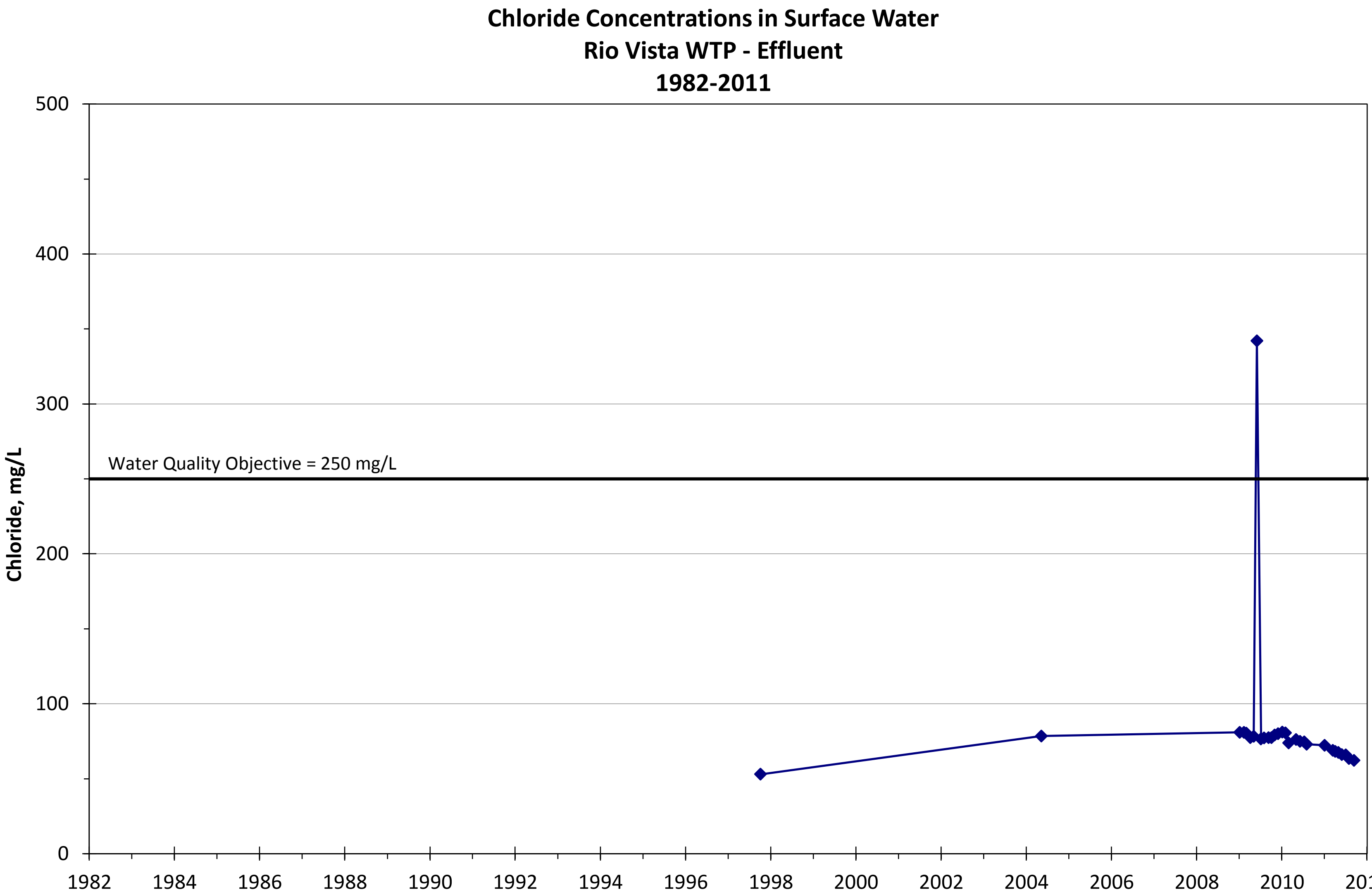

Total Dissolved Solids Concentrations in Surface Water
VA-RE
1982-2011
Total Dissolved Solids, mg/L
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Water Quality Objective = 1,000 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012


Total Dissolved Solids in Surface Water
S29
1982-2011
Total Dissolved Solids, mg/L
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Water Quality Objective = 1,000 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

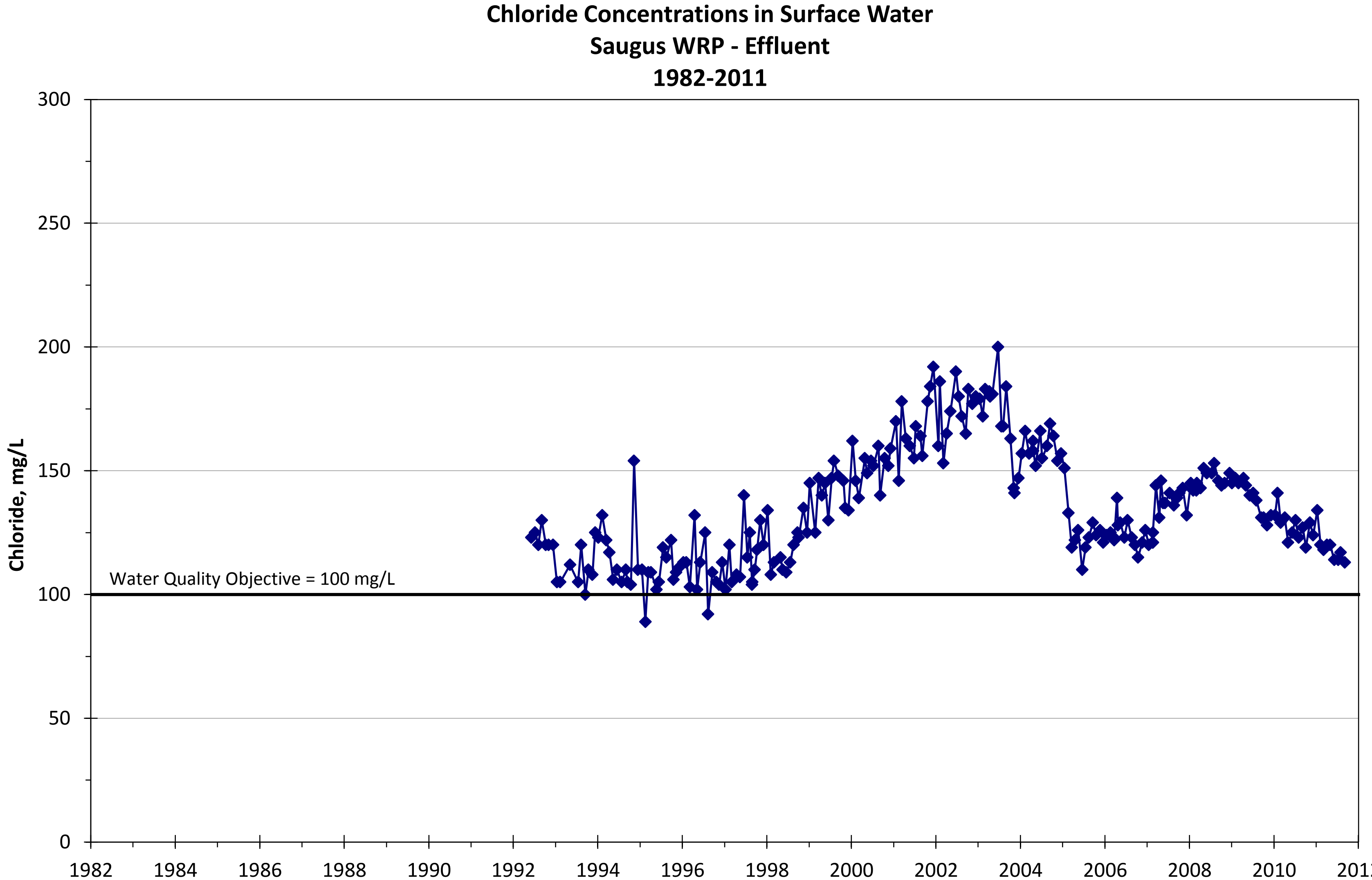
Appendix C

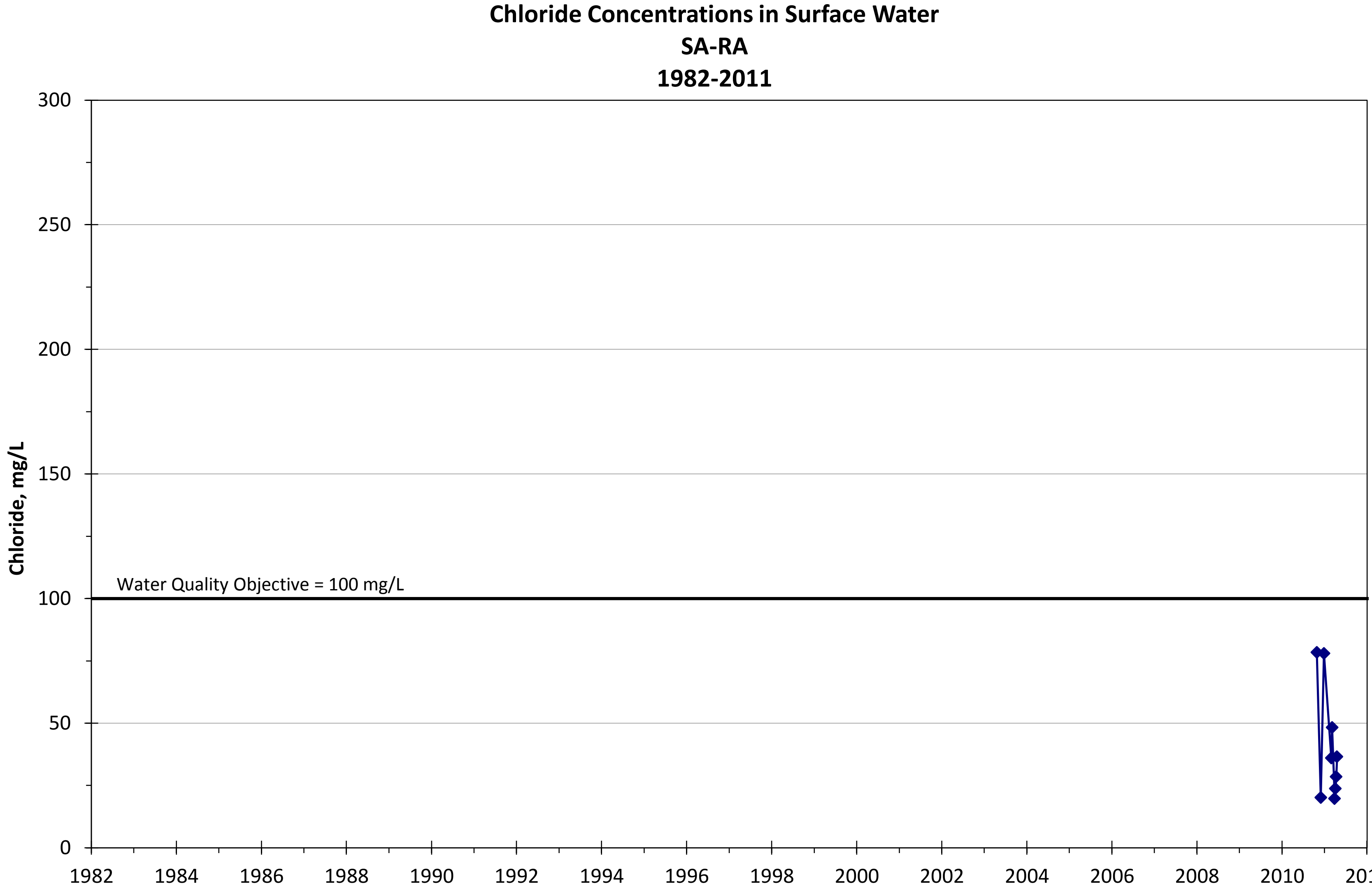

Chloride Concentrations in Surface Water
Castaic Lake - Raw
1982-2011
Chloride, mg/L
Water Quality Objective = 250 mg/L
0
100
200
300
400
500
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012


Chloride Concentrations in Surface Water
Earl Schmidt WTP - Effluent
1982-2011
Water Quality Objective = 250 mg/L
Chloride, mg/L
0
100
200
300
400
500
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

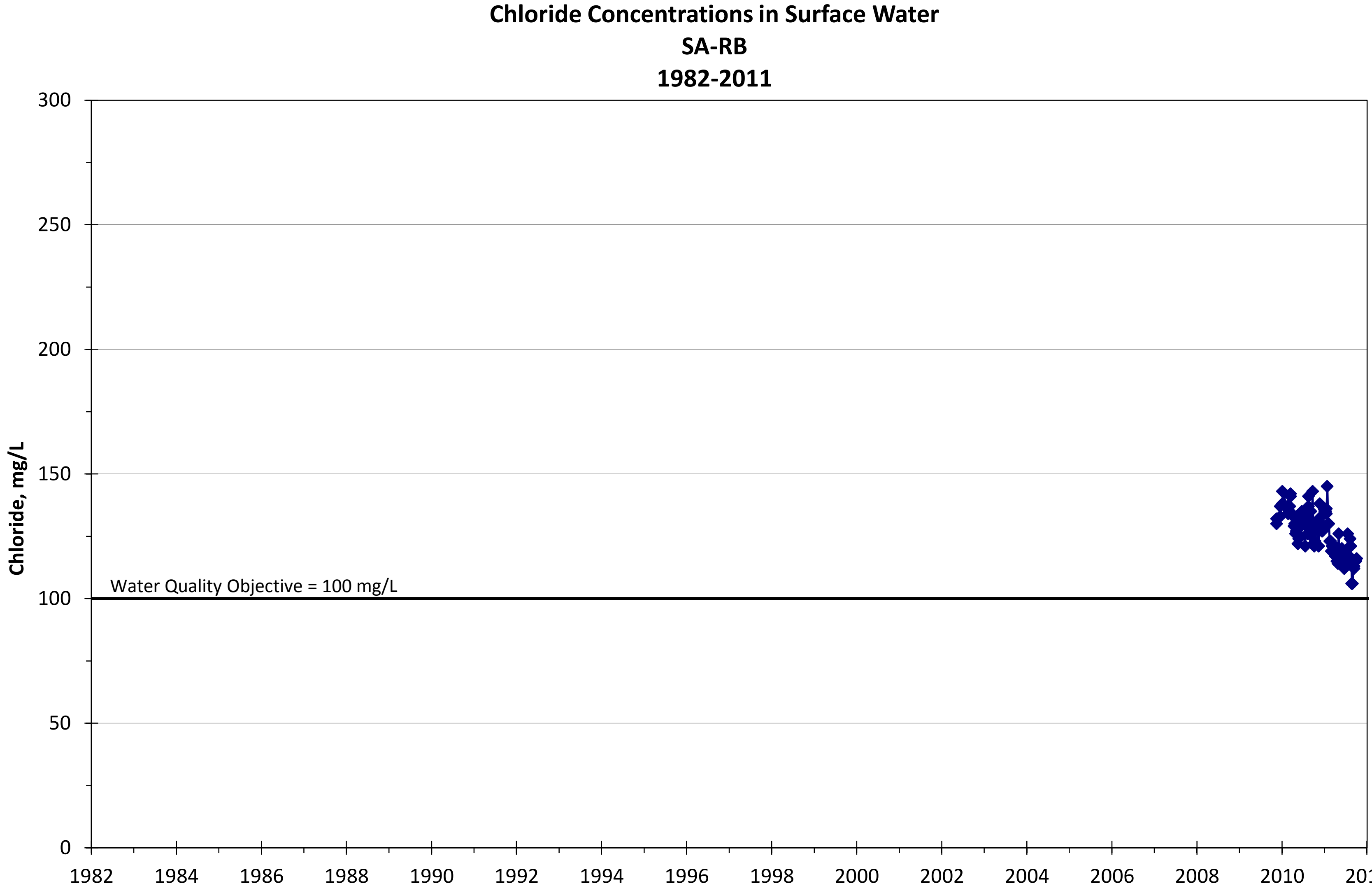

Chloride Concentrations in Surface Water
Rio Vista WTP - Effluent
1982-2011
Chloride, mg/L
500
400
300
200
100
0
Water Quality Objective = 250 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

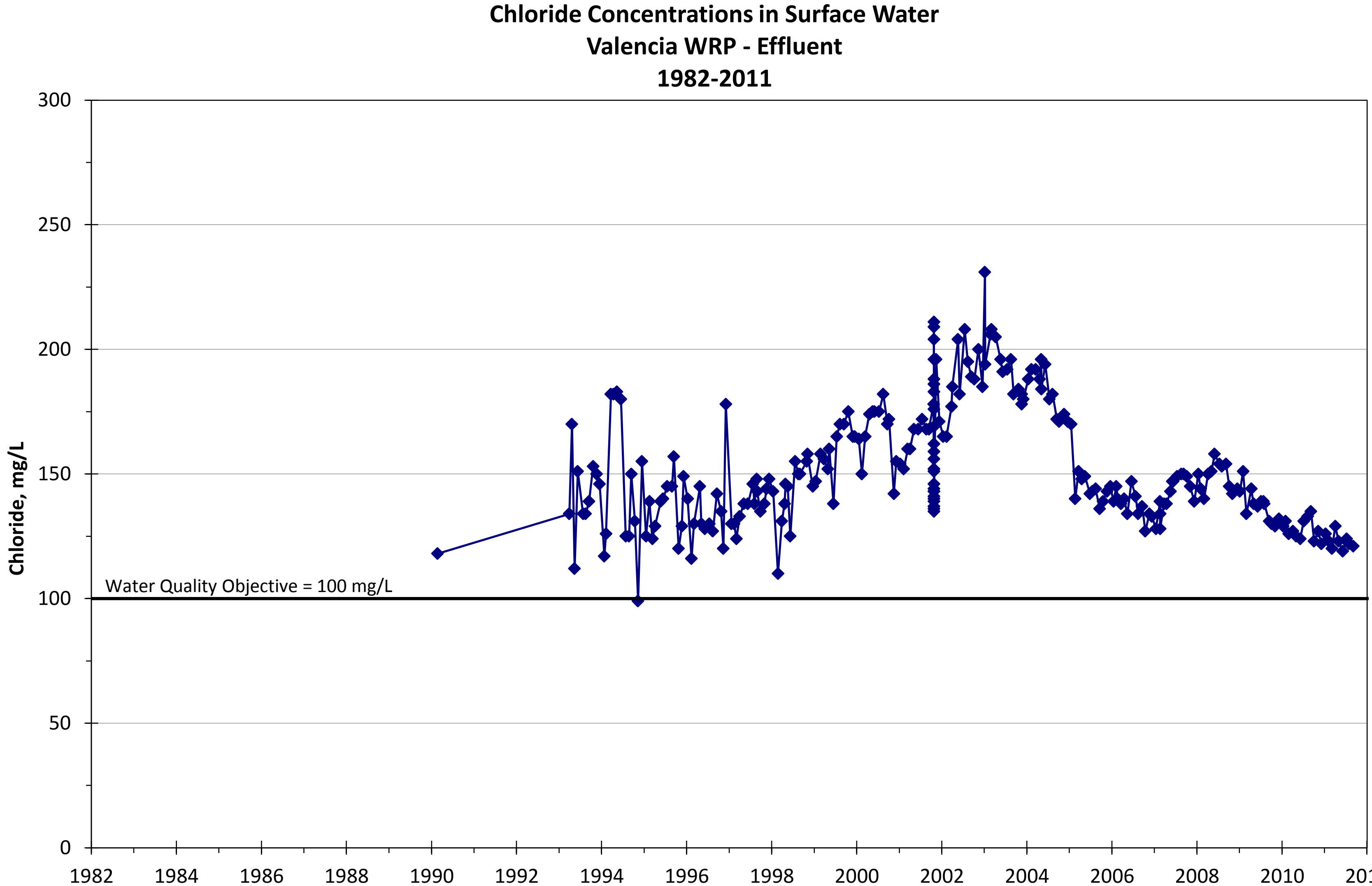
Appendix C


Chloride Concentrations in Surface Water
Saugus WRP - Effluent
1982-2011
Chloride, mg/L
Water Quality Objective = 100 mg/L
0
50
100
150
200
250
300
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

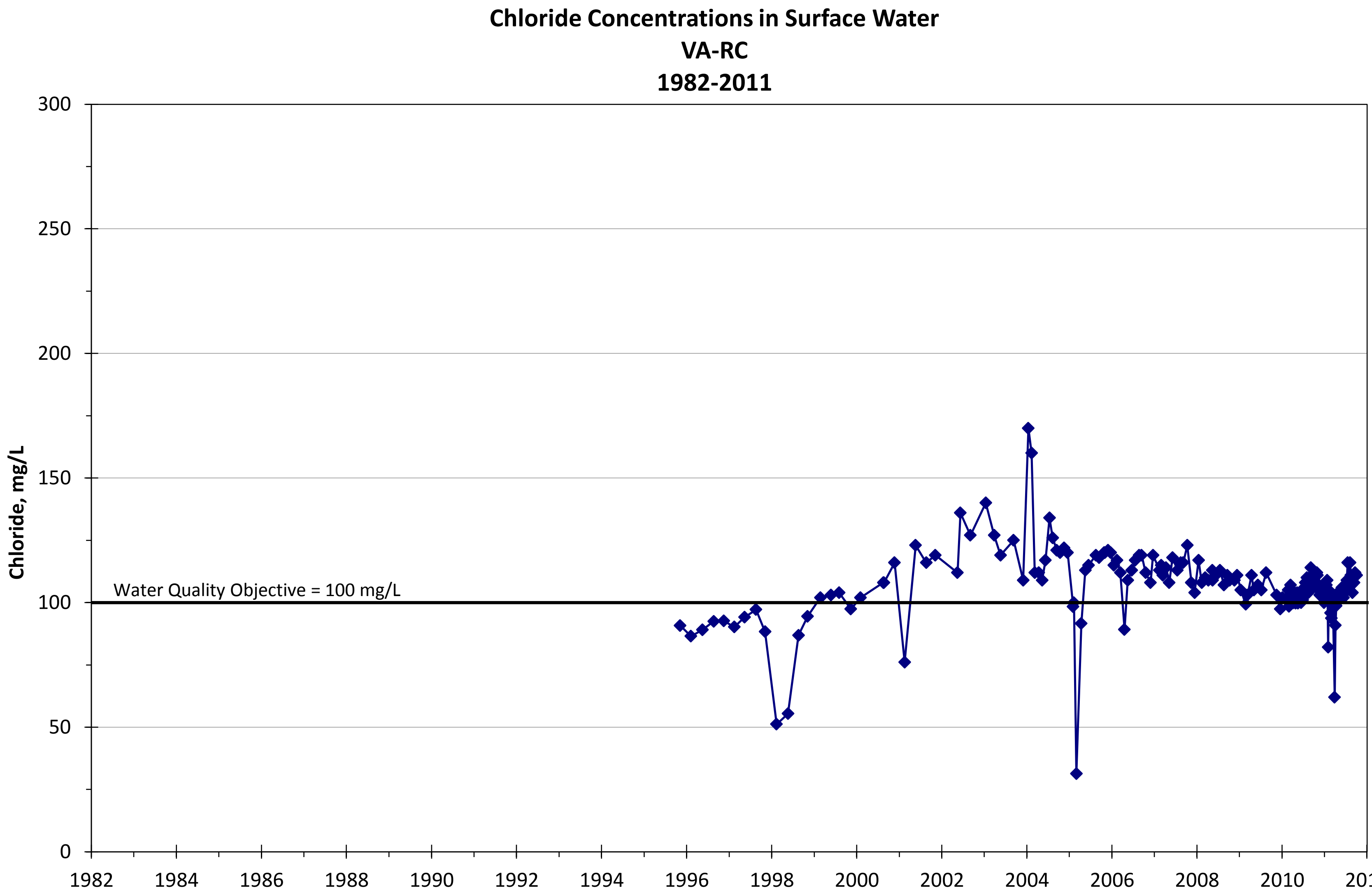

Chloride Concentrations in Surface Water
SA-RA
1982-2011
Chloride, mg/L
Water Quality Objective = 100 mg/L
0
50
100
150
200
250
300
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

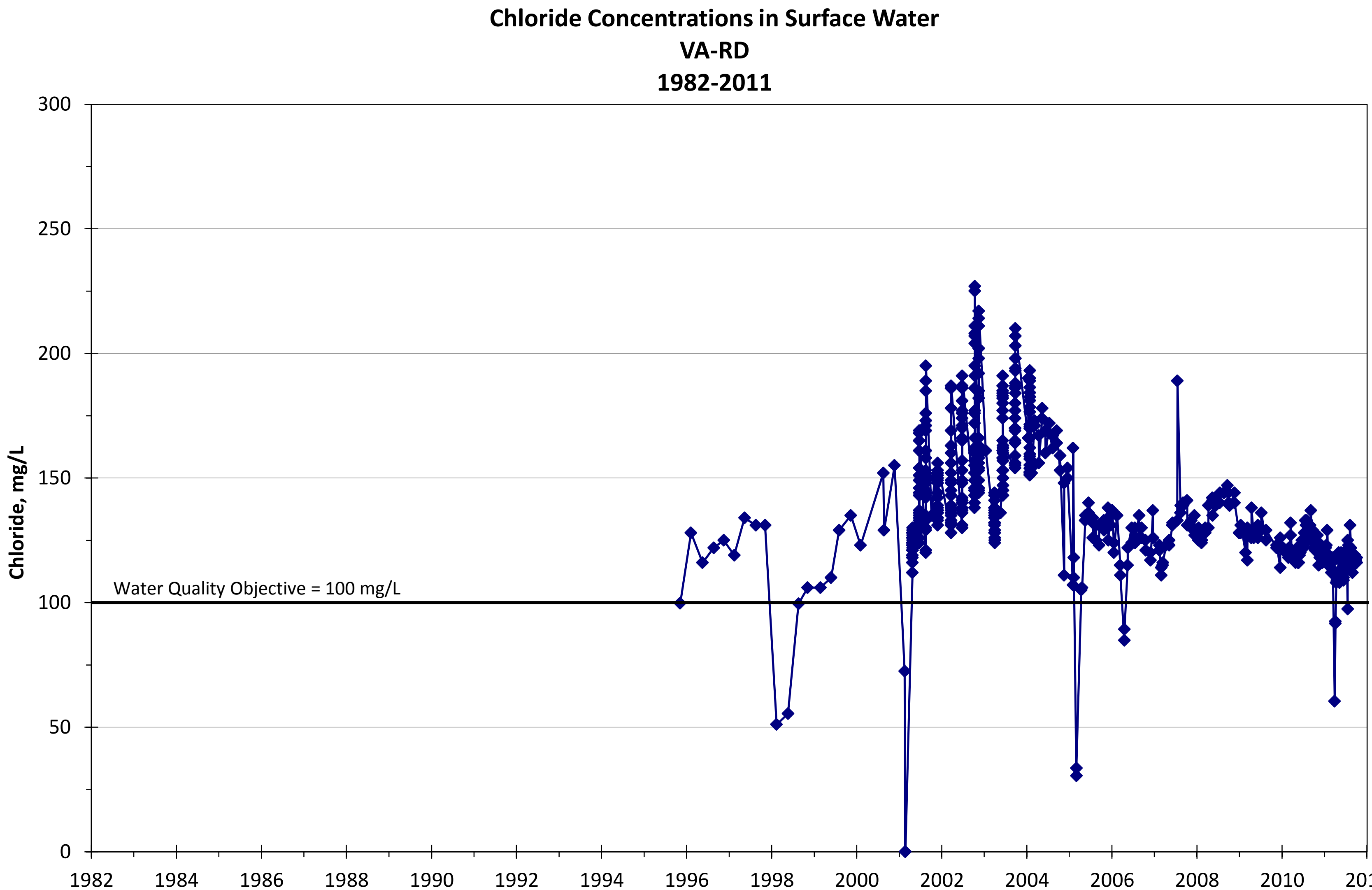
Appendix C


Chloride Concentrations in Surface Water
SA-RB
1982-2011
Chloride, mg/L
300
250
200
150
100
50
0
Water Quality Objective = 100 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

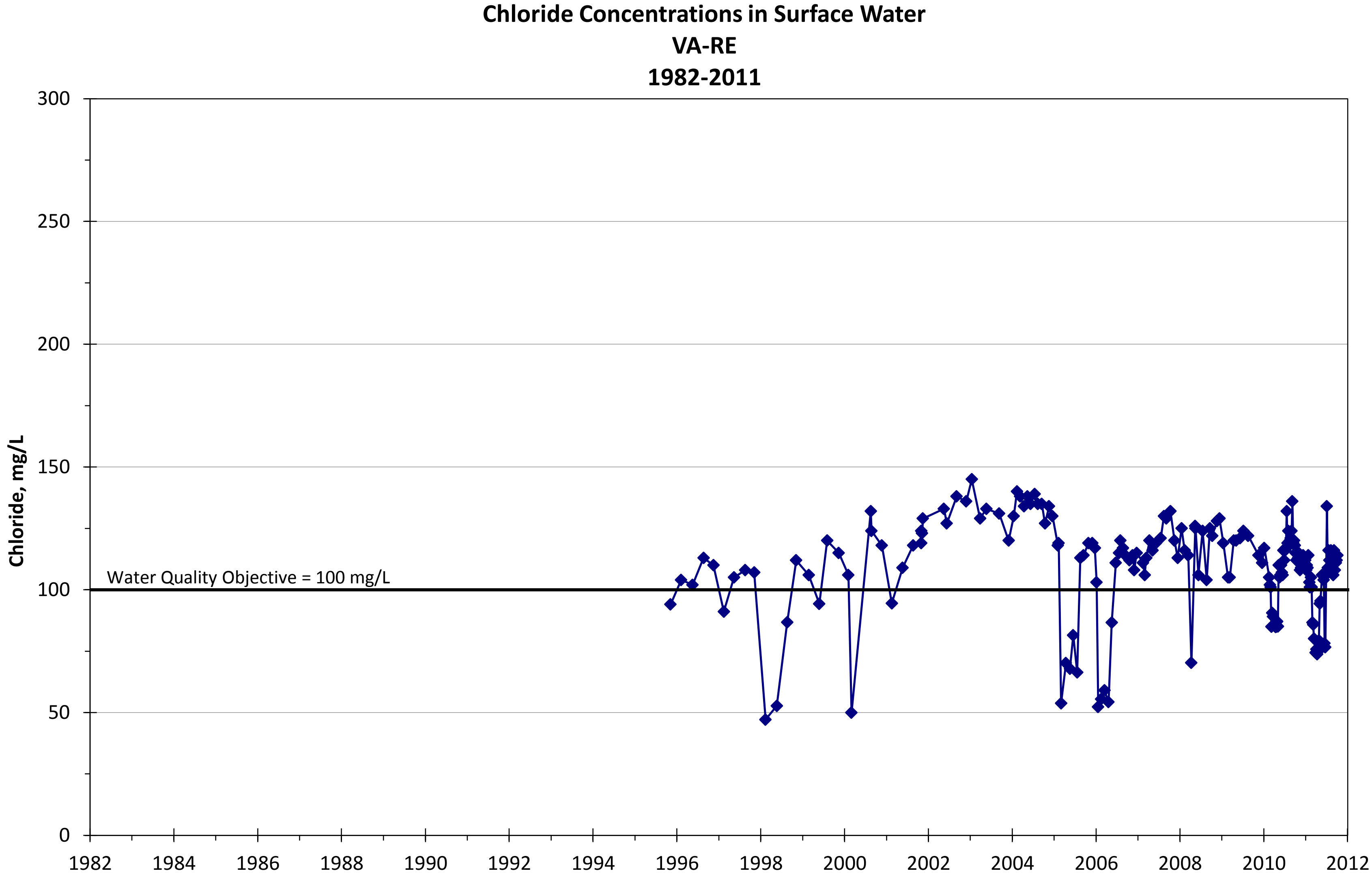

Chloride Concentrations in Surface Water
Valencia WRP - Effluent
1982-2011
Chloride, mg/L
300
250
200
150
100
50
0
Water Quality Objective = 100 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

Appendix C

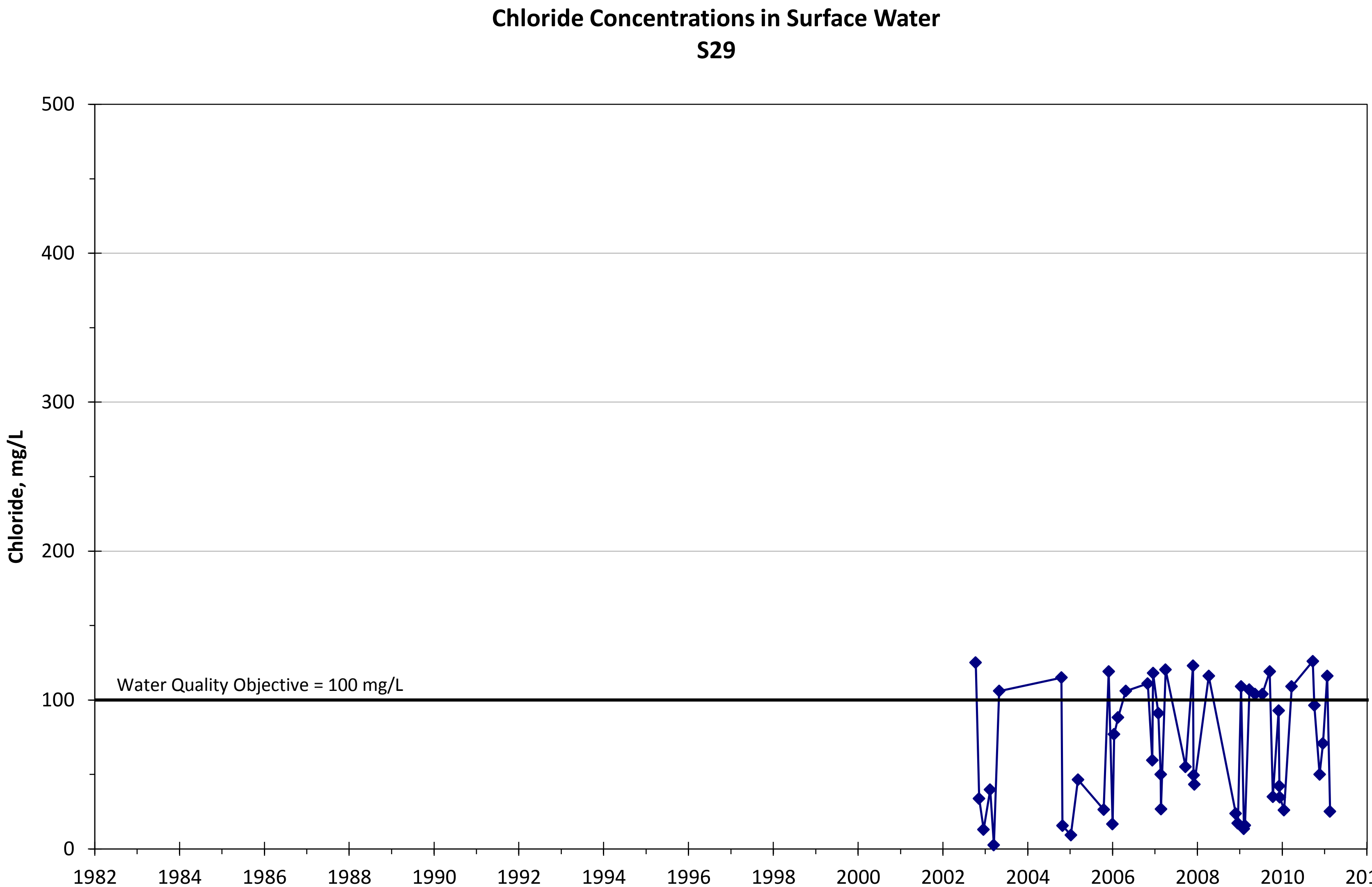

Chloride Concentrations in Surface Water
VA-RC
1982-2011
Chloride, mg/L
Water Quality Objective = 100 mg/L
0
50
100
150
200
250
300
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012


Chloride Concentrations in Surface Water
VA-RD
1982-2011
Chloride, mg/L
Water Quality Objective = 100 mg/L
0
50
100
150
200
250
300
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

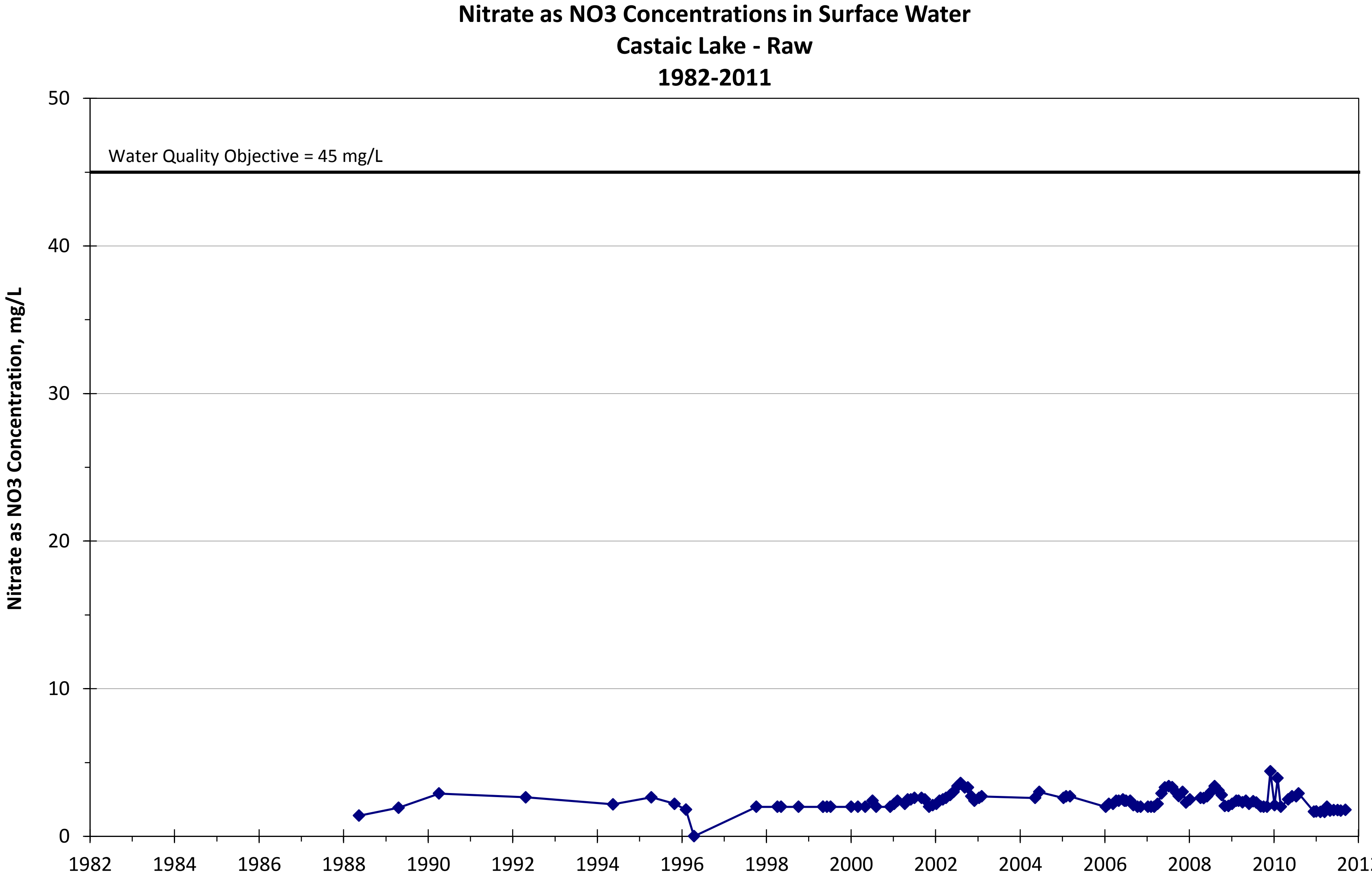
Appendix C


Chloride Concentrations in Surface Water
VA-RE
1982-2011
Chloride, mg/L
300
250
200
150
100
50
0
Water Quality Objective = 100 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

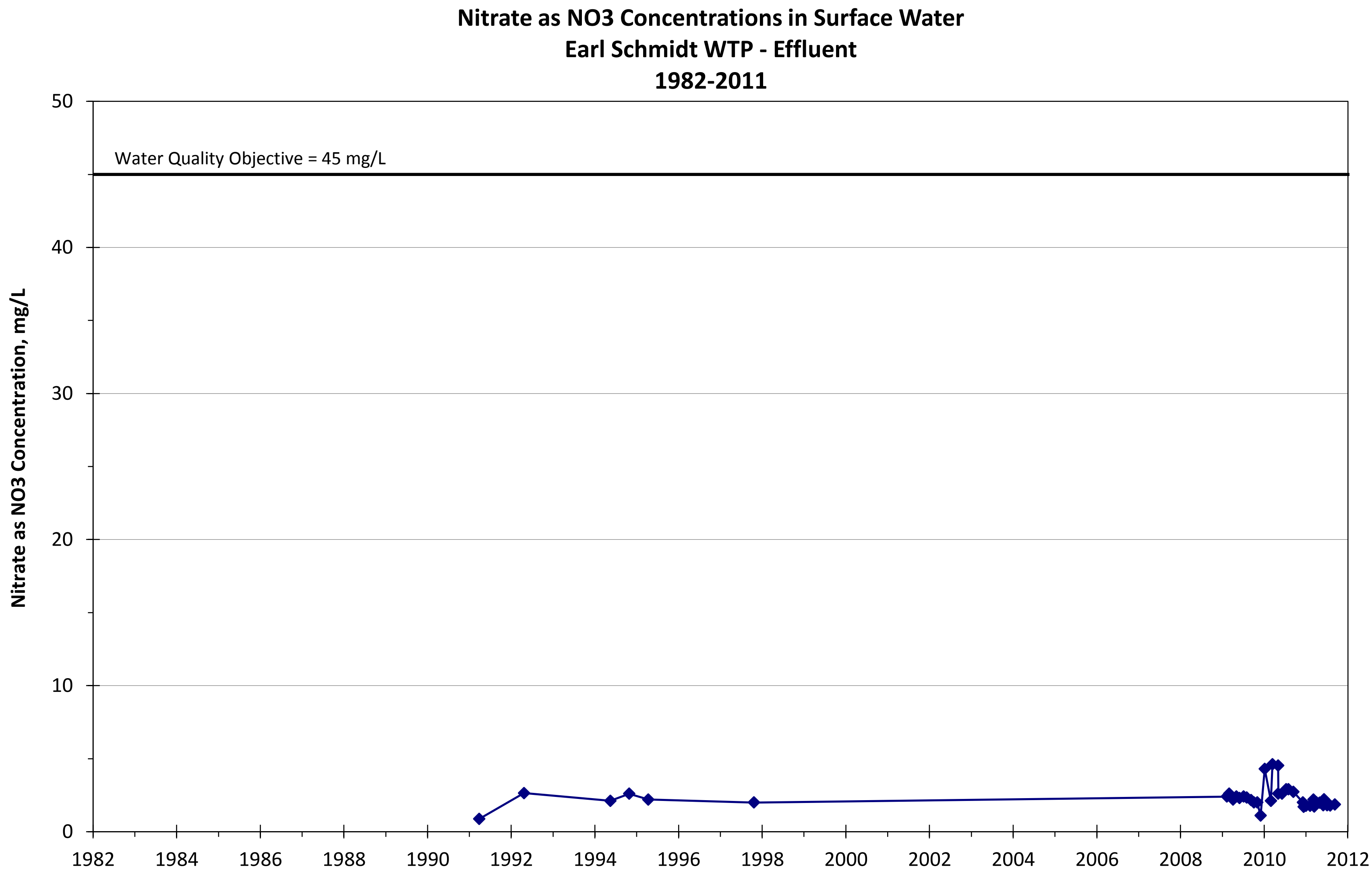
Appendix C


Chloride Concentrations in Surface Water
S29
Chloride, mg/L
500
400
300
200
100
0
Water Quality Objective = 100 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

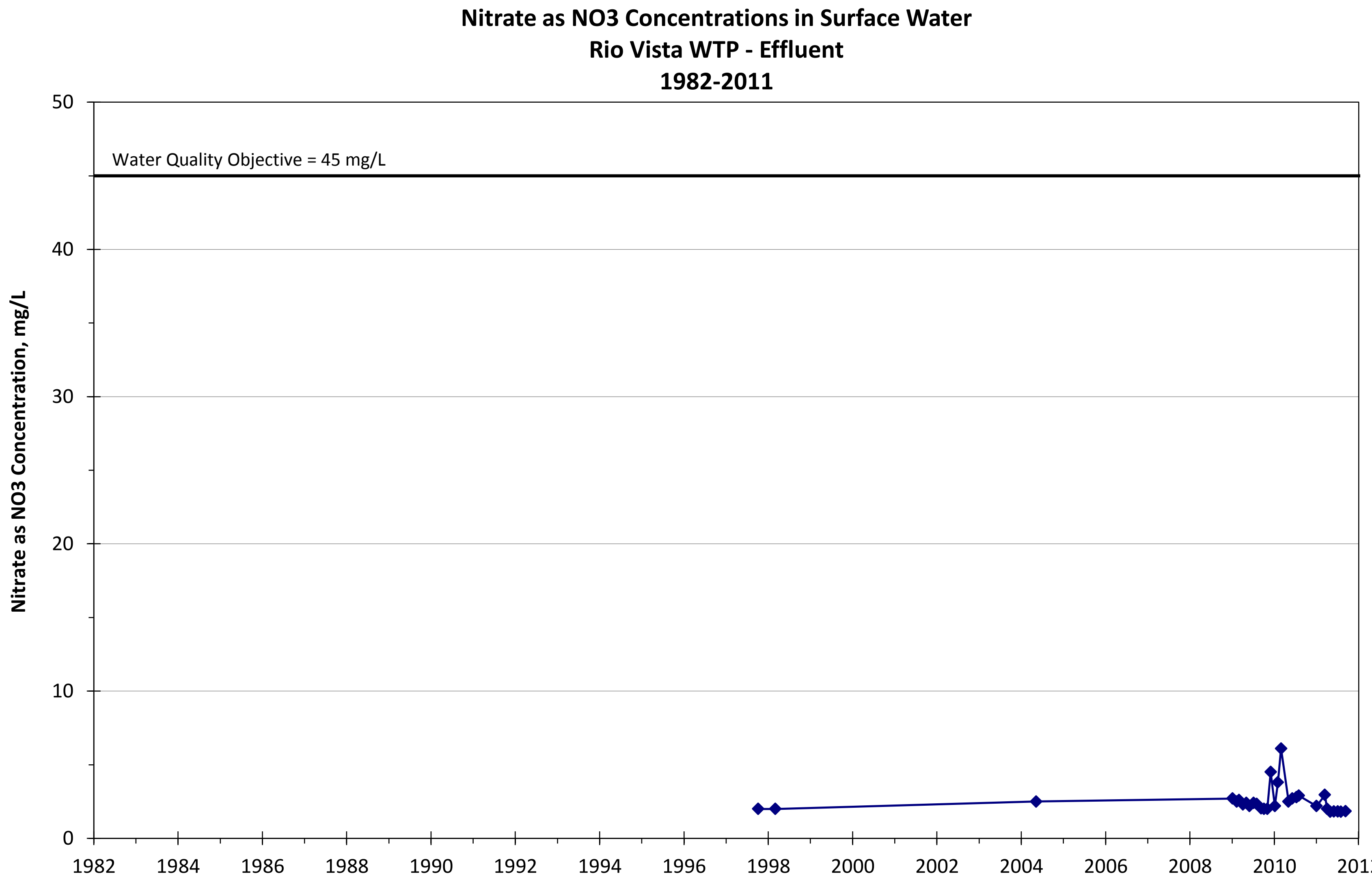
Appendix C


Nitrate as NO3 Concentrations in Surface Water
Castaic Lake - Raw
1982-2011
Water Quality Objective = 45 mg/L
Nitrate as NO3 Concentration, mg/L
0
10
20
30
40
50
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

Appendix C

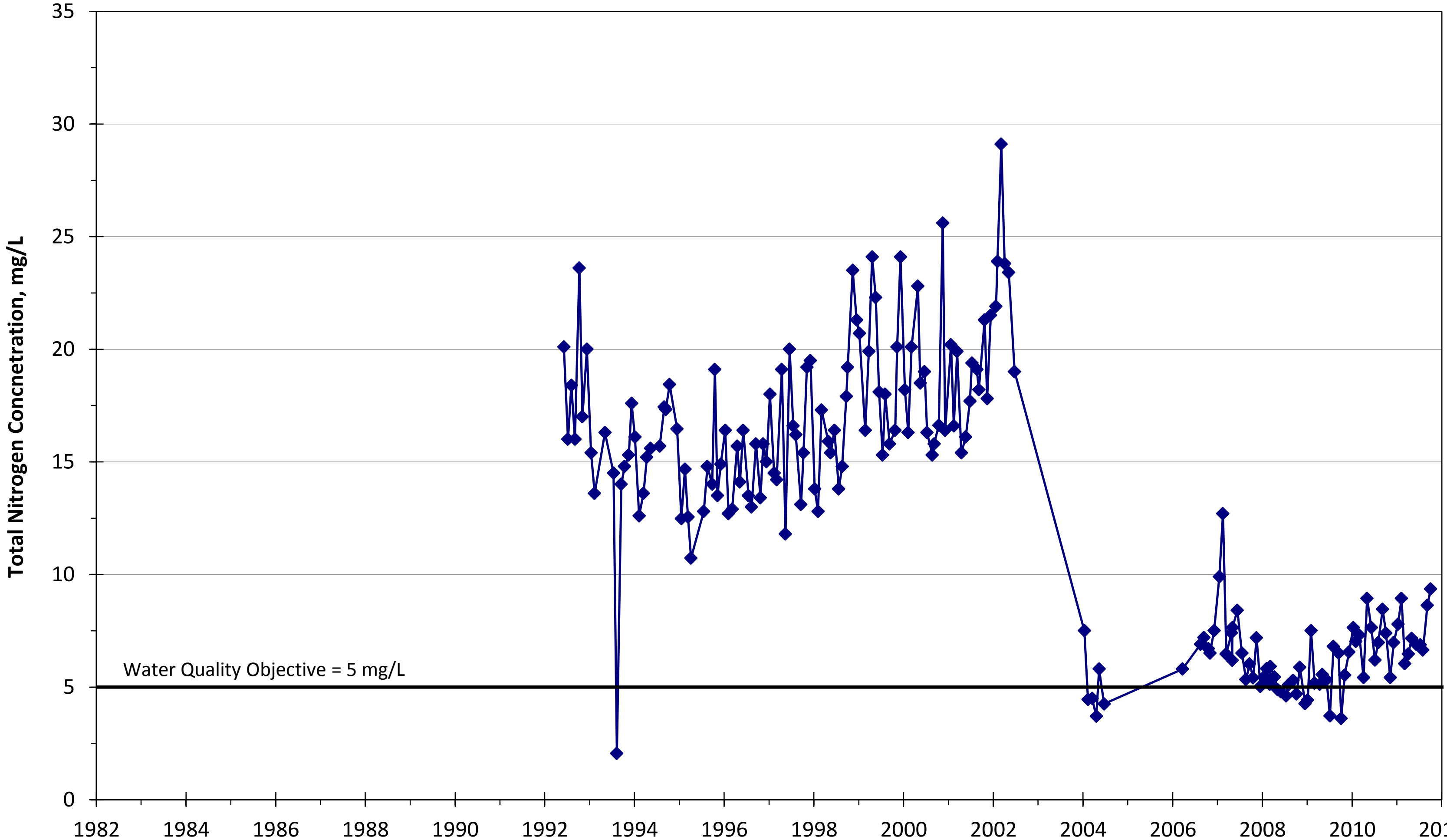

Nitrate as NO3 Concentrations in Surface Water
Earl Schmidt WTP - Effluent
1982-2011
Water Quality Objective = 45 mg/L
Nitrate as NO3 Concentration, mg/L
0
10
20
30
40
50
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

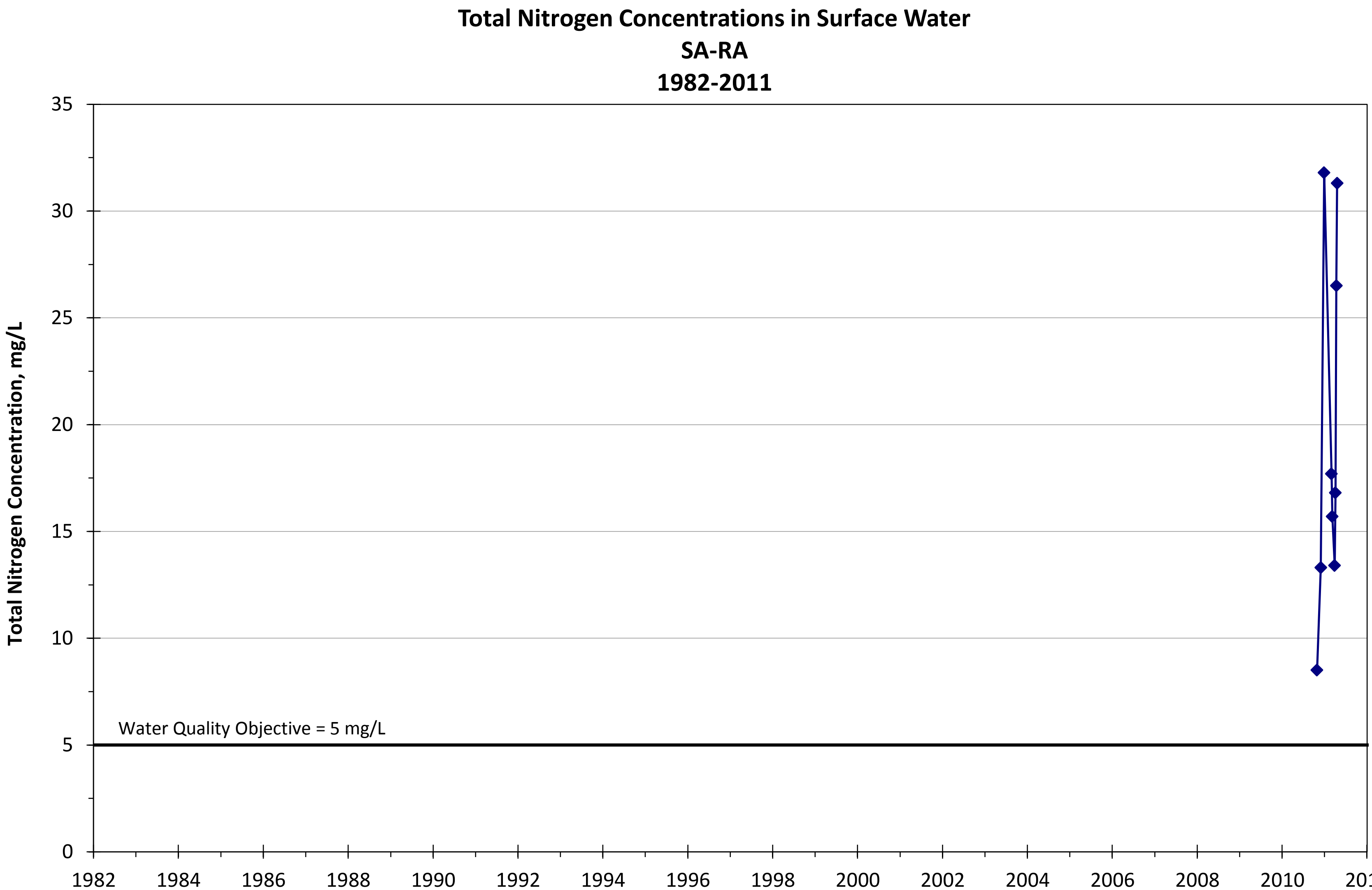
Appendix C


Nitrate as NO3 Concentrations in Surface Water
Rio Vista WTP - Effluent
1982-2011
Water Quality Objective = 45 mg/L
Nitrate as NO3 Concentration, mg/L
0
10
20
30
40
50
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

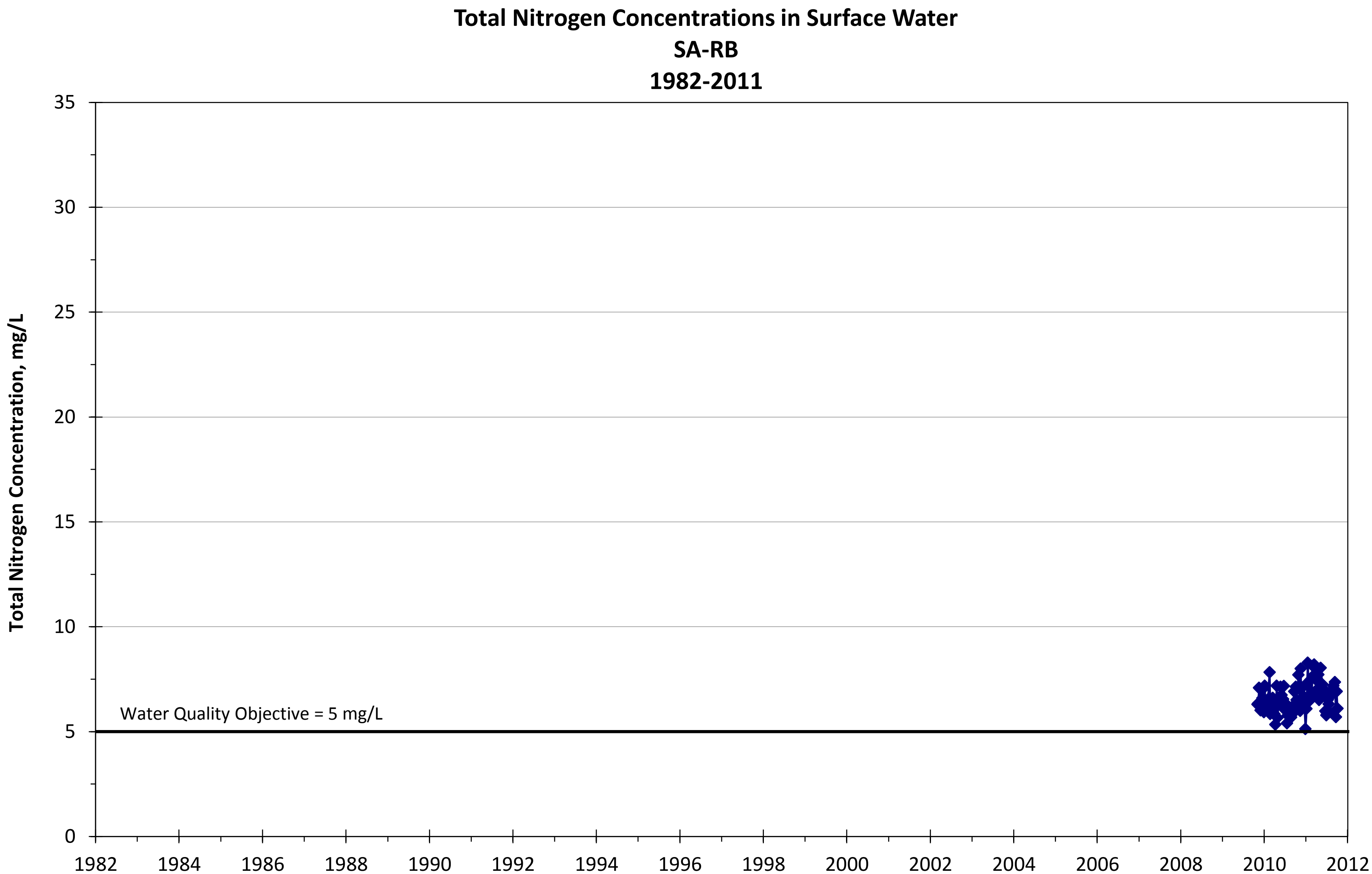
Appendix C

Total Nitrogen Concentrations in Surface Water
Saugus WRP - Effluent
1982-2011

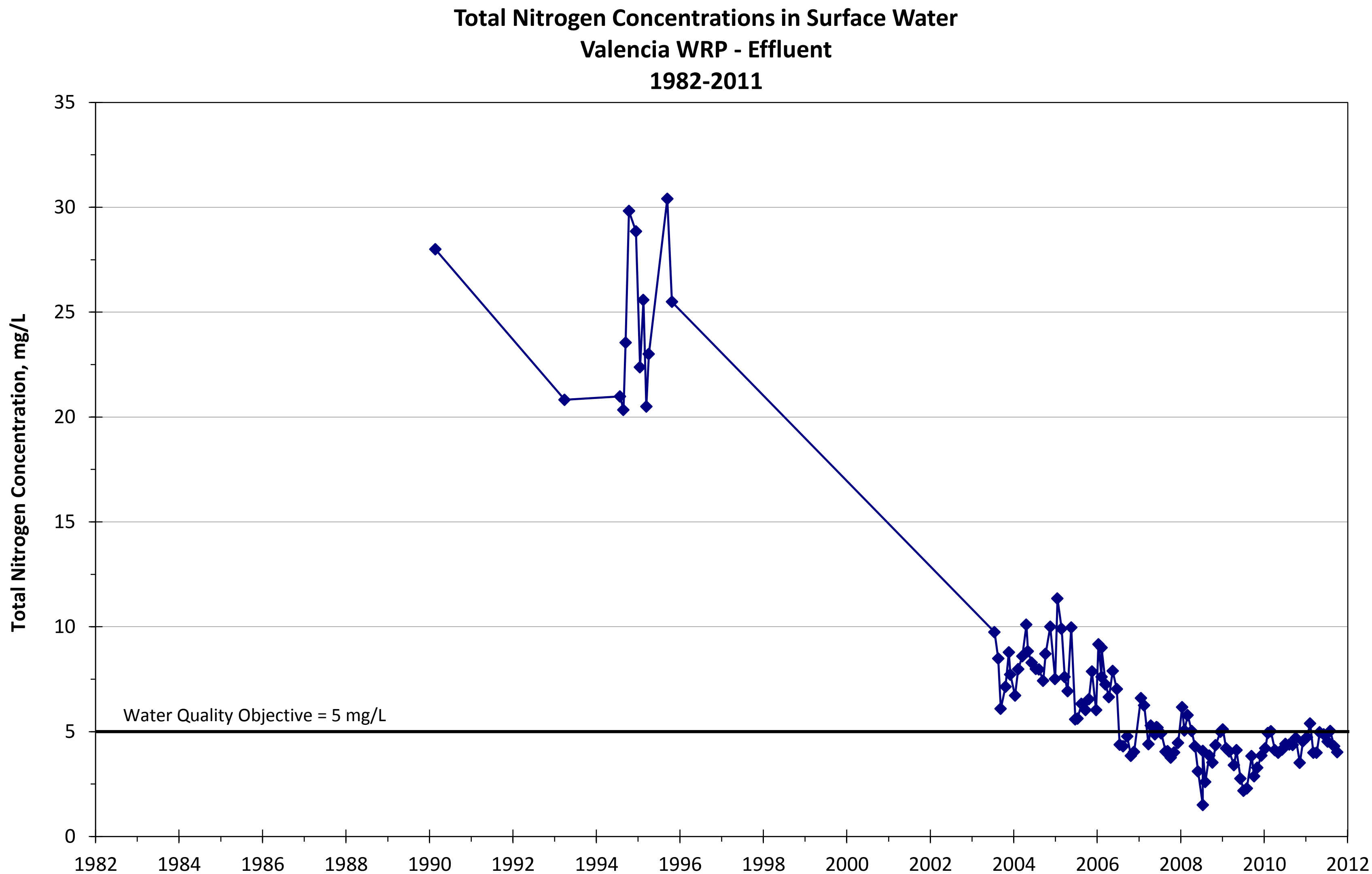


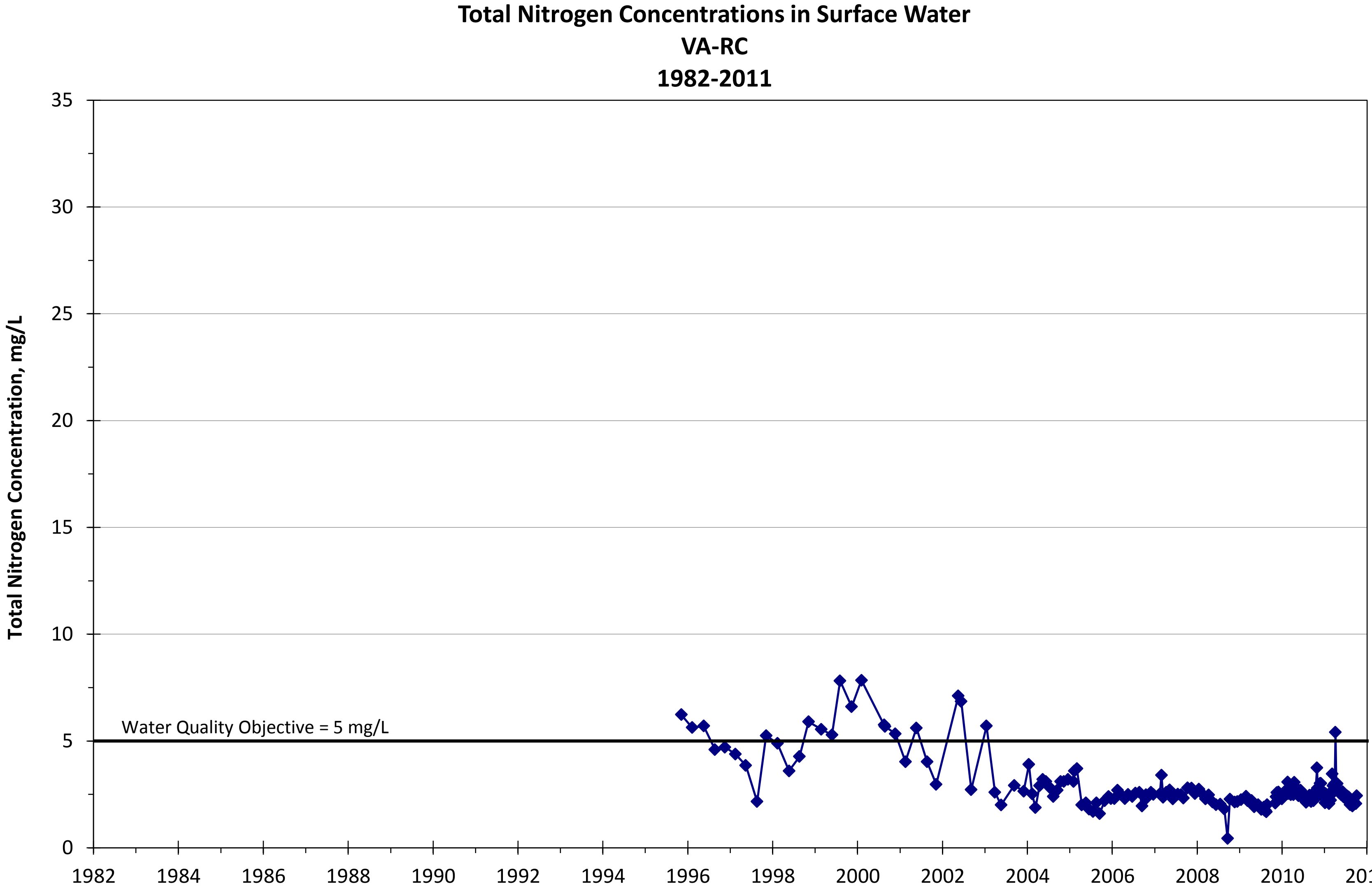

Total Nitrogen Concentrations in Surface Water
SA-RA
1982-2011
Total Nitrogen Concentration, mg/L
Water Quality Objective = 5 mg/L
0
5
10
15
20
25
30
35
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

Appendix C

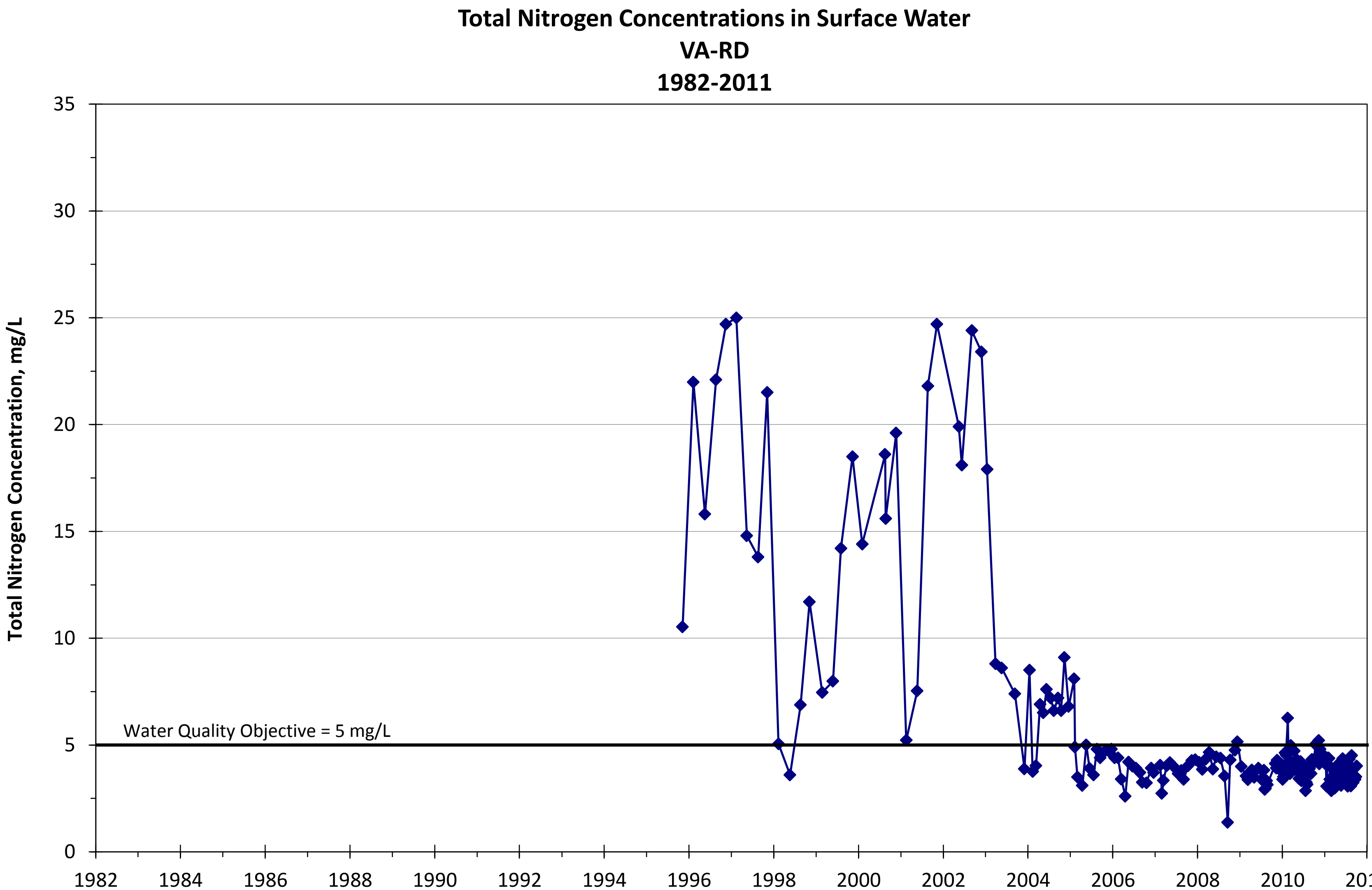

Total Nitrogen Concentrations in Surface Water
SA-RB
1982-2011
Total Nitrogen Concentration, mg/L
35
30
25
20
15
10
5
0
Water Quality Objective = 5 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

Appendix C

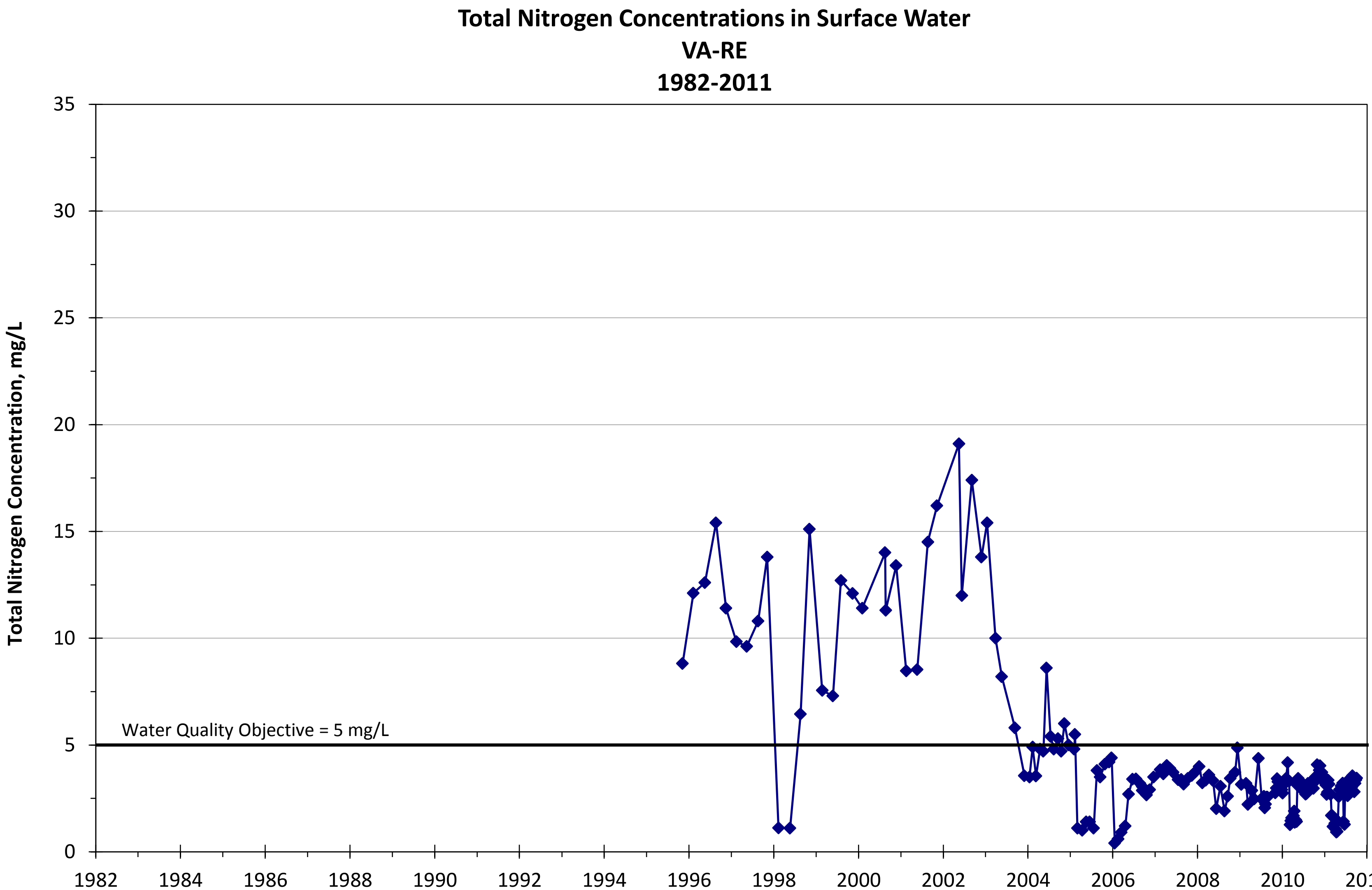

Total Nitrogen Concentrations in Surface Water
Valencia WRP - Effluent
1982-2011
Total Nitrogen Concentration, mg/L
35
30
25
20
15
10
5
0
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
Water Quality Objective = 5 mg/L


Total Nitrogen Concentrations in Surface Water
VA-RC
1982-2011
Total Nitrogen Concentration, mg/L
35
30
25
20
15
10
5
0
Water Quality Objective = 5 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

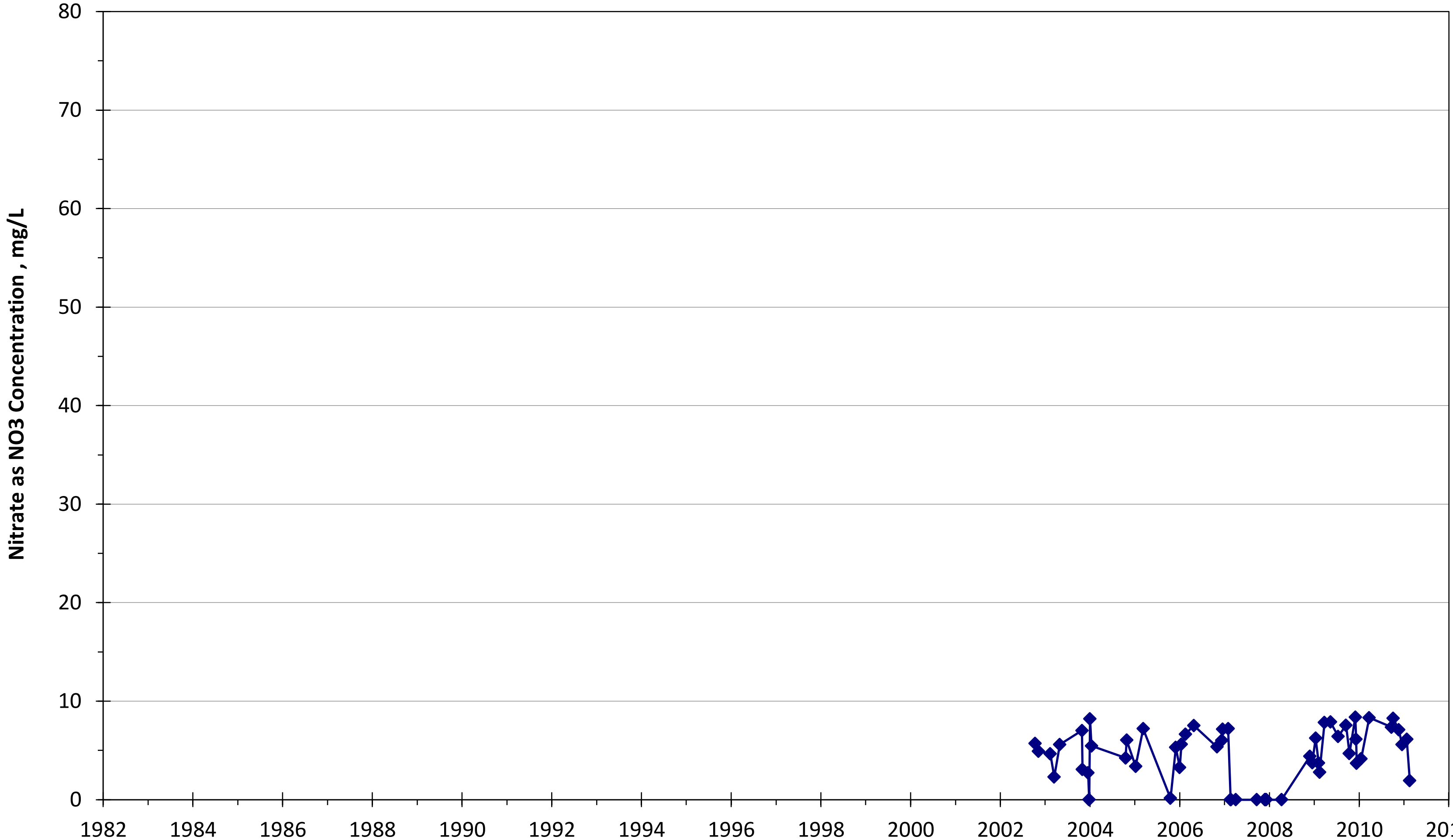
Appendix C


Total Nitrogen Concentrations in Surface Water
VA-RD
1982-2011
Total Nitrogen Concentration, mg/L
35
30
25
20
15
10
5
0
Water Quality Objective = 5 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

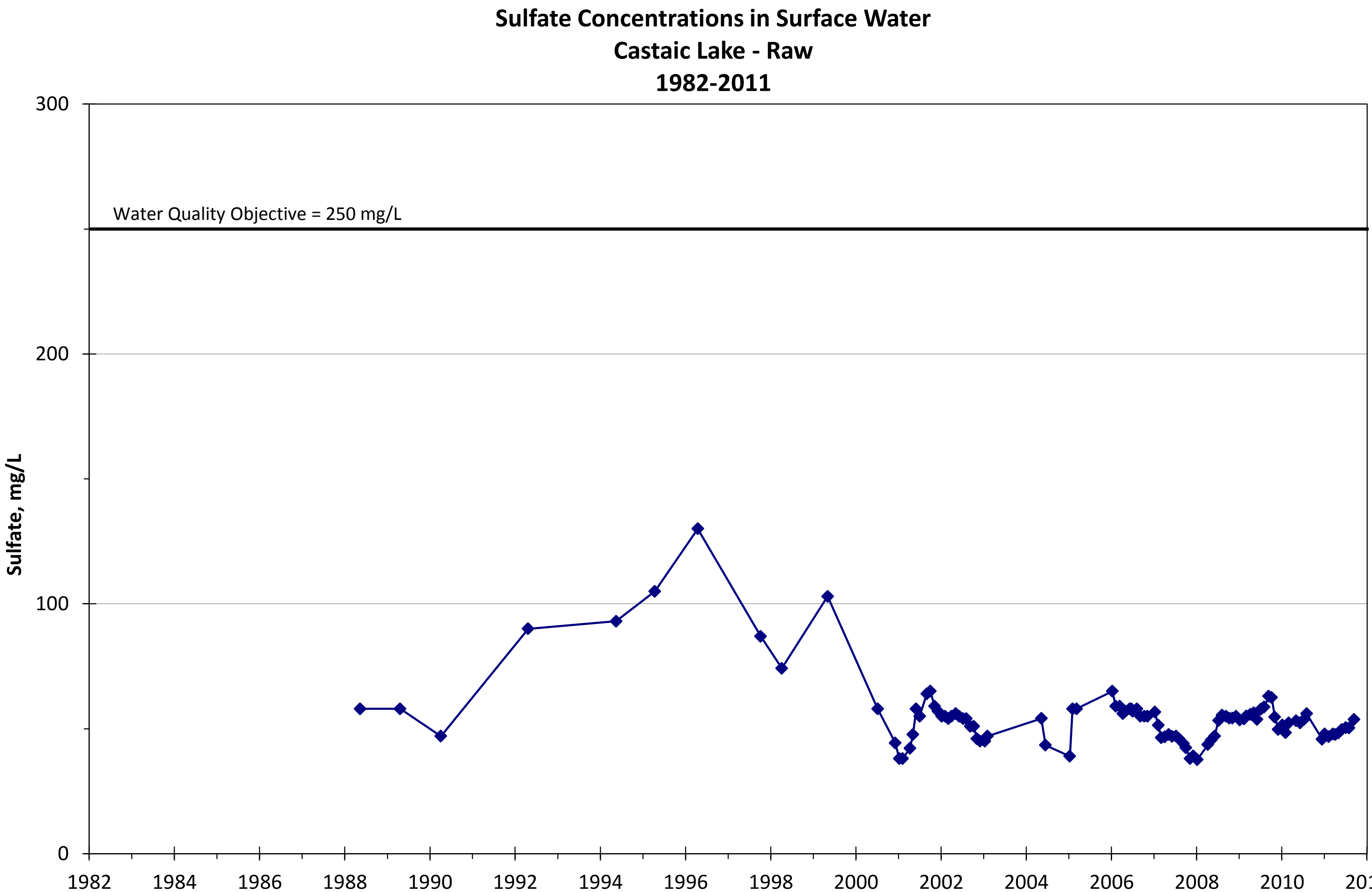
Appendix C


Total Nitrogen Concentrations in Surface Water
VA-RE
1982-2011
Total Nitrogen Concentration, mg/L
Water Quality Objective = 5 mg/L
0
5
10
15
20
25
30
35
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

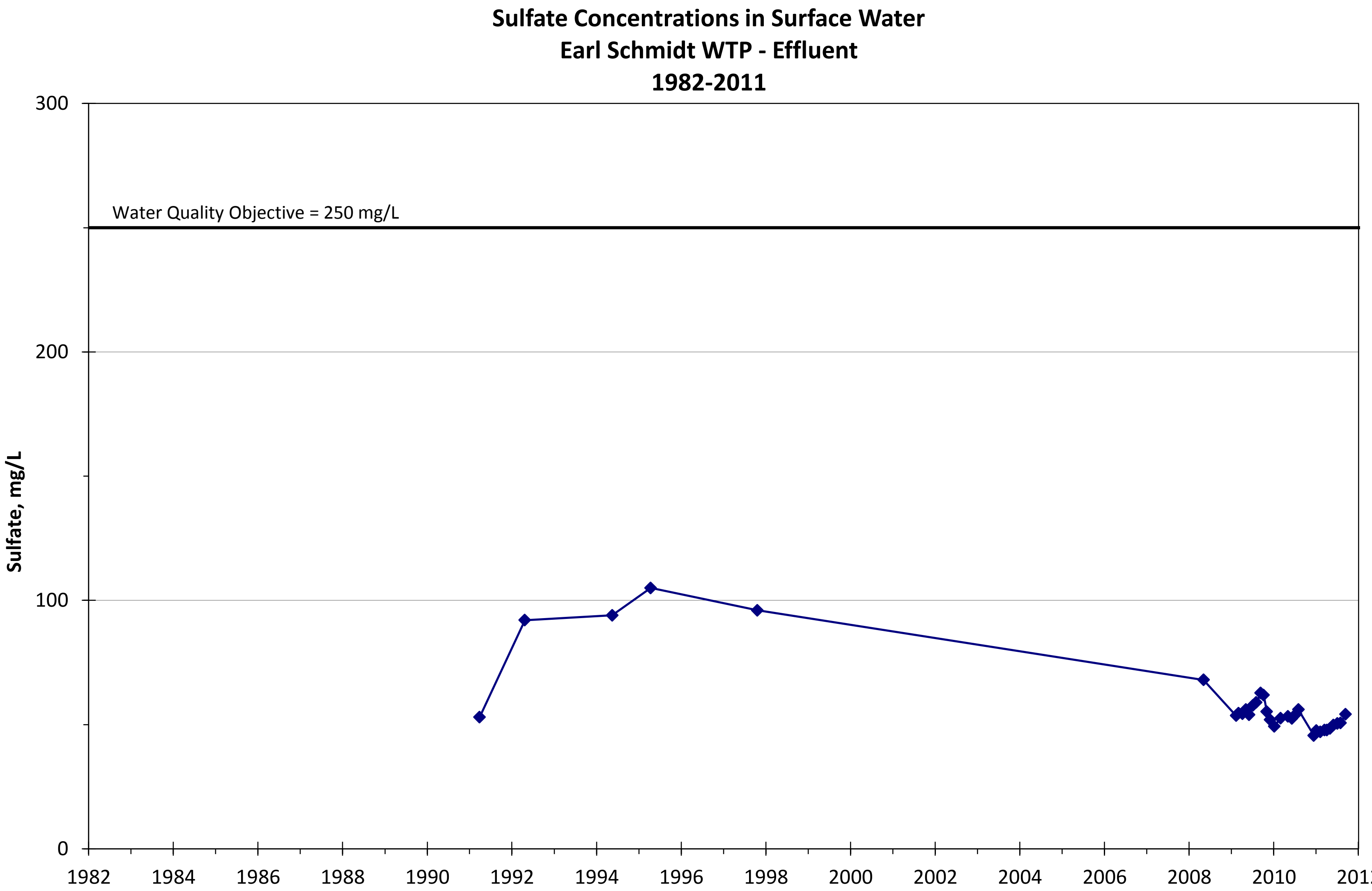
Nitrate as NO3 Concentrations in Surface Water
S29
1982-2011



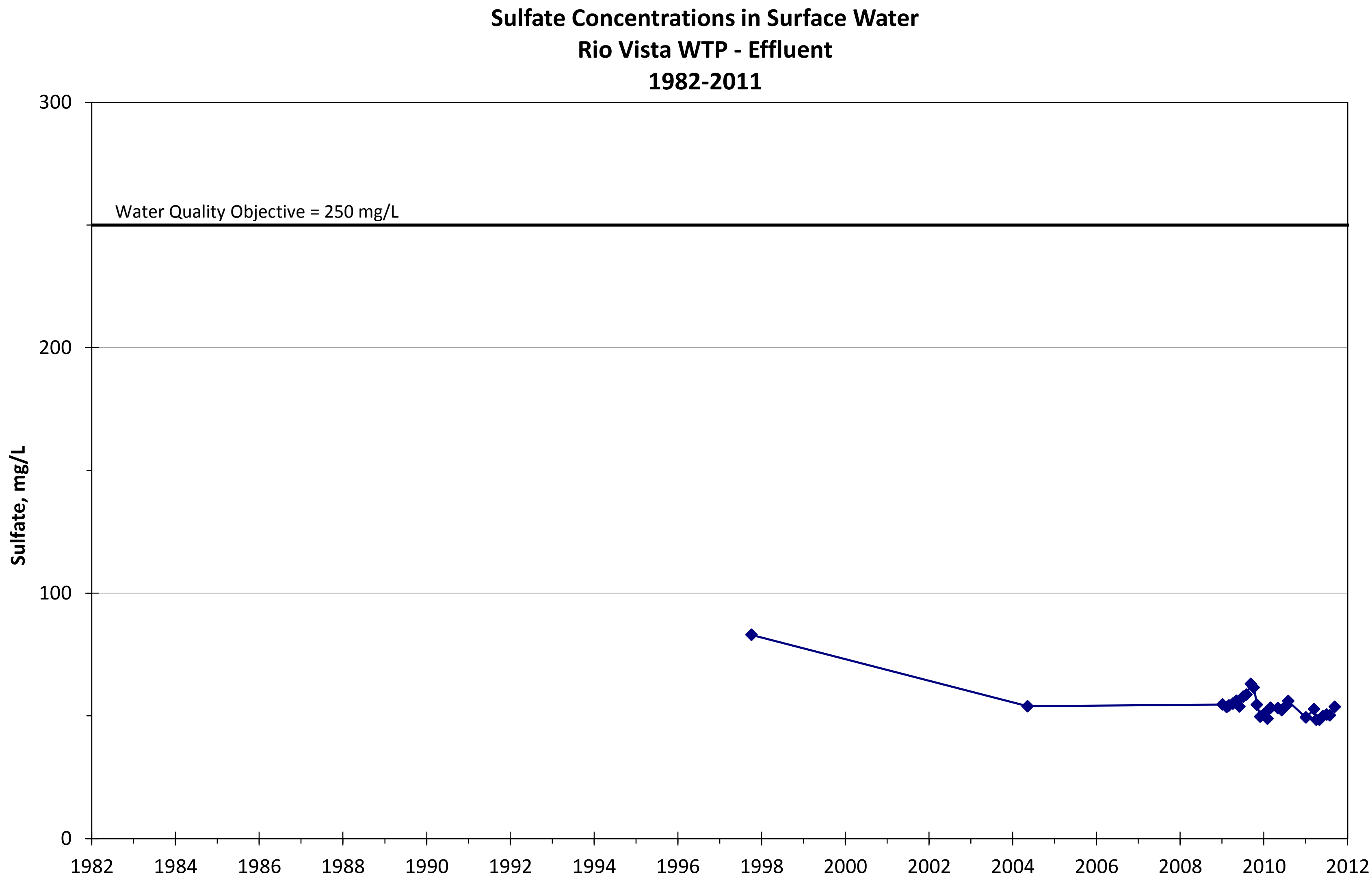
Appendix C


Sulfate Concentrations in Surface Water
Castaic Lake - Raw
1982-2011
Water Quality Objective = 250 mg/L
Sulfate, mg/L
300
200
100
0
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

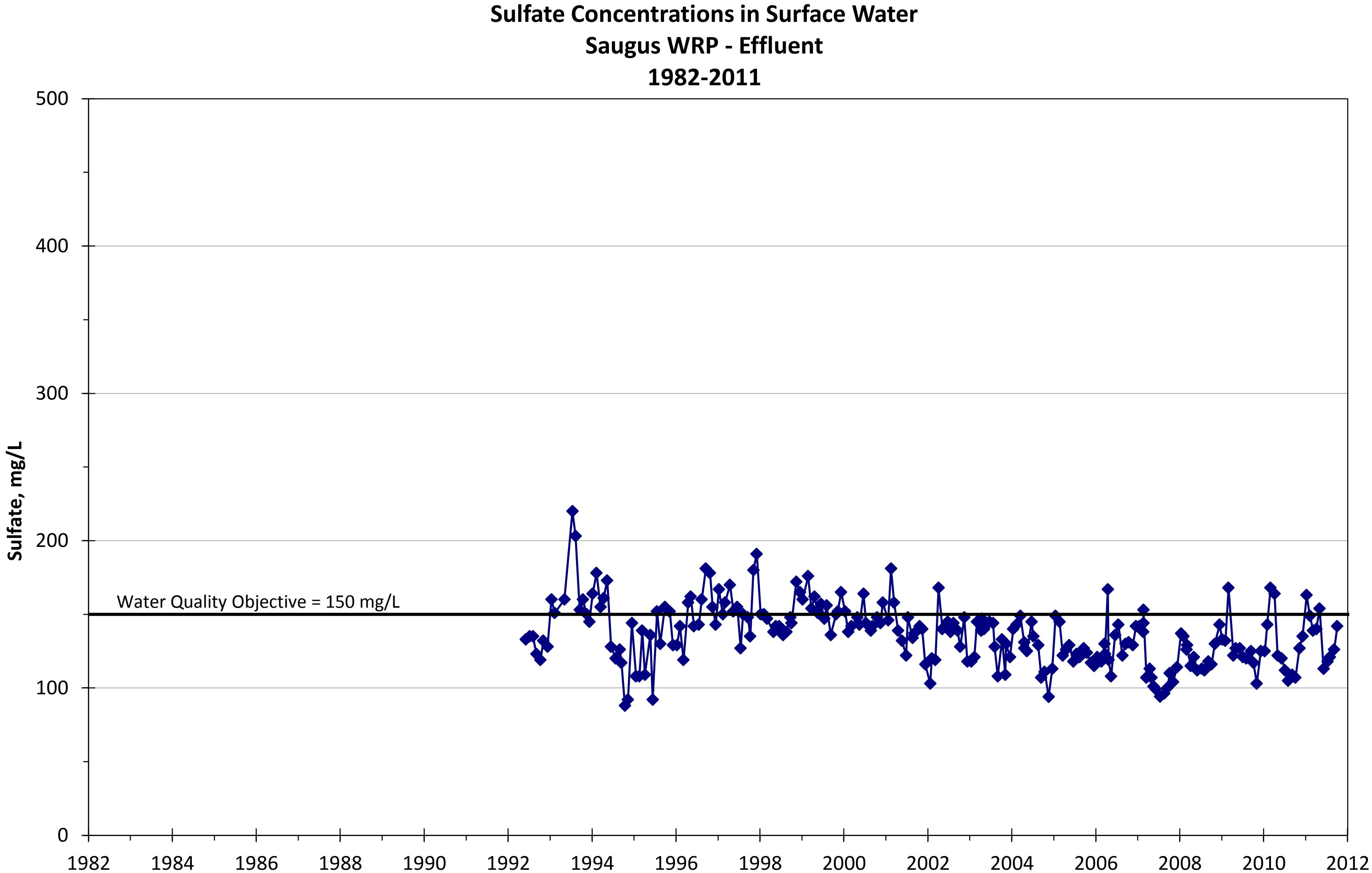
Appendix C


Sulfate Concentrations in Surface Water
Earl Schmidt WTP - Effluent
1982-2011
Water Quality Objective = 250 mg/L
Sulfate, mg/L
300
200
100
0
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

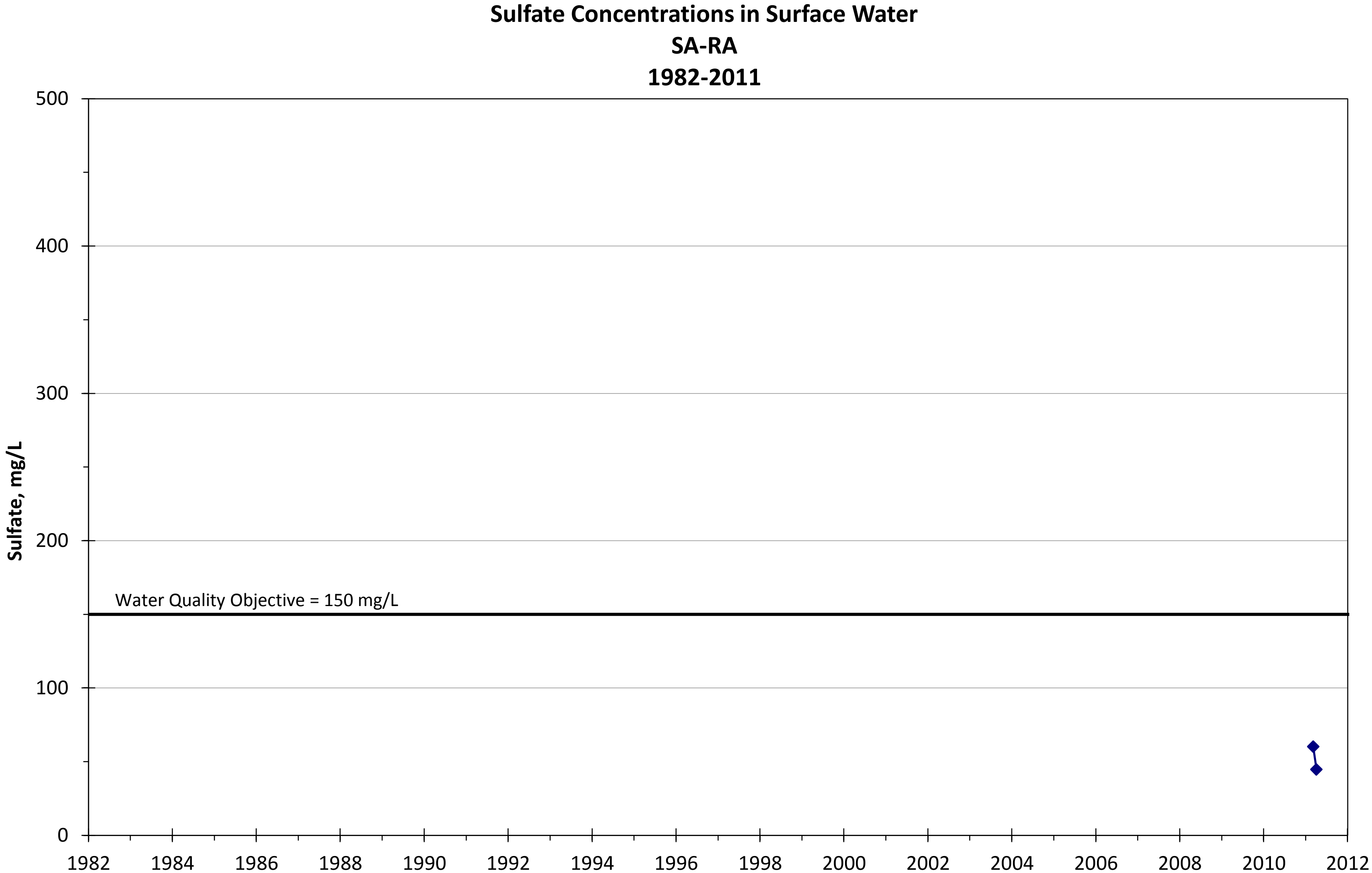
Appendix C

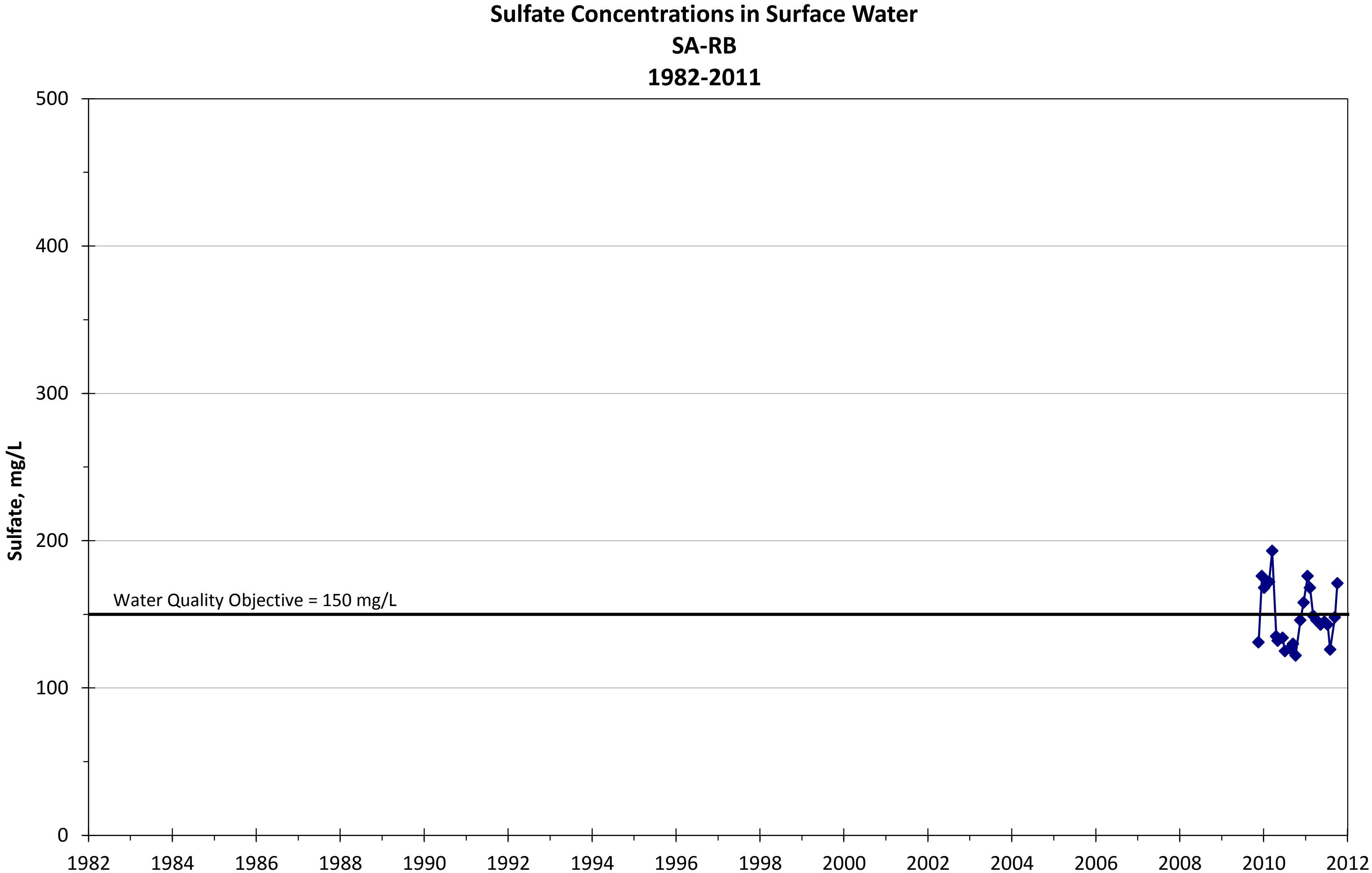

Sulfate Concentrations in Surface Water
Rio Vista WTP - Effluent
1982-2011
Water Quality Objective = 250 mg/L
Sulfate, mg/L
300
200
100
0
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

Appendix C

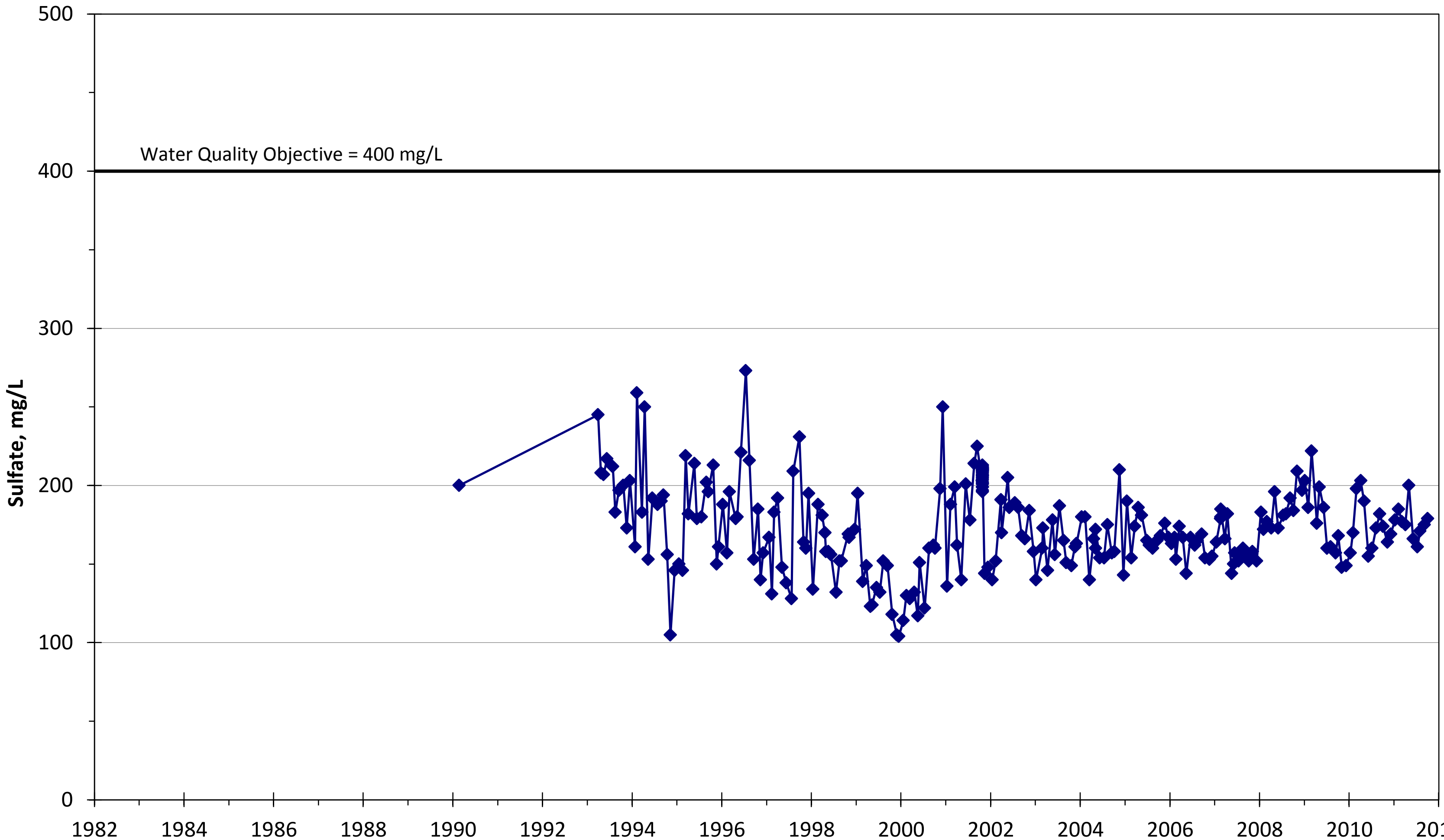

Sulfate Concentrations in Surface Water
Saugus WRP - Effluent
1982-2011
Sulfate, mg/L
Water Quality Objective = 150 mg/L
0
100
200
300
400
500
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

Appendix C


Sulfate Concentrations in Surface Water
SA-RA
1982-2011
Sulfate, mg/L
Water Quality Objective = 150 mg/L
0
100
200
300
400
500
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012


Sulfate Concentrations in Surface Water
SA-RB
1982-2011
Sulfate, mg/L
500
400
300
200
100
0
Water Quality Objective = 150 mg/L
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

Sulfate Concentrations in Surface Water
Valencia WRP - Effluent
1982-2011



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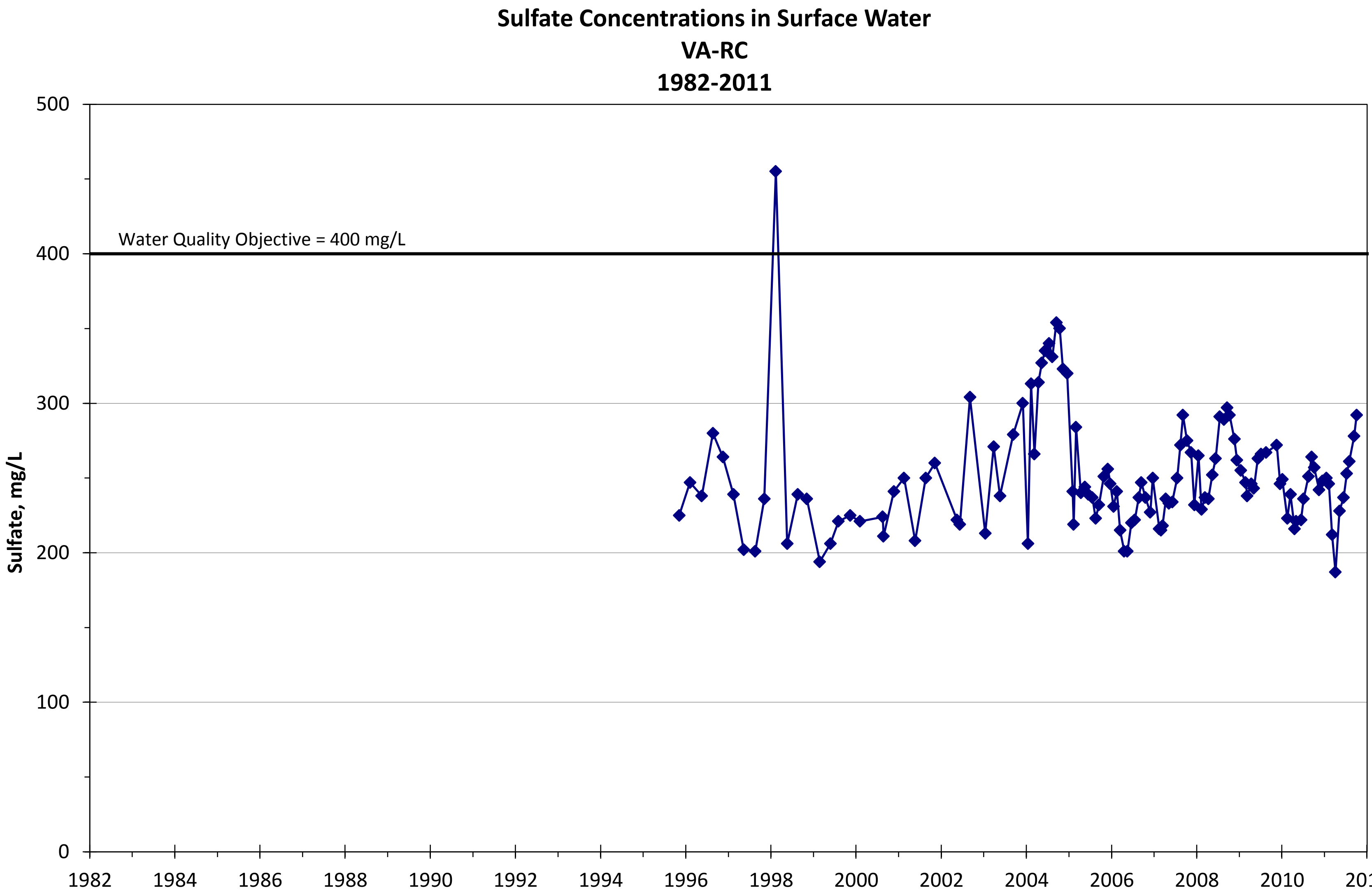
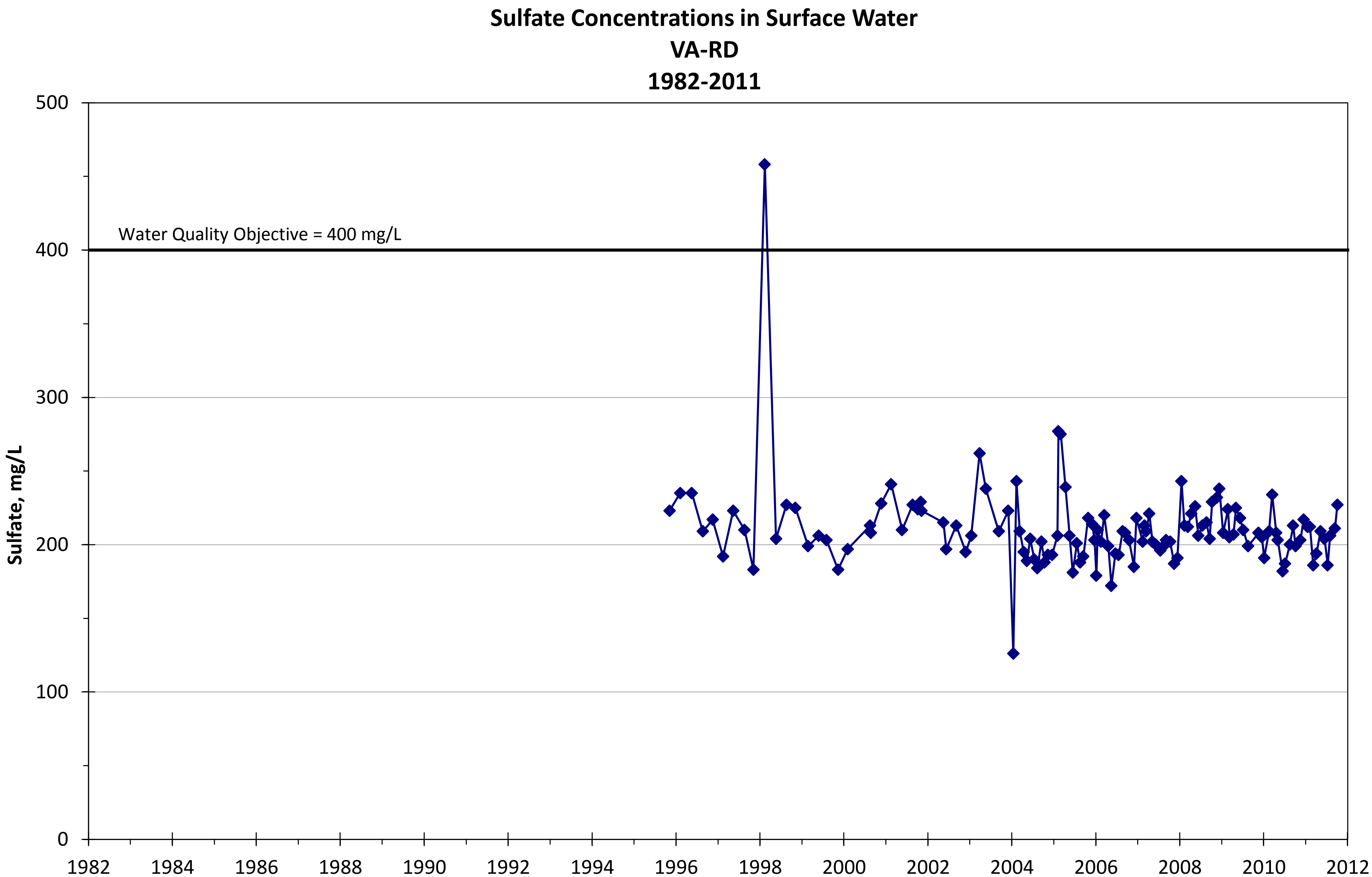
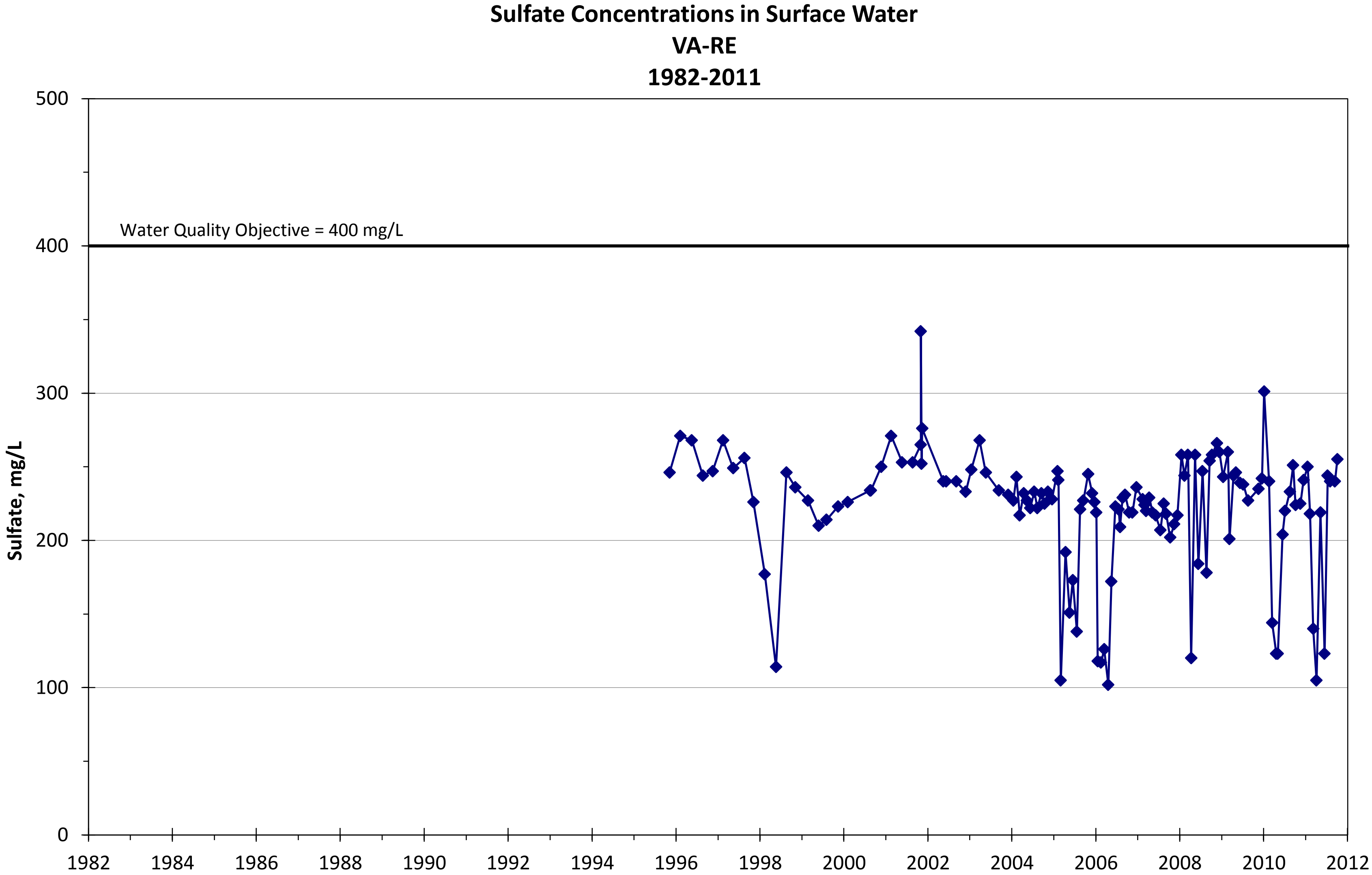

Sulfate Concentrations in Surface Water
VA-RC
1982-2011
Water Quality Objective = 400 mg/L
Sulfate, mg/L
0
100
200
300
400
500
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

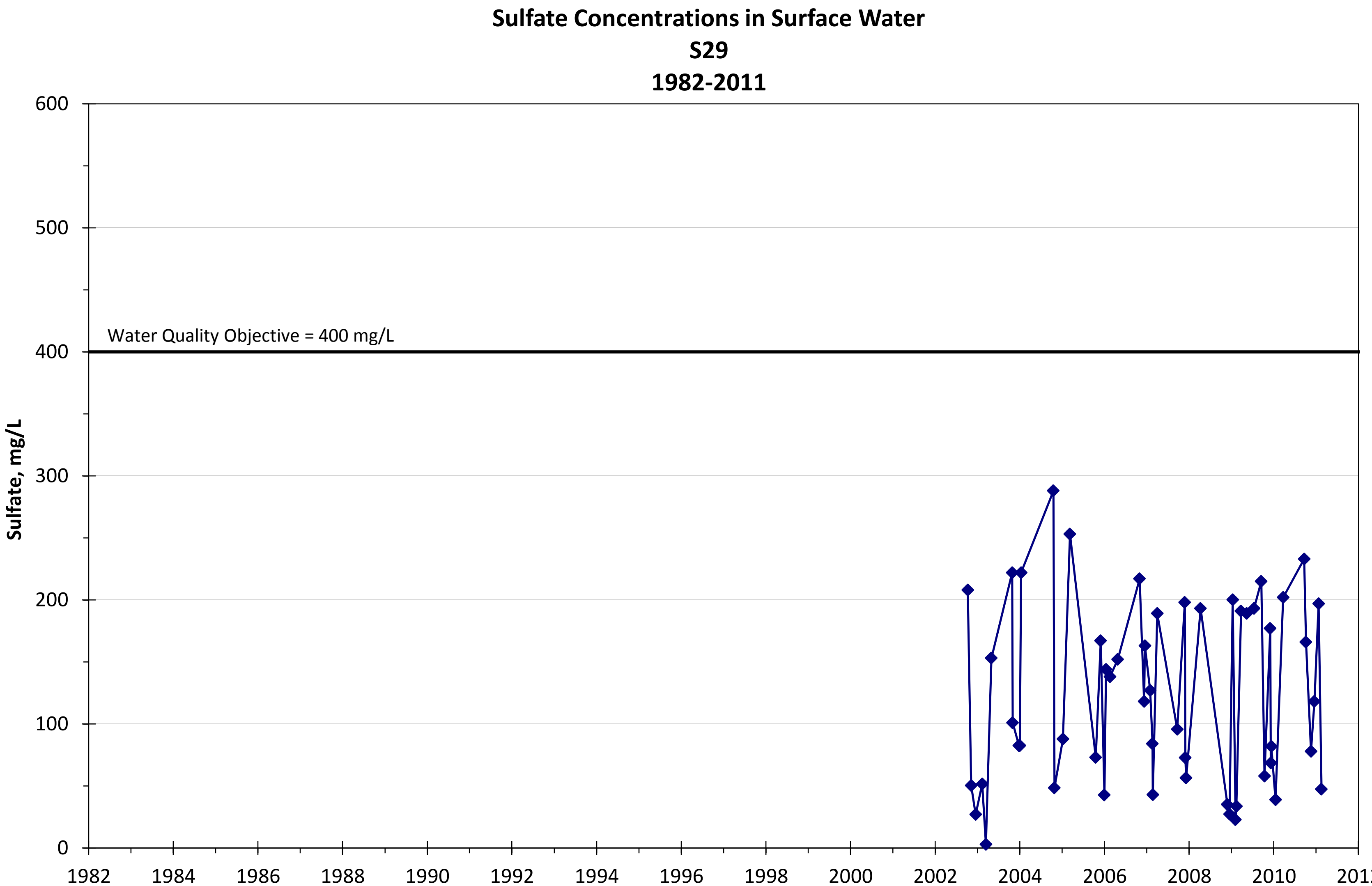
Appendix C


Sulfate Concentrations in Surface Water
VA-RD
1982-2011
Water Quality Objective = 400 mg/L
Sulfate, mg/L
0
100
200
300
400
500
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

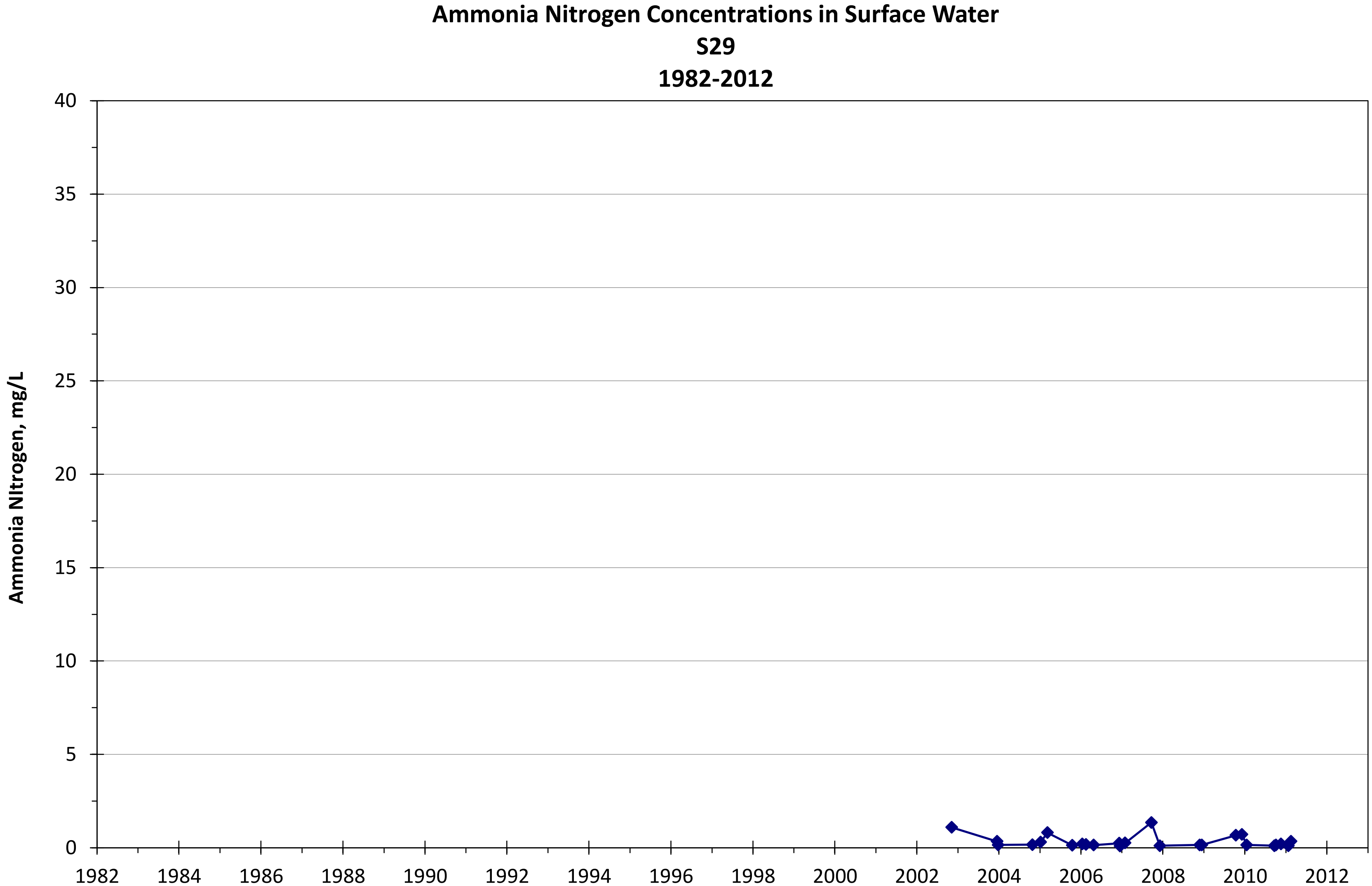
Appendix C


Sulfate Concentrations in Surface Water
VA-RE
1982-2011
Sulfate, mg/L
Water Quality Objective = 400 mg/L
0
100
200
300
400
500
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

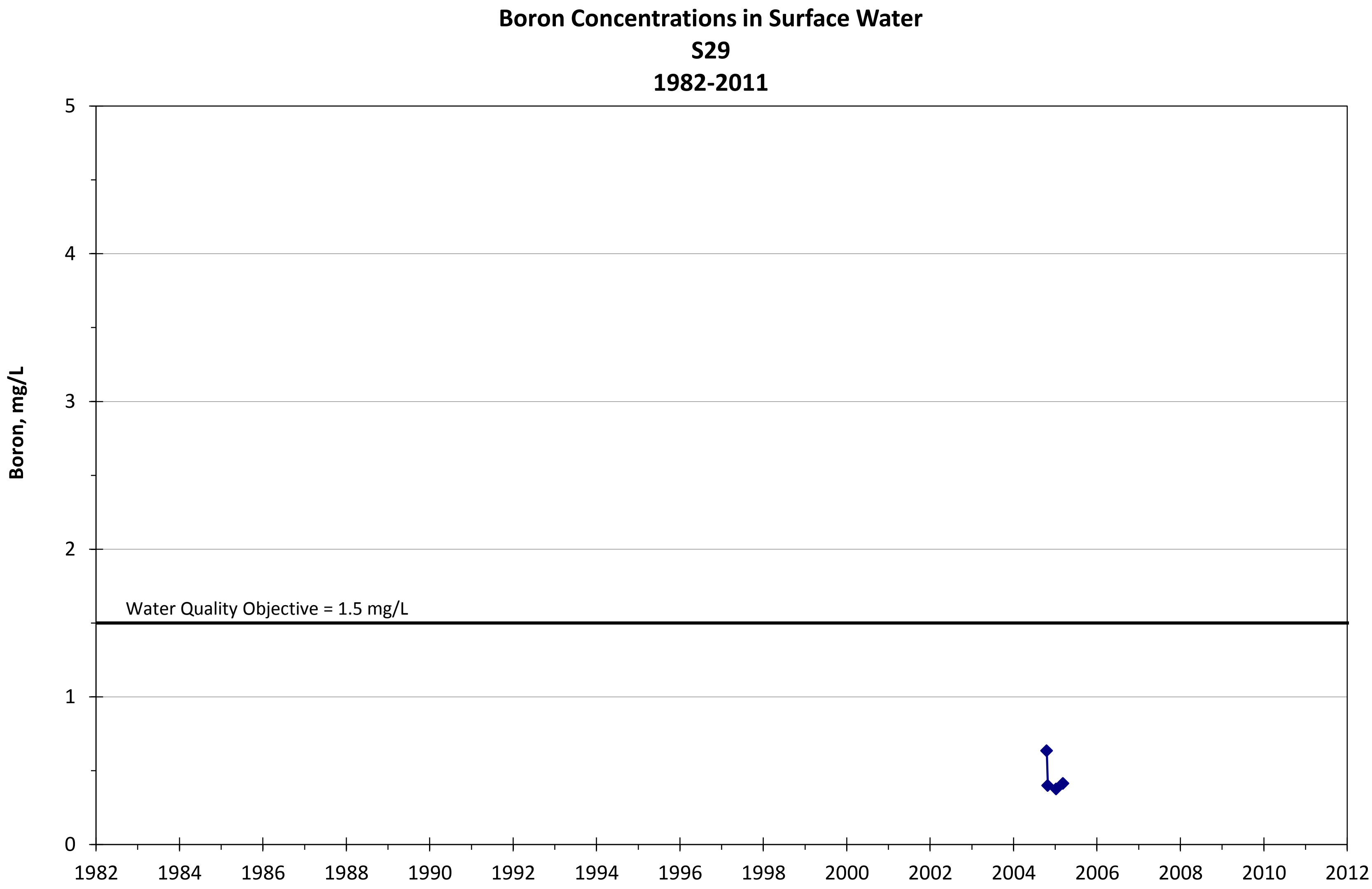
Appendix C


Sulfate Concentrations in Surface Water
S29
1982-2011
Water Quality Objective = 400 mg/L
Sulfate, mg/L
0
100
200
300
400
500
600
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

Appendix C


Ammonia Nitrogen Concentrations in Surface Water
S29
1982-2012
Ammonia NItrogen, mg/L
40
35
30
25
20
15
10
5
0
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

Appendix C


Boron Concentrations in Surface Water
S29
1982-2011
Boron, mg/L
Water Quality Objective = 1.5 mg/L
0
1
2
3
4
5
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012

Appendix C

APPENDIX D

GSI Water Solutions, Inc.

Draft Technical Memorandum

and Updated 2015 Groundwater

Budget Tables

GEOSCIENCE

DRAFT Technical Memorandum

To: Brian Villalobos/Geosciences Support Services, Inc.
Jeff Ford/Castaic Lake Water Agency

From: John Porcello /GSI Water Solutions, Inc.
Jeff Barry/GSI Water Solutions, Inc.

Date: December 5, 2014

Subject: Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient and Management Plan (Santa Clarita Valley, CA)

1.0 Introduction

This memorandum presents the results of groundwater modeling work conducted by GSI Water Solutions, Inc. (GSI), to develop monthly and annual groundwater budgets for use in a Salt and Nutrient Management Plan (SNMP) that is being prepared by the Castaic Lake Water Agency (CLWA) and its retail water purveyors[1]. The SNMP is being prepared for the Santa Clara River Valley East Subbasin, which is groundwater subbasin number 4-4.07 as defined by the California Department of Water Resources (DWR). The groundwater budget was developed using the local water purveyors' numerical model of the local groundwater basin (a model that is herein referred to as the "Purveyor" model). GSI's work was performed under contract to Geosciences Support Services, Inc. (GSSI), which is under contract to CLWA to develop the SNMP. This memorandum constitutes GSI's documentation of the groundwater budget modeling work, in accordance with the scope of work contained in the May 19, 2014 subcontract agreement between GSI and GSSI.

The Purveyor model is a multi-layered finite-element numerical model that simulates groundwater flow in the entire aquifer system in the East Subbasin, including the rates and variations in flow, groundwater recharge, groundwater discharge, and the amount of groundwater in storage. Figure 1 shows the area simulated by the model, superimposed on a geologic map of the valley's groundwater basin and adjoining areas. Figure 2 shows the model's layering and its relationship to the two principal aquifer

[1] The retail water purveyors are the Newhall County Water District (NCWD), the Santa Clarita Water Division (SCWD) of CLWA, Valencia Water Company (VWC), and Los Angeles County Waterworks District 36 (LACWWD36).

systems in the valley – the surficial Alluvial Aquifer and the underlying Saugus Formation. A description of the Purveyor model is contained in Appendix A. The original effort to develop and calibrate the model is described by CH2M HILL (2004). Subsequent refinements and updates to the model are presented in CH2M HILL (2005), GSI and LSCE (2013), and Appendix A of this technical memorandum.

The remainder of this technical memorandum presents the following topics:

- The general process that was used to develop the groundwater budget terms, including key data sources (Section 2)
- The hydrogeology of the Santa Clarita Valley (Section 3)
- The water supplies for the valley, and the local operating plan that governs the rates and year-to-year variability in local groundwater pumping (Section 4)
- The development of the primary input terms for the model simulation (Section 5)
- Highlights of the groundwater budget (Section 6)
- A list of references cited in this technical memorandum (Section 7)
- Appendices:
  - A description of the groundwater flow model (Appendix A)
  - Background information on the effect of year to year variations in the availability of imported water supplies on local groundwater pumping patterns (Appendix B)
  - Background information on the physical setting and hydrogeology of the Santa Clarita Valley (Appendix C)
  - Groundwater budget terms for the entire Alluvial Aquifer, each of its 6 SNMP management zones, and the aquifer system as a whole (presented annually in Appendix D, and monthly in Appendix E)

2.0 General Process for Groundwater Budget Development

The general process of developing the water budget consisted of simulating a future time period of anticipated hydrologic, land use, and groundwater pumping conditions, and running the model on a monthly basis to develop inflow and outflow terms for direct use in the salt balance calculations being conducted by GSSI. Monthly and annual groundwater budget terms were compiled for the entire aquifer system; for five localized management subareas in the surficial Alluvial Aquifer (SNMP Management Zones 1 through 5); and for the deep aquifer system that resides in the Saugus Formation (SNMP Management Zone 6). See Figure 3 for the locations of each SNMP management zone.

The processes for developing the groundwater budget were reviewed with the Los Angeles Regional Water Quality Control Board (LARWQCB) and were approved by the

LARWQCB in an email to CLWA dated July 21, 2014. Specific work activities for developing the groundwater budget terms were as follows:

- **Identifying a hydrologic time period to simulate.** Based on inspection of rainfall records, CLWA and the consulting team selected a 24-year period for running the model. This time period is for the years 2012 through 2035.
- **Developing time-varying pumping terms.** Year-to-year pumping volumes were developed from work conducted in support of previous hydrogeologic studies (particularly LSCE and GSI [2009], and GSI and LSCE [2014]) and previous water supply planning activities (including the 2010 Urban Water Management Plan [UWMP] prepared by KJC and others [2011]). As discussed in Section 4 and Appendix B of this technical memorandum, pumping from the Alluvial Aquifer system is based on a general set of rainfall-related rules, while pumping from the Saugus Formation is based on the availability of imported water supplies.
- **Developing land use details, including changes in land uses.** The groundwater model allows for specification of differences in the annual volumes of deep percolation of water that is used for irrigation or other outdoor purposes. The model distinguishes between the deep percolation rates for residential developments; commercial/industrial/retail land uses; schools, parks, and recreational facilities; and golf courses. Septic systems are also included in the model simulation in areas that are served by public water supplies but not served by sanitary sewers.
- **Developing time-varying recharge terms.** Recharge from rainfall and streams was based on projecting the historical variations in these recharge mechanisms (from 1980 through 2003) to the future simulation period (2012 through 2035). Recharge from irrigation was defined from existing land uses and from adjustments to land uses that account for the expected changes in land use patterns that are projected to occur between 2012 and 2035.
- **Conducting monthly simulations and post-processing activities.** The model was run with monthly time steps for the entire period 2012 through 2035. Post-processing was then conducted to generate water budget terms for the entire aquifer system and all six of the management zones of interest.

3.0 Santa Clarita Valley Hydrogeology

Detailed descriptions of the hydrogeologic setting of the Santa Clarita Valley are provided by CH2M HILL (2004) and in Appendix C of this report. The Santa Clara River Valley East Subbasin lies within the relatively flat-lying Santa Clarita Valley and portions of the surrounding hills and mountains. Figure 1 shows a geologic map of the groundwater basin and its surroundings. The groundwater basin is underlain and laterally bounded by non-water-bearing bedrock units that are Miocene, Oligocene, and pre-Tertiary in geologic age. The Saugus Formation, which is of Pliocene and Pleistocene age, overlies these rocks within much of the local groundwater basin, except where the Saugus Formation is absent at the far western and eastern ends of the basin and in the upper reaches of some of the canyons. In these areas, the bedrock units are overlain by unconsolidated alluvium of Quaternary geologic age.

Developable quantities of groundwater are present in the alluvium and in portions of the Saugus Formation. Key attributes of the local aquifer system are as follows.

- The Alluvial Aquifer is present in the alluvial valley occupied by the Santa Clara River and also in alluvium that lies in each tributary. Recharge to the alluvium occurs from rainfall and storm-induced streamflow, primarily in the eastern half of the valley and primarily during years of above-average rainfall. Groundwater discharge from the Alluvial Aquifer occurs from pumping and from multiple natural processes (discharge to the river, evapotranspiration, and a minor amount of subsurface outflow) that occur in the Santa Clara River alluvial valley at the west end of the basin. Groundwater supply development from this unconfined aquifer has occurred primarily along the Santa Clara River and Castaic Creek, and also in the lower reaches of Bouquet Canyon and San Francisquito Canyon.
- Saugus Formation groundwater is present under unconfined conditions in the shallowest water-bearing zones where the Alluvial Aquifer is absent, and under semi-confined and confined conditions elsewhere. Groundwater in the Saugus Formation is recharged by two principal sources: (1) infiltration of precipitation in the exposed portions of the Saugus Formation in the highlands surrounding the valley, and (2) seepage from the Alluvial Aquifer along the Santa Clara River and its tributaries, particularly in the central portion of the Santa Clarita Valley (including along the South Fork of the Santa Clara River). The Saugus Formation contains lenticular and interfingered beds of poorly to well-consolidated sandstone, conglomerate, and siltstone that are at least 7,500 feet thick in the deepest part of the basin. RCS (1988 and 2002) found that the groundwater-yielding capability of the Saugus Formation is likely limited north and east of the San Gabriel Fault compared with areas lying south and west of the fault (where all Saugus groundwater development has occurred to date). Groundwater discharge from the Saugus Formation occurs as (1) groundwater pumping and (2) natural discharge into the Alluvial Aquifer at the west end of the valley (west of Interstate 5 [I-5]). Groundwater development in the Saugus Formation has been limited to the area south and west of the San Gabriel Fault.

4.0 Santa Clarita Valley Water Supplies and Local Groundwater Pumping Plan

This section discusses the local pumping plan for the Alluvial Aquifer and the Saugus Formation. The pumping plan is referred to as the Groundwater Operating Plan by CLWA and the local retail water purveyors. Pumping in accordance with this plan has a large effect on the overall water budget in the basin, and therefore is integral to the development of the SNMP. The Groundwater Operating Plan for the basin is designed to provide reliable groundwater supplies during years of reduced availability of imported water supplies, while providing a minimal base supply during years when imported supplies are not significantly curtailed. As discussed in the 2010 UWMP (KJC and others, 2011), CLWA and the local retail water purveyors have secured multiple different water supplies that are available for importation into the valley as needed. These include State Water Project (SWP) water, transfers from water agencies outside the valley, and groundwater banking programs in other parts of the state. Although the purveyors have access to multiple sources of imported water, the majority of this water is provided by the SWP, which experiences year-to-year fluctuations in the amount of water that it can deliver.

Accordingly, the purveyors have designed the Groundwater Operating Plan for the local groundwater basin to account for fluctuations in local rainfall and fluctuations in the availability of SWP water. The Groundwater Operating Plan is designed to maximize the use of Alluvial Aquifer water supplies and imported water during years of normal rainfall and normal SWP water availability, while limiting the use of the Saugus Formation during these periods and then temporarily increasing groundwater pumping from the Saugus Formation during years when SWP supplies are significantly reduced. Details regarding SWP water availability and its relationship to the groundwater pumping strategy incorporated into the Groundwater Operating Plan and the UWMP are provided in Appendix B. As shown in Table 1, the Groundwater Operating Plan for the local groundwater basin is as follows:

- Pumping from the Alluvial Aquifer ranges between 30,000 and 40,000 acre-feet per year (afy) during years of normal and above-normal rainfall within the Santa Clarita Valley. However, because of operational constraints in the eastern part of the basin, pumping from the Alluvial Aquifer is reduced in that area during locally dry years, resulting in basin-wide Alluvial Aquifer pumping volumes of between 30,000 and 35,000 afy during locally dry years. These rates reflect current demands and the purveyors' collective experience operating wells in the Alluvial Aquifer.
- Pumping from the Saugus Formation ranges between 7,500 and 15,000 afy during average-year to wet-year conditions within the SWP system. Planned dry-year pumping from the Saugus Formation ranges between 15,000 and 25,000 afy during the first year of significant curtailments in SWP allocations. Saugus pumping increases to between 21,000 and 25,000 afy if SWP allocations are reduced for two consecutive years, and ranges between 21,000 and 35,000 afy if SWP allocations are reduced for three or more consecutive years.

As discussed in Section 6 and Appendix B, the two-part strategy of (1) maximizing the use of Saugus Formation wells only during extended periods of reduced SWP water availability and (2) maximizing the use of Alluvial Aquifer wells during all other years is viable on a long-term basis and does not create unsustainable conditions in the local groundwater basin. This finding supports the historical and ongoing confidence that groundwater pumping can continue to be a sustainable source of water supply under the Groundwater Operating Plan (and thereby under the 2010 UWMP).

5.0 Development of Primary Model Input Terms

Following are discussions of the simulation time period and its relationship to historical hydrology (Section 5.1); the definition of pumping (Section 5.2); the land uses programmed into the model for the years 2012 through 2035 (Section 5.3); the time-varying recharge rates for the 24-year simulation (Section 5.4); and the model simulation process (Section 5.5).

5.1 Simulation Time Period and Relationship to Historical Hydrology

The future hydrologic conditions for the 24-year period from 2012 through 2035 were simulated using the historically observed rainfall conditions that occurred in the Santa Clarita Valley from 1980 through 2003. This period included years of normal rainfall, above-normal rainfall, and multi-year drought periods (see Figures 4 and 5 and Table 2). Average precipitation for this period is 18.13 inches, which is identical to the long-term average precipitation for the period of record (18.13 inches from 1931 through 2011; see Figures 4 and 5).

5.2 Variations in Pumping from the Alluvial Aquifer and Saugus Formation

The cycles of groundwater pumping from both local aquifer systems during the period 2012 through 2035 are displayed in Table 3 and were based on the following:

- For the Alluvial Aquifer, pumping was defined from the occurrence of dry years versus normal/above-normal years, as defined by rainfall data from the Newhall-Soledad rain gage (Station No. FC32CE). Dry-year pumping was used when the annual rainfall in the prior year was 12.5 inches or less at this rain gage.
- For the Saugus Formation, pumping was defined by the availability of imported water supplies (primarily from the SWP). In general, increased Saugus pumping is modeled for years when SWP deliveries could be 40% or less of the "Table A" annual volume that is available to CLWA during years of no SWP curtailments.

Annual production volumes for each purveyor-owned well are identified in the most recent (2014) version of the Groundwater Operating Plan (LSCE and GSI, 2009) using recent and planned production schedules for each well; information on the depths and lengths of the intake sections (open intervals) of each well; and a pumping strategy that is designed to minimize the potential for spreading of a perchlorate plume that is present in a localized portion of the Saugus Formation (GSI and LSCE, 2014). The well-specific production volumes are listed in Table 4 for the Alluvial Aquifer and in Table 5 for the Saugus Formation.

The monthly variations in pumping for irrigation wells and purveyor-owned municipal water supply wells are shown in Table 6.[2] The percentages of annual use that occur in any given month are different for irrigation wells than for municipal wells because the

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[2] Irrigation wells are VWC's well V160, LACWWD36's well 19, and the Robinson Ranch well, which each provide water exclusively to golf courses; and certain wells owned by the Newhall Land & Farming Company, which provide agricultural irrigation water. All other wells simulated in the model are used for municipal supply purposes.

irrigation wells provide water exclusively for golf courses and irrigated agriculture, whereas municipal wells provide water that is used both indoors (for potable uses at rates that vary only minimally from month to month) and outdoors (for landscape irrigation and other urban/suburban uses).

5.3 Current and Future Land Uses

Categories of land use were defined from geographic information system (GIS) coverages obtained from the following sources: (1) the Southern California Association of Governments (SCAG) 2008 land use survey; (2) the One Valley One Vision (OVOV) land use planning process; and (3) the Newhall Ranch planned community. Construction of Newhall Ranch is currently scheduled to begin in 2016, with full build-out anticipated to be complete by the year 2035. Full build-out in the remainder of the Santa Clarita Valley is anticipated to occur by the year 2050. Table 7 shows the modified 2008 SCAG land use categories in acres, the OVOV acreages for each land use category at full build-out, and the change in land use per year in each of the 6 areas that comprise the SNMP management zones.

5.4 Time-Varying Recharge Rates

The Purveyor model simulates recharge to the water table from irrigation (on urban and agricultural lands), septic systems, and precipitation, as well as recharge that occurs as stormwater and direct discharges into the Santa Clara River from water reclamation plants (WRPs). The recharge that arises from these local hydrologic processes was defined using a pre-processing tool called the Surface Water Routing Model (SWRM), which was developed in Microsoft Visual Basic at the same time that the regional model was developed.[3] Besides defining these recharge terms and their monthly variation, the SWRM also tracks stormwater flows, WRP discharges to the Santa Clara River, and the amount of rejected recharge that is calculated by the groundwater model. The procedures used to quantitatively derive the time-varying values of these processes for the SNMP groundwater budget were the same as those described in the model development report (CH2M HILL, 2004) and used in recent modeling studies (LSCE and GSI, 2009; GSI and LSCE, 2014) that are the basis for the design of the Groundwater Operating Plan. Details regarding these processes are described in the following sections.

5.4.1 Recharge from Urban Irrigation and Septic Systems

The estimated long-term infiltration rates of applied irrigation water beneath urban areas are estimated to be 1.0 inches per year (in/yr) for industrial and retail lands, 2.2 in/yr for residential developments, 3.4 in/yr for parks and recreation centers, and 4.6 in/yr for golf courses. These rates were applied during each year (and each month) of the 24-year simulation period.

Recharge from septic systems was defined for residential developments that are served by public water supplies, but not sanitary storm sewers. In these developments, the

3 See Appendix C of the model development and calibration report (CH2M HILL, 2004) for details of the SWRM's design, construction, and usage.

onsite treatment of wastewater (via septic systems) represents an importation of water with subsequent recharge to groundwater from the septic systems. The locations of these areas were obtained by coupling census tract maps developed by Los Angeles County (using data from the 2010 census; see Los Angeles County, 2010) with sewer infrastructure information provided by the City of Santa Clarita, Los Angeles County Sanitation District, and the Los Angeles Department of Public Works. Personal communications by GSSI with these agencies determined that areas beyond the sewered system were likely to be on a septic system. The rates of septic system discharges were defined from a U.S. Geological Survey (USGS) study (USGS, 2003) and from Bouwer (1978), which estimates that residential and commercial land use septic systems seep as much as 70 gallons per day (gal/day) per capita (GCD) and 1,000 gal/day per acre, respectively. Two other studies (Systech, 2002; and the 2010 UWMP [KJC and others, 2011]) estimate household septic uses to occur at rates of 75 gal/day per capita and 77 gal/day per capita, respectively. Based upon a population of approximately 29,343 living in unsewered areas (as determined from the census data for areas outside sewered areas), and based on an average 74 gal/day per capita of flow into septic systems[4], the recharge from septic systems was estimated to be 2,432 afy. Although some of the areas contributing this volume of recharge do not lie directly over the aquifer, they are in close proximity. Consequently, in order to account for their potential to load salt into the groundwater system, this volume of recharge was distributed over the nearest model grid nodes where septic systems were present, so that the full volume of 2,432 afy would be loaded to the aquifer. The corresponding rates of recharge at aquifer nodes where this loading was specified in the model are listed by census tract in Table 8.

5.4.2 Recharge from Agricultural Irrigation

As discussed by CH2M HILL (2002 and 2004), a portion of the irrigation water applied to agricultural lands owned by the Newhall Land & Farming Company (NLF) seeps downward past the root zone and recharges the underlying Alluvial Aquifer. The source of agricultural irrigation water is groundwater pumping from the Alluvial Aquifer. Under full valley build-out conditions, the currently irrigated lands no longer will be irrigated because their water source will be used as part of the water supply for the planned Newhall Ranch development.

5.4.3 Precipitation Recharge

Infiltration from direct precipitation within the model domain was defined using data from the Newhall-Soledad and NCWD rain gages, an isohyet map of rainfall throughout the watershed, and a power-function equation developed by Turner (1986) that (as shown in Figure 6) describes the relationship between annual rainfall and annual groundwater recharge within the valley. Details concerning the derivation of precipitation infiltration rates from these data are contained in Appendix C to the model development and calibration report (CH2M HILL, 2004). Table 9 lists the

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[4] This is the average of 70 gpd/person (USGS, 2003), 75 gpd/person (Systech, 2002), and 77 gpd/person (KJC and others, 2011).

simulated monthly precipitation at the NCWD rain gage for the 24-year simulation period[5].

5.4.4 Stormwater Flows and Recharge from Streams

For each month of the simulation, the SWRM calculated the amounts of stormwater flow and groundwater recharge in all streams, plus the amount of flow and groundwater recharge arising from projected future WRP discharges to the Santa Clara River (including from the future Newhall WRP, which will service the planned Newhall Ranch development). For the Santa Clara River, the volume of streamflow into the local groundwater basin area was defined from measured and estimated streamflow data at the Lang stream gage (Table 10). For Castaic Creek, the volume of streamflow was defined from historical California Department of Water Resources operations of releases of water from Castaic Lake, and through consideration of the corresponding hydrologic year type (Table 11). For the remaining Santa Clara River tributaries, streamflow volumes were defined by the SWRM using monthly rainfall data and the Turner (1986) method that quantifies the relationship between rainfall and the subsequent yield of water from each watershed.

5.4.5 WRP Discharges to the Santa Clara River

Treated water is currently discharged to the Santa Clara River from two WRPs that are present in the Santa Clarita Valley. The Saugus WRP discharges to the river immediately above the mouth of the South Fork Santa Clara River, and the Valencia WRP discharges to the river just west of Interstate 5. The planned Newhall WRP will discharge to the river just east of the Los Angeles/Ventura County line for limited durations during the winter months. The discharges from these three WRPs will continue to occur predominantly in reaches of the Santa Clara River that are perennial (i.e., are flowing year-round). Accordingly, little of this water recharges the aquifer, though some limited recharge may occur from the river between the furthest upstream WRP (the Saugus WRP) and Interstate 5.

Under full valley build-out conditions, future flows into and from WRPs will be higher than historical flows because of increased development and the associated increases in (1) indoor water use volumes and (2) accordant wastewater flows into WRPs. Additionally, a portion of the future treated water will be reclaimed, as described in CLWA's recycled water master plan (KJC, 2002). As was done in prior modeling analyses of the Groundwater Operating Plan (CH2M HILL and LSCE, 2005; LSCE and GSI, 2009; GSI and LSCE, 2014), future inflows to the Saugus and Valencia WRPs were estimated from projected future water demands and from comparisons of historical water use and measured inflows to both WRPs. Table 12 shows the derivation of urban water demands outside the Newhall Ranch development (which will be served by the future Newhall WRP). Table 13 shows the total amount of treated water generated by the Saugus and Valencia WRPs, and the amount of this water that is reclaimed and discharged to the river, by month. The values in Table 13 assume that the reclaimed

[5] The simulated monthly precipitation was defined from measurements at the NCWD rain gage from 1979 through 2011, as well as by combining the isohyet map with measurements at the Newhall-Soledad rain gage from before 1979.

water volume will be no more than 16,000 afy, to maintain existing flow volumes in the Santa Clara River. For the Newhall Ranch WRP, discharges to the river will be 286 afy, occurring primarily in December and January, when demands for reclaimed water are at their seasonal low. The total combined volumes of treated water discharged to the Santa Clara River under full build-out conditions in the Santa Clarita Valley (including Newhall Ranch) are summarized by month in Table 14.

5.4.6 Monthly Assignment and Tracking of Surface Water Budget

The month-by-month assignment of the rates and locations of surface water infiltration to the underlying Alluvial Aquifer was performed by the SWRM using the procedures described in Section C.8.5 of Appendix C to the model development and calibration report (CH2M HILL, 2004). Streambed infiltration capacities for the 24-year simulation period (calendar years 2012 through 2035) were the same as those used in the calibrated model for the 24-year period 1980 through 2003.

For each month of the 24-year simulation period, the SWRM also tracked the volume of surface water that does not infiltrate to groundwater (i.e., rejected stream leakage). This rejected stream leakage occurs in the perennial reach of the Santa Clara River, which extends from near Round Mountain downstream to the Los Angeles/Ventura County Line. Rejected stream leakage also occurs periodically in ephemeral reaches when the groundwater table rises to the streambed following large rainfall and streamflow events. The amount of rejected stream leakage in any given month is calculated to remain as surface water in the Santa Clara River and eventually to exit the groundwater basin at the west end of the valley, at the County Line.

5.5 Model Simulation Process

As discussed in previous sections, the modeling evaluations were performed by simulating conditions on a monthly basis for the 24-year simulation period. The first step in this process consisted of running the SWRM to calculate the monthly distribution of recharge to the Alluvial Aquifer system (from rainfall, streamflow, irrigation, septic systems, and WRP discharges), and the monthly distribution of recharge to the Saugus Formation (from rainfall, irrigation, and septic systems) in areas where the Alluvial Aquifer is not present. The output from the SWRM consisted of monthly files that assigned recharge to each node in the 37,823-node model grid.

The model then was run using monthly time steps, in which pumping and recharge terms were varied each month. For each month, the model was run by solving the groundwater flow equations using a convergence criterion of 0.005 foot for groundwater elevations and a water budget convergence criterion of 2 cubic feet per day. For post-processing purposes, monthly groundwater budget terms were calculated and output to time-flux files across the entire model area, for the Alluvial Aquifer as a whole, for the Saugus Formation as a whole, and for each of the 6 individual SNMP management zones. The post-processing work included developing utilities that checked that individual components of the water budget were summed correctly, compared with the direct model results for larger systems. Specifically, the separate analyses for SNMP Management Zones 1 through 5 were summed and compared with the analysis for the entire Alluvial Aquifer; and the separate analyses for the Alluvial Aquifer and for SNMP Management Zone 6 (the Saugus Formation) were summed and compared with the analysis for the entire aquifer system.

6.0 Results

Annual and monthly groundwater budget details are presented in a series of tables contained in Appendixes D and E, respectively. The tables include water budget details for each of the 6 SNMP management zones. Each table presents the individual components of recharge and discharge, as well as the total recharge and total discharge calculated by the model. Time-series plots of annual groundwater inflows (recharge) and outflows (discharge) are presented for the valley's aquifer systems as a whole in Figures 7 and 8, respectively. These figures show that total recharge to groundwater is highly variable from one year to the next, while total groundwater discharge is less so. Because significant changes in recharge can occur from year to year, the amount of groundwater in storage varies from year to year, as shown in Figure 9.

Each table in Appendixes D and E also shows the change in groundwater storage reported by the model (in green font) and the amount of model error, which is calculated as:

Error = Modeled Total Recharge – Modeled Total Discharge – Modeled Change in Storage

Each table also shows the cumulative change in the amount of stored groundwater as time progresses from the beginning of the model simulation. This cumulative change in storage is plotted in Figure 10, which shows that there is no long-term reduction in groundwater storage that would indicate an overdraft condition. During the 2012–2035 period, there are more years that showed groundwater level declines than groundwater level rises, and accordingly a small reduction in groundwater storage occurred; however, this appears to be strongly related to year-to-year variations in precipitation. The lack of a sustained decline in the groundwater storage volume is consistent with the year-to-year groundwater level trends seen across the basin during the past several decades. Over the long term, the water level monitoring network maintained by the purveyors has not shown a downward trend in groundwater levels, which is also consistent with modeling results for anticipated land use changes in the valley through 2035.

7.0 References

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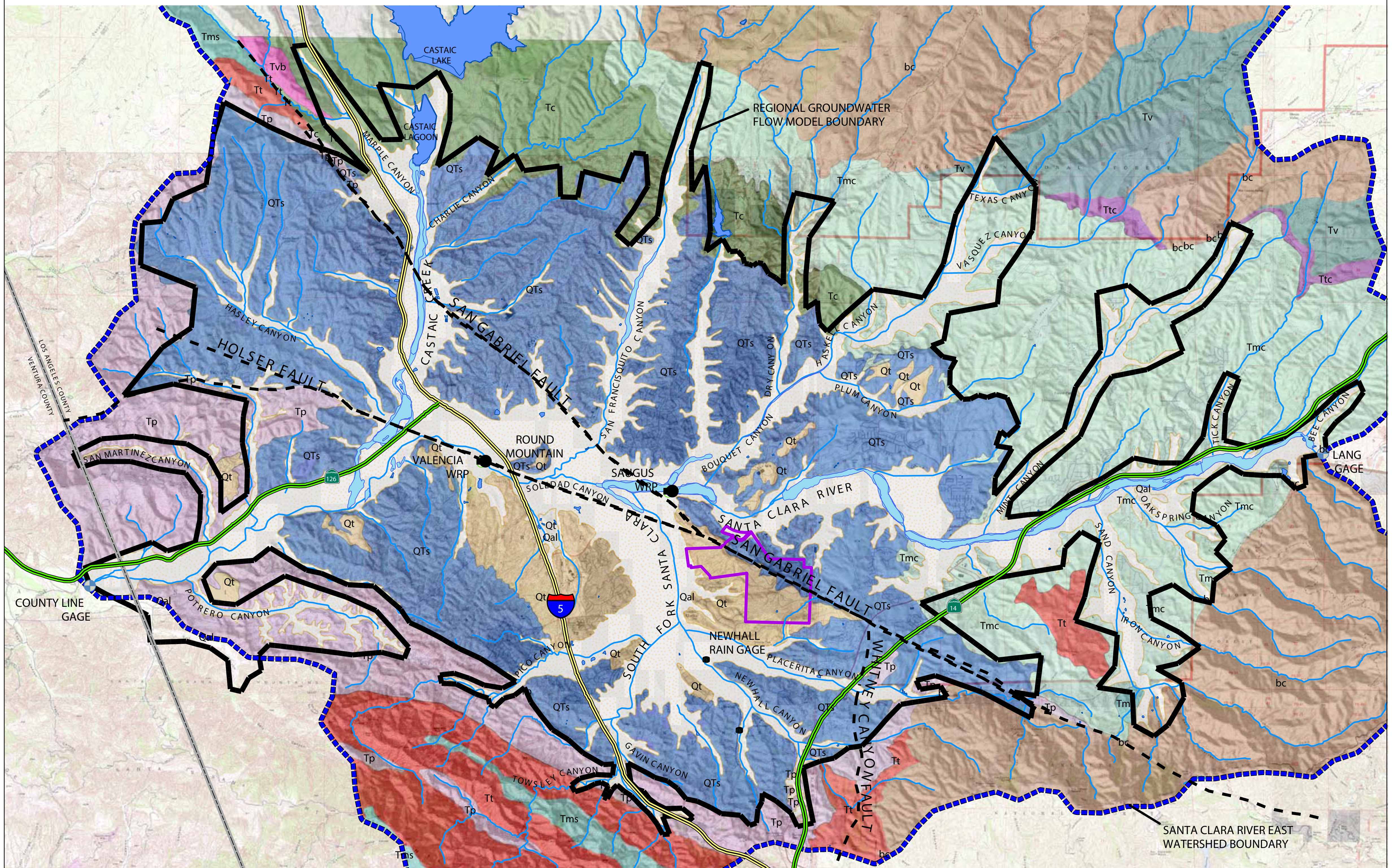
FIGURES

FIGURE 1

Model Domain and Basin Geologic Map

Development of
Groundwater Budget Terms for the
Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)



LEGEND

GEOLOGY

- UNDIFFERENTIATED ALLUVIUM (Qal)
- TERRACE DEPOSITS (Qt)
- SAUGUS FORMATION (QTs)
- PICO FORMATION (Tp)
- TOWSLEY FORMATION (Tt)
- MODELO FORMATION (Tms)
- CASTAIC FORMATION (Tc)
- VIOLIN BRECCIA (Tvb)
- MINT CANYON FORMATION (Tmc)
- TICK CANYON FORMATION (Ttc)
- VASQUEZ FORMATION (Tv)
- UNDIFFERENTIATED BASEMENT COMPLEX (bc)

HYDROGRAPHY

- LAKE
- STREAM
- STREAM GAGE

MAJOR ROAD

- INTERSTATE
- STATE HIGHWAY
- WHITTAKER-BERMITE PROPERTY BOUNDARY

N

0 9,00 18,000
Feet

SOURCE: CH2M HILL, 2004

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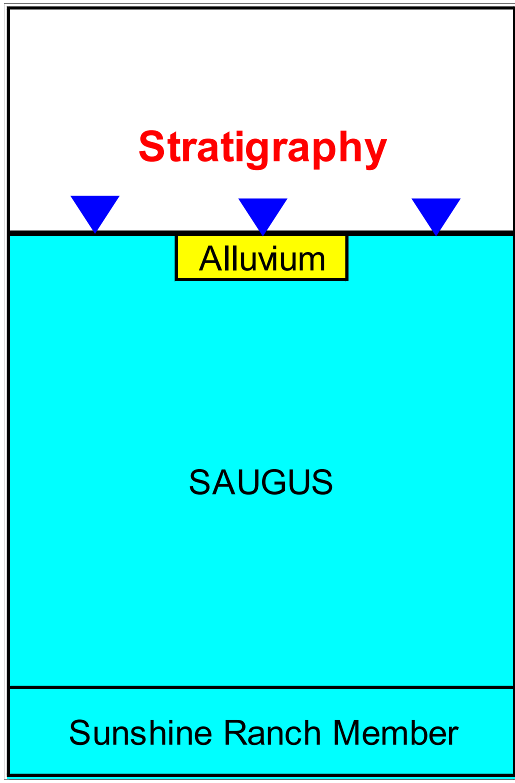

Model Layer Number	Thickness (feet)
1	500
2	
3	250
4	250
5	500
6	500
7	500
8	Variable

FIGURE 2

Schematic Diagram of Model's Representation of Basin Stratigraphy

Development of
Groundwater Budget Terms for the
Santa Clara River Valley
East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

NOTE:

The blue triangles represent the long-term water table surface in model layer 1.

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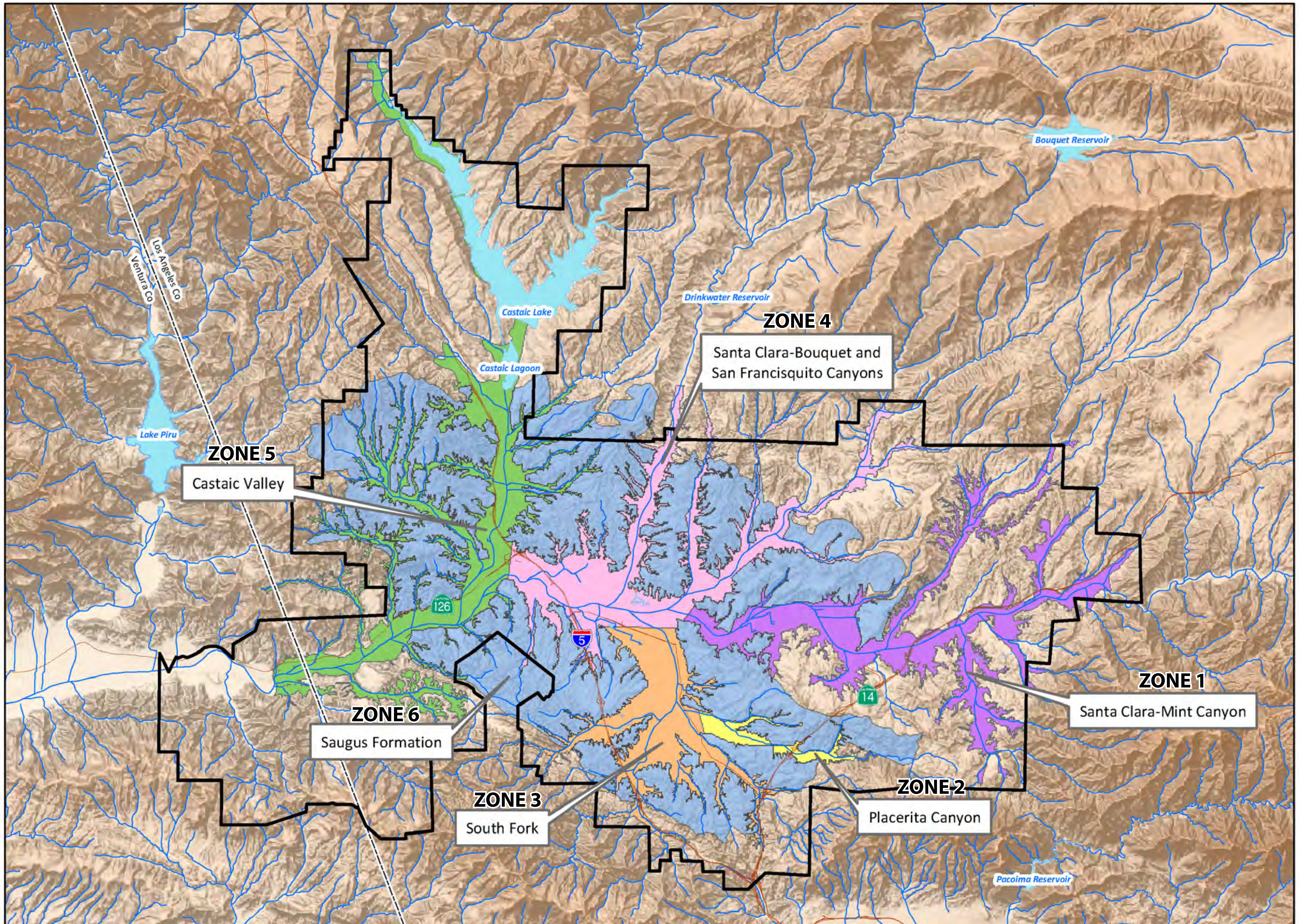
FIGURE 3

SNMP Management Zones (Subunits) of the East Subbasin Alluvial Aquifer and Saugus Formation

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)



LEGEND

- Castaic Lake Water Agency Boundary

LARWQCB Ground Water Subunit (SNMP Management Zone)

- Castaic Valley
- Santa Clara-Mint Canyon
- Santa Clara-Bouquet and San Francisquito Canyons
- South Fork
- Placerita Canyon
- Saugus Formation (Areal Extent)

N

0 2 4 Miles

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15-Oct-12

Prepared by: DWB. Map Projection: UTM 1927, Zone 11.

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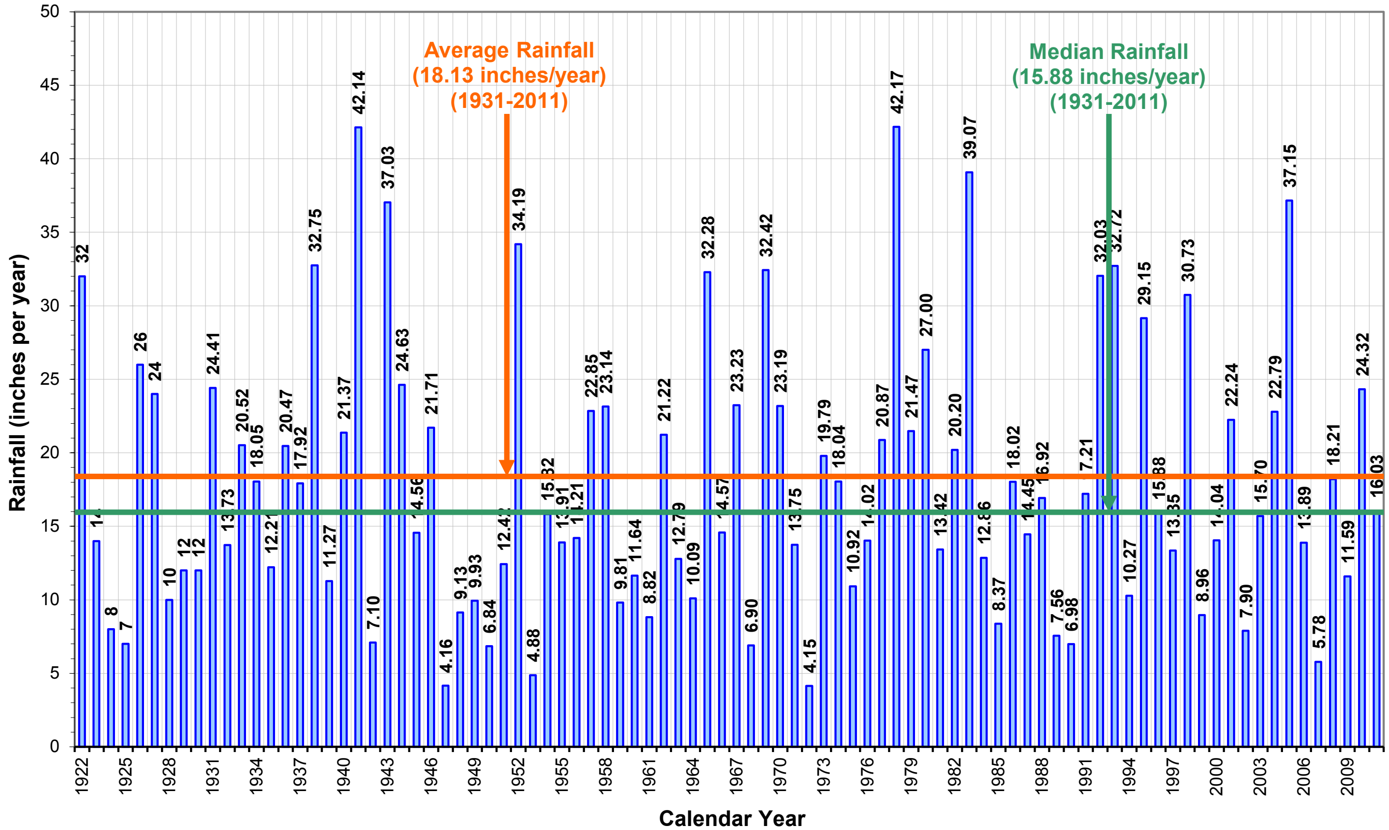

FIGURE 4

Annual Rainfall at the Newhall-Soledad Rain Gage

Development of
Groundwater Budget Terms for the
Santa Clara River Valley
East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

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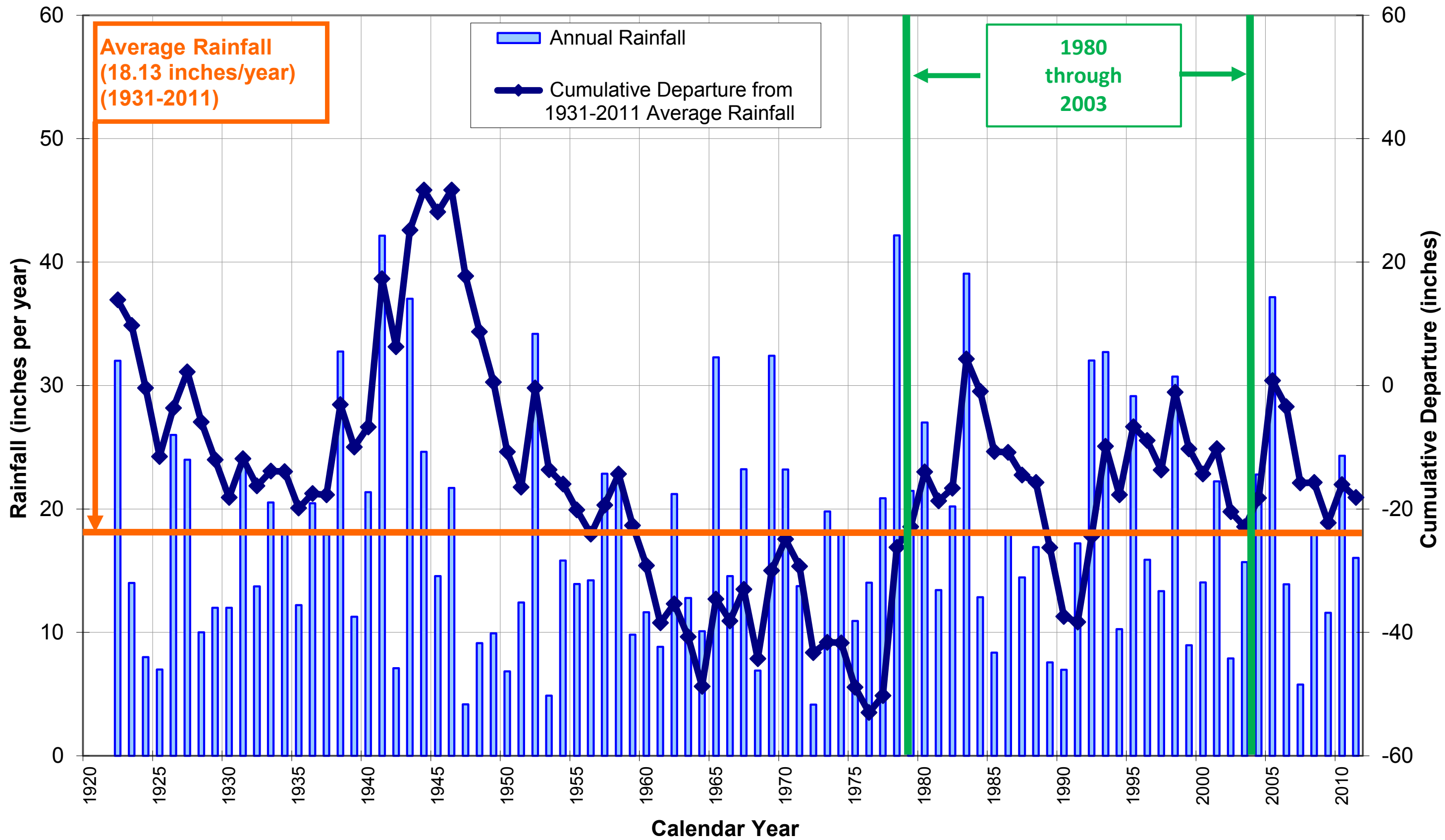

FIGURE 5

Annual Rainfall and Cumulative Departure from Average Rainfall (Newhall-Soledad Rain Gage)

Development of
Groundwater Budget Terms for the
Santa Clara River Valley
East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

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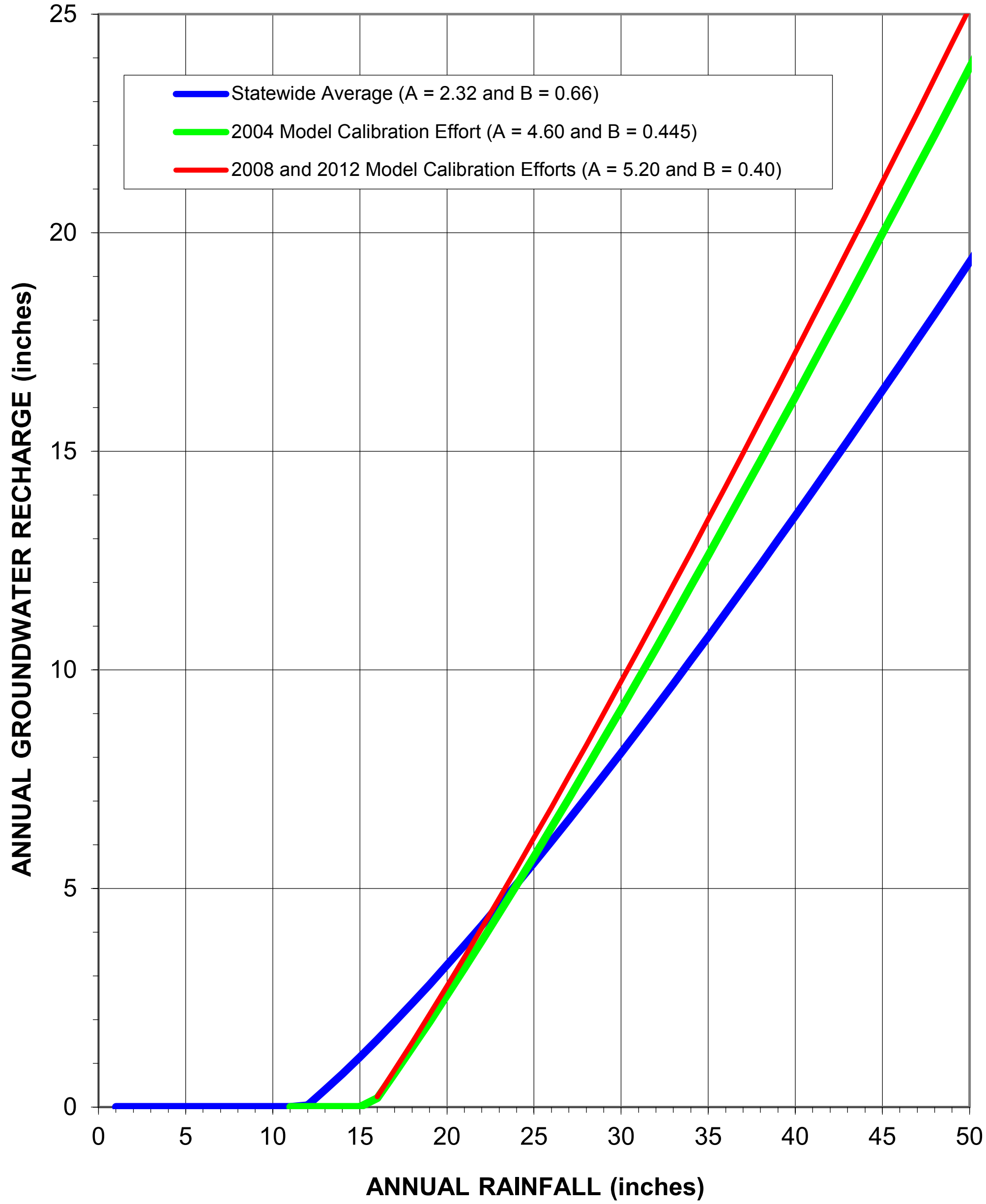

FIGURE 6

Rainfall-Recharge Relationship for the Groundwater Flow Model

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Turner (1986):

Annual Recharge =

Annual Rainfall - A * (Annual Rainfall ^ B)

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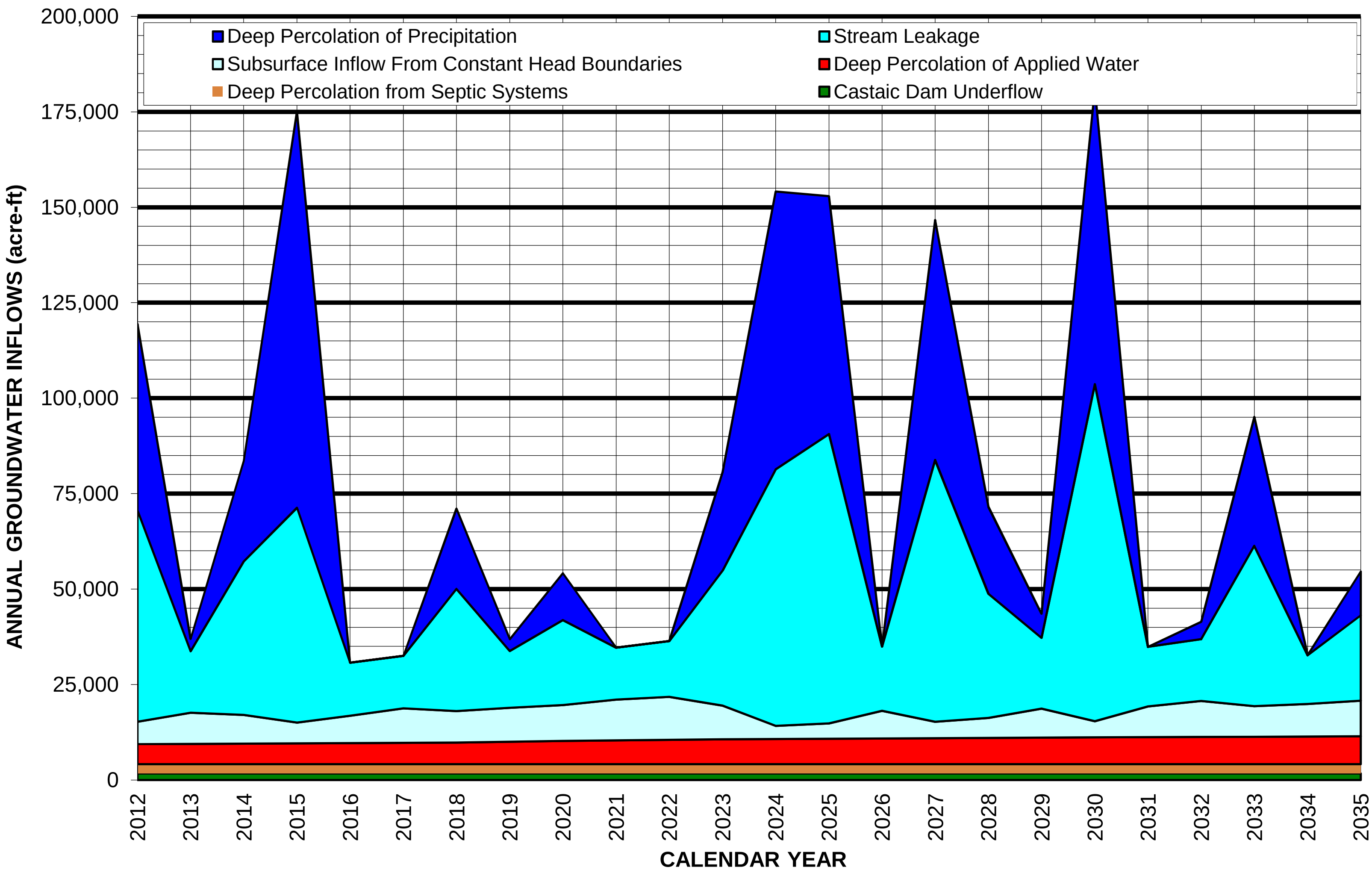

FIGURE 7
ANNUAL GROUNDWATER INFLOWS
(2012-2035)
(Alluvium+Saugus)

DEVELOPMENT OF GROUNDWATER BUDGET TERMS FOR THE
SANTA CLARA RIVER VALLEY EAST SUBBASIN
SALT AND NUTRIENT MANAGEMENT PLAN (SANTA CLARITA VALLEY, CALIFORNIA)

GSI Water Solutions, Inc.

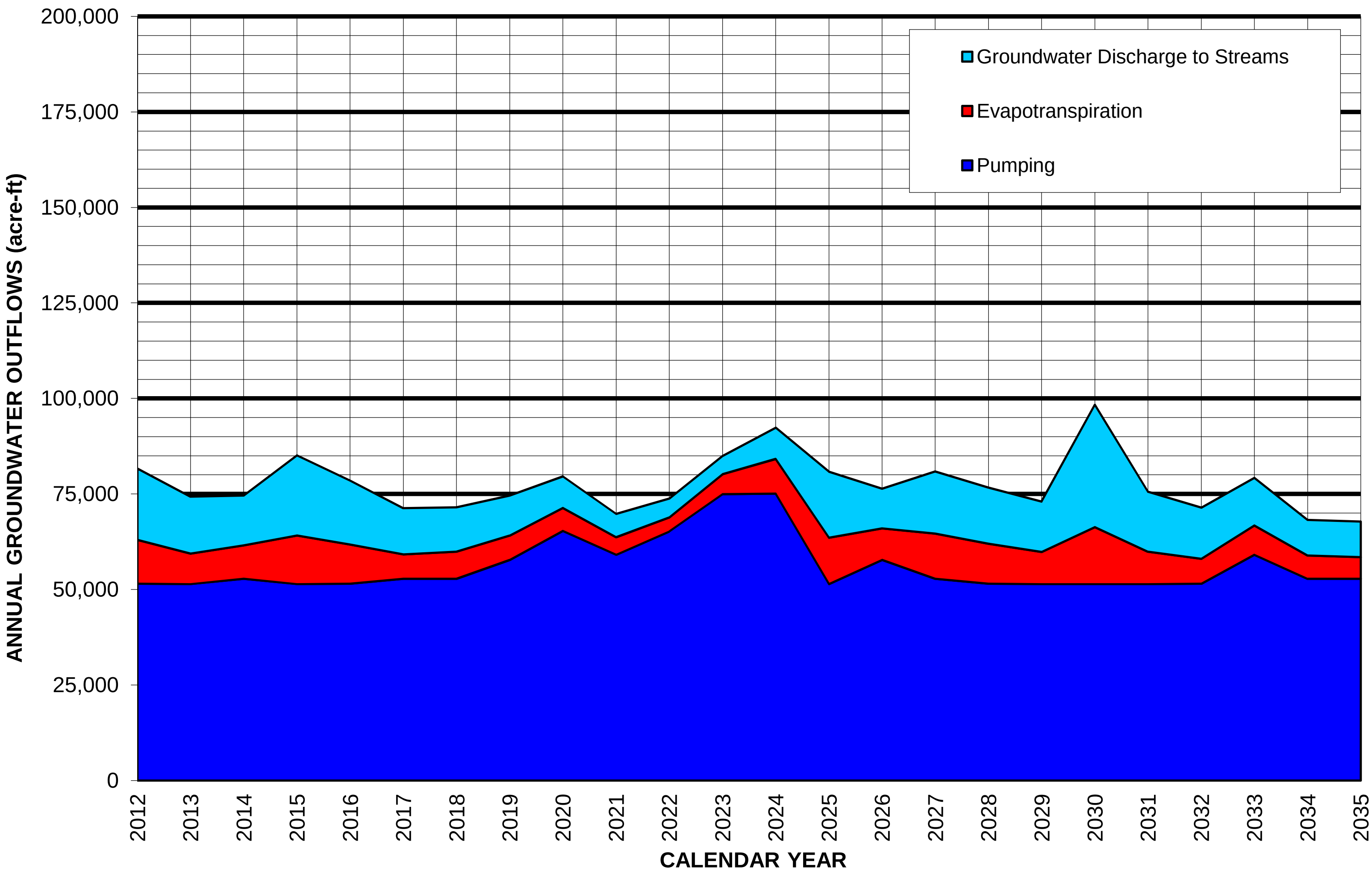

FIGURE 8
ANNUAL GROUNDWATER OUTFLOWS
(2012-2035)
(Alluvium+Saugus)

DEVELOPMENT OF GROUNDWATER BUDGET TERMS FOR THE
SANTA CLARA RIVER VALLEY EAST SUBBASIN
SALT AND NUTRIENT MANAGEMENT PLAN (SANTA CLARITA VALLEY, CALIFORNIA)

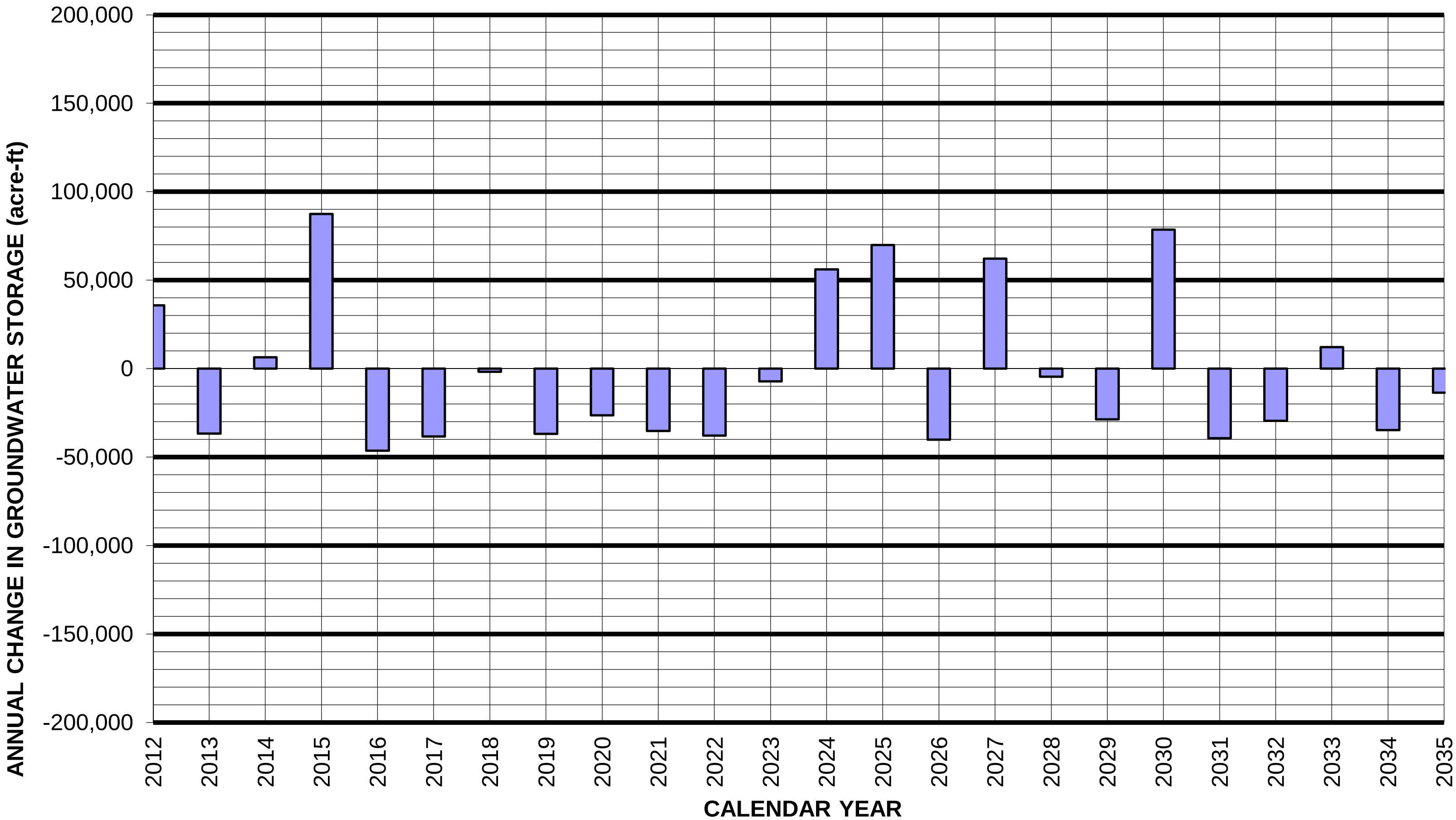

FIGURE 9
ANNUAL CHANGE IN GROUNDWATER STORAGE
(2012-2035)
(Alluvium+Saugus)

DEVELOPMENT OF GROUNDWATER BUDGET TERMS FOR THE
SANTA CLARA RIVER VALLEY EAST SUBBASIN
SALT AND NUTRIENT MANAGEMENT PLAN
(SANTA CLARITA VALLEY, CALIFORNIA)

GSI Water Solutions, Inc.

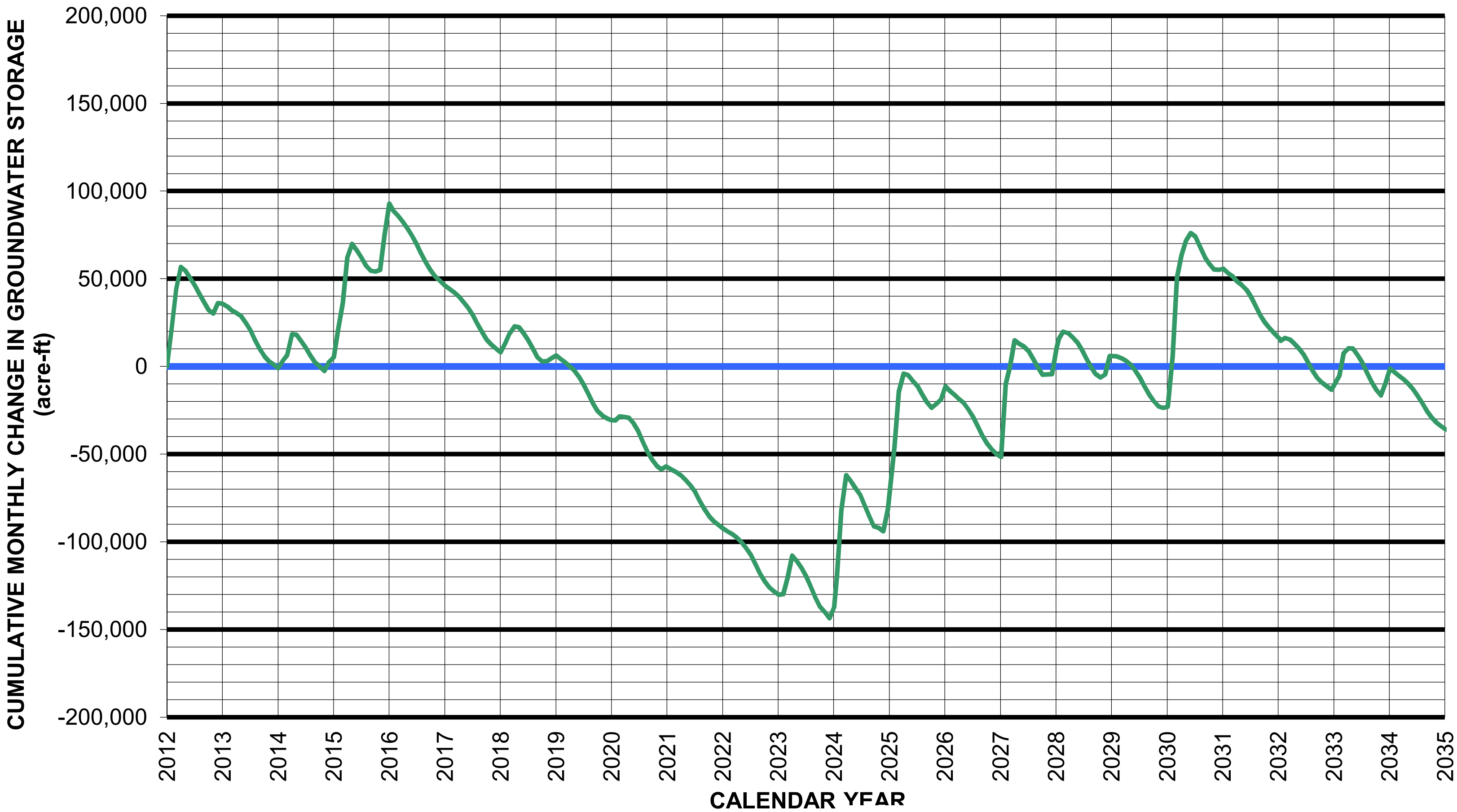

FIGURE 10
CUMULATIVE CHANGE IN GROUNDWATER STORAGE
(2012-2035)
(Alluvium+Saugus)

DEVELOPMENT OF GROUNDWATER BUDGET TERMS FOR THE
SANTA CLARA RIVER VALLEY EAST SUBBASIN
SALT AND NUTRIENT MANAGEMENT PLAN
(SANTA CLARITA VALLEY, CALIFORNIA)

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TABLES

Table 1

Annual Basin-Wide Pumping Volumes under the Groundwater Operating Plan

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Local Hydrology [a]	Alluvial Aquifer Pumping (afy)	SWP Hydrology [b]	Saugus Formation Pumping (afy)
Normal	30,000 to 40,000	Normal	7,500 to 15,000
Dry Year 1	30,000 to 35,000	Drought Year 1	15,000 to 25,000
Dry Year 2	30,000 to 35,000	Drought Year 2	21,000 to 25,000
Dry Year 3	30,000 to 35,000	Drought Year 3	21,000 to 35,000

[a] Defined by rainfall data at rain gage located at the Newhall County Water District (NCWD) office.

[b] Defined by water year, using the California Department of Water Resources (DWR) Sacramento Valley Unimpaired Runoff Index. Wet = wettest, Critical = driest.

SWP = State Water Project

afy = acre-feet per year

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Table 2

Local Hydrology and the Groundwater Operating Plan for the Alluvial Aquifer (1980-2011)

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan

(Santa Clarita Valley, California)

Year	Local Rainfall (inches)[a]	Departure (inches) from 1931-2011 Average	Year Type for Alluvial Pumping	Alluvial Aquifer Pumping under the Groundwater Operating Plan (afy)
1980	27.00	8.87	Normal	30,000-40,000
1981	13.42	-4.71	Normal	30,000-40,000
1982	20.20	2.07	Dry Year 1	30,000-35,000
1983	39.07	20.94	Normal	30,000-40,000
1984	12.86	-5.27	Normal	30,000-40,000
1985	8.37	-9.76	Dry Year 1	30,000-35,000
1986	18.02	-0.11	Dry Year 2	30,000-35,000
1987	14.45	-3.68	Normal	30,000-40,000
1988	16.92	-1.21	Dry Year 1	30,000-35,000
1989	7.56	-10.57	Dry Year 2	30,000-35,000
1990	6.98	-11.15	Dry Year 3	30,000-35,000
1991	17.21	-0.92	Dry Year 4	30,000-35,000
1992	32.03	13.90	Dry Year 5	30,000-35,000
1993	32.72	14.59	Normal	30,000-40,000
1994	10.27	-7.86	Normal	30,000-40,000
1995	29.15	11.02	Dry Year 1	30,000-35,000
1996	15.88	-2.25	Normal	30,000-40,000
1997	13.35	-4.78	Normal	30,000-40,000
1998	30.73	12.60	Normal	30,000-40,000
1999	8.96	-9.17	Normal	30,000-40,000
2000	14.04	-4.09	Normal	30,000-40,000
2001	22.24	4.11	Dry Year 1	30,000-35,000
2002	7.90	-10.23	Dry Year 2	30,000-35,000
2003	15.70	-2.43	Dry Year 3	30,000-35,000
2004	22.79	4.66	Dry Year 4	30,000-35,000
2005	37.15	19.02	Normal	30,000-40,000
2006	13.89	-4.24	Normal	30,000-40,000
2007	5.78	-12.35	Dry Year 1	30,000-35,000
2008	18.21	0.08	Normal	30,000-40,000
2009	11.59	-6.54	Dry Year 1	30,000-35,000
2010	24.32	6.19	Normal	30,000-40,000
2011	16.03	-2.10	Normal	30,000-40,000

[a]From records at Newhall-Soledad rain gage (Station No. FC32CE).

Dry year pumping occurs when rainfall in prior year is 12.5 inches or less, and may continue until after a year with high rainfall (well above normal) has occurred.

afy = acre-feet per year

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Table 3

Alluvial and Saugus Formation Pumping Patterns for the Simulation of 1980-2035 Local and SWP Conditions

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Historic Year	Future Year	Local Rainfall (inches)[a]	SWP Allocations[b]			Simulated Pumping Conditions		Simulated Pumping Rates (afy)	
			2007 Conditions	2011 Conditions	2013 Future Conditions	Alluvium	Saugus	Alluvium	Saugus
1980	2012	27.00	66%	72%	92%	Normal	Normal	38,600	12,814
1981	2013	13.42	76%	63%	39%	Normal	Normal	38,600	12,814
1982	2014	20.20	71%	73%	100%	Dry Year 1	Normal	36,600	12,814
1983	2015	39.07	60%	70%	100%	Normal	Normal	38,600	12,814
1984	2016	12.86	78%	76%	79%	Normal	Normal	38,600	12,814
1985	2017	8.37	77%	71%	71%	Dry Year 1	Normal	36,600	12,814
1986	2018	18.02	56%	72%	76%	Dry Year 2	Normal	35,000	12,814
1987	2019	14.45	68%	49%	15%	Normal	Dry Year 1	38,600	19,125
1988	2020	16.92	12%	19%	26%	Dry Year 1	Dry Year 2	36,600	25,227
1989	2021	7.56	76%	62%	56%	Dry Year 2	Dry Year 1	35,000	34,977
1990	2022	6.98	9%	25%	15%	Dry Year 3	Dry Year 2	35,000	34,977
1991	2023	17.21	18%	33%	18%	Dry Year 4	Dry Year 3	35,000	34,977
1992	2024	32.03	26%	24%	21%	Dry Year 5	Dry Year 4	35,000	34,977
1993	2025	32.72	90%	66%	68%	Normal	Normal	38,600	12,814
1994	2026	10.27	51%	59%	35%	Normal	Dry Year 1	38,600	19,125
1995	2027	29.15	72%	71%	87%	Dry Year 1	Normal	36,600	12,814
1996	2028	15.88	83%	79%	73%	Normal	Normal	38,600	12,814
1997	2029	13.35	75%	77%	83%	Normal	Normal	38,600	12,814
1998	2030	30.73	73%	78%	88%	Normal	Normal	38,600	12,814
1999	2031	8.96	83%	79%	69%	Normal	Normal	38,600	12,814
2000	2032	14.04	84%	67%	65%	Normal	Normal	38,600	12,814
2001	2033	22.24	28%	35%	22%	Dry Year 1	Dry Year 1	36,600	19,125
2002	2034	7.90	52%	62%	59%	Dry Year 2	Normal	35,000	12,814
2003	2035	15.70	71%	70%	57%	Dry Year 3	Normal	35,000	12,814

a From records at Newhall-Soledad rain gage (Station No. FC32CE). Pumping year type lags local rainfall by 1 year. Dry-year pumping occurs when rainfall in prior year is 12.5 inches or less, and may continue for one year after a high-rainfall year has occurred.

[b] Table A delivery values ae from Table B.3 in DWR (2008) for 2007 conditions; Table 9 in DWR (2012) for 2011 conditions; and pages 47 and 103 in DWR (2014) for 2013 Future Conditions.

DWR = California Department of Water Resources SWP = California State Water Project afy = acre-feet per year

Table 4

Pumping Rates Simulated for Individual Alluvial Aquifer Wells under the Groundwater Operating Plan

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan

(Santa Clarita Valley, California)

Well Name	Alluvial Subarea	Annual Production Volume (afy) Under the Groundwater Operating Plan		
		Normal	**Dry Yr 1**	**Dry Yr 2+**
NCWD-Castaic 1	Castaic Valley	350	300	250
NCWD-Castaic 2	Castaic Valley	100	100	100
NCWD-Castaic 4	Castaic Valley	100	0	0
NCWD-Castaic 7	Castaic Valley	300	200	200
NCWD-Pinetree 1	Above Mint Canyon	150	0	0
NCWD-Pinetree 3	Above Mint Canyon	350	300	300
NCWD-Pinetree 4	Above Mint Canyon	300	200	200
NCWD-Pinetree 5	Above Mint Canyon	300	200	200
NCWD Total		**1,950**	**1,300**	**1,250**
NLF-161	Below Valencia WRP	1,000	1,000	1,000
NLF-B10	Below Valencia WRP	500	500	500
NLF-B11	Below Valencia WRP	100	100	100
NLF-B14	Below Valencia WRP	300	300	300
NLF-B20	Below Valencia WRP	350	350	350
NLF-B5	Below Valencia WRP	2,400	2,400	2,400
NLF-B6	Below Valencia WRP	1,100	1,100	1,100
NLF-C10	Below Valencia WRP	1,100	1,100	1,100
NLF-C3	Below Valencia WRP	100	100	100
NLF-C4	Below Valencia WRP	200	200	200
NLF-C5	Below Valencia WRP	900	900	900
NLF-C7	Below Valencia WRP	350	350	350
NLF-C8	Below Valencia WRP	400	400	400
NLF-E5	Below Valencia WRP	100	100	100
NLF-E9	Below Valencia WRP	900	900	900
NLF-G45	Below Valencia WRP	350	350	350
NLF Total		**10,150**	**10,150**	**10,150**
SCWD-Bouquet	Bouquet Canyon	800	800	800
SCWD-Clark	Bouquet Canyon	700	700	700
SCWD-Guida	Bouquet Canyon	1,300	1,250	1,200
SCWD-Methodist	Bouquet Canyon	500	350	200
SCWD-Lost Canyon 2	Above Mint Canyon	300	150	0
SCWD-Lost Canyon 2A	Above Mint Canyon	300	150	0
SCWD-Mitchell #5A and #5B	Above Mint Canyon	800	550	300
SCWD-N. Oaks Central	Above Mint Canyon	850	800	700
SCWD-N. Oaks East	Above Mint Canyon	800	750	700
SCWD-N. Oaks West	Above Mint Canyon	800	750	700
SCWD-Sand Canyon	Above Mint Canyon	200	150	0
SCWD-Sierra	Above Mint Canyon	1,100	900	700
SCWD-Honby	Above Saugus WRP	1,000	850	700
SCWD-Santa Clara	Above Saugus WRP	800	800	800
SCWD-Valley Center	Above Saugus WRP	800	800	800
SCWD Total		**11,050**	**9,750**	**8,300**
VWC-D	Castaic Valley	880	880	880
VWC-E15	Below Valencia WRP	800	800	800
VWC-N	Below Saugus WRP	650	650	650
VWC-N7	Below Saugus WRP	1,160	1,160	1,160
VWC-N8	Below Saugus WRP	1,160	1,160	1,160
VWC-Q2	Below Saugus WRP	1,100	1,100	1,100
VWC-S6	Below Saugus WRP	1,000	1,000	1,000
VWC-S7	Below Saugus WRP	500	500	500
VWC-S8	Below Saugus WRP	500	500	500
VWC-T7	Above Saugus WRP	750	750	750
VWC-U4	Above Saugus WRP	800	800	800
VWC-U6	Above Saugus WRP	800	800	800
VWC-W9	San Francisquito Canyon	950	950	950
VWC-W10	San Francisquito Canyon	1,000	1,000	1,000
VWC-W11	San Francisquito Canyon	800	800	800
VWC Total		**12,850**	**12,850**	**12,850**
Robinson Ranch	Above Mint Canyon	600	550	450
WHR	Castaic Valley	2,000	2,000	2,000
Purveyor Alluvial Usage		**25,850**	**23,900**	**22,400**
Other Alluvial Usage		**12,750**	**12,700**	**12,600**
Total Alluvial Pumping		**38,600**	**36,600**	**35,000**

Notes:

All pumping volumes are listed in units of acre-feet per year (afy).

Wells that are not listed are assumed to not be pumping in the future.

NLF = Newhall Land & Farming Company

NCWD = Newhall County Water District

SCWD = Santa Clarita Division of Castaic Lake Water Agency

VWC = Valencia Water Company

WHR = Wayside Honor Rancho, whose wells are owned by the Los Angeles County Waterworks District No. 36

"Other Alluvial Usage" consists of pumping by NLF, WHR, and Robinson Ranch.

An additional 500 afy of pumping by other private well owners is not included in this table.

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Table 5

Annual Groundwater Production Volumes (Acre-Feet) for Individual Saugus Formation Water Supply Wells under the Revised Groundwater Operating Plan

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

		Year Type for State Water Project Allocation			
Owner	**Well Name**	**Normal Years**	**Curtailment Year 1**	**Curtailment Year 2**	**Curtailment Year 3+**
NCWD	NC12	1,765	2,494	2,494	2,494
	NC13	1,765	2,494	2,494	2,494
Total Pumping (NCWD Wells)		**3,530**	**4,988**	**4,988**	**4,988**
CLWA	Saugus 1	1,772	1,772	1,772	1,772
	Saugus 2	1,772	1,772	1,772	1,772
Total Pumping (CLWA Wells)		**3,544**	**3,544**	**3,544**	**3,544**
LACWWD36	LACWWD36-19	500	500	500	500
Total Pumping (LACWWD36)		**500**	**500**	**500**	**500**
VWC	V159	50	50	50	50
	V160 (Municipal)	0	0	0	0
	V160 (Val. Ctry Club)	500	500	500	500
	V201	3,227 to 3,777	3,227 to 3,777	3,227 to 3,777	3,227 to 3,777
	V205	366	2,184	4,355	4,355
	V206 and V207*	547	3,582	3,757	6,905
Total Pumping (VWC Wells)		**4,690 to 5,240**	**9,543 to 10,093**	**11,889 to 12,439**	**15,037 to 15,587**
CLWA	Future Wells	0	0	3,756	10,358
Total Pumping (Future Wells)		**0**	**0**	**3,756**	**10,358**
Total Pumping (All Saugus Water Supply Wells)		**12,264 to 12,814**	**18,575 to 19,125**	**24,677 to 25,227**	**34,427 to 34,977**

Notes:

All pumping volumes are listed in units of acre-feet per year (afy).

Wells that are not listed are assumed to not be pumping in the future.

NLF = Newhall Land & Farming Company

CLWA = Castaic Lake Water Agency

LACWWD36 = Los Angeles County Waterworks District #36

NCWD = Newhall County Water District

VWC = Valencia Water Company

* Wells V206, V207, and the three future CLWA wells together will comprise the Magic Mountain wellfield.
Accordingly, the distribution of pumping between these various wells may differ from the values shown in this table.

Table 6

Allocation of Pumping by Month for Private Agricultural Wells and Purveyor-Owned Municipal Production Wells

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin

Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Month	Percent of Annual Water Use, Agricultural Wells	Percent of Annual Water Use, Municipal Supply Wells	Percent of May through October Water Use, Municipal Supply Wells
January	3.75	5.2	
February	5.1	3.7	
March	6.6	5.2	
April	9.1	6.6	
May	10.55	8.7	13.2
June	11.4	10.4	15.8
July	14.1	13	19.7
August	12.95	13.6	20.6
September	10.2	10.9	16.6
October	7.5	9.3	14.1
November	5	7.1	
December	3.75	6.3	
Total	**100**	**100**	**100**

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Table 7

Estimation of Land Use Changes Using SCAG 2008 and OVOV Land Use Information

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

SCAG 2008 Land Use (acres)

SNMP Management Zone	Ag	Parks/ Golf Courses	Commercial	Industrial	Industrial - Open Space	Public Facilities	Residential - High density	Residential - Low Density	Residential - Medium Density	Open Space	Non-Irrigated Ag	Commercial Recreation	Unclassified	Impervious	Water Surface
Zone 1: Santa Clara -Mint Canyon	71	404	833	603	220	918	2,153	2,372		38,878	487	68	409	18	
Zone 2: Placerita Canyon		5	190	12	72	65	43	200		2,671	23		4		
Zone 3: South Fork	14	254	450	418	229	377	1,388	58	8	13,363	49	5	40	78	
Zone 4: SC-Bouquet/SF Canyon	270	272	498	706	30	1,333	1,585	571		59,265	456	162	154	65	136
Zone 5: Castaic Valley	684	156	97	531	616	2,113	571	402		27,600	84	3	114	21	527
Zone 6: Saugus Formation	143	378	704	714	1,526	1,182	4,031	758		22,871	171	79	421	26	

SCAG Categories Combined to Match OVOV Categories (acres)

SNMP Management Zone	Ag/Parks/GC	Com/Ind	Dom	Open Space	Impervious	Water
Zone 1: Santa Clara -Mint Canyon	476	2,574	4,525	39,842	18	0
Zone 2: Placerita Canyon	5	339	243	2,698	0	0
Zone 3: South Fork	269	1,472	1,453	13,457	78	0
Zone 4: SC-Bouquet/SF Canyon	542	2,567	2,156	60,037	65	136
Zone 5: Castaic Valley	840	3,357	973	27,801	21	527
Zone 6: Saugus Formation	521	4,127	4,789	23,543	26	0
Total	**2,653**	**14,437**	**14,140**	**167,377**	**208**	**663**

OVOV Land Use (acres)

SNMP Management Zone	Ag/Parks/GC	Com/Ind	Dom	Open Space	Impervious	Water
Zone 1: Santa Clara -Mint Canyon		2,535	10,457	33,204	2,943	123
Zone 2: Placerita Canyon		144	449	2,722	34	
Zone 3: South Fork		1,244	2,789	10,500	2,924	
Zone 4: SC-Bouquet/SF Canyon		2,436	3,689	62,941	213	275
Zone 5: Castaic Valley		2,957	16,783	18,183	786	200
Zone 6: Saugus Formation		6,068	18,853	11,390	294	7
Total	**0**	**15,383**	**53,020**	**138,940**	**7,193**	**605**

Change Per Year to Full Build-Out (acres)

SNMP Management Zone	Ag/Parks/GC	Com/Ind	Dom	Open Space	Impervious	Water
Zone 1: Santa Clara -Mint Canyon	11	1	-141	158	-70	-3
Zone 2: Placerita Canyon	0	5	-5	-1	-1	0
Zone 3: South Fork	6	5	-32	70	-68	0
Zone 4: SC-Bouquet/SF Canyon	13	3	-36	-69	-4	-3
Zone 5: Castaic Valley	6	10	-376	229	-18	8
Zone 6: Saugus Formation	12	-46	-335	289	-6	0

Table 8

Derivation of Recharge Rates from Septic Systems to Groundwater

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Census Tract Number	Location	Population	Septic Contribution Assuming 70 GDC* (afy)	Septic Contribution Assuming 75 GDC** (afy)	Septic Contribution Assuming 77 GDC*** (afy)	Average Septic Contribution (afy)	Area Overlying Aquifer System (acres)	Fraction of Census Tract Overlying Aquifer System	Average Septic Contribution to Aquifers (afy)	Average Septic Contribution to Aquifers (feet/yr)	Average Septic Contribution to Aquifers (inches/yr)
9108.07 (1/3)	East of Sand Canyon Rd. and Highway 14	1829	143	154	158	**152**	*NOT IN MODEL*				
9108.08 (1/2)	Mint Canyon	1,768	139	149	153	**147**	383	100%	223	0.58	7.00
9108.09	Iron Canyon South of Santa Clara River	2,235	175	188	193	**185**	1,430	100%	282	0.20	2.37
9108.1 (1/2)	Tick Canyon	1,382	108	116	119	**115**	*NOT IN MODEL*				
9200.26	Bouquet Canyon	419	33	35	36	**35**	123	100%	53	0.43	5.16
9200.32 (1/3)	Bouquet Canyon	1,448	114	122	125	**120**	90	100%	183	2.03	24.42
9200.33	Bouquet Canyon	515	40	43	44	**43**	*NOT IN MODEL*				
9200.34 (1/2)	North of Nadal Street	1,814	142	152	156	**150**	*NOT IN MODEL*				
9200.40 (1/2)	West of Sand Canyon Rd. and Highway 14	1,676	131	141	145	**139**	*NOT IN MODEL*				
9200.43 (1/2)	Placerita Canyon	2,855	224	240	246	**237**	*NOT IN MODEL*				
9201.02 (1/4)	Upper San Fransiquito Creek and Vicinity	1,417	111	119	122	**117**	31	100%	179	5.81	69.68
9201.04	Hasley Canyon	2,798	219	235	241	**232**	848	100%	353	0.42	5.00
9201.06	Val Verde	3,110	244	261	268	**258**	511	100%	393	0.77	9.21
9203.12 (1/2)	Newhall Creek	2,634	207	221	227	**218**	284	100%	332	1.17	14.04
9203.32	East of Railroad and Dockweiler Drive	2,897	227	243	250	**240**	481	100%	366	0.76	9.11
9302.00	Whitney Canyon Rd.	546	43	46	47	**45**	259	100%	69	0.27	3.19
TOTAL		**29,343**	**2,301**	**2,465**	**2,531**	**2,432**	**4,440**		**2,432**	**0.55**	**6.57**

* Source: Bouwer (1978) and USGS (2003)　　** Source: Page 23 of Systech 2002　　*** Source: Table 4-2 of 2010 UWMP, with sewered flows adjusted by factor of 90% for losses to surface vegetation and evaporation (86 gal/day/capita = 2,827 adjust by 90%= 77 gal/day/capita)

GDC = gallons per day per capita　　yr = year　　afy = acre-feet per year

Census data are from the following sources:

http://www2.census.gov/geo/maps/dc10map/tract/st06_ca/c06037_los_angeles/DC10CT_C06037_008.pdf

http://www2.census.gov/geo/maps/dc10map/tract/st06_ca/c06037_los_angeles/DC10CT_C06037_007.pdf

http://www.census.gov/2010census/popmap/

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Table 9
Simulated Monthly Precipitation at the Newhall County Water District Rain Gage for the 24-year Simulation
Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Model Year	Historical Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2012	1980	10.36	14.63	4.84	0.36	0.40	0.00	0.00	0.00	0.00	0.00	0.00	1.36	31.95
2013	1981	4.76	1.66	5.50	0.46	0.00	0.00	0.00	0.00	0.00	0.58	3.62	0.22	16.80
2014	1982	3.33	1.21	9.50	1.09	0.13	0.00	0.00	0.00	1.02	0.25	5.34	2.95	24.82
2015	1983	8.67	6.85	13.07	4.61	0.20	0.00	0.00	1.17	1.85	1.74	5.04	5.13	48.33
2016	1984	0.00	0.00	0.27	0.07	0.00	0.00	0.00	0.00	0.05	0.16	3.87	8.13	12.55
2017	1985	0.78	1.20	1.04	0.14	0.07	0.00	0.06	0.00	0.12	0.54	5.11	0.70	9.76
2018	1986	5.84	6.65	5.39	0.88	0.00	0.00	0.05	0.00	1.78	0.68	1.55	0.24	23.06
2019	1987	2.10	0.61	1.69	0.14	0.00	0.00	0.09	0.02	0.00	3.47	3.84	4.80	16.76
2020	1988	3.27	3.39	1.16	3.98	0.09	0.00	0.00	0.00	0.10	0.00	0.92	7.14	20.05
2021	1989	0.89	4.13	1.30	0.30	0.00	0.00	0.00	0.00	0.62	0.86	0.37	0.00	8.47
2022	1990	2.89	4.23	0.22	0.48	0.88	0.00	0.00	0.00	0.00	0.00	0.63	0.01	9.34
2023	1991	1.11	5.72	11.33	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	5.95	24.61
2024	1992	3.28	16.64	9.73	0.15	0.34	0.00	0.30	0.00	0.00	1.55	0.00	7.25	39.24
2025	1993	17.11	11.73	4.27	0.00	0.00	0.65	0.00	0.00	0.00	0.57	0.75	1.00	36.08
2026	1994	0.48	5.31	2.33	0.42	0.00	0.00	0.00	0.00	0.00	0.78	0.71	1.94	11.97
2027	1995	21.98	1.93	8.30	0.72	0.26	0.76	0.00	0.00	0.00	0.00	0.00	2.33	36.28
2028	1996	2.97	6.73	2.08	0.13	0.68	0.00	0.00	0.00	0.00	1.30	1.06	8.70	23.65
2029	1997	6.67	0.23	0.00	0.00	0.00	0.00	0.05	0.00	0.53	0.00	3.73	6.72	17.93
2030	1998	3.49	22.00	3.98	2.28	5.50	0.06	0.00	0.00	0.21	0.33	1.36	1.39	40.60
2031	1999	2.08	0.65	3.00	3.78	0.00	0.48	0.00	0.00	0.01	0.00	0.00	0.05	10.05
2032	2000	1.21	9.43	3.15	2.10	0.00	0.00	0.00	0.31	0.00	1.13	0.00	0.00	17.33
2033	2001	5.84	10.76	3.38	2.56	0.00	0.00	0.00	0.00	0.00	0.22	3.18	1.30	27.24
2034	2002	1.55	0.51	0.38	0.05	0.12	0.01	0.00	0.00	0.02	0.00	3.01	5.85	11.50
2035	2003	0.00	9.03	2.38	2.35	1.70	0.00	0.02	0.00	0.00	1.10	0.63	2.57	19.78

Note: All values are in units of inches.

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Table 10

Simulated Monthly Streamflows in the Santa Clara River at the Lang Gage for the 24-year Simulation

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Model Year	Historical Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Prototype Year
2012	1980	1,310	7,449	1,213	568	218	78	6	0	37	274	467	553	12,175	1980
2013	1981	594	98	339	240	107	18	18	12	338	321	258	394	2,739	1981
2014	1982	333	1,420	785	283	238	0	0	0	0	95	178	855	4,188	1982
2015	1983	1,922	16,971	2,755	2,576	958	523	639	512	0	0	0	0	26,855	1983
2016	1984	0	596	405	240	143	166	228	411	154	220	904	578	4,044	1984
2017	1985	483	461	274	215	77	0	0	0	12	179	221	301	2,224	1985
2018	1986	483	1,138	488	283	107	6	0	12	6	12	80	129	2,744	1986
2019	1987	117	117	65	31	12	0	0	0	0	0	258	516	1,116	1987
2020	1988	222	209	506	117	77	68	0	0	0	0	12	25	1,236	1988
2021	1989	50	111	60	25	6	0	0	0	102	94	34	18	499	1989
2022	1990	212	276	230	46	46	5	0	0	0	27	36	147	1,025	1990
2023	1991	162	775	879	736	145	142	14	0	45	69	62	263	3,291	1991
2024	1992	336	534	429	398	117	84	16	5	108	144	498	1,446	4,115	1992
2025	1993	14,709	5,336	1,194	530	239	110	54	10	64	145	264	281	22,937	1993
2026	1994	388	493	497	319	163	80	20	7	37	102	193	941	3,239	1994
2027	1995	1,211	1,421	954	802	268	156	62	8	6	1	27	189	5,104	1995
2028	1996	666	896	730	315	151	46	7	0	54	154	307	510	3,836	1996
2029	1997	517	346	140	85	33	5	4	50	66	240	566	809	2,859	1997
2030	1998	18,997	8,508	3,837	961	667	347	81	91	70	139	190	186	34,074	1998
2031	1999	92	85	204	224	197	107	80	46	52	54	31	80	1,252	1999
2032	2000	117	117	65	31	12	0	0	0	0	0	258	516	1,116	1987
2033	2001	333	1,420	785	283	238	0	0	0	0	95	178	855	4,188	1982
2034	2002	50	111	60	25	6	0	0	0	102	94	34	18	499	1989
2035	2003	666	896	730	315	109	0	0	0	0	0	0	0	2,715	1996 and 2003

Note: All values are in units of acre-feet.

Table 11

Simulated Monthly Water Releases from Castaic Lagoon to Castaic Creek for the 24-year Simulation

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Model Year	Historical Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Prototype Year
2012	1980	0	0	0	0	0	834	1,052	919	0	0	0	0	2,805	1980
2013	1981	105	0	0	1,490	46	0	0	0	0	0	0	0	1,641	1986
2014	1982	0	0	0	0	0	667	842	735	0	0	0	0	2,244	1982
2015	1983	0	0	0	0	0	1,168	1,473	1,287	0	0	0	0	3,928	1983
2016	1984	0	0	0	0	0	0	0	0	0	0	0	0	0	1984
2017	1985	0	0	0	0	0	0	0	0	0	0	0	0	0	1985
2018	1986	105	0	0	1,490	46	0	0	0	0	0	0	0	1,641	1986
2019	1987	105	0	0	1,490	46	0	0	0	0	0	212	0	1,853	1987
2020	1988	0	0	809	341	900	0	0	0	0	0	0	0	2,050	1988
2021	1989	0	0	0	0	0	0	0	0	0	0	0	0	0	1989
2022	1990	0	0	0	0	0	0	0	0	0	0	0	0	0	1990
2023	1991	0	0	0	0	0	0	0	0	0	0	0	66	66	1991
2024	1992	0	0	580	3,052	667	127	24	0	0	0	0	0	4,450	1992
2025	1993	0	140	186	3,031	1,901	635	341	337	813	0	0	341	7,725	1993
2026	1994	210	0	0	2,979	93	0	0	0	0	0	0	0	3,282	1994
2027	1995	0	0	0	0	0	1,668	2,104	1,839	0	0	0	0	5,611	1995
2028	1996	0	0	0	4,961	671	0	0	0	0	0	0	0	5,632	1996
2029	1997	0	0	8,701	873	0	0	0	0	0	0	0	310	9,884	1997
2030	1998	1,186	19,545	10,747	4,566	7,561	47	1,370	436	464	302	652	926	47,802	1998
2031	1999	612	691	0	3,187	1,191	149	0	0	0	0	0	0	5,830	1999
2032	2000	0	660	855	0	2,087	3,484	0	0	0	0	0	0	7,086	2000
2033	2001	0	389	1,218	0	0	0	0	0	0	0	0	0	1,607	2001
2034	2002	0	0	0	0	0	0	0	0	0	0	0	0	0	2002
2035	2003	0	0	0	2,286	418	315	0	0	0	0	0	0	3,019	2003

Note: All values are in units of acre-feet.

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Table 12

Water Demands and Indoor Water Use under Valley Full Build-out Conditions in 2050 (Excluding Newhall Ranch)

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Year 2000 Actual (afy)	Full Build-out Conditions (afy)	Comments
Annual Urban Water Use Outside Newhall Ranch		
60,988	123,038	Year 2000 value is retail purveyor demand plus other demands in Table II-6 of the *2004 Santa Clarita Valley Water Report* (LSCE, 2005). Year 2045 value is from Table 2.5-4 of the *Newhall Ranch Draft Additional Analysis* (Impact Sciences, Inc., 2001). Consists of 89,805 afy Development Monitoring System[a] demand, plus 55,995 afy additional urban demand, minus 14,480 afy conservation, minus 5,193 afy agricultural uses and 3,089 afy “other” uses. Does not include 4,500 afy for aquifer storage and recovery or 17,680 afy of demand for the Newhall Ranch Specific Plan.
Annual Indoor Water Use Outside Newhall Ranch (Equal to LACSD WRP Influent Volumes)		
18,723	40,313 (average year)	The year 2000 volume is from the Saugus and Valencia WRPs for the period January 2000 through December 2000. The long-term current generated effluent volume is based on the influent volume estimated from water balance calculations performed for the chloride mass balance analysis. The effluent volume is 32.8 percent of the total urban water production of 123,038 afy, which includes other uses.

[a]Development Monitoring System water demands are demands associated with future build-out of developments identified in Los Angeles County’s Development Monitoring System for the Santa Clarita Valley.

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Table 13

Treated Water Discharges from the Saugus and Valencia WRPs to the Santa Clara River under Valley Full Build-out Conditions in 2050

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin

Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Month	Treated Water Volume (2000)[a]	Treated Water Volume (Full Build-out Conditions)[b]	Percent of Annual Outdoor Demand	Reclaimed Volume under Full Build-out Conditions (Before Maintaining Existing Streamflows)	Reclaimed Volume under Full Build-out Conditions (After Maintaining Existing Streamflows)	WRP Discharges to River under Full Build-out Conditions[c]	Month
January	1,503	3,237	3.75	637	637	2,600	January
February	1,443	3,106	5.1	867	867	2,239	February
March	1,528	3,290	6.6	1,122	1,122	2,168	March
April	1,505	3,240	9.1	1,547	1,547	1,693	April
May	1,569	3,379	10.55	1,794	1,794	1,585	May
June	1,543	3,322	11.4	1,938	1,781	1,541	June
July	1,606	3,459	14.1	2,397	1,854	1,605	July
August	1,649	3,550	12.95	2,202	1,902	1,648	August
September	1,593	3,430	10.2	1,734	1,734	1,696	September
October	1,631	3,512	7.5	1,275	1,275	2,237	October
November	1,546	3,329	5	850	850	2,479	November
December	1,607	3,459	3.75	637	637	2,822	December
Total Annual	**18,723**	**40,313**	**100**	**17,000**	**16,000**	**24,313**	**Total Annual**

[a]Values shown are the actual volumes of treated water discharged to the Santa Clara River from the Saugus and Valencia WRPs during calendar year 2000. (See also Table 12.)

[b]Values shown are the combined treated water volumes estimated to be produced by the Saugus and Valencia WRPs for full build-out conditions in the Santa Clarita Valley. These values do not include the future Newhall Ranch WRP, which will be operated by LACSD.

[c]Values shown do not include discharges of treated water to the river from the future Newhall Ranch WRP. These volumes are 10 acre-feet in November, 138 acre-feet in December, and 138 acre-feet in January. During the other nine months of the year, this WRP will not discharge treated water to the river (see the *Newhall Ranch Draft Additional Analysis* [Impact Sciences, Inc., 2001] for further details). The combined total discharge from the Saugus, Valencia, and Newhall Ranch WRPs is summarized in Table 14.

Note: All volumes are in acre-feet.

WRP = water reclamation plant

Table 14

Simulated Monthly Treated Wastewater Discharges from Santa Clarita Valley WRPs under Valley Full Build-out Conditions in 2050

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

WRP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Saugus	493	487	500	490	503	466	457	508	586	555	514	596	**6,155**
Valencia	2,107	1,752	1,668	1,203	1,082	1,075	1,148	1,140	1,110	1,682	1,965	2,226	**18,158**
Newhall	138	0	0	0	0	0	0	0	0	0	10	138	**286**
Total	**2,738**	**2,239**	**2,168**	**1,693**	**1,585**	**1,541**	**1,605**	**1,648**	**1,696**	**2,237**	**2,489**	**2,960**	**24,599**

Note: All volumes are in acre-feet.

WRP = water reclamation plant

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APPENDIX A

UPDATED DESCRIPTION OF THE
SANTA CLARITA VALLEY GROUNDWATER FLOW MODEL

APPENDIX A

Updated Description of the Santa Clarita Valley Groundwater Flow Model

Prepared by GSI Water Solutions, Inc.
December 2014

A.1 Introduction

The Santa Clarita Valley Groundwater Flow Model is a three-dimensional, numerical model of groundwater flow that covers the entire area underlain by the Saugus Formation, plus the portions of the Alluvial Aquifer that lie beyond the limits of the Saugus Formation. A Surface Water Routing Model (SWRM) was also developed specifically for this basin as a pre- and post-processor for the groundwater model.

The approach to developing the groundwater model included the following steps:

1. Compiling information on the geology and hydrogeology of the valley and developing a conceptual understanding of the groundwater flow system
2. Creating a variety of data sets to conduct steady-state and transient calibrations
3. Constructing the model using the MicroFEM® finite-element groundwater flow code (Hemker and de Boer, 2003 and 2014), and also using the available database and geographic information system (GIS) information for the Santa Clarita Valley
4. Calibrating the model
5. Performing sensitivity tests on the model

This appendix provides an overview of the groundwater model's construction and calibration. The initial construction and calibration of the model and the SWRM are described in detail in the model development report (CH2M HILL, 2004a). Subsequent checks of, and minor updates to, the model's calibration were performed in early 2005 (CH2M HILL, 2005), in 2008 (LSCE and GSI, 2009), and again in 2012 (GSI and LSCE, 2013) as hydrologic and water use data became available for years subsequent to 1999.

A.2 Model Construction

A.2.1 Software

The groundwater model was constructed using the three-dimensional, finite-element ground-water modeling software MicroFEM® (Hemker and de Boer, 2003 and 2014). MicroFEM® operates in a Windows™ environment and can be used to solve groundwater flow problems for unconfined, semi-confined, or confined aquifer systems. This software simulates steady-state or transient flow conditions in up to a 20-layer aquifer system; the finite-element mesh may contain as many as 50,000 nodes in each model layer. The software contains several different methods for simulating groundwater/surface water interactions. MicroFEM® is based on software developed in the Netherlands during the 1980s for use in evaluating the effects of groundwater pumping in areas with complicated meandering rivers. Further details regarding this software's design, capabilities, and functionality can be found on the Internet at www.microfem.com and in two reviews of the software by Diodato (1997, 2000).

A.2.2 Model Grid

The original version of the groundwater flow model was based on a finite-element mesh consisting of 7 layers, with 17,103 nodes and 32,496 elements in each layer (CH2M HILL, 2004a). The nodes are spaced 500 feet apart in the majority of the modeled area. However, a finer node spacing (150 feet) was used along the Santa Clara River and its tributaries to allow a more exact simulation of surface water/groundwater exchanges. Additionally, specific nodes were placed within this regional grid at the locations of production and monitoring wells. After the process of constructing and calibrating that model had been completed, a second version of the model was created, which uses a much finer-resolution node spacing in the vicinity of the South Fork of the Santa Clara River, to simulate conditions in greater detail near the Whittaker Bermite property (CH2M HILL, 2004b). This version of the model contains 37,823 nodes and 73,936 elements per layer. The model grid is based on the California State Plane Zone 5, North American Datum 1983 (NAD83) horizontal coordinate system.

A.2.3 Layering

The upper model layer simulates the Alluvial Aquifer, or the upper portion of the Saugus Formation wherever the Alluvial Aquifer is not present. The underlying layers simulate the underlying freshwater Saugus Formation and the Sunshine Ranch Member. The northern and southern edges of the model domain are defined by the geologic contacts mapped by Richard C. Slade and Associates, LLC (2002), formerly known as Richard C. Slade, Consulting Groundwater Geologist (both hereafter referred to as RCS), for the Alluvial Aquifer and the Saugus Formation. A total of 7 layers were used in the original model. As part of the effort to update the model's calibration through the year 2011, the third model layer (which represents a depth interval of 500 to 1,000 feet below the water table) was subdivided into two 250-foot thick layers, in order to provide better resolution of the different depths to which various Saugus Formation production wells are open.

The saturated thickness of the Alluvial Aquifer was defined from the average base elevation of the aquifer and the water level elevations measured during the fall of 1985 and the spring of 2000, as described by RCS (1986 and 2002). Along the Santa Clara River, the typical saturated thickness of the Alluvial Aquifer is as much as 130 feet in the western (downgradient) portion of the basin and between 80 and 90 feet in the eastern (upgradient) portion of the basin, though it can be notably less in this area during droughts. Saturated thicknesses can be less than 60 feet in some tributary canyons, particularly along the South Fork Santa Clara River, where all production wells are constructed in the Saugus Formation, rather than the alluvium (RCS, 2002).

The Saugus Formation is generally a bowl-shaped structure that thins at its margins and has its greatest thickness (about 5,500 feet) in the center of the basin. The upper, freshwater-bearing portion of the Saugus Formation was simulated using 500-foot-thick model layers to depths as great as 2,500 feet in the center of the basin (RCS, 1988 and 2002). The deepest active model layer at any given location represented the Sunshine Ranch Member of the Saugus Formation, which is of marine origin and, therefore, is more saline and thought to have lower water-bearing potential than the overlying Saugus Formation deposits that are terrestrial in origin.

A.2.4 Boundary Conditions

The following boundary conditions are used in the model:

1. **Specified flux for precipitation within the model grid.** Deep percolation of precipitation is simulated using the precipitation top-system package contained in MicroFEM®.

2. **Specified flux for irrigation.** The precipitation top-system package contained in MicroFEM® is used to simulate deep percolation of (a) agricultural irrigation water, (b) outdoor water use in urban areas, and (c) recharge from septic systems currently served by public water supplies.

3. **Specified flux and head-dependent flux along ephemeral streams**. With respect to groundwater discharges to streams, the Santa Clara River is modeled as an ephemeral, predominantly losing stream at and upstream of the mouth of San Francisquito Canyon, and as a perennial, predominantly gaining stream downstream of San Francisquito Canyon. The tributaries to the Santa Clara River are modeled as ephemeral streams, using the precipitation top-system package to specify stream leakage to groundwater. For these tributaries and the ephemeral reach of the Santa Clara River, groundwater recharge rates are estimated from precipitation records, streamflow records, watershed maps, topographic maps, and aerial photography using the SWRM, which was developed specifically to calculate time-varying recharge at each stream node from these data. Aerial photos and historical observations indicate that under high water table conditions, groundwater can locally discharge into Castaic Creek and the ephemeral reach of the Santa Clara River wherever Alluvial groundwater levels rise above the riverbed elevation. Consequently, the drain package in MicroFEM® is used in these streams to allow for drainage of any groundwater that is calculated by MicroFEM® to be above the riverbed elevation in any given river node at any given time step.

4. **Specified flux and head-dependent flux along perennial Santa Clara River**. The perennial reach of the Santa Clara River is modeled using the wadi top-system package contained in MicroFEM®. The wadi package allows groundwater to discharge to the river whenever groundwater elevations are higher than the specified river stage. When

groundwater levels are below the river stage, the river recharges the Alluvial Aquifer. The rate of recharge is proportional to the difference between the river stage elevation and the model-calculated groundwater elevation. However, after the groundwater elevation drops below the streambed sediments, the rate of leakage from the stream is constant (i.e., does not vary as the groundwater elevation fluctuates). For the Santa Clarita Valley groundwater flow model, each node along the perennial reach of the Santa Clara River is assigned a river stage that is 1 foot higher than the mapped bed elevation of the river. The riverbed conductance term in the model (which helps control the model-calculated groundwater/surface water exchange rates and varies over time according to variations in streamflow and wetted area) was adjusted during model calibration by calibrating to streamflow data collected at the County Line gage.

5. **Specified flux for pumping**. Pumping rates and locations for wells completed in the Alluvial Aquifer and the Saugus Formation were directly imported into the model from the Upper Santa Clara River Groundwater Basin database. For model calibration, pumping rates were assigned from water use records maintained by the water purveyors in the Santa Clarita Valley; estimates of monthly water demand for urban water use and agricultural water use; and well construction records, which were needed to determine which model layers at each individual well should be assigned pumping

6. **Specified flux at upgradient Alluvial Aquifer boundaries.** Where there is Alluvial groundwater flow into the study area from beneath Castaic Dam, the magnitude of the specified flux was adjusted during the model calibration process using groundwater elevations and gradients published by RCS (1986 and 2002).

7. **Specified groundwater elevation in the Alluvial Aquifer at the county line.** The groundwater elevation (805 feet) was obtained from water level contour maps for the Alluvial Aquifer prepared by RCS (1986, 2002). (See also CH2M HILL [2004a].)

8. **Specified groundwater elevation in the Alluvial Aquifer at the Lang gage.** The groundwater elevation (1,746 feet) was derived from topographic maps of the elevation of the Santa Clara River bed. As discussed in *Final Report: Analysis of Perchlorate Containment in Groundwater Near the Whittaker-Bermite Property* (CH2M HILL, 2004b), the boundary condition at this location was converted to a constant-head boundary shortly after completion of the initial model development report (CH2M HILL, 2004a). This change was made based on results from field reconnaissance that was performed in April and May of 2004, when the Santa Clara River was dry at the Lang gage. At that time, groundwater was locally discharging from the bed of the Santa Clara River in isolated locations where the riverbed intersects the water table, then seeping back into the riverbed nearby. Significant phreatophyte growth was also present along the riverbed in this same area (just downstream of the Lang gage). Additionally, water was present and actively flowing in the river east (upstream) of the Santa Clarita Valley (in the area between the Santa Clarita Valley and the upstream Acton Basin). Based on these observations, a specified groundwater elevation of 1,746 feet has been established in

the Alluvial Aquifer at the eastern boundary of the model to simulate subsurface flow beneath the channel of the Santa Clara River at the Lang gage. This specified elevation is held constant throughout all simulation periods.

9. **Head-dependent flux for evapotranspiration (ET).** ET from the water table by riparian vegetation is simulated using the evaporation top-system package contained in MicroFEM®. This package requires specification of the maximum rooting depth for the riparian vegetation, the maximum potential ET rate, and the ground surface elevation.

10. **No-flow boundaries**. In general, the outermost line of nodes that form the model boundary and the bottom of the model are no-flow boundaries. The exceptions are the western model boundary (specified head) and the specified-flux nodes representing underflow into the Alluvial Aquifer from beneath Castaic Dam. Also, all nodes on the model boundary are assigned specified fluxes due to precipitation and, in some cases, ephemeral streamflow.

A.2.5 Aquifer Parameters

The selection of the aquifer parameter values (horizontal and vertical hydraulic conductivity, storage coefficients, streambed conductance, and ET parameters) is described in detail in Sections 4 and 5 of the model development report (CH2M HILL, 2004a). Initial estimates of, and ranges of values for, these parameters were defined during initial model development and adjusted on an as-needed basis, and within certain limits, during model calibration. Additionally, the calibration process adjusted the coefficients for an empirical power-function equation (Turner, 1986) that was used in the SWRM to define the relationship between precipitation, stormwater flow, and the amount of stormwater flow available for potential infiltration to groundwater. Adjustments to some of the parameters have been made during recent calibration update efforts, as described by CH2M HILL (2005), LSCE and GSI (2009), GSI and LSCE (2013), and Section A.3.1 of this document.

A.3 Model Calibration

A.3.1 Calibration Process

Calibration of the groundwater flow model involved matching both steady-state and transient conditions in the Alluvial Aquifer and the Saugus Formation. The steady-state calibration was performed for calendar years 1980 through 1985, and the initial transient calibration effort was performed for calendar years 1980 through 1999, as described by CH2M HILL (2004a). Subsequent checks of, and minor updates to, the model's calibration were performed in early 2005 (CH2M HILL, 2005), in 2008 (LSCE and GSI, 2009), and again in 2012 as hydrologic and water use data became available for years subsequent to 1999 (GSI and LSCE, 2013).

The goals of the calibration process have been generally to match groundwater flow directions, groundwater gradients, and groundwater elevations that were measured throughout the period of historical record at wells across the valley. An additional calibration goal has been to match the patterns of total flow in the Santa Clara River and estimated groundwater discharge rates to the river. The Alluvial Aquifer and the Saugus Formation have each been subdivided into zones to facilitate parameter selection and model calibration. Model variables were adjusted during the early years of calibration in a manner that seeks to honor independent estimates of parameter values while resulting in the best possible calibration. No significant changes to most aquifer parameters have occurred since the update described by LSCE and GSI (2009); however, some parameter values have been changed locally as follows:

- Hydraulic conductivity values in portions of the Alluvial Aquifer were raised as new data and improved reference point elevations became available at certain wells. The horizontal hydraulic conductivity was raised as follows: from 375 to 550 feet per day (ft/day) between Round Mountain and the mouth of Soledad Canyon (the Bouquet Canyon Road crossing of the Santa Clara River); from 550 to 825 ft/day in the western half of Soledad Canyon (at and west of the mouth of Mint Canyon); from 400 to 600 ft/day at the mouth of Sand Canyon; from 350 to 525 ft/day at production wells just east of Sand Canyon; and from 150 to 270 ft/day at and below the Lang stream gage (at the far east end of the valley). These changes improved the model's simulation of conditions throughout these areas during low-rainfall periods.

- A modest reduction was made in the vertical hydraulic conductivity of a portion of the Saugus Formation as a result of data collected in 2010 and 2011 at VWC's production well V205 following the resumption of pumping at two long-dormant production wells (SCWD's Saugus 1 and Saugus 2 production wells).

- The month-by-month riverbed leakage coefficients in the ephemeral reaches of the Santa Clara River and its tributaries were developed through the year 2011 as part of the calibration update process that extended the model's calibration time period into the years 2008 through 2011 (GSI and LSCE, 2013).

A.3.2 Calibration Quality

The calibrated version of the model meets most of the qualitative and quantitative goals that were established for the calibration process. For the steady-state model, statistical goals for the head residuals, which are equal to the modeled minus measured groundwater elevations, were easily met for the Alluvial Aquifer and adequately met for the Saugus Formation as discussed by CH2M HILL (2004a). For the transient model, trends in groundwater elevations were generally well matched, and groundwater discharges to the river were simulated well for both the steady-state and transient models. However, during the middle and late 1990s, the model tended to simulate too much decline in Alluvial Aquifer groundwater elevations in the eastern-most portion of the valley. This is the area where local droughts have the greatest effect on the water purveyors' ability to pump groundwater. Although this deviation was conservative (because predictive simulations of various groundwater pumping strategies did not overestimate the degree to which groundwater can be pumped from the Alluvial Aquifer in this area), the most recent changes to the model improve its ability to simulate conditions during periods of below-normal rainfall.

A.4 Model Sensitivity

Sensitivity analyses were performed during the model's initial calibration (CH2M HILL, 2004a) to evaluate whether further changes in the values of key model parameters would improve the model's calibration quality. Variables that were tested were the hydraulic properties (horizontal and vertical hydraulic conductivities and storage coefficients) for the Alluvial Aquifer and the Saugus Formation, the riverbed leakage terms for the Santa Clara River and Castaic Creek, and the ET parameters. The sensitivity analysis indicated that the model is sensitive to the choices of horizontal hydraulic conductivity in both aquifers and the vertical hydraulic conductivity values in the Saugus Formation. The model is also sensitive to the surface water parameters, specifically the choice of empirical coefficients used by the Turner (1986) equation to estimate stormwater flows from rainfall data and the riverbed leakage terms in both the eastern (groundwater recharge) and western (groundwater discharge) portions of the basin. The model is relatively insensitive to the choice of ET parameters.

A.5 Model Applicability

The process of developing the conceptual model of the local groundwater basin, developing a detailed numerical model, and calibrating the model to the past 32 years of groundwater elevation and streamflow data (during calendar years 1980 through 2011), has resulted in a groundwater flow model that is suitable for its intended applications, which are evaluating groundwater management strategies, groundwater sustainability, artificial recharge options, and restoration of contaminated water supplies. The primary design and calibration attributes that make the model appropriate for its intended uses are as follows:

1. Its ability to simulate historical trends in groundwater elevations and river flows during a nearly 3-decade period that reflects increased urbanization, increased State Water Project water imports (from outside the valley), and associated changes in land use and water use

2. Its ability to simulate trends in smaller geographic areas of interest within the valley (for example, near the Whittaker Bermite property)

3. Its use of an integrated model of the watershed to define the amount of rainfall and stormwater that is potentially available to recharge the groundwater system

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APPENDIX B

SWP WATER AVAILABILITY AND RELATIONSHIP TO LOCAL GROUNDWATER PUMPING OPERATIONS

APPENDIX B

SWP Water Availability and Relationship to Local Groundwater Pumping Operations

Prepared by GSI Water Solutions, Inc.
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The availability of water supplies from the State Water Project (SWP) affects the amount of groundwater that the purveyors pump from the Saugus Formation in any given year. Following are discussions of SWP water supply availability (Section B.1) and its relationship to the schedule and rates of groundwater pumping operations for local groundwater production wells (Section B.2). Section B.3 contains a list of references cited in this appendix.

B.1 SWP Water Supply Availability

Castaic Lake Water Agency (CLWA) holds a contract with the California Department of Water Resources (DWR) that specifies the contractual amount of water it is to receive; this amount is known as the "Table A" amount and is 92,500 acre-feet per year (afy). CLWA also has access to "flexible storage" in Castaic Lake, amounting to 4,684 afy of water that it can use for its own water supplies. The term of the CLWA contract with DWR is through 2038 and is renewable after that year. DWR routes SWP water to Castaic Lake, from which CLWA pumps it as needed to its Rio Vista Water Treatment Facility for treatment to drinking water standards and subsequent delivery to its retail customers.

In 2012, DWR issued a delivery reliability report (DWR, 2012) that maintains current restrictions on SWP operations arising from Biological Opinions that were issued by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service in 2008 and 2009. In December 2010, a federal judge overruled most of the 2008 Biological Opinion and invalidated several of the criteria that reduced the amount of water supply available to all SWP contractors, such as CLWA. Although this matter is currently under appeal and may result in some relief from current SWP pumping restrictions at a later time, the delivery reliability report not only maintains the current restrictions, but also considers the impacts on SWP delivery reliability of (1) climate change, (2) sea level rise, and (3) flooding or earthquakes that could damage the conveyance systems and structures in the California Bay Delta. With these factors, the reliability report projects that long-term reliability will remain at 60 percent of Table A amounts for years of normal hydrology within the SWP system. This amount equates to 55,500 afy of SWP water supply for CLWA during normal years, which is 37,000 afy below the Table A amount of 92,500 afy. Although CLWA's portfolio of water supplies nonetheless will continue to meet water supply needs through the Urban Water Management Plan (UWMP) planning horizon and beyond under this scenario for SWP availability (as discussed by KJC and others [2011] and LSCE [2013]), the uncertainty in the amount of SWP water available in any given year underscores the importance of local groundwater supplies so that the water purveyors can meet their production targets from local water supply wells during years of reduced SWP water availability.

Table B-1 shows the year-by-year variations in the amount of SWP water deliveries. This information is compiled for two different reliability reports published by DWR – a report that examined conditions in 2007 (DWR, 2008) and a report that examined conditions in 2011 (DWR, 2012). The purveyors' most recent analysis of the Groundwater Operating Plan (LSCE and GSI, 2009) used the Table A amounts for 2007 conditions as the basis for formulating the year-by-year variations in groundwater pumping from the Saugus Formation. Under the 2007 conditions, the 90-year period of 1922 through 2011 is characterized by:

- 15 years when deliveries are 35 percent or less of maximum Table A amounts, including 6 years when the deliveries do not exceed 25 percent of the Table A amounts

- One drought lasting 6 years (1929 through 1934) and a 5-year period (1988 through 1992) containing 4 drought years

The Table A amounts that DWR has estimated more recently for 2011 conditions (DWR, 2012) show some differences in the amounts of SWP allocations in certain years. In particular, during the first year of reduced allocations (1924, 1929, 1949, 1955, 1960, 1988, 1990, and 2001) the allocation amounts are higher according to the 2011 Reliability Study (i.e., the 2011 condition of the SWP, as described by DWR, [2012]) than the 2009 Reliability Study (i.e., the 2007 condition of the SWP, as described by DWR [2008]). In contrast, after a significant curtailment has ended, the 2011 conditions sometimes (although not always) show lower allocations than the 2007 conditions in the first year of more normal allocations (such as in the years 1935, 1956, 1978, and 1993).

Despite these differences, the original cycle of "dry years" (i.e., curtailments in the SWP system and associated increased pumping from the Saugus Formation) that was evaluated by the purveyors based on 2007 conditions remains a reasonable scenario for groundwater modeling purposes. Accordingly, the 90-year time period of 1922 through 2011 has been used in the recent groundwater management studies, including those by LSCE and GSI (2009) and GSI and LSCE (2014). For this 90-year period, the relative number of normal versus curtailment years in the SWP system (as shown in Table B-1) is as follows:

- Normal years: 71 years (79 percent of the 90-year time period)
- Curtailment years: 19 years (21 percent of the 90-year time period)
    - Single-year curtailments: six occurrences (6.5 percent of the 90-year time period)
    - Two-year-long curtailments: one occurrence (2.2 percent of the 90-year time period)
    - Longer curtailments: two occurrences (11 years, 12.2 percent of the 90-year time period)

B.2 Local Groundwater Pumping Operations

The Groundwater Operating Plan defines the ranges of annual groundwater pumping rates that are planned for the Saugus Formation and the Alluvial Aquifer under variable hydrologic conditions. This plan is based on the water supply needs of the purveyors, the locations of their service areas and individual wells, and the understanding that has been developed over the years (from wellfield operations, hydrogeologic studies, and groundwater modeling analyses) of the responses of the aquifer to varying cycles of natural recharge and groundwater pumping.

The Groundwater Operating Plan is described in a report by LSCE and GSI (2009), which contains a detailed analysis of the plan's sustainability, and in the 2010 UWMP (KJC and others, 2011). Those documents define the following ranges of basin-wide annual groundwater pumping volumes that are planned for the Saugus Formation and the Alluvial Aquifer:

1. Pumping from the Saugus Formation in a given year is tied directly to the availability of other water supplies – specifically, water that is imported from the SWP system and from other outside sources (transfers from water agencies outside the valley, and groundwater banking programs in other parts of the state). For the Saugus Formation, the operational plan consists of pumping between 7,500 and 15,000 afy during average-year and wet-year conditions in the SWP system. Planned pumping from the Saugus Formation ranges between 15,000 and 25,000 afy during the first year of a curtailment in SWP water allocations, and increases to between 21,000 and 25,000 afy if SWP allocations are reduced for 2 consecutive years, and between 21,000 and 35,000 afy if SWP allocations are reduced for 3 or more consecutive years. Table B-2 shows the sequence of SWP water allocations and associated pumping from the Saugus Formation, based on this operating plan and the 90-year model-simulation period that reflects historical hydrology in the SWP system from 1922 through 2011.

2. Pumping from the Alluvial Aquifer in a given year is governed by local hydrologic conditions in the Santa Clarita Valley. Specifically, year-by-year variations in Alluvial Aquifer pumping are simulated in the model according to variability in local rainfall and the commensurate recharge that occurs from rainfall infiltration, stormwater infiltration, and Santa Clara River streamflows that (1) are generated within the local watershed and (2) flow into the groundwater basin from the upstream Acton Basin. Under the Groundwater Operating Plan, pumping ranges between 30,000 and 40,000 afy during normal and above-normal rainfall years, but is reduced to between 30,000 and 35,000 afy during locally dry years because of operational constraints for certain Alluvial Aquifer wells in the eastern-most portion of the valley. Table B-3 shows the sequence of historical rainfall cycles and associated pumping from the Alluvial Aquifer, based on this operating plan and the 90-year model-simulation period that reflects historical rainfall in the valley from 1922 through 2011.

Because local droughts and SWP curtailments do not necessarily coincide with each other, it was decided during prior studies (CH2M HILL, 2004; CH2M HILL and LSCE, 2005; LSCE and GSI, 2009) that the model would need to be run over several decades to capture the year-to-year differences between local hydrology and SWP hydrology and water availability, as well as the less frequent times when both systems experience similar hydrologic conditions. Table B-4 shows the combined sequence of pumping conditions for the Saugus Formation and the Alluvial Aquifer for the simulation period of 1922 through 2011 under the Groundwater Operating Plan.

The sustainability of the Groundwater Operating Plan has been analyzed in two prior reports (CH2M HILL and LSCE, 2005; LSCE and GSI, 2009) and further discussed and evaluated annually (LSCE, 2013). Those studies defined sustainability in terms of the renewability (recharge) of groundwater as reflected by the following indicators that are evaluated over a multi-decadal period comprised of wet, normal, and dry hydrologic conditions:

- A lack of chronic, or sustained, depletion of groundwater storage, as indicated by projected long-term trends in groundwater levels on a multi-decadal time scale
- Maintenance of surface water flows within the western portion of the basin and surface water outflow to downstream basins[1]

The two sustainability studies (CH2M HILL and LSCE, 2005; LSCE and GSI, 2009) reached the following conclusions:

- The groundwater basin historically has been, and continues to be, in good operating condition and not in overdraft, as indicated by historical data.
- Based on historical climate conditions in the Santa Clarita Valley and in the northern California watersheds that provide water to the SWP, the Groundwater Operating Plan for the Santa Clarita Valley is sustainable over varying hydrologic conditions because it is feasible to intermittently exceed a long-term average yield for one or more years without creating long-term adverse impacts to the groundwater system and the Santa Clara River.
- Model simulations replicate the purveyors' historical difficulty of sustaining pumping at the eastern end of the Alluvial Aquifer during years of below-normal rainfall. In this localized area within the Santa Clarita Valley, this condition is particularly evident if several years or a few decades of predominantly below-normal rainfall years were to occur in the future, such as occurred during much of the 5 decades from the mid-1920s through the mid-1970s.
- Some climate-change models suggest that certain potential long-term drying trends could decrease local groundwater recharge to the point that lower and declining groundwater levels might render the plan difficult to achieve at certain times, primarily in the Alluvial Aquifer. However, other climate models suggest that rainfall trends could be generally similar to historical averages and fluctuations, and possibly could produce even wetter conditions than observed in the past. Consequently, while conclusions about possible future rainfall and climate conditions cannot be made with a high degree of certainty, the analysis of a broad range of climate change possibilities indicates that the Groundwater Operating Plan is likely to remain

[1] These flows are partially maintained by groundwater discharges to the Santa Clara River within the basin. Although the development and use of groundwater in a sustainable manner necessitate the inducement of recharge from surface water, sustainability does not rely on inducing groundwater recharge by eliminating surface water flows. Rather, sustainability retains surface water outflows and actually increases those flows with the importation of supplemental water (when contrasted to pre-SWP conditions).

sustainable, albeit with the same physical constraints to full pumping in the eastern part of the basin as have been historically experienced.

- The Groundwater Operating Plan can be used for long-term water supply planning purposes. In particular, although increased pumping from the Saugus Formation during periods of reduced SWP water availability can be expected to cause short-term declines in groundwater levels, it is not projected to cause permanent declines in groundwater discharges to the Santa Clara River or to streamflows in the river. After a period of increased groundwater pumping from the Saugus Formation comes to an end, Saugus Formation groundwater levels can be expected to recover to conditions observed during years of normal SWP water availability.

The well-specific pumping rates for Saugus Formation production wells under the Groundwater Operating Plan are listed in Table B-5. The table provides this information for two wells owned by the Newhall County Water District (NCWD), two wells owned by CLWA, six existing wells owned by Valencia Water Company (VWC), a well in Hasley Canyon (near the Palmer golf course) that is owned and operated by the Los Angeles County Waterworks District 36 (LACWWD36), and three future wells whose locations and designs are known only approximately at this time. The pumping rates and schedules for each specific Saugus Formation production well are listed for each type of year (normal, SWP curtailment year 1, SWP curtailment year 2, and SWP curtailment year 3) using information on the capacity, recent and planned use, and location of each well[2]. Under this pumping program, the two CLWA production wells (Saugus 1 and Saugus 2) each operate at a sustained rate of 1,100 gallons per minute for the purposes of providing containment of perchlorate emanating from the Whittaker Bermite property. This operation of the Saugus 1 and Saugus 2 wells commenced in May 2010, under a permit issued by the California Department of Public Health and in accordance with the Interim Remedial Action Plan that was approved by the California Department of Toxic Substances Control. The design of this containment program was developed using the purveyors' groundwater flow model (CH2M HILL, 2004). Groundwater production rates and schedules for Wells V201 and V205 have been developed from modeling simulations (GSI and LSCE, 2014), and pumping is expected to resume at these wells in 2014 or 2015 upon construction and final permitting of perchlorate treatment at Well V201.

Using the Groundwater Operating Plan and the associated purveyor-by-purveyor total groundwater supply needs as an underlying constraint, the current study (and model simulations) of perchlorate containment options in the Saugus Formation examined how the distribution of Saugus Formation pumping should occur between individual wells, primarily with respect to the balance of pumping that should occur from the three VWC production wells that are closest to the Whittaker Bermite property (Wells V160, V201, and V205). Accordingly, a series of model runs was conducted that simulated the year-to-year and multi-decadal cycles of SWP water availability and commensurate annual groundwater production volumes from the Saugus Formation.

[2] Table B-5 only lists Saugus Formation wells that are anticipated to be operating in the future. Existing wells that are not listed in this table (such as NCWD Wells NC7, NC10, and NC11) currently are not in service and, therefore, are not expected to provide significant quantities of water in the future.

B.3 References

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Table B-1

DWR-Estimated SWP System-Wide Water Allocations Under 2007 and 2011 Conditions

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

	SWP System-Wide Water Allocations from the California Bay-Delta			**Saugus Formation Pumping**
	Historical	Percent of Max. Table A Deliveries		Year
Year	SWP Hydrology	2007 Conditions	2011 Conditions	Type
1922	Above Normal	89%	60%	Normal
1923	Below Normal	76%	70%	Normal
1924	Critical	10%	35%	Dry Year 1
1925	Dry	40%	46%	Normal
1926	Dry	53%	53%	Normal
1927	Wet	89%	64%	Normal
1928	Above Normal	50%	70%	Normal
1929	Critical	18%	31%	Dry Year 1
1930	Dry	49%	36%	Dry Year 2
1931	Critical	27%	35%	Dry Year 3
1932	Dry	32%	40%	Dry Year 4
1933	Critical	48%	42%	Dry Year 5
1934	Critical	32%	24%	Dry Year 6
1935	Below Normal	81%	59%	Normal
1936	Below Normal	76%	67%	Normal
1937	Below Normal	78%	75%	Normal
1938	Wet	82%	81%	Normal
1939	Dry	79%	74%	Normal
1940	Above Normal	77%	62%	Normal
1941	Wet	61%	64%	Normal
1942	Wet	77%	79%	Normal
1943	Wet	76%	79%	Normal
1944	Dry	71%	63%	Normal
1945	Below Normal	75%	64%	Normal
1946	Below Normal	77%	70%	Normal
1947	Dry	56%	66%	Normal
1948	Below Normal	63%	60%	Normal
1949	Dry	31%	59%	Dry Year 1
1950	Below Normal	60%	54%	Normal
1951	Above Normal	85%	66%	Normal
1952	Wet	63%	72%	Normal
1953	Wet	80%	74%	Normal
1954	Above Normal	77%	66%	Normal
1955	Dry	28%	46%	Dry Year 1
1956	Wet	87%	72%	Normal
1957	Above Normal	62%	61%	Normal
1958	Wet	73%	74%	Normal
1959	Below Normal	84%	66%	Normal
1960	Dry	35%	54%	Dry Year 1
1961	Dry	57%	59%	Normal
1962	Below Normal	72%	60%	Normal
1963	Wet	82%	68%	Normal
1964	Dry	53%	61%	Normal
1965	Wet	69%	66%	Normal
1966	Below Normal	79%	70%	Normal
1967	Wet	72%	68%	Normal
1968	Below Normal	80%	71%	Normal
1969	Wet	64%	71%	Normal
1970	Wet	79%	78%	Normal
1971	Wet	80%	67%	Normal
1972	Below Normal	41%	60%	Normal
1973	Above Normal	75%	62%	Normal
1974	Wet	77%	77%	Normal
1975	Wet	78%	72%	Normal
1976	Critical	63%	67%	Normal
1977	Critical	6%	9%	Dry Year 3
1978	Above Normal	87%	64%	Normal
1979	Below Normal	76%	75%	Normal
1980	Above Normal	66%	72%	Normal
1981	Dry	76%	63%	Normal
1982	Wet	71%	73%	Normal
1983	Wet	60%	70%	Normal
1984	Wet	78%	76%	Normal
1985	Dry	77%	71%	Normal
1986	Wet	56%	72%	Normal
1987	Dry	68%	49%	Normal
1988	Critical	12%	19%	Dry Year 1
1989	Dry	76%	62%	Normal
1990	Critical	9%	25%	Dry Year 2
1991	Critical	18%	33%	Dry Year 3
1992	Critical	26%	24%	Dry Year 4
1993	Above Normal	90%	66%	Normal
1994	Critical	51%	59%	Normal
1995	Wet	72%	71%	Normal
1996	Wet	83%	79%	Normal
1997	Wet	75%	77%	Normal
1998	Wet	73%	78%	Normal
1999	Wet	83%	79%	Normal
2000	Above Normal	84%	67%	Normal
2001	Dry	28%	35%	Dry Year 1
2002	Dry	52%	62%	Normal
2003	Above Normal	71%	70%	Normal
2004	Below Normal / Dry	65%		Normal
2005	Wet / Above Normal	90%		Normal
2006	Wet / Wet	100%		Normal
2007	Dry / Critical	60%		Normal
2008	Critical	35%		Dry Year 1
2009	Dry	40%		Dry Year 2
2010	Below Normal	50%		Normal
2011	Wet	80%		Normal

Table A delivery values from 1922-2003 are from Table B.3 in DWR (2008) for 2007 conditions and from Table 9 in DWR (2012) for 2011 conditions. Values in 2004 through 2011 are actual historical deliveries during those years. In any given year, the allocation may be made up, in part, of carryover water from the prior year.

DWR = California Department of Water Resources SWP = California State Water Project

GSI Water Solutions, Inc.

Table B-2

SWP Deliveries and Groundwater Operating Plan for the Saugus Formation

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan

(Santa Clarita Valley, California)

Year	Historical SWP Hydrology	SWP Water Allocations from the California Bay-Delta — Percent of Max. Table A Deliveries: 2007 Conditions	2011 Conditions	Design of Updated Basin Analysis — Saugus Pumping: Year Type	Saugus Operating Plan Pumping Volume (afy)	
1922	Above Normal	89%	60%	Normal	11,000	
1923	Below Normal	76%	70%	Normal	11,000	
1924	Critical	10%	35%	Dry Year 1	15,000	**Mild Single Dry Year**
1925	Dry	40%	46%	Normal	11,000	
1926	Dry	53%	53%	Normal	11,000	
1927	Wet	89%	64%	Normal	11,000	
1928	Above Normal	50%	70%	Normal	11,000	
1929	Critical	18%	31%	Dry Year 1	15,000	
1930	Dry	49%	36%	Dry Year 2	11,000	
1931	Critical	27%	35%	Dry Year 3	25,000	**6-Year Drought (1929-1934)**
1932	Dry	32%	40%	Dry Year 4	35,000	
1933	Critical	48%	42%	Dry Year 5	35,000	
1934	Critical	32%	24%	Dry Year 6	35,000	
1935	Below Normal	81%	59%	Normal	11,000	
1936	Below Normal	76%	67%	Normal	11,000	
1937	Below Normal	78%	75%	Normal	11,000	
1938	Wet	82%	81%	Normal	11,000	
1939	Dry	79%	74%	Normal	11,000	
1940	Above Normal	77%	62%	Normal	11,000	
1941	Wet	61%	64%	Normal	11,000	
1942	Wet	77%	79%	Normal	11,000	
1943	Wet	76%	79%	Normal	11,000	
1944	Dry	71%	63%	Normal	11,000	
1945	Below Normal	75%	64%	Normal	11,000	
1946	Below Normal	77%	70%	Normal	11,000	
1947	Dry	56%	66%	Normal	11,000	
1948	Below Normal	63%	60%	Normal	11,000	
1949	Dry	31%	59%	Dry Year 1	15,000	**Mild Single Dry Year**
1950	Below Normal	60%	54%	Normal	11,000	
1951	Above Normal	85%	66%	Normal	11,000	
1952	Wet	63%	72%	Normal	11,000	
1953	Wet	80%	74%	Normal	11,000	
1954	Above Normal	77%	66%	Normal	11,000	
1955	Dry	28%	46%	Dry Year 1	15,000	**Mild Single Dry Year**
1956	Wet	87%	72%	Normal	11,000	
1957	Above Normal	62%	61%	Normal	11,000	
1958	Wet	73%	74%	Normal	11,000	
1959	Below Normal	84%	66%	Normal	11,000	
1960	Dry	35%	54%	Dry Year 1	15,000	**Mild Single Dry Year**
1961	Dry	57%	59%	Normal	11,000	
1962	Below Normal	72%	60%	Normal	11,000	
1963	Wet	82%	68%	Normal	11,000	
1964	Dry	53%	61%	Normal	11,000	
1965	Wet	69%	66%	Normal	11,000	
1966	Below Normal	79%	70%	Normal	11,000	
1967	Wet	72%	68%	Normal	11,000	
1968	Below Normal	80%	71%	Normal	11,000	
1969	Wet	64%	71%	Normal	11,000	
1970	Wet	79%	78%	Normal	11,000	
1971	Wet	80%	67%	Normal	11,000	
1972	Below Normal	41%	60%	Normal	11,000	
1973	Above Normal	75%	62%	Normal	11,000	
1974	Wet	77%	77%	Normal	11,000	
1975	Wet	78%	72%	Normal	11,000	
1976	Critical	63%	67%	Normal	11,000	**2-year Drought (1976-1977);**
1977	Critical	6%	9%	Dry Year 3	35,000	**Single Critical Dry Year (1977)**
1978	Above Normal	87%	64%	Normal	11,000	
1979	Below Normal	76%	75%	Normal	11,000	
1980	Above Normal	66%	72%	Normal	11,000	
1981	Dry	76%	63%	Normal	11,000	
1982	Wet	71%	73%	Normal	11,000	
1983	Wet	60%	70%	Normal	11,000	
1984	Wet	78%	76%	Normal	11,000	
1985	Dry	77%	71%	Normal	11,000	
1986	Wet	56%	72%	Normal	11,000	
1987	Dry	68%	49%	Normal	11,000	
1988	Critical	12%	19%	Dry Year 1	15,000	
1989	Dry	76%	62%	Normal	11,000	**6-Year Drought (1987-1992)**
1990	Critical	9%	25%	Dry Year 2	25,000	
1991	Critical	18%	33%	Dry Year 3	35,000	
1992	Critical	26%	24%	Dry Year 4	35,000	
1993	Above Normal	90%	66%	Normal	11,000	
1994	Critical	51%	59%	Normal	11,000	
1995	Wet	72%	71%	Normal	11,000	
1996	Wet	83%	79%	Normal	11,000	
1997	Wet	75%	77%	Normal	11,000	
1998	Wet	73%	78%	Normal	11,000	
1999	Wet	83%	79%	Normal	11,000	
2000	Above Normal	84%	67%	Normal	11,000	
2001	Dry	28%	35%	Dry Year 1	15,000	**Mild Single Dry Year**
2002	Dry	52%	62%	Normal	11,000	
2003	Above Normal	71%	70%	Normal	11,000	
2004	Below Normal / Dry	65%		Normal	11,000	
2005	Wet / Above Normal	90%		Normal	11,000	
2006	Wet / Wet	100%		Normal	11,000	
2007	Dry / Critical	60%		Normal	11,000	
2008	Critical	35%		Dry Year 1	15,000	**2-Year Drought (2008-2009)**
2009	Dry	40%		Dry Year 2	25,000	
2010	Below Normal	50%		Normal	11,000	
2011	Wet	80%		Normal	11,000	

Table A delivery values from 1922-2003 are from Table B.3 in DWR (2008) for 2007 conditions and from Table 9 in DWR (2012) for 2011 conditions. Values in 2004 through 2011 are actual historical deliveries during those years. In any given year, the allocation may be made up, in part, of carryover water from the prior year.

DWR = California Department of Water Resources SWP = California State Water Project

GSI Water Solutions, Inc.

Table B-3

Local Hydrology and the Groundwater Operating Plan for the Alluvial Aquifer

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

Year	Local Rainfall (inches)[a]	Year Type	Alluvial Aquifer Pumping under the Groundwater Operating Plan (afy)
1922	~ 32	Normal	30,000-40,000
1923	~ 14	Normal	30,000-40,000
1924	~ 8	Dry Year 1	30,000-35,000
1925	~ 7	Dry Year 2	30,000-35,000
1926	~ 26	Dry Year 3	30,000-35,000
1927	~ 24	Normal	30,000-40,000
1928	~ 10	Normal	30,000-40,000
1929	~ 12	Dry Year 1	30,000-35,000
1930	~ 12	Dry Year 2	30,000-35,000
1931	24.41	Dry Year 3	30,000-35,000
1932	13.73	Normal	30,000-40,000
1933	20.52	Dry Year 1	30,000-35,000
1934	18.05	Dry Year 2	30,000-35,000
1935	12.21	Dry Year 3	30,000-35,000
1936	20.47	Dry Year 4	30,000-35,000
1937	17.92	Dry Year 5	30,000-35,000
1938	32.75	Dry Year 6	30,000-35,000
1939	11.27	Normal	30,000-40,000
1940	21.37	Dry Year 1	30,000-35,000
1941	42.14	Dry Year 2	30,000-35,000
1942	7.10	Normal	30,000-40,000
1943	37.03	Dry Year 1	30,000-35,000
1944	24.63	Normal	30,000-40,000
1945	14.56	Normal	30,000-40,000
1946	21.71	Normal	30,000-40,000
1947	4.16	Normal	30,000-40,000
1948	9.13	Dry Year 1	30,000-35,000
1949	9.93	Dry Year 2	30,000-35,000
1950	6.84	Dry Year 3	30,000-35,000
1951	12.42	Dry Year 4	30,000-35,000
1952	34.19	Dry Year 5	30,000-35,000
1953	4.88	Normal	30,000-40,000
1954	15.82	Dry Year 1	30,000-35,000
1955	13.91	Dry Year 2	30,000-35,000
1956	14.21	Dry Year 3	30,000-35,000
1957	22.85	Dry Year 4	30,000-35,000
1958	23.14	Dry Year 5	30,000-35,000
1959	9.81	Normal	30,000-40,000
1960	11.64	Dry Year 1	30,000-35,000
1961	8.82	Dry Year 2	30,000-35,000
1962	21.22	Dry Year 3	30,000-35,000
1963	12.79	Dry Year 4	30,000-35,000
1964	10.09	Dry Year 5	30,000-35,000
1965	32.28	Dry Year 6	30,000-35,000
1966	14.57	Normal	30,000-40,000
1967	23.23	Dry Year 1	30,000-35,000
1968	6.90	Dry Year 2	30,000-35,000
1969	32.42	Dry Year 3	30,000-35,000
1970	23.19	Normal	30,000-40,000
1971	13.75	Normal	30,000-40,000
1972	4.15	Dry Year 1	30,000-35,000
1973	19.79	Dry Year 2	30,000-35,000
1974	18.04	Dry Year 3	30,000-35,000
1975	10.92	Dry Year 4	30,000-35,000
1976	14.02	Dry Year 5	30,000-35,000
1977	20.87	Dry Year 6	30,000-35,000
1978	42.17	Dry Year 7	30,000-35,000
1979	21.47	Normal	30,000-40,000
1980	27.00	Normal	30,000-40,000
1981	13.42	Normal	30,000-40,000
1982	20.20	Dry Year 1	30,000-35,000
1983	39.07	Normal	30,000-40,000
1984	12.86	Normal	30,000-40,000
1985	8.37	Dry Year 1	30,000-35,000
1986	18.02	Dry Year 2	30,000-35,000
1987	14.45	Normal	30,000-40,000
1988	16.92	Dry Year 1	30,000-35,000
1989	7.56	Dry Year 2	30,000-35,000
1990	6.98	Dry Year 3	30,000-35,000
1991	17.21	Dry Year 4	30,000-35,000
1992	32.03	Dry Year 5	30,000-35,000
1993	32.72	Normal	30,000-40,000
1994	10.27	Normal	30,000-40,000
1995	29.15	Dry Year 1	30,000-35,000
1996	15.88	Normal	30,000-40,000
1997	13.35	Normal	30,000-40,000
1998	30.73	Normal	30,000-40,000
1999	8.96	Normal	30,000-40,000
2000	14.04	Normal	30,000-40,000
2001	22.24	Dry Year 1	30,000-35,000
2002	7.90	Dry Year 2	30,000-35,000
2003	15.70	Dry Year 3	30,000-35,000
2004	22.79	Dry Year 4	30,000-35,000
2005	37.15	Normal	30,000-40,000
2006	13.89	Normal	30,000-40,000
2007	5.78	Dry Year 1	30,000-35,000
2008	18.21	Normal	30,000-40,000
2009	11.59	Dry Year 1	30,000-35,000
2010	24.32	Normal	30,000-40,000
2011	16.03	Normal	30,000-40,000

[a]From records at Newhall-Soledad rain gage (Station No. FC32CE).

Dry year pumping occurs when rainfall in prior year is 12.5 inches or less, and may continue until after a year with high rainfall (well above normal) has occurred.

afy = acre-feet per year

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Table B-4

Alluvial and Saugus Formation Pumping Patterns for the Simulation of 1922-2011 Historical Hydrology

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan

(Santa Clarita Valley, California)

	Local Rainfall	SWP Allocations[b]		Simulated Pumping Conditions	
Year	(inches)[a]	2007 Conditions	2011 Conditions	Alluvium	Saugus
1922	~ 32	89%	60%	Normal	Normal
1923	~ 14	76%	70%	Normal	Normal
1924	~ 8	10%	35%	Dry Year 1	Dry Year 1
1925	~ 7	40%	46%	Dry Year 2	Normal
1926	~ 26	53%	53%	Dry Year 3	Normal
1927	~ 24	89%	64%	Normal	Normal
1928	~ 10	50%	70%	Normal	Normal
1929	~ 12	18%	31%	Dry Year 1	Dry Year 1
1930	~ 12	49%	36%	Dry Year 2	Normal
1931	24.41	27%	35%	Dry Year 3	Dry Year 2
1932	13.73	32%	40%	Normal	Dry Year 3
1933	20.52	48%	42%	Dry Year 1	Dry Year 4
1934	18.05	32%	24%	Dry Year 2	Dry Year 5
1935	12.21	81%	59%	Dry Year 3	Normal
1936	20.47	76%	67%	Dry Year 4	Normal
1937	17.92	78%	75%	Dry Year 5	Normal
1938	32.75	82%	81%	Dry Year 6	Normal
1939	11.27	79%	74%	Normal	Normal
1940	21.37	77%	62%	Dry Year 1	Normal
1941	42.14	61%	64%	Dry Year 2	Normal
1942	7.10	77%	79%	Normal	Normal
1943	37.03	76%	79%	Dry Year 1	Normal
1944	24.63	71%	63%	Normal	Normal
1945	14.56	75%	64%	Normal	Normal
1946	21.71	77%	70%	Normal	Normal
1947	4.16	56%	66%	Normal	Normal
1948	9.13	63%	60%	Dry Year 1	Normal
1949	9.93	31%	59%	Dry Year 2	Dry Year 1
1950	6.84	60%	54%	Dry Year 3	Normal
1951	12.42	85%	66%	Dry Year 4	Normal
1952	34.19	63%	72%	Dry Year 5	Normal
1953	4.88	80%	74%	Normal	Normal
1954	15.82	77%	66%	Dry Year 1	Normal
1955	13.91	28%	46%	Dry Year 2	Dry Year 1
1956	14.21	87%	72%	Dry Year 3	Normal
1957	22.85	62%	61%	Dry Year 4	Normal
1958	23.14	73%	74%	Dry Year 5	Normal
1959	9.81	84%	66%	Normal	Normal
1960	11.64	35%	54%	Dry Year 1	Dry Year 1
1961	8.82	57%	59%	Dry Year 2	Normal
1962	21.22	72%	60%	Dry Year 3	Normal
1963	12.79	82%	68%	Dry Year 4	Normal
1964	10.09	53%	61%	Dry Year 5	Normal
1965	32.28	69%	66%	Dry Year 6	Normal
1966	14.57	79%	70%	Normal	Normal
1967	23.23	72%	68%	Dry Year 1	Normal
1968	6.90	80%	71%	Dry Year 2	Normal
1969	32.42	64%	71%	Dry Year 3	Normal
1970	23.19	79%	78%	Normal	Normal
1971	13.75	80%	67%	Normal	Normal
1972	4.15	41%	60%	Dry Year 1	Normal
1973	19.79	75%	62%	Dry Year 2	Normal
1974	18.04	77%	77%	Dry Year 3	Normal
1975	10.92	78%	72%	Dry Year 4	Normal
1976	14.02	63%	67%	Dry Year 5	Normal
1977	20.87	6%	9%	Dry Year 6	Dry Year 3
1978	42.17	87%	64%	Dry Year 7	Normal
1979	21.47	76%	75%	Normal	Normal
1980	27.00	66%	72%	Normal	Normal
1981	13.42	76%	63%	Normal	Normal
1982	20.20	71%	73%	Dry Year 1	Normal
1983	39.07	60%	70%	Normal	Normal
1984	12.86	78%	76%	Normal	Normal
1985	8.37	77%	71%	Dry Year 1	Normal
1986	18.02	56%	72%	Dry Year 2	Normal
1987	14.45	68%	49%	Normal	Normal
1988	16.92	12%	19%	Dry Year 1	Dry Year 1
1989	7.56	76%	62%	Dry Year 2	Normal
1990	6.98	9%	25%	Dry Year 3	Dry Year 2
1991	17.21	18%	33%	Dry Year 4	Dry Year 3
1992	32.03	26%	24%	Dry Year 5	Dry Year 4
1993	32.72	90%	66%	Normal	Normal
1994	10.27	51%	59%	Normal	Normal
1995	29.15	72%	71%	Dry Year 1	Normal
1996	15.88	83%	79%	Normal	Normal
1997	13.35	75%	77%	Normal	Normal
1998	30.73	73%	78%	Normal	Normal
1999	8.96	83%	79%	Normal	Normal
2000	14.04	84%	67%	Normal	Normal
2001	22.24	28%	35%	Dry Year 1	Dry Year 1
2002	7.90	52%	62%	Dry Year 2	Normal
2003	15.70	71%	70%	Dry Year 3	Normal
2004	22.79	65%		Dry Year 4	Normal
2005	37.15	90%		Normal	Normal
2006	13.89	100%		Normal	Normal
2007	5.78	60%		Dry Year 1	Normal
2008	18.21	35%		Normal	Dry Year 1
2009	11.59	40%		Dry Year 1	Dry Year 2
2010	24.32	50%		Normal	Normal
2011	16.03	80%		Normal	Normal

a From records at Newhall-Soledad rain gage (Station No. FC32CE). Pumping year type lags local rainfall by 1 year. Dry year pumping occurs when rainfall in prior year is 12.5 inches or less, and may continue until after a year with high rainfall (well above normal) has occurred.

[b] Table A delivery values from 1922-2003 are from Table B.3 in DWR (2008) for 2007 conditions and from Table 9 in DWR (2012) for 2011 conditions. Values in 2004 through 2011 are actual historical deliveries during those years. In any given year, the allocation may be made up, in part, of carryover water from the prior year.

DWR = California Department of Water Resources

SWP = California State Water Project

Table B-5

Annual Groundwater Production Volumes (Acre-Feet) for Individual Saugus Formation Water Supply Wells under the Groundwater Operating Plan

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

Owner	Well Name	Year Type for State Water Project Allocation			
		Normal Years	**Curtailment Year 1**	**Curtailment Year 2**	**Curtailment Year 3+**
NCWD	NC12	1,765	2,494	2,494	2,494
	NC13	1,765	2,494	2,494	2,494
Total Pumping (NCWD Wells)		**3,530**	**4,988**	**4,988**	**4,988**
CLWA	Saugus 1	1,772	1,772	1,772	1,772
	Saugus 2	1,772	1,772	1,772	1,772
Total Pumping (CLWA Wells)		**3,544**	**3,544**	**3,544**	**3,544**
LACWWD36	LACWWD36-19	500	500	500	500
Total Pumping (LACWWD36)		**500**	**500**	**500**	**500**
VWC	V159	50	50	50	50
	V160 (Municipal)	0	0	0	0
	V160 (Val. Ctry Club)	500	500	500	500
	V201	3,227 to 3,777	3,227 to 3,777	3,227 to 3,777	3,227 to 3,777
	V205	366	2,184	4,355	4,355
	V206 and V207*	547	3,582	3,757	6,905
Total Pumping (VWC Wells)		**4,690 to 5,240**	**9,543 to 10,093**	**11,889 to 12,439**	**15,037 to 15,587**
CLWA	Future Wells	0	0	3,756	10,358
Total Pumping (Future Wells)		**0**	**0**	**3,756**	**10,358**
Total Pumping (All Saugus Water Supply Wells)		**12,264 to 12,814**	**18,575 to 19,125**	**24,677 to 25,227**	**34,427 to 34,977**

Notes:

All pumping volumes are listed in units of acre-feet per year (afy).

Wells that are not listed are assumed to not be pumping in the future.

NLF = Newhall Land & Farming Company

CLWA = Castaic Lake Water Agency

LACWWD36 = Los Angeles County Waterworks District #36

NCWD = Newhall County Water District

VWC = Valencia Water Company

* Wells V206, V207, and the three future CLWA wells together will comprise the Magic Mountain wellfield.
Accordingly, the distribution of pumping between these various wells may differ from the values shown in this table.

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APPENDIX C
PHYSICAL SETTING AND HYDROGEOLOGY OF THE SANTA CLARITA VALLEY

APPENDIX C

Physical Setting and Hydrogeology of the Santa Clarita Valley

Prepared by GSI Water Solutions, Inc.
December 2014

Following are discussions of the physical setting of the local groundwater basin (Section C.1), its climate (Section C.2), and its geology (Section C.3); a summary of groundwater occurrence and the mechanisms by which groundwater recharge and discharge occur (Section C.4); and a list of references cited in this attachment (Section C.5). This attachment is the same as Appendix C in a recent report prepared by GSI and LSCE (2014).

C.1 Basin Setting

The Santa Clara River Valley East Groundwater Subbasin lies within the relatively flat-lying Santa Clarita Valley and portions of the surrounding hills and mountains. This groundwater basin extends from approximately the Los Angeles-Ventura County line (county line) on the west to the community of Lang on the east, and from the southern end of Castaic Lake on the north to the intersection of the Golden State Freeway (Interstate 5 [I-5]) and the Antelope Valley Freeway (State Highway 14) on the south. The mountains that surround this groundwater basin and the Santa Clarita Valley itself include the Santa Susana and San Gabriel Mountains to the south and the Sierra Pelona and Leibre-Sawmill Mountains to the north. Elevations range from about 800 feet on the valley floor to about 6,500 feet in the San Gabriel Mountains. The headwaters of the Santa Clara River are at an elevation of about 3,200 feet at the topographic divide separating the Upper Santa Clara River Hydrologic Area from the Mojave Desert.

Before the 1960s, the predominant land use in the Santa Clarita Valley was agricultural, with much of the valley undeveloped. Urbanization began gradually in the 1960s, with a rapid increase beginning in the late 1970s and early 1980s and continuing to the present. Accompanying the rapid population increase has been a gradual change in valley land use patterns, from largely agricultural to urban and suburban developments. Nevertheless, a considerable portion of the hills and low mountains bordering the main river valley remain in a natural, undeveloped condition.

C.2 Climate

The Santa Clarita Valley has a semi-arid Mediterranean-type climate, characterized by long, dry summers and relatively short, wet winters. Temperatures in the Santa Clarita Valley range from a maximum of approximately 100 to 110 degrees Fahrenheit (°F) during the summer to a minimum of 20°F to 30°F in the winter. Mean monthly temperatures range between approximately 77°F in the summer and 48°F in the winter.

Rainfall data have been recorded since 1883 at the Newhall-Soledad gage (Station No. 32C), located near San Fernando Road in the community of Newhall. On a calendar year basis, average and median rainfall during the past 8 decades (from 1931 through 2011) at this gage are 18.1 and 15.9 inches per year, respectively. Annual rainfall is highly variable from year to year, ranging from about 4 inches (in calendar years 1947 and 1972) to about 42 inches (in calendar years 1941 and 1978).

Approximately 80 percent of the annual precipitation in the Santa Clarita Valley falls between November and March. Most of the precipitation comes from winter storms that last only a few days and are separated by relatively long periods of dry weather.

Rainfall varies across the basin according to elevation differences and the locations of surrounding mountain ranges. A second rain gage has operated farther south, at the Newhall County Water District office, since 1979. This gage has shown on average about 17 percent higher rainfall than the Newhall-Soledad gage, in part because of its closer proximity to the San Gabriel Mountains (which form the southern margin of the valley). As presented in the model development report (CH2M HILL, 2004a), the spatial variability in rainfall (expressed as contour lines of equal precipitation; i.e., rainfall isohyets) shows that average rainfall is notably higher (exceeding 25 inches/year on average) in the highest elevations of the watershed – areas that contribute surface water runoff that moves into, and then partially or wholly recharges, the groundwater basin.[1]

C.3 Geology

Figure C-1 shows a geologic map of the Santa Clarita Valley. The local groundwater basin is underlain and laterally bounded by non-water-bearing bedrock units that are Miocene, Oligocene, and pre-Tertiary in geologic age. The Saugus Formation, which is of Pliocene and Pleistocene age, overlies these rocks within much of the local groundwater basin, except where the Saugus Formation is absent at the far western and eastern ends of the basin and in the upper reaches of some of the canyons. In these areas, the bedrock units are overlain by a blanket of unconsolidated alluvium of Quaternary geologic age, which comprises the Alluvial Aquifer.

In some areas where the alluvium is absent, the Saugus Formation is overlain by scattered outcrops of Quaternary-age terrace deposits, including on the Whittaker Bermite property. Here and elsewhere, the terrace deposits do not contain significant water resources because they typically are situated at elevations above the regional water table.

The Saugus Formation contains lenticular and interfingered beds of poorly consolidated to well-consolidated sandstone, conglomerate, and siltstone that are at least 7,500 feet thick in the deepest part of the basin. These terrestrial sediments were deposited in stream channels, floodplains, and alluvial fans by the ancestral drainage system in the valley. The coarser-grained materials in the Saugus Formation were deposited in the main channels of the ancestral drainage system, and the locations of these channels changed throughout the

[1] See Figure 2-5 in the model development report for isohyetal contours that display the average annual rainfall during the period from 1900 through 1960. These contours were developed by the U.S. Geological Survey (USGS), California Department of Water Resources, and the California Division of Mines and were downloaded in 2003 from a state Web site that is no longer in service.

approximately 3 million-year period of deposition of the Saugus Formation. Prior interpretations of geophysical electric log data indicate that the coarse-grained channel deposits (the primary water-bearing strata) are thicker and more numerous in some locations than in others. Although the Saugus Formation displays a considerable amount of lateral variability in lithology and grain size, some thicker stratigraphic packages can be traced through portions of the basin, as has been mapped by RCS (1988 and 2002) and CH2M HILL (2005b).

The deepest and oldest portion of the Saugus Formation, the Sunshine Ranch Member, was deposited in a marine environment and consists of fine-grained, low-permeability siltstone and sandstone. The Sunshine Ranch Member has a maximum thickness of approximately 3,500 feet in the central part of the basin. It is present at or close to ground surface at the margins of the Santa Clarita Valley. Geophysical (electric) logging indicates that the groundwater in much of the Sunshine Ranch Member may be somewhat brackish in quality and is not useful for municipal water supply purposes.

Faulting and folding of the rocks in the region have caused the sedimentary rocks, including the Saugus Formation, to form a bowl-shaped structure on a regional, basin-wide scale. The Saugus Formation dips generally toward the center of the “bowl,” mimicking the dip of the underlying bedrock units that underlie the Saugus Formation. However, certain features create structural imperfections in this bowl. Most notable are (1) Round Mountain, which is a localized knob of Saugus Formation sediments along the northern bank of the Santa Clara River just east of I-5; (2) the southeast-northwest-trending San Gabriel Fault; and (3) the east-west trending Holser Fault. The San Gabriel Fault is a northeast-dipping reverse fault with vertical displacement of the Saugus Formation of as much as 2,600 feet (RCS, 1988). The Saugus Formation is thickest south of the fault, and this is the area where all Saugus water supply wells are located. North of the San Gabriel Fault, the Saugus Formation is composed primarily of the older, fine-grained Sunshine Ranch member and has not been targeted for groundwater supply development. The Holser Fault is a spur off of the San Gabriel Fault. The Holser Fault shows vertical displacement of the Saugus Formation on the order of 100 to 200 feet. Another spur fault (the Whitney Canyon Fault) extends south from the San Gabriel Fault in the southeastern corner of the valley (southeast of the Whittaker Bermite property).

C.4 Groundwater Occurrence, Recharge, and Discharge

C.4.1 Groundwater Occurrence in the Alluvium

Groundwater is present in the alluvial valley occupied by the Santa Clara River and also in each tributary. Development of agricultural and municipal groundwater supplies from the alluvium (in the Alluvial Aquifer) has occurred primarily along the Santa Clara River and Castaic Creek, and also in the lower reaches of Bouquet Canyon and San Francisquito Canyon. Smaller amounts of water supply – primarily by individual domestic wells – have been developed elsewhere in the alluvium. The alluvial valley occupied by the South Fork Santa Clara River, which lies immediately west of the Whittaker Bermite property, contains only a thin saturated zone and hence has not been the target of groundwater supply development.

Available groundwater elevation data and aquifer test data indicate that the Alluvial Aquifer is unconfined (i.e., is under water table conditions). Transmissivity values are estimated to range from 4,700 square feet per day (ft^2/day), or 35,000 gallons per day (gpd) per foot (gpd/ft) to more than 100,000 ft^2/day, or 750,000 gpd/ft (CH2M HILL, 2004a). The specific yield of the Alluvial Aquifer is estimated to range from about 0.09 to 0.16 (RCS, 1986 and 2002; CH2M HILL, 2004a). Based on interpretations of aquifer tests, specific capacity tests, and groundwater model calibration results, the hydraulic conductivity of the Alluvial Aquifer is estimated to range from 350 to 550 feet per day (ft/day) in the alluvial valley occupied by the Santa Clara River, and 100 to 550 ft/day in the alluvium that occupies the various tributary valleys.

C.4.2 Groundwater Occurrence in the Saugus Formation

Saugus Formation groundwater is present under unconfined conditions in the shallowest water-bearing zones where the Alluvial Aquifer is absent, and under semi-confined and confined conditions elsewhere. Available aquifer test data from Saugus Formation wells located near the center of the valley (where the Saugus is thickest) indicate that groundwater in the Saugus Formation is strongly confined (under pressure) in this area. Where the Saugus Formation crops out away from the center of the valley, the uppermost saturated zones are partially unconfined because the permeable beds are folded upward near the margin of the aquifer. In the highlands, the Saugus Formation beds are exposed at the ground surface, and in the valley, the top of the Saugus Formation is in contact with the Alluvial Aquifer wherever the alluvium is present.

The 1988 and 2002 hydrogeologic studies by RCS concluded that the Saugus Formation is discretely layered, with groundwater production occurring from discrete sand and gravel zones that exist throughout much of the total thickness of the formation. RCS also concluded that (1) it is hydrogeologically feasible to develop additional groundwater supplies from the Saugus Formation as long as wells are properly sited and constructed, and (2) the groundwater-yielding capability of the Saugus Formation likely is limited north and east of the San Gabriel fault compared with areas lying south of the fault (where all Saugus groundwater development has occurred to date). These findings later were supported by the U.S. Army Corps of Engineers (USACE) conceptual hydrogeologic evaluation (CH2M HILL, 2005a), which included three important findings related to groundwater occurrence on and near the Whittaker Bermite property:

1. Further indications (from water level data) that the San Gabriel Fault is a barrier to groundwater flow
2. An indication (from aquifer testing) that the Holser Fault likely is not a barrier to groundwater flow
3. The identification of eight distinct hydrostratigraphic units within the Saugus Formation, based on the lithological characteristics of the Saugus Formation at and in the immediate vicinity of the Whittaker Bermite property.

The definition of hydrostratigraphic units near the Whittaker Bermite property reflects the presence of alternating sequences of coarse and fine-grained beds within the Saugus Formation. The coarse-grained units are relatively thick and are identified as the SI, SIII, SV, SVII, and SVIII units, while the fine-grained beds are relatively thin in comparison and are designated as the SII, SIV, and SVI units. A schematic depiction of these units is illustrated in Figure C-2. More recently, the SIII unit has been further subdivided on the Whittaker Bermite property into the coarse-grained SIIIA and SIIIC subunits, and the intervening fine-grained SIIIB subunit.

As shown in a hydrostratigraphic cross section prepared by the USACE (Figure C-3), the eight major hydrostratigraphic units have been traced lithologically from the Whittaker Bermite property westward to the Saugus 1/Saugus 2 wells and to Wells V201 and V205. These wells are all open to the SIII, SV, and SVII coarse-grained units, which are the primary water-producing zones. Although these hydrostratigraphic units are traceable across the area shown in Figure C-3, inspections of geophysical logs and spinner flow profile surveys indicate that the distinctions in the hydraulic properties of the fine-grained versus the coarse-grained units may not be as strong west of the Whittaker Bermite property as is the case on that property. Specifically, LSCE (2013) found that the lithological definitions of the SIIIA, SIIIB, and SIIIC subunits are not as distinctly pronounced near these production wells as they are on the Whittaker Bermite property, but that some distinction between the SIII unit and the underlying SV unit could be made based on spinner testing results at Well V201 and former Well V157.

Transmissivity values in the Saugus Formation are estimated to range from about 400 to 25,000 ft^2/day (3,000 to 180,000 gpd/ft), but are typically between 5,500 and 11,000 ft^2/day (40,000 and 80,000 gpd/ft). Storativity values are on the order of 10^{-3} to 10^{-4}. These aquifer parameter values have been estimated from well performance tests and from an aquifer storage and recovery (ASR) pump test and study conducted in the Saugus Formation (RCS, 2001 and 2002). Analyses of the ASR test data, including numerical model calibration runs, indicated that the bulk hydraulic conductivity of the Saugus Formation at Wells VWC-201 and VWC-205 is approximately 6.5 ft/day (CH2M HILL, 2004a). In the numerical model, the hydraulic conductivity of the Saugus Formation in the primary target area for groundwater development (the area south of the San Gabriel Fault) is represented as gradually decreasing with depth, from values of 5 to 10 ft/day in the upper hydrostratigraphic units to values of 0.1 to 5 ft/day in deeper hydrostratigraphic units.

C.4.3 Groundwater Recharge and Discharge

A detailed discussion of groundwater recharge and discharge for both the Alluvial Aquifer and the Saugus Formation is presented by CH2M HILL (2004a and 2004b). Figure C-4 is a schematic cross-sectional representation of the groundwater flow patterns in the Santa Clarita Valley, including the predominant recharge and discharge mechanisms for the two aquifer systems.

Groundwater elevation data indicate that the direction of groundwater flow in the Saugus Formation is toward the center of the valley from the highlands. The data indicate that Saugus Formation groundwater flows toward the western end of the Santa Clara Valley where it discharges naturally into the Alluvial Aquifer.

- The Saugus Formation is recharged by two principal sources: (1) infiltration of precipitation in the exposed portions of the Saugus Formation in the highlands surrounding the valley, and (2) seepage from the Alluvial Aquifer along the Santa Clara River and its tributaries, particularly in the central portion of the Santa Clarita Valley (including along the South Fork Santa Clara River).

- Discharge from the Saugus Formation occurs in part as groundwater pumping from wells that are completed to depths of as much as 2,000 feet. Discharge from the Saugus Formation also occurs at the west end of the valley, west of I-5, where water level data and geochemical data indicate that Saugus Formation groundwater naturally discharges to the Alluvial Aquifer. The Saugus Formation is not present at Blue Cut, which is approximately 3 miles downstream of the Saugus/Pico Formation contact and about 1 mile downstream of the county line; consequently, the Saugus Formation does not discharge directly to the Santa Clara River.

C.5 References

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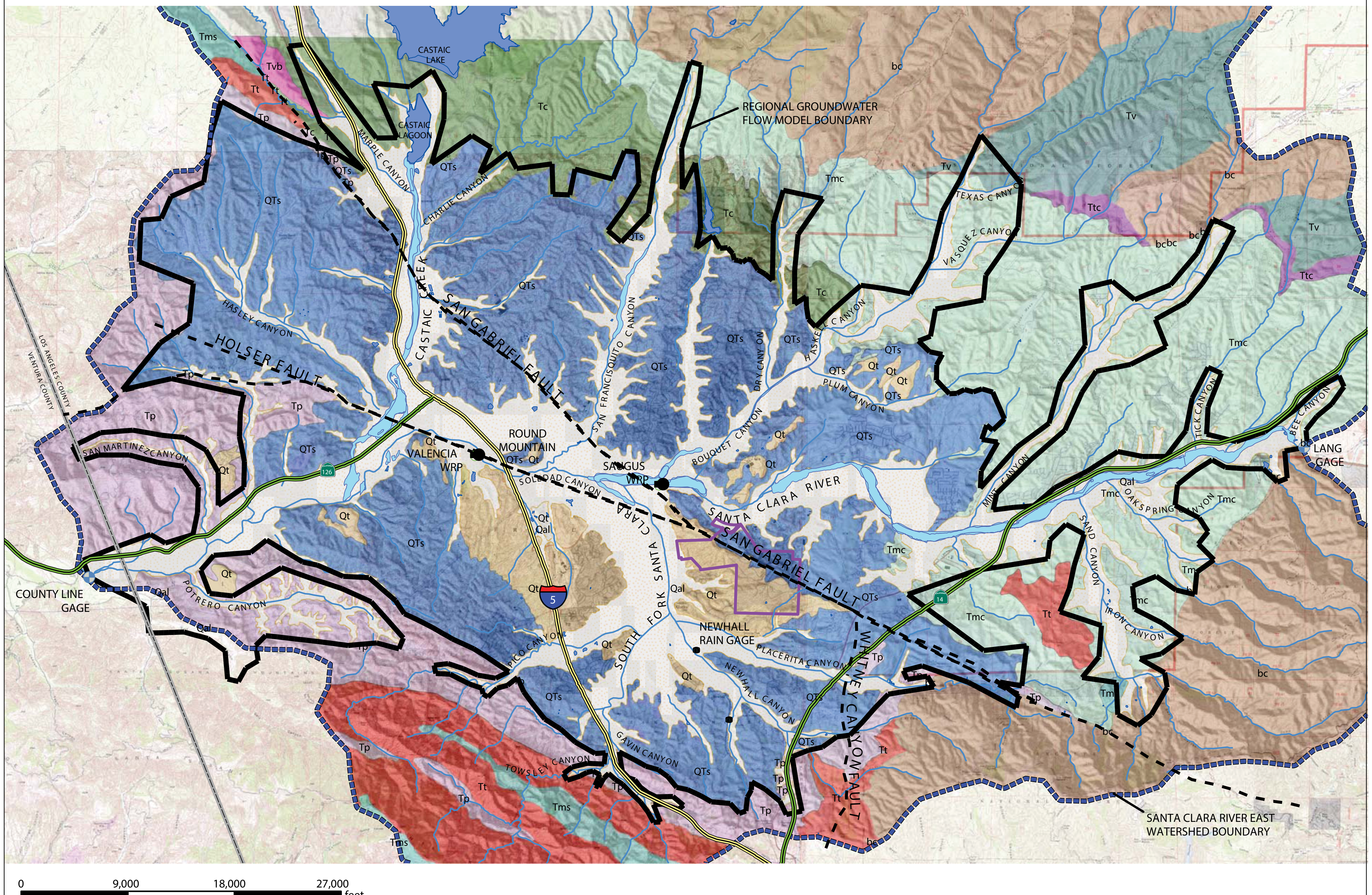
FIGURE C-1

Basin Geologic Map

Development of
Groundwater Budget Terms for the
Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)



LEGEND

GEOLOGY

- UNDIFFERENTIATED ALLUVIUM (Qal)
- TERRACE DEPOSITS (Qt)
- SAUGUS FORMATION (QTs)
- PICO FORMATION (Tp)
- TOWSLEY FORMATION (Tt)
- MODELO FORMATION (Tms)
- CASTAIC FORMATION (Tc)
- VIOLIN BRECCIA (Tvb)
- MINT CANYON FORMATION (Tmc)
- TICK CANYON FORMATION (Ttc)
- VASQUEZ FORMATION (Tv)
- UNDIFFERENTIATED BASEMENT COMPLEX (bc)

HYDROGRAPHY

- LAKE
- STREAM
- STREAM GAGE

MAJOR ROAD

- INTERSTATE
- STATE HIGHWAY
- WHITTAKER-BERMITE PROPERTY BOUNDARY

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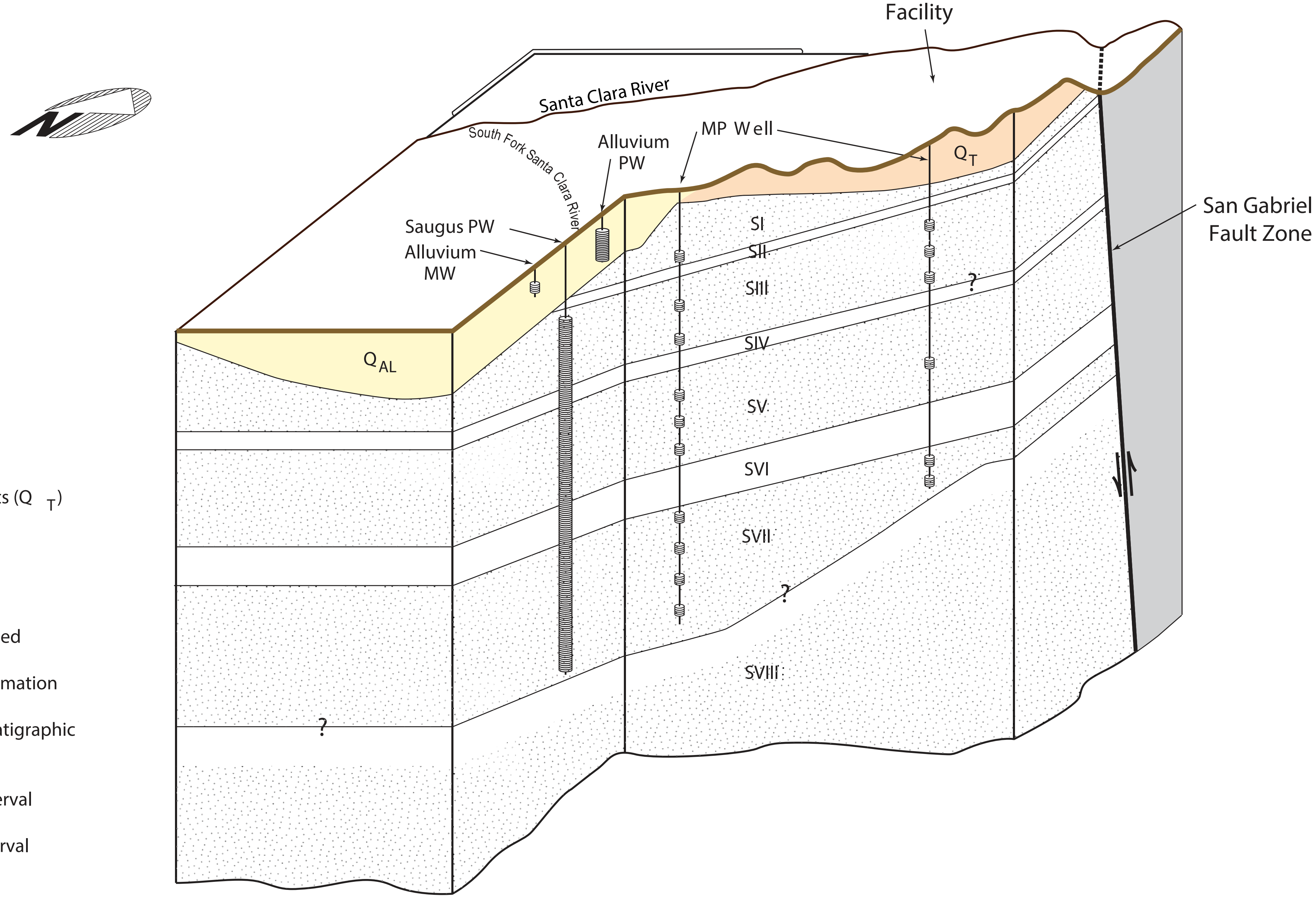


Explanation

- Quaternary Alluvium (Q_{AL})
- Quaternary Terrace Deposits (Q_T)

Saugus Formation

- Predominantly Fine-Grained
- Predominantly Coarse-Grained
- Undifferentiated Saugus Formation
- SIII Saugus Formation Hydrostratigraphic Unit #3
- Production Well Screen Interval
- Monitoring Well Screen Interval
- Fault

PW = Production Well

MW = Monitoring Well

MP = Multiport

Source: CH2M HILL, 2005a

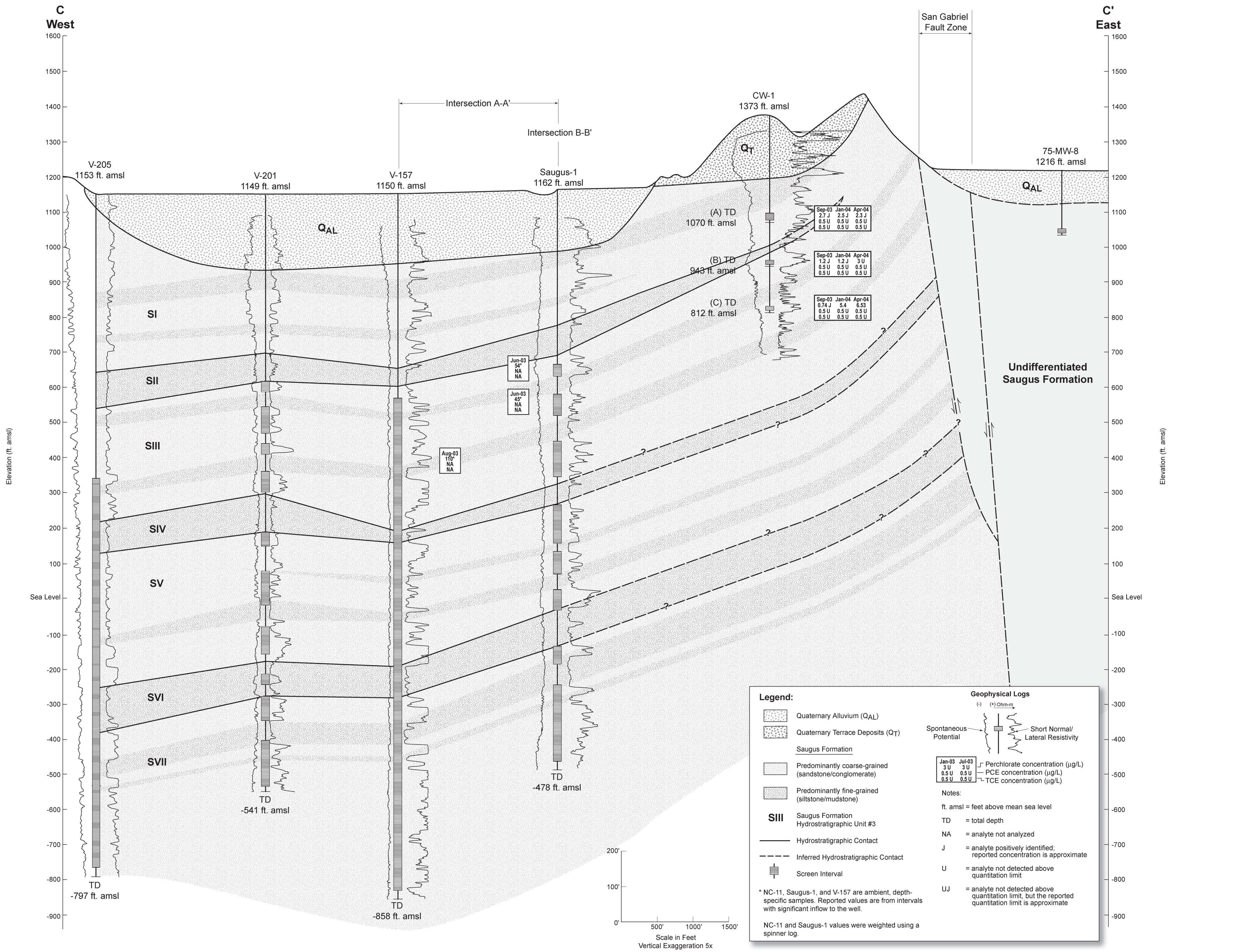
FIGURE C-2

Cross-Sections Showing Layering in the Original Model

Development of
Groundwater Budget Terms for the
Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

N

GSI Water Solutions, Inc.



Source: CH2M HILL, 2005a

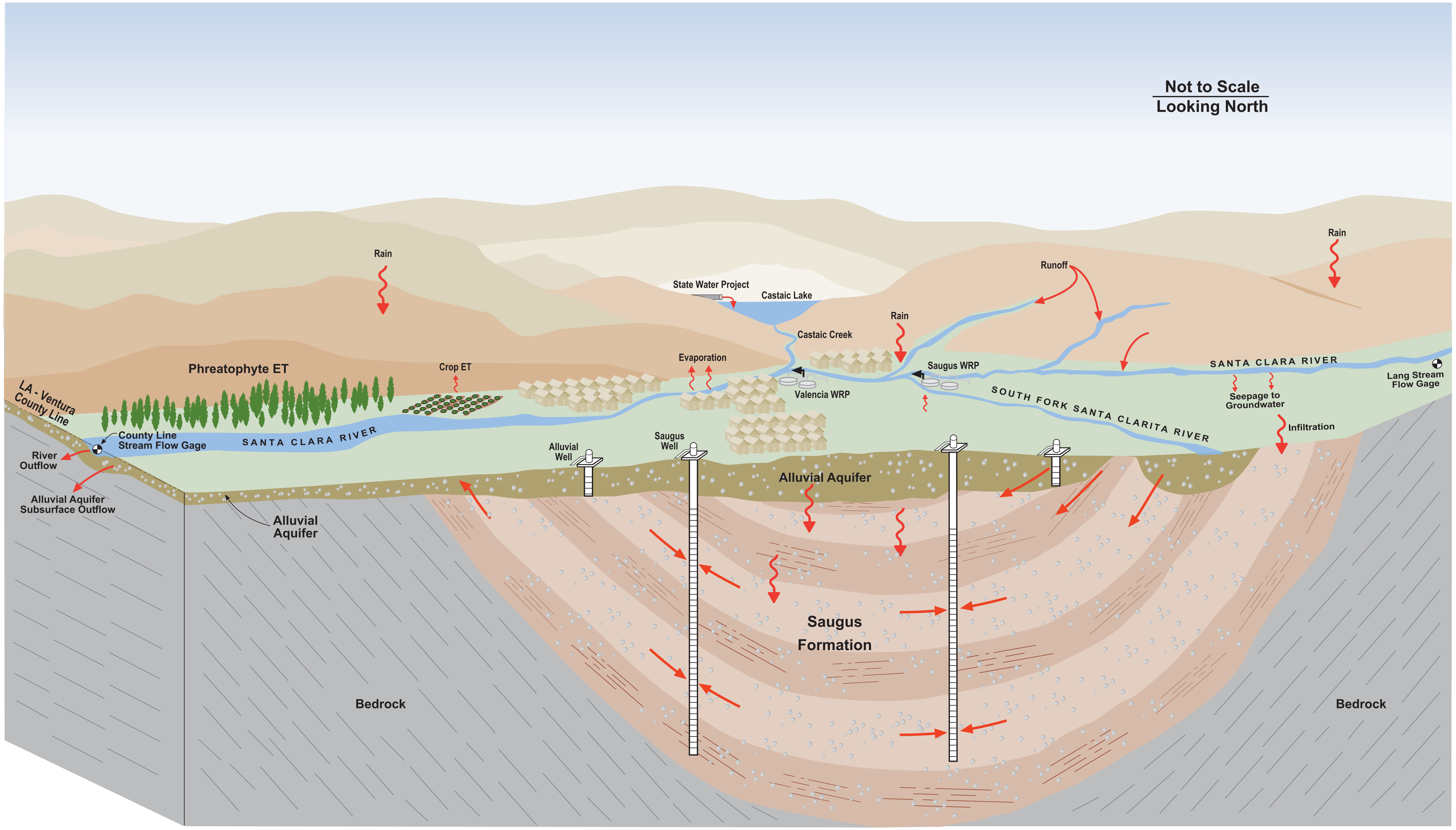
FIGURE C-3

Cross-Sections C-C'

Development of Groundwater Budget Terms for the Santa Clara River Valley East Subbasin Salt and Nutrient Management Plan (Santa Clarita Valley, California)

GSI Water Solutions, Inc.

\\PDX\Projects\Portland\541-Geoscience Support Svcs\001- 2014 SNMP Modeling\TechMemos\2014-12\Figures



Sources: CH2M HILL, 2004a and 2004b

FIGURE C-4

Santa Clarita Valley Hydrogeology

Development of
Groundwater Budget Terms for the
Santa Clara River Valley East Subbasin
Salt and Nutrient Management Plan
(Santa Clarita Valley, California)

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GSI Water Solutions, Inc.

\\PDX\Projects\Portland\541-Geoscience Support Svcs\001- 2014 SNMP Modeling\TechMemos\2014-12\Figures

APPENDIX D

MODEL-SIMULATED ANNUAL GROUNDWATER BUDGETS (2012-2035)

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

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Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	19649	1173	2492	55545	1705	5801	3493	89859	38653	18722	8981	6573	72928	16938	-8	16938
2013	1278	1170	2506	16142	1700	8159	13388	44343	38598	14904	6379	6438	66319	-21975	-1	-5037
2014	10614	1170	2520	40225	1700	7506	8342	72077	39998	13081	6998	6487	66563	5515	-1	478
2015	41894	1170	2534	56251	1700	5430	7548	116527	38598	20983	9189	6694	75464	41055	8	41533
2016	0	1173	2548	13968	1705	7134	15070	41598	38653	16775	7992	6475	69895	-28293	-4	13240
2017	0	1170	2562	13713	1700	9071	15725	43941	39998	12151	4797	6432	63378	-19430	-6	-6190
2018	8475	1170	2582	32068	1700	8198	11187	65380	39998	11626	5367	6480	63471	1907	2	-4284
2019	1234	1170	2612	14895	1700	8937	11066	41614	38598	10464	5025	6430	60517	-18907	4	-23191
2020	4924	1173	2654	22281	1705	9425	6932	49094	40055	8266	4685	6464	59470	-10376	-1	-33567
2021	0	1170	2714	13620	1700	10620	9579	39403	39998	6121	3394	6416	55928	-16522	-3	-50089
2022	0	1170	2766	14644	1700	11205	6933	38418	39998	4919	2625	6407	53949	-15533	2	-65622
2023	10357	1170	2794	35449	1700	8814	-2484	57801	39998	4789	4008	6466	55262	2533	5	-63089
2024	29346	1173	2817	67175	1705	3470	-11757	93929	40055	8185	6946	6617	61804	32128	-3	-30961
2025	25096	1170	2837	75859	1700	4011	-4923	105750	38598	17290	9213	6601	71702	34047	1	3086
2026	0	1170	2856	16830	1700	7273	6696	36526	38598	10395	6604	6433	62031	-25509	4	-22423
2027	25363	1170	2876	68550	1700	4322	704	104684	39998	16287	9075	6592	71952	32745	-13	10322
2028	9188	1173	2897	32504	1705	5241	8362	61069	38653	14694	8407	6510	68264	-7194	0	3128
2029	2520	1170	2917	18620	1700	7593	11985	46505	38598	13177	6695	6452	64922	-18415	-2	-15287
2030	31195	1170	2936	88307	1700	4236	-612	128933	38598	32048	11661	6638	88945	39994	-6	24707
2031	0	1170	2955	15599	1700	8045	13774	43243	38598	15677	6610	6445	67331	-24086	-3	621
2032	1857	1173	2972	16224	1705	9387	14111	47428	38653	13377	5002	6462	63494	-16065	-1	-15444
2033	13614	1170	2989	42029	1700	7988	6424	75914	39998	12453	5770	6514	64736	11174	4	-4270
2034	0	1170	3004	12735	1700	8501	13627	40737	39998	9321	4650	6430	60399	-19654	-8	-23924
2035	4613	1170	3018	22391	1700	9288	12438	54618	39998	9285	4270	6451	60003	-5385	0	-29309

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	5474	472	810	16328	5801	3719	32604	11816	1315	1230	14829	29189	3418	-3	3418
2013	356	471	816	3042	8159	6184	19027	11800	840	902	14012	27554	-8527	0	-5109
2014	2957	471	822	8554	7506	3945	24255	5550	874	839	14762	22025	2230	0	-2879
2015	11670	471	828	29810	5430	1298	49507	11800	2132	1367	14876	30175	19331	2	16452
2016	0	472	835	4044	7134	5668	18152	11816	1587	1385	15133	29921	-11768	-1	4684
2017	0	471	841	2224	9071	5119	17726	5550	943	922	15667	23083	-5355	-1	-671
2018	2361	471	847	5887	8198	4603	22367	5550	821	812	15809	22992	-626	1	-1297
2019	344	471	853	1408	8937	6415	18427	11800	416	535	14351	27101	-8676	1	-9973
2020	1372	472	860	2705	9425	4943	19776	5557	385	436	15098	21477	-1701	0	-11674
2021	0	471	866	499	10620	5175	17630	5550	140	322	15548	21560	-3929	-1	-15602
2022	0	471	872	1025	11205	4896	18470	5550	129	288	15646	21612	-3144	1	-18746
2023	2885	471	878	7610	8814	4060	24719	5550	454	363	15878	22246	2471	2	-16275
2024	8175	472	885	25273	3470	1763	40039	5557	2650	1321	16430	25958	14081	-1	-2194
2025	6991	471	891	34121	4011	1758	48243	11800	8131	2145	16565	38641	9602	0	7408
2026	0	471	897	3239	7273	6343	18223	11800	1314	1124	15076	29314	-11092	1	-3684
2027	7065	471	903	22582	4322	3049	38392	5550	3596	1832	15461	26439	11957	-3	8273
2028	2559	472	910	7473	5241	6306	22962	11816	2022	1541	14581	29960	-6998	0	1275
2029	702	471	916	3488	7593	6268	19438	11800	852	946	13788	27387	-7948	-1	-6673
2030	8690	471	922	52813	4236	-1910	65222	11800	13866	3195	16691	45552	19673	-3	13000
2031	0	471	928	1252	8045	6643	17339	11800	982	1213	15167	29162	-11822	-1	1178
2032	517	472	935	1571	9387	6359	19241	11816	379	764	14269	27229	-7988	0	-6810
2033	3792	471	941	11126	7988	3721	28039	5550	694	830	14985	22059	5979	1	-831
2034	0	471	947	499	8501	5615	16033	5550	481	648	15452	22131	-6096	-2	-6927
2035	1285	471	953	4060	9288	4612	20670	5550	413	540	15522	22025	-1355	0	-8281

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	667	270	88	1438	0	-534	1929	0	0	941	292	1233	695	0	695
2013	43	269	88	18	0	-198	221	0	0	620	323	943	-722	0	-27
2014	360	269	89	1029	0	-305	1442	0	0	764	309	1074	368	0	342
2015	1421	269	89	916	0	-303	2394	0	0	915	321	1236	1158	0	1499
2016	0	270	90	0	0	-234	126	0	0	765	341	1106	-980	0	520
2017	0	269	90	0	0	-131	229	0	0	373	351	724	-495	0	25
2018	288	269	90	796	0	-201	1243	0	0	544	359	903	340	0	364
2019	42	269	91	13	0	-275	140	0	0	494	350	844	-704	0	-340
2020	167	270	91	412	0	-300	640	0	0	477	365	842	-202	0	-542
2021	0	269	92	0	0	-240	121	0	0	288	399	687	-566	0	-1108
2022	0	269	92	0	0	-257	105	0	0	189	407	596	-491	0	-1599
2023	351	269	93	908	0	-502	1119	0	0	484	399	883	236	0	-1363
2024	996	270	93	1326	0	-752	1933	0	0	848	415	1264	670	0	-694
2025	851	269	93	1585	0	-529	2270	0	0	1042	409	1450	820	0	126
2026	0	269	94	0	0	-249	114	0	0	779	382	1161	-1046	0	-920
2027	860	269	94	1614	0	-467	2371	0	0	945	317	1262	1109	0	189
2028	312	270	95	874	0	-367	1183	0	0	881	306	1187	-4	0	185
2029	86	269	95	152	0	-198	404	0	0	717	295	1011	-608	0	-423
2030	1058	269	96	1476	0	-595	2304	0	0	1019	266	1284	1020	0	597
2031	0	269	96	0	0	-125	240	0	0	594	305	899	-659	0	-61
2032	63	270	97	80	0	-121	389	0	0	373	312	685	-296	0	-357
2033	462	269	97	1032	0	-377	1484	0	0	586	314	900	584	0	227
2034	0	269	97	0	0	-283	84	0	0	456	344	800	-716	0	-489
2035	157	269	98	378	0	-183	719	0	0	419	347	765	-47	0	-536

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	4214	181	772	6085	0	292	1628	13173	0	0	3696	5579	9275	3899	-1	3899
2013	274	181	773	737	0	323	2114	4401	0	0	2366	5283	7649	-3248	0	651
2014	2277	181	773	4962	0	309	80	8582	0	0	3004	4371	7375	1207	0	1858
2015	8986	181	774	3952	0	321	1954	16167	0	0	3654	5444	9098	7068	1	8925
2016	0	181	774	0	0	341	2078	3374	0	0	2869	5612	8481	-5106	-1	3819
2017	0	181	775	0	0	351	936	2243	0	0	1336	4660	5996	-3752	-1	67
2018	1818	181	775	3992	0	359	976	8100	0	0	1990	4603	6593	1507	0	1574
2019	265	181	776	718	0	350	1570	3859	0	0	2032	5266	7298	-3439	0	-1866
2020	1056	181	777	2381	0	365	-894	3866	0	0	1988	4526	6514	-2648	0	-4514
2021	0	181	777	0	0	399	462	1819	0	0	1158	4606	5764	-3945	-1	-8458
2022	0	181	778	0	0	407	358	1723	0	0	641	4695	5336	-3613	0	-12071
2023	2221	181	778	4160	0	399	-900	6838	0	0	1778	4860	6639	199	1	-11872
2024	6294	181	779	5602	0	415	-1606	11665	0	0	3291	5093	8383	3282	0	-8590
2025	5383	181	779	6749	0	409	3258	16758	0	0	3925	6385	10310	6448	1	-2142
2026	0	181	780	0	0	382	2985	4328	0	0	2752	6115	8867	-4539	0	-6682
2027	5440	181	780	6946	0	317	1030	14695	0	0	3643	5043	8686	6011	-2	-671
2028	1971	181	781	3950	0	306	3036	10225	0	0	3258	5909	9168	1057	0	386
2029	541	181	782	1290	0	295	2421	5508	0	0	2680	5351	8031	-2523	0	-2137
2030	6691	181	782	6310	0	266	2578	16807	0	0	4022	6386	10408	6399	0	4262
2031	0	181	783	0	0	305	2777	4045	0	0	2131	5727	7858	-3812	0	450
2032	398	181	783	988	0	312	2573	5236	0	0	1578	5357	6935	-1700	0	-1249
2033	2920	181	784	4407	0	314	-379	8227	0	0	2214	4529	6743	1484	0	235
2034	0	181	784	0	0	344	983	2292	0	0	1679	4641	6319	-4026	-1	-3791
2035	990	181	785	2240	0	347	1245	5787	0	0	1470	4544	6015	-228	0	-4019

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	4893	148	666	15775	0	14829	5579	-7383	34505	13388	6543	1102	7025	28058	6451	-4	6451
2013	318	147	667	4723	0	14012	5283	-4005	21145	13370	5290	763	7327	26750	-5605	0	846
2014	2643	147	668	13428	0	14762	4371	-3295	32724	19000	4129	642	8008	31778	946	-1	1792
2015	10432	147	669	11737	0	14876	5444	-5012	38294	13370	6633	1215	7370	28588	9702	4	11494
2016	0	148	671	4122	0	15133	5612	-3408	22278	13388	6166	1189	7743	28486	-6206	-2	5289
2017	0	147	672	5207	0	15667	4660	-1059	25295	19000	3885	533	8261	31679	-6380	-4	-1092
2018	2110	147	673	10904	0	15809	4603	-2957	31289	19000	3363	368	8124	30855	433	1	-659
2019	307	147	674	5595	0	14351	5266	-5784	20556	13370	3153	354	7742	24619	-4065	3	-4724
2020	1226	148	677	7245	0	15098	4526	-4396	24523	19025	1993	233	8101	29352	-4829	0	-9552
2021	0	147	682	5965	0	15548	4606	-4195	22753	19000	1039	145	7777	27962	-5207	-2	-14759
2022	0	147	686	6146	0	15646	4695	-5651	21669	19000	446	103	7575	27125	-5457	1	-20216
2023	2579	147	689	11478	0	15878	4860	-9590	26042	19000	116	59	7195	26371	-331	3	-20547
2024	7308	148	691	16289	0	16430	5093	-12606	33352	19025	89	57	6910	26081	7272	-2	-13275
2025	6249	147	693	19700	0	16565	6385	-14738	35001	13370	1542	341	6661	21915	13085	1	-190
2026	0	147	694	5716	0	15076	6115	-9923	17825	13370	2478	340	7167	23355	-5532	2	-5722
2027	6316	147	696	22702	0	15461	5043	-9627	40738	19000	3486	848	7540	30874	9872	-8	4150
2028	2288	148	697	10291	0	14581	5909	-8785	25130	13388	3997	959	7278	25622	-492	0	3658
2029	628	147	699	5421	0	13788	5351	-5568	20465	13370	4157	668	7520	25714	-5248	-1	-1590
2030	7768	147	700	14999	0	16691	6386	-8831	37861	13370	6759	1511	7590	29230	8634	-3	7044
2031	0	147	701	4434	0	15167	5727	-4354	21822	13370	5605	949	7347	27271	-5448	-1	1596
2032	462	148	702	5008	0	14269	5357	-4154	21792	13388	4630	601	7722	26341	-4549	0	-2953
2033	3390	147	704	13610	0	14985	4529	-4294	33071	19000	3599	451	8143	31193	1875	2	-1078
2034	0	147	705	5693	0	15452	4641	-2879	23760	19000	2424	274	8055	29753	-5988	-5	-7066
2035	1149	147	706	7233	0	15522	4544	-2585	26717	19000	2279	233	7800	29312	-2595	0	-9661

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	4402	102	157	15920	1705	0	7025	6063	35374	13450	10864	2012	6573	32898	2476	0	2476
2013	286	102	163	7623	1700	0	7327	9292	26493	13428	8774	1727	6438	30367	-3874	0	-1397
2014	2378	102	168	12252	1700	0	8008	7916	32524	15448	8078	1748	6487	31761	763	0	-634
2015	9386	102	174	9835	1700	0	7370	9611	38178	13428	12219	2038	6694	34379	3799	0	3165
2016	0	102	179	5803	1705	0	7743	10964	26496	13450	9022	1783	6475	30731	-4235	0	-1070
2017	0	102	185	6281	1700	0	8261	10859	27388	15448	7323	1633	6432	30836	-3448	0	-4518
2018	1899	102	196	10488	1700	0	8124	8766	31275	15448	7442	1652	6480	31023	252	0	-4265
2019	277	102	217	7161	1700	0	7742	9140	26340	13428	6896	1609	6430	28364	-2023	0	-6289
2020	1103	102	250	9538	1705	0	8101	7578	28377	15472	5888	1550	6464	29374	-997	0	-7286
2021	0	102	297	7156	1700	0	7777	8375	25409	15448	4941	1480	6416	28285	-2877	0	-10163
2022	0	102	339	7472	1700	0	7575	7586	24775	15448	4345	1404	6407	27604	-2830	0	-12993
2023	2320	102	356	11294	1700	0	7195	4447	27415	15448	4218	1324	6466	27457	-42	0	-13035
2024	6575	102	370	18685	1705	0	6910	1442	35789	15472	5446	1429	6617	28965	6823	0	-6211
2025	5623	102	381	13704	1700	0	6661	5328	33499	13428	7616	1760	6601	29406	4093	0	-2118
2026	0	102	391	7875	1700	0	7167	7539	24775	13428	6603	1609	6433	28074	-3299	0	-5417
2027	5682	102	402	14705	1700	0	7540	6719	36851	15448	9206	1808	6592	33053	3797	0	-1620
2028	2058	102	414	9915	1705	0	7278	8171	29644	13450	8675	1767	6510	30401	-757	0	-2377
2029	565	102	426	8270	1700	0	7520	9061	27643	13428	8168	1684	6452	29732	-2089	0	-4466
2030	6989	102	437	12708	1700	0	7590	8147	37674	13428	11423	1914	6638	33404	4270	0	-196
2031	0	102	447	9913	1700	0	7347	8832	28341	13428	9091	1723	6445	30687	-2346	0	-2541
2032	416	102	456	8577	1705	0	7722	9453	28430	13450	8368	1685	6462	29964	-1534	0	-4075
2033	3050	102	464	11853	1700	0	8143	7751	33064	15448	8159	1690	6514	31812	1253	0	-2822
2034	0	102	470	6543	1700	0	8055	10189	27060	15448	6416	1594	6430	29889	-2829	0	-5651
2035	1034	102	476	8479	1700	0	7800	9348	28939	15448	6593	1608	6451	30100	-1161	0	-6812

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	29070	1254	2787	10	0	0	1086	34205	12841	0	2499	0	15340	18861	4	18861
2013	1890	1250	2834	0	0	0	-6354	-379	12814	0	1571	0	14385	-14764	0	4098
2014	15703	1250	2882	0	0	0	-4437	15398	12814	0	1717	0	14531	867	1	4964
2015	61979	1250	2929	7	0	0	-3393	62772	12814	0	3511	0	16325	46436	11	51400
2016	0	1254	2977	0	0	0	-7262	-3031	12841	0	2239	0	15080	-18110	0	33290
2017	0	1250	3027	0	0	0	-8929	-4652	12814	0	1545	0	14359	-19008	-3	14282
2018	12538	1250	3112	0	0	0	-6178	10723	12814	0	1681	0	14495	-3773	1	10509
2019	1826	1250	3260	0	0	0	-3862	2475	19123	0	1378	0	20501	-17999	-27	-7490
2020	7285	1254	3432	0	0	0	-1332	10638	25281	0	1338	0	26619	-15954	-26	-23444
2021	0	1250	3559	0	0	0	-3251	1558	19123	0	1152	0	20274	-18720	3	-42164
2022	0	1250	3648	0	0	0	-1048	3851	25228	0	997	0	26225	-22349	-26	-64512
2023	15322	1250	3715	0	0	0	6178	26465	34977	0	1191	0	36168	-9684	-19	-74197
2024	43415	1254	3772	10	0	0	12611	61061	35059	0	2088	0	37148	23912	1	-50284
2025	37127	1250	3825	10	0	0	9375	51588	12814	0	2893	0	15707	35843	38	-14441
2026	0	1250	3877	0	0	0	865	5992	19123	0	1635	0	20757	-14743	-22	-29185
2027	37522	1250	3927	8	0	0	2277	44984	12814	0	2728	0	15542	29429	13	244
2028	13592	1254	3979	0	0	0	-1380	17445	12841	0	2060	0	14901	2540	4	2784
2029	3729	1250	4030	0	0	0	-4818	4191	12814	0	1729	0	14543	-10352	1	-7568
2030	46150	1250	4081	10	0	0	3208	54699	12814	0	3238	0	16051	38635	13	31066
2031	0	1250	4129	0	0	0	-6063	-683	12814	0	1853	0	14666	-15349	0	15717
2032	2747	1254	4178	0	0	0	-7280	899	12841	0	1551	0	14392	-13493	0	2224
2033	20140	1250	4226	3	0	0	-3716	21904	19123	0	1905	0	21027	900	-23	3124
2034	0	1250	4274	0	0	0	-6418	-894	12814	0	1427	0	14241	-15143	8	-12019
2035	6825	1250	4321	0	0	0	-6455	5941	12814	0	1377	0	14190	-8249	1	-20268

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Entire Aquifer System (Alluvium and Saugus Combined)

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	48719	2427	5279	55555	1705	5801	4578	124063	51494	18722	11479	6573	88268	35800	-5	35800
2013	3168	2421	5340	16142	1700	8159	7033	43962	51412	14904	7950	6438	80703	-36739	-2	-939
2014	26317	2421	5402	40225	1700	7506	3904	87475	52812	13081	8714	6487	81094	6381	-1	5442
2015	103872	2421	5464	56258	1700	5430	4154	179298	51412	20983	12701	6694	91789	87491	18	92933
2016	0	2427	5525	13968	1705	7134	7808	38566	51494	16775	10230	6475	84975	-46403	-6	46530
2017	0	2421	5589	13713	1700	9071	6795	39288	52812	12151	6342	6432	77737	-38438	-11	8092
2018	21014	2421	5694	32068	1700	8198	5009	76103	52812	11626	7049	6480	77966	-1866	2	6226
2019	3060	2421	5872	14895	1700	8937	7204	44088	57721	10464	6402	6430	81018	-36906	-23	-30681
2020	12210	2427	6086	22281	1705	9425	5598	59731	65337	8266	6022	6464	86089	-26330	-28	-57011
2021	0	2421	6273	13620	1700	10620	6327	40960	59121	6121	4545	6416	76203	-35242	-1	-92253
2022	0	2421	6414	14644	1700	11205	5884	42268	65226	4919	3622	6407	80174	-37881	-25	-130134
2023	25679	2421	6508	35449	1700	8814	3693	84264	74976	4789	5199	6466	91430	-7151	-15	-137285
2024	72761	2427	6589	67184	1705	3470	852	154989	75114	8185	9035	6617	98951	56040	-3	-81245
2025	62223	2421	6663	75869	1700	4011	4451	157337	51412	17290	12106	6601	87409	69890	38	-11355
2026	0	2421	6733	16830	1700	7273	7560	42517	57721	10395	8239	6433	82788	-40252	-19	-51608
2027	62885	2421	6803	68557	1700	4322	2979	149667	52812	16287	11803	6592	87494	62174	-1	10566
2028	22780	2427	6876	32504	1705	5241	6981	78513	51494	14694	10467	6510	83165	-4655	3	5912
2029	6249	2421	6947	18620	1700	7593	7166	50695	51412	13177	8424	6452	79465	-28767	-2	-22855
2030	77345	2421	7017	88317	1700	4236	2595	183631	51412	32048	14899	6638	104996	78629	6	55773
2031	0	2421	7084	15599	1700	8045	7710	42559	51412	15677	8463	6445	81998	-39435	-4	16338
2032	4604	2427	7150	16224	1705	9387	6830	48327	51494	13377	6553	6462	77886	-29558	-2	-13220
2033	33754	2421	7215	42032	1700	7988	2707	97817	59121	12453	7675	6514	85763	12074	-20	-1146
2034	0	2421	7277	12735	1700	8501	7208	39842	52812	9321	6078	6430	74641	-34797	-1	-35943
2035	11439	2421	7339	22391	1700	9288	5982	60559	52812	9285	5646	6451	74193	-13634	0	-49577

APPENDIX E

MODEL-SIMULATED MONTHLY GROUNDWATER BUDGETS
(2012-2035)

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Alluvium

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	6371	99	94	11186	144	380	-1231	17044	1878	1927	742	578	5124	11919	1	11919
Feb-2012	8997	93	127	5650	135	282	-226	15059	1609	2236	826	559	5230	9828	0	21747
Mar-2012	2977	99	164	11519	144	341	-1375	13870	2131	2344	973	571	6019	7849	2	29596
Apr-2012	221	96	227	2920	140	388	399	4392	2772	1830	856	537	5995	-1596	-7	28000
May-2012	246	99	263	1010	144	512	1148	3422	3526	1638	817	551	6532	-3108	-1	24891
Jun-2012	0	96	283	1738	140	540	1069	3867	4100	1365	735	531	6732	-2864	0	22027
Jul-2012	0	99	352	1979	144	599	1194	4367	5118	1192	706	547	7563	-3195	0	18832
Aug-2012	0	99	322	1883	144	636	1232	4317	5189	1095	662	546	7493	-3176	0	15656
Sep-2012	0	96	255	981	140	632	1307	3411	4147	1079	602	528	6355	-2941	-3	12716
Oct-2012	0	99	187	3315	144	589	768	5103	3428	1199	634	545	5806	-704	0	12011
Nov-2012	0	96	125	11183	140	409	-1287	10665	2552	1306	711	529	5098	5568	0	17579
Dec-2012	836	99	94	2180	144	492	495	4342	2203	1511	716	551	4982	-641	0	16938
Jan-2013	362	99	94	1631	144	571	724	3626	1878	1582	695	550	4705	-1080	0	15859
Feb-2013	126	90	128	858	130	550	820	2703	1553	1414	597	496	4061	-1358	0	14500
Mar-2013	418	99	165	1532	144	610	946	3914	2131	1547	644	550	4871	-960	2	13541
Apr-2013	35	96	228	2575	140	627	608	4308	2772	1394	593	530	5289	-981	-1	12560
May-2013	0	99	265	1032	144	674	1212	3427	3526	1334	574	547	5981	-2553	0	10007
Jun-2013	0	96	285	909	140	675	1378	3481	4100	1163	518	529	6310	-2828	0	7179
Jul-2013	0	99	354	997	144	718	1578	3890	5118	1050	498	545	7211	-3321	0	3858
Aug-2013	0	99	324	1030	144	739	1592	3929	5189	964	470	544	7167	-3238	0	620
Sep-2013	0	96	256	1379	140	725	1297	3893	4147	963	443	526	6079	-2183	-2	-1564
Oct-2013	44	99	188	1344	144	765	1211	3795	3428	1074	451	544	5498	-1703	0	-3266
Nov-2013	275	96	125	1423	140	732	1048	3839	2552	1147	442	529	4669	-830	0	-4097
Dec-2013	17	99	94	1433	144	775	975	3538	2203	1272	456	546	4478	-940	0	-5037
Jan-2014	1424	99	95	5150	144	648	119	7680	1953	1394	573	553	4473	3206	0	-1831
Feb-2014	517	90	128	5408	130	559	-259	6575	1603	1251	555	498	3907	2668	0	837
Mar-2014	4063	99	166	6921	144	516	-245	11664	2202	1585	720	567	5074	6586	3	7423
Apr-2014	466	96	229	3508	140	546	431	5417	2861	1311	682	535	5388	30	-2	7454
May-2014	56	99	266	1280	144	638	1186	3670	3645	1182	660	548	6034	-2364	-1	5090
Jun-2014	0	96	286	1641	140	663	1213	4039	4245	965	587	529	6326	-2286	0	2804
Jul-2014	0	99	356	1904	144	710	1341	4554	5298	833	554	546	7231	-2676	0	128
Aug-2014	0	99	326	2444	144	685	1292	4991	5380	744	518	544	7188	-2196	0	-2068
Sep-2014	436	96	258	2021	140	648	1216	4816	4300	740	491	528	6060	-1242	-2	-3309
Oct-2014	107	99	189	2073	144	677	1127	4416	3561	853	501	545	5461	-1045	0	-4354
Nov-2014	2284	96	126	3763	140	601	545	7555	2654	1034	551	539	4778	2776	0	-1578
Dec-2014	1262	99	95	4112	144	613	374	6700	2295	1189	605	554	4643	2056	0	478
Jan-2015	7515	99	95	2702	144	536	672	11765	1878	1683	694	584	4839	6925	1	7403
Feb-2015	5938	90	129	3238	130	459	484	10468	1553	1678	669	528	4429	6038	1	13441
Mar-2015	11329	99	167	4415	144	285	682	17122	2131	2514	902	609	6156	10965	1	24406
Apr-2015	3996	96	231	3355	140	350	870	9037	2772	2093	848	561	6274	2756	8	27162

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Alluvium

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2015	173	99	268	1712	144	512	1337	4245	3526	1683	795	556	6560	-2314	-1	24849
Jun-2015	0	96	288	2082	140	545	1295	4446	4100	1493	714	533	6841	-2395	0	22454
Jul-2015	0	99	358	2180	144	597	1460	4838	5118	1378	684	549	7730	-2891	0	19563
Aug-2015	1014	99	328	1797	144	603	1589	5575	5189	1342	659	552	7742	-2167	0	17397
Sep-2015	1604	96	259	1470	140	543	1500	5611	4147	1240	628	538	6553	-941	-1	16456
Oct-2015	1508	99	190	2729	144	525	1179	6375	3428	1421	673	556	6078	296	0	16752
Nov-2015	4369	96	127	16100	140	204	-1583	19452	2552	2000	868	553	5973	13479	0	30232
Dec-2015	4447	99	95	14472	144	272	-1938	17592	2203	2458	1053	575	6290	11302	1	41533
Jan-2016	0	99	96	656	144	454	786	2237	1878	1900	918	555	5251	-3015	0	38518
Feb-2016	0	93	130	1247	135	464	827	2895	1609	1717	812	516	4655	-1760	0	36759
Mar-2016	0	99	168	1130	144	532	1075	3148	2131	1751	817	550	5249	-2101	-1	34658
Apr-2016	0	96	232	984	140	541	1230	3224	2772	1563	741	532	5609	-2384	-1	32274
May-2016	0	99	269	960	144	584	1430	3487	3526	1474	713	549	6261	-2774	0	29500
Jun-2016	0	96	289	1000	140	585	1517	3627	4100	1302	645	530	6578	-2950	0	26549
Jul-2016	0	99	360	1146	144	624	1691	4064	5118	1182	621	547	7468	-3404	0	23145
Aug-2016	0	99	329	1369	144	643	1640	4225	5189	1094	586	546	7415	-3189	0	19956
Sep-2016	0	96	261	1093	140	640	1475	3704	4147	1052	543	528	6269	-2562	-2	17393
Oct-2016	0	99	191	1171	144	680	1365	3650	3428	1154	545	546	5673	-2023	0	15371
Nov-2016	0	96	128	1784	140	674	980	3802	2552	1218	520	529	4819	-1018	0	14353
Dec-2016	0	99	96	1428	144	713	1055	3536	2203	1367	531	547	4648	-1113	0	13240
Jan-2017	0	99	96	1307	144	726	1026	3400	1953	1410	520	548	4431	-1031	0	12209
Feb-2017	0	90	130	1205	130	665	886	3106	1603	1271	456	495	3826	-720	0	11489
Mar-2017	0	99	168	1114	144	745	1117	3389	2202	1361	486	548	4596	-1205	-3	10285
Apr-2017	0	96	233	1077	140	727	1216	3488	2861	1201	446	530	5039	-1549	-1	8735
May-2017	0	99	271	1030	144	757	1402	3703	3645	1086	433	547	5710	-2006	-1	6729
Jun-2017	0	96	291	984	140	749	1500	3759	4245	913	391	529	6077	-2318	0	4411
Jul-2017	0	99	362	1070	144	781	1705	4161	5298	795	373	546	7013	-2851	0	1560
Aug-2017	0	99	331	1098	144	788	1729	4190	5380	712	350	545	6987	-2797	0	-1237
Sep-2017	0	96	262	1075	140	763	1501	3837	4300	692	326	527	5845	-2006	-2	-3242
Oct-2017	0	99	192	1252	144	793	1378	3858	3561	807	338	544	5250	-1393	0	-4635
Nov-2017	0	96	128	1221	140	773	1170	3528	2654	884	331	528	4397	-869	0	-5504
Dec-2017	0	99	96	1279	144	805	1096	3521	2295	1019	347	546	4207	-687	0	-6190
Jan-2018	2146	99	97	3681	144	696	511	7376	1953	1212	453	557	4175	3200	1	-2990
Feb-2018	2444	90	131	2570	130	600	530	6496	1603	1198	439	507	3748	2748	0	-242
Mar-2018	1981	99	170	3125	144	635	665	6820	2202	1332	529	559	4621	2194	5	1952
Apr-2018	323	96	235	2818	140	676	656	4944	2861	1152	483	534	5030	-85	-1	1867
May-2018	0	99	273	1137	144	732	1297	3683	3645	1053	461	548	5707	-2024	-1	-156
Jun-2018	0	96	293	1003	140	728	1455	3716	4245	874	409	529	6057	-2341	0	-2497
Jul-2018	18	99	364	1174	144	762	1658	4221	5298	756	388	546	6989	-2767	0	-5264
Aug-2018	0	99	334	1138	144	771	1697	4184	5380	675	360	545	6960	-2776	0	-8041

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Alluvium

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Sep-2018	654	96	264	1069	140	747	1485	4456	4300	679	340	530	5849	-1391	-2	-9431
Oct-2018	250	99	194	4384	144	680	696	6448	3561	787	448	546	5342	1106	0	-8326
Nov-2018	570	96	129	4609	140	601	396	6541	2654	888	497	531	4570	1970	0	-6356
Dec-2018	88	99	97	5358	144	568	141	6496	2295	1020	561	547	4424	2072	0	-4284
Jan-2019	155	99	98	1321	144	641	783	3242	1878	1113	552	548	4091	-850	0	-5133
Feb-2019	45	90	133	1128	130	600	699	2825	1553	1016	483	495	3548	-728	5	-5862
Mar-2019	124	99	172	1061	144	695	837	3133	2131	1104	508	548	4291	-1159	0	-7020
Apr-2019	10	96	238	1531	140	683	835	3533	2772	1028	468	529	4798	-1266	0	-8286
May-2019	0	99	276	1069	144	741	1040	3370	3526	931	450	547	5454	-2084	0	-10369
Jun-2019	0	96	297	1012	140	745	1139	3429	4100	808	407	528	5844	-2415	0	-12784
Jul-2019	7	99	369	1090	144	788	1256	3752	5118	709	390	545	6762	-3009	0	-15793
Aug-2019	1	99	338	1113	144	805	1230	3731	5189	642	365	544	6740	-3009	0	-18802
Sep-2019	0	96	267	1083	140	795	1000	3381	4147	623	338	526	5634	-2253	-1	-21055
Oct-2019	256	99	196	1088	144	833	932	3549	3428	720	344	545	5037	-1489	0	-22544
Nov-2019	283	96	131	1529	140	800	706	3684	2552	814	339	529	4233	-549	0	-23093
Dec-2019	353	99	98	1870	144	811	611	3987	2203	954	379	548	4084	-98	0	-23191
Jan-2020	803	99	100	1894	144	776	531	4348	1953	1030	403	550	3936	412	0	-22779
Feb-2020	833	93	135	3944	135	690	14	5843	1660	982	455	516	3613	2228	2	-20551
Mar-2020	285	99	175	3332	144	738	144	4917	2202	995	489	549	4235	682	0	-19869
Apr-2020	978	96	242	1654	140	726	547	4381	2861	896	455	534	4746	-364	0	-20233
May-2020	22	99	280	2017	144	793	626	3982	3645	794	431	547	5417	-1435	0	-21668
Jun-2020	0	96	301	1121	140	783	891	3332	4245	661	385	528	5819	-2486	0	-24154
Jul-2020	0	99	375	1143	144	833	989	3584	5298	511	364	545	6718	-3134	0	-27289
Aug-2020	0	99	343	1175	144	849	970	3580	5380	417	339	544	6681	-3100	0	-30389
Sep-2020	25	96	271	1646	140	798	697	3672	4300	382	322	526	5530	-1857	-1	-32246
Oct-2020	0	99	199	1867	144	818	536	3663	3561	430	342	543	4876	-1213	0	-33459
Nov-2020	226	96	133	1409	140	799	483	3286	2654	499	336	528	4017	-731	0	-34190
Dec-2020	1754	99	100	1081	144	823	505	4506	2295	668	365	554	3882	623	0	-33567
Jan-2021	0	99	102	1075	144	854	519	2794	1953	718	358	547	3576	-782	0	-34349
Feb-2021	0	90	138	1030	130	781	451	2620	1603	666	316	494	3079	-460	0	-34809
Mar-2021	0	99	178	1084	144	874	588	2969	2202	723	339	547	3810	-842	0	-35650
Apr-2021	0	96	247	1051	140	855	709	3097	2861	624	311	529	4324	-1224	-2	-36875
May-2021	0	99	287	1109	144	898	874	3412	3645	567	303	546	5061	-1648	-1	-38523
Jun-2021	0	96	308	1100	140	882	998	3524	4245	473	276	527	5522	-1997	0	-40520
Jul-2021	0	99	383	1173	144	917	1147	3864	5298	377	264	544	6483	-2619	0	-43139
Aug-2021	0	99	351	1197	144	924	1152	3867	5380	312	248	543	6484	-2616	0	-45755
Sep-2021	0	96	278	1261	140	886	932	3593	4300	310	236	525	5372	-1778	-1	-47533
Oct-2021	0	99	204	1274	144	918	855	3495	3561	377	246	543	4727	-1233	0	-48766
Nov-2021	0	96	136	1146	140	895	704	3117	2654	440	241	526	3862	-745	0	-49511
Dec-2021	0	99	102	1120	144	935	649	3050	2295	533	254	545	3627	-578	0	-50089

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Jan-2022	0	99	104	1270	144	937	482	3037	1953	609	260	546	3367	-330	0	-50419
Feb-2022	0	90	141	1223	130	846	330	2760	1603	572	234	493	2902	-145	4	-50565
Mar-2022	0	99	182	1284	144	937	423	3070	2202	623	255	546	3625	-556	0	-51120
Apr-2022	0	96	252	1101	140	908	551	3047	2861	535	237	528	4161	-1114	0	-52234
May-2022	0	99	292	1176	144	940	691	3343	3645	480	234	545	4904	-1561	0	-53795
Jun-2022	0	96	314	1129	140	920	809	3407	4245	379	214	527	5365	-1957	0	-55752
Jul-2022	0	99	390	1209	144	958	885	3687	5298	286	205	543	6334	-2646	0	-58399
Aug-2022	0	99	358	1250	144	962	863	3678	5380	238	194	542	6355	-2677	0	-61076
Sep-2022	0	96	283	1219	140	936	645	3318	4300	227	184	524	5236	-1917	-1	-62993
Oct-2022	0	99	208	1268	144	962	504	3185	3561	264	195	542	4562	-1377	0	-64370
Nov-2022	0	96	138	1206	140	933	408	2922	2654	311	197	526	3688	-767	0	-65137
Dec-2022	0	99	104	1309	144	965	342	2965	2295	394	216	544	3449	-485	0	-65622
Jan-2023	467	99	105	3211	144	877	-277	4627	1953	459	280	547	3239	1385	2	-64237
Feb-2023	2407	90	142	8279	130	591	-1669	9971	1603	548	347	504	3002	6964	4	-57273
Mar-2023	4768	99	184	6541	144	545	-1271	11011	2202	753	468	570	3994	7016	2	-50257
Apr-2023	0	96	254	1881	140	664	-195	2840	2861	525	414	533	4333	-1492	0	-51749
May-2023	0	99	295	1513	144	721	178	2951	3645	437	393	547	5022	-2071	0	-53820
Jun-2023	0	96	317	1313	140	738	359	2963	4245	354	345	528	5471	-2507	0	-56327
Jul-2023	0	99	394	1462	144	776	476	3352	5298	278	316	544	6436	-3084	0	-59411
Aug-2023	0	99	361	1292	144	818	515	3230	5380	239	281	543	6443	-3213	0	-62624
Sep-2023	0	96	286	1300	140	800	324	2947	4300	235	250	525	5311	-2363	-1	-64987
Oct-2023	210	99	210	2310	144	780	-32	3723	3561	263	274	543	4642	-918	-1	-65905
Nov-2023	0	96	140	1270	140	815	-56	2405	2654	283	256	526	3719	-1315	0	-67219
Dec-2023	2504	99	105	5076	144	688	-837	7781	2295	414	384	556	3650	4131	0	-63089
Jan-2024	2453	99	106	20519	144	109	-4570	18861	1953	745	557	560	3815	15046	0	-48043
Feb-2024	12444	93	143	14170	135	-187	-3134	23664	1660	1653	750	572	4635	19028	0	-29015
Mar-2024	7277	99	185	9463	144	-27	-2143	14998	2202	1421	830	593	5046	9952	1	-19063
Apr-2024	112	96	256	2433	140	206	-570	2674	2861	840	686	539	4926	-2250	-2	-21314
May-2024	254	99	297	1900	144	314	-107	2902	3645	623	617	552	5436	-2534	-1	-23848
Jun-2024	0	96	320	3146	140	297	-199	3800	4245	490	564	531	5829	-2029	0	-25876
Jul-2024	224	99	398	1284	144	426	305	2881	5298	349	532	548	6726	-3845	0	-29722
Aug-2024	0	99	364	1281	144	493	382	2764	5380	291	484	545	6701	-3936	0	-33658
Sep-2024	0	96	288	1350	140	517	211	2601	4300	301	440	527	5568	-2965	-2	-36623
Oct-2024	1159	99	211	2960	144	470	-274	4770	3561	366	465	550	4942	-172	0	-36796
Nov-2024	0	96	141	3634	140	473	-658	3827	2654	384	455	528	4022	-196	0	-36991
Dec-2024	5422	99	106	5036	144	379	-999	10188	2295	722	567	572	4157	6031	0	-30961
Jan-2025	11901	99	107	12483	144	180	-1855	23059	1878	2175	812	608	5473	17585	0	-13375
Feb-2025	8159	90	144	18886	130	122	-3306	24225	1553	3751	937	544	6785	17440	0	4064
Mar-2025	2970	99	187	10253	144	160	-1363	12450	2131	3428	1052	573	7184	5265	0	9330
Apr-2025	0	96	258	4257	140	229	-328	4652	2772	1339	892	537	5540	-888	0	8441

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May-2025	0	99	300	1431	144	368	505	2846	3526	965	798	551	5839	-2993	0	5449
Jun-2025	452	96	322	1301	140	399	788	3499	4100	822	708	534	6164	-2665	-1	2783
Jul-2025	0	99	401	1333	144	462	1032	3471	5118	689	674	548	7030	-3559	0	-775
Aug-2025	0	99	367	1487	144	506	1024	3627	5189	573	629	547	6937	-3310	-1	-4085
Sep-2025	0	96	290	1923	140	520	714	3683	4147	637	581	528	5893	-2210	0	-6295
Oct-2025	396	99	213	5974	144	425	-152	7100	3428	793	656	548	5425	1675	0	-4620
Nov-2025	522	96	142	5632	140	382	-369	6545	2552	902	680	532	4665	1879	0	-2741
Dec-2025	696	99	107	10901	144	259	-1613	10593	2203	1216	795	551	4766	5827	0	3086
Jan-2026	0	99	108	1540	144	429	58	2377	1878	1186	743	549	4355	-1978	0	1108
Feb-2026	0	90	145	1346	130	436	207	2355	1553	1044	642	495	3734	-1383	4	-275
Mar-2026	0	99	188	1454	144	529	363	2778	2131	1115	673	548	4467	-1690	1	-1966
Apr-2026	0	96	260	2307	140	546	259	3608	2772	1092	617	530	5012	-1404	0	-3369
May-2026	0	99	302	1274	144	594	670	3083	3526	989	598	547	5660	-2577	0	-5946
Jun-2026	0	96	324	1106	140	599	850	3116	4100	810	545	529	5985	-2868	0	-8815
Jul-2026	0	99	403	1125	144	644	987	3403	5118	677	522	546	6863	-3460	0	-12274
Aug-2026	0	99	369	1137	144	671	981	3403	5189	598	488	545	6820	-3416	0	-15690
Sep-2026	0	96	292	1132	140	667	773	3101	4147	591	449	527	5714	-2612	-1	-18302
Oct-2026	0	99	214	1214	144	709	700	3081	3428	681	452	544	5106	-2025	0	-20328
Nov-2026	0	96	143	1232	140	704	552	2867	2552	748	433	528	4260	-1393	0	-21721
Dec-2026	0	99	108	1961	144	745	296	3353	2203	863	443	546	4055	-702	0	-22423
Jan-2027	15366	99	108	9239	144	234	-924	24267	1953	1995	765	620	5332	18934	0	-3489
Feb-2027	1349	90	146	12871	130	159	-1825	12922	1603	2208	796	513	5119	7802	0	4314
Mar-2027	5802	99	189	6638	144	200	-369	12704	2202	2252	956	581	5991	6713	0	11026
Apr-2027	503	96	262	2123	140	322	634	4080	2861	1677	850	539	5928	-1848	-1	9179
May-2027	182	99	304	3621	144	341	570	5262	3645	1249	824	552	6269	-1002	-6	8177
Jun-2027	531	96	327	1738	140	431	1044	4307	4245	1129	737	534	6644	-2337	-1	5840
Jul-2027	0	99	406	1962	144	501	1239	4352	5298	948	700	548	7495	-3142	0	2698
Aug-2027	0	99	372	2061	144	547	1243	4466	5380	830	648	547	7405	-2938	0	-240
Sep-2027	0	96	294	1053	140	566	1281	3430	4300	734	586	528	6148	-2712	-7	-2952
Oct-2027	0	99	216	5225	144	486	368	6539	3561	829	659	546	5595	943	0	-2009
Nov-2027	0	96	144	4539	140	456	199	5575	2654	894	668	529	4746	829	0	-1180
Dec-2027	1629	99	108	17479	144	79	-2757	16782	2295	1542	887	555	5279	11502	1	10322
Jan-2028	1154	99	109	7425	144	139	-810	8261	1878	1537	923	555	4893	3367	1	13689
Feb-2028	2614	93	148	1959	135	210	324	5483	1609	1666	836	526	4637	846	0	14535
Mar-2028	808	99	190	1611	144	336	673	3863	2131	1591	847	555	5123	-1263	2	13273
Apr-2028	51	96	264	1927	140	398	721	3596	2772	1386	758	532	5448	-1853	1	11420
May-2028	264	99	306	1662	144	461	973	3910	3526	1355	727	550	6157	-2247	0	9173
Jun-2028	0	96	329	1009	140	492	1234	3301	4100	1074	652	530	6357	-3055	0	6118
Jul-2028	0	99	409	1111	144	548	1440	3752	5118	920	624	547	7209	-3457	0	2661
Aug-2028	0	99	375	1072	144	593	1473	3756	5189	838	583	546	7156	-3400	0	-739

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Sep-2028	0	96	296	1690	140	552	1180	3955	4147	839	543	527	6056	-2098	-3	-2837
Oct-2028	505	99	217	1196	144	623	1141	3927	3428	964	548	548	5488	-1561	0	-4399
Nov-2028	412	96	145	4932	140	514	237	6476	2552	1053	611	531	4747	1729	0	-2670
Dec-2028	3380	99	109	6909	144	375	-226	10791	2203	1471	755	563	4993	5798	0	3128
Jan-2029	938	99	110	1557	144	488	625	3962	1878	1460	731	555	4624	-663	0	2465
Feb-2029	32	90	149	2281	130	458	601	3741	1553	1253	648	497	3951	-210	0	2255
Mar-2029	0	99	192	2222	144	547	600	3805	2131	1431	688	549	4799	-995	1	1260
Apr-2029	0	96	265	1959	140	567	715	3742	2772	1238	625	530	5166	-1423	-1	-163
May-2029	0	99	308	1281	144	604	1120	3558	3526	1148	608	547	5829	-2271	-1	-2434
Jun-2029	0	96	331	982	140	633	1281	3463	4100	991	548	529	6169	-2706	0	-5140
Jul-2029	7	99	412	1055	144	684	1491	3891	5118	889	524	546	7077	-3185	0	-8325
Aug-2029	0	99	377	1124	144	703	1514	3961	5189	838	491	545	7063	-3102	0	-11427
Sep-2029	75	96	298	1116	140	699	1294	3716	4147	825	456	527	5955	-2235	-3	-13662
Oct-2029	0	99	219	1307	144	743	1160	3672	3428	922	459	545	5354	-1682	0	-15344
Nov-2029	524	96	146	1609	140	721	891	4128	2552	1009	447	530	4538	-410	0	-15754
Dec-2029	945	99	110	2127	144	746	693	4865	2203	1174	469	551	4398	467	0	-15287
Jan-2030	2682	99	111	30363	144	364	-5118	28645	1878	2840	760	561	6039	22605	1	7318
Feb-2030	16904	90	150	11284	130	68	-1211	27414	1553	4454	1030	575	7613	19801	0	27119
Mar-2030	3058	99	193	14898	144	205	-1585	17013	2131	5042	1267	578	9018	7995	0	35114
Apr-2030	1752	96	267	15590	140	223	-1228	16840	2772	6603	1359	547	11281	5560	-1	40674
May-2030	4226	99	310	1503	144	280	1074	7636	3526	3066	1209	573	8374	-736	-1	39938
Jun-2030	46	96	334	4951	140	276	666	6508	4100	1957	1080	536	7674	-1165	-1	38773
Jul-2030	0	99	414	1313	144	395	1401	3768	5118	1477	963	550	8108	-4340	0	34433
Aug-2030	0	99	380	1432	144	444	1434	3934	5189	1238	874	548	7850	-3915	0	30517
Sep-2030	161	96	300	1537	140	457	1182	3874	4147	1139	800	531	6616	-2738	-4	27780
Oct-2030	254	99	220	1351	144	512	1157	3738	3428	1260	793	549	6029	-2292	0	25487
Nov-2030	1045	96	147	1660	140	508	892	4488	2552	1375	754	535	5216	-728	0	24759
Dec-2030	1068	99	111	2425	144	505	724	5076	2203	1598	772	554	5128	-52	0	24707
Jan-2031	0	99	111	1460	144	580	800	3194	1878	1583	733	550	4743	-1549	0	23157
Feb-2031	0	90	150	1458	130	547	659	3035	1553	1430	631	496	4110	-1076	0	22082
Mar-2031	0	99	194	971	144	629	1015	3053	2131	1558	665	549	4903	-1851	1	20230
Apr-2031	0	96	269	2415	140	626	759	4305	2772	1551	617	531	5471	-1165	-1	19065
May-2031	0	99	312	2214	144	664	945	4379	3526	1513	607	548	6194	-1814	0	17251
Jun-2031	0	96	336	1101	140	657	1353	3683	4100	1305	548	530	6483	-2800	0	14451
Jul-2031	0	99	417	1017	144	693	1614	3985	5118	1159	528	547	7352	-3366	0	11085
Aug-2031	0	99	382	1028	144	708	1640	4001	5189	1052	495	546	7282	-3280	0	7805
Sep-2031	0	96	302	1013	140	700	1415	3667	4147	1008	458	528	6140	-2471	-3	5334
Oct-2031	0	99	222	1029	144	740	1321	3555	3428	1102	457	546	5532	-1977	0	3356
Nov-2031	0	96	148	935	140	731	1146	3196	2552	1142	432	529	4654	-1458	0	1898
Dec-2031	0	99	111	958	144	769	1107	3189	2203	1275	440	547	4466	-1277	0	621

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Jan-2032	130	99	112	1282	144	753	1023	3544	1878	1349	463	548	4238	-694	0	-73
Feb-2032	1010	93	151	2135	135	676	735	4935	1609	1322	472	517	3921	1014	0	941
Mar-2032	338	99	195	1924	144	737	818	4256	2131	1407	496	550	4585	-331	2	609
Apr-2032	225	96	270	996	140	724	1124	3576	2772	1242	461	532	5008	-1432	-1	-822
May-2032	0	99	314	1455	144	778	1210	4001	3526	1216	452	548	5742	-1741	0	-2563
Jun-2032	0	96	338	1401	140	774	1311	4060	4100	1095	416	529	6140	-2080	0	-4642
Jul-2032	0	99	420	1001	144	813	1599	4076	5118	946	400	546	7010	-2933	0	-7576
Aug-2032	33	99	384	1045	144	825	1616	4147	5189	862	379	545	6975	-2828	0	-10403
Sep-2032	0	96	304	1020	140	811	1387	3759	4147	837	353	527	5865	-2103	-3	-12507
Oct-2032	121	99	223	1043	144	848	1289	3768	3428	938	361	545	5273	-1505	0	-14012
Nov-2032	0	96	149	1396	140	805	1055	3640	2552	1014	365	528	4459	-819	0	-14831
Dec-2032	0	99	112	1526	144	843	943	3667	2203	1148	382	546	4280	-613	0	-15444
Jan-2033	2917	99	113	5141	144	666	190	9271	1953	1389	524	561	4426	4844	0	-10599
Feb-2033	5379	90	152	4009	130	522	50	10332	1603	1519	536	522	4180	6147	6	-4452
Mar-2033	1690	99	197	3200	144	617	472	6420	2202	1536	582	561	4881	1539	0	-2913
Apr-2033	1280	96	272	1272	140	657	997	4714	2861	1274	536	539	5209	-496	0	-3409
May-2033	0	99	316	1581	144	704	1130	3975	3645	1109	511	550	5814	-1840	0	-5248
Jun-2033	0	96	340	1015	140	732	1299	3621	4245	901	450	530	6125	-2504	0	-7752
Jul-2033	0	99	422	1077	144	777	1437	3956	5298	756	423	547	7024	-3067	0	-10819
Aug-2033	0	99	386	1108	144	793	1421	3952	5380	652	393	546	6971	-3018	0	-13838
Sep-2033	0	96	306	1142	140	776	1178	3637	4300	613	363	527	5804	-2166	-1	-16004
Oct-2033	110	99	224	1186	144	806	1106	3677	3561	713	370	546	5190	-1514	0	-17517
Nov-2033	1590	96	150	8148	140	560	-616	10067	2654	911	488	536	4589	5478	0	-12039
Dec-2033	650	99	113	13149	144	378	-2241	12292	2295	1082	594	551	4522	7770	0	-4270
Jan-2034	0	99	113	981	144	554	572	2464	1953	1072	550	548	4123	-1659	0	-5929
Feb-2034	0	90	153	954	130	541	690	2558	1603	960	474	495	3532	-975	0	-6903
Mar-2034	0	99	198	1006	144	641	898	2987	2202	1029	490	548	4268	-1281	0	-8184
Apr-2034	0	96	273	976	140	653	1025	3164	2861	892	435	530	4717	-1552	-2	-9736
May-2034	0	99	317	1031	144	709	1214	3514	3645	820	412	547	5423	-1907	-2	-11643
Jun-2034	0	96	341	1031	140	714	1338	3660	4245	706	368	529	5847	-2187	-1	-13830
Jul-2034	0	99	424	1111	144	758	1556	4093	5298	606	350	545	6800	-2707	0	-16537
Aug-2034	0	99	388	1135	144	776	1593	4137	5380	539	329	544	6793	-2655	0	-19192
Sep-2034	0	96	307	1201	140	755	1368	3868	4300	548	309	526	5684	-1812	-5	-21004
Oct-2034	0	99	225	1207	144	793	1265	3734	3561	639	315	544	5059	-1325	0	-22329
Nov-2034	0	96	150	1070	140	782	1080	3319	2654	701	304	527	4187	-868	0	-23197
Dec-2034	0	99	113	1031	144	825	1026	3239	2295	808	315	546	3965	-727	0	-23924
Jan-2035	0	99	114	1808	144	819	772	3757	1953	900	325	547	3724	32	0	-23891
Feb-2035	2106	90	154	3726	130	628	366	7201	1603	942	399	504	3448	3752	0	-20139
Mar-2035	555	99	198	1770	144	755	747	4268	2202	1007	424	551	4183	82	3	-20057
Apr-2035	548	96	275	2019	140	742	817	4636	2861	983	392	533	4769	-132	-1	-20189

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Alluvium

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2035	397	99	319	1530	144	781	1101	4371	3645	917	377	549	5488	-1117	-1	-21306
Jun-2035	0	96	343	1335	140	782	1233	3929	4245	738	332	529	5844	-1915	0	-23221
Jul-2035	5	99	426	1108	144	821	1550	4153	5298	621	314	545	6779	-2625	0	-25846
Aug-2035	0	99	390	1136	144	832	1593	4195	5380	544	295	544	6763	-2568	0	-28413
Sep-2035	0	96	309	1101	140	816	1375	3837	4300	526	276	526	5629	-1789	-3	-30203
Oct-2035	257	99	227	2384	144	782	1136	5028	3561	612	355	545	5074	-46	0	-30248
Nov-2035	147	96	151	1205	140	792	1042	3573	2654	679	343	528	4205	-632	0	-30881
Dec-2035	599	99	114	3268	144	739	705	5670	2295	817	437	549	4097	1572	0	-29309

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	1775	40	30	3745	380	-158	5813	605	88	92	1176	1961	3852	0	3852
Feb-2012	2506	37	41	1551	282	146	4564	461	152	105	1102	1820	2744	0	6596
Mar-2012	829	40	53	5316	341	-608	5972	622	233	145	1358	2357	3614	0	10210
Apr-2012	62	39	74	873	388	265	1700	794	171	122	1256	2344	-641	-2	9570
May-2012	69	40	86	218	512	511	1435	1038	149	115	1285	2587	-1151	0	8418
Jun-2012	0	39	92	78	540	595	1345	1233	96	101	1244	2674	-1329	0	7089
Jul-2012	0	40	114	6	599	697	1457	1541	55	94	1289	2979	-1523	0	5567
Aug-2012	0	40	105	0	636	723	1504	1601	44	87	1284	3016	-1512	0	4055
Sep-2012	0	39	83	37	632	639	1430	1282	55	79	1222	2638	-1207	-1	2847
Oct-2012	0	40	61	662	589	518	1869	1087	69	88	1242	2485	-616	0	2232
Nov-2012	0	39	41	3139	409	44	3671	825	97	102	1171	2195	1476	0	3708
Dec-2012	233	40	30	700	492	347	1843	728	105	100	1200	2133	-290	0	3418
Jan-2013	101	40	31	635	571	341	1718	605	103	96	1191	1995	-277	0	3141
Feb-2013	35	36	42	113	550	397	1173	445	85	82	1068	1679	-506	0	2635
Mar-2013	117	40	54	455	610	399	1674	622	95	90	1186	1993	-319	1	2316
Apr-2013	10	39	74	253	627	461	1464	794	91	85	1155	2125	-661	0	1655
May-2013	0	40	86	109	674	566	1475	1038	85	83	1202	2408	-933	0	722
Jun-2013	0	39	93	18	675	614	1438	1233	52	72	1171	2527	-1089	0	-367
Jul-2013	0	40	115	18	718	705	1596	1541	44	69	1217	2871	-1274	0	-1641
Aug-2013	0	40	106	12	739	727	1623	1601	34	64	1215	2914	-1292	0	-2933
Sep-2013	0	39	83	351	725	571	1769	1282	55	64	1157	2559	-789	-1	-3722
Oct-2013	12	40	61	324	765	536	1739	1087	63	67	1177	2394	-655	0	-4377
Nov-2013	77	39	41	323	732	463	1675	825	65	65	1123	2078	-403	0	-4780
Dec-2013	5	40	31	430	775	404	1683	728	69	66	1150	2013	-330	0	-5109
Jan-2014	397	40	31	1119	648	239	2473	282	80	73	1163	1599	874	0	-4236
Feb-2014	144	36	42	2036	559	-124	2694	212	79	69	1050	1411	1283	0	-2952
Mar-2014	1132	40	54	2008	516	26	3775	295	125	89	1175	1683	2091	1	-862
Apr-2014	130	39	75	690	546	296	1776	378	114	85	1162	1738	38	0	-823
May-2014	15	40	87	255	638	429	1464	491	110	83	1233	1917	-453	0	-1276
Jun-2014	0	39	93	0	663	492	1287	582	52	70	1228	1931	-644	0	-1920
Jul-2014	0	40	116	0	710	553	1420	727	43	65	1310	2144	-724	0	-2645
Aug-2014	0	40	106	102	685	556	1490	752	37	60	1337	2185	-695	0	-3340
Sep-2014	122	39	84	162	648	500	1556	602	33	56	1285	1976	-420	-1	-3760
Oct-2014	30	40	62	249	677	472	1529	508	57	58	1310	1933	-404	0	-4164
Nov-2014	636	39	41	625	601	363	2304	385	68	63	1243	1759	545	0	-3619
Dec-2014	351	40	31	1309	613	144	2488	338	76	69	1265	1748	740	0	-2879
Jan-2015	2094	40	31	1922	536	80	4703	605	105	82	1223	2015	2688	0	-191
Feb-2015	1654	36	42	2520	459	-102	4609	445	118	82	1189	1834	2774	0	2583
Mar-2015	3156	40	54	1829	285	220	5584	622	236	114	1234	2206	3377	0	5960
Apr-2015	1113	39	75	2040	350	106	3723	794	201	109	1218	2322	1398	2	7358

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2015	48	40	87	958	512	397	2043	1038	163	106	1247	2554	-511	0	6848
Jun-2015	0	39	94	523	545	517	1718	1233	139	98	1210	2680	-962	0	5885
Jul-2015	0	40	117	639	597	588	1982	1541	134	97	1257	3029	-1047	0	4838
Aug-2015	283	40	107	512	603	650	2194	1601	135	96	1255	3087	-893	0	3945
Sep-2015	447	39	85	115	543	668	1897	1282	64	87	1196	2630	-733	-1	3213
Oct-2015	420	40	62	376	525	617	2039	1087	73	90	1217	2466	-427	0	2786
Nov-2015	1217	39	41	10224	204	-1177	10548	825	337	169	1143	2475	8074	0	10859
Dec-2015	1239	40	31	8153	272	-1266	8468	728	425	237	1485	2876	5592	0	16452
Jan-2016	0	40	31	0	454	286	811	605	117	154	1307	2184	-1373	0	15079
Feb-2016	0	37	43	596	464	231	1371	461	150	135	1194	1940	-569	0	14510
Mar-2016	0	40	55	405	532	359	1390	622	162	134	1276	2195	-804	0	13705
Apr-2016	0	39	76	240	541	448	1344	794	155	124	1242	2315	-971	0	12735
May-2016	0	40	88	143	584	549	1403	1038	142	120	1292	2592	-1188	0	11546
Jun-2016	0	39	95	166	585	591	1475	1233	132	110	1259	2734	-1259	0	10287
Jul-2016	0	40	118	228	624	672	1681	1541	132	109	1308	3090	-1408	0	8879
Aug-2016	0	40	108	411	643	644	1846	1601	129	106	1305	3141	-1296	0	7583
Sep-2016	0	39	85	154	640	634	1551	1282	115	99	1243	2740	-1188	-1	6395
Oct-2016	0	40	63	220	680	580	1583	1087	114	100	1265	2565	-982	0	5413
Nov-2016	0	39	42	904	674	294	1953	825	113	95	1206	2240	-287	0	5126
Dec-2016	0	40	31	578	713	380	1743	728	125	98	1234	2185	-442	0	4684
Jan-2017	0	40	32	483	726	314	1595	282	132	97	1249	1759	-164	0	4520
Feb-2017	0	36	43	461	665	257	1462	212	123	86	1129	1550	-88	0	4432
Mar-2017	0	40	55	274	745	366	1480	295	135	94	1265	1788	-309	0	4123
Apr-2017	0	39	77	215	727	392	1449	378	125	89	1246	1837	-388	0	3735
May-2017	0	40	89	77	757	457	1420	491	86	85	1317	1979	-559	0	3176
Jun-2017	0	39	96	0	749	481	1364	582	48	74	1305	2009	-645	0	2531
Jul-2017	0	40	119	0	781	542	1482	727	40	72	1386	2224	-743	0	1788
Aug-2017	0	40	109	0	788	560	1497	752	35	67	1409	2262	-765	0	1023
Sep-2017	0	39	86	12	763	510	1410	602	32	61	1351	2046	-636	-1	387
Oct-2017	0	40	63	179	793	470	1544	508	57	66	1375	2007	-463	0	-76
Nov-2017	0	39	42	221	773	403	1478	385	62	65	1306	1818	-339	0	-415
Dec-2017	0	40	32	301	805	368	1547	338	68	67	1329	1803	-256	0	-671
Jan-2018	598	40	32	869	696	243	2479	282	78	74	1309	1743	736	0	64
Feb-2018	681	36	43	1250	600	36	2646	212	83	71	1165	1530	1116	0	1180
Mar-2018	552	40	56	796	635	277	2356	295	106	85	1291	1777	578	1	1758
Apr-2018	90	39	77	307	676	386	1575	378	111	80	1263	1832	-256	0	1502
May-2018	0	40	89	107	732	475	1443	491	97	77	1328	1993	-550	0	952
Jun-2018	0	39	96	6	728	497	1366	582	49	66	1312	2010	-644	0	308
Jul-2018	5	40	120	16	762	553	1495	727	41	63	1390	2221	-725	0	-417
Aug-2018	0	40	110	15	771	569	1505	752	37	58	1411	2258	-752	0	-1169

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Sep-2018	182	39	87	6	747	522	1583	602	32	54	1352	2039	-456	-1	-1626
Oct-2018	70	40	64	662	680	417	1932	508	51	57	1372	1988	-56	0	-1682
Nov-2018	159	39	42	804	601	340	1985	385	63	60	1298	1805	179	0	-1502
Dec-2018	25	40	32	1049	568	287	2001	338	75	65	1317	1795	206	0	-1297
Jan-2019	43	40	32	164	641	440	1360	605	74	61	1270	2009	-650	0	-1947
Feb-2019	13	36	43	166	600	381	1239	445	65	53	1119	1681	-444	1	-2391
Mar-2019	35	40	56	82	695	462	1370	622	66	53	1228	1969	-599	0	-2990
Apr-2019	3	39	78	89	683	486	1377	794	47	47	1186	2074	-696	0	-3686
May-2019	0	40	90	13	741	566	1451	1038	29	45	1227	2339	-888	0	-4574
Jun-2019	0	39	97	0	745	608	1488	1233	21	42	1190	2486	-998	0	-5572
Jul-2019	2	40	120	0	788	699	1649	1541	18	42	1235	2834	-1185	0	-6757
Aug-2019	0	40	110	0	805	721	1677	1601	14	40	1231	2886	-1209	0	-7966
Sep-2019	0	39	87	1	795	636	1559	1282	11	37	1172	2503	-944	0	-8910
Oct-2019	71	40	64	0	833	595	1603	1087	10	38	1192	2326	-723	0	-9633
Nov-2019	79	39	43	272	800	466	1698	825	27	38	1137	2027	-328	0	-9962
Dec-2019	98	40	32	620	811	355	1956	728	36	39	1163	1967	-11	0	-9973
Jan-2020	224	40	32	376	776	340	1788	282	44	40	1179	1546	242	0	-9731
Feb-2020	232	37	44	931	690	199	2133	219	47	41	1104	1411	721	1	-9009
Mar-2020	79	40	57	732	738	221	1867	295	54	43	1197	1589	278	0	-8731
Apr-2020	272	39	78	168	726	379	1662	378	55	42	1184	1659	3	0	-8728
May-2020	6	40	91	77	793	446	1454	491	54	40	1256	1842	-389	0	-9117
Jun-2020	0	39	98	68	783	471	1457	582	49	37	1251	1918	-461	0	-9578
Jul-2020	0	40	121	0	833	534	1529	727	23	35	1335	2120	-591	0	-10169
Aug-2020	0	40	111	0	849	552	1552	752	16	34	1363	2165	-613	0	-10782
Sep-2020	7	39	88	106	798	489	1526	602	12	31	1312	1957	-431	0	-11213
Oct-2020	0	40	65	148	818	464	1534	508	9	31	1340	1888	-354	0	-11567
Nov-2020	63	39	43	75	799	419	1438	385	8	30	1275	1698	-259	0	-11826
Dec-2020	489	40	32	25	823	429	1837	338	14	31	1301	1685	153	0	-11674
Jan-2021	0	40	33	50	854	399	1375	282	20	31	1283	1615	-240	0	-11914
Feb-2021	0	36	44	111	781	328	1300	212	22	28	1141	1404	-104	0	-12018
Mar-2021	0	40	57	60	874	377	1408	295	25	31	1265	1616	-208	0	-12226
Apr-2021	0	39	79	25	855	389	1387	378	15	28	1238	1659	-272	-1	-12498
May-2021	0	40	91	6	898	434	1469	491	6	27	1303	1827	-357	0	-12855
Jun-2021	0	39	98	0	882	455	1474	582	3	25	1288	1898	-424	0	-13279
Jul-2021	0	40	122	0	917	516	1595	727	1	25	1366	2119	-524	0	-13803
Aug-2021	0	40	112	0	924	534	1609	752	0	24	1388	2164	-554	0	-14357
Sep-2021	0	39	89	102	886	478	1593	602	12	26	1331	1970	-377	0	-14734
Oct-2021	0	40	65	94	918	458	1575	508	18	27	1354	1907	-332	0	-15066
Nov-2021	0	39	43	34	895	410	1421	385	13	25	1284	1707	-286	0	-15352
Dec-2021	0	40	33	18	935	398	1424	338	5	24	1306	1674	-250	0	-15602

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2022	0	40	33	212	937	343	1565	282	15	26	1287	1610	-45	0	-15648
Feb-2022	0	36	44	276	846	262	1466	212	19	24	1145	1399	66	1	-15582
Mar-2022	0	40	57	230	937	323	1587	295	26	27	1270	1617	-30	0	-15612
Apr-2022	0	39	79	46	908	370	1442	378	22	26	1243	1669	-227	0	-15839
May-2022	0	40	92	46	940	417	1535	491	20	26	1309	1846	-311	0	-16150
Jun-2022	0	39	99	5	920	442	1504	582	6	23	1295	1905	-401	0	-16552
Jul-2022	0	40	123	0	958	504	1625	727	2	23	1374	2126	-501	0	-17053
Aug-2022	0	40	113	0	962	523	1638	752	0	22	1397	2171	-533	0	-17586
Sep-2022	0	39	89	0	936	476	1541	602	0	21	1341	1964	-424	0	-18010
Oct-2022	0	40	65	27	962	456	1550	508	3	22	1367	1899	-349	0	-18359
Nov-2022	0	39	44	36	933	404	1456	385	5	22	1298	1709	-254	0	-18612
Dec-2022	0	40	33	147	965	376	1561	338	10	24	1322	1694	-134	0	-18746
Jan-2023	130	40	33	502	877	308	1891	282	18	27	1301	1628	262	1	-18484
Feb-2023	671	36	45	2668	591	-173	3837	212	30	28	1141	1410	2426	1	-16058
Mar-2023	1328	40	58	1948	545	-7	3911	295	55	35	1279	1663	2247	1	-13811
Apr-2023	0	39	80	751	664	205	1738	378	50	32	1256	1716	22	0	-13789
May-2023	0	40	93	178	721	444	1476	491	53	33	1326	1902	-426	0	-14216
Jun-2023	0	39	100	142	738	472	1490	582	52	32	1314	1980	-489	0	-14705
Jul-2023	0	40	124	44	776	541	1524	727	30	30	1397	2183	-658	0	-15363
Aug-2023	0	40	114	0	818	562	1533	752	20	28	1422	2222	-688	0	-16052
Sep-2023	0	39	90	45	800	510	1484	602	30	27	1367	2026	-542	0	-16593
Oct-2023	59	40	66	231	780	470	1646	508	35	30	1395	1968	-322	0	-16916
Nov-2023	0	39	44	62	815	432	1391	385	33	28	1328	1774	-383	0	-17299
Dec-2023	698	40	33	1041	688	298	2797	338	48	33	1354	1773	1024	0	-16275
Jan-2024	683	40	33	10442	109	-1489	9818	282	238	130	1317	1967	7851	0	-8424
Feb-2024	3467	37	45	7523	-187	-892	9993	219	738	220	1213	2390	7602	0	-822
Mar-2024	2027	40	58	2912	-27	1	5011	295	463	214	1299	2271	2740	0	1918
Apr-2024	31	39	80	398	206	386	1141	378	235	133	1292	2038	-897	0	1022
May-2024	71	40	93	117	314	527	1163	491	176	90	1369	2126	-963	0	59
Jun-2024	0	39	100	428	297	523	1388	582	152	82	1359	2175	-787	0	-729
Jul-2024	62	40	125	16	426	600	1270	727	72	74	1446	2319	-1049	0	-1778
Aug-2024	0	40	114	5	493	615	1267	752	52	67	1474	2345	-1077	0	-2855
Sep-2024	0	39	90	108	517	553	1307	602	79	64	1419	2164	-856	0	-3712
Oct-2024	323	40	66	443	470	512	1854	508	100	73	1450	2130	-276	0	-3988
Nov-2024	0	39	44	898	473	336	1790	385	104	73	1381	1942	-153	0	-4140
Dec-2024	1510	40	33	1984	379	90	4037	338	241	101	1410	2090	1947	0	-2194
Jan-2025	3315	40	34	9294	180	-968	11894	605	1234	219	1369	3427	8468	0	6274
Feb-2025	2273	36	45	13163	122	-1925	13713	445	2669	324	1384	4821	8892	0	15166
Mar-2025	827	40	59	4572	160	-21	5637	622	2395	351	1459	4827	809	0	15975
Apr-2025	0	39	81	1090	229	377	1816	794	555	237	1395	2981	-1165	0	14811

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2025	0	40	94	239	368	548	1289	1038	253	169	1433	2894	-1605	0	13206
Jun-2025	126	39	101	110	399	623	1398	1233	179	131	1384	2927	-1529	0	11677
Jul-2025	0	40	126	54	462	718	1400	1541	118	118	1429	3206	-1806	0	9871
Aug-2025	0	40	115	10	506	740	1411	1601	64	108	1419	3192	-1781	0	8090
Sep-2025	0	39	91	64	520	654	1368	1282	77	99	1348	2806	-1438	0	6652
Oct-2025	110	40	67	1214	425	509	2366	1087	154	117	1365	2722	-356	0	6296
Nov-2025	145	39	45	1232	382	394	2237	825	183	120	1295	2424	-186	0	6110
Dec-2025	194	40	34	3078	259	109	3713	728	250	152	1284	2414	1299	0	7408
Jan-2026	0	40	34	388	429	407	1298	605	202	127	1290	2224	-926	0	6483
Feb-2026	0	36	46	493	436	323	1334	445	168	110	1158	1880	-547	1	5936
Mar-2026	0	40	59	497	529	401	1525	622	178	116	1283	2199	-674	0	5261
Apr-2026	0	39	82	319	546	479	1465	794	164	106	1246	2310	-845	0	4416
May-2026	0	40	95	163	594	589	1481	1038	150	104	1293	2585	-1104	0	3313
Jun-2026	0	39	102	80	599	632	1452	1233	91	94	1256	2674	-1223	0	2090
Jul-2026	0	40	127	20	644	724	1554	1541	58	88	1305	2992	-1437	0	653
Aug-2026	0	40	116	7	671	746	1580	1601	44	81	1302	3028	-1448	0	-795
Sep-2026	0	39	92	37	667	659	1493	1282	55	74	1241	2652	-1158	0	-1954
Oct-2026	0	40	67	102	709	610	1529	1087	65	75	1264	2491	-962	0	-2915
Nov-2026	0	39	45	193	704	507	1488	825	67	73	1206	2170	-683	0	-3598
Dec-2026	0	40	34	941	745	264	2023	728	72	76	1234	2109	-86	0	-3684
Jan-2027	4280	40	34	3389	234	-110	7868	282	233	129	1227	1872	5996	0	2312
Feb-2027	376	36	46	6481	159	-577	6522	212	888	197	1073	2369	4152	0	6464
Mar-2027	1616	40	59	2452	200	131	4499	295	673	219	1233	2420	2078	0	8542
Apr-2027	140	39	82	887	322	364	1834	378	512	188	1234	2312	-478	0	8065
May-2027	51	40	95	729	341	477	1732	491	252	165	1310	2218	-485	-1	7580
Jun-2027	148	39	103	156	431	553	1429	582	206	135	1303	2225	-796	0	6784
Jul-2027	0	40	128	62	501	614	1343	727	120	124	1387	2357	-1014	0	5771
Aug-2027	0	40	117	8	547	621	1334	752	61	114	1413	2340	-1006	0	4764
Sep-2027	0	39	92	6	566	562	1265	602	47	102	1358	2110	-843	-2	3921
Oct-2027	0	40	68	907	486	469	1969	508	88	115	1383	2093	-124	0	3797
Nov-2027	0	39	45	761	456	406	1707	385	101	115	1312	1912	-205	0	3592
Dec-2027	454	40	34	6746	79	-463	6890	338	414	227	1230	2209	4681	0	8273
Jan-2028	321	40	34	2035	139	209	2779	605	322	218	1256	2400	379	0	8652
Feb-2028	728	37	46	938	210	325	2285	461	426	173	1162	2222	62	0	8714
Mar-2028	225	40	60	730	336	438	1829	622	339	170	1241	2371	-542	0	8172
Apr-2028	14	39	83	315	398	545	1393	794	208	139	1203	2343	-951	0	7222
May-2028	74	40	96	151	461	646	1469	1038	182	126	1247	2593	-1124	0	6098
Jun-2028	0	39	103	46	492	675	1355	1233	91	111	1212	2648	-1293	0	4805
Jul-2028	0	40	128	16	548	759	1491	1541	53	106	1259	2958	-1467	0	3338
Aug-2028	0	40	118	0	593	776	1527	1601	44	99	1255	2999	-1473	0	1866

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Sep-2028	0	39	93	155	552	671	1510	1282	64	92	1196	2634	-1124	-1	742
Oct-2028	141	40	68	154	623	626	1651	1087	74	96	1217	2473	-822	0	-80
Nov-2028	115	39	46	1043	514	410	2166	825	88	99	1159	2171	-5	0	-85
Dec-2028	941	40	34	1890	375	225	3506	728	130	114	1174	2146	1360	0	1275
Jan-2029	261	40	34	571	488	367	1762	605	130	109	1167	2010	-248	0	1027
Feb-2029	9	36	47	687	458	323	1560	445	112	94	1047	1698	-138	0	889
Mar-2029	0	40	60	202	547	470	1319	622	108	98	1164	1992	-673	0	215
Apr-2029	0	39	83	120	567	513	1322	794	84	88	1134	2100	-778	0	-563
May-2029	0	40	97	118	604	581	1440	1038	65	82	1181	2366	-926	0	-1489
Jun-2029	0	39	104	6	633	632	1413	1233	40	73	1151	2497	-1084	0	-2572
Jul-2029	2	40	129	4	684	723	1582	1541	33	71	1198	2843	-1260	0	-3833
Aug-2029	0	40	118	50	703	742	1653	1601	50	68	1197	2915	-1262	0	-5095
Sep-2029	21	39	94	69	699	653	1574	1282	51	64	1141	2539	-964	-1	-6059
Oct-2029	0	40	69	245	743	572	1669	1087	56	66	1162	2371	-702	0	-6761
Nov-2029	146	39	46	587	721	389	1928	825	59	64	1109	2058	-130	0	-6891
Dec-2029	263	40	34	830	746	303	2217	728	65	68	1137	1998	218	0	-6673
Jan-2030	747	40	35	23764	364	-4218	20731	605	1459	219	1703	3986	16745	0	10072
Feb-2030	4709	36	47	7543	68	-1025	11378	445	2152	319	1455	4371	7007	0	17079
Mar-2030	852	40	61	8881	205	-880	9158	622	2911	456	1528	5518	3641	0	20720
Apr-2030	488	39	84	9703	223	-468	10067	794	4783	560	1320	7456	2613	-1	23333
May-2030	1177	40	97	667	280	541	2802	1038	1199	391	1353	3980	-1178	0	22155
Jun-2030	13	39	105	1379	276	475	2287	1233	474	301	1316	3323	-1036	0	21118
Jul-2030	0	40	130	81	395	692	1337	1541	190	210	1374	3315	-1978	0	19140
Aug-2030	0	40	119	91	444	720	1415	1601	146	169	1378	3293	-1878	0	17262
Sep-2030	45	39	94	89	457	640	1365	1282	112	148	1318	2861	-1495	-1	15767
Oct-2030	71	40	69	139	512	599	1430	1087	139	145	1345	2715	-1285	0	14482
Nov-2030	291	39	46	189	508	518	1591	825	147	138	1285	2395	-804	0	13678
Dec-2030	298	40	35	287	505	497	1660	728	155	140	1316	2339	-679	0	13000
Jan-2031	0	40	35	92	580	473	1220	605	102	131	1304	2142	-922	0	12077
Feb-2031	0	36	47	85	547	397	1113	445	87	113	1168	1813	-700	0	11377
Mar-2031	0	40	61	204	629	443	1377	622	104	123	1294	2143	-767	0	10611
Apr-2031	0	39	84	224	626	468	1441	794	107	115	1257	2273	-832	0	9779
May-2031	0	40	98	197	664	548	1548	1038	110	114	1304	2566	-1019	0	8760
Jun-2031	0	39	105	107	657	606	1515	1233	93	103	1267	2697	-1182	0	7578
Jul-2031	0	40	131	80	693	704	1647	1541	81	100	1314	3036	-1389	0	6189
Aug-2031	0	40	120	46	708	730	1645	1601	70	92	1309	3072	-1428	0	4762
Sep-2031	0	39	95	52	700	647	1533	1282	64	85	1245	2676	-1142	-1	3619
Oct-2031	0	40	70	54	740	605	1509	1087	61	83	1265	2497	-988	0	2631
Nov-2031	0	39	46	31	731	524	1371	825	47	76	1206	2154	-783	0	1849
Dec-2031	0	40	35	80	769	498	1422	728	56	77	1232	2093	-671	0	1178

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Management Zone 1: Santa Clara - Mint Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2032	36	40	35	214	753	439	1518	605	59	76	1220	1960	-442	0	736
Feb-2032	281	37	48	296	676	372	1710	461	59	72	1131	1722	-12	0	724
Mar-2032	94	40	61	122	737	440	1494	622	60	73	1210	1965	-471	1	253
Apr-2032	63	39	85	73	724	479	1463	794	43	67	1176	2080	-617	0	-364
May-2032	0	40	99	12	778	561	1489	1038	26	66	1222	2352	-863	0	-1227
Jun-2032	0	39	106	0	774	604	1523	1233	19	62	1188	2503	-979	0	-2206
Jul-2032	0	40	132	0	813	697	1682	1541	17	62	1234	2853	-1172	0	-3378
Aug-2032	9	40	121	0	825	720	1715	1601	14	60	1231	2905	-1190	0	-4568
Sep-2032	0	39	96	0	811	635	1581	1282	11	56	1171	2521	-939	-1	-5507
Oct-2032	34	40	70	4	848	593	1588	1087	9	57	1191	2343	-755	0	-6262
Nov-2032	0	39	47	311	805	457	1659	825	26	56	1135	2042	-383	0	-6646
Dec-2032	0	40	35	538	843	362	1818	728	36	57	1161	1982	-164	0	-6810
Jan-2033	812	40	35	1229	666	235	3017	282	57	66	1175	1581	1436	0	-5374
Feb-2033	1498	36	48	1703	522	-65	3742	212	66	67	1064	1409	2331	2	-3042
Mar-2033	471	40	62	996	617	205	2390	295	74	78	1196	1643	748	0	-2295
Apr-2033	356	39	86	309	657	396	1843	378	75	77	1183	1713	129	0	-2166
May-2033	0	40	99	303	704	445	1591	491	79	79	1256	1906	-315	0	-2481
Jun-2033	0	39	107	5	732	502	1384	582	44	68	1250	1944	-560	0	-3040
Jul-2033	0	40	133	0	777	561	1511	727	36	65	1334	2162	-650	0	-3691
Aug-2033	0	40	122	0	793	576	1530	752	31	60	1361	2204	-674	0	-4365
Sep-2033	0	39	96	11	776	522	1444	602	26	55	1310	1993	-549	0	-4914
Oct-2033	31	40	71	95	806	496	1539	508	48	58	1336	1951	-412	0	-5325
Nov-2033	443	39	47	2000	560	175	3264	385	68	66	1260	1779	1485	0	-3840
Dec-2033	181	40	35	4476	378	-327	4785	338	89	89	1259	1775	3010	0	-831
Jan-2034	0	40	36	50	554	401	1081	282	73	70	1258	1682	-602	0	-1432
Feb-2034	0	36	48	111	541	375	1111	212	65	62	1126	1464	-353	0	-1785
Mar-2034	0	40	62	60	641	433	1236	295	67	64	1253	1678	-442	0	-2228
Apr-2034	0	39	86	25	653	440	1242	378	45	57	1229	1709	-466	0	-2694
May-2034	0	40	100	6	709	481	1336	491	30	55	1296	1872	-536	0	-3230
Jun-2034	0	39	108	0	714	497	1358	582	24	51	1283	1940	-582	0	-3812
Jul-2034	0	40	134	0	758	556	1487	727	21	51	1362	2161	-674	0	-4486
Aug-2034	0	40	122	0	776	570	1509	752	19	49	1384	2204	-695	0	-5181
Sep-2034	0	39	97	102	755	510	1502	602	37	49	1327	2015	-511	-1	-5692
Oct-2034	0	40	71	94	793	489	1488	508	44	50	1350	1952	-465	0	-6156
Nov-2034	0	39	47	34	782	438	1340	385	34	46	1281	1746	-405	0	-6562
Dec-2034	0	40	36	18	825	425	1343	338	21	45	1304	1708	-365	0	-6927
Jan-2035	0	40	36	703	819	228	1825	282	37	46	1284	1648	177	0	-6750
Feb-2035	587	36	49	1363	628	62	2725	212	45	46	1140	1443	1282	0	-5467
Mar-2035	155	40	63	751	755	207	1970	295	56	52	1264	1666	304	1	-5164
Apr-2035	153	39	87	326	742	357	1703	378	59	52	1237	1726	-23	0	-5187

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Management Zone 1: Santa Clara - Mint Canyon Subunit

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2035	110	40	101	109	781	457	1598	491	65	53	1301	1911	-313	0	-5500
Jun-2035	0	39	108	0	782	481	1410	582	34	46	1287	1949	-539	0	-6038
Jul-2035	1	40	135	0	821	539	1536	727	28	44	1365	2164	-628	0	-6666
Aug-2035	0	40	123	0	832	554	1550	752	24	42	1385	2203	-654	0	-7320
Sep-2035	0	39	98	0	816	503	1455	602	20	40	1327	1988	-533	-1	-7853
Oct-2035	71	40	72	278	782	449	1692	508	18	41	1350	1916	-225	0	-8077
Nov-2035	41	39	48	36	792	416	1371	385	15	38	1280	1717	-346	0	-8423
Dec-2035	167	40	36	494	739	359	1836	338	14	40	1302	1694	142	0	-8281

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	216	23	3	367	0	-70	539	0	0	75	21	96	443	0	443
Feb-2012	305	21	4	199	0	-41	489	0	0	82	24	106	383	0	827
Mar-2012	101	23	6	367	0	-90	406	0	0	94	20	114	292	0	1119
Apr-2012	8	22	8	55	0	-49	43	0	0	88	24	112	-69	0	1050
May-2012	8	23	9	0	0	-37	3	0	0	87	26	113	-110	0	941
Jun-2012	0	22	10	0	0	-31	1	0	0	80	25	105	-104	0	837
Jul-2012	0	23	12	0	0	-30	6	0	0	78	27	105	-99	0	738
Aug-2012	0	23	11	0	0	-28	6	0	0	74	27	101	-94	0	644
Sep-2012	0	22	9	0	0	-23	8	0	0	68	26	94	-86	0	557
Oct-2012	0	23	7	69	0	-21	78	0	0	69	27	96	-18	0	539
Nov-2012	0	22	4	355	0	-74	307	0	0	73	20	93	214	0	753
Dec-2012	28	23	3	26	0	-39	42	0	0	74	26	100	-58	0	695
Jan-2013	12	23	3	2	0	-26	15	0	0	71	27	97	-82	0	613
Feb-2013	4	21	4	1	0	-17	13	0	0	61	24	86	-73	0	540
Mar-2013	14	23	6	7	0	-16	34	0	0	65	27	92	-58	0	482
Apr-2013	1	22	8	1	0	-14	18	0	0	60	26	86	-68	0	414
May-2013	0	23	9	0	0	-15	17	0	0	57	27	84	-67	0	347
Jun-2013	0	22	10	0	0	-15	17	0	0	52	26	78	-61	0	286
Jul-2013	0	23	12	0	0	-18	17	0	0	50	27	77	-60	0	226
Aug-2013	0	23	11	0	0	-20	15	0	0	46	28	74	-59	0	167
Sep-2013	0	22	9	1	0	-18	14	0	0	42	27	69	-55	0	112
Oct-2013	1	23	7	0	0	-16	15	0	0	41	28	69	-54	0	58
Nov-2013	9	22	4	4	0	-13	27	0	0	38	27	65	-38	0	20
Dec-2013	1	23	3	2	0	-11	18	0	0	37	28	65	-47	0	-27
Jan-2014	48	23	3	185	0	-17	242	0	0	58	27	86	156	0	130
Feb-2014	18	21	5	146	0	-18	170	0	0	59	24	83	87	0	217
Mar-2014	138	23	6	278	0	-47	398	0	0	73	25	98	299	0	517
Apr-2014	16	22	8	98	0	-33	111	0	0	72	24	95	15	0	532
May-2014	2	23	9	4	0	-28	10	0	0	71	25	96	-86	0	446
Jun-2014	0	22	10	0	0	-25	7	0	0	65	24	89	-82	0	364
Jul-2014	0	23	13	0	0	-26	9	0	0	63	26	89	-80	0	284
Aug-2014	0	23	11	25	0	-26	34	0	0	60	26	86	-53	0	232
Sep-2014	15	22	9	39	0	-22	63	0	0	58	26	84	-21	0	210
Oct-2014	4	23	7	37	0	-19	51	0	0	59	27	86	-35	0	175
Nov-2014	77	22	4	107	0	-21	191	0	0	61	27	88	103	0	278
Dec-2014	43	23	3	109	0	-22	156	0	0	65	28	93	63	0	342
Jan-2015	255	23	3	0	0	-18	263	0	0	72	28	100	164	0	505
Feb-2015	201	21	5	0	0	-13	214	0	0	68	25	93	121	0	626
Mar-2015	384	23	6	96	0	-17	492	0	0	86	28	114	378	0	1005
Apr-2015	136	22	8	25	0	-13	177	0	0	84	27	111	66	0	1071

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2015	6	23	9	0	0	-13	26	0	0	81	28	109	-84	0	988
Jun-2015	0	22	10	0	0	-13	20	0	0	74	28	101	-82	0	906
Jul-2015	0	23	13	0	0	-15	20	0	0	73	29	101	-81	0	825
Aug-2015	34	23	12	0	0	-16	53	0	0	71	29	100	-47	0	778
Sep-2015	54	22	9	18	0	-14	89	0	0	68	28	96	-7	0	770
Oct-2015	51	23	7	57	0	-12	125	0	0	70	29	99	25	0	796
Nov-2015	148	22	4	355	0	-67	462	0	0	79	21	100	363	0	1158
Dec-2015	151	23	3	367	0	-92	452	0	0	90	21	111	341	0	1499
Jan-2016	0	23	3	0	0	-45	-19	0	0	86	27	113	-131	0	1368
Feb-2016	0	21	5	0	0	-27	-1	0	0	77	26	103	-104	0	1264
Mar-2016	0	23	6	0	0	-21	7	0	0	78	28	106	-99	0	1165
Apr-2016	0	22	8	0	0	-18	13	0	0	71	28	99	-86	0	1079
May-2016	0	23	9	0	0	-17	15	0	0	70	29	99	-84	0	995
Jun-2016	0	22	10	0	0	-16	16	0	0	65	28	93	-77	0	918
Jul-2016	0	23	13	0	0	-19	17	0	0	63	29	92	-75	0	844
Aug-2016	0	23	12	0	0	-19	15	0	0	59	29	88	-73	0	771
Sep-2016	0	22	9	0	0	-17	14	0	0	53	29	81	-67	0	704
Oct-2016	0	23	7	0	0	-15	15	0	0	52	30	81	-66	0	638
Nov-2016	0	22	4	0	0	-11	15	0	0	47	29	76	-60	0	578
Dec-2016	0	23	3	0	0	-9	17	0	0	46	30	75	-58	0	520
Jan-2017	0	23	3	0	0	-7	19	0	0	43	30	72	-53	0	466
Feb-2017	0	21	5	0	0	-5	20	0	0	36	27	63	-43	0	424
Mar-2017	0	23	6	0	0	-6	23	0	0	37	29	67	-44	0	380
Apr-2017	0	22	8	0	0	-7	24	0	0	34	28	62	-39	0	342
May-2017	0	23	10	0	0	-9	23	0	0	33	29	62	-39	0	302
Jun-2017	0	22	10	0	0	-11	21	0	0	30	29	59	-38	0	265
Jul-2017	0	23	13	0	0	-15	21	0	0	30	30	60	-39	0	226
Aug-2017	0	23	12	0	0	-17	17	0	0	28	30	59	-41	0	184
Sep-2017	0	22	9	0	0	-16	15	0	0	26	29	56	-40	0	144
Oct-2017	0	23	7	0	0	-15	15	0	0	26	30	56	-42	0	103
Nov-2017	0	22	5	0	0	-12	15	0	0	24	29	54	-39	0	63
Dec-2017	0	23	3	0	0	-11	16	0	0	24	30	55	-39	0	25
Jan-2018	73	23	3	100	0	-13	186	0	0	42	30	72	114	0	138
Feb-2018	83	21	5	29	0	-9	128	0	0	41	27	69	60	0	198
Mar-2018	67	23	6	80	0	-11	166	0	0	51	30	82	84	0	282
Apr-2018	11	22	8	7	0	-10	38	0	0	46	30	76	-38	0	244
May-2018	0	23	10	0	0	-12	21	0	0	43	31	74	-53	0	190
Jun-2018	0	22	10	0	0	-13	19	0	0	38	30	68	-49	0	142
Jul-2018	1	23	13	4	0	-16	24	0	0	36	31	67	-43	0	99
Aug-2018	0	23	12	1	0	-18	17	0	0	34	31	65	-48	0	51

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Sep-2018	22	22	9	0	0	-17	37	0	0	31	30	62	-25	0	27
Oct-2018	8	23	7	165	0	-22	181	0	0	53	31	85	96	0	123
Nov-2018	19	22	5	182	0	-25	204	0	0	60	29	89	114	0	237
Dec-2018	3	23	3	228	0	-35	222	0	0	67	28	95	127	0	364
Jan-2019	5	23	3	2	0	-28	6	0	0	64	27	91	-86	0	279
Feb-2019	2	21	5	2	0	-21	8	0	0	53	25	78	-70	0	209
Mar-2019	4	23	6	1	0	-20	14	0	0	54	28	82	-69	0	140
Apr-2019	0	22	8	3	0	-19	14	0	0	48	28	76	-62	0	78
May-2019	0	23	10	0	0	-21	12	0	0	45	29	75	-63	0	15
Jun-2019	0	22	10	0	0	-22	10	0	0	40	29	69	-59	0	-44
Jul-2019	0	23	13	0	0	-27	9	0	0	38	30	68	-59	0	-103
Aug-2019	0	23	12	0	0	-29	5	0	0	35	31	65	-60	0	-163
Sep-2019	0	22	9	0	0	-27	5	0	0	31	30	61	-56	0	-219
Oct-2019	9	23	7	0	0	-24	14	0	0	30	31	61	-47	0	-266
Nov-2019	10	22	5	1	0	-20	17	0	0	28	30	58	-41	0	-306
Dec-2019	12	23	3	5	0	-17	26	0	0	28	31	59	-34	0	-340
Jan-2020	27	23	3	43	0	-15	81	0	0	34	31	65	16	0	-324
Feb-2020	28	21	5	201	0	-21	234	0	0	51	28	78	156	0	-168
Mar-2020	10	23	6	63	0	-22	80	0	0	53	29	82	-3	0	-171
Apr-2020	33	22	8	15	0	-22	56	0	0	49	28	77	-21	0	-192
May-2020	1	23	10	0	0	-24	9	0	0	45	30	75	-66	0	-257
Jun-2020	0	22	10	0	0	-26	7	0	0	39	29	68	-61	0	-318
Jul-2020	0	23	13	0	0	-31	5	0	0	36	31	67	-62	0	-380
Aug-2020	0	23	12	0	0	-33	2	0	0	33	31	65	-63	0	-443
Sep-2020	1	22	9	30	0	-30	32	0	0	33	31	64	-32	0	-475
Oct-2020	0	23	7	42	0	-29	43	0	0	36	32	68	-26	0	-501
Nov-2020	8	22	5	18	0	-25	28	0	0	33	32	65	-37	0	-538
Dec-2020	59	23	3	0	0	-23	63	0	0	34	33	67	-4	0	-542
Jan-2021	0	23	3	0	0	-19	8	0	0	32	33	65	-57	0	-599
Feb-2021	0	21	5	0	0	-14	11	0	0	27	30	57	-46	0	-645
Mar-2021	0	23	6	0	0	-15	14	0	0	29	33	62	-48	0	-693
Apr-2021	0	22	8	0	0	-15	15	0	0	27	32	59	-44	0	-737
May-2021	0	23	10	0	0	-18	15	0	0	26	34	60	-45	0	-782
Jun-2021	0	22	10	0	0	-20	13	0	0	24	33	57	-44	0	-826
Jul-2021	0	23	13	0	0	-25	11	0	0	23	34	57	-47	0	-873
Aug-2021	0	23	12	0	0	-28	7	0	0	22	34	56	-50	0	-922
Sep-2021	0	22	9	0	0	-26	5	0	0	20	33	54	-48	0	-970
Oct-2021	0	23	7	0	0	-24	6	0	0	20	34	55	-49	0	-1019
Nov-2021	0	22	5	0	0	-19	7	0	0	19	33	52	-45	0	-1064
Dec-2021	0	23	3	0	0	-17	9	0	0	19	34	53	-44	0	-1108

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December 2014

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Jan-2022	0	23	3	0	0	-15	11	0	0	18	34	52	-41	0	-1149
Feb-2022	0	21	5	0	0	-12	13	0	0	16	31	47	-34	0	-1183
Mar-2022	0	23	6	0	0	-14	15	0	0	17	34	51	-37	0	-1219
Apr-2022	0	22	8	0	0	-16	15	0	0	16	33	49	-35	0	-1254
May-2022	0	23	10	0	0	-19	13	0	0	16	34	50	-37	0	-1291
Jun-2022	0	22	10	0	0	-22	10	0	0	15	33	49	-38	0	-1330
Jul-2022	0	23	13	0	0	-28	8	0	0	16	35	50	-42	0	-1371
Aug-2022	0	23	12	0	0	-30	4	0	0	15	35	50	-46	0	-1417
Sep-2022	0	22	9	0	0	-28	3	0	0	15	34	49	-45	0	-1463
Oct-2022	0	23	7	0	0	-27	3	0	0	15	35	50	-47	0	-1510
Nov-2022	0	22	5	0	0	-23	4	0	0	14	34	48	-45	0	-1555
Dec-2022	0	23	3	0	0	-21	5	0	0	15	35	50	-44	0	-1599
Jan-2023	16	23	3	84	0	-21	105	0	0	25	35	60	45	0	-1554
Feb-2023	82	21	5	331	0	-70	368	0	0	40	25	65	303	0	-1251
Mar-2023	162	23	6	248	0	-65	374	0	0	59	32	91	283	0	-968
Apr-2023	0	22	8	4	0	-45	-10	0	0	52	31	83	-94	0	-1062
May-2023	0	23	10	9	0	-41	1	0	0	48	33	81	-81	0	-1142
Jun-2023	0	22	11	0	0	-38	-6	0	0	42	32	74	-80	0	-1222
Jul-2023	0	23	13	8	0	-41	3	0	0	38	34	73	-70	0	-1292
Aug-2023	0	23	12	0	0	-42	-7	0	0	34	35	69	-76	0	-1368
Sep-2023	0	22	9	0	0	-37	-6	0	0	30	34	64	-70	0	-1438
Oct-2023	7	23	7	40	0	-35	41	0	0	34	36	70	-29	0	-1467
Nov-2023	0	22	5	0	0	-30	-4	0	0	29	35	64	-68	0	-1535
Dec-2023	85	23	3	185	0	-36	260	0	0	52	36	89	171	0	-1363
Jan-2024	83	23	4	367	0	-92	384	0	0	61	28	90	295	0	-1069
Feb-2024	422	21	5	343	0	-107	685	0	0	72	25	97	587	0	-481
Mar-2024	247	23	6	363	0	-125	514	0	0	88	32	120	395	0	-86
Apr-2024	4	22	8	0	0	-73	-39	0	0	81	34	115	-153	0	-240
May-2024	9	23	10	0	0	-59	-18	0	0	79	36	115	-132	0	-372
Jun-2024	0	22	11	55	0	-52	37	0	0	74	35	109	-73	0	-445
Jul-2024	8	23	13	0	0	-51	-7	0	0	72	37	109	-116	0	-561
Aug-2024	0	23	12	0	0	-48	-13	0	0	68	37	105	-118	0	-679
Sep-2024	0	22	10	0	0	-42	-10	0	0	61	37	98	-108	0	-787
Oct-2024	39	23	7	48	0	-38	79	0	0	63	38	101	-22	0	-809
Nov-2024	0	22	5	64	0	-33	58	0	0	60	37	98	-40	0	-849
Dec-2024	184	23	4	85	0	-32	263	0	0	69	39	108	155	0	-694
Jan-2025	404	23	4	104	0	-30	505	0	0	81	38	120	385	0	-309
Feb-2025	277	21	5	331	0	-73	561	0	0	86	28	114	447	0	138
Mar-2025	101	23	6	367	0	-101	396	0	0	101	29	130	265	0	403
Apr-2025	0	22	9	91	0	-55	67	0	0	95	35	130	-63	0	340

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May-2025	0	23	10	0	0	-39	-7	0	0	94	37	131	-138	0	203
Jun-2025	15	22	11	0	0	-31	17	0	0	87	36	123	-106	0	97
Jul-2025	0	23	13	0	0	-28	8	0	0	85	37	122	-114	0	-17
Aug-2025	0	23	12	0	0	-25	10	0	0	80	37	117	-107	0	-124
Sep-2025	0	22	10	0	0	-20	12	0	0	73	35	108	-96	0	-221
Oct-2025	13	23	7	170	0	-24	189	0	0	82	36	118	71	0	-149
Nov-2025	18	22	5	155	0	-24	175	0	0	84	34	118	57	0	-92
Dec-2025	24	23	4	367	0	-79	337	0	0	91	27	119	219	0	126
Jan-2026	0	23	4	0	0	-40	-14	0	0	88	33	121	-135	0	-8
Feb-2026	0	21	5	0	0	-24	1	0	0	76	30	106	-105	0	-113
Mar-2026	0	23	6	0	0	-21	9	0	0	79	33	112	-104	0	-217
Apr-2026	0	22	9	0	0	-18	13	0	0	72	32	104	-91	0	-307
May-2026	0	23	10	0	0	-18	15	0	0	71	33	103	-89	0	-396
Jun-2026	0	22	11	0	0	-19	14	0	0	65	31	97	-82	0	-479
Jul-2026	0	23	13	0	0	-22	14	0	0	64	32	96	-83	0	-561
Aug-2026	0	23	12	0	0	-24	11	0	0	60	32	93	-82	0	-643
Sep-2026	0	22	10	0	0	-21	11	0	0	55	31	86	-75	0	-718
Oct-2026	0	23	7	0	0	-18	12	0	0	53	32	85	-73	0	-792
Nov-2026	0	22	5	0	0	-13	13	0	0	48	31	79	-66	0	-857
Dec-2026	0	23	4	0	0	-11	16	0	0	47	32	78	-63	0	-920
Jan-2027	521	23	4	331	0	-56	823	0	0	77	26	102	721	0	-200
Feb-2027	46	21	5	331	0	-75	328	0	0	73	21	94	234	0	34
Mar-2027	197	23	6	232	0	-57	401	0	0	93	27	120	281	0	315
Apr-2027	17	22	9	14	0	-36	26	0	0	87	27	113	-87	0	228
May-2027	6	23	10	76	0	-30	85	0	0	87	28	114	-30	0	198
Jun-2027	18	22	11	0	0	-25	26	0	0	80	27	107	-82	0	117
Jul-2027	0	23	13	0	0	-25	12	0	0	78	28	107	-95	0	22
Aug-2027	0	23	12	0	0	-23	12	0	0	73	28	102	-90	0	-68
Sep-2027	0	22	10	0	0	-19	13	0	0	67	28	95	-82	0	-150
Oct-2027	0	23	7	145	0	-22	153	0	0	73	29	102	51	0	-100
Nov-2027	0	22	5	118	0	-21	124	0	0	73	28	100	23	0	-77
Dec-2027	55	23	4	367	0	-77	371	0	0	84	22	106	265	0	189
Jan-2028	39	23	4	325	0	-83	307	0	0	89	19	108	199	0	387
Feb-2028	89	21	5	11	0	-43	84	0	0	84	24	107	-24	0	364
Mar-2028	27	23	6	0	0	-31	26	0	0	85	27	112	-86	0	277
Apr-2028	2	22	9	0	0	-23	9	0	0	78	27	105	-95	0	182
May-2028	9	23	10	0	0	-21	21	0	0	76	28	104	-83	0	100
Jun-2028	0	22	11	0	0	-19	14	0	0	70	27	96	-82	0	17
Jul-2028	0	23	13	2	0	-20	19	0	0	69	28	96	-77	0	-60
Aug-2028	0	23	12	0	0	-19	16	0	0	65	28	93	-77	0	-137

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Sep-2028	0	22	10	26	0	-16	41	0	0	61	27	88	-46	0	-183
Oct-2028	17	23	7	0	0	-14	33	0	0	59	28	87	-54	0	-236
Nov-2028	14	22	5	182	0	-18	205	0	0	67	26	93	112	0	-125
Dec-2028	115	23	4	327	0	-61	407	0	0	79	18	98	310	0	185
Jan-2029	32	23	4	13	0	-32	40	0	0	77	24	101	-61	0	124
Feb-2029	1	21	5	82	0	-21	87	0	0	68	22	90	-3	0	121
Mar-2029	0	23	6	15	0	-18	26	0	0	72	24	97	-71	0	50
Apr-2029	0	22	9	9	0	-15	24	0	0	67	24	91	-67	0	-17
May-2029	0	23	10	21	0	-15	39	0	0	67	25	92	-53	0	-70
Jun-2029	0	22	11	0	0	-15	18	0	0	61	24	85	-67	0	-137
Jul-2029	0	23	13	0	0	-17	20	0	0	59	25	85	-65	0	-202
Aug-2029	0	23	12	0	0	-18	17	0	0	56	26	81	-64	0	-266
Sep-2029	3	22	10	1	0	-15	20	0	0	50	25	75	-55	0	-321
Oct-2029	0	23	7	1	0	-13	18	0	0	48	26	74	-56	0	-377
Nov-2029	18	22	5	5	0	-10	40	0	0	45	25	70	-30	0	-407
Dec-2029	32	23	4	5	0	-8	55	0	0	45	26	71	-15	0	-423
Jan-2030	91	23	4	367	0	-67	418	0	0	64	19	83	335	0	-88
Feb-2030	573	21	5	212	0	-46	765	0	0	79	20	99	666	0	578
Mar-2030	104	23	6	367	0	-90	409	0	0	93	18	111	298	0	876
Apr-2030	59	22	9	355	0	-103	342	0	0	94	17	111	230	0	1106
May-2030	143	23	10	0	0	-62	115	0	0	98	22	120	-6	0	1101
Jun-2030	2	22	11	156	0	-51	139	0	0	96	23	118	21	0	1122
Jul-2030	0	23	14	0	0	-45	-8	0	0	95	24	119	-127	0	995
Aug-2030	0	23	12	0	0	-39	-4	0	0	89	24	113	-117	0	878
Sep-2030	5	22	10	3	0	-31	9	0	0	82	24	106	-96	0	782
Oct-2030	9	23	7	0	0	-26	13	0	0	80	25	105	-92	0	690
Nov-2030	35	22	5	0	0	-19	43	0	0	75	24	99	-56	0	634
Dec-2030	36	23	4	16	0	-16	63	0	0	75	25	100	-37	0	597
Jan-2031	0	23	4	0	0	-11	15	0	0	70	25	95	-80	0	517
Feb-2031	0	21	5	0	0	-8	18	0	0	60	23	82	-64	0	452
Mar-2031	0	23	6	0	0	-7	22	0	0	61	25	87	-65	0	388
Apr-2031	0	22	9	0	0	-7	24	0	0	55	25	80	-57	0	331
May-2031	0	23	10	0	0	-9	24	0	0	54	26	80	-56	0	276
Jun-2031	0	22	11	0	0	-10	23	0	0	49	25	74	-52	0	224
Jul-2031	0	23	14	0	0	-14	23	0	0	48	26	74	-51	0	173
Aug-2031	0	23	12	0	0	-15	20	0	0	45	26	71	-51	0	121
Sep-2031	0	22	10	0	0	-14	18	0	0	41	25	66	-48	0	73
Oct-2031	0	23	7	0	0	-12	18	0	0	39	26	66	-48	0	25
Nov-2031	0	22	5	0	0	-9	17	0	0	36	26	61	-44	0	-19
Dec-2031	0	23	4	0	0	-8	19	0	0	35	26	61	-43	0	-61

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2032	4	23	4	17	0	-6	42	0	0	36	26	62	-21	0	-82
Feb-2032	34	21	5	32	0	-5	88	0	0	37	25	61	26	0	-55
Mar-2032	11	23	6	10	0	-5	46	0	0	37	26	64	-18	0	-73
Apr-2032	8	22	9	8	0	-6	40	0	0	35	25	60	-20	0	-94
May-2032	0	23	10	0	0	-8	25	0	0	34	26	60	-35	0	-129
Jun-2032	0	22	11	0	0	-10	23	0	0	31	25	57	-34	0	-163
Jul-2032	0	23	14	0	0	-14	22	0	0	30	26	57	-34	0	-198
Aug-2032	1	23	12	0	0	-16	20	0	0	29	27	55	-35	0	-233
Sep-2032	0	22	10	0	0	-15	17	0	0	26	26	52	-35	0	-268
Oct-2032	4	23	7	1	0	-14	21	0	0	26	27	53	-32	0	-299
Nov-2032	0	22	5	9	0	-11	25	0	0	26	26	51	-26	0	-326
Dec-2032	0	23	4	4	0	-10	21	0	0	26	27	52	-31	0	-357
Jan-2033	99	23	4	183	0	-18	290	0	0	52	26	78	212	0	-145
Feb-2033	182	21	5	60	0	-15	253	0	0	54	23	77	175	0	30
Mar-2033	57	23	6	45	0	-15	116	0	0	58	26	84	32	0	62
Apr-2033	43	22	9	6	0	-15	65	0	0	55	25	80	-15	0	47
May-2033	0	23	10	14	0	-18	30	0	0	51	26	78	-48	0	-1
Jun-2033	0	22	11	1	0	-20	15	0	0	45	26	71	-56	0	-57
Jul-2033	0	23	14	0	0	-25	12	0	0	42	27	70	-58	0	-115
Aug-2033	0	23	13	0	0	-27	8	0	0	39	28	67	-59	0	-174
Sep-2033	0	22	10	2	0	-25	9	0	0	35	28	63	-54	0	-228
Oct-2033	4	23	7	0	0	-23	11	0	0	35	29	64	-53	0	-281
Nov-2033	54	22	5	355	0	-75	361	0	0	55	27	82	279	0	-2
Dec-2033	22	23	4	367	0	-100	315	0	0	65	22	87	228	0	227
Jan-2034	0	23	4	0	0	-51	-24	0	0	60	27	88	-112	0	115
Feb-2034	0	21	5	0	0	-31	-5	0	0	50	26	76	-81	0	34
Mar-2034	0	23	6	0	0	-26	3	0	0	50	29	79	-76	0	-42
Apr-2034	0	22	9	0	0	-21	10	0	0	44	28	72	-62	0	-105
May-2034	0	23	10	0	0	-21	13	0	0	41	29	70	-58	0	-162
Jun-2034	0	22	11	0	0	-20	13	0	0	37	28	65	-52	0	-214
Jul-2034	0	23	14	0	0	-22	14	0	0	35	29	64	-50	0	-263
Aug-2034	0	23	13	0	0	-23	12	0	0	32	30	61	-49	0	-313
Sep-2034	0	22	10	0	0	-21	11	0	0	29	29	57	-46	0	-359
Oct-2034	0	23	7	0	0	-19	12	0	0	28	30	58	-46	0	-405
Nov-2034	0	22	5	0	0	-15	12	0	0	25	29	54	-43	0	-447
Dec-2034	0	23	4	0	0	-13	13	0	0	25	30	55	-42	0	-489
Jan-2035	0	23	4	11	0	-11	26	0	0	26	30	56	-30	0	-519
Feb-2035	71	21	5	131	0	-14	215	0	0	43	26	69	145	0	-374
Mar-2035	19	23	6	6	0	-13	41	0	0	44	29	72	-31	0	-405
Apr-2035	19	22	9	3	0	-12	41	0	0	38	28	66	-25	0	-430

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2035	13	23	10	0	0	-14	33	0	0	36	29	65	-31	0	-462
Jun-2035	0	22	11	0	0	-15	19	0	0	31	28	59	-40	0	-502
Jul-2035	0	23	14	0	0	-18	19	0	0	29	29	59	-40	0	-542
Aug-2035	0	23	13	0	0	-19	16	0	0	27	30	57	-41	0	-582
Sep-2035	0	22	10	0	0	-18	14	0	0	25	29	54	-39	0	-622
Oct-2035	9	23	7	78	0	-18	99	0	0	37	30	67	32	0	-590
Nov-2035	5	22	5	10	0	-14	28	0	0	33	29	62	-34	0	-623
Dec-2035	20	23	4	139	0	-18	168	0	0	51	29	81	87	0	-536

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	1367	15	29	1521	0	21	214	3167	0	0	303	504	807	2360	0	2360
Feb-2012	1930	14	39	895	0	24	257	3159	0	0	338	494	832	2327	0	4687
Mar-2012	638	15	51	1530	0	20	216	2470	0	0	375	554	929	1541	0	6228
Apr-2012	47	15	70	248	0	24	223	627	0	0	352	512	863	-235	-1	5993
May-2012	53	15	82	0	0	26	182	357	0	0	344	497	841	-484	0	5509
Jun-2012	0	15	88	0	0	25	108	236	0	0	315	446	761	-524	0	4984
Jul-2012	0	15	109	0	0	27	18	169	0	0	306	420	726	-557	0	4427
Aug-2012	0	15	100	0	0	27	-23	119	0	0	284	398	682	-562	0	3865
Sep-2012	0	15	79	0	0	26	38	158	0	0	255	400	654	-496	-1	3368
Oct-2012	0	15	58	313	0	27	114	527	0	0	259	434	693	-166	0	3203
Nov-2012	0	15	39	1460	0	20	80	1613	0	0	280	444	725	889	0	4091
Dec-2012	179	15	29	119	0	26	201	569	0	0	285	477	762	-193	0	3899
Jan-2013	78	15	29	99	0	27	278	526	0	0	271	499	770	-244	0	3654
Feb-2013	27	14	39	36	0	24	305	446	0	0	227	470	697	-251	0	3403
Mar-2013	90	15	51	282	0	27	318	783	0	0	244	514	758	25	0	3428
Apr-2013	8	15	70	32	0	26	263	415	0	0	222	478	700	-285	0	3143
May-2013	0	15	82	4	0	27	206	334	0	0	214	466	681	-346	0	2797
Jun-2013	0	15	88	0	0	26	125	254	0	0	194	419	613	-359	0	2438
Jul-2013	0	15	109	0	0	27	30	181	0	0	189	395	583	-402	0	2036
Aug-2013	0	15	100	0	0	28	-16	127	0	0	178	374	551	-425	0	1611
Sep-2013	0	15	79	30	0	27	40	191	0	0	163	377	541	-349	0	1262
Oct-2013	9	15	58	7	0	28	119	238	0	0	160	412	572	-334	0	928
Nov-2013	59	15	39	159	0	27	192	490	0	0	153	423	576	-86	0	842
Dec-2013	4	15	29	88	0	28	254	417	0	0	152	456	608	-191	0	651
Jan-2014	305	15	29	890	0	27	188	1456	0	0	220	434	654	802	0	1453
Feb-2014	111	14	39	703	0	24	219	1111	0	0	222	411	633	478	0	1930
Mar-2014	871	15	51	1342	0	25	62	2366	0	0	298	422	720	1646	1	3576
Apr-2014	100	15	70	473	0	24	69	751	0	0	292	393	685	67	0	3643
May-2014	12	15	82	21	0	25	3	157	0	0	288	371	659	-502	0	3141
Jun-2014	0	15	88	0	0	24	-82	46	0	0	260	326	587	-541	0	2600
Jul-2014	0	15	109	0	0	26	-185	-35	0	0	249	312	560	-595	0	2005
Aug-2014	0	15	100	120	0	26	-218	44	0	0	235	306	541	-497	0	1508
Sep-2014	94	15	79	190	0	26	-141	262	0	0	220	304	524	-262	0	1246
Oct-2014	23	15	58	179	0	27	-42	260	0	0	217	337	554	-295	0	952
Nov-2014	490	15	39	517	0	27	65	1152	0	0	242	357	599	553	0	1505
Dec-2014	271	15	29	527	0	28	143	1012	0	0	262	397	659	353	0	1858
Jan-2015	1612	15	29	0	0	28	283	1967	0	0	296	467	763	1205	0	3062
Feb-2015	1274	14	39	0	0	25	356	1708	0	0	282	475	757	951	0	4013
Mar-2015	2430	15	51	412	0	28	331	3267	0	0	366	522	887	2379	0	6392
Apr-2015	857	15	70	107	0	27	273	1349	0	0	348	494	842	505	1	6897

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2015	37	15	82	0	0	28	210	372	0	0	328	479	807	-434	0	6463
Jun-2015	0	15	88	0	0	28	124	254	0	0	291	429	720	-466	0	5997
Jul-2015	0	15	109	0	0	29	27	181	0	0	276	404	681	-500	0	5498
Aug-2015	218	15	100	0	0	29	-21	341	0	0	264	383	647	-306	0	5192
Sep-2015	344	15	79	76	0	28	29	572	0	0	253	386	639	-67	0	5125
Oct-2015	324	15	58	244	0	29	108	778	0	0	261	420	681	97	0	5221
Nov-2015	937	15	39	1531	0	21	55	2598	0	0	320	438	757	1841	0	7062
Dec-2015	954	15	29	1583	0	21	178	2780	0	0	369	548	917	1863	0	8925
Jan-2016	0	15	29	0	0	27	274	345	0	0	348	545	893	-548	0	8378
Feb-2016	0	14	39	0	0	26	304	384	0	0	308	517	825	-441	0	7937
Mar-2016	0	15	51	0	0	28	307	402	0	0	308	540	848	-446	0	7491
Apr-2016	0	15	70	0	0	28	252	365	0	0	276	502	777	-412	0	7078
May-2016	0	15	82	0	0	29	196	322	0	0	262	490	752	-429	0	6649
Jun-2016	0	15	88	0	0	28	118	249	0	0	233	442	676	-427	0	6222
Jul-2016	0	15	109	0	0	29	26	179	0	0	223	420	643	-464	0	5758
Aug-2016	0	15	100	0	0	29	-17	128	0	0	208	399	607	-479	0	5279
Sep-2016	0	15	79	0	0	29	40	163	0	0	189	400	589	-426	0	4853
Oct-2016	0	15	58	0	0	30	121	224	0	0	184	434	618	-394	0	4459
Nov-2016	0	15	39	0	0	29	198	280	0	0	168	445	613	-333	0	4126
Dec-2016	0	15	29	0	0	30	260	334	0	0	164	478	641	-307	0	3819
Jan-2017	0	15	29	0	0	30	228	302	0	0	155	458	613	-311	0	3508
Feb-2017	0	14	39	0	0	27	257	337	0	0	133	431	564	-227	0	3281
Mar-2017	0	15	51	0	0	29	251	347	0	0	138	463	601	-254	-1	3028
Apr-2017	0	15	71	0	0	28	172	286	0	0	126	420	545	-260	0	2768
May-2017	0	15	82	0	0	29	85	211	0	0	122	397	519	-308	0	2460
Jun-2017	0	15	88	0	0	29	-13	118	0	0	110	350	461	-342	0	2118
Jul-2017	0	15	109	0	0	30	-123	31	0	0	107	335	443	-411	0	1707
Aug-2017	0	15	100	0	0	30	-161	-16	0	0	101	328	429	-445	0	1262
Sep-2017	0	15	79	0	0	29	-86	37	0	0	93	325	417	-380	0	882
Oct-2017	0	15	58	0	0	30	12	116	0	0	90	357	447	-331	0	551
Nov-2017	0	15	39	0	0	29	119	202	0	0	82	378	460	-259	0	292
Dec-2017	0	15	29	0	0	30	197	272	0	0	80	417	497	-225	0	67
Jan-2018	460	15	29	500	0	30	253	1289	0	0	146	444	590	698	0	765
Feb-2018	524	14	39	145	0	27	285	1035	0	0	148	426	574	461	0	1227
Mar-2018	425	15	51	403	0	30	272	1196	0	0	192	460	652	543	1	1769
Apr-2018	69	15	71	33	0	30	193	411	0	0	173	417	590	-179	0	1590
May-2018	0	15	82	0	0	31	106	234	0	0	162	395	557	-323	0	1267
Jun-2018	0	15	88	0	0	30	4	137	0	0	142	348	490	-353	0	914
Jul-2018	4	15	109	21	0	31	-110	71	0	0	136	330	466	-395	0	519
Aug-2018	0	15	100	5	0	31	-150	2	0	0	124	322	446	-444	0	75

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Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Sep-2018	140	15	79	0	0	30	-76	189	0	0	114	321	435	-246	0	-171
Oct-2018	54	15	58	827	0	31	-1	984	0	0	185	351	536	448	0	278
Nov-2018	122	15	39	915	0	29	82	1202	0	0	218	374	592	610	0	888
Dec-2018	19	15	29	1143	0	28	116	1351	0	0	251	414	665	686	0	1574
Jan-2019	33	15	29	117	0	27	278	500	0	0	243	484	727	-227	0	1347
Feb-2019	10	14	40	121	0	25	307	516	0	0	209	463	672	-157	1	1190
Mar-2019	27	15	51	42	0	28	313	476	0	0	215	508	723	-247	0	943
Apr-2019	2	15	71	143	0	28	241	499	0	0	197	473	670	-171	0	772
May-2019	0	15	82	3	0	29	169	299	0	0	187	461	648	-349	0	422
Jun-2019	0	15	88	0	0	29	76	207	0	0	166	415	581	-374	0	49
Jul-2019	1	15	110	0	0	30	-47	109	0	0	158	393	551	-442	0	-393
Aug-2019	0	15	100	0	0	31	-107	39	0	0	146	376	521	-482	0	-875
Sep-2019	0	15	79	4	0	30	-46	82	0	0	130	382	512	-431	0	-1305
Oct-2019	55	15	58	0	0	31	47	206	0	0	125	418	543	-337	0	-1642
Nov-2019	61	15	39	33	0	30	138	315	0	0	117	430	547	-232	0	-1874
Dec-2019	76	15	29	256	0	31	203	610	0	0	139	463	602	8	0	-1866
Jan-2020	172	15	29	250	0	31	147	645	0	0	148	442	590	56	0	-1810
Feb-2020	179	14	40	1161	0	28	95	1516	0	0	193	425	618	897	0	-913
Mar-2020	61	15	51	365	0	29	99	621	0	0	215	444	659	-38	0	-951
Apr-2020	210	15	71	84	0	28	26	434	0	0	200	403	602	-168	0	-1119
May-2020	5	15	82	0	0	30	-65	66	0	0	186	381	567	-501	0	-1620
Jun-2020	0	15	88	0	0	29	-164	-32	0	0	165	334	500	-531	0	-2151
Jul-2020	0	15	110	0	0	31	-299	-143	0	0	159	317	476	-619	0	-2771
Aug-2020	0	15	100	0	0	31	-348	-201	0	0	149	310	458	-659	0	-3429
Sep-2020	5	15	79	174	0	31	-260	45	0	0	140	315	455	-410	0	-3839
Oct-2020	0	15	58	242	0	32	-162	186	0	0	148	354	502	-316	0	-4155
Nov-2020	48	15	39	104	0	32	-26	211	0	0	140	380	519	-308	0	-4463
Dec-2020	376	15	29	0	0	33	63	517	0	0	146	421	567	-50	0	-4514
Jan-2021	0	15	29	0	0	33	177	254	0	0	136	450	586	-331	0	-4845
Feb-2021	0	14	40	0	0	30	244	327	0	0	116	432	548	-221	0	-5066
Mar-2021	0	15	51	0	0	33	243	343	0	0	121	465	586	-244	0	-5309
Apr-2021	0	15	71	0	0	32	159	277	0	0	110	420	530	-252	0	-5562
May-2021	0	15	82	0	0	34	61	192	0	0	106	394	501	-309	0	-5870
Jun-2021	0	15	88	0	0	33	-51	85	0	0	96	343	439	-354	0	-6224
Jul-2021	0	15	110	0	0	34	-194	-35	0	0	93	319	412	-446	0	-6671
Aug-2021	0	15	100	0	0	34	-250	-99	0	0	87	307	394	-493	0	-7164
Sep-2021	0	15	79	0	0	33	-159	-32	0	0	79	315	394	-426	0	-7589
Oct-2021	0	15	58	0	0	34	-38	70	0	0	77	355	432	-362	0	-7951
Nov-2021	0	15	39	0	0	33	90	177	0	0	70	382	452	-275	0	-8226
Dec-2021	0	15	29	0	0	34	180	259	0	0	68	424	491	-232	0	-8458

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2022	0	15	29	0	0	34	239	318	0	0	64	455	519	-200	0	-8659
Feb-2022	0	14	40	0	0	31	273	357	0	0	56	439	494	-137	1	-8796
Mar-2022	0	15	51	0	0	34	257	357	0	0	59	473	532	-175	0	-8971
Apr-2022	0	15	71	0	0	33	159	278	0	0	56	427	483	-205	0	-9176
May-2022	0	15	82	0	0	34	52	183	0	0	56	402	458	-274	0	-9450
Jun-2022	0	15	88	0	0	33	-67	69	0	0	53	348	401	-331	0	-9782
Jul-2022	0	15	110	0	0	35	-215	-56	0	0	53	322	376	-431	0	-10213
Aug-2022	0	15	101	0	0	35	-276	-125	0	0	52	310	362	-487	0	-10700
Sep-2022	0	15	80	0	0	34	-184	-56	0	0	49	321	371	-427	0	-11127
Oct-2022	0	15	58	0	0	35	-80	29	0	0	49	366	415	-386	0	-11513
Nov-2022	0	15	39	0	0	34	53	141	0	0	46	394	441	-300	0	-11813
Dec-2022	0	15	29	0	0	35	146	226	0	0	46	438	484	-258	0	-12071
Jan-2023	100	15	29	405	0	35	203	788	0	0	89	470	559	229	0	-11842
Feb-2023	516	14	40	1369	0	25	131	2095	0	0	143	458	601	1493	1	-10350
Mar-2023	1023	15	51	1202	0	32	63	2385	0	0	215	486	701	1684	0	-8665
Apr-2023	0	15	71	19	0	31	29	164	0	0	193	439	632	-468	0	-9133
May-2023	0	15	82	42	0	33	-65	107	0	0	183	414	596	-489	0	-9622
Jun-2023	0	15	88	0	0	32	-170	-34	0	0	158	359	517	-552	0	-10173
Jul-2023	0	15	110	37	0	34	-311	-115	0	0	148	332	480	-594	0	-10768
Aug-2023	0	15	101	0	0	35	-362	-211	0	0	130	319	449	-660	0	-11427
Sep-2023	0	15	80	0	0	34	-258	-129	0	0	111	333	444	-573	0	-12000
Oct-2023	45	15	58	191	0	36	-160	187	0	0	121	381	502	-315	0	-12315
Nov-2023	0	15	39	0	0	35	-29	60	0	0	105	412	517	-458	0	-12773
Dec-2023	537	15	29	895	0	36	28	1541	0	0	183	457	640	901	0	-11872
Jan-2024	526	15	29	1583	0	28	10	2191	0	0	231	496	727	1464	0	-10408
Feb-2024	2669	14	40	1466	0	25	2	4217	0	0	295	490	785	3432	0	-6977
Mar-2024	1561	15	51	1446	0	32	-66	3039	0	0	352	506	858	2181	0	-4796
Apr-2024	24	15	71	0	0	34	-54	90	0	0	323	453	776	-686	0	-5481
May-2024	55	15	82	0	0	36	-124	64	0	0	311	429	740	-676	0	-6157
Jun-2024	0	15	88	242	0	35	-218	163	0	0	289	375	664	-501	0	-6658
Jul-2024	48	15	110	0	0	37	-347	-137	0	0	281	347	628	-765	0	-7423
Aug-2024	0	15	101	0	0	37	-388	-235	0	0	258	334	592	-826	0	-8249
Sep-2024	0	15	80	0	0	37	-274	-143	0	0	229	350	579	-721	0	-8971
Oct-2024	249	15	58	212	0	38	-168	405	0	0	235	400	635	-230	0	-9201
Nov-2024	0	15	39	280	0	37	-31	339	0	0	222	432	654	-314	0	-9515
Dec-2024	1163	15	29	373	0	39	51	1670	0	0	265	480	745	925	0	-8590
Jan-2025	2553	15	29	462	0	38	291	3389	0	0	334	558	891	2497	0	-6093
Feb-2025	1750	14	40	1429	0	28	309	3570	0	0	344	562	906	2664	0	-3429
Mar-2025	637	15	51	1514	0	29	315	2561	0	0	390	622	1011	1549	0	-1880
Apr-2025	0	15	71	404	0	35	350	875	0	0	362	576	938	-63	0	-1943

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2025	0	15	82	0	0	37	326	460	0	0	354	563	917	-457	0	-2400
Jun-2025	97	15	89	0	0	36	252	488	0	0	328	508	836	-348	0	-2748
Jul-2025	0	15	110	0	0	37	169	331	0	0	319	483	803	-471	0	-3219
Aug-2025	0	15	101	0	0	37	129	282	0	0	301	461	761	-480	0	-3698
Sep-2025	0	15	80	0	0	35	186	316	0	0	272	463	735	-420	0	-4118
Oct-2025	85	15	58	751	0	36	267	1213	0	0	296	503	799	414	0	-3704
Nov-2025	112	15	39	684	0	34	343	1227	0	0	295	516	812	415	0	-3289
Dec-2025	149	15	29	1505	0	27	321	2048	0	0	331	569	900	1147	0	-2142
Jan-2026	0	15	29	0	0	33	405	482	0	0	319	583	901	-419	0	-2562
Feb-2026	0	14	40	0	0	30	415	499	0	0	276	542	817	-320	1	-2881
Mar-2026	0	15	51	0	0	33	433	533	0	0	287	589	876	-343	0	-3224
Apr-2026	0	15	71	0	0	32	359	477	0	0	261	547	808	-331	0	-3555
May-2026	0	15	82	0	0	33	290	420	0	0	253	534	787	-367	0	-3922
Jun-2026	0	15	89	0	0	31	191	326	0	0	231	482	713	-387	0	-4309
Jul-2026	0	15	110	0	0	32	70	228	0	0	224	459	682	-455	0	-4764
Aug-2026	0	15	101	0	0	32	8	157	0	0	209	438	647	-490	0	-5253
Sep-2026	0	15	80	0	0	31	67	193	0	0	189	443	631	-438	0	-5692
Oct-2026	0	15	59	0	0	32	166	272	0	0	182	481	663	-392	0	-6083
Nov-2026	0	15	39	0	0	31	255	339	0	0	165	492	657	-317	0	-6401
Dec-2026	0	15	29	0	0	32	328	404	0	0	158	527	685	-281	0	-6682
Jan-2027	3296	15	29	1406	0	26	169	4942	0	0	317	497	814	4127	0	-2555
Feb-2027	289	14	40	1396	0	21	209	1968	0	0	301	483	784	1184	0	-1370
Mar-2027	1245	15	51	1024	0	27	224	2586	0	0	365	513	878	1708	0	338
Apr-2027	108	15	71	64	0	27	180	464	0	0	338	459	796	-332	0	6
May-2027	39	15	82	335	0	28	97	597	0	0	335	428	764	-166	-1	-160
Jun-2027	114	15	89	0	0	27	2	246	0	0	310	370	680	-434	0	-594
Jul-2027	0	15	110	0	0	28	-112	42	0	0	300	341	641	-599	0	-1193
Aug-2027	0	15	101	0	0	28	-150	-5	0	0	277	325	603	-608	0	-1801
Sep-2027	0	15	80	0	0	28	-56	66	0	0	248	335	583	-516	-1	-2317
Oct-2027	0	15	59	640	0	29	53	796	0	0	271	375	647	149	0	-2168
Nov-2027	0	15	39	522	0	28	169	773	0	0	265	404	669	104	0	-2064
Dec-2027	349	15	29	1559	0	22	245	2219	0	0	314	512	826	1393	0	-671
Jan-2028	247	15	29	1427	0	19	342	2080	0	0	334	579	913	1167	0	496
Feb-2028	561	14	40	55	0	24	415	1109	0	0	317	554	871	238	0	734
Mar-2028	173	15	51	0	0	27	434	701	0	0	325	578	903	-202	0	532
Apr-2028	11	15	71	0	0	27	371	494	0	0	297	533	830	-336	0	195
May-2028	57	15	82	0	0	28	309	491	0	0	286	517	803	-312	0	-116
Jun-2028	0	15	89	0	0	27	219	349	0	0	258	464	722	-372	0	-489
Jul-2028	0	15	110	12	0	28	120	285	0	0	248	438	686	-400	0	-889
Aug-2028	0	15	101	0	0	28	70	214	0	0	231	415	646	-432	0	-1321

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Sep-2028	0	15	80	128	0	27	118	367	0	0	212	418	630	-262	0	-1584
Oct-2028	108	15	59	0	0	28	199	409	0	0	204	453	657	-248	0	-1832
Nov-2028	88	15	39	898	0	26	243	1310	0	0	244	464	708	601	0	-1230
Dec-2028	725	15	29	1430	0	18	196	2414	0	0	301	497	798	1616	0	386
Jan-2029	201	15	29	111	0	24	304	685	0	0	293	510	803	-119	0	267
Feb-2029	7	14	40	699	0	22	318	1099	0	0	268	478	746	354	0	621
Mar-2029	0	15	51	126	0	24	344	561	0	0	282	520	803	-241	0	380
Apr-2029	0	15	71	72	0	24	289	471	0	0	257	483	740	-268	0	111
May-2029	0	15	83	175	0	25	231	528	0	0	252	470	722	-194	0	-83
Jun-2029	0	15	89	2	0	24	150	280	0	0	225	422	647	-367	0	-450
Jul-2029	2	15	110	0	0	25	55	208	0	0	216	397	613	-405	0	-856
Aug-2029	0	15	101	0	0	26	10	152	0	0	199	377	577	-425	0	-1281
Sep-2029	16	15	80	7	0	25	66	209	0	0	181	383	564	-355	0	-1635
Oct-2029	0	15	59	10	0	26	148	259	0	0	176	418	594	-335	0	-1970
Nov-2029	112	15	39	43	0	25	222	457	0	0	164	430	594	-138	0	-2108
Dec-2029	203	15	29	44	0	26	283	600	0	0	166	463	629	-29	0	-2137
Jan-2030	575	15	29	1529	0	19	386	2555	0	0	248	579	827	1727	0	-409
Feb-2030	3626	14	40	924	0	20	456	5079	0	0	334	599	932	4147	0	3738
Mar-2030	656	15	51	1558	0	18	443	2742	0	0	379	689	1069	1673	0	5410
Apr-2030	376	15	71	1531	0	17	231	2242	0	0	374	601	976	1266	0	6676
May-2030	906	15	83	0	0	22	192	1218	0	0	391	561	952	266	0	6942
Jun-2030	10	15	89	682	0	23	118	936	0	0	371	498	869	67	0	7010
Jul-2030	0	15	110	0	0	24	31	181	0	0	367	471	838	-656	0	6353
Aug-2030	0	15	101	0	0	24	-5	136	0	0	349	446	795	-659	0	5694
Sep-2030	35	15	80	14	0	24	60	227	0	0	322	446	768	-540	-1	5155
Oct-2030	54	15	59	0	0	25	148	302	0	0	313	481	794	-492	0	4662
Nov-2030	224	15	39	0	0	24	226	529	0	0	288	490	778	-250	0	4413
Dec-2030	229	15	29	71	0	25	291	661	0	0	286	525	811	-150	0	4262
Jan-2031	0	15	29	0	0	25	349	419	0	0	262	543	805	-386	0	3876
Feb-2031	0	14	40	0	0	23	362	438	0	0	219	507	727	-289	0	3588
Mar-2031	0	15	51	0	0	25	381	474	0	0	224	554	778	-304	0	3284
Apr-2031	0	15	71	0	0	25	320	431	0	0	201	516	717	-286	0	2998
May-2031	0	15	83	0	0	26	263	386	0	0	195	505	700	-313	0	2684
Jun-2031	0	15	89	0	0	25	178	307	0	0	178	456	634	-327	0	2357
Jul-2031	0	15	110	0	0	26	83	235	0	0	173	432	605	-370	0	1987
Aug-2031	0	15	101	0	0	26	36	178	0	0	161	410	571	-392	0	1595
Sep-2031	0	15	80	0	0	25	89	210	0	0	144	412	556	-346	0	1249
Oct-2031	0	15	59	0	0	26	170	270	0	0	137	446	583	-313	0	936
Nov-2031	0	15	39	0	0	26	243	322	0	0	122	456	578	-256	0	680
Dec-2031	0	15	29	0	0	26	304	376	0	0	116	489	605	-230	0	450

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2032	28	15	29	212	0	26	350	661	0	0	133	508	641	20	0	471
Feb-2032	217	14	40	390	0	25	363	1049	0	0	158	493	650	399	0	869
Mar-2032	72	15	52	123	0	26	366	654	0	0	168	519	687	-33	0	836
Apr-2032	48	15	71	93	0	25	303	556	0	0	158	483	641	-85	0	751
May-2032	0	15	83	0	0	26	244	369	0	0	150	471	621	-252	0	499
Jun-2032	0	15	89	0	0	25	159	288	0	0	136	423	559	-270	0	229
Jul-2032	0	15	111	0	0	26	62	215	0	0	130	399	529	-314	0	-85
Aug-2032	7	15	101	0	0	27	14	165	0	0	121	378	498	-334	0	-419
Sep-2032	0	15	80	0	0	26	68	189	0	0	108	382	489	-300	0	-720
Oct-2032	26	15	59	8	0	27	146	281	0	0	105	416	521	-240	0	-960
Nov-2032	0	15	39	115	0	26	218	413	0	0	106	427	534	-121	0	-1080
Dec-2032	0	15	29	47	0	27	279	397	0	0	106	460	566	-169	0	-1249
Jan-2033	626	15	30	852	0	26	178	1727	0	0	192	438	630	1097	0	-152
Feb-2033	1154	14	40	280	0	23	200	1711	0	0	207	416	623	1088	1	935
Mar-2033	362	15	52	209	0	26	180	844	0	0	224	449	673	171	0	1107
Apr-2033	274	15	71	27	0	25	95	508	0	0	204	406	610	-102	0	1005
May-2033	0	15	83	66	0	26	-1	189	0	0	191	384	575	-386	0	619
Jun-2033	0	15	89	5	0	26	-104	31	0	0	168	338	506	-474	0	145
Jul-2033	0	15	111	0	0	27	-239	-85	0	0	160	322	482	-567	0	-422
Aug-2033	0	15	101	0	0	28	-288	-143	0	0	149	315	464	-607	0	-1029
Sep-2033	0	15	80	11	0	28	-201	-68	0	0	135	316	451	-519	0	-1548
Oct-2033	24	15	59	0	0	29	-85	42	0	0	130	352	482	-440	0	-1989
Nov-2033	341	15	39	1420	0	27	-81	1761	0	0	204	370	574	1187	0	-801
Dec-2033	139	15	30	1536	0	22	-33	1709	0	0	250	423	673	1036	0	235
Jan-2034	0	15	30	0	0	27	168	240	0	0	233	454	687	-447	0	-212
Feb-2034	0	14	40	0	0	26	250	330	0	0	196	437	633	-303	0	-515
Mar-2034	0	15	52	0	0	29	260	355	0	0	196	470	666	-310	0	-826
Apr-2034	0	15	71	0	0	28	184	299	0	0	168	424	592	-293	0	-1119
May-2034	0	15	83	0	0	29	99	226	0	0	153	399	552	-325	0	-1444
Jun-2034	0	15	89	0	0	28	-2	130	0	0	132	348	480	-350	0	-1794
Jul-2034	0	15	111	0	0	29	-117	39	0	0	123	327	450	-411	0	-2206
Aug-2034	0	15	101	0	0	30	-157	-10	0	0	113	316	429	-440	0	-2645
Sep-2034	0	15	80	0	0	29	-77	47	0	0	100	319	419	-371	-1	-3016
Oct-2034	0	15	59	0	0	30	26	130	0	0	95	354	450	-320	0	-3336
Nov-2034	0	15	39	0	0	29	135	218	0	0	86	377	463	-245	0	-3581
Dec-2034	0	15	30	0	0	30	215	289	0	0	83	417	499	-210	0	-3791
Jan-2035	0	15	30	63	0	30	285	422	0	0	83	444	528	-106	0	-3897
Feb-2035	452	14	40	777	0	26	289	1598	0	0	150	426	576	1022	0	-2874
Mar-2035	119	15	52	36	0	29	292	543	0	0	154	459	613	-71	1	-2945
Apr-2035	118	15	71	19	0	28	209	460	0	0	136	415	550	-90	0	-3036

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Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2035	85	15	83	0	0	29	118	331	0	0	125	390	515	-184	0	-3220
Jun-2035	0	15	89	0	0	28	15	147	0	0	107	340	447	-300	0	-3520
Jul-2035	1	15	111	0	0	29	-102	55	0	0	99	319	418	-364	0	-3883
Aug-2035	0	15	101	0	0	30	-144	2	0	0	91	309	400	-397	0	-4281
Sep-2035	0	15	80	0	0	29	-65	59	0	0	82	312	394	-335	0	-4615
Oct-2035	55	15	59	461	0	30	27	647	0	0	136	348	484	163	0	-4452
Nov-2035	32	15	39	62	0	29	136	312	0	0	126	372	497	-185	0	-4637
Dec-2035	129	15	30	822	0	29	186	1212	0	0	182	411	593	618	0	-4019

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Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	1587	12	25	2842	0	1176	504	-1205	4941	677	554	74	541	1846	3095	0	3095
Feb-2012	2241	12	34	1831	0	1102	494	-960	4754	530	680	100	537	1848	2906	0	6001
Mar-2012	741	12	44	2411	0	1358	554	-1137	3983	712	760	127	547	2146	1836	1	7837
Apr-2012	55	12	61	1094	0	1256	512	-713	2277	914	652	113	560	2239	40	-3	7877
May-2012	61	12	70	328	0	1285	497	-398	1856	1186	609	104	598	2498	-641	0	7236
Jun-2012	0	12	76	330	0	1244	446	-227	1882	1402	531	91	591	2616	-734	0	6502
Jul-2012	0	12	94	361	0	1289	420	-96	2082	1752	487	85	615	2939	-857	0	5645
Aug-2012	0	12	86	384	0	1284	398	-46	2118	1810	450	78	620	2957	-839	0	4806
Sep-2012	0	12	68	385	0	1222	400	-151	1936	1449	424	71	599	2542	-605	-2	4201
Oct-2012	0	12	50	1391	0	1242	434	-496	2633	1221	443	75	619	2358	275	0	4476
Nov-2012	0	12	33	3650	0	1171	444	-1306	4005	923	452	94	592	2061	1944	0	6420
Dec-2012	208	12	25	766	0	1200	477	-648	2040	811	500	90	607	2008	31	0	6451
Jan-2013	90	12	25	375	0	1191	499	-577	1615	677	516	86	604	1883	-268	0	6183
Feb-2013	31	11	34	334	0	1068	470	-554	1394	512	469	74	542	1597	-203	0	5980
Mar-2013	104	12	44	362	0	1186	514	-555	1668	712	522	79	605	1919	-253	1	5727
Apr-2013	9	12	61	352	0	1155	478	-440	1627	914	490	73	582	2059	-432	0	5296
May-2013	0	12	70	371	0	1202	466	-340	1782	1186	486	71	607	2350	-568	0	4727
Jun-2013	0	12	76	370	0	1171	419	-208	1840	1402	443	64	596	2506	-665	0	4062
Jul-2013	0	12	94	402	0	1217	395	-86	2035	1752	416	61	626	2855	-820	0	3242
Aug-2013	0	12	86	423	0	1215	374	-40	2070	1810	389	56	639	2893	-823	0	2419
Sep-2013	0	12	68	424	0	1157	377	-147	1891	1449	369	51	621	2491	-598	-1	1821
Oct-2013	11	12	50	444	0	1177	412	-257	1850	1221	389	51	644	2304	-454	0	1367
Nov-2013	69	12	33	427	0	1123	423	-358	1730	923	389	48	621	1982	-252	0	1115
Dec-2013	4	12	25	439	0	1150	456	-443	1643	811	410	49	641	1912	-269	0	846
Jan-2014	355	12	25	1818	0	1163	434	-721	3087	970	421	60	660	2111	976	0	1822
Feb-2014	129	11	34	1577	0	1050	411	-764	2449	720	378	58	586	1742	706	0	2528
Mar-2014	1012	12	44	1819	0	1175	422	-730	3755	1005	466	87	656	2214	1539	2	4066
Apr-2014	116	12	61	1435	0	1162	393	-568	2610	1285	408	76	643	2412	199	-1	4266
May-2014	14	12	71	478	0	1233	371	-159	2020	1676	381	67	678	2803	-782	0	3483
Jun-2014	0	12	76	440	0	1228	326	50	2132	1988	336	56	671	3051	-919	0	2565
Jul-2014	0	12	94	464	0	1310	312	233	2426	2484	304	48	707	3542	-1116	0	1449
Aug-2014	0	12	86	748	0	1337	306	272	2761	2576	273	40	716	3605	-844	0	605
Sep-2014	109	12	68	887	0	1285	304	86	2751	2063	260	35	680	3038	-285	-1	320
Oct-2014	27	12	50	879	0	1310	337	-56	2559	1745	273	34	690	2741	-182	0	138
Nov-2014	569	12	33	1597	0	1243	357	-450	3361	1323	299	38	653	2314	1047	0	1185
Dec-2014	314	12	25	1287	0	1265	397	-487	2814	1165	329	44	667	2206	607	0	1792
Jan-2015	1871	12	25	447	0	1223	467	-531	3514	677	427	59	636	1800	1714	0	3506
Feb-2015	1479	11	34	451	0	1189	475	-574	3065	512	437	65	568	1582	1483	0	4989
Mar-2015	2821	12	44	1481	0	1234	522	-712	5402	712	697	126	621	2156	3245	1	8234
Apr-2015	995	12	61	743	0	1218	494	-448	3075	914	679	119	601	2313	757	4	8991

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Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2015	43	12	71	322	0	1247	479	-270	1903	1186	602	110	636	2535	-631	0	8360
Jun-2015	0	12	76	323	0	1210	429	-125	1926	1402	538	97	590	2627	-701	0	7659
Jul-2015	0	12	94	352	0	1257	404	1	2122	1752	502	90	607	2951	-829	0	6830
Aug-2015	253	12	87	364	0	1255	383	51	2405	1810	480	85	620	2995	-590	0	6241
Sep-2015	399	12	68	654	0	1196	386	-88	2629	1449	464	82	612	2607	22	-1	6263
Oct-2015	376	12	50	1260	0	1217	420	-350	2984	1221	502	95	634	2453	531	0	6794
Nov-2015	1088	12	33	2539	0	1143	438	-827	4426	923	584	127	612	2246	2180	0	8974
Dec-2015	1107	12	25	2802	0	1485	548	-1138	4842	811	720	159	632	2321	2520	0	11494
Jan-2016	0	12	25	315	0	1307	545	-589	1616	677	675	144	638	2135	-519	0	10975
Feb-2016	0	12	34	297	0	1194	517	-509	1544	530	613	126	594	1863	-319	0	10656
Mar-2016	0	12	44	319	0	1276	540	-472	1720	712	638	126	638	2115	-395	0	10261
Apr-2016	0	12	61	311	0	1242	502	-363	1765	914	588	114	619	2235	-469	-1	9792
May-2016	0	12	71	326	0	1292	490	-267	1925	1186	570	109	647	2513	-587	0	9205
Jun-2016	0	12	76	321	0	1259	442	-143	1967	1402	508	98	634	2642	-675	0	8530
Jul-2016	0	12	95	347	0	1308	420	-28	2153	1752	466	93	663	2974	-820	0	7710
Aug-2016	0	12	87	368	0	1305	399	9	2180	1810	427	85	672	2994	-814	0	6896
Sep-2016	0	12	69	371	0	1243	400	-105	1990	1449	399	77	651	2576	-584	-1	6311
Oct-2016	0	12	50	389	0	1265	434	-217	1934	1221	417	76	671	2385	-451	0	5860
Nov-2016	0	12	34	375	0	1206	445	-320	1752	923	417	71	648	2059	-306	0	5554
Dec-2016	0	12	25	383	0	1234	478	-403	1730	811	447	71	667	1995	-265	0	5289
Jan-2017	0	12	25	389	0	1249	458	-348	1785	970	437	67	683	2157	-372	0	4917
Feb-2017	0	11	34	353	0	1129	431	-385	1573	720	390	58	605	1773	-200	0	4717
Mar-2017	0	12	44	396	0	1265	463	-364	1817	1005	418	61	675	2160	-341	-2	4376
Apr-2017	0	12	61	395	0	1246	420	-234	1901	1285	377	56	659	2377	-475	-1	3901
May-2017	0	12	71	429	0	1317	397	-92	2134	1676	357	53	696	2782	-647	0	3253
Jun-2017	0	12	76	440	0	1305	350	70	2254	1988	317	47	689	3041	-786	0	2467
Jul-2017	0	12	95	466	0	1386	335	240	2534	2484	288	41	726	3539	-1005	0	1462
Aug-2017	0	12	87	471	0	1409	328	299	2606	2576	260	34	739	3608	-1001	0	461
Sep-2017	0	12	69	459	0	1351	325	157	2373	2063	243	30	704	3039	-665	-1	-204
Oct-2017	0	12	50	475	0	1375	357	16	2286	1745	256	29	716	2746	-460	0	-664
Nov-2017	0	12	34	459	0	1306	378	-149	2041	1323	260	28	679	2289	-249	0	-913
Dec-2017	0	12	25	474	0	1329	417	-269	1990	1165	282	29	691	2168	-178	0	-1092
Jan-2018	534	12	25	1341	0	1309	444	-594	3072	970	316	33	680	1998	1073	0	-18
Feb-2018	609	11	34	681	0	1165	426	-488	2438	720	309	33	601	1663	775	0	757
Mar-2018	493	12	44	1165	0	1291	460	-599	2867	1005	352	40	671	2068	796	3	1553
Apr-2018	81	12	61	508	0	1263	417	-321	2020	1285	325	38	648	2296	-275	0	1277
May-2018	0	12	71	466	0	1328	395	-148	2124	1676	317	37	680	2710	-586	0	691
Jun-2018	0	12	76	454	0	1312	348	31	2234	1988	284	33	672	2977	-743	0	-51
Jul-2018	5	12	95	512	0	1390	330	208	2553	2484	257	30	709	3479	-926	0	-977
Aug-2018	0	12	87	485	0	1411	322	273	2591	2576	229	26	722	3553	-962	0	-1939

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Sep-2018	163	12	69	462	0	1352	321	135	2514	2063	221	24	689	2996	-480	-1	-2420
Oct-2018	62	12	51	1586	0	1372	351	-288	3146	1745	236	24	702	2707	439	0	-1981
Nov-2018	142	12	34	1567	0	1298	374	-499	2928	1323	247	25	668	2262	666	0	-1315
Dec-2018	22	12	25	1678	0	1317	414	-667	2802	1165	270	27	682	2145	657	0	-659
Jan-2019	39	12	25	474	0	1270	484	-649	1656	677	291	29	650	1648	8	0	-651
Feb-2019	11	11	34	428	0	1119	463	-652	1415	512	269	28	577	1386	26	3	-625
Mar-2019	31	12	44	472	0	1228	508	-690	1606	712	302	32	641	1688	-82	0	-706
Apr-2019	3	12	61	457	0	1186	473	-586	1605	914	291	32	611	1848	-242	0	-949
May-2019	0	12	71	472	0	1227	461	-497	1747	1186	290	34	647	2156	-410	0	-1359
Jun-2019	0	12	77	458	0	1190	415	-360	1792	1402	267	32	636	2338	-545	0	-1904
Jul-2019	2	12	95	475	0	1235	393	-263	1950	1752	248	31	665	2696	-747	0	-2650
Aug-2019	0	12	87	478	0	1231	376	-225	1959	1810	230	28	674	2742	-783	0	-3433
Sep-2019	0	12	69	464	0	1172	382	-329	1770	1449	217	26	653	2345	-574	0	-4008
Oct-2019	64	12	51	479	0	1192	418	-423	1792	1221	236	27	674	2158	-366	0	-4373
Nov-2019	70	12	34	462	0	1137	430	-512	1633	923	244	26	648	1841	-208	0	-4581
Dec-2019	88	12	25	476	0	1163	463	-598	1630	811	267	28	666	1772	-143	0	-4724
Jan-2020	200	12	25	682	0	1179	442	-577	1965	970	269	28	680	1947	18	0	-4705
Feb-2020	207	12	34	885	0	1104	425	-689	1979	746	250	27	623	1646	331	1	-4374
Mar-2020	71	12	45	779	0	1197	444	-645	1903	1005	255	27	669	1957	-54	0	-4428
Apr-2020	243	12	62	533	0	1184	403	-470	1967	1285	232	25	652	2195	-228	0	-4656
May-2020	6	12	72	481	0	1256	381	-326	1882	1676	210	24	686	2596	-714	0	-5369
Jun-2020	0	12	77	469	0	1251	334	-150	1993	1988	173	20	677	2858	-864	0	-6234
Jul-2020	0	12	96	495	0	1335	317	-44	2210	2484	133	17	712	3347	-1136	0	-7370
Aug-2020	0	12	88	503	0	1363	310	-5	2270	2576	100	15	724	3415	-1144	0	-8514
Sep-2020	6	12	69	633	0	1312	315	-159	2188	2063	81	12	686	2842	-654	0	-9169
Oct-2020	0	12	51	706	0	1340	354	-326	2137	1745	82	12	691	2529	-392	0	-9560
Nov-2020	56	12	34	575	0	1275	380	-444	1889	1323	90	12	647	2072	-183	0	-9744
Dec-2020	437	12	25	504	0	1301	421	-560	2141	1165	117	14	654	1950	191	0	-9552
Jan-2021	0	12	26	503	0	1283	450	-634	1640	970	127	14	640	1751	-111	0	-9663
Feb-2021	0	11	35	454	0	1141	432	-657	1416	720	120	13	564	1417	-1	0	-9664
Mar-2021	0	12	45	502	0	1265	465	-663	1628	1005	134	15	629	1784	-156	0	-9820
Apr-2021	0	12	62	486	0	1238	420	-512	1707	1285	122	14	616	2037	-329	-1	-10149
May-2021	0	12	72	504	0	1303	394	-362	1923	1676	114	14	653	2457	-534	0	-10683
Jun-2021	0	12	77	488	0	1288	343	-172	2037	1988	94	13	650	2745	-708	0	-11391
Jul-2021	0	12	96	508	0	1366	319	-10	2291	2484	68	12	692	3256	-964	0	-12355
Aug-2021	0	12	88	510	0	1388	307	52	2357	2576	46	10	707	3339	-982	0	-13337
Sep-2021	0	12	70	495	0	1331	315	-94	2128	2063	39	9	673	2783	-654	-1	-13991
Oct-2021	0	12	51	511	0	1354	355	-234	2050	1745	47	10	678	2479	-429	0	-14420
Nov-2021	0	12	34	494	0	1284	382	-390	1817	1323	57	10	635	2025	-209	0	-14629
Dec-2021	0	12	26	510	0	1306	424	-519	1759	1165	73	11	640	1890	-131	0	-14759

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Jan-2022	0	12	26	509	0	1287	455	-671	1618	970	83	11	623	1688	-70	0	-14829
Feb-2022	0	11	35	459	0	1145	439	-720	1369	720	78	10	547	1356	11	2	-14818
Mar-2022	0	12	45	508	0	1270	473	-751	1558	1005	86	11	610	1712	-154	0	-14971
Apr-2022	0	12	62	493	0	1243	427	-607	1631	1285	72	10	598	1966	-334	0	-15306
May-2022	0	12	72	510	0	1309	402	-467	1838	1676	59	10	636	2382	-544	0	-15850
Jun-2022	0	12	78	496	0	1295	348	-277	1952	1988	41	9	636	2673	-721	0	-16571
Jul-2022	0	12	97	522	0	1374	322	-158	2170	2484	15	8	677	3184	-1014	0	-17585
Aug-2022	0	12	89	534	0	1397	310	-108	2235	2576	2	7	693	3278	-1043	0	-18628
Sep-2022	0	12	70	524	0	1341	321	-258	2012	2063	0	6	658	2727	-715	0	-19343
Oct-2022	0	12	51	541	0	1367	366	-423	1915	1745	0	6	661	2412	-497	0	-19840
Nov-2022	0	12	34	518	0	1298	394	-542	1714	1323	2	6	617	1948	-234	0	-20074
Dec-2022	0	12	26	531	0	1322	438	-670	1658	1165	8	7	619	1800	-142	0	-20216
Jan-2023	116	12	26	1324	0	1301	470	-1051	2199	970	13	7	599	1590	608	1	-19608
Feb-2023	599	11	35	1996	0	1141	458	-1308	2933	720	23	7	510	1261	1670	3	-17938
Mar-2023	1187	12	45	1690	0	1279	486	-1313	3387	1005	45	9	564	1623	1762	1	-16176
Apr-2023	0	12	63	547	0	1256	439	-914	1404	1285	25	8	568	1886	-482	0	-16658
May-2023	0	12	73	624	0	1326	414	-739	1709	1676	10	7	612	2306	-597	0	-17255
Jun-2023	0	12	78	523	0	1314	359	-521	1765	1988	0	6	617	2611	-845	0	-18100
Jul-2023	0	12	97	635	0	1397	332	-377	2097	2484	0	4	657	3145	-1048	0	-19148
Aug-2023	0	12	89	551	0	1422	319	-301	2092	2576	0	3	665	3243	-1152	0	-20300
Sep-2023	0	12	70	533	0	1367	333	-438	1878	2063	0	2	626	2691	-812	-1	-21112
Oct-2023	52	12	52	974	0	1395	381	-694	2173	1745	0	2	625	2371	-197	-1	-21310
Nov-2023	0	12	34	533	0	1328	412	-804	1517	1323	0	1	580	1905	-388	0	-21698
Dec-2023	624	12	26	1548	0	1354	457	-1131	2891	1165	0	2	572	1740	1151	0	-20547
Jan-2024	611	12	26	2859	0	1317	496	-1696	3627	970	0	3	547	1520	2106	0	-18441
Feb-2024	3099	12	35	2585	0	1213	490	-1749	5684	746	14	7	492	1259	4425	0	-14016
Mar-2024	1812	12	45	2490	0	1299	506	-1730	4436	1005	40	9	537	1591	2845	1	-11171
Apr-2024	28	12	63	506	0	1292	453	-1066	1288	1285	25	8	531	1849	-560	-1	-11731
May-2024	63	12	73	529	0	1369	429	-847	1628	1676	10	7	585	2279	-651	0	-12382
Jun-2024	0	12	78	1383	0	1359	375	-813	2395	1988	0	6	595	2589	-194	0	-12576
Jul-2024	56	12	98	551	0	1446	347	-503	2008	2484	0	4	637	3125	-1117	0	-13693
Aug-2024	0	12	89	551	0	1474	334	-402	2058	2576	0	3	646	3225	-1166	0	-14859
Sep-2024	0	12	71	533	0	1419	350	-531	1854	2063	0	2	608	2673	-818	-1	-15676
Oct-2024	289	12	52	1308	0	1450	400	-884	2627	1745	0	2	608	2354	272	0	-15404
Nov-2024	0	12	35	1412	0	1381	432	-1099	2172	1323	0	2	565	1890	282	0	-15122
Dec-2024	1350	12	26	1581	0	1410	480	-1286	3574	1165	0	4	558	1727	1847	0	-13275
Jan-2025	2964	12	26	1654	0	1369	558	-1434	5149	677	35	9	519	1240	3909	0	-9366
Feb-2025	2032	11	35	2502	0	1384	562	-1692	4834	512	85	15	471	1083	3752	0	-5614
Mar-2025	740	12	46	2579	0	1459	622	-1824	3633	712	119	32	537	1400	2233	0	-3382
Apr-2025	0	12	63	1861	0	1395	576	-1502	2405	914	116	39	529	1598	807	0	-2575

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Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2025	0	12	73	504	0	1433	563	-1037	1549	1186	124	30	562	1902	-353	0	-2928
Jun-2025	113	12	79	487	0	1384	508	-794	1789	1402	125	25	558	2110	-321	0	-3249
Jul-2025	0	12	98	503	0	1429	483	-642	1884	1752	122	22	588	2484	-599	0	-3848
Aug-2025	0	12	90	503	0	1419	461	-558	1926	1810	123	19	597	2548	-622	0	-4470
Sep-2025	0	12	71	485	0	1348	463	-623	1756	1449	138	18	556	2161	-405	0	-4874
Oct-2025	99	12	52	2386	0	1365	503	-1227	3191	1221	158	30	600	2008	1182	0	-3692
Nov-2025	130	12	35	2246	0	1295	516	-1356	2878	923	173	41	586	1724	1153	0	-2539
Dec-2025	173	12	26	3988	0	1284	569	-2048	4006	811	226	61	559	1657	2349	0	-190
Jan-2026	0	12	26	484	0	1290	583	-1211	1184	677	235	48	585	1545	-361	0	-551
Feb-2026	0	11	35	436	0	1158	542	-1052	1130	512	214	37	530	1293	-165	2	-716
Mar-2026	0	12	46	482	0	1283	589	-1089	1324	712	237	37	595	1581	-258	0	-974
Apr-2026	0	12	63	465	0	1246	547	-940	1394	914	244	33	536	1727	-333	0	-1308
May-2026	0	12	73	481	0	1293	534	-844	1550	1186	239	31	590	2047	-497	0	-1805
Jun-2026	0	12	79	467	0	1256	482	-680	1616	1402	215	28	589	2234	-618	0	-2423
Jul-2026	0	12	98	485	0	1305	459	-579	1780	1752	194	25	621	2592	-811	0	-3234
Aug-2026	0	12	90	489	0	1302	438	-528	1803	1810	176	22	632	2641	-838	0	-4072
Sep-2026	0	12	71	475	0	1241	443	-616	1626	1449	165	20	613	2246	-620	0	-4692
Oct-2026	0	12	52	490	0	1264	481	-714	1585	1221	177	20	635	2053	-468	0	-5160
Nov-2026	0	12	35	474	0	1206	492	-789	1428	923	183	19	611	1737	-308	0	-5468
Dec-2026	0	12	26	488	0	1234	527	-881	1406	811	200	20	629	1660	-254	0	-5722
Jan-2027	3826	12	26	2786	0	1227	497	-1342	7034	970	370	55	620	2016	5018	0	-704
Feb-2027	336	11	35	3252	0	1073	483	-1593	3597	720	322	65	549	1656	1941	0	1237
Mar-2027	1445	12	46	2148	0	1233	513	-1271	4127	1005	394	96	628	2123	2004	0	3241
Apr-2027	125	12	63	678	0	1234	459	-679	1892	1285	338	80	625	2328	-436	0	2804
May-2027	45	12	73	1612	0	1310	428	-700	2781	1676	311	84	667	2738	46	-3	2850
Jun-2027	132	12	79	456	0	1303	370	-237	2115	1988	287	71	631	2977	-861	-1	1990
Jul-2027	0	12	98	475	0	1387	341	0	2314	2484	266	62	648	3460	-1146	0	843
Aug-2027	0	12	90	478	0	1413	325	92	2411	2576	247	54	644	3520	-1109	0	-266
Sep-2027	0	12	71	465	0	1358	335	-44	2198	2063	219	46	642	2969	-767	-4	-1033
Oct-2027	0	12	52	2222	0	1383	375	-638	3406	1745	222	65	665	2696	710	0	-323
Nov-2027	0	12	35	2015	0	1312	404	-821	2957	1323	222	75	635	2255	702	0	379
Dec-2027	406	12	26	6116	0	1230	512	-2394	5908	1165	289	95	586	2136	3772	0	4150
Jan-2028	287	12	26	2067	0	1256	579	-1497	2730	677	320	108	587	1693	1037	0	5187
Feb-2028	651	12	36	549	0	1162	554	-1013	1950	530	331	98	553	1512	438	0	5625
Mar-2028	201	12	46	466	0	1241	578	-936	1609	712	359	98	602	1771	-163	1	5462
Apr-2028	13	12	63	449	0	1203	533	-772	1502	914	354	89	557	1913	-412	1	5050
May-2028	66	12	74	462	0	1247	517	-652	1727	1186	369	86	580	2221	-494	0	4556
Jun-2028	0	12	79	449	0	1212	464	-485	1731	1402	338	76	594	2410	-679	0	3877
Jul-2028	0	12	98	492	0	1259	438	-349	1950	1752	320	71	631	2775	-825	0	3052
Aug-2028	0	12	90	470	0	1255	415	-280	1962	1810	302	64	646	2822	-860	0	2193

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December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Sep-2028	0	12	71	710	0	1196	418	-386	2020	1449	288	57	628	2422	-400	-2	1793
Oct-2028	126	12	52	470	0	1217	453	-479	1852	1221	310	56	650	2238	-386	0	1407
Nov-2028	103	12	35	1651	0	1159	464	-865	2559	923	316	62	628	1929	630	0	2037
Dec-2028	842	12	26	2055	0	1174	497	-1070	3537	811	389	94	622	1916	1621	0	3658
Jan-2029	233	12	26	455	0	1167	510	-771	1633	677	396	84	634	1792	-159	0	3499
Feb-2029	8	11	36	411	0	1047	478	-707	1284	512	350	70	571	1503	-219	0	3279
Mar-2029	0	12	46	450	0	1164	520	-713	1480	712	406	73	592	1782	-303	1	2976
Apr-2029	0	12	64	435	0	1134	483	-586	1541	914	383	66	584	1946	-405	0	2571
May-2029	0	12	74	453	0	1181	470	-486	1704	1186	377	63	623	2250	-546	0	2025
Jun-2029	0	12	79	444	0	1151	422	-341	1767	1402	346	56	617	2421	-653	0	1372
Jul-2029	2	12	99	463	0	1198	397	-211	1961	1752	328	52	648	2780	-819	0	553
Aug-2029	0	12	90	467	0	1197	377	-153	1991	1810	309	46	659	2824	-833	0	-280
Sep-2029	19	12	71	454	0	1141	383	-250	1830	1449	294	41	639	2423	-592	-2	-872
Oct-2029	0	12	52	470	0	1162	418	-359	1756	1221	310	40	660	2231	-475	0	-1346
Nov-2029	131	12	35	453	0	1109	430	-454	1717	923	315	38	637	1913	-196	0	-1542
Dec-2029	235	12	26	466	0	1137	463	-537	1803	811	344	39	656	1850	-47	0	-1590
Jan-2030	668	12	26	2983	0	1703	579	-1459	4514	677	393	64	623	1758	2755	0	1166
Feb-2030	4209	11	36	2011	0	1455	599	-1263	7058	512	648	113	563	1836	5221	0	6387
Mar-2030	762	12	46	2817	0	1528	689	-1541	4314	712	758	147	628	2246	2068	0	8455
Apr-2030	436	12	64	2597	0	1320	601	-1338	3693	914	688	156	611	2368	1325	0	9780
May-2030	1052	12	74	303	0	1353	561	-568	2788	1186	748	155	638	2727	61	-1	9840
Jun-2030	11	12	80	1877	0	1316	498	-694	3100	1402	631	155	625	2814	287	0	10127
Jul-2030	0	12	99	326	0	1374	471	-247	2035	1752	553	144	644	3092	-1057	0	9070
Aug-2030	0	12	91	344	0	1378	446	-148	2123	1810	476	130	667	3083	-960	0	8110
Sep-2030	40	12	72	404	0	1318	446	-248	2044	1449	434	117	649	2648	-601	-2	7509
Oct-2030	63	12	53	370	0	1345	481	-352	1971	1221	448	114	669	2452	-480	0	7029
Nov-2030	260	12	35	350	0	1285	490	-437	1995	923	461	107	641	2132	-138	0	6891
Dec-2030	266	12	26	617	0	1316	525	-536	2227	811	522	110	632	2074	153	0	7044
Jan-2031	0	12	26	350	0	1304	543	-579	1658	677	530	105	629	1941	-284	0	6760
Feb-2031	0	11	36	313	0	1168	507	-571	1464	512	488	91	555	1646	-182	0	6578
Mar-2031	0	12	46	345	0	1294	554	-586	1666	712	540	97	619	1968	-303	0	6275
Apr-2031	0	12	64	333	0	1257	516	-466	1715	914	539	90	548	2091	-376	0	5899
May-2031	0	12	74	346	0	1304	505	-362	1880	1186	553	89	564	2393	-513	0	5387
Jun-2031	0	12	80	343	0	1267	456	-232	1926	1402	493	81	588	2564	-637	0	4749
Jul-2031	0	12	99	375	0	1314	432	-116	2116	1752	452	77	628	2909	-793	0	3956
Aug-2031	0	12	91	398	0	1309	410	-75	2145	1810	413	71	645	2940	-794	0	3162
Sep-2031	0	12	72	398	0	1245	412	-184	1954	1449	384	65	630	2528	-572	-1	2590
Oct-2031	0	12	53	417	0	1265	446	-297	1897	1221	399	64	654	2338	-441	0	2149
Nov-2031	0	12	35	404	0	1206	456	-400	1713	923	395	60	632	2010	-298	0	1851
Dec-2031	0	12	26	413	0	1232	489	-486	1688	811	418	60	654	1943	-255	0	1596

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Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit

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December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2032	32	12	26	408	0	1220	508	-556	1650	677	428	59	651	1815	-165	0	1431
Feb-2032	252	12	36	368	0	1131	493	-574	1716	530	418	56	602	1606	110	0	1541
Mar-2032	84	12	46	388	0	1210	519	-562	1698	712	460	60	623	1855	-158	1	1383
Apr-2032	56	12	64	376	0	1176	483	-453	1714	914	429	56	616	2015	-301	0	1082
May-2032	0	12	74	395	0	1222	471	-358	1817	1186	425	55	636	2303	-487	0	596
Jun-2032	0	12	80	394	0	1188	423	-226	1872	1402	390	51	621	2464	-592	0	3
Jul-2032	0	12	99	427	0	1234	399	-104	2067	1752	362	49	659	2823	-755	0	-752
Aug-2032	8	12	91	447	0	1231	378	-57	2110	1810	340	46	672	2868	-758	0	-1510
Sep-2032	0	12	72	443	0	1171	382	-163	1917	1449	325	42	651	2467	-549	-1	-2059
Oct-2032	30	12	53	460	0	1191	416	-271	1891	1221	344	43	673	2281	-390	0	-2449
Nov-2032	0	12	35	444	0	1135	427	-372	1682	923	344	41	649	1957	-275	0	-2724
Dec-2032	0	12	26	458	0	1161	460	-458	1659	811	365	43	669	1887	-229	0	-2953
Jan-2033	726	12	26	1687	0	1175	438	-680	3386	970	396	50	675	2091	1295	0	-1658
Feb-2033	1339	11	36	1047	0	1064	416	-616	3297	720	408	51	594	1774	1520	3	-138
Mar-2033	421	12	46	969	0	1196	449	-560	2534	1005	430	54	662	2151	383	0	245
Apr-2033	319	12	64	488	0	1183	406	-324	2148	1285	380	50	655	2370	-221	0	24
May-2033	0	12	74	640	0	1256	384	-183	2184	1676	348	45	693	2763	-579	0	-555
Jun-2033	0	12	80	465	0	1250	338	-1	2144	1988	299	38	686	3011	-866	0	-1421
Jul-2033	0	12	99	473	0	1334	322	147	2388	2484	257	32	722	3494	-1106	0	-2527
Aug-2033	0	12	91	478	0	1361	315	192	2449	2576	217	26	732	3551	-1101	0	-3628
Sep-2033	0	12	72	496	0	1310	316	37	2243	2063	192	22	697	2973	-730	0	-4358
Oct-2033	27	12	53	482	0	1336	352	-96	2167	1745	200	22	706	2673	-505	0	-4864
Nov-2033	396	12	35	2481	0	1260	370	-740	3814	1323	223	25	657	2228	1586	0	-3278
Dec-2033	162	12	26	3904	0	1259	423	-1471	4316	1165	248	37	665	2115	2200	0	-1078
Jan-2034	0	12	27	479	0	1258	454	-684	1545	970	254	31	664	1919	-374	0	-1451
Feb-2034	0	11	36	432	0	1126	437	-605	1437	720	232	26	589	1568	-131	0	-1583
Mar-2034	0	12	46	478	0	1253	470	-574	1685	1005	257	28	658	1949	-264	0	-1847
Apr-2034	0	12	64	463	0	1229	424	-414	1779	1285	238	26	643	2192	-413	-1	-2259
May-2034	0	12	74	479	0	1296	399	-252	2008	1676	231	26	680	2612	-603	-1	-2862
Jun-2034	0	12	80	465	0	1283	348	-61	2127	1988	204	23	673	2888	-761	0	-3623
Jul-2034	0	12	100	484	0	1362	327	126	2410	2484	179	21	710	3394	-983	0	-4606
Aug-2034	0	12	91	488	0	1384	316	200	2491	2576	157	19	723	3475	-983	0	-5589
Sep-2034	0	12	72	475	0	1327	319	63	2267	2063	149	18	688	2917	-647	-3	-6236
Oct-2034	0	12	53	491	0	1350	354	-79	2181	1745	162	18	698	2623	-442	0	-6678
Nov-2034	0	12	35	474	0	1281	377	-238	1941	1323	170	18	660	2171	-230	0	-6908
Dec-2034	0	12	27	488	0	1304	417	-359	1888	1165	190	19	671	2046	-158	0	-7066
Jan-2035	0	12	27	532	0	1284	444	-470	1828	970	202	20	658	1850	-22	0	-7088
Feb-2035	524	11	36	861	0	1140	426	-595	2403	720	207	19	581	1528	875	0	-6213
Mar-2035	138	12	46	507	0	1264	459	-529	1898	1005	232	22	649	1908	-12	2	-6225
Apr-2035	136	12	64	479	0	1237	415	-371	1972	1285	234	22	598	2139	-167	0	-6392

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2035	99	12	75	480	0	1301	390	-213	2145	1676	235	22	634	2567	-422	0	-6814
Jun-2035	0	12	80	466	0	1287	340	-28	2158	1988	202	21	645	2855	-697	0	-7511
Jul-2035	1	12	100	486	0	1365	319	155	2438	2484	174	20	686	3363	-925	0	-8436
Aug-2035	0	12	91	492	0	1385	309	224	2514	2576	151	18	701	3445	-931	0	-9367
Sep-2035	0	12	72	478	0	1327	312	83	2285	2063	141	17	669	2889	-603	-1	-9970
Oct-2035	64	12	53	834	0	1350	348	-108	2552	1745	155	17	680	2596	-44	0	-10014
Nov-2035	37	12	35	522	0	1280	372	-235	2023	1323	162	17	644	2146	-123	0	-10137
Dec-2035	149	12	27	1096	0	1302	411	-497	2500	1165	185	19	655	2024	476	0	-9661

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	1427	9	6	2711	144	0	541	-12	4826	596	1285	198	578	2656	2170	0	2170
Feb-2012	2016	8	8	1174	135	0	537	372	4250	618	1404	201	559	2782	1468	0	3638
Mar-2012	667	9	10	1895	144	0	547	245	3517	797	1352	233	571	2952	566	0	4204
Apr-2012	50	8	14	650	140	0	560	674	2096	1065	1006	181	537	2789	-693	0	3511
May-2012	55	9	17	463	144	0	598	890	2176	1301	880	166	551	2899	-722	0	2789
Jun-2012	0	8	18	1329	140	0	591	623	2709	1465	738	148	531	2882	-173	0	2616
Jul-2012	0	9	22	1611	144	0	615	604	3006	1825	650	143	547	3165	-159	0	2456
Aug-2012	0	9	20	1499	144	0	620	605	2898	1778	601	140	546	3065	-168	0	2289
Sep-2012	0	8	16	559	140	0	599	805	2126	1416	600	130	528	2673	-547	0	1742
Oct-2012	0	9	12	880	144	0	619	653	2318	1121	687	144	545	2497	-179	0	1563
Nov-2012	0	8	8	2578	140	0	592	-30	3295	804	756	162	529	2250	1045	0	2608
Dec-2012	187	9	6	569	144	0	607	634	2157	665	905	167	551	2288	-131	0	2476
Jan-2013	81	9	6	520	144	0	604	708	2072	596	962	172	550	2279	-208	0	2269
Feb-2013	28	8	8	375	130	0	542	689	1780	596	860	153	496	2106	-326	0	1943
Mar-2013	94	9	11	426	144	0	605	799	2087	797	930	166	550	2442	-355	0	1589
Apr-2013	8	8	15	1936	140	0	582	337	3026	1065	812	153	530	2561	465	0	2054
May-2013	0	9	17	548	144	0	607	795	2120	1301	763	148	547	2760	-640	0	1414
Jun-2013	0	8	18	520	140	0	596	862	2144	1465	668	136	529	2798	-653	0	761
Jul-2013	0	9	23	577	144	0	626	947	2326	1825	590	130	545	3091	-765	0	-4
Aug-2013	0	9	21	595	144	0	639	942	2350	1778	541	125	544	2989	-640	0	-643
Sep-2013	0	8	17	574	140	0	621	851	2211	1416	538	122	526	2602	-392	0	-1035
Oct-2013	10	9	12	568	144	0	644	827	2214	1121	622	132	544	2420	-206	0	-1241
Nov-2013	62	8	8	509	140	0	621	763	2111	804	693	138	529	2163	-52	0	-1293
Dec-2013	4	9	6	475	144	0	641	772	2051	665	793	151	546	2156	-105	0	-1397
Jan-2014	319	9	6	1139	144	0	660	430	2707	701	892	162	553	2308	399	0	-998
Feb-2014	116	8	9	946	130	0	586	428	2224	671	794	148	498	2110	113	0	-885
Mar-2014	910	9	11	1474	144	0	656	444	3648	902	995	173	567	2637	1012	0	126
Apr-2014	104	8	15	812	140	0	643	667	2390	1198	788	158	535	2679	-289	0	-163
May-2014	12	9	18	522	144	0	678	943	2327	1477	691	151	548	2867	-541	0	-704
Jun-2014	0	8	19	1201	140	0	671	777	2818	1675	577	136	529	2918	-100	0	-804
Jul-2014	0	9	24	1439	144	0	707	765	3088	2088	487	129	546	3250	-161	0	-965
Aug-2014	0	9	22	1449	144	0	716	709	3049	2053	434	124	544	3156	-107	0	-1072
Sep-2014	98	8	17	743	140	0	680	794	2479	1636	447	122	528	2733	-254	0	-1326
Oct-2014	24	9	13	729	144	0	690	773	2381	1308	523	133	545	2509	-128	0	-1454
Nov-2014	512	8	8	917	140	0	653	589	2827	947	667	147	539	2300	528	0	-926
Dec-2014	283	9	6	880	144	0	667	597	2586	792	784	165	554	2294	292	0	-634
Jan-2015	1684	9	7	334	144	0	636	857	3671	596	1151	185	584	2515	1156	0	521
Feb-2015	1330	8	9	267	130	0	568	816	3128	596	1123	171	528	2418	710	0	1231
Mar-2015	2538	9	11	598	144	0	621	860	4782	797	1580	210	609	3196	1586	0	2817
Apr-2015	895	8	16	441	140	0	601	953	3054	1065	1212	188	561	3026	29	0	2846

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2015	39	9	18	432	144	0	636	1013	2292	1301	917	171	556	2945	-654	0	2192
Jun-2015	0	8	20	1236	140	0	590	791	2785	1465	816	155	533	2970	-184	0	2008
Jul-2015	0	9	25	1188	144	0	607	858	2831	1825	743	148	549	3265	-434	0	1574
Aug-2015	227	9	22	922	144	0	620	926	2870	1778	727	143	552	3201	-331	0	1243
Sep-2015	359	8	18	606	140	0	612	904	2648	1416	712	139	538	2804	-156	0	1087
Oct-2015	338	9	13	793	144	0	634	817	2749	1121	846	157	556	2679	70	0	1156
Nov-2015	979	8	9	1450	140	0	612	434	3632	804	1079	173	553	2609	1023	0	2179
Dec-2015	996	9	7	1568	144	0	632	381	3736	665	1313	197	575	2750	986	0	3165
Jan-2016	0	9	7	342	144	0	638	861	2001	596	1108	186	555	2444	-444	0	2721
Feb-2016	0	8	9	354	135	0	594	828	1928	618	954	167	516	2254	-327	0	2395
Mar-2016	0	9	12	407	144	0	638	902	2112	797	950	172	550	2469	-357	0	2037
Apr-2016	0	8	16	433	140	0	619	911	2128	1065	820	156	532	2573	-445	0	1592
May-2016	0	9	19	491	144	0	647	969	2279	1301	762	152	549	2764	-485	0	1107
Jun-2016	0	8	20	513	140	0	634	968	2283	1465	662	139	530	2796	-513	0	594
Jul-2016	0	9	25	571	144	0	663	1040	2452	1825	584	133	547	3090	-638	0	-44
Aug-2016	0	9	23	591	144	0	672	1023	2462	1778	538	128	546	2990	-528	0	-572
Sep-2016	0	8	18	569	140	0	651	922	2308	1416	537	124	528	2605	-297	0	-869
Oct-2016	0	9	13	562	144	0	671	894	2294	1121	623	134	546	2424	-130	0	-998
Nov-2016	0	8	9	504	140	0	648	819	2128	804	688	139	529	2160	-31	0	-1029
Dec-2016	0	9	7	467	144	0	667	827	2120	665	796	153	547	2161	-40	0	-1070
Jan-2017	0	9	7	435	144	0	683	839	2118	701	842	159	548	2249	-131	0	-1201
Feb-2017	0	8	9	391	130	0	605	762	1906	671	759	143	495	2068	-162	0	-1363
Mar-2017	0	9	12	444	144	0	675	870	2154	902	807	155	548	2412	-258	0	-1621
Apr-2017	0	8	17	466	140	0	659	893	2183	1198	700	143	530	2571	-388	0	-2008
May-2017	0	9	20	524	144	0	696	962	2354	1477	643	140	547	2808	-454	0	-2462
Jun-2017	0	8	21	543	140	0	689	974	2375	1675	548	129	529	2881	-507	0	-2969
Jul-2017	0	9	26	604	144	0	726	1061	2570	2088	467	124	546	3224	-653	0	-3622
Aug-2017	0	9	24	626	144	0	739	1048	2590	2053	417	119	545	3134	-544	0	-4166
Sep-2017	0	8	19	604	140	0	704	936	2411	1636	417	116	527	2696	-284	0	-4450
Oct-2017	0	9	14	599	144	0	716	895	2377	1308	494	127	544	2473	-97	0	-4547
Nov-2017	0	8	9	540	140	0	679	809	2185	947	561	132	528	2168	17	0	-4530
Dec-2017	0	9	7	504	144	0	691	810	2165	792	668	147	546	2153	12	0	-4518
Jan-2018	481	9	7	871	144	0	680	622	2813	701	819	158	557	2234	579	0	-3939
Feb-2018	548	8	10	465	130	0	601	706	2468	671	806	146	507	2131	337	0	-3602
Mar-2018	444	9	13	682	144	0	671	725	2688	902	873	161	559	2495	193	0	-3409
Apr-2018	72	8	18	1963	140	0	648	408	3258	1198	716	145	534	2594	664	0	-2744
May-2018	0	9	21	565	144	0	680	876	2295	1477	640	141	548	2806	-511	0	-3255
Jun-2018	0	8	22	543	140	0	672	936	2321	1675	541	129	529	2874	-553	0	-3809
Jul-2018	4	9	28	620	144	0	709	1023	2538	2088	459	124	546	3216	-679	0	-4487
Aug-2018	0	9	25	632	144	0	722	1022	2555	2053	409	119	545	3125	-571	0	-5058

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Sep-2018	147	8	20	601	140	0	689	921	2526	1636	426	117	530	2709	-183	0	-5241
Oct-2018	56	9	15	1145	144	0	702	589	2661	1308	500	128	546	2482	178	0	-5063
Nov-2018	128	8	10	1141	140	0	668	497	2591	947	578	135	531	2191	401	0	-4662
Dec-2018	20	9	7	1260	144	0	682	440	2562	792	676	150	547	2165	397	0	-4265
Jan-2019	35	9	8	564	144	0	650	742	2152	596	749	156	548	2048	104	0	-4161
Feb-2019	10	8	11	411	130	0	577	684	1830	596	682	140	495	1914	-83	0	-4244
Mar-2019	28	9	14	464	144	0	641	771	2071	797	736	153	548	2233	-162	0	-4406
Apr-2019	2	8	20	840	140	0	611	713	2334	1065	691	143	529	2428	-94	0	-4500
May-2019	0	9	23	580	144	0	647	823	2227	1301	613	139	547	2600	-373	0	-4874
Jun-2019	0	8	25	554	140	0	636	838	2202	1465	521	127	528	2641	-440	0	-5313
Jul-2019	1	9	31	614	144	0	665	894	2359	1825	443	122	545	2935	-577	0	-5890
Aug-2019	0	9	28	635	144	0	674	870	2361	1778	398	117	544	2837	-476	0	-6365
Sep-2019	0	8	22	614	140	0	653	765	2202	1416	394	114	526	2450	-247	0	-6613
Oct-2019	57	9	16	609	144	0	674	738	2248	1121	474	125	545	2265	-17	0	-6629
Nov-2019	63	8	11	762	140	0	648	633	2266	804	543	130	529	2006	260	0	-6370
Dec-2019	79	9	8	513	144	0	666	669	2089	665	651	145	548	2008	81	0	-6289
Jan-2020	180	9	9	542	144	0	680	637	2201	701	717	153	550	2121	80	0	-6209
Feb-2020	187	8	13	766	135	0	623	430	2161	695	684	144	516	2039	122	0	-6087
Mar-2020	64	9	16	1392	144	0	669	491	2786	902	686	150	549	2287	499	0	-5588
Apr-2020	219	8	23	855	140	0	652	633	2529	1198	608	139	534	2480	49	0	-5539
May-2020	5	9	26	1459	144	0	686	594	2923	1477	530	135	547	2690	234	0	-5305
Jun-2020	0	8	28	585	140	0	677	760	2198	1675	439	123	528	2766	-568	0	-5873
Jul-2020	0	9	35	648	144	0	712	828	2377	2088	355	116	545	3103	-726	0	-6599
Aug-2020	0	9	32	672	144	0	724	803	2385	2053	301	109	544	3006	-622	0	-7221
Sep-2020	6	8	26	703	140	0	686	657	2226	1636	290	105	526	2557	-331	0	-7552
Oct-2020	0	9	19	729	144	0	691	589	2180	1308	339	115	543	2306	-125	0	-7677
Nov-2020	51	8	12	637	140	0	647	559	2054	947	401	121	528	1997	57	0	-7620
Dec-2020	393	9	9	552	144	0	654	595	2356	792	538	139	554	2023	334	0	-7286
Jan-2021	0	9	11	521	144	0	640	597	1922	701	572	145	547	1965	-43	0	-7329
Feb-2021	0	8	15	465	130	0	564	550	1733	671	524	132	494	1821	-88	0	-7417
Mar-2021	0	9	20	522	144	0	629	646	1970	902	564	144	547	2156	-185	0	-7603
Apr-2021	0	8	27	540	140	0	616	688	2018	1198	487	132	529	2346	-328	0	-7931
May-2021	0	9	31	600	144	0	653	759	2197	1477	447	130	546	2600	-403	0	-8334
Jun-2021	0	8	34	612	140	0	650	785	2230	1675	377	118	527	2698	-468	0	-8802
Jul-2021	0	9	42	666	144	0	692	860	2413	2088	307	111	544	3051	-638	0	-9439
Aug-2021	0	9	38	687	144	0	707	844	2430	2053	266	104	543	2966	-537	0	-9976
Sep-2021	0	8	30	664	140	0	673	734	2249	1636	260	101	525	2522	-273	0	-10249
Oct-2021	0	9	22	668	144	0	678	693	2214	1308	313	112	543	2276	-61	0	-10311
Nov-2021	0	8	15	619	140	0	635	613	2030	947	370	118	526	1961	69	0	-10242
Dec-2021	0	9	11	592	144	0	640	607	2003	792	454	133	545	1924	79	0	-10163

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Jan-2022	0	9	13	549	144	0	623	585	1924	701	511	141	546	1897	26	0	-10137
Feb-2022	0	8	17	487	130	0	547	527	1716	671	475	128	493	1767	-51	0	-10188
Mar-2022	0	9	22	545	144	0	610	609	1939	902	511	140	546	2099	-160	0	-10347
Apr-2022	0	8	31	562	140	0	598	644	1983	1198	441	129	528	2296	-313	0	-10661
May-2022	0	9	36	620	144	0	636	708	2154	1477	401	126	545	2548	-395	0	-11056
Jun-2022	0	8	38	629	140	0	636	732	2183	1675	332	113	527	2648	-465	0	-11520
Jul-2022	0	9	48	687	144	0	677	783	2348	2088	269	105	543	3005	-657	0	-12178
Aug-2022	0	9	44	716	144	0	693	754	2360	2053	236	97	542	2929	-569	0	-12746
Sep-2022	0	8	35	694	140	0	658	639	2174	1636	227	93	524	2481	-307	0	-13053
Oct-2022	0	9	25	699	144	0	661	578	2116	1308	261	102	542	2214	-97	0	-13150
Nov-2022	0	8	17	652	140	0	617	516	1950	947	305	108	526	1886	65	0	-13086
Dec-2022	0	9	13	632	144	0	619	511	1928	792	375	123	544	1835	93	0	-12993
Jan-2023	105	9	13	897	144	0	599	283	2050	701	429	132	547	1809	241	0	-12751
Feb-2023	539	8	18	1915	130	0	510	-249	2872	671	495	129	504	1799	1073	0	-11678
Mar-2023	1068	9	23	1454	144	0	564	51	3314	902	653	150	570	2275	1039	0	-10639
Apr-2023	0	8	32	561	140	0	568	531	1840	1198	449	130	533	2310	-470	0	-11109
May-2023	0	9	38	660	144	0	612	579	2042	1477	375	122	547	2520	-478	0	-11588
Jun-2023	0	8	40	648	140	0	617	617	2070	1675	301	107	528	2611	-541	0	-12129
Jul-2023	0	9	50	739	144	0	657	664	2263	2088	248	96	544	2976	-713	0	-12842
Aug-2023	0	9	46	741	144	0	665	658	2263	2053	218	86	543	2900	-637	0	-13479
Sep-2023	0	8	36	722	140	0	626	547	2080	1636	206	80	525	2447	-367	0	-13846
Oct-2023	47	9	27	874	144	0	625	387	2113	1308	228	87	543	2167	-54	0	-13900
Nov-2023	0	8	18	675	140	0	580	375	1797	947	250	92	526	1815	-18	0	-13918
Dec-2023	561	9	13	1407	144	0	572	5	2712	792	366	114	556	1828	884	0	-13035
Jan-2024	550	9	14	5268	144	0	547	-1303	5229	701	508	131	560	1899	3331	0	-9704
Feb-2024	2788	8	19	2253	135	0	492	-389	5307	695	902	156	572	2325	2982	0	-6722
Mar-2024	1630	9	24	2251	144	0	537	-224	4372	902	919	168	593	2581	1791	0	-4930
Apr-2024	25	8	34	1529	140	0	531	236	2503	1198	579	141	539	2458	45	0	-4885
May-2024	57	9	39	1253	144	0	585	395	2483	1477	437	129	552	2595	-112	0	-4997
Jun-2024	0	8	42	1037	140	0	595	359	2181	1675	338	112	531	2656	-474	0	-5471
Jul-2024	50	9	52	717	144	0	637	605	2215	2088	277	100	548	3013	-798	0	-6269
Aug-2024	0	9	48	726	144	0	646	605	2178	2053	238	89	545	2926	-748	0	-7017
Sep-2024	0	8	38	708	140	0	608	504	2007	1636	222	84	527	2469	-462	0	-7479
Oct-2024	260	9	28	949	144	0	608	304	2300	1308	266	94	550	2218	83	0	-7397
Nov-2024	0	8	18	982	140	0	565	170	1883	947	280	98	528	1854	29	0	-7367
Dec-2024	1215	9	14	1012	144	0	558	178	3130	792	481	128	572	1973	1156	0	-6211
Jan-2025	2666	9	14	968	144	0	519	286	4605	596	906	169	608	2278	2327	0	-3884
Feb-2025	1828	8	19	1461	130	0	471	75	3992	596	998	168	544	2306	1687	0	-2197
Mar-2025	665	9	25	1221	144	0	537	269	2870	797	913	178	573	2461	409	0	-1788
Apr-2025	0	8	35	809	140	0	529	502	2023	1065	668	158	537	2428	-405	0	-2193

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May-2025	0	9	40	687	144	0	562	708	2150	1301	588	150	551	2590	-440	0	-2633
Jun-2025	101	8	43	704	140	0	558	738	2293	1465	519	137	534	2655	-362	0	-2996
Jul-2025	0	9	54	776	144	0	588	815	2385	1825	450	130	548	2953	-568	0	-3563
Aug-2025	0	9	49	974	144	0	597	738	2511	1778	386	121	547	2832	-321	0	-3884
Sep-2025	0	8	39	1374	140	0	556	517	2634	1416	422	119	528	2486	149	0	-3735
Oct-2025	89	9	29	1453	144	0	600	323	2646	1121	482	131	548	2282	364	0	-3372
Nov-2025	117	8	19	1315	140	0	586	274	2460	804	545	139	532	2020	440	0	-2931
Dec-2025	156	9	14	1962	144	0	559	85	2930	665	741	160	551	2116	813	0	-2118
Jan-2026	0	9	15	668	144	0	585	496	1917	596	749	161	549	2054	-137	0	-2255
Feb-2026	0	8	20	417	130	0	530	545	1650	596	662	143	495	1897	-247	0	-2502
Mar-2026	0	9	26	475	144	0	595	638	1887	797	700	154	548	2199	-311	0	-2813
Apr-2026	0	8	36	1523	140	0	536	378	2621	1065	685	144	530	2424	197	0	-2616
May-2026	0	9	41	630	144	0	590	653	2068	1301	601	139	547	2589	-521	0	-3137
Jun-2026	0	8	44	559	140	0	589	727	2068	1465	505	127	529	2626	-558	0	-3696
Jul-2026	0	9	55	620	144	0	621	794	2243	1825	425	121	546	2917	-674	0	-4370
Aug-2026	0	9	51	642	144	0	632	779	2257	1778	377	116	545	2816	-559	0	-4929
Sep-2026	0	8	40	621	140	0	613	685	2107	1416	372	112	527	2426	-320	0	-5249
Oct-2026	0	9	29	622	144	0	635	656	2095	1121	438	122	544	2226	-131	0	-5380
Nov-2026	0	8	20	566	140	0	611	593	1938	804	498	128	528	1957	-19	0	-5399
Dec-2026	0	9	15	533	144	0	629	596	1926	665	592	142	546	1944	-18	0	-5417
Jan-2027	3443	9	15	1327	144	0	620	415	5973	701	1392	187	620	2899	3074	0	-2343
Feb-2027	302	8	20	1411	130	0	549	212	2633	671	998	160	513	2342	291	0	-2052
Mar-2027	1300	9	26	782	144	0	628	603	3492	902	1186	183	581	2851	641	0	-1411
Apr-2027	113	8	37	479	140	0	625	805	2208	1198	827	157	539	2722	-515	0	-1925
May-2027	41	9	42	870	144	0	667	726	2499	1477	686	153	552	2867	-368	0	-2293
Jun-2027	119	8	46	1126	140	0	631	752	2822	1675	636	142	534	2986	-164	0	-2458
Jul-2027	0	9	57	1426	144	0	648	762	3046	2088	562	135	548	3333	-288	0	-2745
Aug-2027	0	9	52	1574	144	0	644	702	3126	2053	522	129	547	3251	-125	0	-2871
Sep-2027	0	8	41	582	140	0	642	838	2252	1636	468	122	528	2754	-502	0	-3373
Oct-2027	0	9	30	1312	144	0	665	506	2665	1308	520	134	546	2508	157	0	-3216
Nov-2027	0	8	20	1123	140	0	635	466	2392	947	571	140	529	2188	205	0	-3011
Dec-2027	365	9	15	2692	144	0	586	-67	3743	792	839	166	555	2352	1391	0	-1620
Jan-2028	258	9	16	1570	144	0	587	220	2804	596	895	173	555	2218	586	0	-1034
Feb-2028	586	8	21	406	135	0	553	640	2348	618	909	164	526	2217	132	0	-902
Mar-2028	181	9	27	415	144	0	602	766	2145	797	893	168	555	2413	-269	0	-1171
Apr-2028	11	8	38	1163	140	0	557	599	2517	1065	824	155	532	2576	-59	0	-1230
May-2028	59	9	44	1048	144	0	580	689	2574	1301	804	153	550	2808	-234	0	-1465
Jun-2028	0	8	47	515	140	0	594	844	2148	1465	645	137	530	2778	-629	0	-2094
Jul-2028	0	9	58	588	144	0	631	930	2361	1825	547	130	547	3049	-688	0	-2782
Aug-2028	0	9	54	602	144	0	646	927	2382	1778	492	124	546	2940	-558	0	-3340

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Management Zone 5: Castaic Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Sep-2028	0	8	42	672	140	0	628	794	2285	1416	487	121	527	2551	-266	0	-3606
Oct-2028	113	9	31	572	144	0	650	809	2329	1121	580	132	548	2380	-52	0	-3658
Nov-2028	92	8	21	1158	140	0	628	466	2513	804	649	140	531	2123	390	0	-3268
Dec-2028	757	9	16	1206	144	0	622	485	3239	665	952	168	563	2347	891	0	-2377
Jan-2029	210	9	16	407	144	0	634	757	2177	596	934	168	555	2253	-75	0	-2452
Feb-2029	7	8	22	402	130	0	571	688	1828	596	791	148	497	2032	-203	0	-2655
Mar-2029	0	9	28	1429	144	0	592	518	2719	797	918	163	549	2425	294	0	-2361
Apr-2029	0	8	39	1323	140	0	584	515	2609	1065	772	147	530	2514	95	0	-2266
May-2029	0	9	45	515	144	0	623	810	2146	1301	706	144	547	2698	-552	0	-2818
Jun-2029	0	8	48	530	140	0	617	855	2198	1465	606	132	529	2732	-534	0	-3352
Jul-2029	2	9	60	587	144	0	648	939	2389	1825	527	126	546	3025	-636	0	-3988
Aug-2029	0	9	55	607	144	0	659	932	2406	1778	480	122	545	2925	-518	0	-4506
Sep-2029	17	8	44	585	140	0	639	840	2272	1416	479	119	527	2541	-269	0	-4776
Oct-2029	0	9	32	581	144	0	660	811	2237	1121	556	129	545	2350	-113	0	-4889
Nov-2029	117	8	21	521	140	0	637	744	2188	804	635	136	530	2105	84	0	-4806
Dec-2029	212	9	16	782	144	0	656	653	2472	665	764	151	551	2132	340	0	-4466
Jan-2030	601	9	16	1721	144	0	623	239	3353	596	988	166	561	2310	1042	0	-3423
Feb-2030	3787	8	22	594	130	0	563	668	5772	596	1653	186	575	3011	2761	0	-662
Mar-2030	685	9	29	1275	144	0	628	484	3255	797	1372	191	578	2938	316	0	-346
Apr-2030	392	8	40	1403	140	0	611	451	3046	1065	1133	175	547	2919	127	0	-219
May-2030	947	9	46	533	144	0	638	970	3287	1301	1119	174	573	3168	120	0	-100
Jun-2030	10	8	50	856	140	0	625	818	2507	1465	853	157	536	3011	-503	0	-603
Jul-2030	0	9	62	907	144	0	644	970	2735	1825	734	148	550	3258	-522	0	-1125
Aug-2030	0	9	56	997	144	0	667	906	2779	1778	617	137	548	3081	-302	0	-1427
Sep-2030	36	8	45	1026	140	0	649	762	2665	1416	593	131	531	2671	-6	0	-1432
Oct-2030	57	9	33	842	144	0	669	787	2541	1121	674	141	549	2484	58	0	-1375
Nov-2030	234	8	22	1121	140	0	641	605	2770	804	767	146	535	2252	519	0	-856
Dec-2030	239	9	16	1434	144	0	632	488	2962	665	921	162	554	2301	660	0	-196
Jan-2031	0	9	17	1018	144	0	629	567	2384	596	951	165	550	2261	124	0	-72
Feb-2031	0	8	23	1059	130	0	555	480	2255	596	855	148	496	2096	159	0	87
Mar-2031	0	9	29	422	144	0	619	783	2008	797	914	160	549	2420	-413	0	-326
Apr-2031	0	8	41	1859	140	0	548	445	3041	1065	905	155	531	2656	385	0	60
May-2031	0	9	47	1671	144	0	564	504	2940	1301	850	155	548	2854	86	0	145
Jun-2031	0	8	51	651	140	0	588	811	2248	1465	719	136	530	2850	-602	0	-456
Jul-2031	0	9	63	563	144	0	628	957	2364	1825	625	131	547	3128	-764	0	-1220
Aug-2031	0	9	58	584	144	0	645	964	2404	1778	569	126	546	3019	-615	0	-1835
Sep-2031	0	8	46	563	140	0	630	877	2264	1416	560	123	528	2627	-363	0	-2198
Oct-2031	0	9	34	557	144	0	654	856	2254	1121	641	134	546	2441	-187	0	-2385
Nov-2031	0	8	22	501	140	0	632	789	2092	804	700	139	529	2170	-78	0	-2463
Dec-2031	0	9	17	464	144	0	654	799	2087	665	802	152	547	2166	-79	0	-2541

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Management Zone 5: Castaic Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2032	29	9	17	431	144	0	651	796	2077	596	863	159	548	2165	-87	0	-2629
Feb-2032	226	8	23	1048	135	0	602	579	2621	618	845	150	517	2131	491	0	-2138
Mar-2032	76	9	30	1282	144	0	623	579	2742	797	888	158	550	2393	349	0	-1789
Apr-2032	50	8	41	446	140	0	616	801	2104	1065	770	146	532	2512	-408	0	-2197
May-2032	0	9	48	1048	144	0	636	771	2656	1301	765	146	548	2760	-104	0	-2301
Jun-2032	0	8	52	1007	140	0	621	784	2612	1465	685	136	529	2815	-204	0	-2505
Jul-2032	0	9	64	574	144	0	659	958	2409	1825	567	129	546	3066	-658	0	-3163
Aug-2032	7	9	59	597	144	0	672	955	2444	1778	508	123	545	2955	-511	0	-3674
Sep-2032	0	8	47	577	140	0	651	862	2285	1416	502	120	527	2565	-280	0	-3953
Oct-2032	27	9	34	571	144	0	673	835	2293	1121	584	131	545	2381	-88	0	-4041
Nov-2032	0	8	23	516	140	0	649	763	2099	804	645	136	528	2112	-13	0	-4055
Dec-2032	0	9	17	479	144	0	669	771	2088	665	747	150	546	2108	-20	0	-4075
Jan-2033	653	9	17	1191	144	0	675	475	3166	701	936	163	561	2361	805	0	-3270
Feb-2033	1205	8	24	919	130	0	594	547	3427	671	1045	157	522	2395	1033	0	-2237
Mar-2033	379	9	31	982	144	0	662	662	2868	902	1031	168	561	2662	206	0	-2032
Apr-2033	287	8	42	442	140	0	655	846	2419	1198	818	151	539	2706	-287	0	-2319
May-2033	0	9	49	558	144	0	693	887	2340	1477	682	144	550	2852	-512	0	-2831
Jun-2033	0	8	53	539	140	0	686	921	2347	1675	558	131	530	2894	-547	0	-3378
Jul-2033	0	9	65	604	144	0	722	992	2536	2088	463	125	547	3222	-686	0	-4064
Aug-2033	0	9	60	631	144	0	732	968	2544	2053	404	119	546	3121	-577	0	-4641
Sep-2033	0	8	47	622	140	0	697	845	2359	1636	395	115	527	2673	-314	0	-4955
Oct-2033	25	9	35	609	144	0	706	813	2341	1308	464	126	546	2444	-104	0	-5059
Nov-2033	356	8	23	1892	140	0	657	104	3181	947	620	137	536	2240	941	0	-4118
Dec-2033	146	9	17	2865	144	0	665	-309	3537	792	745	153	551	2242	1296	0	-2822
Jan-2034	0	9	18	452	144	0	664	738	2025	701	745	156	548	2150	-124	0	-2947
Feb-2034	0	8	24	412	130	0	589	700	1862	671	663	139	495	1969	-107	0	-3053
Mar-2034	0	9	31	469	144	0	658	806	2117	902	705	151	548	2306	-188	0	-3242
Apr-2034	0	8	43	489	140	0	643	836	2159	1198	609	139	530	2476	-317	0	-3559
May-2034	0	9	50	546	144	0	680	907	2335	1477	559	137	547	2720	-385	0	-3944
Jun-2034	0	8	53	566	140	0	673	924	2365	1675	477	126	529	2807	-443	0	-4387
Jul-2034	0	9	66	627	144	0	710	1014	2571	2088	406	121	545	3160	-589	0	-4976
Aug-2034	0	9	61	648	144	0	723	1004	2587	2053	363	116	544	3076	-489	0	-5465
Sep-2034	0	8	48	624	140	0	688	893	2401	1636	363	113	526	2638	-237	0	-5701
Oct-2034	0	9	35	622	144	0	698	848	2356	1308	432	124	544	2409	-53	0	-5754
Nov-2034	0	8	24	563	140	0	660	761	2155	947	497	129	527	2100	55	0	-5699
Dec-2034	0	9	18	525	144	0	671	759	2126	792	597	144	546	2078	48	0	-5651
Jan-2035	0	9	18	500	144	0	658	742	2071	701	661	150	547	2058	12	0	-5639
Feb-2035	472	8	24	595	130	0	581	624	2434	671	690	141	504	2006	428	0	-5210
Mar-2035	124	9	31	470	144	0	649	789	2217	902	719	153	551	2325	-108	0	-5319
Apr-2035	123	8	43	1192	140	0	598	635	2739	1198	690	144	533	2565	174	0	-5145

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Management Zone 5: Castaic Subunit

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Net Inflow of Water from the Saugus Formation and Adjoining Areas	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2035	89	9	50	941	144	0	634	752	2619	1477	618	141	549	2785	-166	0	-5311
Jun-2035	0	8	54	869	140	0	645	780	2495	1675	502	128	529	2834	-339	0	-5650
Jul-2035	1	9	67	621	144	0	686	976	2504	2088	418	122	545	3173	-669	0	-6319
Aug-2035	0	9	62	644	144	0	701	978	2538	2053	369	116	544	3082	-545	0	-6864
Sep-2035	0	8	49	623	140	0	669	872	2361	1636	365	113	526	2641	-280	0	-7144
Oct-2035	57	9	36	733	144	0	680	786	2445	1308	440	124	545	2418	28	0	-7116
Nov-2035	33	8	24	574	140	0	644	740	2163	947	502	130	528	2107	55	0	-7061
Dec-2035	134	9	18	717	144	0	655	675	2353	792	618	145	549	2104	249	0	-6812

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Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	9426	106	105	3	0	0	1063	10703	866	0	214	0	1080	9618	5	9618
Feb-2012	13311	99	142	0	0	0	437	13989	791	0	305	0	1096	12888	5	22506
Mar-2012	4404	106	183	3	0	0	1258	5955	894	0	315	0	1209	4739	6	27245
Apr-2012	328	103	254	0	0	0	-11	673	949	0	259	0	1207	-531	-3	26714
May-2012	364	106	294	0	0	0	-489	276	1059	0	231	0	1291	-1010	-5	25704
Jun-2012	0	103	317	0	0	0	-372	47	1107	0	198	0	1305	-1253	-5	24451
Jul-2012	0	106	393	0	0	0	-446	54	1475	0	185	0	1660	-1601	-5	22850
Aug-2012	0	106	360	0	0	0	-488	-21	1485	0	172	0	1656	-1672	-5	21178
Sep-2012	0	103	285	0	0	0	-627	-239	1333	0	156	0	1489	-1725	-3	19453
Oct-2012	0	106	209	0	0	0	-270	45	1050	0	157	0	1207	-1167	5	18286
Nov-2012	0	103	139	3	0	0	1142	1388	926	0	148	0	1074	308	5	18594
Dec-2012	1237	106	105	0	0	0	-112	1337	906	0	158	0	1064	268	5	18861
Jan-2013	536	106	107	0	0	0	-265	484	866	0	154	0	1020	-542	5	18319
Feb-2013	187	96	144	0	0	0	-285	142	764	0	134	0	898	-761	5	17558
Mar-2013	619	106	186	0	0	0	-400	511	894	0	148	0	1042	-535	4	17024
Apr-2013	52	103	258	0	0	0	-30	382	949	0	138	0	1087	-699	-5	16325
May-2013	0	106	299	0	0	0	-564	-158	1059	0	137	0	1197	-1350	-5	14975
Jun-2013	0	103	322	0	0	0	-720	-296	1107	0	129	0	1237	-1527	-5	13448
Jul-2013	0	106	400	0	0	0	-870	-364	1475	0	130	0	1605	-1964	-5	11484
Aug-2013	0	106	366	0	0	0	-883	-411	1485	0	127	0	1612	-2017	-5	9467
Sep-2013	0	103	290	0	0	0	-716	-323	1333	0	120	0	1453	-1772	-4	7695
Oct-2013	65	106	213	0	0	0	-634	-250	1050	0	121	0	1171	-1426	5	6269
Nov-2013	407	103	142	0	0	0	-512	140	926	0	116	0	1042	-908	5	5362
Dec-2013	25	106	107	0	0	0	-475	-237	906	0	116	0	1022	-1264	5	4098
Jan-2014	2107	106	108	0	0	0	-38	2283	866	0	130	0	997	1281	5	5379
Feb-2014	766	96	147	0	0	0	27	1036	764	0	120	0	884	147	5	5526
Mar-2014	6010	106	190	0	0	0	155	6461	894	0	181	0	1075	5380	6	10905
Apr-2014	690	103	262	0	0	0	-155	899	949	0	165	0	1114	-209	-6	10696
May-2014	82	106	304	0	0	0	-608	-115	1059	0	155	0	1215	-1325	-5	9371
Jun-2014	0	103	327	0	0	0	-622	-192	1107	0	140	0	1247	-1433	-5	7938
Jul-2014	0	106	407	0	0	0	-718	-205	1475	0	136	0	1611	-1810	-5	6127
Aug-2014	0	106	373	0	0	0	-725	-246	1485	0	130	0	1614	-1855	-5	4272
Sep-2014	645	103	295	0	0	0	-700	343	1333	0	127	0	1459	-1113	-4	3160
Oct-2014	158	106	216	0	0	0	-612	-131	1050	0	126	0	1177	-1313	5	1847
Nov-2014	3378	103	144	0	0	0	-207	3419	926	0	148	0	1073	2340	5	4187
Dec-2014	1866	106	108	0	0	0	-235	1847	906	0	158	0	1064	777	5	4964
Jan-2015	11118	106	110	0	0	0	-413	10922	866	0	246	0	1112	9805	5	14769
Feb-2015	8784	96	149	0	0	0	-100	8930	764	0	272	0	1036	7889	5	22658
Mar-2015	16761	106	193	0	0	0	-201	16859	894	0	434	0	1329	15524	6	38183

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Management Zone 6: Saugus Formation

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December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Apr-2015	5912	103	267	0	0	0	-319	5962	949	0	400	0	1349	4612	2	42794
May-2015	256	106	309	0	0	0	-725	-53	1059	0	334	0	1393	-1441	-5	41353
Jun-2015	0	103	333	0	0	0	-633	-197	1107	0	270	0	1378	-1570	-5	39784
Jul-2015	0	106	413	0	0	0	-778	-259	1475	0	241	0	1716	-1970	-5	37814
Aug-2015	1500	106	379	0	0	0	-872	1113	1485	0	232	0	1716	-598	-5	37216
Sep-2015	2372	103	300	0	0	0	-768	2007	1333	0	228	0	1560	448	-2	37664
Oct-2015	2231	106	220	0	0	0	-536	2021	1050	0	237	0	1288	728	5	38392
Nov-2015	6463	103	147	3	0	0	454	7170	926	0	283	0	1209	5956	5	44348
Dec-2015	6579	106	110	3	0	0	1499	8298	906	0	334	0	1240	7052	5	51400
Jan-2016	0	106	112	0	0	0	-157	61	866	0	279	0	1145	-1089	5	50310
Feb-2016	0	99	152	0	0	0	-289	-38	791	0	228	0	1019	-1062	5	49249
Mar-2016	0	106	196	0	0	0	-425	-123	894	0	219	0	1113	-1240	4	48009
Apr-2016	0	103	271	0	0	0	-543	-170	949	0	196	0	1145	-1309	-5	46700
May-2016	0	106	314	0	0	0	-682	-262	1059	0	190	0	1249	-1506	-5	45194
Jun-2016	0	103	338	0	0	0	-783	-342	1107	0	175	0	1283	-1620	-5	43574
Jul-2016	0	106	420	0	0	0	-925	-398	1475	0	175	0	1650	-2043	-5	41531
Aug-2016	0	106	385	0	0	0	-932	-441	1485	0	168	0	1653	-2089	-5	39443
Sep-2016	0	103	305	0	0	0	-760	-353	1333	0	158	0	1491	-1840	-4	37603
Oct-2016	0	106	223	0	0	0	-680	-350	1050	0	157	0	1208	-1563	5	36040
Nov-2016	0	103	149	0	0	0	-559	-307	926	0	147	0	1073	-1385	5	34655
Dec-2016	0	106	112	0	0	0	-526	-308	906	0	147	0	1052	-1366	5	33290
Jan-2017	0	106	114	0	0	0	-515	-295	866	0	143	0	1009	-1309	5	31980
Feb-2017	0	96	154	0	0	0	-437	-187	764	0	127	0	890	-1082	5	30898
Mar-2017	0	106	199	0	0	0	-548	-243	894	0	137	0	1032	-1276	2	29622
Apr-2017	0	103	275	0	0	0	-645	-267	949	0	131	0	1080	-1341	-5	28280
May-2017	0	106	320	0	0	0	-786	-360	1059	0	134	0	1193	-1548	-5	26733
Jun-2017	0	103	344	0	0	0	-893	-447	1107	0	128	0	1236	-1677	-5	25056
Jul-2017	0	106	427	0	0	0	-1065	-532	1475	0	131	0	1606	-2133	-5	22923
Aug-2017	0	106	391	0	0	0	-1092	-594	1485	0	129	0	1614	-2203	-5	20720
Sep-2017	0	103	310	0	0	0	-905	-492	1333	0	123	0	1456	-1944	-4	18776
Oct-2017	0	106	227	0	0	0	-804	-470	1050	0	125	0	1175	-1651	5	17126
Nov-2017	0	103	151	0	0	0	-648	-394	926	0	118	0	1044	-1443	5	15683
Dec-2017	0	106	114	0	0	0	-591	-371	906	0	119	0	1025	-1401	5	14282
Jan-2018	3175	106	117	0	0	0	-255	3144	866	0	141	0	1007	2131	5	16413
Feb-2018	3616	96	158	0	0	0	-368	3502	764	0	148	0	911	2586	5	18999
Mar-2018	2931	106	205	0	0	0	-318	2923	894	0	173	0	1067	1850	6	20850
Apr-2018	478	103	283	0	0	0	-137	728	949	0	155	0	1104	-371	-5	20479
May-2018	0	106	329	0	0	0	-693	-258	1059	0	148	0	1207	-1459	-5	19019
Jun-2018	0	103	354	0	0	0	-851	-395	1107	0	135	0	1242	-1632	-5	17388

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Jul-2018	27	106	439	0	0	0	-1030	-458	1475	0	134	0	1609	-2061	-5	15327
Aug-2018	0	106	402	0	0	0	-1066	-557	1485	0	130	0	1614	-2166	-5	13160
Sep-2018	968	103	318	0	0	0	-887	502	1333	0	129	0	1462	-957	-4	12204
Oct-2018	370	106	234	0	0	0	-403	306	1050	0	131	0	1181	-880	5	11323
Nov-2018	843	103	156	0	0	0	-173	928	926	0	129	0	1054	-131	5	11192
Dec-2018	130	106	117	0	0	0	4	358	906	0	129	0	1035	-683	5	10509
Jan-2019	229	106	123	0	0	0	-232	226	1282	0	127	0	1409	-1178	-5	9331
Feb-2019	66	96	166	0	0	0	-171	158	1125	0	112	0	1237	-1078	-1	8253
Mar-2019	184	106	214	0	0	0	-221	283	1311	0	122	0	1433	-1144	-5	7109
Apr-2019	15	103	297	0	0	0	-246	169	1375	0	116	0	1491	-1317	-5	5792
May-2019	0	106	344	0	0	0	-395	56	1527	0	118	0	1645	-1584	-5	4208
Jun-2019	0	103	370	0	0	0	-484	-11	1589	0	113	0	1701	-1708	-5	2500
Jul-2019	10	106	460	0	0	0	-552	24	2289	0	115	0	2404	-2375	-5	125
Aug-2019	2	106	422	0	0	0	-526	4	2307	0	114	0	2421	-2412	-5	-2287
Sep-2019	0	103	333	0	0	0	-356	80	2096	0	108	0	2204	-2119	-5	-4406
Oct-2019	378	106	245	0	0	0	-301	428	1526	0	112	0	1639	-1216	5	-5622
Nov-2019	418	103	163	0	0	0	-208	476	1359	0	108	0	1467	-996	5	-6617
Dec-2019	523	106	123	0	0	0	-169	582	1338	0	112	0	1450	-872	5	-7490
Jan-2020	1188	106	129	0	0	0	-85	1338	1695	0	116	0	1811	-468	-5	-7958
Feb-2020	1232	99	175	0	0	0	167	1673	1552	0	113	0	1664	9	0	-7949
Mar-2020	421	106	226	0	0	0	77	830	1724	0	118	0	1841	-1006	-5	-8955
Apr-2020	1446	103	312	0	0	0	-103	1758	1774	0	120	0	1894	-131	-5	-9086
May-2020	33	106	362	0	0	0	-165	336	1940	0	118	0	2058	-1716	-5	-10802
Jun-2020	0	103	390	0	0	0	-341	151	1988	0	110	0	2098	-1942	-5	-12744
Jul-2020	0	106	484	0	0	0	-389	202	2950	0	111	0	3061	-2853	-5	-15597
Aug-2020	0	106	444	0	0	0	-365	184	2968	0	108	0	3077	-2887	-5	-18484
Sep-2020	36	103	351	0	0	0	-170	320	2736	0	103	0	2839	-2514	-5	-20998
Oct-2020	0	106	258	0	0	0	-26	338	2445	0	104	0	2549	-2216	5	-23214
Nov-2020	334	103	172	0	0	0	20	629	1759	0	100	0	1859	-1235	5	-24449
Dec-2020	2594	106	129	0	0	0	49	2878	1751	0	117	0	1868	1005	5	-23444
Jan-2021	0	106	134	0	0	0	17	258	1282	0	110	0	1392	-1140	5	-24584
Feb-2021	0	96	181	0	0	0	17	294	1125	0	95	0	1220	-931	5	-25515
Mar-2021	0	106	234	0	0	0	-62	278	1311	0	102	0	1412	-1140	5	-26655
Apr-2021	0	103	324	0	0	0	-189	237	1375	0	97	0	1471	-1232	-2	-27887
May-2021	0	106	376	0	0	0	-328	154	1527	0	99	0	1625	-1466	-6	-29353
Jun-2021	0	103	404	0	0	0	-460	47	1589	0	94	0	1683	-1631	-5	-30984
Jul-2021	0	106	502	0	0	0	-576	33	2289	0	97	0	2386	-2348	-5	-33332
Aug-2021	0	106	460	0	0	0	-581	-14	2307	0	96	0	2403	-2412	-5	-35744
Sep-2021	0	103	364	0	0	0	-405	62	2096	0	92	0	2188	-2121	-5	-37865

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Oct-2021	0	106	267	0	0	0	-329	44	1526	0	93	0	1619	-1580	5	-39445
Nov-2021	0	103	178	0	0	0	-209	72	1359	0	88	0	1447	-1380	5	-40825
Dec-2021	0	106	134	0	0	0	-147	93	1338	0	89	0	1427	-1339	5	-42164
Jan-2022	0	106	137	0	0	0	-18	226	1695	0	88	0	1783	-1552	-5	-43716
Feb-2022	0	96	186	0	0	0	57	339	1498	0	78	0	1577	-1238	0	-44954
Mar-2022	0	106	240	0	0	0	34	380	1724	0	86	0	1810	-1424	-5	-46378
Apr-2022	0	103	332	0	0	0	-64	370	1774	0	83	0	1857	-1482	-5	-47860
May-2022	0	106	385	0	0	0	-175	316	1940	0	85	0	2025	-1704	-5	-49564
Jun-2022	0	103	414	0	0	0	-297	220	1988	0	83	0	2071	-1845	-5	-51409
Jul-2022	0	106	515	0	0	0	-340	282	2950	0	85	0	3035	-2748	-5	-54158
Aug-2022	0	106	472	0	0	0	-316	262	2968	0	85	0	3053	-2786	-5	-56943
Sep-2022	0	103	373	0	0	0	-131	345	2736	0	81	0	2817	-2467	-5	-59410
Oct-2022	0	106	274	0	0	0	7	387	2445	0	83	0	2528	-2146	5	-61557
Nov-2022	0	103	183	0	0	0	69	354	1759	0	79	0	1838	-1488	5	-63045
Dec-2022	0	106	137	0	0	0	125	369	1751	0	80	0	1831	-1468	5	-64512
Jan-2023	691	106	140	0	0	0	548	1485	2565	0	82	0	2648	-1162	-1	-65674
Feb-2023	3561	96	189	0	0	0	997	4844	2284	0	90	0	2374	2466	3	-63208
Mar-2023	7054	106	244	0	0	0	990	8394	2594	0	135	0	2729	5670	-4	-57538
Apr-2023	0	103	338	0	0	0	515	956	2616	0	115	0	2732	-1771	-5	-59309
May-2023	0	106	392	0	0	0	380	879	2810	0	109	0	2918	-2034	-5	-61343
Jun-2023	0	103	422	0	0	0	216	741	2830	0	99	0	2929	-2183	-5	-63526
Jul-2023	0	106	524	0	0	0	130	760	3548	0	97	0	3646	-2880	-5	-66406
Aug-2023	0	106	480	0	0	0	105	692	3567	0	94	0	3661	-2963	-5	-69369
Sep-2023	0	103	380	0	0	0	255	738	3315	0	88	0	3403	-2660	-5	-72030
Oct-2023	311	106	279	0	0	0	521	1217	3296	0	90	0	3386	-2173	4	-74202
Nov-2023	0	103	186	0	0	0	585	874	2932	0	84	0	3016	-2148	5	-76350
Dec-2023	3704	106	140	0	0	0	936	4886	2621	0	106	0	2727	2153	5	-74197
Jan-2024	3629	106	142	3	0	0	2105	5986	2565	0	121	0	2686	3294	5	-70903
Feb-2024	18411	99	192	3	0	0	1873	20578	2365	0	226	0	2592	17981	5	-52922
Mar-2024	10765	106	248	3	0	0	1805	12928	2594	0	282	0	2875	10047	6	-42875
Apr-2024	166	103	343	0	0	0	1067	1679	2616	0	221	0	2837	-1153	-5	-44028
May-2024	376	106	398	0	0	0	747	1627	2810	0	194	0	3004	-1371	-5	-45399
Jun-2024	0	103	428	0	0	0	727	1258	2830	0	164	0	2994	-1731	-5	-47130
Jul-2024	332	106	532	0	0	0	445	1416	3548	0	155	0	3704	-2282	-5	-49413
Aug-2024	0	106	488	0	0	0	382	976	3567	0	142	0	3709	-2728	-5	-52140
Sep-2024	0	103	386	0	0	0	498	987	3315	0	129	0	3443	-2452	-4	-54593
Oct-2024	1715	106	283	0	0	0	828	2933	3296	0	139	0	3435	-507	5	-55100
Nov-2024	0	103	189	0	0	0	992	1284	2932	0	125	0	3057	-1779	5	-56879
Dec-2024	8021	106	142	0	0	0	1140	9410	2621	0	189	0	2810	6594	5	-50284

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Jan-2025	17607	106	144	0	0	0	1281	19138	866	0	331	0	1197	17935	5	-32349
Feb-2025	12070	96	195	3	0	0	2740	15105	764	0	360	0	1123	13977	5	-18373
Mar-2025	4394	106	252	3	0	0	1482	6237	894	0	365	0	1260	4972	5	-13401
Apr-2025	0	103	348	0	0	0	897	1348	949	0	291	0	1240	103	5	-13298
May-2025	0	106	404	0	0	0	295	805	1059	0	253	0	1312	-512	5	-13810
Jun-2025	669	103	434	0	0	0	39	1245	1107	0	221	0	1328	-86	2	-13895
Jul-2025	0	106	540	0	0	0	-161	485	1475	0	204	0	1679	-1188	-5	-15083
Aug-2025	0	106	495	0	0	0	-166	435	1485	0	186	0	1671	-1231	-5	-16314
Sep-2025	0	103	391	0	0	0	68	562	1333	0	168	0	1501	-944	5	-17258
Oct-2025	587	106	287	0	0	0	621	1601	1050	0	171	0	1222	375	5	-16884
Nov-2025	772	103	191	0	0	0	721	1787	926	0	167	0	1093	689	5	-16194
Dec-2025	1029	106	144	3	0	0	1557	2840	906	0	176	0	1081	1753	5	-14441
Jan-2026	0	106	146	0	0	0	482	734	1282	0	164	0	1447	-708	-5	-15149
Feb-2026	0	96	197	0	0	0	289	582	1125	0	141	0	1266	-687	3	-15836
Mar-2026	0	106	255	0	0	0	225	586	1311	0	150	0	1460	-869	-5	-16705
Apr-2026	0	103	353	0	0	0	376	831	1375	0	141	0	1515	-679	-5	-17384
May-2026	0	106	409	0	0	0	44	560	1527	0	142	0	1668	-1103	-5	-18487
Jun-2026	0	103	440	0	0	0	-138	405	1589	0	134	0	1723	-1312	-5	-19800
Jul-2026	0	106	547	0	0	0	-225	428	2289	0	136	0	2425	-1991	-5	-21791
Aug-2026	0	106	501	0	0	0	-221	387	2307	0	134	0	2441	-2049	-5	-23840
Sep-2026	0	103	397	0	0	0	-76	423	2096	0	126	0	2222	-1795	-5	-25635
Oct-2026	0	106	291	0	0	0	-23	374	1526	0	127	0	1654	-1285	5	-26920
Nov-2026	0	103	194	0	0	0	49	345	1359	0	120	0	1478	-1138	5	-28058
Dec-2026	0	106	146	0	0	0	84	336	1338	0	120	0	1458	-1127	5	-29185
Jan-2027	22733	106	148	1	0	0	788	23776	866	0	330	0	1196	22575	5	-6610
Feb-2027	1996	96	200	3	0	0	1055	3350	764	0	263	0	1026	2319	5	-4291
Mar-2027	8584	106	258	0	0	0	467	9416	894	0	338	0	1232	8178	5	3887
Apr-2027	745	103	357	0	0	0	-120	1085	949	0	276	0	1224	-144	4	3743
May-2027	269	106	415	0	0	0	-10	780	1059	0	247	0	1306	-522	-4	3221
Jun-2027	786	103	446	0	0	0	-345	990	1107	0	218	0	1325	-330	-5	2891
Jul-2027	0	106	554	0	0	0	-508	152	1475	0	201	0	1676	-1518	-5	1373
Aug-2027	0	106	508	0	0	0	-533	81	1485	0	185	0	1669	-1583	-5	-210
Sep-2027	0	103	402	0	0	0	-606	-102	1333	0	168	0	1500	-1600	-2	-1811
Oct-2027	0	106	295	0	0	0	9	410	1050	0	166	0	1216	-811	5	-2622
Nov-2027	0	103	197	0	0	0	143	442	926	0	156	0	1082	-645	5	-3267
Dec-2027	2410	106	148	3	0	0	1936	4603	906	0	181	0	1087	3511	5	244
Jan-2028	1707	106	150	0	0	0	962	2925	866	0	190	0	1056	1864	5	2108
Feb-2028	3868	99	203	0	0	0	124	4294	791	0	203	0	994	3295	5	5403
Mar-2028	1195	106	262	0	0	0	-78	1485	894	0	206	0	1101	379	6	5782

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Apr-2028	75	103	362	0	0	0	-40	500	949	0	181	0	1130	-626	-4	5156
May-2028	391	106	420	0	0	0	-215	702	1059	0	177	0	1236	-529	-5	4627
Jun-2028	0	103	452	0	0	0	-488	66	1107	0	161	0	1268	-1197	-5	3430
Jul-2028	0	106	562	0	0	0	-652	15	1475	0	159	0	1634	-1613	-5	1817
Aug-2028	0	106	514	0	0	0	-688	-67	1485	0	153	0	1637	-1699	-5	117
Sep-2028	0	103	407	0	0	0	-486	24	1333	0	143	0	1476	-1449	-3	-1331
Oct-2028	747	106	299	0	0	0	-452	700	1050	0	149	0	1199	-505	5	-1836
Nov-2028	609	103	199	0	0	0	186	1097	926	0	145	0	1070	21	5	-1815
Dec-2028	5000	106	150	0	0	0	448	5704	906	0	194	0	1100	4599	5	2784
Jan-2029	1387	106	152	0	0	0	-131	1514	866	0	187	0	1053	456	5	3240
Feb-2029	48	96	205	0	0	0	-130	219	764	0	154	0	918	-704	5	2536
Mar-2029	0	106	265	0	0	0	23	395	894	0	159	0	1053	-663	5	1872
Apr-2029	0	103	367	0	0	0	-96	374	949	0	146	0	1095	-716	-5	1156
May-2029	0	106	426	0	0	0	-454	78	1059	0	146	0	1205	-1122	-5	34
Jun-2029	0	103	458	0	0	0	-599	-39	1107	0	138	0	1245	-1279	-5	-1245
Jul-2029	10	106	569	0	0	0	-759	-73	1475	0	140	0	1614	-1682	-5	-2927
Aug-2029	0	106	521	0	0	0	-784	-156	1485	0	136	0	1621	-1772	-5	-4699
Sep-2029	110	103	412	0	0	0	-626	-1	1333	0	129	0	1462	-1460	-3	-6159
Oct-2029	0	106	302	0	0	0	-544	-135	1050	0	129	0	1180	-1320	5	-7479
Nov-2029	776	103	202	0	0	0	-428	652	926	0	127	0	1053	-406	5	-7885
Dec-2029	1397	106	152	0	0	0	-290	1365	906	0	137	0	1043	317	5	-7568
Jan-2030	3967	106	154	3	0	0	2787	7017	866	0	165	0	1031	5980	5	-1588
Feb-2030	25008	96	208	0	0	0	1023	26335	764	0	380	0	1144	25186	5	23598
Mar-2030	4524	106	268	3	0	0	1332	6234	894	0	386	0	1280	4948	6	28546
Apr-2030	2592	103	371	3	0	0	834	3903	949	0	335	0	1284	2614	5	31161
May-2030	6252	106	431	0	0	0	-287	6502	1059	0	362	0	1421	5086	-5	36247
Jun-2030	68	103	463	0	0	0	-164	470	1107	0	296	0	1403	-928	-5	35319
Jul-2030	0	106	576	0	0	0	-577	105	1475	0	264	0	1739	-1629	-5	33690
Aug-2030	0	106	528	0	0	0	-610	24	1485	0	234	0	1718	-1689	-5	32001
Sep-2030	239	103	417	0	0	0	-430	329	1333	0	208	0	1541	-1210	-3	30792
Oct-2030	375	106	306	0	0	0	-422	366	1050	0	202	0	1253	-892	5	29900
Nov-2030	1546	103	204	0	0	0	-211	1642	926	0	199	0	1125	512	5	30412
Dec-2030	1580	106	154	0	0	0	-68	1772	906	0	207	0	1112	655	5	31066
Jan-2031	0	106	155	0	0	0	-139	123	866	0	189	0	1056	-938	5	30128
Feb-2031	0	96	210	0	0	0	-79	228	764	0	162	0	925	-702	5	29426
Mar-2031	0	106	272	0	0	0	-388	-11	894	0	171	0	1065	-1079	4	28347
Apr-2031	0	103	376	0	0	0	-158	320	949	0	160	0	1109	-783	-5	27563
May-2031	0	106	436	0	0	0	-301	241	1059	0	160	0	1220	-973	-5	26590
Jun-2031	0	103	469	0	0	0	-703	-131	1107	0	151	0	1259	-1385	-5	25205

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jul-2031	0	106	583	0	0	0	-898	-209	1475	0	154	0	1628	-1833	-5	23373
Aug-2031	0	106	534	0	0	0	-917	-277	1485	0	150	0	1635	-1907	-5	21466
Sep-2031	0	103	422	0	0	0	-751	-226	1333	0	142	0	1475	-1697	-4	19768
Oct-2031	0	106	310	0	0	0	-670	-254	1050	0	143	0	1193	-1452	5	18316
Nov-2031	0	103	207	0	0	0	-547	-238	926	0	135	0	1060	-1303	5	17013
Dec-2031	0	106	155	0	0	0	-511	-249	906	0	136	0	1041	-1296	5	15717
Jan-2032	192	106	157	0	0	0	-463	-8	866	0	134	0	1000	-1014	5	14703
Feb-2032	1495	99	213	0	0	0	-264	1543	791	0	135	0	926	613	5	15316
Mar-2032	499	106	275	0	0	0	-292	589	894	0	142	0	1037	-452	4	14864
Apr-2032	333	103	380	0	0	0	-556	260	949	0	136	0	1085	-820	-5	14044
May-2032	0	106	441	0	0	0	-625	-77	1059	0	136	0	1195	-1267	-5	12778
Jun-2032	0	103	475	0	0	0	-724	-147	1107	0	128	0	1236	-1378	-5	11400
Jul-2032	0	106	590	0	0	0	-930	-234	1475	0	130	0	1605	-1834	-5	9565
Aug-2032	49	106	540	0	0	0	-937	-242	1485	0	129	0	1613	-1849	-5	7716
Sep-2032	0	103	427	0	0	0	-762	-232	1333	0	122	0	1455	-1683	-4	6033
Oct-2032	179	106	314	0	0	0	-676	-77	1050	0	124	0	1175	-1257	5	4776
Nov-2032	0	103	209	0	0	0	-545	-234	926	0	117	0	1043	-1282	5	3494
Dec-2032	0	106	157	0	0	0	-504	-241	906	0	118	0	1024	-1270	5	2224
Jan-2033	4315	106	159	0	0	0	-104	4476	1282	0	150	0	1432	3049	-5	5273
Feb-2033	7957	96	215	0	0	0	-128	8140	1125	0	190	0	1315	6822	2	12095
Mar-2033	2500	106	278	0	0	0	-236	2648	1311	0	205	0	1515	1138	-5	13233
Apr-2033	1893	103	385	0	0	0	-477	1903	1375	0	191	0	1565	343	-5	13576
May-2033	0	106	446	0	0	0	-587	-34	1527	0	174	0	1700	-1729	-5	11847
Jun-2033	0	103	480	0	0	0	-701	-118	1589	0	153	0	1742	-1855	-5	9992
Jul-2033	0	106	597	0	0	0	-801	-98	2289	0	148	0	2437	-2530	-5	7462
Aug-2033	0	106	546	0	0	0	-788	-135	2307	0	141	0	2448	-2578	-5	4884
Sep-2033	0	103	432	0	0	0	-592	-57	2096	0	131	0	2227	-2279	-5	2605
Oct-2033	163	106	317	0	0	0	-523	63	1526	0	132	0	1658	-1600	5	1005
Nov-2033	2352	103	211	0	0	0	275	2940	1359	0	143	0	1501	1434	5	2439
Dec-2033	961	106	159	3	0	0	945	2175	1338	0	147	0	1485	685	5	3124
Jan-2034	0	106	161	0	0	0	-55	212	866	0	138	0	1004	-797	5	2327
Feb-2034	0	96	218	0	0	0	-140	174	764	0	119	0	883	-714	5	1613
Mar-2034	0	106	281	0	0	0	-268	120	894	0	127	0	1022	-907	5	706
Apr-2034	0	103	389	0	0	0	-407	85	949	0	120	0	1069	-986	2	-280
May-2034	0	106	451	0	0	0	-572	-15	1059	0	122	0	1182	-1191	-6	-1471
Jun-2034	0	103	485	0	0	0	-713	-125	1107	0	117	0	1224	-1344	-5	-2815
Jul-2034	0	106	603	0	0	0	-901	-192	1475	0	120	0	1595	-1781	-5	-4596
Aug-2034	0	106	553	0	0	0	-943	-284	1485	0	119	0	1603	-1882	-5	-6478
Sep-2034	0	103	437	0	0	0	-769	-229	1333	0	113	0	1446	-1671	-3	-8150

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Inflow from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Oct-2034	0	106	321	0	0	0	-669	-242	1050	0	114	0	1165	-1412	5	-9561
Nov-2034	0	103	214	0	0	0	-520	-204	926	0	108	0	1034	-1243	5	-10804
Dec-2034	0	106	161	0	0	0	-462	-195	906	0	109	0	1015	-1215	5	-12019
Jan-2035	0	106	163	0	0	0	-390	-121	866	0	107	0	974	-1100	5	-13119
Feb-2035	3116	96	220	0	0	0	-148	3284	764	0	116	0	880	2399	5	-10719
Mar-2035	821	106	284	0	0	0	-368	844	894	0	127	0	1021	-183	5	-10902
Apr-2035	811	103	393	0	0	0	-308	999	949	0	122	0	1071	-67	-5	-10969
May-2035	587	106	456	0	0	0	-510	639	1059	0	125	0	1184	-539	-5	-11508
Jun-2035	0	103	491	0	0	0	-650	-56	1107	0	115	0	1223	-1274	-5	-12782
Jul-2035	7	106	610	0	0	0	-938	-215	1475	0	116	0	1591	-1800	-5	-14582
Aug-2035	0	106	559	0	0	0	-983	-318	1485	0	113	0	1598	-1911	-5	-16493
Sep-2035	0	103	442	0	0	0	-805	-260	1333	0	107	0	1440	-1696	-4	-18189
Oct-2035	380	106	324	0	0	0	-605	205	1050	0	111	0	1161	-961	5	-19150
Nov-2035	217	103	216	0	0	0	-524	13	926	0	105	0	1031	-1023	5	-20173
Dec-2035	887	106	163	0	0	0	-229	927	906	0	111	0	1017	-95	5	-20268

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Aquifer System (Alluvium and Saugus Combined)

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	15797	206	199	11190	144	380	-168	27747	2744	1927	956	578	6204	21537	6	21537
Feb-2012	22308	192	269	5650	135	282	210	29048	2400	2236	1131	559	6327	22715	5	44253
Mar-2012	7380	206	347	11523	144	341	-117	19824	3025	2344	1288	571	7228	12588	8	56841
Apr-2012	549	199	480	2920	140	388	388	5065	3721	1830	1115	537	7203	-2128	-10	54713
May-2012	610	206	558	1010	144	512	659	3698	4585	1638	1049	551	7822	-4118	-6	50595
Jun-2012	0	199	600	1738	140	540	697	3914	5208	1365	933	531	8037	-4117	-6	46478
Jul-2012	0	206	745	1979	144	599	748	4421	6593	1192	891	547	9223	-4796	-6	41682
Aug-2012	0	206	683	1883	144	636	744	4295	6674	1095	834	546	9149	-4848	-6	36834
Sep-2012	0	199	540	981	140	632	680	3172	5480	1079	758	528	7844	-4666	-7	32168
Oct-2012	0	206	396	3315	144	589	498	5148	4478	1199	790	545	7013	-1871	5	30297
Nov-2012	0	199	264	11186	140	409	-145	12053	3478	1306	860	529	6172	5876	5	36173
Dec-2012	2074	206	199	2180	144	492	384	5678	3109	1511	875	551	6046	-373	6	35800
Jan-2013	898	206	201	1631	144	571	459	4109	2744	1582	849	550	5725	-1622	6	34178
Feb-2013	313	186	272	858	130	550	535	2844	2317	1414	732	496	4959	-2119	5	32059
Mar-2013	1037	206	351	1532	144	610	546	4426	3025	1547	791	550	5913	-1495	7	30564
Apr-2013	87	199	486	2575	140	627	577	4690	3721	1394	730	530	6376	-1680	-6	28885
May-2013	0	206	564	1032	144	674	649	3269	4585	1334	711	547	7178	-3903	-6	24982
Jun-2013	0	199	607	909	140	675	657	3186	5208	1163	647	529	7546	-4355	-6	20627
Jul-2013	0	206	754	997	144	718	707	3526	6593	1050	628	545	8816	-5285	-6	15342
Aug-2013	0	206	691	1030	144	739	709	3518	6674	964	597	544	8779	-5255	-6	10087
Sep-2013	0	199	546	1379	140	725	582	3570	5480	963	563	526	7532	-3955	-6	6131
Oct-2013	109	206	401	1344	144	765	577	3545	4478	1074	572	544	6668	-3128	5	3003
Nov-2013	683	199	267	1423	140	732	536	3979	3478	1147	558	529	5711	-1738	5	1265
Dec-2013	41	206	201	1433	144	775	501	3301	3109	1272	572	546	5500	-2205	6	-939
Jan-2014	3531	206	203	5150	144	648	81	9963	2819	1394	704	553	5470	4488	6	3548
Feb-2014	1283	186	275	5408	130	559	-231	7610	2367	1251	676	498	4791	2814	5	6363
Mar-2014	10073	206	355	6921	144	516	-90	18125	3096	1585	901	567	6149	11966	10	18329
Apr-2014	1156	199	492	3508	140	546	276	6316	3810	1311	847	535	6503	-179	-7	18150
May-2014	138	206	571	1280	144	638	578	3554	4704	1182	815	548	7249	-3689	-6	14461
Jun-2014	0	199	614	1641	140	663	591	3848	5352	965	727	529	7573	-3719	-6	10742
Jul-2014	0	206	762	1904	144	710	623	4350	6773	833	690	546	8842	-4486	-6	6256
Aug-2014	0	206	699	2444	144	685	568	4745	6865	744	648	544	8802	-4051	-6	2205
Sep-2014	1082	199	553	2021	140	648	516	5159	5633	740	618	528	7519	-2354	-7	-150
Oct-2014	265	206	405	2073	144	677	515	4285	4611	853	628	545	6637	-2358	5	-2507
Nov-2014	5662	199	270	3763	140	601	339	10973	3580	1034	699	539	5851	5116	5	2609
Dec-2014	3128	206	203	4112	144	613	140	8546	3201	1189	764	554	5707	2833	6	5442
Jan-2015	18634	206	206	2702	144	536	259	22687	2744	1683	940	584	5952	16730	6	22172
Feb-2015	14722	186	278	3238	130	459	384	19398	2317	1678	941	528	5464	13928	5	36100
Mar-2015	28090	206	359	4415	144	285	481	33980	3025	2514	1337	609	7484	26489	7	62589
Apr-2015	9908	199	497	3355	140	350	551	15000	3721	2093	1248	561	7623	7368	9	69956
May-2015	430	206	577	1712	144	512	612	4192	4585	1683	1129	556	7953	-3754	-6	66202

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Entire Aquifer System (Alluvium and Saugus Combined)

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December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jun-2015	0	199	621	2082	140	545	662	4249	5208	1493	984	533	8219	-3964	-6	62238
Jul-2015	0	206	771	2180	144	597	682	4580	6593	1378	926	549	9446	-4860	-6	57377
Aug-2015	2515	206	706	1797	144	603	717	6688	6674	1342	891	552	9458	-2764	-6	54613
Sep-2015	3976	199	559	1470	140	543	731	7618	5480	1240	856	538	8114	-493	-3	54120
Oct-2015	3740	206	410	2729	144	525	642	8396	4478	1421	911	556	7366	1024	5	55144
Nov-2015	10832	199	273	16103	140	204	-1129	26622	3478	2000	1150	553	7181	19435	5	74579
Dec-2015	11026	206	206	14475	144	272	-439	25890	3109	2458	1388	575	7530	18354	6	92933
Jan-2016	0	206	208	656	144	454	629	2298	2744	1900	1197	555	6396	-4104	5	88829
Feb-2016	0	192	281	1247	135	464	538	2857	2400	1717	1040	516	5674	-2821	5	86007
Mar-2016	0	206	363	1130	144	532	649	3025	3025	1751	1036	550	6362	-3341	3	82667
Apr-2016	0	199	503	984	140	541	687	3054	3721	1563	937	532	6753	-3693	-7	78974
May-2016	0	206	584	960	144	584	747	3225	4585	1474	903	549	7511	-4280	-6	74694
Jun-2016	0	199	628	1000	140	585	734	3285	5208	1302	820	530	7861	-4571	-6	70123
Jul-2016	0	206	780	1146	144	624	766	3665	6593	1182	796	547	9118	-5447	-6	64676
Aug-2016	0	206	714	1369	144	643	708	3784	6674	1094	754	546	9068	-5278	-6	59398
Sep-2016	0	199	565	1093	140	640	714	3351	5480	1052	700	528	7760	-4402	-6	54996
Oct-2016	0	206	415	1171	144	680	685	3300	4478	1154	702	546	6880	-3585	5	51411
Nov-2016	0	199	276	1784	140	674	421	3495	3478	1218	667	529	5892	-2402	5	49008
Dec-2016	0	206	208	1428	144	713	529	3228	3109	1367	678	547	5701	-2478	6	46530
Jan-2017	0	206	210	1307	144	726	511	3105	2819	1410	663	548	5440	-2341	5	44189
Feb-2017	0	186	285	1205	130	665	448	2919	2367	1271	583	495	4716	-1802	5	42387
Mar-2017	0	206	368	1114	144	745	569	3146	3096	1361	623	548	5628	-2481	-1	39906
Apr-2017	0	199	509	1077	140	727	571	3221	3810	1201	577	530	6119	-2891	-7	37016
May-2017	0	206	590	1030	144	757	616	3344	4704	1086	567	547	6903	-3554	-6	33462
Jun-2017	0	199	635	984	140	749	606	3312	5352	913	519	529	7313	-3995	-6	29467
Jul-2017	0	206	789	1070	144	781	639	3629	6773	795	504	546	8618	-4984	-6	24483
Aug-2017	0	206	723	1098	144	788	637	3596	6865	712	479	545	8601	-4999	-6	19484
Sep-2017	0	199	572	1075	140	763	596	3345	5633	692	450	527	7301	-3950	-7	15534
Oct-2017	0	206	420	1252	144	793	574	3388	4611	807	462	544	6425	-3043	5	12491
Nov-2017	0	199	280	1221	140	773	522	3134	3580	884	449	528	5441	-2312	5	10179
Dec-2017	0	206	210	1279	144	805	505	3150	3201	1019	466	546	5232	-2088	6	8092
Jan-2018	5322	206	214	3681	144	696	257	10520	2819	1212	594	557	5182	5331	6	13423
Feb-2018	6060	186	290	2570	130	600	162	9998	2367	1198	587	507	4659	5334	5	18758
Mar-2018	4912	206	374	3125	144	635	347	9743	3096	1332	702	559	5689	4044	10	22802
Apr-2018	802	199	518	2818	140	676	519	5672	3810	1152	638	534	6134	-455	-6	22346
May-2018	0	206	601	1137	144	732	604	3425	4704	1053	608	548	6914	-3483	-6	18863
Jun-2018	0	199	647	1003	140	728	604	3321	5352	874	544	529	7299	-3972	-6	14891
Jul-2018	46	206	804	1174	144	762	628	3763	6773	756	522	546	8598	-4829	-6	10062
Aug-2018	0	206	736	1138	144	771	631	3626	6865	675	490	545	8575	-4943	-6	5120
Sep-2018	1622	199	582	1069	140	747	598	4958	5633	679	469	530	7311	-2348	-6	2772
Oct-2018	620	206	427	4384	144	680	292	6754	4611	787	578	546	6523	225	5	2998

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Entire Aquifer System (Alluvium and Saugus Combined)

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Nov-2018	1412	199	285	4609	140	601	223	7469	3580	888	626	531	5625	1839	5	4836
Dec-2018	219	206	214	5358	144	568	145	6854	3201	1020	690	547	5459	1389	6	6226
Jan-2019	383	206	221	1321	144	641	551	3468	3160	1113	678	548	5500	-2027	-5	4198
Feb-2019	111	186	299	1128	130	600	528	2982	2678	1016	595	495	4784	-1807	4	2392
Mar-2019	309	206	386	1061	144	695	616	3416	3441	1104	630	548	5724	-2303	-5	89
Apr-2019	26	199	534	1531	140	683	588	3701	4147	1028	584	529	6289	-2583	-5	-2494
May-2019	0	206	620	1069	144	741	645	3425	5052	931	569	547	7098	-3667	-6	-6162
Jun-2019	0	199	667	1012	140	745	655	3417	5689	808	520	528	7545	-4123	-6	-10284
Jul-2019	16	206	829	1090	144	788	704	3776	7407	709	505	545	9166	-5384	-6	-15668
Aug-2019	4	206	759	1113	144	805	703	3735	7496	642	479	544	9161	-5421	-6	-21089
Sep-2019	0	199	601	1083	140	795	644	3461	6243	623	447	526	7838	-4372	-5	-25461
Oct-2019	634	206	441	1088	144	833	631	3977	4955	720	457	545	6676	-2705	5	-28166
Nov-2019	701	199	294	1529	140	800	498	4161	3911	814	447	529	5700	-1545	5	-29710
Dec-2019	876	206	221	1870	144	811	441	4569	3541	954	491	548	5534	-970	6	-30681
Jan-2020	1991	206	229	1894	144	776	446	5686	3648	1030	519	550	5748	-56	-5	-30737
Feb-2020	2064	192	310	3944	135	690	180	7516	3212	982	568	516	5277	2237	2	-28500
Mar-2020	706	206	400	3332	144	738	221	5747	3925	995	607	549	6076	-324	-6	-28824
Apr-2020	2424	199	554	1654	140	726	443	6139	4635	896	575	534	6640	-495	-6	-29319
May-2020	55	206	643	2017	144	793	461	4318	5584	794	549	547	7474	-3151	-6	-32470
Jun-2020	0	199	691	1121	140	783	550	3483	6233	661	494	528	7917	-4428	-6	-36898
Jul-2020	0	206	859	1143	144	833	600	3786	8248	511	475	545	9779	-5988	-6	-42886
Aug-2020	0	206	787	1175	144	849	604	3764	8349	417	448	544	9757	-5987	-6	-48873
Sep-2020	61	199	623	1646	140	798	527	3992	7036	382	425	526	8369	-4371	-6	-53244
Oct-2020	0	206	457	1867	144	818	509	4000	6006	430	446	543	7425	-3429	5	-56673
Nov-2020	560	199	305	1409	140	799	504	3915	4413	499	436	528	5875	-1966	5	-58639
Dec-2020	4348	206	229	1081	144	823	553	7384	4046	668	482	554	5751	1628	6	-57011
Jan-2021	0	206	236	1075	144	854	537	3051	3235	718	468	547	4968	-1922	5	-58933
Feb-2021	0	186	319	1030	130	781	467	2914	2728	666	412	494	4299	-1391	5	-60324
Mar-2021	0	206	412	1084	144	874	526	3247	3512	723	441	547	5223	-1981	5	-62305
Apr-2021	0	199	571	1051	140	855	519	3335	4236	624	407	529	5796	-2457	-4	-64762
May-2021	0	206	662	1109	144	898	546	3566	5171	567	402	546	6686	-3114	-6	-67876
Jun-2021	0	199	712	1100	140	882	538	3571	5833	473	371	527	7205	-3628	-6	-71504
Jul-2021	0	206	885	1173	144	917	571	3897	7587	377	361	544	8869	-4967	-6	-76471
Aug-2021	0	206	811	1197	144	924	571	3853	7688	312	344	543	8887	-5028	-6	-81499
Sep-2021	0	199	642	1261	140	886	528	3655	6396	310	328	525	7560	-3899	-6	-85398
Oct-2021	0	206	471	1274	144	918	526	3539	5087	377	339	543	6346	-2813	5	-88211
Nov-2021	0	199	314	1146	140	895	496	3190	4013	440	329	526	5309	-2125	5	-90336
Dec-2021	0	206	236	1120	144	935	502	3143	3633	533	343	545	5054	-1917	6	-92253
Jan-2022	0	206	241	1270	144	937	464	3263	3648	609	347	546	5150	-1883	-5	-94136
Feb-2022	0	186	327	1223	130	846	387	3099	3101	572	312	493	4479	-1383	3	-95519
Mar-2022	0	206	422	1284	144	937	457	3449	3925	623	341	546	5435	-1980	-5	-97498

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Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

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Apr-2022	0	199	584	1101	140	908	486	3417	4635	535	320	528	6019	-2596	-6	-100094
May-2022	0	206	677	1176	144	940	515	3659	5584	480	320	545	6929	-3265	-6	-103359
Jun-2022	0	199	729	1129	140	920	512	3628	6233	379	297	527	7436	-3802	-6	-107162
Jul-2022	0	206	905	1209	144	958	546	3968	8248	286	291	543	9369	-5395	-6	-112556
Aug-2022	0	206	829	1250	144	962	548	3940	8349	238	279	542	9408	-5463	-6	-118019
Sep-2022	0	199	656	1219	140	936	514	3663	7036	227	266	524	8054	-4384	-6	-122404
Oct-2022	0	206	481	1268	144	962	511	3572	6006	264	277	542	7090	-3523	5	-125926
Nov-2022	0	199	321	1206	140	933	477	3276	4413	311	276	526	5526	-2255	5	-128181
Dec-2022	0	206	241	1309	144	965	467	3333	4046	394	296	544	5280	-1953	6	-130134
Jan-2023	1158	206	245	3211	144	877	271	6112	4518	459	362	547	5887	224	1	-129911
Feb-2023	5968	186	331	8279	130	591	-672	14814	3887	548	437	504	5377	9430	8	-120481
Mar-2023	11822	206	428	6541	144	545	-281	19405	4795	753	603	570	6722	12686	-3	-107795
Apr-2023	0	199	592	1881	140	664	320	3796	5477	525	530	533	7064	-3263	-6	-111058
May-2023	0	206	687	1513	144	721	558	3830	6454	437	502	547	7940	-4105	-6	-115162
Jun-2023	0	199	739	1313	140	738	575	3704	7075	354	443	528	8400	-4690	-6	-119853
Jul-2023	0	206	919	1462	144	776	606	4112	8847	278	413	544	10082	-5964	-6	-125817
Aug-2023	0	206	842	1292	144	818	620	3922	8947	239	375	543	10103	-6176	-6	-131993
Sep-2023	0	199	666	1300	140	800	579	3684	7615	235	338	525	8714	-5024	-6	-137016
Oct-2023	522	206	489	2310	144	780	489	4939	6857	263	364	543	8028	-3091	3	-140107
Nov-2023	0	199	326	1270	140	815	529	3279	5586	283	341	526	6736	-3462	5	-143569
Dec-2023	6208	206	245	5076	144	688	99	12667	4916	414	490	556	6377	6284	6	-137285
Jan-2024	6082	206	248	20522	144	109	-2465	24846	4518	745	678	560	6501	18339	6	-118946
Feb-2024	30855	192	336	14173	135	-187	-1262	44242	4026	1653	976	572	7227	37009	5	-81937
Mar-2024	18042	206	433	9466	144	-27	-338	27926	4795	1421	1112	593	7921	19999	6	-61938
Apr-2024	278	199	600	2433	140	206	497	4353	5477	840	907	539	7764	-3404	-7	-65342
May-2024	630	206	696	1900	144	314	639	4529	6454	623	811	552	8440	-3905	-6	-69247
Jun-2024	0	199	748	3146	140	297	528	5058	7075	490	728	531	8823	-3759	-6	-73007
Jul-2024	556	206	930	1284	144	426	750	4297	8847	349	687	548	10430	-6128	-6	-79134
Aug-2024	0	206	852	1281	144	493	764	3740	8947	291	627	545	10410	-6664	-6	-85798
Sep-2024	0	199	674	1350	140	517	709	3588	7615	301	569	527	9012	-5418	-6	-91216
Oct-2024	2874	206	495	2960	144	470	554	7703	6857	366	604	550	8377	-680	5	-91896
Nov-2024	0	199	330	3634	140	473	334	5110	5586	384	580	528	7079	-1974	5	-93870
Dec-2024	13443	206	248	5036	144	379	142	19597	4916	722	756	572	6967	12625	6	-81245
Jan-2025	29508	206	251	12483	144	180	-574	42196	2744	2175	1143	608	6670	35520	5	-45725
Feb-2025	20229	186	339	18889	130	122	-566	39330	2317	3751	1297	544	7908	31417	5	-14308
Mar-2025	7364	206	438	10256	144	160	119	18687	3025	3428	1418	573	8444	10237	6	-4071
Apr-2025	0	199	606	4257	140	229	569	5999	3721	1339	1182	537	6780	-786	5	-4856
May-2025	0	206	704	1431	144	368	800	3652	4585	965	1051	551	7151	-3505	5	-8361
Jun-2025	1121	199	757	1301	140	399	827	4744	5208	822	929	534	7493	-2751	2	-11112
Jul-2025	0	206	940	1333	144	462	871	3956	6593	689	877	548	8708	-4746	-6	-15858
Aug-2025	0	206	862	1487	144	506	858	4062	6674	573	815	547	8608	-4540	-6	-20399

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Sep-2025	0	199	682	1923	140	520	782	4245	5480	637	749	528	7394	-3154	5	-23553
Oct-2025	983	206	500	5974	144	425	469	8702	4478	793	827	548	6647	2049	6	-21504
Nov-2025	1293	199	333	5632	140	382	352	8332	3478	902	847	532	5758	2569	5	-18935
Dec-2025	1725	206	251	10904	144	259	-55	13433	3109	1216	971	551	5847	7580	6	-11355
Jan-2026	0	206	253	1540	144	429	539	3111	3160	1186	907	549	5802	-2686	-5	-14041
Feb-2026	0	186	343	1346	130	436	496	2937	2678	1044	783	495	5000	-2071	7	-16112
Mar-2026	0	206	443	1454	144	529	587	3363	3441	1115	822	548	5927	-2559	-5	-18671
Apr-2026	0	199	613	2307	140	546	635	4440	4147	1092	758	530	6528	-2083	-6	-20753
May-2026	0	206	711	1274	144	594	714	3643	5052	989	740	547	7329	-3680	-6	-24434
Jun-2026	0	199	765	1106	140	599	713	3521	5689	810	679	529	7707	-4181	-6	-28614
Jul-2026	0	206	950	1125	144	644	762	3831	7407	677	658	546	9288	-5451	-6	-34066
Aug-2026	0	206	871	1137	144	671	760	3790	7496	598	621	545	9260	-5465	-6	-39531
Sep-2026	0	199	689	1132	140	667	697	3524	6243	591	576	527	7936	-4407	-5	-43937
Oct-2026	0	206	505	1214	144	709	676	3455	4955	681	580	544	6759	-3310	5	-47247
Nov-2026	0	199	337	1232	140	704	601	3213	3911	748	553	528	5738	-2531	5	-49779
Dec-2026	0	206	253	1961	144	745	380	3690	3541	863	563	546	5513	-1829	6	-51608
Jan-2027	38098	206	256	9240	144	234	-136	48043	2819	1995	1095	620	6529	41509	6	-10099
Feb-2027	3345	186	346	12874	130	159	-769	16272	2367	2208	1058	513	6146	10121	5	23
Mar-2027	14387	206	447	6638	144	200	98	22119	3096	2252	1294	581	7223	14891	6	14913
Apr-2027	1248	199	619	2123	140	322	514	5165	3810	1677	1125	539	7152	-1991	4	12922
May-2027	451	206	719	3621	144	341	560	6041	4704	1249	1071	552	7576	-1524	-10	11398
Jun-2027	1317	199	773	1738	140	431	699	5296	5352	1129	955	534	7970	-2667	-6	8731
Jul-2027	0	206	960	1962	144	501	731	4504	6773	948	902	548	9171	-4660	-6	4070
Aug-2027	0	206	880	2061	144	547	710	4547	6865	830	832	547	9074	-4521	-6	-450
Sep-2027	0	199	696	1053	140	566	675	3328	5633	734	753	528	7649	-4312	-9	-4762
Oct-2027	0	206	511	5225	144	486	377	6948	4611	829	824	546	6811	132	5	-4630
Nov-2027	0	199	340	4539	140	456	342	6017	3580	894	824	529	5828	184	5	-4447
Dec-2027	4039	206	256	17482	144	79	-821	21385	3201	1542	1068	555	6366	15013	6	10566
Jan-2028	2861	206	259	7425	144	139	153	11186	2744	1537	1113	555	5949	5231	6	15798
Feb-2028	6482	192	350	1959	135	210	448	9777	2400	1666	1039	526	5631	4141	5	19939
Mar-2028	2003	206	452	1611	144	336	595	5348	3025	1591	1053	555	6224	-884	7	19055
Apr-2028	125	199	626	1927	140	398	681	4095	3721	1386	939	532	6578	-2479	-4	16576
May-2028	655	206	726	1662	144	461	757	4612	4585	1355	905	550	7394	-2776	-6	13800
Jun-2028	0	199	781	1009	140	492	746	3368	5208	1074	813	530	7625	-4252	-6	9548
Jul-2028	0	206	970	1111	144	548	788	3767	6593	920	783	547	8843	-5070	-6	4477
Aug-2028	0	206	889	1072	144	593	785	3689	6674	838	736	546	8794	-5099	-6	-622
Sep-2028	0	199	703	1690	140	552	694	3979	5480	839	685	527	7532	-3547	-6	-4169
Oct-2028	1252	206	516	1196	144	623	689	4626	4478	964	696	548	6687	-2066	5	-6235
Nov-2028	1021	199	344	4932	140	514	423	7572	3478	1053	755	531	5817	1750	5	-4485
Dec-2028	8380	206	259	6909	144	375	222	16495	3109	1471	949	563	6092	10396	6	5912
Jan-2029	2325	206	261	1557	144	488	494	5475	2744	1460	918	555	5677	-207	6	5705

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Feb-2029	80	186	354	2281	130	458	470	3960	2317	1253	803	497	4869	-914	5	4791
Mar-2029	0	206	457	2222	144	547	624	4200	3025	1431	847	549	5852	-1658	6	3132
Apr-2029	0	199	632	1959	140	567	620	4116	3721	1238	771	530	6261	-2139	-6	993
May-2029	0	206	734	1281	144	604	666	3635	4585	1148	754	547	7035	-3393	-6	-2400
Jun-2029	0	199	789	982	140	633	682	3424	5208	991	686	529	7414	-3985	-6	-6385
Jul-2029	17	206	981	1055	144	684	732	3818	6593	889	664	546	8691	-4867	-6	-11252
Aug-2029	0	206	898	1124	144	703	730	3805	6674	838	627	545	8684	-4874	-6	-16126
Sep-2029	185	199	711	1116	140	699	667	3715	5480	825	585	527	7417	-3695	-6	-19821
Oct-2029	0	206	521	1307	144	743	616	3537	4478	922	588	545	6533	-3002	5	-22823
Nov-2029	1300	199	348	1609	140	721	463	4780	3478	1009	574	530	5591	-817	5	-23639
Dec-2029	2342	206	261	2127	144	746	403	6230	3109	1174	607	551	5441	784	6	-22855
Jan-2030	6649	206	264	30367	144	364	-2332	35662	2744	2840	926	561	7070	28585	6	5730
Feb-2030	41911	186	357	11284	130	68	-188	53749	2317	4454	1410	575	8756	44987	5	50717
Mar-2030	7582	206	461	14901	144	205	-252	23247	3025	5042	1653	578	10298	12944	6	63661
Apr-2030	4344	199	639	15593	140	223	-394	20743	3721	6603	1694	547	12565	8174	4	71835
May-2030	10478	206	741	1503	144	280	787	14138	4585	3066	1571	573	9795	4350	-6	76184
Jun-2030	114	199	797	4951	140	276	501	6978	5208	1957	1376	536	9077	-2093	-6	74092
Jul-2030	0	206	990	1313	144	395	824	3872	6593	1477	1227	550	9847	-5969	-6	68123
Aug-2030	0	206	907	1432	144	444	825	3958	6674	1238	1108	548	9568	-5604	-6	62519
Sep-2030	400	199	718	1537	140	457	752	4203	5480	1139	1008	531	8158	-3947	-7	58571
Oct-2030	629	206	527	1351	144	512	735	4104	4478	1260	995	549	7282	-3184	5	55387
Nov-2030	2591	199	351	1660	140	508	681	6129	3478	1375	953	535	6341	-217	5	55171
Dec-2030	2648	206	264	2425	144	505	656	6848	3109	1598	979	554	6240	603	6	55773
Jan-2031	0	206	267	1460	144	580	661	3317	2744	1583	922	550	5799	-2487	6	53286
Feb-2031	0	186	361	1458	130	547	580	3262	2317	1430	793	496	5035	-1778	5	51508
Mar-2031	0	206	466	971	144	629	626	3042	3025	1558	836	549	5968	-2931	5	48577
Apr-2031	0	199	645	2415	140	626	600	4625	3721	1551	776	531	6580	-1948	-6	46629
May-2031	0	206	748	2214	144	664	643	4620	4585	1513	767	548	7413	-2788	-6	43841
Jun-2031	0	199	805	1101	140	657	650	3551	5208	1305	699	530	7742	-4185	-6	39656
Jul-2031	0	206	1000	1017	144	693	716	3776	6593	1159	682	547	8980	-5199	-6	34457
Aug-2031	0	206	916	1028	144	708	722	3724	6674	1052	646	546	8917	-5187	-6	29270
Sep-2031	0	199	725	1013	140	700	665	3441	5480	1008	600	528	7616	-4168	-6	25102
Oct-2031	0	206	532	1029	144	740	651	3301	4478	1102	600	546	6726	-3430	5	21672
Nov-2031	0	199	354	935	140	731	599	2958	3478	1142	566	529	5715	-2761	5	18911
Dec-2031	0	206	267	958	144	769	596	2940	3109	1275	576	547	5507	-2573	6	16338
Jan-2032	321	206	269	1282	144	753	560	3536	2744	1349	597	548	5238	-1708	6	14630
Feb-2032	2505	192	364	2135	135	676	471	6478	2400	1322	607	517	4846	1627	5	16257
Mar-2032	837	206	470	1924	144	737	527	4844	3025	1407	639	550	5621	-783	6	15474
Apr-2032	558	199	651	996	140	724	568	3835	3721	1242	597	532	6092	-2251	-6	13222
May-2032	0	206	755	1455	144	778	585	3923	4585	1216	588	548	6937	-3008	-6	10215
Jun-2032	0	199	812	1401	140	774	587	3913	5208	1095	544	529	7376	-3457	-6	6758

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Aquifer System (Alluvium and Saugus Combined)

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jul-2032	0	206	1009	1001	144	813	668	3842	6593	946	531	546	8615	-4768	-6	1990
Aug-2032	82	206	925	1045	144	825	678	3905	6674	862	507	545	8588	-4677	-6	-2687
Sep-2032	0	199	731	1020	140	811	625	3527	5480	837	475	527	7319	-3786	-6	-6474
Oct-2032	300	206	537	1043	144	848	613	3691	4478	938	486	545	6447	-2762	5	-9236
Nov-2032	0	199	358	1396	140	805	509	3407	3478	1014	482	528	5502	-2101	5	-11337
Dec-2032	0	206	269	1526	144	843	439	3426	3109	1148	500	546	5304	-1883	6	-13220
Jan-2033	7232	206	272	5141	144	666	86	13747	3235	1389	674	561	5859	7893	-5	-5326
Feb-2033	13336	186	367	4009	130	522	-78	18472	2728	1519	727	522	5495	12969	8	7643
Mar-2033	4189	206	474	3200	144	617	237	9068	3512	1536	787	561	6396	2677	-6	10320
Apr-2033	3173	199	657	1272	140	657	520	6617	4236	1274	727	539	6775	-153	-6	10167
May-2033	0	206	762	1581	144	704	543	3940	5171	1109	685	550	7515	-3569	-6	6599
Jun-2033	0	199	820	1015	140	732	598	3503	5833	901	603	530	7867	-4358	-6	2240
Jul-2033	0	206	1018	1077	144	777	636	3858	7587	756	572	547	9461	-5597	-6	-3357
Aug-2033	0	206	933	1108	144	793	633	3817	7688	652	534	546	9420	-5597	-6	-8954
Sep-2033	0	199	738	1142	140	776	586	3580	6396	613	494	527	8031	-4445	-6	-13399
Oct-2033	273	206	542	1186	144	806	583	3740	5087	713	502	546	6848	-3114	5	-16513
Nov-2033	3941	199	361	8148	140	560	-342	13007	4013	911	630	536	6090	6912	5	-9601
Dec-2033	1611	206	272	13152	144	378	-1296	14467	3633	1082	740	551	6007	8455	6	-1146
Jan-2034	0	206	274	981	144	554	517	2677	2819	1072	688	548	5127	-2456	6	-3602
Feb-2034	0	186	371	954	130	541	550	2732	2367	960	593	495	4415	-1688	5	-5290
Mar-2034	0	206	479	1006	144	641	631	3107	3096	1029	617	548	5289	-2188	5	-7478
Apr-2034	0	199	662	976	140	653	618	3248	3810	892	555	530	5787	-2538	0	-10016
May-2034	0	206	769	1031	144	709	642	3500	4704	820	534	547	6605	-3098	-8	-13114
Jun-2034	0	199	827	1031	140	714	625	3535	5352	706	485	529	7072	-3531	-6	-16645
Jul-2034	0	206	1027	1111	144	758	655	3901	6773	606	470	545	8395	-4488	-6	-21133
Aug-2034	0	206	941	1135	144	776	650	3853	6865	539	447	544	8396	-4537	-6	-25670
Sep-2034	0	199	744	1201	140	755	600	3639	5633	548	422	526	7130	-3483	-8	-29153
Oct-2034	0	206	546	1207	144	793	596	3493	4611	639	429	544	6224	-2736	5	-31890
Nov-2034	0	199	364	1070	140	782	560	3115	3580	701	412	527	5221	-2111	5	-34001
Dec-2034	0	206	274	1031	144	825	564	3044	3201	808	425	546	4980	-1941	6	-35943
Jan-2035	0	206	276	1808	144	819	383	3636	2819	900	432	547	4698	-1067	6	-37010
Feb-2035	5222	186	374	3726	130	628	218	10485	2367	942	515	504	4327	6152	5	-30858
Mar-2035	1376	206	483	1770	144	755	378	5112	3096	1007	551	551	5205	-101	8	-30959
Apr-2035	1359	199	668	2019	140	742	509	5635	3810	983	514	533	5840	-199	-6	-31158
May-2035	983	206	775	1530	144	781	591	5010	4704	917	501	549	6672	-1656	-6	-32813
Jun-2035	0	199	834	1335	140	782	583	3872	5352	738	448	529	7067	-3189	-6	-36002
Jul-2035	12	206	1036	1108	144	821	613	3939	6773	621	430	545	8370	-4425	-6	-40428
Aug-2035	0	206	949	1136	144	832	610	3877	6865	544	408	544	8361	-4478	-6	-44906
Sep-2035	0	199	751	1101	140	816	570	3577	5633	526	384	526	7069	-3486	-7	-48392
Oct-2035	636	206	551	2384	144	782	531	5234	4611	612	466	545	6235	-1006	5	-49398
Nov-2035	364	199	367	1205	140	792	519	3586	3580	679	448	528	5236	-1656	5	-51054

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Aquifer System (Alluvium and Saugus Combined)

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

December 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Dec-2035	1486	206	276	3268	144	739	476	6597	3201	817	548	549	5114	1477	6	-49577

Table D-1a

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Entire Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	19649	1173	2492	0	55545	1705	5801	13596	99962	38653	18722	8981	6573	10103	83032	16938	-8	16938
2013	1278	1170	2506	0	16142	1700	8159	22790	53745	38598	14904	6379	6438	9402	75721	-21975	-1	-5037
2014	10614	1170	2520	0	40225	1700	7506	17586	81322	39998	13081	6998	6487	9244	75808	5515	-1	478
2015	41894	1170	2534	0	56251	1700	5430	17165	126145	38598	20983	9189	6694	9618	85082	41055	8	41533
2016	0	1173	2548	0	13968	1705	7134	24494	51022	38653	16775	7992	6475	9424	79319	-28293	-4	13240
2017	0	1170	2562	0	13713	1700	9071	24557	52773	39998	12151	4797	6432	8832	72210	-19430	-6	-6190
2018	8475	1170	2576	5	32068	1700	8198	20076	74269	39998	11626	5367	6480	8889	72360	1907	2	-4284
2019	1234	1170	2590	21	14895	1700	8937	22101	52649	38598	10464	5025	6430	11035	71552	-18907	4	-23191
2020	4924	1173	2604	50	22281	1705	9425	20289	62451	40055	8266	4685	6464	13357	72827	-10376	-1	-33567
2021	0	1170	2618	96	13620	1700	10620	21086	50910	39998	6121	3394	6416	11507	67435	-16522	-3	-50089
2022	0	1170	2632	134	14644	1700	11205	20070	51556	39998	4919	2625	6407	13137	67086	-15533	2	-65622
2023	10357	1170	2646	148	35449	1700	8814	14971	75256	39998	4789	4008	6466	17455	72717	2533	5	-63089
2024	29346	1173	2660	157	67175	1705	3470	7308	112994	40055	8185	6946	6617	19065	80869	32128	-3	-30961
2025	25096	1170	2674	163	75859	1700	4011	6760	117434	38598	17290	9213	6601	11683	83386	34047	1	3086
2026	0	1170	2688	168	16830	1700	7273	18567	48397	38598	10395	6604	6433	11871	73902	-25509	4	-22423
2027	25363	1170	2702	174	68550	1700	4322	10930	114911	39998	16287	9075	6592	10227	82179	32745	-13	10322
2028	9188	1173	2716	181	32504	1705	5241	18163	70870	38653	14694	8407	6510	9801	78065	-7194	0	3128
2029	2520	1170	2730	186	18620	1700	7593	21405	55925	38598	13177	6695	6452	9420	74342	-18415	-2	-15287
2030	31195	1170	2744	192	88307	1700	4236	9603	139148	38598	32048	11661	6638	10215	99160	39994	-6	24707
2031	0	1170	2758	196	15599	1700	8045	23176	52645	38598	15677	6610	6445	9402	76733	-24086	-3	621
2032	1857	1173	2772	200	16224	1705	9387	23198	56515	38653	13377	5002	6462	9087	72581	-16065	-1	-15444
2033	13614	1170	2786	203	42029	1700	7988	17435	86925	39998	12453	5770	6514	11011	75747	11174	4	-4270
2034	0	1170	2800	203	12735	1700	8501	22805	49916	39998	9321	4650	6430	9178	69578	-19654	-8	-23924
2035	4613	1170	2814	203	22391	1700	9288	21146	63326	39998	9285	4270	6451	8708	68711	-5385	0	-29309

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	5474	472	810	0	16328	5801	3794	32679	11816	1315	1230	14829	75	29264	3418	-3	3418
2013	356	471	816	0	3042	8159	6225	19068	11800	840	902	14012	41	27595	-8527	0	-5109
2014	2957	471	822	0	8554	7506	3991	24302	5550	874	839	14762	46	22071	2230	0	-2879
2015	11670	471	828	0	29810	5430	1373	49582	11800	2132	1367	14876	75	30250	19331	2	16452
2016	0	472	835	0	4044	7134	5736	18220	11816	1587	1385	15133	68	29989	-11768	-1	4684
2017	0	471	841	0	2224	9071	5169	17776	5550	943	922	15667	50	23133	-5355	-1	-671
2018	2361	471	847	0	5887	8198	4652	22417	5550	821	812	15809	50	23041	-626	1	-1297
2019	344	471	853	0	1408	8937	6449	18461	11800	416	535	14351	34	27136	-8676	1	-9973
2020	1372	472	860	0	2705	9425	4979	19813	5557	385	436	15098	37	21514	-1701	0	-11674
2021	0	471	866	0	499	10620	5212	17667	5550	140	322	15548	37	21597	-3929	-1	-15602
2022	0	471	872	0	1025	11205	4932	18506	5550	129	288	15646	36	21649	-3144	1	-18746
2023	2885	471	878	0	7610	8814	4101	24759	5550	454	363	15878	41	22286	2471	2	-16275
2024	8175	472	885	0	25273	3470	1825	40101	5557	2650	1321	16430	62	26020	14081	-1	-2194
2025	6991	471	891	0	34121	4011	1861	48346	11800	8131	2145	16565	103	38744	9602	0	7408
2026	0	471	897	0	3239	7273	6398	18279	11800	1314	1124	15076	56	29370	-11092	1	-3684
2027	7065	471	903	0	22582	4322	3117	38461	5550	3596	1832	15461	69	26507	11957	-3	8273
2028	2559	472	910	0	7473	5241	6360	23016	11816	2022	1541	14581	55	30015	-6998	0	1275
2029	702	471	916	0	3488	7593	6308	19478	11800	852	946	13788	40	27426	-7948	-1	-6673
2030	8690	471	922	0	52813	4236	-1780	65352	11800	13866	3195	16691	130	45682	19673	-3	13000
2031	0	471	928	0	1252	8045	6698	17394	11800	982	1213	15167	55	29217	-11822	-1	1178
2032	517	472	935	0	1571	9387	6395	19276	11816	379	764	14269	36	27264	-7988	0	-6810
2033	3792	471	941	0	11126	7988	3764	28082	5550	694	830	14985	43	22102	5979	1	-831
2034	0	471	947	0	499	8501	5659	16077	5550	481	648	15452	44	22175	-6096	-2	-6927
2035	1285	471	953	0	4060	9288	4656	20714	5550	413	540	15522	44	22069	-1355	0	-8281

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	667	270	88	0	1438	0	220	2683	0	0	941	292	754	1987	695	0	695
2013	43	269	88	0	18	0	520	938	0	0	620	323	718	1660	-722	0	-27
2014	360	269	89	0	1029	0	413	2160	0	0	764	309	718	1792	368	0	342
2015	1421	269	89	0	916	0	452	3148	0	0	915	321	755	1991	1158	0	1499
2016	0	270	90	0	0	0	515	875	0	0	765	341	749	1854	-980	0	520
2017	0	269	90	0	0	0	604	963	0	0	373	351	734	1458	-495	0	25
2018	288	269	90	0	796	0	542	1985	0	0	544	359	743	1646	340	0	364
2019	42	269	91	0	13	0	555	970	0	0	494	350	830	1674	-704	0	-340
2020	167	270	91	0	412	0	603	1543	0	0	477	365	903	1745	-202	0	-542
2021	0	269	92	0	0	0	653	1014	0	0	288	399	892	1579	-566	0	-1108
2022	0	269	92	0	0	0	661	1023	0	0	189	407	918	1514	-491	0	-1599
2023	351	269	93	0	908	0	507	2128	0	0	484	399	1009	1892	236	0	-1363
2024	996	270	93	0	1326	0	342	3027	0	0	848	415	1094	2357	670	0	-694
2025	851	269	93	0	1585	0	369	3168	0	0	1042	409	898	2348	820	0	126
2026	0	269	94	0	0	0	603	966	0	0	779	382	852	2013	-1046	0	-920
2027	860	269	94	0	1614	0	316	3154	0	0	945	317	783	2045	1109	0	189
2028	312	270	95	0	874	0	370	1920	0	0	881	306	737	1924	-4	0	185
2029	86	269	95	0	152	0	498	1100	0	0	717	295	696	1707	-608	0	-423
2030	1058	269	96	0	1476	0	147	3046	0	0	1019	266	742	2026	1020	0	597
2031	0	269	96	0	0	0	572	938	0	0	594	305	697	1596	-659	0	-61
2032	63	270	97	0	80	0	570	1080	0	0	373	312	691	1375	-296	0	-357
2033	462	269	97	0	1032	0	439	2299	0	0	586	314	816	1716	584	0	227
2034	0	269	97	0	0	0	477	843	0	0	456	344	759	1559	-716	0	-489
2035	157	269	98	0	378	0	544	1446	0	0	419	347	727	1493	-47	0	-536

Table D-1d

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	4214	181	772	0	6085	0	292	7741	19285	0	0	3696	5579	6113	15388	3899	-1	3899
2013	274	181	773	0	737	0	323	7805	10092	0	0	2366	5283	5691	13340	-3248	0	651
2014	2277	181	773	0	4962	0	309	5898	14400	0	0	3004	4371	5819	13193	1207	0	1858
2015	8986	181	774	0	3952	0	321	7949	22163	0	0	3654	5444	5995	15094	7068	1	8925
2016	0	181	774	0	0	0	341	7973	9269	0	0	2869	5612	5895	14376	-5106	-1	3819
2017	0	181	775	0	0	0	351	6506	7813	0	0	1336	4660	5570	11566	-3752	-1	67
2018	1818	181	775	0	3992	0	359	6610	13735	0	0	1990	4603	5635	12228	1507	0	1574
2019	265	181	776	0	718	0	350	8284	10573	0	0	2032	5266	6714	14012	-3439	0	-1866
2020	1056	181	777	0	2381	0	365	6737	11497	0	0	1988	4526	7631	14145	-2648	0	-4514
2021	0	181	777	0	0	0	399	7303	8660	0	0	1158	4606	6841	12605	-3945	-1	-8458
2022	0	181	778	0	0	0	407	7656	9022	0	0	641	4695	7299	12634	-3613	0	-12071
2023	2221	181	778	0	4160	0	399	7733	15472	0	0	1778	4860	8634	15272	199	1	-11872
2024	6294	181	779	0	5602	0	415	7784	21055	0	0	3291	5093	9390	17773	3282	0	-8590
2025	5383	181	779	0	6749	0	409	9956	23456	0	0	3925	6385	6698	17008	6448	1	-2142
2026	0	181	780	0	0	0	382	9740	11083	0	0	2752	6115	6755	15622	-4539	0	-6682
2027	5440	181	780	0	6946	0	317	7174	20839	0	0	3643	5043	6144	14830	6011	-2	-671
2028	1971	181	781	0	3950	0	306	8915	16103	0	0	3258	5909	5878	15046	1057	0	386
2029	541	181	782	0	1290	0	295	8093	11180	0	0	2680	5351	5672	13703	-2523	0	-2137
2030	6691	181	782	0	6310	0	266	8894	23124	0	0	4022	6386	6317	16725	6399	0	4262
2031	0	181	783	0	0	0	305	8493	9761	0	0	2131	5727	5715	13573	-3812	0	450
2032	398	181	783	0	988	0	312	8113	10775	0	0	1578	5357	5540	12475	-1700	0	-1249
2033	2920	181	784	0	4407	0	314	6391	14997	0	0	2214	4529	6770	13513	1484	0	235
2034	0	181	784	0	0	0	344	6724	8033	0	0	1679	4641	5741	12061	-4026	-1	-3791
2035	990	181	785	0	2240	0	347	6695	11237	0	0	1470	4544	5450	11464	-228	0	-4019

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	4893	148	666	0	15775	0	14829	5579	-5182	36707	13388	6543	1102	7025	2202	30260	6451	-4	6451
2013	318	147	667	0	4723	0	14012	5283	-1853	23297	13370	5290	763	7327	2152	28902	-5605	0	846
2014	2643	147	668	0	13428	0	14762	4371	-1307	34712	19000	4129	642	8008	1988	33766	946	-1	1792
2015	10432	147	669	0	11737	0	14876	5444	-2935	40371	13370	6633	1215	7370	2077	30665	9702	4	11494
2016	0	148	671	0	4122	0	15133	5612	-1341	24345	13388	6166	1189	7743	2067	30553	-6206	-2	5289
2017	0	147	672	0	5207	0	15667	4660	848	27201	19000	3885	533	8261	1907	33586	-6380	-4	-1092
2018	2110	147	673	0	10904	0	15809	4603	-1083	33163	19000	3363	368	8124	1874	32729	433	1	-659
2019	307	147	674	0	5595	0	14351	5266	-3014	23326	13370	3153	354	7742	2770	27388	-4065	3	-4724
2020	1226	148	676	1	7245	0	15098	4526	-549	28371	19025	1993	233	8101	3847	33200	-4829	0	-9552
2021	0	147	677	5	5965	0	15548	4606	-1231	25717	19000	1039	145	7777	2964	30926	-5207	-2	-14759
2022	0	147	678	8	6146	0	15646	4695	-1738	25582	19000	446	103	7575	3913	31037	-5457	1	-20216
2023	2579	147	679	10	11478	0	15878	4860	-3762	31870	19000	116	59	7195	5828	32198	-331	3	-20547
2024	7308	148	681	10	16289	0	16430	5093	-6421	39537	19025	89	57	6910	6185	32266	7272	-2	-13275
2025	6249	147	682	11	19700	0	16565	6385	-11665	38074	13370	1542	341	6661	3074	24988	13085	1	-190
2026	0	147	683	11	5716	0	15076	6115	-6621	21128	13370	2478	340	7167	3302	26658	-5532	2	-5722
2027	6316	147	684	12	22702	0	15461	5043	-7168	43198	19000	3486	848	7540	2460	33333	9872	-8	4150
2028	2288	148	686	12	10291	0	14581	5909	-6388	27526	13388	3997	959	7278	2396	28018	-492	0	3658
2029	628	147	687	12	5421	0	13788	5351	-3217	22816	13370	4157	668	7520	2351	28065	-5248	-1	-1590
2030	7768	147	688	12	14999	0	16691	6386	-6483	40209	13370	6759	1511	7590	2348	31578	8634	-3	7044
2031	0	147	689	12	4434	0	15167	5727	-2158	24018	13370	5605	949	7347	2196	29467	-5448	-1	1596
2032	462	148	691	12	5008	0	14269	5357	-1941	24005	13388	4630	601	7722	2213	28554	-4549	0	-2953
2033	3390	147	692	12	13610	0	14985	4529	-1642	35723	19000	3599	451	8143	2652	33846	1875	2	-1078
2034	0	147	693	12	5693	0	15452	4641	-826	25812	19000	2424	274	8055	2052	31805	-5988	-5	-7066
2035	1149	147	694	12	7233	0	15522	4544	-670	28631	19000	2279	233	7800	1914	31226	-2595	0	-9661

Table D-1f

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	4402	102	157	0	15920	1705	0	7025	7024	36335	13450	10864	2012	6573	961	33858	2476	0	2476
2013	286	102	163	0	7623	1700	0	7327	10093	27295	13428	8774	1727	6438	802	31169	-3874	0	-1397
2014	2378	102	168	0	12252	1700	0	8008	8591	33199	15448	8078	1748	6487	675	32436	763	0	-634
2015	9386	102	174	0	9835	1700	0	7370	10328	38895	13428	12219	2038	6694	717	35096	3799	0	3165
2016	0	102	179	0	5803	1705	0	7743	11610	27142	13450	9022	1783	6475	646	31377	-4235	0	-1070
2017	0	102	185	0	6281	1700	0	8261	11431	27960	15448	7323	1633	6432	573	31408	-3448	0	-4518
2018	1899	102	190	5	10488	1700	0	8124	9355	31864	15448	7442	1652	6480	589	31612	252	0	-4265
2019	277	102	196	21	7161	1700	0	7742	9828	27028	13428	6896	1609	6430	688	29052	-2023	0	-6289
2020	1103	102	201	48	9538	1705	0	8101	8519	29317	15472	5888	1550	6464	941	30315	-997	0	-7286
2021	0	102	207	91	7156	1700	0	7777	9150	26183	15448	4941	1480	6416	775	29060	-2877	0	-10163
2022	0	102	212	126	7472	1700	0	7575	8559	25747	15448	4345	1404	6407	973	28577	-2830	0	-12993
2023	2320	102	218	138	11294	1700	0	7195	6393	29361	15448	4218	1324	6466	1946	29403	-42	0	-13035
2024	6575	102	223	146	18685	1705	0	6910	3779	38125	15472	5446	1429	6617	2336	31302	6823	0	-6211
2025	5623	102	229	152	13704	1700	0	6661	6241	34412	13428	7616	1760	6601	912	30319	4093	0	-2118
2026	0	102	234	157	7875	1700	0	7167	8447	25683	13428	6603	1609	6433	908	28982	-3299	0	-5417
2027	5682	102	240	162	14705	1700	0	7540	7491	37623	15448	9206	1808	6592	773	33826	3797	0	-1620
2028	2058	102	246	169	9915	1705	0	7278	8907	30381	13450	8675	1767	6510	736	31137	-757	0	-2377
2029	565	102	251	174	8270	1700	0	7520	9724	28306	13428	8168	1684	6452	663	30395	-2089	0	-4466
2030	6989	102	257	180	12708	1700	0	7590	8826	38353	13428	11423	1914	6638	679	34083	4270	0	-196
2031	0	102	262	184	9913	1700	0	7347	9571	29080	13428	9091	1723	6445	739	31426	-2346	0	-2541
2032	416	102	268	188	8577	1705	0	7722	10062	29040	13450	8368	1685	6462	609	30573	-1534	0	-4075
2033	3050	102	273	191	11853	1700	0	8143	8484	33796	15448	8159	1690	6514	732	32544	1253	0	-2822
2034	0	102	279	192	6543	1700	0	8055	10772	27643	15448	6416	1594	6430	583	30472	-2829	0	-5651
2035	1034	102	284	192	8479	1700	0	7800	9921	29512	15448	6593	1608	6451	574	30673	-1161	0	-6812

Table D-1g

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Alluvium and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	29070	1254	2787	0	10	0	0	3836	36956	12841	0	2499	0	2751	18090	18861	4	18861
2013	1890	1250	2834	0	0	0	0	-3706	2269	12814	0	1571	0	2649	17033	-14764	0	4098
2014	15703	1250	2882	0	0	0	0	-1709	18126	12814	0	1717	0	2727	17258	867	1	4964
2015	61979	1250	2929	0	7	0	0	-578	65587	12814	0	3511	0	2815	19140	46436	11	51400
2016	0	1254	2977	0	0	0	0	-4266	-35	12841	0	2239	0	2996	18076	-18110	0	33290
2017	0	1250	3025	2	0	0	0	-6108	-1831	12814	0	1545	0	2821	17180	-19008	-3	14282
2018	12538	1250	3072	40	0	0	0	-3421	13480	12814	0	1681	0	2757	17252	-3773	1	10509
2019	1826	1250	3120	140	0	0	0	-1862	4475	19123	0	1378	0	2000	22500	-17999	-27	-7490
2020	7285	1254	3168	264	0	0	0	59	12030	25281	0	1338	0	1391	28010	-15954	-26	-23444
2021	0	1250	3215	344	0	0	0	-1798	3011	19123	0	1152	0	1453	21728	-18720	3	-42164
2022	0	1250	3263	385	0	0	0	17	4915	25228	0	997	0	1064	27289	-22349	-26	-64512
2023	15322	1250	3310	404	0	0	0	6827	27114	34977	0	1191	0	649	36818	-9684	-19	-74197
2024	43415	1254	3358	414	10	0	0	13287	61737	35059	0	2088	0	676	37823	23912	1	-50284
2025	37127	1250	3406	420	10	0	0	10964	53176	12814	0	2893	0	1588	17295	35843	38	-14441
2026	0	1250	3453	423	0	0	0	2405	7531	19123	0	1635	0	1540	22297	-14743	-22	-29185
2027	37522	1250	3501	426	8	0	0	4507	47214	12814	0	2728	0	2230	17772	29429	13	244
2028	13592	1254	3548	430	0	0	0	1034	19858	12841	0	2060	0	2414	17315	2540	4	2784
2029	3729	1250	3596	434	0	0	0	-2399	6610	12814	0	1729	0	2419	16962	-10352	1	-7568
2030	46150	1250	3644	437	10	0	0	6011	57502	12814	0	3238	0	2803	18855	38635	13	31066
2031	0	1250	3691	438	0	0	0	-3371	2009	12814	0	1853	0	2692	17358	-15349	0	15717
2032	2747	1254	3739	439	0	0	0	-4658	3520	12841	0	1551	0	2621	17013	-13493	0	2224
2033	20140	1250	3787	440	3	0	0	-1594	24026	19123	0	1905	0	2122	23149	900	-23	3124
2034	0	1250	3834	440	0	0	0	-4025	1499	12814	0	1427	0	2393	16634	-15143	8	-12019
2035	6825	1250	3882	440	0	0	0	-4054	8343	12814	0	1377	0	2402	16592	-8249	1	-20268

Model-Simulated Annual Groundwater Budget (acre-feet per year) for Calendar Years 2012 through 2035

Entire Aquifer System (Alluvium and Saugus Combined)

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
2012	48719	2427	5279	0	55555	1705	5801	4578	124063	51494	18722	11479	6573	88268	35800	-5	35800
2013	3168	2421	5340	0	16142	1700	8159	7033	43962	51412	14904	7950	6438	80703	-36739	-2	-939
2014	26317	2421	5402	0	40225	1700	7506	3904	87475	52812	13081	8714	6487	81094	6381	-1	5442
2015	103872	2421	5464	0	56258	1700	5430	4154	179298	51412	20983	12701	6694	91789	87491	18	92933
2016	0	2427	5525	0	13968	1705	7134	7808	38566	51494	16775	10230	6475	84975	-46403	-6	46530
2017	0	2421	5587	2	13713	1700	9071	6795	39288	52812	12151	6342	6432	77737	-38438	-11	8092
2018	21014	2421	5649	45	32068	1700	8198	5009	76103	52812	11626	7049	6480	77966	-1866	2	6226
2019	3060	2421	5710	162	14895	1700	8937	7204	44088	57721	10464	6402	6430	81018	-36906	-23	-30681
2020	12210	2427	5772	314	22281	1705	9425	5598	59731	65337	8266	6022	6464	86089	-26330	-28	-57011
2021	0	2421	5833	439	13620	1700	10620	6327	40960	59121	6121	4545	6416	76203	-35242	-1	-92253
2022	0	2421	5895	519	14644	1700	11205	5884	42268	65226	4919	3622	6407	80174	-37881	-25	-130134
2023	25679	2421	5957	552	35449	1700	8814	3693	84264	74976	4789	5199	6466	91430	-7151	-15	-137285
2024	72761	2427	6018	571	67184	1705	3470	852	154989	75114	8185	9035	6617	98951	56040	-3	-81245
2025	62223	2421	6080	583	75869	1700	4011	4451	157337	51412	17290	12106	6601	87409	69890	38	-11355
2026	0	2421	6141	592	16830	1700	7273	7560	42517	57721	10395	8239	6433	82788	-40252	-19	-51608
2027	62885	2421	6203	600	68557	1700	4322	2979	149667	52812	16287	11803	6592	87494	62174	-1	10566
2028	22780	2427	6265	611	32504	1705	5241	6981	78513	51494	14694	10467	6510	83165	-4655	3	5912
2029	6249	2421	6326	620	18620	1700	7593	7166	50695	51412	13177	8424	6452	79465	-28767	-2	-22855
2030	77345	2421	6388	629	88317	1700	4236	2595	183631	51412	32048	14899	6638	104996	78629	6	55773
2031	0	2421	6450	634	15599	1700	8045	7710	42559	51412	15677	8463	6445	81998	-39435	-4	16338
2032	4604	2427	6511	639	16224	1705	9387	6830	48327	51494	13377	6553	6462	77886	-29558	-2	-13220
2033	33754	2421	6573	642	42032	1700	7988	2707	97817	59121	12453	7675	6514	85763	12074	-20	-1146
2034	0	2421	6634	643	12735	1700	8501	7208	39842	52812	9321	6078	6430	74641	-34797	-1	-35943
2035	11439	2421	6696	643	22391	1700	9288	5982	60559	52812	9285	5646	6451	74193	-13634	0	-49577

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	6371	99	94	0	11186	144	380	-408	17867	1878	1927	742	578	823	5948	11919	1	11919
Feb-2012	8997	93	127	0	5650	135	282	554	15840	1609	2236	826	559	781	6011	9828	0	21747
Mar-2012	2977	99	164	0	11519	144	341	-517	14728	2131	2344	973	571	858	6877	7849	2	29596
Apr-2012	221	96	227	0	2920	140	388	1196	5189	2772	1830	856	537	796	6791	-1596	-7	28000
May-2012	246	99	263	0	1010	144	512	1972	4246	3526	1638	817	551	824	7355	-3108	-1	24891
Jun-2012	0	96	283	0	1738	140	540	1884	4682	4100	1365	735	531	814	7546	-2864	0	22027
Jul-2012	0	99	352	0	1979	144	599	2092	5265	5118	1192	706	547	898	8461	-3195	0	18832
Aug-2012	0	99	322	0	1883	144	636	2159	5244	5189	1095	662	546	927	8420	-3176	0	15656
Sep-2012	0	96	255	0	981	140	632	2188	4292	4147	1079	602	528	881	7236	-2941	-3	12716
Oct-2012	0	99	187	0	3315	144	589	1627	5961	3428	1199	634	545	859	6665	-704	0	12011
Nov-2012	0	96	125	0	11183	140	409	-451	11501	2552	1306	711	529	835	5933	5568	0	17579
Dec-2012	836	99	94	0	2180	144	492	1301	5148	2203	1511	716	551	806	5788	-641	0	16938
Jan-2013	362	99	94	0	1631	144	571	1492	4394	1878	1582	695	550	768	5473	-1080	0	15859
Feb-2013	126	90	128	0	858	130	550	1490	3372	1553	1414	597	496	670	4730	-1358	0	14500
Mar-2013	418	99	165	0	1532	144	610	1688	4657	2131	1547	644	550	743	5614	-960	2	13541
Apr-2013	35	96	228	0	2575	140	627	1347	5048	2772	1394	593	530	740	6029	-981	-1	12560
May-2013	0	99	265	0	1032	144	674	1991	4205	3526	1334	574	547	779	6759	-2553	0	10007
Jun-2013	0	96	285	0	909	140	675	2153	4257	4100	1163	518	529	775	7085	-2828	0	7179
Jul-2013	0	99	354	0	997	144	718	2435	4747	5118	1050	498	545	857	8068	-3321	0	3858
Aug-2013	0	99	324	0	1030	144	739	2479	4816	5189	964	470	544	887	8055	-3238	0	620
Sep-2013	0	96	256	0	1379	140	725	2145	4741	4147	963	443	526	848	6927	-2183	-2	-1564
Oct-2013	44	99	188	0	1344	144	765	2038	4623	3428	1074	451	544	828	6325	-1703	0	-3266
Nov-2013	275	96	125	0	1423	140	732	1806	4597	2552	1147	442	529	758	5427	-830	0	-4097
Dec-2013	17	99	94	0	1433	144	775	1725	4287	2203	1272	456	546	750	5227	-940	0	-5037
Jan-2014	1424	99	95	0	5150	144	648	865	8426	1953	1394	573	553	746	5219	3206	0	-1831
Feb-2014	517	90	128	0	5408	130	559	402	7236	1603	1251	555	498	661	4568	2668	0	837
Mar-2014	4063	99	166	0	6921	144	516	530	12439	2202	1585	720	567	775	5849	6586	3	7423
Apr-2014	466	96	229	0	3508	140	546	1167	6153	2861	1311	682	535	736	6124	30	-2	7454
May-2014	56	99	266	0	1280	144	638	1951	4434	3645	1182	660	548	764	6798	-2364	-1	5090
Jun-2014	0	96	286	0	1641	140	663	1968	4795	4245	965	587	529	755	7081	-2286	0	2804
Jul-2014	0	99	356	0	1904	144	710	2173	5386	5298	833	554	546	832	8062	-2676	0	128
Aug-2014	0	99	326	0	2444	144	685	2152	5850	5380	744	518	544	859	8047	-2196	0	-2068
Sep-2014	436	96	258	0	2021	140	648	2037	5637	4300	740	491	528	821	6881	-1242	-2	-3309
Oct-2014	107	99	189	0	2073	144	677	1926	5216	3561	853	501	545	800	6260	-1045	0	-4354
Nov-2014	2284	96	126	0	3763	140	601	1294	8303	2654	1034	551	539	749	5527	2776	0	-1578
Dec-2014	1262	99	95	0	4112	144	613	1122	7447	2295	1189	605	554	748	5391	2056	0	478
Jan-2015	7515	99	95	0	2702	144	536	1420	12513	1878	1683	694	584	748	5588	6925	1	7403
Feb-2015	5938	90	129	0	3238	130	459	1154	11137	1553	1678	669	528	670	5099	6038	1	13441
Mar-2015	11329	99	167	0	4415	144	285	1457	17896	2131	2514	902	609	775	6930	10965	1	24406
Apr-2015	3996	96	231	0	3355	140	350	1622	9789	2772	2093	848	561	752	7026	2756	8	27162
May-2015	173	99	268	0	1712	144	512	2117	5026	3526	1683	795	556	780	7340	-2314	-1	24849
Jun-2015	0	96	288	0	2082	140	545	2072	5223	4100	1493	714	533	777	7618	-2395	0	22454
Jul-2015	0	99	358	0	2180	144	597	2317	5695	5118	1378	684	549	857	8586	-2891	0	19563

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Aug-2015	1014	99	328	0	1797	144	603	2479	6464	5189	1342	659	552	890	8631	-2167	0	17397
Sep-2015	1604	96	259	0	1470	140	543	2353	6465	4147	1240	628	538	854	7407	-941	-1	16456
Oct-2015	1508	99	190	0	2729	144	525	2016	7212	3428	1421	673	556	837	6915	296	0	16752
Nov-2015	4369	96	127	0	16100	140	204	-765	20270	2552	2000	868	553	818	6791	13479	0	30232
Dec-2015	4447	99	95	0	14472	144	272	-1077	18453	2203	2458	1053	575	860	7150	11302	1	41533
Jan-2016	0	99	96	0	656	144	454	1575	3025	1878	1900	918	555	788	6040	-3015	0	38518
Feb-2016	0	93	130	0	1247	135	464	1531	3599	1609	1717	812	516	704	5359	-1760	0	36759
Mar-2016	0	99	168	0	1130	144	532	1819	3893	2131	1751	817	550	745	5994	-2101	-1	34658
Apr-2016	0	96	232	0	984	140	541	1960	3953	2772	1563	741	532	729	6338	-2384	-1	32274
May-2016	0	99	269	0	960	144	584	2203	4259	3526	1474	713	549	773	7034	-2774	0	29500
Jun-2016	0	96	289	0	1000	140	585	2289	4399	4100	1302	645	530	772	7350	-2950	0	26549
Jul-2016	0	99	360	0	1146	144	624	2543	4916	5118	1182	621	547	852	8320	-3404	0	23145
Aug-2016	0	99	329	0	1369	144	643	2523	5108	5189	1094	586	546	883	8298	-3189	0	19956
Sep-2016	0	96	261	0	1093	140	640	2319	4549	4147	1052	543	528	844	7114	-2562	-2	17393
Oct-2016	0	99	191	0	1171	144	680	2191	4477	3428	1154	545	546	826	6499	-2023	0	15371
Nov-2016	0	96	128	0	1784	140	674	1737	4559	2552	1218	520	529	757	5576	-1018	0	14353
Dec-2016	0	99	96	0	1428	144	713	1805	4286	2203	1367	531	547	750	5399	-1113	0	13240
Jan-2017	0	99	96	0	1307	144	726	1746	4120	1953	1410	520	548	720	5151	-1031	0	12209
Feb-2017	0	90	130	0	1205	130	665	1516	3737	1603	1271	456	495	630	4456	-720	0	11489
Mar-2017	0	99	168	0	1114	144	745	1814	4085	2202	1361	486	548	697	5293	-1205	-3	10285
Apr-2017	0	96	233	0	1077	140	727	1903	4175	2861	1201	446	530	687	5725	-1549	-1	8735
May-2017	0	99	271	0	1030	144	757	2131	4433	3645	1086	433	547	729	6439	-2006	-1	6729
Jun-2017	0	96	291	0	984	140	749	2228	4488	4245	913	391	529	729	6806	-2318	0	4411
Jul-2017	0	99	362	0	1070	144	781	2511	4967	5298	795	373	546	806	7819	-2851	0	1560
Aug-2017	0	99	331	0	1098	144	788	2564	5025	5380	712	350	545	835	7822	-2797	0	-1237
Sep-2017	0	96	262	0	1075	140	763	2299	4635	4300	692	326	527	798	6643	-2006	-2	-3242
Oct-2017	0	99	192	0	1252	144	793	2157	4637	3561	807	338	544	779	6030	-1393	0	-4635
Nov-2017	0	96	128	0	1221	140	773	1884	4242	2654	884	331	528	714	5111	-869	0	-5504
Dec-2017	0	99	96	0	1279	144	805	1804	4229	2295	1019	347	546	708	4915	-687	0	-6190
Jan-2018	2146	99	97	0	3681	144	696	1212	8076	1953	1212	453	557	700	4875	3200	1	-2990
Feb-2018	2444	90	131	0	2570	130	600	1150	7116	1603	1198	439	507	620	4367	2748	0	-242
Mar-2018	1981	99	169	0	3125	144	635	1358	7514	2202	1332	529	559	694	5315	2194	5	1952
Apr-2018	323	96	234	0	2818	140	676	1345	5633	2861	1152	483	534	689	5719	-85	-1	1867
May-2018	0	99	272	1	1137	144	732	2023	4409	3645	1053	461	548	726	6433	-2024	-1	-156
Jun-2018	0	96	293	1	1003	140	728	2179	4439	4245	874	409	529	724	6780	-2341	0	-2497
Jul-2018	18	99	364	1	1174	144	762	2459	5022	5298	756	388	546	801	7790	-2767	0	-5264
Aug-2018	0	99	333	1	1138	144	771	2526	5013	5380	675	360	545	829	7790	-2776	0	-8041
Sep-2018	654	96	264	1	1069	140	747	2280	5251	4300	679	340	530	795	6644	-1391	-2	-9431
Oct-2018	250	99	193	0	4384	144	680	1491	7243	3561	787	448	546	796	6137	1106	0	-8326
Nov-2018	570	96	129	0	4609	140	601	1146	7291	2654	888	497	531	750	5321	1970	0	-6356
Dec-2018	88	99	97	0	5358	144	568	907	7262	2295	1020	561	547	766	5189	2072	0	-4284
Jan-2019	155	99	97	1	1321	144	641	1561	4020	1878	1113	552	548	778	4869	-850	0	-5133
Feb-2019	45	90	132	1	1128	130	600	1401	3527	1553	1016	483	495	703	4250	-728	5	-5862

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Mar-2019	124	99	170	1	1061	144	695	1637	3933	2131	1104	508	548	800	5092	-1159	0	-7020
Apr-2019	10	96	236	2	1531	140	683	1645	4343	2772	1028	468	529	810	5609	-1266	0	-8286
May-2019	0	99	274	2	1069	144	741	1922	4252	3526	931	450	547	882	6336	-2084	0	-10369
Jun-2019	0	96	294	2	1012	140	745	2040	4330	4100	808	407	528	901	6745	-2415	0	-12784
Jul-2019	7	99	366	3	1090	144	788	2308	4805	5118	709	390	545	1052	7814	-3009	0	-15793
Aug-2019	1	99	335	3	1113	144	805	2352	4853	5189	642	365	544	1122	7862	-3009	0	-18802
Sep-2019	0	96	265	2	1083	140	795	2087	4468	4147	623	338	526	1087	6721	-2253	-1	-21055
Oct-2019	256	99	194	2	1088	144	833	1971	4587	3428	720	344	545	1039	6076	-1489	0	-22544
Nov-2019	283	96	130	1	1529	140	800	1643	4622	2552	814	339	529	938	5171	-549	0	-23093
Dec-2019	353	99	97	1	1870	144	811	1534	4909	2203	954	379	548	923	5007	-98	0	-23191
Jan-2020	803	99	98	2	1894	144	776	1477	5294	1953	1030	403	550	946	4882	412	0	-22779
Feb-2020	833	93	133	3	3944	135	690	929	6759	1660	982	455	516	916	4529	2228	2	-20551
Mar-2020	285	99	171	3	3332	144	738	1127	5900	2202	995	489	549	983	5218	682	0	-19869
Apr-2020	978	96	237	5	1654	140	726	1528	5362	2861	896	455	534	981	5727	-364	0	-20233
May-2020	22	99	275	5	2017	144	793	1674	5030	3645	794	431	547	1049	6465	-1435	0	-21668
Jun-2020	0	96	296	6	1121	140	783	1946	4387	4245	661	385	528	1055	6873	-2486	0	-24154
Jul-2020	0	99	368	7	1143	144	833	2242	4836	5298	511	364	545	1253	7971	-3134	0	-27289
Aug-2020	0	99	337	6	1175	144	849	2307	4917	5380	417	339	544	1337	8017	-3100	0	-30389
Sep-2020	25	96	266	5	1646	140	798	2002	4977	4300	382	322	526	1304	6835	-1857	-1	-32246
Oct-2020	0	99	195	4	1867	144	818	1831	4959	3561	430	342	543	1296	6172	-1213	0	-33459
Nov-2020	226	96	130	2	1409	140	799	1616	4419	2654	499	336	528	1133	5149	-731	0	-34190
Dec-2020	1754	99	98	2	1081	144	823	1611	5612	2295	668	365	554	1107	4989	623	0	-33567
Jan-2021	0	99	99	4	1075	144	854	1505	3779	1953	718	358	547	985	4561	-782	0	-34349
Feb-2021	0	90	133	5	1030	130	781	1279	3448	1603	666	316	494	828	3907	-460	0	-34809
Mar-2021	0	99	172	6	1084	144	874	1483	3863	2202	723	339	547	894	4705	-842	0	-35650
Apr-2021	0	96	238	9	1051	140	855	1579	3968	2861	624	311	529	870	5195	-1224	-2	-36875
May-2021	0	99	277	10	1109	144	898	1794	4333	3645	567	303	546	921	5981	-1648	-1	-38523
Jun-2021	0	96	297	11	1100	140	882	1919	4445	4245	473	276	527	920	6442	-1997	0	-40520
Jul-2021	0	99	370	14	1173	144	917	2205	4923	5298	377	264	544	1059	7542	-2619	0	-43139
Aug-2021	0	99	339	12	1197	144	924	2269	4984	5380	312	248	543	1117	7601	-2616	0	-45755
Sep-2021	0	96	268	10	1261	140	886	2008	4669	4300	310	236	525	1076	6448	-1778	-1	-47533
Oct-2021	0	99	197	7	1274	144	918	1876	4515	3561	377	246	543	1020	5747	-1233	0	-48766
Nov-2021	0	96	131	5	1146	140	895	1622	4035	2654	440	241	526	918	4780	-745	0	-49511
Dec-2021	0	99	99	4	1120	144	935	1548	3948	2295	533	254	545	899	4526	-578	0	-50089
Jan-2022	0	99	99	5	1270	144	937	1408	3963	1953	609	260	546	926	4293	-330	0	-50419
Feb-2022	0	90	134	7	1223	130	846	1171	3601	1603	572	234	493	841	3743	-145	4	-50565
Mar-2022	0	99	173	9	1284	144	937	1377	4023	2202	623	255	546	953	4579	-556	0	-51120
Apr-2022	0	96	240	12	1101	140	908	1507	4004	2861	535	237	528	957	5118	-1114	0	-52234
May-2022	0	99	278	14	1176	144	940	1721	4373	3645	480	234	545	1030	5934	-1561	0	-53795
Jun-2022	0	96	299	15	1129	140	920	1848	4447	4245	379	214	527	1040	6404	-1957	0	-55752
Jul-2022	0	99	372	19	1209	144	958	2129	4931	5298	286	205	543	1244	7578	-2646	0	-58399
Aug-2022	0	99	340	17	1250	144	962	2196	5010	5380	238	194	542	1333	7688	-2677	0	-61076
Sep-2022	0	96	269	14	1219	140	936	1947	4620	4300	227	184	524	1302	6538	-1917	-1	-62993

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Oct-2022	0	99	198	10	1268	144	962	1798	4478	3561	264	195	542	1293	5855	-1377	0	-64370
Nov-2022	0	96	132	7	1206	140	933	1535	4048	2654	311	197	526	1126	4815	-767	0	-65137
Dec-2022	0	99	99	5	1309	144	965	1434	4057	2295	394	216	544	1092	4542	-485	0	-65622
Jan-2023	467	99	100	6	3211	144	877	923	5828	1953	459	280	547	1201	4440	1385	2	-64237
Feb-2023	2407	90	135	8	8279	130	591	-505	11135	1603	548	347	504	1164	4167	6964	4	-57273
Mar-2023	4768	99	174	10	6541	144	545	94	12375	2202	753	468	570	1364	5358	7016	2	-50257
Apr-2023	0	96	241	13	1881	140	664	1130	4165	2861	525	414	533	1325	5658	-1492	0	-51749
May-2023	0	99	279	16	1513	144	721	1582	4355	3645	437	393	547	1404	6426	-2071	0	-53820
Jun-2023	0	96	301	17	1313	140	738	1759	4364	4245	354	345	528	1400	6871	-2507	0	-56327
Jul-2023	0	99	374	21	1462	144	776	2065	4941	5298	278	316	544	1589	8026	-3084	0	-59411
Aug-2023	0	99	342	19	1292	144	818	2175	4890	5380	239	281	543	1660	8103	-3213	0	-62624
Sep-2023	0	96	271	15	1300	140	800	1935	4557	4300	235	250	525	1611	6921	-2363	-1	-64987
Oct-2023	210	99	199	11	2310	144	780	1621	5375	3561	263	274	543	1653	6294	-918	-1	-65905
Nov-2023	0	96	132	7	1270	140	815	1493	3954	2654	283	256	526	1548	5268	-1315	0	-67219
Dec-2023	2504	99	100	6	5076	144	688	699	9316	2295	414	384	556	1536	5185	4131	0	-63089
Jan-2024	2453	99	100	6	20519	144	109	-3050	20381	1953	745	557	560	1521	5335	15046	0	-48043
Feb-2024	12444	93	135	8	14170	135	-187	-1675	25123	1660	1653	750	572	1460	6095	19028	0	-29015
Mar-2024	7277	99	175	10	9463	144	-27	-572	16569	2202	1421	830	593	1571	6617	9952	1	-19063
Apr-2024	112	96	242	14	2433	140	206	907	4151	2861	840	686	539	1478	6404	-2250	-2	-21314
May-2024	254	99	281	17	1900	144	314	1424	4433	3645	623	617	552	1531	6968	-2534	-1	-23848
Jun-2024	0	96	302	18	3146	140	297	1303	5302	4245	490	564	531	1502	7331	-2029	0	-25876
Jul-2024	224	99	375	22	1284	144	426	1984	4559	5298	349	532	548	1679	8405	-3845	0	-29722
Aug-2024	0	99	344	20	1281	144	493	2119	4501	5380	291	484	545	1737	8438	-3936	0	-33658
Sep-2024	0	96	272	16	1350	140	517	1887	4277	4300	301	440	527	1676	7244	-2965	-2	-36623
Oct-2024	1159	99	200	12	2960	144	470	1444	6489	3561	366	465	550	1719	6661	-172	0	-36796
Nov-2024	0	96	133	8	3634	140	473	949	5433	2654	384	455	528	1606	5628	-196	0	-36991
Dec-2024	5422	99	100	6	5036	144	379	588	11774	2295	722	567	572	1586	5743	6031	0	-30961
Jan-2025	11901	99	101	6	12483	144	180	-595	24319	1878	2175	812	608	1260	6733	17585	0	-13375
Feb-2025	8159	90	136	8	18886	130	122	-2279	25252	1553	3751	937	544	1027	7812	17440	0	4064
Mar-2025	2970	99	176	11	10253	144	160	-312	13501	2131	3428	1052	573	1051	8236	5265	0	9330
Apr-2025	0	96	243	15	4257	140	229	614	5594	2772	1339	892	537	942	6482	-888	0	8441
May-2025	0	99	282	17	1431	144	368	1447	3788	3526	965	798	551	942	6781	-2993	0	5449
Jun-2025	452	96	304	19	1301	140	399	1694	4404	4100	822	708	534	906	7070	-2665	-1	2783
Jul-2025	0	99	377	23	1333	144	462	2000	4439	5118	689	674	548	969	7998	-3559	0	-775
Aug-2025	0	99	346	21	1487	144	506	2009	4612	5189	573	629	547	985	7922	-3310	-1	-4085
Sep-2025	0	96	274	17	1923	140	520	1649	4619	4147	637	581	528	935	6828	-2210	0	-6295
Oct-2025	396	99	201	12	5974	144	425	775	8027	3428	793	656	548	927	6352	1675	0	-4620
Nov-2025	522	96	134	8	5632	140	382	486	7400	2552	902	680	532	855	5520	1879	0	-2741
Dec-2025	696	99	101	6	10901	144	259	-727	11479	2203	1216	795	551	886	5652	5827	0	3086
Jan-2026	0	99	101	6	1540	144	429	941	3261	1878	1186	743	549	883	5239	-1978	0	1108
Feb-2026	0	90	137	9	1346	130	436	997	3145	1553	1044	642	495	790	4524	-1383	4	-275
Mar-2026	0	99	177	11	1454	144	529	1250	3665	2131	1115	673	548	888	5355	-1690	1	-1966
Apr-2026	0	96	245	15	2307	140	546	1154	4503	2772	1092	617	530	895	5907	-1404	0	-3369

Table D-2a

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2026	0	99	284	18	1274	144	594	1629	4042	3526	989	598	547	959	6620	-2577	0	-5946
Jun-2026	0	96	305	19	1106	140	599	1819	4084	4100	810	545	529	968	6953	-2868	0	-8815
Jul-2026	0	99	379	24	1125	144	644	2106	4522	5118	677	522	546	1119	7982	-3460	0	-12274
Aug-2026	0	99	348	22	1137	144	671	2167	4589	5189	598	488	545	1186	8005	-3416	0	-15690
Sep-2026	0	96	275	17	1132	140	667	1919	4246	4147	591	449	527	1145	6859	-2612	-1	-18302
Oct-2026	0	99	202	13	1214	144	709	1791	4172	3428	681	452	544	1091	6197	-2025	0	-20328
Nov-2026	0	96	135	8	1232	140	704	1535	3851	2552	748	433	528	983	5243	-1393	0	-21721
Dec-2026	0	99	101	6	1961	144	745	1260	4317	2203	863	443	546	964	5019	-702	0	-22423
Jan-2027	15366	99	102	7	9239	144	234	36	25227	1953	1995	765	620	960	6293	18934	0	-3489
Feb-2027	1349	90	138	9	12871	130	159	-1013	13733	1603	2208	796	513	811	5931	7802	0	4314
Mar-2027	5802	99	178	11	6638	144	200	521	13594	2202	2252	956	581	891	6881	6713	0	11026
Apr-2027	503	96	246	16	2123	140	322	1453	4898	2861	1677	850	539	819	6747	-1848	-1	9179
May-2027	182	99	285	18	3621	144	341	1407	6098	3645	1249	824	552	837	7106	-1002	-6	8177
Jun-2027	531	96	307	20	1738	140	431	1861	5124	4245	1129	737	534	817	7461	-2337	-1	5840
Jul-2027	0	99	381	25	1962	144	501	2125	5238	5298	948	700	548	886	8380	-3142	0	2698
Aug-2027	0	99	349	22	2061	144	547	2148	5372	5380	830	648	547	905	8310	-2938	0	-240
Sep-2027	0	96	276	18	1053	140	566	2138	4287	4300	734	586	528	857	7005	-2712	-7	-2952
Oct-2027	0	99	203	13	5225	144	486	1212	7383	3561	829	659	546	844	6439	943	0	-2009
Nov-2027	0	96	135	9	4539	140	456	974	6350	2654	894	668	529	775	5521	829	0	-1180
Dec-2027	1629	99	102	7	17479	144	79	-1932	17607	2295	1542	887	555	825	6104	11502	1	10322
Jan-2028	1154	99	102	7	7425	144	139	22	9092	1878	1537	923	555	831	5724	3367	1	13689
Feb-2028	2614	93	138	9	1959	135	210	1061	6220	1609	1666	836	526	737	5374	846	0	14535
Mar-2028	808	99	179	12	1611	144	336	1446	4636	2131	1591	847	555	773	5897	-1263	2	13273
Apr-2028	51	96	247	16	1927	140	398	1476	4351	2772	1386	758	532	755	6203	-1853	1	11420
May-2028	264	99	287	19	1662	144	461	1771	4708	3526	1355	727	550	798	6955	-2247	0	9173
Jun-2028	0	96	309	21	1009	140	492	2027	4093	4100	1074	652	530	792	7149	-3055	0	6118
Jul-2028	0	99	383	25	1111	144	548	2314	4625	5118	920	624	547	874	8083	-3457	0	2661
Aug-2028	0	99	351	23	1072	144	593	2376	4659	5189	838	583	546	903	8059	-3400	0	-739
Sep-2028	0	96	278	18	1690	140	552	2043	4818	4147	839	543	527	863	6919	-2098	-3	-2837
Oct-2028	505	99	204	14	1196	144	623	1985	4770	3428	964	548	548	844	6331	-1561	0	-4399
Nov-2028	412	96	136	9	4932	140	514	1033	7272	2552	1053	611	531	796	5543	1729	0	-2670
Dec-2028	3380	99	102	7	6909	144	375	609	11626	2203	1471	755	563	835	5827	5798	0	3128
Jan-2029	938	99	103	7	1557	144	488	1401	4738	1878	1460	731	555	776	5400	-663	0	2465
Feb-2029	32	90	139	9	2281	130	458	1285	4425	1553	1253	648	497	684	4635	-210	0	2255
Mar-2029	0	99	180	12	2222	144	547	1350	4555	2131	1431	688	549	750	5549	-995	1	1260
Apr-2029	0	96	248	17	1959	140	567	1452	4479	2772	1238	625	530	736	5902	-1423	-1	-163
May-2029	0	99	288	20	1281	144	604	1896	4334	3526	1148	608	547	776	6606	-2271	-1	-2434
Jun-2029	0	96	310	21	982	140	633	2054	4236	4100	991	548	529	773	6942	-2706	0	-5140
Jul-2029	7	99	385	26	1055	144	684	2346	4747	5118	889	524	546	855	7932	-3185	0	-8325
Aug-2029	0	99	353	24	1124	144	703	2399	4847	5189	838	491	545	886	7949	-3102	0	-11427
Sep-2029	75	96	279	19	1116	140	699	2140	4563	4147	825	456	527	847	6802	-2235	-3	-13662
Oct-2029	0	99	205	14	1307	144	743	1986	4498	3428	922	459	545	826	6180	-1682	0	-15344
Nov-2029	524	96	137	9	1609	140	721	1649	4885	2552	1009	447	530	757	5295	-410	0	-15754

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Dec-2029	945	99	103	7	2127	144	746	1446	5618	2203	1174	469	551	753	5151	467	0	-15287
Jan-2030	2682	99	103	7	30363	144	364	-4321	29443	1878	2840	760	561	798	6837	22605	1	7318
Feb-2030	16904	90	140	10	11284	130	68	-439	28187	1553	4454	1030	575	772	8385	19801	0	27119
Mar-2030	3058	99	180	13	14898	144	205	-728	17870	2131	5042	1267	578	857	9874	7995	0	35114
Apr-2030	1752	96	250	17	15590	140	223	-378	17689	2772	6603	1359	547	849	12131	5560	-1	40674
May-2030	4226	99	290	20	1503	144	280	1941	8503	3526	3066	1209	573	867	9241	-736	-1	39938
Jun-2030	46	96	312	22	4951	140	276	1519	7362	4100	1957	1080	536	854	8527	-1165	-1	38773
Jul-2030	0	99	387	27	1313	144	395	2319	4686	5118	1477	963	550	918	9026	-4340	0	34433
Aug-2030	0	99	355	25	1432	144	444	2372	4872	5189	1238	874	548	938	8788	-3915	0	30517
Sep-2030	161	96	281	20	1537	140	457	2075	4767	4147	1139	800	531	892	7509	-2738	-4	27780
Oct-2030	254	99	206	14	1351	144	512	2026	4607	3428	1260	793	549	869	6899	-2292	0	25487
Nov-2030	1045	96	137	10	1660	140	508	1694	5290	2552	1375	754	535	802	6018	-728	0	24759
Dec-2030	1068	99	103	7	2425	144	505	1522	5874	2203	1598	772	554	798	5926	-52	0	24707
Jan-2031	0	99	104	7	1460	144	580	1567	3962	1878	1583	733	550	767	5511	-1549	0	23157
Feb-2031	0	90	140	10	1458	130	547	1333	3709	1553	1430	631	496	674	4785	-1076	0	22082
Mar-2031	0	99	181	13	971	144	629	1755	3794	2131	1558	665	549	741	5644	-1851	1	20230
Apr-2031	0	96	251	18	2415	140	626	1493	5039	2772	1551	617	531	734	6205	-1165	-1	19065
May-2031	0	99	291	21	2214	144	664	1727	5161	3526	1513	607	548	782	6976	-1814	0	17251
Jun-2031	0	96	313	22	1101	140	657	2129	4459	4100	1305	548	530	777	7260	-2800	0	14451
Jul-2031	0	99	389	28	1017	144	693	2472	4842	5118	1159	528	547	857	8209	-3366	0	11085
Aug-2031	0	99	357	25	1028	144	708	2527	4889	5189	1052	495	546	887	8169	-3280	0	7805
Sep-2031	0	96	282	20	1013	140	700	2263	4514	4147	1008	458	528	848	6988	-2471	-3	5334
Oct-2031	0	99	207	15	1029	144	740	2149	4383	3428	1102	457	546	828	6360	-1977	0	3356
Nov-2031	0	96	138	10	935	140	731	1903	3953	2552	1142	432	529	757	5411	-1458	0	1898
Dec-2031	0	99	104	7	958	144	769	1857	3939	2203	1275	440	547	749	5215	-1277	0	621
Jan-2032	130	99	104	8	1282	144	753	1746	4267	1878	1349	463	548	723	4961	-694	0	-73
Feb-2032	1010	93	141	10	2135	135	676	1400	5601	1609	1322	472	517	666	4586	1014	0	941
Mar-2032	338	99	182	13	1924	144	737	1530	4967	2131	1407	496	550	711	5296	-331	2	609
Apr-2032	225	96	252	18	996	140	724	1824	4275	2772	1242	461	532	700	5708	-1432	-1	-822
May-2032	0	99	293	21	1455	144	778	1954	4745	3526	1216	452	548	744	6486	-1741	0	-2563
Jun-2032	0	96	315	23	1401	140	774	2057	4806	4100	1095	416	529	746	6886	-2080	0	-4642
Jul-2032	0	99	391	28	1001	144	813	2429	4906	5118	946	400	546	830	7840	-2933	0	-7576
Aug-2032	33	99	358	26	1045	144	825	2479	5010	5189	862	379	545	863	7838	-2828	0	-10403
Sep-2032	0	96	284	20	1020	140	811	2213	4585	4147	837	353	527	826	6691	-2103	-3	-12507
Oct-2032	121	99	208	15	1043	144	848	2097	4576	3428	938	361	545	808	6080	-1505	0	-14012
Nov-2032	0	96	139	10	1396	140	805	1794	4379	2552	1014	365	528	739	5198	-819	0	-14831
Dec-2032	0	99	104	8	1526	144	843	1675	4399	2203	1148	382	546	731	5012	-613	0	-15444
Jan-2033	2917	99	105	8	5141	144	666	981	10062	1953	1389	524	561	791	5218	4844	0	-10599
Feb-2033	5379	90	142	10	4009	130	522	775	11057	1603	1519	536	522	724	4904	6147	6	-4452
Mar-2033	1690	99	183	13	3200	144	617	1284	7231	2202	1536	582	561	812	5692	1539	0	-2913
Apr-2033	1280	96	254	18	1272	140	657	1813	5529	2861	1274	536	539	815	6025	-496	0	-3409
May-2033	0	99	294	21	1581	144	704	2007	4852	3645	1109	511	550	877	6692	-1840	0	-5248
Jun-2033	0	96	316	23	1015	140	732	2188	4510	4245	901	450	530	889	7014	-2504	0	-7752

Table D-2a

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jul-2033	0	99	393	29	1077	144	777	2468	4987	5298	756	423	547	1031	8055	-3067	0	-10819
Aug-2033	0	99	360	26	1108	144	793	2515	5047	5380	652	393	546	1094	8065	-3018	0	-13838
Sep-2033	0	96	285	21	1142	140	776	2235	4694	4300	613	363	527	1057	6861	-2166	-1	-16004
Oct-2033	110	99	209	15	1186	144	806	2113	4683	3561	713	370	546	1006	6196	-1514	0	-17517
Nov-2033	1590	96	139	10	8148	140	560	335	11018	2654	911	488	536	951	5540	5478	0	-12039
Dec-2033	650	99	105	8	13149	144	378	-1277	13256	2295	1082	594	551	964	5486	7770	0	-4270
Jan-2034	0	99	105	8	981	144	554	1406	3298	1953	1072	550	548	834	4957	-1659	0	-5929
Feb-2034	0	90	143	10	954	130	541	1385	3254	1603	960	474	495	696	4228	-975	0	-6903
Mar-2034	0	99	184	13	1006	144	641	1644	3732	2202	1029	490	548	745	5013	-1281	0	-8184
Apr-2034	0	96	255	19	976	140	653	1745	3884	2861	892	435	530	720	5438	-1552	-2	-9736
May-2034	0	99	296	21	1031	144	709	1968	4268	3645	820	412	547	754	6177	-1907	-2	-11643
Jun-2034	0	96	318	23	1031	140	714	2085	4406	4245	706	368	529	746	6594	-2187	-1	-13830
Jul-2034	0	99	395	29	1111	144	758	2377	4914	5298	606	350	545	821	7621	-2707	0	-16537
Aug-2034	0	99	362	26	1135	144	776	2440	4984	5380	539	329	544	846	7639	-2655	0	-19192
Sep-2034	0	96	286	21	1201	140	755	2174	4673	4300	548	309	526	806	6490	-1812	-5	-21004
Oct-2034	0	99	210	15	1207	144	793	2049	4519	3561	639	315	544	784	5843	-1325	0	-22329
Nov-2034	0	96	140	10	1070	140	782	1797	4036	2654	701	304	527	717	4904	-868	0	-23197
Dec-2034	0	99	105	8	1031	144	825	1735	3948	2295	808	315	546	709	4674	-727	0	-23924
Jan-2035	0	99	106	8	1808	144	819	1457	4441	1953	900	325	547	685	4409	32	0	-23891
Feb-2035	2106	90	143	10	3726	130	628	993	7827	1603	942	399	504	626	4074	3752	0	-20139
Mar-2035	555	99	185	13	1770	144	755	1430	4952	2202	1007	424	551	684	4867	82	3	-20057
Apr-2035	548	96	256	19	2019	140	742	1492	5311	2861	983	392	533	675	5444	-132	-1	-20189
May-2035	397	99	297	21	1530	144	781	1819	5089	3645	917	377	549	718	6206	-1117	-1	-21306
Jun-2035	0	96	320	23	1335	140	782	1951	4647	4245	738	332	529	718	6562	-1915	0	-23221
Jul-2035	5	99	397	29	1108	144	821	2346	4949	5298	621	314	545	796	7574	-2625	0	-25846
Aug-2035	0	99	364	26	1136	144	832	2417	5019	5380	544	295	544	824	7587	-2568	0	-28413
Sep-2035	0	96	288	21	1101	140	816	2162	4624	4300	526	276	526	787	6416	-1789	-3	-30203
Oct-2035	257	99	211	15	2384	144	782	1909	5801	3561	612	355	545	773	5847	-46	0	-30248
Nov-2035	147	96	141	10	1205	140	792	1747	4277	2654	679	343	528	704	4909	-632	0	-30881
Dec-2035	599	99	106	8	3268	144	739	1423	6387	2295	817	437	549	717	4815	1572	0	-29309

Table D-2b

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	1775	40	30	0	3745	380	-151	5819	605	88	92	1176	7	1967	3852	0	3852
Feb-2012	2506	37	41	0	1551	282	153	4572	461	152	105	1102	8	1828	2744	0	6596
Mar-2012	829	40	53	0	5316	341	-595	5985	622	233	145	1358	13	2370	3614	0	10210
Apr-2012	62	39	74	0	873	388	274	1709	794	171	122	1256	9	2353	-641	-2	9570
May-2012	69	40	86	0	218	512	519	1443	1038	149	115	1285	8	2594	-1151	0	8418
Jun-2012	0	39	92	0	78	540	601	1351	1233	96	101	1244	6	2680	-1329	0	7089
Jul-2012	0	40	114	0	6	599	702	1462	1541	55	94	1289	5	2985	-1523	0	5567
Aug-2012	0	40	105	0	0	636	727	1508	1601	44	87	1284	4	3020	-1512	0	4055
Sep-2012	0	39	83	0	37	632	643	1434	1282	55	79	1222	4	2642	-1207	-1	2847
Oct-2012	0	40	61	0	662	589	522	1873	1087	69	88	1242	4	2489	-616	0	2232
Nov-2012	0	39	41	0	3139	409	48	3675	825	97	102	1171	4	2199	1476	0	3708
Dec-2012	233	40	30	0	700	492	351	1847	728	105	100	1200	4	2137	-290	0	3418
Jan-2013	101	40	31	0	635	571	345	1723	605	103	96	1191	5	2000	-277	0	3141
Feb-2013	35	36	42	0	113	550	401	1177	445	85	82	1068	4	1683	-506	0	2635
Mar-2013	117	40	54	0	455	610	404	1679	622	95	90	1186	5	1997	-319	1	2316
Apr-2013	10	39	74	0	253	627	466	1469	794	91	85	1155	4	2130	-661	0	1655
May-2013	0	40	86	0	109	674	570	1479	1038	85	83	1202	4	2412	-933	0	722
Jun-2013	0	39	93	0	18	675	617	1442	1233	52	72	1171	3	2531	-1089	0	-367
Jul-2013	0	40	115	0	18	718	708	1599	1541	44	69	1217	3	2873	-1274	0	-1641
Aug-2013	0	40	106	0	12	739	729	1625	1601	34	64	1215	2	2917	-1292	0	-2933
Sep-2013	0	39	83	0	351	725	573	1771	1282	55	64	1157	2	2561	-789	-1	-3722
Oct-2013	12	40	61	0	324	765	538	1741	1087	63	67	1177	2	2396	-655	0	-4377
Nov-2013	77	39	41	0	323	732	466	1677	825	65	65	1123	3	2080	-403	0	-4780
Dec-2013	5	40	31	0	430	775	406	1686	728	69	66	1150	3	2015	-330	0	-5109
Jan-2014	397	40	31	0	1119	648	242	2477	282	80	73	1163	4	1603	874	0	-4236
Feb-2014	144	36	42	0	2036	559	-120	2698	212	79	69	1050	4	1414	1283	0	-2952
Mar-2014	1132	40	54	0	2008	516	31	3780	295	125	89	1175	5	1688	2091	1	-862
Apr-2014	130	39	75	0	690	546	301	1780	378	114	85	1162	4	1743	38	0	-823
May-2014	15	40	87	0	255	638	433	1468	491	110	83	1233	4	1921	-453	0	-1276
Jun-2014	0	39	93	0	0	663	495	1291	582	52	70	1228	4	1935	-644	0	-1920
Jul-2014	0	40	116	0	0	710	557	1423	727	43	65	1310	4	2148	-724	0	-2645
Aug-2014	0	40	106	0	102	685	559	1493	752	37	60	1337	3	2188	-695	0	-3340
Sep-2014	122	39	84	0	162	648	504	1559	602	33	56	1285	3	1979	-420	-1	-3760
Oct-2014	30	40	62	0	249	677	475	1532	508	57	58	1310	3	1937	-404	0	-4164
Nov-2014	636	39	41	0	625	601	366	2308	385	68	63	1243	4	1762	545	0	-3619
Dec-2014	351	40	31	0	1309	613	148	2493	338	76	69	1265	4	1752	740	0	-2879
Jan-2015	2094	40	31	0	1922	536	86	4708	605	105	82	1223	5	2020	2688	0	-191
Feb-2015	1654	36	42	0	2520	459	-95	4616	445	118	82	1189	7	1842	2774	0	2583
Mar-2015	3156	40	54	0	1829	285	228	5592	622	236	114	1234	8	2215	3377	0	5960
Apr-2015	1113	39	75	0	2040	350	114	3731	794	201	109	1218	8	2331	1398	2	7358
May-2015	48	40	87	0	958	512	404	2050	1038	163	106	1247	7	2560	-511	0	6848
Jun-2015	0	39	94	0	523	545	523	1723	1233	139	98	1210	5	2686	-962	0	5885
Jul-2015	0	40	117	0	639	597	593	1986	1541	134	97	1257	4	3033	-1047	0	4838

Table D-2b

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Aug-2015	283	40	107	0	512	603	654	2198	1601	135	96	1255	4	3090	-893	0	3945
Sep-2015	447	39	85	0	115	543	672	1900	1282	64	87	1196	4	2633	-733	-1	3213
Oct-2015	420	40	62	0	376	525	620	2043	1087	73	90	1217	4	2470	-427	0	2786
Nov-2015	1217	39	41	0	10224	204	-1172	10553	825	337	169	1143	5	2480	8074	0	10859
Dec-2015	1239	40	31	0	8153	272	-1253	8481	728	425	237	1485	13	2889	5592	0	16452
Jan-2016	0	40	31	0	0	454	295	821	605	117	154	1307	10	2194	-1373	0	15079
Feb-2016	0	37	43	0	596	464	239	1379	461	150	135	1194	8	1948	-569	0	14510
Mar-2016	0	40	55	0	405	532	367	1398	622	162	134	1276	8	2203	-804	0	13705
Apr-2016	0	39	76	0	240	541	455	1351	794	155	124	1242	7	2322	-971	0	12735
May-2016	0	40	88	0	143	584	555	1410	1038	142	120	1292	6	2598	-1188	0	11546
Jun-2016	0	39	95	0	166	585	596	1481	1233	132	110	1259	5	2740	-1259	0	10287
Jul-2016	0	40	118	0	228	624	677	1686	1541	132	109	1308	5	3094	-1408	0	8879
Aug-2016	0	40	108	0	411	643	648	1850	1601	129	106	1305	4	3145	-1296	0	7583
Sep-2016	0	39	85	0	154	640	638	1555	1282	115	99	1243	4	2744	-1188	-1	6395
Oct-2016	0	40	63	0	220	680	584	1587	1087	114	100	1265	4	2569	-982	0	5413
Nov-2016	0	39	42	0	904	674	298	1957	825	113	95	1206	4	2244	-287	0	5126
Dec-2016	0	40	31	0	578	713	385	1747	728	125	98	1234	4	2189	-442	0	4684
Jan-2017	0	40	32	0	483	726	319	1600	282	132	97	1249	5	1764	-164	0	4520
Feb-2017	0	36	43	0	461	665	261	1466	212	123	86	1129	4	1554	-88	0	4432
Mar-2017	0	40	55	0	274	745	371	1485	295	135	94	1265	5	1793	-309	0	4123
Apr-2017	0	39	77	0	215	727	397	1454	378	125	89	1246	5	1842	-388	0	3735
May-2017	0	40	89	0	77	757	461	1425	491	86	85	1317	5	1983	-559	0	3176
Jun-2017	0	39	96	0	0	749	485	1368	582	48	74	1305	4	2013	-645	0	2531
Jul-2017	0	40	119	0	0	781	546	1486	727	40	72	1386	4	2228	-743	0	1788
Aug-2017	0	40	109	0	0	788	564	1500	752	35	67	1409	4	2266	-765	0	1023
Sep-2017	0	39	86	0	12	763	514	1413	602	32	61	1351	3	2050	-636	-1	387
Oct-2017	0	40	63	0	179	793	473	1548	508	57	66	1375	4	2011	-463	0	-76
Nov-2017	0	39	42	0	221	773	407	1482	385	62	65	1306	4	1821	-339	0	-415
Dec-2017	0	40	32	0	301	805	372	1551	338	68	67	1329	4	1807	-256	0	-671
Jan-2018	598	40	32	0	869	696	248	2484	282	78	74	1309	5	1748	736	0	64
Feb-2018	681	36	43	0	1250	600	41	2651	212	83	71	1165	5	1535	1116	0	1180
Mar-2018	552	40	56	0	796	635	283	2361	295	106	85	1291	5	1782	578	1	1758
Apr-2018	90	39	77	0	307	676	391	1580	378	111	80	1263	5	1836	-256	0	1502
May-2018	0	40	89	0	107	732	479	1448	491	97	77	1328	5	1998	-550	0	952
Jun-2018	0	39	96	0	6	728	501	1370	582	49	66	1312	4	2014	-644	0	308
Jul-2018	5	40	120	0	16	762	557	1499	727	41	63	1390	4	2224	-725	0	-417
Aug-2018	0	40	110	0	15	771	572	1509	752	37	58	1411	3	2261	-752	0	-1169
Sep-2018	182	39	87	0	6	747	525	1586	602	32	54	1352	3	2043	-456	-1	-1626
Oct-2018	70	40	64	0	662	680	420	1936	508	51	57	1372	4	1992	-56	0	-1682
Nov-2018	159	39	42	0	804	601	344	1989	385	63	60	1298	4	1809	179	0	-1502
Dec-2018	25	40	32	0	1049	568	291	2005	338	75	65	1317	4	1799	206	0	-1297
Jan-2019	43	40	32	0	164	641	443	1364	605	74	61	1270	4	2013	-650	0	-1947
Feb-2019	13	36	43	0	166	600	384	1242	445	65	53	1119	4	1685	-444	1	-2391

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Mar-2019	35	40	56	0	82	695	466	1374	622	66	53	1228	4	1973	-599	0	-2990
Apr-2019	3	39	78	0	89	683	490	1381	794	47	47	1186	4	2077	-696	0	-3686
May-2019	0	40	90	0	13	741	569	1454	1038	29	45	1227	3	2342	-888	0	-4574
Jun-2019	0	39	97	0	0	745	610	1491	1233	21	42	1190	3	2489	-998	0	-5572
Jul-2019	2	40	120	0	0	788	701	1651	1541	18	42	1235	2	2837	-1185	0	-6757
Aug-2019	0	40	110	0	0	805	723	1679	1601	14	40	1231	2	2888	-1209	0	-7966
Sep-2019	0	39	87	0	1	795	638	1560	1282	11	37	1172	2	2505	-944	0	-8910
Oct-2019	71	40	64	0	0	833	597	1605	1087	10	38	1192	2	2328	-723	0	-9633
Nov-2019	79	39	43	0	272	800	468	1700	825	27	38	1137	2	2029	-328	0	-9962
Dec-2019	98	40	32	0	620	811	357	1958	728	36	39	1163	2	1969	-11	0	-9973
Jan-2020	224	40	32	0	376	776	343	1791	282	44	40	1179	3	1549	242	0	-9731
Feb-2020	232	37	44	0	931	690	202	2136	219	47	41	1104	3	1414	721	1	-9009
Mar-2020	79	40	57	0	732	738	224	1871	295	54	43	1197	4	1593	278	0	-8731
Apr-2020	272	39	78	0	168	726	383	1666	378	55	42	1184	4	1662	3	0	-8728
May-2020	6	40	91	0	77	793	450	1457	491	54	40	1256	4	1846	-389	0	-9117
Jun-2020	0	39	98	0	68	783	474	1460	582	49	37	1251	3	1921	-461	0	-9578
Jul-2020	0	40	121	0	0	833	537	1532	727	23	35	1335	3	2123	-591	0	-10169
Aug-2020	0	40	111	0	0	849	555	1555	752	16	34	1363	3	2167	-613	0	-10782
Sep-2020	7	39	88	0	106	798	491	1528	602	12	31	1312	2	1960	-431	0	-11213
Oct-2020	0	40	65	0	148	818	466	1537	508	9	31	1340	3	1891	-354	0	-11567
Nov-2020	63	39	43	0	75	799	422	1441	385	8	30	1275	3	1700	-259	0	-11826
Dec-2020	489	40	32	0	25	823	432	1841	338	14	31	1301	3	1688	153	0	-11674
Jan-2021	0	40	33	0	50	854	402	1378	282	20	31	1283	3	1619	-240	0	-11914
Feb-2021	0	36	44	0	111	781	331	1303	212	22	28	1141	3	1407	-104	0	-12018
Mar-2021	0	40	57	0	60	874	381	1412	295	25	31	1265	4	1620	-208	0	-12226
Apr-2021	0	39	79	0	25	855	393	1390	378	15	28	1238	4	1663	-272	-1	-12498
May-2021	0	40	91	0	6	898	437	1473	491	6	27	1303	3	1830	-357	0	-12855
Jun-2021	0	39	98	0	0	882	458	1477	582	3	25	1288	3	1901	-424	0	-13279
Jul-2021	0	40	122	0	0	917	519	1598	727	1	25	1366	3	2122	-524	0	-13803
Aug-2021	0	40	112	0	0	924	536	1612	752	0	24	1388	3	2167	-554	0	-14357
Sep-2021	0	39	89	0	102	886	481	1595	602	12	26	1331	3	1973	-377	0	-14734
Oct-2021	0	40	65	0	94	918	461	1578	508	18	27	1354	3	1910	-332	0	-15066
Nov-2021	0	39	43	0	34	895	413	1424	385	13	25	1284	3	1710	-286	0	-15352
Dec-2021	0	40	33	0	18	935	401	1427	338	5	24	1306	3	1677	-250	0	-15602
Jan-2022	0	40	33	0	212	937	346	1568	282	15	26	1287	3	1613	-45	0	-15648
Feb-2022	0	36	44	0	276	846	266	1469	212	19	24	1145	3	1402	66	1	-15582
Mar-2022	0	40	57	0	230	937	326	1591	295	26	27	1270	4	1621	-30	0	-15612
Apr-2022	0	39	79	0	46	908	374	1446	378	22	26	1243	4	1673	-227	0	-15839
May-2022	0	40	92	0	46	940	420	1539	491	20	26	1309	3	1850	-311	0	-16150
Jun-2022	0	39	99	0	5	920	445	1507	582	6	23	1295	3	1909	-401	0	-16552
Jul-2022	0	40	123	0	0	958	506	1628	727	2	23	1374	3	2129	-501	0	-17053
Aug-2022	0	40	113	0	0	962	526	1641	752	0	22	1397	3	2174	-533	0	-17586
Sep-2022	0	39	89	0	0	936	479	1543	602	0	21	1341	2	1967	-424	0	-18010

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Management Zone 1: Santa Clara - Mint Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Oct-2022	0	40	65	0	27	962	459	1553	508	3	22	1367	3	1902	-349	0	-18359
Nov-2022	0	39	44	0	36	933	407	1458	385	5	22	1298	3	1712	-254	0	-18612
Dec-2022	0	40	33	0	147	965	379	1564	338	10	24	1322	3	1697	-134	0	-18746
Jan-2023	130	40	33	0	502	877	311	1894	282	18	27	1301	3	1631	262	1	-18484
Feb-2023	671	36	45	0	2668	591	-170	3840	212	30	28	1141	4	1414	2426	1	-16058
Mar-2023	1328	40	58	0	1948	545	-3	3916	295	55	35	1279	5	1668	2247	1	-13811
Apr-2023	0	39	80	0	751	664	209	1742	378	50	32	1256	4	1720	22	0	-13789
May-2023	0	40	93	0	178	721	448	1480	491	53	33	1326	4	1906	-426	0	-14216
Jun-2023	0	39	100	0	142	738	475	1494	582	52	32	1314	3	1983	-489	0	-14705
Jul-2023	0	40	124	0	44	776	544	1527	727	30	30	1397	3	2186	-658	0	-15363
Aug-2023	0	40	114	0	0	818	564	1536	752	20	28	1422	3	2224	-688	0	-16052
Sep-2023	0	39	90	0	45	800	513	1486	602	30	27	1367	3	2028	-542	0	-16593
Oct-2023	59	40	66	0	231	780	473	1648	508	35	30	1395	3	1971	-322	0	-16916
Nov-2023	0	39	44	0	62	815	435	1394	385	33	28	1328	3	1777	-383	0	-17299
Dec-2023	698	40	33	0	1041	688	301	2801	338	48	33	1354	4	1777	1024	0	-16275
Jan-2024	683	40	33	0	10442	109	-1485	9822	282	238	130	1317	4	1972	7851	0	-8424
Feb-2024	3467	37	45	0	7523	-187	-886	9999	219	738	220	1213	6	2396	7602	0	-822
Mar-2024	2027	40	58	0	2912	-27	8	5018	295	463	214	1299	7	2278	2740	0	1918
Apr-2024	31	39	80	0	398	206	393	1147	378	235	133	1292	6	2044	-897	0	1022
May-2024	71	40	93	0	117	314	533	1169	491	176	90	1369	6	2132	-963	0	59
Jun-2024	0	39	100	0	428	297	528	1393	582	152	82	1359	5	2180	-787	0	-729
Jul-2024	62	40	125	0	16	426	605	1274	727	72	74	1446	5	2324	-1049	0	-1778
Aug-2024	0	40	114	0	5	493	619	1271	752	52	67	1474	4	2349	-1077	0	-2855
Sep-2024	0	39	90	0	108	517	557	1311	602	79	64	1419	4	2168	-856	0	-3712
Oct-2024	323	40	66	0	443	470	517	1859	508	100	73	1450	4	2135	-276	0	-3988
Nov-2024	0	39	44	0	898	473	341	1794	385	104	73	1381	4	1947	-153	0	-4140
Dec-2024	1510	40	33	0	1984	379	96	4042	338	241	101	1410	5	2096	1947	0	-2194
Jan-2025	3315	40	34	0	9294	180	-961	11902	605	1234	219	1369	8	3434	8468	0	6274
Feb-2025	2273	36	45	0	13163	122	-1909	13730	445	2669	324	1384	16	4838	8892	0	15166
Mar-2025	827	40	59	0	4572	160	-8	5650	622	2395	351	1459	14	4841	809	0	15975
Apr-2025	0	39	81	0	1090	229	388	1827	794	555	237	1395	11	2992	-1165	0	14811
May-2025	0	40	94	0	239	368	558	1299	1038	253	169	1433	10	2904	-1605	0	13206
Jun-2025	126	39	101	0	110	399	632	1407	1233	179	131	1384	8	2936	-1529	0	11677
Jul-2025	0	40	126	0	54	462	725	1407	1541	118	118	1429	7	3213	-1806	0	9871
Aug-2025	0	40	115	0	10	506	747	1417	1601	64	108	1419	6	3198	-1781	0	8090
Sep-2025	0	39	91	0	64	520	660	1373	1282	77	99	1348	6	2812	-1438	0	6652
Oct-2025	110	40	67	0	1214	425	515	2371	1087	154	117	1365	6	2728	-356	0	6296
Nov-2025	145	39	45	0	1232	382	400	2243	825	183	120	1295	6	2429	-186	0	6110
Dec-2025	194	40	34	0	3078	259	115	3719	728	250	152	1284	6	2420	1299	0	7408
Jan-2026	0	40	34	0	388	429	414	1304	605	202	127	1290	6	2230	-926	0	6483
Feb-2026	0	36	46	0	493	436	329	1340	445	168	110	1158	6	1886	-547	1	5936
Mar-2026	0	40	59	0	497	529	407	1532	622	178	116	1283	6	2206	-674	0	5261
Apr-2026	0	39	82	0	319	546	485	1471	794	164	106	1246	6	2316	-845	0	4416

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May-2026	0	40	95	0	163	594	595	1487	1038	150	104	1293	5	2590	-1104	0	3313
Jun-2026	0	39	102	0	80	599	636	1456	1233	91	94	1256	5	2679	-1223	0	2090
Jul-2026	0	40	127	0	20	644	728	1558	1541	58	88	1305	4	2996	-1437	0	653
Aug-2026	0	40	116	0	7	671	749	1584	1601	44	81	1302	3	3032	-1448	0	-795
Sep-2026	0	39	92	0	37	667	662	1496	1282	55	74	1241	3	2655	-1158	0	-1954
Oct-2026	0	40	67	0	102	709	614	1532	1087	65	75	1264	3	2494	-962	0	-2915
Nov-2026	0	39	45	0	193	704	511	1491	825	67	73	1206	3	2174	-683	0	-3598
Dec-2026	0	40	34	0	941	745	268	2027	728	72	76	1234	4	2113	-86	0	-3684
Jan-2027	4280	40	34	0	3389	234	-103	7874	282	233	129	1227	7	1879	5996	0	2312
Feb-2027	376	36	46	0	6481	159	-571	6528	212	888	197	1073	6	2375	4152	0	6464
Mar-2027	1616	40	59	0	2452	200	139	4506	295	673	219	1233	7	2428	2078	0	8542
Apr-2027	140	39	82	0	887	322	371	1841	378	512	188	1234	7	2318	-478	0	8065
May-2027	51	40	95	0	729	341	483	1738	491	252	165	1310	6	2224	-485	-1	7580
Jun-2027	148	39	103	0	156	431	559	1435	582	206	135	1303	6	2231	-796	0	6784
Jul-2027	0	40	128	0	62	501	619	1349	727	120	124	1387	5	2362	-1014	0	5771
Aug-2027	0	40	117	0	8	547	626	1338	752	61	114	1413	5	2345	-1006	0	4764
Sep-2027	0	39	92	0	6	566	567	1269	602	47	102	1358	4	2115	-843	-2	3921
Oct-2027	0	40	68	0	907	486	474	1974	508	88	115	1383	5	2098	-124	0	3797
Nov-2027	0	39	45	0	761	456	411	1712	385	101	115	1312	5	1917	-205	0	3592
Dec-2027	454	40	34	0	6746	79	-457	6897	338	414	227	1230	6	2216	4681	0	8273
Jan-2028	321	40	34	0	2035	139	215	2785	605	322	218	1256	6	2407	379	0	8652
Feb-2028	728	37	46	0	938	210	331	2291	461	426	173	1162	6	2229	62	0	8714
Mar-2028	225	40	60	0	730	336	445	1836	622	339	170	1241	6	2377	-542	0	8172
Apr-2028	14	39	83	0	315	398	551	1399	794	208	139	1203	6	2349	-951	0	7222
May-2028	74	40	96	0	151	461	652	1474	1038	182	126	1247	5	2598	-1124	0	6098
Jun-2028	0	39	103	0	46	492	680	1360	1233	91	111	1212	4	2652	-1293	0	4805
Jul-2028	0	40	128	0	16	548	762	1495	1541	53	106	1259	4	2962	-1467	0	3338
Aug-2028	0	40	118	0	0	593	779	1530	1601	44	99	1255	3	3002	-1473	0	1866
Sep-2028	0	39	93	0	155	552	674	1513	1282	64	92	1196	3	2637	-1124	-1	742
Oct-2028	141	40	68	0	154	623	629	1655	1087	74	96	1217	3	2477	-822	0	-80
Nov-2028	115	39	46	0	1043	514	414	2170	825	88	99	1159	3	2175	-5	0	-85
Dec-2028	941	40	34	0	1890	375	229	3510	728	130	114	1174	4	2150	1360	0	1275
Jan-2029	261	40	34	0	571	488	372	1766	605	130	109	1167	4	2014	-248	0	1027
Feb-2029	9	36	47	0	687	458	327	1564	445	112	94	1047	4	1702	-138	0	889
Mar-2029	0	40	60	0	202	547	475	1324	622	108	98	1164	5	1997	-673	0	215
Apr-2029	0	39	83	0	120	567	518	1326	794	84	88	1134	4	2104	-778	0	-563
May-2029	0	40	97	0	118	604	584	1444	1038	65	82	1181	4	2370	-926	0	-1489
Jun-2029	0	39	104	0	6	633	635	1416	1233	40	73	1151	3	2500	-1084	0	-2572
Jul-2029	2	40	129	0	4	684	726	1585	1541	33	71	1198	3	2845	-1260	0	-3833
Aug-2029	0	40	118	0	50	703	745	1655	1601	50	68	1197	2	2917	-1262	0	-5095
Sep-2029	21	39	94	0	69	699	655	1576	1282	51	64	1141	2	2541	-964	-1	-6059
Oct-2029	0	40	69	0	245	743	575	1671	1087	56	66	1162	2	2374	-702	0	-6761
Nov-2029	146	39	46	0	587	721	392	1930	825	59	64	1109	3	2060	-130	0	-6891

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Dec-2029	263	40	34	0	830	746	306	2220	728	65	68	1137	3	2001	218	0	-6673
Jan-2030	747	40	35	0	23764	364	-4199	20751	605	1459	219	1703	20	4005	16745	0	10072
Feb-2030	4709	36	47	0	7543	68	-1008	11395	445	2152	319	1455	17	4389	7007	0	17079
Mar-2030	852	40	61	0	8881	205	-862	9176	622	2911	456	1528	18	5536	3641	0	20720
Apr-2030	488	39	84	0	9703	223	-455	10080	794	4783	560	1320	13	7468	2613	-1	23333
May-2030	1177	40	97	0	667	280	552	2813	1038	1199	391	1353	11	3992	-1178	0	22155
Jun-2030	13	39	105	0	1379	276	485	2296	1233	474	301	1316	9	3333	-1036	0	21118
Jul-2030	0	40	130	0	81	395	700	1346	1541	190	210	1374	8	3324	-1978	0	19140
Aug-2030	0	40	119	0	91	444	728	1422	1601	146	169	1378	7	3301	-1878	0	17262
Sep-2030	45	39	94	0	89	457	647	1371	1282	112	148	1318	6	2867	-1495	-1	15767
Oct-2030	71	40	69	0	139	512	606	1437	1087	139	145	1345	6	2722	-1285	0	14482
Nov-2030	291	39	46	0	189	508	524	1597	825	147	138	1285	6	2401	-804	0	13678
Dec-2030	298	40	35	0	287	505	503	1667	728	155	140	1316	7	2345	-679	0	13000
Jan-2031	0	40	35	0	92	580	480	1227	605	102	131	1304	7	2149	-922	0	12077
Feb-2031	0	36	47	0	85	547	403	1119	445	87	113	1168	6	1819	-700	0	11377
Mar-2031	0	40	61	0	204	629	449	1383	622	104	123	1294	6	2150	-767	0	10611
Apr-2031	0	39	84	0	224	626	473	1447	794	107	115	1257	6	2279	-832	0	9779
May-2031	0	40	98	0	197	664	554	1553	1038	110	114	1304	5	2572	-1019	0	8760
Jun-2031	0	39	105	0	107	657	611	1519	1233	93	103	1267	5	2701	-1182	0	7578
Jul-2031	0	40	131	0	80	693	708	1651	1541	81	100	1314	4	3040	-1389	0	6189
Aug-2031	0	40	120	0	46	708	734	1648	1601	70	92	1309	3	3075	-1428	0	4762
Sep-2031	0	39	95	0	52	700	650	1536	1282	64	85	1245	3	2679	-1142	-1	3619
Oct-2031	0	40	70	0	54	740	608	1512	1087	61	83	1265	3	2500	-988	0	2631
Nov-2031	0	39	46	0	31	731	527	1374	825	47	76	1206	3	2157	-783	0	1849
Dec-2031	0	40	35	0	80	769	502	1426	728	56	77	1232	4	2097	-671	0	1178
Jan-2032	36	40	35	0	214	753	443	1522	605	59	76	1220	4	1964	-442	0	736
Feb-2032	281	37	48	0	296	676	376	1714	461	59	72	1131	4	1726	-12	0	724
Mar-2032	94	40	61	0	122	737	444	1498	622	60	73	1210	4	1969	-471	1	253
Apr-2032	63	39	85	0	73	724	483	1467	794	43	67	1176	4	2084	-617	0	-364
May-2032	0	40	99	0	12	778	565	1493	1038	26	66	1222	4	2356	-863	0	-1227
Jun-2032	0	39	106	0	0	774	607	1526	1233	19	62	1188	3	2506	-979	0	-2206
Jul-2032	0	40	132	0	0	813	699	1684	1541	17	62	1234	2	2856	-1172	0	-3378
Aug-2032	9	40	121	0	0	825	722	1717	1601	14	60	1231	2	2907	-1190	0	-4568
Sep-2032	0	39	96	0	0	811	637	1583	1282	11	56	1171	2	2523	-939	-1	-5507
Oct-2032	34	40	70	0	4	848	595	1590	1087	9	57	1191	2	2346	-755	0	-6262
Nov-2032	0	39	47	0	311	805	459	1661	825	26	56	1135	2	2044	-383	0	-6646
Dec-2032	0	40	35	0	538	843	364	1820	728	36	57	1161	2	1984	-164	0	-6810
Jan-2033	812	40	35	0	1229	666	238	3021	282	57	66	1175	3	1585	1436	0	-5374
Feb-2033	1498	36	48	0	1703	522	-61	3746	212	66	67	1064	4	1413	2331	2	-3042
Mar-2033	471	40	62	0	996	617	210	2395	295	74	78	1196	5	1647	748	0	-2295
Apr-2033	356	39	86	0	309	657	400	1847	378	75	77	1183	4	1718	129	0	-2166
May-2033	0	40	99	0	303	704	449	1595	491	79	79	1256	4	1910	-315	0	-2481
Jun-2033	0	39	107	0	5	732	505	1388	582	44	68	1250	4	1948	-560	0	-3040

Table D-2b

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 1: Santa Clara - Mint Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jul-2033	0	40	133	0	0	777	565	1514	727	36	65	1334	3	2165	-650	0	-3691
Aug-2033	0	40	122	0	0	793	578	1533	752	31	60	1361	3	2207	-674	0	-4365
Sep-2033	0	39	96	0	11	776	525	1446	602	26	55	1310	3	1996	-549	0	-4914
Oct-2033	31	40	71	0	95	806	499	1542	508	48	58	1336	3	1953	-412	0	-5325
Nov-2033	443	39	47	0	2000	560	179	3267	385	68	66	1260	3	1782	1485	0	-3840
Dec-2033	181	40	35	0	4476	378	-323	4789	338	89	89	1259	4	1779	3010	0	-831
Jan-2034	0	40	36	0	50	554	405	1085	282	73	70	1258	4	1687	-602	0	-1432
Feb-2034	0	36	48	0	111	541	379	1115	212	65	62	1126	4	1468	-353	0	-1785
Mar-2034	0	40	62	0	60	641	437	1240	295	67	64	1253	4	1682	-442	0	-2228
Apr-2034	0	39	86	0	25	653	444	1246	378	45	57	1229	4	1713	-466	0	-2694
May-2034	0	40	100	0	6	709	485	1340	491	30	55	1296	4	1877	-536	0	-3230
Jun-2034	0	39	108	0	0	714	501	1361	582	24	51	1283	4	1944	-582	0	-3812
Jul-2034	0	40	134	0	0	758	559	1490	727	21	51	1362	3	2164	-674	0	-4486
Aug-2034	0	40	122	0	0	776	573	1512	752	19	49	1384	3	2207	-695	0	-5181
Sep-2034	0	39	97	0	102	755	513	1505	602	37	49	1327	3	2018	-511	-1	-5692
Oct-2034	0	40	71	0	94	793	492	1491	508	44	50	1350	3	1955	-465	0	-6156
Nov-2034	0	39	47	0	34	782	441	1344	385	34	46	1281	3	1749	-405	0	-6562
Dec-2034	0	40	36	0	18	825	428	1347	338	21	45	1304	4	1712	-365	0	-6927
Jan-2035	0	40	36	0	703	819	231	1829	282	37	46	1284	4	1652	177	0	-6750
Feb-2035	587	36	49	0	1363	628	66	2729	212	45	46	1140	4	1446	1282	0	-5467
Mar-2035	155	40	63	0	751	755	212	1975	295	56	52	1264	4	1670	304	1	-5164
Apr-2035	153	39	87	0	326	742	361	1707	378	59	52	1237	4	1730	-23	0	-5187
May-2035	110	40	101	0	109	781	461	1602	491	65	53	1301	4	1915	-313	0	-5500
Jun-2035	0	39	108	0	0	782	485	1414	582	34	46	1287	4	1953	-539	0	-6038
Jul-2035	1	40	135	0	0	821	543	1539	727	28	44	1365	3	2167	-628	0	-6666
Aug-2035	0	40	123	0	0	832	557	1553	752	24	42	1385	3	2206	-654	0	-7320
Sep-2035	0	39	98	0	0	816	506	1458	602	20	40	1327	3	1991	-533	-1	-7853
Oct-2035	71	40	72	0	278	782	452	1695	508	18	41	1350	3	1919	-225	0	-8077
Nov-2035	41	39	48	0	36	792	419	1375	385	15	38	1280	3	1721	-346	0	-8423
Dec-2035	167	40	36	0	494	739	363	1840	338	14	40	1302	4	1698	142	0	-8281

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	216	23	3	0	367	0	-7	602	0	0	75	21	63	159	443	0	443
Feb-2012	305	21	4	0	199	0	15	544	0	0	82	24	56	161	383	0	827
Mar-2012	101	23	6	0	367	0	-28	469	0	0	94	20	62	176	292	0	1119
Apr-2012	8	22	8	0	55	0	9	101	0	0	88	24	58	170	-69	0	1050
May-2012	8	23	9	0	0	0	24	64	0	0	87	26	61	174	-110	0	941
Jun-2012	0	22	10	0	0	0	30	63	0	0	80	25	61	166	-104	0	837
Jul-2012	0	23	12	0	0	0	37	72	0	0	78	27	67	171	-99	0	738
Aug-2012	0	23	11	0	0	0	41	75	0	0	74	27	69	170	-94	0	644
Sep-2012	0	22	9	0	0	0	42	73	0	0	68	26	66	160	-86	0	557
Oct-2012	0	23	7	0	69	0	44	143	0	0	69	27	65	161	-18	0	539
Nov-2012	0	22	4	0	355	0	-10	372	0	0	73	20	64	158	214	0	753
Dec-2012	28	23	3	0	26	0	23	104	0	0	74	26	62	161	-58	0	695
Jan-2013	12	23	3	0	2	0	33	74	0	0	71	27	59	156	-82	0	613
Feb-2013	4	21	4	0	1	0	33	64	0	0	61	24	51	136	-73	0	540
Mar-2013	14	23	6	0	7	0	40	90	0	0	65	27	56	148	-58	0	482
Apr-2013	1	22	8	0	1	0	41	73	0	0	60	26	55	141	-68	0	414
May-2013	0	23	9	0	0	0	44	76	0	0	57	27	59	143	-67	0	347
Jun-2013	0	22	10	0	0	0	44	76	0	0	52	26	59	137	-61	0	286
Jul-2013	0	23	12	0	0	0	47	82	0	0	50	27	65	142	-60	0	226
Aug-2013	0	23	11	0	0	0	48	82	0	0	46	28	68	142	-59	0	167
Sep-2013	0	22	9	0	1	0	47	79	0	0	42	27	65	134	-55	0	112
Oct-2013	1	23	7	0	0	0	49	80	0	0	41	28	64	133	-54	0	58
Nov-2013	9	22	4	0	4	0	47	86	0	0	38	27	59	124	-38	0	20
Dec-2013	1	23	3	0	2	0	48	77	0	0	37	28	59	123	-47	0	-27
Jan-2014	48	23	3	0	185	0	39	298	0	0	58	27	56	142	156	0	130
Feb-2014	18	21	5	0	146	0	30	219	0	0	59	24	49	132	87	0	217
Mar-2014	138	23	6	0	278	0	10	455	0	0	73	25	57	156	299	0	517
Apr-2014	16	22	8	0	98	0	21	165	0	0	72	24	55	150	15	0	532
May-2014	2	23	9	0	4	0	30	69	0	0	71	25	58	154	-86	0	446
Jun-2014	0	22	10	0	0	0	34	66	0	0	65	24	59	148	-82	0	364
Jul-2014	0	23	13	0	0	0	39	74	0	0	63	26	65	154	-80	0	284
Aug-2014	0	23	11	0	25	0	42	101	0	0	60	26	68	154	-53	0	232
Sep-2014	15	22	9	0	39	0	43	128	0	0	58	26	65	149	-21	0	210
Oct-2014	4	23	7	0	37	0	46	116	0	0	59	27	65	151	-35	0	175
Nov-2014	77	22	4	0	107	0	40	251	0	0	61	27	61	148	103	0	278
Dec-2014	43	23	3	0	109	0	38	216	0	0	65	28	60	153	63	0	342
Jan-2015	255	23	3	0	0	0	42	323	0	0	72	28	59	159	164	0	505
Feb-2015	201	21	5	0	0	0	40	266	0	0	68	25	52	145	121	0	626
Mar-2015	384	23	6	0	96	0	43	551	0	0	86	28	59	173	378	0	1005
Apr-2015	136	22	8	0	25	0	44	235	0	0	84	27	58	168	66	0	1071
May-2015	6	23	9	0	0	0	48	86	0	0	81	28	61	170	-84	0	988
Jun-2015	0	22	10	0	0	0	48	81	0	0	74	28	61	162	-82	0	906
Jul-2015	0	23	13	0	0	0	52	87	0	0	73	29	67	168	-81	0	825

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Management Zone 2: Placerita Subunit of Alluvial Aquifer

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Aug-2015	34	23	12	0	0	0	54	122	0	0	71	29	70	170	-47	0	778
Sep-2015	54	22	9	0	18	0	53	156	0	0	68	28	67	163	-7	0	770
Oct-2015	51	23	7	0	57	0	54	192	0	0	70	29	67	166	25	0	796
Nov-2015	148	22	4	0	355	0	-1	529	0	0	79	21	66	166	363	0	1158
Dec-2015	151	23	3	0	367	0	-24	520	0	0	90	21	68	179	341	0	1499
Jan-2016	0	23	3	0	0	0	17	44	0	0	86	27	62	175	-131	0	1368
Feb-2016	0	21	5	0	0	0	28	54	0	0	77	26	55	158	-104	0	1264
Mar-2016	0	23	6	0	0	0	37	66	0	0	78	28	58	164	-99	0	1165
Apr-2016	0	22	8	0	0	0	40	70	0	0	71	28	57	156	-86	0	1079
May-2016	0	23	9	0	0	0	44	77	0	0	70	29	61	160	-84	0	995
Jun-2016	0	22	10	0	0	0	45	77	0	0	65	28	62	154	-77	0	918
Jul-2016	0	23	13	0	0	0	49	84	0	0	63	29	67	159	-75	0	844
Aug-2016	0	23	12	0	0	0	51	85	0	0	59	29	70	158	-73	0	771
Sep-2016	0	22	9	0	0	0	50	81	0	0	53	29	67	148	-67	0	704
Oct-2016	0	23	7	0	0	0	52	82	0	0	52	30	67	148	-66	0	638
Nov-2016	0	22	4	0	0	0	50	77	0	0	47	29	61	137	-60	0	578
Dec-2016	0	23	3	0	0	0	52	78	0	0	46	30	61	136	-58	0	520
Jan-2017	0	23	3	0	0	0	51	78	0	0	43	30	59	131	-53	0	466
Feb-2017	0	21	5	0	0	0	46	71	0	0	36	27	51	114	-43	0	424
Mar-2017	0	23	6	0	0	0	51	79	0	0	37	29	56	123	-44	0	380
Apr-2017	0	22	8	0	0	0	49	79	0	0	34	28	56	118	-39	0	342
May-2017	0	23	10	0	0	0	51	83	0	0	33	29	60	122	-39	0	302
Jun-2017	0	22	10	0	0	0	49	82	0	0	30	29	61	120	-38	0	265
Jul-2017	0	23	13	0	0	0	52	87	0	0	30	30	67	126	-39	0	226
Aug-2017	0	23	12	0	0	0	52	87	0	0	28	30	69	128	-41	0	184
Sep-2017	0	22	9	0	0	0	50	82	0	0	26	29	67	122	-40	0	144
Oct-2017	0	23	7	0	0	0	52	81	0	0	26	30	67	123	-42	0	103
Nov-2017	0	22	5	0	0	0	50	76	0	0	24	29	62	115	-39	0	63
Dec-2017	0	23	3	0	0	0	51	77	0	0	24	30	61	116	-39	0	25
Jan-2018	73	23	3	0	100	0	47	245	0	0	42	30	59	132	114	0	138
Feb-2018	83	21	5	0	29	0	43	180	0	0	41	27	52	121	60	0	198
Mar-2018	67	23	6	0	80	0	47	223	0	0	51	30	58	139	84	0	282
Apr-2018	11	22	8	0	7	0	46	94	0	0	46	30	57	132	-38	0	244
May-2018	0	23	10	0	0	0	49	81	0	0	43	31	61	134	-53	0	190
Jun-2018	0	22	10	0	0	0	48	81	0	0	38	30	61	129	-49	0	142
Jul-2018	1	23	13	0	4	0	51	92	0	0	36	31	67	135	-43	0	99
Aug-2018	0	23	12	0	1	0	52	87	0	0	34	31	70	135	-48	0	51
Sep-2018	22	22	9	0	0	0	51	104	0	0	31	30	67	129	-25	0	27
Oct-2018	8	23	7	0	165	0	45	248	0	0	53	31	67	151	96	0	123
Nov-2018	19	22	5	0	182	0	37	265	0	0	60	29	62	151	114	0	237
Dec-2018	3	23	3	0	228	0	27	284	0	0	67	28	62	157	127	0	364
Jan-2019	5	23	3	0	2	0	33	67	0	0	64	27	61	152	-86	0	279
Feb-2019	2	21	5	0	2	0	33	62	0	0	53	25	54	133	-70	0	209

Table D-2c

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Mar-2019	4	23	6	0	1	0	41	74	0	0	54	28	61	143	-69	0	140
Apr-2019	0	22	8	0	3	0	42	75	0	0	48	28	61	137	-62	0	78
May-2019	0	23	10	0	0	0	46	79	0	0	45	29	67	142	-63	0	15
Jun-2019	0	22	10	0	0	0	47	79	0	0	40	29	69	138	-59	0	-44
Jul-2019	0	23	13	0	0	0	51	87	0	0	38	30	78	146	-59	0	-103
Aug-2019	0	23	12	0	0	0	53	87	0	0	35	31	82	147	-60	0	-163
Sep-2019	0	22	9	0	0	0	52	83	0	0	31	30	78	139	-56	0	-219
Oct-2019	9	23	7	0	0	0	54	92	0	0	30	31	78	139	-47	0	-266
Nov-2019	10	22	5	0	1	0	52	88	0	0	28	30	71	129	-41	0	-306
Dec-2019	12	23	3	0	5	0	53	96	0	0	28	31	70	129	-34	0	-340
Jan-2020	27	23	3	0	43	0	53	149	0	0	34	31	68	133	16	0	-324
Feb-2020	28	21	5	0	201	0	40	295	0	0	51	28	61	139	156	0	-168
Mar-2020	10	23	6	0	63	0	44	146	0	0	53	29	66	148	-3	0	-171
Apr-2020	33	22	8	0	15	0	45	123	0	0	49	28	67	144	-21	0	-192
May-2020	1	23	10	0	0	0	48	82	0	0	45	30	73	147	-66	0	-257
Jun-2020	0	22	10	0	0	0	49	81	0	0	39	29	75	143	-61	0	-318
Jul-2020	0	23	13	0	0	0	53	88	0	0	36	31	83	150	-62	0	-380
Aug-2020	0	23	12	0	0	0	54	89	0	0	33	31	87	152	-63	0	-443
Sep-2020	1	22	9	0	30	0	53	116	0	0	33	31	84	147	-32	0	-475
Oct-2020	0	23	7	0	42	0	55	127	0	0	36	32	84	153	-26	0	-501
Nov-2020	8	22	5	0	18	0	54	106	0	0	33	32	78	143	-37	0	-538
Dec-2020	59	23	3	0	0	0	55	141	0	0	34	33	78	145	-4	0	-542
Jan-2021	0	23	3	0	0	0	55	81	0	0	32	33	73	138	-57	0	-599
Feb-2021	0	21	5	0	0	0	49	74	0	0	27	30	63	120	-46	0	-645
Mar-2021	0	23	6	0	0	0	54	83	0	0	29	33	68	131	-48	0	-693
Apr-2021	0	22	8	0	0	0	52	83	0	0	27	32	67	126	-44	0	-737
May-2021	0	23	10	0	0	0	54	87	0	0	26	34	72	132	-45	0	-782
Jun-2021	0	22	10	0	0	0	53	86	0	0	24	33	73	130	-44	0	-826
Jul-2021	0	23	13	0	0	0	56	92	0	0	23	34	81	139	-47	0	-873
Aug-2021	0	23	12	0	0	0	57	92	0	0	22	34	85	141	-50	0	-922
Sep-2021	0	22	9	0	0	0	55	87	0	0	20	33	82	135	-48	0	-970
Oct-2021	0	23	7	0	0	0	57	87	0	0	20	34	81	135	-49	0	-1019
Nov-2021	0	22	5	0	0	0	54	81	0	0	19	33	74	126	-45	0	-1064
Dec-2021	0	23	3	0	0	0	56	82	0	0	19	34	73	126	-44	0	-1108
Jan-2022	0	23	3	0	0	0	55	81	0	0	18	34	70	123	-41	0	-1149
Feb-2022	0	21	5	0	0	0	49	74	0	0	16	31	61	108	-34	0	-1183
Mar-2022	0	23	6	0	0	0	54	83	0	0	17	34	69	120	-37	0	-1219
Apr-2022	0	22	8	0	0	0	53	83	0	0	16	33	69	118	-35	0	-1254
May-2022	0	23	10	0	0	0	55	88	0	0	16	34	74	125	-37	0	-1291
Jun-2022	0	22	10	0	0	0	54	87	0	0	15	33	76	125	-38	0	-1330
Jul-2022	0	23	13	0	0	0	57	93	0	0	16	35	84	135	-42	0	-1371
Aug-2022	0	23	12	0	0	0	58	93	0	0	15	35	88	139	-46	0	-1417
Sep-2022	0	22	9	0	0	0	56	88	0	0	15	34	85	133	-45	0	-1463

Table D-2c

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Oct-2022	0	23	7	0	0	0	58	88	0	0	15	35	85	135	-47	0	-1510
Nov-2022	0	22	5	0	0	0	56	82	0	0	14	34	79	127	-45	0	-1555
Dec-2022	0	23	3	0	0	0	57	83	0	0	15	35	78	128	-44	0	-1599
Jan-2023	16	23	3	0	84	0	55	180	0	0	25	35	75	135	45	0	-1554
Feb-2023	82	21	5	0	331	0	0	439	0	0	40	25	71	136	303	0	-1251
Mar-2023	162	23	6	0	248	0	14	453	0	0	59	32	79	170	283	0	-968
Apr-2023	0	22	8	0	4	0	31	66	0	0	52	31	76	160	-94	0	-1062
May-2023	0	23	10	0	9	0	41	83	0	0	48	33	82	163	-81	0	-1142
Jun-2023	0	22	11	0	0	0	45	78	0	0	42	32	83	157	-80	0	-1222
Jul-2023	0	23	13	0	8	0	51	94	0	0	38	34	92	164	-70	0	-1292
Aug-2023	0	23	12	0	0	0	54	89	0	0	34	35	95	165	-76	0	-1368
Sep-2023	0	22	9	0	0	0	54	86	0	0	30	34	91	156	-70	0	-1438
Oct-2023	7	23	7	0	40	0	57	133	0	0	34	36	92	162	-29	0	-1467
Nov-2023	0	22	5	0	0	0	55	82	0	0	29	35	86	150	-68	0	-1535
Dec-2023	85	23	3	0	185	0	50	346	0	0	52	36	86	174	171	0	-1363
Jan-2024	83	23	4	0	367	0	-5	471	0	0	61	28	87	177	295	0	-1069
Feb-2024	422	21	5	0	343	0	-24	768	0	0	72	25	83	180	587	0	-481
Mar-2024	247	23	6	0	363	0	-35	605	0	0	88	32	90	210	395	0	-86
Apr-2024	4	22	8	0	0	0	12	46	0	0	81	34	85	199	-153	0	-240
May-2024	9	23	10	0	0	0	30	71	0	0	79	36	89	204	-132	0	-372
Jun-2024	0	22	11	0	55	0	38	126	0	0	74	35	89	199	-73	0	-445
Jul-2024	8	23	13	0	0	0	47	90	0	0	72	37	97	206	-116	0	-561
Aug-2024	0	23	12	0	0	0	52	87	0	0	68	37	100	205	-118	0	-679
Sep-2024	0	22	10	0	0	0	54	86	0	0	61	37	96	194	-108	0	-787
Oct-2024	39	23	7	0	48	0	58	176	0	0	63	38	97	198	-22	0	-809
Nov-2024	0	22	5	0	64	0	57	147	0	0	60	37	90	187	-40	0	-849
Dec-2024	184	23	4	0	85	0	58	353	0	0	69	39	91	198	155	0	-694
Jan-2025	404	23	4	0	104	0	54	589	0	0	81	38	85	204	385	0	-309
Feb-2025	277	21	5	0	331	0	2	636	0	0	86	28	75	189	447	0	138
Mar-2025	101	23	6	0	367	0	-20	476	0	0	101	29	81	211	265	0	403
Apr-2025	0	22	9	0	91	0	18	141	0	0	95	35	73	203	-63	0	340
May-2025	0	23	10	0	0	0	35	68	0	0	94	37	75	206	-138	0	203
Jun-2025	15	22	11	0	0	0	42	90	0	0	87	36	73	196	-106	0	97
Jul-2025	0	23	13	0	0	0	49	85	0	0	85	37	77	199	-114	0	-17
Aug-2025	0	23	12	0	0	0	53	88	0	0	80	37	78	195	-107	0	-124
Sep-2025	0	22	10	0	0	0	53	85	0	0	73	35	74	182	-96	0	-221
Oct-2025	13	23	7	0	170	0	49	262	0	0	82	36	73	190	71	0	-149
Nov-2025	18	22	5	0	155	0	42	241	0	0	84	34	66	185	57	0	-92
Dec-2025	24	23	4	0	367	0	-9	407	0	0	91	27	70	189	219	0	126
Jan-2026	0	23	4	0	0	0	27	53	0	0	88	33	67	188	-135	0	-8
Feb-2026	0	21	5	0	0	0	34	60	0	0	76	30	58	164	-105	0	-113
Mar-2026	0	23	6	0	0	0	44	73	0	0	79	33	64	177	-104	0	-217
Apr-2026	0	22	9	0	0	0	46	77	0	0	72	32	64	168	-91	0	-307

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2026	0	23	10	0	0	0	51	84	0	0	71	33	69	173	-89	0	-396
Jun-2026	0	22	11	0	0	0	52	85	0	0	65	31	71	167	-82	0	-479
Jul-2026	0	23	13	0	0	0	56	93	0	0	64	32	79	175	-83	0	-561
Aug-2026	0	23	12	0	0	0	59	94	0	0	60	32	83	175	-82	0	-643
Sep-2026	0	22	10	0	0	0	58	89	0	0	55	31	79	165	-75	0	-718
Oct-2026	0	23	7	0	0	0	60	90	0	0	53	32	78	163	-73	0	-792
Nov-2026	0	22	5	0	0	0	57	84	0	0	48	31	71	150	-66	0	-857
Dec-2026	0	23	4	0	0	0	59	85	0	0	47	32	70	148	-63	0	-920
Jan-2027	521	23	4	0	331	0	15	894	0	0	77	26	71	173	721	0	-200
Feb-2027	46	21	5	0	331	0	-14	389	0	0	73	21	61	155	234	0	34
Mar-2027	197	23	6	0	232	0	9	466	0	0	93	27	66	185	281	0	315
Apr-2027	17	22	9	0	14	0	25	87	0	0	87	27	61	174	-87	0	228
May-2027	6	23	10	0	76	0	33	148	0	0	87	28	63	178	-30	0	198
Jun-2027	18	22	11	0	0	0	38	89	0	0	80	27	63	170	-82	0	117
Jul-2027	0	23	13	0	0	0	44	80	0	0	78	28	68	175	-95	0	22
Aug-2027	0	23	12	0	0	0	47	82	0	0	73	28	70	172	-90	0	-68
Sep-2027	0	22	10	0	0	0	48	80	0	0	67	28	67	162	-82	0	-150
Oct-2027	0	23	7	0	145	0	44	219	0	0	73	29	67	168	51	0	-100
Nov-2027	0	22	5	0	118	0	40	185	0	0	73	28	61	162	23	0	-77
Dec-2027	55	23	4	0	367	0	-12	436	0	0	84	22	65	171	265	0	189
Jan-2028	39	23	4	0	325	0	-20	371	0	0	89	19	64	172	199	0	387
Feb-2028	89	21	5	0	11	0	13	139	0	0	84	24	55	163	-24	0	364
Mar-2028	27	23	6	0	0	0	27	84	0	0	85	27	58	170	-86	0	277
Apr-2028	2	22	9	0	0	0	33	66	0	0	78	27	56	161	-95	0	182
May-2028	9	23	10	0	0	0	39	81	0	0	76	28	60	164	-83	0	100
Jun-2028	0	22	11	0	0	0	41	74	0	0	70	27	60	156	-82	0	17
Jul-2028	0	23	13	0	2	0	46	85	0	0	69	28	66	162	-77	0	-60
Aug-2028	0	23	12	0	0	0	48	84	0	0	65	28	68	160	-77	0	-137
Sep-2028	0	22	10	0	26	0	48	106	0	0	61	27	65	152	-46	0	-183
Oct-2028	17	23	7	0	0	0	51	98	0	0	59	28	64	151	-54	0	-236
Nov-2028	14	22	5	0	182	0	41	264	0	0	67	26	59	152	112	0	-125
Dec-2028	115	23	4	0	327	0	1	470	0	0	79	18	62	160	310	0	185
Jan-2029	32	23	4	0	13	0	26	97	0	0	77	24	58	159	-61	0	124
Feb-2029	1	21	5	0	82	0	28	137	0	0	68	22	49	139	-3	0	121
Mar-2029	0	23	6	0	15	0	36	80	0	0	72	24	54	150	-71	0	50
Apr-2029	0	22	9	0	9	0	38	77	0	0	67	24	53	144	-67	0	-17
May-2029	0	23	10	0	21	0	42	95	0	0	67	25	57	148	-53	0	-70
Jun-2029	0	22	11	0	0	0	43	76	0	0	61	24	57	143	-67	0	-137
Jul-2029	0	23	13	0	0	0	46	83	0	0	59	25	63	148	-65	0	-202
Aug-2029	0	23	12	0	0	0	48	83	0	0	56	26	66	147	-64	0	-266
Sep-2029	3	22	10	0	1	0	47	82	0	0	50	25	63	138	-55	0	-321
Oct-2029	0	23	7	0	1	0	49	80	0	0	48	26	62	136	-56	0	-377
Nov-2029	18	22	5	0	5	0	47	97	0	0	45	25	57	127	-30	0	-407

Table D-2c

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Management Zone 2: Placerita Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Dec-2029	32	23	4	0	5	0	49	112	0	0	45	26	57	128	-15	0	-423
Jan-2030	91	23	4	0	367	0	-7	477	0	0	64	19	59	142	335	0	-88
Feb-2030	573	21	5	0	212	0	9	819	0	0	79	20	55	154	666	0	578
Mar-2030	104	23	6	0	367	0	-29	470	0	0	93	18	61	172	298	0	876
Apr-2030	59	22	9	0	355	0	-43	403	0	0	94	17	61	172	230	0	1106
May-2030	143	23	10	0	0	0	0	177	0	0	98	22	62	182	-6	0	1101
Jun-2030	2	22	11	0	156	0	10	200	0	0	96	23	61	179	21	0	1122
Jul-2030	0	23	14	0	0	0	21	58	0	0	95	24	66	185	-127	0	995
Aug-2030	0	23	12	0	0	0	29	65	0	0	89	24	68	182	-117	0	878
Sep-2030	5	22	10	0	3	0	34	74	0	0	82	24	65	171	-96	0	782
Oct-2030	9	23	7	0	0	0	39	77	0	0	80	25	65	170	-92	0	690
Nov-2030	35	22	5	0	0	0	40	102	0	0	75	24	60	158	-56	0	634
Dec-2030	36	23	4	0	16	0	43	122	0	0	75	25	59	159	-37	0	597
Jan-2031	0	23	4	0	0	0	45	71	0	0	70	25	56	152	-80	0	517
Feb-2031	0	21	5	0	0	0	41	67	0	0	60	23	49	131	-64	0	452
Mar-2031	0	23	6	0	0	0	47	76	0	0	61	25	54	140	-65	0	388
Apr-2031	0	22	9	0	0	0	46	77	0	0	55	25	53	133	-57	0	331
May-2031	0	23	10	0	0	0	48	81	0	0	54	26	57	137	-56	0	276
Jun-2031	0	22	11	0	0	0	47	80	0	0	49	25	58	132	-52	0	224
Jul-2031	0	23	14	0	0	0	50	86	0	0	48	26	64	137	-51	0	173
Aug-2031	0	23	12	0	0	0	51	86	0	0	45	26	66	137	-51	0	121
Sep-2031	0	22	10	0	0	0	49	81	0	0	41	25	63	130	-48	0	73
Oct-2031	0	23	7	0	0	0	51	81	0	0	39	26	63	129	-48	0	25
Nov-2031	0	22	5	0	0	0	48	75	0	0	36	26	58	119	-44	0	-19
Dec-2031	0	23	4	0	0	0	49	76	0	0	35	26	57	118	-43	0	-61
Jan-2032	4	23	4	0	17	0	49	97	0	0	36	26	55	117	-21	0	-82
Feb-2032	34	21	5	0	32	0	45	137	0	0	37	25	50	111	26	0	-55
Mar-2032	11	23	6	0	10	0	48	98	0	0	37	26	53	116	-18	0	-73
Apr-2032	8	22	9	0	8	0	46	92	0	0	35	25	52	113	-20	0	-94
May-2032	0	23	10	0	0	0	48	81	0	0	34	26	56	116	-35	0	-129
Jun-2032	0	22	11	0	0	0	47	80	0	0	31	25	57	114	-34	0	-163
Jul-2032	0	23	14	0	0	0	49	85	0	0	30	26	63	120	-34	0	-198
Aug-2032	1	23	12	0	0	0	49	86	0	0	29	27	65	121	-35	0	-233
Sep-2032	0	22	10	0	0	0	47	79	0	0	26	26	63	115	-35	0	-268
Oct-2032	4	23	7	0	1	0	49	83	0	0	26	27	62	115	-32	0	-299
Nov-2032	0	22	5	0	9	0	46	83	0	0	26	26	57	109	-26	0	-326
Dec-2032	0	23	4	0	4	0	47	78	0	0	26	27	57	109	-31	0	-357
Jan-2033	99	23	4	0	183	0	39	348	0	0	52	26	58	136	212	0	-145
Feb-2033	182	21	5	0	60	0	37	305	0	0	54	23	52	129	175	0	30
Mar-2033	57	23	6	0	45	0	43	174	0	0	58	26	58	143	32	0	62
Apr-2033	43	22	9	0	6	0	43	124	0	0	55	25	59	139	-15	0	47
May-2033	0	23	10	0	14	0	47	94	0	0	51	26	64	142	-48	0	-1
Jun-2033	0	22	11	0	1	0	47	81	0	0	45	26	67	138	-56	0	-57

Table D-2c

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 2: Placerita Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 3	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jul-2033	0	23	14	0	0	0	51	87	0	0	42	27	75	145	-58	0	-115
Aug-2033	0	23	13	0	0	0	52	88	0	0	39	28	80	147	-59	0	-174
Sep-2033	0	22	10	0	2	0	51	86	0	0	35	28	77	140	-54	0	-228
Oct-2033	4	23	7	0	0	0	53	87	0	0	35	29	76	140	-53	0	-281
Nov-2033	54	22	5	0	355	0	0	435	0	0	55	27	74	156	279	0	-2
Dec-2033	22	23	4	0	367	0	-25	390	0	0	65	22	76	162	228	0	227
Jan-2034	0	23	4	0	0	0	16	42	0	0	60	27	67	155	-112	0	115
Feb-2034	0	21	5	0	0	0	25	51	0	0	50	26	56	132	-81	0	34
Mar-2034	0	23	6	0	0	0	34	64	0	0	50	29	60	139	-76	0	-42
Apr-2034	0	22	9	0	0	0	37	68	0	0	44	28	58	131	-62	0	-105
May-2034	0	23	10	0	0	0	41	74	0	0	41	29	62	132	-58	0	-162
Jun-2034	0	22	11	0	0	0	42	75	0	0	37	28	62	127	-52	0	-214
Jul-2034	0	23	14	0	0	0	45	82	0	0	35	29	68	132	-50	0	-263
Aug-2034	0	23	13	0	0	0	47	82	0	0	32	30	70	132	-49	0	-313
Sep-2034	0	22	10	0	0	0	46	78	0	0	29	29	67	124	-46	0	-359
Oct-2034	0	23	7	0	0	0	48	78	0	0	28	30	67	124	-46	0	-405
Nov-2034	0	22	5	0	0	0	46	73	0	0	25	29	62	116	-43	0	-447
Dec-2034	0	23	4	0	0	0	48	74	0	0	25	30	61	116	-42	0	-489
Jan-2035	0	23	4	0	11	0	47	85	0	0	26	30	59	114	-30	0	-519
Feb-2035	71	21	5	0	131	0	37	266	0	0	43	26	51	120	145	0	-374
Mar-2035	19	23	6	0	6	0	43	97	0	0	44	29	56	129	-31	0	-405
Apr-2035	19	22	9	0	3	0	43	96	0	0	38	28	55	121	-25	0	-430
May-2035	13	23	10	0	0	0	46	93	0	0	36	29	59	124	-31	0	-462
Jun-2035	0	22	11	0	0	0	45	79	0	0	31	28	60	119	-40	0	-502
Jul-2035	0	23	14	0	0	0	48	85	0	0	29	29	66	125	-40	0	-542
Aug-2035	0	23	13	0	0	0	49	85	0	0	27	30	69	125	-41	0	-582
Sep-2035	0	22	10	0	0	0	48	80	0	0	25	29	66	119	-39	0	-622
Oct-2035	9	23	7	0	78	0	48	165	0	0	37	30	66	133	32	0	-590
Nov-2035	5	22	5	0	10	0	46	89	0	0	33	29	61	122	-34	0	-623
Dec-2035	20	23	4	0	139	0	42	228	0	0	51	29	60	141	87	0	-536

Table D-2d

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	1367	15	29	0	1521	0	21	701	3654	0	0	303	504	487	1294	2360	0	2360
Feb-2012	1930	14	39	0	895	0	24	720	3622	0	0	338	494	463	1295	2327	0	4687
Mar-2012	638	15	51	0	1530	0	20	730	2984	0	0	375	554	514	1443	1541	0	6228
Apr-2012	47	15	70	0	248	0	24	701	1105	0	0	352	512	478	1341	-235	-1	5993
May-2012	53	15	82	0	0	0	26	682	858	0	0	344	497	500	1342	-484	0	5509
Jun-2012	0	15	88	0	0	0	25	608	736	0	0	315	446	499	1260	-524	0	4984
Jul-2012	0	15	109	0	0	0	27	569	720	0	0	306	420	551	1277	-557	0	4427
Aug-2012	0	15	100	0	0	0	27	546	688	0	0	284	398	569	1251	-562	0	3865
Sep-2012	0	15	79	0	0	0	26	575	695	0	0	255	400	537	1192	-496	-1	3368
Oct-2012	0	15	58	0	313	0	27	638	1051	0	0	259	434	524	1217	-166	0	3203
Nov-2012	0	15	39	0	1460	0	20	587	2120	0	0	280	444	507	1231	889	0	4091
Dec-2012	179	15	29	0	119	0	26	685	1053	0	0	285	477	484	1245	-193	0	3899
Jan-2013	78	15	29	0	99	0	27	735	983	0	0	271	499	457	1227	-244	0	3654
Feb-2013	27	14	39	0	36	0	24	699	839	0	0	227	470	394	1090	-251	0	3403
Mar-2013	90	15	51	0	282	0	27	758	1223	0	0	244	514	440	1198	25	0	3428
Apr-2013	8	15	70	0	32	0	26	698	849	0	0	222	478	435	1135	-285	0	3143
May-2013	0	15	82	0	4	0	27	673	801	0	0	214	466	467	1147	-346	0	2797
Jun-2013	0	15	88	0	0	0	26	599	728	0	0	194	419	474	1087	-359	0	2438
Jul-2013	0	15	109	0	0	0	27	559	711	0	0	189	395	529	1113	-402	0	2036
Aug-2013	0	15	100	0	0	0	28	535	678	0	0	178	374	551	1103	-425	0	1611
Sep-2013	0	15	79	0	30	0	27	561	713	0	0	163	377	522	1062	-349	0	1262
Oct-2013	9	15	58	0	7	0	28	628	746	0	0	160	412	508	1080	-334	0	928
Nov-2013	59	15	39	0	159	0	27	654	952	0	0	153	423	462	1038	-86	0	842
Dec-2013	4	15	29	0	88	0	28	707	870	0	0	152	456	453	1061	-191	0	651
Jan-2014	305	15	29	0	890	0	27	644	1912	0	0	220	434	456	1110	802	0	1453
Feb-2014	111	14	39	0	703	0	24	621	1513	0	0	222	411	402	1035	478	0	1930
Mar-2014	871	15	51	0	1342	0	25	545	2849	0	0	298	422	483	1203	1646	1	3576
Apr-2014	100	15	70	0	473	0	24	527	1209	0	0	292	393	458	1143	67	0	3643
May-2014	12	15	82	0	21	0	25	482	636	0	0	288	371	479	1138	-502	0	3141
Jun-2014	0	15	88	0	0	0	24	398	526	0	0	260	326	480	1066	-541	0	2600
Jul-2014	0	15	109	0	0	0	26	348	498	0	0	249	312	533	1093	-595	0	2005
Aug-2014	0	15	100	0	120	0	26	334	596	0	0	235	306	552	1093	-497	0	1508
Sep-2014	94	15	79	0	190	0	26	382	785	0	0	220	304	523	1047	-262	0	1246
Oct-2014	23	15	58	0	179	0	27	467	769	0	0	217	337	509	1063	-295	0	952
Nov-2014	490	15	39	0	517	0	27	538	1625	0	0	242	357	473	1072	553	0	1505
Dec-2014	271	15	29	0	527	0	28	612	1482	0	0	262	397	470	1129	353	0	1858
Jan-2015	1612	15	29	0	0	0	28	746	2430	0	0	296	467	462	1225	1205	0	3062
Feb-2015	1274	14	39	0	0	0	25	762	2114	0	0	282	475	405	1163	951	0	4013
Mar-2015	2430	15	51	0	412	0	28	803	3738	0	0	366	522	471	1359	2379	0	6392
Apr-2015	857	15	70	0	107	0	27	733	1809	0	0	348	494	460	1302	505	1	6897
May-2015	37	15	82	0	0	0	28	693	856	0	0	328	479	484	1290	-434	0	6463
Jun-2015	0	15	88	0	0	0	28	611	741	0	0	291	429	486	1207	-466	0	5997
Jul-2015	0	15	109	0	0	0	29	568	721	0	0	276	404	540	1221	-500	0	5498

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Aug-2015	218	15	100	0	0	0	29	542	904	0	0	264	383	564	1210	-306	0	5192
Sep-2015	344	15	79	0	76	0	28	566	1108	0	0	253	386	536	1175	-67	0	5125
Oct-2015	324	15	58	0	244	0	29	632	1302	0	0	261	420	524	1205	97	0	5221
Nov-2015	937	15	39	0	1531	0	21	573	3117	0	0	320	438	518	1276	1841	0	7062
Dec-2015	954	15	29	0	1583	0	21	721	3323	0	0	369	548	543	1460	1863	0	8925
Jan-2016	0	15	29	0	0	0	27	763	834	0	0	348	545	489	1382	-548	0	8378
Feb-2016	0	14	39	0	0	0	26	734	815	0	0	308	517	430	1255	-441	0	7937
Mar-2016	0	15	51	0	0	0	28	762	857	0	0	308	540	455	1303	-446	0	7491
Apr-2016	0	15	70	0	0	0	28	700	813	0	0	276	502	449	1226	-412	0	7078
May-2016	0	15	82	0	0	0	29	678	803	0	0	262	490	481	1233	-429	0	6649
Jun-2016	0	15	88	0	0	0	28	606	736	0	0	233	442	488	1163	-427	0	6222
Jul-2016	0	15	109	0	0	0	29	569	723	0	0	223	420	543	1186	-464	0	5758
Aug-2016	0	15	100	0	0	0	29	548	693	0	0	208	399	565	1172	-479	0	5279
Sep-2016	0	15	79	0	0	0	29	575	698	0	0	189	400	535	1124	-426	0	4853
Oct-2016	0	15	58	0	0	0	30	643	746	0	0	184	434	521	1139	-394	0	4459
Nov-2016	0	15	39	0	0	0	29	671	753	0	0	168	445	473	1086	-333	0	4126
Dec-2016	0	15	29	0	0	0	30	725	799	0	0	164	478	465	1106	-307	0	3819
Jan-2017	0	15	29	0	0	0	30	671	745	0	0	155	458	443	1056	-311	0	3508
Feb-2017	0	14	39	0	0	0	27	640	720	0	0	133	431	383	947	-227	0	3281
Mar-2017	0	15	51	0	0	0	29	676	772	0	0	138	463	425	1026	-254	-1	3028
Apr-2017	0	15	71	0	0	0	28	595	709	0	0	126	420	423	969	-260	0	2768
May-2017	0	15	82	0	0	0	29	541	668	0	0	122	397	457	976	-308	0	2460
Jun-2017	0	15	88	0	0	0	29	451	582	0	0	110	350	464	925	-342	0	2118
Jul-2017	0	15	109	0	0	0	30	397	551	0	0	107	335	520	962	-411	0	1707
Aug-2017	0	15	100	0	0	0	30	381	526	0	0	101	328	542	971	-445	0	1262
Sep-2017	0	15	79	0	0	0	29	427	550	0	0	93	325	513	930	-380	0	882
Oct-2017	0	15	58	0	0	0	30	512	616	0	0	90	357	500	947	-331	0	551
Nov-2017	0	15	39	0	0	0	29	572	655	0	0	82	378	454	914	-259	0	292
Dec-2017	0	15	29	0	0	0	30	643	718	0	0	80	417	446	943	-225	0	67
Jan-2018	460	15	29	0	500	0	30	691	1726	0	0	146	444	438	1028	698	0	765
Feb-2018	524	14	39	0	145	0	27	665	1416	0	0	148	426	380	954	461	0	1227
Mar-2018	425	15	51	0	403	0	30	698	1622	0	0	192	460	427	1079	543	1	1769
Apr-2018	69	15	71	0	33	0	30	613	831	0	0	173	417	420	1010	-179	0	1590
May-2018	0	15	82	0	0	0	31	558	685	0	0	162	395	452	1009	-323	0	1267
Jun-2018	0	15	88	0	0	0	30	463	596	0	0	142	348	459	949	-353	0	914
Jul-2018	4	15	109	0	21	0	31	404	586	0	0	136	330	514	980	-395	0	519
Aug-2018	0	15	100	0	5	0	31	387	538	0	0	124	322	536	982	-444	0	75
Sep-2018	140	15	79	0	0	0	30	434	698	0	0	114	321	509	945	-246	0	-171
Oct-2018	54	15	58	0	827	0	31	514	1499	0	0	185	351	515	1050	448	0	278
Nov-2018	122	15	39	0	915	0	29	569	1689	0	0	218	374	487	1078	610	0	888
Dec-2018	19	15	29	0	1143	0	28	614	1849	0	0	251	414	499	1163	686	0	1574
Jan-2019	33	15	29	0	117	0	27	766	989	0	0	243	484	488	1215	-227	0	1347
Feb-2019	10	14	40	0	121	0	25	734	944	0	0	209	463	428	1100	-157	1	1190

Table D-2d

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Mar-2019	27	15	51	0	42	0	28	796	959	0	0	215	508	483	1206	-247	0	943
Apr-2019	2	15	71	0	143	0	28	732	990	0	0	197	473	491	1161	-171	0	772
May-2019	0	15	82	0	3	0	29	709	838	0	0	187	461	540	1188	-349	0	422
Jun-2019	0	15	88	0	0	0	29	634	766	0	0	166	415	559	1140	-374	0	49
Jul-2019	1	15	110	0	0	0	30	599	756	0	0	158	393	646	1198	-442	0	-393
Aug-2019	0	15	100	0	0	0	31	579	726	0	0	146	376	686	1208	-482	0	-875
Sep-2019	0	15	79	0	4	0	30	607	735	0	0	130	382	654	1166	-431	0	-1305
Oct-2019	55	15	58	0	0	0	31	675	834	0	0	125	418	628	1171	-337	0	-1642
Nov-2019	61	15	39	0	33	0	30	700	878	0	0	117	430	562	1109	-232	0	-1874
Dec-2019	76	15	29	0	256	0	31	751	1159	0	0	139	463	549	1151	8	0	-1866
Jan-2020	172	15	29	0	250	0	31	692	1191	0	0	148	442	545	1135	56	0	-1810
Feb-2020	179	14	40	0	1161	0	28	626	2047	0	0	193	425	531	1149	897	0	-913
Mar-2020	61	15	51	0	365	0	29	664	1186	0	0	215	444	565	1224	-38	0	-951
Apr-2020	210	15	71	0	84	0	28	594	1002	0	0	200	403	568	1171	-168	0	-1119
May-2020	5	15	82	0	0	0	30	551	682	0	0	186	381	616	1183	-501	0	-1620
Jun-2020	0	15	88	0	0	0	29	466	598	0	0	165	334	630	1130	-531	0	-2151
Jul-2020	0	15	110	0	0	0	31	416	572	0	0	159	317	715	1191	-619	0	-2771
Aug-2020	0	15	100	0	0	0	31	405	553	0	0	149	310	753	1211	-659	0	-3429
Sep-2020	5	15	79	0	174	0	31	459	763	0	0	140	315	718	1173	-410	0	-3839
Oct-2020	0	15	58	0	242	0	32	552	900	0	0	148	354	714	1216	-316	0	-4155
Nov-2020	48	15	39	0	104	0	32	617	855	0	0	140	380	643	1163	-308	0	-4463
Dec-2020	376	15	29	0	0	0	33	695	1149	0	0	146	421	632	1199	-50	0	-4514
Jan-2021	0	15	29	0	0	0	33	747	824	0	0	136	450	570	1156	-331	0	-4845
Feb-2021	0	14	40	0	0	0	30	719	803	0	0	116	432	475	1024	-221	0	-5066
Mar-2021	0	15	51	0	0	0	33	760	860	0	0	121	465	517	1103	-244	0	-5309
Apr-2021	0	15	71	0	0	0	32	669	787	0	0	110	420	510	1039	-252	0	-5562
May-2021	0	15	82	0	0	0	34	610	741	0	0	106	394	549	1050	-309	0	-5870
Jun-2021	0	15	88	0	0	0	33	510	645	0	0	96	343	560	999	-354	0	-6224
Jul-2021	0	15	110	0	0	0	34	449	608	0	0	93	319	643	1054	-446	0	-6671
Aug-2021	0	15	100	0	0	0	34	429	579	0	0	87	307	678	1072	-493	0	-7164
Sep-2021	0	15	79	0	0	0	33	484	612	0	0	79	315	643	1038	-426	0	-7589
Oct-2021	0	15	58	0	0	0	34	577	685	0	0	77	355	615	1047	-362	0	-7951
Nov-2021	0	15	39	0	0	0	33	638	725	0	0	70	382	548	1000	-275	0	-8226
Dec-2021	0	15	29	0	0	0	34	712	791	0	0	68	424	532	1023	-232	0	-8458
Jan-2022	0	15	29	0	0	0	34	767	846	0	0	64	455	527	1046	-200	0	-8659
Feb-2022	0	14	40	0	0	0	31	741	826	0	0	56	439	468	962	-137	1	-8796
Mar-2022	0	15	51	0	0	0	34	787	888	0	0	59	473	531	1063	-175	0	-8971
Apr-2022	0	15	71	0	0	0	33	698	816	0	0	56	427	538	1021	-205	0	-9176
May-2022	0	15	82	0	0	0	34	641	772	0	0	56	402	589	1047	-274	0	-9450
Jun-2022	0	15	88	0	0	0	33	539	675	0	0	53	348	606	1007	-331	0	-9782
Jul-2022	0	15	110	0	0	0	35	476	636	0	0	53	322	691	1067	-431	0	-10213
Aug-2022	0	15	101	0	0	0	35	455	605	0	0	52	310	730	1092	-487	0	-10700
Sep-2022	0	15	80	0	0	0	34	513	641	0	0	49	321	697	1068	-427	0	-11127

Table D-2d

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Oct-2022	0	15	58	0	0	0	35	612	721	0	0	49	366	692	1107	-386	0	-11513
Nov-2022	0	15	39	0	0	0	34	676	764	0	0	46	394	622	1063	-300	0	-11813
Dec-2022	0	15	29	0	0	0	35	753	832	0	0	46	438	606	1091	-258	0	-12071
Jan-2023	100	15	29	0	405	0	35	811	1396	0	0	89	470	608	1167	229	0	-11842
Feb-2023	516	14	40	0	1369	0	25	709	2673	0	0	143	458	578	1179	1493	1	-10350
Mar-2023	1023	15	51	0	1202	0	32	746	3068	0	0	215	486	683	1383	1684	0	-8665
Apr-2023	0	15	71	0	19	0	31	687	822	0	0	193	439	658	1290	-468	0	-9133
May-2023	0	15	82	0	42	0	33	640	812	0	0	183	414	705	1301	-489	0	-9622
Jun-2023	0	15	88	0	0	0	32	545	681	0	0	158	359	715	1232	-552	0	-10173
Jul-2023	0	15	110	0	37	0	34	485	682	0	0	148	332	796	1276	-594	0	-10768
Aug-2023	0	15	101	0	0	0	35	468	619	0	0	130	319	830	1279	-660	0	-11427
Sep-2023	0	15	80	0	0	0	34	531	660	0	0	111	333	789	1233	-573	0	-12000
Oct-2023	45	15	58	0	191	0	36	633	980	0	0	121	381	793	1295	-315	0	-12315
Nov-2023	0	15	39	0	0	0	35	704	793	0	0	105	412	733	1250	-458	0	-12773
Dec-2023	537	15	29	0	895	0	36	774	2287	0	0	183	457	746	1386	901	0	-11872
Jan-2024	526	15	29	0	1583	0	28	755	2937	0	0	231	496	745	1473	1464	0	-10408
Feb-2024	2669	14	40	0	1466	0	25	720	4934	0	0	295	490	718	1503	3432	0	-6977
Mar-2024	1561	15	51	0	1446	0	32	717	3822	0	0	352	506	782	1641	2181	0	-4796
Apr-2024	24	15	71	0	0	0	34	679	823	0	0	323	453	733	1509	-686	0	-5481
May-2024	55	15	82	0	0	0	36	645	833	0	0	311	429	769	1509	-676	0	-6157
Jun-2024	0	15	88	0	242	0	35	549	930	0	0	289	375	767	1431	-501	0	-6658
Jul-2024	48	15	110	0	0	0	37	494	704	0	0	281	347	842	1470	-765	0	-7423
Aug-2024	0	15	101	0	0	0	37	480	633	0	0	258	334	868	1460	-826	0	-8249
Sep-2024	0	15	80	0	0	0	37	547	678	0	0	229	350	821	1400	-721	0	-8971
Oct-2024	249	15	58	0	212	0	38	657	1230	0	0	235	400	825	1460	-230	0	-9201
Nov-2024	0	15	39	0	280	0	37	729	1100	0	0	222	432	760	1414	-314	0	-9515
Dec-2024	1163	15	29	0	373	0	39	812	2431	0	0	265	480	761	1506	925	0	-8590
Jan-2025	2553	15	29	0	462	0	38	954	4051	0	0	334	558	663	1554	2497	0	-6093
Feb-2025	1750	14	40	0	1429	0	28	870	4131	0	0	344	562	561	1467	2664	0	-3429
Mar-2025	637	15	51	0	1514	0	29	912	3158	0	0	390	622	597	1609	1549	0	-1880
Apr-2025	0	15	71	0	404	0	35	888	1413	0	0	362	576	538	1476	-63	0	-1943
May-2025	0	15	82	0	0	0	37	870	1005	0	0	354	563	545	1462	-457	0	-2400
Jun-2025	97	15	89	0	0	0	36	783	1019	0	0	328	508	531	1367	-348	0	-2748
Jul-2025	0	15	110	0	0	0	37	742	904	0	0	319	483	573	1376	-471	0	-3219
Aug-2025	0	15	101	0	0	0	37	713	866	0	0	301	461	584	1345	-480	0	-3698
Sep-2025	0	15	80	0	0	0	35	733	863	0	0	272	463	547	1282	-420	0	-4118
Oct-2025	85	15	58	0	751	0	36	811	1757	0	0	296	503	543	1343	414	0	-3704
Nov-2025	112	15	39	0	684	0	34	841	1725	0	0	295	516	498	1309	415	0	-3289
Dec-2025	149	15	29	0	1505	0	27	839	2565	0	0	331	569	517	1418	1147	0	-2142
Jan-2026	0	15	29	0	0	0	33	907	984	0	0	319	583	503	1404	-419	0	-2562
Feb-2026	0	14	40	0	0	0	30	854	938	0	0	276	542	439	1256	-320	1	-2881
Mar-2026	0	15	51	0	0	0	33	927	1026	0	0	287	589	493	1369	-343	0	-3224
Apr-2026	0	15	71	0	0	0	32	858	975	0	0	261	547	498	1307	-331	0	-3555

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2026	0	15	82	0	0	0	33	835	965	0	0	253	534	545	1332	-367	0	-3922
Jun-2026	0	15	89	0	0	0	31	752	887	0	0	231	482	562	1274	-387	0	-4309
Jul-2026	0	15	110	0	0	0	32	718	875	0	0	224	459	648	1330	-455	0	-4764
Aug-2026	0	15	101	0	0	0	32	695	844	0	0	209	438	687	1333	-490	0	-5253
Sep-2026	0	15	80	0	0	0	31	720	846	0	0	189	443	653	1284	-438	0	-5692
Oct-2026	0	15	59	0	0	0	32	791	897	0	0	182	481	626	1289	-392	0	-6083
Nov-2026	0	15	39	0	0	0	31	814	898	0	0	165	492	559	1216	-317	0	-6401
Dec-2026	0	15	29	0	0	0	32	871	947	0	0	158	527	543	1228	-281	0	-6682
Jan-2027	3296	15	29	0	1406	0	26	719	5492	0	0	317	497	551	1365	4127	0	-2555
Feb-2027	289	14	40	0	1396	0	21	677	2437	0	0	301	483	468	1252	1184	0	-1370
Mar-2027	1245	15	51	0	1024	0	27	749	3111	0	0	365	513	525	1403	1708	0	338
Apr-2027	108	15	71	0	64	0	27	663	947	0	0	338	459	483	1279	-332	0	6
May-2027	39	15	82	0	335	0	28	597	1097	0	0	335	428	500	1263	-166	-1	-160
Jun-2027	114	15	89	0	0	0	27	497	742	0	0	310	370	496	1176	-434	0	-594
Jul-2027	0	15	110	0	0	0	28	431	585	0	0	300	341	543	1184	-599	0	-1193
Aug-2027	0	15	101	0	0	0	28	409	554	0	0	277	325	559	1161	-608	0	-1801
Sep-2027	0	15	80	0	0	0	28	470	592	0	0	248	335	526	1109	-516	-1	-2317
Oct-2027	0	15	59	0	640	0	29	573	1316	0	0	271	375	520	1166	149	0	-2168
Nov-2027	0	15	39	0	522	0	28	642	1246	0	0	265	404	473	1142	104	0	-2064
Dec-2027	349	15	29	0	1559	0	22	746	2721	0	0	314	512	502	1328	1393	0	-671
Jan-2028	247	15	29	0	1427	0	19	843	2581	0	0	334	579	502	1415	1167	0	496
Feb-2028	561	14	40	0	55	0	24	849	1543	0	0	317	554	434	1305	238	0	734
Mar-2028	173	15	51	0	0	0	27	887	1154	0	0	325	578	452	1356	-202	0	532
Apr-2028	11	15	71	0	0	0	27	812	936	0	0	297	533	442	1272	-336	0	195
May-2028	57	15	82	0	0	0	28	781	963	0	0	286	517	472	1275	-312	0	-116
Jun-2028	0	15	89	0	0	0	27	695	825	0	0	258	464	476	1198	-372	0	-489
Jul-2028	0	15	110	0	12	0	28	650	815	0	0	248	438	530	1216	-400	0	-889
Aug-2028	0	15	101	0	0	0	28	620	765	0	0	231	415	551	1197	-432	0	-1321
Sep-2028	0	15	80	0	128	0	27	640	889	0	0	212	418	521	1151	-262	0	-1584
Oct-2028	108	15	59	0	0	0	28	707	917	0	0	204	453	508	1166	-248	0	-1832
Nov-2028	88	15	39	0	898	0	26	725	1791	0	0	244	464	482	1190	601	0	-1230
Dec-2028	725	15	29	0	1430	0	18	704	2923	0	0	301	497	508	1306	1616	0	386
Jan-2029	201	15	29	0	111	0	24	766	1147	0	0	293	510	462	1265	-119	0	267
Feb-2029	7	14	40	0	699	0	22	725	1506	0	0	268	478	407	1152	354	0	621
Mar-2029	0	15	51	0	126	0	24	784	1002	0	0	282	520	440	1243	-241	0	380
Apr-2029	0	15	71	0	72	0	24	722	904	0	0	257	483	433	1172	-268	0	111
May-2029	0	15	83	0	175	0	25	694	992	0	0	252	470	464	1186	-194	0	-83
Jun-2029	0	15	89	0	2	0	24	619	749	0	0	225	422	470	1117	-367	0	-450
Jul-2029	2	15	110	0	0	0	25	580	732	0	0	216	397	524	1138	-405	0	-856
Aug-2029	0	15	101	0	0	0	26	556	698	0	0	199	377	546	1122	-425	0	-1281
Sep-2029	16	15	80	0	7	0	25	583	725	0	0	181	383	517	1081	-355	0	-1635
Oct-2029	0	15	59	0	10	0	26	651	762	0	0	176	418	503	1097	-335	0	-1970
Nov-2029	112	15	39	0	43	0	25	679	914	0	0	164	430	457	1051	-138	0	-2108

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Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Dec-2029	203	15	29	0	44	0	26	733	1051	0	0	166	463	450	1079	-29	0	-2137
Jan-2030	575	15	29	0	1529	0	19	857	3025	0	0	248	579	470	1297	1727	0	-409
Feb-2030	3626	14	40	0	924	0	20	915	5539	0	0	334	599	460	1392	4147	0	3738
Mar-2030	656	15	51	0	1558	0	18	962	3261	0	0	379	689	519	1588	1673	0	5410
Apr-2030	376	15	71	0	1531	0	17	760	2770	0	0	374	601	529	1504	1266	0	6676
May-2030	906	15	83	0	0	0	22	733	1759	0	0	391	561	541	1493	266	0	6942
Jun-2030	10	15	89	0	682	0	23	660	1479	0	0	371	498	543	1412	67	0	7010
Jul-2030	0	15	110	0	0	0	24	615	764	0	0	367	471	583	1421	-656	0	6353
Aug-2030	0	15	101	0	0	0	24	590	731	0	0	349	446	595	1390	-659	0	5694
Sep-2030	35	15	80	0	14	0	24	618	786	0	0	322	446	559	1326	-540	-1	5155
Oct-2030	54	15	59	0	0	0	25	690	844	0	0	313	481	542	1336	-492	0	4662
Nov-2030	224	15	39	0	0	0	24	719	1022	0	0	288	490	493	1271	-250	0	4413
Dec-2030	229	15	29	0	71	0	25	775	1145	0	0	286	525	484	1295	-150	0	4262
Jan-2031	0	15	29	0	0	0	25	808	879	0	0	262	543	459	1264	-386	0	3876
Feb-2031	0	14	40	0	0	0	23	759	835	0	0	219	507	397	1124	-289	0	3588
Mar-2031	0	15	51	0	0	0	25	821	914	0	0	224	554	440	1218	-304	0	3284
Apr-2031	0	15	71	0	0	0	25	757	868	0	0	201	516	436	1154	-286	0	2998
May-2031	0	15	83	0	0	0	26	732	856	0	0	195	505	469	1169	-313	0	2684
Jun-2031	0	15	89	0	0	0	25	654	783	0	0	178	456	476	1110	-327	0	2357
Jul-2031	0	15	110	0	0	0	26	615	766	0	0	173	432	532	1136	-370	0	1987
Aug-2031	0	15	101	0	0	0	26	589	732	0	0	161	410	553	1124	-392	0	1595
Sep-2031	0	15	80	0	0	0	25	613	734	0	0	144	412	524	1080	-346	0	1249
Oct-2031	0	15	59	0	0	0	26	680	780	0	0	137	446	510	1093	-313	0	936
Nov-2031	0	15	39	0	0	0	26	705	785	0	0	122	456	463	1041	-256	0	680
Dec-2031	0	15	29	0	0	0	26	759	830	0	0	116	489	455	1060	-230	0	450
Jan-2032	28	15	29	0	212	0	26	785	1095	0	0	133	508	434	1075	20	0	471
Feb-2032	217	14	40	0	390	0	25	759	1445	0	0	158	493	396	1046	399	0	869
Mar-2032	72	15	52	0	123	0	26	788	1076	0	0	168	519	421	1108	-33	0	836
Apr-2032	48	15	71	0	93	0	25	722	974	0	0	158	483	419	1060	-85	0	751
May-2032	0	15	83	0	0	0	26	696	820	0	0	150	471	452	1073	-252	0	499
Jun-2032	0	15	89	0	0	0	25	620	749	0	0	136	423	460	1019	-270	0	229
Jul-2032	0	15	111	0	0	0	26	579	731	0	0	130	399	516	1045	-314	0	-85
Aug-2032	7	15	101	0	0	0	27	553	703	0	0	121	378	539	1037	-334	0	-419
Sep-2032	0	15	80	0	0	0	26	578	699	0	0	108	382	511	1000	-300	0	-720
Oct-2032	26	15	59	0	8	0	27	644	779	0	0	105	416	498	1018	-240	0	-960
Nov-2032	0	15	39	0	115	0	26	669	864	0	0	106	427	451	985	-121	0	-1080
Dec-2032	0	15	29	0	47	0	27	722	840	0	0	106	460	443	1009	-169	0	-1249
Jan-2033	626	15	30	0	852	0	26	661	2210	0	0	192	438	483	1113	1097	0	-152
Feb-2033	1154	14	40	0	280	0	23	632	2143	0	0	207	416	431	1054	1088	1	935
Mar-2033	362	15	52	0	209	0	26	664	1328	0	0	224	449	484	1157	171	0	1107
Apr-2033	274	15	71	0	27	0	25	586	1000	0	0	204	406	492	1102	-102	0	1005
May-2033	0	15	83	0	66	0	26	537	727	0	0	191	384	538	1113	-386	0	619
Jun-2033	0	15	89	0	5	0	26	451	587	0	0	168	338	555	1061	-474	0	145

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 3: South Fork Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 2	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 4	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jul-2033	0	15	111	0	0	0	27	403	556	0	0	160	322	642	1124	-567	0	-422
Aug-2033	0	15	101	0	0	0	28	393	538	0	0	149	315	681	1145	-607	0	-1029
Sep-2033	0	15	80	0	11	0	28	447	580	0	0	135	316	648	1099	-519	0	-1548
Oct-2033	24	15	59	0	0	0	29	537	664	0	0	130	352	622	1104	-440	0	-1989
Nov-2033	341	15	39	0	1420	0	27	511	2353	0	0	204	370	592	1166	1187	0	-801
Dec-2033	139	15	30	0	1536	0	22	569	2311	0	0	250	423	602	1275	1036	0	235
Jan-2034	0	15	30	0	0	0	27	680	752	0	0	233	454	512	1199	-447	0	-212
Feb-2034	0	14	40	0	0	0	26	672	752	0	0	196	437	422	1055	-303	0	-515
Mar-2034	0	15	52	0	0	0	29	712	808	0	0	196	470	453	1118	-310	0	-826
Apr-2034	0	15	71	0	0	0	28	625	740	0	0	168	424	441	1033	-293	0	-1119
May-2034	0	15	83	0	0	0	29	567	694	0	0	153	399	468	1020	-325	0	-1444
Jun-2034	0	15	89	0	0	0	28	470	602	0	0	132	348	472	952	-350	0	-1794
Jul-2034	0	15	111	0	0	0	29	408	563	0	0	123	327	525	975	-411	0	-2206
Aug-2034	0	15	101	0	0	0	30	387	534	0	0	113	316	544	973	-440	0	-2645
Sep-2034	0	15	80	0	0	0	29	437	561	0	0	100	319	513	932	-371	-1	-3016
Oct-2034	0	15	59	0	0	0	30	524	628	0	0	95	354	499	948	-320	0	-3336
Nov-2034	0	15	39	0	0	0	29	585	668	0	0	86	377	451	914	-245	0	-3581
Dec-2034	0	15	30	0	0	0	30	656	731	0	0	83	417	442	941	-210	0	-3791
Jan-2035	0	15	30	0	63	0	30	705	843	0	0	83	444	421	948	-106	0	-3897
Feb-2035	452	14	40	0	777	0	26	673	1982	0	0	150	426	384	960	1022	0	-2874
Mar-2035	119	15	52	0	36	0	29	709	959	0	0	154	459	416	1030	-71	1	-2945
Apr-2035	118	15	71	0	19	0	28	621	872	0	0	136	415	412	963	-90	0	-3036
May-2035	85	15	83	0	0	0	29	563	775	0	0	125	390	445	959	-184	0	-3220
Jun-2035	0	15	89	0	0	0	28	466	598	0	0	107	340	452	898	-300	0	-3520
Jul-2035	1	15	111	0	0	0	29	404	561	0	0	99	319	506	925	-364	0	-3883
Aug-2035	0	15	101	0	0	0	30	384	530	0	0	91	309	528	928	-397	0	-4281
Sep-2035	0	15	80	0	0	0	29	434	558	0	0	82	312	499	893	-335	0	-4615
Oct-2035	55	15	59	0	461	0	30	518	1139	0	0	136	348	491	975	163	0	-4452
Nov-2035	32	15	39	0	62	0	29	578	754	0	0	126	372	442	939	-185	0	-4637
Dec-2035	129	15	30	0	822	0	29	639	1664	0	0	182	411	452	1046	618	0	-4019

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	1587	12	25	0	2842	0	1176	504	-1016	5129	677	554	74	541	189	2035	3095	0	3095
Feb-2012	2241	12	34	0	1831	0	1102	494	-783	4931	530	680	100	537	177	2025	2906	0	6001
Mar-2012	741	12	44	0	2411	0	1358	554	-952	4168	712	760	127	547	185	2331	1836	1	7837
Apr-2012	55	12	61	0	1094	0	1256	512	-538	2452	914	652	113	560	175	2415	40	-3	7877
May-2012	61	12	70	0	328	0	1285	497	-218	2036	1186	609	104	598	180	2678	-641	0	7236
Jun-2012	0	12	76	0	330	0	1244	446	-53	2055	1402	531	91	591	174	2789	-734	0	6502
Jul-2012	0	12	94	0	361	0	1289	420	94	2271	1752	487	85	615	189	3128	-857	0	5645
Aug-2012	0	12	86	0	384	0	1284	398	149	2313	1810	450	78	620	195	3152	-839	0	4806
Sep-2012	0	12	68	0	385	0	1222	400	40	2127	1449	424	71	599	192	2734	-605	-2	4201
Oct-2012	0	12	50	0	1391	0	1242	434	-308	2821	1221	443	75	619	188	2546	275	0	4476
Nov-2012	0	12	33	0	3650	0	1171	444	-1128	4183	923	452	94	592	178	2239	1944	0	6420
Dec-2012	208	12	25	0	766	0	1200	477	-468	2219	811	500	90	607	179	2188	31	0	6451
Jan-2013	90	12	25	0	375	0	1191	499	-400	1792	677	516	86	604	177	2060	-268	0	6183
Feb-2013	31	11	34	0	334	0	1068	470	-395	1553	512	469	74	542	159	1756	-203	0	5980
Mar-2013	104	12	44	0	362	0	1186	514	-379	1843	712	522	79	605	176	2095	-253	1	5727
Apr-2013	9	12	61	0	352	0	1155	478	-271	1796	914	490	73	582	170	2228	-432	0	5296
May-2013	0	12	70	0	371	0	1202	466	-165	1957	1186	486	71	607	176	2526	-568	0	4727
Jun-2013	0	12	76	0	370	0	1171	419	-37	2011	1402	443	64	596	171	2677	-665	0	4062
Jul-2013	0	12	94	0	402	0	1217	395	102	2223	1752	416	61	626	188	3044	-820	0	3242
Aug-2013	0	12	86	0	423	0	1215	374	155	2266	1810	389	56	639	196	3089	-823	0	2419
Sep-2013	0	12	68	0	424	0	1157	377	46	2084	1449	369	51	621	193	2683	-598	-1	1821
Oct-2013	11	12	50	0	444	0	1177	412	-67	2039	1221	389	51	644	190	2493	-454	0	1367
Nov-2013	69	12	33	0	427	0	1123	423	-180	1908	923	389	48	621	178	2160	-252	0	1115
Dec-2013	4	12	25	0	439	0	1150	456	-263	1823	811	410	49	641	180	2092	-269	0	846
Jan-2014	355	12	25	0	1818	0	1163	434	-545	3263	970	421	60	660	176	2287	976	0	1822
Feb-2014	129	11	34	0	1577	0	1050	411	-606	2607	720	378	58	586	158	1901	706	0	2528
Mar-2014	1012	12	44	0	1819	0	1175	422	-555	3929	1005	466	87	656	175	2389	1539	2	4066
Apr-2014	116	12	61	0	1435	0	1162	393	-402	2775	1285	408	76	643	165	2577	199	-1	4266
May-2014	14	12	71	0	478	0	1233	371	8	2187	1676	381	67	678	167	2970	-782	0	3483
Jun-2014	0	12	76	0	440	0	1228	326	208	2290	1988	336	56	671	158	3209	-919	0	2565
Jul-2014	0	12	94	0	464	0	1310	312	403	2596	2484	304	48	707	170	3712	-1116	0	1449
Aug-2014	0	12	86	0	748	0	1337	306	443	2933	2576	273	40	716	172	3777	-844	0	605
Sep-2014	109	12	68	0	887	0	1285	304	254	2919	2063	260	35	680	168	3205	-285	-1	320
Oct-2014	27	12	50	0	879	0	1310	337	106	2722	1745	273	34	690	163	2904	-182	0	138
Nov-2014	569	12	33	0	1597	0	1243	357	-294	3517	1323	299	38	653	156	2470	1047	0	1185
Dec-2014	314	12	25	0	1287	0	1265	397	-328	2973	1165	329	44	667	160	2366	607	0	1792
Jan-2015	1871	12	25	0	447	0	1223	467	-364	3681	677	427	59	636	167	1967	1714	0	3506
Feb-2015	1479	11	34	0	451	0	1189	475	-419	3220	512	437	65	568	155	1737	1483	0	4989
Mar-2015	2821	12	44	0	1481	0	1234	522	-536	5579	712	697	126	621	176	2333	3245	1	8234
Apr-2015	995	12	61	0	743	0	1218	494	-280	3243	914	679	119	601	168	2481	757	4	8991
May-2015	43	12	71	0	322	0	1247	479	-99	2074	1186	602	110	636	171	2706	-631	0	8360
Jun-2015	0	12	76	0	323	0	1210	429	40	2091	1402	538	97	590	164	2792	-701	0	7659
Jul-2015	0	12	94	0	352	0	1257	404	180	2300	1752	502	90	607	179	3130	-829	0	6830

Table D-2e

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Aug-2015	253	12	87	0	364	0	1255	383	236	2590	1810	480	85	620	185	3180	-590	0	6241
Sep-2015	399	12	68	0	654	0	1196	386	95	2811	1449	464	82	612	183	2790	22	-1	6263
Oct-2015	376	12	50	0	1260	0	1217	420	-170	3165	1221	502	95	634	181	2634	531	0	6794
Nov-2015	1088	12	33	0	2539	0	1143	438	-656	4598	923	584	127	612	172	2418	2180	0	8974
Dec-2015	1107	12	25	0	2802	0	1485	548	-961	5019	811	720	159	632	177	2498	2520	0	11494
Jan-2016	0	12	25	0	315	0	1307	545	-418	1787	677	675	144	638	172	2306	-519	0	10975
Feb-2016	0	12	34	0	297	0	1194	517	-351	1703	530	613	126	594	159	2022	-319	0	10656
Mar-2016	0	12	44	0	319	0	1276	540	-303	1889	712	638	126	638	169	2283	-395	0	10261
Apr-2016	0	12	61	0	311	0	1242	502	-200	1929	914	588	114	619	163	2398	-469	-1	9792
May-2016	0	12	71	0	326	0	1292	490	-98	2094	1186	570	109	647	169	2682	-587	0	9205
Jun-2016	0	12	76	0	321	0	1259	442	21	2131	1402	508	98	634	164	2806	-675	0	8530
Jul-2016	0	12	95	0	347	0	1308	420	151	2333	1752	466	93	663	179	3153	-820	0	7710
Aug-2016	0	12	87	0	368	0	1305	399	195	2366	1810	427	85	672	186	3180	-814	0	6896
Sep-2016	0	12	69	0	371	0	1243	400	79	2174	1449	399	77	651	184	2760	-584	-1	6311
Oct-2016	0	12	50	0	389	0	1265	434	-36	2115	1221	417	76	671	181	2566	-451	0	5860
Nov-2016	0	12	34	0	375	0	1206	445	-150	1922	923	417	71	648	170	2228	-306	0	5554
Dec-2016	0	12	25	0	383	0	1234	478	-231	1903	811	447	71	667	172	2167	-265	0	5289
Jan-2017	0	12	25	0	389	0	1249	458	-181	1952	970	437	67	683	167	2324	-372	0	4917
Feb-2017	0	11	34	0	353	0	1129	431	-236	1723	720	390	58	605	149	1923	-200	0	4717
Mar-2017	0	12	44	0	396	0	1265	463	-200	1981	1005	418	61	675	164	2324	-341	-2	4376
Apr-2017	0	12	61	0	395	0	1246	420	-77	2058	1285	377	56	659	157	2533	-475	-1	3901
May-2017	0	12	71	0	429	0	1317	397	67	2294	1676	357	53	696	160	2941	-647	0	3253
Jun-2017	0	12	76	0	440	0	1305	350	222	2406	1988	317	47	689	152	3193	-786	0	2467
Jul-2017	0	12	95	0	466	0	1386	335	404	2699	2484	288	41	726	164	3704	-1005	0	1462
Aug-2017	0	12	87	0	471	0	1409	328	466	2774	2576	260	34	739	167	3775	-1001	0	461
Sep-2017	0	12	69	0	459	0	1351	325	321	2536	2063	243	30	704	164	3203	-665	-1	-204
Oct-2017	0	12	50	0	475	0	1375	357	175	2446	1745	256	29	716	160	2906	-460	0	-664
Nov-2017	0	12	34	0	459	0	1306	378	2	2191	1323	260	28	679	150	2439	-249	0	-913
Dec-2017	0	12	25	0	474	0	1329	417	-116	2143	1165	282	29	691	153	2321	-178	0	-1092
Jan-2018	534	12	25	0	1341	0	1309	444	-439	3227	970	316	33	680	155	2153	1073	0	-18
Feb-2018	609	11	34	0	681	0	1165	426	-345	2581	720	309	33	601	143	1806	775	0	757
Mar-2018	493	12	44	0	1165	0	1291	460	-440	3026	1005	352	40	671	159	2228	796	3	1553
Apr-2018	81	12	61	0	508	0	1263	417	-168	2173	1285	325	38	648	153	2449	-275	0	1277
May-2018	0	12	71	0	466	0	1328	395	8	2280	1676	317	37	680	156	2866	-586	0	691
Jun-2018	0	12	76	0	454	0	1312	348	180	2383	1988	284	33	672	149	3126	-743	0	-51
Jul-2018	5	12	95	0	512	0	1390	330	370	2715	2484	257	30	709	162	3641	-926	0	-977
Aug-2018	0	12	87	0	485	0	1411	322	438	2756	2576	229	26	722	165	3718	-962	0	-1939
Sep-2018	163	12	69	0	462	0	1352	321	297	2677	2063	221	24	689	163	3159	-480	-1	-2420
Oct-2018	62	12	51	0	1586	0	1372	351	-127	3306	1745	236	24	702	160	2867	439	0	-1981
Nov-2018	142	12	34	0	1567	0	1298	374	-347	3080	1323	247	25	668	152	2414	666	0	-1315
Dec-2018	22	12	25	0	1678	0	1317	414	-510	2958	1165	270	27	682	156	2301	657	0	-659
Jan-2019	39	12	25	0	474	0	1270	484	-471	1834	677	291	29	650	178	1826	8	0	-651
Feb-2019	11	11	34	0	428	0	1119	463	-479	1588	512	269	28	577	173	1559	26	3	-625

Table D-2e

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Mar-2019	31	12	44	0	472	0	1228	508	-488	1808	712	302	32	641	201	1889	-82	0	-706
Apr-2019	3	12	61	0	457	0	1186	473	-383	1808	914	291	32	611	203	2051	-242	0	-949
May-2019	0	12	71	0	472	0	1227	461	-281	1963	1186	290	34	647	217	2373	-410	0	-1359
Jun-2019	0	12	77	0	458	0	1190	415	-145	2008	1402	267	32	636	216	2554	-545	0	-1904
Jul-2019	2	12	95	0	475	0	1235	393	-1	2212	1752	248	31	665	262	2958	-747	0	-2650
Aug-2019	0	12	87	0	478	0	1231	376	58	2242	1810	230	28	674	283	3025	-783	0	-3433
Sep-2019	0	12	69	0	464	0	1172	382	-44	2054	1449	217	26	653	284	2629	-574	0	-4008
Oct-2019	64	12	51	0	479	0	1192	418	-158	2058	1221	236	27	674	265	2423	-366	0	-4373
Nov-2019	70	12	34	0	462	0	1137	430	-268	1877	923	244	26	648	244	2085	-208	0	-4581
Dec-2019	88	12	25	0	476	0	1163	463	-354	1874	811	267	28	666	244	2016	-143	0	-4724
Jan-2020	200	12	25	0	682	0	1179	442	-306	2236	970	269	28	680	271	2218	18	0	-4705
Feb-2020	207	12	34	0	885	0	1104	425	-426	2242	746	250	27	623	264	1910	331	1	-4374
Mar-2020	71	12	44	0	779	0	1197	444	-360	2188	1005	255	27	669	285	2243	-54	0	-4428
Apr-2020	243	12	61	0	533	0	1184	403	-191	2246	1285	232	25	652	279	2474	-228	0	-4656
May-2020	6	12	71	0	481	0	1256	381	-37	2171	1676	210	24	686	289	2885	-714	0	-5369
Jun-2020	0	12	77	0	469	0	1251	334	131	2274	1988	173	20	677	280	3138	-864	0	-6234
Jul-2020	0	12	95	0	495	0	1335	317	321	2575	2484	133	17	712	365	3712	-1136	0	-7370
Aug-2020	0	12	87	0	503	0	1363	310	388	2663	2576	100	15	724	393	3808	-1144	0	-8514
Sep-2020	6	12	69	0	633	0	1312	315	234	2581	2063	81	12	686	393	3236	-654	0	-9169
Oct-2020	0	12	51	0	706	0	1340	354	62	2526	1745	82	12	691	389	2918	-392	0	-9560
Nov-2020	56	12	34	0	575	0	1275	380	-120	2212	1323	90	12	647	323	2395	-183	0	-9744
Dec-2020	437	12	25	0	504	0	1301	421	-245	2456	1165	117	14	654	315	2265	191	0	-9552
Jan-2021	0	12	25	0	503	0	1283	450	-365	1909	970	127	14	640	269	2019	-111	0	-9663
Feb-2021	0	11	34	0	454	0	1141	432	-430	1643	720	120	13	564	227	1644	-1	0	-9664
Mar-2021	0	12	45	0	502	0	1265	465	-420	1870	1005	134	15	629	242	2026	-156	0	-9820
Apr-2021	0	12	62	0	486	0	1238	420	-282	1937	1285	122	14	616	230	2267	-329	-1	-10149
May-2021	0	12	71	1	504	0	1303	394	-128	2157	1676	114	14	653	234	2691	-534	0	-10683
Jun-2021	0	12	77	1	488	0	1288	343	52	2261	1988	94	13	650	224	2969	-708	0	-11391
Jul-2021	0	12	96	1	508	0	1366	319	253	2555	2484	68	12	692	263	3519	-964	0	-12355
Aug-2021	0	12	88	1	510	0	1388	307	330	2635	2576	46	10	707	278	3617	-982	0	-13337
Sep-2021	0	12	69	1	495	0	1331	315	182	2404	2063	39	9	673	276	3059	-654	-1	-13991
Oct-2021	0	12	51	0	511	0	1354	355	21	2305	1745	47	10	678	255	2733	-429	0	-14420
Nov-2021	0	12	34	0	494	0	1284	382	-157	2049	1323	57	10	635	233	2258	-209	0	-14629
Dec-2021	0	12	25	0	510	0	1306	424	-286	1993	1165	73	11	640	233	2123	-131	0	-14759
Jan-2022	0	12	26	0	509	0	1287	455	-404	1884	970	83	11	623	266	1954	-70	0	-14829
Feb-2022	0	11	35	0	459	0	1145	439	-467	1622	720	78	10	547	253	1609	11	2	-14818
Mar-2022	0	12	45	1	508	0	1270	473	-463	1845	1005	86	11	610	287	1999	-154	0	-14971
Apr-2022	0	12	62	1	493	0	1243	427	-324	1914	1285	72	10	598	283	2248	-334	0	-15306
May-2022	0	12	72	1	510	0	1309	402	-172	2133	1676	59	10	636	296	2677	-544	0	-15850
Jun-2022	0	12	77	1	496	0	1295	348	11	2240	1988	41	9	636	288	2961	-721	0	-16571
Jul-2022	0	12	96	1	522	0	1374	322	217	2545	2484	15	8	677	375	3559	-1014	0	-17585
Aug-2022	0	12	88	1	534	0	1397	310	296	2638	2576	2	7	693	403	3681	-1043	0	-18628
Sep-2022	0	12	69	1	524	0	1341	321	146	2415	2063	0	6	658	403	3130	-715	0	-19343

Table D-2e

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Oct-2022	0	12	51	1	541	0	1367	366	-23	2314	1745	0	6	661	399	2811	-497	0	-19840
Nov-2022	0	12	34	0	518	0	1298	394	-208	2048	1323	2	6	617	334	2282	-234	0	-20074
Dec-2022	0	12	26	0	531	0	1322	438	-345	1983	1165	8	7	619	325	2125	-142	0	-20216
Jan-2023	116	12	26	0	1324	0	1301	470	-641	2609	970	13	7	599	410	2000	608	1	-19608
Feb-2023	599	11	35	0	1996	0	1141	458	-908	3333	720	23	7	510	400	1661	1670	3	-17938
Mar-2023	1187	12	45	1	1690	0	1279	486	-853	3846	1005	45	9	564	459	2083	1762	1	-16176
Apr-2023	0	12	62	1	547	0	1256	439	-465	1853	1285	25	8	568	449	2335	-482	0	-16658
May-2023	0	12	72	1	624	0	1326	414	-271	2178	1676	10	7	612	469	2774	-597	0	-17255
Jun-2023	0	12	77	1	523	0	1314	359	-65	2221	1988	0	6	617	456	3067	-845	0	-18100
Jul-2023	0	12	96	1	635	0	1397	332	146	2619	2484	0	4	657	523	3667	-1048	0	-19148
Aug-2023	0	12	88	1	551	0	1422	319	240	2632	2576	0	3	665	541	3784	-1152	0	-20300
Sep-2023	0	12	69	1	533	0	1367	333	94	2409	2063	0	2	626	532	3222	-812	-1	-21112
Oct-2023	52	12	51	1	974	0	1395	381	-139	2728	1745	0	2	625	555	2926	-197	-1	-21310
Nov-2023	0	12	34	0	533	0	1328	412	-277	2043	1323	0	1	580	526	2431	-388	0	-21698
Dec-2023	624	12	26	0	1548	0	1354	457	-621	3400	1165	0	2	572	509	2249	1151	0	-20547
Jan-2024	611	12	26	0	2859	0	1317	496	-1196	4126	970	0	3	547	499	2020	2106	0	-18441
Feb-2024	3099	12	35	1	2585	0	1213	490	-1276	6158	746	14	7	492	474	1733	4425	0	-14016
Mar-2024	1812	12	45	1	2490	0	1299	506	-1225	4941	1005	40	9	537	505	2095	2845	1	-11171
Apr-2024	28	12	62	1	506	0	1292	453	-586	1768	1285	25	8	531	480	2330	-560	-1	-11731
May-2024	63	12	72	1	529	0	1369	429	-354	2121	1676	10	7	585	493	2772	-651	0	-12382
Jun-2024	0	12	77	1	1383	0	1359	375	-338	2869	1988	0	6	595	474	3064	-194	0	-12576
Jul-2024	56	12	96	1	551	0	1446	347	36	2546	2484	0	4	637	538	3663	-1117	0	-13693
Aug-2024	0	12	88	1	551	0	1474	334	151	2612	2576	0	3	646	554	3779	-1166	0	-14859
Sep-2024	0	12	70	1	533	0	1419	350	11	2397	2063	0	2	608	542	3215	-818	-1	-15676
Oct-2024	289	12	51	1	1308	0	1450	400	-318	3193	1745	0	2	608	566	2920	272	0	-15404
Nov-2024	0	12	34	1	1412	0	1381	432	-562	2709	1323	0	2	565	537	2427	282	0	-15122
Dec-2024	1350	12	26	0	1581	0	1410	480	-764	4096	1165	0	4	558	522	2249	1847	0	-13275
Jan-2025	2964	12	26	0	1654	0	1369	558	-1064	5519	677	35	9	519	369	1609	3909	0	-9366
Feb-2025	2032	11	35	1	2502	0	1384	562	-1410	5116	512	85	15	471	281	1364	3752	0	-5614
Mar-2025	740	12	45	1	2579	0	1459	622	-1547	3910	712	119	32	537	277	1677	2233	0	-3382
Apr-2025	0	12	62	1	1861	0	1395	576	-1254	2654	914	116	39	529	249	1847	807	0	-2575
May-2025	0	12	72	1	504	0	1433	563	-792	1794	1186	124	30	562	245	2147	-353	0	-2928
Jun-2025	113	12	77	1	487	0	1384	508	-564	2020	1402	125	25	558	231	2341	-321	0	-3249
Jul-2025	0	12	96	2	503	0	1429	483	-396	2131	1752	122	22	588	246	2730	-599	0	-3848
Aug-2025	0	12	88	1	503	0	1419	461	-309	2176	1810	123	19	597	249	2798	-622	0	-4470
Sep-2025	0	12	70	1	485	0	1348	463	-382	1998	1449	138	18	556	241	2402	-405	0	-4874
Oct-2025	99	12	51	1	2386	0	1365	503	-990	3428	1221	158	30	600	237	2245	1182	0	-3692
Nov-2025	130	12	34	1	2246	0	1295	516	-1134	3100	923	173	41	586	222	1946	1153	0	-2539
Dec-2025	173	12	26	0	3988	0	1284	569	-1823	4231	811	226	61	559	225	1882	2349	0	-190
Jan-2026	0	12	26	0	484	0	1290	583	-970	1425	677	235	48	585	240	1786	-361	0	-551
Feb-2026	0	11	35	1	436	0	1158	542	-827	1355	512	214	37	530	225	1518	-165	2	-716
Mar-2026	0	12	45	1	482	0	1283	589	-834	1578	712	237	37	595	255	1836	-258	0	-974
Apr-2026	0	12	62	1	465	0	1246	547	-690	1643	914	244	33	536	250	1977	-333	0	-1308

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August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2026	0	12	72	1	481	0	1293	534	-581	1812	1186	239	31	590	263	2309	-497	0	-1805
Jun-2026	0	12	78	1	467	0	1256	482	-422	1874	1402	215	28	589	258	2492	-618	0	-2423
Jul-2026	0	12	96	2	485	0	1305	459	-274	2085	1752	194	25	621	305	2897	-811	0	-3234
Aug-2026	0	12	88	1	489	0	1302	438	-203	2127	1810	176	22	632	325	2965	-838	0	-4072
Sep-2026	0	12	70	1	475	0	1241	443	-293	1949	1449	165	20	613	323	2569	-620	0	-4692
Oct-2026	0	12	51	1	490	0	1264	481	-411	1888	1221	177	20	635	303	2356	-468	0	-5160
Nov-2026	0	12	34	1	474	0	1206	492	-511	1707	923	183	19	611	278	2015	-308	0	-5468
Dec-2026	0	12	26	0	488	0	1234	527	-603	1684	811	200	20	629	278	1938	-254	0	-5722
Jan-2027	3826	12	26	0	2786	0	1227	497	-1083	7293	970	370	55	620	259	2274	5018	0	-704
Feb-2027	336	11	35	1	3252	0	1073	483	-1378	3812	720	322	65	549	215	1871	1941	0	1237
Mar-2027	1445	12	45	1	2148	0	1233	513	-1043	4354	1005	394	96	628	228	2350	2004	0	3241
Apr-2027	125	12	62	1	678	0	1234	459	-471	2100	1285	338	80	625	208	2536	-436	0	2804
May-2027	45	12	72	1	1612	0	1310	428	-495	2987	1676	311	84	667	206	2944	46	-3	2850
Jun-2027	132	12	78	1	456	0	1303	370	-46	2307	1988	287	71	631	191	3168	-861	-1	1990
Jul-2027	0	12	97	2	475	0	1387	341	202	2515	2484	266	62	648	201	3662	-1146	0	843
Aug-2027	0	12	88	1	478	0	1413	325	293	2612	2576	247	54	644	201	3721	-1109	0	-266
Sep-2027	0	12	70	1	465	0	1358	335	151	2392	2063	219	46	642	194	3164	-767	-4	-1033
Oct-2027	0	12	51	1	2222	0	1383	375	-448	3596	1745	222	65	665	190	2887	710	0	-323
Nov-2027	0	12	34	1	2015	0	1312	404	-642	3136	1323	222	75	635	179	2434	702	0	379
Dec-2027	406	12	26	0	6116	0	1230	512	-2207	6095	1165	289	95	586	187	2323	3772	0	4150
Jan-2028	287	12	26	0	2067	0	1256	579	-1306	2921	677	320	108	587	191	1884	1037	0	5187
Feb-2028	651	12	35	1	549	0	1162	554	-831	2132	530	331	98	553	182	1693	438	0	5625
Mar-2028	201	12	45	1	466	0	1241	578	-741	1804	712	359	98	602	195	1966	-163	1	5462
Apr-2028	13	12	62	1	449	0	1203	533	-583	1691	914	354	89	557	189	2102	-412	1	5050
May-2028	66	12	72	1	462	0	1247	517	-455	1924	1186	369	86	580	196	2418	-494	0	4556
Jun-2028	0	12	78	1	449	0	1212	464	-294	1922	1402	338	76	594	191	2601	-679	0	3877
Jul-2028	0	12	97	2	492	0	1259	438	-139	2160	1752	320	71	631	210	2985	-825	0	3052
Aug-2028	0	12	89	2	470	0	1255	415	-63	2180	1810	302	64	646	217	3040	-860	0	2193
Sep-2028	0	12	70	1	710	0	1196	418	-173	2234	1449	288	57	628	213	2635	-400	-2	1793
Oct-2028	126	12	51	1	470	0	1217	453	-270	2062	1221	310	56	650	210	2447	-386	0	1407
Nov-2028	103	12	34	1	1651	0	1159	464	-667	2757	923	316	62	628	198	2127	630	0	2037
Dec-2028	842	12	26	0	2055	0	1174	497	-867	3740	811	389	94	622	203	2119	1621	0	3658
Jan-2029	233	12	26	0	455	0	1167	510	-573	1831	677	396	84	634	198	1990	-159	0	3499
Feb-2029	8	11	35	1	411	0	1047	478	-530	1461	512	350	70	571	177	1680	-219	0	3279
Mar-2029	0	12	45	1	450	0	1164	520	-519	1674	712	406	73	592	194	1976	-303	1	2976
Apr-2029	0	12	63	1	435	0	1134	483	-400	1728	914	383	66	584	187	2133	-405	0	2571
May-2029	0	12	73	1	453	0	1181	470	-293	1897	1186	377	63	623	193	2443	-546	0	2025
Jun-2029	0	12	78	1	444	0	1151	422	-153	1955	1402	346	56	617	187	2608	-653	0	1372
Jul-2029	2	12	97	2	463	0	1198	397	-5	2167	1752	328	52	648	206	2986	-819	0	553
Aug-2029	0	12	89	2	467	0	1197	377	59	2203	1810	309	46	659	212	3037	-833	0	-280
Sep-2029	19	12	70	1	454	0	1141	383	-42	2038	1449	294	41	639	208	2631	-592	-2	-872
Oct-2029	0	12	52	1	470	0	1162	418	-155	1960	1221	310	40	660	204	2435	-475	0	-1346
Nov-2029	131	12	34	1	453	0	1109	430	-263	1908	923	315	38	637	191	2104	-196	0	-1542

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Dec-2029	235	12	26	0	466	0	1137	463	-344	1995	811	344	39	656	193	2043	-47	0	-1590
Jan-2030	668	12	26	0	2983	0	1703	579	-1261	4711	677	393	64	623	197	1955	2755	0	1166
Feb-2030	4209	11	35	1	2011	0	1455	599	-1075	7246	512	648	113	563	188	2025	5221	0	6387
Mar-2030	762	12	45	1	2817	0	1528	689	-1337	4517	712	758	147	628	203	2449	2068	0	8455
Apr-2030	436	12	63	1	2597	0	1320	601	-1144	3886	914	688	156	611	194	2562	1325	0	9780
May-2030	1052	12	73	1	303	0	1353	561	-371	2984	1186	748	155	638	197	2924	61	-1	9840
Jun-2030	11	12	78	1	1877	0	1316	498	-507	3287	1402	631	155	625	187	3001	287	0	10127
Jul-2030	0	12	97	2	326	0	1374	471	-45	2237	1752	553	144	644	202	3294	-1057	0	9070
Aug-2030	0	12	89	2	344	0	1378	446	59	2330	1810	476	130	667	207	3290	-960	0	8110
Sep-2030	40	12	70	1	404	0	1318	446	-45	2246	1449	434	117	649	202	2850	-601	-2	7509
Oct-2030	63	12	52	1	370	0	1345	481	-153	2170	1221	448	114	669	198	2650	-480	0	7029
Nov-2030	260	12	34	1	350	0	1285	490	-252	2180	923	461	107	641	186	2318	-138	0	6891
Dec-2030	266	12	26	0	617	0	1316	525	-350	2413	811	522	110	632	186	2260	153	0	7044
Jan-2031	0	12	26	0	350	0	1304	543	-396	1840	677	530	105	629	183	2124	-284	0	6760
Feb-2031	0	11	35	1	313	0	1168	507	-408	1628	512	488	91	555	163	1810	-182	0	6578
Mar-2031	0	12	45	1	345	0	1294	554	-406	1846	712	540	97	619	180	2148	-303	0	6275
Apr-2031	0	12	63	1	333	0	1257	516	-293	1889	914	539	90	548	174	2265	-376	0	5899
May-2031	0	12	73	1	346	0	1304	505	-182	2059	1186	553	89	564	179	2572	-513	0	5387
Jun-2031	0	12	78	1	343	0	1267	456	-58	2100	1402	493	81	588	174	2738	-637	0	4749
Jul-2031	0	12	97	2	375	0	1314	432	76	2308	1752	452	77	628	192	3101	-793	0	3956
Aug-2031	0	12	89	2	398	0	1309	410	124	2344	1810	413	71	645	199	3138	-794	0	3162
Sep-2031	0	12	71	1	398	0	1245	412	12	2150	1449	384	65	630	196	2723	-572	-1	2590
Oct-2031	0	12	52	1	417	0	1265	446	-104	2090	1221	399	64	654	193	2531	-441	0	2149
Nov-2031	0	12	34	1	404	0	1206	456	-219	1894	923	395	60	632	181	2191	-298	0	1851
Dec-2031	0	12	26	0	413	0	1232	489	-303	1871	811	418	60	654	183	2126	-255	0	1596
Jan-2032	32	12	26	0	408	0	1220	508	-375	1831	677	428	59	651	181	1996	-165	0	1431
Feb-2032	252	12	35	1	368	0	1131	493	-405	1886	530	418	56	602	169	1775	110	0	1541
Mar-2032	84	12	45	1	388	0	1210	519	-382	1878	712	460	60	623	180	2035	-158	1	1383
Apr-2032	56	12	63	1	376	0	1176	483	-279	1888	914	429	56	616	174	2189	-301	0	1082
May-2032	0	12	73	1	395	0	1222	471	-177	1997	1186	425	55	636	181	2484	-487	0	596
Jun-2032	0	12	78	1	394	0	1188	423	-50	2047	1402	390	51	621	176	2640	-592	0	3
Jul-2032	0	12	97	2	427	0	1234	399	89	2261	1752	362	49	659	194	3016	-755	0	-752
Aug-2032	8	12	89	2	447	0	1231	378	143	2311	1810	340	46	672	201	3069	-758	0	-1510
Sep-2032	0	12	71	1	443	0	1171	382	35	2114	1449	325	42	651	198	2665	-549	-1	-2059
Oct-2032	30	12	52	1	460	0	1191	416	-77	2085	1221	344	43	673	194	2475	-390	0	-2449
Nov-2032	0	12	35	1	444	0	1135	427	-190	1864	923	344	41	649	182	2138	-275	0	-2724
Dec-2032	0	12	26	0	458	0	1161	460	-275	1843	811	365	43	669	183	2071	-229	0	-2953
Jan-2033	726	12	26	0	1687	0	1175	438	-481	3584	970	396	50	675	198	2289	1295	0	-1658
Feb-2033	1339	11	35	1	1047	0	1064	416	-428	3485	720	408	51	594	188	1962	1520	3	-138
Mar-2033	421	12	45	1	969	0	1196	449	-350	2743	1005	430	54	662	209	2360	383	0	245
Apr-2033	319	12	63	1	488	0	1183	406	-120	2352	1285	380	50	655	204	2574	-221	0	24
May-2033	0	12	73	1	640	0	1256	384	28	2395	1676	348	45	693	211	2974	-579	0	-555
Jun-2033	0	12	79	1	465	0	1250	338	203	2348	1988	299	38	686	204	3215	-866	0	-1421

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 4: Santa Clara - Bouquet and San Francisquito Canyon Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 1	Subsurface Inflow From Management Zone 3	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow to Management Zone 5	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jul-2033	0	12	98	2	473	0	1334	322	390	2630	2484	257	32	722	242	3736	-1106	0	-2527
Aug-2033	0	12	89	2	478	0	1361	315	450	2707	2576	217	26	732	258	3809	-1101	0	-3628
Sep-2033	0	12	71	1	496	0	1310	316	294	2500	2063	192	22	697	257	3231	-730	0	-4358
Oct-2033	27	12	52	1	482	0	1336	352	142	2405	1745	200	22	706	237	2910	-505	0	-4864
Nov-2033	396	12	35	1	2481	0	1260	370	-520	4034	1323	223	25	657	220	2448	1586	0	-3278
Dec-2033	162	12	26	0	3904	0	1259	423	-1249	4538	1165	248	37	665	222	2337	2200	0	-1078
Jan-2034	0	12	26	0	479	0	1258	454	-487	1742	970	254	31	664	197	2116	-374	0	-1451
Feb-2034	0	11	35	1	432	0	1126	437	-437	1605	720	232	26	589	168	1736	-131	0	-1583
Mar-2034	0	12	46	1	478	0	1253	470	-395	1864	1005	257	28	658	179	2128	-264	0	-1847
Apr-2034	0	12	63	1	463	0	1229	424	-244	1948	1285	238	26	643	169	2362	-413	-1	-2259
May-2034	0	12	73	1	479	0	1296	399	-81	2179	1676	231	26	680	171	2783	-603	-1	-2862
Jun-2034	0	12	79	1	465	0	1283	348	100	2289	1988	204	23	673	162	3049	-761	0	-3623
Jul-2034	0	12	98	2	484	0	1362	327	300	2585	2484	179	21	710	174	3568	-983	0	-4606
Aug-2034	0	12	90	2	488	0	1384	316	376	2668	2576	157	19	723	177	3651	-983	0	-5589
Sep-2034	0	12	71	1	475	0	1327	319	235	2440	2063	149	18	688	172	3089	-647	-3	-6236
Oct-2034	0	12	52	1	491	0	1350	354	88	2348	1745	162	18	698	167	2790	-442	0	-6678
Nov-2034	0	12	35	1	474	0	1281	377	-82	2098	1323	170	18	660	157	2328	-230	0	-6908
Dec-2034	0	12	26	0	488	0	1304	417	-200	2047	1165	190	19	671	159	2205	-158	0	-7066
Jan-2035	0	12	26	0	532	0	1284	444	-312	1987	970	202	20	658	159	2009	-22	0	-7088
Feb-2035	524	11	35	1	861	0	1140	426	-448	2550	720	207	19	581	147	1675	875	0	-6213
Mar-2035	138	12	46	1	507	0	1264	459	-366	2061	1005	232	22	649	163	2071	-12	2	-6225
Apr-2035	136	12	63	1	479	0	1237	415	-215	2129	1285	234	22	598	157	2296	-167	0	-6392
May-2035	99	12	73	1	480	0	1301	390	-52	2305	1676	235	22	634	160	2727	-422	0	-6814
Jun-2035	0	12	79	1	466	0	1287	340	125	2311	1988	202	21	645	153	3008	-697	0	-7511
Jul-2035	1	12	98	2	486	0	1365	319	322	2605	2484	174	20	686	167	3530	-925	0	-8436
Aug-2035	0	12	90	2	492	0	1385	309	395	2684	2576	151	18	701	170	3616	-931	0	-9367
Sep-2035	0	12	71	1	478	0	1327	312	250	2452	2063	141	17	669	167	3056	-603	-1	-9970
Oct-2035	64	12	52	1	834	0	1350	348	54	2715	1745	155	17	680	163	2759	-44	0	-10014
Nov-2035	37	12	35	1	522	0	1280	372	-82	2176	1323	162	17	644	153	2299	-123	0	-10137
Dec-2035	149	12	26	0	1096	0	1302	411	-342	2656	1165	185	19	655	156	2180	476	0	-9661

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	1427	9	6	0	2711	144	0	541	66	4905	596	1285	198	578	79	2735	2170	0	2170
Feb-2012	2016	8	8	0	1174	135	0	537	449	4327	618	1404	201	559	78	2859	1468	0	3638
Mar-2012	667	9	10	0	1895	144	0	547	329	3601	797	1352	233	571	84	3036	566	0	4204
Apr-2012	50	8	14	0	650	140	0	560	750	2172	1065	1006	181	537	76	2865	-693	0	3511
May-2012	55	9	17	0	463	144	0	598	965	2251	1301	880	166	551	75	2973	-722	0	2789
Jun-2012	0	8	18	0	1329	140	0	591	697	2783	1465	738	148	531	74	2956	-173	0	2616
Jul-2012	0	9	22	0	1611	144	0	615	691	3092	1825	650	143	547	86	3251	-159	0	2456
Aug-2012	0	9	20	0	1499	144	0	620	695	2988	1778	601	140	546	90	3155	-168	0	2289
Sep-2012	0	8	16	0	559	140	0	599	887	2209	1416	600	130	528	82	2755	-547	0	1742
Oct-2012	0	9	12	0	880	144	0	619	731	2395	1121	687	144	545	78	2575	-179	0	1563
Nov-2012	0	8	8	0	2578	140	0	592	52	3378	804	756	162	529	82	2333	1045	0	2608
Dec-2012	187	9	6	0	569	144	0	607	711	2234	665	905	167	551	77	2365	-131	0	2476
Jan-2013	81	9	6	0	520	144	0	604	780	2143	596	962	172	550	72	2351	-208	0	2269
Feb-2013	28	8	8	0	375	130	0	542	751	1842	596	860	153	496	62	2168	-326	0	1943
Mar-2013	94	9	11	0	426	144	0	605	865	2154	797	930	166	550	66	2508	-355	0	1589
Apr-2013	8	8	15	0	1936	140	0	582	414	3103	1065	812	153	530	76	2637	465	0	2054
May-2013	0	9	17	0	548	144	0	607	869	2194	1301	763	148	547	74	2833	-640	0	1414
Jun-2013	0	8	18	0	520	140	0	596	930	2213	1465	668	136	529	68	2866	-653	0	761
Jul-2013	0	9	23	0	577	144	0	626	1019	2397	1825	590	130	545	71	3162	-765	0	-4
Aug-2013	0	9	21	0	595	144	0	639	1012	2420	1778	541	125	544	71	3060	-640	0	-643
Sep-2013	0	8	17	0	574	140	0	621	918	2277	1416	538	122	526	66	2669	-392	0	-1035
Oct-2013	10	9	12	0	568	144	0	644	891	2277	1121	622	132	544	63	2483	-206	0	-1241
Nov-2013	62	8	8	0	509	140	0	621	820	2168	804	693	138	529	57	2220	-52	0	-1293
Dec-2013	4	9	6	0	475	144	0	641	827	2106	665	793	151	546	55	2211	-105	0	-1397
Jan-2014	319	9	6	0	1139	144	0	660	484	2761	701	892	162	553	54	2362	399	0	-998
Feb-2014	116	8	9	0	946	130	0	586	476	2272	671	794	148	498	48	2158	113	0	-885
Mar-2014	910	9	11	0	1474	144	0	656	499	3703	902	995	173	567	55	2692	1012	0	126
Apr-2014	104	8	15	0	812	140	0	643	721	2443	1198	788	158	535	53	2733	-289	0	-163
May-2014	12	9	18	0	522	144	0	678	998	2382	1477	691	151	548	55	2923	-541	0	-704
Jun-2014	0	8	19	0	1201	140	0	671	832	2872	1675	577	136	529	54	2972	-100	0	-804
Jul-2014	0	9	24	0	1439	144	0	707	826	3149	2088	487	129	546	61	3310	-161	0	-965
Aug-2014	0	9	22	0	1449	144	0	716	773	3113	2053	434	124	544	64	3220	-107	0	-1072
Sep-2014	98	8	17	0	743	140	0	680	855	2541	1636	447	122	528	62	2795	-254	0	-1326
Oct-2014	24	9	13	0	729	144	0	690	833	2441	1308	523	133	545	60	2569	-128	0	-1454
Nov-2014	512	8	8	0	917	140	0	653	644	2882	947	667	147	539	55	2355	528	0	-926
Dec-2014	283	9	6	0	880	144	0	667	651	2640	792	784	165	554	54	2348	292	0	-634
Jan-2015	1684	9	7	0	334	144	0	636	912	3726	596	1151	185	584	55	2570	1156	0	521
Feb-2015	1330	8	9	0	267	130	0	568	866	3179	596	1123	171	528	50	2469	710	0	1231
Mar-2015	2538	9	11	0	598	144	0	621	919	4842	797	1580	210	609	59	3255	1586	0	2817
Apr-2015	895	8	16	0	441	140	0	601	1011	3112	1065	1212	188	561	58	3083	29	0	2846
May-2015	39	9	18	0	432	144	0	636	1072	2350	1301	917	171	556	59	3004	-654	0	2192
Jun-2015	0	8	20	0	1236	140	0	590	851	2845	1465	816	155	533	60	3029	-184	0	2008
Jul-2015	0	9	25	0	1188	144	0	607	925	2897	1825	743	148	549	66	3331	-434	0	1574

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Aug-2015	227	9	22	0	922	144	0	620	993	2937	1778	727	143	552	67	3268	-331	0	1243
Sep-2015	359	8	18	0	606	140	0	612	968	2712	1416	712	139	538	64	2869	-156	0	1087
Oct-2015	338	9	13	0	793	144	0	634	879	2810	1121	846	157	556	62	2741	70	0	1156
Nov-2015	979	8	9	0	1450	140	0	612	491	3689	804	1079	173	553	58	2666	1023	0	2179
Dec-2015	996	9	7	0	1568	144	0	632	440	3796	665	1313	197	575	60	2810	986	0	3165
Jan-2016	0	9	7	0	342	144	0	638	917	2057	596	1108	186	555	56	2500	-444	0	2721
Feb-2016	0	8	9	0	354	135	0	594	879	1979	618	954	167	516	52	2306	-327	0	2395
Mar-2016	0	9	12	0	407	144	0	638	957	2166	797	950	172	550	54	2523	-357	0	2037
Apr-2016	0	8	16	0	433	140	0	619	964	2181	1065	820	156	532	53	2626	-445	0	1592
May-2016	0	9	19	0	491	144	0	647	1024	2334	1301	762	152	549	55	2819	-485	0	1107
Jun-2016	0	8	20	0	513	140	0	634	1021	2337	1465	662	139	530	53	2850	-513	0	594
Jul-2016	0	9	25	0	571	144	0	663	1097	2509	1825	584	133	547	57	3147	-638	0	-44
Aug-2016	0	9	23	0	591	144	0	672	1081	2521	1778	538	128	546	58	3048	-528	0	-572
Sep-2016	0	8	18	0	569	140	0	651	978	2364	1416	537	124	528	56	2661	-297	0	-869
Oct-2016	0	9	13	0	562	144	0	671	948	2348	1121	623	134	546	54	2478	-130	0	-998
Nov-2016	0	8	9	0	504	140	0	648	868	2178	804	688	139	529	49	2209	-31	0	-1029
Dec-2016	0	9	7	0	467	144	0	667	875	2169	665	796	153	547	48	2209	-40	0	-1070
Jan-2017	0	9	7	0	435	144	0	683	886	2165	701	842	159	548	47	2296	-131	0	-1201
Feb-2017	0	8	9	0	391	130	0	605	804	1948	671	759	143	495	42	2110	-162	0	-1363
Mar-2017	0	9	12	0	444	144	0	675	916	2201	902	807	155	548	47	2459	-258	0	-1621
Apr-2017	0	8	17	0	466	140	0	659	939	2229	1198	700	143	530	46	2617	-388	0	-2008
May-2017	0	9	20	0	524	144	0	696	1010	2402	1477	643	140	547	48	2856	-454	0	-2462
Jun-2017	0	8	21	0	543	140	0	689	1021	2422	1675	548	129	529	47	2929	-507	0	-2969
Jul-2017	0	9	26	0	604	144	0	726	1113	2622	2088	467	124	546	52	3275	-653	0	-3622
Aug-2017	0	9	24	0	626	144	0	739	1101	2643	2053	417	119	545	53	3187	-544	0	-4166
Sep-2017	0	8	19	0	604	140	0	704	987	2462	1636	417	116	527	51	2747	-284	0	-4450
Oct-2017	0	9	14	0	599	144	0	716	944	2426	1308	494	127	544	49	2523	-97	0	-4547
Nov-2017	0	8	9	0	540	140	0	679	854	2230	947	561	132	528	45	2213	17	0	-4530
Dec-2017	0	9	7	0	504	144	0	691	854	2209	792	668	147	546	44	2197	12	0	-4518
Jan-2018	481	9	7	0	871	144	0	680	666	2857	701	819	158	557	44	2278	579	0	-3939
Feb-2018	548	8	10	0	465	130	0	601	746	2508	671	806	146	507	40	2171	337	0	-3602
Mar-2018	444	9	13	0	682	144	0	671	770	2733	902	873	161	559	45	2540	193	0	-3409
Apr-2018	72	8	17	0	1963	140	0	648	462	3312	1198	716	145	534	54	2648	664	0	-2744
May-2018	0	9	20	1	565	144	0	680	929	2348	1477	640	141	548	53	2859	-511	0	-3255
Jun-2018	0	8	22	1	543	140	0	672	986	2372	1675	541	129	529	50	2925	-553	0	-3809
Jul-2018	4	9	27	1	620	144	0	709	1077	2592	2088	459	124	546	54	3270	-679	0	-4487
Aug-2018	0	9	25	1	632	144	0	722	1077	2609	2053	409	119	545	54	3180	-571	0	-5058
Sep-2018	147	8	19	1	601	140	0	689	973	2578	1636	426	117	530	52	2762	-183	0	-5241
Oct-2018	56	9	14	0	1145	144	0	702	640	2711	1308	500	128	546	50	2533	178	0	-5063
Nov-2018	128	8	10	0	1141	140	0	668	543	2637	947	578	135	531	46	2237	401	0	-4662
Dec-2018	20	9	7	0	1260	144	0	682	485	2607	792	676	150	547	45	2210	397	0	-4265
Jan-2019	35	9	7	1	564	144	0	650	789	2199	596	749	156	548	47	2094	104	0	-4161
Feb-2019	10	8	10	1	411	130	0	577	728	1875	596	682	140	495	44	1958	-83	0	-4244

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Mar-2019	28	9	13	1	464	144	0	641	822	2122	797	736	153	548	51	2284	-162	0	-4406
Apr-2019	2	8	18	2	840	140	0	611	764	2386	1065	691	143	529	52	2480	-94	0	-4500
May-2019	0	9	21	2	580	144	0	647	879	2282	1301	613	139	547	55	2655	-373	0	-4874
Jun-2019	0	8	22	2	554	140	0	636	893	2257	1465	521	127	528	55	2696	-440	0	-5313
Jul-2019	1	9	28	3	614	144	0	665	958	2423	1825	443	122	545	64	3000	-577	0	-5890
Aug-2019	0	9	25	3	635	144	0	674	939	2430	1778	398	117	544	69	2906	-476	0	-6365
Sep-2019	0	8	20	2	614	140	0	653	834	2271	1416	394	114	526	69	2519	-247	0	-6613
Oct-2019	57	9	15	2	609	144	0	674	803	2313	1121	474	125	545	65	2330	-17	0	-6629
Nov-2019	63	8	10	1	762	140	0	648	691	2324	804	543	130	529	59	2065	260	0	-6370
Dec-2019	79	9	7	1	513	144	0	666	727	2146	665	651	145	548	57	2065	81	0	-6289
Jan-2020	180	9	8	2	542	144	0	680	696	2260	701	717	153	550	59	2180	80	0	-6209
Feb-2020	187	8	10	2	766	135	0	623	487	2218	695	684	144	516	57	2096	122	0	-6087
Mar-2020	64	9	13	3	1392	144	0	669	554	2849	902	686	150	549	63	2350	499	0	-5588
Apr-2020	219	8	18	4	855	140	0	652	696	2592	1198	608	139	534	64	2543	49	0	-5539
May-2020	5	9	21	5	1459	144	0	686	662	2991	1477	530	135	547	68	2757	234	0	-5305
Jun-2020	0	8	23	5	585	140	0	677	827	2265	1675	439	123	528	67	2833	-568	0	-5873
Jul-2020	0	9	28	7	648	144	0	712	915	2464	2088	355	116	545	87	3190	-726	0	-6599
Aug-2020	0	9	26	6	672	144	0	724	904	2486	2053	301	109	544	101	3107	-622	0	-7221
Sep-2020	6	8	21	5	703	140	0	686	764	2332	1636	290	105	526	106	2663	-331	0	-7552
Oct-2020	0	9	15	4	729	144	0	691	696	2287	1308	339	115	543	106	2412	-125	0	-7677
Nov-2020	51	8	10	2	637	140	0	647	644	2139	947	401	121	528	85	2082	57	0	-7620
Dec-2020	393	9	8	2	552	144	0	654	674	2435	792	538	139	554	79	2102	334	0	-7286
Jan-2021	0	9	8	3	521	144	0	640	667	1992	701	572	145	547	70	2035	-43	0	-7329
Feb-2021	0	8	11	5	465	130	0	564	610	1792	671	524	132	494	59	1880	-88	0	-7417
Mar-2021	0	9	14	6	522	144	0	629	709	2033	902	564	144	547	63	2219	-185	0	-7603
Apr-2021	0	8	19	8	540	140	0	616	748	2078	1198	487	132	529	60	2406	-328	0	-7931
May-2021	0	9	22	10	600	144	0	653	821	2259	1477	447	130	546	62	2662	-403	0	-8334
Jun-2021	0	8	23	10	612	140	0	650	845	2290	1675	377	118	527	60	2757	-468	0	-8802
Jul-2021	0	9	29	13	666	144	0	692	929	2482	2088	307	111	544	69	3119	-638	0	-9439
Aug-2021	0	9	27	12	687	144	0	707	917	2503	2053	266	104	543	73	3039	-537	0	-9976
Sep-2021	0	8	21	9	664	140	0	673	806	2321	1636	260	101	525	72	2595	-273	0	-10249
Oct-2021	0	9	16	7	668	144	0	678	760	2282	1308	313	112	543	68	2343	-61	0	-10311
Nov-2021	0	8	10	5	619	140	0	635	674	2090	947	370	118	526	60	2021	69	0	-10242
Dec-2021	0	9	8	3	592	144	0	640	665	2062	792	454	133	545	58	1983	79	0	-10163
Jan-2022	0	9	8	5	549	144	0	623	644	1983	701	511	141	546	59	1957	26	0	-10137
Feb-2022	0	8	11	6	487	130	0	547	582	1772	671	475	128	493	55	1822	-51	0	-10188
Mar-2022	0	9	14	8	545	144	0	610	672	2002	902	511	140	546	63	2162	-160	0	-10347
Apr-2022	0	8	19	11	562	140	0	598	708	2046	1198	441	129	528	64	2360	-313	0	-10661
May-2022	0	9	22	13	620	144	0	636	776	2221	1477	401	126	545	68	2616	-395	0	-11056
Jun-2022	0	8	24	14	629	140	0	636	800	2250	1675	332	113	527	67	2715	-465	0	-11520
Jul-2022	0	9	30	18	687	144	0	677	873	2439	2088	269	105	543	91	3096	-657	0	-12178
Aug-2022	0	9	27	16	716	144	0	693	862	2468	2053	236	97	542	108	3037	-569	0	-12746
Sep-2022	0	8	22	13	694	140	0	658	753	2289	1636	227	93	524	115	2595	-307	0	-13053

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Oct-2022	0	9	16	9	699	144	0	661	692	2230	1308	261	102	542	114	2328	-97	0	-13150
Nov-2022	0	8	11	6	652	140	0	617	605	2039	947	305	108	526	89	1974	65	0	-13086
Dec-2022	0	9	8	5	632	144	0	619	591	2008	792	375	123	544	80	1915	93	0	-12993
Jan-2023	105	9	8	5	897	144	0	599	387	2154	701	429	132	547	104	1913	241	0	-12751
Feb-2023	539	8	11	7	1915	130	0	510	-137	2984	671	495	129	504	112	1911	1073	0	-11678
Mar-2023	1068	9	14	9	1454	144	0	564	190	3453	902	653	150	570	139	2414	1039	0	-10639
Apr-2023	0	8	20	13	561	140	0	568	668	1977	1198	449	130	533	137	2447	-470	0	-11109
May-2023	0	9	23	15	660	144	0	612	724	2188	1477	375	122	547	145	2666	-478	0	-11588
Jun-2023	0	8	25	16	648	140	0	617	760	2213	1675	301	107	528	143	2754	-541	0	-12129
Jul-2023	0	9	31	19	739	144	0	657	839	2438	2088	248	96	544	176	3151	-713	0	-12842
Aug-2023	0	9	28	18	741	144	0	665	850	2455	2053	218	86	543	192	3092	-637	0	-13479
Sep-2023	0	8	22	14	722	140	0	626	743	2276	1636	206	80	525	196	2643	-367	0	-13846
Oct-2023	47	9	16	10	874	144	0	625	597	2323	1308	228	87	543	210	2378	-54	0	-13900
Nov-2023	0	8	11	7	675	140	0	580	576	1998	947	250	92	526	201	2016	-18	0	-13918
Dec-2023	561	9	8	5	1407	144	0	572	196	2903	792	366	114	556	191	2019	884	0	-13035
Jan-2024	550	9	8	6	5268	144	0	547	-1118	5414	701	508	131	560	184	2083	3331	0	-9704
Feb-2024	2788	8	11	7	2253	135	0	492	-210	5486	695	902	156	572	179	2504	2982	0	-6722
Mar-2024	1630	9	15	10	2251	144	0	537	-36	4559	902	919	168	593	187	2768	1791	0	-4930
Apr-2024	25	8	20	13	1529	140	0	531	410	2677	1198	579	141	539	174	2632	45	0	-4885
May-2024	57	9	24	15	1253	144	0	585	570	2658	1477	437	129	552	175	2770	-112	0	-4997
Jun-2024	0	8	25	17	1037	140	0	595	526	2348	1675	338	112	531	166	2822	-474	0	-5471
Jul-2024	50	9	32	21	717	144	0	637	802	2412	2088	277	100	548	197	3210	-798	0	-6269
Aug-2024	0	9	29	19	726	144	0	646	816	2389	2053	238	89	545	211	3137	-748	0	-7017
Sep-2024	0	8	23	15	708	140	0	608	717	2220	1636	222	84	527	213	2681	-462	0	-7479
Oct-2024	260	9	17	11	949	144	0	608	530	2527	1308	266	94	550	227	2445	83	0	-7397
Nov-2024	0	8	11	7	982	140	0	565	385	2099	947	280	98	528	216	2069	29	0	-7367
Dec-2024	1215	9	8	6	1012	144	0	558	386	3338	792	481	128	572	208	2181	1156	0	-6211
Jan-2025	2666	9	9	6	968	144	0	519	421	4741	596	906	169	608	136	2414	2327	0	-3884
Feb-2025	1828	8	12	8	1461	130	0	471	168	4086	596	998	168	544	93	2399	1687	0	-2197
Mar-2025	665	9	15	10	1221	144	0	537	352	2954	797	913	178	573	83	2545	409	0	-1788
Apr-2025	0	8	21	14	809	140	0	529	573	2094	1065	668	158	537	71	2499	-405	0	-2193
May-2025	0	9	24	16	687	144	0	562	775	2218	1301	588	150	551	68	2658	-440	0	-2633
Jun-2025	101	8	26	17	704	140	0	558	800	2355	1465	519	137	534	63	2717	-362	0	-2996
Jul-2025	0	9	32	21	776	144	0	588	880	2450	1825	450	130	548	65	3018	-568	0	-3563
Aug-2025	0	9	30	20	974	144	0	597	805	2578	1778	386	121	547	67	2899	-321	0	-3884
Sep-2025	0	8	23	16	1374	140	0	556	584	2702	1416	422	119	528	67	2553	149	0	-3735
Oct-2025	89	9	17	11	1453	144	0	600	391	2714	1121	482	131	548	68	2350	364	0	-3372
Nov-2025	117	8	11	8	1315	140	0	586	338	2523	804	545	139	532	63	2083	440	0	-2931
Dec-2025	156	9	9	6	1962	144	0	559	152	2997	665	741	160	551	67	2184	813	0	-2118
Jan-2026	0	9	9	6	668	144	0	585	563	1984	596	749	161	549	67	2121	-137	0	-2255
Feb-2026	0	8	12	8	417	130	0	530	607	1712	596	662	143	495	62	1959	-247	0	-2502
Mar-2026	0	9	15	10	475	144	0	595	707	1957	797	700	154	548	69	2268	-311	0	-2813
Apr-2026	0	8	21	14	1523	140	0	536	455	2697	1065	685	144	530	76	2500	197	0	-2616

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Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2026	0	9	25	17	630	144	0	590	730	2144	1301	601	139	547	77	2665	-521	0	-3137
Jun-2026	0	8	27	18	559	140	0	589	800	2141	1465	505	127	529	74	2699	-558	0	-3696
Jul-2026	0	9	33	22	620	144	0	621	878	2327	1825	425	121	546	84	3001	-674	0	-4370
Aug-2026	0	9	30	20	642	144	0	632	868	2345	1778	377	116	545	89	2905	-559	0	-4929
Sep-2026	0	8	24	16	621	140	0	613	772	2194	1416	372	112	527	88	2514	-320	0	-5249
Oct-2026	0	9	18	12	622	144	0	635	737	2176	1121	438	122	544	81	2307	-131	0	-5380
Nov-2026	0	8	12	8	566	140	0	611	665	2010	804	498	128	528	72	2029	-19	0	-5399
Dec-2026	0	9	9	6	533	144	0	629	665	1995	665	592	142	546	69	2013	-18	0	-5417
Jan-2027	3443	9	9	6	1327	144	0	620	488	6046	701	1392	187	620	74	2973	3074	0	-2343
Feb-2027	302	8	12	8	1411	130	0	549	273	2694	671	998	160	513	61	2403	291	0	-2052
Mar-2027	1300	9	16	11	782	144	0	628	668	3557	902	1186	183	581	65	2916	641	0	-1411
Apr-2027	113	8	22	15	479	140	0	625	866	2268	1198	827	157	539	60	2783	-515	0	-1925
May-2027	41	9	25	17	870	144	0	667	788	2561	1477	686	153	552	62	2929	-368	0	-2293
Jun-2027	119	8	27	18	1126	140	0	631	813	2883	1675	636	142	534	61	3048	-164	0	-2458
Jul-2027	0	9	34	23	1426	144	0	648	830	3114	2088	562	135	548	68	3401	-288	0	-2745
Aug-2027	0	9	31	21	1574	144	0	644	773	3197	2053	522	129	547	71	3322	-125	0	-2871
Sep-2027	0	8	25	17	582	140	0	642	903	2317	1636	468	122	528	66	2820	-502	0	-3373
Oct-2027	0	9	18	12	1312	144	0	665	568	2728	1308	520	134	546	63	2571	157	0	-3216
Nov-2027	0	8	12	8	1123	140	0	635	523	2449	947	571	140	529	57	2245	205	0	-3011
Dec-2027	365	9	9	6	2692	144	0	586	-2	3808	792	839	166	555	65	2417	1391	0	-1620
Jan-2028	258	9	9	6	1570	144	0	587	288	2873	596	895	173	555	68	2287	586	0	-1034
Feb-2028	586	8	13	9	406	135	0	553	700	2409	618	909	164	526	60	2277	132	0	-902
Mar-2028	181	9	16	11	415	144	0	602	828	2206	797	893	168	555	62	2475	-269	0	-1171
Apr-2028	11	8	22	15	1163	140	0	557	662	2579	1065	824	155	532	62	2639	-59	0	-1230
May-2028	59	9	26	18	1048	144	0	580	754	2639	1301	804	153	550	65	2873	-234	0	-1465
Jun-2028	0	8	28	19	515	140	0	594	905	2209	1465	645	137	530	60	2838	-629	0	-2094
Jul-2028	0	9	35	24	588	144	0	631	994	2425	1825	547	130	547	64	3113	-688	0	-2782
Aug-2028	0	9	32	22	602	144	0	646	991	2446	1778	492	124	546	64	3004	-558	0	-3340
Sep-2028	0	8	25	17	672	140	0	628	855	2345	1416	487	121	527	61	2611	-266	0	-3606
Oct-2028	113	9	18	13	572	144	0	650	868	2387	1121	580	132	548	58	2439	-52	0	-3658
Nov-2028	92	8	12	8	1158	140	0	628	521	2568	804	649	140	531	55	2178	390	0	-3268
Dec-2028	757	9	9	6	1206	144	0	622	542	3295	665	952	168	563	57	2404	891	0	-2377
Jan-2029	210	9	9	7	407	144	0	634	811	2231	596	934	168	555	53	2306	-75	0	-2452
Feb-2029	7	8	13	9	402	130	0	571	735	1875	596	791	148	497	47	2079	-203	0	-2655
Mar-2029	0	9	17	11	1429	144	0	592	575	2777	797	918	163	549	57	2483	294	0	-2361
Apr-2029	0	8	23	16	1323	140	0	584	574	2669	1065	772	147	530	60	2574	95	0	-2266
May-2029	0	9	27	18	515	144	0	623	869	2205	1301	706	144	547	59	2757	-552	0	-2818
Jun-2029	0	8	29	20	530	140	0	617	911	2254	1465	606	132	529	56	2788	-534	0	-3352
Jul-2029	2	9	35	25	587	144	0	648	999	2449	1825	527	126	546	60	3085	-636	0	-3988
Aug-2029	0	9	32	23	607	144	0	659	992	2466	1778	480	122	545	60	2985	-518	0	-4506
Sep-2029	17	8	26	18	585	140	0	639	897	2329	1416	479	119	527	57	2598	-269	0	-4776
Oct-2029	0	9	19	13	581	144	0	660	865	2291	1121	556	129	545	55	2405	-113	0	-4889
Nov-2029	117	8	13	9	521	140	0	637	793	2238	804	635	136	530	49	2154	84	0	-4806

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August 19, 2015 Presentation of Original Water Budget Developed in October 2014

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Dec-2029	212	9	9	7	782	144	0	656	703	2522	665	764	151	551	50	2181	340	0	-4466
Jan-2030	601	9	10	7	1721	144	0	623	291	3404	596	988	166	561	51	2362	1042	0	-3423
Feb-2030	3787	8	13	9	594	130	0	563	720	5824	596	1653	186	575	52	3063	2761	0	-662
Mar-2030	685	9	17	12	1275	144	0	628	540	3310	797	1372	191	578	55	2994	316	0	-346
Apr-2030	392	8	23	16	1403	140	0	611	505	3099	1065	1133	175	547	53	2973	127	0	-219
May-2030	947	9	27	19	533	144	0	638	1027	3344	1301	1119	174	573	56	3224	120	0	-100
Jun-2030	10	8	29	20	856	140	0	625	872	2561	1465	853	157	536	53	3064	-503	0	-603
Jul-2030	0	9	36	25	907	144	0	644	1028	2794	1825	734	148	550	58	3316	-522	0	-1125
Aug-2030	0	9	33	23	997	144	0	667	966	2840	1778	617	137	548	61	3141	-302	0	-1427
Sep-2030	36	8	26	18	1026	140	0	649	821	2725	1416	593	131	531	60	2731	-6	0	-1432
Oct-2030	57	9	19	14	842	144	0	669	845	2599	1121	674	141	549	58	2542	58	0	-1375
Nov-2030	234	8	13	9	1121	140	0	641	663	2828	804	767	146	535	58	2310	519	0	-856
Dec-2030	239	9	10	7	1434	144	0	632	550	3024	665	921	162	554	62	2364	660	0	-196
Jan-2031	0	9	10	7	1018	144	0	629	630	2447	596	951	165	550	63	2323	124	0	-72
Feb-2031	0	8	13	9	1059	130	0	555	539	2314	596	855	148	496	59	2155	159	0	87
Mar-2031	0	9	17	12	422	144	0	619	844	2068	797	914	160	549	60	2481	-413	0	-326
Apr-2031	0	8	24	17	1859	140	0	548	510	3106	1065	905	155	531	65	2721	385	0	60
May-2031	0	9	28	19	1671	144	0	564	575	3011	1301	850	155	548	71	2926	86	0	145
Jun-2031	0	8	30	21	651	140	0	588	875	2312	1465	719	136	530	64	2914	-602	0	-456
Jul-2031	0	9	37	26	563	144	0	628	1024	2431	1825	625	131	547	67	3195	-764	0	-1220
Aug-2031	0	9	34	24	584	144	0	645	1030	2470	1778	569	126	546	66	3084	-615	0	-1835
Sep-2031	0	8	27	19	563	140	0	630	939	2326	1416	560	123	528	62	2689	-363	0	-2198
Oct-2031	0	9	20	14	557	144	0	654	915	2312	1121	641	134	546	59	2499	-187	0	-2385
Nov-2031	0	8	13	9	501	140	0	632	841	2145	804	700	139	529	52	2223	-78	0	-2463
Dec-2031	0	9	10	7	464	144	0	654	849	2138	665	802	152	547	51	2216	-79	0	-2541
Jan-2032	29	9	10	7	431	144	0	651	844	2126	596	863	159	548	49	2214	-87	0	-2629
Feb-2032	226	8	14	10	1048	135	0	602	625	2668	618	845	150	517	47	2178	491	0	-2138
Mar-2032	76	9	18	12	1282	144	0	623	631	2794	797	888	158	550	53	2445	349	0	-1789
Apr-2032	50	8	24	17	446	140	0	616	852	2154	1065	770	146	532	51	2562	-408	0	-2197
May-2032	0	9	28	20	1048	144	0	636	823	2708	1301	765	146	548	52	2812	-104	0	-2301
Jun-2032	0	8	30	21	1007	140	0	621	834	2662	1465	685	136	529	50	2866	-204	0	-2505
Jul-2032	0	9	38	27	574	144	0	659	1013	2463	1825	567	129	546	55	3121	-658	0	-3163
Aug-2032	7	9	35	24	597	144	0	672	1011	2500	1778	508	123	545	56	3011	-511	0	-3674
Sep-2032	0	8	27	19	577	140	0	651	915	2339	1416	502	120	527	53	2618	-280	0	-3953
Oct-2032	27	9	20	14	571	144	0	673	886	2345	1121	584	131	545	52	2433	-88	0	-4041
Nov-2032	0	8	13	9	516	140	0	649	810	2146	804	645	136	528	47	2159	-13	0	-4055
Dec-2032	0	9	10	7	479	144	0	669	816	2134	665	747	150	546	46	2154	-20	0	-4075
Jan-2033	653	9	10	7	1191	144	0	675	524	3215	701	936	163	561	49	2410	805	0	-3270
Feb-2033	1205	8	14	10	919	130	0	594	596	3476	671	1045	157	522	49	2443	1033	0	-2237
Mar-2033	379	9	18	13	982	144	0	662	718	2923	902	1031	168	561	56	2718	206	0	-2032
Apr-2033	287	8	25	17	442	140	0	655	903	2476	1198	818	151	539	57	2763	-287	0	-2319
May-2033	0	9	29	20	558	144	0	693	947	2400	1477	682	144	550	60	2912	-512	0	-2831
Jun-2033	0	8	31	22	539	140	0	686	981	2406	1675	558	131	530	59	2953	-547	0	-3378

Table D-2f

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 5: Castaic Subunit of Alluvial Aquifer

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Upstream Tributaries	Subsurface Inflow From Management Zone 4	Upward Leakage from Saugus + Net Lateral Inflow from Saugus and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jul-2033	0	9	39	27	604	144	0	722	1060	2604	2088	463	125	547	68	3290	-686	0	-4064
Aug-2033	0	9	35	25	631	144	0	732	1041	2617	2053	404	119	546	73	3194	-577	0	-4641
Sep-2033	0	8	28	20	622	140	0	697	917	2431	1636	395	115	527	72	2745	-314	0	-4955
Oct-2033	25	9	21	14	609	144	0	706	881	2409	1308	464	126	546	68	2512	-104	0	-5059
Nov-2033	356	8	14	10	1892	140	0	657	166	3243	947	620	137	536	62	2302	941	0	-4118
Dec-2033	146	9	10	7	2865	144	0	665	-249	3597	792	745	153	551	60	2302	1296	0	-2822
Jan-2034	0	9	10	7	452	144	0	664	792	2079	701	745	156	548	54	2204	-124	0	-2947
Feb-2034	0	8	14	10	412	130	0	589	745	1908	671	663	139	495	46	2015	-107	0	-3053
Mar-2034	0	9	18	13	469	144	0	658	855	2166	902	705	151	548	49	2355	-188	0	-3242
Apr-2034	0	8	25	17	489	140	0	643	883	2206	1198	609	139	530	47	2524	-317	0	-3559
May-2034	0	9	29	20	546	144	0	680	956	2384	1477	559	137	547	49	2769	-385	0	-3944
Jun-2034	0	8	32	22	566	140	0	673	971	2412	1675	477	126	529	47	2855	-443	0	-4387
Jul-2034	0	9	39	27	627	144	0	710	1065	2622	2088	406	121	545	51	3211	-589	0	-4976
Aug-2034	0	9	36	25	648	144	0	723	1056	2640	2053	363	116	544	52	3129	-489	0	-5465
Sep-2034	0	8	29	20	624	140	0	688	943	2452	1636	363	113	526	50	2689	-237	0	-5701
Oct-2034	0	9	21	14	622	144	0	698	897	2405	1308	432	124	544	49	2458	-53	0	-5754
Nov-2034	0	8	14	10	563	140	0	660	806	2200	947	497	129	527	45	2145	55	0	-5699
Dec-2034	0	9	10	7	525	144	0	671	803	2170	792	597	144	546	44	2122	48	0	-5651
Jan-2035	0	9	11	7	500	144	0	658	784	2113	701	661	150	547	43	2101	12	0	-5639
Feb-2035	472	8	14	10	595	130	0	581	664	2474	671	690	141	504	40	2046	428	0	-5210
Mar-2035	124	9	19	13	470	144	0	649	833	2261	902	719	153	551	44	2370	-108	0	-5319
Apr-2035	123	8	26	17	1192	140	0	598	681	2785	1198	690	144	533	46	2611	174	0	-5145
May-2035	89	9	30	20	941	144	0	634	802	2669	1477	618	141	549	50	2835	-166	0	-5311
Jun-2035	0	8	32	22	869	140	0	645	829	2545	1675	502	128	529	50	2884	-339	0	-5650
Jul-2035	1	9	40	27	621	144	0	686	1029	2558	2088	418	122	545	53	3227	-669	0	-6319
Aug-2035	0	9	37	25	644	144	0	701	1032	2592	2053	369	116	544	54	3137	-545	0	-6864
Sep-2035	0	8	29	20	623	140	0	669	924	2413	1636	365	113	526	52	2693	-280	0	-7144
Oct-2035	57	9	21	14	733	144	0	680	837	2495	1308	440	124	545	50	2468	28	0	-7116
Nov-2035	33	8	14	10	574	140	0	644	785	2208	947	502	130	528	46	2153	55	0	-7061
Dec-2035	134	9	11	7	717	144	0	655	721	2398	792	618	145	549	46	2150	249	0	-6812

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Alluvium and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	9426	106	105	0	3	0	0	1275	10915	866	0	214	0	212	1292	9618	5	9618
Feb-2012	13311	99	142	0	0	0	0	653	14205	791	0	305	0	216	1312	12888	5	22506
Mar-2012	4404	106	183	0	3	0	0	1509	6205	894	0	315	0	250	1460	4739	6	27245
Apr-2012	328	103	254	0	0	0	0	227	911	949	0	259	0	239	1446	-531	-3	26714
May-2012	364	106	294	0	0	0	0	-244	520	1059	0	231	0	245	1535	-1010	-5	25704
Jun-2012	0	103	317	0	0	0	0	-136	283	1107	0	198	0	236	1541	-1253	-5	24451
Jul-2012	0	106	393	0	0	0	0	-212	288	1475	0	185	0	234	1894	-1601	-5	22850
Aug-2012	0	106	360	0	0	0	0	-262	205	1485	0	172	0	226	1882	-1672	-5	21178
Sep-2012	0	103	285	0	0	0	0	-415	-28	1333	0	156	0	212	1701	-1725	-3	19453
Oct-2012	0	106	209	0	0	0	0	-48	267	1050	0	157	0	222	1429	-1167	5	18286
Nov-2012	0	103	139	0	3	0	0	1373	1618	926	0	148	0	231	1305	308	5	18594
Dec-2012	1237	106	105	0	0	0	0	118	1566	906	0	158	0	230	1293	268	5	18861
Jan-2013	536	106	107	0	0	0	0	-37	712	866	0	154	0	228	1249	-542	5	18319
Feb-2013	187	96	144	0	0	0	0	-78	349	764	0	134	0	207	1105	-761	5	17558
Mar-2013	619	106	186	0	0	0	0	-167	745	894	0	148	0	233	1275	-535	4	17024
Apr-2013	52	103	258	0	0	0	0	198	610	949	0	138	0	228	1315	-699	-5	16325
May-2013	0	106	299	0	0	0	0	-328	78	1059	0	137	0	236	1433	-1350	-5	14975
Jun-2013	0	103	322	0	0	0	0	-493	-68	1107	0	129	0	228	1464	-1527	-5	13448
Jul-2013	0	106	400	0	0	0	0	-645	-138	1475	0	130	0	226	1831	-1964	-5	11484
Aug-2013	0	106	366	0	0	0	0	-665	-192	1485	0	127	0	218	1830	-2017	-5	9467
Sep-2013	0	103	290	0	0	0	0	-511	-118	1333	0	120	0	205	1657	-1772	-4	7695
Oct-2013	65	106	213	0	0	0	0	-419	-35	1050	0	121	0	215	1385	-1426	5	6269
Nov-2013	407	103	142	0	0	0	0	-304	348	926	0	116	0	209	1251	-908	5	5362
Dec-2013	25	106	107	0	0	0	0	-258	-20	906	0	116	0	217	1239	-1264	5	4098
Jan-2014	2107	106	108	0	0	0	0	191	2513	866	0	130	0	229	1226	1281	5	5379
Feb-2014	766	96	147	0	0	0	0	241	1250	764	0	120	0	214	1098	147	5	5526
Mar-2014	6010	106	190	0	0	0	0	406	6712	894	0	181	0	251	1327	5380	6	10905
Apr-2014	690	103	262	0	0	0	0	84	1139	949	0	165	0	240	1354	-209	-6	10696
May-2014	82	106	304	0	0	0	0	-366	127	1059	0	155	0	243	1457	-1325	-5	9371
Jun-2014	0	103	327	0	0	0	0	-389	41	1107	0	140	0	233	1480	-1433	-5	7938
Jul-2014	0	106	407	0	0	0	0	-487	26	1475	0	136	0	231	1842	-1810	-5	6127
Aug-2014	0	106	373	0	0	0	0	-501	-23	1485	0	130	0	223	1838	-1855	-5	4272
Sep-2014	645	103	295	0	0	0	0	-492	551	1333	0	127	0	208	1667	-1113	-4	3160
Oct-2014	158	106	216	0	0	0	0	-395	86	1050	0	126	0	217	1394	-1313	5	1847
Nov-2014	3378	103	144	0	0	0	0	6	3631	926	0	148	0	213	1286	2340	5	4187
Dec-2014	1866	106	108	0	0	0	0	-9	2072	906	0	158	0	226	1289	777	5	4964
Jan-2015	11118	106	110	0	0	0	0	-193	11142	866	0	246	0	220	1332	9805	5	14769
Feb-2015	8784	96	149	0	0	0	0	101	9131	764	0	272	0	201	1236	7889	5	22658
Mar-2015	16761	106	193	0	0	0	0	27	17087	894	0	434	0	228	1557	15524	6	38183
Apr-2015	5912	103	267	0	0	0	0	-85	6196	949	0	400	0	234	1582	4612	2	42794
May-2015	256	106	309	0	0	0	0	-473	199	1059	0	334	0	252	1645	-1441	-5	41353
Jun-2015	0	103	333	0	0	0	0	-391	45	1107	0	270	0	242	1620	-1570	-5	39784
Jul-2015	0	106	413	0	0	0	0	-539	-19	1475	0	241	0	239	1956	-1970	-5	37814

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Alluvium and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Aug-2015	1500	106	379	0	0	0	0	-640	1346	1485	0	232	0	232	1949	-598	-5	37216
Sep-2015	2372	103	300	0	0	0	0	-547	2228	1333	0	228	0	221	1781	448	-2	37664
Oct-2015	2231	106	220	0	0	0	0	-303	2255	1050	0	237	0	234	1522	728	5	38392
Nov-2015	6463	103	147	0	3	0	0	697	7413	926	0	283	0	243	1452	5956	5	44348
Dec-2015	6579	106	110	0	3	0	0	1768	8567	906	0	334	0	269	1509	7052	5	51400
Jan-2016	0	106	112	0	0	0	0	109	327	866	0	279	0	266	1411	-1089	5	50310
Feb-2016	0	99	152	0	0	0	0	-41	210	791	0	228	0	248	1266	-1062	5	49249
Mar-2016	0	106	196	0	0	0	0	-161	141	894	0	219	0	264	1377	-1240	4	48009
Apr-2016	0	103	271	0	0	0	0	-287	87	949	0	196	0	256	1401	-1309	-5	46700
May-2016	0	106	314	0	0	0	0	-417	3	1059	0	190	0	265	1515	-1506	-5	45194
Jun-2016	0	103	338	0	0	0	0	-527	-86	1107	0	175	0	256	1539	-1620	-5	43574
Jul-2016	0	106	420	0	0	0	0	-672	-146	1475	0	175	0	252	1902	-2043	-5	41531
Aug-2016	0	106	385	0	0	0	0	-688	-197	1485	0	168	0	244	1897	-2089	-5	39443
Sep-2016	0	103	305	0	0	0	0	-532	-124	1333	0	158	0	229	1719	-1840	-4	37603
Oct-2016	0	106	223	0	0	0	0	-440	-110	1050	0	157	0	240	1447	-1563	5	36040
Nov-2016	0	103	149	0	0	0	0	-325	-74	926	0	147	0	233	1306	-1385	5	34655
Dec-2016	0	106	112	0	0	0	0	-284	-66	906	0	147	0	242	1295	-1366	5	33290
Jan-2017	0	106	114	0	0	0	0	-270	-50	866	0	143	0	245	1254	-1309	5	31980
Feb-2017	0	96	154	0	0	0	0	-215	35	764	0	127	0	223	1113	-1082	5	30898
Mar-2017	0	106	199	0	0	0	0	-300	5	894	0	137	0	248	1279	-1276	2	29622
Apr-2017	0	103	275	0	0	0	0	-404	-25	949	0	131	0	242	1321	-1341	-5	28280
May-2017	0	106	319	0	0	0	0	-535	-109	1059	0	134	0	251	1444	-1548	-5	26733
Jun-2017	0	103	344	0	0	0	0	-650	-203	1107	0	128	0	243	1479	-1677	-5	25056
Jul-2017	0	106	427	0	0	0	0	-824	-291	1475	0	131	0	241	1847	-2133	-5	22923
Aug-2017	0	106	391	0	0	0	0	-858	-360	1485	0	129	0	234	1848	-2203	-5	20720
Sep-2017	0	103	309	0	0	0	0	-686	-274	1333	0	123	0	219	1675	-1944	-4	18776
Oct-2017	0	106	227	0	0	0	0	-576	-243	1050	0	125	0	228	1403	-1651	5	17126
Nov-2017	0	103	151	0	0	0	0	-428	-173	926	0	118	0	221	1264	-1443	5	15683
Dec-2017	0	106	114	0	0	0	0	-363	-143	906	0	119	0	228	1253	-1401	5	14282
Jan-2018	3175	106	116	2	0	0	0	-24	3375	866	0	141	0	231	1239	2131	5	16413
Feb-2018	3616	96	156	2	0	0	0	-161	3709	764	0	148	0	207	1119	2586	5	18999
Mar-2018	2931	106	202	3	0	0	0	-84	3157	894	0	173	0	234	1302	1850	6	20850
Apr-2018	478	103	280	4	0	0	0	93	958	949	0	155	0	230	1334	-371	-5	20479
May-2018	0	106	324	4	0	0	0	-454	-19	1059	0	148	0	239	1446	-1459	-5	19019
Jun-2018	0	103	349	5	0	0	0	-618	-162	1107	0	135	0	233	1475	-1632	-5	17388
Jul-2018	27	106	434	6	0	0	0	-799	-226	1475	0	134	0	232	1840	-2061	-5	15327
Aug-2018	0	106	397	5	0	0	0	-841	-332	1485	0	130	0	225	1839	-2166	-5	13160
Sep-2018	968	103	314	4	0	0	0	-677	712	1333	0	129	0	210	1672	-957	-4	12204
Oct-2018	370	106	231	3	0	0	0	-174	536	1050	0	131	0	229	1411	-880	5	11323
Nov-2018	843	103	154	2	0	0	0	61	1162	926	0	129	0	234	1288	-131	5	11192
Dec-2018	130	106	116	2	0	0	0	256	610	906	0	129	0	252	1287	-683	5	10509
Jan-2019	229	106	117	5	0	0	0	-16	442	1282	0	127	0	216	1625	-1178	-5	9331
Feb-2019	66	96	159	7	0	0	0	9	338	1125	0	112	0	180	1417	-1078	-1	8253

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Alluvium and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Mar-2019	184	106	205	9	0	0	0	-32	473	1311	0	122	0	190	1623	-1144	-5	7109
Apr-2019	15	103	284	13	0	0	0	-68	346	1375	0	116	0	178	1669	-1317	-5	5792
May-2019	0	106	330	15	0	0	0	-213	238	1527	0	118	0	182	1827	-1584	-5	4208
Jun-2019	0	103	354	16	0	0	0	-309	164	1589	0	113	0	175	1877	-1708	-5	2500
Jul-2019	10	106	440	20	0	0	0	-393	183	2289	0	115	0	159	2563	-2375	-5	125
Aug-2019	2	106	403	18	0	0	0	-380	150	2307	0	114	0	146	2567	-2412	-5	-2287
Sep-2019	0	103	319	14	0	0	0	-224	212	2096	0	108	0	131	2336	-2119	-5	-4406
Oct-2019	378	106	234	11	0	0	0	-155	574	1526	0	112	0	146	1785	-1216	5	-5622
Nov-2019	418	103	156	7	0	0	0	-63	621	1359	0	108	0	145	1612	-996	5	-6617
Dec-2019	523	106	117	5	0	0	0	-17	735	1338	0	112	0	153	1602	-872	5	-7490
Jan-2020	1188	106	119	10	0	0	0	60	1483	1695	0	116	0	145	1956	-468	-5	-7958
Feb-2020	1232	99	161	13	0	0	0	311	1816	1552	0	113	0	144	1808	9	0	-7949
Mar-2020	421	106	208	17	0	0	0	221	974	1724	0	118	0	144	1986	-1006	-5	-8955
Apr-2020	1446	103	288	24	0	0	0	33	1894	1774	0	120	0	136	2030	-131	-5	-9086
May-2020	33	106	335	28	0	0	0	-25	476	1940	0	118	0	140	2198	-1716	-5	-10802
Jun-2020	0	103	360	30	0	0	0	-206	287	1988	0	110	0	136	2234	-1942	-5	-12744
Jul-2020	0	106	447	37	0	0	0	-281	309	2950	0	111	0	107	3168	-2853	-5	-15597
Aug-2020	0	106	410	34	0	0	0	-273	277	2968	0	108	0	92	3169	-2887	-5	-18484
Sep-2020	36	103	324	27	0	0	0	-90	400	2736	0	103	0	80	2919	-2514	-5	-20998
Oct-2020	0	106	238	20	0	0	0	55	419	2445	0	104	0	81	2630	-2216	5	-23214
Nov-2020	334	103	159	13	0	0	0	109	718	1759	0	100	0	89	1948	-1235	5	-24449
Dec-2020	2594	106	119	10	0	0	0	146	2976	1751	0	117	0	98	1966	1005	5	-23444
Jan-2021	0	106	121	13	0	0	0	128	368	1282	0	110	0	110	1502	-1140	5	-24584
Feb-2021	0	96	164	17	0	0	0	124	401	1125	0	95	0	107	1327	-931	5	-25515
Mar-2021	0	106	211	23	0	0	0	64	404	1311	0	102	0	126	1538	-1140	5	-26655
Apr-2021	0	103	293	31	0	0	0	-61	365	1375	0	97	0	128	1599	-1232	-2	-27887
May-2021	0	106	340	36	0	0	0	-191	291	1527	0	99	0	137	1763	-1466	-6	-29353
Jun-2021	0	103	365	39	0	0	0	-323	184	1589	0	94	0	137	1820	-1631	-5	-30984
Jul-2021	0	106	454	48	0	0	0	-449	159	2289	0	97	0	126	2512	-2348	-5	-33332
Aug-2021	0	106	416	44	0	0	0	-463	103	2307	0	96	0	118	2521	-2412	-5	-35744
Sep-2021	0	103	329	35	0	0	0	-299	168	2096	0	92	0	106	2293	-2121	-5	-37865
Oct-2021	0	106	241	26	0	0	0	-210	163	1526	0	93	0	119	1738	-1580	5	-39445
Nov-2021	0	103	161	17	0	0	0	-91	190	1359	0	88	0	117	1564	-1380	5	-40825
Dec-2021	0	106	121	13	0	0	0	-24	216	1338	0	89	0	122	1549	-1339	5	-42164
Jan-2022	0	106	123	15	0	0	0	96	340	1695	0	88	0	114	1897	-1552	-5	-43716
Feb-2022	0	96	166	20	0	0	0	156	437	1498	0	78	0	98	1675	-1238	0	-44954
Mar-2022	0	106	215	25	0	0	0	141	487	1724	0	86	0	107	1917	-1424	-5	-46378
Apr-2022	0	103	297	35	0	0	0	39	474	1774	0	83	0	104	1961	-1482	-5	-47860
May-2022	0	106	345	41	0	0	0	-67	424	1940	0	85	0	108	2133	-1704	-5	-49564
Jun-2022	0	103	371	44	0	0	0	-191	326	1988	0	83	0	106	2177	-1845	-5	-51409
Jul-2022	0	106	461	54	0	0	0	-257	365	2950	0	85	0	83	3118	-2748	-5	-54158
Aug-2022	0	106	422	50	0	0	0	-243	335	2968	0	85	0	73	3126	-2786	-5	-56943
Sep-2022	0	103	334	39	0	0	0	-67	408	2736	0	81	0	63	2880	-2467	-5	-59410

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Alluvium and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Oct-2022	0	106	245	29	0	0	0	71	451	2445	0	83	0	64	2592	-2146	5	-61557
Nov-2022	0	103	163	19	0	0	0	138	424	1759	0	79	0	69	1907	-1488	5	-63045
Dec-2022	0	106	123	15	0	0	0	201	445	1751	0	80	0	76	1907	-1468	5	-64512
Jan-2023	691	106	125	15	0	0	0	608	1545	2565	0	82	0	59	2707	-1162	-1	-65674
Feb-2023	3561	96	169	21	0	0	0	1057	4904	2284	0	90	0	60	2434	2466	3	-63208
Mar-2023	7054	106	218	27	0	0	0	1064	8469	2594	0	135	0	74	2803	5670	-4	-57538
Apr-2023	0	103	301	37	0	0	0	574	1015	2616	0	115	0	59	2790	-1771	-5	-59309
May-2023	0	106	350	43	0	0	0	436	935	2810	0	109	0	56	2974	-2034	-5	-61343
Jun-2023	0	103	376	46	0	0	0	268	793	2830	0	99	0	52	2981	-2183	-5	-63526
Jul-2023	0	106	467	57	0	0	0	182	812	3548	0	97	0	52	3697	-2880	-5	-66406
Aug-2023	0	106	428	52	0	0	0	156	742	3567	0	94	0	51	3711	-2963	-5	-69369
Sep-2023	0	103	339	41	0	0	0	302	785	3315	0	88	0	47	3450	-2660	-5	-72030
Oct-2023	311	106	248	30	0	0	0	567	1263	3296	0	90	0	46	3432	-2173	4	-74202
Nov-2023	0	103	166	20	0	0	0	627	916	2932	0	84	0	42	3059	-2148	5	-76350
Dec-2023	3704	106	125	15	0	0	0	987	4938	2621	0	106	0	52	2779	2153	5	-74197
Jan-2024	3629	106	126	16	3	0	0	2168	6048	2565	0	121	0	62	2749	3294	5	-70903
Feb-2024	18411	99	171	21	3	0	0	1937	20643	2365	0	226	0	65	2656	17981	5	-52922
Mar-2024	10765	106	221	27	3	0	0	1884	13006	2594	0	282	0	78	2954	10047	6	-42875
Apr-2024	166	103	306	38	0	0	0	1131	1743	2616	0	221	0	64	2901	-1153	-5	-44028
May-2024	376	106	355	44	0	0	0	807	1688	2810	0	194	0	60	3064	-1371	-5	-45399
Jun-2024	0	103	381	47	0	0	0	783	1314	2830	0	164	0	56	3050	-1731	-5	-47130
Jul-2024	332	106	474	58	0	0	0	500	1471	3548	0	155	0	55	3759	-2282	-5	-49413
Aug-2024	0	106	434	54	0	0	0	435	1029	3567	0	142	0	53	3762	-2728	-5	-52140
Sep-2024	0	103	343	42	0	0	0	546	1035	3315	0	129	0	48	3491	-2452	-4	-54593
Oct-2024	1715	106	252	31	0	0	0	875	2979	3296	0	139	0	47	3482	-507	5	-55100
Nov-2024	0	103	168	21	0	0	0	1036	1327	2932	0	125	0	44	3101	-1779	5	-56879
Dec-2024	8021	106	126	16	0	0	0	1184	9454	2621	0	189	0	44	2854	6594	5	-50284
Jan-2025	17607	106	128	16	0	0	0	1335	19192	866	0	331	0	54	1251	17935	5	-32349
Feb-2025	12070	96	173	21	3	0	0	2816	15181	764	0	360	0	76	1199	13977	5	-18373
Mar-2025	4394	106	224	28	3	0	0	1603	6358	894	0	365	0	121	1381	4972	5	-13401
Apr-2025	0	103	310	38	0	0	0	1022	1473	949	0	291	0	125	1365	103	5	-13298
May-2025	0	106	360	44	0	0	0	434	944	1059	0	253	0	139	1451	-512	5	-13810
Jun-2025	669	103	387	48	0	0	0	181	1387	1107	0	221	0	142	1470	-86	2	-13895
Jul-2025	0	106	481	59	0	0	0	-14	632	1475	0	204	0	146	1825	-1188	-5	-15083
Aug-2025	0	106	440	54	0	0	0	-20	581	1485	0	186	0	146	1817	-1231	-5	-16314
Sep-2025	0	103	348	43	0	0	0	204	698	1333	0	168	0	136	1637	-944	5	-17258
Oct-2025	587	106	256	31	0	0	0	779	1759	1050	0	171	0	158	1379	375	5	-16884
Nov-2025	772	103	170	21	0	0	0	886	1951	926	0	167	0	164	1257	689	5	-16194
Dec-2025	1029	106	128	16	3	0	0	1737	3020	906	0	176	0	180	1262	1753	5	-14441
Jan-2026	0	106	130	16	0	0	0	640	892	1282	0	164	0	158	1604	-708	-5	-15149
Feb-2026	0	96	176	22	0	0	0	422	716	1125	0	141	0	134	1400	-687	3	-15836
Mar-2026	0	106	227	28	0	0	0	368	729	1311	0	150	0	143	1603	-869	-5	-16705
Apr-2026	0	103	314	39	0	0	0	509	965	1375	0	141	0	133	1649	-679	-5	-17384

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Management Zone 6: Saugus Formation

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Alluvium and Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2026	0	106	365	45	0	0	0	184	699	1527	0	142	0	140	1808	-1103	-5	-18487
Jun-2026	0	103	392	48	0	0	0	-2	542	1589	0	134	0	136	1859	-1312	-5	-19800
Jul-2026	0	106	487	60	0	0	0	-101	552	2289	0	136	0	124	2549	-1991	-5	-21791
Aug-2026	0	106	447	55	0	0	0	-106	501	2307	0	134	0	115	2556	-2049	-5	-23840
Sep-2026	0	103	353	43	0	0	0	28	527	2096	0	126	0	104	2326	-1795	-5	-25635
Oct-2026	0	106	259	32	0	0	0	93	490	1526	0	127	0	116	1770	-1285	5	-26920
Nov-2026	0	103	173	21	0	0	0	164	461	1359	0	120	0	116	1594	-1138	5	-28058
Dec-2026	0	106	130	16	0	0	0	206	458	1338	0	120	0	121	1579	-1127	5	-29185
Jan-2027	22733	106	132	16	1	0	0	932	23920	866	0	330	0	144	1340	22575	5	-6610
Feb-2027	1996	96	178	22	3	0	0	1214	3509	764	0	263	0	158	1185	2319	5	-4291
Mar-2027	8584	106	230	28	0	0	0	663	9612	894	0	338	0	196	1428	8178	5	3887
Apr-2027	745	103	319	39	0	0	0	71	1276	949	0	276	0	191	1415	-144	4	3743
May-2027	269	106	370	45	0	0	0	191	980	1059	0	247	0	201	1507	-522	-4	3221
Jun-2027	786	103	398	48	0	0	0	-152	1183	1107	0	218	0	193	1518	-330	-5	2891
Jul-2027	0	106	494	60	0	0	0	-317	344	1475	0	201	0	192	1868	-1518	-5	1373
Aug-2027	0	106	453	55	0	0	0	-347	267	1485	0	185	0	185	1855	-1583	-5	-210
Sep-2027	0	103	358	44	0	0	0	-428	76	1333	0	168	0	178	1678	-1600	-2	-1811
Oct-2027	0	106	263	32	0	0	0	204	605	1050	0	166	0	195	1411	-811	5	-2622
Nov-2027	0	103	175	21	0	0	0	336	635	926	0	156	0	193	1275	-645	5	-3267
Dec-2027	2410	106	132	16	3	0	0	2140	4807	906	0	181	0	204	1291	3511	5	244
Jan-2028	1707	106	134	16	0	0	0	1183	3145	866	0	190	0	220	1276	1864	5	2108
Feb-2028	3868	99	181	22	0	0	0	319	4489	791	0	203	0	195	1189	3295	5	5403
Mar-2028	1195	106	233	28	0	0	0	128	1691	894	0	206	0	206	1307	379	6	5782
Apr-2028	75	103	323	39	0	0	0	157	696	949	0	181	0	196	1327	-626	-4	5156
May-2028	391	106	375	45	0	0	0	-13	905	1059	0	177	0	203	1439	-529	-5	4627
Jun-2028	0	103	403	49	0	0	0	-288	267	1107	0	161	0	201	1469	-1197	-5	3430
Jul-2028	0	106	501	61	0	0	0	-452	216	1475	0	159	0	201	1835	-1613	-5	1817
Aug-2028	0	106	459	56	0	0	0	-492	129	1485	0	153	0	196	1833	-1699	-5	117
Sep-2028	0	103	363	44	0	0	0	-301	209	1333	0	143	0	185	1660	-1449	-3	-1331
Oct-2028	747	106	266	32	0	0	0	-258	894	1050	0	149	0	194	1393	-505	5	-1836
Nov-2028	609	103	178	22	0	0	0	386	1297	926	0	145	0	200	1271	21	5	-1815
Dec-2028	5000	106	134	16	0	0	0	664	5920	906	0	194	0	217	1316	4599	5	2784
Jan-2029	1387	106	135	16	0	0	0	78	1723	866	0	187	0	209	1262	456	5	3240
Feb-2029	48	96	183	22	0	0	0	67	416	764	0	154	0	197	1115	-704	5	2536
Mar-2029	0	106	236	29	0	0	0	231	603	894	0	159	0	208	1261	-663	5	1872
Apr-2029	0	103	327	39	0	0	0	107	576	949	0	146	0	202	1298	-716	-5	1156
May-2029	0	106	380	46	0	0	0	-243	289	1059	0	146	0	212	1417	-1122	-5	34
Jun-2029	0	103	408	49	0	0	0	-393	167	1107	0	138	0	206	1451	-1279	-5	-1245
Jul-2029	10	106	508	61	0	0	0	-553	133	1475	0	140	0	206	1820	-1682	-5	-2927
Aug-2029	0	106	465	56	0	0	0	-584	44	1485	0	136	0	200	1821	-1772	-5	-4699
Sep-2029	110	103	368	44	0	0	0	-438	187	1333	0	129	0	188	1650	-1460	-3	-6159
Oct-2029	0	106	270	33	0	0	0	-346	63	1050	0	129	0	198	1378	-1320	5	-7479
Nov-2029	776	103	180	22	0	0	0	-235	845	926	0	127	0	193	1246	-406	5	-7885

Table D-2g

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Management Zone 6: Saugus Formation

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Dec-2029	1397	106	135	16	0	0	0	-90	1566	906	0	137	0	200	1243	317	5	-7568
Jan-2030	3967	106	137	16	3	0	0	2996	7227	866	0	165	0	210	1241	5980	5	-1588
Feb-2030	25008	96	186	22	0	0	0	1220	26531	764	0	380	0	196	1340	25186	5	23598
Mar-2030	4524	106	240	29	3	0	0	1579	6481	894	0	386	0	247	1527	4948	6	28546
Apr-2030	2592	103	332	40	3	0	0	1089	4158	949	0	335	0	255	1539	2614	5	31161
May-2030	6252	106	385	46	0	0	0	-34	6755	1059	0	362	0	252	1673	5086	-5	36247
Jun-2030	68	103	414	50	0	0	0	92	727	1107	0	296	0	256	1660	-928	-5	35319
Jul-2030	0	106	514	62	0	0	0	-331	351	1475	0	264	0	246	1985	-1629	-5	33690
Aug-2030	0	106	471	56	0	0	0	-373	261	1485	0	234	0	237	1955	-1689	-5	32001
Sep-2030	239	103	373	45	0	0	0	-209	550	1333	0	208	0	221	1762	-1210	-3	30792
Oct-2030	375	106	273	33	0	0	0	-191	596	1050	0	202	0	230	1483	-892	5	29900
Nov-2030	1546	103	182	22	0	0	0	12	1865	926	0	199	0	224	1348	512	5	30412
Dec-2030	1580	106	137	16	0	0	0	161	2001	906	0	207	0	229	1341	655	5	31066
Jan-2031	0	106	139	16	0	0	0	94	356	866	0	189	0	233	1289	-938	5	30128
Feb-2031	0	96	188	22	0	0	0	134	440	764	0	162	0	212	1137	-702	5	29426
Mar-2031	0	106	243	29	0	0	0	-151	227	894	0	171	0	237	1302	-1079	4	28347
Apr-2031	0	103	336	40	0	0	0	67	545	949	0	160	0	225	1334	-783	-5	27563
May-2031	0	106	390	46	0	0	0	-68	474	1059	0	160	0	233	1453	-973	-5	26590
Jun-2031	0	103	419	50	0	0	0	-473	98	1107	0	151	0	230	1488	-1385	-5	25205
Jul-2031	0	106	521	62	0	0	0	-669	20	1475	0	154	0	229	1858	-1833	-5	23373
Aug-2031	0	106	477	57	0	0	0	-694	-54	1485	0	150	0	223	1858	-1907	-5	21466
Sep-2031	0	103	378	45	0	0	0	-541	-16	1333	0	142	0	210	1685	-1697	-4	19768
Oct-2031	0	106	277	33	0	0	0	-449	-33	1050	0	143	0	221	1414	-1452	5	18316
Nov-2031	0	103	185	22	0	0	0	-332	-22	926	0	135	0	215	1276	-1303	5	17013
Dec-2031	0	106	139	16	0	0	0	-287	-26	906	0	136	0	224	1265	-1296	5	15717
Jan-2032	192	106	141	17	0	0	0	-238	217	866	0	134	0	225	1225	-1014	5	14703
Feb-2032	1495	99	190	22	0	0	0	-49	1758	791	0	135	0	215	1140	613	5	15316
Mar-2032	499	106	246	29	0	0	0	-65	815	894	0	142	0	226	1263	-452	4	14864
Apr-2032	333	103	340	40	0	0	0	-334	482	949	0	136	0	222	1307	-820	-5	14044
May-2032	0	106	395	46	0	0	0	-395	152	1059	0	136	0	230	1425	-1267	-5	12778
Jun-2032	0	103	425	50	0	0	0	-502	76	1107	0	128	0	223	1458	-1378	-5	11400
Jul-2032	0	106	528	62	0	0	0	-708	-12	1475	0	130	0	223	1828	-1834	-5	9565
Aug-2032	49	106	483	57	0	0	0	-721	-25	1485	0	129	0	217	1830	-1849	-5	7716
Sep-2032	0	103	382	45	0	0	0	-559	-29	1333	0	122	0	203	1658	-1683	-4	6033
Oct-2032	179	106	281	33	0	0	0	-462	136	1050	0	124	0	214	1388	-1257	5	4776
Nov-2032	0	103	187	22	0	0	0	-337	-26	926	0	117	0	208	1251	-1282	5	3494
Dec-2032	0	106	141	17	0	0	0	-288	-25	906	0	118	0	216	1240	-1270	5	2224
Jan-2033	4315	106	143	17	0	0	0	105	4685	1282	0	150	0	209	1641	3049	-5	5273
Feb-2033	7957	96	193	22	0	0	0	46	8314	1125	0	190	0	174	1489	6822	2	12095
Mar-2033	2500	106	249	29	0	0	0	-45	2838	1311	0	205	0	190	1706	1138	-5	13233
Apr-2033	1893	103	345	40	0	0	0	-292	2089	1375	0	191	0	186	1751	343	-5	13576
May-2033	0	106	400	46	0	0	0	-393	160	1527	0	174	0	194	1894	-1729	-5	11847
Jun-2033	0	103	430	50	0	0	0	-513	70	1589	0	153	0	188	1930	-1855	-5	9992

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Management Zone 6: Saugus Formation

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Jul-2033	0	106	534	62	0	0	0	-629	74	2289	0	148	0	172	2609	-2530	-5	7462
Aug-2033	0	106	490	57	0	0	0	-629	24	2307	0	141	0	159	2607	-2578	-5	4884
Sep-2033	0	103	387	45	0	0	0	-449	86	2096	0	131	0	143	2370	-2279	-5	2605
Oct-2033	163	106	284	33	0	0	0	-366	220	1526	0	132	0	157	1815	-1600	5	1005
Nov-2033	2352	103	189	22	0	0	0	441	3107	1359	0	143	0	166	1668	1434	5	2439
Dec-2033	961	106	143	17	3	0	0	1130	2360	1338	0	147	0	185	1669	685	5	3124
Jan-2034	0	106	144	17	0	0	0	134	401	866	0	138	0	188	1192	-797	5	2327
Feb-2034	0	96	195	22	0	0	0	35	349	764	0	119	0	175	1058	-714	5	1613
Mar-2034	0	106	252	29	0	0	0	-68	319	894	0	127	0	200	1221	-907	5	706
Apr-2034	0	103	349	40	0	0	0	-208	284	949	0	120	0	200	1269	-986	2	-280
May-2034	0	106	405	46	0	0	0	-361	197	1059	0	122	0	212	1394	-1191	-6	-1471
Jun-2034	0	103	435	50	0	0	0	-504	84	1107	0	117	0	209	1434	-1344	-5	-2815
Jul-2034	0	106	541	62	0	0	0	-690	19	1475	0	120	0	211	1805	-1781	-5	-4596
Aug-2034	0	106	496	57	0	0	0	-737	-78	1485	0	119	0	206	1809	-1882	-5	-6478
Sep-2034	0	103	392	45	0	0	0	-576	-36	1333	0	113	0	193	1639	-1671	-3	-8150
Oct-2034	0	106	288	33	0	0	0	-467	-40	1050	0	114	0	202	1366	-1412	5	-9561
Nov-2034	0	103	192	22	0	0	0	-325	-8	926	0	108	0	196	1230	-1243	5	-10804
Dec-2034	0	106	144	17	0	0	0	-259	8	906	0	109	0	202	1217	-1215	5	-12019
Jan-2035	0	106	146	17	0	0	0	-187	82	866	0	107	0	203	1176	-1100	5	-13119
Feb-2035	3116	96	198	22	0	0	0	41	3473	764	0	116	0	189	1069	2399	5	-10719
Mar-2035	821	106	255	29	0	0	0	-160	1051	894	0	127	0	208	1229	-183	5	-10902
Apr-2035	811	103	353	40	0	0	0	-111	1196	949	0	122	0	197	1268	-67	-5	-10969
May-2035	587	106	410	46	0	0	0	-303	846	1059	0	125	0	206	1390	-539	-5	-11508
Jun-2035	0	103	441	50	0	0	0	-445	149	1107	0	115	0	205	1428	-1274	-5	-12782
Jul-2035	7	106	548	62	0	0	0	-732	-9	1475	0	116	0	206	1797	-1800	-5	-14582
Aug-2035	0	106	502	57	0	0	0	-782	-117	1485	0	113	0	201	1799	-1911	-5	-16493
Sep-2035	0	103	397	45	0	0	0	-617	-72	1333	0	107	0	188	1628	-1696	-4	-18189
Oct-2035	380	106	291	33	0	0	0	-404	406	1050	0	111	0	200	1361	-961	5	-19150
Nov-2035	217	103	194	22	0	0	0	-332	205	926	0	105	0	192	1223	-1023	5	-20173
Dec-2035	887	106	146	17	0	0	0	-22	1133	906	0	111	0	207	1224	-95	5	-20268

Table D-2h

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035
Entire Aquifer System (Alluvium and Saugus Combined)
Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Other Geologic Units	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Jan-2012	15797	206	199	0	11190	144	380	-168	27747	2744	1927	956	578	0	6204	21537	6	21537
Feb-2012	22308	192	269	0	5650	135	282	210	29048	2400	2236	1131	559	0	6327	22715	5	44253
Mar-2012	7380	206	347	0	11523	144	341	-117	19824	3025	2344	1288	571	0	7228	12588	8	56841
Apr-2012	549	199	480	0	2920	140	388	388	5065	3721	1830	1115	537	0	7203	-2128	-10	54713
May-2012	610	206	558	0	1010	144	512	659	3698	4585	1638	1049	551	0	7822	-4118	-6	50595
Jun-2012	0	199	600	0	1738	140	540	697	3914	5208	1365	933	531	0	8037	-4117	-6	46478
Jul-2012	0	206	745	0	1979	144	599	748	4421	6593	1192	891	547	0	9223	-4796	-6	41682
Aug-2012	0	206	683	0	1883	144	636	744	4295	6674	1095	834	546	0	9149	-4848	-6	36834
Sep-2012	0	199	540	0	981	140	632	680	3172	5480	1079	758	528	0	7844	-4666	-7	32168
Oct-2012	0	206	396	0	3315	144	589	498	5148	4478	1199	790	545	0	7013	-1871	5	30297
Nov-2012	0	199	264	0	11186	140	409	-145	12053	3478	1306	860	529	0	6172	5876	5	36173
Dec-2012	2074	206	199	0	2180	144	492	384	5678	3109	1511	875	551	0	6046	-373	6	35800
Jan-2013	898	206	201	0	1631	144	571	459	4109	2744	1582	849	550	0	5725	-1622	6	34178
Feb-2013	313	186	272	0	858	130	550	535	2844	2317	1414	732	496	0	4959	-2119	5	32059
Mar-2013	1037	206	351	0	1532	144	610	546	4426	3025	1547	791	550	0	5913	-1495	7	30564
Apr-2013	87	199	486	0	2575	140	627	577	4690	3721	1394	730	530	0	6376	-1680	-6	28885
May-2013	0	206	564	0	1032	144	674	649	3269	4585	1334	711	547	0	7178	-3903	-6	24982
Jun-2013	0	199	607	0	909	140	675	657	3186	5208	1163	647	529	0	7546	-4355	-6	20627
Jul-2013	0	206	754	0	997	144	718	707	3526	6593	1050	628	545	0	8816	-5285	-6	15342
Aug-2013	0	206	691	0	1030	144	739	709	3518	6674	964	597	544	0	8779	-5255	-6	10087
Sep-2013	0	199	546	0	1379	140	725	582	3570	5480	963	563	526	0	7532	-3955	-6	6131
Oct-2013	109	206	401	0	1344	144	765	577	3545	4478	1074	572	544	0	6668	-3128	5	3003
Nov-2013	683	199	267	0	1423	140	732	536	3979	3478	1147	558	529	0	5711	-1738	5	1265
Dec-2013	41	206	201	0	1433	144	775	501	3301	3109	1272	572	546	0	5500	-2205	6	-939
Jan-2014	3531	206	203	0	5150	144	648	81	9963	2819	1394	704	553	0	5470	4488	6	3548
Feb-2014	1283	186	275	0	5408	130	559	-231	7610	2367	1251	676	498	0	4791	2814	5	6363
Mar-2014	10073	206	355	0	6921	144	516	-90	18125	3096	1585	901	567	0	6149	11966	10	18329
Apr-2014	1156	199	492	0	3508	140	546	276	6316	3810	1311	847	535	0	6503	-179	-7	18150
May-2014	138	206	571	0	1280	144	638	578	3554	4704	1182	815	548	0	7249	-3689	-6	14461
Jun-2014	0	199	614	0	1641	140	663	591	3848	5352	965	727	529	0	7573	-3719	-6	10742
Jul-2014	0	206	762	0	1904	144	710	623	4350	6773	833	690	546	0	8842	-4486	-6	6256
Aug-2014	0	206	699	0	2444	144	685	568	4745	6865	744	648	544	0	8802	-4051	-6	2205
Sep-2014	1082	199	553	0	2021	140	648	516	5159	5633	740	618	528	0	7519	-2354	-7	-150
Oct-2014	265	206	405	0	2073	144	677	515	4285	4611	853	628	545	0	6637	-2358	5	-2507
Nov-2014	5662	199	270	0	3763	140	601	339	10973	3580	1034	699	539	0	5851	5116	5	2609
Dec-2014	3128	206	203	0	4112	144	613	140	8546	3201	1189	764	554	0	5707	2833	6	5442
Jan-2015	18634	206	206	0	2702	144	536	259	22687	2744	1683	940	584	0	5952	16730	6	22172
Feb-2015	14722	186	278	0	3238	130	459	384	19398	2317	1678	941	528	0	5464	13928	5	36100
Mar-2015	28090	206	359	0	4415	144	285	481	33980	3025	2514	1337	609	0	7484	26489	7	62589
Apr-2015	9908	199	497	0	3355	140	350	551	15000	3721	2093	1248	561	0	7623	7368	9	69956
May-2015	430	206	577	0	1712	144	512	612	4192	4585	1683	1129	556	0	7953	-3754	-6	66202
Jun-2015	0	199	621	0	2082	140	545	662	4249	5208	1493	984	533	0	8219	-3964	-6	62238
Jul-2015	0	206	771	0	2180	144	597	682	4580	6593	1378	926	549	0	9446	-4860	-6	57377

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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-transpiration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Other Geologic Units	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Aug-2015	2515	206	706	0	1797	144	603	717	6688	6674	1342	891	552	0	9458	-2764	-6	54613
Sep-2015	3976	199	559	0	1470	140	543	731	7618	5480	1240	856	538	0	8114	-493	-3	54120
Oct-2015	3740	206	410	0	2729	144	525	642	8396	4478	1421	911	556	0	7366	1024	5	55144
Nov-2015	10832	199	273	0	16103	140	204	-1129	26622	3478	2000	1150	553	0	7181	19435	5	74579
Dec-2015	11026	206	206	0	14475	144	272	-439	25890	3109	2458	1388	575	0	7530	18354	6	92933
Jan-2016	0	206	208	0	656	144	454	629	2298	2744	1900	1197	555	0	6396	-4104	5	88829
Feb-2016	0	192	281	0	1247	135	464	538	2857	2400	1717	1040	516	0	5674	-2821	5	86007
Mar-2016	0	206	363	0	1130	144	532	649	3025	3025	1751	1036	550	0	6362	-3341	3	82667
Apr-2016	0	199	503	0	984	140	541	687	3054	3721	1563	937	532	0	6753	-3693	-7	78974
May-2016	0	206	584	0	960	144	584	747	3225	4585	1474	903	549	0	7511	-4280	-6	74694
Jun-2016	0	199	628	0	1000	140	585	734	3285	5208	1302	820	530	0	7861	-4571	-6	70123
Jul-2016	0	206	780	0	1146	144	624	766	3665	6593	1182	796	547	0	9118	-5447	-6	64676
Aug-2016	0	206	714	0	1369	144	643	708	3784	6674	1094	754	546	0	9068	-5278	-6	59398
Sep-2016	0	199	565	0	1093	140	640	714	3351	5480	1052	700	528	0	7760	-4402	-6	54996
Oct-2016	0	206	415	0	1171	144	680	685	3300	4478	1154	702	546	0	6880	-3585	5	51411
Nov-2016	0	199	276	0	1784	140	674	421	3495	3478	1218	667	529	0	5892	-2402	5	49008
Dec-2016	0	206	208	0	1428	144	713	529	3228	3109	1367	678	547	0	5701	-2478	6	46530
Jan-2017	0	206	210	0	1307	144	726	511	3105	2819	1410	663	548	0	5440	-2341	5	44189
Feb-2017	0	186	285	0	1205	130	665	448	2919	2367	1271	583	495	0	4716	-1802	5	42387
Mar-2017	0	206	367	0	1114	144	745	569	3146	3096	1361	623	548	0	5628	-2481	-1	39906
Apr-2017	0	199	508	0	1077	140	727	571	3221	3810	1201	577	530	0	6119	-2891	-7	37016
May-2017	0	206	590	0	1030	144	757	616	3344	4704	1086	567	547	0	6903	-3554	-6	33462
Jun-2017	0	199	635	0	984	140	749	606	3312	5352	913	519	529	0	7313	-3995	-6	29467
Jul-2017	0	206	789	0	1070	144	781	639	3629	6773	795	504	546	0	8618	-4984	-6	24483
Aug-2017	0	206	722	0	1098	144	788	637	3596	6865	712	479	545	0	8601	-4999	-6	19484
Sep-2017	0	199	571	0	1075	140	763	596	3345	5633	692	450	527	0	7301	-3950	-7	15534
Oct-2017	0	206	419	0	1252	144	793	574	3388	4611	807	462	544	0	6425	-3043	5	12491
Nov-2017	0	199	280	0	1221	140	773	522	3134	3580	884	449	528	0	5441	-2312	5	10179
Dec-2017	0	206	210	0	1279	144	805	505	3150	3201	1019	466	546	0	5232	-2088	6	8092
Jan-2018	5322	206	213	2	3681	144	696	257	10520	2819	1212	594	557	0	5182	5331	6	13423
Feb-2018	6060	186	288	2	2570	130	600	162	9998	2367	1198	587	507	0	4659	5334	5	18758
Mar-2018	4912	206	371	3	3125	144	635	347	9743	3096	1332	702	559	0	5689	4044	10	22802
Apr-2018	802	199	514	4	2818	140	676	519	5672	3810	1152	638	534	0	6134	-455	-6	22346
May-2018	0	206	597	5	1137	144	732	604	3425	4704	1053	608	548	0	6914	-3483	-6	18863
Jun-2018	0	199	642	5	1003	140	728	604	3321	5352	874	544	529	0	7299	-3972	-6	14891
Jul-2018	46	206	797	6	1174	144	762	628	3763	6773	756	522	546	0	8598	-4829	-6	10062
Aug-2018	0	206	730	6	1138	144	771	631	3626	6865	675	490	545	0	8575	-4943	-6	5120
Sep-2018	1622	199	578	5	1069	140	747	598	4958	5633	679	469	530	0	7311	-2348	-6	2772
Oct-2018	620	206	424	3	4384	144	680	292	6754	4611	787	578	546	0	6523	225	5	2998
Nov-2018	1412	199	283	2	4609	140	601	223	7469	3580	888	626	531	0	5625	1839	5	4836
Dec-2018	219	206	213	2	5358	144	568	145	6854	3201	1020	690	547	0	5459	1389	6	6226
Jan-2019	383	206	215	6	1321	144	641	551	3468	3160	1113	678	548	0	5500	-2027	-5	4198
Feb-2019	111	186	291	8	1128	130	600	528	2982	2678	1016	595	495	0	4784	-1807	4	2392

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Mar-2019	309	206	375	11	1061	144	695	616	3416	3441	1104	630	548	0	5724	-2303	-5	89
Apr-2019	26	199	520	15	1531	140	683	588	3701	4147	1028	584	529	0	6289	-2583	-5	-2494
May-2019	0	206	603	17	1069	144	741	645	3425	5052	931	569	547	0	7098	-3667	-6	-6162
Jun-2019	0	199	649	18	1012	140	745	655	3417	5689	808	520	528	0	7545	-4123	-6	-10284
Jul-2019	16	206	806	23	1090	144	788	704	3776	7407	709	505	545	0	9166	-5384	-6	-15668
Aug-2019	4	206	738	21	1113	144	805	703	3735	7496	642	479	544	0	9161	-5421	-6	-21089
Sep-2019	0	199	584	17	1083	140	795	644	3461	6243	623	447	526	0	7838	-4372	-5	-25461
Oct-2019	634	206	429	12	1088	144	833	631	3977	4955	720	457	545	0	6676	-2705	5	-28166
Nov-2019	701	199	286	8	1529	140	800	498	4161	3911	814	447	529	0	5700	-1545	5	-29710
Dec-2019	876	206	215	6	1870	144	811	441	4569	3541	954	491	548	0	5534	-970	6	-30681
Jan-2020	1991	206	217	12	1894	144	776	446	5686	3648	1030	519	550	0	5748	-56	-5	-30737
Feb-2020	2064	192	294	16	3944	135	690	180	7516	3212	982	568	516	0	5277	2237	2	-28500
Mar-2020	706	206	380	21	3332	144	738	221	5747	3925	995	607	549	0	6076	-324	-6	-28824
Apr-2020	2424	199	525	29	1654	140	726	443	6139	4635	896	575	534	0	6640	-495	-6	-29319
May-2020	55	206	610	33	2017	144	793	461	4318	5584	794	549	547	0	7474	-3151	-6	-32470
Jun-2020	0	199	656	36	1121	140	783	550	3483	6233	661	494	528	0	7917	-4428	-6	-36898
Jul-2020	0	206	815	44	1143	144	833	600	3786	8248	511	475	545	0	9779	-5988	-6	-42886
Aug-2020	0	206	746	41	1175	144	849	604	3764	8349	417	448	544	0	9757	-5987	-6	-48873
Sep-2020	61	199	590	32	1646	140	798	527	3992	7036	382	425	526	0	8369	-4371	-6	-53244
Oct-2020	0	206	433	24	1867	144	818	509	4000	6006	430	446	543	0	7425	-3429	5	-56673
Nov-2020	560	199	289	16	1409	140	799	504	3915	4413	499	436	528	0	5875	-1966	5	-58639
Dec-2020	4348	206	217	12	1081	144	823	553	7384	4046	668	482	554	0	5751	1628	6	-57011
Jan-2021	0	206	220	17	1075	144	854	537	3051	3235	718	468	547	0	4968	-1922	5	-58933
Feb-2021	0	186	297	22	1030	130	781	467	2914	2728	666	412	494	0	4299	-1391	5	-60324
Mar-2021	0	206	384	29	1084	144	874	526	3247	3512	723	441	547	0	5223	-1981	5	-62305
Apr-2021	0	199	531	40	1051	140	855	519	3335	4236	624	407	529	0	5796	-2457	-4	-64762
May-2021	0	206	616	46	1109	144	898	546	3566	5171	567	402	546	0	6686	-3114	-6	-67876
Jun-2021	0	199	663	50	1100	140	882	538	3571	5833	473	371	527	0	7205	-3628	-6	-71504
Jul-2021	0	206	823	62	1173	144	917	571	3897	7587	377	361	544	0	8869	-4967	-6	-76471
Aug-2021	0	206	754	57	1197	144	924	571	3853	7688	312	344	543	0	8887	-5028	-6	-81499
Sep-2021	0	199	597	45	1261	140	886	528	3655	6396	310	328	525	0	7560	-3899	-6	-85398
Oct-2021	0	206	438	33	1274	144	918	526	3539	5087	377	339	543	0	6346	-2813	5	-88211
Nov-2021	0	199	292	22	1146	140	895	496	3190	4013	440	329	526	0	5309	-2125	5	-90336
Dec-2021	0	206	220	17	1120	144	935	502	3143	3633	533	343	545	0	5054	-1917	6	-92253
Jan-2022	0	206	222	20	1270	144	937	464	3263	3648	609	347	546	0	5150	-1883	-5	-94136
Feb-2022	0	186	300	26	1223	130	846	387	3099	3101	572	312	493	0	4479	-1383	3	-95519
Mar-2022	0	206	388	34	1284	144	937	457	3449	3925	623	341	546	0	5435	-1980	-5	-97498
Apr-2022	0	199	536	47	1101	140	908	486	3417	4635	535	320	528	0	6019	-2596	-6	-100094
May-2022	0	206	623	55	1176	144	940	515	3659	5584	480	320	545	0	6929	-3265	-6	-103359
Jun-2022	0	199	670	59	1129	140	920	512	3628	6233	379	297	527	0	7436	-3802	-6	-107162
Jul-2022	0	206	832	73	1209	144	958	546	3968	8248	286	291	543	0	9369	-5395	-6	-112556
Aug-2022	0	206	762	67	1250	144	962	548	3940	8349	238	279	542	0	9408	-5463	-6	-118019
Sep-2022	0	199	603	53	1219	140	936	514	3663	7036	227	266	524	0	8054	-4384	-6	-122404

Table D-2h

Model-Simulated Monthly Historical Groundwater Budget (acre-feet per month) for Calendar Years 2012 through 2035

Entire Aquifer System (Alluvium and Saugus Combined)

Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)

August 19, 2015 Presentation of Original Water Budget Developed in October 2014

Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Other Geologic Units	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
Oct-2022	0	206	442	39	1268	144	962	511	3572	6006	264	277	542	0	7090	-3523	5	-125926
Nov-2022	0	199	295	26	1206	140	933	477	3276	4413	311	276	526	0	5526	-2255	5	-128181
Dec-2022	0	206	222	20	1309	144	965	467	3333	4046	394	296	544	0	5280	-1953	6	-130134
Jan-2023	1158	206	224	21	3211	144	877	271	6112	4518	459	362	547	0	5887	224	1	-129911
Feb-2023	5968	186	303	28	8279	130	591	-672	14814	3887	548	437	504	0	5377	9430	8	-120481
Mar-2023	11822	206	392	36	6541	144	545	-281	19405	4795	753	603	570	0	6722	12686	-3	-107795
Apr-2023	0	199	542	50	1881	140	664	320	3796	5477	525	530	533	0	7064	-3263	-6	-111058
May-2023	0	206	629	58	1513	144	721	558	3830	6454	437	502	547	0	7940	-4105	-6	-115162
Jun-2023	0	199	677	63	1313	140	738	575	3704	7075	354	443	528	0	8400	-4690	-6	-119853
Jul-2023	0	206	841	78	1462	144	776	606	4112	8847	278	413	544	0	10082	-5964	-6	-125817
Aug-2023	0	206	770	71	1292	144	818	620	3922	8947	239	375	543	0	10103	-6176	-6	-131993
Sep-2023	0	199	609	56	1300	140	800	579	3684	7615	235	338	525	0	8714	-5024	-6	-137016
Oct-2023	522	206	447	41	2310	144	780	489	4939	6857	263	364	543	0	8028	-3091	3	-140107
Nov-2023	0	199	298	28	1270	140	815	529	3279	5586	283	341	526	0	6736	-3462	5	-143569
Dec-2023	6208	206	224	21	5076	144	688	99	12667	4916	414	490	556	0	6377	6284	6	-137285
Jan-2024	6082	206	227	21	20522	144	109	-2465	24846	4518	745	678	560	0	6501	18339	6	-118946
Feb-2024	30855	192	306	29	14173	135	-187	-1262	44242	4026	1653	976	572	0	7227	37009	5	-81937
Mar-2024	18042	206	396	38	9466	144	-27	-338	27926	4795	1421	1112	593	0	7921	19999	6	-61938
Apr-2024	278	199	548	52	2433	140	206	497	4353	5477	840	907	539	0	7764	-3404	-7	-65342
May-2024	630	206	636	60	1900	144	314	639	4529	6454	623	811	552	0	8440	-3905	-6	-69247
Jun-2024	0	199	684	65	3146	140	297	528	5058	7075	490	728	531	0	8823	-3759	-6	-73007
Jul-2024	556	206	849	81	1284	144	426	750	4297	8847	349	687	548	0	10430	-6128	-6	-79134
Aug-2024	0	206	778	74	1281	144	493	764	3740	8947	291	627	545	0	10410	-6664	-6	-85798
Sep-2024	0	199	616	58	1350	140	517	709	3588	7615	301	569	527	0	9012	-5418	-6	-91216
Oct-2024	2874	206	452	43	2960	144	470	554	7703	6857	366	604	550	0	8377	-680	5	-91896
Nov-2024	0	199	301	29	3634	140	473	334	5110	5586	384	580	528	0	7079	-1974	5	-93870
Dec-2024	13443	206	227	21	5036	144	379	142	19597	4916	722	756	572	0	6967	12625	6	-81245
Jan-2025	29508	206	229	22	12483	144	180	-574	42196	2744	2175	1143	608	0	6670	35520	5	-45725
Feb-2025	20229	186	310	30	18889	130	122	-566	39330	2317	3751	1297	544	0	7908	31417	5	-14308
Mar-2025	7364	206	400	38	10256	144	160	119	18687	3025	3428	1418	573	0	8444	10237	6	-4071
Apr-2025	0	199	553	53	4257	140	229	569	5999	3721	1339	1182	537	0	6780	-786	5	-4856
May-2025	0	206	642	62	1431	144	368	800	3652	4585	965	1051	551	0	7151	-3505	5	-8361
Jun-2025	1121	199	691	66	1301	140	399	827	4744	5208	822	929	534	0	7493	-2751	2	-11112
Jul-2025	0	206	858	82	1333	144	462	871	3956	6593	689	877	548	0	8708	-4746	-6	-15858
Aug-2025	0	206	786	75	1487	144	506	858	4062	6674	573	815	547	0	8608	-4540	-6	-20399
Sep-2025	0	199	622	60	1923	140	520	782	4245	5480	637	749	528	0	7394	-3154	5	-23553
Oct-2025	983	206	456	44	5974	144	425	469	8702	4478	793	827	548	0	6647	2049	6	-21504
Nov-2025	1293	199	304	29	5632	140	382	352	8332	3478	902	847	532	0	5758	2569	5	-18935
Dec-2025	1725	206	229	22	10904	144	259	-55	13433	3109	1216	971	551	0	5847	7580	6	-11355
Jan-2026	0	206	231	22	1540	144	429	539	3111	3160	1186	907	549	0	5802	-2686	-5	-14041
Feb-2026	0	186	313	30	1346	130	436	496	2937	2678	1044	783	495	0	5000	-2071	7	-16112
Mar-2026	0	206	404	39	1454	144	529	587	3363	3441	1115	822	548	0	5927	-2559	-5	-18671
Apr-2026	0	199	559	54	2307	140	546	635	4440	4147	1092	758	530	0	6528	-2083	-6	-20753

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Santa Clara River Valley East Subbasin (Santa Clarita Valley, California)
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Month-Year	Rainfall Recharge	Septic System Recharge	Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Recharge from Stream Leakage	Recharge from Castaic Dam Underflow	Subsurface Inflow From Acton Basin and Other Upstream Tributaries	Net Lateral Inflow from Other Geologic Units	TOTAL INFLOW	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Other Geologic Units	TOTAL OUTFLOW	Change in GW Storage	Error	Cum. Change in GW Storage After 2011
May-2026	0	206	649	62	1274	144	594	714	3643	5052	989	740	547	0	7329	-3680	-6	-24434
Jun-2026	0	199	698	67	1106	140	599	713	3521	5689	810	679	529	0	7707	-4181	-6	-28614
Jul-2026	0	206	867	83	1125	144	644	762	3831	7407	677	658	546	0	9288	-5451	-6	-34066
Aug-2026	0	206	794	76	1137	144	671	760	3790	7496	598	621	545	0	9260	-5465	-6	-39531
Sep-2026	0	199	628	61	1132	140	667	697	3524	6243	591	576	527	0	7936	-4407	-5	-43937
Oct-2026	0	206	461	44	1214	144	709	676	3455	4955	681	580	544	0	6759	-3310	5	-47247
Nov-2026	0	199	307	30	1232	140	704	601	3213	3911	748	553	528	0	5738	-2531	5	-49779
Dec-2026	0	206	231	22	1961	144	745	380	3690	3541	863	563	546	0	5513	-1829	6	-51608
Jan-2027	38098	206	233	23	9240	144	234	-136	48043	2819	1995	1095	620	0	6529	41509	6	-10099
Feb-2027	3345	186	316	31	12874	130	159	-769	16272	2367	2208	1058	513	0	6146	10121	5	23
Mar-2027	14387	206	408	39	6638	144	200	98	22119	3096	2252	1294	581	0	7223	14891	6	14913
Apr-2027	1248	199	564	55	2123	140	322	514	5165	3810	1677	1125	539	0	7152	-1991	4	12922
May-2027	451	206	655	63	3621	144	341	560	6041	4704	1249	1071	552	0	7576	-1524	-10	11398
Jun-2027	1317	199	705	68	1738	140	431	699	5296	5352	1129	955	534	0	7970	-2667	-6	8731
Jul-2027	0	206	876	85	1962	144	501	731	4504	6773	948	902	548	0	9171	-4660	-6	4070
Aug-2027	0	206	802	78	2061	144	547	710	4547	6865	830	832	547	0	9074	-4521	-6	-450
Sep-2027	0	199	635	61	1053	140	566	675	3328	5633	734	753	528	0	7649	-4312	-9	-4762
Oct-2027	0	206	466	45	5225	144	486	377	6948	4611	829	824	546	0	6811	132	5	-4630
Nov-2027	0	199	310	30	4539	140	456	342	6017	3580	894	824	529	0	5828	184	5	-4447
Dec-2027	4039	206	233	23	17482	144	79	-821	21385	3201	1542	1068	555	0	6366	15013	6	10566
Jan-2028	2861	206	236	23	7425	144	139	153	11186	2744	1537	1113	555	0	5949	5231	6	15798
Feb-2028	6482	192	319	31	1959	135	210	448	9777	2400	1666	1039	526	0	5631	4141	5	19939
Mar-2028	2003	206	412	40	1611	144	336	595	5348	3025	1591	1053	555	0	6224	-884	7	19055
Apr-2028	125	199	570	56	1927	140	398	681	4095	3721	1386	939	532	0	6578	-2479	-4	16576
May-2028	655	206	662	65	1662	144	461	757	4612	4585	1355	905	550	0	7394	-2776	-6	13800
Jun-2028	0	199	712	69	1009	140	492	746	3368	5208	1074	813	530	0	7625	-4252	-6	9548
Jul-2028	0	206	884	86	1111	144	548	788	3767	6593	920	783	547	0	8843	-5070	-6	4477
Aug-2028	0	206	810	79	1072	144	593	785	3689	6674	838	736	546	0	8794	-5099	-6	-622
Sep-2028	0	199	641	62	1690	140	552	694	3979	5480	839	685	527	0	7532	-3547	-6	-4169
Oct-2028	1252	206	470	46	1196	144	623	689	4626	4478	964	696	548	0	6687	-2066	5	-6235
Nov-2028	1021	199	313	31	4932	140	514	423	7572	3478	1053	755	531	0	5817	1750	5	-4485
Dec-2028	8380	206	236	23	6909	144	375	222	16495	3109	1471	949	563	0	6092	10396	6	5912
Jan-2029	2325	206	238	23	1557	144	488	494	5475	2744	1460	918	555	0	5677	-207	6	5705
Feb-2029	80	186	322	32	2281	130	458	470	3960	2317	1253	803	497	0	4869	-914	5	4791
Mar-2029	0	206	416	41	2222	144	547	624	4200	3025	1431	847	549	0	5852	-1658	6	3132
Apr-2029	0	199	576	56	1959	140	567	620	4116	3721	1238	771	530	0	6261	-2139	-6	993
May-2029	0	206	668	66	1281	144	604	666	3635	4585	1148	754	547	0	7035	-3393	-6	-2400
Jun-2029	0	199	719	70	982	140	633	682	3424	5208	991	686	529	0	7414	-3985	-6	-6385
Jul-2029	17	206	893	88	1055	144	684	732	3818	6593	889	664	546	0	8691	-4867	-6	-11252
Aug-2029	0	206	818	80	1124	144	703	730	3805	6674	838	627	545	0	8684	-4874	-6	-16126
Sep-2029	185	199	647	63	1116	140	699	667	3715	5480	825	585	527	0	7417	-3695	-6	-19821
Oct-2029	0	206	475	47	1307	144	743	616	3537	4478	922	588	545	0	6533	-3002	5	-22823
Nov-2029	1300	199	317	31	1609	140	721	463	4780	3478	1009	574	530	0	5591	-817	5	-23639

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Dec-2029	2342	206	238	23	2127	144	746	403	6230	3109	1174	607	551	0	5441	784	6	-22855
Jan-2030	6649	206	240	24	30367	144	364	-2332	35662	2744	2840	926	561	0	7070	28585	6	5730
Feb-2030	41911	186	325	32	11284	130	68	-188	53749	2317	4454	1410	575	0	8756	44987	5	50717
Mar-2030	7582	206	420	41	14901	144	205	-252	23247	3025	5042	1653	578	0	10298	12944	6	63661
Apr-2030	4344	199	581	57	15593	140	223	-394	20743	3721	6603	1694	547	0	12565	8174	4	71835
May-2030	10478	206	675	66	1503	144	280	787	14138	4585	3066	1571	573	0	9795	4350	-6	76184
Jun-2030	114	199	726	71	4951	140	276	501	6978	5208	1957	1376	536	0	9077	-2093	-6	74092
Jul-2030	0	206	902	89	1313	144	395	824	3872	6593	1477	1227	550	0	9847	-5969	-6	68123
Aug-2030	0	206	826	81	1432	144	444	825	3958	6674	1238	1108	548	0	9568	-5604	-6	62519
Sep-2030	400	199	653	64	1537	140	457	752	4203	5480	1139	1008	531	0	8158	-3947	-7	58571
Oct-2030	629	206	479	47	1351	144	512	735	4104	4478	1260	995	549	0	7282	-3184	5	55387
Nov-2030	2591	199	320	31	1660	140	508	681	6129	3478	1375	953	535	0	6341	-217	5	55171
Dec-2030	2648	206	240	24	2425	144	505	656	6848	3109	1598	979	554	0	6240	603	6	55773
Jan-2031	0	206	243	24	1460	144	580	661	3317	2744	1583	922	550	0	5799	-2487	6	53286
Feb-2031	0	186	328	32	1458	130	547	580	3262	2317	1430	793	496	0	5035	-1778	5	51508
Mar-2031	0	206	424	42	971	144	629	626	3042	3025	1558	836	549	0	5968	-2931	5	48577
Apr-2031	0	199	587	58	2415	140	626	600	4625	3721	1551	776	531	0	6580	-1948	-6	46629
May-2031	0	206	681	67	2214	144	664	643	4620	4585	1513	767	548	0	7413	-2788	-6	43841
Jun-2031	0	199	733	72	1101	140	657	650	3551	5208	1305	699	530	0	7742	-4185	-6	39656
Jul-2031	0	206	910	90	1017	144	693	716	3776	6593	1159	682	547	0	8980	-5199	-6	34457
Aug-2031	0	206	834	82	1028	144	708	722	3724	6674	1052	646	546	0	8917	-5187	-6	29270
Sep-2031	0	199	660	65	1013	140	700	665	3441	5480	1008	600	528	0	7616	-4168	-6	25102
Oct-2031	0	206	484	48	1029	144	740	651	3301	4478	1102	600	546	0	6726	-3430	5	21672
Nov-2031	0	199	323	32	935	140	731	599	2958	3478	1142	566	529	0	5715	-2761	5	18911
Dec-2031	0	206	243	24	958	144	769	596	2940	3109	1275	576	547	0	5507	-2573	6	16338
Jan-2032	321	206	245	24	1282	144	753	560	3536	2744	1349	597	548	0	5238	-1708	6	14630
Feb-2032	2505	192	332	33	2135	135	676	471	6478	2400	1322	607	517	0	4846	1627	5	16257
Mar-2032	837	206	428	42	1924	144	737	527	4844	3025	1407	639	550	0	5621	-783	6	15474
Apr-2032	558	199	593	58	996	140	724	568	3835	3721	1242	597	532	0	6092	-2251	-6	13222
May-2032	0	206	688	67	1455	144	778	585	3923	4585	1216	588	548	0	6937	-3008	-6	10215
Jun-2032	0	199	740	73	1401	140	774	587	3913	5208	1095	544	529	0	7376	-3457	-6	6758
Jul-2032	0	206	919	90	1001	144	813	668	3842	6593	946	531	546	0	8615	-4768	-6	1990
Aug-2032	82	206	842	83	1045	144	825	678	3905	6674	862	507	545	0	8588	-4677	-6	-2687
Sep-2032	0	199	666	65	1020	140	811	625	3527	5480	837	475	527	0	7319	-3786	-6	-6474
Oct-2032	300	206	489	48	1043	144	848	613	3691	4478	938	486	545	0	6447	-2762	5	-9236
Nov-2032	0	199	326	32	1396	140	805	509	3407	3478	1014	482	528	0	5502	-2101	5	-11337
Dec-2032	0	206	245	24	1526	144	843	439	3426	3109	1148	500	546	0	5304	-1883	6	-13220
Jan-2033	7232	206	247	24	5141	144	666	86	13747	3235	1389	674	561	0	5859	7893	-5	-5326
Feb-2033	13336	186	335	33	4009	130	522	-78	18472	2728	1519	727	522	0	5495	12969	8	7643
Mar-2033	4189	206	432	42	3200	144	617	237	9068	3512	1536	787	561	0	6396	2677	-6	10320
Apr-2033	3173	199	598	58	1272	140	657	520	6617	4236	1274	727	539	0	6775	-153	-6	10167
May-2033	0	206	694	68	1581	144	704	543	3940	5171	1109	685	550	0	7515	-3569	-6	6599
Jun-2033	0	199	747	73	1015	140	732	598	3503	5833	901	603	530	0	7867	-4358	-6	2240

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Jul-2033	0	206	928	91	1077	144	777	636	3858	7587	756	572	547	0	9461	-5597	-6	-3357
Aug-2033	0	206	850	83	1108	144	793	633	3817	7688	652	534	546	0	9420	-5597	-6	-8954
Sep-2033	0	199	672	66	1142	140	776	586	3580	6396	613	494	527	0	8031	-4445	-6	-13399
Oct-2033	273	206	493	48	1186	144	806	583	3740	5087	713	502	546	0	6848	-3114	5	-16513
Nov-2033	3941	199	329	32	8148	140	560	-342	13007	4013	911	630	536	0	6090	6912	5	-9601
Dec-2033	1611	206	247	24	13152	144	378	-1296	14467	3633	1082	740	551	0	6007	8455	6	-1146
Jan-2034	0	206	250	24	981	144	554	517	2677	2819	1072	688	548	0	5127	-2456	6	-3602
Feb-2034	0	186	338	33	954	130	541	550	2732	2367	960	593	495	0	4415	-1688	5	-5290
Mar-2034	0	206	436	42	1006	144	641	631	3107	3096	1029	617	548	0	5289	-2188	5	-7478
Apr-2034	0	199	604	59	976	140	653	618	3248	3810	892	555	530	0	5787	-2538	0	-10016
May-2034	0	206	701	68	1031	144	709	642	3500	4704	820	534	547	0	6605	-3098	-8	-13114
Jun-2034	0	199	754	73	1031	140	714	625	3535	5352	706	485	529	0	7072	-3531	-6	-16645
Jul-2034	0	206	936	91	1111	144	758	655	3901	6773	606	470	545	0	8395	-4488	-6	-21133
Aug-2034	0	206	858	83	1135	144	776	650	3853	6865	539	447	544	0	8396	-4537	-6	-25670
Sep-2034	0	199	679	66	1201	140	755	600	3639	5633	548	422	526	0	7130	-3483	-8	-29153
Oct-2034	0	206	498	48	1207	144	793	596	3493	4611	639	429	544	0	6224	-2736	5	-31890
Nov-2034	0	199	332	32	1070	140	782	560	3115	3580	701	412	527	0	5221	-2111	5	-34001
Dec-2034	0	206	250	24	1031	144	825	564	3044	3201	808	425	546	0	4980	-1941	6	-35943
Jan-2035	0	206	252	24	1808	144	819	383	3636	2819	900	432	547	0	4698	-1067	6	-37010
Feb-2035	5222	186	341	33	3726	130	628	218	10485	2367	942	515	504	0	4327	6152	5	-30858
Mar-2035	1376	206	440	42	1770	144	755	378	5112	3096	1007	551	551	0	5205	-101	8	-30959
Apr-2035	1359	199	609	59	2019	140	742	509	5635	3810	983	514	533	0	5840	-199	-6	-31158
May-2035	983	206	707	68	1530	144	781	591	5010	4704	917	501	549	0	6672	-1656	-6	-32813
Jun-2035	0	199	761	73	1335	140	782	583	3872	5352	738	448	529	0	7067	-3189	-6	-36002
Jul-2035	12	206	945	91	1108	144	821	613	3939	6773	621	430	545	0	8370	-4425	-6	-40428
Aug-2035	0	206	866	83	1136	144	832	610	3877	6865	544	408	544	0	8361	-4478	-6	-44906
Sep-2035	0	199	685	66	1101	140	816	570	3577	5633	526	384	526	0	7069	-3486	-7	-48392
Oct-2035	636	206	503	48	2384	144	782	531	5234	4611	612	466	545	0	6235	-1006	5	-49398
Nov-2035	364	199	335	32	1205	140	792	519	3586	3580	679	448	528	0	5236	-1656	5	-51054
Dec-2035	1486	206	252	24	3268	144	739	476	6597	3201	817	548	549	0	5114	1477	6	-49577

Outdoor Water Demands and the Supplies Used to Meet Those Demands in the Nine West Side Communities to be Developed by Newhall Land

Santa Clarita Valley, California

Prepared by GSI Water Solutions (August 2015)

	Baseline (No Reuse)		NHR WRP Project (With Reuse)	
	Annual Volume (acre-feet/year)	Percent of Outdoor Demand	Annual Volume (acre-feet/year)	Percent of Outdoor Demand
OUTDOOR DEMANDS				
Outdoor Potable Demand	3,161	31%	3,161	31%
Outdoor Nonpotable Demand	7,102	69%	7,102	69%
Total Outdoor Demand	**10,263**	**100%**	**10,263**	**100%**
SUPPLIES USED TO MEET OUTDOOR DEMANDS				
Imported Water	7,102	69%	0	0%
Recycled Water from NRH WRP	0	0%	5,697	56%
Recycled water from Other WRPs	0	0%	1,405	14%
Local Groundwater from MZ5	3,161	31%	3,161	31%
Total Supply for Outdoor Demands	**10,263**	**100%**	**10,263**	**100%**

Baseline project: All nine communities are built, but no treated water from either the NHR WRP or other WRPs is used to meet outdoor demands.

NHR WRP project: All nine communities are built, and treated water from the NHR WRP and the Valencia WRP is used to meet outdoor demands.

Table D-3

APPENDIX E

Overview of Water Balance Inflow Term Development

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APPENDIX E

Overview of Water Balance Inflow Term Development

Water Balance Approach

The water balance terms prepared for this study were initially prepared based on the hydrologic information available from various sources as well as documentation and data from previously constructed groundwater models (CH2MHill, 2004, 2005). The water budget terms were submitted to the Regional Water Management Group (RWMG) for review and comment. Comments were received by Valencia Water Company (VWC) via their consultant GSI Water Solutions of Santa Barbara California. GSI Water developed and maintains a calibrated groundwater model for the East Subbasin, identified as the "Purveyors' Regional Groundwater Flow Model, Upper Santa Clara River Groundwater Basin, East Subbasin" (Regional Model). The Regional Model is a modified and updated version of the original CH2MHill model and used by VWC for groundwater management.

The comments received indicated that, with the exception of two inflow terms, the water balance developed by GEOSCIENCE was in concert with the results generated by the Regional Model. As an example, the average annual inflow into the alluvial aquifers for the period 2001 through 2011 (the period used for the ambient water quality calculation period) was calculated by the Purveyor's Model to be 87,469 acre-ft/yr, after adding a septic contribution component (the model did account for a contribution from septic leakage, but has since been modified). The GEOSCIENCE calculated average annual inflow for this period was 87,302 acre-ft/yr. Based on the closeness of fit, and in consultation with the RWMG, the model-generated inflow and outflow terms from the Regional Model were adopted for the water balance inflow and outflow terms and for the subsequent salt balance calculations with two essential modifications. Those modifications are discussed below.

The Regional Model is a calibrated groundwater flow model and is appropriate for evaluating groundwater management strategies. However, the Regional Model does not simulate terms for mountain front recharge. Also, as stated previously, it was modified for this study to include leakage volume from septic systems. The result is that the model will correctly simulate total volumes of water as inflow and outflow terms, and is correctly calibrated to groundwater levels. However, the model, as used, does not need to differentiate whether the source of water which drives the groundwater levels is from mountain front recharge, deep percolation of septage, or deep percolation of applied water. The GEOSCIENCE calculated volume of return flows from applied water and the volume of deep percolation of rainfall are slightly different from those calculated by the Purveyor's Model. For example, the GEOSCIENCE calculated volume of deep percolation of applied water is 9,182 acre-ft/yr, as compared to 4,884 acre-ft/yr calculated by the Purveyor's Model (both estimates include septage and irrigation return flows). The GEOSCIENCE calculated volume of deep percolation of rainfall is 10,422 acre-ft/yr and the Purveyor's Model calculated value is 14,760 acre-ft/yr.

For purposes of historical and predicted salt balances, the source of the water is essential – since the salt loading applied to each source of water varies widely. For example the total dissolved solids (TDS) concentration applied to rainwater after considering a concentration factor for the efficiency of vegetation in the watershed, is 100 milligrams per liter (mg/L). The TDS concentration for septage is approximately 780 mg/L and return flows from applied irrigation water are approximately 2,200 mg/L (see Table B-7 through B-11 of this study). Therefore, the volume attributed to the source of water in the salt balance is significant. The derivation of the salt loading factors used for the salt balance are discussed in Section 6.3.2.

Inflow Terms

The following inflow terms and their values were obtained from the Regional Model and are used for (1) the 2001 through 2011 water balance, and (2) for preparing the salt balance:

- Stream leakage,
- Castaic Dam underflow,
- Subsurface inflow from the Acton subbasin and upstream tributaries, and
- Upward leakage from the Saugus Formation
- Lateral inflow from adjoining subunits.

A discussion of the calculation of the water balance inflow terms in the model is presented in the report entitled “Calibrated Update of the Regional Groundwater Flow Model for the Santa Clara River Valley Groundwater Basin, East Subbasin” (GSI Water Solutions, 2012).

Calculation of Deep Percolation of Rainfall and Applied Water

The average annual volume of water from combined deep percolation of rainfall and deep percolation of applied water was calculated by the Regional Model to be 19,644 acre-ft/yr for the period 2011 through 2011. GEOSCIENCE modified the components of the inflow terms while maintaining the overall inflow volume of the combined terms of septage, applied water, and areal recharge from precipitation at 19,644 acre-ft/yr. The inflow terms described in Section 6.2.1.1 through 6.2.1.5 were based on the output from the Regional Model, but modified to facilitate a more accurate accounting of salt loading in the subunits. All other terms from the Purveyor’s Model were adopted for this study since they are consistent with the independent evaluation of those terms conducted by GEOSCIENCE for this study.

APPENDIX F

Annual Water Balances and Mass Loading Tables and Plots - 2001-2011

Annual Water Balance and Mass Loading under "No Project" Conditions – 2012-2035

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APPENDIX F

ANNUAL WATER BALANCES AND MASS LOADING TABLES AND PLOTS – 2001-2011
ANNUAL WATER BALANCE AND MASS LOADING UNDER
"LAND USE BUILD-OUT" CONDITIONS – 2012-2035

APPENDIX F (cont.)

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Table F-1

Historical Annual Groundwater Balance - Management Zone 1 (Santa Clara - Mint Canyon Subunit) - 2001 through 2011																
Year	Deep Perc of Precip [acre-ft]	Deep Perc from Septic Systems [acre-ft]	Deep Perc of Applied Water [acre-ft]	Stream Leakage [acre-ft]	Castaic Dam Underflow [acre-ft]	Subsurface Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TOTAL INFLOW [acre-ft]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow to Management Zone 4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	Change in GW Storage [acre-ft]	Cum. Change in GW Storage Since Jan. 2001 [acre-ft]
2001	4,317	979	1,119	14,053	0	2,504	4,937	27,909	12,951	306	1,300	8,654	20	23,232	4,677	4,677
2002	9	979	1,119	499	0	3,028	6,981	12,615	11,230	112	806	8,720	16	20,885	-8,270	-3,592
2003	1,720	979	1,119	5,129	0	2,984	5,224	17,155	8,975	54	629	8,524	17	18,199	-1,044	-4,636
2004	2,969	979	1,119	7,110	0	3,162	4,373	19,713	8,394	0	512	8,426	26	17,358	2,355	-2,281
2005	9,617	979	1,119	65,396	0	2,116	-2,643	76,583	14,107	22,862	4,607	9,838	84	51,499	25,084	22,803
2006	1,536	979	1,119	4,686	0	2,618	6,642	17,580	14,203	1,662	2,121	10,409	43	28,439	-10,859	11,944
2007	0	979	1,119	125	0	3,154	7,040	12,417	12,391	26	822	10,134	26	23,399	-10,981	963
2008	3,415	979	1,119	8,079	0	2,882	6,013	22,487	13,232	58	882	10,148	26	24,346	-1,859	-896
2009	849	979	1,119	1,109	0	3,319	6,934	14,308	12,008	2	579	9,270	16	21,874	-7,566	-8,462
2010	6,337	979	1,119	18,924	0	2,614	3,752	33,725	12,275	143	1,050	8,696	17	22,181	11,543	3,082
2011	2,400	979	1,119	7,337	0	2,569	5,544	19,948	12,829	440	1,301	8,916	21	23,508	-3,560	-478

Historical Annual Groundwater Balance - Management Zone 2 (Placerita Subunit) - 2001 through 2011																	
Year	Deep Perc of Precip [acre-ft]	Deep Perc from Septic Systems [acre-ft]	Deep Perc of Applied Water [acre-ft]	Stream Leakage [acre-ft]	Castaic Dam Underflow [acre-ft]	Subsurface Inflow From Upstream Tributaries [acre-ft]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TOTAL INFLOW [acre-ft]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow to Management Zone 3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	Change in GW Storage [acre-ft]	Cum. Change in GW Storage Since Jan. 2001 [acre-ft]
2001	416	560	157	1,380	0	0	282	2,795	0	0	872	364	632	1,868	927	927
2002	1	560	157	0	0	0	575	1,293	0	0	578	408	666	1,651	-358	569
2003	166	560	157	637	0	0	507	2,027	0	0	588	414	645	1,646	381	949
2004	286	560	157	1,037	0	0	413	2,453	0	0	655	412	725	1,793	660	1,609
2005	928	560	157	1,415	0	0	221	3,281	0	0	1,184	392	778	2,353	927	2,536
2006	148	560	157	561	0	0	559	1,985	0	0	1,013	403	726	2,142	-157	2,379
2007	0	560	157	0	0	0	695	1,412	0	0	615	462	744	1,821	-409	1,971
2008	329	560	157	754	0	0	559	2,359	0	0	665	458	775	1,898	461	2,432
2009	82	560	157	271	0	0	648	1,717	0	0	609	448	745	1,802	-85	2,347
2010	611	560	157	1,568	0	0	348	3,244	0	0	867	415	828	2,110	1,134	3,481
2011	231	560	157	912	0	0	441	2,302	0	0	985	445	875	2,306	-4	3,477

Table F-3

Historical Annual Groundwater Balance - Management Zone 3 (South Fork Subunit) - 2001 through 2011																	
Year	Deep Perc of Precip [acre-ft]	Deep Perc from Septic Systems [acre-ft]	Deep Perc of Applied Water [acre-ft]	Stream Leakage [acre-ft]	Castaic Dam Underflow [acre-ft]	Subsurface Inflow From Upstream Tributaries [acre-ft]	Subsurface Inflow From Management Zone 2 [acre-ft]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TOTAL INFLOW [acre-ft]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow to Management Zone 4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	Change in GW Storage [acre-ft]	Cum. Change in GW Storage Since Jan. 2001 [acre-ft]
2001	2,645	375	1,057	7,210	0	0	364	3,429	15,080	0	0	3,768	3,687	4,011	11,466	3,614	3,614
2002	6	375	1,057	0	0	0	408	3,539	5,384	0	0	2,484	3,235	3,980	9,700	-4,316	-702
2003	1,054	375	1,057	4,077	0	0	414	3,721	10,696	0	0	2,666	3,300	3,734	9,699	997	295
2004	1,819	375	1,057	5,040	0	0	412	4,228	12,931	0	0	2,921	3,724	4,471	11,117	1,815	2,110
2005	5,892	375	1,057	7,351	0	0	392	3,813	18,880	0	0	4,991	4,419	5,271	14,681	4,200	6,309
2006	941	375	1,057	4,362	0	0	403	4,258	11,396	0	0	4,276	4,189	4,777	13,242	-1,846	4,463
2007	0	375	1,057	0	0	0	462	4,795	6,689	0	0	2,651	4,007	4,589	11,247	-4,559	-95
2008	2,092	375	1,057	4,285	0	0	458	3,847	12,115	0	0	2,911	3,522	4,643	11,076	1,039	944
2009	520	375	1,057	2,662	0	0	448	4,032	9,093	0	0	2,702	3,334	4,563	10,600	-1,506	-562
2010	3,882	375	1,057	7,831	0	0	415	3,633	17,193	0	0	3,912	3,476	5,519	12,907	4,287	3,724
2011	1,470	375	1,057	5,119	0	0	445	3,866	12,332	0	0	4,303	3,599	5,821	13,723	-1,392	2,333

Table F-4

Historical Annual Groundwater Balance - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - 2001 through 2011																			
Year	Deep Perc of Precip [acre-ft]	Deep Perc from Septic Systems [acre-ft]	Deep Perc of Applied Water [acre-ft]	Stream Leakage [acre-ft]	Castaic Dam Underflow [acre-ft]	Subsurface Inflow From Upstream Tributaries [acre-ft]	Subsurface Inflow From Management Zone 1 [acre-ft]	Subsurface Inflow From Management Zone 3 [acre-ft]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TOTAL INFLOW [acre-ft]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow to Management Zone 5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	Change in GW Storage [acre-ft]	Cum. Change in GW Storage Since Jan. 2001 [acre-ft]
2001	4,050	306	1,106	22,110	0	0	8,654	3,687	511	40,424	9,179	12,853	3,500	7,718	967	34,217	6,206	6,206
2002	8	306	1,106	3,741	0	0	8,720	3,235	6,706	23,823	11,235	9,343	1,705	7,453	939	30,675	-6,852	-645
2003	1,613	306	1,106	6,605	0	0	8,524	3,300	5,112	26,566	9,509	8,966	1,062	7,814	961	28,313	-1,746	-2,391
2004	2,785	306	1,106	10,028	0	0	8,426	3,724	3,004	29,380	9,609	8,347	1,022	7,809	1,114	27,902	1,478	-913
2005	9,022	306	1,106	18,269	0	0	9,838	4,419	3,839	46,800	11,484	16,958	3,301	7,351	1,049	40,142	6,658	5,744
2006	1,441	306	1,106	7,093	0	0	10,409	4,189	6,210	30,755	12,537	12,089	2,447	6,958	1,056	35,087	-4,331	1,413
2007	0	306	1,106	3,895	0	0	10,134	4,007	5,395	24,842	11,697	8,883	1,233	8,021	1,137	30,972	-6,130	-4,717
2008	3,204	306	1,106	13,224	0	0	10,148	3,522	3,759	35,268	13,435	9,892	1,530	7,421	1,058	33,337	1,931	-2,786
2009	796	306	1,106	4,718	0	0	9,270	3,334	5,005	24,536	11,011	7,588	1,021	7,856	1,195	28,671	-4,135	-6,921
2010	5,945	306	1,106	18,673	0	0	8,696	3,476	1,213	39,415	11,110	10,064	1,735	7,762	1,336	32,008	7,408	486
2011	2,251	306	1,106	9,147	0	0	8,916	3,599	4,528	29,854	10,481	10,816	2,143	7,580	1,247	32,268	-2,414	-1,927

Table F-5

Historical Annual Groundwater Balance - Management Zone 5 (Castaic Subunit) - 2001 through 2011																		
Year	Deep Perc of Precip [acre-ft]	Deep Perc from Septic Systems [acre-ft]	Deep Perc of Applied Water [acre-ft]	Stream Leakage [acre-ft]	Castaic Dam Underflow [acre-ft]	Subsurface Inflow From Upstream Tributaries [acre-ft]	Subsurface Inflow From Manageme nt Zone 4 [acre-ft]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TOTAL INFLOW [acre-ft]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	Change in GW Storage [acre-ft]	Cum. Change in GW Storage Since Jan. 2001 [acre-ft]
2001	4,939	212	2,341	10,375	1,700	0	7,718	12,240	39,526	14,623	12,589	2,257	6,755	400	36,623	2,903	2,903
2002	10	212	2,341	5,845	1,700	0	7,453	13,394	30,955	15,089	9,299	1,878	6,617	381	33,264	-2,309	594
2003	1,967	212	2,341	8,122	1,700	0	7,814	12,393	34,549	14,543	11,096	1,985	6,670	392	34,687	-138	456
2004	3,397	212	2,341	9,259	1,705	0	7,809	12,294	37,017	15,038	11,643	2,017	6,721	398	35,817	1,200	1,657
2005	11,002	212	2,341	10,550	1,700	0	7,351	13,419	46,575	12,493	18,118	2,986	6,957	449	41,003	5,571	7,228
2006	1,758	212	2,341	10,653	1,700	0	6,958	12,884	36,506	15,729	12,660	2,492	6,695	517	38,093	-1,587	5,640
2007	0	212	2,341	5,242	1,700	0	8,021	13,318	30,833	14,108	10,111	2,023	6,632	455	33,330	-2,496	3,144
2008	3,907	212	2,341	11,606	1,705	0	7,421	11,806	38,998	14,546	13,125	2,224	6,752	427	37,074	1,924	5,068
2009	971	212	2,341	6,768	1,700	0	7,856	13,375	33,223	16,386	10,192	1,923	6,650	435	35,586	-2,363	2,705
2010	7,249	212	2,341	12,207	1,700	0	7,762	11,711	43,182	17,193	12,500	2,141	6,802	456	39,092	4,090	6,795
2011	2,745	212	2,341	11,652	1,700	0	7,580	12,400	38,630	16,935	12,332	2,290	6,725	447	38,730	-100	6,696

Table F-6

Historical Annual Groundwater Balance - Entire Alluvial Aquifer - 2001 through 2011																
Year	Deep Perc of Precip [acre-ft]	Deep Perc from Septic Systems [acre-ft]	Deep Perc of Applied Water [acre-ft]	Stream Leakage [acre-ft]	Castaic Dam Underflow [acre-ft]	Subsurface Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TOTAL INFLOW [acre-ft]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	Change in GW Storage [acre-ft]	Cum. Change in GW Storage Since Jan. 2001 [acre-ft]
2001	16,368	2,432	5,780	55,129	1,700	2,504	21,397	105,310	36,753	25,749	11,695	6,755	6,030	86,983	18,327	18,327
2002	34	2,432	5,780	10,084	1,700	3,028	31,195	54,253	37,554	18,754	7,451	6,617	5,980	76,356	-22,103	-3,775
2003	6,519	2,432	5,780	24,571	1,700	2,984	26,957	70,942	33,027	20,117	6,930	6,670	5,749	72,493	-1,550	-5,325
2004	11,257	2,432	5,780	32,474	1,705	3,162	24,312	81,121	33,041	19,990	7,128	6,721	6,733	73,613	7,508	2,183
2005	36,460	2,432	5,780	102,982	1,700	2,116	18,648	170,118	38,084	57,938	17,069	6,957	7,630	127,678	42,440	44,623
2006	5,825	2,432	5,780	27,356	1,700	2,618	30,552	76,262	42,468	26,411	12,349	6,695	7,118	95,042	-18,780	25,843
2007	0	2,432	5,780	9,261	1,700	3,154	31,243	53,570	38,196	19,020	7,344	6,632	6,951	78,144	-24,573	1,270
2008	12,948	2,432	5,780	37,948	1,705	2,882	25,983	89,678	41,213	23,075	8,212	6,752	6,929	86,180	3,497	4,767
2009	3,218	2,432	5,780	15,527	1,700	3,319	29,994	61,970	39,405	17,782	6,834	6,650	6,954	77,625	-15,655	-10,888
2010	24,024	2,432	5,780	59,205	1,700	2,614	20,655	116,410	40,578	22,707	9,705	6,802	8,155	87,948	28,462	17,574
2011	9,098	2,432	5,780	34,167	1,700	2,569	26,779	82,525	40,246	23,588	11,024	6,725	8,409	89,993	-7,467	10,107

Summary of Assumptions for TDS, Chloride, Nitrate and Sulfate Mass Loading for Water Balance Inflow and Outflow Parameters
Management Zone 1a (Santa Clara - Mint Canyon Subunit)

		Inflow terms	TDS Concentration [mg/L]	Data Sources	Chloride Concentration [mg/L]	Data Sources	Nitrate Concentration [mg/L]	Data Sources	Sulfate Concentration [mg/L]	Data Sources
MZ 1(SC-Mint Canyon Subunit)	Inflow	Deep Percolation from Precipitation	100	TDS in precipitation is 25mg/L[1] and concentrated by four, 25*4=100[2]	40	Chloride in precipitation is 10mg/L[1] and concentrated by four, 10*4=40 [2]	9	Nitrate in precipitation is 2.2mg/L[1] and concentrated by four, 2.2*4=8.8[2]	40	Sulfate in precipitation is 10mg/L[1] and concentrated by four, 10*4=40[2]
		Septic Water	777	Potable water quality equals 475mg/L[3] + urban increment 225mg/L[4] and tank efficiency 90%[5] , (475mg/L+225mg/L)/0.9 = 777mg/L	113	Potable water quality equals 82mg/L[3] + urban increment 20mg/L[4] and tank efficiency 90%[5] , (82mg/L+20mg/L)/0.9 = 113mg/L	45	Potable water quality equals 10.3mg/L[3] + urban increment 30mg/L[4] and tank efficiency 90%[5] , (10.3mg/L+30mg/L)/0.9 = 44.7mg/L	124	Potable water quality equals 92mg/L[3] + urban increment 20mg/L[4] and tank efficiency 90%[5] , (92mg/L+20mg/L)/0.9 = 124mg/L
		Applied Water	2240	Potable water quality equals 475mg/L[3]+ urban increment 225mg/L[4] and concentrated by four and 20% are absorbed[6] (475mg/L+225mg/L)*4*0.8 = 2240mg/L	326	Potable water quality equals 82mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (82mg/L+20mg/L)*4*0.8 = 326mg/L	16	Potable water quality equals 10.3mg/L[3]+ urban increment 30mg/L[4] and concentrated by four and 90% are absorbed[6] (10.3mg/L+30mg/L)*4*0.1 = 16.1mg/L	358	Potable water quality equals 92mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (92mg/L+20mg/L)*4*0.8 = 358mg/L
		Stream Leakage	722	Value determined as a sensitivity parameter to result in ambient concentration close to historical measurement	89	Value determined as a sensitivity parameter to result in ambient concentration close to historical measurement	20	Value determined as a sensitivity parameter to result in ambient concentration close to historical measurement	140	Value determined as a sensitivity parameter to result in ambient concentration close to historical measurement
		Subsurface Inflow From Acton Basin	722	Determined by water quality from Well NCWD - 1 - Pinetree	98	Determined by water quality from Well NCWD - 1 - Pinetree	17	Determined by water quality from Well NCWD - 1 - Pinetree	108	Determined by water quality from Well NCWD - 1 - Pinetree
		Upward Leakage from Saugus	723	Determined by water quality from Well VWC - 206, VWC - 160, VWC - 205, VWC - 201, NCWD - 11 - Newhall, NCWD - 13 - Newhall, and NCWD - 12 - Newhall	34	Determined by water quality from Well VWC - 206, VWC - 160, VWC - 205, VWC - 201, NCWD - 11 - Newhall, NCWD - 13 - Newhall, and NCWD - 12 - Newhall	20	Determined from Saugus ambient concentration	235	Determined from Saugus ambient concentration
	Outflow	Evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation
		Pumping, Groundwater Discharge to Streams, Subsurface Outflow to Management Zone 4 and Downward Leakage to Saugus	720	2001 Groundwater Concentration	74	2001 Groundwater Concentration	25	2001 Groundwater Concentration	141	2001 Groundwater Concentration

[1]TDS, Chloride and Nitrate concentrations for precipitation is based on Dantane (1978). Sulfate concentration for precipitation is based on Vong (1989).
[2] The irrigation efficiency in this area is 25%. It means rain falls on the watershed, vegetation will consume 75% of the precipitation concentrating the salt into 25% of the volume. This results in an increase in concentration of four times. Therefore rainfall percolating to the groundwater system will contain four times the salt content
[3]Potable quality is weighted by volume from purveyor water quality data.
[4] Urban increment is based on personal communication with Michael Welch, PhD(2011).
[5]The septic loss factor is 0.1, which indicates that 10 % of water is lost when percolating, thus the water is concentrated to 90% of its initial volume and thererfore results in an increase in concentration.
6 The absorption factor is 0.8. An absorption factor accounts for the portion of the applied water absorbed by the system, which indicates that 20 % of salt is taken. For nitrate, the absorption factor is 0.1.

Table F-7

Summary of Assumptions for TDS, Chloride, Nitrate and Sulfate Mass Loading for Water Balance Inflow and Outflow Parameters
Management Zone 1b (Santa Clara - Mint Canyon Subunit)

		Inflow terms	TDS Concentration [mg/L]	Data Sources	Chloride Concentration [mg/L]	Data Sources	Nitrate Concentration [mg/L]	Data Sources	Sulfate Concentration [mg/L]	Data Sources
MZ 1(SC-Mint Canyon Subunit)	Inflow	Deep Percolation from Precipitation	100	TDS in precipitation is 25mg/L[1] and concentrated by four, 25*4=100[2]	40	Chloride in precipitation is 10mg/L[1] and concentrated by four, 10*4=40 [2]	9	Nitrate in precipitation is 2.2mg/L[1] and concentrated by four, 2.2*4=8.8[2]	40	Sulfate in precipitation is 10mg/L[1] and concentrated by four, 10*4=40[2]
		Septic Water	777	Potable water quality equals 475mg/L[3] + urban increment 225mg/L[4] and tank efficiency 90%[5], (475mg/L+225mg/L)/0.9 = 777mg/L	113	Potable water quality equals 82mg/L[3] + urban increment 20mg/L[4] and tank efficiency 90%[5], (82mg/L+20mg/L)/0.9 = 113mg/L	45	Potable water quality equals 10.3mg/L[3] + urban increment 30mg/L[4] and tank efficiency 90%[5], (10.3mg/L+30mg/L)/0.9 = 44.7mg/L	124	Potable water quality equals 92mg/L[3] + urban increment 20mg/L[4] and tank efficiency 90%[5], (92mg/L+20mg/L)/0.9 = 124mg/L
		Applied Water	2240	Potable water quality equals 475mg/L[3]+ urban increment 225mg/L[4] and concentrated by four and 20% are absorbed[6] (475mg/L+225mg/L)*4*0.8 = 2240mg/L	326	Potable water quality equals 82mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (82mg/L+20mg/L)*4*0.8 = 326mg/L	16	Potable water quality equals 10.3mg/L[3]+ urban increment 30mg/L[4] and concentrated by four and 90% are absorbed[6] (10.3mg/L+30mg/L)*4*0.1 = 16.1mg/L	358	Potable water quality equals 92mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (92mg/L+20mg/L)*4*0.8 = 358mg/L
		Stream Leakage	722	Value determined as a sensitivity parameter to result in ambient concentration close to historical measurement	89	Value determined as a sensitivity parameter to result in ambient concentration close to historical measurement	20	Value determined as a sensitivity parameter to result in ambient concentration close to historical measurement	140	Value determined as a sensitivity parameter to result in ambient concentration close to historical measurement
		Subsurface Inflow From Acton Basin	722	Determined by water quality from Well NCWD - 1 - Pinetree	98	Determined by water quality from Well NCWD - 1 - Pinetree	17	Determined by water quality from Well NCWD - 1 - Pinetree	108	Determined by water quality from Well NCWD - 1 - Pinetree
		Upward Leakage from Saugus	723	Determined by water quality from Well VWC - 206, VWC - 160, VWC - 205, VWC - 201, NCWD - 11 - Newhall, NCWD - 13 - Newhall, and NCWD - 12 - Newhall	34	Determined by water quality from Well VWC - 206, VWC - 160, VWC - 205, VWC - 201, NCWD - 11 - Newhall, NCWD - 13 - Newhall, and NCWD - 12 - Newhall	20	Determined from Saugus ambient concentration	235	Determined from Saugus ambient concentration
	Outflow	Evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation
		Pumping, Groundwater Discharge to Streams, Subsurface Outflow to Management Zone 4 and Downward Leakage to Saugus	824	Value determined by 2001 groundwater concentration in MZ 1a which is 720mg/L and factor 1.14[7] which is based on average sulfate concentration between 2001 and 2011. 720mg/L * 1.14 = 824 mg/L	60	Based on 2001 Groundwater Concentration in MZ 1a which is 74mg/L and factor 0.81 which is based on average sulfate concentration between 2001 and 2011. 74mg/L * 0.81 = 60 mg/L	26	Based on 2001 Groundwater Concentration in MZ 1a which is 25mg/L and factor 1.05 which is based on average sulfate concentration between 2001 and 2011. 25mg/L * 1.05 = 26 mg/L	275	Based on 2001 Groundwater Concentration in MZ 1a which is 141mg/L and factor 1.95 which is based on average sulfate concentration between 2001 and 2011. 141mg/L * 1.95 = 275 mg/L

[1] TDS, Chloride and Nitrate concentrations for precipitation is based on Dantane (1978). Sulfate concentration for precipitation is based on Vong (1989).

[2] The irrigation efficiency in this area is 25%. It means rain falls on the watershed, vegetation will consume 75% of the precipitation concentrating the salt into 25% of the volume. This results in an increase in concentration of four times. Therefore rainfall percolating to the groundwater system will contain four times the salt content

[3] Potable quality is weighted by volume from purveyor water quality data.

[4] Urban increment is based on personal communication with Michael Welch, PhD(2011).

[5] The septic loss factor is 0.1, which indicates that 10 % of water is lost when percolating, thus the water is concentrated to 90% of its initial volume and thererfore results in an increase in concentration.

6 The absorption factor is 0.8. An absorption factor accounts for the portion of the applied water absorbed by the system, which indicates that 20 % of salt is taken. For nitrate, the absorption factor is 0.1.

[7] Factor 1.14 = (833mg/L - 728mg/L) / 728mg/L. Where 833 is the average TDS concentration in MZ 1a, and 728 is the average TDS concentration in MZ 1b.

Table F-8

Summary of Assumptions for TDS, Chloride, Nitrate and Sulfate Mass Loading for Water Balance Inflow and Outflow Parameters
Management Zone 2 (Placerita Subunit)

		Inflow terms	TDS Concentration [mg/L]	Data Sources	Chloride Concentration [mg/L]	Data Sources	Nitrate Concentration [mg/L]	Data Sources	Sulfate Concentration [mg/L]	Data Sources
MZ 2(Placerita Subunit)	Inflow	Deep Percolation from Precipitation	100	TDS in precipitation is 25mg/L[1] and concentrated by four, 25*4=100[2]	40	Chloride in precipitation is 10mg/L[1] and concentrated by four, 10*4=40 [2]	9	Nitrate in precipitation is 2.2mg/L[1] and concentrated by four, 2.2*4=8.8[2]	40	Sulfate in precipitation is 10mg/L[1] and concentrated by four, 10*4=40[2]
		Septic Water	808	Potable water quality equals 503mg/L[3] + urban increment 225mg/L[4] and tank efficiency 90%[5], (503mg/L+225mg/L)/0.9 = 808mg/L	89	Potable water quality equals 60mg/L[3] + urban increment 20mg/L[4] and tank efficiency 90%[5], (60mg/L+20mg/L)/0.9 = 89mg/L	46	Potable water quality equals 11.8mg/L[3] + urban increment 30mg/L[4] and tank efficiency 90%[5], (11.8mg/L+30mg/L)/0.9 = 46.4mg/L	170	Potable water quality equals 133mg/L[3] + urban increment 20mg/L[4] and tank efficiency 90%[5], (133mg/L+20mg/L)/0.9 = 170mg/L
		Applied Water	2330	Potable water quality equals 503mg/L[3]+ urban increment 225mg/L[4] and concentrated by four and 20% are absorbed[6] (503mg/L+225mg/L)*4*0.8 = 808mg/L	256	Potable water quality equals 60mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (60mg/L+20mg/L)*4*0.8 = 256mg/L	17	Potable water quality equals 11.8mg/L[3]+ urban increment 225mg/L[4] and concentrated by four and 90% are absorbed[6] (11.8mg/L+30mg/L)*4*0.1 = 16.7mg/L	490	Potable water quality equals 133mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (133mg/L+20mg/L)*4*0.8 = 490mg/L
		Stream Leakage	532	Value determined as average concentration from 2001 through 2011, see spreadsheet model	65	Value determined as average concentration from 2001 through 2011, see spreadsheet model	7	Value determined as average concentration from 2001 through 2011, see spreadsheet model	103	Value determined as average concentration from 2001 through 2011, see spreadsheet model
		Upward Leakage from Saugus	668	Value determined as average concentration from 2001 through 2011, see spreadsheet model	39	Value determined as average concentration from 2001 through 2011, see spreadsheet model	21	Value determined as average concentration from 2001 through 2011, see spreadsheet model	190	Value determined as average concentration from 2001 through 2011, see spreadsheet model
	Outflow	Evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation
		Pumping, Groundwater Discharge to Streams, Subsurface Outflow to Management Zone 3 and Downward Leakage to Saugus	700	Assumed same to Management Zone 3	77	Assumed same to Management Zone 3	24	Assumed same to Management Zone 3	99	Assumed same to Management Zone 3

[1]TDS, Chloride and Nitrate concentrations for precipitation is based on Dantane (1978). Sulfate concentration for precipitation is based on Vong (1989).

[2] The irrigation efficiency in this area is 25%. It means rain falls on the watershed, vegetation will consume 75% of the precipitation concentrating the salt into 25% of the volume. This results in an increase in concentration of four times.
Therefore rainfall percolating to the groundwater system will contain four times the salt content

[3]Potable quality is weighted by volume from purveyor water quality data.

[4] Urban increment is based on personal communication with Michael Welch, PhD(2011).

[5]The septic loss factor is 0.1, which indicates that 10 % of water is lost when percolating, thus the water is concentrated to 90% of its initial volume and thererfore results in an increase in concentration.

6 The absorption factor is 0.8. An absorption factor accounts for the portion of the applied water absorbed by the system, which indicates that 20 % of salt is taken. For nitrate, the absorption factor is 0.1.

Table F-9

Summary of Assumptions for TDS, Chloride, Nitrate and Sulfate Mass Loading for Water Balance Inflow and Outflow Parameters
Management Zone 3 (South Fork Subunit)

		Inflow terms	TDS Concentration [mg/L]	Data Sources	Chloride Concentration [mg/L]	Data Sources	Nitrate Concentration [mg/L]	Data Sources	Sulfate Concentration [mg/L]	Data Sources
MZ 3(South Fork Subunit)	Inflow	Deep Percolation from Precipitation	100	TDS in precipitation is 25mg/L[1] and concentrated by four, 25*4=100[2]	40	Chloride in precipitation is 10mg/L[1] and concentrated by four, 10*4=40 [2]	9	Nitrate in precipitation is 2.2mg/L[1] and concentrated by four, 2.2*4=8.8[2]	40	Sulfate in precipitation is 10mg/L[1] and concentrated by four, 10*4=40[2]
		Septic Water	833	Potable water quality equals 525mg/L[3] + urban increment 225mg/L[4] and tank efficiency 90%[5], (525mg/L+225mg/L)/0.9 = 833mg/L	95	Potable water quality equals 66mg/L[3] + urban increment 20mg/L[4] and tank efficiency 90%[5], (66 mg/L+20mg/L)/0.9=95mg/L	46	Potable water quality equals 11.5mg/L[3] + urban increment 30mg/L[4] and tank efficiency 90%[5], (11.5mg/L+30mg/L)/0.9 = 46.1mg/L	178	Potable water quality equals 140mg/L[3] + urban increment 20mg/L[4] and tank efficiency 90%[5], (140mg/L+20mg/L)/0.9 = 178mg/L
		Applied Water	2400	Potable water quality equals 525mg/L[3]+ urban increment 225mg/L[4] and concentrated by four and 20% are absorbed[6] (525mg/L+225mg/L)*4*0.8 = 2400mg/L	275	Potable water quality equals 66mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (66mg/L+20mg/L)*4*0.8 = 275mg/L	17	Potable water quality equals 11.5mg/L[3]+ urban increment 30mg/L[4] and concentrated by four and 90% are absorbed[6] (11.5mg/L+30mg/L)*4*0.1 = 16.6mg/L	512	Potable water quality equals 140mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (140mg/L+20mg/L)*4*0.8 = 512mg/L
		Stream Leakage	532	Value determined as average concentration from 2001 through 2011, see spreadsheet model	65	Value determined as average concentration from 2001 through 2011, see spreadsheet model	7	Value determined as average concentration from 2001 through 2011, see spreadsheet model	103	Value determined as average concentration from 2001 through 2011, see spreadsheet model
		Subsurface Inflow From Management Zone 2	666 (Year 2001)	From model calculated outflow of Management Zone 2	76 (Year 2001)	From model calculated outflow of Management Zone 2	20 (Year 2001)	From model calculated outflow of Management Zone 2	120 (Year 2001)	From model calculated outflow of Management Zone 2
		Upward Leakage from Saugus	668	Value determined as average concentration from 2001 through 2011, see spreadsheet model	39	Value determined as average concentration from 2001 through 2011, see spreadsheet model	21	Value determined as average concentration from 2001 through 2011, see spreadsheet model	190	Value determined as average concentration from 2001 through 2011, see spreadsheet model
	Outflow	Evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation
		Pumping, Groundwater Discharge to Streams, Subsurface Outflow to Management Zone 4 and Downward Leakage to Saugus	700	2001 Groundwater Concentration	77	2001 Groundwater Concentration	24	2001 Groundwater Concentration	99	2001 Groundwater Concentration

[1]TDS, Chloride and Nitrate concentrations for precipitation is based on Dantane (1978). Sulfate concentration for precipitation is based on Vong (1989).

[2] The irrigation efficiency in this area is 25%. It means rain falls on the watershed, vegetation will consume 75% of the precipitation concentrating the salt into 25% of the volume. This results in an increase in concentration of four times. Therefore rainfall percolating to the groundwater system will contain four times the salt content

[3]Potable quality is weighted by volume from purveyor water quality data.

[4] Urban increment is based on personal communication with Michael Welch, PhD(2011).

[5]The septic loss factor is 0.1, which indicates that 10 % of water is lost when percolating, thus the water is concentrated to 90% of its initial volume and thererfore results in an increase in concentration.

6 The absorption factor is 0.8. An absorption factor accounts for the portion of the applied water absorbed by the system, which indicates that 20 % of salt is taken. For nitrate, the absorption factor is 0.1.

Table F-10

Summary of Assumptions for TDS, Chloride, Nitrate and Sulfate Mass Loading for Water Balance Inflow and Outflow Parameters
Santa Clara - Bouquet and San Francisquito Canyon Subunit (Management Zone 4)

		Inflow terms	TDS Concentration [mg/L]	Data Sources	Chloride Concentration [mg/L]	Data Sources	Nitrate Concentration [mg/L]	Data Sources	Sulfate Concentration [mg/L]	Data Sources
MZ 4(SC-Bouquet and San Francisquito Canyon Subunit)	**Inflow**	Deep Percolation from Precipitation	100	TDS in precipitation is 25mg/L[1] and concentrated by four, 25*4=100[2]	40	Chloride in precipitation is 10mg/L[1] and concentrated by four, 10*4=40 [2]	9	Nitrate in precipitation is 2.2mg/L[1] and concentrated by four, 2.2*4=8.8[2]	40	Sulfate in precipitation is 10mg/L[1] and concentrated by four, 10*4=40[2]
		Septic Water	783	Potable water quality equals 480mg/L[3] + urban increment 225mg/L[4] and tank efficiency 90%[5], (480 mg/L+225mg/L)/0.9=783mg/L	109	Potable water quality equals 78mg/L[3] + urban increment 20mg/L[4] and tank efficiency 90%[5], (78 mg/L+20mg/L)/0.9=109mg/L	44	Potable water quality equals 9.4mg/L[3] + urban increment 30mg/L[4] and tank efficiency 90%[5], (9.4 mg/L+30mg/L)/0.9=43.7mg/L	143	Potable water quality equals 109mg/L[3] + urban increment 20mg/L[4] and tank efficiency 90%[5], (109 mg/L+20mg/L)/0.9=143mg/L
		Applied Water	2256	Potable water quality equals 480mg/L[3]+ urban increment 225mg/L[4] and concentrated by four and 20% are absorbed[6] (480mg/L+225mg/L)*4*0.8 = 2256mg/L	314	Potable water quality equals 78mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (78mg/L+20mg/L)*4*0.8 = 314mg/L	16	Potable water quality equals 9.4mg/L[3]+ urban increment 30mg/L[4] and concentrated by four and 90% are absorbed[6] (9.4mg/L+30mg/L)*4*0.1 = 15.8mg/L	413	Potable water quality equals 109mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (109mg/L+20mg/L)*4*0.8 = 413mg/L
		Stream Leakage	671	Determined by water quality from Gage SA-RB and Gage VA-RD	126	Determined by water quality from Gage SA-RB	20	Value determined as a sensitivity parameter to result in ambient concentration close to historical measurement	179	Determined by water quality from Gage SA-RB and Gage VA-RD
		Subsurface Inflow From Management Zone 1	709 (year 2001)	From model calculated outflow of Management Zone 1	77 (year 2001)	From model calculated outflow of Management Zone 1	23 (year 2001)	From model calculated outflow of Management Zone 1	143 (year 2001)	From model calculated outflow of Management Zone 1
		Subsurface Inflow From Management Zone 3	700	Based on Saugus ambient concentration. Assumption that due to shallow thickness of alluvium water quality is similar to Saugus ambient	28	Based on Saugus ambient concentration. Assumption that due to shallow thickness of alluvium water quality is similar to Saugus ambient	20	Based on Saugus ambient concentration. Assumption that due to shallow thickness of alluvium water quality is similar to Saugus ambient	235	Based on Saugus ambient concentration. Assumption that due to shallow thickness of alluvium water quality is similar to Saugus ambient
		Upward Leakage from Saugus	700	Determined from Saugus ambient concentration	28	Determined from Saugus ambient concentration	20	Determined from Saugus ambient concentration	235	Determined from Saugus ambient concentration
	Outflow	Evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation
		Pumping, Groundwater Discharge to Streams, Subsurface Outflow to Management Zone 4 and Downward Leakage to Saugus	692	2001 Groundwater Concentration	79	2001 Groundwater Concentration	25	2001 Groundwater Concentration	169	2001 Groundwater Concentration

[1]TDS, Chloride and Nitrate concentrations for precipitation is based on Dantane (1978). Sulfate concentration for precipitation is based on Vong (1989).

[2] The irrigation efficiency in this area is 25%. It means rain falls on the watershed, vegetation will consume 75% of the precipitation concentrating the salt into 25% of the volume. This results in an increase in concentration of four times.
Therefore rainfall percolating to the groundwater system will contain four times the salt content

[3]Potable quality is weighted by volume from purveyor water quality data.

[4] Urban increment is based on personal communication with Michael Welch, PhD(2011).

[5]The septic loss factor is 0.1, which indicates that 10 % of water is lost when percolating, thus the water is concentrated to 90% of its initial volume and thererfore results in an increase in concentration.

6 The absorption factor is 0.8. An absorption factor accounts for the portion of the applied water absorbed by the system, which indicates that 20 % of salt is taken. For nitrate, the absorption factor is 0.1.

Table F-11

Summary of Assumptions for TDS, Chloride, Nitrate and Sulfate Mass Loading for Water Balance Inflow and Outflow Parameters
Castaic Subunit (Management Zone 5)

		Inflow terms	TDS Concentration [mg/L]	Data Sources	Chloride Concentration [mg/L]	Data Sources	Nitrate Concentration [mg/L]	Data Sources	Sulfate Concentration [mg/L]	Data Sources
MZ 5(Castaic Subunit)	Inflow	Deep Percolation from Precipitation	100	TDS in precipitation is 25mg/L[1] and concentrated by four, 25*4=100[2]	40	Chloride in precipitation is 10mg/L[1] and concentrated by four, 10*4=40 [2]	9	Nitrate in precipitation is 2.2mg/L[1] and concentrated by four, 2.2*4=8.8[2]	40	Sulfate in precipitation is 10mg/L[1] and concentrated by four, 10*4=40[2]
		Septic Water	758	Potable water quality equals 458mg/L[3] + urban increment 225mg/L[4] and tank efficiency 90%[5], (458 mg/L+225mg/L)/0.9=758mg/L	107	Potable water quality equals 76mg/L[3] + urban increment 20mg/L[4] and tank efficiency 90%[5], (76 mg/L+20mg/L)/0.9=107mg/L	41	Potable water quality equals 6.6mg/L[3] + urban increment 30mg/L[4] and tank efficiency 90%[5], (6.6 mg/L+30mg/L)/0.9=40.6mg/L	144	Potable water quality equals 475mg/L[3] + urban increment 225mg/L[4] and tank efficiency 90%[5], (475 mg/L+225mg/L)/0.9=777mg/L
		Applied Water	2186	Potable water quality equals 458mg/L[3]+ urban increment 225mg/L[4] and concentrated by four and 20% are absorbed[6] (458mg/L+225mg/L)*4*0.8 =2186mg/L	307	Potable water quality equals 76mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (76mg/L+20mg/L)*4*0.8 = 307mg/L	15	Potable water quality equals 6.6mg/L[3]+ urban increment 30mg/L[4] and concentrated by four and 90% are absorbed[6] (6.6mg/L+30mg/L)*4*0.1 = 14.6mg/L	416	Potable water quality equals 110mg/L[3]+ urban increment 20mg/L[4] and concentrated by four and 20% are absorbed[6] (110mg/L+20mg/L)*4*0.8 = 416mg/L
		Stream Leakage	762	Determined by water quality from Gage VA-RE	109	Determined by water quality from Gage VA-RC	7	Value determined as a sensitivity parameter to result in ambient concentration close to historical measurement	254	Determined by water quality from Gage VA-RC
		Castaic Dam Underflow	274 (Year 2001)	From reservior released water quality data	71 (Year 2001)	From reservior released water quality data	3 (Year 2001)	From reservior released water quality data	52 (Year 2001)	From reservior released water quality data
		Subsurface Inflow From Management Zone 4	917	Determined by water quality from Well VWC-E-15	96	Determined by water quality from Well VWC-E-15	16	Determined by water quality from Well VWC-E-15	295	Determined by water quality from Well VWC-E-14 and VWC-E-15
		Upward Leakage from Saugus	550	Determined from Saugus ambient concentration	15	Determined from Saugus ambient concentration	10	Determined from Saugus ambient concentration	235	Determined from Saugus ambient concentration
	Outflow	Evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation	0	Assume no salt loss from evaporation
		Pumping, Groundwater Discharge to Streams, Subsurface Outflow to Management Zone 4 and Downward Leakage to Saugus	653	2001 Groundwater Concentration	66	2001 Groundwater Concentration	8	2001 Groundwater Concentration	220	2001 Groundwater Concentration

[1]TDS, Chloride and Nitrate concentrations for precipitation is based on Dantane (1978). Sulfate concentration for precipitation is based on Vong (1989).

[2] The irrigation efficiency in this area is 25%. It means rain falls on the watershed, vegetation will consume 75% of the precipitation concentrating the salt into 25% of the volume. This results in an increase in concentration of four times.
Therefore rainfall percolating to the groundwater system will contain four times the salt content

[3]Potable quality is weighted by volume from purveyor water quality data.

[4] Urban increment is based on personal communication with Michael Welch, PhD(2011).

[5]The septic loss factor is 0.1, which indicates that 10 % of water is lost when percolating, thus the water is concentrated to 90% of its initial volume and thererfore results in an increase in concentration.

6 The absorption factor is 0.8. An absorption factor accounts for the portion of the applied water absorbed by the system, which indicates that 20 % of salt is taken. For nitrate, the absorption factor is 0.1.

Table F-12

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table F-13a

Historical TDS Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Deep Perc of Applied Water	TDS Conc. for Deep Perc of Applied Water	Stream Leakage	TDS Conc. for Stream Leakage	Castaic Dam Underflow	TDS Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentrati on	Change in GW Storage	Ending Storage	Ending Concentra tion	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2001	4,040	100	916	777	1,047	2,240	13,152	722	0	0	2,343	722	4,620	723	26,119	24,463	12,121	287	1,216	8,099	19	21,742	20,094	70,078	720	4,377	74,455	**721**	68,604	72,973	**4,369**
2002	8	100	916	777	1,047	2,240	467	722	0	0	2,834	722	6,534	723	11,806	13,825	10,510	104	754	8,161	15	19,545	18,417	74,455	721	-7,739	66,716	**754**	72,973	68,381	**-4,592**
2003	1,609	100	916	777	1,047	2,240	4,800	722	0	0	2,792	722	4,889	723	16,055	16,639	8,399	51	588	7,977	16	17,032	16,854	66,716	754	-977	65,739	**763**	68,381	68,167	**-215**
2004	2,779	100	916	777	1,047	2,240	6,654	722	0	0	2,959	722	4,093	723	18,448	17,998	7,855	0	479	7,886	24	16,244	16,348	65,739	763	2,204	67,943	**756**	68,167	69,817	**1,651**
2005	9,000	100	916	777	1,047	2,240	61,201	722	0	0	1,980	722	-2,474	723	71,671	64,972	13,202	21,395	4,312	9,207	79	48,196	45,095	67,943	756	23,475	91,418	**722**	69,817	89,695	**19,877**
2006	1,438	100	916	777	1,047	2,240	4,385	722	0	0	2,450	722	6,216	723	16,452	17,177	13,292	1,555	1,985	9,742	40	26,615	24,165	91,418	722	-10,162	81,256	**749**	89,695	82,707	**-6,988**
2007	0	100	916	777	1,047	2,240	117	722	0	0	2,952	722	6,589	723	11,621	13,651	11,596	24	770	9,484	25	21,898	21,505	81,256	749	-10,277	70,979	**776**	82,707	74,852	**-7,854**
2008	3,196	100	916	777	1,047	2,240	7,561	722	0	0	2,697	722	5,628	723	21,045	20,197	12,383	55	825	9,497	25	22,785	23,158	70,979	776	-1,740	69,239	**764**	74,852	71,892	**-2,960**
2009	794	100	916	777	1,047	2,240	1,038	722	0	0	3,106	722	6,489	723	13,390	14,716	11,238	2	542	8,675	15	20,471	20,693	69,239	764	-7,081	62,159	**780**	71,892	65,915	**-5,977**
2010	5,930	100	916	777	1,047	2,240	17,710	722	0	0	2,446	722	3,511	723	31,562	28,205	11,488	134	982	8,138	16	20,758	20,971	62,159	780	10,803	72,962	**737**	65,915	73,149	**7,234**
2011	2,246	100	916	777	1,047	2,240	6,867	722	0	0	2,404	722	5,189	723	18,669	18,668	12,007	412	1,218	8,344	20	22,000	20,836	72,962	737	-3,332	69,630	**750**	73,149	70,981	**-2,168**

Historical Chloride Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	Chloride Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	4,040	40	916	113	1,047	326	13,152	89	0	0	2,343	98	4,620	34	26,119	2,938	12,121	287	1,216	8,099	19	21,742	2,076	70,078	74	4,377	74,455	**79**	7,087	7,950	**863**
2002	8	40	916	113	1,047	326	467	89	0	0	2,834	98	6,534	34	11,806	1,338	10,510	104	754	8,161	15	19,545	2,006	74,455	79	-7,739	66,716	**80**	7,950	7,281	**-669**
2003	1,609	40	916	113	1,047	326	4,800	89	0	0	2,792	98	4,889	34	16,055	1,868	8,399	51	588	7,977	16	17,032	1,795	66,716	80	-977	65,739	**82**	7,281	7,355	**74**
2004	2,779	40	916	113	1,047	326	6,654	89	0	0	2,959	98	4,093	34	18,448	2,142	7,855	0	479	7,886	24	16,244	1,764	65,739	82	2,204	67,943	**84**	7,355	7,733	**378**
2005	9,000	40	916	113	1,047	326	61,201	89	0	0	1,980	98	-2,474	34	71,671	8,647	13,202	21,395	4,312	9,207	79	48,196	4,995	67,943	84	23,475	91,418	**92**	7,733	11,385	**3,652**
2006	1,438	40	916	113	1,047	326	4,385	89	0	0	2,450	98	6,216	34	16,452	1,824	13,292	1,555	1,985	9,742	40	26,615	3,067	91,418	92	-10,162	81,256	**92**	11,385	10,141	**-1,244**
2007	0	40	916	113	1,047	326	117	89	0	0	2,952	98	6,589	34	11,621	1,313	11,596	24	770	9,484	25	21,898	2,637	81,256	92	-10,277	70,979	**91**	10,141	8,818	**-1,324**
2008	3,196	40	916	113	1,047	326	7,561	89	0	0	2,697	98	5,628	34	21,045	2,309	12,383	55	825	9,497	25	22,785	2,728	70,979	91	-1,740	69,239	**89**	8,818	8,399	**-419**
2009	794	40	916	113	1,047	326	1,038	89	0	0	3,106	98	6,489	34	13,390	1,484	11,238	2	542	8,675	15	20,471	2,418	69,239	89	-7,081	62,159	**88**	8,399	7,465	**-934**
2010	5,930	40	916	113	1,047	326	17,710	89	0	0	2,446	98	3,511	34	31,562	3,556	11,488	134	982	8,138	16	20,758	2,375	62,159	88	10,803	72,962	**87**	7,465	8,646	**1,180**
2011	2,246	40	916	113	1,047	326	6,867	89	0	0	2,404	98	5,189	34	18,669	2,115	12,007	412	1,218	8,344	20	22,000	2,463	72,962	87	-3,332	69,630	**88**	8,646	8,298	**-348**

Historical Nitrate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	Nitrate Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Nitrate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	4,040	9	916	45	1,047	16	13,152	20	0	0	2,343	17	4,620	20	26,119	663	12,121	287	1,216	8,099	19	21,742	687	70,078	25	4,377	74,455	23	2,344	2,321	-23
2002	8	9	916	45	1,047	16	467	20	0	0	2,834	17	6,534	20	11,806	333	10,510	104	754	8,161	15	19,545	586	74,455	23	-7,739	66,716	23	2,321	2,068	-252
2003	1,609	9	916	45	1,047	16	4,800	20	0	0	2,792	17	4,889	20	16,055	425	8,399	51	588	7,977	16	17,032	510	66,716	23	-977	65,739	22	2,068	1,983	-85
2004	2,779	9	916	45	1,047	16	6,654	20	0	0	2,959	17	4,093	20	18,448	471	7,855	0	479	7,886	24	16,244	476	65,739	22	2,204	67,943	21	1,983	1,979	-4
2005	9,000	9	916	45	1,047	16	61,201	20	0	0	1,980	17	-2,474	20	71,671	1,828	13,202	21,395	4,312	9,207	79	48,196	1,278	67,943	21	23,475	91,418	20	1,979	2,529	550
2006	1,438	9	916	45	1,047	16	4,385	20	0	0	2,450	17	6,216	20	16,452	440	13,292	1,555	1,985	9,742	40	26,615	681	91,418	20	-10,162	81,256	21	2,529	2,287	-242
2007	0	9	916	45	1,047	16	117	20	0	0	2,952	17	6,589	20	11,621	328	11,596	24	770	9,484	25	21,898	595	81,256	21	-10,277	70,979	21	2,287	2,020	-267
2008	3,196	9	916	45	1,047	16	7,561	20	0	0	2,697	17	5,628	20	21,045	537	12,383	55	825	9,497	25	22,785	625	70,979	21	-1,740	69,239	21	2,020	1,932	-88
2009	794	9	916	45	1,047	16	1,038	20	0	0	3,106	17	6,489	20	13,390	363	11,238	2	542	8,675	15	20,471	556	69,239	21	-7,081	62,159	21	1,932	1,739	-193
2010	5,930	9	916	45	1,047	16	17,710	20	0	0	2,446	17	3,511	20	31,562	782	11,488	134	982	8,138	16	20,758	553	62,159	21	10,803	72,962	20	1,739	1,968	229
2011	2,246	9	916	45	1,047	16	6,867	20	0	0	2,404	17	5,189	20	18,669	488	12,007	412	1,218	8,344	20	22,000	560	72,962	20	-3,332	69,630	20	1,968	1,895	-73

Table F-13d

Historical Sulfate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	Sulfate Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Sulfate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	4,040	40	916	124	1,047	358	13,152	140	0	0	2,343	108	4,620	235	26,119	5,200	12,121	287	1,216	8,099	19	21,742	3,935	70,078	141	4,377	74,455	145	13,435	14,699	1,265
2002	8	40	916	124	1,047	358	467	140	0	0	2,834	108	6,534	235	11,806	3,257	10,510	104	754	8,161	15	19,545	3,710	74,455	145	-7,739	66,716	157	14,699	14,247	-453
2003	1,609	40	916	124	1,047	358	4,800	140	0	0	2,792	108	4,889	235	16,055	3,635	8,399	51	588	7,977	16	17,032	3,511	66,716	157	-977	65,739	161	14,247	14,370	123
2004	2,779	40	916	124	1,047	358	6,654	140	0	0	2,959	108	4,093	235	18,448	3,820	7,855	0	479	7,886	24	16,244	3,446	65,739	161	2,204	67,943	160	14,370	14,744	374
2005	9,000	40	916	124	1,047	358	61,201	140	0	0	1,980	108	-2,474	235	71,671	12,265	13,202	21,395	4,312	9,207	79	48,196	9,523	67,943	160	23,475	91,418	141	14,744	17,486	2,742
2006	1,438	40	916	124	1,047	358	4,385	140	0	0	2,450	108	6,216	235	16,452	3,920	13,292	1,555	1,985	9,742	40	26,615	4,711	91,418	141	-10,162	81,256	151	17,486	16,696	-791
2007	0	40	916	124	1,047	358	117	140	0	0	2,952	108	6,589	235	11,621	3,225	11,596	24	770	9,484	25	21,898	4,341	81,256	151	-10,277	70,979	161	16,696	15,580	-1,116
2008	3,196	40	916	124	1,047	358	7,561	140	0	0	2,697	108	5,628	235	21,045	4,467	12,383	55	825	9,497	25	22,785	4,820	70,979	161	-1,740	69,239	162	15,580	15,226	-353
2009	794	40	916	124	1,047	358	1,038	140	0	0	3,106	108	6,489	235	13,390	3,434	11,238	2	542	8,675	15	20,471	4,383	69,239	162	-7,081	62,159	169	15,226	14,277	-949
2010	5,930	40	916	124	1,047	358	17,710	140	0	0	2,446	108	3,511	235	31,562	5,828	11,488	134	982	8,138	16	20,758	4,542	62,159	169	10,803	72,962	157	14,277	15,563	1,286
2011	2,246	40	916	124	1,047	358	6,867	140	0	0	2,404	108	5,189	235	18,669	4,100	12,007	412	1,218	8,344	20	22,000	4,433	72,962	157	-3,332	69,630	161	15,563	15,230	-333

Historical TDS Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Deep Perc of Applied Water	TDS Conc. for Deep Perc of Applied Water	Stream Leakage	TDS Conc. for Stream Leakage	Castaic Dam Underflow	TDS Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2001	277	100	63	777	72	2,240	901	722	0	0	161	722	317	723	1,790	1,677	831	20	83	555	1	1,490	1,576	70,078	824	300	70,378	**821**	78,499	78,599	**101**
2002	1	100	63	777	72	2,240	32	722	0	0	194	722	448	723	809	948	720	7	52	559	1	1,340	1,438	70,378	821	-530	69,847	**822**	78,599	78,109	**-491**
2003	110	100	63	777	72	2,240	329	722	0	0	191	722	335	723	1,100	1,140	576	3	40	547	1	1,167	1,260	69,847	822	-67	69,780	**822**	78,109	77,989	**-120**
2004	190	100	63	777	72	2,240	456	722	0	0	203	722	280	723	1,264	1,234	538	0	33	540	2	1,113	1,208	69,780	822	151	69,931	**820**	77,989	78,015	**26**
2005	617	100	63	777	72	2,240	4,194	722	0	0	136	722	-170	723	4,912	4,453	905	1,466	296	631	5	3,303	3,355	69,931	820	1,609	71,540	**813**	78,015	79,112	**1,098**
2006	99	100	63	777	72	2,240	301	722	0	0	168	722	426	723	1,128	1,177	911	107	136	668	3	1,824	1,867	71,540	813	-696	70,844	**814**	79,112	78,423	**-689**
2007	0	100	63	777	72	2,240	8	722	0	0	202	722	452	723	796	936	795	2	53	650	2	1,501	1,603	70,844	814	-704	70,139	**815**	78,423	77,756	**-667**
2008	219	100	63	777	72	2,240	518	722	0	0	185	722	386	723	1,442	1,384	849	4	57	651	2	1,562	1,668	70,139	815	-119	70,020	**814**	77,756	77,471	**-284**
2009	54	100	63	777	72	2,240	71	722	0	0	213	722	445	723	918	1,009	770	0	37	595	1	1,403	1,511	70,020	814	-485	69,535	**814**	77,471	76,969	**-503**
2010	406	100	63	777	72	2,240	1,214	722	0	0	168	722	241	723	2,163	1,933	787	9	67	558	1	1,423	1,500	69,535	814	740	70,275	**810**	76,969	77,402	**433**
2011	154	100	63	777	72	2,240	471	722	0	0	165	722	356	723	1,279	1,279	823	28	83	572	1	1,508	1,569	70,275	810	-228	70,047	**810**	77,402	77,112	**-289**

Historical Chloride Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	Chloride Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	277	40	63	113	72	326	901	89	0	0	161	98	317	34	1,790	201	831	20	83	555	1	1,490	115	70,078	60	300	70,378	61	5,734	5,820	86
2002	1	40	63	113	72	326	32	89	0	0	194	98	448	34	809	92	720	7	52	559	1	1,340	106	70,378	61	-530	69,847	61	5,820	5,805	-15
2003	110	40	63	113	72	326	329	89	0	0	191	98	335	34	1,100	128	576	3	40	547	1	1,167	94	69,847	61	-67	69,780	62	5,805	5,839	34
2004	190	40	63	113	72	326	456	89	0	0	203	98	280	34	1,264	147	538	0	33	540	2	1,113	90	69,780	62	151	69,931	62	5,839	5,896	56
2005	617	40	63	113	72	326	4,194	89	0	0	136	98	-170	34	4,912	593	905	1,466	296	631	5	3,303	254	69,931	62	1,609	71,540	64	5,896	6,235	339
2006	99	40	63	113	72	326	301	89	0	0	168	98	426	34	1,128	125	911	107	136	668	3	1,824	147	71,540	64	-696	70,844	64	6,235	6,213	-22
2007	0	40	63	113	72	326	8	89	0	0	202	98	452	34	796	90	795	2	53	650	2	1,501	127	70,844	64	-704	70,139	65	6,213	6,176	-37
2008	219	40	63	113	72	326	518	89	0	0	185	98	386	34	1,442	158	849	4	57	651	2	1,562	133	70,139	65	-119	70,020	65	6,176	6,201	26
2009	54	40	63	113	72	326	71	89	0	0	213	98	445	34	918	102	770	0	37	595	1	1,403	121	70,020	65	-485	69,535	65	6,201	6,182	-19
2010	406	40	63	113	72	326	1,214	89	0	0	168	98	241	34	2,163	244	787	9	67	558	1	1,423	121	69,535	65	740	70,275	66	6,182	6,305	123
2011	154	40	63	113	72	326	471	89	0	0	165	98	356	34	1,279	145	823	28	83	572	1	1,508	128	70,275	66	-228	70,047	66	6,305	6,322	17

Historical Nitrate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Deep Perc of Applied Water	Nitrate Conc. for Deep Perc of Applied Water	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2001	277	9	63	45	72	16	901	20	0	0	161	17	317	20	1,790	45	831	20	83	555	1	1,490	49	70,078	26	300	70,378	26	2,461	2,457	-4
2002	1	9	63	45	72	16	32	20	0	0	194	17	448	20	809	23	720	7	52	559	1	1,340	45	70,378	26	-530	69,847	26	2,457	2,435	-22
2003	110	9	63	45	72	16	329	20	0	0	191	17	335	20	1,100	29	576	3	40	547	1	1,167	39	69,847	26	-67	69,780	26	2,435	2,425	-10
2004	190	9	63	45	72	16	456	20	0	0	203	17	280	20	1,264	32	538	0	33	540	2	1,113	38	69,780	26	151	69,931	25	2,425	2,420	-5
2005	617	9	63	45	72	16	4,194	20	0	0	136	17	-170	20	4,912	125	905	1,466	296	631	5	3,303	104	69,931	25	1,609	71,540	25	2,420	2,441	21
2006	99	9	63	45	72	16	301	20	0	0	168	17	426	20	1,128	30	911	107	136	668	3	1,824	58	71,540	25	-696	70,844	25	2,441	2,413	-27
2007	0	9	63	45	72	16	8	20	0	0	202	17	452	20	796	22	795	2	53	650	2	1,501	49	70,844	25	-704	70,139	25	2,413	2,387	-27
2008	219	9	63	45	72	16	518	20	0	0	185	17	386	20	1,442	37	849	4	57	651	2	1,562	51	70,139	25	-119	70,020	25	2,387	2,372	-14
2009	54	9	63	45	72	16	71	20	0	0	213	17	445	20	918	25	770	0	37	595	1	1,403	46	70,020	25	-485	69,535	25	2,372	2,351	-21
2010	406	9	63	45	72	16	1,214	20	0	0	168	17	241	20	2,163	54	787	9	67	558	1	1,423	46	69,535	25	740	70,275	25	2,351	2,359	8
2011	154	9	63	45	72	16	471	20	0	0	165	17	356	20	1,279	33	823	28	83	572	1	1,508	48	70,275	25	-228	70,047	25	2,359	2,344	-14

Historical Sulfate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Deep Perc of Applied Water	Sulfate Conc. for Deep Perc of Applied Water	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2001	277	40	63	124	72	358	901	140	0	0	161	108	317	235	1,790	356	831	20	83	555	1	1,490	526	70,078	275	300	70,378	**272**	26,188	26,019	**-169**
2002	1	40	63	124	72	358	32	140	0	0	194	108	448	235	809	223	720	7	52	559	1	1,340	476	70,378	272	-530	69,847	**271**	26,019	25,766	**-253**
2003	110	40	63	124	72	358	329	140	0	0	191	108	335	235	1,100	249	576	3	40	547	1	1,167	416	69,847	271	-67	69,780	**270**	25,766	25,600	**-167**
2004	190	40	63	124	72	358	456	140	0	0	203	108	280	235	1,264	262	538	0	33	540	2	1,113	396	69,780	270	151	69,931	**268**	25,600	25,465	**-135**
2005	617	40	63	124	72	358	4,194	140	0	0	136	108	-170	235	4,912	841	905	1,466	296	631	5	3,303	1,095	69,931	268	1,609	71,540	**259**	25,465	25,210	**-255**
2006	99	40	63	124	72	358	301	140	0	0	168	108	426	235	1,128	269	911	107	136	668	3	1,824	595	71,540	259	-696	70,844	**258**	25,210	24,884	**-326**
2007	0	40	63	124	72	358	8	140	0	0	202	108	452	235	796	221	795	2	53	650	2	1,501	509	70,844	258	-704	70,139	**258**	24,884	24,597	**-288**
2008	219	40	63	124	72	358	518	140	0	0	185	108	386	235	1,442	306	849	4	57	651	2	1,562	528	70,139	258	-119	70,020	**256**	24,597	24,375	**-222**
2009	54	40	63	124	72	358	71	140	0	0	213	108	445	235	918	235	770	0	37	595	1	1,403	475	70,020	256	-485	69,535	**255**	24,375	24,135	**-240**
2010	406	40	63	124	72	358	1,214	140	0	0	168	108	241	235	2,163	399	787	9	67	558	1	1,423	470	69,535	255	740	70,275	**252**	24,135	24,064	**-71**
2011	154	40	63	124	72	358	471	140	0	0	165	108	356	235	1,279	281	823	28	83	572	1	1,508	488	70,275	252	-228	70,047	**250**	24,064	23,857	**-207**

Historical TDS Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	TDS Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	416	100	560	808	157	2,330	1,380	532	0	0	0	0	282	668	2,795	2,423	0	0	872	364	632	1,868	948	4,169	700	927	5,096	**786**	3,968	5,443	**1,475**
2002	1	100	560	808	157	2,330	0	532	0	0	0	0	575	668	1,293	1,636	0	0	578	408	666	1,651	1,147	5,096	786	-358	4,738	**921**	5,443	5,932	**489**
2003	166	100	560	808	157	2,330	637	532	0	0	0	0	507	668	2,027	2,057	0	0	588	414	645	1,646	1,325	4,738	921	381	5,119	**957**	5,932	6,664	**731**
2004	286	100	560	808	157	2,330	1,037	532	0	0	0	0	413	668	2,453	2,276	0	0	655	412	725	1,793	1,481	5,119	957	660	5,778	**949**	6,664	7,459	**795**
2005	928	100	560	808	157	2,330	1,415	532	0	0	0	0	221	668	3,281	2,463	0	0	1,184	392	778	2,353	1,510	5,778	949	927	6,706	**923**	7,459	8,412	**953**
2006	148	100	560	808	157	2,330	561	532	0	0	0	0	559	668	1,985	2,046	0	0	1,013	403	726	2,142	1,416	6,706	923	-157	6,549	**1,016**	8,412	9,042	**630**
2007	0	100	560	808	157	2,330	0	532	0	0	0	0	695	668	1,412	1,744	0	0	615	462	744	1,821	1,665	6,549	1,016	-409	6,140	**1,093**	9,042	9,122	**79**
2008	329	100	560	808	157	2,330	754	532	0	0	0	0	559	668	2,359	2,210	0	0	665	458	775	1,898	1,832	6,140	1,093	461	6,601	**1,058**	9,122	9,500	**378**
2009	82	100	560	808	157	2,330	271	532	0	0	0	0	648	668	1,717	1,908	0	0	609	448	745	1,802	1,717	6,601	1,058	-85	6,516	**1,094**	9,500	9,691	**191**
2010	611	100	560	808	157	2,330	1,568	532	0	0	0	0	348	668	3,244	2,646	0	0	867	415	828	2,110	1,849	6,516	1,094	1,134	7,650	**1,008**	9,691	10,488	**797**
2011	231	100	560	808	157	2,330	912	532	0	0	0	0	441	668	2,302	2,205	0	0	985	445	875	2,306	1,810	7,650	1,008	-4	7,647	**1,047**	10,488	10,883	**395**

Table F-15b

Historical Chloride Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	Chloride Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]
2001	416	40	560	89	157	256	1,380	65	0	0	0	0	282	39	2,795	283
2002	1	40	560	89	157	256	0	65	0	0	0	0	575	39	1,293	153
2003	166	40	560	89	157	256	637	65	0	0	0	0	507	39	2,027	215
2004	286	40	560	89	157	256	1,037	65	0	0	0	0	413	39	2,453	252
2005	928	40	560	89	157	256	1,415	65	0	0	0	0	221	39	3,281	310
2006	148	40	560	89	157	256	561	65	0	0	0	0	559	39	1,985	210
2007	0	40	560	89	157	256	0	65	0	0	0	0	695	39	1,412	159
2008	329	40	560	89	157	256	754	65	0	0	0	0	559	39	2,359	237
2009	82	40	560	89	157	256	271	65	0	0	0	0	648	39	1,717	185
2010	611	40	560	89	157	256	1,568	65	0	0	0	0	348	39	3,244	313
2011	231	40	560	89	157	256	912	65	0	0	0	0	441	39	2,302	239

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	0	0	872	364	632	1,868	104	4,169	77	927	5,096	89	437	615	178
2002	0	0	578	408	666	1,651	129	5,096	89	-358	4,738	99	615	638	23
2003	0	0	588	414	645	1,646	143	4,738	99	381	5,119	102	638	710	72
2004	0	0	655	412	725	1,793	158	5,119	102	660	5,778	102	710	804	94
2005	0	0	1,184	392	778	2,353	163	5,778	102	927	6,706	104	804	952	148
2006	0	0	1,013	403	726	2,142	160	6,706	104	-157	6,549	112	952	1,001	50
2007	0	0	615	462	744	1,821	184	6,549	112	-409	6,140	117	1,001	976	-25
2008	0	0	665	458	775	1,898	196	6,140	117	461	6,601	113	976	1,017	41
2009	0	0	609	448	745	1,802	184	6,601	113	-85	6,516	115	1,017	1,018	1
2010	0	0	867	415	828	2,110	194	6,516	115	1,134	7,650	109	1,018	1,137	119
2011	0	0	985	445	875	2,306	196	7,650	109	-4	7,647	114	1,137	1,180	43

Historical Nitrate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	Nitrate Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Nitrate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]
2001	416	9	560	46	157	17	1,380	7	0	0	0	0	282	21	2,795	65
2002	1	9	560	46	157	17	0	7	0	0	0	0	575	21	1,293	55
2003	166	9	560	46	157	17	637	7	0	0	0	0	507	21	2,027	61
2004	286	9	560	46	157	17	1,037	7	0	0	0	0	413	21	2,453	64
2005	928	9	560	46	157	17	1,415	7	0	0	0	0	221	21	3,281	70
2006	148	9	560	46	157	17	561	7	0	0	0	0	559	21	1,985	62
2007	0	9	560	46	157	17	0	7	0	0	0	0	695	21	1,412	59
2008	329	9	560	46	157	17	754	7	0	0	0	0	559	21	2,359	66
2009	82	9	560	46	157	17	271	7	0	0	0	0	648	21	1,717	61
2010	611	9	560	46	157	17	1,568	7	0	0	0	0	348	21	3,244	71
2011	231	9	560	46	157	17	912	7	0	0	0	0	441	21	2,302	63

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	0	0	872	364	632	1,868	32	4,169	24	927	5,096	24	135	168	33
2002	0	0	578	408	666	1,651	35	5,096	24	-358	4,738	29	168	188	20
2003	0	0	588	414	645	1,646	42	4,738	29	381	5,119	30	188	208	19
2004	0	0	655	412	725	1,793	46	5,119	30	660	5,778	29	208	225	18
2005	0	0	1,184	392	778	2,353	46	5,778	29	927	6,706	27	225	250	24
2006	0	0	1,013	403	726	2,142	42	6,706	27	-157	6,549	30	250	270	20
2007	0	0	615	462	744	1,821	50	6,549	30	-409	6,140	33	270	279	9
2008	0	0	665	458	775	1,898	56	6,140	33	461	6,601	32	279	289	10
2009	0	0	609	448	745	1,802	52	6,601	32	-85	6,516	34	289	297	9
2010	0	0	867	415	828	2,110	57	6,516	34	1,134	7,650	30	297	312	14
2011	0	0	985	445	875	2,306	54	7,650	30	-4	7,647	31	312	321	9

Table F-15d

Historical Sulfate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Deep Perc of Applied Water	Sulfate Conc. for Deep Perc of Applied Water	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Upstream Tributaries	Sulfate Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2001	416	40	560	170	157	490	1,380	103	0	0	0	0	282	190	2,795	522	0	0	872	364	632	1,868	134	4,169	99	927	5,096	**137**	561	949	**388**
2002	1	40	560	170	157	490	0	103	0	0	0	0	575	190	1,293	383	0	0	578	408	666	1,651	200	5,096	137	-358	4,738	**176**	949	1,132	**183**
2003	166	40	560	170	157	490	637	103	0	0	0	0	507	190	2,027	463	0	0	588	414	645	1,646	253	4,738	176	381	5,119	**193**	1,132	1,342	**210**
2004	286	40	560	170	157	490	1,037	103	0	0	0	0	413	190	2,453	501	0	0	655	412	725	1,793	298	5,119	193	660	5,778	**197**	1,342	1,544	**203**
2005	928	40	560	170	157	490	1,415	103	0	0	0	0	221	190	3,281	539	0	0	1,184	392	778	2,353	313	5,778	197	927	6,706	**194**	1,544	1,771	**226**
2006	148	40	560	170	157	490	561	103	0	0	0	0	559	190	1,985	465	0	0	1,013	403	726	2,142	298	6,706	194	-157	6,549	**218**	1,771	1,937	**167**
2007	0	40	560	170	157	490	0	103	0	0	0	0	695	190	1,412	414	0	0	615	462	744	1,821	357	6,549	218	-409	6,140	**239**	1,937	1,994	**57**
2008	329	40	560	170	157	490	754	103	0	0	0	0	559	190	2,359	501	0	0	665	458	775	1,898	401	6,140	239	461	6,601	**233**	1,994	2,095	**101**
2009	82	40	560	170	157	490	271	103	0	0	0	0	648	190	1,717	443	0	0	609	448	745	1,802	379	6,601	233	-85	6,516	**244**	2,095	2,160	**65**
2010	611	40	560	170	157	490	1,568	103	0	0	0	0	348	190	3,244	576	0	0	867	415	828	2,110	412	6,516	244	1,134	7,650	**223**	2,160	2,323	**164**
2011	231	40	560	170	157	490	912	103	0	0	0	0	441	190	2,302	488	0	0	985	445	875	2,306	401	7,650	223	-4	7,647	**232**	2,323	2,410	**87**

Historical TDS Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	TDS Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	TDS Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	2,645	100	375	833	1,057	2,400	7,210	532	0	0	0	0	364	786	3,429	668	15,080	12,952	0	0	3,768	3,687	4,011	11,466	7,327	23,395	700	3,614	27,009	**760**	22,267	27,892	**5,625**
2002	6	100	375	833	1,057	2,400	0	532	0	0	0	0	408	921	3,539	668	5,384	7,601	0	0	2,484	3,235	3,980	9,700	7,451	27,009	760	-4,316	22,693	**909**	27,892	28,042	**150**
2003	1,054	100	375	833	1,057	2,400	4,077	532	0	0	0	0	414	957	3,721	668	10,696	10,884	0	0	2,666	3,300	3,734	9,699	8,691	22,693	909	997	23,690	**939**	28,042	30,235	**2,193**
2004	1,819	100	375	833	1,057	2,400	5,040	532	0	0	0	0	412	949	4,228	668	12,931	12,140	0	0	2,921	3,724	4,471	11,117	10,460	23,690	939	1,815	25,505	**920**	30,235	31,915	**1,681**
2005	5,892	100	375	833	1,057	2,400	7,351	532	0	0	0	0	392	923	3,813	668	18,880	13,948	0	0	4,991	4,419	5,271	14,681	12,125	25,505	920	4,200	29,704	**835**	31,915	33,739	**1,823**
2006	941	100	375	833	1,057	2,400	4,362	532	0	0	0	0	403	1,016	4,258	668	11,396	11,582	0	0	4,276	4,189	4,777	13,242	10,184	29,704	835	-1,846	27,859	**928**	33,739	35,137	**1,398**
2007	0	100	375	833	1,057	2,400	0	532	0	0	0	0	462	1,093	4,795	668	6,689	8,917	0	0	2,651	4,007	4,589	11,247	10,842	27,859	928	-4,559	23,300	**1,048**	35,137	33,211	**-1,926**
2008	2,092	100	375	833	1,057	2,400	4,285	532	0	0	0	0	458	1,058	3,847	668	12,115	11,412	0	0	2,911	3,522	4,643	11,076	11,637	23,300	1,048	1,039	24,339	**997**	33,211	32,986	**-225**
2009	520	100	375	833	1,057	2,400	2,662	532	0	0	0	0	448	1,094	4,032	668	9,093	10,199	0	0	2,702	3,334	4,563	10,600	10,703	24,339	997	-1,506	22,833	**1,046**	32,986	32,481	**-504**
2010	3,882	100	375	833	1,057	2,400	7,831	532	0	0	0	0	415	1,008	3,633	668	17,193	13,935	0	0	3,912	3,476	5,519	12,907	12,796	22,833	1,046	4,287	27,119	**912**	32,481	33,621	**1,139**
2011	1,470	100	375	833	1,057	2,400	5,119	532	0	0	0	0	445	1,047	3,866	668	12,332	11,922	0	0	4,303	3,599	5,821	13,723	11,678	27,119	912	-1,392	25,728	**968**	33,621	33,864	**243**

Historical Chloride Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Deep Perc of Applied Water	Chloride Conc. for Deep Perc of Applied Water	Stream Leakage	Chloride Conc. for Stream Leakage	Castaic Dam Underflow	Chloride Conc. for Castaic Dam Underflow	Inflow From Upstream Tributaries	Chloride Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Chloride Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2001	2,645	40	375	95	1,057	275	7,210	65	0	0	0	0	364	89	3,429	39	15,080	1,453	0	0	3,768	3,687	4,011	11,466	806	23,395	77	3,614	27,009	**84**	2,449	3,096	**647**
2002	6	40	375	95	1,057	275	0	65	0	0	0	0	408	99	3,539	39	5,384	685	0	0	2,484	3,235	3,980	9,700	827	27,009	84	-4,316	22,693	**96**	3,096	2,954	**-142**
2003	1,054	40	375	95	1,057	275	4,077	65	0	0	0	0	414	102	3,721	39	10,696	1,116	0	0	2,666	3,300	3,734	9,699	916	22,693	96	997	23,690	**98**	2,954	3,155	**201**
2004	1,819	40	375	95	1,057	275	5,040	65	0	0	0	0	412	102	4,228	39	12,931	1,270	0	0	2,921	3,724	4,471	11,117	1,091	23,690	98	1,815	25,505	**96**	3,155	3,334	**179**
2005	5,892	40	375	95	1,057	275	7,351	65	0	0	0	0	392	104	3,813	39	18,880	1,674	0	0	4,991	4,419	5,271	14,681	1,266	25,505	96	4,200	29,704	**93**	3,334	3,741	**407**
2006	941	40	375	95	1,057	275	4,362	65	0	0	0	0	403	112	4,258	39	11,396	1,168	0	0	4,276	4,189	4,777	13,242	1,129	29,704	93	-1,846	27,859	**100**	3,741	3,780	**39**
2007	0	40	375	95	1,057	275	0	65	0	0	0	0	462	117	4,795	39	6,689	769	0	0	2,651	4,007	4,589	11,247	1,166	27,859	100	-4,559	23,300	**107**	3,780	3,382	**-397**
2008	2,092	40	375	95	1,057	275	4,285	65	0	0	0	0	458	113	3,847	39	12,115	1,211	0	0	2,911	3,522	4,643	11,076	1,185	23,300	107	1,039	24,339	**103**	3,382	3,408	**26**
2009	520	40	375	95	1,057	275	2,662	65	0	0	0	0	448	115	4,032	39	9,093	990	0	0	2,702	3,334	4,563	10,600	1,106	24,339	103	-1,506	22,833	**106**	3,408	3,293	**-116**
2010	3,882	40	375	95	1,057	275	7,831	65	0	0	0	0	415	109	3,633	39	17,193	1,604	0	0	3,912	3,476	5,519	12,907	1,297	22,833	106	4,287	27,119	**98**	3,293	3,599	**307**
2011	1,470	40	375	95	1,057	275	5,119	65	0	0	0	0	445	114	3,866	39	12,332	1,251	0	0	4,303	3,599	5,821	13,723	1,250	27,119	98	-1,392	25,728	**103**	3,599	3,600	**0**

Historical Nitrate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	Nitrate Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Nitrate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	Nitrate Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]
2001	2,645	9	375	46	1,057	17	7,210	7	0	0	0	0	364	24	3,429	21	15,080	258
2002	6	9	375	46	1,057	17	0	7	0	0	0	0	408	29	3,539	21	5,384	164
2003	1,054	9	375	46	1,057	17	4,077	7	0	0	0	0	414	30	3,721	21	10,696	222
2004	1,819	9	375	46	1,057	17	5,040	7	0	0	0	0	412	29	4,228	21	12,931	254
2005	5,892	9	375	46	1,057	17	7,351	7	0	0	0	0	392	27	3,813	21	18,880	312
2006	941	9	375	46	1,057	17	4,362	7	0	0	0	0	403	30	4,258	21	11,396	238
2007	0	9	375	46	1,057	17	0	7	0	0	0	0	462	33	4,795	21	6,689	205
2008	2,092	9	375	46	1,057	17	4,285	7	0	0	0	0	458	32	3,847	21	12,115	243
2009	520	9	375	46	1,057	17	2,662	7	0	0	0	0	448	34	4,032	21	9,093	214
2010	3,882	9	375	46	1,057	17	7,831	7	0	0	0	0	415	30	3,633	21	17,193	290
2011	1,470	9	375	46	1,057	17	5,119	7	0	0	0	0	445	31	3,866	21	12,332	243

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	0	0	3,768	3,687	4,011	11,466	250	23,395	24	3,614	27,009	**21**	760	768	**8**
2002	0	0	2,484	3,235	3,980	9,700	205	27,009	21	-4,316	22,693	**24**	768	727	**-41**
2003	0	0	2,666	3,300	3,734	9,699	225	22,693	24	997	23,690	**22**	727	724	**-4**
2004	0	0	2,921	3,724	4,471	11,117	250	23,690	22	1,815	25,505	**21**	724	728	**4**
2005	0	0	4,991	4,419	5,271	14,681	276	25,505	21	4,200	29,704	**19**	728	763	**35**
2006	0	0	4,276	4,189	4,777	13,242	230	29,704	19	-1,846	27,859	**20**	763	771	**8**
2007	0	0	2,651	4,007	4,589	11,247	238	27,859	20	-4,559	23,300	**23**	771	738	**-33**
2008	0	0	2,911	3,522	4,643	11,076	259	23,300	23	1,039	24,339	**22**	738	723	**-15**
2009	0	0	2,702	3,334	4,563	10,600	234	24,339	22	-1,506	22,833	**23**	723	702	**-20**
2010	0	0	3,912	3,476	5,519	12,907	277	22,833	23	4,287	27,119	**19**	702	715	**13**
2011	0	0	4,303	3,599	5,821	13,723	248	27,119	19	-1,392	25,728	**20**	715	710	**-5**

Historical Sulfate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Deep Perc of Applied Water	Sulfate Conc. for Deep Perc of Applied Water	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Upstream Tributaries	Sulfate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Sulfate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2001	2,645	40	375	178	1,057	512	7,210	103	0	0	0	0	364	137	3,429	190	15,080	2,929	0	0	3,768	3,687	4,011	11,466	1,036	23,395	99	3,614	27,009	**137**	3,149	5,042	**1,893**
2002	6	40	375	178	1,057	512	0	103	0	0	0	0	408	176	3,539	190	5,384	1,838	0	0	2,484	3,235	3,980	9,700	1,347	27,009	137	-4,316	22,693	**179**	5,042	5,533	**491**
2003	1,054	40	375	178	1,057	512	4,077	103	0	0	0	0	414	193	3,721	190	10,696	2,521	0	0	2,666	3,300	3,734	9,699	1,715	22,693	179	997	23,690	**197**	5,533	6,339	**806**
2004	1,819	40	375	178	1,057	512	5,040	103	0	0	0	0	412	197	4,228	190	12,931	2,830	0	0	2,921	3,724	4,471	11,117	2,193	23,690	197	1,815	25,505	**201**	6,339	6,976	**637**
2005	5,892	40	375	178	1,057	512	7,351	103	0	0	0	0	392	194	3,813	190	18,880	3,260	0	0	4,991	4,419	5,271	14,681	2,650	25,505	201	4,200	29,704	**188**	6,976	7,586	**610**
2006	941	40	375	178	1,057	512	4,362	103	0	0	0	0	403	218	4,258	190	11,396	2,704	0	0	4,276	4,189	4,777	13,242	2,290	29,704	188	-1,846	27,859	**211**	7,586	8,001	**415**
2007	0	40	375	178	1,057	512	0	103	0	0	0	0	462	239	4,795	190	6,689	2,214	0	0	2,651	4,007	4,589	11,247	2,469	27,859	211	-4,559	23,300	**245**	8,001	7,746	**-255**
2008	2,092	40	375	178	1,057	512	4,285	103	0	0	0	0	458	233	3,847	190	12,115	2,676	0	0	2,911	3,522	4,643	11,076	2,714	23,300	245	1,039	24,339	**233**	7,746	7,708	**-38**
2009	520	40	375	178	1,057	512	2,662	103	0	0	0	0	448	244	4,032	190	9,093	2,415	0	0	2,702	3,334	4,563	10,600	2,501	24,339	233	-1,506	22,833	**246**	7,708	7,622	**-86**
2010	3,882	40	375	178	1,057	512	7,831	103	0	0	0	0	415	223	3,633	190	17,193	3,194	0	0	3,912	3,476	5,519	12,907	3,003	22,833	246	4,287	27,119	**212**	7,622	7,813	**191**
2011	1,470	40	375	178	1,057	512	5,119	103	0	0	0	0	445	232	3,866	190	12,332	2,759	0	0	4,303	3,599	5,821	13,723	2,714	27,119	212	-1,392	25,728	**225**	7,813	7,858	**45**

Historical TDS Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	TDS Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	TDS Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	TDS Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]
2001	4,050	100	306	783	1,106	2,256	22,110	671	0	0	0	0	8,654	721	3,687	700	511	700	40,424	36,918
2002	8	100	306	783	1,106	2,256	3,741	671	0	0	0	0	8,720	754	3,235	700	6,706	700	23,823	25,533
2003	1,613	100	306	783	1,106	2,256	6,605	671	0	0	0	0	8,524	763	3,300	700	5,112	700	26,566	26,809
2004	2,785	100	306	783	1,106	2,256	10,028	671	0	0	0	0	8,426	756	3,724	700	3,004	700	29,380	28,309
2005	9,022	100	306	783	1,106	2,256	18,269	671	0	0	0	0	9,838	722	4,419	700	3,839	700	46,800	39,126
2006	1,441	100	306	783	1,106	2,256	7,093	671	0	0	0	0	10,409	749	4,189	700	6,210	700	30,755	30,879
2007	0	100	306	783	1,106	2,256	3,895	671	0	0	0	0	10,134	776	4,007	700	5,395	700	24,842	26,907
2008	3,204	100	306	783	1,106	2,256	13,224	671	0	0	0	0	10,148	764	3,522	700	3,759	700	35,268	33,684
2009	796	100	306	783	1,106	2,256	4,718	671	0	0	0	0	9,270	780	3,334	700	5,005	700	24,536	25,898
2010	5,945	100	306	783	1,106	2,256	18,673	671	0	0	0	0	8,696	737	3,476	700	1,213	700	39,415	34,745
2011	2,251	100	306	783	1,106	2,256	9,147	671	0	0	0	0	8,916	750	3,599	700	4,528	700	29,854	29,195

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	9,179	12,853	3,500	7,718	967	34,217	28,902	80,287	692	6,206	86,493	**711**	75,542	83,557	**8,015**
2002	11,235	9,343	1,705	7,453	939	30,675	27,986	86,493	711	-6,852	79,641	**749**	83,557	81,103	**-2,454**
2003	9,509	8,966	1,062	7,814	961	28,313	27,751	79,641	749	-1,746	77,895	**757**	81,103	80,162	**-942**
2004	9,609	8,347	1,022	7,809	1,114	27,902	27,662	77,895	757	1,478	79,373	**749**	80,162	80,809	**647**
2005	11,484	16,958	3,301	7,351	1,049	40,142	37,508	79,373	749	6,658	86,031	**705**	80,809	82,427	**1,618**
2006	12,537	12,089	2,447	6,958	1,056	35,087	31,273	86,031	705	-4,331	81,700	**738**	82,427	82,033	**-394**
2007	11,697	8,883	1,233	8,021	1,137	30,972	29,861	81,700	738	-6,130	75,570	**770**	82,033	79,079	**-2,954**
2008	13,435	9,892	1,530	7,421	1,058	33,337	33,284	75,570	770	1,931	77,501	**754**	79,079	79,480	**401**
2009	11,011	7,588	1,021	7,856	1,195	28,671	28,356	77,501	754	-4,135	73,365	**772**	79,480	77,022	**-2,458**
2010	11,110	10,064	1,735	7,762	1,336	32,008	31,781	73,365	772	7,408	80,773	**728**	77,022	79,986	**2,963**
2011	10,481	10,816	2,143	7,580	1,247	32,268	29,831	80,773	728	-2,414	78,359	**745**	79,986	79,349	**-636**

Table F-17b

Historical Chloride Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	Chloride Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Chloride Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Chloride Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]
2001	4,050	40	306	109	1,106	314	22,110	126	0	0	0	0	8,654	79	3,687	28	511	28	40,424	5,610
2002	8	40	306	109	1,106	314	3,741	126	0	0	0	0	8,720	80	3,235	28	6,706	28	23,823	2,489
2003	1,613	40	306	109	1,106	314	6,605	126	0	0	0	0	8,524	82	3,300	28	5,112	28	26,566	3,011
2004	2,785	40	306	109	1,106	314	10,028	126	0	0	0	0	8,426	84	3,724	28	3,004	28	29,380	3,602
2005	9,022	40	306	109	1,106	314	18,269	126	0	0	0	0	9,838	92	4,419	28	3,839	28	46,800	5,678
2006	1,441	40	306	109	1,106	314	7,093	126	0	0	0	0	10,409	92	4,189	28	6,210	28	30,755	3,506
2007	0	40	306	109	1,106	314	3,895	126	0	0	0	0	10,134	91	4,007	28	5,395	28	24,842	2,802
2008	3,204	40	306	109	1,106	314	13,224	126	0	0	0	0	10,148	89	3,522	28	3,759	28	35,268	4,465
2009	796	40	306	109	1,106	314	4,718	126	0	0	0	0	9,270	88	3,334	28	5,005	28	24,536	2,800
2010	5,945	40	306	109	1,106	314	18,673	126	0	0	0	0	8,696	87	3,476	28	1,213	28	39,415	5,249
2011	2,251	40	306	109	1,106	314	9,147	126	0	0	0	0	8,916	88	3,599	28	4,528	28	29,854	3,579

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	9,179	12,853	3,500	7,718	967	34,217	3,279	80,287	79	6,206	86,493	**93**	8,569	10,900	**2,331**
2002	11,235	9,343	1,705	7,453	939	30,675	3,651	86,493	93	-6,852	79,641	**90**	10,900	9,738	**-1,162**
2003	9,509	8,966	1,062	7,814	961	28,313	3,332	79,641	90	-1,746	77,895	**89**	9,738	9,417	**-321**
2004	9,609	8,347	1,022	7,809	1,114	27,902	3,250	77,895	89	1,478	79,373	**91**	9,417	9,770	**353**
2005	11,484	16,958	3,301	7,351	1,049	40,142	4,535	79,373	91	6,658	86,031	**93**	9,770	10,913	**1,143**
2006	12,537	12,089	2,447	6,958	1,056	35,087	4,140	86,031	93	-4,331	81,700	**93**	10,913	10,279	**-634**
2007	11,697	8,883	1,233	8,021	1,137	30,972	3,742	81,700	93	-6,130	75,570	**91**	10,279	9,339	**-940**
2008	13,435	9,892	1,530	7,421	1,058	33,337	3,931	75,570	91	1,931	77,501	**94**	9,339	9,874	**535**
2009	11,011	7,588	1,021	7,856	1,195	28,671	3,523	77,501	94	-4,135	73,365	**92**	9,874	9,151	**-723**
2010	11,110	10,064	1,735	7,762	1,336	32,008	3,776	73,365	92	7,408	80,773	**97**	9,151	10,624	**1,473**
2011	10,481	10,816	2,143	7,580	1,247	32,268	3,962	80,773	97	-2,414	78,359	**96**	10,624	10,241	**-383**

Table F-17c

Historical Nitrate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Deep Perc of Applied Water	Nitrate Conc. for Deep Perc of Applied Water	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Upstream Tributaries	Nitrate Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Nitrate Conc. for Inflow From MZ1	Inflow From MZ3	Nitrate Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2001	4,050	9	306	44	1,106	16	22,110	20	0	0	0	0	8,654	23	3,687	20	511	20	40,424	1,076	9,179	12,853	3,500	7,718	967	34,217	1,023	80,287	25	6,206	86,493	23	2,675	2,727	52
2002	8	9	306	44	1,106	16	3,741	20	0	0	0	0	8,720	23	3,235	20	6,706	20	23,823	684	11,235	9,343	1,705	7,453	939	30,675	913	86,493	23	-6,852	79,641	23	2,727	2,498	-229
2003	1,613	9	306	44	1,106	16	6,605	20	0	0	0	0	8,524	22	3,300	20	5,112	20	26,566	727	9,509	8,966	1,062	7,814	961	28,313	855	79,641	23	-1,746	77,895	22	2,498	2,370	-128
2004	2,785	9	306	44	1,106	16	10,028	20	0	0	0	0	8,426	21	3,724	20	3,004	20	29,380	776	9,609	8,347	1,022	7,809	1,114	27,902	818	77,895	22	1,478	79,373	22	2,370	2,329	-41
2005	9,022	9	306	44	1,106	16	18,269	20	0	0	0	0	9,838	20	4,419	20	3,839	20	46,800	1,143	11,484	16,958	3,301	7,351	1,049	40,142	1,081	79,373	22	6,658	86,031	20	2,329	2,391	63
2006	1,441	9	306	44	1,106	16	7,093	20	0	0	0	0	10,409	21	4,189	20	6,210	20	30,755	828	12,537	12,089	2,447	6,958	1,056	35,087	907	86,031	20	-4,331	81,700	21	2,391	2,312	-79
2007	0	9	306	44	1,106	16	3,895	20	0	0	0	0	10,134	21	4,007	20	5,395	20	24,842	692	11,697	8,883	1,233	8,021	1,137	30,972	842	81,700	21	-6,130	75,570	21	2,312	2,162	-150
2008	3,204	9	306	44	1,106	16	13,224	20	0	0	0	0	10,148	21	3,522	20	3,759	20	35,268	921	13,435	9,892	1,530	7,421	1,058	33,337	910	75,570	21	1,931	77,501	21	2,162	2,173	11
2009	796	9	306	44	1,106	16	4,718	20	0	0	0	0	9,270	21	3,334	20	5,005	20	24,536	666	11,011	7,588	1,021	7,856	1,195	28,671	775	77,501	21	-4,135	73,365	21	2,173	2,064	-109
2010	5,945	9	306	44	1,106	16	18,673	20	0	0	0	0	8,696	20	3,476	20	1,213	20	39,415	983	11,110	10,064	1,735	7,762	1,336	32,008	852	73,365	21	7,408	80,773	20	2,064	2,195	131
2011	2,251	9	306	44	1,106	16	9,147	20	0	0	0	0	8,916	20	3,599	20	4,528	20	29,854	781	10,481	10,816	2,143	7,580	1,247	32,268	819	80,773	20	-2,414	78,359	20	2,195	2,158	-37

Table F-17d

Historical Sulfate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - No Project - 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	Sulfate Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Sulfate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Sulfate Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Sulfate Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	4,050	40	306	143	1,106	413	22,110	179	0	0	0	0	8,654	145	3,687	235	511	235	40,424	9,317	9,179	12,853	3,500	7,718	967	34,217	7,067	80,287	169	6,206	86,493	**176**	18,471	20,720	**2,250**
2002	8	40	306	143	1,106	413	3,741	179	0	0	0	0	8,720	157	3,235	235	6,706	235	23,823	6,628	11,235	9,343	1,705	7,453	939	30,675	6,940	86,493	176	-6,852	79,641	**188**	20,720	20,408	**-312**
2003	1,613	40	306	143	1,106	413	6,605	179	0	0	0	0	8,524	161	3,300	235	5,112	235	26,566	6,923	9,509	8,966	1,062	7,814	961	28,313	6,983	79,641	188	-1,746	77,895	**192**	20,408	20,348	**-60**
2004	2,785	40	306	143	1,106	413	10,028	179	0	0	0	0	8,426	160	3,724	235	3,004	235	29,380	7,244	9,609	8,347	1,022	7,809	1,114	27,902	7,022	77,895	192	1,478	79,373	**191**	20,348	20,571	**223**
2005	9,022	40	306	143	1,106	413	18,269	179	0	0	0	0	9,838	141	4,419	235	3,839	235	46,800	10,126	11,484	16,958	3,301	7,351	1,049	40,142	9,548	79,373	191	6,658	86,031	**181**	20,571	21,149	**578**
2006	1,441	40	306	143	1,106	413	7,093	179	0	0	0	0	10,409	151	4,189	235	6,210	235	30,755	7,942	12,537	12,089	2,447	6,958	1,056	35,087	8,024	86,031	181	-4,331	81,700	**190**	21,149	21,067	**-82**
2007	0	40	306	143	1,106	413	3,895	179	0	0	0	0	10,134	161	4,007	235	5,395	235	24,842	6,854	11,697	8,883	1,233	8,021	1,137	30,972	7,668	81,700	190	-6,130	75,570	**197**	21,067	20,253	**-814**
2008	3,204	40	306	143	1,106	413	13,224	179	0	0	0	0	10,148	162	3,522	235	3,759	235	35,268	8,622	13,435	9,892	1,530	7,421	1,058	33,337	8,524	75,570	197	1,931	77,501	**193**	20,253	20,351	**98**
2009	796	40	306	143	1,106	413	4,718	179	0	0	0	0	9,270	169	3,334	235	5,005	235	24,536	6,663	11,011	7,588	1,021	7,856	1,195	28,671	7,260	77,501	193	-4,135	73,365	**198**	20,351	19,753	**-598**
2010	5,945	40	306	143	1,106	413	18,673	179	0	0	0	0	8,696	157	3,476	235	1,213	235	39,415	8,889	11,110	10,064	1,735	7,762	1,336	32,008	8,151	73,365	198	7,408	80,773	**187**	19,753	20,492	**739**
2011	2,251	40	306	143	1,106	413	9,147	179	0	0	0	0	8,916	161	3,599	235	4,528	235	29,854	7,570	10,481	10,816	2,143	7,580	1,247	32,268	7,642	80,773	187	-2,414	78,359	**192**	20,492	20,419	**-72**

Table F-18a

Historical TDS Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - No Project- 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	TDS Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	TDS Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	4,939	100	212	758	2,341	2,186	10,375	762	1,700	274	0	0	7,718	917	12,240	550	39,526	38,007	14,623	12,589	2,257	6,755	400	36,623	30,489	43,744	653	2,903	46,647	**730**	38,809	46,327	**7,517**
2002	10	100	212	758	2,341	2,186	5,845	762	1,700	274	0	0	7,453	917	13,394	550	30,955	33,175	15,089	9,299	1,878	6,617	381	33,264	31,170	46,647	730	-2,309	44,338	**802**	46,327	48,331	**2,005**
2003	1,967	100	212	758	2,341	2,186	8,122	762	1,700	274	0	0	7,814	917	12,393	550	34,549	35,502	14,543	11,096	1,985	6,670	392	34,687	35,647	44,338	802	-138	44,200	**802**	48,331	48,186	**-145**
2004	3,397	100	212	758	2,341	2,186	9,259	762	1,705	267	0	0	7,809	917	12,294	550	37,017	36,781	15,038	11,643	2,017	6,721	398	35,817	36,847	44,200	802	1,200	45,401	**780**	48,186	48,119	**-67**
2005	11,002	100	212	758	2,341	2,186	10,550	762	1,700	225	0	0	7,351	917	13,419	550	46,575	39,324	12,493	18,118	2,986	6,957	449	41,003	40,294	45,401	780	5,571	50,972	**680**	48,119	47,149	**-970**
2006	1,758	100	212	758	2,341	2,186	10,653	762	1,700	212	0	0	6,958	917	12,884	550	36,506	37,255	15,729	12,660	2,492	6,695	517	38,093	32,931	50,972	680	-1,587	49,385	**767**	47,149	51,473	**4,324**
2007	0	100	212	758	2,341	2,186	5,242	762	1,700	264	0	0	8,021	917	13,318	550	30,833	33,177	14,108	10,111	2,023	6,632	455	33,330	32,631	49,385	767	-2,496	46,888	**816**	51,473	52,019	**546**
2008	3,907	100	212	758	2,341	2,186	11,606	762	1,705	301	0	0	7,421	917	11,806	550	38,998	38,512	14,546	13,125	2,224	6,752	427	37,074	38,663	46,888	816	1,924	48,813	**781**	52,019	51,867	**-152**
2009	971	100	212	758	2,341	2,186	6,768	762	1,700	333	0	0	7,856	917	13,375	550	33,223	34,888	16,386	10,192	1,923	6,650	435	35,586	35,770	48,813	781	-2,363	46,449	**807**	51,867	50,985	**-882**
2010	7,249	100	212	758	2,341	2,186	12,207	762	1,700	304	0	0	7,762	917	11,711	550	43,182	39,949	17,193	12,500	2,141	6,802	456	39,092	40,559	46,449	807	4,090	50,539	**733**	50,985	50,375	**-610**
2011	2,745	100	212	758	2,341	2,186	11,652	762	1,700	282	0	0	7,580	917	12,400	550	38,630	38,998	16,935	12,332	2,290	6,725	447	38,730	36,321	50,539	733	-100	50,440	**774**	50,375	53,052	**2,677**

Table F-18b

Historical Chloride Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - No Project- 2001 through 2011

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Deep Perc of Applied Water	Chloride Conc. for Deep Perc of Applied Water	Stream Leakage	Chloride Conc. for Stream Leakage	Castaic Dam Underflow	Chloride Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Chloride Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2001	4,939	40	212	107	2,341	307	10,375	109	1,700	71	0	0	7,718	96	12,240	15	39,526	4,230	14,623	12,589	2,257	6,755	400	36,623	3,061	43,744	66	2,903	46,647	**80**	3,896	5,066	**1,170**
2002	10	40	212	107	2,341	307	5,845	109	1,700	80	0	0	7,453	96	13,394	15	30,955	3,304	15,089	9,299	1,878	6,617	381	33,264	3,408	46,647	80	-2,309	44,338	**82**	5,066	4,961	**-104**
2003	1,967	40	212	107	2,341	307	8,122	109	1,700	93	0	0	7,814	96	12,393	15	34,549	3,803	14,543	11,096	1,985	6,670	392	34,687	3,659	44,338	82	-138	44,200	**85**	4,961	5,105	**144**
2004	3,397	40	212	107	2,341	307	9,259	109	1,705	82	0	0	7,809	96	12,294	15	37,017	4,020	15,038	11,643	2,017	6,721	398	35,817	3,904	44,200	85	1,200	45,401	**85**	5,105	5,222	**116**
2005	11,002	40	212	107	2,341	307	10,550	109	1,700	51	0	0	7,351	96	13,419	15	46,575	4,517	12,493	18,118	2,986	6,957	449	41,003	4,373	45,401	85	5,571	50,972	**77**	5,222	5,366	**144**
2006	1,758	40	212	107	2,341	307	10,653	109	1,700	47	0	0	6,958	96	12,884	15	36,506	3,957	15,729	12,660	2,492	6,695	517	38,093	3,748	50,972	77	-1,587	49,385	**83**	5,366	5,575	**209**
2007	0	40	212	107	2,341	307	5,242	109	1,700	58	0	0	8,021	96	13,318	15	30,833	3,235	14,108	10,111	2,023	6,632	455	33,330	3,534	49,385	83	-2,496	46,888	**83**	5,575	5,275	**-300**
2008	3,907	40	212	107	2,341	307	11,606	109	1,705	71	0	0	7,421	96	11,806	15	38,998	4,310	14,546	13,125	2,224	6,752	427	37,074	3,921	46,888	83	1,924	48,813	**85**	5,275	5,665	**389**
2009	971	40	212	107	2,341	307	6,768	109	1,700	76	0	0	7,856	96	13,375	15	33,223	3,534	16,386	10,192	1,923	6,650	435	35,586	3,907	48,813	85	-2,363	46,449	**84**	5,665	5,292	**-372**
2010	7,249	40	212	107	2,341	307	12,207	109	1,700	72	0	0	7,762	96	11,711	15	43,182	4,625	17,193	12,500	2,141	6,802	456	39,092	4,210	46,449	84	4,090	50,539	**83**	5,292	5,707	**415**
2011	2,745	40	212	107	2,341	307	11,652	109	1,700	63	0	0	7,580	96	12,400	15	38,630	4,267	16,935	12,332	2,290	6,725	447	38,730	4,115	50,539	83	-100	50,440	**85**	5,707	5,859	**152**

Historical Nitrate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - No Project- 2001 through 2011

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Deep Perc of Applied Water [acre-ft]	Nitrate Conc. for Deep Perc of Applied Water [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Nitrate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	Nitrate Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2001	4,939	9	212	41	2,341	15	10,375	7	1,700	3	0	0	7,718	16	12,240	10	39,526	556	14,623	12,589	2,257	6,755	400	36,623	388	43,744	8	2,903	46,647	10	494	662	168
2002	10	9	212	41	2,341	15	5,845	7	1,700	3	0	0	7,453	16	13,394	10	30,955	464	15,089	9,299	1,878	6,617	381	33,264	445	46,647	10	-2,309	44,338	11	662	681	19
2003	1,967	9	212	41	2,341	15	8,122	7	1,700	3	0	0	7,814	16	12,393	10	34,549	503	14,543	11,096	1,985	6,670	392	34,687	502	44,338	11	-138	44,200	11	681	682	1
2004	3,397	9	212	41	2,341	15	9,259	7	1,705	3	0	0	7,809	16	12,294	10	37,017	530	15,038	11,643	2,017	6,721	398	35,817	521	44,200	11	1,200	45,401	11	682	690	8
2005	11,002	9	212	41	2,341	15	10,550	7	1,700	3	0	0	7,351	16	13,419	10	46,575	638	12,493	18,118	2,986	6,957	449	41,003	578	45,401	11	5,571	50,972	11	690	751	60
2006	1,758	9	212	41	2,341	15	10,653	7	1,700	3	0	0	6,958	16	12,884	10	36,506	513	15,729	12,660	2,492	6,695	517	38,093	524	50,972	11	-1,587	49,385	11	751	739	-11
2007	0	9	212	41	2,341	15	5,242	7	1,700	3	0	0	8,021	16	13,318	10	30,833	469	14,108	10,111	2,023	6,632	455	33,330	469	49,385	11	-2,496	46,888	12	739	740	1
2008	3,907	9	212	41	2,341	15	11,606	7	1,705	3	0	0	7,421	16	11,806	10	38,998	543	14,546	13,125	2,224	6,752	427	37,074	550	46,888	12	1,924	48,813	11	740	733	-7
2009	971	9	212	41	2,341	15	6,768	7	1,700	3	0	0	7,856	16	13,375	10	33,223	493	16,386	10,192	1,923	6,650	435	35,586	506	48,813	11	-2,363	46,449	11	733	720	-13
2010	7,249	9	212	41	2,341	15	12,207	7	1,700	3	0	0	7,762	16	11,711	10	43,182	595	17,193	12,500	2,141	6,802	456	39,092	573	46,449	11	4,090	50,539	11	720	742	22
2011	2,745	9	212	41	2,341	15	11,652	7	1,700	3	0	0	7,580	16	12,400	10	38,630	541	16,935	12,332	2,290	6,725	447	38,730	535	50,539	11	-100	50,440	11	742	748	6

Table F-18d

Historical Sulfate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - No Project- 2001 through 2011

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Deep Perc of Applied Water	Sulfate Conc. for Deep Perc of Applied Water	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Sulfate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2001	4,939	40	212	144	2,341	416	10,375	254	1,700	52	0	0	7,718	295	12,240	235	39,526	12,344	14,623	12,589	2,257	6,755	400	36,623	10,294	43,744	220	2,903	46,647	**239**	13,103	15,153	**2,050**
2002	10	40	212	144	2,341	416	5,845	254	1,700	53	0	0	7,453	295	13,394	235	30,955	10,775	15,089	9,299	1,878	6,617	381	33,264	10,196	46,647	239	-2,309	44,338	**261**	15,153	15,733	**580**
2003	1,967	40	212	144	2,341	416	8,122	254	1,700	47	0	0	7,814	295	12,393	235	34,549	11,480	14,543	11,096	1,985	6,670	392	34,687	11,604	44,338	261	-138	44,200	**260**	15,733	15,610	**-124**
2004	3,397	40	212	144	2,341	416	9,259	254	1,705	46	0	0	7,809	295	12,294	235	37,017	11,915	15,038	11,643	2,017	6,721	398	35,817	11,936	44,200	260	1,200	45,401	**253**	15,610	15,588	**-21**
2005	11,002	40	212	144	2,341	416	10,550	254	1,700	54	0	0	7,351	295	13,419	235	46,575	12,968	12,493	18,118	2,986	6,957	449	41,003	13,053	45,401	253	5,571	50,972	**224**	15,588	15,503	**-85**
2006	1,758	40	212	144	2,341	416	10,653	254	1,700	57	0	0	6,958	295	12,884	235	36,506	12,181	15,729	12,660	2,492	6,695	517	38,093	10,828	50,972	224	-1,587	49,385	**251**	15,503	16,856	**1,353**
2007	0	40	212	144	2,341	416	5,242	254	1,700	46	0	0	8,021	295	13,318	235	30,833	10,755	14,108	10,111	2,023	6,632	455	33,330	10,686	49,385	251	-2,496	46,888	**265**	16,856	16,925	**69**
2008	3,907	40	212	144	2,341	416	11,606	254	1,705	48	0	0	8,021	295	11,806	235	39,598	12,687	14,546	13,125	2,224	6,752	427	37,074	12,580	46,888	265	2,524	49,413	**254**	16,925	17,033	**108**
2009	971	40	212	144	2,341	416	6,768	254	1,700	56	0	0	7,856	295	13,375	235	33,223	11,311	16,386	10,192	1,923	6,650	435	35,586	11,604	49,413	254	-2,363	47,049	**262**	17,033	16,739	**-294**
2010	7,249	40	212	144	2,341	416	12,207	254	1,700	53	0	0	7,762	295	11,711	235	43,182	12,953	17,193	12,500	2,141	6,802	456	39,092	13,146	47,049	262	4,090	51,139	**238**	16,739	16,546	**-193**
2011	2,745	40	212	144	2,341	416	11,652	254	1,700	50	0	0	7,580	295	12,400	235	38,630	12,658	16,935	12,332	2,290	6,725	447	38,730	11,790	51,139	238	-100	51,040	**251**	16,546	17,414	**868**

Projected TDS Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	100	442	777	758	2,240	0	0	15,281	722	5,429	722	3,551	723	30,583	27,295	11,058	1,231	1,151	13,877	70	27,387	26,745	69,600	750	3,196	72,795	722	70,950	71,499	549
2013	333	100	441	777	764	2,240	0	0	2,847	722	7,635	722	5,826	723	17,845	18,857	11,043	786	844	13,113	38	25,825	24,536	72,795	722	-7,980	64,815	747	71,499	65,820	-5,679
2014	2,767	100	441	777	770	2,240	0	0	8,005	722	7,025	722	3,735	723	22,743	21,615	5,194	818	785	13,815	43	20,656	20,178	64,815	747	2,087	66,902	739	65,820	67,256	1,436
2015	10,922	100	441	777	775	2,240	0	0	27,898	722	5,082	722	1,284	723	46,402	37,951	11,043	1,995	1,279	13,922	70	28,309	27,173	66,902	739	18,093	84,995	675	67,256	78,035	10,778
2016	0	100	442	777	781	2,240	0	0	3,784	722	6,676	722	5,368	723	17,052	18,395	11,058	1,485	1,297	14,163	64	28,066	24,577	84,995	675	-11,014	73,981	714	78,035	71,853	-6,182
2017	0	100	441	777	787	2,240	0	0	2,081	722	8,489	722	4,838	723	16,636	17,998	5,194	883	863	14,662	47	21,649	20,188	73,981	714	-5,013	68,968	743	71,853	69,663	-2,190
2018	2,209	100	441	777	793	2,240	0	0	5,510	722	7,672	722	4,354	723	20,979	20,404	5,194	769	760	14,795	47	21,564	21,014	68,968	743	-585	68,383	743	69,663	69,053	-610
2019	322	100	441	777	799	2,240	0	0	1,318	722	8,363	722	6,035	723	17,277	18,382	11,043	389	501	13,430	32	25,395	25,138	68,383	743	-8,118	60,265	760	69,053	62,297	-6,756
2020	1,284	100	442	777	805	2,240	0	0	2,532	722	8,820	722	4,660	723	18,542	18,820	5,201	361	408	14,129	34	20,134	20,391	60,265	760	-1,592	58,674	761	62,297	60,726	-1,571
2021	0	100	441	777	810	2,240	0	0	467	722	9,939	722	4,877	723	16,534	17,946	5,194	131	301	14,551	35	20,212	20,607	58,674	761	-3,678	54,996	777	60,726	58,065	-2,661
2022	0	100	441	777	816	2,240	0	0	960	722	10,486	722	4,616	723	17,319	18,728	5,194	120	269	14,643	34	20,260	21,107	54,996	777	-2,941	52,055	787	58,065	55,687	-2,378
2023	2,700	100	441	777	822	2,240	0	0	7,122	722	8,249	722	3,838	723	23,171	22,201	5,194	425	340	14,860	38	20,857	21,949	52,055	787	2,314	54,369	757	55,687	55,939	252
2024	7,651	100	442	777	828	2,240	0	0	23,652	722	3,248	722	1,708	723	37,529	32,116	5,201	2,480	1,236	15,376	58	24,351	23,782	54,369	757	13,177	67,546	700	55,939	64,273	8,334
2025	6,543	100	441	777	834	2,240	0	0	31,933	722	3,754	722	1,742	723	45,245	40,641	11,043	7,610	2,007	15,503	97	36,259	32,592	67,546	700	8,986	76,532	695	64,273	72,321	8,048
2026	0	100	441	777	840	2,240	0	0	3,032	722	6,806	722	5,988	723	17,106	18,570	11,043	1,230	1,052	14,109	52	27,486	24,979	76,532	695	-10,380	66,152	733	72,321	65,913	-6,409
2027	6,612	100	441	777	845	2,240	0	0	21,134	722	4,045	722	2,918	723	35,994	31,527	5,194	3,365	1,714	14,470	64	24,807	23,009	66,152	733	11,187	77,340	708	65,913	74,430	8,517
2028	2,395	100	442	777	851	2,240	0	0	6,994	722	4,905	722	5,952	723	21,540	20,922	11,058	1,893	1,442	13,646	51	28,090	25,645	77,340	708	-6,550	70,790	724	74,430	69,707	-4,723
2029	657	100	441	777	857	2,240	0	0	3,265	722	7,106	722	5,903	723	18,228	19,152	11,043	798	886	12,904	37	25,667	24,402	70,790	724	-7,439	63,351	748	69,707	64,457	-5,250
2030	8,133	100	441	777	863	2,240	0	0	49,426	722	3,965	722	-1,666	723	61,160	54,973	11,043	12,976	2,990	15,621	122	42,752	40,456	63,351	748	18,409	81,760	710	64,457	78,974	14,518
2031	0	100	441	777	869	2,240	0	0	1,172	722	7,529	722	6,268	723	16,278	17,818	11,043	919	1,135	14,194	51	27,343	25,315	81,760	710	-11,065	70,695	744	78,974	71,478	-7,496
2032	484	100	442	777	875	2,240	0	0	1,470	722	8,784	722	5,984	723	18,040	19,150	11,058	355	715	13,354	33	25,515	25,075	70,695	744	-7,476	63,219	763	71,478	65,553	-5,925
2033	3,549	100	441	777	880	2,240	0	0	10,413	722	7,475	722	3,523	723	26,281	24,655	5,194	650	777	14,023	40	20,684	20,642	63,219	763	5,597	68,817	743	65,553	69,566	4,013
2034	0	100	441	777	886	2,240	0	0	467	722	7,956	722	5,296	723	15,045	16,642	5,194	450	607	14,461	41	20,753	20,365	68,817	743	-5,707	63,109	767	69,566	65,843	-3,723
2035	1,203	100	441	777	892	2,240	0	0	3,800	722	8,693	722	4,358	723	19,386	19,896	5,194	386	505	14,526	42	20,654	21,021	63,109	767	-1,268	61,842	770	65,843	64,718	-1,125

Table F-19b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentrati on	Change in GW Storage	Ending Storage	Ending Concentrat ion	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	113	758	326	0	0	15,281	89	5,429	98	3,551	34	30,583	3,416	11,058	1,231	1,151	13,877	70	27,387	3,127	69,600	88	3,196	72,795	87	8,294	8,584	290
2013	333	40	441	113	764	326	0	0	2,847	89	7,635	98	5,826	34	17,845	2,052	11,043	786	844	13,113	38	25,825	2,946	72,795	87	-7,980	64,815	87	8,584	7,690	-893
2014	2,767	40	441	113	770	326	0	0	8,005	89	7,025	98	3,735	34	22,743	2,634	5,194	818	785	13,815	43	20,656	2,358	64,815	87	2,087	66,902	88	7,690	7,967	277
2015	10,922	40	441	113	775	326	0	0	27,898	89	5,082	98	1,284	34	46,402	5,115	11,043	1,995	1,279	13,922	70	28,309	3,219	66,902	88	18,093	84,995	85	7,967	9,864	1,897
2016	0	40	442	113	781	326	0	0	3,784	89	6,676	98	5,368	34	17,052	2,007	11,058	1,485	1,297	14,163	64	28,066	3,107	84,995	85	-11,014	73,981	87	9,864	8,764	-1,100
2017	0	40	441	113	787	326	0	0	2,081	89	8,489	98	4,838	34	16,636	2,021	5,194	883	863	14,662	47	21,649	2,462	73,981	87	-5,013	68,968	89	8,764	8,322	-442
2018	2,209	40	441	113	793	326	0	0	5,510	89	7,672	98	4,354	34	20,979	2,427	5,194	769	760	14,795	47	21,564	2,510	68,968	89	-585	68,383	89	8,322	8,239	-83
2019	322	40	441	113	799	326	0	0	1,318	89	8,363	98	6,035	34	17,277	1,989	11,043	389	501	13,430	32	25,395	2,999	68,383	89	-8,118	60,265	88	8,239	7,229	-1,010
2020	1,284	40	442	113	805	326	0	0	2,532	89	8,820	98	4,660	34	18,542	2,189	5,201	361	408	14,129	34	20,134	2,366	60,265	88	-1,592	58,674	88	7,229	7,052	-177
2021	0	40	441	113	810	326	0	0	467	89	9,939	98	4,877	34	16,534	2,031	5,194	131	301	14,551	35	20,212	2,393	58,674	88	-3,678	54,996	89	7,052	6,689	-362
2022	0	40	441	113	816	326	0	0	960	89	10,486	98	4,616	34	17,319	2,154	5,194	120	269	14,643	34	20,260	2,432	54,996	89	-2,941	52,055	91	6,689	6,412	-278
2023	2,700	40	441	113	822	326	0	0	7,122	89	8,249	98	3,838	34	23,171	2,715	5,194	425	340	14,860	38	20,857	2,527	52,055	91	2,314	54,369	89	6,412	6,600	188
2024	7,651	40	442	113	828	326	0	0	23,652	89	3,248	98	1,708	34	37,529	4,223	5,201	2,480	1,236	15,376	58	24,351	2,806	54,369	89	13,177	67,546	87	6,600	8,016	1,417
2025	6,543	40	441	113	834	326	0	0	31,933	89	3,754	98	1,742	34	45,245	5,235	11,043	7,610	2,007	15,503	97	36,259	4,065	67,546	87	8,986	76,532	88	8,016	9,186	1,170
2026	0	40	441	113	840	326	0	0	3,032	89	6,806	98	5,988	34	17,106	1,987	11,043	1,230	1,052	14,109	52	27,486	3,173	76,532	88	-10,380	66,152	89	9,186	8,001	-1,186
2027	6,612	40	441	113	845	326	0	0	21,134	89	4,045	98	2,918	34	35,994	4,030	5,194	3,365	1,714	14,470	64	24,807	2,793	66,152	89	11,187	77,340	88	8,001	9,238	1,238
2028	2,395	40	442	113	851	326	0	0	6,994	89	4,905	98	5,952	34	21,540	2,347	11,058	1,893	1,442	13,646	51	28,090	3,183	77,340	88	-6,550	70,790	87	9,238	8,402	-836
2029	657	40	441	113	857	326	0	0	3,265	89	7,106	98	5,903	34	18,228	2,095	11,043	798	886	12,904	37	25,667	2,941	70,790	87	-7,439	63,351	88	8,402	7,556	-846
2030	8,133	40	441	113	863	326	0	0	49,426	89	3,965	98	-1,666	34	61,160	7,323	11,043	12,976	2,990	15,621	122	42,752	4,742	63,351	88	18,409	81,760	91	7,556	10,136	2,580
2031	0	40	441	113	869	326	0	0	1,172	89	7,529	98	6,268	34	16,278	1,884	11,043	919	1,135	14,194	51	27,343	3,249	81,760	91	-11,065	70,695	91	10,136	8,771	-1,365
2032	484	40	442	113	875	326	0	0	1,470	89	8,784	98	5,984	34	18,040	2,104	11,058	355	715	13,354	33	25,515	3,077	70,695	91	-7,476	63,219	91	8,771	7,798	-973
2033	3,549	40	441	113	880	326	0	0	10,413	89	7,475	98	3,523	34	26,281	3,068	5,194	650	777	14,023	40	20,684	2,456	63,219	91	5,597	68,817	90	7,798	8,410	612
2034	0	40	441	113	886	326	0	0	467	89	7,956	98	5,296	34	15,045	1,819	5,194	450	607	14,461	41	20,753	2,462	68,817	90	-5,707	63,109	91	8,410	7,767	-643
2035	1,203	40	441	113	892	326	0	0	3,800	89	8,693	98	4,358	34	19,386	2,346	5,194	386	505	14,526	42	20,654	2,480	63,109	91	-1,268	61,842	91	7,767	7,633	-134

Table F-19c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	9	442	45	758	16	0	0	15,281	20	5,429	17	3,551	20	30,583	740	11,058	1,231	1,151	13,877	70	27,387	714	69,600	20	3,196	72,795	**19**	1,894	1,920	**26**
2013	333	9	441	45	764	16	0	0	2,847	20	7,635	17	5,826	20	17,845	456	11,043	786	844	13,113	38	25,825	659	72,795	19	-7,980	64,815	**19**	1,920	1,717	**-203**
2014	2,767	9	441	45	770	16	0	0	8,005	20	7,025	17	3,735	20	22,743	555	5,194	818	785	13,815	43	20,656	526	64,815	19	2,087	66,902	**19**	1,717	1,746	**29**
2015	10,922	9	441	45	775	16	0	0	27,898	20	5,082	17	1,284	20	46,402	1,083	11,043	1,995	1,279	13,922	70	28,309	705	66,902	19	18,093	84,995	**18**	1,746	2,124	**378**
2016	0	9	442	45	781	16	0	0	3,784	20	6,676	17	5,368	20	17,052	444	11,058	1,485	1,297	14,163	64	28,066	669	84,995	18	-11,014	73,981	**19**	2,124	1,899	**-225**
2017	0	9	441	45	787	16	0	0	2,081	20	8,489	17	4,838	20	16,636	424	5,194	883	863	14,662	47	21,649	534	73,981	19	-5,013	68,968	**19**	1,899	1,790	**-109**
2018	2,209	9	441	45	793	16	0	0	5,510	20	7,672	17	4,354	20	20,979	513	5,194	769	760	14,795	47	21,564	540	68,968	19	-585	68,383	**19**	1,790	1,763	**-27**
2019	322	9	441	45	799	16	0	0	1,318	20	8,363	17	6,035	20	17,277	438	11,043	389	501	13,430	32	25,395	642	68,383	19	-8,118	60,265	**19**	1,763	1,558	**-204**
2020	1,284	9	442	45	805	16	0	0	2,532	20	8,820	17	4,660	20	18,542	455	5,201	361	408	14,129	34	20,134	510	60,265	19	-1,592	58,674	**19**	1,558	1,504	**-55**
2021	0	9	441	45	810	16	0	0	467	20	9,939	17	4,877	20	16,534	415	5,194	131	301	14,551	35	20,212	510	58,674	19	-3,678	54,996	**19**	1,504	1,408	**-95**
2022	0	9	441	45	816	16	0	0	960	20	10,486	17	4,616	20	17,319	434	5,194	120	269	14,643	34	20,260	512	54,996	19	-2,941	52,055	**19**	1,408	1,330	**-78**
2023	2,700	9	441	45	822	16	0	0	7,122	20	8,249	17	3,838	20	23,171	562	5,194	425	340	14,860	38	20,857	524	52,055	19	2,314	54,369	**19**	1,330	1,368	**38**
2024	7,651	9	442	45	828	16	0	0	23,652	20	3,248	17	1,708	20	37,529	900	5,201	2,480	1,236	15,376	58	24,351	582	54,369	19	13,177	67,546	**18**	1,368	1,686	**318**
2025	6,543	9	441	45	834	16	0	0	31,933	20	3,754	17	1,742	20	45,245	1,124	11,043	7,610	2,007	15,503	97	36,259	855	67,546	18	8,986	76,532	**19**	1,686	1,955	**269**
2026	0	9	441	45	840	16	0	0	3,032	20	6,806	17	5,988	20	17,106	445	11,043	1,230	1,052	14,109	52	27,486	675	76,532	19	-10,380	66,152	**19**	1,955	1,725	**-231**
2027	6,612	9	441	45	845	16	0	0	21,134	20	4,045	17	2,918	20	35,994	870	5,194	3,365	1,714	14,470	64	24,807	602	66,152	19	11,187	77,340	**19**	1,725	1,993	**268**
2028	2,395	9	442	45	851	16	0	0	6,994	20	4,905	17	5,952	20	21,540	537	11,058	1,893	1,442	13,646	51	28,090	687	77,340	19	-6,550	70,790	**19**	1,993	1,843	**-149**
2029	657	9	441	45	857	16	0	0	3,265	20	7,106	17	5,903	20	18,228	464	11,043	798	886	12,904	37	25,667	645	70,790	19	-7,439	63,351	**19**	1,843	1,662	**-182**
2030	8,133	9	441	45	863	16	0	0	49,426	20	3,965	17	-1,666	20	61,160	1,532	11,043	12,976	2,990	15,621	122	42,752	1,043	63,351	19	18,409	81,760	**19**	1,662	2,150	**489**
2031	0	9	441	45	869	16	0	0	1,172	20	7,529	17	6,268	20	16,278	419	11,043	919	1,135	14,194	51	27,343	689	81,760	19	-11,065	70,695	**20**	2,150	1,880	**-271**
2032	484	9	442	45	875	16	0	0	1,470	20	8,784	17	5,984	20	18,040	454	11,058	355	715	13,354	33	25,515	659	70,695	20	-7,476	63,219	**19**	1,880	1,674	**-206**
2033	3,549	9	441	45	880	16	0	0	10,413	20	7,475	17	3,523	20	26,281	637	5,194	650	777	14,023	40	20,684	527	63,219	19	5,597	68,817	**19**	1,674	1,784	**110**
2034	0	9	441	45	886	16	0	0	467	20	7,956	17	5,296	20	15,045	383	5,194	450	607	14,461	41	20,753	522	68,817	19	-5,707	63,109	**19**	1,784	1,645	**-139**
2035	1,203	9	441	45	892	16	0	0	3,800	20	8,693	17	4,358	20	19,386	479	5,194	386	505	14,526	42	20,654	525	63,109	19	-1,268	61,842	**19**	1,645	1,599	**-46**

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	124	758	358	0	0	15,281	140	5,429	108	3,551	235	30,583	5,553	11,058	1,231	1,151	13,877	70	27,387	5,739	69,600	161	3,196	72,795	**152**	15,223	15,038	**-185**
2013	333	40	441	124	764	358	0	0	2,847	140	7,635	108	5,826	235	17,845	3,987	11,043	786	844	13,113	38	25,825	5,161	72,795	152	-7,980	64,815	**157**	15,038	13,865	**-1,173**
2014	2,767	40	441	124	770	358	0	0	8,005	140	7,025	108	3,735	235	22,743	4,344	5,194	818	785	13,815	43	20,656	4,251	64,815	157	2,087	66,902	**153**	13,865	13,958	**93**
2015	10,922	40	441	124	775	358	0	0	27,898	140	5,082	108	1,284	235	46,402	7,496	11,043	1,995	1,279	13,922	70	28,309	5,639	66,902	153	18,093	84,995	**137**	13,958	15,814	**1,856**
2016	0	40	442	124	781	358	0	0	3,784	140	6,676	108	5,368	235	17,052	3,869	11,058	1,485	1,297	14,163	64	28,066	4,981	84,995	137	-11,014	73,981	**146**	15,814	14,702	**-1,112**
2017	0	40	441	124	787	358	0	0	2,081	140	8,489	108	4,838	235	16,636	3,645	5,194	883	863	14,662	47	21,649	4,131	73,981	146	-5,013	68,968	**152**	14,702	14,217	**-486**
2018	2,209	40	441	124	793	358	0	0	5,510	140	7,672	108	4,354	235	20,979	4,144	5,194	769	760	14,795	47	21,564	4,288	68,968	152	-585	68,383	**151**	14,217	14,072	**-144**
2019	322	40	441	124	799	358	0	0	1,318	140	8,363	108	6,035	235	17,277	3,887	11,043	389	501	13,430	32	25,395	5,123	68,383	151	-8,118	60,265	**157**	14,072	12,837	**-1,235**
2020	1,284	40	442	124	805	358	0	0	2,532	140	8,820	108	4,660	235	18,542	3,801	5,201	361	408	14,129	34	20,134	4,202	60,265	157	-1,592	58,674	**156**	12,837	12,436	**-401**
2021	0	40	441	124	810	358	0	0	467	140	9,939	108	4,877	235	16,534	3,576	5,194	131	301	14,551	35	20,212	4,220	58,674	156	-3,678	54,996	**158**	12,436	11,792	**-644**
2022	0	40	441	124	816	358	0	0	960	140	10,486	108	4,616	235	17,319	3,669	5,194	120	269	14,643	34	20,260	4,286	54,996	158	-2,941	52,055	**158**	11,792	11,174	**-617**
2023	2,700	40	441	124	822	358	0	0	7,122	140	8,249	108	3,838	235	23,171	4,410	5,194	425	340	14,860	38	20,857	4,404	52,055	158	2,314	54,369	**151**	11,174	11,180	**6**
2024	7,651	40	442	124	828	358	0	0	23,652	140	3,248	108	1,708	235	37,529	6,404	5,201	2,480	1,236	15,376	58	24,351	4,753	54,369	151	13,177	67,546	**140**	11,180	12,831	**1,651**
2025	6,543	40	441	124	834	358	0	0	31,933	140	3,754	108	1,742	235	45,245	8,003	11,043	7,610	2,007	15,503	97	36,259	6,507	67,546	140	8,986	76,532	**138**	12,831	14,327	**1,496**
2026	0	40	441	124	840	358	0	0	3,032	140	6,806	108	5,988	235	17,106	3,971	11,043	1,230	1,052	14,109	52	27,486	4,949	76,532	138	-10,380	66,152	**148**	14,327	13,350	**-977**
2027	6,612	40	441	124	845	358	0	0	21,134	140	4,045	108	2,918	235	35,994	6,382	5,194	3,365	1,714	14,470	64	24,807	4,660	66,152	148	11,187	77,340	**143**	13,350	15,071	**1,721**
2028	2,395	40	442	124	851	358	0	0	6,994	140	4,905	108	5,952	235	21,540	4,569	11,058	1,893	1,442	13,646	51	28,090	5,193	77,340	143	-6,550	70,790	**150**	15,071	14,447	**-624**
2029	657	40	441	124	857	358	0	0	3,265	140	7,106	108	5,903	235	18,228	4,077	11,043	798	886	12,904	37	25,667	5,058	70,790	150	-7,439	63,351	**156**	14,447	13,467	**-981**
2030	8,133	40	441	124	863	358	0	0	49,426	140	3,965	108	-1,666	235	61,160	10,364	11,043	12,976	2,990	15,621	122	42,752	8,452	63,351	156	18,409	81,760	**138**	13,467	15,379	**1,912**
2031	0	40	441	124	869	358	0	0	1,172	140	7,529	108	6,268	235	16,278	3,828	11,043	919	1,135	14,194	51	27,343	4,930	81,760	138	-11,065	70,695	**149**	15,379	14,277	**-1,101**
2032	484	40	442	124	875	358	0	0	1,470	140	8,784	108	5,984	235	18,040	4,008	11,058	355	715	13,354	33	25,515	5,009	70,695	149	-7,476	63,219	**154**	14,277	13,277	**-1,000**
2033	3,549	40	441	124	880	358	0	0	10,413	140	7,475	108	3,523	235	26,281	4,895	5,194	650	777	14,023	40	20,684	4,181	63,219	154	5,597	68,817	**150**	13,277	13,991	**714**
2034	0	40	441	124	886	358	0	0	467	140	7,956	108	5,296	235	15,045	3,455	5,194	450	607	14,461	41	20,753	4,096	68,817	150	-5,707	63,109	**156**	13,991	13,351	**-641**
2035	1,203	40	441	124	892	358	0	0	3,800	140	8,693	108	4,358	235	19,386	3,964	5,194	386	505	14,526	42	20,654	4,262	63,109	156	-1,268	61,842	**155**	13,351	13,052	**-298**

Table F-20a

Projected TDS Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	100	30	777	52	2,240	0	0	1,047	722	372	722	243	723	2,096	1,871	758	84	79	951	5	1,877	1,979	69,600	810	219	69,819	806	76,620	76,511	-109
2013	23	100	30	777	52	2,240	0	0	195	722	523	722	399	723	1,223	1,292	757	54	58	899	3	1,770	1,876	69,819	806	-547	69,272	806	76,511	75,927	-584
2014	190	100	30	777	53	2,240	0	0	549	722	481	722	256	723	1,559	1,481	356	56	54	947	3	1,416	1,493	69,272	806	143	69,415	804	75,927	75,916	-11
2015	749	100	30	777	53	2,240	0	0	1,912	722	348	722	88	723	3,180	2,601	757	137	88	954	5	1,940	2,026	69,415	804	1,240	70,655	796	75,916	76,491	575
2016	0	100	30	777	54	2,240	0	0	259	722	458	722	368	723	1,169	1,261	758	102	89	971	4	1,923	1,986	70,655	796	-755	69,900	797	76,491	75,765	-725
2017	0	100	30	777	54	2,240	0	0	143	722	582	722	332	723	1,140	1,234	356	60	59	1,005	3	1,484	1,544	69,900	797	-344	69,556	798	75,765	75,455	-311
2018	151	100	30	777	54	2,240	0	0	378	722	526	722	298	723	1,438	1,398	356	53	52	1,014	3	1,478	1,547	69,556	798	-40	69,516	797	75,455	75,307	-148
2019	22	100	30	777	55	2,240	0	0	90	722	573	722	414	723	1,184	1,260	757	27	34	920	2	1,740	1,848	69,516	797	-556	68,960	797	75,307	74,718	-588
2020	88	100	30	777	55	2,240	0	0	174	722	605	722	319	723	1,271	1,290	356	25	28	968	2	1,380	1,465	68,960	797	-109	68,851	796	74,718	74,543	-175
2021	0	100	30	777	56	2,240	0	0	32	722	681	722	334	723	1,133	1,230	356	9	21	997	2	1,385	1,477	68,851	796	-252	68,599	797	74,543	74,296	-247
2022	0	100	30	777	56	2,240	0	0	66	722	719	722	316	723	1,187	1,284	356	8	18	1,004	2	1,389	1,484	68,599	797	-202	68,397	797	74,296	74,095	-200
2023	185	100	30	777	56	2,240	0	0	488	722	565	722	263	723	1,588	1,522	356	29	23	1,018	3	1,429	1,523	68,397	797	159	68,556	795	74,095	74,094	-2
2024	524	100	30	777	57	2,240	0	0	1,621	722	223	722	117	723	2,572	2,201	356	170	85	1,054	4	1,669	1,712	68,556	795	903	69,459	790	74,094	74,583	489
2025	448	100	30	777	57	2,240	0	0	2,189	722	257	722	119	723	3,101	2,785	757	522	138	1,062	7	2,485	2,521	69,459	790	616	70,075	786	74,583	74,847	265
2026	0	100	30	777	58	2,240	0	0	208	722	466	722	410	723	1,172	1,273	757	84	72	967	4	1,884	1,935	70,075	786	-711	69,363	787	74,847	74,185	-662
2027	453	100	30	777	58	2,240	0	0	1,448	722	277	722	200	723	2,467	2,161	356	231	117	992	4	1,700	1,693	69,363	787	767	70,130	783	74,185	74,653	468
2028	164	100	30	777	58	2,240	0	0	479	722	336	722	408	723	1,476	1,434	758	130	99	935	4	1,925	1,944	70,130	783	-449	69,681	783	74,653	74,143	-510
2029	45	100	30	777	59	2,240	0	0	224	722	487	722	405	723	1,249	1,313	757	55	61	884	3	1,759	1,807	69,681	783	-510	69,171	783	74,143	73,648	-495
2030	557	100	30	777	59	2,240	0	0	3,387	722	272	722	-114	723	4,192	3,768	757	889	205	1,071	8	2,930	2,901	69,171	783	1,262	70,433	778	73,648	74,514	866
2031	0	100	30	777	60	2,240	0	0	80	722	516	722	430	723	1,116	1,221	757	63	78	973	4	1,874	1,900	70,433	778	-758	69,675	779	74,514	73,835	-679
2032	33	100	30	777	60	2,240	0	0	101	722	602	722	410	723	1,236	1,312	758	24	49	915	2	1,749	1,801	69,675	779	-512	69,162	780	73,835	73,347	-489
2033	243	100	30	777	60	2,240	0	0	714	722	512	722	241	723	1,801	1,690	356	45	53	961	3	1,418	1,447	69,162	780	384	69,546	778	73,347	73,589	243
2034	0	100	30	777	61	2,240	0	0	32	722	545	722	363	723	1,031	1,141	356	31	42	991	3	1,422	1,461	69,546	778	-391	69,155	779	73,589	73,269	-320
2035	82	100	30	777	61	2,240	0	0	260	722	596	722	299	723	1,329	1,364	356	26	35	996	3	1,416	1,463	69,155	779	-87	69,068	779	73,269	73,170	-99

Table F-20b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	40	30	113	52	326	0	0	1,047	89	372	98	243	34	2,096	234	758	84	79	951	5	1,877	162	69,600	66	219	69,819	**67**	6,282	6,354	**72**
2013	23	40	30	113	52	326	0	0	195	89	523	98	399	34	1,223	141	757	54	58	899	3	1,770	156	69,819	67	-547	69,272	**67**	6,354	6,339	**-15**
2014	190	40	30	113	53	326	0	0	549	89	481	98	256	34	1,559	181	356	56	54	947	3	1,416	125	69,272	67	143	69,415	**68**	6,339	6,395	**56**
2015	749	40	30	113	53	326	0	0	1,912	89	348	98	88	34	3,180	351	757	137	88	954	5	1,940	171	69,415	68	1,240	70,655	**68**	6,395	6,575	**180**
2016	0	40	30	113	54	326	0	0	259	89	458	98	368	34	1,169	138	758	102	89	971	4	1,923	171	70,655	68	-755	69,900	**69**	6,575	6,541	**-33**
2017	0	40	30	113	54	326	0	0	143	89	582	98	332	34	1,140	138	356	60	59	1,005	3	1,484	133	69,900	69	-344	69,556	**69**	6,541	6,547	**5**
2018	151	40	30	113	54	326	0	0	378	89	526	98	298	34	1,438	166	356	53	52	1,014	3	1,478	134	69,556	69	-40	69,516	**70**	6,547	6,579	**32**
2019	22	40	30	113	55	326	0	0	90	89	573	98	414	34	1,184	136	757	27	34	920	2	1,740	161	69,516	70	-556	68,960	**70**	6,579	6,554	**-25**
2020	88	40	30	113	55	326	0	0	174	89	605	98	319	34	1,271	150	356	25	28	968	2	1,380	128	68,960	70	-109	68,851	**70**	6,554	6,575	**22**
2021	0	40	30	113	56	326	0	0	32	89	681	98	334	34	1,133	139	356	9	21	997	2	1,385	130	68,851	70	-252	68,599	**71**	6,575	6,584	**9**
2022	0	40	30	113	56	326	0	0	66	89	719	98	316	34	1,187	148	356	8	18	1,004	2	1,389	132	68,599	71	-202	68,397	**71**	6,584	6,600	**16**
2023	185	40	30	113	56	326	0	0	488	89	565	98	263	34	1,588	186	356	29	23	1,018	3	1,429	136	68,397	71	159	68,556	**71**	6,600	6,651	**50**
2024	524	40	30	113	57	326	0	0	1,621	89	223	98	117	34	2,572	289	356	170	85	1,054	4	1,669	154	68,556	71	903	69,459	**72**	6,651	6,786	**136**
2025	448	40	30	113	57	326	0	0	2,189	89	257	98	119	34	3,101	359	757	522	138	1,062	7	2,485	229	69,459	72	616	70,075	**73**	6,786	6,916	**129**
2026	0	40	30	113	58	326	0	0	208	89	466	98	410	34	1,172	136	757	84	72	967	4	1,884	179	70,075	73	-711	69,363	**73**	6,916	6,873	**-43**
2027	453	40	30	113	58	326	0	0	1,448	89	277	98	200	34	2,467	276	356	231	117	992	4	1,700	157	69,363	73	767	70,130	**73**	6,873	6,993	**119**
2028	164	40	30	113	58	326	0	0	479	89	336	98	408	34	1,476	161	758	130	99	935	4	1,925	182	70,130	73	-449	69,681	**74**	6,993	6,971	**-21**
2029	45	40	30	113	59	326	0	0	224	89	487	98	405	34	1,249	144	757	55	61	884	3	1,759	170	69,681	74	-510	69,171	**74**	6,971	6,945	**-26**
2030	557	40	30	113	59	326	0	0	3,387	89	272	98	-114	34	4,192	502	757	889	205	1,071	8	2,930	274	69,171	74	1,262	70,433	**75**	6,945	7,173	**228**
2031	0	40	30	113	60	326	0	0	80	89	516	98	430	34	1,116	129	757	63	78	973	4	1,874	183	70,433	75	-758	69,675	**75**	7,173	7,119	**-54**
2032	33	40	30	113	60	326	0	0	101	89	602	98	410	34	1,236	144	758	24	49	915	2	1,749	174	69,675	75	-512	69,162	**75**	7,119	7,090	**-29**
2033	243	40	30	113	60	326	0	0	714	89	512	98	241	34	1,801	210	356	45	53	961	3	1,418	140	69,162	75	384	69,546	**76**	7,090	7,160	**70**
2034	0	40	30	113	61	326	0	0	32	89	545	98	363	34	1,031	125	356	31	42	991	3	1,422	142	69,546	76	-391	69,155	**76**	7,160	7,143	**-17**
2035	82	40	30	113	61	326	0	0	260	89	596	98	299	34	1,329	161	356	26	35	996	3	1,416	143	69,155	76	-87	69,068	**76**	7,143	7,161	**18**

Table F-20c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	9	30	45	52	16	0	0	1,047	20	372	17	243	20	2,096	51	758	84	79	951	5	1,877	60	69,600	25	219	69,819	24	2,329	2,320	-9
2013	23	9	30	45	52	16	0	0	195	20	523	17	399	20	1,223	31	757	54	58	899	3	1,770	57	69,819	24	-547	69,272	24	2,320	2,294	-26
2014	190	9	30	45	53	16	0	0	549	20	481	17	256	20	1,559	38	356	56	54	947	3	1,416	45	69,272	24	143	69,415	24	2,294	2,287	-7
2015	749	9	30	45	53	16	0	0	1,912	20	348	17	88	20	3,180	74	757	137	88	954	5	1,940	61	69,415	24	1,240	70,655	24	2,287	2,300	13
2016	0	9	30	45	54	16	0	0	259	20	458	17	368	20	1,169	30	758	102	89	971	4	1,923	60	70,655	24	-755	69,900	24	2,300	2,271	-29
2017	0	9	30	45	54	16	0	0	143	20	582	17	332	20	1,140	29	356	60	59	1,005	3	1,484	46	69,900	24	-344	69,556	24	2,271	2,254	-17
2018	151	9	30	45	54	16	0	0	378	20	526	17	298	20	1,438	35	356	53	52	1,014	3	1,478	46	69,556	24	-40	69,516	24	2,254	2,243	-11
2019	22	9	30	45	55	16	0	0	90	20	573	17	414	20	1,184	30	757	27	34	920	2	1,740	55	69,516	24	-556	68,960	24	2,243	2,218	-25
2020	88	9	30	45	55	16	0	0	174	20	605	17	319	20	1,271	31	356	25	28	968	2	1,380	43	68,960	24	-109	68,851	24	2,218	2,205	-12
2021	0	9	30	45	56	16	0	0	32	20	681	17	334	20	1,133	28	356	9	21	997	2	1,385	44	68,851	24	-252	68,599	23	2,205	2,190	-15
2022	0	9	30	45	56	16	0	0	66	20	719	17	316	20	1,187	30	356	8	18	1,004	2	1,389	44	68,599	23	-202	68,397	23	2,190	2,176	-14
2023	185	9	30	45	56	16	0	0	488	20	565	17	263	20	1,588	39	356	29	23	1,018	3	1,429	45	68,397	23	159	68,556	23	2,176	2,170	-6
2024	524	9	30	45	57	16	0	0	1,621	20	223	17	117	20	2,572	62	356	170	85	1,054	4	1,669	50	68,556	23	903	69,459	23	2,170	2,181	12
2025	448	9	30	45	57	16	0	0	2,189	20	257	17	119	20	3,101	77	757	522	138	1,062	7	2,485	74	69,459	23	616	70,075	23	2,181	2,185	3
2026	0	9	30	45	58	16	0	0	208	20	466	17	410	20	1,172	30	757	84	72	967	4	1,884	56	70,075	23	-711	69,363	23	2,185	2,159	-26
2027	453	9	30	45	58	16	0	0	1,448	20	277	17	200	20	2,467	60	356	231	117	992	4	1,700	49	69,363	23	767	70,130	23	2,159	2,169	10
2028	164	9	30	45	58	16	0	0	479	20	336	17	408	20	1,476	37	758	130	99	935	4	1,925	56	70,130	23	-449	69,681	23	2,169	2,149	-20
2029	45	9	30	45	59	16	0	0	224	20	487	17	405	20	1,249	32	757	55	61	884	3	1,759	52	69,681	23	-510	69,171	23	2,149	2,129	-21
2030	557	9	30	45	59	16	0	0	3,387	20	272	17	-114	20	4,192	105	757	889	205	1,071	8	2,930	84	69,171	23	1,262	70,433	22	2,129	2,150	21
2031	0	9	30	45	60	16	0	0	80	20	516	17	430	20	1,116	29	757	63	78	973	4	1,874	55	70,433	22	-758	69,675	22	2,150	2,124	-26
2032	33	9	30	45	60	16	0	0	101	20	602	17	410	20	1,236	31	758	24	49	915	2	1,749	52	69,675	22	-512	69,162	22	2,124	2,103	-21
2033	243	9	30	45	60	16	0	0	714	20	512	17	241	20	1,801	44	356	45	53	961	3	1,418	41	69,162	22	384	69,546	22	2,103	2,105	2
2034	0	9	30	45	61	16	0	0	32	20	545	17	363	20	1,031	26	356	31	42	991	3	1,422	42	69,546	22	-391	69,155	22	2,105	2,090	-16
2035	82	9	30	45	61	16	0	0	260	20	596	17	299	20	1,329	33	356	26	35	996	3	1,416	42	69,155	22	-87	69,068	22	2,090	2,081	-9

Table F-20d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	40	30	124	52	358	0	0	1,047	140	372	108	243	235	2,096	381	758	84	79	951	5	1,877	612	69,600	250	219	69,819	**247**	23,705	23,473	**-232**
2013	23	40	30	124	52	358	0	0	195	140	523	108	399	235	1,223	273	757	54	58	899	3	1,770	576	69,819	247	-547	69,272	**246**	23,473	23,171	**-302**
2014	190	40	30	124	53	358	0	0	549	140	481	108	256	235	1,559	298	356	56	54	947	3	1,416	456	69,272	246	143	69,415	**244**	23,171	23,013	**-158**
2015	749	40	30	124	53	358	0	0	1,912	140	348	108	88	235	3,180	514	757	137	88	954	5	1,940	614	69,415	244	1,240	70,655	**239**	23,013	22,912	**-100**
2016	0	40	30	124	54	358	0	0	259	140	458	108	368	235	1,169	265	758	102	89	971	4	1,923	595	70,655	239	-755	69,900	**238**	22,912	22,583	**-330**
2017	0	40	30	124	54	358	0	0	143	140	582	108	332	235	1,140	250	356	60	59	1,005	3	1,484	460	69,900	238	-344	69,556	**237**	22,583	22,372	**-210**
2018	151	40	30	124	54	358	0	0	378	140	526	108	298	235	1,438	284	356	53	52	1,014	3	1,478	459	69,556	237	-40	69,516	**235**	22,372	22,198	**-175**
2019	22	40	30	124	55	358	0	0	90	140	573	108	414	235	1,184	266	757	27	34	920	2	1,740	545	69,516	235	-556	68,960	**234**	22,198	21,919	**-278**
2020	88	40	30	124	55	358	0	0	174	140	605	108	319	235	1,271	260	356	25	28	968	2	1,380	430	68,960	234	-109	68,851	**232**	21,919	21,750	**-169**
2021	0	40	30	124	56	358	0	0	32	140	681	108	334	235	1,133	245	356	9	21	997	2	1,385	431	68,851	232	-252	68,599	**231**	21,750	21,564	**-186**
2022	0	40	30	124	56	358	0	0	66	140	719	108	316	235	1,187	251	356	8	18	1,004	2	1,389	431	68,599	231	-202	68,397	**230**	21,564	21,385	**-179**
2023	185	40	30	124	56	358	0	0	488	140	565	108	263	235	1,588	302	356	29	23	1,018	3	1,429	440	68,397	230	159	68,556	**228**	21,385	21,247	**-137**
2024	524	40	30	124	57	358	0	0	1,621	140	223	108	117	235	2,572	439	356	170	85	1,054	4	1,669	491	68,556	228	903	69,459	**224**	21,247	21,195	**-52**
2025	448	40	30	124	57	358	0	0	2,189	140	257	108	119	235	3,101	548	757	522	138	1,062	7	2,485	716	69,459	224	616	70,075	**221**	21,195	21,027	**-168**
2026	0	40	30	124	58	358	0	0	208	140	466	108	410	235	1,172	272	757	84	72	967	4	1,884	544	70,075	221	-711	69,363	**220**	21,027	20,756	**-271**
2027	453	40	30	124	58	358	0	0	1,448	140	277	108	200	235	2,467	437	356	231	117	992	4	1,700	474	69,363	220	767	70,130	**217**	20,756	20,720	**-36**
2028	164	40	30	124	58	358	0	0	479	140	336	108	408	235	1,476	313	758	130	99	935	4	1,925	540	70,130	217	-449	69,681	**216**	20,720	20,493	**-226**
2029	45	40	30	124	59	358	0	0	224	140	487	108	405	235	1,249	279	757	55	61	884	3	1,759	500	69,681	216	-510	69,171	**216**	20,493	20,273	**-220**
2030	557	40	30	124	59	358	0	0	3,387	140	272	108	-114	235	4,192	710	757	889	205	1,071	8	2,930	799	69,171	216	1,262	70,433	**211**	20,273	20,185	**-88**
2031	0	40	30	124	60	358	0	0	80	140	516	108	430	235	1,116	262	757	63	78	973	4	1,874	515	70,433	211	-758	69,675	**210**	20,185	19,932	**-252**
2032	33	40	30	124	60	358	0	0	101	140	602	108	410	235	1,236	275	758	24	49	915	2	1,749	486	69,675	210	-512	69,162	**210**	19,932	19,721	**-212**
2033	243	40	30	124	60	358	0	0	714	140	512	108	241	235	1,801	335	356	45	53	961	3	1,418	389	69,162	210	384	69,546	**208**	19,721	19,667	**-54**
2034	0	40	30	124	61	358	0	0	32	140	545	108	363	235	1,031	237	356	31	42	991	3	1,422	390	69,546	208	-391	69,155	**208**	19,667	19,514	**-154**
2035	82	40	30	124	61	358	0	0	260	140	596	108	299	235	1,329	272	356	26	35	996	3	1,416	390	69,155	208	-87	69,068	**207**	19,514	19,396	**-118**

Table F-21a

Projected TDS Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	100	270	808	88	2,330	0	0	1,438	532	0	0	220	647	2,683	1,899	0	0	941	292	754	1,987	1,489	7,647	1,047	695	8,342	**996**	10,883	11,294	**411**
2013	43	100	269	808	88	2,330	0	0	18	532	0	0	520	650	938	1,053	0	0	620	323	718	1,660	1,408	8,342	996	-722	7,620	**1,056**	11,294	10,939	**-355**
2014	360	100	269	808	89	2,330	0	0	1,029	532	0	0	413	648	2,160	1,734	0	0	764	309	718	1,792	1,475	7,620	1,056	368	7,988	**1,031**	10,939	11,198	**259**
2015	1,421	100	269	808	89	2,330	0	0	916	532	0	0	452	632	3,148	1,823	0	0	915	321	755	1,991	1,508	7,988	1,031	1,158	9,146	**926**	11,198	11,513	**315**
2016	0	100	270	808	90	2,330	0	0	0	532	0	0	515	630	875	1,022	0	0	765	341	749	1,854	1,371	9,146	926	-980	8,166	**1,005**	11,513	11,163	**-349**
2017	0	100	269	808	90	2,330	0	0	0	532	0	0	604	629	963	1,098	0	0	373	351	734	1,458	1,484	8,166	1,005	-495	7,671	**1,033**	11,163	10,777	**-386**
2018	288	100	269	808	90	2,330	0	0	796	532	0	0	542	629	1,985	1,661	0	0	544	359	743	1,646	1,547	7,671	1,033	340	8,011	**1,000**	10,777	10,891	**114**
2019	42	100	269	808	91	2,330	0	0	13	532	0	0	555	632	970	1,076	0	0	494	350	830	1,674	1,604	8,011	1,000	-704	7,307	**1,043**	10,891	10,363	**-528**
2020	167	100	270	808	91	2,330	0	0	412	532	0	0	603	634	1,543	1,427	0	0	477	365	903	1,745	1,798	7,307	1,043	-202	7,105	**1,034**	10,363	9,991	**-372**
2021	0	100	269	808	92	2,330	0	0	0	532	0	0	653	639	1,014	1,154	0	0	288	399	892	1,579	1,816	7,105	1,034	-566	6,539	**1,049**	9,991	9,329	**-662**
2022	0	100	269	808	92	2,330	0	0	0	532	0	0	661	644	1,023	1,167	0	0	189	407	918	1,514	1,891	6,539	1,049	-491	6,048	**1,046**	9,329	8,605	**-724**
2023	351	100	269	808	93	2,330	0	0	908	532	0	0	507	644	2,128	1,738	0	0	484	399	1,009	1,892	2,003	6,048	1,046	236	6,283	**976**	8,605	8,339	**-266**
2024	996	100	270	808	93	2,330	0	0	1,326	532	0	0	342	636	3,027	1,982	0	0	848	415	1,094	2,357	2,003	6,283	976	670	6,953	**880**	8,339	8,318	**-21**
2025	851	100	269	808	93	2,330	0	0	1,585	532	0	0	369	630	3,168	2,170	0	0	1,042	409	898	2,348	1,563	6,953	880	820	7,773	**844**	8,318	8,925	**607**
2026	0	100	269	808	94	2,330	0	0	0	532	0	0	603	635	966	1,114	0	0	779	382	852	2,013	1,417	7,773	844	-1,046	6,727	**943**	8,925	8,622	**-303**
2027	860	100	269	808	94	2,330	0	0	1,614	532	0	0	316	629	3,154	2,149	0	0	945	317	783	2,045	1,411	6,727	943	1,109	7,835	**879**	8,622	9,361	**739**
2028	312	100	270	808	95	2,330	0	0	874	532	0	0	370	630	1,920	1,588	0	0	881	306	737	1,924	1,245	7,835	879	-4	7,832	**911**	9,361	9,704	**343**
2029	86	100	269	808	95	2,330	0	0	152	532	0	0	498	634	1,100	1,148	0	0	717	295	696	1,707	1,227	7,832	911	-608	7,224	**980**	9,704	9,625	**-79**
2030	1,058	100	269	808	96	2,330	0	0	1,476	532	0	0	147	626	3,046	1,935	0	0	1,019	266	742	2,026	1,343	7,224	980	1,020	8,244	**912**	9,625	10,218	**593**
2031	0	100	269	808	96	2,330	0	0	0	532	0	0	572	632	938	1,092	0	0	594	305	697	1,596	1,242	8,244	912	-659	7,586	**976**	10,218	10,068	**-150**
2032	63	100	270	808	97	2,330	0	0	80	532	0	0	570	636	1,080	1,162	0	0	373	312	691	1,375	1,330	7,586	976	-296	7,290	**999**	10,068	9,899	**-168**
2033	462	100	269	808	97	2,330	0	0	1,032	532	0	0	439	635	2,299	1,791	0	0	586	314	816	1,716	1,534	7,290	999	584	7,873	**949**	9,899	10,156	**257**
2034	0	100	269	808	97	2,330	0	0	0	532	0	0	477	640	843	1,019	0	0	456	344	759	1,559	1,424	7,873	949	-716	7,158	**1,002**	10,156	9,752	**-404**
2035	157	100	269	808	98	2,330	0	0	378	532	0	0	544	643	1,446	1,377	0	0	419	347	727	1,493	1,463	7,158	1,002	-47	7,111	**1,000**	9,752	9,666	**-87**

Table F-21b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	40	270	89	88	256	0	0	1,438	65	0	0	220	39	2,683	239	0	0	941	292	754	1,987	161	7,647	114	695	8,342	111	1,180	1,258	78
2013	43	40	269	89	88	256	0	0	18	65	0	0	520	40	938	95	0	0	620	323	718	1,660	157	8,342	111	-722	7,620	115	1,258	1,196	-61
2014	360	40	269	89	89	256	0	0	1,029	65	0	0	413	40	2,160	197	0	0	764	309	718	1,792	161	7,620	115	368	7,988	113	1,196	1,232	36
2015	1,421	40	269	89	89	256	0	0	916	65	0	0	452	41	3,148	248	0	0	915	321	755	1,991	166	7,988	113	1,158	9,146	106	1,232	1,314	82
2016	0	40	270	89	90	256	0	0	0	65	0	0	515	41	875	92	0	0	765	341	749	1,854	157	9,146	106	-980	8,166	113	1,314	1,250	-64
2017	0	40	269	89	90	256	0	0	0	65	0	0	604	40	963	97	0	0	373	351	734	1,458	166	8,166	113	-495	7,671	113	1,250	1,181	-69
2018	288	40	269	89	90	256	0	0	796	65	0	0	542	41	1,985	181	0	0	544	359	743	1,646	169	7,671	113	340	8,011	109	1,181	1,192	11
2019	42	40	269	89	91	256	0	0	13	65	0	0	555	41	970	99	0	0	494	350	830	1,674	176	8,011	109	-704	7,307	112	1,192	1,115	-77
2020	167	40	270	89	91	256	0	0	412	65	0	0	603	42	1,543	145	0	0	477	365	903	1,745	194	7,307	112	-202	7,105	110	1,115	1,066	-49
2021	0	40	269	89	92	256	0	0	0	65	0	0	653	43	1,014	102	0	0	288	399	892	1,579	194	7,105	110	-566	6,539	110	1,066	975	-91
2022	0	40	269	89	92	256	0	0	0	65	0	0	661	44	1,023	104	0	0	189	407	918	1,514	198	6,539	110	-491	6,048	107	975	881	-94
2023	351	40	269	89	93	256	0	0	908	65	0	0	507	44	2,128	195	0	0	484	399	1,009	1,892	205	6,048	107	236	6,283	102	881	871	-10
2024	996	40	270	89	93	256	0	0	1,326	65	0	0	342	45	3,027	258	0	0	848	415	1,094	2,357	209	6,283	102	670	6,953	97	871	920	49
2025	851	40	269	89	93	256	0	0	1,585	65	0	0	369	46	3,168	276	0	0	1,042	409	898	2,348	173	6,953	97	820	7,773	97	920	1,023	103
2026	0	40	269	89	94	256	0	0	0	65	0	0	603	47	966	104	0	0	779	382	852	2,013	162	7,773	97	-1,046	6,727	105	1,023	965	-58
2027	860	40	269	89	94	256	0	0	1,614	65	0	0	316	48	3,154	276	0	0	945	317	783	2,045	158	6,727	105	1,109	7,835	102	965	1,083	119
2028	312	40	270	89	95	256	0	0	874	65	0	0	370	49	1,920	185	0	0	881	306	737	1,924	144	7,835	102	-4	7,832	106	1,083	1,124	41
2029	86	40	269	89	95	256	0	0	152	65	0	0	498	50	1,100	117	0	0	717	295	696	1,707	142	7,832	106	-608	7,224	112	1,124	1,099	-25
2030	1,058	40	269	89	96	256	0	0	1,476	65	0	0	147	50	3,046	265	0	0	1,019	266	742	2,026	153	7,224	112	1,020	8,244	108	1,099	1,211	111
2031	0	40	269	89	96	256	0	0	0	65	0	0	572	51	938	106	0	0	594	305	697	1,596	147	8,244	108	-659	7,586	113	1,211	1,169	-41
2032	63	40	270	89	97	256	0	0	80	65	0	0	570	52	1,080	117	0	0	373	312	691	1,375	155	7,586	113	-296	7,290	114	1,169	1,132	-38
2033	462	40	269	89	97	256	0	0	1,032	65	0	0	439	52	2,299	215	0	0	586	314	816	1,716	175	7,290	114	584	7,873	109	1,132	1,171	39
2034	0	40	269	89	97	256	0	0	0	65	0	0	477	53	843	101	0	0	456	344	759	1,559	164	7,873	109	-716	7,158	114	1,171	1,108	-63
2035	157	40	269	89	98	256	0	0	378	65	0	0	544	54	1,446	149	0	0	419	347	727	1,493	166	7,158	114	-47	7,111	113	1,108	1,090	-18

Table F-21c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	9	270	46	88	17	0	0	1,438	7	0	0	220	20	2,683	47	0	0	941	292	754	1,987	44	7,647	31	695	8,342	**29**	321	324	**3**
2013	43	9	269	46	88	17	0	0	18	7	0	0	520	20	938	34	0	0	620	323	718	1,660	40	8,342	29	-722	7,620	**31**	324	318	**-7**
2014	360	9	269	46	89	17	0	0	1,029	7	0	0	413	20	2,160	44	0	0	764	309	718	1,792	43	7,620	31	368	7,988	**29**	318	319	**2**
2015	1,421	9	269	46	89	17	0	0	916	7	0	0	452	20	3,148	57	0	0	915	321	755	1,991	43	7,988	29	1,158	9,146	**27**	319	333	**14**
2016	0	9	270	46	90	17	0	0	0	7	0	0	515	20	875	33	0	0	765	341	749	1,854	40	9,146	27	-980	8,166	**29**	333	326	**-7**
2017	0	9	269	46	90	17	0	0	0	7	0	0	604	20	963	35	0	0	373	351	734	1,458	43	8,166	29	-495	7,671	**31**	326	318	**-8**
2018	288	9	269	46	90	17	0	0	796	7	0	0	542	20	1,985	45	0	0	544	359	743	1,646	46	7,671	31	340	8,011	**29**	318	317	**-1**
2019	42	9	269	46	91	17	0	0	13	7	0	0	555	20	970	35	0	0	494	350	830	1,674	47	8,011	29	-704	7,307	**31**	317	305	**-12**
2020	167	9	270	46	91	17	0	0	412	7	0	0	603	20	1,543	41	0	0	477	365	903	1,745	53	7,307	31	-202	7,105	**30**	305	293	**-12**
2021	0	9	269	46	92	17	0	0	0	7	0	0	653	20	1,014	37	0	0	288	399	892	1,579	53	7,105	30	-566	6,539	**31**	293	276	**-17**
2022	0	9	269	46	92	17	0	0	0	7	0	0	661	20	1,023	37	0	0	189	407	918	1,514	56	6,539	31	-491	6,048	**31**	276	257	**-19**
2023	351	9	269	46	93	17	0	0	908	7	0	0	507	20	2,128	46	0	0	484	399	1,009	1,892	60	6,048	31	236	6,283	**28**	257	243	**-14**
2024	996	9	270	46	93	17	0	0	1,326	7	0	0	342	19	3,027	53	0	0	848	415	1,094	2,357	58	6,283	28	670	6,953	**25**	243	237	**-5**
2025	851	9	269	46	93	17	0	0	1,585	7	0	0	369	19	3,168	54	0	0	1,042	409	898	2,348	45	6,953	25	820	7,773	**23**	237	247	**10**
2026	0	9	269	46	94	17	0	0	0	7	0	0	603	19	966	35	0	0	779	382	852	2,013	39	7,773	23	-1,046	6,727	**27**	247	243	**-4**
2027	860	9	269	46	94	17	0	0	1,614	7	0	0	316	19	3,154	53	0	0	945	317	783	2,045	40	6,727	27	1,109	7,835	**24**	243	256	**13**
2028	312	9	270	46	95	17	0	0	874	7	0	0	370	19	1,920	41	0	0	881	306	737	1,924	34	7,835	24	-4	7,832	**25**	256	263	**7**
2029	86	9	269	46	95	17	0	0	152	7	0	0	498	19	1,100	34	0	0	717	295	696	1,707	33	7,832	25	-608	7,224	**27**	263	264	**1**
2030	1,058	9	269	46	96	17	0	0	1,476	7	0	0	147	19	3,046	50	0	0	1,019	266	742	2,026	37	7,224	27	1,020	8,244	**25**	264	277	**13**
2031	0	9	269	46	96	17	0	0	0	7	0	0	572	19	938	34	0	0	594	305	697	1,596	34	8,244	25	-659	7,586	**27**	277	277	**0**
2032	63	9	270	46	97	17	0	0	80	7	0	0	570	19	1,080	35	0	0	373	312	691	1,375	37	7,586	27	-296	7,290	**28**	277	276	**-1**
2033	462	9	269	46	97	17	0	0	1,032	7	0	0	439	19	2,299	46	0	0	586	314	816	1,716	43	7,290	28	584	7,873	**26**	276	279	**3**
2034	0	9	269	46	97	17	0	0	0	7	0	0	477	19	843	31	0	0	456	344	759	1,559	39	7,873	26	-716	7,158	**28**	279	271	**-8**
2035	157	9	269	46	98	17	0	0	378	7	0	0	544	19	1,446	39	0	0	419	347	727	1,493	41	7,158	28	-47	7,111	**28**	271	269	**-2**

Table F-21d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	40	270	170	88	490	0	0	1,438	103	0	0	220	266	2,683	437	0	0	941	292	754	1,987	330	7,647	232	695	8,342	**222**	2,410	2,518	**108**
2013	43	40	269	170	88	490	0	0	18	103	0	0	520	266	938	314	0	0	620	323	718	1,660	314	8,342	222	-722	7,620	**243**	2,518	2,518	**0**
2014	360	40	269	170	89	490	0	0	1,029	103	0	0	413	265	2,160	433	0	0	764	309	718	1,792	339	7,620	243	368	7,988	**240**	2,518	2,612	**94**
2015	1,421	40	269	170	89	490	0	0	916	103	0	0	452	257	3,148	485	0	0	915	321	755	1,991	352	7,988	240	1,158	9,146	**221**	2,612	2,745	**133**
2016	0	40	270	170	90	490	0	0	0	103	0	0	515	257	875	302	0	0	765	341	749	1,854	327	9,146	221	-980	8,166	**245**	2,745	2,720	**-25**
2017	0	40	269	170	90	490	0	0	0	103	0	0	604	258	963	334	0	0	373	351	734	1,458	362	8,166	245	-495	7,671	**258**	2,720	2,693	**-28**
2018	288	40	269	170	90	490	0	0	796	103	0	0	542	257	1,985	438	0	0	544	359	743	1,646	387	7,671	258	340	8,011	**252**	2,693	2,744	**52**
2019	42	40	269	170	91	490	0	0	13	103	0	0	555	257	970	321	0	0	494	350	830	1,674	404	8,011	252	-704	7,307	**268**	2,744	2,661	**-83**
2020	167	40	270	170	91	490	0	0	412	103	0	0	603	257	1,543	400	0	0	477	365	903	1,745	462	7,307	268	-202	7,105	**269**	2,661	2,599	**-62**
2021	0	40	269	170	92	490	0	0	0	103	0	0	653	257	1,014	352	0	0	288	399	892	1,579	472	7,105	269	-566	6,539	**279**	2,599	2,479	**-121**
2022	0	40	269	170	92	490	0	0	0	103	0	0	661	258	1,023	355	0	0	189	407	918	1,514	502	6,539	279	-491	6,048	**284**	2,479	2,332	**-147**
2023	351	40	269	170	93	490	0	0	908	103	0	0	507	256	2,128	446	0	0	484	399	1,009	1,892	543	6,048	284	236	6,283	**262**	2,332	2,235	**-97**
2024	996	40	270	170	93	490	0	0	1,326	103	0	0	342	251	3,027	480	0	0	848	415	1,094	2,357	537	6,283	262	670	6,953	**230**	2,235	2,178	**-57**
2025	851	40	269	170	93	490	0	0	1,585	103	0	0	369	246	3,168	515	0	0	1,042	409	898	2,348	409	6,953	230	820	7,773	**216**	2,178	2,285	**106**
2026	0	40	269	170	94	490	0	0	0	103	0	0	603	247	966	327	0	0	779	382	852	2,013	363	7,773	216	-1,046	6,727	**246**	2,285	2,249	**-35**
2027	860	40	269	170	94	490	0	0	1,614	103	0	0	316	243	3,154	502	0	0	945	317	783	2,045	368	6,727	246	1,109	7,835	**224**	2,249	2,383	**134**
2028	312	40	270	170	95	490	0	0	874	103	0	0	370	242	1,920	386	0	0	881	306	737	1,924	317	7,835	224	-4	7,832	**230**	2,383	2,452	**69**
2029	86	40	269	170	95	490	0	0	152	103	0	0	498	243	1,100	316	0	0	717	295	696	1,707	310	7,832	230	-608	7,224	**250**	2,452	2,458	**6**
2030	1,058	40	269	170	96	490	0	0	1,476	103	0	0	147	238	3,046	437	0	0	1,019	266	742	2,026	343	7,224	250	1,020	8,244	**228**	2,458	2,552	**94**
2031	0	40	269	170	96	490	0	0	0	103	0	0	572	239	938	312	0	0	594	305	697	1,596	310	8,244	228	-659	7,586	**248**	2,552	2,554	**2**
2032	63	40	270	170	97	490	0	0	80	103	0	0	570	239	1,080	327	0	0	373	312	691	1,375	337	7,586	248	-296	7,290	**257**	2,554	2,544	**-11**
2033	462	40	269	170	97	490	0	0	1,032	103	0	0	439	238	2,299	438	0	0	586	314	816	1,716	394	7,290	257	584	7,873	**242**	2,544	2,587	**44**
2034	0	40	269	170	97	490	0	0	0	103	0	0	477	239	843	282	0	0	456	344	759	1,559	363	7,873	242	-716	7,158	**258**	2,587	2,506	**-81**
2035	157	40	269	170	98	490	0	0	378	103	0	0	544	239	1,446	365	0	0	419	347	727	1,493	376	7,158	258	-47	7,111	**258**	2,506	2,496	**-11**

Table F-22a

Projected TDS Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Upstream Tributaries	TDS Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	TDS Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	100	181	833	772	2,400	0	0	6,085	532	0	0	292	996	7,741	647	19,285	14,902	0	0	3,696	5,579	6,113	15,388	15,390	25,728	968	3,898	29,626	829	33,864	33,377	-487
2013	274	100	181	833	773	2,400	0	0	737	532	0	0	323	1,056	7,805	650	10,092	10,653	0	0	2,366	5,283	5,691	13,340	12,364	29,626	829	-3,248	26,378	883	33,377	31,666	-1,711
2014	2,277	100	181	833	773	2,400	0	0	4,962	532	0	0	309	1,031	5,898	648	14,400	12,255	0	0	3,004	4,371	5,819	13,193	12,232	26,378	883	1,207	27,584	845	31,666	31,688	23
2015	8,986	100	181	833	774	2,400	0	0	3,952	532	0	0	321	926	7,949	632	22,163	14,045	0	0	3,654	5,444	5,995	15,094	13,141	27,584	845	7,069	34,653	692	31,688	32,592	904
2016	0	100	181	833	774	2,400	0	0	0	532	0	0	341	1,005	7,973	630	9,269	10,027	0	0	2,869	5,612	5,895	14,376	10,823	34,653	692	-5,107	29,546	791	32,592	31,797	-796
2017	0	100	181	833	775	2,400	0	0	0	532	0	0	351	1,033	6,506	629	7,813	8,793	0	0	1,336	4,660	5,570	11,566	11,009	29,546	791	-3,753	25,793	843	31,797	29,581	-2,216
2018	1,818	100	181	833	775	2,400	0	0	3,992	532	0	0	359	1,000	6,610	629	13,735	12,009	0	0	1,990	4,603	5,635	12,228	11,741	25,793	843	1,507	27,300	804	29,581	29,848	268
2019	265	100	181	833	776	2,400	0	0	718	532	0	0	350	1,043	8,284	632	10,573	10,909	0	0	2,032	5,266	6,714	14,012	13,098	27,300	804	-3,439	23,861	853	29,848	27,659	-2,189
2020	1,056	100	181	833	777	2,400	0	0	2,381	532	0	0	365	1,034	6,737	634	11,497	10,929	0	0	1,988	4,526	7,631	14,145	14,091	23,861	853	-2,648	21,213	849	27,659	24,496	-3,163
2021	0	100	181	833	777	2,400	0	0	0	532	0	0	399	1,049	7,303	639	8,660	9,654	0	0	1,158	4,606	6,841	12,605	13,218	21,213	849	-3,945	17,268	892	24,496	20,932	-3,564
2022	0	100	181	833	778	2,400	0	0	0	532	0	0	407	1,046	7,656	644	9,022	10,024	0	0	641	4,695	7,299	12,634	14,539	17,268	892	-3,613	13,655	884	20,932	16,418	-4,515
2023	2,221	100	181	833	778	2,400	0	0	4,160	532	0	0	399	976	7,733	644	15,472	13,360	0	0	1,778	4,860	8,634	15,272	16,224	13,655	884	200	13,855	719	16,418	13,553	-2,865
2024	6,294	100	181	833	779	2,400	0	0	5,602	532	0	0	415	880	7,784	636	21,055	14,881	0	0	3,291	5,093	9,390	17,773	14,167	13,855	719	3,282	17,137	612	13,553	14,267	714
2025	5,383	100	181	833	779	2,400	0	0	6,749	532	0	0	409	844	9,956	630	23,456	17,355	0	0	3,925	6,385	6,698	17,008	10,892	17,137	612	6,448	23,585	646	14,267	20,730	6,463
2026	0	100	181	833	780	2,400	0	0	0	532	0	0	382	943	9,740	635	11,083	11,651	0	0	2,752	6,115	6,755	15,622	11,312	23,585	646	-4,539	19,046	814	20,730	21,070	340
2027	5,440	100	181	833	780	2,400	0	0	6,946	532	0	0	317	879	7,174	629	20,839	15,030	0	0	3,643	5,043	6,144	14,830	12,376	19,046	814	6,009	25,055	696	21,070	23,724	2,654
2028	1,971	100	181	833	781	2,400	0	0	3,950	532	0	0	306	911	8,915	630	16,103	13,896	0	0	3,258	5,909	5,878	15,046	11,161	25,055	696	1,057	26,111	745	23,724	26,459	2,735
2029	541	100	181	833	782	2,400	0	0	1,290	532	0	0	295	980	8,093	634	11,180	11,135	0	0	2,680	5,351	5,672	13,703	11,170	26,111	745	-2,523	23,588	824	26,459	26,424	-35
2030	6,691	100	181	833	782	2,400	0	0	6,310	532	0	0	266	912	8,894	626	23,124	16,132	0	0	4,022	6,386	6,317	16,725	14,230	23,588	824	6,399	29,987	695	26,424	28,326	1,902
2031	0	100	181	833	783	2,400	0	0	0	532	0	0	305	976	8,493	632	9,761	10,457	0	0	2,131	5,727	5,715	13,573	10,808	29,987	695	-3,813	26,175	786	28,326	27,975	-351
2032	398	100	181	833	783	2,400	0	0	988	532	0	0	312	999	8,113	636	10,775	10,968	0	0	1,578	5,357	5,540	12,475	11,646	26,175	786	-1,700	24,475	820	27,975	27,297	-678
2033	2,920	100	181	833	784	2,400	0	0	4,407	532	0	0	314	949	6,391	635	14,997	12,270	0	0	2,214	4,529	6,770	13,513	12,602	24,475	820	1,484	25,959	764	27,297	26,966	-331
2034	0	100	181	833	784	2,400	0	0	0	532	0	0	344	1,002	6,724	640	8,033	9,088	0	0	1,679	4,641	5,741	12,061	10,784	25,959	764	-4,027	21,932	847	26,966	25,270	-1,696
2035	990	100	181	833	785	2,400	0	0	2,240	532	0	0	347	1,000	6,695	643	11,237	10,849	0	0	1,470	4,544	5,450	11,464	11,515	21,932	847	-228	21,705	834	25,270	24,604	-666

Table F-22b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Chloride Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	40	181	95	772	275	0	0	6,085	65	0	0	292	111	7,741	39	19,285	1,541	0	0	3,696	5,579	6,113	15,388	1,636	25,728	103	3,898	29,626	87	3,600	3,505	-95
2013	274	40	181	95	773	275	0	0	737	65	0	0	323	115	7,805	40	10,092	866	0	0	2,366	5,283	5,691	13,340	1,298	29,626	87	-3,248	26,378	86	3,505	3,073	-432
2014	2,277	40	181	95	773	275	0	0	4,962	65	0	0	309	113	5,898	40	14,400	1,249	0	0	3,004	4,371	5,819	13,193	1,187	26,378	86	1,207	27,584	84	3,073	3,135	62
2015	8,986	40	181	95	774	275	0	0	3,952	65	0	0	321	106	7,949	41	22,163	1,641	0	0	3,654	5,444	5,995	15,094	1,300	27,584	84	7,069	34,653	74	3,135	3,476	341
2016	0	40	181	95	774	275	0	0	0	65	0	0	341	113	7,973	41	9,269	805	0	0	2,869	5,612	5,895	14,376	1,154	34,653	74	-5,107	29,546	78	3,476	3,126	-350
2017	0	40	181	95	775	275	0	0	0	65	0	0	351	113	6,506	40	7,813	724	0	0	1,336	4,660	5,570	11,566	1,082	29,546	78	-3,753	25,793	79	3,126	2,767	-359
2018	1,818	40	181	95	775	275	0	0	3,992	65	0	0	359	109	6,610	41	13,735	1,187	0	0	1,990	4,603	5,635	12,228	1,098	25,793	79	1,507	27,300	77	2,767	2,856	89
2019	265	40	181	95	776	275	0	0	718	65	0	0	350	112	8,284	41	10,573	911	0	0	2,032	5,266	6,714	14,012	1,253	27,300	77	-3,439	23,861	77	2,856	2,514	-342
2020	1,056	40	181	95	777	275	0	0	2,381	65	0	0	365	110	6,737	42	11,497	1,023	0	0	1,988	4,526	7,631	14,145	1,281	23,861	77	-2,648	21,213	78	2,514	2,256	-258
2021	0	40	181	95	777	275	0	0	0	65	0	0	399	110	7,303	43	8,660	798	0	0	1,158	4,606	6,841	12,605	1,217	21,213	78	-3,945	17,268	78	2,256	1,837	-419
2022	0	40	181	95	778	275	0	0	0	65	0	0	407	107	7,656	44	9,022	827	0	0	641	4,695	7,299	12,634	1,276	17,268	78	-3,613	13,655	75	1,837	1,388	-449
2023	2,221	40	181	95	778	275	0	0	4,160	65	0	0	399	102	7,733	44	15,472	1,328	0	0	1,778	4,860	8,634	15,272	1,371	13,655	75	200	13,855	71	1,388	1,344	-43
2024	6,294	40	181	95	779	275	0	0	5,602	65	0	0	415	97	7,784	45	21,055	1,691	0	0	3,291	5,093	9,390	17,773	1,405	13,855	71	3,282	17,137	70	1,344	1,631	286
2025	5,383	40	181	95	779	275	0	0	6,749	65	0	0	409	97	9,956	46	23,456	1,890	0	0	3,925	6,385	6,698	17,008	1,245	17,137	70	6,448	23,585	71	1,631	2,276	645
2026	0	40	181	95	780	275	0	0	0	65	0	0	382	105	9,740	47	11,083	996	0	0	2,752	6,115	6,755	15,622	1,242	23,585	71	-4,539	19,046	78	2,276	2,031	-246
2027	5,440	40	181	95	780	275	0	0	6,946	65	0	0	317	102	7,174	48	20,839	1,742	0	0	3,643	5,043	6,144	14,830	1,193	19,046	78	6,009	25,055	76	2,031	2,580	549
2028	1,971	40	181	95	781	275	0	0	3,950	65	0	0	306	106	8,915	49	16,103	1,410	0	0	3,258	5,909	5,878	15,046	1,214	25,055	76	1,057	26,111	78	2,580	2,776	196
2029	541	40	181	95	782	275	0	0	1,290	65	0	0	295	112	8,093	50	11,180	1,050	0	0	2,680	5,351	5,672	13,703	1,172	26,111	78	-2,523	23,588	83	2,776	2,655	-121
2030	6,691	40	181	95	782	275	0	0	6,310	65	0	0	266	108	8,894	50	23,124	1,889	0	0	4,022	6,386	6,317	16,725	1,430	23,588	83	6,399	29,987	76	2,655	3,114	459
2031	0	40	181	95	783	275	0	0	0	65	0	0	305	113	8,493	51	9,761	953	0	0	2,131	5,727	5,715	13,573	1,188	29,987	76	-3,813	26,175	81	3,114	2,878	-235
2032	398	40	181	95	783	275	0	0	988	65	0	0	312	114	8,113	52	10,775	1,046	0	0	1,578	5,357	5,540	12,475	1,198	26,175	81	-1,700	24,475	82	2,878	2,726	-153
2033	2,920	40	181	95	784	275	0	0	4,407	65	0	0	314	109	6,391	52	14,997	1,370	0	0	2,214	4,529	6,770	13,513	1,258	24,475	82	1,484	25,959	80	2,726	2,837	111
2034	0	40	181	95	784	275	0	0	0	65	0	0	344	114	6,724	53	8,033	856	0	0	1,679	4,641	5,741	12,061	1,135	25,959	80	-4,027	21,932	86	2,837	2,559	-278
2035	990	40	181	95	785	275	0	0	2,240	65	0	0	347	113	6,695	54	11,237	1,114	0	0	1,470	4,544	5,450	11,464	1,166	21,932	86	-228	21,705	85	2,559	2,507	-52

Table F-22c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Nitrate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	9	181	46	772	17	0	0	6,085	7	0	0	292	29	7,741	20	19,285	360	0	0	3,696	5,579	6,113	15,388	323	25,728	20	3,898	29,626	19	710	747	38
2013	274	9	181	46	773	17	0	0	737	7	0	0	323	31	7,805	20	10,092	265	0	0	2,366	5,283	5,691	13,340	277	29,626	19	-3,248	26,378	21	747	736	-11
2014	2,277	9	181	46	773	17	0	0	4,962	7	0	0	309	29	5,898	20	14,400	277	0	0	3,004	4,371	5,819	13,193	284	26,378	21	1,207	27,584	19	736	728	-8
2015	8,986	9	181	46	774	17	0	0	3,952	7	0	0	321	27	7,949	20	22,163	398	0	0	3,654	5,444	5,995	15,094	302	27,584	19	7,069	34,653	18	728	825	96
2016	0	9	181	46	774	17	0	0	0	7	0	0	341	29	7,973	20	9,269	255	0	0	2,869	5,612	5,895	14,376	274	34,653	18	-5,107	29,546	20	825	806	-18
2017	0	9	181	46	775	17	0	0	0	7	0	0	351	31	6,506	20	7,813	217	0	0	1,336	4,660	5,570	11,566	279	29,546	20	-3,753	25,793	21	806	744	-62
2018	1,818	9	181	46	775	17	0	0	3,992	7	0	0	359	29	6,610	20	13,735	280	0	0	1,990	4,603	5,635	12,228	295	25,793	21	1,507	27,300	20	744	729	-16
2019	265	9	181	46	776	17	0	0	718	7	0	0	350	31	8,284	20	10,573	275	0	0	2,032	5,266	6,714	14,012	320	27,300	20	-3,439	23,861	21	729	684	-45
2020	1,056	9	181	46	777	17	0	0	2,381	7	0	0	365	30	6,737	20	11,497	259	0	0	1,988	4,526	7,631	14,145	348	23,861	21	-2,648	21,213	21	684	595	-89
2021	0	9	181	46	777	17	0	0	0	7	0	0	399	31	7,303	20	8,660	241	0	0	1,158	4,606	6,841	12,605	321	21,213	21	-3,945	17,268	22	595	515	-80
2022	0	9	181	46	778	17	0	0	0	7	0	0	407	31	7,656	20	9,022	251	0	0	641	4,695	7,299	12,634	358	17,268	22	-3,613	13,655	22	515	408	-106
2023	2,221	9	181	46	778	17	0	0	4,160	7	0	0	399	28	7,733	20	15,472	317	0	0	1,778	4,860	8,634	15,272	404	13,655	22	200	13,855	17	408	322	-86
2024	6,294	9	181	46	779	17	0	0	5,602	7	0	0	415	25	7,784	19	21,055	377	0	0	3,291	5,093	9,390	17,773	337	13,855	17	3,282	17,137	16	322	362	40
2025	5,383	9	181	46	779	17	0	0	6,749	7	0	0	409	23	9,956	19	23,456	430	0	0	3,925	6,385	6,698	17,008	277	17,137	16	6,448	23,585	16	362	516	153
2026	0	9	181	46	780	17	0	0	0	7	0	0	382	27	9,740	19	11,083	296	0	0	2,752	6,115	6,755	15,622	281	23,585	16	-4,539	19,046	20	516	530	15
2027	5,440	9	181	46	780	17	0	0	6,946	7	0	0	317	24	7,174	19	20,839	356	0	0	3,643	5,043	6,144	14,830	312	19,046	20	6,009	25,055	17	530	575	45
2028	1,971	9	181	46	781	17	0	0	3,950	7	0	0	306	25	8,915	19	16,103	330	0	0	3,258	5,909	5,878	15,046	271	25,055	17	1,057	26,111	18	575	634	59
2029	541	9	181	46	782	17	0	0	1,290	7	0	0	295	27	8,093	19	11,180	267	0	0	2,680	5,351	5,672	13,703	268	26,111	18	-2,523	23,588	20	634	633	-1
2030	6,691	9	181	46	782	17	0	0	6,310	7	0	0	266	25	8,894	19	23,124	405	0	0	4,022	6,386	6,317	16,725	341	23,588	20	6,399	29,987	17	633	697	64
2031	0	9	181	46	783	17	0	0	0	7	0	0	305	27	8,493	19	9,761	256	0	0	2,131	5,727	5,715	13,573	266	29,987	17	-3,813	26,175	19	697	687	-10
2032	398	9	181	46	783	17	0	0	988	7	0	0	312	28	8,113	19	10,775	262	0	0	1,578	5,357	5,540	12,475	286	26,175	19	-1,700	24,475	20	687	663	-24
2033	2,920	9	181	46	784	17	0	0	4,407	7	0	0	314	26	6,391	19	14,997	280	0	0	2,214	4,529	6,770	13,513	306	24,475	20	1,484	25,959	18	663	637	-26
2034	0	9	181	46	784	17	0	0	0	7	0	0	344	28	6,724	19	8,033	213	0	0	1,679	4,641	5,741	12,061	255	25,959	18	-4,027	21,932	20	637	595	-42
2035	990	9	181	46	785	17	0	0	2,240	7	0	0	347	28	6,695	19	11,237	246	0	0	1,470	4,544	5,450	11,464	271	21,932	20	-228	21,705	19	595	570	-25

Table F-22d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	Sulfate Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,214	40	181	178	772	512	0	0	6,085	103	0	0	292	222	7,741	266	19,285	4,548	0	0	3,696	5,579	6,113	15,388	3,571	25,728	225	3,898	29,626	219	7,858	8,835	977
2013	274	40	181	178	773	512	0	0	737	103	0	0	323	243	7,805	266	10,092	3,633	0	0	2,366	5,283	5,691	13,340	3,273	29,626	219	-3,248	26,378	256	8,835	9,195	360
2014	2,277	40	181	178	773	512	0	0	4,962	103	0	0	309	240	5,898	265	14,400	3,622	0	0	3,004	4,371	5,819	13,193	3,552	26,378	256	1,207	27,584	247	9,195	9,266	71
2015	8,986	40	181	178	774	512	0	0	3,952	103	0	0	321	221	7,949	257	22,163	4,500	0	0	3,654	5,444	5,995	15,094	3,842	27,584	247	7,069	34,653	211	9,266	9,924	658
2016	0	40	181	178	774	512	0	0	0	103	0	0	341	245	7,973	257	9,269	3,486	0	0	2,869	5,612	5,895	14,376	3,295	34,653	211	-5,107	29,546	252	9,924	10,114	191
2017	0	40	181	178	775	512	0	0	0	103	0	0	351	258	6,506	258	7,813	2,986	0	0	1,336	4,660	5,570	11,566	3,502	29,546	252	-3,753	25,793	274	10,114	9,598	-516
2018	1,818	40	181	178	775	512	0	0	3,992	103	0	0	359	252	6,610	257	13,735	3,669	0	0	1,990	4,603	5,635	12,228	3,810	25,793	274	1,507	27,300	255	9,598	9,458	-141
2019	265	40	181	178	776	512	0	0	718	103	0	0	350	268	8,284	257	10,573	3,720	0	0	2,032	5,266	6,714	14,012	4,150	27,300	255	-3,439	23,861	278	9,458	9,028	-430
2020	1,056	40	181	178	777	512	0	0	2,381	103	0	0	365	269	6,737	257	11,497	3,458	0	0	1,988	4,526	7,631	14,145	4,599	23,861	278	-2,648	21,213	273	9,028	7,886	-1,141
2021	0	40	181	178	777	512	0	0	0	103	0	0	399	279	7,303	257	8,660	3,290	0	0	1,158	4,606	6,841	12,605	4,255	21,213	273	-3,945	17,268	295	7,886	6,921	-965
2022	0	40	181	178	778	512	0	0	0	103	0	0	407	284	7,656	258	9,022	3,426	0	0	641	4,695	7,299	12,634	4,807	17,268	295	-3,613	13,655	298	6,921	5,540	-1,381
2023	2,221	40	181	178	778	512	0	0	4,160	103	0	0	399	262	7,733	256	15,472	4,123	0	0	1,778	4,860	8,634	15,272	5,474	13,655	298	200	13,855	222	5,540	4,188	-1,352
2024	6,294	40	181	178	779	512	0	0	5,602	103	0	0	415	230	7,784	251	21,055	4,494	0	0	3,291	5,093	9,390	17,773	4,378	13,855	222	3,282	17,137	185	4,188	4,304	116
2025	5,383	40	181	178	779	512	0	0	6,749	103	0	0	409	216	9,956	246	23,456	5,277	0	0	3,925	6,385	6,698	17,008	3,286	17,137	185	6,448	23,585	196	4,304	6,295	1,991
2026	0	40	181	178	780	512	0	0	0	103	0	0	382	246	9,740	247	11,083	3,987	0	0	2,752	6,115	6,755	15,622	3,435	23,585	196	-4,539	19,046	264	6,295	6,848	552
2027	5,440	40	181	178	780	512	0	0	6,946	103	0	0	317	224	7,174	243	20,839	4,321	0	0	3,643	5,043	6,144	14,830	4,022	19,046	264	6,009	25,055	210	6,848	7,146	299
2028	1,971	40	181	178	781	512	0	0	3,950	103	0	0	306	230	8,915	242	16,103	4,279	0	0	3,258	5,909	5,878	15,046	3,362	25,055	210	1,057	26,111	227	7,146	8,063	917
2029	541	40	181	178	782	512	0	0	1,290	103	0	0	295	250	8,093	243	11,180	3,568	0	0	2,680	5,351	5,672	13,703	3,404	26,111	227	-2,523	23,588	257	8,063	8,227	164
2030	6,691	40	181	178	782	512	0	0	6,310	103	0	0	266	228	8,894	238	23,124	4,793	0	0	4,022	6,386	6,317	16,725	4,431	23,588	257	6,399	29,987	211	8,227	8,590	363
2031	0	40	181	178	783	512	0	0	0	103	0	0	305	248	8,493	239	9,761	3,450	0	0	2,131	5,727	5,715	13,573	3,278	29,987	211	-3,813	26,175	246	8,590	8,763	173
2032	398	40	181	178	783	512	0	0	988	103	0	0	312	257	8,113	239	10,775	3,499	0	0	1,578	5,357	5,540	12,475	3,648	26,175	246	-1,700	24,475	259	8,763	8,614	-149
2033	2,920	40	181	178	784	512	0	0	4,407	103	0	0	314	242	6,391	238	14,997	3,533	0	0	2,214	4,529	6,770	13,513	3,976	24,475	259	1,484	25,959	231	8,614	8,171	-443
2034	0	40	181	178	784	512	0	0	0	103	0	0	344	258	6,724	239	8,033	2,893	0	0	1,679	4,641	5,741	12,061	3,268	25,959	231	-4,027	21,932	261	8,171	7,796	-375
2035	990	40	181	178	785	512	0	0	2,240	103	0	0	347	258	6,695	239	11,237	3,251	0	0	1,470	4,544	5,450	11,464	3,552	21,932	261	-228	21,705	254	7,796	7,495	-301

Table F-23a

Projected TDS Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	TDS Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	TDS Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	TDS Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	100	148	783	666	2,256	0	4,991	4,100	671	11,675	671	0	0	14,829	722	5,579	700	-5,182	700	36,707	32,199	13,388	6,543	1,102	7,025	2,202	30,260	29,526	78,359	745	6,447	84,807	711	79,349	82,022	2,673
2013	318	100	147	783	667	2,256	0	4,991	4,100	671	623	671	0	0	14,012	747	5,283	700	-1,853	700	23,297	24,048	13,370	5,290	763	7,327	2,152	28,902	27,215	84,807	711	-5,606	79,201	732	82,022	78,855	-3,168
2014	2,643	100	147	783	668	2,256	0	4,991	4,100	671	9,328	671	0	0	14,762	739	4,371	700	-1,307	700	34,712	32,572	19,000	4,129	642	8,008	1,988	33,766	32,979	79,201	732	946	80,147	720	78,855	78,447	-407
2015	10,432	100	147	783	669	2,256	0	4,991	4,100	671	7,637	671	0	0	14,876	675	5,444	700	-2,935	700	40,371	30,383	13,370	6,633	1,215	7,370	2,077	30,665	28,825	80,147	720	9,706	89,853	655	78,447	80,005	1,557
2016	0	100	148	783	671	2,256	0	4,991	4,100	671	22	671	0	0	15,133	714	5,612	700	-1,341	700	24,345	24,738	13,388	6,166	1,189	7,743	2,067	30,553	26,145	89,853	655	-6,208	83,645	691	80,005	78,598	-1,407
2017	0	100	147	783	672	2,256	0	4,991	4,100	671	1,107	671	0	0	15,667	743	4,660	700	848	700	27,201	28,036	19,000	3,885	533	8,261	1,907	33,586	31,058	83,645	691	-6,384	77,261	719	78,598	75,575	-3,022
2018	2,110	100	147	783	673	2,256	0	4,991	4,100	671	6,804	671	0	0	15,809	743	4,603	700	-1,083	700	33,163	31,770	19,000	3,363	368	8,124	1,874	32,729	31,654	77,261	719	434	77,695	716	75,575	75,691	116
2019	307	100	147	783	674	2,256	0	4,991	4,100	671	1,495	671	0	0	14,351	760	5,266	700	-3,014	700	23,326	24,349	13,370	3,153	354	7,742	2,770	27,388	26,337	77,695	716	-4,063	73,633	736	75,691	73,703	-1,988
2020	1,226	100	148	783	676	2,256	1	4,991	4,100	671	3,145	671	0	0	15,098	761	4,526	700	-549	700	28,371	28,427	19,025	1,993	233	8,101	3,847	33,200	32,998	73,633	736	-4,829	68,804	739	73,703	69,132	-4,571
2021	0	100	147	783	677	2,256	5	4,991	4,100	671	1,865	671	0	0	15,548	777	4,606	700	-1,231	700	25,717	27,338	19,000	1,039	145	7,777	2,964	30,926	30,927	68,804	739	-5,209	63,595	758	69,132	65,543	-3,589
2022	0	100	147	783	678	2,256	8	4,991	4,100	671	2,046	671	0	0	15,646	787	4,695	700	-1,738	700	25,582	27,448	19,000	446	103	7,575	3,913	31,037	31,881	63,595	758	-5,456	58,140	773	65,543	61,109	-4,433
2023	2,579	100	147	783	679	2,256	10	4,991	4,100	671	7,378	671	0	0	15,878	757	4,860	700	-3,762	700	31,870	30,511	19,000	116	59	7,195	5,828	32,198	33,781	58,140	773	-328	57,812	736	61,109	57,839	-3,270
2024	7,308	100	148	783	681	2,256	10	4,991	4,100	671	12,189	671	0	0	16,430	700	5,093	700	-6,421	700	39,537	32,540	19,025	89	57	6,910	6,185	32,266	32,225	57,812	736	7,270	65,082	657	57,839	58,155	315
2025	6,249	100	147	783	682	2,256	11	4,991	4,100	671	15,600	671	0	0	16,565	695	6,385	700	-11,665	700	38,074	31,773	13,370	1,542	341	6,661	3,074	24,988	22,023	65,082	657	13,086	78,168	639	58,155	67,905	9,750
2026	0	100	147	783	683	2,256	11	4,991	4,100	671	1,616	671	0	0	15,076	733	6,115	700	-6,621	700	21,128	22,083	13,370	2,478	340	7,167	3,302	26,658	22,862	78,168	639	-5,530	72,638	680	67,905	67,126	-779
2027	6,316	100	147	783	684	2,256	12	4,991	4,100	671	18,602	671	0	0	15,461	708	5,043	700	-7,168	700	43,198	36,763	19,000	3,486	848	7,540	2,460	33,333	30,020	72,638	680	9,865	82,503	659	67,126	73,869	6,743
2028	2,288	100	148	783	686	2,256	12	4,991	4,100	671	6,191	671	0	0	14,581	724	5,909	700	-6,388	700	27,526	25,943	13,388	3,997	959	7,278	2,396	28,018	24,227	82,503	659	-492	82,011	678	73,869	75,584	1,715
2029	628	100	147	783	687	2,256	12	4,991	4,100	671	1,321	671	0	0	13,788	748	5,351	700	-3,217	700	22,816	23,435	13,370	4,157	668	7,520	2,351	28,065	25,250	82,011	678	-5,249	76,761	707	75,584	73,768	-1,816
2030	7,768	100	147	783	688	2,256	12	4,991	4,100	671	10,899	671	0	0	16,691	710	6,386	700	-6,483	700	40,209	33,120	13,370	6,759	1,511	7,590	2,348	31,578	28,895	76,761	707	8,631	85,392	672	73,768	77,993	4,225
2031	0	100	147	783	689	2,256	12	4,991	4,100	671	334	671	0	0	15,167	744	5,727	700	-2,158	700	24,018	25,129	13,370	5,605	949	7,347	2,196	29,467	26,047	85,392	672	-5,449	79,943	709	77,993	77,075	-918
2032	462	100	148	783	691	2,256	12	4,991	4,100	671	908	671	0	0	14,269	763	5,357	700	-1,941	700	24,005	25,034	13,388	4,630	601	7,722	2,213	28,554	26,950	79,943	709	-4,549	75,394	733	77,075	75,160	-1,916
2033	3,390	100	147	783	692	2,256	12	4,991	4,100	671	9,510	671	0	0	14,985	743	4,529	700	-1,642	700	35,723	33,133	19,000	3,599	451	8,143	2,652	33,846	33,290	75,394	733	1,877	77,271	714	75,160	75,002	-157
2034	0	100	147	783	693	2,256	12	4,991	4,100	671	1,593	671	0	0	15,452	767	4,641	700	-826	700	25,812	27,309	19,000	2,424	274	8,055	2,052	31,805	30,605	77,271	714	-5,993	71,278	740	75,002	71,706	-3,296
2035	1,149	100	147	783	694	2,256	12	4,991	4,100	671	3,133	671	0	0	15,522	770	4,544	700	-670	700	28,631	29,054	19,000	2,279	233	7,800	1,914	31,226	31,179	71,278	740	-2,595	68,683	745	71,706	69,581	-2,126

Table F-23b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	Chloride Conc. for Saugus WRP Infiltration	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Chloride Conc. for Inflow From MZ1	Inflow From MZ3	Chloride Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	40	148	109	666	314	0	694	4,100	126	11,675	89	0	0	14,829	87	5,579	28	-5,182	28	36,707	4,450	13,388	6,543	1,102	7,025	2,202	30,260	3,811	78,359	96	6,447	84,807	94	10,241	10,880	639
2013	318	40	147	109	667	314	0	694	4,100	126	623	89	0	0	14,012	87	5,283	28	-1,853	28	23,297	2,894	13,370	5,290	763	7,327	2,152	28,902	3,610	84,807	94	-5,606	79,201	94	10,880	10,164	-716
2014	2,643	40	147	109	668	314	0	694	4,100	126	9,328	89	0	0	14,762	88	4,371	28	-1,307	28	34,712	4,155	19,000	4,129	642	8,008	1,988	33,766	4,251	79,201	94	946	80,147	92	10,164	10,069	-95
2015	10,432	40	147	109	669	314	0	694	4,100	126	7,637	89	0	0	14,876	85	5,444	28	-2,935	28	40,371	4,323	13,370	6,633	1,215	7,370	2,077	30,665	3,700	80,147	92	9,706	89,853	88	10,069	10,692	623
2016	0	40	148	109	671	314	0	694	4,100	126	22	89	0	0	15,133	87	5,612	28	-1,341	28	24,345	2,968	13,388	6,166	1,189	7,743	2,067	30,553	3,494	89,853	88	-6,208	83,645	89	10,692	10,166	-526
2017	0	40	147	109	672	314	0	694	4,100	126	1,107	89	0	0	15,667	89	4,660	28	848	28	27,201	3,245	19,000	3,885	533	8,261	1,907	33,586	4,017	83,645	89	-6,384	77,261	89	10,166	9,394	-772
2018	2,110	40	147	109	673	314	0	694	4,100	126	6,804	89	0	0	15,809	89	4,603	28	-1,083	28	33,163	3,988	19,000	3,363	368	8,124	1,874	32,729	3,934	77,261	89	434	77,695	89	9,394	9,447	53
2019	307	40	147	109	674	314	0	694	4,100	126	1,495	89	0	0	14,351	88	5,266	28	-3,014	28	23,326	3,016	13,370	3,153	354	7,742	2,770	27,388	3,287	77,695	89	-4,063	73,633	92	9,447	9,176	-271
2020	1,226	40	148	109	676	314	1	694	4,100	126	3,145	89	0	0	15,098	88	4,526	28	-549	28	28,371	3,427	19,025	1,993	233	8,101	3,847	33,200	4,108	73,633	92	-4,829	68,804	91	9,176	8,494	-682
2021	0	40	147	109	677	314	5	694	4,100	126	1,865	89	0	0	15,548	89	4,606	28	-1,231	28	25,717	3,263	19,000	1,039	145	7,777	2,964	30,926	3,800	68,804	91	-5,209	63,595	92	8,494	7,957	-537
2022	0	40	147	109	678	314	8	694	4,100	126	2,046	89	0	0	15,646	91	4,695	28	-1,738	28	25,582	3,308	19,000	446	103	7,575	3,913	31,037	3,871	63,595	92	-5,456	58,140	94	7,957	7,394	-563
2023	2,579	40	147	109	679	314	10	694	4,100	126	7,378	89	0	0	15,878	89	4,860	28	-3,762	28	31,870	4,025	19,000	116	59	7,195	5,828	32,198	4,088	58,140	94	-328	57,812	93	7,394	7,332	-63
2024	7,308	40	148	109	681	314	10	694	4,100	126	12,189	89	0	0	16,430	87	5,093	28	-6,421	28	39,537	4,795	19,025	89	57	6,910	6,185	32,266	4,085	57,812	93	7,270	65,082	91	7,332	8,042	710
2025	6,249	40	147	109	682	314	11	694	4,100	126	15,600	89	0	0	16,565	88	6,385	28	-11,665	28	38,074	5,039	13,370	1,542	341	6,661	3,074	24,988	3,046	65,082	91	13,086	78,168	94	8,042	10,036	1,994
2026	0	40	147	109	683	314	11	694	4,100	126	1,616	89	0	0	15,076	89	6,115	28	-6,621	28	21,128	3,026	13,370	2,478	340	7,167	3,302	26,658	3,379	78,168	94	-5,530	72,638	98	10,036	9,682	-353
2027	6,316	40	147	109	684	314	12	694	4,100	126	18,602	89	0	0	15,461	88	5,043	28	-7,168	28	43,198	5,386	19,000	3,486	848	7,540	2,460	33,333	4,330	72,638	98	9,865	82,503	96	9,682	10,738	1,056
2028	2,288	40	148	109	686	314	12	694	4,100	126	6,191	89	0	0	14,581	87	5,909	28	-6,388	28	27,526	3,613	13,388	3,997	959	7,278	2,396	28,018	3,522	82,503	96	-492	82,011	97	10,738	10,830	91
2029	628	40	147	109	687	314	12	694	4,100	126	1,321	89	0	0	13,788	88	5,351	28	-3,217	28	22,816	2,948	13,370	4,157	668	7,520	2,351	28,065	3,618	82,011	97	-5,249	76,761	97	10,830	10,160	-670
2030	7,768	40	147	109	688	314	12	694	4,100	126	10,899	89	0	0	16,691	91	6,386	28	-6,483	28	40,209	4,835	13,370	6,759	1,511	7,590	2,348	31,578	3,980	76,761	97	8,631	85,392	95	10,160	11,015	855
2031	0	40	147	109	689	314	12	694	4,100	126	334	89	0	0	15,167	91	5,727	28	-2,158	28	24,018	3,087	13,370	5,605	949	7,347	2,196	29,467	3,679	85,392	95	-5,449	79,943	96	11,015	10,424	-591
2032	462	40	148	109	691	314	12	694	4,100	126	908	89	0	0	14,269	91	5,357	28	-1,941	28	24,005	3,055	13,388	4,630	601	7,722	2,213	28,554	3,645	79,943	96	-4,549	75,394	96	10,424	9,834	-590
2033	3,390	40	147	109	692	314	12	694	4,100	126	9,510	89	0	0	14,985	90	4,529	28	-1,642	28	35,723	4,306	19,000	3,599	451	8,143	2,652	33,846	4,356	75,394	96	1,877	77,271	93	9,834	9,784	-50
2034	0	40	147	109	693	314	12	694	4,100	126	1,593	89	0	0	15,452	91	4,641	28	-826	28	25,812	3,271	19,000	2,424	274	8,055	2,052	31,805	3,993	77,271	93	-5,993	71,278	94	9,784	9,062	-722
2035	1,149	40	147	109	694	314	12	694	4,100	126	3,133	89	0	0	15,522	91	4,544	28	-670	28	28,631	3,536	19,000	2,279	233	7,800	1,914	31,226	3,941	71,278	94	-2,595	68,683	93	9,062	8,658	-404

Table F-23c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	Nitrate Conc. for Saugus WRP Infiltration	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Nitrate Conc. for Inflow From MZ1	Inflow From MZ3	Nitrate Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	9	148	44	666	16	0	35	4,100	20	11,675	20	0	0	14,829	19	5,579	20	-5,182	20	36,707	912	13,388	6,543	1,102	7,025	2,202	30,260	803	78,359	20	6,447	84,807	20	2,158	2,267	110
2013	318	9	147	44	667	16	0	35	4,100	20	623	20	0	0	14,012	19	5,283	20	-1,853	20	23,297	620	13,370	5,290	763	7,327	2,152	28,902	752	84,807	20	-5,606	79,201	20	2,267	2,135	-132
2014	2,643	9	147	44	668	16	0	35	4,100	20	9,328	20	0	0	14,762	19	4,371	20	-1,307	20	34,712	888	19,000	4,129	642	8,008	1,988	33,766	893	79,201	20	946	80,147	20	2,135	2,130	-4
2015	10,432	9	147	44	669	16	0	35	4,100	20	7,637	20	0	0	14,876	18	5,444	20	-2,935	20	40,371	907	13,370	6,633	1,215	7,370	2,077	30,665	783	80,147	20	9,706	89,853	18	2,130	2,255	124
2016	0	9	148	44	671	16	0	35	4,100	20	22	20	0	0	15,133	19	5,612	20	-1,341	20	24,345	640	13,388	6,166	1,189	7,743	2,067	30,553	737	89,853	18	-6,208	83,645	19	2,255	2,158	-97
2017	0	9	147	44	672	16	0	35	4,100	20	1,107	20	0	0	15,667	19	4,660	20	848	20	27,201	721	19,000	3,885	533	8,261	1,907	33,586	853	83,645	19	-6,384	77,261	19	2,158	2,026	-131
2018	2,110	9	147	44	673	16	0	35	4,100	20	6,804	20	0	0	15,809	19	4,603	20	-1,083	20	33,163	848	19,000	3,363	368	8,124	1,874	32,729	849	77,261	19	434	77,695	19	2,026	2,026	-1
2019	307	9	147	44	674	16	0	35	4,100	20	1,495	20	0	0	14,351	19	5,266	20	-3,014	20	23,326	611	13,370	3,153	354	7,742	2,770	27,388	705	77,695	19	-4,063	73,633	19	2,026	1,932	-93
2020	1,226	9	148	44	676	16	1	35	4,100	20	3,145	20	0	0	15,098	19	4,526	20	-549	20	28,371	730	19,025	1,993	233	8,101	3,847	33,200	865	73,633	19	-4,829	68,804	19	1,932	1,797	-135
2021	0	9	147	44	677	16	5	35	4,100	20	1,865	20	0	0	15,548	19	4,606	20	-1,231	20	25,717	676	19,000	1,039	145	7,777	2,964	30,926	804	68,804	19	-5,209	63,595	19	1,797	1,669	-128
2022	0	9	147	44	678	16	8	35	4,100	20	2,046	20	0	0	15,646	19	4,695	20	-1,738	20	25,582	671	19,000	446	103	7,575	3,913	31,037	812	63,595	19	-5,456	58,140	19	1,669	1,528	-141
2023	2,579	9	147	44	679	16	10	35	4,100	20	7,378	20	0	0	15,878	19	4,860	20	-3,762	20	31,870	796	19,000	116	59	7,195	5,828	32,198	845	58,140	19	-328	57,812	19	1,528	1,479	-49
2024	7,308	9	148	44	681	16	10	35	4,100	20	12,189	20	0	0	16,430	18	5,093	20	-6,421	20	39,537	928	19,025	89	57	6,910	6,185	32,266	824	57,812	19	7,270	65,082	18	1,479	1,583	104
2025	6,249	9	147	44	682	16	11	35	4,100	20	15,600	20	0	0	16,565	19	6,385	20	-11,665	20	38,074	914	13,370	1,542	341	6,661	3,074	24,988	600	65,082	18	13,086	78,168	18	1,583	1,898	314
2026	0	9	147	44	683	16	11	35	4,100	20	1,616	20	0	0	15,076	19	6,115	20	-6,621	20	21,128	559	13,370	2,478	340	7,167	3,302	26,658	639	78,168	18	-5,530	72,638	18	1,898	1,817	-80
2027	6,316	9	147	44	684	16	12	35	4,100	20	18,602	20	0	0	15,461	19	5,043	20	-7,168	20	43,198	1,057	19,000	3,486	848	7,540	2,460	33,333	813	72,638	18	9,865	82,503	18	1,817	2,062	245
2028	2,288	9	148	44	686	16	12	35	4,100	20	6,191	20	0	0	14,581	19	5,909	20	-6,388	20	27,526	698	13,388	3,997	959	7,278	2,396	28,018	676	82,503	18	-492	82,011	19	2,062	2,084	22
2029	628	9	147	44	687	16	12	35	4,100	20	1,321	20	0	0	13,788	19	5,351	20	-3,217	20	22,816	599	13,370	4,157	668	7,520	2,351	28,065	696	82,011	19	-5,249	76,761	19	2,084	1,986	-97
2030	7,768	9	147	44	688	16	12	35	4,100	20	10,899	20	0	0	16,691	19	6,386	20	-6,483	20	40,209	961	13,370	6,759	1,511	7,590	2,348	31,578	778	76,761	19	8,631	85,392	19	1,986	2,169	183
2031	0	9	147	44	689	16	12	35	4,100	20	334	20	0	0	15,167	20	5,727	20	-2,158	20	24,018	645	13,370	5,605	949	7,347	2,196	29,467	725	85,392	19	-5,449	79,943	19	2,169	2,090	-80
2032	462	9	148	44	691	16	12	35	4,100	20	908	20	0	0	14,269	19	5,357	20	-1,941	20	24,005	637	13,388	4,630	601	7,722	2,213	28,554	731	79,943	19	-4,549	75,394	19	2,090	1,996	-94
2033	3,390	9	147	44	692	16	12	35	4,100	20	9,510	20	0	0	14,985	19	4,529	20	-1,642	20	35,723	902	19,000	3,599	451	8,143	2,652	33,846	884	75,394	19	1,877	77,271	19	1,996	2,013	18
2034	0	9	147	44	693	16	12	35	4,100	20	1,593	20	0	0	15,452	19	4,641	20	-826	20	25,812	685	19,000	2,424	274	8,055	2,052	31,805	822	77,271	19	-5,993	71,278	19	2,013	1,877	-136
2035	1,149	9	147	44	694	16	12	35	4,100	20	3,133	20	0	0	15,522	19	4,544	20	-670	20	28,631	741	19,000	2,279	233	7,800	1,914	31,226	816	71,278	19	-2,595	68,683	19	1,877	1,802	-75

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table F-23d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - No Project - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	Sulfate Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Sulfate Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Sulfate Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	40	148	143	666	413	0	913	4,100	179	11,675	179	0	0	14,829	152	5,579	235	-5,182	235	36,707	7,687	13,388	6,543	1,102	7,025	2,202	30,260	7,598	78,359	192	6,447	84,807	178	20,419	20,509	89
2013	318	40	147	143	667	413	0	913	4,100	179	623	179	0	0	14,012	157	5,283	235	-1,853	235	23,297	5,660	13,370	5,290	763	7,327	2,152	28,902	6,805	84,807	178	-5,606	79,201	180	20,509	19,363	-1,145
2014	2,643	40	147	143	668	413	0	913	4,100	179	9,328	179	0	0	14,762	153	4,371	235	-1,307	235	34,712	7,865	19,000	4,129	642	8,008	1,988	33,766	8,098	79,201	180	946	80,147	176	19,363	19,130	-233
2015	10,432	40	147	143	669	413	0	913	4,100	179	7,637	179	0	0	14,876	137	5,444	235	-2,935	235	40,371	7,390	13,370	6,633	1,215	7,370	2,077	30,665	7,029	80,147	176	9,706	89,853	160	19,130	19,491	361
2016	0	40	148	143	671	413	0	913	4,100	179	22	179	0	0	15,133	146	5,612	235	-1,341	235	24,345	5,778	13,388	6,166	1,189	7,743	2,067	30,553	6,369	89,853	160	-6,208	83,645	166	19,491	18,899	-592
2017	0	40	147	143	672	413	0	913	4,100	179	1,107	179	0	0	15,667	152	4,660	235	848	235	27,201	6,659	19,000	3,885	533	8,261	1,907	33,586	7,468	83,645	166	-6,384	77,261	172	18,899	18,090	-809
2018	2,110	40	147	143	673	413	0	913	4,100	179	6,804	179	0	0	15,809	151	4,603	235	-1,083	235	33,163	7,545	19,000	3,363	368	8,124	1,874	32,729	7,577	77,261	172	434	77,695	171	18,090	18,058	-32
2019	307	40	147	143	674	413	0	913	4,100	179	1,495	179	0	0	14,351	157	5,266	235	-3,014	235	23,326	5,558	13,370	3,153	354	7,742	2,770	27,388	6,284	77,695	171	-4,063	73,633	173	18,058	17,333	-726
2020	1,226	40	148	143	676	413	1	913	4,100	179	3,145	179	0	0	15,098	156	4,526	235	-549	235	28,371	6,706	19,025	1,993	233	8,101	3,847	33,200	7,760	73,633	173	-4,829	68,804	174	17,333	16,278	-1,055
2021	0	40	147	143	677	413	5	913	4,100	179	1,865	179	0	0	15,548	158	4,606	235	-1,231	235	25,717	6,275	19,000	1,039	145	7,777	2,964	30,926	7,282	68,804	174	-5,209	63,595	177	16,278	15,271	-1,008
2022	0	40	147	143	678	413	8	913	4,100	179	2,046	179	0	0	15,646	158	4,695	235	-1,738	235	25,582	6,214	19,000	446	103	7,575	3,913	31,037	7,428	63,595	177	-5,456	58,140	178	15,271	14,056	-1,214
2023	2,579	40	147	143	679	413	10	913	4,100	179	7,378	179	0	0	15,878	151	4,860	235	-3,762	235	31,870	6,964	19,000	116	59	7,195	5,828	32,198	7,770	58,140	178	-328	57,812	169	14,056	13,250	-806
2024	7,308	40	148	143	681	413	10	913	4,100	179	12,189	179	0	0	16,430	140	5,093	235	-6,421	235	39,537	7,471	19,025	89	57	6,910	6,185	32,266	7,382	57,812	169	7,270	65,082	151	13,250	13,339	89
2025	6,249	40	147	143	682	413	11	913	4,100	179	15,600	179	0	0	16,565	138	6,385	235	-11,665	235	38,074	6,960	13,370	1,542	341	6,661	3,074	24,988	5,052	65,082	151	13,086	78,168	143	13,339	15,248	1,908
2026	0	40	147	143	683	413	11	913	4,100	179	1,616	179	0	0	15,076	148	6,115	235	-6,621	235	21,128	4,694	13,370	2,478	340	7,167	3,302	26,658	5,134	78,168	143	-5,530	72,638	150	15,248	14,808	-439
2027	6,316	40	147	143	684	413	12	913	4,100	179	18,602	179	0	0	15,461	143	5,043	235	-7,168	235	43,198	8,615	19,000	3,486	848	7,540	2,460	33,333	6,622	72,638	150	9,865	82,503	150	14,808	16,800	1,992
2028	2,288	40	148	143	686	413	12	913	4,100	179	6,191	179	0	0	14,581	150	5,909	235	-6,388	235	27,526	5,873	13,388	3,997	959	7,278	2,396	28,018	5,510	82,503	150	-492	82,011	154	16,800	17,163	363
2029	628	40	147	143	687	413	12	913	4,100	179	1,321	179	0	0	13,788	156	5,351	235	-3,217	235	22,816	5,391	13,370	4,157	668	7,520	2,351	28,065	5,734	82,011	154	-5,249	76,761	161	17,163	16,821	-342
2030	7,768	40	147	143	688	413	12	913	4,100	179	10,899	179	0	0	16,691	138	6,386	235	-6,483	235	40,209	7,601	13,370	6,759	1,511	7,590	2,348	31,578	6,589	76,761	161	8,631	85,392	154	16,821	17,833	1,013
2031	0	40	147	143	689	413	12	913	4,100	179	334	179	0	0	15,167	149	5,727	235	-2,158	235	24,018	5,710	13,370	5,605	949	7,347	2,196	29,467	5,956	85,392	154	-5,449	79,943	162	17,833	17,587	-246
2032	462	40	148	143	691	413	12	913	4,100	179	908	179	0	0	14,269	154	5,357	235	-1,941	235	24,005	5,760	13,388	4,630	601	7,722	2,213	28,554	6,150	79,943	162	-4,549	75,394	168	17,587	17,198	-390
2033	3,390	40	147	143	692	413	12	913	4,100	179	9,510	179	0	0	14,985	150	4,529	235	-1,642	235	35,723	7,888	19,000	3,599	451	8,143	2,652	33,846	7,617	75,394	168	1,877	77,271	166	17,198	17,469	271
2034	0	40	147	143	693	413	12	913	4,100	179	1,593	179	0	0	15,452	156	4,641	235	-826	235	25,812	6,302	19,000	2,424	274	8,055	2,052	31,805	7,128	77,271	166	-5,993	71,278	172	17,469	16,642	-826
2035	1,149	40	147	143	694	413	12	913	4,100	179	3,133	179	0	0	15,522	155	4,544	235	-670	235	28,631	6,765	19,000	2,279	233	7,800	1,914	31,226	7,236	71,278	172	-2,595	68,683	173	16,642	16,171	-471

Table F-24a

Projected TDS Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - No Project- 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	TDS Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,402	100	102	758	157	2,186	0	4,835	15,920	762	1,705	274	0	0	7,025	917	7,024	550	36,335	32,310	13,450	10,864	2,012	6,573	961	33,858	33,496	50,440	774	2,476	52,916	721	53,052	51,866	-1,186
2013	286	100	102	758	163	2,186	0	4,835	7,623	762	1,700	274	0	0	7,327	917	10,093	550	27,295	25,842	13,428	8,774	1,727	6,438	802	31,169	28,857	52,916	721	-3,874	49,042	733	51,866	48,851	-3,015
2014	2,378	100	102	758	168	2,186	0	4,835	12,252	762	1,700	274	0	0	8,008	917	8,591	550	33,199	30,663	15,448	8,078	1,748	6,487	675	32,436	30,568	49,042	733	763	49,805	723	48,851	48,946	95
2015	9,386	100	102	758	174	2,186	0	4,835	9,835	762	1,700	274	0	0	7,370	917	10,328	550	38,895	29,633	13,428	12,219	2,038	6,694	717	35,096	32,488	49,805	723	3,799	53,605	632	48,946	46,091	-2,855
2016	0	100	102	758	179	2,186	0	4,835	5,803	762	1,705	274	0	0	7,743	917	11,610	550	27,142	25,620	13,450	9,022	1,783	6,475	646	31,377	25,445	53,605	632	-4,235	49,370	689	46,091	46,266	175
2017	0	100	102	758	185	2,186	0	4,835	6,281	762	1,700	274	0	0	8,261	917	11,431	550	27,960	26,643	15,448	7,323	1,633	6,432	573	31,408	27,904	49,370	689	-3,448	45,922	721	46,266	45,005	-1,261
2018	1,899	100	102	758	190	2,186	5	4,835	10,488	762	1,700	274	0	0	8,124	917	9,355	550	31,864	29,588	15,448	7,442	1,652	6,480	589	31,612	29,361	45,922	721	252	46,174	720	45,005	45,233	227
2019	277	100	102	758	196	2,186	21	4,835	7,161	762	1,700	274	0	0	7,742	917	9,828	550	27,028	25,921	13,428	6,896	1,609	6,430	688	29,052	26,883	46,174	720	-2,023	44,151	737	45,233	44,271	-962
2020	1,103	100	102	758	201	2,186	48	4,835	9,538	762	1,705	274	0	0	8,101	917	8,519	550	29,317	28,159	15,472	5,888	1,550	6,464	941	30,315	28,843	44,151	737	-997	43,154	743	44,271	43,586	-684
2021	0	100	102	758	207	2,186	91	4,835	7,156	762	1,700	274	0	0	7,777	917	9,150	550	26,183	25,902	15,448	4,941	1,480	6,416	775	29,060	27,856	43,154	743	-2,877	40,277	760	43,586	41,632	-1,954
2022	0	100	102	758	212	2,186	126	4,835	7,472	762	1,700	274	0	0	7,575	917	8,559	550	25,747	25,786	15,448	4,345	1,404	6,407	973	28,577	28,087	40,277	760	-2,830	37,447	772	41,632	39,331	-2,301
2023	2,320	100	102	758	218	2,186	138	4,835	11,294	762	1,700	274	0	0	7,195	917	6,393	550	29,361	28,063	15,448	4,218	1,324	6,466	1,946	29,403	29,492	37,447	772	-42	37,405	745	39,331	37,902	-1,429
2024	6,575	100	102	758	223	2,186	146	4,835	18,685	762	1,705	274	0	0	6,910	917	3,779	550	38,125	34,059	15,472	5,446	1,429	6,617	2,336	31,302	30,269	37,405	745	6,823	44,229	693	37,902	41,691	3,790
2025	5,623	100	102	758	229	2,186	152	4,835	13,704	762	1,700	274	0	0	6,661	917	6,241	550	34,412	30,354	13,428	7,616	1,760	6,601	912	30,319	26,920	44,229	693	4,093	48,322	687	41,691	45,126	3,434
2026	0	100	102	758	234	2,186	157	4,835	7,875	762	1,700	274	0	0	7,167	917	8,447	550	25,683	25,878	13,428	6,603	1,609	6,433	908	28,982	25,563	48,322	687	-3,299	45,023	742	45,126	45,441	315
2027	5,682	100	102	758	240	2,186	162	4,835	14,705	762	1,700	274	0	0	7,540	917	7,491	550	37,623	33,528	15,448	9,206	1,808	6,592	773	33,826	32,316	45,023	742	3,797	48,820	703	45,441	46,653	1,213
2028	2,058	100	102	758	246	2,186	169	4,835	9,915	762	1,705	274	0	0	7,278	917	8,907	550	30,381	28,867	13,450	8,675	1,767	6,510	736	31,137	28,067	48,820	703	-757	48,063	726	46,653	47,453	799
2029	565	100	102	758	251	2,186	174	4,835	8,270	762	1,700	274	0	0	7,520	917	9,724	550	28,306	27,923	13,428	8,168	1,684	6,452	663	30,395	28,346	48,063	726	-2,089	45,974	752	47,453	47,030	-423
2030	6,989	100	102	758	257	2,186	180	4,835	12,708	762	1,700	274	0	0	7,590	917	8,826	550	38,353	32,866	13,428	11,423	1,914	6,638	679	34,083	32,907	45,974	752	4,270	50,244	688	47,030	46,988	-42
2031	0	100	102	758	262	2,186	184	4,835	9,913	762	1,700	274	0	0	7,347	917	9,571	550	29,080	29,318	13,428	9,091	1,723	6,445	739	31,426	27,779	50,244	688	-2,346	47,898	745	46,988	48,528	1,540
2032	416	100	102	758	268	2,186	188	4,835	8,577	762	1,705	274	0	0	7,722	917	10,062	550	29,040	28,866	13,450	8,368	1,685	6,462	609	30,573	29,268	47,898	745	-1,534	46,365	763	48,528	48,126	-402
2033	3,050	100	102	758	273	2,186	191	4,835	11,853	762	1,700	274	0	0	8,143	917	8,484	550	33,796	31,997	15,448	8,159	1,690	6,514	732	32,544	32,026	46,365	763	1,253	47,617	743	48,126	48,097	-29
2034	0	100	102	758	279	2,186	192	4,835	6,543	762	1,700	274	0	0	8,055	917	10,772	550	27,643	27,703	15,448	6,416	1,594	6,430	583	30,472	29,169	47,617	743	-2,829	44,789	766	48,097	46,631	-1,465
2035	1,034	100	102	758	284	2,186	192	4,835	8,479	762	1,700	274	0	0	7,800	917	9,921	550	29,512	28,912	15,448	6,593	1,608	6,451	574	30,673	30,261	44,789	766	-1,161	43,628	763	46,631	45,282	-1,350

Table F-24b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - No Project- 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	Chloride Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,402	40	102	107	157	307	0	680	15,920	109	1,705	70	0	0	7,025	96	7,024	15	36,335	3,893	13,450	10,864	2,012	6,573	961	33,858	3,699	50,440	85	2,476	52,916	**84**	5,859	6,053	**194**
2013	286	40	102	107	163	307	0	680	7,623	109	1,700	70	0	0	7,327	96	10,093	15	27,295	2,548	13,428	8,774	1,727	6,438	802	31,169	3,368	52,916	84	-3,874	49,042	**78**	6,053	5,233	**-820**
2014	2,378	40	102	107	168	307	0	680	12,252	109	1,700	70	0	0	8,008	96	8,591	15	33,199	3,406	15,448	8,078	1,748	6,487	675	32,436	3,275	49,042	78	763	49,805	**79**	5,233	5,364	**131**
2015	9,386	40	102	107	174	307	0	680	9,835	109	1,700	70	0	0	7,370	96	10,328	15	38,895	3,384	13,428	12,219	2,038	6,694	717	35,096	3,561	49,805	79	3,799	53,605	**71**	5,364	5,188	**-176**
2016	0	40	102	107	179	307	0	680	5,803	109	1,705	70	0	0	7,743	96	11,610	15	27,142	2,356	13,450	9,022	1,783	6,475	646	31,377	2,864	53,605	71	-4,235	49,370	**70**	5,188	4,680	**-508**
2017	0	40	102	107	185	307	0	680	6,281	109	1,700	70	0	0	8,261	96	11,431	15	27,960	2,492	15,448	7,323	1,633	6,432	573	31,408	2,822	49,370	70	-3,448	45,922	**70**	4,680	4,350	**-330**
2018	1,899	40	102	107	190	307	5	680	10,488	109	1,700	70	0	0	8,124	96	9,355	15	31,864	3,164	15,448	7,442	1,652	6,480	589	31,612	2,838	45,922	70	252	46,174	**74**	4,350	4,676	**326**
2019	277	40	102	107	196	307	21	680	7,161	109	1,700	70	0	0	7,742	96	9,828	15	27,028	2,561	13,428	6,896	1,609	6,430	688	29,052	2,779	46,174	74	-2,023	44,151	**74**	4,676	4,458	**-218**
2020	1,103	40	102	107	201	307	48	680	9,538	109	1,705	70	0	0	8,101	96	8,519	15	29,317	3,005	15,472	5,888	1,550	6,464	941	30,315	2,905	44,151	74	-997	43,154	**78**	4,458	4,559	**100**
2021	0	40	102	107	207	307	91	680	7,156	109	1,700	70	0	0	7,777	96	9,150	15	26,183	2,605	15,448	4,941	1,480	6,416	775	29,060	2,914	43,154	78	-2,877	40,277	**78**	4,559	4,250	**-309**
2022	0	40	102	107	212	307	126	680	7,472	109	1,700	70	0	0	7,575	96	8,559	15	25,747	2,648	15,448	4,345	1,404	6,407	973	28,577	2,867	40,277	78	-2,830	37,447	**79**	4,250	4,031	**-219**
2023	2,320	40	102	107	218	307	138	680	11,294	109	1,700	70	0	0	7,195	96	6,393	15	29,361	3,259	15,448	4,218	1,324	6,466	1,946	29,403	3,023	37,447	79	-42	37,405	**84**	4,031	4,267	**236**
2024	6,575	40	102	107	223	307	146	680	18,685	109	1,705	70	0	0	6,910	96	3,779	15	38,125	4,502	15,472	5,446	1,429	6,617	2,336	31,302	3,408	37,405	84	6,823	44,229	**89**	4,267	5,361	**1,094**
2025	5,623	40	102	107	229	307	152	680	13,704	109	1,700	70	0	0	6,661	96	6,241	15	34,412	3,739	13,428	7,616	1,760	6,601	912	30,319	3,462	44,229	89	4,093	48,322	**86**	5,361	5,639	**278**
2026	0	40	102	107	234	307	157	680	7,875	109	1,700	70	0	0	7,167	96	8,447	15	25,683	2,690	13,428	6,603	1,609	6,433	908	28,982	3,194	48,322	86	-3,299	45,023	**84**	5,639	5,134	**-504**
2027	5,682	40	102	107	240	307	162	680	14,705	109	1,700	70	0	0	7,540	96	7,491	15	37,623	4,044	15,448	9,206	1,808	6,592	773	33,826	3,651	45,023	84	3,797	48,820	**83**	5,134	5,527	**393**
2028	2,058	40	102	107	246	307	169	680	9,915	109	1,705	70	0	0	7,278	96	8,907	15	30,381	3,143	13,450	8,675	1,767	6,510	736	31,137	3,325	48,820	83	-757	48,063	**82**	5,527	5,345	**-182**
2029	565	40	102	107	251	307	174	680	8,270	109	1,700	70	0	0	7,520	96	9,724	15	28,306	2,874	13,428	8,168	1,684	6,452	663	30,395	3,193	48,063	82	-2,089	45,974	**80**	5,345	5,026	**-319**
2030	6,989	40	102	107	257	307	180	680	12,708	109	1,700	70	0	0	7,590	96	8,826	15	38,353	3,878	13,428	11,423	1,914	6,638	679	34,083	3,517	45,974	80	4,270	50,244	**79**	5,026	5,387	**361**
2031	0	40	102	107	262	307	184	680	9,913	109	1,700	70	0	0	7,347	96	9,571	15	29,080	3,074	13,428	9,091	1,723	6,445	739	31,426	3,185	50,244	79	-2,346	47,898	**81**	5,387	5,277	**-110**
2032	416	40	102	107	268	307	188	680	8,577	109	1,705	70	0	0	7,722	96	10,062	15	29,040	2,965	13,450	8,368	1,685	6,462	609	30,573	3,183	47,898	81	-1,534	46,365	**80**	5,277	5,059	**-218**
2033	3,050	40	102	107	273	307	191	680	11,853	109	1,700	70	0	0	8,143	96	8,484	15	33,796	3,619	15,448	8,159	1,690	6,514	732	32,544	3,367	46,365	80	1,253	47,617	**82**	5,059	5,312	**253**
2034	0	40	102	107	279	307	192	680	6,543	109	1,700	70	0	0	8,055	96	10,772	15	27,643	2,707	15,448	6,416	1,594	6,430	583	30,472	3,221	47,617	82	-2,829	44,789	**79**	5,312	4,797	**-514**
2035	1,034	40	102	107	284	307	192	680	8,479	109	1,700	70	0	0	7,800	96	9,921	15	29,512	3,001	15,448	6,593	1,608	6,451	574	30,673	3,113	44,789	79	-1,161	43,628	**79**	4,797	4,685	**-112**

Table F-24c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - No Project- 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Nitrate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]
2012	4,402	9	102	41	157	15	0	32	15,920	7	1,705	3	0	0	7,025	16	7,024	10	36,335	467
2013	286	9	102	41	163	15	0	32	7,623	7	1,700	3	0	0	7,327	16	10,093	10	27,295	387
2014	2,378	9	102	41	168	15	0	32	12,252	7	1,700	3	0	0	8,008	16	8,591	10	33,199	451
2015	9,386	9	102	41	174	15	0	32	9,835	7	1,700	3	0	0	7,370	16	10,328	10	38,895	522
2016	0	9	102	41	179	15	0	32	5,803	7	1,705	3	0	0	7,743	16	11,610	10	27,142	397
2017	0	9	102	41	185	15	0	32	6,281	7	1,700	3	0	0	8,261	16	11,431	10	27,960	410
2018	1,899	9	102	41	190	15	5	32	10,488	7	1,700	3	0	0	8,124	16	9,355	10	31,864	442
2019	277	9	102	41	196	15	21	32	7,161	7	1,700	3	0	0	7,742	16	9,828	10	27,028	390
2020	1,103	9	102	41	201	15	48	32	9,538	7	1,705	3	0	0	8,101	16	8,519	10	29,317	414
2021	0	9	102	41	207	15	91	32	7,156	7	1,700	3	0	0	7,777	16	9,150	10	26,183	381
2022	0	9	102	41	212	15	126	32	7,472	7	1,700	3	0	0	7,575	16	8,559	10	25,747	374
2023	2,320	9	102	41	218	15	138	32	11,294	7	1,700	3	0	0	7,195	16	6,393	10	29,361	401
2024	6,575	9	102	41	223	15	146	32	18,685	7	1,705	3	0	0	6,910	16	3,779	10	38,125	481
2025	5,623	9	102	41	229	15	152	32	13,704	7	1,700	3	0	0	6,661	16	6,241	10	34,412	450
2026	0	9	102	41	234	15	157	32	7,875	7	1,700	3	0	0	7,167	16	8,447	10	25,683	369
2027	5,682	9	102	41	240	15	162	32	14,705	7	1,700	3	0	0	7,540	16	7,491	10	37,623	497
2028	2,058	9	102	41	246	15	169	32	9,915	7	1,705	3	0	0	7,278	16	8,907	10	30,381	422
2029	565	9	102	41	251	15	174	32	8,270	7	1,700	3	0	0	7,520	16	9,724	10	28,306	405
2030	6,989	9	102	41	257	15	180	32	12,708	7	1,700	3	0	0	7,590	16	8,826	10	38,353	514
2031	0	9	102	41	262	15	184	32	9,913	7	1,700	3	0	0	7,347	16	9,571	10	29,080	409
2032	416	9	102	41	268	15	188	32	8,577	7	1,705	3	0	0	7,722	16	10,062	10	29,040	416
2033	3,050	9	102	41	273	15	191	32	11,853	7	1,700	3	0	0	8,143	16	8,484	10	33,796	467
2034	0	9	102	41	279	15	192	32	6,543	7	1,700	3	0	0	8,055	16	10,772	10	27,643	409
2035	1,034	9	102	41	284	15	192	32	8,479	7	1,700	3	0	0	7,800	16	9,921	10	29,512	423

Year	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	13,450	10,864	2,012	6,573	961	33,858	472	50,440	11	2,476	52,916	10	748	743	-5
2013	13,428	8,774	1,727	6,438	802	31,169	413	52,916	10	-3,874	49,042	11	743	717	-26
2014	15,448	8,078	1,748	6,487	675	32,436	449	49,042	11	763	49,805	11	717	719	2
2015	13,428	12,219	2,038	6,694	717	35,096	477	49,805	11	3,799	53,605	10	719	763	44
2016	13,450	9,022	1,783	6,475	646	31,377	421	53,605	10	-4,235	49,370	11	763	738	-25
2017	15,448	7,323	1,633	6,432	573	31,408	445	49,370	11	-3,448	45,922	11	738	703	-35
2018	15,448	7,442	1,652	6,480	589	31,612	459	45,922	11	252	46,174	11	703	686	-17
2019	13,428	6,896	1,609	6,430	688	29,052	408	46,174	11	-2,023	44,151	11	686	668	-18
2020	15,472	5,888	1,550	6,464	941	30,315	435	44,151	11	-997	43,154	11	668	646	-22
2021	15,448	4,941	1,480	6,416	775	29,060	413	43,154	11	-2,877	40,277	11	646	615	-32
2022	15,448	4,345	1,404	6,407	973	28,577	415	40,277	11	-2,830	37,447	11	615	573	-41
2023	15,448	4,218	1,324	6,466	1,946	29,403	430	37,447	11	-42	37,405	11	573	544	-29
2024	15,472	5,446	1,429	6,617	2,336	31,302	434	37,405	11	6,823	44,229	10	544	590	46
2025	13,428	7,616	1,760	6,601	912	30,319	381	44,229	10	4,093	48,322	10	590	659	69
2026	13,428	6,603	1,609	6,433	908	28,982	373	48,322	10	-3,299	45,023	11	659	655	-5
2027	15,448	9,206	1,808	6,592	773	33,826	465	45,023	11	3,797	48,820	10	655	686	32
2028	13,450	8,675	1,767	6,510	736	31,137	413	48,820	10	-757	48,063	11	686	696	9
2029	13,428	8,168	1,684	6,452	663	30,395	416	48,063	11	-2,089	45,974	11	696	685	-10
2030	13,428	11,423	1,914	6,638	679	34,083	480	45,974	11	4,270	50,244	11	685	720	35
2031	13,428	9,091	1,723	6,445	739	31,426	426	50,244	11	-2,346	47,898	11	720	703	-17
2032	13,450	8,368	1,685	6,462	609	30,573	424	47,898	11	-1,534	46,365	11	703	696	-8
2033	15,448	8,159	1,690	6,514	732	32,544	463	46,365	11	1,253	47,617	11	696	700	4
2034	15,448	6,416	1,594	6,430	583	30,472	424	47,617	11	-2,829	44,789	11	700	685	-15
2035	15,448	6,593	1,608	6,451	574	30,673	444	44,789	11	-1,161	43,628	11	685	664	-21

Table F-24d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - No Project- 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Sulfate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	40	102	144	157	416	0	920	15,920	254	1,705	51	0	0	7,025	295	7,024	235	36,335	11,027	13,450	10,864	2,012	6,573	961	33,858	10,866	50,440	251	2,476	52,916	**241**	17,209	17,370	**161**
2013	286	40	102	144	163	416	0	920	7,623	254	1,700	51	0	0	7,327	295	10,093	235	27,295	9,042	13,428	8,774	1,727	6,438	802	31,169	9,665	52,916	241	-3,874	49,042	**251**	17,370	16,748	**-622**
2014	2,378	40	102	144	168	416	0	920	12,252	254	1,700	51	0	0	8,008	295	8,591	235	33,199	10,551	15,448	8,078	1,748	6,487	675	32,436	10,480	49,042	251	763	49,805	**248**	16,748	16,819	**71**
2015	9,386	40	102	144	174	416	0	920	9,835	254	1,700	51	0	0	7,370	295	10,328	235	38,895	10,400	13,428	12,219	2,038	6,694	717	35,096	11,164	49,805	248	3,799	53,605	**220**	16,819	16,055	**-764**
2016	0	40	102	144	179	416	0	920	5,803	254	1,705	51	0	0	7,743	295	11,610	235	27,142	9,059	13,450	9,022	1,783	6,475	646	31,377	8,864	53,605	220	-4,235	49,370	**242**	16,055	16,251	**196**
2017	0	40	102	144	185	416	0	920	6,281	254	1,700	51	0	0	8,261	295	11,431	235	27,960	9,378	15,448	7,323	1,633	6,432	573	31,408	9,801	49,370	242	-3,448	45,922	**253**	16,251	15,828	**-423**
2018	1,899	40	102	144	190	416	5	920	10,488	254	1,700	51	0	0	8,124	295	9,355	235	31,864	10,226	15,448	7,442	1,652	6,480	589	31,612	10,326	45,922	253	252	46,174	**251**	15,828	15,728	**-100**
2019	277	40	102	144	196	416	21	920	7,161	254	1,700	51	0	0	7,742	295	9,828	235	27,028	9,010	13,428	6,896	1,609	6,430	688	29,052	9,347	46,174	251	-2,023	44,151	**256**	15,728	15,390	**-337**
2020	1,103	40	102	144	201	416	48	920	9,538	254	1,705	51	0	0	8,101	295	8,519	235	29,317	9,638	15,472	5,888	1,550	6,464	941	30,315	10,027	44,151	256	-997	43,154	**256**	15,390	15,001	**-389**
2021	0	40	102	144	207	416	91	920	7,156	254	1,700	51	0	0	7,777	295	9,150	235	26,183	8,883	15,448	4,941	1,480	6,416	775	29,060	9,587	43,154	256	-2,877	40,277	**261**	15,001	14,297	**-704**
2022	0	40	102	144	212	416	126	920	7,472	254	1,700	51	0	0	7,575	295	8,559	235	25,747	8,770	15,448	4,345	1,404	6,407	973	28,577	9,646	40,277	261	-2,830	37,447	**264**	14,297	13,422	**-875**
2023	2,320	40	102	144	218	416	138	920	11,294	254	1,700	51	0	0	7,195	295	6,393	235	29,361	9,390	15,448	4,218	1,324	6,466	1,946	29,403	10,064	37,447	264	-42	37,405	**251**	13,422	12,747	**-674**
2024	6,575	40	102	144	223	416	146	920	18,685	254	1,705	51	0	0	6,910	295	3,779	235	38,125	11,237	15,472	5,446	1,429	6,617	2,336	31,302	10,180	37,405	251	6,823	44,229	**230**	12,747	13,804	**1,057**
2025	5,623	40	102	144	229	416	152	920	13,704	254	1,700	51	0	0	6,661	295	6,241	235	34,412	10,163	13,428	7,616	1,760	6,601	912	30,319	8,914	44,229	230	4,093	48,322	**229**	13,804	15,054	**1,249**
2026	0	40	102	144	234	416	157	920	7,875	254	1,700	51	0	0	7,167	295	8,447	235	25,683	8,761	13,428	6,603	1,609	6,433	908	28,982	8,527	48,322	229	-3,299	45,023	**250**	15,054	15,287	**233**
2027	5,682	40	102	144	240	416	162	920	14,705	254	1,700	51	0	0	7,540	295	7,491	235	37,623	11,282	15,448	9,206	1,808	6,592	773	33,826	10,871	45,023	250	3,797	48,820	**236**	15,287	15,698	**411**
2028	2,058	40	102	144	246	416	169	920	9,915	254	1,705	51	0	0	7,278	295	8,907	235	30,381	9,790	13,450	8,675	1,767	6,510	736	31,137	9,444	48,820	236	-757	48,063	**246**	15,698	16,044	**346**
2029	565	40	102	144	251	416	174	920	8,270	254	1,700	51	0	0	7,520	295	9,724	235	28,306	9,508	13,428	8,168	1,684	6,452	663	30,395	9,584	48,063	246	-2,089	45,974	**255**	16,044	15,968	**-76**
2030	6,989	40	102	144	257	416	180	920	12,708	254	1,700	51	0	0	7,590	295	8,826	235	38,353	11,142	13,428	11,423	1,914	6,638	679	34,083	11,173	45,974	255	4,270	50,244	**233**	15,968	15,938	**-31**
2031	0	40	102	144	262	416	184	920	9,913	254	1,700	51	0	0	7,347	295	9,571	235	29,080	9,946	13,428	9,091	1,723	6,445	739	31,426	9,422	50,244	233	-2,346	47,898	**253**	15,938	16,462	**524**
2032	416	40	102	144	268	416	188	920	8,577	254	1,705	51	0	0	7,722	295	10,062	235	29,040	9,822	13,450	8,368	1,685	6,462	609	30,573	9,928	47,898	253	-1,534	46,365	**259**	16,462	16,356	**-106**
2033	3,050	40	102	144	273	416	191	920	11,853	254	1,700	51	0	0	8,143	295	8,484	235	33,796	10,768	15,448	8,159	1,690	6,514	732	32,544	10,884	46,365	259	1,253	47,617	**251**	16,356	16,239	**-116**
2034	0	40	102	144	279	416	192	920	6,543	254	1,700	51	0	0	8,055	295	10,772	235	27,643	9,468	15,448	6,416	1,594	6,430	583	30,472	9,849	47,617	251	-2,829	44,789	**260**	16,239	15,859	**-380**
2035	1,034	40	102	144	284	416	192	920	8,479	254	1,700	51	0	0	7,800	295	9,921	235	29,512	9,822	15,448	6,593	1,608	6,451	574	30,673	10,292	44,789	260	-1,161	43,628	**259**	15,859	15,389	**-470**

Projected TDS Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - No Project - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Castaic Dam Underflow	TDS Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TDS Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	100	1,254	786	2,787	2,267	0	4,915	10	669	0	0	0	0	3,836	816	36,956	18,144	12,841	0	2,499	0	2,751	18,090	13,831	1,650,000	652	18,866	1,668,866	647	1,463,642	1,467,956	4,314
2013	1,890	100	1,250	786	2,834	2,267	0	4,915	0	669	0	0	0	0	-3,706	754	2,269	6,532	12,814	0	1,571	0	2,649	17,033	13,601	1,668,866	647	-14,764	1,654,102	650	1,467,956	1,460,887	-7,069
2014	15,703	100	1,250	786	2,882	2,267	0	4,915	0	669	0	0	0	0	-1,709	780	18,126	10,540	12,814	0	1,717	0	2,727	17,258	13,726	1,654,102	650	868	1,654,969	648	1,460,887	1,457,701	-3,186
2015	61,979	100	1,250	786	2,929	2,267	0	4,915	7	669	0	0	0	0	-578	763	65,587	18,198	12,814	0	3,511	0	2,815	19,140	13,766	1,654,969	648	46,447	1,701,416	632	1,457,701	1,462,133	4,432
2016	0	100	1,254	786	2,977	2,267	0	4,915	0	669	0	0	0	0	-4,266	671	-35	6,625	12,841	0	2,239	0	2,996	18,076	13,610	1,701,416	632	-18,111	1,683,305	630	1,462,133	1,441,899	-6,985
2017	0	100	1,250	786	3,025	2,267	2	4,915	0	669	0	0	0	0	-6,108	728	-1,831	4,625	12,814	0	1,545	0	2,821	17,180	13,393	1,683,305	630	-19,011	1,664,294	629	1,441,899	1,423,881	-8,768
2018	12,538	100	1,250	786	3,072	2,267	40	4,915	0	669	0	0	0	0	-3,421	762	13,480	9,232	12,814	0	1,681	0	2,757	17,252	13,321	1,664,294	629	-3,772	1,660,523	629	1,423,881	1,419,792	-4,090
2019	1,826	100	1,250	786	3,120	2,267	140	4,915	0	669	0	0	0	0	-1,862	751	4,475	10,236	19,123	0	1,378	0	2,000	22,500	18,060	1,660,523	629	-18,026	1,642,497	632	1,419,792	1,411,968	-7,824
2020	7,285	100	1,254	786	3,168	2,267	264	4,915	0	669	0	0	0	0	59	777	12,030	13,921	25,281	0	1,338	0	1,391	28,010	22,929	1,642,497	632	-15,981	1,626,516	634	1,411,968	1,402,959	-9,008
2021	0	100	1,250	786	3,215	2,267	344	4,915	0	669	0	0	0	0	-1,798	778	3,011	11,638	19,123	0	1,152	0	1,453	21,728	17,748	1,626,516	634	-18,717	1,607,800	639	1,402,959	1,396,850	-6,109
2022	0	100	1,250	786	3,263	2,267	385	4,915	0	669	0	0	0	0	17	801	4,915	13,986	25,228	0	997	0	1,064	27,289	22,843	1,607,800	639	-22,374	1,585,426	644	1,396,850	1,387,993	-8,857
2023	15,322	100	1,250	786	3,310	2,267	404	4,915	0	669	0	0	0	0	6,827	809	27,114	23,831	34,977	0	1,191	0	649	36,818	31,190	1,585,426	644	-9,703	1,575,722	644	1,387,993	1,380,634	-7,359
2024	43,415	100	1,254	786	3,358	2,267	414	4,915	10	669	0	0	0	0	13,287	747	61,737	33,861	35,059	0	2,088	0	676	37,823	31,311	1,575,722	644	23,914	1,599,636	636	1,380,634	1,383,184	2,550
2025	37,127	100	1,250	786	3,406	2,267	420	4,915	10	669	0	0	0	0	10,964	673	53,176	29,731	12,814	0	2,893	0	1,588	17,295	12,453	1,599,636	636	35,881	1,635,517	630	1,383,184	1,400,461	17,277
2026	0	100	1,250	786	3,453	2,267	423	4,915	0	669	0	0	0	0	2,405	671	7,531	17,002	19,123	0	1,635	0	1,540	22,297	17,693	1,635,517	630	-14,766	1,620,751	635	1,400,461	1,399,770	-691
2027	37,522	100	1,250	786	3,501	2,267	426	4,915	8	669	0	0	0	0	4,507	745	47,214	24,649	12,814	0	2,728	0	2,230	17,772	12,993	1,620,751	635	29,442	1,650,193	629	1,399,770	1,411,426	11,656
2028	13,592	100	1,254	786	3,548	2,267	430	4,915	0	669	0	0	0	0	1,034	696	19,858	17,978	12,841	0	2,060	0	2,414	17,315	13,047	1,650,193	629	2,544	1,652,737	630	1,411,426	1,416,356	4,930
2029	3,729	100	1,250	786	3,596	2,267	434	4,915	0	669	0	0	0	0	-2,399	722	6,610	13,470	12,814	0	1,729	0	2,419	16,962	13,054	1,652,737	630	-10,351	1,642,385	634	1,416,356	1,416,772	416
2030	46,150	100	1,250	786	3,644	2,267	437	4,915	10	669	0	0	0	0	6,011	762	57,502	27,995	12,814	0	3,238	0	2,803	18,855	13,472	1,642,385	634	38,648	1,681,033	626	1,416,772	1,431,296	14,523
2031	0	100	1,250	786	3,691	2,267	438	4,915	0	669	0	0	0	0	-3,371	696	2,009	12,449	12,814	0	1,853	0	2,692	17,358	13,202	1,681,033	626	-15,350	1,665,683	632	1,431,296	1,430,543	-753
2032	2,747	100	1,254	786	3,739	2,267	439	4,915	0	669	0	0	0	0	-4,658	751	3,520	11,410	12,841	0	1,551	0	2,621	17,013	13,279	1,665,683	632	-13,493	1,652,190	636	1,430,543	1,428,674	-1,869
2033	20,140	100	1,250	786	3,787	2,267	440	4,915	3	669	0	0	0	0	-1,594	775	24,026	17,005	19,123	0	1,905	0	2,122	23,149	18,370	1,652,190	636	877	1,653,067	635	1,428,674	1,427,309	-1,365
2034	0	100	1,250	786	3,834	2,267	440	4,915	0	669	0	0	0	0	-4,025	746	1,499	12,006	12,814	0	1,427	0	2,393	16,634	13,130	1,653,067	635	-15,135	1,637,932	640	1,427,309	1,426,185	-1,124
2035	6,825	100	1,250	786	3,882	2,267	440	4,915	0	669	0	0	0	0	-4,054	784	8,343	12,843	12,814	0	1,377	0	2,402	16,592	13,248	1,637,932	640	-8,249	1,629,683	643	1,426,185	1,425,780	-405

Table F-25b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - No Project - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Castaic Dam Underflow	Chloride Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	40	1,254	105	2,787	302	0	687	10	89	0	0	0	0	3,836	93	36,956	3,394	12,841	0	2,499	0	2,751	18,090	821	1,650,000	39	18,866	1,668,866	39	86,867	89,441	2,574
2013	1,890	40	1,250	105	2,834	302	0	687	0	89	0	0	0	0	-3,706	89	2,269	999	12,814	0	1,571	0	2,649	17,033	829	1,668,866	39	-14,764	1,654,102	40	89,441	89,611	170
2014	15,703	40	1,250	105	2,882	302	0	687	0	89	0	0	0	0	-1,709	87	18,126	2,015	12,814	0	1,717	0	2,727	17,258	842	1,654,102	40	868	1,654,969	40	89,611	90,784	1,173
2015	61,979	40	1,250	105	2,929	302	0	687	7	89	0	0	0	0	-578	86	65,587	4,687	12,814	0	3,511	0	2,815	19,140	857	1,654,969	40	46,447	1,701,416	41	90,784	94,613	3,829
2016	0	40	1,254	105	2,977	302	0	687	0	89	0	0	0	0	-4,266	79	-35	942	12,841	0	2,239	0	2,996	18,076	881	1,701,416	41	-18,111	1,683,305	41	94,613	92,790	62
2017	0	40	1,250	105	3,025	302	2	687	0	89	0	0	0	0	-6,108	81	-1,831	753	12,814	0	1,545	0	2,821	17,180	862	1,683,305	41	-19,011	1,664,294	40	92,790	91,176	-109
2018	12,538	40	1,250	105	3,072	302	40	687	0	89	0	0	0	0	-3,421	81	13,480	1,783	12,814	0	1,681	0	2,757	17,252	853	1,664,294	40	-3,772	1,660,523	41	91,176	92,105	930
2019	1,826	40	1,250	105	3,120	302	140	687	0	89	0	0	0	0	-1,862	82	4,475	1,483	19,123	0	1,378	0	2,000	22,500	1,172	1,660,523	41	-18,026	1,642,497	41	92,105	92,417	312
2020	7,285	40	1,254	105	3,168	302	264	687	0	89	0	0	0	0	59	83	12,030	2,131	25,281	0	1,338	0	1,391	28,010	1,501	1,642,497	41	-15,981	1,626,516	42	92,417	93,047	630
2021	0	40	1,250	105	3,215	302	344	687	0	89	0	0	0	0	-1,798	84	3,011	1,616	19,123	0	1,152	0	1,453	21,728	1,177	1,626,516	42	-18,717	1,607,800	43	93,047	93,486	439
2022	0	40	1,250	105	3,263	302	385	687	0	89	0	0	0	0	17	84	4,915	1,882	25,228	0	997	0	1,064	27,289	1,529	1,607,800	43	-22,374	1,585,426	44	93,486	93,839	353
2023	15,322	40	1,250	105	3,310	302	404	687	0	89	0	0	0	0	6,827	85	27,114	3,536	34,977	0	1,191	0	649	36,818	2,109	1,585,426	44	-9,703	1,575,722	44	93,839	95,266	1,427
2024	43,415	40	1,254	105	3,358	302	414	687	10	89	0	0	0	0	13,287	85	61,737	5,844	35,059	0	2,088	0	676	37,823	2,160	1,575,722	44	23,914	1,599,636	45	95,266	98,949	3,683
2025	37,127	40	1,250	105	3,406	302	420	687	10	89	0	0	0	0	10,964	85	53,176	5,261	12,814	0	2,893	0	1,588	17,295	891	1,599,636	45	35,881	1,635,517	46	98,949	103,320	4,371
2026	0	40	1,250	105	3,453	302	423	687	0	89	0	0	0	0	2,405	86	7,531	2,274	19,123	0	1,635	0	1,540	22,297	1,305	1,635,517	46	-14,766	1,620,751	47	103,320	104,288	968
2027	37,522	40	1,250	105	3,501	302	426	687	8	89	0	0	0	0	4,507	88	47,214	4,598	12,814	0	2,728	0	2,230	17,772	968	1,620,751	47	29,442	1,650,193	48	104,288	107,918	3,630
2028	13,592	40	1,254	105	3,548	302	430	687	0	89	0	0	0	0	1,034	86	19,858	2,900	12,841	0	2,060	0	2,414	17,315	998	1,650,193	48	2,544	1,652,737	49	107,918	109,821	1,903
2029	3,729	40	1,250	105	3,596	302	434	687	0	89	0	0	0	0	-2,399	87	6,610	1,981	12,814	0	1,729	0	2,419	16,962	1,012	1,652,737	49	-10,351	1,642,385	50	109,821	110,789	969
2030	46,150	40	1,250	105	3,644	302	437	687	10	89	0	0	0	0	6,011	88	57,502	5,315	12,814	0	3,238	0	2,803	18,855	1,053	1,642,385	50	38,648	1,681,033	50	110,789	115,051	4,262
2031	0	40	1,250	105	3,691	302	438	687	0	89	0	0	0	0	-3,371	85	2,009	1,713	12,814	0	1,853	0	2,692	17,358	1,061	1,681,033	50	-15,350	1,665,683	51	115,051	115,703	652
2032	2,747	40	1,254	105	3,739	302	439	687	0	89	0	0	0	0	-4,658	88	3,520	1,720	12,841	0	1,551	0	2,621	17,013	1,074	1,665,683	51	-13,493	1,652,190	52	115,703	116,349	646
2033	20,140	40	1,250	105	3,787	302	440	687	3	89	0	0	0	0	-1,594	88	24,026	3,051	19,123	0	1,905	0	2,122	23,149	1,496	1,652,190	52	877	1,653,067	52	116,349	117,904	1,555
2034	0	40	1,250	105	3,834	302	440	687	0	89	0	0	0	0	-4,025	87	1,499	1,690	12,814	0	1,427	0	2,393	16,634	1,085	1,653,067	52	-15,135	1,637,932	53	117,904	118,510	606
2035	6,825	40	1,250	105	3,882	302	440	687	0	89	0	0	0	0	-4,054	87	8,343	2,075	12,814	0	1,377	0	2,402	16,592	1,101	1,637,932	53	-8,249	1,629,683	54	118,510	119,484	974

Table F-25c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - No Project - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Nitrate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	9	1,254	43	2,787	16	0	34	10	13	0	0	0	0	3,836	18	36,956	574	12,841	0	2,499	0	2,751	18,090	428	1,650,000	20	18,866	1,668,866	20	45,318	45,464	146
2013	1,890	9	1,250	43	2,834	16	0	34	0	13	0	0	0	0	-3,706	17	2,269	72	12,814	0	1,571	0	2,649	17,033	421	1,668,866	20	-14,764	1,654,102	20	45,464	45,115	-350
2014	15,703	9	1,250	43	2,882	16	0	34	0	13	0	0	0	0	-1,709	18	18,126	282	12,814	0	1,717	0	2,727	17,258	424	1,654,102	20	868	1,654,969	20	45,115	44,973	-142
2015	61,979	9	1,250	43	2,929	16	0	34	7	13	0	0	0	0	-578	17	65,587	864	12,814	0	3,511	0	2,815	19,140	425	1,654,969	20	46,447	1,701,416	20	44,973	45,413	440
2016	0	9	1,254	43	2,977	16	0	34	0	13	0	0	0	0	-4,266	16	-35	44	12,841	0	2,239	0	2,996	18,076	423	1,701,416	20	-18,111	1,683,305	20	45,413	44,946	-379
2017	0	9	1,250	43	3,025	16	2	34	0	13	0	0	0	0	-6,108	17	-1,831	-4	12,814	0	1,545	0	2,821	17,180	417	1,683,305	20	-19,011	1,664,294	20	44,946	44,524	-422
2018	12,538	9	1,250	43	3,072	16	40	34	0	13	0	0	0	0	-3,421	18	13,480	209	12,814	0	1,681	0	2,757	17,252	417	1,664,294	20	-3,772	1,660,523	20	44,524	44,317	-208
2019	1,826	9	1,250	43	3,120	16	140	34	0	13	0	0	0	0	-1,862	17	4,475	125	19,123	0	1,378	0	2,000	22,500	564	1,660,523	20	-18,026	1,642,497	20	44,317	43,878	-439
2020	7,285	9	1,254	43	3,168	16	264	34	0	13	0	0	0	0	59	18	12,030	242	25,281	0	1,338	0	1,391	28,010	713	1,642,497	20	-15,981	1,626,516	20	43,878	43,408	-470
2021	0	9	1,250	43	3,215	16	344	34	0	13	0	0	0	0	-1,798	17	3,011	115	19,123	0	1,152	0	1,453	21,728	549	1,626,516	20	-18,717	1,607,800	20	43,408	42,974	-434
2022	0	9	1,250	43	3,263	16	385	34	0	13	0	0	0	0	17	18	4,915	161	25,228	0	997	0	1,064	27,289	703	1,607,800	20	-22,374	1,585,426	20	42,974	42,433	-541
2023	15,322	9	1,250	43	3,310	16	404	34	0	13	0	0	0	0	6,827	18	27,114	512	34,977	0	1,191	0	649	36,818	954	1,585,426	20	-9,703	1,575,722	20	42,433	41,991	-441
2024	43,415	9	1,254	43	3,358	16	414	34	10	13	0	0	0	0	13,287	16	61,737	979	35,059	0	2,088	0	676	37,823	952	1,575,722	20	23,914	1,599,636	19	41,991	42,018	27
2025	37,127	9	1,250	43	3,406	16	420	34	10	13	0	0	0	0	10,964	15	53,176	838	12,814	0	2,893	0	1,588	17,295	378	1,599,636	19	35,881	1,635,517	19	42,018	42,477	459
2026	0	9	1,250	43	3,453	16	423	34	0	13	0	0	0	0	2,405	15	7,531	217	19,123	0	1,635	0	1,540	22,297	537	1,635,517	19	-14,766	1,620,751	19	42,477	42,158	-319
2027	37,522	9	1,250	43	3,501	16	426	34	8	13	0	0	0	0	4,507	17	47,214	721	12,814	0	2,728	0	2,230	17,772	391	1,620,751	19	29,442	1,650,193	19	42,158	42,487	329
2028	13,592	9	1,254	43	3,548	16	430	34	0	13	0	0	0	0	1,034	16	19,858	354	12,841	0	2,060	0	2,414	17,315	393	1,650,193	19	2,544	1,652,737	19	42,487	42,449	-38
2029	3,729	9	1,250	43	3,596	16	434	34	0	13	0	0	0	0	-2,399	16	6,610	162	12,814	0	1,729	0	2,419	16,962	391	1,652,737	19	-10,351	1,642,385	19	42,449	42,219	-230
2030	46,150	9	1,250	43	3,644	16	437	34	10	13	0	0	0	0	6,011	17	57,502	863	12,814	0	3,238	0	2,803	18,855	401	1,642,385	19	38,648	1,681,033	19	42,219	42,681	462
2031	0	9	1,250	43	3,691	16	438	34	0	13	0	0	0	0	-3,371	16	2,009	99	12,814	0	1,853	0	2,692	17,358	394	1,681,033	19	-15,350	1,665,683	19	42,681	42,386	-295
2032	2,747	9	1,254	43	3,739	16	439	34	0	13	0	0	0	0	-4,658	17	3,520	99	12,841	0	1,551	0	2,621	17,013	393	1,665,683	19	-13,493	1,652,190	19	42,386	42,091	-294
2033	20,140	9	1,250	43	3,787	16	440	34	3	13	0	0	0	0	-1,594	17	24,026	378	19,123	0	1,905	0	2,122	23,149	541	1,652,190	19	877	1,653,067	19	42,091	41,928	-163
2034	0	9	1,250	43	3,834	16	440	34	0	13	0	0	0	0	-4,025	17	1,499	85	12,814	0	1,427	0	2,393	16,634	386	1,653,067	19	-15,135	1,637,932	19	41,928	41,627	-301
2035	6,825	9	1,250	43	3,882	16	440	34	0	13	0	0	0	0	-4,054	17	8,343	163	12,814	0	1,377	0	2,402	16,592	387	1,637,932	19	-8,249	1,629,683	19	41,627	41,404	-224

Table F-25d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - No Project - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Sulfate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]
2012	29,070	40	1,254	150	2,787	433	0	917	10	179	0	0	0	0	3,836	218	36,956	4,616
2013	1,890	40	1,250	150	2,834	433	0	917	0	179	0	0	0	0	-3,706	208	2,269	977
2014	15,703	40	1,250	150	2,882	433	0	917	0	179	0	0	0	0	-1,709	221	18,126	2,291
2015	61,979	40	1,250	150	2,929	433	0	917	7	179	0	0	0	0	-578	216	65,587	5,181
2016	0	40	1,254	150	2,977	433	0	917	0	179	0	0	0	0	-4,266	192	-35	893
2017	0	40	1,250	150	3,025	433	2	917	0	179	0	0	0	0	-6,108	212	-1,831	278
2018	12,538	40	1,250	150	3,072	433	40	917	0	179	0	0	0	0	-3,421	223	13,480	1,757
2019	1,826	40	1,250	150	3,120	433	140	917	0	179	0	0	0	0	-1,862	217	4,475	1,815
2020	7,285	40	1,254	150	3,168	433	264	917	0	179	0	0	0	0	59	226	12,030	2,863
2021	0	40	1,250	150	3,215	433	344	917	0	179	0	0	0	0	-1,798	225	3,011	2,025
2022	0	40	1,250	150	3,263	433	385	917	0	179	0	0	0	0	17	233	4,915	2,661
2023	15,322	40	1,250	150	3,310	433	404	917	0	179	0	0	0	0	6,827	235	27,114	5,720
2024	43,415	40	1,254	150	3,358	433	414	917	10	179	0	0	0	0	13,287	210	61,737	8,899
2025	37,127	40	1,250	150	3,406	433	420	917	10	179	0	0	0	0	10,964	187	53,176	7,589
2026	0	40	1,250	150	3,453	433	423	917	0	179	0	0	0	0	2,405	186	7,531	3,423
2027	37,522	40	1,250	150	3,501	433	426	917	8	179	0	0	0	0	4,507	211	47,214	6,185
2028	13,592	40	1,254	150	3,548	433	430	917	0	179	0	0	0	0	1,034	194	19,858	3,892
2029	3,729	40	1,250	150	3,596	433	434	917	0	179	0	0	0	0	-2,399	203	6,610	2,454
2030	46,150	40	1,250	150	3,644	433	437	917	10	179	0	0	0	0	6,011	216	57,502	7,221
2031	0	40	1,250	150	3,691	433	438	917	0	179	0	0	0	0	-3,371	194	2,009	2,084
2032	2,747	40	1,254	150	3,739	433	439	917	0	179	0	0	0	0	-4,658	212	3,520	1,809
2033	20,140	40	1,250	150	3,787	433	440	917	3	179	0	0	0	0	-1,594	220	24,026	3,651
2034	0	40	1,250	150	3,834	433	440	917	0	179	0	0	0	0	-4,025	210	1,499	1,912
2035	6,825	40	1,250	150	3,882	433	440	917	0	179	0	0	0	0	-4,054	222	8,343	2,235

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,841	0	2,499	0	2,751	18,090	5,715	1,650,000	270	18,866	1,668,866	**266**	604,840	603,741	**-1,099**
2013	12,814	0	1,571	0	2,649	17,033	5,594	1,668,866	266	-14,764	1,654,102	**266**	603,741	599,124	**-4,617**
2014	12,814	0	1,717	0	2,727	17,258	5,629	1,654,102	266	868	1,654,969	**265**	599,124	595,786	**-3,338**
2015	12,814	0	3,511	0	2,815	19,140	5,626	1,654,969	265	46,447	1,701,416	**257**	595,786	595,341	**-445**
2016	12,841	0	2,239	0	2,996	18,076	5,541	1,701,416	257	-18,111	1,683,305	**257**	595,341	588,907	**-4,649**
2017	12,814	0	1,545	0	2,821	17,180	5,470	1,683,305	257	-19,011	1,664,294	**258**	588,907	583,159	**-5,192**
2018	12,814	0	1,681	0	2,757	17,252	5,456	1,664,294	258	-3,772	1,660,523	**257**	583,159	579,460	**-3,699**
2019	19,123	0	1,378	0	2,000	22,500	7,371	1,660,523	257	-18,026	1,642,497	**257**	579,460	573,904	**-5,556**
2020	25,281	0	1,338	0	1,391	28,010	9,320	1,642,497	257	-15,981	1,626,516	**257**	573,904	567,448	**-6,456**
2021	19,123	0	1,152	0	1,453	21,728	7,178	1,626,516	257	-18,717	1,607,800	**257**	567,448	562,295	**-5,153**
2022	25,228	0	997	0	1,064	27,289	9,195	1,607,800	257	-22,374	1,585,426	**258**	562,295	555,760	**-6,534**
2023	34,977	0	1,191	0	649	36,818	12,489	1,585,426	258	-9,703	1,575,722	**256**	555,760	548,991	**-6,769**
2024	35,059	0	2,088	0	676	37,823	12,450	1,575,722	256	23,914	1,599,636	**251**	548,991	545,440	**-3,552**
2025	12,814	0	2,893	0	1,588	17,295	4,911	1,599,636	251	35,881	1,635,517	**246**	545,440	548,118	**2,678**
2026	19,123	0	1,635	0	1,540	22,297	6,925	1,635,517	246	-14,766	1,620,751	**247**	548,118	544,616	**-3,501**
2027	12,814	0	2,728	0	2,230	17,772	5,055	1,620,751	247	29,442	1,650,193	**243**	544,616	545,746	**1,130**
2028	12,841	0	2,060	0	2,414	17,315	5,045	1,650,193	243	2,544	1,652,737	**242**	545,746	544,594	**-1,153**
2029	12,814	0	1,729	0	2,419	16,962	5,019	1,652,737	242	-10,351	1,642,385	**243**	544,594	542,028	**-2,566**
2030	12,814	0	3,238	0	2,803	18,855	5,154	1,642,385	243	38,648	1,681,033	**238**	542,028	544,095	**2,067**
2031	12,814	0	1,853	0	2,692	17,358	5,019	1,681,033	238	-15,350	1,665,683	**239**	544,095	541,160	**-2,935**
2032	12,841	0	1,551	0	2,621	17,013	5,023	1,665,683	239	-13,493	1,652,190	**239**	541,160	537,945	**-3,215**
2033	19,123	0	1,905	0	2,122	23,149	6,917	1,652,190	239	877	1,653,067	**238**	537,945	534,679	**-3,266**
2034	12,814	0	1,427	0	2,393	16,634	4,918	1,653,067	238	-15,135	1,637,932	**239**	534,679	531,672	**-3,006**
2035	12,814	0	1,377	0	2,402	16,592	4,939	1,637,932	239	-8,249	1,629,683	**239**	531,672	528,968	**-2,704**

APPENDIX G

Santa Clara Valley East Subbasin Salt and Nutrient Management Plan

Substitute Environmental Document

Prepared by: Kennedy/Jenks Consultants

For: the Los Angeles Regional Water Quality Control Board

GEOSCIENCE

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Santa Clara Valley East Subbasin Salt and Nutrient Management Plan Substitute Environmental Document

Prepared for

Los Angeles Regional Water Quality Control Board

K/J Project No. 1444237*00

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Acronym List

ACOE	Army Corps of Engineers
AF	Acre-feet
AFY	Acre-feet per year
AGR	Agricultural Supply
ASR	Aquifer storage and recovery
BO	Basin Objective
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
CESA	California Endangered Species act
CLWA	Castaic Lake Water Agency

CWS	Community Water System
DWR	California Department of Water Resources
FESA	Federal Endangered Species Act
GHG	Greenhouse gas
Gpd	gallons per day
gpd/ft	gallons per day per foot
IRWMP	Integrated Regional Water Management Plan
LARWQCB	Los Angeles Regional Water Quality Control Board
LID	low impact development
LOS	Level of Service
LSCE	Luhdorff & Scalmanini Consulting Engineers
mg/L	Milligrams per liter
MLD	Most Likely Descendant
MS4	Municipal Separate Storm Sewer System
Msl	mean sea level
MUN	Municipal and Domestic Supply
MZ	Management Zone
NAHC	Native American Heritage Commission
NO3	Nitrate
NPDES	National Pollutant Discharge Elimination System
OVOV	One Valley One Vision
PRC	Public Resources Code
PROC	Industrial Process Supply
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAQMD	Southern California Air Quality Management District
SCVSD	Santa Clarita Valley Sanitation District
SCWD	Santa Clarita Water Division
SEA	Significant Ecological Area
SED	Substitute Environmental Document
SNMP	Salt Nutrient Management Plan
SRWS	Self-regenerating water softeners
SWPPP	Stormwater Pollution Prevention Control Plan
SWRCB	State Water Resources Control Board
TDS	Total dissolved solids
TMDL	Total Maximum Daily Load
USCR	Upper Santa Clara River
USFWS	United States Fish and Wildlife Service
UWMP	Urban Water Management Plan
WQO	Water Quality Objective
WRP	Water Reclamation Plant

Executive Summary

In accordance with the State Water Resources Control Board's (SWRCB's) Recycled Water Policy (Policy), the Upper Santa Clara River Integrated Regional Water Management Planning Group of stakeholders, including the Castaic Lake Water Agency (CLWA), City of Santa Clarita, CLWA Santa Clarita Water Division (SCWD), Santa Clarita Valley Sanitation District (SCVSD), Newhall County Water District (NCWD), Valencia Water Company (VWC), and other interested community members worked collaboratively to prepare a Salt and Nutrient Management Plan (SNMP) for the Santa Clara River Valley East Groundwater East Subbasin (East Subbasin). The Basin can also be referred to as the Upper Santa Clara River (USCR) Basin.

The purpose of the SNMP is to determine the current (ambient) water quality conditions in the East Subbasin and ensure that all water management practices, including the use of recycled water, are consistent with water quality objectives. The SNMP is intended to provide the framework for water management practices to ensure protection of beneficial uses, and allow for the sustainability of groundwater resources consistent with the Basin Plan. As part of the SNMP, a monitoring plan has been developed for the East Subbasin which identifies key monitoring locations within the basin for both surface and groundwater.

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is the lead agency for evaluating the environmental impacts of the SNMP. Any water quality control plan, state policy for water quality control, and any other components of California's water quality management plan as defined in Code of Federal Regulations, title 40, sections 130.2(k) and 130.6, proposed for board approval or adoption must include or be accompanied by Substitute Environmental Documentation (SED) and supported by substantial evidence in the administrative record. This SED analyzes environmental impacts that may occur from implementing groundwater quality management measures identified in the SNMP, and is a variation of the California Environmental Quality Act (CEQA) evaluation. This SED is based on the proposed SNMP for the East Sub-basin that will be considered by the Regional Board and, if approved by the Regional Board, will be incorporated into the California Water Quality Control Plan, Los Angeles Region (Basin Plan) consistent with Water Code Section 13242. The proposed SNMP is described in the Staff Report, Tentative Board Resolution, and Tentative Basin Plan Amendment available on the Regional Board website. This SED analyzes foreseeable methods of compliance with the SNMP and provides the public information regarding environmental impacts, mitigation, and alternatives.

The SED will be considered by the Regional Board when the Regional Board considers adoption of the groundwater quality management measures in the SNMP as a Basin Plan Amendment. Approval of the SED is separate from approval of a specific project alternative or a component of an alternative. The approval process for the SED includes (1) addressing public comments received during the 45-day comment period, (2) confirming that the Regional Board considered the information in the SED, and (3) affirming that the SED reflects independent judgment and analysis by the Regional Board (CEQA Guidelines Section 15090 (Title 14 of CCR), Division 6, Chapter 3).

The SNMP for the Upper Santa Clara River is intended to fulfill the requirements of the Statewide Recycled Water Policy and provide the framework for the management of water containing salts and nutrients in the Upper Santa Clara River groundwater basins in compliance with the Basin Plan.

This SED analyzes three Program Alternatives and both structural and non-structural Implementation Alternatives that encompass actions within the jurisdiction of the Regional Board and implementing municipalities and agencies. A No Project Alternative is analyzed to compare the impacts of approving a proposed alternative and its components compared with the impacts of not approving the proposed alternative. The SED analyzes the potential environmental impacts in accordance with significance criteria. CEQA requires the Regional Board to conduct a program level analysis of environmental impacts (Public Resources Code §21159(d)). This analysis fulfills that requirement. Public Resources Code Section 21159(c) requires that the environmental analysis take into account a reasonable range of:

(1) Environmental, economic, and technical factors,
(2) Population and geographic areas, and
(3) Specific sites.

A “reasonable range” does not require an examination of every site, but a reasonably representative sample of them. The statute specifically states that the alternatives section shall not require the agency to conduct a “project-level analysis” (Public Resources Code § 21159(d)). Rather, a project-level analysis must be performed by the local agencies that are required to implement the requirements of the SNMP (Public Resources Code §21159.2). Notably, the Regional Board is prohibited from specifying the manner of compliance with its regulations (Water Code §13360), and accordingly, the actual environmental impacts will necessarily depend upon the compliance strategy selected by the local agencies and municipalities who intend to provide recycled water within the groundwater basin. Municipalities and agencies that will implement recycled water projects resulting in the need for management measures to address salt and nutrient loading in the Upper Santa Clara River groundwater basin may use this SED to help with the selection and approval of project alternatives.

Approval of projects (i.e., project alternatives or components of project alternatives) refers to the decision of either the implementing municipalities or agencies to select and carry out an alternative or a component of an alternative. In most cases the components assessed at a program-level do not have specific locations/designs at this time; the specific locations/designs will be determined by implementing municipalities and agencies. The project-level components will be subject to additional environmental review, including review by cities and municipalities implementing the management measures (Implementation Alternatives) identified in the SNMP.

Many of the specific projects and Best Management Practices (BMPs) analyzed in this SED will involve infrastructure projects that will reduce salt and nutrient loading in the groundwater basin. Construction and operation of infrastructure projects generate varying degrees of environmental impacts. The potential impacts can include, for example, noise associated with construction, air emissions associated with vehicles to deliver materials during construction, traffic associated with increased vehicle trips and where construction or attendant activities occur near or in thoroughfares, additional light and glare. Additionally, operation of infrastructure, such as water recycling or other water treatment facilities (e.g. desalination, regional water softening) would result in additional air and greenhouse gas emissions, primarily through an increase in energy use. Some of this gas emission impacts would be offset, in part, if recycled water is used in place of potable supplies due to the decreased need to transport and treat potable water.

To address the potential environmental impacts from construction and operation of the management measures identified in the SNMP, responsible parties can employ a variety of techniques, BMPs, and other mitigation measures to minimize potential impacts on the environment. Mitigation measures for construction projects include implementation of BMPs to reduce noise impacts, including sound barriers, developing detailed traffic plans in coordination with police or fire protection authorities, and using lower emission vehicles to reduce air pollutant emissions. Operational mitigation measures include use of renewable energy sources, noise reducing equipment and other BMPs.

Many of the mitigation measures identified in the SED are common practices currently employed to reduce impacts associated with construction and operation of infrastructure projects. Mitigation measures are suggested to minimize site specific impacts to less than significant levels. Mitigation of adverse environmental impacts is strictly within the discretion of the individual implementing agency. It is the obligation of responsible parties to mitigate adverse environmental impacts associated with reasonably foreseeable means of compliance when impacts are deemed significant (14CCR§15091(a)(2)).

This SED finds that foreseeable methods to implement the SNMP, including both nonstructural and structural management measures, would not cause significant impacts that cannot be mitigated through commonly used construction, design and operational practices. The SED identifies mitigation methods for impacts with potentially significant effects and finds that these methods can mitigate potentially significant impacts to levels that are less than significant. To the extent that there are significant adverse effects on the environment due to the implementation of this SNMP, there are feasible alternatives and/or feasible mitigation measures that would substantially lessen significant adverse impacts in most cases. The SED can be used by implementing municipalities and agencies to assist with any additional environmental analysis of specific projects required to comply with the SNMP.

Section 1: Introduction

1.1 Recycled Water Policy and SNMP

In February 2009, the State Water Resources Control Board (State Water Board) adopted the Recycled Water Policy (Resolution No. 2009-0011), in a statewide effort to increase recycled water use while protecting groundwater resources. The Recycled Water Policy, provided as Appendix C, was subsequently revised by an amendment adopted by the State Water Board in April 2013 (Resolution No. 2013-0003).

The Recycled Water Policy prescribes permitting criteria that enable a streamlined and statewide consistent permit process for most recycled water projects while allowing the Regional Water Quality Control Boards (RWQCB) to focus on site-specific conditions. Rather than imposing specific requirements on individual recycled water projects, the Recycled Water Policy promotes a broader approach to expedite the implementation of recycled water projects in a manner that implements State and Federal water quality laws. Accordingly, the Recycled Water Policy requires the development of regional or sub-regional salt and nutrient management plans (SNMPs) to manage salts and nutrients from all sources on a basin-wide or watershed-wide basis while ensuring attainment of water quality objectives and protection of beneficial uses. SNMPs are required to be tailored to address the water quality concerns in each basin or sub-basin and must be completed by 2014, in some cases by 2016, as is the case for the East Santa Clara River Sub Basin SNMP. Upon completion and approval of the SNMP, the Regional Water Board may adopt the implementation measures of the SNMP into the Water Quality Control Plan (Basin Plan).

1.2 CEQA

The Recycled Water Policy requires that SNMPs comply with the California Environmental Quality Act (CEQA). CEQA requires state and local agencies to determine the potential significant environmental impacts of proposed projects and identify measures to avoid or mitigate those impacts where feasible. The basic purposes of CEQA are to 1) inform decision makers and the public about the potential significant environmental effects of a proposed project, 2) identify ways that environmental damage may be avoided or mitigated, 3) prevent significant, avoidable damage to the environment by requiring changes in projects through the selection of feasible project alternatives or mitigation measures, and 4) disclose to the public why an agency approved a project if significant effects are involved (California Code of Regulations (CCR), title 14, § 15002(a)).

The State and Regional Boards' basin planning process is exempt from certain requirements of CEQA, including preparation of an initial study, negative declaration, and environmental impact report. However, the basin planning process is subject to other provisions in CEQA (Public Resources Code [PRC]. Section 21000 et seq.), such as the requirement to avoid significant adverse effects to the environment where feasible.

The *Regional Water Board Assistance in Guiding Salt and Nutrient Management Plan Development in the Los Angeles Region*, issued in 2012, provides guidance for the preparation of SNMPs within the Los Angeles Region and outlines the CEQA requirements for LARWQCB adoption of an Implementation Plan based on the SNMP into the Basin Plan. The document was used as guidance to prepare this SED, and is included as Appendix D.

1.3 SED Purpose and Objectives

While the basin planning process is exempt from certain CEQA requirements, it is subject to the substantive requirements of CCR, title 23, § 3777, which requires that any water quality control plan (as defined in Code of Federal Regulations, title 40, sections 130.2(k) and 130.6) proposed for board approval or adoption must include or be accompanied by Substitute Environmental Documentation (SED) and supported by substantial evidence in the administrative record. The SED shall consist of a written report containing an environmental analysis of the project, a completed Environmental Checklist, and other documentation as found necessary by the board.

This SED presents the results of the environmental analysis conducted for the Santa Clara River Valley East Sub-basin SNMP. Specifically, this SED provides a description of the proposed activity – the groundwater quality management measures identified in the Santa Clara River Valley East Sub-basin SNMP, an analysis of reasonable alternatives, identification of reasonably foreseeable significant or potentially significant adverse environmental impacts of the SNMP, and an analysis of reasonably foreseeable mitigation measures to minimize those impacts. The Environmental Checklist is provided in Section 5 of this document.

The SED serves as a program-level environmental analysis, which takes into account a reasonable range of environmental, economic, and technical factors, population, geographic areas, and specific sites, which are examined based on a representative sample. The project-level analysis must be performed by the local agencies that will implement the strategies and projects identified in the SNMP (PRC § 21159). The RWQCB is prohibited from specifying the manner of compliance with its regulations (California Water Code §13360). Hence, the actual environmental impacts will necessarily depend upon the compliance strategy selected by the local agencies and other permittees. The analysis of program alternatives presented in this SED assumes that implementation of individual projects will occur in accordance with applicable laws, regulations, ordinances, and formally adopted municipal and/or agency codes, standards, and practices.

Preparation of the environmental analysis for this SED involves utilization of numerical ranges or averages where specific data are not available; however the analysis does not involve speculation or conjecture (CCR, title 23, § 3777).

1.4 Basin Plan Amendment and CEQA Lead Agency

The applicable Basin Plan for this SNMP is the Water Quality Control Plan for the Los Angeles Region, issued by the Los Angeles Regional Water Quality Control Board (LARWQCB) in 1994. The Basin Plan is intended to preserve and enhance water quality and protect the beneficial uses of the regional waters in the Los Angeles Region, through implementation of established Water Quality Objectives. Upon completion, the SNMP will serve as the basis for a revised Implementation Plan that will be adopted as a Basin Plan amendment, by the LARWQCB. The

LARWQCB's goal in this process is to incorporate regional salt and nutrient management strategies rather than relying on imposing requirements on individual projects. Additionally, the LARWQCB's Basin Plan Amendment may allow for streamlined permitting and elimination of separate anti-degradation analyses for the vast majority of projects already identified in the SNMP (barring site-specific conditions).

CEQA analysis is a required component of the Basin Plan amendment adoption process for which the LARWQB acts as the lead agency. As set forth in the Recycled Water Policy, the SNMP proponents, in this case the Santa Clara River Valley East Subbasin stakeholders, are responsible for funding and developing the SNMP and conducting the required environmental analysis. As a result, the development of this SED and the SNMP required close collaboration between the LARWQCB and the Santa Clara River Valley East Sub-basin stakeholders.

The environmental analysis of the SNMP will be conducted primarily by the stakeholders with oversight and review by LARWQCB. Following the release of the Draft SED for public review, it is anticipated that there will be comments on its technical and regulatory aspects. LARWQCB will take the lead in responding to the comments that reference the regulatory process, while the basin stakeholders will be the lead for responding to technical comments.

Once the SNMP has been approved and specific projects are to be implemented, the stakeholders will be responsible for conducting project-specific environmental analyses, when applicable, in accordance with CEQA while meeting all other applicable regulatory requirements.

The SED will be considered by the LARWQCB as part of the adoption of the implementation measures and proposed major recycled water projects described in the SNMP. Approval of the SED is separate from approval of a specific project or a component of a program alternative. Approval of the SED refers to the process of: (1) addressing comments, (2) confirming that the LARWQCB considered the information in the SED, and (3) affirming that the SED reflects independent judgment and analysis by the LARWQCB (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3 Guidelines for Implementation of the California Environmental Quality Act [CEQA Guidelines], Sections 10590 and 15090).

1.5 CEQA Scoping Meeting

Pursuant to California Public Resources Code section 21083.9, a CEQA Scoping Meeting was held on December 8, 2015, to receive comments on the appropriate scope and content of the SED. The purpose of this meeting was to scope the proposed projects and/or strategies for groundwater basin management and to determine, with input from interested agencies and persons, if those means would result in significant adverse impacts to the environment.

As the lead agency for the CEQA process, LARWQCB prepared and issued the Notification of the CEQA Scoping Meeting to all interested parties and was the designated entity to receive public comments regarding the scope and content of the proposed SED. The Scoping meeting was held by the LARWQCB and basin stakeholders on December 8, 2015 at the Newhall County Water District. An overview of the SNMP was presented to the regional stakeholders, along with a description of why an SED is required, and also the checklist of environmental resources that could potentially be impacted by implementation of the SNMP.

A 30-day public comment period was established by LARWQCB and comments were also solicited during the CEQA Scoping Meeting. Three stakeholders submitted comments on the proposed environmental analysis; these are provided as Appendix B in this SED.

Information garnered from this public participation process was considered during development of this SED.

1.6 Organization of the SED

This SED is organized as follows:

- Section 1 – Describes the purpose of the SNMP and SED, Basin Plan Amendment and CEQA lead agency, the program-level CEQA analysis, and the organization of this document.
- Section 2 – Describes the project background and environmental baseline conditions in the Santa Clara River Valley East Sub-basin.
- Section 3 – Summarizes the SNMP Implementation Plan, including the implementation measures and planned major recycled water projects in the Santa Clara River Valley East Sub-basin.
- Section 4 – Describes the program alternatives, including the Recommended Program Alternative, and project level alternatives that were developed by the LARWQCB and Santa Clara River Valley East Sub-basin stakeholders based on the primary objectives of the SNMP and Recycled Water Policy.
- Section 5 – Contains the CEQA Checklist with an analysis of potential direct and indirect impacts for each identified environmental resource.
- Section 6 – Describes other environmental considerations for the Recommended Program Alternative, including cumulative environmental impacts and growth-inducing effects.
- Section 7 – Provides the CEQA determination and findings.
- Section 8 – Provides a list of references citied in this SED. Supporting materials are attached as the following appendices to this SED.

Section 2: Environmental Setting

This section describes the environmental setting of the Santa Clara River Valley East Sub-basin in order to provide context for the assessment of reasonably foreseeable impacts and mitigation measures associated with the alternatives proposed in this SED (see Section 4).

2.1 Study Area Location

The Santa Clara River Valley East Sub-basin lies within the Upper Santa Clara River (USCR) watershed, which encompasses approximately 786 square miles within Los Angeles County, approximately 243 square miles within Ventura County, and one square mile within Kern County. Elevations range from approximately 800 feet above mean sea level (msl) on the valley floor, to approximately 6,500 feet above msl in the San Gabriel Mountains. The headwaters of the Santa Clara River are at an elevation of approximately 3,200 feet above msl at the divide that separates the USCR Watershed from the Antelope Valley to the east. The Santa Clara River flows westward, towards the Pacific Ocean. It is one of the few natural river systems remaining in Southern California.

The East Subbasin is part of the larger Santa Clara River Valley Groundwater Basin and encompasses approximately 66,200 acres in the northwestern portion of Los Angeles County. It is bound to the north by the Piru Mountains, to the south by the Santa Susana Mountains, to the south and east by the San Gabriel Mountains, and to the west by the outcrops consisting of the Modelo and Saugus formations. The main surface drainage features include the Santa Clara River, Bouquet Creek, San Francisquito Creek, and Castaic Creek.

Water agencies in the region include CLWA, the wholesale water agency, and three retail water purveyors, SCWD, NCWD, and VWC. The service area boundary for each agency and the watershed boundary is provided as Figure 1 in Appendix A.

The Subbasin underlies the City of Santa Clarita, as well as unincorporated communities of Los Angeles County, including Stevenson Ranch, Val Verde, and Castaic. The predominant land uses overlying the East Subbasin are urban residential and open space. Other existing land use categories identified within the East Subbasin include among others agriculture, commercial; industrial; public facilities, and parks. Refer to Figure 2 in Appendix A for regional land uses.

2.2 Climate and Drought

Climate in the Study Area is characterized by an arid climate. Summers are typically dry with temperatures as high as 100°F. Most precipitation falls during the winter months when temperatures can drop as low as 20°F. The long-term average precipitation is 18.2 inches (based on data from 1960 to 2011 at the Newhall weather station), though average precipitation decreases to the east and to the north in the Subbasin. Intermittent periods of less than average precipitation are typically followed by periods of greater than average precipitation in cyclical patterns of typically one to five years. In general, periods of less than average precipitation are longer and more moderate than periods of greater than average precipitation.

Since 2012, the state has been experiencing one of the driest periods in recorded history, with the 2014 water year ending as the state's third driest on record (California Department of Water Resources [DWR] 2015). The severity of the statewide drought has also strained water resource conditions within the project area, including through severe cuts in imported water supplies and reductions in groundwater recovery and recharge.

2.3 Groundwater Basins Overview

The East Subbasin lies within the DWR designated USCR Hydrologic Area and is the sole source of local groundwater for water supply in the Santa Clara River Valley. The East Subbasin is comprised of two primary aquifer systems, the shallow Alluvium and the deeper underlying Saugus Formation. The Alluvium generally underlies all of the Santa Clara River and its several tributaries within the East Subbasin, to maximum depths of approximately 200 feet. The Saugus Formation underlies practically the entire study area, to depths of at least 2,000 feet. There are also some scattered outcrops of terrace deposits in the subbasin that likely contain limited amounts of ground water. However, since these deposits are located in limited areas situated at elevations above the regional water table, and are also of limited thickness, they are of no practical significance as aquifers for municipal water supply. Consequently, these deposits have not been developed for any significant water supply in the subbasin, and are therefore not included as part of the existing or planned ground water supplies (DWR, 2006).

The East Subbasin consists of six management zones (MZs), the first five are all located in the Alluvium:

- Management Zone 1 (MZ-1) Santa Clara-Mint Canyon,
- Management Zone 2 (MZ-2) Placerita Canyon,
- Management Zone 3 (MZ-3) South Fork,
- Management Zone 4 (MZ-4) Santa Clara–Bouquet and San Francisquito Canyons,
- Management Zone 5 (MZ-5) Castaic Valley, and
- Management Zone 6 (MZ-6) Saugus Formation.

See Figure 3 in Appendix A for their locations.

2.3.1 Alluvium

The Alluvium consists primarily of stream channel and flood plain deposits of the Santa Clara River and its tributaries, ranging from unconsolidated, poorly bedded, poorly-sorted to well-sorted sand, gravel, silt and clay with cobbles and boulders. The aquifer is deepest along the center of the present river channel, and thins toward the flanks of the adjoining hills and toward the eastern and western boundaries of the subbasin and, in the tributaries, becomes a mere veneer in their upper reaches.

Groundwater generally moves westward toward the outlet of the subbasin, which is also the outlet of the USCR Hydrologic Area. Thus, groundwater movement in the alluvium beneath the tributaries is toward their confluence with the Santa Clara River and then westward. From approximately Castaic Junction to Blue Cut, the Alluvium thins and narrows (Geomatrix, 2006 and Santa Clarita Valley Sanitation District [SCVSD], 2008). This configuration forces groundwater to rise, keeping the depth to water at or approaching land surface. The general groundwater flow direction has remained unchanged whether groundwater levels have been high or intermittently depressed. The San Gabriel and Holser Faults traverse the subbasin, but neither fault measurably affects groundwater levels or flows in the Alluvium (DWR, 2006).

Alluvial wells are distributed throughout the subbasin along the Santa Clara River and its southwest draining tributaries (see Figure 4 in Appendix A). The Alluvium is the most permeable of the local aquifer systems. Transmissivity values have been estimated ranging from 50,000 to 500,000 gallons per day per foot of drawdown, with the higher values occurring where the alluvium is thickest (Kennedy/Jenks, 2008). Groundwater recharge occurs from surface water recharge from the Santa Clara River, subsurface flow from the upgradient adjacent subunits, recharge from the Saugus Formation, and mountain front recharge. The amount of groundwater in storage in the Alluvial Aquifer can vary due to the effects of recharge, discharge, and pumping. The maximum storage capacity has been estimated to be 240,000 acre-feet (AF) (DWR, 2006).

Historical groundwater data collected from the Alluvium over many hydrologic cycles provides assurance that groundwater elevations return to normal in average or wet years following periods during which the groundwater elevations have declined. Management of pumping during dry periods limits the lowering of water levels, and normal-to-wet period recharge results in a rapid return of groundwater levels to historic highs. High rainfall totals in only one to two years generally will cause water levels within the aquifer to rise quickly, and by a relatively large amount (Luhdorff & Scalmanini Consulting Engineers [LSCE], 2012). Such water level response to rainfall is a significant characteristic of permeable, porous, alluvial aquifer systems that occur within large watersheds.

2.3.2 Saugus Formation

The Saugus Formation, of Pliocene to Pleistocene geologic age, has traditionally been divided into two stratigraphic units: the lowermost, geologically older Sunshine Ranch Member, which is of mixed marine to terrestrial (non-marine) origin; and, the overlying, or upper, portion of the Saugus Formation, which is entirely terrestrial in origin (Winterer and Durham, 1962). The Sunshine Ranch Member has a maximum thickness of approximately 3,000 to 3,500 feet in the central part of the Valley (2014 Integrated Regional Water Management Plan [IRWMP]); however, due to its marine origin and fine-grained nature, it is not considered to be a viable source of ground water for municipal or other water supply. Overlying the Sunshine Ranch Member, the upper portion of the Saugus Formation is coarser grained, consisting mainly of lenticular beds of sandstone and conglomerate that are interbedded with lesser amounts of sandy mudstone. These units were deposited in stream channels, flood plains, and alluvial fans by one or more ancestral drainage systems in the Valley. The sand and gravel units that represent aquifer materials in the upper part of the Saugus Formation are generally located between depths of approximately 300 and 2,500 feet.

The Saugus Formation is much thicker and more spatially extensive throughout the East Subbasin when compared to the Alluvium. It is also significant in terms of ground water storage and individual well capacity. However, the Saugus Formation has typically lower values of transmissivity (i.e., in the range of 80,000 to 160,000 gallons per day per foot [gpd/ft]), with the higher values found in the upper portions (2014 IRWMP). The storage capacity of the Saugus Formation has most recently been estimated to be 1.65 million acre-feet (AF) (DWR, 2006) between depths of 300 feet and approximately 2,500 feet (to the base of the Saugus Formation, or to the base of fresh water if shallower than 2,500 feet).

Groundwater recharge to the Saugus Formation occurs primarily through infiltration of rainfall and percolation from the overlying Alluvium. Groundwater in the Saugus Formation generally flows to the north in the southern portion and to the south in the northwestern portion of the subbasin towards the Santa Clara River.

2.4 Groundwater Quality

The groundwater quality within each subunit is primarily the result of the quality of recharge water. Therefore, the natural surface run-off, stormwater and dry weather flows from urban development, septic system leakage, return flow from agricultural practices, underflow from Castaic Dam, discharged treated wastewater into the Santa Clara River and applied recycled water as irrigation will contribute to the quality of ground water in the Alluvium and Saugus Formation. To an extent, the quality of groundwater flowing from outside the East Subbasin and from re-entrant canyon areas will also contribute to the quality of groundwater within the East Subbasin.

As required by the Recycled Water Policy, the SNMP includes salt and nutrient source identification, basin assimilative capacity and loading estimates, and an analysis of fate and transport of the identified salt and nutrients. The following sections provide an overview of these analyses from the SNMP, including a summary of the existing groundwater quality determined from the SNMP analysis.

2.4.1 Salt and Nutrients Analyzed

During the SNMP analysis, ambient concentrations and assimilative capacities for Total Dissolved Solids (TDS), chloride, nitrate, and sulfate were established for all six MZs (refer to Figure 3 in Appendix A). Each of the MZs (with the exception of MZ 6, the Saugus Formation) has established WQOs for TDS, chloride, nitrate, and sulfate. It is important to note that for the purposes of this report, “nitrate” is reported as NO_3. For MZ 6, the LARWQCB recommended the interim use of the most conservative basin objective of the alluvial MZs for the calculation of assimilative capacity for TDS, chloride and nitrate. However, due to the lack of supporting historical data for sulfate, no decision has been made with regards to the WQO for sulfate in MZ 6.

The significant variability of water quality in the Saugus Formation needs to be further evaluated to establish meaningful WQOs. In addition, after consulting with the LARWQCB, MZ 1 was split into two zones in order to isolate a localized area that may be associated with elevated levels of sulfate and TDS due to an unknown source. This area in MZ 1 was designated as MZ1b while the remaining area was designated as MZ 1a. Average groundwater concentrations and assimilative capacities were calculated for each of these zones separately.

2.4.2 Salt and Nutrient Fate and Transport

Fate and transport describes the distribution, transport, and transformation of a constituent in the environment, in this case salt and nutrients in groundwater. These processes may be influenced by numerous factors, including among other factors ground water flow direction and rates, characteristics of the constituents, and certain aquifer characteristics.

Salts and nutrients occur as dissolved constituents in groundwater. When natural or anthropogenically applied water reaches the groundwater system, it mixes with the existing groundwater and flows down gradient due to gravity. These waters ultimately leave the East Sub-basin at the down gradient end of Castaic Valley subunit as surface/subsurface flows.

The historical assessment of mass loading changes and concentration changes for salt and nutrients conducted as part of the SNMP indicates that salt and nutrients enter the hydrologic system from both natural and anthropogenic sources and exit the system in the form of surface flow, extracted groundwater, rising water, evapotranspiration, or as subsurface flows. During a prolonged dry period, when less inflow is present, it is anticipated that salt and nutrient mass loading will increase, resulting in increased concentrations in groundwater. However, the system historically recovers during wet periods, thus removing and reducing salt and nutrient mass from the system through outflows.

2.4.3 Water Quality Objectives and Beneficial Uses

The LARWQCB Basin Plan sets water quality objectives for surface waters and groundwater, which must be attained or maintained to protect the designated beneficial uses and conform to the State's anti-degradation policy. The LARWQCB Basin Plan objectives for the East Subbasin groundwater subunits are shown in the following Table 1. Units are in milligrams/Liter (mg/L)

The beneficial uses designated for the East Subbasin include Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Services Supply (IND), and Industrial Process Supply (PROC). All of these beneficial uses apply to all of the groundwater subunits, except for the Saugus Formation, to which only MUN has been designated.

2.4.4 Existing Salt and Nutrient Conditions

The average TDS, chloride, nitrate, and sulfate concentrations for each MZ were determined by preparing concentration contours of the median concentration values for the years 2001-2011 from wells in each MZ. The average groundwater concentration values were determined based on the areal and vertical distribution of the median concentration contours. The average median concentration value for each constituent in each MZ is considered to be the ambient groundwater concentration. The ambient concentration for each constituent was subtracted from the specific WQO for that constituent and MZ to determine the available assimilative capacity. Calculated ambient groundwater concentrations are provided in Table 1 below along with each MZ's WQO.

TABLE 1 AMBIENT GROUNDWATER QUALITY AND BASIN OBJECTIVES
(Table 1-3 in the Draft Final SNMP)

Groundwater Subunit	Water Quality Status Comparison	TDS (mg/L)	Chloride (mg/L)	Nitrate as NO3 (mg/L)	Sulfate (mg/L)
Santa Clara-Mint Canyon (MZ-1a)	Water Quality Objective	800	150	45	150
	Ambient Water Quality	728	89	20	138
Santa Clara-Mint Canyon (MZ-1b)	Water Quality Objective	800	150	45	150
	Ambient Water Quality	833	72	21	269
Placerita Canyon (MZ-2)[1]	Water Quality Objective	700	100	45	150
	Ambient Water Quality	NA	NA	NA	NA
South Fork (MZ-3)[1]	Water Quality Objective	700	100	45	200
	Ambient Water Quality	NA	NA	NA	NA
Santa Clara-Bouquet and San Francisquito Canyons (MZ-4)	Water Quality Objective	700	100	45	250
	Ambient Water Quality	710	77	16	189
Castaic Valley (MZ-5)	Water Quality Objective	1,000	150	45	350
	Ambient Water Quality	727	77	8	246
Saugus Formation (MZ-6)[2]	Water Quality Objective	700	100	45	NA
	Secondary Water Quality Objective	500	250	100	250
	Ambient Water Quality	636	28	14	235

1 Insufficient data to establish trend.

2 Water Quality Objectives have not been established for the Saugus Formation. Therefore the most conservative water quality objectives of the alluvial management zone were used for comparison for TDS, chloride and nitrate. For information purposes, the secondary MCL is provided.

Note: Red values indicate exceedance of WQOs.

The SNMP analysis indicates that the average groundwater concentrations (ambient) are generally lower than the WQOs and assimilative capacity is available for all constituents for all MZs with the exception of TDS for MZs 1b and 4 and sulfate for MZ 1b. MZ 2 and 3 have no data set to compare with the basin objectives and, as mentioned previously, no WQO has been set for MZ 6 sulfate or any other constituent.

2.4.5 Future Salt and Nutrient Conditions

Salt and nutrients in the East Subbasin come from both natural and anthropogenic sources. The quantification of salt and nutrient loading was developed by determining the potential volume of water coming from each source and applying an appropriate loading factor based on water quality sampling data and the distribution of potential salt loads by land use. The salt and nutrient loads were applied to the annual water balances for each MZ to evaluate the annual and overall changes in salt and nutrient concentrations for the study period.

A spreadsheet model was used to predict future groundwater quality and trends, as well as the percentage of the assimilative capacity to be used by implementation of individual projects and all projects combined, for the period from 2012 through 2035. This 24-year period was selected by the Regional Water Management Group since it falls within the planning range incorporated by the 2010 UWMP and incorporates the time period in which planned projects described herein will be implemented or will be in the process of implementation.

In order to evaluate the impacts of proposed projects, the simulated results were compared to baseline results. The baseline model run represents a predictive scenario for salt and nutrient loading and parameter concentrations under existing conditions ("Land Use Build-Out" conditions) projected into the future. Future hydrologic conditions were simulated using the hydrologic conditions from 1980 through 2003. Future land use changes in the Santa Clarita Valley were also taken into account by using the combined land use planning projected by the 2011 City of Santa Clarita General Plan and the 2012 Santa Clarita Valley Plan - "One Valley One Vision" (OVOV) which plans future land uses in both the City of Santa Clarita and unincorporated Los Angeles County. In addition to the change in land use, the appropriate water use factors were also input into the Regional Model annually for each MZ to simulate the change in water use with change in land use.

The proposed projects were identified by the members of the SNMP Task Force. Brief project descriptions are provided below.

SCVSD Wastewater Treatment Plant Chloride Compliance Program

SCVSD proposes to produce wastewater effluent that will meet a combined discharge of chloride from the Saugus and Valencia Water Reclamation Plants (WRPs) equal to 100 mg/L as a three-month average.

The process will include further treatment and blending of recycled water with water treated using the reverse osmosis process. The Saugus WRP would discharge up to 150 mg/L chloride, while limiting discharges from the Valencia WRP to a concentration less than 100 mg/L – such that the combined discharge from the two plants would be 100 mg/L downstream of the Valencia WRP. Recycled water use is estimated to increase from the current (2015) use of 450 acre-ft/yr (AFY) to 10,275 AFY by 2035. CLWA-purchased recycled water will remain at current concentrations to be used for landscape irrigation.

SCWD Water Use Efficiency Program

This project consists of ten (10) programs designed to conserve 4,437 AFY in water use by conserving approximately 634 AFY from 2014 through 2020, thereby reducing residential and commercial urban water use and urban run-off. For this analysis it is assumed that one-half of the water conservation will occur by a reduction of outside applied water, and the other one-half from lower indoor water use, reducing flows to the sewer.

Vista Canyon Water Reclamation Plant

Will be constructed to serve Vista Canyon Development, located in MZ 1. The treatment plant will generate 439 AFY of treated wastewater. The plant would provide approximately 190 AFY of the treated wastewater to the Vista Canyon development area for landscape irrigation and the remainder will be placed into the existing sewer system and treated at downstream treatment plants. This will occur during the winter months/during wet years when demand is lower.

CLWA Recycled Water Master Plan

Proposes to incorporate additional recycled water for use in the Valley for landscape irrigation. Currently, approximately 400 AFY of recycled water is used for landscape irrigation. In accordance with the intent of the Recycled Water Policy, CLWA is planning to incrementally increase use of recycled water to about 2,000 AFY for Phase 2A, 2B, and 2C planning areas by the year 2035. Approximately 1,000 AFY will be used in areas upstream of the Saugus WRP and 1,000 AFY will be used in the Phase 2C planning area.

CLWA Santa Clarita Valley Water Use Efficiency Strategic Plan (SCV WUE SP)

Plans to conserve 683 acre ft/yr for a total planned reduction of 3,287 AF over a five-year span – which will also result in a decreased need of 380 AFY of imported water. The planned reductions will be achieved primarily through reduction in residential use and urban run-off. The full project benefits will be achieved between 2015 and 2026.

Newhall Ranch Water Reclamation Plant and Recycled Water Use

The Newhall WRP will service development in the Newhall Ranch Specific Plan and may also serve Newhall Land owned Westside Communities and the unincorporated area known as Val Verde, which are included in OVOV. It is anticipated to come online in 2023 and will be constructed initially to treat a flow rate of 2.0 MGD with a 4.0 MGD capability to accommodate full-build-out of the Newhall Ranch Specific Plan by 2033. The plant could also be expanded to accommodate the Westside Communities (0.4 MGD) and Val Verde area (1.3 MGD). However, the SNMP analysis does not include this additional potential capacity. The project will use recycled water primarily for landscape irrigation. However it is anticipated that some recycled water will be discharged to the Santa Clara River – generally during the months of November through March during wet, dry, and average years through 2035. At complete build-out, recycled water demand will be near 7,164 acre-ft/yr with approximately 566 AFY of discharge to the Santa Clara River. Recycled water discharged to the river will be treated by reverse osmosis (RO) and will have a maximum average chloride concentration of 100 mg/L, while recycled water used for landscape irrigation is expected to have a chloride concentration of approximately 125 mg/L.

Table 2 below summarizes the average TDS, chloride, nitrate and sulfate concentrations as a result of “Land Use Build-Out” conditions (i.e., changes in land use in accordance with local and regional land use plans but without the addition of any new water conservation or recycled water projects for the period 2012 through 2035).

TABLE 2. SALT AND NUTRIENT CONCENTRATIONS UNDER LAND USE BUILD-OUT CONDITIONS

(Table 1-2 in the Draft Final SNMP)

Water Quality Constituent	MZ 1a		MZ 1b		MZ 2		MZ 3		MZ 4		MZ 5		MZ 6	
	WQO[1]	LUB[2]	WQO[1]	LUB[2]	WQO[1]	LUB[2]	WQO[1]	LUB[2]	WQO[1]	LUB[2]	WQO[1]	LUB[2]	WQO[1]	LUB[2]
TDS	800	739	800	790	700	-	700	-	700	709	1,000	728	700	636
Chloride	150	89	150	72	100	-	100	-	100	93	150	79	100	46
Nitrate	45	19	45	23	45	-	45	-	45	19	45	11	45	19
Sulfate	150	150	150	225	150	-	200	-	250	166	350	248		251

1 WQO = Water Quality Objective

2 LUB = Land Use Build-Out

Notes: MZ-2, MZ-3 and sulfate in MZ-6 have insufficient data for preparation of analysis

Review of the table above indicates that only sulfate in MZ 1b will exceed the WQO under Land Use Build-Out conditions. The spreadsheet model also indicates, in some cases, Land Use Build-Out conditions will use assimilative capacity (defined as the difference between the applicable Water Quality Objective and the ambient water quality) at a rate greater than the thresholds established by the LARWQCB Recycled Water Policy for projects. However, the addition of all proposed projects will have varying but generally beneficial effect by decreasing the projected salts concentrations, therefore decreasing the amount of assimilative capacity used, as compared to the projected Land Use Build-Out conditions alone. Implementation of the proposed projects in the East Subbasin will result in a “maximum benefit” to the people of the state by providing additional water supply and conservation activities while decreasing the total amount of assimilative capacity used, as compared to the Land Use Build-Out conditions (i.e., no projects).

The impacts of the proposed projects were evaluated by determining the water quality changes that will occur as a result of implementing the project for the MZ(s) in which the water quality change will occur. Table 3 below provides a comparison of the assimilative capacity used between Land Use Build-Out conditions and the “All Projects” scenario.

TABLE 3 COMPARISON OF ASSIMILATIVE CAPACITY USED – LAND USE BUILD-OUT VS. PLANNED PROJECTS

(Table 1-3 in the Draft Final SNMP)

Water Quality Constituent		MZ 1a		MZ 1b		MZ 2		MZ 3		MZ 4		MZ 5		MZ 6	
		LUB[1]	AP[2]	LUB[1]	AP[2]	LUB[1]	AP[2]	LUB[1]	AP[2]	LUB[1]	AP[2]	LUB[1]	AP[2]	LUB[1]	AP[2]
	Projected Concentration (mg/L)	739	717	790	786					709	703	728	719	636	636
TDS	AC used[3]	-15%	14%	129%	143%	-	-	-	-	12%	70%	0%	3%	-1%	-1%
	Projected Concentration (mg/L)	89	85	72	71					93	88	79	75	46	46
Chloride	AC used[3]	0%	6%	0%	1%	-	-	-	-	-71%	-49%	-3%	3%	-24%	-25%

Water Quality Constituent		MZ 1a		MZ 1b		MZ 2		MZ 3		MZ 4		MZ 5		MZ 6	
		LUB[1]	AP[2]	LUB[1]	AP[2]	LUB[1]	AP[2]	LUB[1]	AP[2]	LUB[1]	AP[2]	LUB[1]	AP[2]	LUB[1]	AP[2]
Nitrate	Projected Concentration (mg/L)	19	19	23	23					19	19	11	11	19	19
	AC used[3]	3%	2%	-9%	-9%	-	-	-	-	-10%	-11%	-8%	-8%	-17%	-17%
Sulfate	Projected Concentration (mg/L)	150	147	225	225					166	164	248	248	251	251
	AC used[3]	102%	-76%	37%	37%	-	-	-	-	39%	41%	-2%	-2%	-	-

[1] LUB = Land Use Build-Out
[2] AP = All Projects
[3] AC used = Assimilative capacity used = current assimilative capacity – projected assimilative capacity
Notes: MZ-2, MZ-3 and sulfate in MZ-6 have insufficient data for preparation of analysis
Negative (-) values denote a decrease in assimilative capacity compared to the current situation, while positive numbers indicate an increase in assimilative capacity after implementation.

The anti-degradation analysis shows that in the absence of projects, groundwater constituent concentrations will increase above the ambient plus 10% assimilative capacity concentration threshold by 2035. The implementation of single projects and the combined projects in general will increase assimilative capacity of salt and nutrient concentrations. However, where assimilative capacity is decreased and concentrations are (1) above the ambient plus 10% assimilative capacity concentration for single projects or (2) the ambient plus 20% assimilative capacity concentration for combined projects; the decrease is similar to that resulting from Land Use Build-Out only concentrations.

Therefore, if no projects are implemented, assimilative capacity will cross thresholds established in the Recycled Water Policy set forth to evaluate recycled water projects. Implementation of the proposed projects represents a “maximum benefit” to the people of the State by providing beneficial uses for recycled water and decreasing the use of assimilative capacity, as compared to not adding planned projects to the East Subbasin.

Other implementation measures not included in the model will serve to lower ambient concentrations of salts and nutrients, though the amount of decrease is unknown and pending further design of the implementation measures. With some or all of the measures in place, the assimilative capacity of all of the groundwater MZs, all other things being equal, would increase.

In summary, this analysis indicates that several approaches to future assessment of assimilative capacity should be considered:

1) Less assimilative capacity is used as a result of implementation of all the projects when compared to Land Use Build-Out conditions only.

2) Water quality in MZ 1b will experience a beneficial impact from implementation of all projects as compared to Land Use Build-Out conditions only.

3) Water quality is moved closer to the WQOs as a result of implementation of the proposed projects.

4) Calculated assimilative capacity should be based on comparison of Land Use Build-Out changes with single project and All Projects conditions, since changes from Land Use Build-Out represents actual baseline conditions (i.e., predicted ambient increases from year to year) going forward in the Subbasin.

5) WQOs should be re-evaluated to determine whether existing WQOs are appropriate for current water quality conditions and proposed groundwater management strategies. WQOs for MZ 6 should be prepared by the LARWQCB for future assessments.

6) The assimilative capacity, and thus the ambient plus 10% or 20% assimilative capacity concentrations, should be re-calculated when new data sets are collected from the proposed monitoring program (Section 12). New data sets should be used to update and refine the spreadsheet model and confirm the current anti-degradation analysis.

Implementation of the proposed projects represents a "maximum benefit" to the people of the State by providing beneficial uses for recycled water by increasing the assimilative capacity for each constituent which will result under Land Use Build-Out conditions.

Section 3: SNMP Implementation Plan

This section provides an overview of the SNMP implementation plan, which includes an evaluation of proposed projects that were identified by the members of the SNMP stakeholder group. These projects were analyzed as part of the anti-degradation analysis in the SNMP in order to determine whether or not collective project impacts would consume less than 20% of the available assimilative capacity calculated for each groundwater subunit (MZ). Results provide valuable information for sustainably managing salt and nutrient loading in the East Subbasin while expanding recycled water use in the project area.

The proposed projects included in the implementation plan, provide the basis for program alternatives described and evaluated in Section 4 of this SED.

3.1 Implementation Measures

The region has long been concerned about salinity and nutrient discharges in order to, among other things, allow for the use of recycled water. In the Santa Clarita Valley, the principle sources of chloride to the sewerage system include potable water supply, self-regenerating water softeners, treatment plant disinfection using chlorine, and other miscellaneous residential, commercial and industrial sources. Due to the importance of the East Subbasin as a water supply source, projects have been implemented over the years to manage salt and nutrient concentrations in the groundwater. Historic aggressive activities conducted to reduce salt and nutrient loads in the East Subbasin have included restrictions on brine discharges from water softeners into sewage systems, prohibition of installation of new residential self-regenerating water softeners, water softener removal rebate programs, chlorine discharge limits, implementation of total maximum daily loads for nitrogen compounds in the Santa Clara River, water reclamation plant upgrades, and a large-scale water softening treatment for drinking water in the Valencia Water Company service area.

The Recycled Water Policy states that within one year of the receipt of a proposed SNMP, the LARWQCB shall consider for adoption revised implementation plans, consistent with Water Code Section 13242, for those groundwater basins where Water Quality Objectives (WQOs) or Basin Objectives (BOs) for salt and nutrients are being, or are threatening to be, exceeded. Accordingly, the need for, or lack of need for, implementation measures was determined by comparing existing and projected future groundwater quality with respect to the BOs for TDS, chloride, nitrate, and sulfate.

Existing (ambient) concentrations and assimilative capacities are presented in Section 6.5 of this SNMP. Projected future groundwater quality is summarized in Sections 7.3.4 and 9.4.1 of the SNMP. Ambient groundwater exceeds the BOs for TDS and sulfate in MZ-1b and TDS in MZ-4. Under Land Use Build-Out conditions (2012-2035), TDS and sulfate will decrease below the BO in MZ-1b, and TDS will decrease below the BO in MZ-4. The decrease in concentrations and resulting increase in assimilative capacity is a result of existing implementation measures and groundwater management strategies. Never-the-less, future predictions described in Section 9.0 of the SNMP indicate that under Land Use Build-Out conditions, the assimilative capacity for some constituents will be used in greater percentages than the thresholds set forth in the Recycled Water Policy for recycled water projects. Therefore, the projects simulated in

Section 9.0 of the SNMP represent additional implementation measures to decrease salt and nutrient loading in the future and increase the assimilative capacity in the MZs, as compared to Land Use Build-Out conditions.

Implementation measures (IM) are classified as existing, planned, or conceptual. Each implementation measure addresses stormwater/runoff management, groundwater recharge, wastewater salinity/nutrient source control, source water salinity control, public education/outreach, institutional measures, regulatory/non-regulatory requirements, land use regulation, conservation and/or TMDLs. Each measure is described in the following sections, and summarized in Table 4 below. The table also identifies how the implementation measure can impact the groundwater basin; either they can decrease the salt and nutrient loading, or they can decrease the concentration of salt and nutrients in groundwater. As reported in the SNMP (Section 9.0), all of the projects proposed in the SNMP will have a beneficial impact on the Basin, as compared to conditions that will result from on-going and approved changes in land use (Land Use Build-Out conditions). Therefore, all of the projects are considered implementation measures.

3.1.1 Existing Implementation Measures

A brief description of the existing implementation measures as provided in Section 10 of the SNMP is provided below. Since existing implementation measures are projects/programs that have already been put into place, they are considered part of the baseline conditions.

Stormwater/Runoff Management:

- Municipal Storm Water Permitting Program: Regulates storm water discharges from municipal separate storm sewer systems (MS4s) through permits issued by the LARWQCB. National Pollutant Discharge Elimination System General Permit (NPDES) storm water permits have been adopted for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities that require the discharger to develop and implement a Storm Water Management Plan/Program with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). In addition, compliance with stormwater permitting requires the treatment/infiltration of the first 0.85 inches of any storm.

Wastewater Salinity/Nutrient Source Control:

- Treatment Process Upgrade at the Valencia and Saugus WRPs: Upgrades include nitrification/denitrification. As a result, nutrient concentrations in the effluent have decreased.

- Industrial Wastewater Source Control Programs: Ongoing source control programs that allow WRPs to achieve NPDES permit compliance.

- SCVSD Automatic Water Softener Rebate Program: Also a Public Education/Outreach program that provides reimbursement to Self-Regenerating Water Softener (SRWS) owners for their removal. Phase I of the program commenced in November, 2005 and resulted in the removal of 431 units. Phase II commenced in May, 2007.

Source Water Salinity Control:

- LACDPW Stormwater “First Flush” Policy: Low Impact Development Guide that lists requirements for infiltration and other stormwater quality.

Institutional:

- 1999 SCVSD Ordinance Prohibiting Installation of New Residential SRWSs: Ordinance that took effect in March 2003 and prohibits the installation of new SRWSs.

- SCVSD Measure S: Measure on the November, 2008 ballot that requires the removal and disposal of all remaining active SRWSs connected to SCVSD’s sewerage system. Responsible for the removal of approximately 8,000 SRWSs.

- SCVSD Commercial and Industrial Sector Regulations: Program added to the source control program for NPDES permit compliance. Enforces the SRWS ban and implementation of chloride discharge limits of 100 mg/L, or performance-based chloride limits that reflect the implementation of chloride reduction practices.

Regulatory/Non-Regulatory:

- Wastewater, Recycled Water, Surface Water/Stormwater, Imported Water and Groundwater Monitoring: Compliance with requirements of SB7x-6, CASGEM monitoring and the Sustainable Groundwater Management Act.

- State Regulations for Groundwater Replenishment Using Recycled Water: Facilitation of artificial recharge for purposes of groundwater recovery to supplement Eastside wells.

- LARWQCB Permits for Groundwater Recharge: Facilitation of artificial recharge for purposes of groundwater recovery.

- Recycled Water Non-Potable Reuse Regulations, Guidelines and Permits: Facilitation of nonpotable reuse by defining limits of human contact and streamlining permitting for projects.

- CASGEM Monitoring: Enhanced monitoring and reporting ensures compliance with requirements of SB7x-6 and coordinates groundwater level monitoring among all of the users in the subbasin.

Land Use Regulation:

- City/County Model Water Efficient Landscape Ordinance: Ordinances requiring new development to minimize exterior water use and implemented by land use planning agencies and local water retailers.

Conservation:

- Water Conservation Act of 2009 (Senate Bill X7-7): Requires all water providers above a minimum size to increase water use efficiency by demonstrating a 10% reduction in potable water demand by 2015 and 20% reduction by 2020. The bill also requires, among other things, that the Department of Water Resources, in consultation with other state agencies, develop a single standardized water use reporting form, which would be used by both urban and agricultural water agencies.

- Emergency Drought Mandates: Emergency measures to reduce water use and minimize drought impacts on customers while conforming to statewide drought mandates. Includes a list of prohibitive activities.

TMDLs:

- TMDLs for Chloride, Bacteria and Nitrogen: Requires the review of all sources of pollution and all aspects of a watershed's drainage system be reviewed to help manage water quality within applicable water quality standards.

3.1.2 Planned Projects

In addition to the existing implementation measures, the following projects are planned to be implemented in the near future. These are described in more detail in Section 10 of the SNMP, and briefly in Section 2.4.5 of this SED.

Stormwater/Runoff Management:

- P-1. SWRCB Statewide NPDES for CWS: State Division of Drinking Water regulation of small potable water suppliers.

Groundwater Recharge:

- P-2. Projects from Recon Study: Includes possible rubber dams and moving up to 10,000 acre-ft/yr (AFY) of Saugus WRP and Valencia WRP water to discharge points in the eastern part of the subbasin for groundwater recharge.

- P-3. Vista Canyon WRP: WRP will generate 439 AFY of treated wastewater that will be used for landscape irrigation; any remaining treated wastewater will be placed into the existing sewer system and treated at downstream treatment plants.

- P-4. Newhall Ranch WRP: WRP to service development in the Newhall Ranch Specific Plan and Westside communities, thereby also serving as a Wastewater Salinity/Nutrient Source Control program. It will also provide water for landscape irrigation.

- P-5. City/County MS4 Stormwater Infiltration Basins: Also a Regulatory/Non-Regulatory project that would provide basins needed to implement the MS4 permit requirements.

Wastewater Salinity/Nutrient Source Control:

- P-6. SCVSD Wastewater Treatment Plant Chloride Reduction Program: Further treatment and blending of recycled water so that all discharged effluent will have a chloride concentration of no greater than 100 mg/L.

Source Water Salinity Control (and Conservation):

- P-7. Santa Clarita Valley Water Use Efficiency Programs: Suite of water conservation programs/projects to be implemented from the updated Santa Clarita Valley Water Use Efficiency Plan (2015).

- P-8. Santa Clarita Water Division (SCWD) Water Use Efficiency Programs: Ten (10) programs designed to conserve water and reduce residential and urban use, run-off and sewage flows.

Conservation:

- P-9. CLWA Recycled Water Master Plan: Plans to incorporate additional recycled water for use in landscape irrigation.

Regulatory/Non-Regulatory:

- P-10. SNMP Monitoring: Increased groundwater level and water quality monitoring as recommended in Section 11.0 of the SNMP. The monitoring program data will allow preparation of updated ambient water quality for the MZs every three years.

- P-11. Sustainable Groundwater Management Act Plan/Programs: Long term planning and monitoring to ensure sustainable yield of the subbasin by all of the groundwater stakeholders.

3.1.3 Conceptual Implementation Measures

If, after 2035, the concentration of salts continues to increase and the assimilative capacity is reduced, then the incentive to implement the measures below is greater. Although the amount of salt reduction from these measures is unknown, the conceptual implementation measures would have an overall positive effect (decrease) of salt concentrations in the basin. At this time, it is uncertain which of the measures would be implemented either before or after 2035.

Source Water Salinity Control:

- Brine Line to Ventura County: Proposed Brine Line in the lower sections of the Santa Clara River Valley that could be extended to Los Angeles County.

Groundwater Recharge:

- Aquifer storage and recovery (ASR) in Saugus Formation: Recharge in the Saugus formation using SWP water during wet years with recovery during dry years. Maximum input and recovery would be 5,000 AFY.

Regulatory/Non-Regulatory:

- State Regulations for Potable Reuse: SWRCB and CDPH are required to publish recommended regulations for potable reuse of recycled water by no later than 2017

TABLE 4 SANTA CLARA RIVER VALLEY EAST SUBBASIN SNMP IMPLEMENTATION MEASURES

Timeframe	Number	Management Strategy	Category	Management Zone	Impact to Loading	Impact to Concentrations
Existing	IM-1	Municipal Stormwater Permitting Program	Stormwater/Runoff Management	All	Decrease	Decrease
Existing	IM-2	Treatment Process Upgrade at the Valencia and Saugus WRPs	Wastewater Salinity/Nutrient Source Control	4	Decrease	Decrease
Existing	IM-3	Industrial Wastewater Source Control Programs	Wastewater Salinity/Nutrient Source Control	All	Decrease	Decrease
Existing	IM-4	SCVSD Automatic Water Softener Rebate Program (Phase I and II)	Wastewater Salinity/Nutrient Source Control and Public Education/Outreach	3, 4, and 5	Decrease	Decrease
Existing	IM-5	LACDPW Stormwater "First Flush" Policy	Source Water Salinity Control	4	Decrease	Decrease
Existing	IM-6	1999 SCVSD Ordinance Prohibiting Installation of New Residential Self-Regenerating Water Softeners	Institutional	3, 4, and 5	Decrease	Decrease
Existing	IM-7	SCVSD Measure S	Institutional	3, 4, and 5	Decrease	Decrease
Existing	IM-8	SCVSD - Commercial and Industrial Sector Regulations ban on SRWS and Chloride Discharge Limits of 100 mg/L	Institutional	3, 4, and 5	Decrease	Decrease

Timeframe	Number	Management Strategy	Category	Management Zone	Impact to Loading	Impact to Concentrations
Existing	IM-9	Wastewater, Recycled Water, Surface Water/Stormwater, Imported Water, and Groundwater Monitoring	Regulatory/Non-Regulatory	All	-	-
Existing	IM-10	State Regulations for Groundwater Replenishment Using Recycled Water	Regulatory/Non-Regulatory	All	Decrease	Decrease
Existing	IM-11	LARWQCB Permits for Groundwater Recharge	Regulatory/Non-Regulatory	All	Decrease	Decrease
Existing	IM-12	Recycled Water Non-Potable Reuse Regulations, Guidelines, and Permits	Regulatory/Non-Regulatory	All	Decrease	Decrease
Existing	IM-13	CASGEM Monitoring	Regulatory/Non-Regulatory	All	-	-
Existing	IM-14	City/County Model Water Efficient Landscape Ordinance	Land Use Regulation	All	Decrease	Decrease
Existing	IM-15	Water Conservation Act of 2009 (Senate Bill X7-7)	Conservation	3, 4, 5 and 6	Decrease	Decrease
Existing	IM-16	Emergency Drought Mandates	Conservation	All	Decrease	Decrease
Existing	IM-17	TMDLs for Chloride, Bacteria and Nitrogen	TMDLs	All	Decrease	Decrease
Planned	IM-18	SWRCB Statewide NPDES for CWS	Stormwater/Runoff Management	All	Decrease	Decrease

Timeframe	Number	Management Strategy	Category	Management Zone	Impact to Loading	Impact to Concentrations
Planned	IM-19	Projects from Water Supply Reconnaissance Study	Groundwater Recharge	1	Decrease/Increase [3]	Decrease/Increase [3]
Planned	IM-20	Vista Canyon WRP	Groundwater Recharge	1	Increase	Decrease[1]
Planned	IM-21	Newhall Ranch WRP	Groundwater Recharge and Wastewater Salinity/Nutrient Source Control	5	Increase	Increase[2]
Planned	IM-22	City/County MS4 Stormwater Infiltration Basins	Groundwater Recharge and Regulatory/Non-Regulatory	All	Decrease	Decrease
Planned	IM-23	SCVSD Wastewater Treatment Plant Chloride Reduction Program	Wastewater Salinity/Nutrient Source Control	4 and 5	Increase	Decrease
Planned	IM-24	SCV Water Use Efficiency Programs	Source Water Salinity Control and Conservation	All	Decrease	Decrease
Planned	IM-25	SCWD Water Use Efficiency Programs	Source Water Salinity Control and Conservation	1, 2, 3, and 4	Decrease	Decrease
Planned	IM-26	CLWA Recycled Water Master Plan	Conservation	3 and 4	Increase	Decrease
Planned	IM-27	SNMP Monitoring	Regulatory/Non-Regulatory	All	-	-
Planned	IM-28	Sustainable Groundwater Management Act Plan/Programs	Regulatory/Non-Regulatory	All	Decrease	Decrease
Conceptual	IM-29	ASR in Saugus Formation	Groundwater Recharge	2 and 3	Increase	Decrease

Timeframe	Number	Management Strategy	Category	Management Zone	Impact to Loading	Impact to Concentrations
Conceptual	IM-30	Brine Line to Ventura County	Wastewater Salinity/Nutrient Source Control	All	-	-
Conceptual	IM-31	State Regulations for Potable Reuse	Regulatory/Non-Regulatory	All	-	-

Notes:

(1) The implementation measure will both increase and decrease concentrations depending on the constituent. Overall the implementation measure will decrease salt concentrations.

(2) The implementation measure will both increase and decrease concentrations depending on the constituent. Overall the implementation measure will increase salt concentrations.

(3) Implementation measures from the "Recon" study may include both stormwater capture and recharge and redistribution of recycled water discharge points. Stormwater capture and recharge implementation measures are anticipated to decrease loading and salt and nutrient concentrations. Recycled Water redistribution will both increase and decrease concentrations depending on the constituent.

Section 4: Program Alternatives/Implementation Measures

4.1 Program Alternatives

In accordance with the requirements addressed by this SED, three reasonable program alternatives were evaluated and are described in this section. The evaluation includes a discussion of mitigation measures to avoid or reduce significant or potentially significant adverse environmental impacts. The alternatives selection was based in part on CCR, Title 14, Section 15126.6, which only requires consideration of alternatives necessary to permit a reasoned choice and that will foster informed decision making and meaningful public participation. Program alternatives evaluated as part of this SED capture the full spectrum of potential implementation scenarios, ranging from a “No Future Projects” alternative (Program 1) to complete implementation of all potential projects proposed by stakeholders (Program 3).

4.1.1 Program 1: No Future Projects/Land-Use Buildout Conditions Only

Under Program 1, only the existing projects and programs identified in Section 3.1.1 of this document (land-use buildout conditions) would be implemented. This program alternative corresponds to the continuation of existing conditions.

The intent of the Recycled Water Policy is to promote expanded recycled water use from municipal wastewater sources in accordance with State and Federal Water quality laws. In addition, as required by the Recycled Water Policy, the SNMP must include implementation measures to sustainably manage salt and nutrient loadings in the basin. As a result, the “No Future Projects” alternative does not meet the objectives or requirements of the Recycled Water Policy or the East Subbasin SNMP. Therefore, Program 1 is not considered further in this SED.

4.1.2 Program 2: Land-Use Buildout Conditions and Implementation of all Planned Projects

The Program 2 alternative evaluates the water quality assuming land-use buildout conditions and consists of the implementation of all 11 proposed projects evaluated in the SNMP and described in Section 3.1.2. These projects encompass the recycled water projects in addition to those projects that have water conservation and water quality improvement benefits.

4.1.3 Program 3: Land-Use Buildout Conditions and all Existing and Conceptual Implementation Measures

The Program 3 alternative evaluates the water quality assuming land-use buildout conditions and consists of the implementation of all existing and conceptual implementation measures described in Section 3.1.2. Because of the speculative nature of these implementation measures as to their location, water quality impacts, and schedule, they have only be qualitatively evaluated in the SNMP, and as shown in Table 4. Therefore, Program 3 is not considered further in this SED.

4.2 Recommended Program Alternative

The Program 2 alternative consists of landuse buildout conditions and all 11 proposed projects in the SNMP (and described in Section 3.1.2) that are planned to be implemented in the near future and that would directly expand recycled water use and production in the project area as well as conservation projects. These proposed projects have direct recycled water and conservation benefits. They would only be allowed if the subbasin has sufficient available assimilative capacity to accommodate the recycled water project or action without resulting in an exceedance of the water quality objectives for that subbasin. Development of these projects would be allowed until there is no remaining assimilative capacity. If no assimilative capacity is available, all projects within the subbasin that would increase groundwater salts/nutrients levels would be prohibited and no other management measures would be implemented. This alternative would be consistent with the State's Recycled Water Policy by allowing for the development of recycled water.

Section 5: Environmental Analysis of the Recommended Program Alternative

This section presents the environmental analysis of the recommended program alternative – Program 2, including the identification of reasonably foreseeable significant adverse environmental impacts associated with implementation of Program 2 and reasonably foreseeable mitigation measures to minimize potentially significant adverse environmental impacts.

Implementation measures can impact the groundwater basins in two ways: 1) they can decrease the salt and nutrient loading, 2) they can decrease the concentration of salt and nutrients in groundwater, or both. This distinction is important in understanding the different types of benefits of implementation measures in the context of salt and nutrient management. The impacts are differentiated by the source water quality and whether one source water replaces another of different water quality. As reported in Section 9.0, all of the projects proposed in this SNMP will have a beneficial impact on the Basin, as compared to conditions that will result from on-going and approved changes in land use (Land Use Build-Out conditions). Therefore, all of the projects are considered implementation measures.

The evaluation presented in this SED was conducted on a broad program level and based on the Environmental Checklist, which addresses the following environmental resources categories: earth, air, water, plant life, animal life, noise, light and glare, land use, natural resources, risk of upset, population, housing, transportation/circulation, public services, energy, utilities and service systems, human health, aesthetics, recreation, greenhouse gas emissions, and archaeological/historical.

It is important to note that potential environmental impacts associated with implementation of Program 2 depend on the specific implementation alternatives selected, which would be subject to detailed project-level analyses in compliance with CEQA by the project lead agency and other environmental laws and regulations. However, it is assumed that potential projects captured by this SED analysis would be designed, installed and maintained in compliance with and according to all applicable laws, regulations, ordinances, and formally adopted municipal and/or agency codes, standards, and practices.

Section 5.1 presents the Environmental Checklist (based on the State CEQA Guidelines Checklist but not identical) which provides a summary of the potential reasonably foreseeable impacts according to the level of significance of the potential impact. The levels are described below.

a. "Potentially Significant Impact": applies if there is substantial evidence that an impact may be significant. If there are one or more "Potentially Significant Impact" entries on the checklist, the SED must include an examination of feasible alternatives and mitigation measures for each such impact, similar to the requirements for preparing an environmental impact report.
b. "Less than Significant with Mitigation Incorporated" applies if mitigation measures are incorporated that will reduce an impact that is "Potentially Significant" to a "Less than Significant Impact."

c. “Less than Significant” applies if the impact will not be significant, and mitigation is therefore not required.
d. “No Impact” applies when no adverse change in the environment is expected

Section 5.2 provides a detailed discussion on the results of the environmental evaluation, including identification of reasonably foreseeable mitigation measures that could be considered at the program level.

5.1 SED Environmental Checklist

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
1	**Earth. Will the program result in:**				
a.	Unstable earth conditions or in changes in geologic substructures?		X		
b.	Disruptions, displacements, compaction or overcoming of the soil?		X		
c.	Change in topography or ground surface relief features?		X		
d.	The destruction, covering or modification of any unique geologic or physical features?		X		
e.	Any increase in wind or water erosion of soils, either on or off the site?		X		
f.	Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?		X		
g.	Exposure of people or property to geologic hazards, such as earthquakes, landslides, mudslides, ground failure, or similar hazards?		X		
2	**Air. Will the Program result in:**				
a.	Substantial air emissions or deterioration of ambient air quality?		X		
b.	The creation of objectionable odors?		X		
c.	Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?			X	

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
3	**Water. Will the Program result in:**				
a.	Changes in currents, or the course of direction or water movements, in either marine or fresh waters?				X
b.	Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff?		X		
c.	Alterations to the course of flow of flood waters?				X
d.	Change in the amount of surface water in any water body?			X	
e.	Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity?		X		
f.	Alteration of the direction or rate of flow of groundwaters?			X	
g.	Change in the quantity or quality of groundwaters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?			X	
h.	Substantial reduction in the amount of water otherwise available for public water supplies?				X
i.	Exposure of people or property to water related hazards such as flooding or tidal waves?				X
4	**Plant Life. Will the Program result in:**				
a.	Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, microflora and aquatic plants)?		X		
b.	Reduction of the numbers of any unique, rare or endangered species of plants?		X		

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
c.	Introduction of new species of plants into an area or in a barrier to the normal replenishment of existing species?		X		
d.	Reduction in acreage of any agricultural crop?			X	
5	**Animal Life. Will the Program result in:**				
a.	Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects or microfauna)?		X		
b.	Reduction of the numbers of any unique, rare or endangered species of animals?		X		
c.	Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?		X		
d.	Deterioration to existing fish or wildlife habitat?		X		
6	**Noise. Will the Program result in:**				
a.	Increases in existing noise levels?		X		
b.	Exposure of people to severe noise levels?		X		
7	**Light and Glare. Will the Program result in:**				
a.	Produce new light or glare?		X		
8	**Land Use. Will the Program result in:**				
a.	Substantial alteration of the present or planned land use of an area?			X	
9	**Natural Resources. Will the Program result in:**				
a.	Increase in the rate of use of any natural resources?				X

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
b.	Substantial depletion of any nonrenewable natural resource?				X
10	**Risk of Upset. Will the Program involve:**				
a.	A risk of an explosion or the release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?		X		
11	**Population. Will the Program:**				
a.	Alter the location, distribution, density, or growth rate of the human population of an area?			X	
12	**Housing. Will the Program:**				
a.	Affect existing housing, or create a demand for additional housing?			X	
13	**Transportation/Circulation. Will the Program result in:**				
a.	Generation of substantial additional vehicular movement?		X		
b.	Effects on existing parking facilities, or demand for new parking?			X	
c.	Substantial impact upon existing transportation systems?		X		
d.	Alterations to present patterns of circulation or movement of people and/or goods?		X		
e.	Alterations to waterborne, rail or air traffic?			X	
f.	Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?		X		
14	**Public Service. Will the Program have an effect upon, or result in a need for new or altered governmental services in any of the following areas:**				
a.	Fire protection?			X	

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
b.	Police protection?				X
c.	Schools?				X
d.	Parks or other recreational facilities?			X	
e.	Maintenance of public facilities, including roads?		X		
f.	Other governmental services?		X		
15	**Energy. Will the proposal result in:**				
a.	Use of substantial amounts of fuel or energy?			X	
b.	Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?			X	
16	**Utilities and Service Systems. Will the Program result in a need for new systems, or substantial alterations to the following utilities:**				
a.	Power or natural gas?			X	
b.	Communications systems?			X	
c.	Water?			X	
d.	Sewer or septic tanks?			X	
e.	Stormwater drainage?			X	
f.	Solid waste and disposal?			X	
17	**Human Health. Will the Program result in:**				
a.	Creation of any health hazard or potential health hazard (excluding mental health)?		X		
b.	Exposure of people to potential health hazards?		X		

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
18	**Aesthetics. Will the Program result in:**				
a.	The obstruction of any scenic vista or view open to the public?		X		
b.	The creation of an aesthetically offensive site open to public view?			X	
19	**Recreation. Will the Program result in:**				
a.	Impact upon the quality or quantity of existing recreational opportunities?				X
20	**Archeological/Historical. Will the Program:**				
a.	Result in the alteration of a significant archeological or historical site structure, object or building?		X		
21	**Greenhouse Gas Emissions**				
a.	Generate greenhouse gas emissions directly or indirectly and cause a significant impact?		X		
b.	Conflict with adopted plans or policies for the purpose of reducing greenhouse gases?		X		
22	**Mandatory Findings of Significance**				
a.	**Potential to Degrade:** Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
b.	**Short-Term:** Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time, while long-term impacts will endure well into the future.)			X	
c.	**Cumulative:** Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)		X		
d.	**Substantial Adverse:** Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

5.2 Discussion of Environmental Resource Evaluation

5.2.1 Earth

Would the program result in:

a) Unstable earth conditions or in changes in geologic structures

b) Disruptions, displacements, compaction or overcoming of the soil?

c) Change in topography or ground surface relief features?

d) The destruction, covering or modification of any unique geologic or physical features?

e) Any increase in wind or water erosion of soils, either on or off the site?

f) Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?

g) Exposure of people or property to geologic hazard, such as earthquakes, landslides, mudslides, ground failure or similar hazards.

With implementation of mitigation measures, potential impacts would be reduced to less than significant.

a and g)

The study area is located in a seismically active region, with several known active or potentially active faults located in the vicinity. The largest faults capable of causing major damage within and near the study area include the San Andreas Fault and the San Gabriel Fault. The San Andreas Fault Zone is located north/northeast of the study area. The length and active seismic history of this fault indicate a high potential for large-sale ground movement in the near future. The San Gabriel Fault zone - runs in northwest direction through the City of Santa Clarita. The length of this Fault and its relationship with the San Andreas Fault system result in potential for future activity (LA County, 2012).

In the event of an earthquake, substantial ground movement and ground failure could be experienced within the study area that could potentially result in structural damage to facilities and public health risks. However, necessary measures would be taken during program implementation so as not to increase exposure to these risks as a result of program implementation. All proposed facilities would be designed and built in accordance with seismic design provision of the Uniform Building Code. Both the City of Santa Clarita and the County of Los Angeles enforce structural requirements of the Building Code.

Facility designs will incorporate design standards to withstand the local groundshaking predicted for the area as a result of the regional fault zones. Incorporating such seismic design standards will prevent catastrophic failure of the facilities in the event of an earthquake or other disaster, based on a reasonable standard of professional design care.

Areas most susceptible to liquefaction-induced damage are underlain by loose, water-saturated, granular sediment within 40 feet of the ground surface. These geological and ground-water conditions exist in portions of the study area underlain by unconsolidated alluvium, such as along the Santa Clara River and tributary washes (LA County, 2012). At project sites that have been previously developed and paved, the potential for liquefaction is considered to be negligible. Site-specific risks of liquefaction will be evaluated as part of geotechnical investigations during project-level review, which will allow incorporation of site-specific designs to mitigate hazards.

Landslides may result from either natural conditions or human activity that trigger a slope failure. Several factors can may influence their occurrence, including seismic activity, soil moisture and composition, and subsurface geology. Due to the varied relief within the study area, earthquake-induced landslide zones have been identified nearly all across the study areas. Prior to project implementation, zones identifying where slope stability must be evaluated and countermeasures undertaken in the design and construction of facilities.

All projects associated with the proposed program would be designed in accordance with the recommendations of a site-specific geotechnical investigation and in compliance with State Building Code. This investigation would provide data on geological and soil conditions to minimize and avoid impacts and potential hazards related to unstable and/or expansive soils, including landslides, subsidence, and liquefaction. The building codes provide requirements for construction, grading, excavation, use of fill, and foundation work, including type of materials, design, procedures, etc., which are intended to limit the probability of occurrence and the severity of consequences from geologic hazards.

b, e and f)

Soil erosion, displacement and associated loss of topsoil could potentially occur with projects that will result in soil disturbance as part of construction, such as excavation and grading. The fugitive dust control program anticipated to be implemented as an air quality mitigation measure (see below) would help minimize wind erosion.

Projects will be implemented in compliance with local policies and permits. As such, projects would be required to implement minimum best management practices (BMPs) in accordance with the Los Angeles County MS4 Permit, which would include erosion and sediment control for construction sites. Additionally, the OVOV Area Plan includes policies to mitigate potential erosion by water and air and promote conservation of topsoil.

Construction projects that result in land disturbance of 1 acre or more require coverage under the NPDES Construction General Permit, which requires preparation and implementation of a Stormwater Pollution Prevention Control Plan (SWPPP). The SWPPP identifies BMPs to control erosion and sedimentation associated with runoff from construction sites in order to minimize and avoid soil erosion, loss of topsoil and water pollution.

Implementation of erosion-related mitigation measures and local, regional and national compliance requirements would minimize and avoid changes to the siltation of local streams and overall minimize potential soil erosion impacts to less than significant.

c and d)

The One Valley One Vision (OVOV) Area Plan states that with respect to geologic resources, primary conservation issues are hillside development and ridgeline protection. Grading related to construction activities may result in changes to surface relief and/or topography, however these changes are not anticipated to be significant. In addition, the nature of projects associated with the program, such as water reclamation plants, does not lend itself to facility siting along ridgelines or on hillsides. Therefore, it is not anticipated that program implementation would impact these geologic resources.

Mitigation Measures

The following is a list of mitigation measures considered to be reasonably foreseeable for implementation of the proposed program.

- Earth – 1: Prior to construction of new facilities and infrastructure, a design-level geotechnical investigation, including collection of site specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including fault rupture, and characterize the soil profiles, including liquefaction potential and expansive soil potential. In addition, the design-level geotechnical investigation shall identify potential geologic hazards, including sinkholes, subsidence, and soil corrosivity, and characterize the soil profiles for their potential to lead to the aforementioned hazards. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and geologic hazards, such as special foundations, avoidance of problem areas, and structural setbacks. These recommendations shall be incorporated into the design of individual proposed projects.

- Earth – 2: The structural design and construction of new structures will, at a minimum, be in accordance with the requirements of the most recent Uniform Building Code and California Building Code including the latest supplements for Groundshaking Zone 4 as described in the 2010 California Building Code and all other applicable City, County, State and Federal laws, regulations and guidelines.

5.2.2 Air

Would the program result in:

a) Substantial air emissions or deterioration of ambient air quality?

b) The creation of objectionable odors?

c) Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?

Potential air impacts from program implementation may result from short-term emissions from construction activities in addition to long-term emissions from operation of new facilities and/or equipment.

During construction, temporary emissions may be generated from the following construction activities: (1) site preparation, grading, and excavation; (2) construction worker travel to and from construction sites; (3) delivery and hauling of construction supplies to and debris from the construction site; (4) fuel combustion by on-site construction equipment; and (5) construction of structures, installation of equipment, paving and landscaping. Temporary air emissions would be related to fumes, primarily nitrous oxides (NOx), from diesel-powered construction vehicles and equipment, fugitive dust (PM2.5 and PM10) from soil disturbance, and volatile organic compounds (VOCs) from paving and application of architectural coatings.

Amounts of emissions generated on a daily basis would vary, depending on the intensity and types of construction activities and construction schedule of individual projects. Detailed emissions analyses will be conducted on a project-specific basis during project-specific environmental review process. Specific mitigation measures to minimize and/or avoid air quality impacts would also be identified during that process.

Facility operations from implementation of the proposed program are not anticipated to result in significant long-term air quality impacts. Potential emission sources of operational activities could primarily include emissions from powering of new facilities and vehicular trips for facility maintenance and operation. Collectively, proposed program projects are not anticipated to result in large numbers of new employees, and therefore related additional vehicle emissions would be minimal. Similarly to construction activity emissions, details on operational emissions will be obtained during project-level analyses and review.

It is important to note that the proposed program will be implemented with the intention of increasing recycled water use, which can reduce and off-set demand on imported water supplies. Imported water supplies, such as State Water Project water which is used in the region, are generally energy intensive and can produce accordingly high levels of greenhouse gas and other air emissions. By contributing to reducing demands on imported water supplies, the proposed program may have beneficial impacts on air quality by reducing emissions associated with water supply imports.

Project-level review, which will involve detailed analyses of greenhouse gas emissions and air quality impacts will provide more details on potential impacts from project-emissions. The study area is located within the South Coast Air Basin under the jurisdiction of the South Coast Air Quality Management. During project-level review, emission analyses would consider SCAQMD suggested emissions thresholds.

b)

Objectionable odors may be produced during construction and operation of facilities.

During construction activities resulting from implementation of the proposed program, exhaust from equipment may produce discernible odors typical of most construction sites. Such odors may create a nuisance to potential receptors, but they would be temporary and intermittent in nature and would not be considered a significant impact.

According to SCAQMD (2005), types of facilities or operations that are prone to generate objectionable odors include agriculture (farming and livestock), chemical plants, composting operations, dairies, fiberglass molding, landfills, refineries, rendering plants, rail yards, wastewater treatment plants. The proposed program would involve the construction or modification of wastewater treatment facilities (reclamation plants) to increase recycled water production and use. However, odor control systems, which are commonly implemented at such treatment facilities, are in place at existing wastewater treatment facilities in the study area and new facilities would similarly be equipped with such odor control systems. Overall, standard odor control measures and monitoring would be implemented at all facilities to reduce and avoid odor impacts to offsite receptors.

As a result of these factors, collectively, odor impacts would be considered less than significant. Specific analyses of potential impacts will be conducted on a project by project basis.

c)

It is not anticipated that the proposed program would result in the alteration of air movement, moisture or temperature. However, program activities may generate greenhouse gas (GHG) emissions from a variety of sources, which are known to contribute to climate changes at various scales including regional. Project-level emissions analyses will provide details on potential GHG emission levels and specific mitigation measures to minimize and/or avoid emissions impacts would also be identified during that process.

Mitigation Measures

The following is a list of mitigation measures considered to be reasonably foreseeable for implementation of the proposed program.

- Air-1: The construction contractor shall maintain and properly tune all construction equipment in accordance with manufacturer's specifications.

- Air-2: The construction contractors shall minimize idling times either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.

- Air-3: The construction contractor shall use off-road diesel-powered construction equipment (greater than 50 horsepower) that meets the Tier 3 emission standards, where available. In the event equipment that meets Tier 3 emission standards is not available, diesel-powered construction equipment shall meet a minimum of Tier 2 emission standards.

- Air-4: The construction contractor shall use alternative fueled (e.g., compressed natural gas, liquefied natural gas, propane), or electric-powered construction equipment, as available.

- Air-5: The construction contractor shall implement activity management (e.g. rescheduling activities to avoid overlap of construction phases, which would reduce short-term impacts).

- Air-6: All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds shall have a 2007 model year engine or newer, or be equipped with a particulate matter trap.

- Air-7: All trucks hauling loose material, such as debris or fill, shall fully cover their loads while operating off-site.

- Air-8: Construction trucks shall be routed away from congested streets or sensitive receptor areas to the greatest extent possible.

- Air-9: A fugitive dust control program shall be implemented, which should include the following procedures:

  - The area disturbed by clearing, grading, earth moving, or excavation operations shall be minimized to prevent excessive amounts of dust.

  - Pre-grading/excavation activities shall include watering the area to be graded or excavated before commencement of grading or excavation operations. Application of water (preferably reclaimed, if available) should penetrate sufficiently to minimize fugitive dust during grading activities.

  - All trucks shall be required to cover their loads as required by California Vehicle Code §23114.

  - All graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways, shall be treated to prevent fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally-safe soil stabilization materials, and/or roll-compaction as appropriate. Watering shall be done as often as necessary and reclaimed water shall be used whenever possible.

- o Graded and/or excavated inactive areas of the construction site shall be monitored at least weekly for dust stabilization. Soil stabilization methods, such as water and roll-compaction, and environmentally-safe dust control materials, shall be periodically applied to portions of the construction site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area shall be seeded and watered until plant growth is evident, or periodically treated with environmentally-safe dust suppressants, to prevent excessive fugitive dust.

- o Signs shall be posted on-site limiting traffic to 15 miles per hour or less.

- o During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), all clearing, grading, earth moving, and excavation operations shall be curtailed to the degree necessary to prevent fugitive dust created by on-site activities and operations from being a nuisance or hazard, either off-site or on-site. The site superintendent / supervisor shall use his/her discretion in conjunction with the APCD in determining when winds are excessive.

5.2.3 Water

Would the program result in:

a) Changes in currents, or the course of direction or water movements, in either marine or fresh waters?

b) Changes in absorption rates, drainage patterns or the rate and amount of surface water runoff?

c) Alterations to the course of flow of flood waters?

d) Change in the amount of surface water in any water body?

e) Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity?

f) Alteration of the direction or rate of flow of groundwaters?

g) Change in the quantity or quality of groundwaters, either through direct additions or withdrawals, or through interceptions of an aquifer by cuts or excavations?

h) Substantial reduction in the amount of water otherwise available for public water supplies?

i) Exposure of people or property to water related hazards such as flooding or tidal waves?

a)

The proposed program is not anticipated to result in significant changes to currents or water movements in marine or fresh waters. No significant changes to discharges or withdrawals from local streams are anticipated that could cause significant changes to currents, course of direction or water movements. Potential changes to groundwater operations are also not anticipated to be substantial enough to have significant impacts on groundwater movements. Stormwater capture or runoff management measures that may be implemented as part of this program may have impacts on flows, however are not anticipated to be significant enough to affect the current, course or water movement.

Implementation measures that would utilize recycled water for groundwater recharge are not expected to change the current in groundwater flow, however the discharge location throughout the basin may change.

In the case that project implementation may impact the course of a stream, a Streambed Alteration Agreement would be required from CDFG, a 401 Water Quality Certification would be required from the RWQCB, and a 404 Permit would be required from the Army Corps of Engineers in the form of a.

b and e)

Project implementation will occur in compliance with local, state and federal regulations and policies, which will help mitigate and avoid water resource impacts and in many cases result in water resources benefits. Program implementation is anticipated to have overall positive impacts on water resources.

Potential runoff impacts related to construction activities would be mitigated through implementation of stormwater quality programs that help reduce and avoid polluted construction site runoff, and related sedimentation. BMPs and design requirements as part of these programs may include implementation of low impact development (LID) design features or similar in order to minimize pervious surfaces and changes to stormwater infiltration and runoff flows. Construction projects that result in land disturbance of 1 acre or more require coverage under the NPDES Construction General Permit, which requires preparation and implementation of a Stormwater Pollution Prevention Control Plan (SWPPP). By taking drainage patterns of pre- and post-construction conditions into consideration, the SWPPP guides implementation of BMPS and design features to reduce changes to runoff amounts and limit pervious surfaces, as well as to prevent stormwater pollution.

These measures help reduce the loads of pollutants, such as sediments, heavy metals, and pesticides, from reaching surface water bodies that could result in impaired water quality conditions. Potential impacts during the construction phase of individual projects are therefore not anticipated to be significant.

In addition, the proposed program will be implemented with the intent of improving water quality in the area and meeting state and regional requirements. Implementation measures and projects have been chosen in consideration of existing water quality standards and waste discharge requirements. Program implementation will reduce salt and nutrient loads in discharged wastewater thereby resulting in improved surface water conditions. As a result, project implementation is anticipated to positively benefit water quality.

c)

The proposed program is not anticipated to result in the alteration of the course of flow of flood waters. In compliance with local planning requirements, and other flood management guidance, development within flood-prone areas would be limited, thereby minimizing the potential impact on the course of flood flows.

100-year flood zones exist within the study area along the Santa Clara River and tributaries. While final project locations have not yet been determined, all project implementation will occur in compliance with County and City Municipal ordinances, which govern land uses and construction of structures within floodplains. Program implementation is therefore not anticipated to impeded or redirect flows within a 100-year flood hazard zone.

d)

The proposed program is not anticipated to result in significant changes to surface runoff, which could result in changes in the amount of surface water in any water body. Various mitigation measures, such as limiting pervious surfaces as described above, will reduce changes in surface runoff.

Additionally, the program is not anticipated to result in substantial changes to direct withdrawal or discharges to local surface water bodies.

However, local recycled water and water use efficiency projects, which are the main focus of this program will help reduce dependence on imported water supplies, including from the Sacramento-San Joaquin Delta and the Colorado River. As a result, this project could have positive impacts on the amounts of water in those surface water bodies.

f and g)

Program implementation will have net positive benefits on groundwater supplies. Implementation measures include groundwater recharge activities that would directly replenish groundwater supplies. In addition, expanded recycled water use, which is the primary objective of program implementation, will augment local water supplies thereby helping to reduce pressures on existing groundwater supplies.

Any changes to groundwater operations are not anticipated to result in substantial and/or negative impacts to the direction or rate of groundwater flows. However, the increased use of recycled water that would otherwise displace imported water for irrigation use and would decrease slightly the amount of water being discharged to the Santa Clara River. An Indirect Potable Reuse project has the potential to change the location of effluent discharge, but then in return will capture most of that water in potable wells in another location. This is considered less than significant and will largely displace greater imported water in the future as opposed to reducing current flow levels.

h)

Program implementation would result in enhanced reliability of local water supplies through the increased use of recycled water and other water resource management measures, such as water use efficiency programs. As a result, the proposed program will positively affect availability of public water supplies.

i)

The proposed program is not anticipated to expose people or property to water related hazards. Implementation is not anticipated to result in changes to the course of flood flows and implementation will occur in compliance with local planning requirements, which limit development within flood-prone areas. As a result, exposure of people or property to flood hazards will be avoided. In addition, water related hazards would be mitigated through implementation of local safety plans, which outline procedures for response and recovery from potential hazards, including identification of inundation areas and evacuation routes.

Mudflows have the potential to occur in the case of slope failure, similar to landslides. Prior to project implementation, hill slope stability will be evaluated, where necessary, and countermeasures will be undertaken in the design and construction of facilities to reduce associated risks to public health and infrastructure.

The study area is not located in the immediate vicinity of the coastline where a tidal wave could create a potential hazard.

Mitigation Measures

The following is a list of mitigation measures considered to be reasonably foreseeable for implementation of the proposed program.

- Water-1: Implementing agency shall prepare a stormwater pollution prevention plan (SWPPP) to address the potential for contaminated surface water resulting from construction activities to be discharged from the site. Where applicable, use of products that are safe for use in and around aquatic environments shall be required during construction activities.

- Water-2: Implementing agency shall ensure that facility designs direct runoff into subsurface percolation basins and traps which would remove urban pollutants, fertilizers, pesticides, and other chemicals from surface water runoff prior to discharge from the site.

- Water-3: Implementing agency shall ensure that new facilities are designed to be elevated at least one foot above the 100-year flood zone elevation, that bank stabilization and erosion control measures are implemented along creek crossings, and facilities are sited outside of tsunami hazard zones.

5.2.4 Plant Life

Would the program result in:

a) Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, microflora and aquatic plants)?

b) Reduction of the numbers of any unique, rare or endangered species of plants?

c) Introduction of new species of plants into an area or in a barrier to the normal replenishment of existing species?

d) Reduction in acreage of any agricultural crop?

a and b)

Direct impacts to biological resources, such as plant life, typically result from construction activities which would occur for new facilities or facility upgrades. These activities may cause disturbance to plant communities, including special interest plant species. Indirect biological impacts to existing populations of sensitive species may occur from construction activities, resulting from soil erosion, dust accumulation, changes in runoff, loss of potential habitat, displacement of local populations, and disruptions to behavioral patterns. The construction of facilities associated with the proposed program therefore have the potential to impact existing species, habitat and sensitive natural plant communities within the vicinity of program implementation.

The study area encompasses the Santa Clara River Valley, the east extension of the Santa Susana Mountains, the western reaches of the San Gabriel Mountains, and the southern slopes of the Sierra Pelona range. As a result of the range of ecosystems in the geographic setting, the study area contains a wide variety of valuable habitat that supports a large diversity of plant species. One of the primary wildlife movement corridors in the study area is the Santa Clara River, which is the largest undeveloped riparian system remaining in Southern California. Further, the River is one of several biologically important areas, known as Significant Ecological Area (SEA), identified in and around the study area. As a result of the ecosystem and biological values found within the study area, conservation and protection of those resources is high importance.

The watershed of the USCR is host to over 30 special status plant species, including federally and California endangered and threatened species and California rare plant species, which was confirmed based on a query of the California Natural Diversity Database performed for the study area. Among these are the California Orcutt grass, Nevin’s barberry, slender mariposa-lily, slender-horned spineflower, and spreading navarretia.

There are several local policies and plans intended to ensure that resource conservation and urban development is balanced in a sustainable way. The principal local land use planning documents for the study area are the Los Angeles Countywide General Plan and the OVOV Area Plan. These plans contain policies and guidance that aim to protect sensitive habitat, species and natural resources from the adverse impacts of development. The County General Plan and OVOV Area Plan have adopted policies to protect areas identified as SEAs and in order to maintain biological diversity within those areas. Local ordinances applicable to program implementation include, among others, the Oak Tree Preservation Ordinance restricting impacts on protected oak trees.

There are also several federal and state regulations applicable to the proposed program that aim to ensure protection of biological resources and that potential project-related adverse effects to biological resources are minimized. These regulations include the Army Corps of Engineers’ (ACOE) no net loss policy for wetlands, the CDFW Section 1602 Lake and Streambed Alteration Agreement, the federal Endangered Species Act (FESA) and the California Endangered Species Act (CESA), among others.

Program implementation is anticipated to be consistent with local land use planning and will occur in compliance with local, state and federal regulations. Additionally, construction-related activities of the proposed program are anticipated to occur primarily within already developed and/or disturbed areas where sensitive habitat is not highly supported. As a result, significant adverse impacts on local biological resources, including native plant species, are not anticipated from program implementation.

The ultimate locations of individual projects to be implemented as part of the program have not all been finalized, which prevents a more definitive assessment of potential impacts on plant species. However, project-level environmental analyses will be conducted to assess the potential for impacts on biological resources and identify necessary mitigation measures to minimize potentially significant impacts. Generally, mitigation measures require that focused surveys be conducted prior to and during construction activities to ensure that sensitive plant species and their habitat would be identified and significant impacts avoided. Careful siting and planning can help mitigate impacts to the biological resources in the study area. To the extent possible, project facilities would be designed to avoid temporary and permanent adverse effects on riparian habitat, wetlands, and sensitive communities.

c)

Introduction and spread of invasive species can occur through transportation on construction equipment contaminated with invasive species. Equipment however is anticipated to be contracted locally, thereby minimizing potential introduction of invasive species not already existing within the study area. In addition, in the case of land disturbance activities that require revegetation, revegetation will occur with a native plant mix, not containing invasive species. Therefore, implementation of the proposed program is not anticipated to introduce new species of plants into the area or result in a barrier to the normal replenishment of existing species.

d)

Land uses within the study area include agricultural lands that are designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Local land use planning documents, including the Los Angeles Countywide General Plan and the Santa Clarita Area Valley OVOV Area Plan, contain policies that support and protect existing and future agricultural use from urban encroachment and conversion. Program implementation is anticipated to be, to the extent possible, consistent with local land use planning. Therefore is it not anticipated that implementation of the proposed program would lead to a conversion of agricultural land to non-agricultural uses or conflict with established agricultural use zoning. Further, it is not likely that program implementation would indirectly result in conversion of Farmland to non-agricultural use.

The locations and details of new facilities associated with the proposed program are subject to change. As the projects move forward in the development and implementation process, project-specific CEQA analyses will assess potential impacts to agricultural resources in more detail.

Mitigation Measures

The following is a list of mitigation measures considered to be reasonably foreseeable for implementation of the proposed program.

- PLANT -1: Prior to construction in areas that could support special-status plants, a qualified biologist shall conduct a pre-construction floristic inventory and, if deemed necessary, a focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within disturbed areas. This survey shall be conducted during the typical blooming periods of the identified potentially-occurring special-status plants. The plant survey shall follow the CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFW, 2009).

- PLANT -2: The limits of construction shall be staked, flagged, fenced, or otherwise clearly delineated to avoid and minimize impacts on adjacent habitats that have been determined to support special-status plant species.

- PLANT -3: To the extent feasible, the implementing agencies shall avoid and/or reduce the footprint of construction and staging areas in areas having potential occurrences of special-status plant species.

- PLANT.4: Earth-moving equipment shall avoid maneuvering in areas outside the identified limits of construction in order to avoid disturbing areas that would remain undeveloped. Where natural open space areas are located adjacent to construction areas, the limits of construction shall be identified on the site plans.

- PLANT.5: Once projects are completed, vegetated areas disturbed due to construction activity shall be restored to pre-construction conditions. Re-vegetation plans shall be developed and included in project design specifications. The plant palette shall include native plants, when feasible, and exotic or invasive plants shall be avoided.

- PLANT.6: If permanent unavoidable impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall retain a qualified biologist to develop and implement a plant mitigation and restoration program. This program shall contain the following items: responsibilities and qualifications of the personnel to implement and supervise the program; site selection; site preparation and planting implementation; schedule; maintenance plan/guidelines; monitoring plan; long-term preservation; and performance standards.

- PLANT.7: If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall retain a qualified biologist to prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage (if feasible), replant, and monitor the disturbance area until native vegetation is re-established, in accordance with requirements of the CDFW and United States Fish and Wildlife Service (USFWS).

- PLANT.8: If trees could be impacted by project construction, an arborist shall conduct a tree survey. If any Oak trees or other protected trees will be impacted by Program 2, the required county or city permits shall be obtained, as directed by the arborist. All terms and conditions of the permits shall be implemented.

5.2.5 Animal Life

Would the program result in:

a) Change in the diversity of species, or number of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects or microfauna)?

b) Reduction of the numbers of any unique, rare or endangered species of animals?

c) Introduction of new species of animals into an area or in a barrier to the normal replenishment of existing species?

d) Deterioration to existing fish or wildlife habitat?

a-d)

As described above, direct impacts to biological resources, such as animal life, typically result from construction activities which would occur for new facilities or facility upgrades. These activities may cause disturbance to wildlife communities, including special interest and sensitive animal species. Indirect biological impacts to existing populations of sensitive species may occur from construction activities, resulting from soil erosion, dust accumulation, changes in runoff, loss of potential habitat, displacement of local populations, and disruptions to behavioral patterns. The construction of facilities associated with the proposed program therefore have the potential to impact existing species, habitat and sensitive natural wildlife communities within the vicinity of program implementation.

The study area encompasses the Santa Clara River Valley, the east extension of the Santa Susana Mountains, the western reaches of the San Gabriel Mountains, and the southern slopes of the Sierra Pelona range. As a result of the range of ecosystems in the geographic setting, the study area contains a wide variety of valuable habitat that supports a large diversity of animal species. One of the primary wildlife movement corridors in the study area is the Santa Clara River, which is the largest undeveloped riparian system remaining in Southern California. Further, the River is one of several biologically important areas, known as Significant Ecological Area (SEA), identified in and around the study area. As a result of the ecosystem and biological values found within the study area, conservation and protection of those resources is high importance.

The watershed of the Upper Santa Clara River is host to over 40 special status wildlife species, including federally and California listed species, and California Department of Fish and Wildlife special animal species, which was confirmed based on a query of the California Natural Diversity Database performed for the study area. Among these are the least Bell's vireo, southwestern willow flycatcher, unarmored threespine stickleback, quino checkerspot butterfly, California red-legged frog, and arroyo toad.

There are several local policies and plans intended to ensure that resource conservation and urban development is balanced in a sustainable way. The principal local land use planning documents for the study area are the Los Angeles Countywide General Plan and the OVOV Area Plan. These plans contain policies and guidance that aim to protect sensitive habitat, species and natural resources from the adverse impacts of development. The County General

Plan and OVOV Area Plan have adopted policies to protect areas identified as SEAs and in order to maintain biological diversity within those areas.

There are also several federal and state regulations applicable to the proposed program that aim to ensure protection of biological resources and that potential project-related adverse effects to biological resources are minimized. These regulations include ACOE no net loss policy for wetlands, the California Fish and Wildlife Section 1602 Lake and Streambed Alteration Agreement, California Water Code Section 1211 review for changes in water discharges, the FESA and the CESA, among others.

Program implementation is anticipated to be consistent with local land use planning and will occur in compliance with local, state and federal regulations. Additionally, construction-related activities of the proposed program are anticipated to occur primarily within already developed and/or disturbed areas where sensitive habitat is not highly supported. As a result, significant adverse impacts on local biological resources, including animal species, are not anticipated from program implementation and measures would be taken to avoid and/or minimize impacts to wildlife movement.

The ultimate locations of individual projects to be implemented as part of the program have not all been finalized, which prevents a more definitive assessment of potential impacts on animal species. However, project-level environmental analyses will be conducted to assess the potential for impacts on biological resources and identify necessary mitigation measures to minimize potentially significant impacts. Generally, mitigation measures require that focused surveys be conducted prior to and during construction activities to ensure that sensitive animal species and their habitat would be identified and significant impacts avoided. Careful siting and planning can help mitigate impacts to the biological resources in the study area. To the extent possible, project facilities would be designed to avoid temporary and permanent adverse effects on riparian habitat, wetlands, and sensitive communities.

Mitigation Measures

The following is a list of mitigation measures considered to be reasonably foreseeable for implementation of the proposed program.

- ANIMAL-1: Prior to ground disturbing activities in areas that could support sensitive biological resources, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas. If the habitat assessment determines that a special-status wildlife species has the potential to be present within 500 feet of the construction zone, the qualified biologist shall consult with the implementing agency to determine whether a focused survey shall be conducted prior to project implementation to determine the presence or absence of the species.

- ANIMAL-2: If a special-status wildlife species is determined present within the limits of construction activities, a qualified biologist shall conduct pre-construction surveys of proposed work zones and the 500-foot buffer around each area within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species, such as burrows, shall be flagged for avoidance, as necessary; any additional habitat features, if any, shall also be identified and flagged as necessary.

- ANIMAL-3: If the habitat assessment concludes that there is potential for listed special-status wildlife species to occur and the area of potential presence cannot be avoided, appropriate protocol-level surveys shall be conducted by a qualified biologist in accordance with the requirements of the appropriate regulating agency (USFWS or CDFW). If a listed species is determined to have the potential to be present in or adjacent to the area of disturbance, a mitigation plan shall be prepared by a qualified biologist and, if necessary, approved by the USFWS and/or the CDFW prior to any ground disturbing activities.

- ANIMAL-4: Project design and construction specifications shall be modified to avoid potential impacts to special-status wildlife species by eliminating construction activities to the greatest extent possible within areas where those species are detected through surveys. Tunneling or jack and bore construction methods under drainages that may support listed special-status wildlife species shall be recommended in areas where those species have the potential to occur or where presence has been confirmed.

- ANIMAL-5: All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist.

- ANIMAL-6: Silt fencing or similar impermeable barriers to exclude small wildlife species from entering the active work areas shall be installed around future work areas that occur within or adjacent to undisturbed habitats, or near areas of documented occurrences of special status wildlife as determined during pre-construction surveys by a qualified biologist. Such impermeable barriers shall be verified by a qualified biologist prior to initiating construction activities.

- ANIMAL-7: If construction is initiated or vegetation removal is proposed between February 1 and August 31, then a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds within 500 feet of the construction area limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided and a non-disturbance buffer zone shall be established, consisting of 300 feet for any passerine (or similar) species and 500 feet for any raptor or special-status species, or distances otherwise determined by a qualified biologist. Nest sites shall be avoided with approved non-disturbance buffer zones until the adults and young are no longer reliant on the nest site for survival, as determined by a qualified biologist.

- ANIMAL-8: All active bird nest buffer areas shall be clearly demarcated with stakes, flags, or fence material. The installation of buffer areas shall be verified by a qualified biologist prior to the initiation of ground disturbing activities.

- ANIMAL-9: A qualified biologist shall conduct a survey for bat roost sites prior to the initiation of any construction activities in areas where potential roost sites may occur, such as abandoned structures, bridges, or hollow trees. If a bat roost is identified, a minimum 300-foot buffer shall be established by a qualified biologist or as otherwise determined in consultation with the CDFW.

5.2.6 Noise

Would the program result in:

a) Increases in existing noise levels?

b) Exposure of people to severe noise levels?

a and b)

Noise associated with the project would result from short-term construction activities as well as operational activities of the proposed facilities. The program's contribution to the ambient noise level will vary, however project implementation is not anticipated to noticeably increase the ambient noise level beyond the individual project sites.

The proposed program would involve the installation of new or upgrade of existing facilities, which may include construction activities such as grading, excavation, paving and trenching. Noise impacts associated with construction would be short-term and limited to construction phases.

The noise levels created by construction equipment would vary depending upon factors such as the type and specific model of the equipment, the operation being performed and the condition of the equipment. The average sound level of the construction activity also depends upon the duration that the equipment operates and the intensity of the construction during the time period. Construction equipment reasonably foreseeable to be used during construction activities include loaders, trucks, backhoes, pavers, compactors, generators, and bulldozers. Noise generated by construction equipment will occur with varying intensities and durations during the various phases of construction. Potential impacts related to construction noise depend on proximity to noise-sensitive receptors.

In addition to noise from the operation of construction equipment at the project sites, the construction phase would also cause minor increases in traffic noise along access routes to and from construction sites from the movement of equipment, materials and workers. This short-term impact would be anticipated to be less than significant.

Operations of newly constructed facilities or facility upgrades are not anticipated to result in significant increases in ambient noise levels. Facility modifications would not generate significantly different noise levels than produced at the existing facility. To reduce operational noise impacts to less than significant levels, the implementing agency for each project would implement design features to comply with applicable city and county noise level requirements. It is anticipated that new facilities and facility upgrades would include noise abatement and noise attenuation features as standard equipment.

Overall potential noise impacts will highly depend on actual project locations, facility design and other project-specific features. More detailed noise impact analyses will be conducted on a project-level.

Mitigation Measures

The following is a list of mitigation measures considered to be reasonably foreseeable for implementation of the proposed program.

- NOISE-1: If necessary, include design measures where feasible to reduce the construction noise levels to comply with local noise ordinances. These measures may include, but are not limited to, the erection of noise barriers/curtains, use of advanced or state-of-the-art mufflers on construction equipment, and/or reduction in the amount of equipment that would operate concurrently at the construction site. The construction contractor shall keep equipment properly maintained. Provide noise shielding and muffling devices on construction equipment per the manufacturer's specifications.

- NOISE-2: The construction contractor shall use rubber-tired equipment rather than track equipment.

- NOISE-3: The construction contractor shall turn off noise-generating equipment when not in use. Minimize the effects of equipment with the greatest peak noise generation potential via shrouding or shielding to the extent feasible. Examples include the use of drills, pavement breakers, and jackhammers.

- NOISE-4: The construction contractor shall ensure that all stockpiling and vehicle staging areas are located away from noise-sensitive land uses.

- NOISE-5: The construction contractor shall establish a public liaison for project construction that shall be responsible for addressing public concerns about construction activities, including excessive noise. The liaison shall determine the cause of the concern (e.g., starting too early, bad muffler, etc.) and shall work with the construction contractor to implement reasonable measures to address the concern.

- NOISE-6: The construction contractor shall develop a construction schedule to ensure that activity shall be completed quickly to minimize the time noise-sensitive land uses that would be exposed to construction noise. Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible, and require that these noise sources be muffled and enclosed within temporary sheds, insulation barriers if necessary to comply with local noise ordinances.

- NOISE-7: The construction contractor shall use electric- and hydraulic-powered rather than diesel- and pneumatic-powered equipment, as feasible. Place noise and groundborne vibration-generating construction equipment whose specific location on a construction site may be flexible (e.g., operation of compressors and generators, cement mixing, general truck idling) as far as possible from the nearest noise- and vibration-sensitive land uses such as residences, schools, and hospitals.

- NOISE-8: Prior to construction work, residences, businesses, and other properties located along the pipeline alignment shall be notified of the location and dates of construction. For major construction projects, identify a liaison for surrounding residents and property owners to contact with concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at construction locations.

- NOISE-9: Haul routes shall be on major arterial roads within non-residential areas, as feasible.

- NOISE-10: The construction contractor shall coordinate with the site administrators for institutional land uses (e.g., schools) along the alignment to discuss construction activities that generate high noise levels. Coordination between the site administrator and construction contractor shall continue on an as-needed basis to mitigate potential disruption of classroom activities.

- NOISE-11: For construction activities during non-standard working hours or hours that are not exempt from compliance with applicable city or county noise ordinances (e.g., 24-hour well drilling), the implementing agency will secure a noise waiver from the appropriate jurisdiction if available.

5.2.7 Light and Glare

Would the program:

a) Produce new light or glare?

The urbanized portion of the study area includes significant existing sources of light and glare, such as street lights along roadways, parking lots and walkways, lighted recreation facilities, and light emitted from residential and nonresidential buildings. A source of new light and/or glare would result from interior or exterior facility lighting, such as security lighting or construction lighting and light reflection off of new reflective surfaces. Program implementation is not anticipated to create a new source of substantial light or glare.

Construction activities may require temporary light installations, which have the potential to affect day or nighttime views in the vicinity. New facilities implemented as part of the program may require new exterior daytime and/or nighttime lighting for operational and security purposes. Lighting fixtures added as part of improvements to existing facilities will not add a new source of substantial light or glare. Temporary and permanent lighting impacts resulting from program implementation could be minimized by shielding and directing light away from surrounding light-sensitive areas.

Mitigation Measures:

The following mitigation measure is considered to be reasonably foreseeable for implementation of the proposed program.

- Light – 1: Lighting fixtures used during construction or installed as permanent fixtures shall be shielded and pointed away from surrounding light-sensitive land uses. When possible, lighting should be directed downward to avoid any light spill onto neighboring lands or into nighttime skies.

5.2.8 Land Use

Would the program result in:

a) Substantial alteration of the present or planned land use of an area?

Program implementation will be consistent with local land use plans, including the OVOV Area Plan and City of Santa Clarita General Plan. These plans designate land uses appropriate for the projects associated with the program. In addition, these plans include policies to preserve local habitat and natural resources and protect all designated SEAs from incompatible development. Facilities implemented as part of the proposed program are not anticipated to physically divide an established community or change present or planned land use designations.

Impacts are anticipated to be less than significant.

5.2.9 Natural Resources

Would the program result in:

a) Increase in the rate of use of any natural resources?

It is not anticipated that program implementation would result in an increase in the rate of use of any natural resources.

Program implementation will enhance availability of water, a natural resource, and in some cases will promote use efficiency through water use efficiency programs.

Construction of new or expansion of existing facilities may require use of sand, gravel and rock, however it is not anticipated that a substantial increase in the use of these resources over existing conditions would occur. Additionally, these mineral resources and extraction activities are regulated by the Surface Mining and Reclamation Act, which encourages protection and conservation of minerals.

Construction and operations of program elements will require use of natural resources for electricity generation, whereby construction would result, at the most in a short-term increase in the use of fuel. Facility expansions are not anticipated to result in substantial changes to electricity and thereby natural resources use rates, compared to existing conditions. Electricity demands of new operations and related impacts on natural resources will be evaluated in more detail during project-level analyses. Overall, resources consumption is not anticipated to occur at levels that would cause significant adverse impacts.

5.2.10 Risk of Upset

Would the program result in:

a) A risk of an explosion or the release of hazardous substances (including, but not limited to: oil, pesticides, chemicals, or radiation) in the event of an accident or upset conditions?

Construction activities could involve the use of potentially hazardous materials, including petroleum products, solvents, degreasers and other construction materials. Use, disposal and transportation of hazardous and/or toxic materials would be conducted in accordance with existing laws and regulations to prevent hazardous conditions to the public and the environment. In instances where construction and operation of the proposed project facilities require use of hazardous materials, implementation of mitigation measures HAZ-1, HAZ-2, and HAZ-3 will reduce potential hazards to a less than significant level.

Both during construction and operation at facilities, a potential exists for accidental release of hazardous materials. Such accidental releases of hazardous materials are readily controlled to a less than significant level of hazard through control or remediation of the material accidentally released. Implementation of mitigation measures HAZ-1 through HAZ-3 can prevent any significant exposures to hazardous or toxic materials by the public or employees at the location of an accidental spill. These measures are sufficient to control or limit the adverse impact of accidental releases to a less than significant impact level.

Construction and operation at facilities would be required to occur in compliance with State and federal laws including the California Accidental Release Prevention Program, requiring development of a Risk Management Plan. The California Hazardous Materials Release Response Plans and Inventory Program require facilities that store hazardous materials on site to prepare a Hazardous Materials Business Plan and Emergency Response Plan.

Transportation of hazardous materials, which may be required during facility construction or operation, would occur in compliance with California Department of Transportation requirements. Therefore all transport of hazardous materials would be tracked by Caltrans and delivery vehicles would be required to utilize roadways approved for transportation of hazardous materials. Transporters of hazardous waste would be required to be certified by Caltrans.

Compliance with applicable hazardous materials laws and regulations, as well as implementation of reasonably foreseeable mitigations measures listed below would reduce potential risks to the public and environment to less than significant.

Mitigation Measures

The following is a list of mitigation measures considered to be reasonably foreseeable for implementation of the proposed program.

- HAZ-1: All spills or leakage of hazardous wastes during construction shall be remediated in compliance with applicable state and local regulations regarding cleanup and disposal of the contaminant released. All contaminated material shall be delivered to a licensed treatment, disposal or recycling facility that has the appropriate systems to manage the contaminated material without significant impact on the environment.

- HAZ-2: All construction equipment shall be regularly inspected for leaks.

- HAZ-3: A prevention and response plan shall be prepared that will incorporate best management practices (BMPs) designed to minimize the potential for accidental release of hazardous materials or wastes. The developed plan shall assess the potential accidental release scenarios and identify the equipment and response capabilities required to provide immediate containment, control and collection of any released material, and assess potential exposure pathways.

5.2.11 Population

Would the program:

a) Alter the location, distribution, density, or growth rate of the human population of an area?

Program implementation will be consistent with local land use plans and would therefore not result in changes to the location or distribution of existing populations within the study area. The proposed program is not anticipated to induce substantial growth in the study area either directly or indirectly. No facilities will be constructed that would accommodate housing and projects are not anticipated to crease a substantial number of jobs that would have a noticeable effect on population. The program will result in the increase of recycled water use and thereby increased local water supply reliability. However, these program benefits are intended to meet the demand of the current and projected population, rather than induce additional growth.

5.2.12 Housing

Would the program:

a) Affect existing housing, or create a demand for additional housing?

No facilities will be constructed that would accommodate housing and the program is not anticipated to result in the need for additional housing. Program implementation will not displace a substantial number of existing housing or people, which would necessitate construction of replacement housing. Project implementation will occur consistent with local land use plans.

5.2.13 Transportation/Circulation

Would the program result in:

a) Generation of substantial additional vehicular movement?

b) Effects on existing parking facilities, or demand for new parking?

c) Substantial impact on existing transportation systems?

d) Alterations to present patterns of circulation or movement of people and/or goods?

e) Alterations to waterborne, rail or air traffic?

f) Increase in traffic hazards to motor vehicles, bicycles or pedestrians

a and c)

Program implementation would not result in the generation of substantial additional long-term vehicular movement. Minor traffic increases may result from construction activities, but these potential impacts would be short-term and intermittent. Operation and maintenance activities may result in minor traffic, but the increase in new employees is not expected to be significant and maintenance activities generally occur intermittently. Overall the amount of additional road trips associated with program implementation would not cause a substantial increase in traffic in relation to existing traffic load and capacity conditions.

Similarly, the increase in new employees is not expected to result in substantial impacts to other transportation systems. Further, program implementation would not affect planned alternative transportation routes or modes or conflict with adopted policies, plans and programs supporting alternative transportation.

b)

The proposed program is not anticipated to increase overall traffic and will therefore not require additional parking capacity. Parking for new facilities would be incorporated into facility design and is not anticipated to impact existing public parking.

d)

Short-term and limited construction-related traffic would not create a substantial impact on traffic volumes nor change traffic patterns in such a way as to substantially affect the level of service or vehicle to congestion ratio on study area roadways. Long-term operating traffic would be minor. The project would not involve the alteration of existing roadways nor would it result in incompatible uses that may alter movement of people and/or goods.

Proposed facilities will be designed to satisfy the emergency requirements of the Fire and Police departments. Therefore, access to and from the treatment facilities in the case of an emergency would not be impacted by project implementation.

Additionally, while site locations of new facilities have not yet been finalized, project locations are not anticipated to interfere with road way circulation. Potentially heightened traffic during the short-term of construction phases of individual projects is not anticipated to create significant interference to potential emergency road ways. Construction vehicles have the potential to use the same routes as first response vehicles, however this impact would be temporary and the local Fire Department would be notified of construction schedules and access routes prior to construction, so that impacts would be less than significant. Construction and operation of the proposed project is not anticipated to affect the activities of any emergency first response services on the long-term, nor are project activities and proposed facilities anticipated to have potential to permanently impact emergency evacuation or response plans.

e)

Program implementation is not anticipated to involve substantial amounts of air, waterborne or rail traffic. Potential needs of construction materials may require rail transportation, however impacts on rail traffic are not anticipated to be significant.

f)

Potential alterations to traffic circulation during construction may have impacts on potential traffic hazards. Construction activities could result in partial closures of street lanes, sidewalks and bike lanes. These impacts would be temporary. Implementation of traffic control plans will help mitigate potential impacts.

The proposed program would involve the construction of water reclamation facilities and groundwater recharge basins, which are not anticipated to increase hazards as a result of design features.

As site locations of new facilities and facility designs have not yet been finalized, potential traffic hazards are not known. Potential impacts will be evaluated in more detail during project-level analyses.

Mitigation Measures

The following is a list of mitigation measures considered to be reasonably foreseeable for implementation of the proposed program.

- TRANS-1: A Traffic Control/Management Plan, subject to approval by appropriate local jurisdictions, shall be prepared and implemented by the construction contractor prior to commencement of any construction activities. The Traffic Control/Management Plan shall include the following as applicable.

- TRANS-2: The implementing agency of the project shall identify all roadway locations where special construction techniques (e.g., horizontal boring, directional drilling or night construction) could be used to minimize impacts to traffic flow, and implement such techniques when feasible.

- TRANS-3: The implementing agency of the project shall develop traffic management and detour plans to minimize impacts to local street circulation, including bikeways. This may include the use of signing and flagging to guide vehicles and cyclists through and/or around the construction zone.

- TRANS-4: The implementing agency of the project shall encourage construction crews to park at staging areas to limit lane closures in the public ROW.

- TRANS-5: Peak travel periods shall be avoided where possible when implementing partial road closures.

- TRANS-6: The implementing agency of the project shall consult with nearby school districts at least one month prior to construction to coordinate bus stop relocations (if necessary), alternative busing routes, alternative safe routes to school programs, and other traffic circulation provisions to reduce potential interruption of student transit services.

- TRANS-7: The implementing agency of the project shall consult with Caltrans to obtain permits for the transport of oversized loads, and to obtain encroachment permits for any work along roadways.

- TRANS-8: The implementing agency of the project shall require the construction contractor to consult with local jurisdictions if bicycle or pedestrian facilities would be directly affected by construction activities. If required, the construction contractor shall develop circulation and detour plans to minimize impacts to bikeways and pedestrian facilities. This may include the use of signing and flagging to guide vehicles, cyclists, and pedestrians through and/or around the construction zone. After construction is complete, implementing agencies shall ensure that bicycle or pedestrian facilities are restored to pre-construction conditions.

- TRANS-9: The implementing agency of the project shall require the construction contractor to consult and coordinate with VCTC or other local transit agencies at least one month.

5.2.14 Public Service

Would the program have an effect upon, or result in a need for new or altered governmental services in any of the following areas:

a) Fire protection?

b) Police protection?

c) Schools?

d) Parks?

e) Maintenance of public facilities, including roads?

f) Other governmental services?

Implementation of the proposed program is not forecast to change land uses, increase the number of residential units, cause an increase in population or otherwise create activities that would increase demand for public services beyond that anticipated in the existing General Plan and Area Plan. Overall levels of public services will be increased based upon the future population and associated public services demands. As this project will have no population inducing impacts, this project has no potential to impact the need or demand for schools, parks, and other public facilities such as libraries.

Program implementation is not anticipated to warrant additional emergency response services or providers, such as fire or police protection. Project facilities will be required to meet or exceed the minimum standards for the applicable building codes by state law and all local fire ordinances will be followed in design, construction and operation of the proposed project facilities. No potential for any significant demand for fire protection services is identified. The type of facilities being proposed do not have a potential to create new demand for police services and common safety features are anticipated to be implemented, including controlled site access, to prevent illegal trespass to the facilities. No potential for any significant demand for police protection services is identified.

Potentially increased road use resulting from construction activities would be temporary and would not result in substantial impacts to public services.

5.2.15 Energy

Would the program result in:

a) Use of substantial amounts of fuel or energy?

b) Substantial increase in demand upon existing sources of energy, or required the development of new sources of energy?

a and b)

Construction activities related to implementation of the program would require fuel and energy, including for heavy equipment and vehicles. Energy demands during construction will be temporary and are not anticipated to result in substantial use or substantial increases in demands. Mitigation measures implemented to address air quality and greenhouse gas concerns will help mitigate impacts on fuel and energy demands, including use of energy efficiency vehicles and equipment.

Operational energy demands for existing facilities are not anticipated to be substantially greater upon implementation of upgrades. Operation of new facilities could result in substantial use and increases in energy demands for the treatment of wastewater. However, the amount of energy use and potential increase in energy demands will highly depend on facility design details as new facilities and facility upgrades may incorporate renewable energy sources.

More details on potential impacts on energy use will be determined during project-level analyses.

5.2.16 Utilities and Service Systems

Would the program result in a need for new systems or substantial alterations to the following utilities:

a) Power or natural gas?

b) Communications systems

c) Water?

d) Sewer or septic tanks?

e) Stormwater drainage?

f) Solid waste and disposal?

a)

As described above, the potential impacts on energy demands, including power and natural gas systems, will be determined through project-level analyses as design details are not yet available for program elements.

b)

Program implementation is not anticipated to result in the need of new or alterations to existing communication systems. Program activities, including but not limited to facility construction and operations, will make use of existing communication systems without resulting in the need for expansion.

c and d)

The proposed program will result in an increased availability of local water supplies by expanding the use of recycled water. Construction activities may require additional water use for activities such as dust control, however these impacts on existing water supplies would be minimal.

This program involves the construction and expansion of wastewater treatment facilities in order to expand recycled water use. Program implementation would not generate any wastewater or indirectly result in increased wastewater production. Overall program impacts will be positive on existing water and wastewater systems.

e)

The proposed program is not anticipated to result in substantial increases in stormwater runoff, which would require additional stormwater drainage capacity. As a result, program implementation will not result in a need for new or alterations to existing stormwater drainage systems. However, specific projects or individual project designs, may involve alterations of existing stormwater drainage systems for purposes of stormwater capture and enhanced runoff infiltration. These changes would provide positive benefits to existing stormwater drainage systems.

f)

The proposed program would not have substantial solid waste disposal needs. Minor amounts of solid waste are anticipated to be generated during construction activities. Disposal of this waste would occur in accordance with federal, state, and local regulations. Disposal would occur at permitted landfills, and construction contractors would be encouraged to recycle construction materials, as feasible.

5.2.17 Human Health

Would the program result in:

a) Creation of any health hazard or potential health hazard (excluding mental health)?

b) Exposure of people to potential health hazards?

a and b)

As described above, program activities have the potential to create human health hazards, such as through accidental hazardous materials or chemical exposure, geologic or water related hazards, or traffic hazards. However, implementation of mitigation measures associated with these potential hazards, and compliance with all applicable laws and regulations would reduce potential human health risks to less than significant.

One hazard not discussed above is potential wildfire hazards. The study area is susceptible to wildland fires because of its hilly terrain, dry weather conditions, and native vegetation. The Los Angeles County Fire Hazard Severity Zones map shows that a large portion of the area is located within Very High Fire Hazard Severity Zones. The Fire Department has adopted programs directed at wildland fire prevention, including adoption of the State Fire Code standards for new development in hazardous fire areas. Project implementation will be consistent with local plans and ordinances, which require facilities within fire hazard areas to maintain defensible space around structures by clearing dry brush and vegetation. Project design will incorporate other fire hazard reduction measures, including landscape guidelines with recommended plant materials.

Compliance with existing policies and ordinances will ensure that potential risks are less than significant.

5.2.18 Aesthetics

Would the project result in:

a) The obstruction of any scenic vista or view open to the public?

b) The creation of an aesthetically offensive site open to public view?

a and b)

A scenic vista may be described as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. The diverse topography of the Santa Clarita Valley, which encompasses the study area, provides numerous scenic views and resources including mountain backdrops, hillsides and ridgelines, canyons and streams, natural open spaces, as well as greenbelts and parks within the built environment.

Implementation of the proposed program may create temporary impairment and obstruction of scenic vistas, as a result of the implementation of program components involving construction activities. Temporary ground disturbance and the presence of construction equipment and materials maybe visible from public vantage points, however these impacts would be temporary. The impact from construction on scenic vistas are anticipated to generally be localized and short-term, lasting for the duration of construction activities.

It is expected that program elements requiring construction may occur within already developed, urban areas, or relatively undeveloped settings. In urban settings, structures could be designed with aesthetic qualities consistent with existing structures in the vicinity in order to reduce impacts to scenic vistas. In undeveloped settings, facilities would generally be somewhat removed from public thoroughfares, which would reduce impacts to views from the public. Overall, efforts will be encouraged to locate facility improvements and construction in a way to minimize impacts on the area’s aesthetic resources and scenic vistas. Additionally, revegetation of graded areas with native vegetation will help blend developed areas with natural spaces.

New facilities or facility upgrades are anticipated to be consistent with features of existing buildings, consistent with existing building codes and under consideration of aesthetics. As a result, the creation of an aesthetically offensive site will not occur.

Measures will be taken to reduce impacts on the visual character and quality, to the extent possible, including locating projects in a way to minimize visual and aesthetic impacts, and implementation of revegetation and landscaping of any disturbed landscapes in order to blend those area with existing visual character and quality of the site.

Mitigation Measures:

The following is a list of mitigation measures considered to be reasonably foreseeable for implementation of the proposed program.

- AES-1: Staging of construction equipment and materials shall be conducted in such a way as to minimize the visual impact from adjacent viewing areas to the extent practicable. This may be accomplished by utilizing the minimum area needed for staging, confining all overnight staging of equipment and materials to designated areas and use of visual screening. This measure shall be included in contractor bid specifications.

- AES-2: Proposed aboveground buildings/structures shall be designed to be consistent with the aesthetic qualities of existing structures in the vicinity to minimize contrasting features.

- AES-3: A revegetation plan shall be prepared during project design and implemented as soon as practical upon project completion, in areas where natural vegetation will be impacted from earth-disturbing activities. The revegetation plan shall be prepared and implemented with the objective of restoring disturbed areas to pre-project conditions or better to minimize impacts on aesthetic and scenic resources.

- AES-4: Newly constructed facilities shall be sited, to the extent practical, in such as manner that minimizes impacts on topography and overall scenic resources.

5.2.19 Recreation

Would the project result in an:

a) Impact upon the quality or quantity of existing recreational opportunities?

The proposed program and individual projects would not increase the use of existing recreational opportunities, including parks or other recreational facilities, and would not introduce new housing or population that would increase demand on such opportunities. The program does not require the construction or expansion of recreational facilities. Accordingly, there would be no recreation-related impacts.

5.2.20 Archaeological/Historical

Would the project:

a) Result in the alteration of a significant archaeological or historical site structure, object or building?

Construction activities associated with the proposed program that require ground disturbance and excavation have the potential to impact archaeological and historical resources.

The study area was pre-historically inhabited by Native American groups, identified as the Tataviam peoples. The Tataviam were found to have lived primarily on the upper reaches of the Santa Clara River, east of Piru Creek and extending from the Antelope Valley to the San Gabriel

Mountains. The Native American Heritage Commission (NAHC) has identified three sites of Native American cultural significance near the Santa Clara River, registered as CA-LAN-361, CA-LAN-366, and CA-LAN-367. In addition, research indicates that almost 70 Native American archeological sites have been identified near the Upper Santa Clara River.

The study area is also rich in other historical sites that are under preservation and protection by the City of Santa Clarita and County of Los Angeles. Numerous significant historical properties, sites and landmarks exist in the study area, including at least one listed on the National Register of Historic Places and 13 recognized by the State of California (LA County, 2012).

Program activities that result in land disturbance, such as grading or excavation, have the potential to make a thorough historic resources evaluation an essential part of the project-specific review process. The cultural resources analysis will be included as a mitigation measure in order to avoid and/or minimize impacts to these cultural resources.

Historic buildings would not be damaged or altered with implementation of the program.

Mitigation Measures

The following is a list of mitigation measures considered to be reasonably foreseeable for implementation of the proposed program.

- CUL-1: The implementing agency shall retain a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional qualifications in archaeology, to conduct a study of the potentially impacted area(s) for all individual projects that involve ground disturbance. The archaeologist shall conduct a cultural resources inventory designed to identify potentially significant resources. This inventory would be developed based on a cultural resources records search conducted at the South Central Coastal Information Center located at California State University Fullerton and a field survey of the area deemed appropriate by the archaeologist. The archaeologist shall also provide recommendations for additional work for those resources that may be affected by a proposed project.

- CUL-2: For project components that include or affect existing structures that are 50 years old or greater, the implementing agency shall retain a qualified architectural historian, defined as meeting the Secretary of the Interior's Standards for historic preservation, to determine the need for a project-specific historic architectural study. If warranted, the architectural historian shall identify and evaluate potentially affected historic resources (eligible for the National Register, California Register, or local designation) prior to project implementation.

- CUL-3: The implementing agency shall avoid impacts, if feasible, to identified cultural resources that are eligible for listing in the National Register, California Register, or local designation, or that qualify as a unique archaeological resource under CEQA, including prehistoric and historic archaeological sites, locations of importance to Native Americans, human remains, and historical buildings, structures and landscapes. Methods of avoidance may include, but should not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. If avoidance is determined not to be feasible, then a qualified archaeologist shall develop and implement a cultural resources treatment plan. This treatment plan shall include provisions for analysis of data in a regional context, curation of artifacts and data at an approved facility, and dissemination of reports to Local and State repositories, libraries, and interested professionals.

- CUL-4: The implementing agency shall retain archaeological monitors (and Native American monitors, where deemed appropriate) to assess project-related ground-disturbing activities that have the potential to impact significant archaeological resources as determined by a qualified archaeologist. If appropriate, a qualified archaeologist shall develop a Cultural Resources Monitoring and Mitigation Plan (CRMMP). The CRMMP shall specify the location, duration and timing of monitoring and establish emergency procedures applicable upon the potential discovery of unanticipated significant archaeological resources. The CRMMP shall include, at a minimum, procedures for: the re-direction of ground disturbing activities in the event of a discovery of unanticipated significant archaeological resources; the evaluation and protection of archaeological resources encountered; notification protocols; treatment options in the event avoidance is determined to be infeasible; and reporting.

- CUL-5: For all individual projects that involve ground disturbance, construction workers will receive paleontological awareness training prior to commencement of fieldwork. This training shall emphasize applicable State, Federal, and Local laws, and include information on what to do in case an unanticipated discovery is made by a field worker. All construction personnel shall be informed of the possibility of encountering fossils, and instructed to immediately inform the field supervisor if any bones or other potential fossils are unearthed in the project area and a paleontological monitor is not present (for example, if a sensitive formation is encountered subsurface that is not mapped at the surface, thus not necessitating the presence of a paleontological monitor for this work). In such a case, workers shall immediately cease all activity within a 20-foot radius of the discovery site and notify the Construction Manager.

- CUL-6: For all individual projects that involve ground disturbance, if human remains are discovered, work in the immediate vicinity of the discovery site shall promptly be suspended and the Los Angeles County Coroner shall be contacted. If the remains are deemed Native American in origin, the Coroner shall contact the NAHC and identify a Most Likely Descendant (MLD) pursuant to Section 5097.98 of the PRC and CEQA Guidelines (CCR, Title 14, Section 15064.5). Work may commence only after consultation and treatment have been completed. Work may continue on other parts of the project while consultation and treatment are conducted.

5.2.21 Greenhouse Gas Emissions

Would the project:

a) Generate greenhouse gas emissions directly or indirectly and cause a significant impact?

b) Conflict with adopted plans or policies for the purpose of reducing greenhouse gases?

a) and b)

Potential greenhouse gas impacts from program implementation may result from short-term emissions from construction activities in addition to long-term emissions from operation of new facilities and/or equipment.

During construction, temporary emissions may be generated from the following construction activities: (1) site preparation, grading, and excavation; (2) construction worker travel to and from construction sites; (3) delivery and hauling of construction supplies to and debris from the construction site; (4) fuel combustion by on-site construction equipment; and (5) construction of structures, installation of equipment, paving and landscaping. Temporary air emissions would be related to fumes, primarily nitrous oxides (NOx), from diesel-powered construction vehicles and equipment, fugitive dust (PM2.5 and PM10) from soil disturbance, and volatile organic compounds (VOCs) from paving and application of architectural coatings.

Amounts of emissions generated on a daily basis would vary, depending on the intensity and types of construction activities and construction schedule of individual projects. Detailed emissions analyses will be conducted on a project-specific basis during project-specific environmental review process. Specific mitigation measures to minimize and/or avoid air quality impacts would also be identified during that process.

Facility operations from implementation of the proposed program are not anticipated to result in significant long-term air quality impacts. Potential emission sources of operational activities could primarily include emissions from powering of new facilities and vehicular trips for facility maintenance and operation. Collectively, proposed program projects are not anticipated to result in large numbers of new employees, and therefore related additional vehicle emissions would be minimal. Similarly to construction activity emissions, details on operational emissions will be obtained during project-level analyses and review.

It is important to note that the proposed program will be implemented with the intention of increasing recycled water use, which can reduce and off-set demand on imported water supplies. Imported water supplies, such as State Water Project water which is used in the region, are generally energy intensive and can produce accordingly high levels of greenhouse gas and other air emissions. By contributing to reducing demands on imported water supplies, the proposed program may have beneficial impacts on air quality by reducing emissions associated with water supply imports.

Project-level review, which will involve detailed analyses of greenhouse gas emissions and air quality impacts will provide more details on potential impacts from project-emissions. The study area is located within the South Coast Air Basin under the jurisdiction of the South Coast Air Quality Management. During project-level review, emission analyses would consider SCAQMD suggested emissions thresholds.

It is not anticipated that the proposed program would result in the alteration of air movement, moisture or temperature. However, program activities may generate greenhouse gas (GHG) emissions from a variety of sources, which are known to contribute to climate changes at various scales including regional. The use of recycled water will have a net benefit on GHG emissions due to decreased need to pump and treat imported water. Project-level emissions analyses will provide details on potential GHG emission levels and specific mitigation measures to minimize and/or avoid emissions impacts would also be identified during that process.

Mitigation Measures Air-1 through Air-9 are recommended to reduce potential greenhouse gas impacts to less than significant.

5.3 Mandatory Findings of Significance

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

The program is anticipated to result in a less than significant impact with mitigation incorporated.

Implementation of the proposed program will be consistent with existing local, State and federal regulations and policies that ensure that the program will not have significant adverse impacts on the environment, including fish, wildlife and plant communities in the study area. Numerous mitigation measures are anticipated to be implemented in order to minimize and avoid potential impacts on biological resources.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

The program is anticipated to result in a less than significant impact with mitigation incorporated.

Potential impacts identified in this SED are primarily short-term impacts from construction activities. These short-term impacts would not result in cumulatively considerable impacts. Potential long-term impacts are mostly minor and are not likely to contribute to incremental effects that would be cumulatively considerable. In both cases, mitigation measures are anticipated to be implemented in order to reduce impacts to less than significant.

An important factor in minimizing cumulative impacts is compliance with local planning documents and ordinances. These guidance documents and policies are aimed at allowing development while maintaining and protecting the existing resources in the area and community character. Program implementation is anticipated to be consistent with local planning documents and policies, as well as State and federal regulations. As a result, potential impacts would be reduced to less than significant and are less likely to result in cumulatively considerable impacts.

The following summarizes the potential for cumulatively considerable impacts by resource.

Aesthetics

The proposed program is not anticipated to have significant impacts on aesthetics. Scenic resources may be temporarily impacted during construction activities, however, mitigation measures will be implemented to reduce impacts. To the extent possible, project siting and design will occur in a way to minimize visual and aesthetic impacts and help blend in facilities with existing visual character and quality of the site.

Agricultural Resources

Program implementation is not anticipated to result in significant impacts on agricultural resources, including converting farmland to non-agricultural uses. Potential impacts will be evaluated on a project-level based on individual project design and location.

Air Quality

The proposed program would increase air emissions, however most significant impacts will be short-term during construction activities. Long-term operational emission increases are anticipated to be minimal and would likely lie below significance thresholds.

Biological Resources

As mentioned above, implementation of the proposed program will be consistent with existing local, State and federal regulations and policies which will help ensure that the program will not have significant adverse impacts on biological resources. Potential impacts will be mitigated to less than significant and not likely to contribute to cumulatively considerable impacts.

Cultural Resources

Some individual projects may require land disturbance, thereby creating the potential to reveal and impact previously unidentified cultural resources. However, mitigation measures will be implemented to ensure any human remains or other potentially valuable cultural resources are appropriately handled in the unlikely event that they are unearthed.

Geology and Soils

The study area is located in a seismically active area. Appropriate mitigation measures have been proposed to avoid and lessen seismic hazards. Program implementation would not contribute to cumulatively considerable impacts on these resources.

Greenhouse Gas Emissions

The proposed program would increase air emissions and potentially greenhouse gas emissions, however most significant impacts will be short-term during construction activities. Long-term operational emission increases are anticipated to be minimal and would likely lie below significance thresholds.

Hazards and Hazardous Materials

The program will involve use, transport and storage of potentially hazardous materials during the construction and operation phase. Potential impacts are anticipated to be less than significant and are not likely to result in cumulatively considerable impacts. However, mitigation measures will be implemented to ensure appropriate handling of hazardous materials are included with the project and will avoid significant impacts.

Hydrology and Water Quality

The program is not anticipated to result in significant impacts on hydrology or water quality. Implementation of the project is in fact anticipated to create positive water quality benefits by reducing salt and nutrient loads in wastewater discharges. Compliance with applicable regulations, including stormwater pollution prevention programs, will help reduce potential construction-related impacts to less than significant levels. Program implementation will have net positive benefits on groundwater supplies. Implementation measures include groundwater recharge activities that would directly replenish groundwater supplies. In addition, expanded recycled water use, which is the primary objective of program implementation, will augment local water supplies thereby helping to reduce pressures on existing groundwater supplies.

Any changes to groundwater operations are not anticipated to result in substantial and/or negative impacts to the direction or rate of groundwater flows. However, the increased use of recycled water that would otherwise displace imported water for irrigation use and would decrease slightly the amount of water being discharged to the Santa Clara River. An Indirect Potable Reuse project has the potential to change the location of effluent discharge, but then in return will capture most of that water in potable wells in another location. This is considered less than significant and will largely displace greater imported water in the future as opposed to reducing current flow levels.

Overall impacts are not anticipated to contribute to cumulatively considerable adverse impacts.

Land Use and Planning

As implementation of the proposed program is anticipated to occur consistent with existing local land use planning, the program is not anticipated to have significant impacts, either stand-alone or cumulatively.

Mineral Resources

No impacts are anticipated with program implementation. Hence, no cumulatively considerable impacts are anticipated.

Noise

The proposed program would create and increase noise, however it is not anticipated that noise associated with individual projects would noticeably increase the ambient noise levels or generate noise levels in excess of local noise criteria. Greatest noise impacts will occur during construction, which are short-term impacts. Project-level review would identify necessary mitigation measures to reduce potential impacts to less than significant.

Population and Housing, Public Services, Recreation

Implementation of the proposed program is not anticipated to change land uses, increase the number of residential units, induce population growth or otherwise result in an increase in demand for public services or facilities. No cumulatively considerable impacts are therefore expected.

Transportation/Traffic

The proposed program would add temporary construction traffic and minor additional traffic during operations. These additions are anticipated to be minor in comparison to roadway capacity or significantly impact the local Level of Service (LOS) standard.

Utilities and Service Systems

Minor amounts of solid waste are anticipated to be generated during construction activities. Disposal of this waste would occur in accordance with federal, state, and local regulations. Disposal would occur at permitted landfills, and construction contractors will be encouraged to recycle construction materials as feasible. The program does not involve new housing or induce population growth, which would increase demands on potable water or wastewater capacity. Rather, the program will involve construction of new wastewater treatment facilities and facility expansions to increase recycled water use and increase local water supply reliability.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The program is anticipated to result in a less than significant impact with mitigation incorporated. Therefore, no identified substantial adverse effects on human beings are anticipated to occur, either directly or indirectly.

Section 6: Other Environmental Considerations for the Recommended Program Alternative

This section provides an overview of other environmental considerations for the recommended program alternative (Program 3), including unavoidable significant environmental potential impacts, cumulative impacts, growth-inducing impacts and irreversible environmental impacts.

6.1 Cumulative Impacts

On a program-level, implementation of the proposed program is not anticipated to result in cumulatively considerable impacts. In the case that construction of all program-related projects occurred during the same timeframe, and/or if other non-SNMP projects were being implemented at the same time, cumulative impacts may occur. However, actual cumulative impacts will depend on the locations of individual projects and nature of work occurring simultaneously. Additionally, construction-related impacts are generally short-term in nature, thereby reducing the likelihood of significant impacts.

Cumulative impacts in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects were discussed in Section 5.3.

6.2 Unavoidable Significant Environmental Effects

Based on the environmental impact evaluation presented in this SED, program implementation is not anticipated to result in any unavoidable significant environmental effects, or otherwise significant impacts that cannot be reduced to less than significant levels through mitigation measures.

6.3 Significant Irreversible Environmental Changes

According to CEQA Guidelines (CCR, Section 15126.2 [c]), potential significant, irreversible changes may include commitment of nonrenewable resources to uses that future generations will not be able to reverse, irreversible damage that may result from accidents associated with a project, or irretrievable commitment of resources.

Although program implementation would require resources, such as construction materials and energy resources, their use would not represent a substantial commitment of resources. In addition, the proposed program will be implemented with the objectives of increasing recycled water use to enhance local water supplies, as well as managing salts and nutrients in the basin to improve water quality. Therefore, implementation of the program will result in potentially significant environmental benefits and may avoid or mitigate against irreversible changes to environmental quality that could occur if the program was not implemented.

6.4 Growth-Inducing Impacts

Implementation of the proposed program will not have growth-inducing impacts, including foster economic or population growth, or result in the construction of additional housing.

The creation of jobs in the region or elsewhere as a result of construction, operations, and maintenance activities would be minor.

Growth-inducing impacts are defined by the State CEQA Guidelines as (CEQA Guidelines, Section 15126.2(d)):

The ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are impacts which would remove obstacles to population growth. Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects... [In addition,] the characteristics of some projects… may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It is not assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Growth inducement could indirectly result in adverse environmental effects if the induced growth is not consistent with or accommodated by the land use plans and growth management plans and policies. Local land use plans provide for land use development patterns and growth policies that encourage orderly urban development supported by adequate public services, such as water supply, roadway infrastructure, sewer services, and solid waste disposal services.

Public works projects that are developed to address future unplanned needs (i.e., that would not accommodate planned growth) could result in removing obstacles to population growth. Direct growth inducement would result if, for example, a project involved the construction of new wastewater treatment facilities to accommodate populations in excess of those projected by local or regional planning agencies. Indirect growth inducement would result if a project accommodated unplanned growth and indirectly established substantial new permanent employment opportunities (for example, new commercial, industrial, or governmental enterprises) or if a project involved a construction effort with substantial short-term employment opportunities that would indirectly stimulate the need for additional housing and services. Growth inducement also could occur if the project would affect the timing or location of either population or land use growth, or create a surplus in infrastructure capacity.

Implementation of the program will help increase local water supply reliability, which is often a limiting factor in growth. The increase in recycled water supplies resulting from program implementation will make additional potable water supplies available. However, additional water supplies are not anticipated to induce growth. Rather, the planned additional supplies will help sustain the existing population as well as the projected population. The projected population is based on continuation of baseline conditions.

Population growth is growth in the number of persons that live and work in the USCR SNMP planning area. Population growth occurs from natural causes (births minus deaths) and net emigration to or immigration from other geographical areas. Emigration or immigration can occur in response to economic opportunities, life style choices, or for personal reasons.

Although land use growth and population growth are interrelated, land use and population growth could occur independently from each other. This has occurred in the past where the housing growth is minimal, but population within the area continues to increase. Such a situation results in increasing population densities with a corresponding demand for services, despite minimal land use growth.

Overall, development in the Santa Clarita Valley and USCR SNMP planning area is governed by the General Plans adopted by the County and the City of Santa Clarita, which are intended to direct land use development in an orderly manner. The County or city's General Plan is the framework under which development occurs, and, within this framework, other land use entitlements (such as variances and conditional use permits) can be obtained. Because the General Plan adopted by a city or the County guides land use development and allows for entitlements, it does not represent an obstacle to land use growth.

Implementation of measures that require construction would generate jobs throughout the region and elsewhere where goods and services are purchased or used to develop new facilities or upgrade existing facilities. It should be noted that the construction projects are generally temporary in nature and would likely occur in discrete segments throughout the region as opposed to one continuous project. As a result the alternatives would generate employment opportunities both directly and indirectly.

Although the construction activities associated with implementation of management measures would increase the economic opportunities in the area and region, this construction is not expected to result in or induce substantial or significant population or land use development growth because the majority of the new jobs that would be created by this construction are expected to be filled by persons already residing in the area or region, based on the existing surplus of unemployed persons in the area and region. This also would not generate substantial or significant population or land use development growth because these facilities are not anticipated to require a large number of employees for operation and maintenance.

The second area of potential indirect growth inducement is through the removal of obstacles to growth. As discussed above, obstacles to growth could include lack of water supply to allow land development or population growth to occur. The objective of the proposed SNMP is management of salt and nutrient loading in the groundwater basin resulting from implementation of recycled water projects. These projects would provide additional sources of water within the LSCR groundwater basin and could remove an obstacle to future growth within the region particularly with cycles of drought. However, in many cases these projects could replace existing sources of water supply, such as groundwater pumping or imported water. As such, while implementation of the proposed SNMP could cause some indirect growth inducement in general it is anticipated that the recycled water projects facilitated by the implementation of the SNMP would provide alternate sources of water to replace some existing supplies.

Section 7: Determination and Findings

The LARWQCB staff, with assistance from the SNMP stakeholders evaluated the Recommended Program Alternative against the potentially significant environmental effects identified in this SED to determine whether to recommend it for approval. Upon review of the environmental information generated for this program level CEQA analysis and in view of the entire record supporting the Recommended Program, LARWQCB staff has determined that the identified potential environmental effects can be mitigated such that significant adverse environmental impacts associated with the implementation of the Program would be less than significant.

The implementation of the proposed Basin Plan Amendment will result in improved groundwater quality in the Santa Clara River Valley East Sub-basin and will have significant positive impacts to the environment (including the preservation of groundwater beneficial uses) and the economy over the long term. Additionally, the program level CEQA analysis further concludes that when the Program is implemented in combination with non-SNMP projects in the region, there would be less than significant cumulative impacts on the environment.

The Santa Clara River Valley East Sub-basin SNMP, Basin Plan Amendment, and this SED provide the necessary information pursuant to PRC Section 21159 to conclude that when properly designed and implemented, the recommended Program generally should not have a reasonably foreseeable significant adverse effect on the environment. As specific projects are implemented under the Program, subsequent and separate project level CEQA assessments would occur where applicable and necessary. Any project specific potential environmental impacts would be identified through the subsequent project level CEQA process and the implementing agencies (i.e. SNMP stakeholders) would be responsible for identifying the recommended mitigation measures. In accordance with CEQA, the lead agency for each project would be responsible for mitigating all the significant environmental impacts they identify, unless they have reason not to do so.

This program level CEQA assessment identifies all reasonably foreseeable impacts and provides mitigation measures that can be applied to individual projects associated with the Program in order to reduce impacts below significance thresholds. In addition, in the event that project level CEQA assessments identify unavoidable or immitigable impacts that would present unacceptable hardship upon nearby receptors, venues, or resources, the implementing agencies would have a variety of alternative SNMP implementation measures available that could be used instead to avoid such unavoidable or immitigable impacts.

On the basis of this initial evaluation and staff report for the Upper Santa Clara River Salt and Nutrient Management Plan (USCR SNMP), which collectively provide the required information:

☐ I find the proposed Basin Plan amendment could not have a significant effect on the environment.

☐ I find that the proposed Basin Plan amendment could have a significant adverse effect on the environment. However, there are feasible alternatives and/or feasible mitigation measures that would substantially lessen any significant adverse impact. These alternatives are discussed above and in the staff report for the USCR SNMP.

☐ I find the proposed Basin Plan amendment may have a significant effect on the environment. There are no feasible alternatives and/or feasible mitigation measures available which would substantially lessen any significant adverse impacts. See the attached written report for a discussion of this determination.

DATE: ______________________

___________________________________ ___________________________________

INSERT NATE INSERT TITLE

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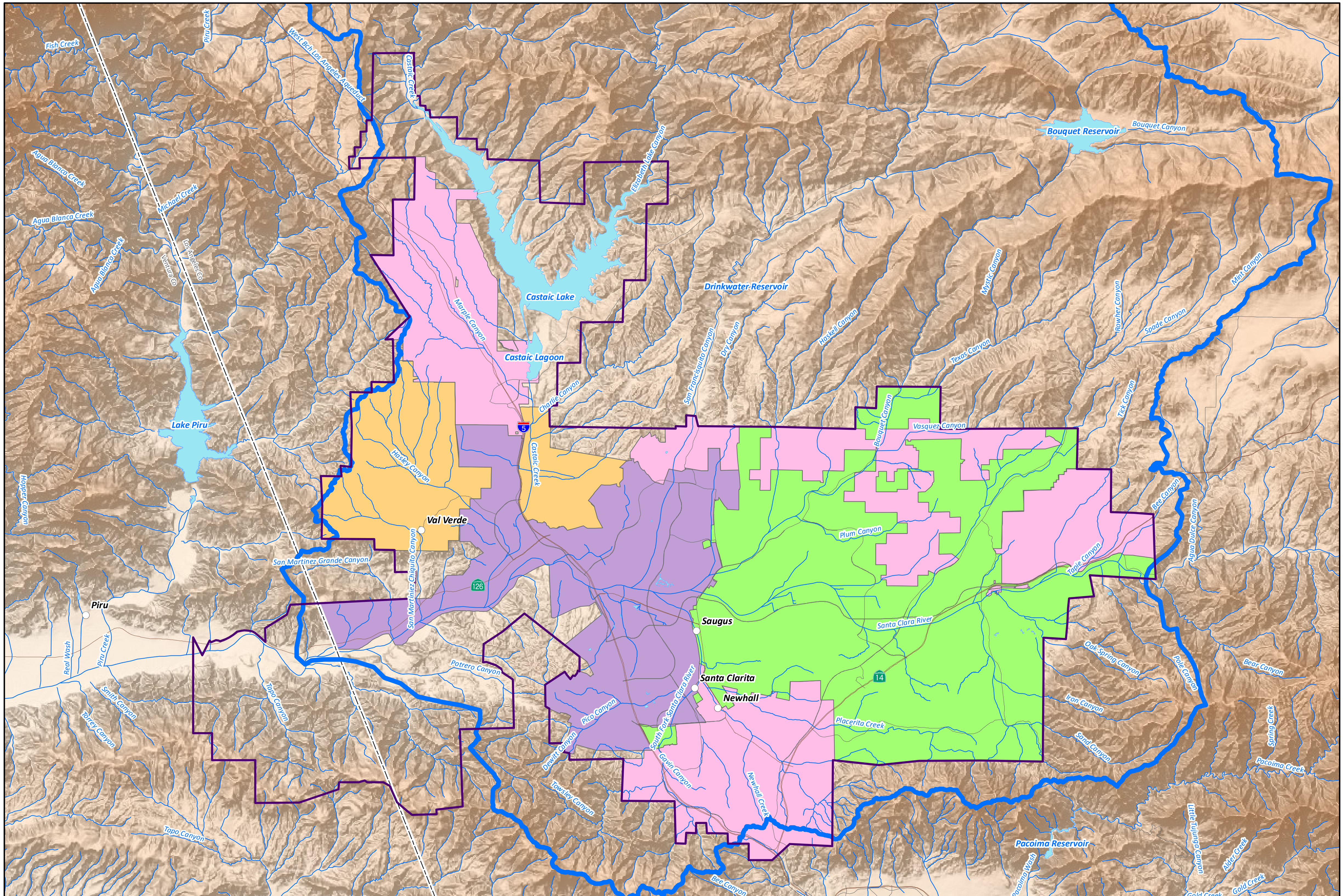
Appendix A: Figures

CASTAIC LAKE WATER AGENCY

SALT AND NUTRIENT MANAGEMENT PLAN
SANTA CLARA RIVER VALLEY EAST SUBBASIN



CASTAIC LAKE WATER AGENCY SERVICE AREA AND OTHER WATER PURVEYORS

EXPLANATION

- Castaic Lake Water Agency Boundary
- Santa Clara River East Subbasin Watershed
- LA County Waterworks District No. 36 - Val Verde Boundary
- Newhall County Water District Boundary
- Santa Clarita Water Division Boundary
- Valencia Water Company Boundary

California County Inset

19-Nov-15

Prepared by: DB. Map Projection: State Plane 1983, Zone V.

NORTH

0 1.5 3 6 Miles

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DRAFT FINAL

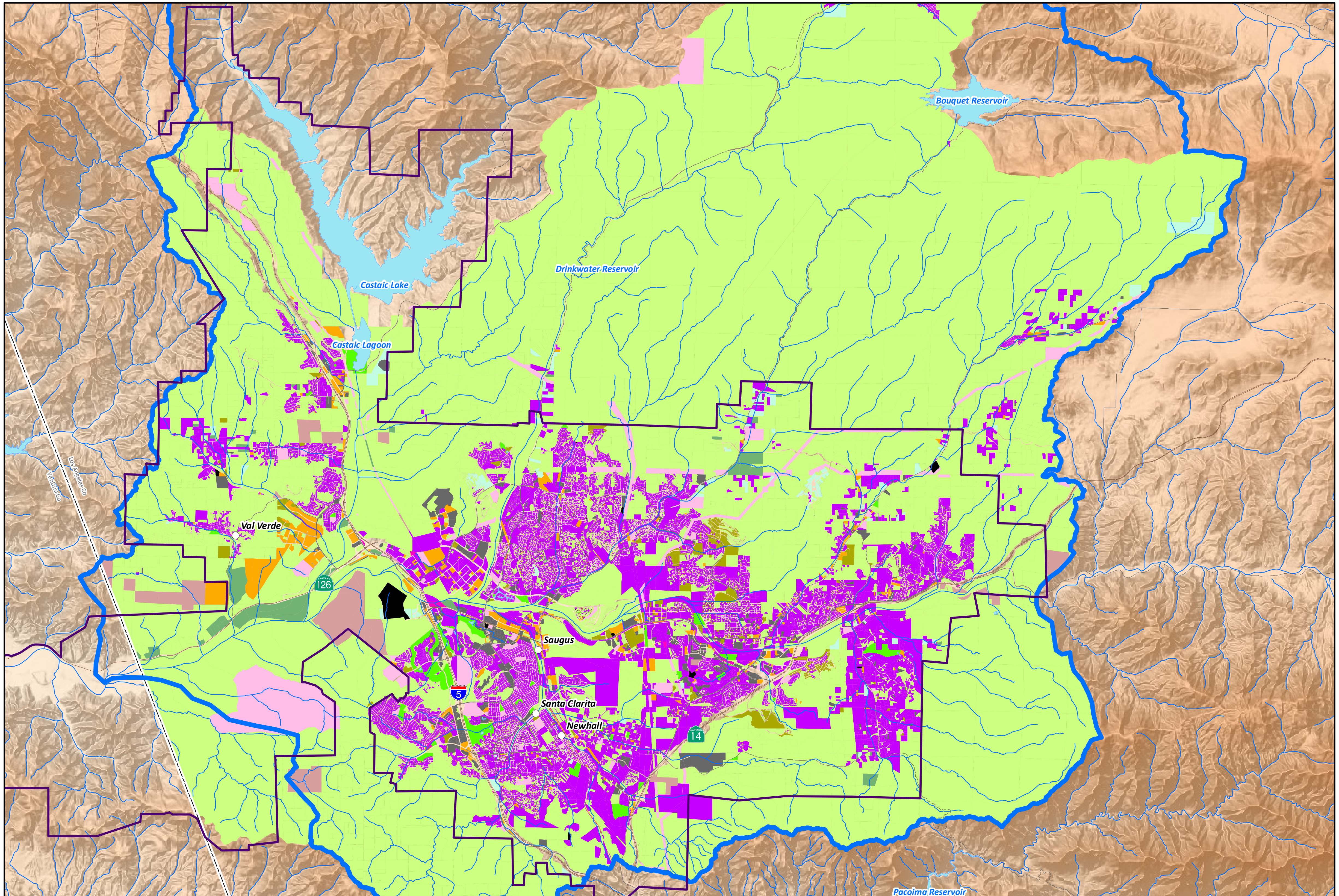
Figure 1

GIS_proj/castaic_lake_SNMP_6-12/19_CastaicSNMP_Fig_1_water_purveyors_11-15.mxd

CASTAIC LAKE WATER AGENCY

SALT AND NUTRIENT MANAGEMENT PLAN
SANTA CLARA RIVER VALLEY EAST SUBBASIN

2008 SCAG LAND USE



EXPLANATION

Castaic Lake Water Agency Boundary

Santa Clara River East Subbasin Watershed

2008 SCAG (Southern California Association of Governments) Land Use

- Agriculture
- Commercial
- Commercial Recreation
- Impervious
- Industrial
- Industrial - Open Space
- Non-Irrigated Agriculture
- Open Space
- Parks/ Golf Courses
- Public Facilities
- Residential
- Unclassified

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NORTH

0 1 2 4 Miles

19-Nov-15

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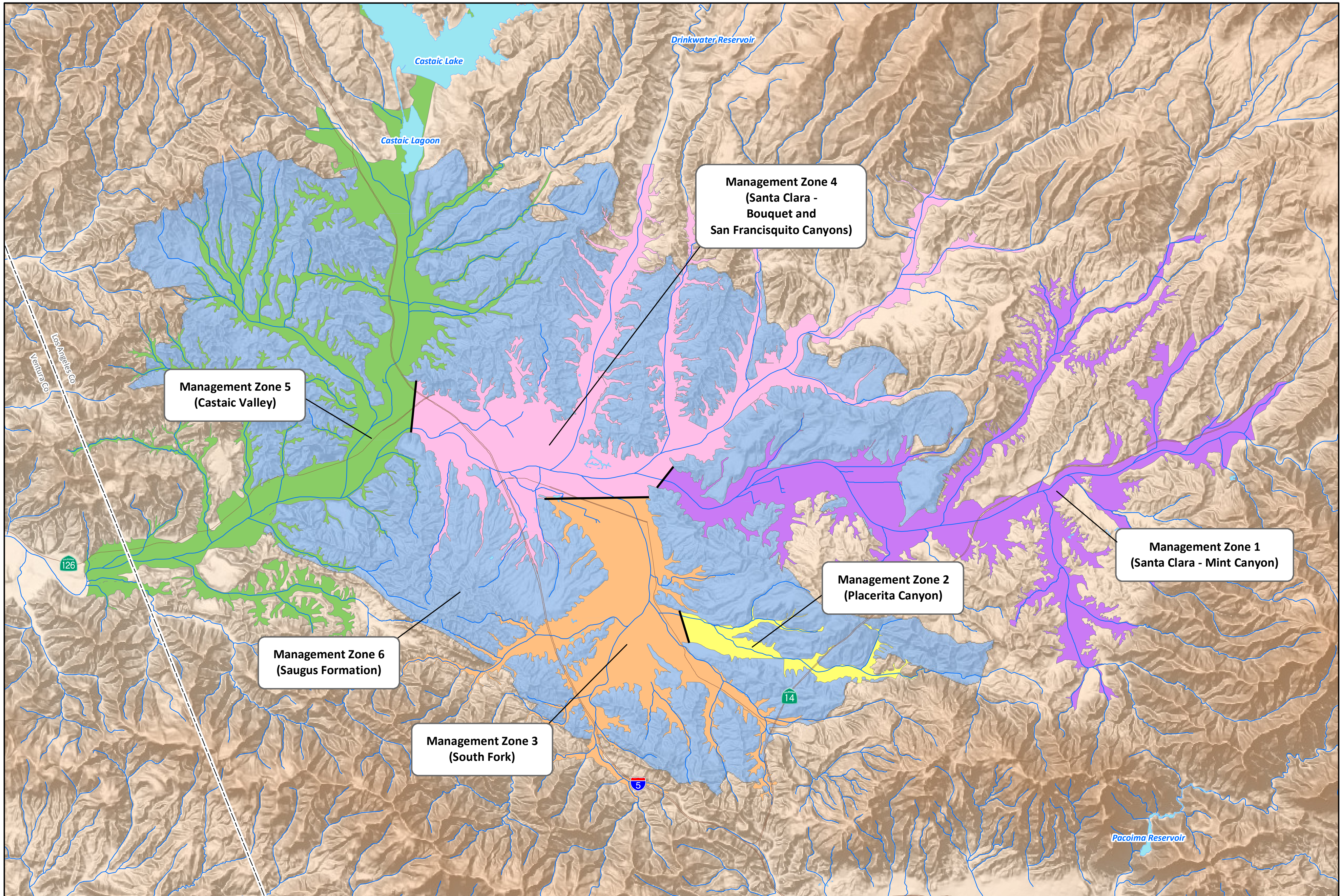
Figure 2

GIS_proj/castaic_lake_SNMP_6-12/19_CastaicSNMP_Fig_2_landuse_11-15.mxd

CASTAIC LAKE WATER AGENCY

SALT AND NUTRIENT MANAGEMENT PLAN
SANTA CLARA RIVER VALLEY EAST SUBBASIN

EAST SUBBASIN GROUNDWATER MANAGEMENT ZONES ALLUVIAL AQUIFER AND SAUGUS FORMATION



EXPLANATION

LARWQCB Groundwater Subunit

- Management Zone 1 (Santa Clara - Mint Canyon)
- Management Zone 2 (Placerita Canyon)
- Management Zone 3 (South Fork)
- Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
- Management Zone 5 (Castaic Valley)
- Management Zone 6 (Saugus Formation)
- Boundary Between Adjacent Management Zones

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19-Nov-15

Prepared by: DB. Map Projection: State Plane 1983, Zone V.

NORTH

0 1 2 4 Miles

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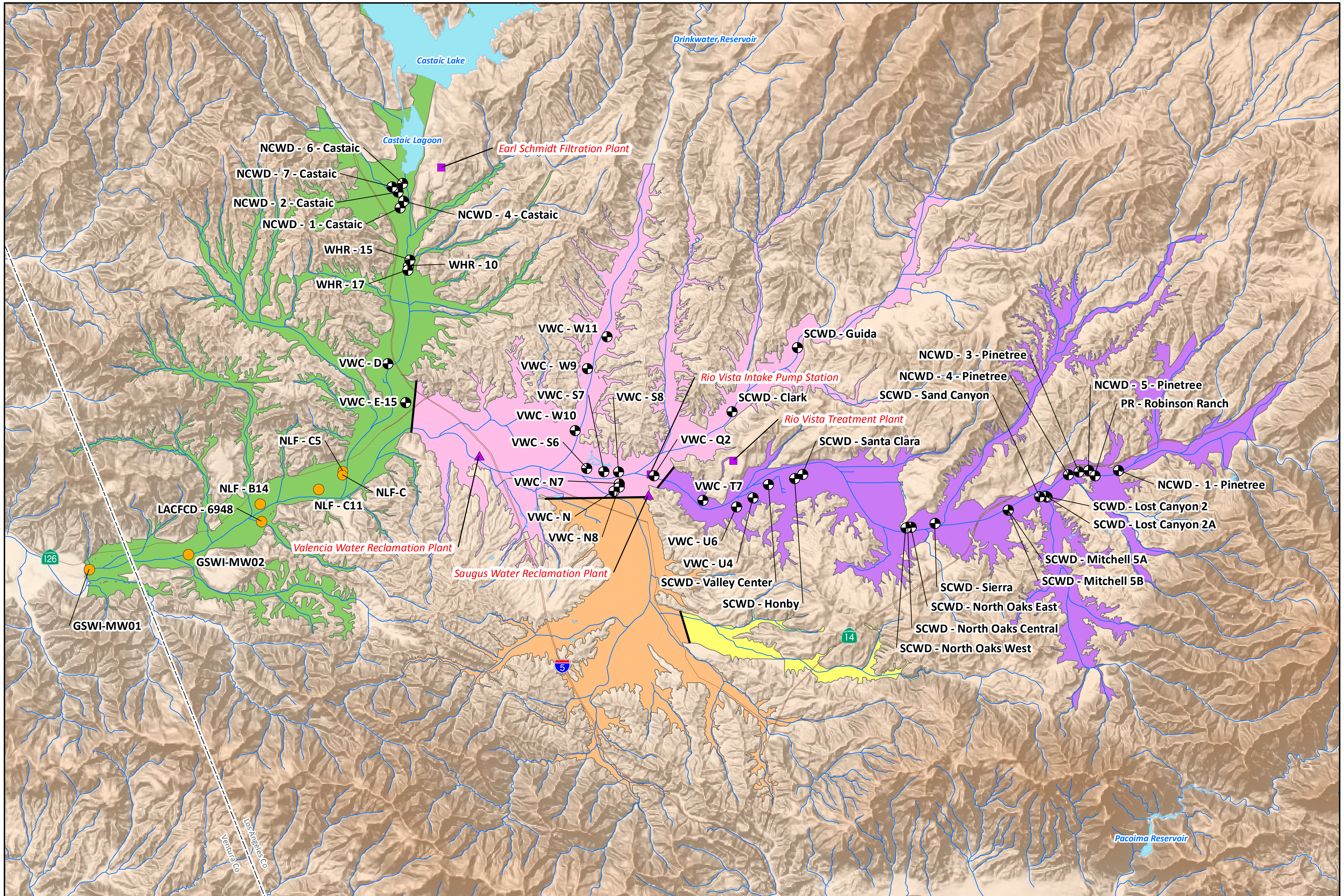
Figure 3

GIS_proj/castaic_lake_SNMP_6-12/19_CastaicSNMP_Fig_5_Subunits_11-15.mxd

CASTAIC LAKE WATER AGENCY

SALT AND NUTRIENT MANAGEMENT PLAN
SANTA CLARA RIVER VALLEY EAST SUBBASIN

ALLUVIAL AQUIFER WELLS



EXPLANATION

Alluvial Aquifer Wells by Owner

- Active Municipal Well
- Active Monitoring Well

LACFCD = LA County Flood Control District
NCWD = Newhall County Water District
NLF = Newhall Land and Farming
(GSWI = Groundwater / Surface Water Interaction)
Private
SCWD = Santa Clarita Water Division
VWC = Valencia Water Company
WHR - Wayside Honor Ranch

LARWQCB Groundwater Subunit

- Management Zone 1 (Santa Clara - Mint Canyon)
- Management Zone 2 (Placerita Canyon)
- Management Zone 3 (South Fork)
- Management Zone 4 (Santa Clara-Bouquet and San Francisquito Canyons)
- Management Zone 5 (Castaic Valley)
- Boundary Between Adjacent Management Zones
- Water Treatment Facility
- Water Reclamation Plant

DRAFT FINAL

NORTH

0 1 2 4 Miles

19-Nov-15

Prepared by: DB. Map Projection: State Plane 1983, Zone V.

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Figure 4

GIS_proj/castaic_lake_SNMP_6-12/19_CastaicSNMP_Fig_8_alluvial_aquifer_wells_11-15.mxd

Appendix B: Comments and Responses on the proposed SED from the December 8, 2015 SED Scoping Meeting

SCOPE Letter, Lynne Plambeck, dated December 15, 2015

Comment:

Founded in 1987, Santa Clarita Organization for Planning and the Environment (SCOPE) is a non-profit organization based in Northern Los Angeles County and organized to provide community oversight on planning and environmental issues in the watershed of the Santa Clara River. As Los Angeles County's last free-flowing river, home to a number of listed endangered species and a major source of our community's water supply, we give the preservation of the Santa Clara River and its tributaries a high priority in our efforts to ensure a sustainable and high quality of life for residents of the SCV as well as the protection of the local flora and fauna.

Response:

Comment noted.

Comment:

We have reviewed the SNMP and a member of our organization attended and spoke at the public hearing. We request to receive notification and a copy of the EIR for this project when that document is released.

Response:

Comment noted. SCOPE will be notified of the completion of the environmental document which is a substitute environmental document (SED) consistent with the CEQA requirements for RWQCB projects and not an EIR.

Comment:

SCOPE strongly supports the five co-equal goals of the SNMP including to protect groundwater quality and to facilitate increased reliance on water recycling. However, we wish to make some comments on statements that seem to be inaccurate and mitigation proposals that are probably not feasible. First, the scoping document states that:

"The SNMP analysis indicates that average ground water concentrations in the USCR groundwater basin are generally below the basin Water Quality Objectives and assimilative capacity is available for all constituents.." (page 6).

We have not reviewed the modeling conducted in support of the SNMP, but believe its conclusions may not be entirely accurate. This statement in particular is accurate for some zones. For instance, the E wells currently serving some areas of Castaic and proposed to serve the first phases of Newhall Ranch are under the influence of the Valencia Sanitation facility discharge and currently high in chlorides. The following chart found in the Newhall Ranch River Permit EIR/EIS (FEIR Appendix F4_3_46) clearly indicates elevated pollutant levels.

Water Quality Constituents of Concern

Secondary Standards:

(from FEIR Appendix F4_3_46)

Parameter	MCL	DLR	Units	E-14	E-15	E-16	E-17
Chloride	250-500-600	NA	mg/L	75	88	89	74
	pH 6.5 - 8.5	NA	units	7.5	7.7	7.3	7.4
Specific Conductance (E.C.)	900-1600-2,200	NA	umho/cm	1240	1290	1390	1360
Sulfate	250-500-600	0.5	mg/L	340	330	340	340
Total Dissolved Solids (TDS)	500-1000-1500	NA	mg/L	900	890	950	960

Response:

Eight meetings of the Salt and Nutrient Management Plan Task Force were held since 2012 wherein modeling for the SNMP was discussed and vetted by the Stakeholders. They were publicly noticed and generally followed the regularly scheduled Integrated Regional Water Management Plan Stakeholder meetings when possible.

The proposed Newhall Ranch Project lies within, or is tributary to, Water Management Zone 5 (Castaic Subunit) and based on data available for the years 2001-2011, this area does not exceed the basin-specific Water Quality Objectives (please refer to the table below). The median values from the wells cited in the SNMP were averaged over the 11-year period to determine the values in the table.[1] All the data used, including data from the wells identified by the commenter, are provided in Appendix B of the SNMP. There are certain areas where the ambient concentrations exceed the Basin Objectives in Management Zone 1b (for Total Dissolved Solids (TDS) and sulfate), and in Management Zone 4 (TDS), otherwise the SNMP shows that all nutrient and salt concentrations meet the Basin Objectives in all of the Management Zones. Modeling in the SNMP, and specifically shown on Table 1-3 in the SNMP, determines that with implementation of all of the projects proposed in the SNMP, concentrations will remain below the Basin Objectives. Moreover, the data presented by the commenter from the table of the Newhall Ranch River Permit FEIR/FEIS also shows values that are less than the Basin Objectives for that reach of the Santa Clara River.

[1] Details of the calculations are provided in the SNMP in sections 6.3.1and 6.5.7.

Chemical	Management Zone 1a		Management Zone 1b		Management Zone 2		Management Zone 3		Management Zone 4		Management Zone 5		Management Zone 6	
	BO[1]	Ambient[2]	BO	Ambient	BO	Ambient	BO	Ambient	BO	Ambient	BO	Ambient	BO	Ambient
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TDS	800	728	800	833	700	-	700	-	700	710	1,000	727	700	636
Chloride	150	89	150	72	100	-	100	-	100	77	150	77	100	28
Nitrate	45	20	45	21	45	-	45	-	45	16	45	8	45	14
Sulfate	150	138	150	269	150	-	200	-	250	189	350	246	-	235

One objective of the SNMP is to facilitate the use of recycled water. One of the proposed projects evaluated in the SNMP is the Newhall Ranch Water Reclamation Plant (NRWRP). This facility will be constructed if the Newhall Ranch project is constructed and will treat all of the wastewater to meet the Basin Objectives of reach 5 of the Santa Clara River, where water will be discharged. Discharges from the NRWRP and Valencia Water Reclamation Plant, will be treated to reduce salts and nutrients and then the reclaimed water will be either be used for landscape irrigation on site or discharged to the Santa Clara River. As modeled for in the SNMP, this will result in a ground water quality benefit as the assimilative capacity for salts and nutrients in Water Management Zone 5 will be increased with the completion of the NRWRP and with all of the other projects that the SNMP modeled for. That being said, language in the SNMP itself will be clarified.

Comment:

Further, it appears that water quality data for some wells proposed for future development is unavailable, making the modeling questionable. The Regional Board should also be aware that the Saugus aquifer, apparently proposed for storage and recharge, is currently polluted by an ammonium perchlorate plume, making that option unavailable. Clean up of this pollution is project to take 40 years.

Response:

The Salt and Nutrient Management Plans is specifically focused on the management of salts (e.g. TDS and Chloride), and nutrients (e.g. nitrates) within the basin. There is a small area of the Saugus Formation containing a plume of perchlorate that results in water quality that does not meet the drinking water standard. However, this issue is being dealt with through a separate regulatory process involving the Department of Toxic Substances Control and the ‘responsible parties’. Since this perchlorate plume does not encroach on significant areas of the formation, drinking water wells continue to reliability supply water from the Saugus Formation that meet all drinking water standards. Additionally, some wells that have contamination in excess of the perchlorate standard are treated to remove perchlorate. That treated water is being put into the drinking water system and the perchlorate is removed from the groundwater as a result of this treatment. Since the water reclamation plants that will supply recycled water have little or no perchlorate in their effluent, the use of recycled water will not alter the perchlorate plume.

One of the proposed conceptual implementation measures discussed in the SNMP is the injection of State Water Project surplus water into the Saugus formation during wet years in order to increase local storage of groundwater. However, this project is still tentative in nature, and as such was not specifically modeled for the purposes of the SNMP.. Further evaluation and review would be necessary to bring the status of this type of implementation measures from the conceptual stage to a feasible project for the basin.

The injection of perchlorate-free State Water Project water into the formation would ultimately help to reduce the size of the plume of perchlorate as it would be injected into the non-contaminated portion of the formation. The project is conceptual at this time, and a hydrologic analysis would be performed before the approval of such a project. The analysis would evaluate the water quality impacts, if any, from the injection of State Water Project water during wet, and therefore low chloride concentration, years.

Comment:

As for the suggested mitigation, the Board should be aware that a brine line to the ocean has been proposed in several other EIRs for various facilities and found not to be feasible due to the substantial costs and delays of property acquisition as well as the cost of the line itself.

Response:

The proposed brine line running in the Santa Clara River corridor from the Valencia Water Reclamation Plant to the ocean near Ventura, which is discussed in the SNMP. is not one of the projects planned for implementation, nor modeled for in the SNMP. However, it is recognized as a conceptual implementation measure for future management of salts and nutrients within the basin. Past efforts to construct a similar line have not been successful largely for the reasons the commenter states. However, the wastewater treatment plants located in the lower watershed at Ventura, Santa Paula, Fillmore and Piru also would benefit from a means of salt disposal and the City of Ventura has begun planning for its own ocean discharge of brine. A shared brine line would reduce the costs associated with it for any single agency and would make acquisition of a right-of-way through each of their service areas less onerous. Though agencies in the Upper Santa Clara River watershed are not working on a brine line at this time, the increased use of recycled water may result in a greater need to dispose of the salt resulting from treatment. Further evaluation and review would be necessary to bring the status of this type of implementation measures from the conceptual stage to a feasible project for the basin.

Comment:

Thank you for this opportunity to comment. We regret that time limitations reduced our ability to provide a more thorough review of this document. We will provide additional comments on the EIR when it is released.

Response:

Comment noted. SCOPE will be notified of the completion of the environmental document which is a substitute environmental document (SED) consistent with the CEQA requirements for RWQCB projects and not an EIR.

Whittaker-Bermite Toxics Advisory Committee Chair Letter

Comment:

I attended the December 8, 2015 Upper Santa Clara River IRWM Stakeholders Meeting and Salt and Nutrient Management Plan CEQA Scoping Meeting. I hope my comments at that meeting were recorded. I am a SCOPE board member and am on the board of the local Whittaker Bermite Citizens Advisory Group.

Response:

Comment noted. Notes were taken at the CEQA Scoping Meeting by staff. It was also stated that commenters needed to submit written comments in order to be responded to in writing.

Comment:

Whittaker Bermite is a 996 acre brown field in the center of the City of Santa Clarita. I am the toxic chair of the CAG and we deal with the air, soil and water contamination from that site. The water coming from the site has contaminated our groundwater supply with perchlorate and VOC's. Perchlorate is being treated but the VOV's are currently being blended into our water supply with surface imported water. The projected clean up time frame for cleanup of the water is thirty to fifty years. There are other sites in the Santa Clarita Valley that may be contributing to the contamination of our water supply coming from the Saugus aquifer. The plume of contamination has not been contained and ground water wells continue to be contaminated and shut down. The Saugus aquifer cannot be used as a dumping ground for "artificial recharge" unless the recharge water is treated to be suitable for human use. Also, under Groundwater Recharge, using imported water to recharge the Saugus aquifer will increase the chloride level as the imported water is high in chloride. It appears this will just create a bigger problem for the taxpayers to correct.

Response:

The Salt and Nutrient Management Plans is specifically focused on the management of salts (e.g. TDS and Chloride), and nutrients (e.g. nitrates) within the basin. There is a small area of the Saugus Formation containing a plume of perchlorate that results in water quality that does not meet the drinking water standard. However, this issue is being dealt with through a separate regulatory process involving the Department of Toxic Substances Control and the 'responsible parties'. Since this perchlorate plume does not encroach on significant areas of the formation, drinking water wells continue to reliability supply water from the Saugus Formation that meet all drinking water standards. Additionally, some wells that have contamination in excess of the perchlorate standard are treated to remove perchlorate. That treated water is being put into the drinking water system and the perchlorate is removed from the groundwater as a result of this treatment. Since the effluent of the water reclamation plants that will supply recycled have little or no perchlorate in their effluent, the use of recycled water will not alter the perchlorate plume. Evaluation and management of VOCs is also ongoing in the basin, separate and apart from the SNMP.

The injection of perchlorate-free State Water Project water into the formation would ultimately help to reduce the size of the plume of perchlorate as it would be injected into the non-contaminated portion of the formation. The project is conceptual at this time, and a hydrologic analysis would be performed before the approval of such a project. The analysis would evaluate the water quality impacts, if any, from the injection of State Water Project water during wet, and therefore low-chloride concentration, years.

Comment:

The presentations at the meeting were vague, even completely void, of the possible safety of the process being recommended. An article in the Los Angeles Times today, Study highlights risks of recycling water states “Runoff from storms and faucets can help conserve, but researchers say health hazards need further analysis”. The authors called for ”rigorous risk-based guidelines” for gray water and stormwater. “The wide variability in existing regulations and absence of Federal guidance leaves stakeholders and local decision makers uncertain about the safety of these practices” the study said.

Response:

The intent of the SNMP is to establish a baseline of salts and nutrients in the local groundwater formations, to determine what the likely projections of future concentrations will be and then propose management measures to prevent the exceedance of Basin Plan objectives. This is all part of an effort to increase the use of recycled water in the area and to expedite the permitting of recycled water projects; while protecting beneficial uses of the basin. The SNMP makes no recommendations with regard to gray water as there are no gray water projects or management measures proposed for the region at this time. The SNMP does discuss increased storm water capture consistent with compliance with municipal storm water permitting requirements as a conceptual mitigation measure. As such, storm water would be infiltrated and some of it may be recovered by municipal drinking water wells as it is now, but all of the water would be required to meet Federal Drinking Water Standards as it does currently. The use of the water would also require further modeling and vetting with the Regional Board.

Comment:

The Vista Canyon WRP and Newhall Ranch WRP are private and planned for their own projects. Will their discharge effluent have a chloride concentration of no greater than 100 mg/L? Why is only SCVSD WRP listed as having that requirement? Again the presenters appeared unprepared and the solutions based more too providing benefit to developers than health and safety of the public.

Response:

The Vista Canyon WRP is located within Management Zone 1a of the Santa Clara – Mint Canyon Subunit. The facility will be discharging to groundwater, which has a Water Quality Objective for chloride of 150mg/L. The Newhall Ranch WRP is located in Management Zone 5 of the Castaic Valley Subunit. The facility will be discharging to both groundwater and to surface water within Reach 5 of the Santa Clara River. Applicable Water Quality Objectives for groundwater and surface water in this area are 150 mg/L and 100mg/L, respectively. Any discharger, including these wastewater reclamation plants in these areas of the basin will be required to discharge at concentrations no greater than the water quality objective that applies in this case 150mg/L for Vista Canyon WRP, and 100mg/L for Newhall Ranch WRP. They will be required to demonstrate, as part of the Nation Pollutant Discharge Elimination System permitting process, that their effluent will not interfere with the attainment of the stated objectives of the Basin Plan. Both the Vista Canyon WRP and the Newhall Ranch WRP will be required to comply with those permitting provisions.

Comment:

The City of Oxnard has a chloride limit of 150 mg/L. Use of this recycled water may be used for: Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop, Parks and playgrounds, School yards and other uses. Approximately 243 square miles within Ventura County are now part of this Salt and Nutrient Management Plan. Will this area be limited to the 100 mg/L for chloride? There never has been a clear definition of why there is a 100 mg/L limit in the Upper Santa Clara River Groundwater Basins.

Response:

The area identified by the commenter is located in the Lower Santa Clara River Basin which has its own separate Salt and Nutrient Management Plan that addresses management of these constituents consistent with basin-specific water quality objectives. The SNMP does not propose any changes to the Basin Objectives or the Total Daily Maximum Load (TMDL) for chloride in the Upper Santa Clara River watershed. Therefore, there is no potential for a significant environmental impact resulting from such a change to chloride standards. Also, the SNMP for the Upper Santa Clara River Basin will not modify the City of Oxnard's chloride limit, nor the how the recycled water is used.

Comment:

Thank you for this opportunity to comment. We request to receive notification and a copy of the EIR for this project when that document is released.

Response:

Comment noted. You will be notified of the completion of the environmental document which is a substitute environmental document consistent with the CEQA requirements for RWQCB projects and not an EIR.

Lauma W. Jurkevics, Department of Water Resources

Comment:

GHGs are not limited to construction activities, but also include operational emissions in the transport and treatment of water, including recycled water, and are dependent on the energy source. The SED should include a discussion of this element. If would also benefit the SED to identify how climate change could impact the plan and how the plan could benefit adaptation to climate change within the USCR groundwater basin.

Response:

Comment noted. The SED will include a discussion of Greenhouse Gas emissions and energy sources dedicated to the treatment and transport of water within the basin. The SED will also clarify that the increased use of recycled water, and likewise reduction in imported water will reduce net energy demand and result in a net benefit for the region. Increased use of recycled water is a demonstrative way to adapt to climate change as available supplies of recycled water are less dependent on a given hydrologic cycle than are other sources of water.

Appendix C: State Water Resources Control Board Recycled Water Policy for Water Quality Control for Recycled Water (Recycled Water Policy)

California
Water Boards
Protecting California's Water

State Water Resources Control Board

Policy for Water Quality Control for Recycled Water (Recycled Water Policy)

Revised January 22, 2013
Effective April 25, 2013

CALIFORNIA
Water Boards

State of California
Edmund G. Brown Jr., Governor

California Environmental Protection Agency
Matthew Rodriquez, Secretary

State Water Resources Control Board
P.O. Box100
Sacramento, CA 95812-0100

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 2013-0003

ADOPTION OF AN AMENDMENT TO THE POLICY FOR WATER QUALITY CONTROL FOR RECYCLED WATER CONCERNING MONITORING REQUIREMENTS FOR CONSTITUTENTS OF EMERGING CONCERN

WHEREAS:

1. Provisions of the Policy for Water Quality Control for Recycled Water (Recycled Water Policy), adopted under Resolution No. 2009-0011, directed the State Water Resources Control Board (State Water Board) to convene a “blue-ribbon” advisory panel (Panel) to provide guidance on future actions related to monitoring constituents of emerging concern (CECs) in recycled water.

2. In June 2010, the Panel submitted a report titled “Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel” (Report), which presented recommendations for monitoring CECs in municipal recycled water used for groundwater recharge.

3. In December 2010, the State Water Board held a public hearing regarding the Panel’s Report and received public comments.

4. In May 2012, staff circulated a draft amendment to the Recycled Water Policy that: (1) proposed, in accordance with the Panel’s recommendations, monitoring requirements for CECs and surrogates in recycled water used for groundwater recharge; and (2) proposed a reduction of priority pollutant monitoring of recycled water used for landscape irrigation.

5. In July 2012, a scientific peer review of the draft amendment and the Panel’s Report was conducted.

6. Staff reviewed comments received on the draft amendment from the public and peer reviewers and issued a revised draft amendment on September 14, 2012. Written comments were received on this draft prior to an October 9, 2012, due date.

7. The State Water Board held a public hearing on October 16, 2012, to consider adoption of the draft amendment. At the hearing, the adoption was postponed to refine the responses to comments and allow additional time for public review.

8. The Natural Resources Agency has approved the State Water Board’s and the Regional Water Quality Control Boards’ water quality control planning process as a “certified regulatory program” that adequately satisfies the California Environmental Quality Act requirements for preparing environmental documents. The amendment concerns monitoring requirements for priority pollutants and constituents of emerging concern. It is not a “project” as defined by title 14, California Code of Regulations chapter 3, Guidelines for Implementation of the California Environmental Quality Act. Hence, approval of an environmental document is not required to adopt the amendment.

THEREFORE BE IT RESOLVED THAT:

The State Water Board

1. Adopts the amendment to the Recycled Water Policy.

2. Directs State Water Board Staff to submit the amended Recycled Water Policy to the Office of Administrative Law (OAL) for final approval.

3. Directs the Executive Director or designee to make minor, non-substantive modifications to the language of the amendment, if OAL determines during its approval process that such changes are needed; and directs the Executive Director to inform the State Water Board of any such changes.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on January 22, 2013.

AYE:	Vice Chair Frances Spivy-Weber Board Member Tam M. Doduc Board Member Steven Moore
NAY:	None
ABSENT:	Chairman Charles R. Hoppin Board Member Felicia Marcus
ABSTAIN:	None

Jeanine Townsend

Jeanine Townsend
Clerk to the Board

Recycled Water Policy

Table of Contents

Recycled Water Policy

1. *Preamble*

California is facing an unprecedented water crisis.

The collapse of the Bay-Delta ecosystem, climate change, and continuing population growth have combined with a severe drought on the Colorado River and failing levees in the Delta to create a new reality that challenges California's ability to provide the clean water needed for a healthy environment, a healthy population and a healthy economy, both now and in the future.

These challenges also present an unparalleled opportunity for California to move aggressively towards a sustainable water future. The State Water Resources Control Board (State Water Board) declares that we will achieve our mission to "preserve, enhance and restore the quality of California's water resources to the benefit of present and future generations." To achieve that mission, we support and encourage every region in California to develop a salt/nutrient management plan by 2014 that is sustainable on a long-term basis and that provides California with clean, abundant water. These plans shall be consistent with the Department of Water Resources' Bulletin 160, as appropriate, and shall be locally developed, locally controlled and recognize the variability of California's water supplies and the diversity of its waterways. We strongly encourage local and regional water agencies to move toward clean, abundant, local water for California by emphasizing appropriate water recycling, water conservation, and maintenance of supply infrastructure and the use of stormwater (including dry-weather urban runoff) in these plans; these sources of supply are drought-proof, reliable, and minimize our carbon footprint and can be sustained over the long-term.

We declare our independence from relying on the vagaries of annual precipitation and move towards sustainable management of surface waters and groundwater, together with enhanced water conservation, water reuse and the use of stormwater. To this end, we adopt the following goals for California:

- Increase the use of recycled water over 2002 levels by at least one million acre-feet per year (afy) by 2020 and by at least two million afy by 2030.
- Increase the use of stormwater over use in 2007 by at least 500,000 afy by 2020 and by at least one million afy by 2030.
- Increase the amount of water conserved in urban and industrial uses by comparison to 2007 by at least 20 percent by 2020.
- Included in these goals is the substitution of as much recycled water for potable water as possible by 2030.

The purpose of this Policy is to increase the use of recycled water from municipal wastewater sources that meets the definition in Water Code section 13050(n), in a manner that implements state and federal water quality laws. The State Water Board expects to develop additional policies to encourage the use of stormwater, encourage water conservation, encourage the conjunctive use of surface and groundwater, and improve the use of local water supplies.

When used in compliance with this Policy, Title 22 and all applicable state and federal water quality laws, the State Water Board finds that recycled water is safe for approved uses, and strongly supports recycled water as a safe alternative to potable water for such approved uses.

2. *Purpose of the Policy*

   a. The purpose of this Policy is to provide direction to the Regional Water Quality Control Boards (Regional Water Boards), proponents of recycled water projects, and the public regarding the appropriate criteria to be used by the State Water Board and the Regional Water Boards in issuing permits for recycled water projects.

   b. It is the intent of the State Water Board that all elements of this Policy are to be interpreted in a manner that fully implements state and federal water quality laws and regulations in order to enhance the environment and put the waters of the state to the fullest use of which they are capable.

   c. This Policy describes permitting criteria that are intended to streamline the permitting of the vast majority of recycled water projects. The intent of this streamlined permit process is to expedite the implementation of recycled water projects in a manner that implements state and federal water quality laws while allowing the Regional Water Boards to focus their limited resources on projects that require substantial regulatory review due to unique site-specific conditions.

   d. By prescribing permitting criteria that apply to the vast majority of recycled water projects, it is the State Water Board's intent to maximize consistency in the permitting of recycled water projects in California while also reserving to the Regional Water Boards sufficient authority and flexibility to address site-specific conditions.

   e. The State Water Board will establish additional policies that are intended to assist the State of California in meeting the goals established in the preamble to this Policy for water conservation and the use of stormwater.

f. For purposes of this Policy, the term “permit” means an order adopted by a Regional Water Board or the State Water Board prescribing requirements for a recycled water project, including but not limited to water recycling requirements, master reclamation permits, and waste discharge requirements.

3. *Benefits of Recycled Water*

The State Water Board finds that the use of recycled water in accordance with this Policy, that is, which supports the sustainable use of groundwater and/or surface water, which is sufficiently treated so as not to adversely impact public health or the environment and which ideally substitutes for use of potable water, is presumed to have a beneficial impact. Other public agencies are encouraged to use this presumption in evaluating the impacts of recycled water projects on the environment as required by the California Environmental Quality Act (CEQA).

4. *Mandate for the Use of Recycled Water*

a. The State Water Board and Regional Water Boards will exercise the authority granted to them by the Legislature to the fullest extent possible to encourage the use of recycled water, consistent with state and federal water quality laws.

(1) The State Water Board hereby establishes a mandate to increase the use of recycled water in California by 200,000 afy by 2020 and by an additional 300,000 afy by 2030. These mandates shall be achieved through the cooperation and collaboration of the State Water Board, the Regional Water Boards, the environmental community, water purveyors and the operators of publicly owned treatment works. The State Water Board will evaluate progress toward these mandates biennially and review and revise as necessary the implementation provisions of this Policy in 2012 and 2016.

(2) Agencies producing recycled water that is available for reuse and not being put to beneficial use shall make that recycled water available to water purveyors for reuse on reasonable terms and conditions. Such terms and conditions may include payment by the water purveyor of a fair and reasonable share of the cost of the recycled water supply and facilities.

(3) The State Water Board hereby declares that, pursuant to Water Code sections 13550 *et seq*., it is a waste and unreasonable use of water for water agencies not to use recycled water when recycled water of adequate quality is available and is not being put to beneficial use, subject to the conditions established in sections 13550 *et seq*. The State Water Board shall exercise its authority pursuant to Water Code section 275 to the fullest extent possible to enforce the mandates of this subparagraph.

b. These mandates are contingent on the availability of sufficient capital funding for the construction of recycled water projects from private, local, state, and federal sources and assume that the Regional Water Boards will effectively implement regulatory streamlining in accordance with this Policy.

c. The water industry and the environmental community have agreed jointly to advocate for $1 billion in state and federal funds over the next five years to fund projects needed to meet the goals and mandates for the use of recycled water established in this Policy.

d. The State Water Board requests the California Department of Public Health (CDPH), the California Public Utilities Commission (CPUC), and the California Department of Water Resources (CDWR) to use their respective authorities to the fullest extent practicable to assist the State Water Board and the Regional Water Boards in increasing the use of recycled water in California.

5. *Roles of the State Water Board, Regional Water Boards, CDPH and CDWR*

The State Water Board recognizes that it shares jurisdiction over the use of recycled water with the Regional Water Boards and with CDPH. In addition, the State Water Board recognizes that CDWR and the CPUC have important roles to play in encouraging the use of recycled water. The State Water Board believes that it is important to clarify the respective roles of each of these agencies in connection with recycled water projects, as follows:

a. The State Water Board establishes general policies governing the permitting of recycled water projects consistent with its role of protecting water quality and sustaining water supplies. The State Water Board exercises general oversight over recycled water projects, including review of Regional Water Board permitting practices, and shall lead the effort to meet the recycled water use goals set forth in the Preamble to this Policy. The State Water Board is also charged by statute with developing a general permit for irrigation uses of recycled water.

b. The CDPH is charged with protection of public health and drinking water supplies and with the development of uniform water recycling criteria appropriate to particular uses of water. Regional Water Boards shall appropriately rely on the expertise of CDPH for the establishment of permit conditions needed to protect human health.

c. The Regional Water Boards are charged with protection of surface and groundwater resources and with the issuance of permits that implement CDPH recommendations, this Policy, and applicable law and will, pursuant to paragraph 4 of this Policy, use their authority to the fullest extent possible to encourage the use of recycled water.

d. CDWR is charged with reviewing and, every five years, updating the California Water Plan, including evaluating the quantity of recycled water presently being used and planning for the potential for future uses of recycled water. In undertaking these tasks, CDWR may appropriately rely on urban water management plans and may share the data from those plans with the State Water Board and the Regional Water Boards. CDWR also shares with the State Water Board the authority to allocate and distribute bond funding, which can provide incentives for the use of recycled water.

e. The CPUC is charged with approving rates and terms of service for the use of recycled water by investor-owned utilities.

6. *Salt/Nutrient Management Plans*

a. Introduction.

(1) Some groundwater basins in the state contain salts and nutrients that exceed or threaten to exceed water quality objectives established in the applicable Water Quality Control Plans (Basin Plans), and not all Basin Plans include adequate implementation procedures for achieving or ensuring compliance with the water quality objectives for salt or nutrients. These conditions can be caused by natural soils/conditions, discharges of waste, irrigation using surface water, groundwater or recycled water and water supply augmentation using surface or recycled water. Regulation of recycled water alone will not address these conditions.

(2) It is the intent of this Policy that salts and nutrients from all sources be managed on a basin-wide or watershed-wide basis in a manner that ensures attainment of water quality objectives and protection of beneficial uses. The State Water Board finds that the appropriate way to address salt and nutrient issues is through the development of regional or subregional salt and nutrient management plans

rather than through imposing requirements solely on individual recycled water projects.

b. Adoption of Salt/ Nutrient Management Plans.

(1) The State Water Board recognizes that, pursuant to the letter dated December 19, 2008 and attached to the Resolution adopting this Policy, the local water and wastewater entities, together with local salt/nutrient contributing stakeholders, will fund locally driven and controlled, collaborative processes open to all stakeholders that will prepare salt and nutrient management plans for each basin/sub-basin in California, including compliance with CEQA and participation by Regional Water Board staff.

(a) It is the intent of this Policy for every groundwater basin/sub-basin in California to have a consistent salt/nutrient management plan. The degree of specificity within these plans and the length of these plans will be dependent on a variety of site-specific factors, including but not limited to size and complexity of a basin, source water quality, stormwater recharge, hydrogeology, and aquifer water quality. It is also the intent of the State Water Board that because stormwater is typically lower in nutrients and salts and can augment local water supplies, inclusion of a significant stormwater use and recharge component within the salt/nutrient management plans is critical to the long-term sustainable use of water in California. Inclusion of stormwater recharge is consistent with State Water Board Resolution No. 2005-0006, which establishes sustainability as a core value for State Water Board programs and also assists in implementing Resolution No. 2008-0030, which requires sustainable water resources management and is consistent with Objective 3.2 of the State Water Board Strategic Plan Update dated September 2, 2008.

(b) Salt and nutrient plans shall be tailored to address the water quality concerns in each basin/sub-basin and may include constituents other than salt and nutrients that impact water quality in the basin/sub-basin. Such plans shall address and implement provisions, as appropriate, for all sources of salt and/or nutrients to groundwater basins, including recycled water irrigation projects and groundwater recharge reuse projects.

(c) Such plans may be developed or funded pursuant to the provisions of Water Code sections 10750 *et seq.* or other appropriate authority.

(d) Salt and nutrient plans shall be completed and proposed to the Regional Water Board within five years from the date of this Policy unless a Regional Water Board finds that the stakeholders are making substantial progress towards completion of a plan. In no case shall the period for the completion of a plan exceed seven years.

(e) The requirements of this paragraph shall not apply to areas that have already completed a Regional Water Board approved salt and nutrient plan for a basin, sub-basin, or other regional planning area that is functionally equivalent to paragraph 6(b)3.

(f) The plans may, depending upon the local situation, address constituents other than salt and nutrients that adversely affect groundwater quality.

(2) Within one year of the receipt of a proposed salt and nutrient management plan, the Regional Water Boards shall consider for adoption revised implementation plans, consistent with Water Code section 13242, for those groundwater basins within their regions where water quality objectives for salts or nutrients are being, or are threatening to be, exceeded. The implementation plans shall be based on the salt and nutrient plans required by this Policy.

(3) Each salt and nutrient management plan shall include the following components:

(a) A basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations. The scale of the basin/sub-basin monitoring plan is dependent upon the site-specific conditions and shall be adequate to provide a reasonable, cost-effective means of determining whether the concentrations of salt, nutrients, and other constituents of concern as identified in the salt and nutrient plans are consistent with applicable water quality objectives. Salts, nutrients, and the constituents identified in paragraph 6(b)(1)(f) shall be monitored. The frequency of monitoring shall be determined in the salt/nutrient management plan and approved by the Regional Water Board pursuant to paragraph 6(b)(2).

(i) The monitoring plan must be designed to determine water quality in the basin. The plan must focus on basin water quality near water supply wells and areas proximate to large water recycling projects, particularly groundwater recharge projects. Also, monitoring locations shall, where appropriate, target groundwater and surface waters where groundwater has connectivity with adjacent surface waters.

(ii) The preferred approach to monitoring plan development is to collect samples from existing wells if feasible as long as the existing wells are located appropriately to determine water quality throughout the most critical areas of the basin.

(iii) The monitoring plan shall identify those stakeholders responsible for conducting, compiling, and reporting the monitoring data. The data shall be reported to the Regional Water Board at least every three years.

(b) A provision for annual monitoring of Constituents of Emerging Concern (e.g., endocrine disrupters, personal care products or pharmaceuticals) (CECs) consistent with recommendations by CDPH and consistent with any actions by the State Water Board taken pursuant to paragraph 10(b) of this Policy.

(c) Water recycling and stormwater recharge/use goals and objectives.

(d) Salt and nutrient source identification, basin/sub-basin assimilative capacity and loading estimates, together with fate and transport of salts and nutrients.

(e) Implementation measures to manage salt and nutrient loading in the basin on a sustainable basis.

(f) An antidegradation analysis demonstrating that the projects included within the plan will, collectively, satisfy the requirements of Resolution No. 68-16.

(4) Nothing in this Policy shall prevent stakeholders from developing a plan that is more protective of water quality than applicable standards in the Basin Plan. No Regional Water Board, however, shall seek to modify Basin Plan objectives without full compliance

with the process for such modification as established by existing law.

7. *Landscape Irrigation Projects*[1]

a. *Control of incidental runoff.* Incidental runoff is defined as unintended small amounts (volume) of runoff from recycled water use areas, such as unintended, minimal over-spray from sprinklers that escapes the recycled water use area. Water leaving a recycled water use area is not considered incidental if it is part of the facility design, if it is due to excessive application, if it is due to intentional overflow or application, or if it is due to negligence. Incidental runoff may be regulated by waste discharge requirements or, where necessary, waste discharge requirements that serve as a National Pollutant Discharge Elimination System (NPDES) permit, including municipal separate storm water system permits, but regardless of the regulatory instrument, the project shall include, but is not limited to, the following practices:

(1) Implementation of an operations and management plan that may apply to multiple sites and provides for detection of leaks, (for example, from broken sprinkler heads), and correction either within 72 hours of learning of the runoff, or prior to the release of 1,000 gallons, whichever occurs first,

(2) Proper design and aim of sprinkler heads,

(3) Refraining from application during precipitation events, and

(4) Management of any ponds containing recycled water such that no discharge occurs unless the discharge is a result of a 25-year, 24-hour storm event or greater, and there is notification of the appropriate Regional Water Board Executive Officer of the discharge.

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[1] Specified uses of recycled water considered "landscape irrigation" projects include any of the following:
i. Parks, greenbelts, and playgrounds;
ii. School yards;
iii. Athletic fields;
iv. Golf courses;
v. Cemeteries;
vi. Residential landscaping, common areas;
vii. Commercial landscaping, except eating areas;
viii. Industrial landscaping, except eating areas; and
ix. Freeway, highway, and street landscaping.

b. *Streamlined Permitting.*

(1) The Regional Water Boards shall, absent unusual circumstances (i.e., unique, site-specific conditions such as where recycled water is proposed to be used for irrigation over high transmissivity soils over a shallow (5' or less) high quality groundwater aquifer), permit recycled water projects that meet the criteria set forth in this Policy, consistent with the provisions of this paragraph.

(2) If the Regional Water Board determines that unusual circumstances apply, the Regional Water Board shall make a finding of unusual circumstances based on substantial evidence in the record, after public notice and hearing.

(3) Projects meeting the criteria set forth below and eligible for enrollment under requirements established in a general order shall be enrolled by the State or Regional Water Board within 60 days from the date on which an application is deemed complete by the State or Regional Water Board. For projects that are not enrolled in a general order, the Regional Water Board shall consider permit adoption within 120 days from the date on which the application is deemed complete by the Regional Water Board.

(4) Landscape irrigation projects that qualify for streamlined permitting shall not be required to include a project specific receiving water and groundwater monitoring component unless such project specific monitoring is required under the adopted salt/nutrient management plan. During the interim while the salt management plan is under development, a landscape irrigation project proponent can either perform project specific monitoring, or actively participate in the development and implementation of a salt/nutrient management plan, including basin/sub-basin monitoring. Permits or requirements for landscape irrigation projects shall include, in addition to any other appropriate recycled water monitoring requirements, monitoring for priority pollutants in the recycled water at the recycled water production facility once per year, except when the recycled water production facility has a design production flow for the entire water reuse system of one million gallons per day or less. For these smaller facilities, the recycled water shall be monitored for priority pollutants once every five years.

(5) It is the intent of the State Water Board that the general permit for landscape irrigation projects be consistent with the terms of this Policy.

c. *Criteria for streamlined permitting*. Irrigation projects using recycled water that meet the following criteria are eligible for streamlined permitting, and, if otherwise in compliance with applicable laws, shall be approved absent unusual circumstances:

(1) Compliance with the requirements for recycled water established in Title 22 of the California Code of Regulations, including the requirements for treatment and use area restrictions, together with any other recommendations by CDPH pursuant to Water Code section 13523.

(2) Application in amounts and at rates as needed for the landscape (i.e., at agronomic rates and not when the soil is saturated). Each irrigation project shall be subject to an operations and management plan, that may apply to multiple sites, provided to the Regional Water Board that specifies the agronomic rate(s) and describes a set of reasonably practicable measures to ensure compliance with this requirement, which may include the development of water budgets for use areas, site supervisor training, periodic inspections, tiered rate structures, the use of smart controllers, or other appropriate measures.

(3) Compliance with any applicable salt and nutrient management plan.

(4) Appropriate use of fertilizers that takes into account the nutrient levels in the recycled water. Recycled water producers shall monitor and communicate to the users the nutrient levels in their recycled water.

8. *Recycled Water Groundwater Recharge Projects*

a. The State Water Board acknowledges that all recycled water groundwater recharge projects must be reviewed and permitted on a site-specific basis, and so such projects will require project-by-project review.

b. Approved groundwater recharge projects will meet the following criteria:

(1) Compliance with regulations adopted by CDPH for groundwater recharge projects or, in the interim until such regulations are approved, CDPH's recommendations pursuant to Water Code section 13523 for the project (e.g., level of treatment, retention time, setback distance, source control, monitoring program, etc.).

(2) Implementation of a monitoring program for CECs that is consistent with Attachment A and any recommendations from CDPH.

Groundwater recharge projects shall include monitoring of recycled water for priority pollutants twice per year.

c. Nothing in this paragraph shall be construed to limit the authority of a Regional Water Board to protect designated beneficial uses, *provided* that any proposed limitations for the protection of public health may only be imposed following regular consultation by the Regional Water Board with CDPH, consistent with State Water Board Orders WQ 2005-0007 and 2006-0001.

d. Nothing in this Policy shall be construed to prevent a Regional Water Board from imposing additional requirements for a proposed recharge project that has a substantial adverse effect on the fate and transport of a contaminant plume or changes the geochemistry of an aquifer thereby causing the dissolution of constituents, such as arsenic, from the geologic formation into groundwater.

e. Projects that utilize surface spreading to recharge groundwater with recycled water treated by reverse osmosis shall be permitted by a Regional Water Board within one year of receipt of recommendations from CDPH. Furthermore, the Regional Water Board shall give a high priority to review and approval of such projects.

9. *Antidegradation*

a. The State Water Board adopted Resolution No. 68-16 as a policy statement to implement the Legislature's intent that waters of the state shall be regulated to achieve the highest water quality consistent with the maximum benefit to the people of the state.

b. Activities involving the disposal of waste that could impact high quality waters are required to implement best practicable treatment or control of the discharge necessary to ensure that pollution or nuisance will not occur, and the highest water quality consistent with the maximum benefit to the people of the state will be maintained.

c. Groundwater recharge with recycled water for later extraction and use in accordance with this Policy and state and federal water quality law is to the benefit of the people of the state of California. Nonetheless, the State Water Board finds that groundwater recharge projects using recycled water have the potential to lower water quality within a basin. The proponent of a groundwater recharge project must demonstrate compliance with Resolution No. 68-16. Until such time as a salt/nutrient management plan is in effect, such compliance may be demonstrated as follows:

(1) A project that utilizes less than 10 percent of the available assimilative capacity in a basin/sub-basin (or multiple projects utilizing less than 20 percent of the available assimilative capacity in a basin/sub-basin) need only conduct an antidegradation analysis verifying the use of the assimilative capacity. For those basins/sub-basins where the Regional Water Boards have not determined the baseline assimilative capacity, the baseline assimilative capacity shall be calculated by the initial project proponent, with review and approval by the Regional Water Board, until such time as the salt/nutrient plan is approved by the Regional Water Board and is in effect. For compliance with this subparagraph, the available assimilative capacity shall be calculated by comparing the mineral water quality objective with the average concentration of the basin/sub-basin, either over the most recent five years of data available or using a data set approved by the Regional Water Board Executive Officer. In determining whether the available assimilative capacity will be exceeded by the project or projects, the Regional Water Board shall calculate the impacts of the project or projects over at least a ten year time frame.

(2) In the event a project or multiple projects utilize more than the fraction of the assimilative capacity designated in subparagraph (1), then a Regional Water Board-deemed acceptable antidegradation analysis shall be performed to comply with Resolution No. 68-16. The project proponent shall provide sufficient information for the Regional Water Board to make this determination. An example of an approved method is the method used by the State Water Board in connection with Resolution No. 2004-0060 and the Regional Water Board in connection with Resolution No. R8-2004-0001. An integrated approach (using surface water, groundwater, recycled water, stormwater, pollution prevention, water conservation, etc.) to the implementation of Resolution No. 68-16 is encouraged.

d. Landscape irrigation with recycled water in accordance with this Policy is to the benefit of the people of the State of California. Nonetheless, the State Water Board finds that the use of water for irrigation may, regardless of its source, collectively affect groundwater quality over time. The State Water Board intends to address these impacts in part through the development of salt/nutrient management plans described in paragraph 6.

(1) A project that meets the criteria for a streamlined irrigation permit and is within a basin where a salt/nutrient management plan satisfying the provisions of paragraph 6(b) is in place may be

approved without further antidegradation analysis, provided that the project is consistent with that plan.

(2) A project that meets the criteria for a streamlined irrigation permit and is within a basin where a salt/nutrient management plan satisfying the provisions of paragraph 6(b) is being prepared may be approved by the Regional Water Board by demonstrating through a salt/nutrient mass balance or similar analysis that the project uses less than 10 percent of the available assimilative capacity as estimated by the project proponent in a basin/sub-basin (or multiple projects using less than 20 percent of the available assimilative capacity as estimated by the project proponent in a basin/sub-basin).

10. *Constituents of Emerging Concern*

a. General Provisions

(1) Regulatory requirements for recycled water shall be based on the best available peer-reviewed science. In addition, all uses of recycled water must meet conditions set by CDPH.

(2) Knowledge of risks will change over time and recycled water projects must meet legally applicable criteria. However, when standards change, projects should be allowed time to comply through a compliance schedule.

(3) The state of knowledge regarding CECs is incomplete. There needs to be additional research and development of analytical methods and surrogates to determine potential environmental and public health impacts. Agencies should minimize the likelihood of CECs impacting human health and the environment by means of source control and/or pollution prevention programs.

(4) Regulating most CECs will require significant work to develop test methods and more specific determinations as to how and at what level CECs impact public health or our environment.

b. Research Program

(1) The State Water Board, in consultation with CDPH, convened a “blue-ribbon” advisory panel to guide future actions relating to CECs.

(a) The panel was actively managed by the State Water Board and was composed of the following: one human health toxicologist, one environmental toxicologist, one epidemiologist, one biochemist, one civil engineer familiar with the design and construction of recycled water treatment facilities, and one chemist familiar with the design and operation of advanced laboratory methods for the detection of emerging constituents. Each of these panelists had extensive experience as a principal investigator in their respective areas of expertise.

(b) The panel reviewed the scientific literature and submitted a report to the State Water Board and CDPH that described the current state of scientific knowledge regarding the risks of CECs to public health and the environment. In December 2010, the State Water Board, in coordination with CDPH, held a public hearing to hear a presentation on the report and to receive comments from stakeholders.

(c) The State Water Board considered the panel report and the comments received and adopted an amendment to the Policy establishing monitoring requirements for CECs in recycled water. These monitoring requirements are prescribed in Attachment A.

(2) The panel or a similarly constituted panel shall update the report every five years. The next update is due in June 2015.

(a) Each updated report shall recommend actions that the State of California should take to improve our understanding of CECs and, as may be appropriate, to protect public health and the environment.

(b) The updated reports shall answer the following questions: What are the appropriate constituents to be monitored in recycled water, including analytical methods and method detection limits? What is the known toxicological information for the above constituents? Would the above lists change based on level of treatment and use? If so, how? What are possible indicators that represent a suite of CECs? What levels of CEC's should trigger enhanced monitoring of CEC's in recycled water, groundwater and/or surface waters?

(c) Within six months from receipt of an updated report, the State Water Board shall hold a hearing to consider recommendations from staff and shall endorse the recommendations, as appropriate, after making any necessary modifications.

c. Permit Provisions

Permits for recycled water projects shall be consistent with any CDPH recommendations to protect public health and the monitoring requirements prescribed in Attachment A.

11. *Incentives for the Use of Recycled Water*

a. Funding

The State Water Board will request CDWR to provide priority funding for projects that have major recycling components; particularly those that decrease demand on potable water supplies. The State Water Board will also request priority funding for stormwater recharge projects that augment local water supplies. The State Water Board shall promote the use of the State Revolving Fund (SRF) for water purveyor, stormwater agencies, and water recyclers to use for water reuse and stormwater use and recharge projects.

b. Stormwater

The State Water Board strongly encourages all water purveyors to provide financial incentives for water recycling and stormwater recharge and reuse projects. The State Water Board also encourages the Regional Water Boards to require less stringent monitoring and regulatory requirements for stormwater treatment and use projects than for projects involving untreated stormwater discharges.

c. TMDLs

Water recycling reduces mass loadings from municipal wastewater sources to impaired waters. As such, waste load allocations shall be assigned as appropriate by the Regional Water Boards in a manner that provides an incentive for greater water recycling.

ATTACHMENT A

Requirements for Monitoring Constituents of Emerging Concern in Recycled Water

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ATTACHMENT A

REQUIREMENTS FOR MONITORING CONSTITUENTS OF EMERGING CONCERN FOR RECYCLED WATER

The purpose of this attachment to the Recycled Water Policy (Policy) is to provide direction to the Regional Water Quality Control Boards (Regional Water Boards) on monitoring requirements for constituents of emerging concern[2] (CECs) in recycled municipal wastewater, herein referred to as "recycled water." The monitoring requirements and criteria for evaluating monitoring results in the Policy are based on recommendations from a Science Advisory Panel[3]. The monitoring requirements pertain to the production and use of recycled water for groundwater recharge reuse[4] by surface and subsurface application methods. The monitoring requirements apply to recycled water producers, including entities that further treat or enhance the quality of recycled water supplied by municipal wastewater treatment facilities, and groundwater recharge reuse facilities.

Groundwater recharge by surface application is the controlled application of water to a spreading area for infiltration resulting in the recharge of a groundwater basin. Subsurface application is the controlled application of water to a groundwater basin or aquifer by a means other than surface application, such as direct injection through a well.

The California Department of Public Health (CDPH) shall be consulted for any additional monitoring requirements for recycled water use found necessary by CDPH to protect human health.

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[2] For this Policy, CECs are defined to be chemicals in personal care products, pharmaceuticals including antibiotics, antimicrobials; industrial, agricultural, and household chemicals; hormones; food additives; transformation products, inorganic constituents; and nanomaterials.

[3] The Science Advisory Panel was convened in accordance with provision 10.b. of the Policy. The panel's recommendations were presented in the report; *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel*, dated June 25, 2010.

[4] As used in this attachment, use of recycled water for groundwater recharge reuse has the same meaning as indirect potable reuse for groundwater recharge as defined in Water Code section 13561(c), where it is defined as the planned use of recycled water for replenishment of a groundwater basin or an aquifer that has been designated as a source of water supply for a public water system.

1. CECS AND SURROGATES

Within this Policy, CECs of toxicological relevance to human health are referred to as "health-based CECs."[5] CECs determined not to have human health relevance, but useful for monitoring treatment process effectiveness, are referred to as "performance indicator CECs." A performance indicator CEC is an individual CEC used for evaluating a family of CECs with similar physicochemical or biodegradable characteristics. The removal of a performance indicator CEC through a treatment process provides an indication of removal of CECs with similar properties. A health-based CEC may also serve as a performance indicator CEC.

A surrogate is a measurable physical or chemical property, such as chlorine residual or electrical conductivity, that can be used to measure the effectiveness of trace organic compound removal by treatment process and/or provide an indication of a treatment process failure. A reverse osmosis (RO) treatment process, for example, is expected to substantially reduce the electrical conductivity of the recycled water being treated. This reduction in the level of the surrogate also provides an indication that inorganic and organic compounds, including CECs, are being removed.

Recycled water monitoring programs used for groundwater recharge reuse shall include monitoring for: (1) human health-based CECs; (2) performance indicator CECs; and (3) surrogates. The purpose of monitoring performance indicator CECs and surrogates is to assess the effectiveness of unit processes to remove CECs. For this policy for groundwater recharge reuse, unit processes that remove CECs include RO, advanced oxidation processes (AOPs), and soil aquifer treatment.[6] AOPs are treatment processes involving the use of oxidizing agents, such as hydrogen peroxide and ozone, combined with ultraviolet light irradiation. Soil aquifer treatment is a natural treatment process that removes CECs as water passes through soil, the vadose zone, and within an aquifer.

This Policy provides CEC monitoring requirements for recycled water which undergoes additional treatment by soil aquifer treatment or by RO followed by AOPs. CEC monitoring requirements for groundwater recharge reuse projects implementing treatment processes that provide control of CECs by processes other than soil aquifer treatment or RO/AOPs shall be established on a case-by-case basis by the State Water Board in consultation with CDPH.

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[5] Heath-based CECs were determined through a screening process that was developed and conducted by the CEC Science Advisory Panel; *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel*, dated June 25, 2010.

[6] For evaluating removal of CECs, the treatment zone for soil aquifer treatment is from the surface of the application area through the unsaturated zone to groundwater, including groundwater within a 30-day travel time distance through the aquifer downgradient of the surface application area.

Monitoring of health-based CECs or performance indicator CECs is not required for recycled water used for landscape irrigation due to the low risk for ingestion of the water.[7]

1.1. CECs for Monitoring Programs

This Policy provides requirements for monitoring CECs in recycled water used for groundwater recharge reuse. The Regional Water Boards shall not issue requirements for monitoring of additional CECs in recycled water beyond the requirements provided in this Policy except when recommended by CDPH or requested by the project proponent.

Table 1 provides the health-based CECs and performance indicator CECs to be monitored along with their respective reporting limits. All CECs listed for a recycled water application shall be monitored during an initial assessment monitoring phase, as described in Section 3.1. Based on monitoring results and findings, the list of performance indicator CECs required for monitoring may be refined for subsequent monitoring phases. The health-based CECs listed in Table 1 shall be monitored during the entirety of the initial assessment and baseline monitoring phases (Sections 3.1 and 3.2). Based on the results of the baseline monitoring phase and/or subsequent monitoring, the list of health-based CECs required for monitoring may be revised. The method for evaluation of monitoring results for health-based CECs is provided in Section 4.2.

Quality assurance and quality control measures shall be used for both collection of samples and laboratory analysis work. The project proponent shall develop a quality assurance project plan that includes the appropriate number of field blanks, laboratory blanks, replicate samples, and matrix spikes.

[7] "For monitoring programs to assess CEC threats for urban irrigation reuse, none of the chemicals for which measurement methods and exposure data are available exceeded the threshold for monitoring priority. This is largely attributable to higher Monitoring Trigger Levels (MTLs), because of reduced water ingestion in a landscape irrigation setting compared to drinking water." MTLs are health-based screening level values for CECs for a particular water reuse scenario. MTLs were established in, *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel*, dated June 25, 2010.

Table 1 – CECs to be Monitored

Constituent	Constituent Group	Relevance/Indicator Type	Reporting Limit (µg/L)
GROUNDWATER RECHARGE REUSE - SURFACE APPLICATION			
17β-estradiol	Steroid hormones	Health	0.001
Caffeine	Stimulant	Health & Performance	0.05
N-Nitrosodimethylamine (NDMA)	Disinfection byproduct	Health	0.002
Triclosan	Antimicrobial	Health	0.05
Gemfibrozil	Pharmaceutical	Performance	0.01
Iopromide	Pharmaceutical	Performance	0.05
N,N-Diethyl-meta-toluamide (DEET)	Personal care product	Performance	0.05
Sucralose	Food additive	Performance	0.1
GROUNDWATER RECHARGE REUSE - SUBSURFACE APPLICATION			
17β-estradiol	Steroid hormones	Health	0.001
Caffeine	Stimulant	Health & Performance	0.05
NDMA	Disinfection byproduct	Health & Performance	0.002
Triclosan	Antimicrobial	Health	0.05
DEET	Personal care product	Performance	0.05
Sucralose	Food additive	Performance	0.1

µg/L – Micrograms per liter

Analytical methods for laboratory analysis of CECs shall be selected to achieve the reporting limits presented in Table 1. The analytical methods shall be based on methods published by the United States Environmental Protection Agency, methods certified by CDPH, or peer reviewed and published methods that have been reviewed by CDPH, including those published by voluntary consensus standards bodies such as the Standards Methods Committee and the American Society for Testing and Materials International. Any modifications to the published or certified methods shall be reviewed by CDPH and subsequently submitted to the Regional Water Board in an updated quality assurance project plan.

1.2. Surrogates for Monitoring Programs

Table 2 presents a list of surrogates that shall be considered for monitoring treatment of recycled water used for groundwater recharge reuse. Other surrogates not listed in Table 2 may also be considered.

Table 2: Surrogates

GROUNDWATER RECHARGE REUSE - SURFACE APPLICATION
Ammonia
Total Organic Carbon (TOC)
Nitrate
Ultraviolet (UV) Light Absorption
GROUNDWATER RECHARGE REUSE - SUBSURFACE APPLICATION
Electrical Conductivity
TOC

The project proponent shall propose surrogates to monitor on a case-by-case basis appropriate for the treatment process or processes. The Regional Water Board shall review and approve the selected surrogates in consultation with CDPH.

Where applicable, surrogates may be measured using on-line or hand-held instruments provided that instrument calibration procedures are implemented in accordance with the manufacturer's specifications and that calibration is documented.

2. MONITORING LOCATIONS

Monitoring locations for CECs and surrogates are described in this section.

2.1. Health-Based CEC Monitoring Locations

2.1.1. Groundwater Recharge Reuse - Surface Application

For groundwater recharge reuse projects implementing surface application of recycled water, health-based CECs shall be monitored at these locations:

(1) Following tertiary treatment[8] prior to application to the surface spreading area; and

(2) At monitoring well locations designated in consultation with CDPH within the distance groundwater travels downgradient from the application site in 30 days.

Monitoring locations for health-based CECs for the phases of monitoring are presented in Tables 3 through 5.

2.1.2. Groundwater Recharge Reuse - Subsurface Application

For groundwater recharge reuse projects implementing subsurface application of recycled water, health-based CECs shall be monitored at a location following treatment prior to release into an aquifer.

2.2. Performance Indicator CEC and Surrogate Monitoring Locations

To allow evaluation of individual unit processes or a combination of unit processes that provide removal of CECs, performance indicator CECs and surrogates shall be monitored at the locations described below and presented in Tables 3 through 5.

2.2.1. Groundwater Recharge Reuse - Surface Application

For groundwater recharge reuse projects using surface application of recycled water, performance indicator CECs and surrogates shall be monitored at these locations:

(1) Following tertiary treatment prior to application to the surface spreading area; and

(2) At monitoring well locations designated in consultation with CDPH within the distance groundwater travels downgradient from the application site in 30 days.

Monitoring locations for performance indicator CECs and surrogates for the phases of monitoring are presented in Tables 3 through 5.

2.2.2. Groundwater Recharge Reuse - Subsurface Application

For groundwater recharge reuse projects using subsurface application of recycled water, performance indicator CECs shall be monitored in recycled water at these locations:

(1) Prior to treatment by RO; and

[8] Standards for disinfected tertiary recycled water presented in California Code of Regulations, Title 22, section 60301.230 and 60301.320.

(2) Following treatment prior to release to the aquifer.

If the project proponent can demonstrate that the RO unit will not substantially remove a CEC, the Regional Water Board may allow monitoring for that CEC prior to the AOPs, instead of prior to the RO unit.

For groundwater recharge reuse projects using subsurface application of recycled water, surrogates shall be monitored at locations proposed by the project proponent and approved by the Regional Water Board in consultation with CDPH.

3. PHASED MONITORING REQUIREMENTS

The Regional Water Board shall phase the monitoring requirements for CECs and surrogates for groundwater recharge reuse projects. The purpose of phased monitoring is to allow monitoring requirements for health-based CECs, performance indicator CECs and surrogates to be refined based on the monitoring results and findings of the previous phase. An initial assessment monitoring phase, followed by a baseline monitoring phase, shall be conducted to determine the project-specific monitoring requirements for standard operations. The initial assessment and baseline monitoring phases shall be conducted after CDPH approval for groundwater recharge reuse project operation.

3.1. Initial Assessment Monitoring Phase

The purposes of the initial assessment phase are to: (1) identify the occurrence of health-based CECs, performance indicator CECs, and surrogates in recycled water and groundwater;[9] (2) determine treatment effectiveness; (3) define the project-specific performance indicator CECs and surrogates to monitor during the baseline phase; and (4) specify the expected removal percentages for performance indicator CECs and surrogates. The monitoring requirements for the initial assessment monitoring phase shall apply to the start-up of new facilities, piloting of new unit processes at existing facilities, and existing facilities where CECs and surrogates have not been assessed equivalent to the requirements of this Policy. Data from prior assessment need not replicate the exact frequency and duration of the initial assessment phase requirements specified in Table 3, if the overall robustness and size of the data are sufficient to adequately characterize the CECs, surrogates, and treatment performance. The initial assessment monitoring phase shall be conducted for a period of one year.

During the initial assessment monitoring phase for the applicable recycled water application method, each of the health-based CECs and performance indicator CECs

[9] The identification of the occurrence of health-based CECs, performance indicator CECs, and surrogates in groundwater only applies to groundwater recharge reuse by surface application.

listed in Table 1 and appropriate surrogates (see Section 1.2) shall be monitored. Surrogates shall be selected to monitor individual unit processes or combinations of unit processes that remove CECs. Performance indicator CEC and surrogate monitoring results that demonstrate measurable removal for a given unit process shall be candidates for use in the monitoring programs for the baseline and standard operation phases. Monitoring requirements for the initial assessment phase are summarized in Table 3.

For existing groundwater recharge reuse projects, historic monitoring data may be used to assess the occurrence and removal of CECs and surrogates. Existing projects demonstrating prior assessment of CECs and surrogates equivalent to the initial assessment phase requirements of this Policy may skip the initial monitoring phase and initiate the baseline monitoring phase requirements in Section 3.2.
Monitoring results shall be evaluated following each sampling event to allow timely implementation of any response actions. If evaluation of monitoring results indicates a concern, such as finding a concentration of a health-based CEC above the thresholds described in Table 7, more frequent monitoring may be required to further evaluate the effectiveness of the treatment process. Additional actions may also be warranted, which may include, but not be limited to, resampling to confirm a result, additional monitoring, implementation of a source identification program, toxicological studies, engineering removal studies, and/or modification of facility operations. If additional monitoring is required, the Regional Water Board shall consult with CDPH and revise the Monitoring and Reporting Program as appropriate. Evaluation of monitoring results and determination of appropriate response actions based on the monitoring results are presented in Section 4.

Following completion of the initial assessment monitoring phase, monitoring requirements shall be re-evaluated and subsequent requirements for the baseline monitoring phase shall be determined on a project-specific basis.

3.2. Baseline Monitoring Phase

Based on the findings of the initial assessment monitoring phase, project-specific performance indicator CECs and surrogates shall be selected for monitoring during the baseline monitoring phase. The purpose of the baseline monitoring phase is to assess and refine which health-based CECs, performance indicator CECs and surrogates are appropriate to monitor the removal of CECs and treatment system performance for the standard operation of a facility. Performance indicator CECs and surrogates that exhibited reduction by unit processes and/or provided an indication of operational performance shall be selected for monitoring during the baseline monitoring phase. Surrogates not reduced through a unit process are not good indicators of the unit's intended performance. For example, soil aquifer treatment may not effectively lower electrical conductivity. Therefore, electrical conductivity may not be a good surrogate for soil aquifer treatment. The baseline monitoring phase shall be conducted for a period of three years following the initial assessment monitoring phase. Monitoring requirements for the baseline phase are summarized in Table 4. If a performance indicator CEC listed in Table 1 is found not to be a good indicator, the project proponent shall propose an alternative performance indicator CEC representative of the constituent group to monitor. This performance indicator CEC shall be subject to approval by the Regional Water Board in consultation with CDPH.

For existing groundwater recharge reuse projects, historic monitoring data may be used to assess removal of health-based CECs, performance indicator CECs and surrogates. Existing projects that can demonstrate prior assessment of CECs and surrogates equivalent to the initial assessment phase and baseline phase requirements of this Policy may be eligible for the standard operation monitoring requirements.

Monitoring results shall be evaluated following each sampling event to allow timely implementation of any response actions. If evaluation of monitoring results indicates a concern, such as finding a concentration of a health-based CEC above the thresholds described in Table 7, more frequent monitoring may be required to further evaluate the effectiveness of the treatment process. Additional actions may also be warranted, which may include, but not be limited to, resampling to confirm a result, additional monitoring, implementation of a source identification program, toxicological studies, engineering removal studies, and/or modification of facility operation. If additional monitoring is required, the Regional Water Board shall consult with CDPH and revise the Monitoring and Reporting Program as appropriate. Evaluation of monitoring results and determination of appropriate response actions based on the monitoring results are presented in Section 4.

Following the baseline operation monitoring phase, monitoring requirements shall be re-evaluated and subsequent requirements for the standard operation of a project shall be determined on a project-specific basis.

Table 3: Initial Assessment Phase Monitoring Requirements

Recycled Water Use	Constituent	Frequency	Monitoring Point
Groundwater Recharge Reuse- Surface Application	Health-Based CECs and Performance Indicator CECs: All listed in Table 1.	Quarterly[1]	- Following tertiary treatment prior to application to surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
	Surrogates: To be selected on a project-specific basis.[5]	1st 3 months: To be determined on a project-specific basis.[3]	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
		3-12 months: To be determined on a project-specific basis.[3]	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
Groundwater Recharge Reuse -Subsurface Application	Health-Based CECs: All listed in Table 1.	Quarterly[1]	Following treatment prior to release to the aquifer.
	Performance Indicator CECs: All listed in Table 1.	Quarterly[1]	- Prior to RO treatment.[4] - Following treatment prior to release to the aquifer.
	Surrogates: To be selected on a project-specific basis.[5]	To be determined on a project-specific basis.	- At locations approved by the Regional Water Board.[6]

1 – This is the initial monitoring frequency for the monitoring and reporting program. The Regional Water Board may require additional monitoring to respond to a concern as stated in Section 3.1.
2 – Groundwater within the distance groundwater travels downgradient from the application site in 30-days.
3 – The monitoring frequency shall be determined by the Regional Water Board in consultation with CDPH. The intent is to have an increased monitoring frequency during the first three months and a decreased monitoring frequency after three months.
4 – If the project proponent can demonstrate that the RO unit will not substantially remove a CEC, the Regional Water Board may allow monitoring for that CEC prior to the AOP, instead of prior to the RO unit.
5 – See Section 1.2 for guidance on selection of surrogates.
6 – See Section 2.2.2 for information on surrogate monitoring locations for subsurface application.

Table 4: Baseline Phase Monitoring Requirements

Recycled Water Use	Constituent	Frequency	Monitoring Point
Groundwater Recharge Reuse – Surface Application	Health-Based CECs: All listed in Table 1. Performance Indicator CECs: Selected based on the findings of the initial assessment phase.	Semi-Annually[1]	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
	Surrogates: Selected based on the findings of the initial assessment phase.	Based on findings of the initial assessment phase. .	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
Groundwater Recharge Reuse – Subsurface Application	Health-Based CECs: All listed in Table 1.	Semi-Annually[1]	Following treatment prior to release to the aquifer.
	Performance Indicator CECs: Selected based on the findings of the initial assessment phase.	Semi-Annually[1]	- Prior to RO treatment.[3] - Following treatment prior to release to the aquifer.
	Surrogates: Selected based on the findings of the initial assessment phase.	Based on findings of the initial assessment phase.	- At locations approved by the Regional Water Board.[4]

1 – More frequent monitoring may be required to respond to a concern as stated in Section 3.2.
2 – Groundwater within the distance groundwater travels downgradient from the application site in 30-days.
3 – If the project proponent can demonstrate that the RO unit will not substantially remove a CEC, the Regional Water Board may allow monitoring for that CEC prior to the AOP, instead of prior to the RO unit.
4 – See Section 2.2.2 for information on surrogate monitoring locations for subsurface application.

3.3. Standard Operation Monitoring

Based on the findings of the baseline monitoring phase, monitoring requirements for health-based CECs, performance indicator CECs and surrogates may be refined to establish project-specific requirements for monitoring the standard operating conditions of a groundwater recharge reuse project. Monitoring requirements for the standard operation phase are summarized in Table 5. The list of health-based CECs may be revised to remove a health-based CEC from the list if monitoring results meet the conditions of the minimum threshold level presented in Table 7. Performance indicator CECs and surrogates that exhibited reduction by a unit process and/or provided an indication of operational performance shall be selected for monitoring of standard operations. If a performance indicator CEC is found to be a poor indicator, the project proponent shall propose an alternative performance indicator CEC representative of the constituent group to monitor. This performance indicator CEC shall be subject to approval by the Regional Water Board in consultation with CDPH.

Monitoring locations for the standard operation phase shall be the same as the locations used for the baseline monitoring phase.

Monitoring for health-based CECs and performance indicator CECs shall be conducted on a semi-annual basis, unless the project demonstrates consistency in treatment effectiveness in removal of CECs, treatment operational performance, and appropriate recycled water quality. These projects may be monitored for CECs on an annual basis. Monitoring frequencies for CECs and surrogates for standard operation monitoring are presented in Table 5.

Monitoring results shall be evaluated following each sampling event to allow timely implementation of any response actions. If evaluation of monitoring results indicates a concern, such as finding a health-based CEC above the thresholds described in Table 7 or a decline in removal of a performance indicator CEC from the performance levels established during the initial and baseline monitoring phases, more frequent monitoring may be required to further evaluate the effectiveness of the treatment process. Additional actions may also be warranted, which may include, but not be limited to, resampling to confirm a result, additional monitoring, implementation of a source identification program, toxicological studies, engineering removal studies, and/or modification of facility operation. If additional monitoring is required, the Regional Water Board shall consult with CDPH and revise the Monitoring and Reporting Program as appropriate. Evaluation of monitoring results and determination of appropriate response actions based on the monitoring results are presented in Section 4.

Table 5: Standard Operation Monitoring Requirement

Recycled Water Use	Constituent	Frequency	Monitoring Point
Groundwater Recharge Reuse - Surface Application	Health-Based CECs: Selected based on the findings of the baseline phase.	Semi-Annually or Annually[1]	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
	Performance Indicator CECs: Selected based on the findings of the baseline phase.		
	Surrogates: Selected based on the findings of the baseline phase.	Based on findings of the baseline assessment phase.	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
Groundwater Recharge Reuse - Subsurface Application	Health-Based CECs: Selected based on the findings of the baseline phase	Semi-Annually or Annually[1]	-Following ~~RO/AOPs~~ treatment prior to release to the aquifer.
	Performance Indicator CECs: Selected based on the findings of the baseline phase.	Semi-Annually or Annually[1]	- Prior to RO treatment.[3] - Following treatment prior to release to the aquifer.
	Surrogates: Selected based on the findings of the baseline phase,	Based on findings of the baseline assessment phase.	At locations approved by the Regional Water Board.[4]

1 – More frequent monitoring may be required to respond to a concern as stated in Section 3.3.
2 – Groundwater within the distance groundwater travels downgradient from the application site in 30-days.
3 – If the project proponent can demonstrate that the RO unit will not substantially remove a CEC, the Regional Water Board may allow monitoring for that CEC prior to the AOP, instead of prior to the RO unit.
4 – See Section 2.2.2 for information on surrogate monitoring locations for subsurface application.

4. EVALUATION OF CEC AND SURROGATE MONITORING RESULTS

This section presents the approaches for evaluating treatment process performance and health-based CEC monitoring results. Monitoring results for performance indicator CECs and surrogates shall be used to evaluate the operational performance of a treatment process and the effectiveness of a treatment process in removing CECs. For evaluation of health-based CEC monitoring results, a multi-tiered approach of thresholds and corresponding response actions is presented in Section 4.2. The evaluation of monitoring results shall be included in monitoring reports submitted to the Regional Water Board and CDPH.

4.1 Evaluation of Performance Indicator CEC and Surrogate Results

The effectiveness of a treatment process to remove CECs shall be evaluated by determining the removal percentages for performance indicator CECs and surrogates. The removal percentage is the difference in the concentration of a compound in recycled water prior to and after a treatment process (e.g., soil aquifer treatment or RO followed by AOPs), divided by the concentration prior to the treatment process and multiplied by 100.

$$\text{Removal Percentage} = ([X_{in} - X_{out}]/X_{in})\ (100)$$

X_{in} - Concentration in recycled water prior to a treatment process
X_{out} - Concentration in recycled water after a treatment process

During the initial assessment, the recycled water project proponent shall monitor performance to determine removal percentages for performance indicator CECs and surrogates. The removal percentages shall be confirmed during the baseline monitoring phase. One example of removal percentages from Drews et. al. (2008) for each application scenario and their associated processes (i.e. soil aquifer treatment or RO/AOPs) is presented in Table 6. The established removal percentages for each project shall be used to evaluate treatment effectiveness and operational performance.

4.1.1. Groundwater Recharge Reuse – Surface Application

For groundwater recharge reuse by surface application, the removal percentage shall be determined by comparing the quality of the recycled water applied to a surface spreading area to the quality of groundwater at monitoring wells. The distance between the application site and the monitoring wells shall be no more than the distance the groundwater travels in 30 days downgradient from the application site. The location of the monitoring wells shall be designated in consultation with CDPH. The removal percentage shall be adjusted to account for dilution from potable water applied to the application site, storm water applied to the application site, and native groundwater.

The removal percentage shall also be adjusted to account for CECs in these waters. The project proponent shall submit a proposal to the Regional Water Board and CDPH as part of its operation plan on how it will perform this accounting.

4.1.2. Groundwater Recharge Reuse – Subsurface Application

For groundwater recharge reuse using subsurface application, the removal percentage shall be determined by comparing recycled water quality before treatment by RO/AOPs and after treatment prior to release to the aquifer.

Table 6: Monitoring Trigger Levels and Removal Percentages

Constituent/ Parameter	Relevance/Indicator Type/Surrogate	Monitoring Trigger Level (micrograms/liter)[1]	Removal Percentages (%)[2]
GROUNDWATER RECHARGE REUSE - SURFACE APPLICATION[3]			
17β-estradiol	Health	0.0009	--[4]
Caffeine	Health & Performance	0.35	>90
NDMA	Health	0.01	--
Triclosan	Health	0.35	--
Gemfibrozil	Performance	--	>90
Iopromide	Performance	--	>90
DEET	Performance	--	>90
Sucralose	Performance	--	<25[5]
Ammonia	Surrogate	--	>90
TOC	Surrogate	--	>30
Nitrate	Surrogate	--	>30
UV Absorption	Surrogate	--	>30
GROUNDWATER RECHARGE REUSE - SUBSURFACE APPLICATION[6]			
17β-estradiol	Health	0.0009	--
Caffeine	Health & Performance	0.35	>90
NDMA	Health & Performance	0.01	25-50, >80[7]
Triclosan	Health	0.35	--
DEET	Performance	--	>90
Sucralose	Performance	--	>90
Electrical Conductivity	Surrogate	--	>90
TOC	Surrogate	--	>90

1 – Monitoring trigger levels for groundwater recharge reuse and landscape irrigation applications were established in *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel*, dated June 25, 2010.
2 –The removal percentages presented in this table are from work by Drewes et.al. (2008) and provide an example of performance for that specific research. Project specific removal percentages will be developed for each groundwater recharge reuse project during the initial and baseline monitoring phases.
3 – Treatment process: Soil aquifer treatment. The stated removal percentages are examples and need to be finalized during the initial and baseline monitoring phases for a given site.
4 – Not applicable
5 – Sucralose degrades poorly during soil aquifer treatment. It is included here mainly as a tracer.
6 – Treatment process: Reverse osmosis and advanced oxidation process.
7 – For treatment using reverse osmosis, removal percentage is between 25 and 50 percent. For treatment using reverse osmosis and advanced oxidation processes, removal percentage is greater than 80 percent.

4.2. Evaluation of Health-Based CEC Results

The project proponent shall evaluate health-based CEC monitoring results. To determine the appropriate response actions, the project proponent shall compare measured environmental concentrations (MECs) to their respective monitoring trigger levels[10] (MTLs) listed in Table 6 to determine MEC/MTL ratios. The project proponent shall compare the calculated MEC/MTL ratios to the thresholds presented in Table 7 and shall implement the response actions corresponding to the threshold.

For surface application, the results shall be evaluated for groundwater collected from the monitoring wells. For subsurface application projects, results shall be evaluated for the recycled water released to the aquifer.

Table 7: MEC/MTL Thresholds and Response Actions

MC/MTL Threshold	Response Action
If greater than 75 percent of the MEC/MTL ratio results for a CEC are less than or equal to 0.1 during the baseline monitoring phase and/or subsequent monitoring -	A) After completion of the baseline monitoring phase, consider requesting removal of the CEC from the monitoring program.
If MEC/MTL ratio is greater than 0.1 and less than or equal to 1 -	B) Continue to monitor.
If MEC/MTL ratio is greater than 1 and less than or equal to 10 -	C) Check the data. Continue to monitor.
If MEC/MLT ratio is greater than 10 and less than or equal to 100 -	D) Resample immediately and analyze to confirm CEC result. Continue to monitor.
If MEC/MLT ratio is greater than 100 -	E) Resample immediately and analyze to confirm result. Continue to monitor. Contact the Regional Water Board and CDPH to discuss additional actions. (Additional actions may include, but are not limited to, additional monitoring, toxicological studies, engineering removal studies, modification of facility operation, implementation of a source identification program, and monitoring at additional locations.)

[10] Monitoring Trigger Level (MTL): Health-based screening level value for a CEC for a particular water reuse scenario. MTLs were established in, *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel*, dated June 25, 2010.

Appendix D: Los Angeles Regional Water Quality Control Board, June 28, 2012, Regional Water Board Assistance in Guiding Salt and Nutrient Management Plan Development in the Los Angeles Region

Regional Water Board Assistance in Guiding Salt and Nutrient Management Plan Development in the Los Angeles Region

Further clarification and information to assist development of Salt and Nutrient Management Plans set forth in the State Water Board's Recycled Water Policy

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION

JUNE 28, 2012

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1. INTRODUCTION

The State Water Resources Control Board (State Water Board) adopted the Recycled Water Policy (State Water Board Resolution No. 2009-0011) on February 3, 2009. The purpose of the Recycled Water Policy (hereinafter, Policy) is to protect groundwater resources and increase the beneficial use of recycled water from municipal wastewater sources in a manner consistent with state and federal water quality laws and regulations. The Policy provides direction to the Regional Water Quality Control Boards (Regional Water Boards), proponents of recycled water projects, and the public regarding the appropriate criteria to be used by the State Water Board and the Regional Water Boards in issuing permits for recycled water projects.

The Policy recognizes the potential for increased salt and nutrient loading to groundwater basins as a result of increased recycled water use, and therefore, requires the development of regional or sub-regional salt and nutrient management plans.
In requiring such plans, the Policy acknowledges that recycled water may not be the sole cause of high concentrations of salts and nutrients in groundwater basins, and therefore regulation of recycled water alone will not address such conditions. The intent of this requirement is for salts and nutrients from all sources to be managed on a basin-wide or watershed-wide basis in a manner that ensures the attainment of water quality objectives and protection of beneficial use.

The Recycled Water Policy states:

a) Every basin/sub-basin shall have a consistent salt and nutrient management plan (hereinafter, SNMP);
b) SNMPs shall be tailored to address the water quality concerns in each basin;
c) Shall be developed or funded pursuant to the provisions of Water Code sections 10750 *et seq.* or other appropriate authority;
d) SNMPs shall be completed and proposed to the Regional Water Board within five years from the adoption date of the Policy;
e) SNMPs are not required in areas where a Regional Water Board has approved a functionally equivalent salt and nutrient plan; and
f) SNMPs may address constituents other than salt and nutrients that adversely affect groundwater quality.

Within one year of the receipt of a proposed SNMP, the Regional Water Board is expected to consider for adoption revised implementation plans, consistent with Water Code section 13242, for those groundwater basins within their regions where water quality objectives for salts or nutrients are being, or are threatening to be, exceeded. The implementation plans are to be based on the salt and nutrient plans required by the Policy.

The Policy spells out the required elements of an SNMP. In addition, State Water Board staff provided additional detail on the contents of a SNMP by developing “Suggested Elements” as a means of indicating the nature and extent of information to be provided in the plans. State Water Board staff also provided templates for Regional Water Board adoption of the implementation aspects of the SNMPs into each region’s Water Quality Control Plan (hereinafter, Basin Plan).

The Policy is clear that the SNMP process should be stakeholder-led and conducted in a collaborative manner among interested parties. The Regional Water Board’s role is that of an overseer and facilitator of the SNMP development process – providing regulatory guidance as necessary and technical and regulatory oversight of the process to ensure that the final product is compliant with the specific requirements of the Policy and state and federal water quality laws. Board staff has been attending stakeholder meetings for various groundwater basin/sub-basin groups to provide support and information as necessary.

The purpose of this document is to provide information and guidance to assist on certain aspects of the SNMP development identified by stakeholder groups. Recognizing that each basin has its own unique set of conditions and constraints, this document does not seek to dictate the methods by which stakeholders should manage salt and nutrient loads to their basins. It does, however, provide clarification of the regulatory requirements of SNMPs along with other considerations. By providing such information, the Regional Water Board will promote adherence with SNMP requirements for groundwater basins in the Los Angeles Region. This document is not a policy or regulation of the Regional Water Board and has no regulatory affect; it is intended to assist in the development of SNMPs.

2. GROUNDWATER BASINS IN THE LOS ANGELES REGION

The Los Angeles subregion overlies 24 groundwater basins and encompasses most of Ventura and Los Angeles counties (Figure 2-1). Within this subregion, the Ventura River Valley, Santa Clara River Valley, and Coastal Plain of Los Angeles basins are divided into sub-basins. The basins in the Los Angeles subregion underlie 1.01 million acres (1,580 square miles) or about 40 percent of the total surface area of the subregion (DWR, 2003). Groundwater is found in unconfined alluvial aquifers in most of the inland basins of the Los Angeles subregions. In some larger basins, such as those underlying the coastal plain, groundwater occurs in multiple aquifers separated by aquitards that create confined groundwater conditions (DWR, 2003). Coastal basins in this hydrologic region are prone to intrusion of seawater. Seawater intrusion barriers are maintained along the coastal plain. In Los Angeles County, imported and recycled water is injected to maintain a seawater intrusion barrier (DWR, 2003).

FIGURE 2-1: GROUNDWATER BASINS IN THE LOS ANGELES REGION

For purposes of regulation by the Regional Water Board pursuant to its authority under the California Water Code, the groundwater basins in the Los Angeles Region are identified in the Basin Plan. Basin descriptions in the Basin Plan were updated in 2011 based on the Department of Water Resources (DWR) 2003 revision of Bulletin 118 (Figure 2-1). The basins include the Central and West Coast Basins, which underlie the Los Angeles Coastal Plain; the San Fernando and San Gabriel Basins, which lie between the Santa Monica Mountains and the San Gabriel and Santa Susanna Range; and the Santa Clara and Ventura Basins, which lie between Oak Ridge and the Transverse Ranges.
General characteristics of the major basins/sub-basins are summarized in Table 2-1.

TABLE 2-1: GENERAL CHARACTERISTICS OF THE LOS ANGELES REGION GROUNDWATER BASINS

MAJOR GROUNDWATER BASIN(S) AND SUB-BASINS	STORAGE CAPACITY (AC-FT)	BASIN RECHARGE[1]
COASTAL PLAINS OF LOS ANGELES		
Santa Monica	~1,100,000	Natural/Recycled
Hollywood	200,000	Natural
West Coast Basin	~6,500,000	Natural/Recycled/Imported
Central	13,800,000	Natural/Recycled/Imported
SAN GABRIEL	10,740,000	Natural
RAYMOND	450,000	Natural
SAN FERNANDO	3,670,000	Natural/ Recycled
SANTA CLARA RIVER VALLEY		
Oxnard	7,140,000	Natural/ Recycled/ Septics
Mound	n.a	
Santa Paula	800,000	Recycled/Septics
Fillmore	1,100,000	Recycled/Septics
Piru	1,979,000	Recycled/Septics
Santa Clara River Valley East	n.a.	Natural/Recycled/Septics
PLEASANT VALLEY	1,886,000	Natural/Recycled/Septics
LAS POSAS VALLEY	345,000	Natural/Irrigation
ARROYO SANTA ROSA	103,600	Natural/Irrigation/Septics
UPPER/LOWER OJAI	~84,000	Natural/Septics
VENTURA RIVER VALLEY	10,000	
SIMI VALLEY	180,000	Natural/IRecycled/Septics
TIERRA REJADA	80,000	
THOUSAND OAKS	130,000	
CONEJO VALLEY	7,106	
RUSSELL VALLEY	10,570	
HIDDEN VALLEY	n.a.	
MALIBU VALLEY	n.a.	Natural/Irrigation/Septics

n.a: not available

The Central and West Coast Basins, San Gabriel and Raymond Basins, and the Piru, Fillmore, Mound and Oxnard Forebay sub-basins beneath the Santa Clara River Valley have large storage capacities with significant existing or proposed municipal groundwater use in both urbanized and agricultural areas. The water levels are stable or declining and imported and/or recycled water is used to replenish and help manage

[1] Managed and natural stormwater recharge takes place in most of these basins.

groundwater supplies. The hydrogeology and groundwater of the basins have been extensively studied and documented, and groundwater quality and transport have been studied using computer models. Potential groundwater management alternatives for these basins have also been extensively studied. The San Gabriel Basin has no confining layers, but the Regional Water Board and USEPA's management of twelve plumes of Volatile Organic Compounds (VOCs) and five plumes of nitrates, where groundwater exceeds the Maximum Contaminant Level (MCL), has limited the impact to adjudicated drinking water resources. Basin water quality has also benefited from management practices and implementation of groundwater remediation conducted by the Watermaster in conjunction with local water purveyors.
The San Fernando Basin and Santa Clara River also have large storage capacities, but have declining water levels, significantly less municipal groundwater use, and no existing conjunctive use. The groundwater quality is variable, but remains locally usable as a source of irrigation or municipal supply. Wastewater and recycling agencies within these basins experience periodic noncompliance with groundwater quality objectives. In general, the basins have been studied less extensively than the Central and West Coast, San Gabriel and Raymond and Lower Santa Clara River Valley basins, although the potential yields from these basins are equally large. In the San Fernando Basin, impacts from a VOC plume and four nitrate plumes along with the irregular presence of confining layers have impacted the use of the basin for drinking water uses. In the upgradient portion of Santa Clara River Valley, contamination of the groundwater and its exfiltrates by salts, nutrients and bacteria as a result of increasing urbanization has impacted the use of groundwater as a source of domestic supply.

Nine groundwater basins in rural areas[2] are the sole source of local drinking water supply. They have smaller storage capacities (less than 10,000 acre-feet) in unconsolidated sediment. Wastewater, recycling agencies and facilities with onsite wastewater treatment systems (hereinafter, OWTS) may experience periodic noncompliance with Basin Plan groundwater quality objectives in these basins. Fewer studies and resources exist to characterize basin hydrogeology, groundwater quality, and groundwater transport. The California Department of Public Health, the State Water Board's Division of Water Rights, and USEPA's drinking water protection programs identify problems with water quality upon delivery, and efforts to isolate pollutants from the underlying potable supply are implemented through waste discharge requirements from the Regional Water Board.

The Oxnard Plain, Ventura River, Sylmar, Pomona, and Thousand Oaks/Pleasant Valley/Fox Canyon basins are moderately sized agricultural and urbanized groundwater basins with higher salinity levels. Wastewater and recycled water can usually comply with Basin Plan groundwater quality objectives, but the quality is improved by potable water conjunctive use. The coastal areas of the Region are underlain by porous sediments or fractured bedrock, both of which may have been intruded by saltwater during historic municipal, agricultural and industrial use of the aquifers. Fresh or recycled water injection is used to limit seawater intrusion in the Central, West Coast and Oxnard Plain basins. The tidally influenced and impacted areas may be heavily studied or un-evaluated, but wastewater and recycled water permits generally require compliance with Basin Plan objectives for salt. Public water supplies are not currently developed within these areas.

[2] Ojai Valley, Acton, Sierra Pelona Valley, Lake Elizabeth, Santa Rosa Valley, Hidden Valley, Santa Susana Knolls, Lockwood Valley, and Hungry Valley.

Beneficial uses of the groundwater basins in the region include Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Services Supply (IND), Industrial Process Supply (PROC), and Aquaculture (AQUA). The designated beneficial uses for these basins are shown in Table 2-2.

TABLE 2-2: BENEFICIAL USES OF GROUND WATERS IN THE LOS ANGELES REGION.[1]

DWR[2] Basin No.	**BASIN**	**MUN**	**IND**	**PROC**	**AGR**	**AQUA**
	PITAS POINT AREA[3]	E	E	P	E	
4-1	**UPPER OJAI VALLEY**	E	E	E	E	
4-2	**OJAI VALLEY**	E	E	E	E	
4-3	**VENTURA RIVER VALLEY**					
4-3.01	Upper Ventura	E	E	E	E	
4-3.02	Lower Ventura	P	E	P	E	
4-4	**SANTA CLARA RIVER VALLEY[4]**					
4-4.02	Oxnard					
4-4.02	Oxnard Forebay	E	E	E	E	
4-4.02	Confined aquifers	E	E	E	E	
4-4.02	Unconfined and perched aquifers	E	P		E	
4-4.03	Mound					
4-4.03	Confined aquifers	E	E	E	E	
4-4.03	Unconfined and perched aquifers	E	P		E	
4-4.04	Santa Paula					
4-4.04	East of Peck Road	E	E	E	E	
4-4.04	West of Peck Road	E	E	E	E	
4-4.05	Fillmore					
4-4.05	Pole Creek Fan area	E	E	E	E	
4-4.05	South side of Santa Clara River	E	E	E	E	
4-4.05	Remaining Fillmore area	E	E	E	E	E
4-4.05	Topa Tapa (upper Sespe) area	P	E	P	E	
4-4.06	Piru					
4-4.06	Upper area (upper Lake Piru)	P	E	E	E	
4-4.06	Lower area east of Piru Creek	E	E	E	E	
4-4.06	Lower area west of Piru Creek	E	E	E	E	
4-4.07	Santa Clara River Valley East					
4-4.07	Mint Canyon	E	E	E	E	
4-4.07	South Fork	E	E	E	E	
4-4.07	Placerita Canyon	E	E	E	E	
4-4.07	Bouquet and San Francisquito Canyons	E	E	E	E	
4-4.07	Castaic Valley	E	E	E	E	
4-4.07	Saugus Aquifer	E				
4-5	**ACTON VALLEY[4]**					
4-5	Acton Valley	E	E	E	E	
4-5	Sierra Pelona Valley (Agua Dulce)	E	E		E	
4-5	Upper Mint Canyon	E	E	E	E	
4-5	Upper Bouquet Canyon	E	P	P	E	

DWR[2] Basin No.	BASIN	MUN	IND	PROC	AGR	AQUA
4-5	Green Valley	E	P	P	E	
4-5	Lake Elizabeth- Lake Hughes area	E	P	P	E	
4-6	**PLEASANT VALLEY**[5]					
4-6	Confined Aquifers	E	E	E	E	
4-6	Unconfined and perched aquifers	P	E	E	E	
4-7	**ARROYO SANTA ROSA VALLEY**[5]	E	E	E	E	
4-8	**LAS POSAS VALLEY**[5]	E	E	E	E	
4-9	**SIMI VALLEY**					
	Simi Valley Basin					
	Confined aquifers	E	E	E	E	
	Unconfined aquifers	E	E	E	E	
	Gillibrand Basin	E	E	P	E	
4-10	**CONEJO**	E	E	E	E	
4-11	**COASTAL PLAIN OF LOS ANGELES**					
4-11.01	Santa Monica	E	E	E	E	
4-11.02	Hollywood	E	E	E	E	
4-11.03	West Coast					
	Underlying Ports of Los Angeles & Long Beach		E	E	E	
4-11.03	Underlying El Segundo, Seaward of Barrier		E	E	E	
4-11.03	Remainder of Basin	E	E	E	E	
4-11.04	Central	E	E	E	E	
4-12	**SAN FERNANDO VALLEY**	E[6]	E	E	E	
4-13	**SAN GABRIEL VALLEY**[7]	E	E	E	E	
4-15	**TIERRA REJADA**	E	P	P	E	
4-16	**HIDDEN VALLEY**	E	P		E	
4-17	**LOCKWOOD VALLEY**	E	E		E	
4-18	**HUNGRY VALLEY**	E	P	E	E	
4-19	**THOUSAND OAKS AREA**[8]	E	E	E	E	
4-19	Triunfo Canyon area	P	P		E	
4-19	Lindero Canyon area	P	P		E	
4-19	Las Virgenes Canyon area	P	P		E	
4-20	**RUSSELL VALLEY**	E	P		E	
4-21	**CONEJO-TIERRA REJADA VOLCANIC**[9]	E			E	
4-22	**MALIBU VALLEY**[10]					
4-22	Camarillo area	E	P		E	
4-22	Point Dume area	E	P		E	
4-22	Malibu Valley	P	P		E	
4-22	Topanga Canyon area	P	P		E	
4-23	**RAYMOND**	E	E	E	E	
	SAN PEDRO CHANNEL ISLANDS[11]					
	Anacapa Island	P	P			
	San Nicolas Island	E	P			

DWR[2] Basin No.	BASIN	MUN	IND	PROC	AGR	AQUA
	Santa Catalina Island	E	P		E	
	San Clemente Island	P	P			
	Santa Barbara Island	P	P			

E: Existing beneficial use
P: Potential beneficial use
1: Beneficial uses for ground waters outside of the major basins listed on this table have not been specifically listed. However, ground waters outside of the major basins are, in many cases, significant sources of water. Furthermore, ground waters outside of the major basins are either potential or existing source of water for downgradient basins, and as such, beneficial uses in the downgradient basins shall apply to these areas.
2: Basins are numbered according to DWR Bulletin No. 118-Update 2003 (DWR, 2003).
3: Ground waters in the Pitas Point area (between the lower Ventura River and Rincon Point) are not considered to comprise a major basin and, accordingly, have not been designated a basin number by the DWR or outlined on Fig. 2-1.
4: Santa Clara River Valley Basin was formerly Ventura Central Basin and Acton Valley Basin was formerly Upper Santa Clara Basin (DWR, 1980).
5: Pleasant Valley, Arroyo Santa Rosa Valley, and Las Posas Valley Basins were formerly sub-basins of Ventura Central (DWR, 1980).
6: Nitrite pollution in the groundwater of the Sunland-Tujunga area currently precludes direct MUN use. Since the groundwater in this area can be treated or blended (or both), it retains the MUN designation.
7: Raymond Basin was formerly a sub-basin of San Gabriel Valley and Monk Hill sub-basin is now part of San Fernando Valley Basin (DWR, 2003). The Main San Gabriel Basin was formerly separated into Eastern and Western areas. Since these areas had the same beneficial uses as Puente Basin all three areas have been combined into San Gabriel Valley. Any groundwater upgradient of these areas is subject to downgradient beneficial uses and objectives, as explained in Footnote 1.
8: These areas were formerly part of the Russell Valley Basin (DWR, 1980).
9: Groundwater in the Conejo-Tierra Rejada Volcanic Area occurs primarily in fractured volcanic rocks in the western Santa Monica Mountains and Conejo Mountain areas. These areas have not been delineated on Fig. 2-1.
10: With the exception of groundwater in Malibu Valley (DWR Basin No. 4-22) ground waters along the southern slopes of the Santa Monica Mountains are not considered to comprise a major basin and accordingly have not been designated a basin number by DWR.
11: DWR has not designated basins for ground waters on the San Pedro Channel Islands.

3. REGIONAL GROUNDWATER QUALITY OBJECTIVES

As set forth in the Policy, *SNMPs shall be tailored to address water quality concerns in each basin and may include constituents other than salt and nutrients that adversely impact basin/sub-basin water quality.*

GROUND WATER QUALITY OBJECTIVES

Water quality objectives for ground waters in the Los Angeles Region are contained in the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan). The same water quality objectives for Nitrogen, Chemical Constituents and Radioactivity, Bacteria, and Taste and Odor, apply to all ground waters in the region (Table 3-1).

TABLE 3-1: WATER QUALITY OBJECTIVES FOR GROUNDWATER BASINS IN THE LOS ANGELES REGION

PARAMETER	**WATER QUALITY OBJECTIVE**
Nitrogen NO3-N + NO2-N NO3 NO3-N NO2-N	 10 mg/L 45 mg/L 10 mg/L 1 mg/L
Chemical Constituents and Radioactivity	For ground waters designated for use as domestic or municipal supply, Maximum Contaminant Levels (MCLs) contained in Title 22 of the California Code of Regulations apply. In addition, ground waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use.
Bacteria	In ground waters used for domestic or municipal supply (MUN), the concentration of coliform organisms over any seven day period shall be less than 1.1/100 mL.
Taste and Odor	Ground waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

The Basin Plan also contains site-specific objectives for mineral water quality for individual basins/sub-basins (Table 3-2).

TABLE 3-2: WATER QUALITY OBJECTIVES FOR SELECTED CONSTITUENTS IN REGIONAL GROUND WATERS

2011 Basin Plan Name	Bulletin 118-03 update number	1994 Basin Plan Name	Bulletin 118-80 number	TDS	Sulfate	Chloride	Boron
Upper Ojai Valley	**4-1**	**Ojai Valley**	**4-1**				
Upper Ojai Valley	4-1	Upper Ojai Valley	4-1				
Upper Ojai Valley	4-1	West of Sulfur Mountain Road	4-1	1000	300	200	1.0
Upper Ojai Valley	4-1	Central Area	4-1	700	50	100	1.0
Upper Ojai Valley	4-1	Sisar Area	4-1	700	250	100	0.5
Ojai Valley	**4-2**	**Lower Ojai Valley**	**4-2**				**0.5**
Ojai Valley	4-2	West of San Antonio-Senior Canyon	4-2	1000	300	200	0.5
Ojai Valley	4-2	East of San Antonio-Senior Canyon	4-2	700	200	50	
Ventura River Valley	**4-3**	**Ventura River Valley**	**4-3**				
Upper Ventura River	4-3.01	Upper Ventura	4-3	800	300	100	0.5
Upper Ventura River	4-3.01	San Antonio Creek Area	4-3	1000	300	100	1.0
Lower Ventura River	4-3.02	Lower Ventura	4-3	1500	500	30	1.5
Santa Clara River Valley	**4-4**	**Ventura Central**	**4-4**				
Piru	4-4.06	Santa Clara-Piru Creek Area	4-4				
Piru	4-4.06	Upper Area (above Lake Piru)	4-4	1100	400	200	2.0
Piru	4-4.06	Lower Area East of Piru Creek	4-4	2500	1200	200	1.5
Piru	4-4.06	Lower Area West of Piru Creek	4-4	1200	600	100	1.5
Fillmore	4-4.05	Santa Clara-Sespe Creek Area	4-4				
Fillmore	4-4.05	Topa Topa (upper Sespe) Area	4-4	900	350	30	2.0
Fillmore	4-4.05	Fillmore Area	4-4				
Fillmore	4-4.05	Pole Creek Fan Area	4-4	2000	800	100	1.0
Fillmore	4-4.05	South Side of Santa Clara River	4-4	1500	800	100	1.1
Fillmore	4-4.05	Remaining Fillmore Area	4-4	1000	400	50	0.7
Santa Paula	4-4.04	Santa Clara-Santa Paula Area	4-4				
Santa Paula	4-4.04	East of Peck Road	4-4	1200	600	100	1.0
Santa Paula	4-4.04	West of Peck Road	4-4	2000	800	110	1.0

2011 Basin Plan Name	Bulletin 118-03 update number	1994 Basin Plan Name	Bulletin 118-80 number	TDS	Sulfate	Chloride	Boron
Oxnard	4-4.02	Oxnard Plain	4-4				
Mound	4-4.03	Oxnard Plain	4-4				
Oxnard	4-4.02	Oxnard Forebay	4-4	1200	600	150	1.0
Oxnard	4-4.02	Confined Aquifers	4-4	1200	600	150	1.0
Oxnard	4-4.02	Unconfined & Perched Aquifers	4-4	3000	1000	500	
Pleasant Valley	**4-6**	**Pleasant Valley**	**4-6**				
Pleasant Valley	4-6	Confined Aquifers	4-6	700	300	150	1.0
Pleasant Valley	4-6	Unconfined & Perched Aquifers	4-6				
Arroyo Santa Rosa Valley	**4-7**	**Arroyo Santa Rosa**	**4-7**	900	300	150	1.0
Las Posas Valley	**4-8**	**Las Posas Valley**	**4-8**				
Las Posas Valley	4-8	South Las Posas Area	4-8				
Las Posas Valley	4-8	NW of Grimes Cyn Rd. & LA Ave. & Somis Rd.	4-8	700	300	100	0.5
Las Posas Valley	4-8	E of Grimes Cyn Rd & Hitch Blvd.	4-8	2500	1200	400	3.0
Las Posas Valley	4-8	S of LA Ave Between Somis Rd & Hitch Blvd.	4-8	1500	700	250	1.0
Las Posas Valley	4-8	Grimes Canyon Rd. & Broadway Area	4-8	250	30	30	0.2
Las Posas Valley	4-8	North Las Posas Area	4-8	500	250	150	1.0
Acton Valley	**4-5**	**Upper Santa Clara**	**4-5**				
Acton Valley	4-5	Acton Valley	4-5	550	150	100	1.0
Acton Valley	4-5	Sierra Pelona Valley (Agua Dulce)	4-5	600	100	100	0.5
Acton Valley	4-5	Upper Mint Canyon	4-5	700	150	100	0.5
Acton Valley	4-5	Upper Bouquet Canyon	4-5	400	50	30	0.5
Acton Valley	4-5	Green Valley	4-5	400	50	25	
Acton Valley	4-5	Lake Elizabeth-Lake Hughes Area	4-5	500	100	50	0.5
Santa Clara River Valley East	**4-4.07**	**Eastern Santa Clara**	**4-4.07**				
Santa Clara River Valley	4-4.07	Santa Clara-Mint Canyon	4-4.07	800	150	150	1.0

2011 Basin Plan Name	Bulletin 118-03 update number	1994 Basin Plan Name	Bulletin 118-80 number	TDS	Sulfate	Chloride	Boron
East							
Santa Clara River Valley East	4-4.07	South Fork	4-4.07	700	200	100	0.5
Santa Clara River Valley East	4-4.07	Placentia Canyon	4-4.07	700	150	100	0.5
Santa Clara River Valley East	4-4.07	Santa Clara-Bouquet & San Fransisquito Canyons	4-4.07	700	250	100	1.0
Santa Clara River Valley East	4-4.07	Castaic Valley	4-4.07	1000	350	150	1.0
Santa Clara River Valley East	4-4.07	Saugus Aquifer	4-4.07				
Simi Valley	**4-9**	**Simi Valley**	**4-9**				
Simi Valley	4-9	Simi Valley Basin	4-9				
Simi Valley	4-10	Confined Aquifers	4-9	1200	600	150	1.0
Simi Valley	4-11	Unconfined & Perched Aquifers	4-9				
Simi Valley	4-12	Gillibrand Basin	4-9	900	350	50	1.0
Conejo Valley	**4-10**	**Conejo Valley**	**4-10**	**800**	**250**	**150**	**1.0**
Coastal Plain of Los Angeles	**4-11**	**Los Angeles Coastal Plain**	**4-11**				
Central	4-11.04	Central Basin	4-11	700	250	150	1.0
West Coast	4-11.03	West Coast Basin	4-11	800	250	250	1.5
Hollywood	4-11.02	Hollywood Basin	4-11	750	100	100	1.0
Santa Monica	4-11.01	Santa Monica Basin	4-11	1000	250	200	0.5
San Fernando Valley	**4-12**	**San Fernando Valley**	**4-12**				
San Fernando Valley	4-12	Sylmar Basin	4-12	600	150	100	0.5
San Fernando Valley	4-12	Verdugo Basin	4-12	600	150	100	0.5
San Fernando Valley	4-12	San Fernando Basin	4-12				
San Fernando Valley	4-12	West of Highway 405	4-12	800	300	100	1.5
San Fernando Valley	4-12	East of Highway 405 (overall)	4-12	700	300	100	1.5
San Fernando Valley	4-12	Sunland-Tujunga Area	4-12	400	50	50	0.5
San Fernando Valley	4-12	Foothill Area	4-12	400	100	50	1.0
San Fernando Valley	4-12	Area Encompassing RT-Tujunga -Erwin-N. Hollywood-Whithall-LA/Verdugo-Crystal	4-12	600	250	100	1.5

2011 Basin Plan Name	Bulletin 118-03 update number	1994 Basin Plan Name	Bulletin 118-80 number	TDS	Sulfate	Chloride	Boron
		Springs-Headworks-Glendale/Burbank Well Fields					
San Fernando Valley	4-12	Narrows Area (below confluence of Verdugo Wash with the LA River	4-12	900	300	150	1.5
San Fernando Valley	4-12	Eagle Rock Basin	4-12	800	150	100	0.5
San Gabriel Valley/Raymond/San Fernando Valley	**4-13**	**San Gabriel Valley**	**4-13**				
Raymond	4-23	Raymond Basin	4-13				
San Fernando Valley	4-12	Monk Hill Sub-Basin	4-13	450	100	100	0.5
Raymond	4-23	Santa Anita Area	4-13	450	100	100	0.5
Raymond	4-23	Pasadena Area	4-13	450	100	100	0.5
San Gabriel Valley	4-13	Main San Gabriel Basin	4-13				
San Gabriel Valley	4-13	Western Area	4-13	450	100	100	0.5
San Gabriel Valley	4-13	Eastern Area	4-13	600	100	100	0.5
San Gabriel Valley	4-13	Puente Basin	4-13	1000	300	150	1.0
Upper Santa Ana Valley/San Gabriel Valley	**8-2.01**	**Upper Santa Ana Valley**	**4-14**				
San Gabriel Valley	4-13	Live Oak Area	8-2	450	150	100	0.5
San Gabriel Valley	4-13	Claremont Heights Area	8-2	450	100	50	
San Gabriel Valley	4-13	Pomona Area	8-2	300	100	50	0.5
Upper Santa Ana Valley/ San Gabriel Valley	8-2.01/4-13	Chino Area	8-2	450	20	15	
San Gabriel Valley	4-13	Spadra Area	8-2	550	200	120	1.0
Tierra Rejada	**4-15**	**Tierra Rejada**	**4-15**	**700**	**250**	**100**	**0.5**
Hidden Valley	**4-16**	**Hidden Valley**	**4-16**	**1000**	**250**	**250**	**1.0**
Lockwood Valley	**4-17**	**Lockwood Valley**	**4-17**	**1000**	**300**	**20**	**2.0**
Hungry Valley	**4-18**	**Hungry Valley & Peace Valley**	**4-18**	**500**	**150**	**50**	**1.0**
Conejo Valley	**4-10**	**Thousand Oaks Area**	**4-19**	**1400**	**700**	**150**	**1.0**
Russell Valley	**4-20**	**Russell Valley**	**4-20**				
Russell Valley	4-20	Russell Valley	4-20	1500	500	250	1.0
Thousand Oaks Area	4-19	Triunfo Canyon Area	4-20	2000	500	500	2.0

2011 Basin Plan Name	Bulletin 118-03 update number	1994 Basin Plan Name	Bulletin 118-80 number	TDS	Sulfate	Chloride	Boron
Thousand Oaks Area	4-20	Lindero Canyon Area	4-20	2000	500	500	2.0
Thousand Oaks Area	4-21	Las Virgenes Canyon Area	4-20	2000	500	500	2.0
Deleted	**Deleted**	**Conejo-Tierra Rejada Volcanic Area**	**4-21**				
Malibu Valley	**4-22**	**Santa Monica Mountains-Southern Slopes**	**4-22**				
Malibu Valley	4-22	Camarillo Area	4-22	1000	250	250	1.0
Malibu Valley	4-22	Point Dume Area	4-22	1000	250	250	1.0
Malibu Valley	4-22	Malibu Valley	4-22	2000	500	500	2.0
Malibu Valley	4-22	Topanga Canyon Area	4-22	2000	500	500	2.0
San Pedro Channel Islands		**San Pedro Channel Islands**					
Anacapa Island	No DWR#	Anacapa Island	No DWR#				
San Nicholas Island	No DWR#	San Nicholas Island	No DWR#	1100	150	350	
Santa Catalina Island	No DWR#	Santa Catalina Island	No DWR#	1000	100	250	1.0
San Clemente Island	No DWR#	San Clemente Island	No DWR#				
Santa Barbara	No DWR#	Santa Barbara Island	No DWR#				

GROUNDWATER BASIN WATER QUALITY

The following section presents information on general water quality conditions as provided by the Department of Water Resources in their Bulletin 118- 2003 update. This information is meant to provide a general overview of the conditions within the basins. It is anticipated that more current information will be provided in the Salt and Nutrient Management Plans developed for each basin.

According to DWR's Bulletin 118-2003, nitrate content is elevated in some parts of the subregion. Volatile organic compounds (VOCs) have caused groundwater impairments in some of the industrialized portions of the region. The San Gabriel Valley and San Fernando Valley groundwater basins both have multiple sites of contamination from VOCs. The main constituents in the contamination plumes are trichloroethylene (TCE) and tetrachloroethylene (PCE). Some of the locations have been declared federal Superfund sites. Contamination plumes containing high concentrations of TCE and PCE also occur in the Bunker Hill Sub-basin of the Upper Santa Ana Valley Groundwater Basin. Some of these plumes are also designated as Superfund sites. Also, perchlorate has been identified as a significant pollutant in some areas of the Los Angeles Region.

Basin-specific information on water quality in the region's major basins/sub-basins is provided in Table 3-3. This information is summarized from DWR's Bulletin 118-2003 and includes monitoring results from public supply wells sampled under the DHS Title 22 program from 1994 through 2000. Per this bulletin, the information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

TABLE 3-3: WATER QUALITY IN MAJOR BASINS/SUB-BASINS IN THE LOS ANGELES REGION

Basin/sub-basin	Status	TDS	Constituent Group[3]	Number of wells sampled[4]	Number of wells with a concentration above an MCL[5]
Central Basin		Range: 200-2500 mg/l Average: 453 mg/l (293 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	316 315 315 322 344 316	15 1 2 0 43 113
West Coast Basin	Injection wells create a groundwater ridge, which inhibits the inland flow of saltwater into the sub-basin to protect and maintain groundwater elevations.		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	45 45 46 46 44 45	0 1 0 0 0 30
San Fernando Valley Basin	Groundwater contamination from VOCs and hexavalent chromium (CrVI) continues to be a serious problem for water supply in the eastern portion of the San Fernando Valley		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	129 122 129 134 134 129	6 13 44 3 90 17
San Gabriel[6]	Four areas of the San Gabriel Valley Basin are Superfund sites. Trichloroethylene, Perchloroethylene, and Carbon Tetrachloride contaminate the Whittier Narrows, Puente basin, Baldwin Park and El Monte areas.		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	287 278 300 292 301 287	3 4 73 1 85 20

[3] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater–Bulletin 118* by DWR (2003).

[4] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

[5] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

[6] There are six operable units (O.U.) within the Main San Gabriel Basin: the Baldwin Park O.U., the Puente Valley O.U., the Whittier Narrows O.U., the South El Monte O.U., and the Area 3 (Alhambra) O.U.

Basin/sub-basin	Status	TDS	Constituent Group[3]	Number of wells sampled[4]	Number of wells with a concentration above an MCL[5]
Raymond	Fluoride content occasionally exceeds recommended levels of 1.6 mg/L, near the San Gabriel Mountain front. Volatile organic compounds are detected in wells near Arroyo Seco and radiation is occasionally detected near the San Gabriel Mountains.	Range: 38-780 mg/l Average: 346 mg/l (70 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	66 55 78 57 60 66	9 8 23 0 19 9
Santa Monica		Range: 729-1,156 mg/L Average: 916 mg/L (7 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	13 12 13 12 12 13	0 1 0 0 9 8
Hollywood	Public water supply from imported surface water, groundwater quality information scarce.	Single sample 526 mg/L (Truran, 2001).			
Oxnard	Nitrate concentrations can exceed the state Maximum Contaminant Level (MCL) of 45 mg/L. Intrusion of seawater has occurred near Pt. Mugu and Port Hueneme. Elevated levels of DDT and PCB are found near Pt. Mugu.	Range: 160-1,800 mg/L Average: 1,102 mg/L (69 public supply wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	73 69 80 63 68 73	6 8 14 1 2 49
Piru	Agricultural return flows may lead to high nitrate concentrations particularly during dry periods. Urban stormwater runoff within the Santa Clara River Watershed tends to concentrate salts and other contaminants. The most prominent natural contaminants in the sub-basin are boron and sulfate.		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	3 3 3 3 3 3	0 0 0 0 0 1

Basin/sub-basin	Status	TDS	Constituent Group[3]	Number of wells sampled[4]	Number of wells with a concentration above an MCL[5]
Fillmore	Agricultural return flows may lead to high nitrate concentrations particularly during dry periods. Urban stormwater runoff within the Santa Clara River Watershed tends to concentrate salts and other contaminants. Other contaminants in the sub-basin are boron, sulfate, and nitrates.		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	13 10 14 10 10 13	0 1 1 0 1 3
Santa Paula	Nitrate concentrations can fluctuate significantly.	Range: 470-1,800 mg/L Average: 1,198 mg/L (13 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	16 12 16 9 9 16	3 1 2 0 0 15
Mound		Range: 1,498-1,908 mg/L Average: 1,644 mg/L (4 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	2 2 2 2 2 2	1 0 0 0 0 2
Las Posas		Range: 338-1,700 mg/L Average: 742 mg/L (23 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	22 22 24 22 22 22	1 2 0 1 0 16
Santa Rosa			Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	1 1 1 1 1 1	0 0 0 0 0 1

Basin/sub-basin	Status	TDS	Constituent Group[3]	Number of wells sampled[4]	Number of wells with a concentration above an MCL[5]
Pleasant Valley		Range: 597-1,420 mg/L Average: 922 mg/L (10 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	10 10 10 10 10 10	0 1 0 0 0 10
Lower Santa Clara	Drinking water standards are met at public supply wells without the use of treatment methods. Areas with somewhat elevated mineral levels have been observed in the northern basin. Some wells with elevated nitrate concentration have been identified in the southern portion of the basin.		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	257 234 268 253 252 257	9 1 10 3 4 29
Upper Santa Clara	Nitrate content has exceeded 45 mg/L in some parts of the sub-basin with a well in the central part of the sub-basin reaching 68 mg/L. Trichloroethylene and ammonium perchlorate have been detected in four wells in the eastern part of the sub-basin.	Range: 300-1,662 mg/L Average: 695 mg/L (59 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	67 56 74 66 66 67	4 2 2 4 0 7

4. CLARIFICATION OF SNMP REQUIREMENTS

The Policy states that SNMPs are to be developed for every groundwater basin in California. This will allow water purveyors and basin management agencies to take advantage of a streamlined permit process for recycled water projects that is intended to expedite the implementation of recycled water projects. The required elements of a SNMP, as specified by the Policy include:

a) Development of a basin-wide monitoring plan;
b) Annual monitoring of Constituents of Emerging Concern;
c) Consideration of Water Recycling/Stormwater Recharge/Use;
d) Source identification/Source loading and assimilative capacity estimates;
e) Implementation measures; and
f) Anti-degradation analyses.

Development of SNMPs will lead to a more comprehensive approach to basin water quality management. SNMP proponents will have the opportunity to collectively determine the implementation strategies necessary to comply with water quality objectives established to restore and maintain the beneficial use of the ground waters.

SNMPs are required for each groundwater basin in the state. However, there is flexibility in the level of detail required in each plan depending on the size, complexity and level of activity within the basin. That notwithstanding, an initial assessment of water quality (past and present) and use (including future use) is necessary in order to determine the level of specificity warranted in each basin. The following sections discuss the required SNMP elements in greater detail, providing clarification where communications with stakeholders have indicated it to be necessary.

STAKEHOLDER COLLABORATION

As stated in the Policy*:*
"…local water and wastewater entities, together with local salt/nutrient contributing stakeholders, will fund locally driven and controlled, collaborative processes open to all stakeholders that will prepare salt and nutrient management plans for each basin/sub-basin in California, including compliance with CEQA and participation by Regional Water Board staff."

Stakeholder collaboration may be within or between basins. While the Policy requires that every basin/sub-basin in the state have a SNMP, this does not preclude stakeholders working across basin boundaries to accommodate existing and future stakeholder structures and basin management efforts. Also, some differences exist between DWR Bulletin-118 basin/sub-basin definitions and court-adjudicated basins, which may influence formation of stakeholder groups.

Key stakeholders include local agencies involved in groundwater management, owners and operators of recharge facilities, water purveyors, water districts, water masters, and salt and nutrient contributing dischargers. These agencies have access to basin-specific data and information that is essential to the development of successful SNMPs. Private well owners may also have essential water quality information. Nongovernmental entities may have information about ecosystems associated with groundwater exfiltration. Other parties from regulatory agencies, environmental groups, industry, and interested persons may also provide important support. No single entity is wholly responsible for SNMP development. While a lead agency is necessary to coordinate the development effort, the point of a collaborative process is to take advantage of the collective expertise, resources and information of the participating entities. Therefore, participation to varying degrees by all stakeholders is encouraged. Table 4-1 lists the agencies already engaged in, and others that should consider being involved in salt and nutrient management for each groundwater basin or sub-basin group. This is not an exhaustive list.

TABLE 4-1: PARTICIPATING AND POTENTIAL STAKEHOLDERS FOR EACH BASIN/SUB-BASIN GROUP AS OF FEBRUARY 2012

Basin/sub-basin	**Participating and Potential Stakeholders**
Central and West Coast Basins	Water Replenishment District (WRD) of Southern California City of Los Angeles Department of Water & Power County Sanitation Districts of Los Angeles County Metropolitan Water District of Southern California West Basin Municipal Water District Central Basin Municipal Water District Los Angeles County Department of Public Works California Department of Public Health
San Fernando Basin	Upper Los Angeles River Area Water Master Los Angeles Department of Water and Power City of Glendale City of Burbank City of San Fernando City of La Crescenta Metropolitan Water District US Environmental Protection Agency California Department of Public Health
San Gabriel/	San Gabriel Basin Water Master City of Alhambra* City of Arcadia* City of Pasadena* Crescenta Valley Water District* Metropolitan Water District County Sanitation Districts of Los Angeles County
Raymond Basin	Raymond Basin Management Board City of Alhambra* City of Pasadena* Metropolitan Water District County Sanitation Districts of Los Angeles County
Three Valleys (Six Basins)	Three Valleys Municipal Water District*
Lower Santa Clara Pleasant Valley, Las Posas, Oxnard	Fox Canyon United Water Conservation District Metropolitan Water District City of Oxnard
Lower Santa Clara	Ventura County Watershed Protection District City of Fillmore County of Ventura City of Santa Paula United Water Conservation District
Eastern Santa Clara	Castaic Lake Water Agency

Basin/sub-basin	Participating and Potential Stakeholders
Saugus Aquifer, Santa Clara Castaic Valley, South Fork, Placerita Canyon, Santa Clara-Bouquet and San Francisquito Canyons, Santa Clara-Mint Canyon, Acton/Sierra Pelona/Upper Mint Canyon Basins	Los Angeles County Sanitation Districts City of Santa Clara
Tierra Rejada/Gillibrand/Simi/Thousand Oaks/Conejo/Hidden Valley/Russell Valley Basins	Calleguas Municipal Water District Calleguas Creek Watershed Management Plan
Hollywood and Santa Monica Basins	*City of Beverly Hills* City of Santa Monica**
Pleasant Valley, Las Posas, Oxnard and Tierra Rejada/Gillibrand/Simi/Thousand Oaks/Conejo/Hidden Valley/Russell Valley Basins	Calleguas Creek Watershed Management Plan, Fox Canyon, City of Oxnard, United Water Conservation District.
Ventura/Ojai	County of Ventura
Malibu Valley	City of Malibu* La Paz Treatment Facility

**Potentia Stakeholders*

Ideally, participation in the SNMP development process should not be limited to those agencies directly involved with basin management or salt and nutrient contributors. Other parties from regulatory agencies, environmental groups, industry, and interested persons may be included and/or kept informed; and their input solicited for each major task. Groundwater basin adjudication may impact the roles of stakeholders not identified as parties in the applicable judgments.

The Regional Water Board's role in preparing SNMPs is to:

a) Facilitate interaction and information sharing within and among groundwater basin stakeholder groups,
b) Provide regulatory guidance on the SNMP requirements of the Policy,
c) Provide technical and regulatory oversight of the SNMP process to maintain consistency in scope and content of these plans and ensure compliance with the Policy's requirements, and
d) Adopt, as appropriate, the implementation measures included in SNMPs into the Water Quality Control Plan for the Los Angeles Region.

The Regional Water Board conducted its first stakeholder workshop in November 2010 to introduce the SNMP requirement to stakeholders and initiate the development process. Since then stakeholder groups have been formed for the major groundwater basins and Regional Water Board staff have been made available to each group to provide basin-specific technical guidance and oversight of individual plans. A second stakeholder workshop was held in November 2011 to provide further clarification on certain regulatory aspects of the SNMP development process that were identified as issues of concern by stakeholders.

Specific SNMP Requirements

It is the intent of the Policy "… *that salts and nutrients from all sources be managed on a basin-wide or watershed-wide basis in a manner that ensures attainment of water quality objectives and protection of beneficial uses*."

The Policy also specifies that each salt and nutrient management plan shall include:

a) A basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations to determine whether concentrations of salt, nutrients, and other constituents of concern are consistent with applicable water quality objectives.
b) A provision for annual monitoring of Emerging Constituents/Constituents of Emerging Concern
c) Water recycling and stormwater recharge/use goals and objectives.
d) Salt and nutrient source identification, basin/sub-basin assimilative capacity and loading estimates, together with fate and transport of salts and nutrients.
e) *Implementation measures to manage salt and nutrient loading in the basin on a sustainable basis.*
f) An antidegradation analysis demonstrating that the projects included within the plan will, collectively, satisfy the requirements of the Antidegradation Policy (Resolution No. 68-16).

SNMP "Suggested Elements"

In 2010, at the direction of the Executive Director, State Water Board staff provided a draft list of suggested elements for SNMPs that would assure that the requirements of the Policy were met (Appendix I). These elements are not considered additions to the requirements; rather they are meant to provide specifics as to how the requirements can be met, and indicate the appropriate level of detail necessary in a SNMP. They are purely recommendations and stakeholders have the option of arriving at the Policy's SNMP requirements via alternative means. This is illustrated in Table 4-2 where the suggested elements provided by State Water Board staff are lined up with the SNMP requirements as enumerated in the Policy.

Table 4-2: SNMP Suggested Elements and Corresponding Requirements from the Recycled Water Policy

Recycled Water Policy Section	**Recycled Water Policy Requirement**	**SNMP Suggested Elements**
6b(1)	…local water and wastewater entities, together with local salt/nutrient contributing stakeholders, will fund locally driven and controlled, collaborative processes open to all stakeholders that will prepare salt and nutrient management plans for each basin/sub-basin in California, including compliance with CEQA …	**CEQA ANALYSIS**
6b(1)(a)	It is the intent of this Policy for every groundwater basin/sub-	**GROUNDWATER BASIN CHARACTERISTICS** GROUNDWATER BASIN OVERVIEW

RECYCLED WATER POLICY SECTION	RECYCLED WATER POLICY REQUIREMENT	SNMP SUGGESTED ELEMENTS

	basin in California to have a consistent salt/nutrient management plan. The degree of specificity within these plans and the length of these plans will be dependent on a variety of site-specific factors, including but not limited to size and complexity of a basin, source water quality, stormwater recharge, hydrogeology, and aquifer water quality.	▪ Physiographic Description
		▪ Groundwater Basin and/or Sub-Basin Boundaries
		▪ Watershed Boundaries
		▪ Geology
		▪ Hydrogeology/Hydrology
		▪ Aquifers
		▪ Recharge Areas
		▪ Hydrologic Areas Tributary to the Groundwater Basin
		▪ Climate
		▪ Land Cover and Land Use
		▪ Water Sources
		
		GROUNDWATER INVENTORY
		▪ Groundwater Levels
		▪ Historical, Existing, Regional Changes
		▪ Groundwater Storage
		▪ Historical, Existing, Changes
		▪ Groundwater Production
		▪ Historical, Existing, Spatial and Temporal Changes, Safe Yield
		▪ Groundwater Mixing and Movement
		▪ Subsurface Inflow/Outflow
		▪ Horizontal and Vertical Movement and Mixing
		
		BASIN EVALUATION
		WATER BALANCE
		▪ Conceptual Model
		▪ Basin Inflow/Outflow
		▪ Groundwater, Surface Water, Imported Water, Water Transfers, Recycled Water Irrigation, Waste Water Discharges, Agricultural Runoff, Stormwater Runoff (Urban, Agriculture, Open Space), Precipitation
		▪ Infiltration, Evaporation, Evapotranspiration, Recharge, Surface Water and Groundwater Connectivity
		
		PROJECTED WATER QUALITY
		
		BASIN WATER QUALITY
		▪ Groundwater Quality
		    ▪ Background, Historical, Existing
		    ▪ Water Quality Objectives
		▪ Surface Water Quality
		▪ Delivered Water Quality
		▪ Imported Water Quality
		▪ Recycled Water Quality

6b(3)(a)	A basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations.	**BASIN MANAGEMENT PLAN ELEMENTS** BASIN MONITORING PROGRAMS ▪ Identify Responsible Stakeholder(s) Implementing the Monitoring ▪ Monitoring Program Goals

Recycled Water Policy Section	Recycled Water Policy Requirement	SNMP Suggested Elements

6b(3)(a)(i)
 	
6b(3)(a)(iii)
	The plan must focus on basin water quality near water supply wells and areas proximate to large water recycling projects, particularly groundwater recharge projects. Also, monitoring locations shall, where appropriate, target groundwater and surface waters where groundwater has connectivity with adjacent surface waters.
	
	The monitoring plan shall identify those stakeholders responsible for conducting, compiling, and reporting the monitoring data.
		▪ Sampling Locations
		▪ Water Quality Parameters
		▪ Sampling Frequency
		▪ Quality Assurance/Quality Control
		▪ Database Management
		▪ Data Analysis and Reporting
		▪ Groundwater Level Monitoring
		▪ Basin Water Quality Monitoring
		▪ Groundwater Quality Monitoring
		    ▪ Areas of Surface Water and Groundwater Connectivity
		    ▪ Areas of Large Recycled Water Projects
		    ▪ Recycled Water Recharge Areas
		▪ Surface Water Quality Monitoring
		▪ Stormwater Monitoring
		▪ Wastewater Discharge Monitoring
		▪ Recycled Water Quality Monitoring
		▪ Salt and Nutrient Source Loading Monitoring
		▪ Other Constituents of Concern
		▪ Water Balance Monitoring
		    ▪ Climatological Monitoring
		    ▪ Surface Water Flow Monitoring
		    ▪ Groundwater Production Monitoring

6b(3)(b)	A provision for annual monitoring of Emerging Constituents/ Constituents of Emerging Concern (e.g., endocrine disrupters, personal care products or pharmaceuticals) (CECs) consistent with recommendations by CDPH and consistent with any actions by the State Water Board taken pursuant to paragraph 10(b) of this Policy.	**BASIN EVALUATION** CONSTITUENTS OF EMERGING CONCERNS (CECs) ▪ Constituents ▪ CEC Source Identification
6b(3)(c)	Water recycling and stormwater recharge/use goals and objectives.	**BASIN MANAGEMENT PLAN ELEMENTS** GROUNDWATER MANAGEMENT GOALS ▪ Recycled Water and Stormwater Use/Recharge Goals and Objectives
6b(3)(d)	Salt and nutrient source identification, basin/sub-basin assimilative capacity and loading estimates, together with fate and transport of salts and nutrients.	**BASIN EVALUATION** SALT AND NUTRIENT BALANCE ▪ Conceptual Model ▪ Salt and Nutrient Source Identification ▪ Salt and Nutrient Loading Estimates ▪ Historical, Existing, Projected ▪ Import/Export ▪ Basin/Sub-Basin Assimilative Capacity for Salt and Nutrients ▪ Fate and Transport of Salt and Nutrients
6b(3)(e)	Implementation measures to	**BASIN MANAGEMENT PLAN ELEMENTS**

RECYCLED WATER POLICY SECTION	RECYCLED WATER POLICY REQUIREMENT	SNMP SUGGESTED ELEMENTS

	manage salt and nutrient loading in the basin on a sustainable basis.	GROUNDWATER MANAGEMENT GOALS
		▪ Groundwater Management Goals
		
		SALT AND NUTRIENT LOAD ALLOCATIONS
		
		SALT AND NUTRIENT MANAGEMENT STRATEGIES
		▪ Load Reduction Goals
		▪ Future Land Development and Use
		▪ Salt/Nutrient Management Options
		▪ Salt/Nutrient Management Strategies and Modeling
		▪ Management Strategy Model Results
		▪ Feasibility
		▪ Cost
		
		PLAN IMPLEMENTATION
		SALT AND NUTRIENT MANAGEMENT PROGRAM
		▪ Organizational Structure
		▪ Stakeholder Responsibilities
		▪ Implementation Measures to Manage Salt and Nutrient Loading
		▪ Salt/Nutrient Management
		  ▪ Water Supply Quality
		  ▪ Regulations of Salt/Nutrients
		  ▪ Load Allocations
		  ▪ Salt and Nutrient Source Control
		  ▪ CEC Source Control
		  ▪ Site Specific Requirements
		▪ Groundwater Resource Protection
		▪ Additional Studies
		
		PERIODIC REVIEW OF SALT/NUTRIENT MANAGEMENT PLAN
		▪ Adaptive Management Plan
		▪ Performance Measures
		▪ Performance Evaluation
		
		COST ANALYSIS
		▪ CWC § 13141, "…prior to implementation of any agricultural water quality control program, an estimate of the total cost of such a program, together with an identification of potential sources of funding, shall be indicated in any regional water quality control plan."
		
		IMPLEMENTATION SCHEDULE

6b(3)(f)	An antidegradation analysis demonstrating that the projects included within the plan will, collectively, satisfy the requirements of Resolution No. 68-16.	**ANTIDEGRADATION ANALYSIS**
No specific reference	While the background information listed in State	**BACKGROUND** ▪ Purpose

RECYCLED WATER POLICY SECTION	RECYCLED WATER POLICY REQUIREMENT	SNMP SUGGESTED ELEMENTS
	Water Board's "Suggested Elements" is not specifically identified by the Recycled Water Policy, it would provide the necessary information in support of the conceptual basis for the plan.	▪ Protection of Beneficial Use ▪ Sustainability of Water Resources ▪ Problem Statement ▪ Salt/Nutrient Management Objectives ▪ Regulatory Framework ▪ Groundwater Beneficial Uses ▪ Stakeholder Roles and Responsibilities ▪ Process to Develop Salt/Nutrient Management Plan

The Policy recognizes that:
The degree of specificity within these plans and the length of these plans will be dependent on a variety of site-specific factors, including but not limited to size and complexity of a basin, source water quality, stormwater recharge, hydrogeology, and aquifer water quality.

In response to this, State Water Board staff has suggested three classes of basins in the context of SNMP development to assist in determining the extent of information required for each class: Major, Saline/Coastal, and No Threat basins. They are defined as follows:

a) Major: Large in size, complex land use, heavily used, water quality threatened;
b) Saline/Coastal: Basins with naturally saline groundwater not currently used as a source of water; and
c) Low threat: Basins with minimal or no known or current threat to water quality.

The State Water Board staff have also provided draft Basin Plan Amendment templates to indicate the amount of information necessary for each classification. The templates for each basin class are provided in Appendix I. Groundwater basins in the Los Angeles Region do not necessarily fit neatly into these classes; the scope of information for a SNMP will also be influenced by basin-specific attributes, conditions and water quality concerns. However, stakeholders are encouraged to use the templates as a guide.

Regardless of how a basin may be categorized, the Policy states that the SNMP must include "implementation measures to manage salt and nutrient loading in the basin on a sustainable basis."
Where applicable, implementation strategies may be developed to address issues such as pollution prevention, water quality restoration, basin recharge with storm water and recycled water and groundwater-surface water interaction.

A. BASIN/SUB-BASIN WIDE MONITORING PLAN

As set forth in the Policy Part 6(b)(3)(a), each SNMP shall include *"a basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations. The scale of the basin/sub-basin monitoring plan is dependent upon the site-specific conditions and shall be adequate to provide a reasonable, cost-effective means of determining whether the concentrations of salt, nutrients, and other constituents of concern as identified in the salt and nutrient plans are consistent with applicable water* *quality objectives. Salts, nutrients, and the constituents identified in paragraph 6(b)(1)(f) shall be monitored. The frequency of monitoring shall be determined in the salt/nutrient management plan and approved by the Regional Water Board pursuant to paragraph 6(b)(2).*

(i) The monitoring plan must be designed to determine water quality in the basin. The plan must focus on basin water quality near water supply wells and areas proximate to large water recycling projects, particularly groundwater recharge projects. Also, monitoring locations shall, where appropriate, target groundwater and surface waters where groundwater has connectivity with adjacent surface waters.

(ii) The preferred approach to monitoring plan development is to collect samples from existing wells if feasible as long as the existing wells are located appropriately to determine water quality throughout the most critical areas of the basin.

(iii) The monitoring plan shall identify those stakeholders responsible for conducting, compiling, and reporting the monitoring data. The data shall be reported to the Regional Water Board at least every three years.

The objective of this requirement is to develop a basin wide monitoring plan that would allow for a comprehensive assessment of basin water quality in relation to beneficial uses supported by the basin and applicable water quality objectives. Several localized and project-specific monitoring programs exist throughout the basins in the region. These include monitoring of ground and surface waters by various agencies to comply with regulatory requirements, as well as voluntary monitoring efforts by these agencies and environmental groups. In keeping with the Policy's preferred approach, it is recommended that all parties engaged in water quality monitoring and data collection within each groundwater basin be identified as a starting point in developing a basin-wide monitoring plan. Compilation and review of existing programs and groundwater quality reports will reduce the potential for redundancy, and also assist in identifying data gaps that need to be addressed.

Regulatory agencies are involved in statewide monitoring of groundwater quality for the purpose of assessing and protecting groundwater basins. These agencies include the State Water Board, the California Department of Public Health, Department of Water Resources, Department of Toxic Substances Control, Department of Pesticide Regulation, and the U.S. Geological Survey. State Water Board's online groundwater information system, GeoTracker GAMA provides access to groundwater quality monitoring data from these agencies as well as other Regional Boards and the Lawrence Livermore National Laboratory. This information is available on the Groundwater Ambient Monitoring and Assessment (GAMA) program website at: http://www.waterboards.ca.gov/water_issues/programs/gama/geotracker_gama.shtml. Results from these monitoring efforts may be used in conjunction with those generated by water purveyors, managers and private entities in determining the scope of the monitoring plan.

The monitoring plan should clearly define the areal extent of the basin or sub-basin to be monitored. The region's major basin boundaries were most recently updated by the Department of Water Resources in its 2003 update of Bulletin 118 (DWR, 2003). While this update omitted some of the sub-basins that were identified in the previous version, the Regional Water Board's Basin Plan still retains these basins/sub-basin as ground waters to be protected under the California Water Code.

In developing sampling locations within a given basin, stakeholders are encouraged to consider:

a) Location of existing monitoring locations;
b) Location of existing and potential contributing sources, including areas with significant groundwater-surface water interaction; and
c) Existing and proposed recycled water projects/facilities and groundwater recharge areas.

Stakeholders are also encouraged to use the 2003 U.S. Geological Survey report titled "Framework for a Ground Water Quality and Assessment Program for California" as a resource when developing the monitoring plan. This document is available at: http://www.waterboards.ca.gov/water_issues/programs/gama/docs/usgs_rpt_72903_wri034166.pdf

The parameters to be monitored should be reflective of the water quality conditions and applicable water quality objectives within a given basin or sub-basin. Per the Policy, salts, nutrients, and CECs will be monitored in all basins. It is recommended that a draft monitoring plan be submitted to the Regional Water Board for review prior to finalizing the SNMP of which it would be a component. As with other groundwater monitoring programs in the region, data generated from SNMP monitoring programs should be submitted to the State Water Board's online groundwater information system – GeoTracker.

The Policy also states that Salt and Nutrient Management Plans may include constituents other than salt and nutrients which may impact water quality in the basin/sub-basin. However, inclusion of additional parameters is at the discretion of stakeholders involved in the SNMP development process. Stakeholders are encouraged to consider existing groundwater quality information and their knowledge of localized conditions, in determining which other parameters of concern should be monitored. Table 4-3 lists some of the known parameters of concern in the major basins and sub-basins in the Los Angeles Region.

TABLE 4-3: PARAMETERS OF CONCERN IN THE LOS ANGELES REGION'S MAJOR BASINS

<table>
<tr><th colspan="2">Groundwater Basin</th><th>Primary Parameters of Concern*</th></tr>
<tr><td colspan="2">West Coast
Central</td><td>Seawater Intrusion</td></tr>
<tr><td colspan="2">San Gabriel
Raymond</td><td>VOCs, SVOCs</td></tr>
<tr><td colspan="2">San Fernando</td><td>VOCs, Cr^{VI}</td></tr>
<tr><td>Santa Clara Watershed</td><td>Oxnard
Mound
Santa Paula
Fillmore
Piru
East Santa Clara</td><td>Nitrate, Salts, TDS, DDT, PCBs</td></tr>
<tr><td colspan="2">Pleasant Valley</td><td>Nitrates, TDS, Salts</td></tr>
</table>

Groundwater Basin		Primary Parameters of Concern*
Ojai Ventura River		Nitrates
Calleguas Watershed	Conejo Valley Russell Valley Hidden Valley Simi Valley Tierra Rejada Thousand Oaks	Nitrates, TDS, Salts
Malibu Valley		Seawater Intrusion

*This is not a complete list of parameters of concern.

B. MONITORING OF CONSTITUENTS OF EMERGING CONCERN

Constituents of emerging concerns (CECs) include several types of chemicals that may be classified as (i) persistent organic pollutants (ii) pharmaceuticals and personal care products, (iii) veterinary medicines, (iv) endocrine disruptors, and others. Such constituents present water quality concerns due to their large number and variety, their prevalence in the environment, and their potential for harmful effects on aquatic life. Much less is known about their potential effects on humans. Increasing recycled water use has the potential to increase the occurrence of CECs in ground water basins through indirect potable reuse or groundwater recharge reuse (i.e., augmentation of drinking water aquifers using recycled water), as well as urban landscape irrigation. Staff are coordinating with EPA, the Southern California Coastal Water Research Project, and others in studying this issue.

<u>Recycled Water Policy CEC Monitoring Requirements:</u>
As stated in the Policy, *"[e]ach Salt and Nutrient Management Plan shall include a provision for annual monitoring of Emerging Constituents/Constituents of Emerging Concern (CECs) consistent with recommendations by CDPH and consistent with any actions by the State Water Board taken pursuant to paragraph 10(b) of this Policy."*

Paragraph 10(b) of the Policy directs the State Water Board, in consultation with the California Department of Public Health (CDPH), to convene a "blue-ribbon" advisory panel to guide future actions relating to constituents of emerging concern.

The advisory panel (Panel) completed its report (Panel Report) on CECs in June 2010. State Water Board staff developed a staff report (SWRCB, 2010) based on recommendations from the Panel and those provided by the CDPH. In December 2010, the State Water Board held a public hearing regarding proposed CEC monitoring requirements presented in the staff report.
The Panel Report employed a risk-based screening process to identify CECs of toxicological relevance to monitor for potable and non-potable recycled water use scenarios (i.e., groundwater recharge reuse and landscape irrigation). The screening approach focused the universe of CECs based on their potential for health effects and their occurrence in recycled water in California. The Panel Report recommends monitoring of selected performance indicator CECs to evaluate the performance of treatment processes to remove CECs; and recommends monitoring of surrogate parameters, such as turbidity, dissolved organic carbon, and conductivity, to verify that treatment units are working as designed.

Health-based CECs selected for monitoring include caffeine, 17-beta-estradiol (17β-estradiol), n-nitrosodimethylamine (NDMA), and triclosan.

The Panel also selected a set of performance-based indicator CECs. Each selected performance-based indicator CEC represents a group or a family of CECs. The removal of the performance-based indicator CEC through a treatment process provides an indication of the removal of the other CECs in the group, provide they have similar properties. The six compounds selected to serve as performance-based indicator CECs are caffeine, gemfibrozil, n,n-diethyl-meta-toluamide (DEET), iopromide, NDMA, and sucralose. Caffeine and NDMA serve as both health and performance-based indicator CECs.

Upon reviewing the oral and written comments received on the publicly noticed staff report, the State Water Board drafted an amendment to the Policy prescribing monitoring requirements for CECs in recycled water used for groundwater recharge reuse and landscape irrigation. The draft Policy amendment ("Requirements for Monitoring Emerging Constituents/Constituents of Emerging Concern for Recycled Water") was released for public comment on May 9, 2012. The proposed amendment and accompanying attachment can be found on the State Water Board's website at: http://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy/draft_amendment_to_policy.shtml

Other Considerations

The California Department of Public Health has released a draft of their Groundwater Replenishment Reuse Regulations, which are used to regulate recycled water for replenishment projects. Upon adoption of the final regulation, where the CEC monitoring requirements differ from those specified by the State Water Board in the amendment to the Policy, monitoring for the additional constituents specified by California Department of Public Health regulations should be included where groundwater recharge using recycled water is a consideration.

Section 60320.120(c) of the draft regulations requires annual monitoring of indicator CECs specified by CDPH and the Regional Water Board by proponents of groundwater replenishment and reuse projects (GRRPs). Stakeholders may take this into consideration in developing CEC monitoring programs for each basin/sub-basin where such projects exist or are planned. .

Regional Board Considerations

The Los Angeles Regional Board has taken early actions to begin to address CECs. The Board currently includes CEC Special Study Requirements in NPDES permits for Publicly Owned Treatment Works (POTWs), during permit renewal.
In addition, the development of a CEC monitoring strategy for the region was identified as a priority project during the project-selection phase of the 2011-13 triennial review. The Regional Board has also directed resources toward establishing some baseline information on CEC occurrence, and fate and transport in inland surface waters throughout the region. The information gathered from on-going monitoring and other applicable studies will inform future monitoring strategies.

Where site specific CEC monitoring is required for existing or proposed projects within a groundwater basin or sub-basin, SNMP proponents are encouraged to consider including them as part of the CEC monitoring strategies developed for the basin or sub-basin

C. SALT AND NUTRIENT ANALYSIS

As stated in the Policy, *"[e]ach SNMPs shall include salt and nutrient source identification, basin/sub-basin assimilative capacity and loading estimates, together with fate and transport of salts and nutrients…"* in order to *"… address and implement provisions, as appropriate, for all sources of salt and/or nutrients to groundwater basins, including recycled water irrigation projects and groundwater recharge reuse projects."*

Identification of existing and planned future sources of salts and nutrients is an essential part of a SNMP. This allows for a more accurate assessment of the pollutant loads to the basin and analysis of the final impact on basin water quality as determined through fate and transport analysis. A comprehensive consideration of sources will lead to a robust assessment and a more effective implementation strategy for basin management. Table 4-5 provides examples of source considerations in conducting this analysis.

TABLE 4-6: LIKELY SOURCES OF SALTS, NUTRIENTS, AND OTHER POLLUTANTS OF CONCERN IN GROUNDWATER BASINS

Source Considerations	**Examples**
Land uses	Agricultural and landscape irrigation
Groundwater recharge	Recycled water, Municipal water supply, Stormwater
Point source discharges to groundwater	Municipal and Industrial facilities, Other permitted facilities (e.g. landfills)
Non-point source discharges	Agricultural and nursery facilities, on-site wastewater treatment system discharges
Specific point sources	Injection wells*, percolation basins*
Surface water-groundwater interaction	Percolation from stream flow, stormwater runoff infiltration
Sub-surface inflow	Seawater intrusion, upstream inflow
Discrete discharges	Chemical spills, leaking tanks, improper disposal

*associated with oil production

In order to estimate pollutant loads to these basins, it will be necessary to quantify the mass loadings of all identifiable sources to each basin/sub-basin, and evaluate their fate and transport Stakeholders have the flexibility to apply any scientifically defensible methodology to make these determinations.

D. WATER RECYCLING AND STORMWATER RECHARGE/USE GOALS AND OBJECTIVES

Recycled Water Use

As stated in the Policy, *"[e]ach SNMP shall include water recycling and stormwater recharge goals and objectives."* With the intent of moving towards sustainable management of surface waters and groundwater, the Policy adopts the goals of increasing the use of recycled water in California over 2002 levels by at least one million acre-feet per year (afy) by 2020 and by at least two million afy by 2030.

There are a significant number of recycled water facilities in the Los Angeles Region. The State Water Board conducted a 2009 survey of recycled water use throughout the state to determine the amount of recycled water used and the beneficial uses to which recycled water was put. Only publicly-owned wastewater and water recycling agencies were included in the survey. Due to the low response rate from agencies solicited (18%), data from a similar 2001 survey were included in the overall results. Table 4-6 shows survey results for responding agencies in the Los Angeles Region. More details on the survey are available on the State Water Board's website at http://www.waterboards.ca.gov/water_issues/programs/grants_loans/water_recycling/munirec.shtml.

TABLE 4-7: SURVEY RESULTS OF RECYCLED WATER USE BY POTWS AND WATER RECYCLING AGENCIES IN THE LOS ANGELES REGION

Agency	Total Reuse (AFY)	Beneficial Use
Burbank Water and Power	2090	Golf Course and Landscape Irrigation, Industrial
City of Burbank	879	Landscape Irrigation, Geothermal/Energy Production
City of Los Angeles Bureau of Sanitation	40,787	Recreational Impoundment, Natural systems restoration, Wetlands, Wildlife Habitat
City of Los Angeles Department of Water and Power	32,113	Golf Course & Landscape Irrigation, Industrial, Seawater Intrusion Barrier, Recreational Impoundment, Natural systems restoration, Wetlands, Wildlife Habitat
City of Los Angeles Department of Public Works	3,683	Landscape Irrigation, Geothermal/Energy Production
Camarillo Sanitation District/City of Camarillo	1,293	Agriculture Irrigation
Camrosa Water District	779	Agriculture Irrigation
City of Fillmore	110	Landscape Irrigation
County Sanitation Districts of Los Angeles County	80,000	Unspecified (likely groundwater recharge)
Las Virgenes Municipal Water District	5,174	Landscape Irrigation
Los Angeles County Department of Public Works	148	Landscape Irrigation
Long Beach Water Department	6,380	Golf Course & Landscape Irrigation, Commercial, Seawater Barrier
Ventura County Waterworks District 1	428	Golf Course Irrigation
Ventura County Waterworks District 1	63	Commercial
West Basin Municipal Water District	26,032	Landscape Irrigation, Industrial, Seawater Intrusion Barrier

While the majority of facilities surveyed used their recycled water for irrigation, a significant portion of the recycled water is used for groundwater recharge. In the Central and West Coast Groundwater Basins, recycled water is used extensively by the Water Replenishment District of Southern California for groundwater recharge and to maintain seawater intrusion barriers. An innovative form of recycling is practiced by the City of Santa Monica using its Santa Monica Urban Runoff Recycling Facility, which collects and treats 90% of the City's urban runoff in the dry season for use in landscape irrigation.

Substituting potable water with recycled water is another means of increasing recycled water use and reducing dependence on imported water supplies. This may be achieved by developing an indirect potable use program similar to the one initiated by the Orange County Water District.

SNMPs should include goals and objectives for water recycling. As part of developing these goals, it may be helpful to examine master plans for water recycling that have been developed by recycled water producers, distributors, and municipalities, as well as Urban Water Management Plans.

Stormwater Use

Another goal of the Policy, with the intent of increasing sustainable local water supplies, is to increase the use of stormwater over the levels in 2007 by at least 500,000 afy by 2020 and by at least one million afy by 2030.The Policy recognizes that stormwater is typically lower in nutrients and salts and can augment local water supplies, and therefore deems the inclusion of a significant stormwater use and recharge component within the salt/nutrient management plans to be critical to the long-term sustainable use of water in California. In support of this, the State Water Board expects to develop additional policies to encourage the use of stormwater, encourage water conservation, encourage the conjunctive use of surface and groundwater, and improve the use of local water supplies.

The Regional Water Board also recognizes stormwater as a valuable resource and contains a requirement in its Municipal Separate Stormwater Systems (MS4) permits that new developments and significant redevelopments retain stormwater onsite using low impact development (LID) best management practices (BMPs), with an allowance for regional and other alternative compliance approaches. MS4 permits require that land development projects be designed to infiltrate, harvest and use, evapotranspire, or bio-treat a specified volume of stormwater onsite using LID BMPs, if technically feasible. The intent of this requirement is twofold – first, to achieve improvements in water quality by preventing pollutants conveyed by stormwater from being discharged to receiving waters and, second, to increase the use of stormwater for groundwater recharge.

Since new developments and redevelopments will not necessarily occur in areas where infiltration or recharge is feasible, it is important that stormwater use be considered on a regional scale to maximize the potential for stormwater infiltration and use. Basin stakeholders are encouraged to consider such an approach in developing their implementation strategies for increasing stormwater use.

E. IMPLEMENTATION MEASURES

As stated in the Policy, *"[e]ach SNMP shall include implementation measures to manage salt and nutrient loading in the basin on a sustainable basis."*

Implementation strategies should integrate water quantity and quality, groundwater and surface water, and recharge area protection in order to maintain a sustainable long-term supply for multiple beneficial uses. These strategies will be dictated to a large degree by basin-specific characteristics and conditions. Depending on conditions within each basin/sub-basin, strategies may generally be geared towards:

a) Pollution prevention to maintain and protect ground water quality at levels consistent with Basin Plan objectives and the State's anti-degradation policy;
b) Source load reductions to groundwater basins;
c) Treatment and management of areas of impaired water quality;
d) Increasing groundwater recharge by storm water; and
e) Increasing recycled water use.

Based on water quality conditions within a basin and the results of the source loading and fate and transport analysis, salts and nutrients from identifiable non-point and point sources should be managed in a manner that will support attainment of applicable water quality objectives. Measurable parameters should be identified for evaluation of the effectiveness of the strategies, and an implementation schedule and monitoring program should be developed to track progress toward basin management goals. Implementation measures may also include, as appropriate, strategies for local water supply development including increasing the use of recycled water, and plans for stormwater retention for use or recharge.

The consideration of implementation alternatives should take into account the interest of all parties currently involved in basin use and management in order to resolve any potential competing or conflicting interests prior to finalizing the basin management approach. To the greatest extent feasible, input from all stakeholders and interested parties should be solicited as part of the development process.

The Regional Water Board recognizes that a number of agencies have developed basin management plans for specific basins; while others have developed specific management measures for salt and/or nutrient impairments. Existing basin or sub-basin management plans and salt and nutrient management strategies should be assessed to determine their applicability towards the SNMP requirements of the Policy. For the purpose of SNMP development, these efforts may be supplemented as necessary to provide missing elements or address inconsistencies and demonstrate compliance with SNMP requirements. In instances where water quality from a sub-basin or basin may impact or be impacted by that of adjacent basins, all stakeholders concerned are encouraged to collaborate in developing salt and nutrient management strategies.

F. ANTI-DEGRADATION REQUIREMENTS

As stated in the Policy, *"[e]ach Salt and Nutrient Management Plan shall include an antidegradation analysis demonstrating that the projects included within the plan will, collectively, satisfy the requirements of Resolution No. 68-16."*

Resolution No. 68-16 is the State Water Board's "Statement of Policy with respect to Maintaining High Quality of Waters in California" also known as the State Anti-degradation Policy. It requires that:

> *Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.*

Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

The intent of Resolution 68-16 is to preserve the State's high quality waters. Any activity that results in the discharge of waste must be subject to treatment or controls that assure that the discharge will not cause the receiving water to exceed water quality objectives set forth in the applicable Basin Plan or cause pollution or nuisance. In addition, the discharge should be controlled to achieve the highest water quality feasible. In other words, water quality should be the best it can be, but at least not exceed water quality objectives or impact beneficial uses. The water quality objectives are set forth in the Regional Water Board Basin Plans, the State Water Board's Sources of Drinking Water Policy, and the California Ocean Plan. The baseline water quality to maintain refers to the highest existing quality since Resolution No. 68-16 was adopted in 1968, although if a lowering of water quality was formally approved in the past, this could adjust the baseline.

In some instances, degradation of existing water quality may be allowed so long as such degradation is consistent with the maximum benefit to the people of the state. Modification of existing water quality through the development of site specific objectives should only be considered when all other salt and nutrient management alternatives have been exhausted; and even so should be part of a larger salt and nutrient load reduction strategy. Such changes to water quality objectives may only occur where the existing water quality is better than that required to support the most sensitive beneficial use(s) of the basin (i.e. where there is assimilative capacity). Basin-wide management strategies should always be developed in a manner that would be protective of the most sensitive beneficial uses within a basin.
Where project(s) within SNMPs have the potential to degrade the water quality within a basin, stakeholders are required to conduct an anti-degradation analysis. The rigor of the analysis required depends on the nature and extent of the potential degradation. The guidelines and requirements for such analysis are provided below and parallel, to a large extent, those provided in the Policy for basins where plans are yet to be completed. This analysis will be part of the supporting documentation for the Basin Plan amendment incorporating the implementation plan(s) consistent with implementation measures identified in the SNMP. Implementation projects must be demonstrated to be consistent with Resolution 68-16 as supported by the anti-degradation analysis conducted as part of SNMP development.

The Policy recognizes that groundwater recharge and landscape irrigation projects are to the benefit of the people of the state, despite having the potential to lower water quality within the basin. As such, the Policy provides a threshold below which less rigorous analysis will be conducted for the anti-degradation analysis – during the period before SNMPs have been developed.
The Regional Water Board will apply the same considerations, on a basin-wide scale, once SNMPs are in place.

(1) Generally, a basin-wide implementation strategy that utilizes less than 20 percent of the available assimilative capacity in a basin/sub-basin need only conduct an anti-degradation analysis verifying the use of the assimilative capacity. For those basins /sub-basins where the Regional Water Boards have not determined the baseline assimilative capacity, the baseline assimilative capacity shall be calculated by the initial project proponent, with review and approval by the Regional Water Board. The available assimilative capacity shall be calculated by comparing the water quality objectives with the average concentration of the basin/sub-basin[7], either over the most recent five years of data available or using a data set approved by the Regional Water Board Executive Officer. Though the Policy expresses assimilative capacity in units of concentration, the Regional Water Board recognizes that, depending on the complexity of the basin, it may be more appropriate to calculate and express assimilative capacity as a load. Historical groundwater quality data will be reviewed in order to inform decisions about assimilative capacity and conclusions drawn about anti-degradation requirements. In determining whether the available assimilative capacity will be exceeded by the basin-wide implementation strategy, the Regional Water Board will consider the impacts of the strategy over at least a ten-year time frame, based on an analysis of these impacts provided by the project proponent(s), and other relevant data and information.

(2) In the event a basin wide implementation strategy utilizes more than 20 percent of the available assimilative capacity in a basin/sub-basin), a more rigorous anti-degradation analysis shall be performed to comply with Resolution No. 68-16. Proponents of the strategy shall provide sufficient information for the Regional Water Board to make this determination.

    In addition to verification of the assimilative capacity to be used, the analysis should show:

    a) That the strategy is necessary to accommodate important economic or social development;
    b) Any reduction in water quality will be consistent with maximum benefit to people of the State;
    c) Reduction in water quality will not unreasonably affect actual or potential beneficial uses; and
    d) Water quality will not fall below water quality objectives set to protect beneficial uses as prescribed in the Basin Plan.

The severity and extent of water quality reduction will be considered when evaluating the benefits required to compensate for the degradation. The magnitude of the proposed strategy and potential reduction in water quality will also determine the scope of impact assessment. The Regional Water Board will ensure that a systematic impact assessment is conducted.

Factors that should be considered when determining whether a strategy is necessary to accommodate social or economic development and is consistent with maximum benefit to the people of the State, include:

1. Past, present, and probable beneficial uses of the water.

[7] More than one average concentration may be necessary for a given basin/sub-basin to fully evaluate variability between sub-areas or sub-basins.

2. Economic and social costs, tangible and intangible, of the proposed strategy compared to benefits. The economic impacts to be considered may include the cost of alternative actions in lieu of the proposed strategy, as well as the cost of any mitigation necessary to address degradation resulting from the proposed strategy. The long-term and short-term socioeconomic impacts of maintaining existing water quality must be considered. Examples of social and economic parameters that could be affected are employment, housing, community services, income, tax revenues, and land value. To accurately assess the impact of the proposed strategy, the projected baseline socioeconomic profile of the affected community without the strategy should be compared to the projected profile with the strategy.

3. The environmental aspects of the proposed discharge must be evaluated. The proposed discharge, while actually causing a reduction in water quality in a given water body, may be simultaneously causing an increase in water quality in a more environmentally sensitive body of water from which the discharge in question is being diverted.

4. The implementation of feasible alternative control measures, which might reduce, eliminate, or compensate for negative impacts of the proposed action.

Participation from the public and appropriate government agencies should be solicited in the "maximum benefit" determination to ensure that the environmental, social, and economic impacts of the strategy are accurately assessed.

The Regional Water Board will ultimately make the decision as to whether or not it is to the maximum benefit of the people of the State to use more than 20% of the assimilative capacity of a basin or sub-basin as part of a SNMP's implementation strategy. Consideration will be given to providing buffers for varying environmental conditions such as droughts, as well as the needs of future generations.

Where no assimilative capacity exists for salts and/or nutrients within a basin/sub-basin, stakeholders may explore and implement strategies for creating such assimilative capacity. As previously mentioned, modifying water quality objectives should only be considered where all other alternatives have been exhausted and then only as part of a larger comprehensive salt and nutrient reduction strategy. Any modifications to water quality objectives shall be done in a manner that protects the most sensitive beneficial uses in a basin/ sub-basin.

The Policy includes an example of an approved method for conducting an anti-degradation analysis based on a numeric groundwater model. It was used by the State Water Board in connection with Resolution No. 2004-0060 and the Regional Water Board in connection with Resolution No. R8-2004-0001. However, stakeholders have the flexibility to use other methods that have been deemed acceptable by the Regional Board. SNMP proponents should vet any such other methods with Regional Board staff prior to embarking on an analysis using the method. The Policy also encourages an integrated approach (using surface water, groundwater, recycled water, stormwater, pollution prevention, water conservation, etc.) to the implementation of Resolution No. 68-16.

An anti-degradation analysis will not be required where it has been demonstrated that implementation strategies are not expected to result in water quality degradation in a groundwater basin.

E. DISCHARGES COVERED BY THE RECYCLED WATER POLICY

The Policy is specifically geared towards increasing the use of recycled water from municipal wastewater sources permitted through Wastewater Recycling Requirements (WRRs). Land discharges of wastewater are addressed through separate Waste Discharge Requirements (WDRs), however, this does not preclude them from the SNMP development process. Such discharges (existing and proposed) should be accounted for in determining source loading estimates, determination of assimilative capacity, and in basin management planning. In the same vein, recycled water projects already in progress should be considered during the same phases of SNMP development.

5. CEQA REQUIREMENTS

The Policy requires that salt and nutrient management plans developed for basin/sub-basins comply with the applicable California Environmental Quality Act (CEQA) requirements. The following outlines the CEQA requirements for the Regional Board adoption of SNMP implementation strategies into the Water Quality Control Plan for the Los Angeles Region (Basin Plan). SNMP proponents may be required to comply with other CEQA requirements related to specific implementation strategies for salt and nutrient management contained in their plans. SNMP proponents are to conduct the environmental analysis required for Regional Board adoption.

The CEQA requires state and local agencies determine the potential significant environmental impacts of proposed projects and identify measures to avoid or mitigate these impacts where feasible. The CEQA Guidelines, which provide the protocol by which state and local agencies comply with CEQA requirements, are detailed in California Code of Regulations, Title 14 § 15000 et seq.

The basic purposes of CEQA are to: 1) inform decision makers and public about the potential significant environmental effects of a proposed project, 2) identify ways that environmental damage may be mitigated, 3) prevent significant, avoidable damage to the environment by requiring changes in projects, through the selection of alternative projects or the use of mitigation measures when feasible, and 4) disclose to the public why an agency approved a project if significant effects are involved (Cal. Code Regs., tit. 14, § 15002(a)).

LEAD AND RESPONSIBLE AGENCIES UNDER CEQA

As set forth in the Policy, stakeholders will fund SNMP development including any necessary analysis and documentation to comply with CEQA. Stakeholders will develop implementation strategies, which may include projects requiring environmental analysis. Public agencies that carry out or implement projects associated with the SNMPs are considered the lead agencies under CEQA for these individual projects. However, in addition, the implementation measures identified in a SNMP may be adopted as amendments to the Basin Plan by the Regional Water Board, and CEQA analysis is a required part of the adoption process in accordance with the State Water Board's certified regulatory program. As such, for the purpose of Water Board adoption of a Basin Plan amendment, the Regional Water Board will be the lead agency for purposes of CEQA. Therefore, it will be necessary for stakeholders and Regional Water Board staff to work in collaboration.

REQUIRED ENVIRONMENTAL ANALYSIS

The California Secretary for Natural Resources has certified the State and Regional Water Boards' basin planning process as exempt from certain requirements of CEQA, including preparation of an initial study, negative declaration, and environmental impact report (California Code of Regulations, Title 14, Section 15251(g)).

The basin planning process is certified by the Secretary for Natural Resources as a regulatory program exempt from the requirements to prepare an Environmental Impact Report, Negative Declaration, and Initial Study (Title 14, California Code of Regulations (CCR), Section 15241(g)). However, a certified program is subject to other provisions in CEQA (Pub. Resources Code, Section 21000 et seq.), such as the requirement to avoid significant adverse effects to the environment where feasible. The Regional Board is required to comply with State Water Board regulations set forth in California Code of Regulations, Title 23, sections 3775 et. seq, and Public Resources Code section 21159.

Requirements of California Code of Regulations, Title 23, Section 3777(a)

The “certified regulatory program” of the Regional Water Board is also subject to the substantive requirements of California Code of Regulations, Title 23, Section 3777(a), which requires a written report that includes a description of the proposed activity, an analysis of reasonable alternatives, and an identification of mitigation measures to minimize any significant adverse environmental impacts. Section 3777(a) also requires the Regional Water Board to complete an environmental checklist as part of its substitute environmental documents.

Any water quality control plan, state policy for water quality control, and any other components of California's water quality management plan as defined in Code of Federal Regulations, title 40, sections 130.2(k) and 130.6, proposed for board approval or adoption must include or be accompanied by Substitute Environmental Documentation (SED) and supported by substantial evidence in the administrative record. The Draft SED may be comprised of a single document or a compilation of documents. The Draft SED must be circulated prior to board action approving or adopting a project, as specified in sections 3778 and 3779. The Draft SED shall consist of:

a) A written report prepared for the board, containing an environmental analysis of the project;
b) A completed Environmental Checklist (a sample of which is contained in Appendix II). The sample Environmental Checklist may be modified as appropriate to meet the particular circumstances of a project. The issues identified in the Environmental Checklist must be evaluated in the checklist or elsewhere in the SED; and
c) Other documentation as the board may include.

The Draft SED shall include, at a minimum, the following information:

a) A brief description of the proposed project;
b) An identification of any significant or potentially significant adverse environmental impacts of the proposed project;
c) An analysis of reasonable alternatives to the project and mitigation measures to avoid or reduce any significant or potentially significant adverse environmental impacts; and
d) An environmental analysis of the reasonably foreseeable methods of compliance. The environmental analysis shall include, at a minimum, all of the following:
    i. An identification of the reasonably foreseeable methods of compliance with the project;

ii. An analysis of any reasonably foreseeable significant adverse environmental impacts associated with those methods of compliance;
iii. An analysis of reasonably foreseeable alternative methods of compliance that would have less significant adverse environmental impacts; and
iv. An analysis of reasonably foreseeable mitigation measures that would minimize any unavoidable significant adverse environmental impacts of the reasonably foreseeable methods of compliance.

In the preparation of the environmental analysis described in d) above, the board may utilize numerical ranges or averages where specific data are not available; however, the board shall not be required to engage in speculation or conjecture. The environmental analysis shall take into account a reasonable range of environmental, economic, and technical factors, population and geographic areas, and specific sites, but the board shall not be required to conduct a site-specific project level analysis of the methods of compliance, which CEQA may otherwise require of those agencies who are responsible for complying with the plan or policy when they determine the manner in which they will comply.

As to each environmental impact, the SED shall contain findings as described in State CEQA Guidelines section 15091, and if applicable, a statement described in section 15093.

If the board determines that no fair argument exists that the project could result in any reasonably foreseeable significant adverse environmental impacts, the SED shall include a finding to that effect in lieu of the analysis of project alternatives and mitigation measures.

If the board determines that no fair argument exists that the reasonably foreseeable methods of compliance with the project could result in any reasonably foreseeable significant adverse environmental impacts, the SED shall include a finding to that effect in lieu of the analysis of alternative methods of compliance and associated mitigation measures.

Requirements of Public Resources Code section 21159

Public Resources Code section 21159 has the same minimum requirements for the environmental analysis which the Regional Water Board is also required to fulfill along with the same considerations. Section 21159(c) requires that the environmental analysis take into account a reasonable range of:

a) Environmental, economic, and technical factors,
b) Population and geographic areas, and
c) Specific sites.

A “reasonable range” does not require an examination of every site, but a reasonably representative sample of them. The statute specifically states that the section shall not require the agency to conduct a “project-level analysis” (Public Resources Code § 21159(d)). Rather, a project-level analysis must be performed by the local agencies that will implement the strategies and projects identified in the SNMP (Public Resources Code §21159.2). Notably, the Regional Water Board is prohibited from specifying the manner of compliance with its regulations (Cal. Water Code §13360), and accordingly, the actual environmental impacts will necessarily depend upon the compliance strategy selected by the local agencies and other permittees.

State Water Board Finding

As set forth in the Policy, the State Water Board finds that the use of recycled water which supports the sustainable use of groundwater and/or surface water that is sufficiently treated so as not to adversely impact public health or the environment and which ideally substitutes for use of potable water is presumed to have a beneficial impact. Other public agencies are encouraged to use this presumption in evaluating the impacts of recycled water projects on the environment as required by the CEQA.

Public Participation Requirements for the CEQA Process

Pursuant to California Public Resources Code section 21083.9, a CEQA Scoping Meeting will be held to receive comments on the appropriate scope and content of substitute environmental documents supporting amendments to the Basin Plan to incorporate salt and nutrient management plans for groundwater basins in the Los Angeles Region. The purpose of this meeting is to scope the proposed projects and/or strategies for groundwater basin management and to determine, with input from interested agencies and persons, if those means would result in significant adverse impacts to the environment. Information garnered from this process will be considered during development of the draft SED and, where applicable, may be incorporated into the final document.

ROLES OF STAKEHOLDER GROUPS AND REGIONAL WATER BOARD STAFF IN THE CEQA PROCESS

Both Regional Water Board staff and stakeholder groups will be significantly involved in the environmental analysis for the SNMPs. Table 5-1 lists the different aspects of the CEQA process and identifies the roles of each party.

TABLE 5-1: ROLES OF STAKEHOLDERS AND REGIONAL WATER BOARD STAFF IN THE CEQA PROCESS FOR BASIN PLAN AMENDMENTS

TASK	REGIONAL WATER BOARD	STAKEHOLDERS
LEAD AGENCY	Lead	
CEQA SCOPING MEETING	Co-Lead	Co-Lead
ENVIRONMENTAL ANALYSIS	Oversight	Lead
SED DEVELOPMENT	Oversight	Lead
DOCUMENT REVIEW	Lead	
RESPONSE TO COMMENTS	Lead - Regulatory	Lead - Technical
REVISIONS	Oversight/Review	Lead
PUBLIC HEARING	Lead	
PROJECT LEVEL EIR		Lead

The CEQA scoping meeting will be held jointly by Regional Water Board staff and stakeholder groups, while the environmental analysis will be conducted primarily by the groundwater basin stakeholder groups with oversight and review by Regional Water Board staff. Following the release of the draft environmental document for public review, it is anticipated that there will be comments on its technical and regulatory aspects. The Regional Water Board will take the lead in responding to the regulatory comments, while stakeholders will be the lead for responding to technical comments. Any revisions necessary in response to public comments will be the purview of the stakeholder groups with oversight by Regional Water Board staff. Preparation of the environmental documentation for consideration and adoption by the Regional Water Board will be the responsibility of Regional Water Board and staff. Finally, once the SNMPs have been adopted and specific projects are to be implemented, basin stakeholders will be responsible for the development of project-specific environmental analysis and other related CEQA requirements.

TIMELINE FOR THE CEQA PROCESS IN RELATION TO SNMP DEVELOPMENT

The SED will be considered by the Regional Water Board as part of the adoption of the implementation provisions contained in the SNMPs. Approval of the SED is separate from approval of a specific project alternative or a component of an alternative. Approval of the SED refers to the process of: (1) addressing comments, (2) confirming that the Regional Water Board considered the information in the SED, and (3) affirming that the SED reflects independent judgment and analysis by the Regional Water Board - CEQA Guidelines Section 10590 and 15090 (Title 14 of CCR).

Stakeholders are encouraged to begin the CEQA process once potential basin management strategies have been identified during SNMP development. The CEQA scoping meeting should be held early enough in the process for consideration of public comments during the development of the substitute environmental document. Ideally the SED should be completed at the same time as the SNMP for timely consideration and adoption by the Regional Water Board.
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6. BOARD ADOPTION OF SNMPS

As stated in the Policy: *Salt and nutrient plans shall be completed and proposed to the Regional Water Board within five years from the date of this Policy unless a Regional Water Board finds that the stakeholders are making substantial progress towards completion of a plan. In no case shall the period for the completion of a plan exceed seven years.*

Stakeholders are encouraged to complete and submit SNMPs for each basin by May 2014 as specified in the Policy. However, the Policy allows for an extension where significant progress has been made but this deadline cannot be met. For this purpose, the Regional Water Board will consider “significant progress” as follows: (i) upon completion of a collaborative stakeholder developed basin wide monitoring plan that meets the requirements set forth in the Policy, (ii) completion of the salt/nutrient source identification, loading and linkage analysis, and (iii) commencement of the development of implementation strategies for basin management. Stakeholders will also be required to make a showing that completion by the May 2014 deadline is infeasible. SNMPs that have not achieved significant progress may warrant greater Regional Board involvement or Regional Board developed plans, and will be addressed on a case-by-case basis.

Within one year of the receipt of a proposed salt and nutrient management plan, the Regional Water Boards shall consider for adoption revised implementation plans, consistent with Water Code section 13242, for those groundwater basins within their regions where water quality objectives for salts or nutrients are being, or are threatening to be, exceeded. The implementation plans shall be based on the salt and nutrient plans required by this Policy.

The Regional Water Board expects to adopt the implementation provisions of each SNMP within one year of submission by basin/sub-basin stakeholders. State Water Board staff have provided templates for these Basin Plan amendments (see Appendix I) as a guide to the scope of information to be provided in the amendment language. Table 6-1 provides a tentative schedule of stakeholder tasks and submissions.

TABLE 6-1: TENTATIVE SCHEDULE OF STAKEHOLDER SUBMISSIONS

Tasks	Date
CEQA Scoping Meeting	June 2013
Initial Draft SNMP & CEQA submittal	November 2013
Final Draft SNMP & CEQA submittal	May 2014
Regional Water Board Consideration and Adoption	May 2015 and beyond

Regional and State Water Board Resources

Regional Water Board staff expects to continue working collaboratively with groundwater basin stakeholders during the SNMP development process, as well as through the Board adoption process. In addition to staff assigned for this purpose, the following resources are available to stakeholders to facilitate the process.

Regional Water Board SNMP website:

www.waterboards.ca.gov/losangeles/water_issues/programs/salt_and_nutrient_management/index.shtml

SNMP E-mail list subscription:
http://www.waterboards.ca.gov/resources/email_subscriptions/reg4_subscribe.shtml

Groundwater Ambient Monitoring and Assessment (GAMA) website:
www.waterboards.ca.gov/losangeles/water_issues/programs/sgama/geotracker_gama.html

State Water Board website:
http://www.swrcb.ca.gov/water_issues/programs/water_recycling_policy/index.shtml

7. REFERENCES

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State Water Resources Control Board. GeoTracker GAMA Groundwater Information System Webpage.
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U.S. Geological Survey. (2003) "*Framework for a Ground-Water Quality Monitoring and Assessment Program for California*" WRIR 03-4166.
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APPENDIX H

Upper Santa Clara River East Subbasin, Salt and Nutrient Management Plan,

Anti-Degradation Analysis - Project Questionnaires

GEOSCIENCE

APPENDIX H

UPPER SANTA CLARA RIVER EAST SUBBASIN, SALT AND NUTRIENT MANAGEMENT PLAN ANTI-DEGRADATION ANALYSIS – PROJECT QUESTIONNAIRES

Description **Page No.**

Upper Santa Clara River East Subbasin
Salt and Nutrient Management Plan
Anti-Degradation Analysis
Projects Questionnaire
SCV WUE SP

Questions

A) Do you have projects planned for implementation between 2014-2035 that will:

1) Change Land Use (*that might otherwise impact groundwater*) not already envisioned by OVOV, if so what is the change and what is the area of change
There is no change in land use proposed in the SCV WUE SP.

2) Change water use application, if so, what is the water use application change;

There may be a change in the rate at which water is applied in irrigation due to these programs:

1. Santa Clarita Valley Large Landscape Audit and Incentive Program
2. Santa Clarita Valley Commercial, Industrial and Institutional (CII) Audit and Customized Incentive Program
3. Santa Clarita Valley Landscape Contractor Certification and Weather-based Irrigation Controller Program

3) Change water use volume, if so, what volume (annually);
The SCV WUE SP will result in 51,414 AF in lifetime savings according to p. 42 of the current SCV WUE SP with an annual savings in 2013 of 3287 AF. The programs (in more limited forms) in Round 2 of IRWMP will save 308 AF.

4) Change water quality, if so, what will the resultant water quality be? (include if you know or if you have initial assumptions)
The SCV WUE SP may reduce runoff, which would reduce concentrations of nutrients and salts in residential run off.

5) Change ground water recharge, if so, will it reduce or increase groundwater recharge, and by what volume (annually)
The SCV WUE SP will reduce recharge because it is reducing runoff. There is no information on the volume of runoff that will decrease.

6) Will the project increase use of recycled water, if so, by what volume
There is no increase in recycled water with the SCV WUE SP.

7) Will project change septic to sewer use, if so by how many residential units or commercial units;
No.

8) Will the project be phased? If so, please provide a sequence of phasing;
Years that programs began (or will begin) in years noted below:

1. Santa Clarita Valley Large Landscape Audit and Incentive Program (2010)
2. Santa Clarita Valley Commercial, Industrial and Institutional (CII) Audit and Customized Incentive Program (2010)
3. Santa Clarita Valley Landscape Contractor Certification and Weather-based Irrigation Controller Program (2010)
4. High-Efficiency Clothes Washer (HECW) Machine Program (2012)
5. Cash for Grass Rebate Program (2013 or 2014)

B) Describe Project:

The SCV WUE Strategic Plan Programs (CLWA-3) Project identifies programs that will most effectively reduce per capita water use in the Santa Clarita Valley. The goal of the Project is to achieve a long-term reduction in water demand of at least 10 percent over the next 20 years. Newly passed State legislation, Senate Bill 7 of Special Extended Session 7 (SBX7-7), signed into law in November 2009, calls for progress towards a 20 percent reduction in per capita water use by 2020. This CLWA-3 Project will implement five programs identified in the SCV WUE Strategic Plan to help meet these goals.

The five programs being implemented by CLWA-3 are:

1. Santa Clarita Valley Large Landscape Audit and Incentive Program
2. Santa Clarita Valley Commercial, Industrial and Institutional (CII) Audit and Customized Incentive Program
3. Santa Clarita Valley Landscape Contractor Certification and Weather-based Irrigation Controller Program
4. High-Efficiency Clothes Washer (HECW) Machine Program
5. Cash for Grass Rebate Program

The programs have already had three successful years of implementation and now seek the expansion recommended in the Strategic Plan. Full project benefits will accrue beginning in 2015. At this time, water conservation resulting from the five programs will yield avoided SWP imports of 380 acre-feet per year (AFY).

C) Provide Location map showing project.

8) Will the project be phased? If so, please provide a sequence of phasing;

Pellet Water Softening Treatment Plant

Phase 1 - Conceptual design and feasibility

Phase 2 - Design and permitting

Phase 3 - Construction

Santa Clara River Sewer Trunk Line Relocation

Phase 1 - Conceptual design, environmental, bank protection, cost estimates

Phase 2 - Design and permitting

Phase 3 - Construction

Upper Santa Clara River East Subbasin
Salt and Nutrient Management Plan

Anti-Degradation Analysis

Projects Questionnaire

Recycled Water Master Plan Phases 2A, 2B, 2C

Questions

A) Do you have projects planned for implementation between 2014-2035 that will:

1) Change Land Use (*that might otherwise impact groundwater*) not already envisioned by OVOV, if so what is the change and what is the area of change;

There is no change in land use proposed by the project.

2) Change water use application, if so, what is the water use application change;

The application of the recycled water will be mainly for irrigation with some minor industrial use.

3) Change water use volume, if so, what volume (annually);

See the table on the next page. Recycled water use will increase from an existing 325 AFY to approximately 12,000 AFY over the planning horizon.

4) Change water quality, if so, what will the resultant water quality be? (include if you know or if you have initial assumptions)

5) Change ground water recharge, if so, will it reduce or increase groundwater recharge, and by what volume (annually);

NA

6) Will the project increase use of recycled water, if so, by what volume;

Yes. See the table on the next page. Recycled water use will increase from an existing 325 AFY to approximately 12,000 AFY over the planning horizon.

7) Will project change septic to sewer use, if so by how many residential units or commercial units;

No.

8) Will the project be phased? If so, please provide a sequence of phasing;

Yes. See table below.

B) Describe Project:

The project is the implementation of the Agency's Recycled Water Master Plan.

C) Provide Location map showing project.

TABLE 1. PROJECTED AVERAGE/NORMAL YEAR SUPPLIES AND DEMANDS (2010 UWMP) MODFIED FOR DECREASE RECYCLED WATER USE

	2015	2020	2025	2030	2035	2040	2045	2050
Existing Supplies								
Existing Groundwater								
Alluvial Aquifer	24,000	24,000	24,000	25,000	25,000	25,000	25,000	25,000
Saugus Formation	9,225	10,225	10,225	10,225	10,225	10,225	10,225	10,225
Total Groundwater	**33,225**	**34,225**	**34,225**	**35,225**	**35,225**	**35,225**	**35,225**	**35,225**
Recycled Water	325	325	325	325	325	325	325	325
Imported Water								
State Water Project	58,100	57,900	57,600	57,400	57,400	57,400	57,400	57,400
Flexible Storage Accounts	0	0	0	0	0	0	0	0
Buena Vista-Rosedale	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000
Nickel Water - Newhall Land	1,607	1,607	1,607	1,607	1,607	1,607	1,607	1,607
Total Imported	**70,707**	**70,507**	**70,207**	**70,007**	**70,007**	**70,007**	**70,007**	**70,007**
Total Banking	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total Existing Supplies	**104,257**	**105,057**	**104,757**	**105,557**	**105,557**	**105,557**	**105,557**	**105,557**
Planned Supplies								
Future Groundwater								
Alluvial Aquifer	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000
Saugus Formation	1,375	1,375	1,375	1,375	1,375	1,375	1,375	1,375
Total Groundwater	**1,375**	**2,375**	**3,375**	**4,375**	**5,375**	**6,375**	**7,375**	**8,375**
Recycled Water*	975	2,725	5,225	7,775	10,275	***12,000***	***12,000***	***12,000***
Banking Programs	0	0	0	0	0	0	0	0
Total Planned Supplies	**2,350**	**5,100**	**8,600**	**12,150**	**15,650**	**18,375**	**19,375**	**20,375**
Total Existing and Planned Supplies	106,607	110,157	113,357	117,707	121,207	123,932	124,932	125,932
Regional Summary								
Demand w/o Conservation	80,070	88,484	96,898	105,313	113,725	122,141	130,553	138,968
20x2020 Reduction	9,027	19,626	21,166	22,770	24,342	25,914	27,486	29,058
Reduction from Recycled Water	1,300	3,050	5,550	8,100	10,600	***12,325***	***12,325***	***12,325***
Reduction from Water Conservation	7,727	16,576	16,662	16,747	16,833	16,920	17,006	17,092
Demand w/ Conservation	72,343	71,909	80,236	88,565	96,892	105,221	113,548	121,877
Difference Total Supplies - Demand	**34,264**	**38,248**	**33,121**	**29,142**	**24,315**	**18,711**	**11,384**	**4,055**

Upper Santa Clara River East Subbasin Salt and Nutrient Management Plan *Anti-Degradation Analysis Projects Questionnaire*

Questions

A) Do you have projects planned for implementation between 2014-2035 that will:

1) Change Land Use (*that might otherwise impact groundwater*) not already envisioned by OVOV, if so what is the change and what is the area of change;

The Vista Canyon project was approved by the City of Santa Clarita in May 2011 prior to adoption of OVOV. The Vista Canyon Specific Plan is incorporated into OVOV.

2) Change water use application, if so, what is the water use application change;

Currently no water application – the mostly undeveloped site will be developed with a transit-oriented community.

3) Change water use volume, if so, what volume (annually);

The project is projected to use 190 AF/YR of potable water, 136.9 AF/YR of recycled water and make recycled available to others up to 302.3 AF/YR.

4) Change water quality, if so, what will the resultant water quality be? (include if you know or if you have initial assumptions)

See Exhibit 1

Change ground water recharge, if so, will it reduce or increase groundwater recharge, and by what volume (annually);

Will increase recharge as recycled water will be used on and off-site.

5) Will the project increase use of recycled water, if so, by what volume;

Yes, See Item 3.

6) Will project change septic to sewer use, if so by how many residential units or commercial units;

No.

7) Will the project be phased? If so, please provide a sequence of phasing;

Yes, project development is anticipated to start in 2014/2015 and have a 5 year buildout.

B) Describe Project:

See Exhibit 2.

C) Provide Location map showing project.

See Exhibit 3.

EXHIBIT 1

DEXTER WILSON ENGINEERING, INC.

DEXTER S. WILSON, P.E.
ANDREW M. OVEN, P.E.
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MEMORANDUM **898-004**

TO: **Dr. Rebecca Chou, Senior Water Resource Control Engineer**

CC: **Sam Unger, P.E., Executive Officer**
Glenn Adamick, Vista Canyon Ranch, LLC

FROM: **Dexter S. Wilson, P.E., Dexter Wilson Engineering, Inc.**
Natalie J. Fraschetti, P.E., Dexter Wilson Engineering, Inc.

DATE: **January 30, 2012**

SUBJECT: **Analysis – Vista Canyon Water Factory ("Water Reclamation Plant") Percolation Pond Infiltration**

PURPOSE AND EXECUTIVE SUMMARY

This memorandum provides background information regarding the groundwater located in the East Subbasin of the Santa Clara River Valley Groundwater Basin. It also discusses the discharge of tertiary treated recycled water from the Vista Canyon Water Factory into adjacent percolation ponds and, thereafter, the East Subbasin. The memorandum ultimately demonstrates that utilization of a localized analysis to characterize potential impacts to the East Subbasin is well-founded and appropriate.

As background, the Vista Canyon Water Factory is a component of the approved Vista Canyon Project, which is located west of Sand Canyon Road, south of State Route ("SR") 14, and north of the Metrolink railroad tracks in the eastern Santa Clarita Valley.

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The Vista Canyon Water Factory will have a treatment capacity of 395,411 gallons per day and will produce disinfected tertiary recycled water for landscape irrigation and dual-plumbed use. During wet winter months when recycled water demands are lower, recycled water will be disposed of in adjacent percolation ponds. There will be no solids processed at the facility; rather, all solids will be sent to an existing, downstream sewer line for processing, treatment, and disposal by the Santa Clarita Valley Sanitation District.

Historically, water quality impacts to the Santa Clara River and the Santa Clara River Valley Groundwater Basin resulting from chloride have been caused by wastewater discharges and the historical use of imported water in the Santa Clarita Valley to supplement local supplies. In response, and in order to reduce chloride loading in effluent that is discharged directly to the River, the Regional Water Quality Control Board for the Los Angeles Region ("Regional Board") promulgated a TMDL for chloride in the Santa Clara River. The TMDL has been an important regulatory tool in developing permits.

In anticipation of the development of a waste discharge permit for the Vista Canyon Water Factory's disposal to the percolation ponds (not directly to the River), and in light of the sensitivity surrounding chloride, the Vista Canyon Water Factory's potential degradation of the Santa Clara River and related groundwater basin has been examined. Based on available data and an analysis of site conditions, the Vista Canyon Water Factory will not degrade or impact water quality in the Santa Clara River or its related groundwater basin. This conclusion applies to chloride as well as other constituents of concern.

BACKGROUND – SANTA CLARITA VALLEY GROUNDWATER BASIN

The Santa Clara River Valley Groundwater Basin is divided into subbasins across Ventura and Los Angeles Counties (see Figure 1). The East Subbasin consists of two aquifer systems – the Alluvial aquifer associated with the Santa Clara River (and its tributaries) and the deeper underlying Saugus Formation (DWR Groundwater Basin 4-4.07).

The Alluvial aquifer, as characterized by Geosyntec (2010), "consists of 18 extensively interlayered and interfingered mixtures of gravel and sand, with variable amounts of cobbles and boulders and minor amounts of silt and clay. Due to the unconsolidated to poorly consolidated condition of the alluvium, and its lack of cementation, the alluvium has relatively high permeability and porosity." The alluvium is shallow across the Valley, with its thickest depth (200 feet) measured along the center of the Santa Clara River near Saugus. (CLWA, 2003) The maximum storage capacity of the Alluvial aquifer has been estimated at 240,000 acre feet (AF) (Slade, 2002).

The Saugus Formation storage capacity has been estimated to be 1.65 million AF (Slade, 2002). Figure 2 shows a cross section of the Santa Clara River along its centerline illustrating the vast spatial differences between the Alluvial aquifer and Saugus Formation.

The Vista Canyon Water Factory would be located along the eastern edge of the East Subbasin's "bowl" where the depth of the Alluvial aquifer is shallow and the Saugus Formation is not present. Additionally, the width of the Alluvial aquifer in the project area is more narrow, as compared to the rest of the East Subbasin.

CURRENT GROUNDWATER USE IN THE EASTERN SUBBASIN

The Alluvial aquifer and Saugus Formation serve as municipal water supplies for the Upper Santa Clara River Valley and combined comprise the Santa Clarita Valley groundwater basin. The wholesale water purveyor for the area is the Castaic Lake Water Agency (CLWA). Both CLWA and the Valley's water retailers, manage the groundwater basin. Figure 3 shows the boundaries of CLWA and the Valley's retail water purveyors.

In 2003, CLWA (working in concert with the Valley's water retailers) adopted a Groundwater Management Plan (GWMP) for its wholesale service area, which effectively encompasses the East Subbasin. The GWMP contains four major objectives: (1) development of an integrated supply to meet existing and proposed demands; (2) development of a utilization plan that will not result in overdraft; (3) preservation of groundwater quality; and (4) preservation of interrelations between surface and groundwater discharges and quality to downstream basins. (Kennedy/Jenks, 2008.)

The groundwater operating plan (i.e., groundwater production approach) for normal and dry years is summarized in Table 1 from CLWA's 2010 Urban Water Management Plan (UWMP).

TABLE 1
GROUNDWATER OPERATING PLAN FOR THE SANTA CLARITA VALLEY

	Groundwater Production, Af			
Aquifer	**Normal Years**	**Dry Year 1**	**Dry Year 2**	**Dry Year 3**
Alluvium	30,000 to 40,000	30,000 to 35,000	30,000 to 35,000	30,000 to 35,000
Saugus Formation	7,500 to 15,000	15,500 to 25,000	21,000 to 25,000	21,000 to 35,000
TOTAL	**37,500 to 55,000**	**45,000 to 60,000**	**51,000 to 60,000**	**51,000 to 70,000**

Source: CLWA, 2010, Table 3-5.

Prior to development of the GWMP, stakeholders in the region (including Ventura County) developed a Memorandum of Understanding to cooperatively evaluate and manage the groundwater basin and its interaction with the Santa Clara River. As part of this work, a regional groundwater flow model was constructed, calibrated, and used to verify the groundwater operating plan. The modeling results indicated that the groundwater operating plan would not cause short- or long-term effects to the groundwater and surface water resources in the Santa Clarita Valley and, therefore, is sustainable. (Kennedy/Jenks, 2008)

As of 2010, the Santa Clarita Valley water retailers were operating 37 wells in the Alluvial aquifer and 9 wells in the Saugus Formation. Figure 4 illustrates the proximity of these wells to the Vista Canyon Water Factory.

CURRENT CHLORIDE LEVELS IN THE EAST SUBBASIN

Table 2 summarizes average chloride levels in the Alluvial aquifer, Saugus Formation, and State Water Project water for comparison.

TABLE 2
POTABLE WATER SUPPLY CHLORIDE CONCENTRATIONS

Year	State Water Project, mg/L	Alluvial Aquifer, mg/L	Saugus Aquifer, mg/L
2002	83	87	33
2003	81	101	34
2004	69	97	34
2005	54	59	32
2006	51	66	35
2007	61	66	38
2008	75	85	38
2009	79	88	35
2010 (through June)	79	88	37

Source: LACSD, 2010, Table 3.2-5.

Additional background quality information (e.g., chloride, TDS, and boron) can be found in Table 4.

CHARACTERISTICS OF THE ALLUVIAL AQUIFER IN THE VICINITY OF VISTA CANYON WATER FACTORY

The Vista Canyon Project's geotechnical investigation determined that the Vista Canyon Water Factory and percolation ponds would be underlain by up to seven feet of fill. Below this fill is the silt-sand-gravel alluvium that extends to at least 35 feet below ground surface, and locally greater than 50 feet below ground surface. (RTFA, 2007a, 2007b by Geosyntec, 2010) At the time of the Project's 2005 geotechnical investigation, the groundwater elevation was measured at approximately 1,487 feet mean sea level (MSL) (15 feet below ground surface) in the eastern portion of the Project site and approximately

1,450 feet (57 feet below ground surface) in the western portion of the Project site. The nearby Santa Clarita Water Division (SCWD) wells were measuring groundwater at approximately 1,460 feet (30 feet below ground surface). Historically, groundwater elevations in these SCWD wells have measured as shallow as 10 feet and as deep as 100 feet. As Figure 4 shows, the municipal wells referenced above are located very close to the active channel of the River, as compared to the Vista Canyon Water Factory's percolation ponds.

In the project area, the Santa Clara River is known as a "losing" reach because upstream surface and upriver flows have percolated downward and downstream into the Alluvial aquifer or, eventually, the Saugus Formation. In contrast to this reach are the "gaining" reaches primarily located in the western Santa Clarita Valley; the "gaining" reaches can be described as those areas where the groundwater elevation reaches the elevation of the river bottom and thus contributes to surface flows.

Because the recycled water discharged to the Vista Canyon Water Factory's percolation ponds will first percolate down through the Alluvium, the percolation ponds will have no impact on surface flows of the Santa Clara River located in the project reach. In other words, the Vista Canyon Water Factory will not emit surface water discharges. Figure 5 depicts two cross-sections through the percolation ponds and Santa Clara River that illustrate this condition.

Additional technical characterization of the alluvial groundwater basin in the vicinity of the Vista Canyon Water Factory was assembled for the Groundwater/Surface Water Interaction Model (GSWIM), which was developed as part of the 2005 Upper Santa Clara River Chloride TMDL. Table 3 summarizes these characteristics. The sources listed in the table provide the location of additional information regarding the groundwater basin, its interaction with the Santa Clara River surface water, and surrounding groundwater basins.

TABLE 3
ALLUVIAL AQUIFER CHARACTERISTICS IN THE VICINITY OF THE VISTA CANYON WATER FACTORY

Characteristic		Source
Bottom Elevation of Alluvial Aquifer	1,500 – 1,000 ft MSL	CH2MHILL-HGL, 2008 Figure 3-7
Alluvial Aquifer Thickness	100 – 250 ft	CH2MHILL-HGL, 2008 Figure 3-16
Horizontal Hydraulic Conductivity	100 – 200 ft/day	CH2MHILL-HGL, 2008 Figure 3-26
Vertical Leakance	0 – 0.21888 day^{-1}	CH2MHILL-HGL, 2008 Figure 3-33
Specific Storage	10^{-4} ft^{-1}	CH2MHILL-HGL, 2008 Page 3-10
Specific Yield	0.15 - 0.20 0.20 - 0.25	CH2MHILL-HGL, 2008 Figure 3-39
Horizontal:Vertical Conductivity	10:1	CH2MHILL-HGL, 2006 Page 4-2
Hydraulic Gradient	46 ft/mile East to West	Kennedy/Jenks, 2008 Page 2-37
Transmissivity	50,000 gpd/ft – 500,000 gpd/ft	Kennedy/Jenks, 2008 Page 2-37
Inflow from Action Subbasin	2,000 afy	CH2MHILL-HGL, 2008 Page 3-14

IMPACT OF THE VISTA CANYON WATER FACTORY ON THE EAST SUBBASIN

2011 Vista Canyon EIR Analysis

The City of Santa Clarita's Final EIR for the Vista Canyon Project (April 2011; SCH No. 2007071039) evaluated the potential water quality impacts of the proposed Vista Canyon Water Factory and its disposal of water into percolation ponds above the Alluvial aquifer (Geosyntec, 2010). The results of this analysis are presented in Table 4.

TABLE 4
VISTA CANYON EIR
GROUNDWATER IMPACT ANALYSIS

Parameter	Units	Estimated Average Concentration in Sierra Well		Water Quality Benchmarks	
		Existing Condition[1]	Proposed Condition	Primary MCL	Secondary MCL
TDS	mg/L	763	812	-	500/1000
Chloride	mg/L	80	91	-	250/500
Sulfate	mg/L	173	165	-	250/500
NO_3-N+NO_2N	mg/L	7.1	<7.9	10	-
Boron	mg/L	1.0	1.1	-	-
Aluminum	mg/L	<DLR (0.05)	<0.32	1	-
Fluoride	mg/L	0.31	0.60	2	-
Manganese	mg/L	<DLR (0.02)	<0.10	-	0.05

[1] Based on arithmetic average of samples collected in 2001, 2004, and 2007.

[2] Recommended concentration/maximum concentration.

DLR – Detection Levels for Purposes of Reporting (detection limit)

Source: Geosyntec, 2010, Table 7-12.

The Proposed Condition methodology used in the EIR analysis was an overly conservative, worst-case scenario that assumed: (1) no recycled water would be utilized by CLWA and all recycled water, beyond the needs of the Vista Canyon Project itself, would be discharged to the percolation ponds; (2) the percolation ponds would have direct hydraulic connectivity to the first down-gradient SCWD production well, the Sierra well, located approximately 5,500 feet to the west; and (3) the Sierra well would extract/pump the entire portion of water discharged to the percolation ponds (in terms of flow and parameters), thereby impacting the well's water quality parameters. This methodology is overly conservative for the reasons discussed below.

First, the analysis assumed that recycled water produced by the Vista Canyon Water Factory would be utilized for irrigation and dual-plumbed uses only on the Vista Canyon Project site and that all of the remaining recycled water would be disposed of in the percolation ponds (103 million gallons ("MG") per year or 316 acre feet per year ("AFY")) on a permanent basis. This scenario may exist for a short period of time (e.g., during initial operation of the Vista Canyon Water Factory until off-site recycled water infrastructure is in place, or during an interruption in recycled water deliveries to CLWA). However, these would be isolated events and not occur over the long term. Rather, either CLWA or the City of Santa Clarita would utilize the surplus recycled water off-site *or* the quantity of treated wastewater would be reduced as it would not be cost effective to treat this surplus wastewater without being able to recover a portion of these costs through the sale of recycled water. As a result, the actual annual discharge is estimated to be 108.9 AFY (not 316 AFY).

Second, and importantly, the analysis assumed that 100 percent of the flow and mass loading of the constituents disposed of in the percolation ponds (e.g., TDS, chloride, boron) would be taken out at the down-gradient Sierra well. In other words, using chloride as an example, the analysis assumed that, on an annual basis, of the 365 MG pumped from the Sierra well at a chloride concentration of 80 mg/L, 103 MG of that water would be replaced with percolation pond water at a concentration of 117 mg/L, resulting in an increase in the Sierra well chloride concentration from 80 mg/L to 91 mg/L (a 13.75% increase).

In order for this hypothetical scenario to occur, all water that was discharged to the percolation ponds would have to move approximately 5,500 feet to the west without mixing with other sources of water and be extracted at the Sierra well. This would not actually occur. Rather, as the percolation pond water moves west, it would mix with other lower chloride sources and only a portion of the water would be extracted at the Sierra well.

Notably, although the analysis is overly conservative from an engineering standpoint, it shows that even under such a scenario, chloride levels at the nearest beneficial use (Sierra well) would remain below 100 mg/L with the Water Factory's disposal of water into the percolation ponds.

Boron and TDS would act similar to chloride; therefore, actual impacts to the Sierra well from the percolation ponds would be less than shown in Table 4.

<u>**Updated Analyses - Potential Impact of the Vista Canyon Water Factory**</u>

Because of the conservative assumptions utilized in the Vista Canyon Final EIR, two additional analyses have been conducted to evaluate the potential impact of the Vista

Canyon Water Factory on groundwater. Both analyses, described in the following sections, confirm that the Final EIR analysis is very conservative. The two analyses are summarized in the paragraph below and are detailed in Attachments 1 and 2, respectively.

First Analysis - Local Analysis. The impact to groundwater was analyzed on a localized basis considering the geometry, flow, and solute transport characteristics of the Alluvial aquifer in the vicinity of the Vista Canyon Water Factory. The analysis specifically considered chloride, TDS, and boron.

As discussed previously, the Alluvial aquifer was characterized as part of the GSWIM. As part of that work, the groundwater basin was divided into three dimensional grids and layers to assign relevant characteristics. These grids and layers are described in detail in the CH2MHILL-HGL 2006 and 2008 documents and are utilized as the basis for this local analysis.

Figure 6 is an excerpt from Figure 3-16 of the CH2MHILL-HGL 2008 report, which approximates the geometry of the Alluvium (GSWIM model layer 3). The analysis presented herein focuses solely on those north-south sections of the Alluvium labeled 1 through 4 on Figure 6. The Vista Canyon Water Factory (including the percolation ponds) is generally located within Section 1.

As Table 7 shows, with the addition of the percolation pond water (108.9 AFY) to Section 1, the background chloride concentration is estimated to increase by 0.169% from 80 mg/L to 80.135 mg/L. Then, as Section 1 moves down-gradient into Section 2 of the Alluvial aquifer, the chloride impact is further reduced, resulting in a 0.155% increase to the background chloride concentration. The final section analyzed, Section 4, shows an increase in chloride concentration of 0.129% over the background. Note that the Final EIR estimated, in its overly conservative analysis, a 13.75% increase in chloride concentration at the Sierra well, which is located further west of Section 4. (Section 4 was the western-most section analyzed as the chloride concentration impact decreases significantly as the basin volume expands as you proceed west into the "bowl" of the basin.)

TABLE 7 IMPACT ANALYSIS FOR CHLORIDE		
Section	**Alluvial Aquifer Chloride Concentration, mg/L**	**% Increase Caused by the Vista Canyon Water Factory**
Background *	80.0	--
1	80.135	0.169
2	80.124	0.155
3	80.124	0.155
4	80.103	0.129

Based on a Water Factory effluent quality of 117 mg/L
* See Table 4

Similar analyses were completed for TDS and boron, with Tables 8 and 9, respectively, providing the results.

TABLE 8 IMPACT ANALYSIS FOR TDS		
Section	**Alluvial Aquifer Chloride Concentration, mg/L**	**% Increase Caused by the Vista Canyon Water Factory**
Background *	763.0	--
1	763.967	0.127
2	763.885	0.116
3	763.885	0.116
4	763.739	0.097

Based on a Water Factory effluent quality of 1,028 mg/L
* See Table 4

TABLE 9 IMPACT ANALYSIS FOR BORON		
Section	**Alluvial Aquifer Chloride Concentration, mg/L**	**% Increase Caused by the Vista Canyon Water Factory**
Background *	1.0	--
1	1.001	0.055
2	1.000	0.049
3	1.000	0.049
4	1.000	0.042

Based on a Water Factory effluent quality of 1.15 mg/L
* See Table 4

<u>Second Analysis - Relative Analysis.</u> A second analysis was conducted to show the combined impact of the percolation ponds and rainfall. At an average annual rainfall of 18 inches per year, Geosyntec (2010) estimated an average of 69 AFY would be discharged via storm drains to the Santa Clara River. This discharge does not include rain that falls directly into the River, but rather rain that would fall into the developed portion of the project site. Presently, the site (which is mostly undeveloped) discharges on average 9 AFY to the Santa Clara River. At a chloride concentration of 21 mg/L, the rain water discharge combined with the chloride concentration of the percolation pond water would be approximately 79.77 mg/L. For comparison, the Alluvial aquifer chloride concentration is approximately 80 mg/L, as shown in Table 4. The calculations for this analysis can be found in Attachment 2.

CONCLUSION

As the above analyses demonstrate, the Vista Canyon Water Factory's disposal of water to the adjacent percolation ponds would not adversely affect groundwater quality in the East Subbasin. More specifically, as shown in Tables 7 through 9 above, the Water Factory's incremental contribution to chloride, TDS, and boron background concentration levels in the East Subbasin's groundwater would not be appreciable. Therefore, it can be concluded that the Vista Canyon Water Factory's disposal of water to the adjacent percolation ponds will not unreasonably affect present and anticipated beneficial uses of such water; and, will not result in degradation to water quality.

DSW:NF:ck

\\PACIFIC\DWG\898004\FIGURE-1.DWG 11-17-11 10:15:11 LAYOUT: LAYOUT1

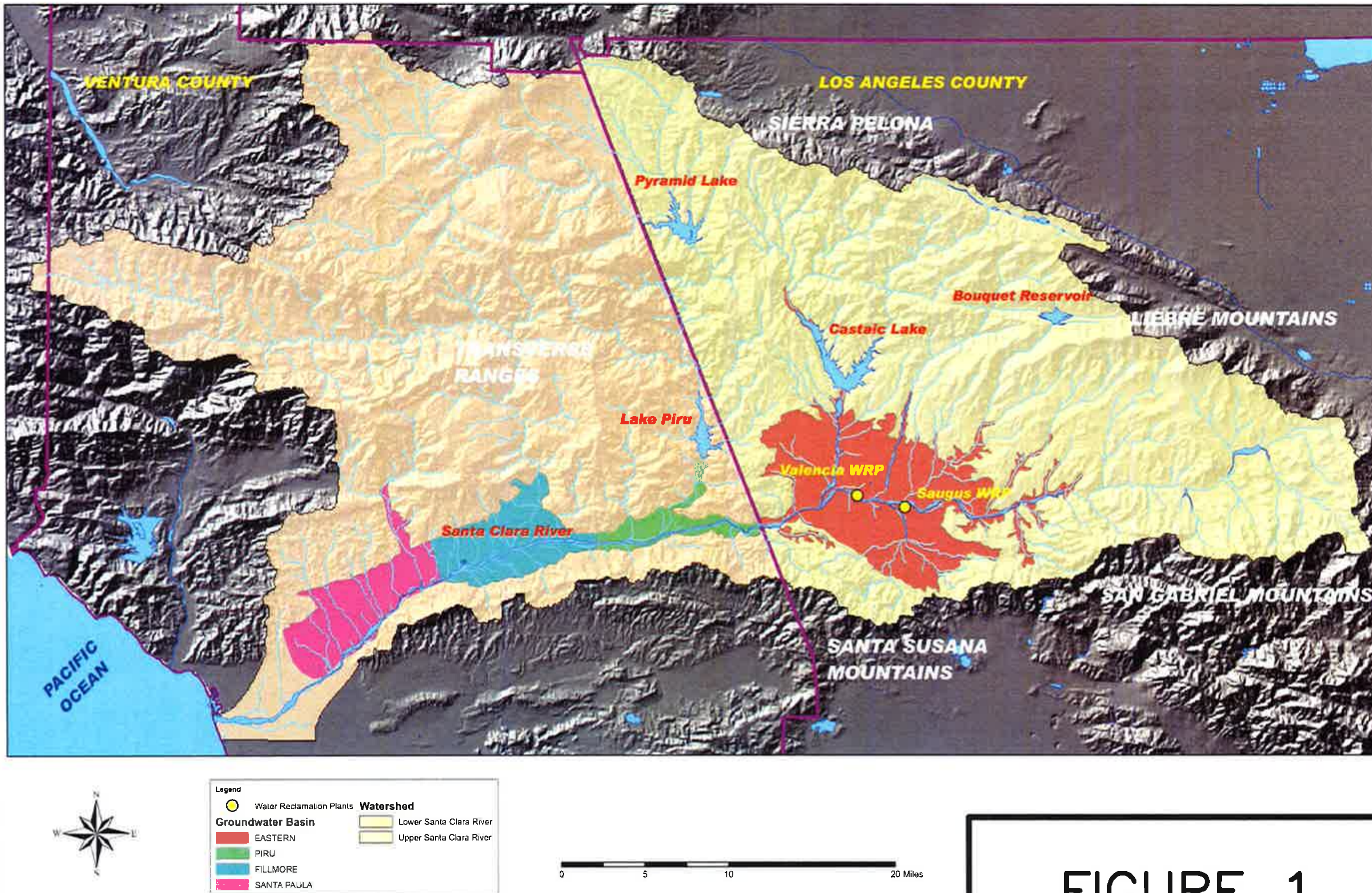


FIGURE 1

UPPER SANTA CLARITA RIVER WATERSHED
HYDROLOGIC FEATURES

SOURCE: 2008 SCR IWRMP
KENNEDY/JENKS CONSULTANTS

\\PACIFIC\DWG\898004\FIGURE-2.DWG 11-17-11 08:52:18 LAYOUT: EXHIBIT

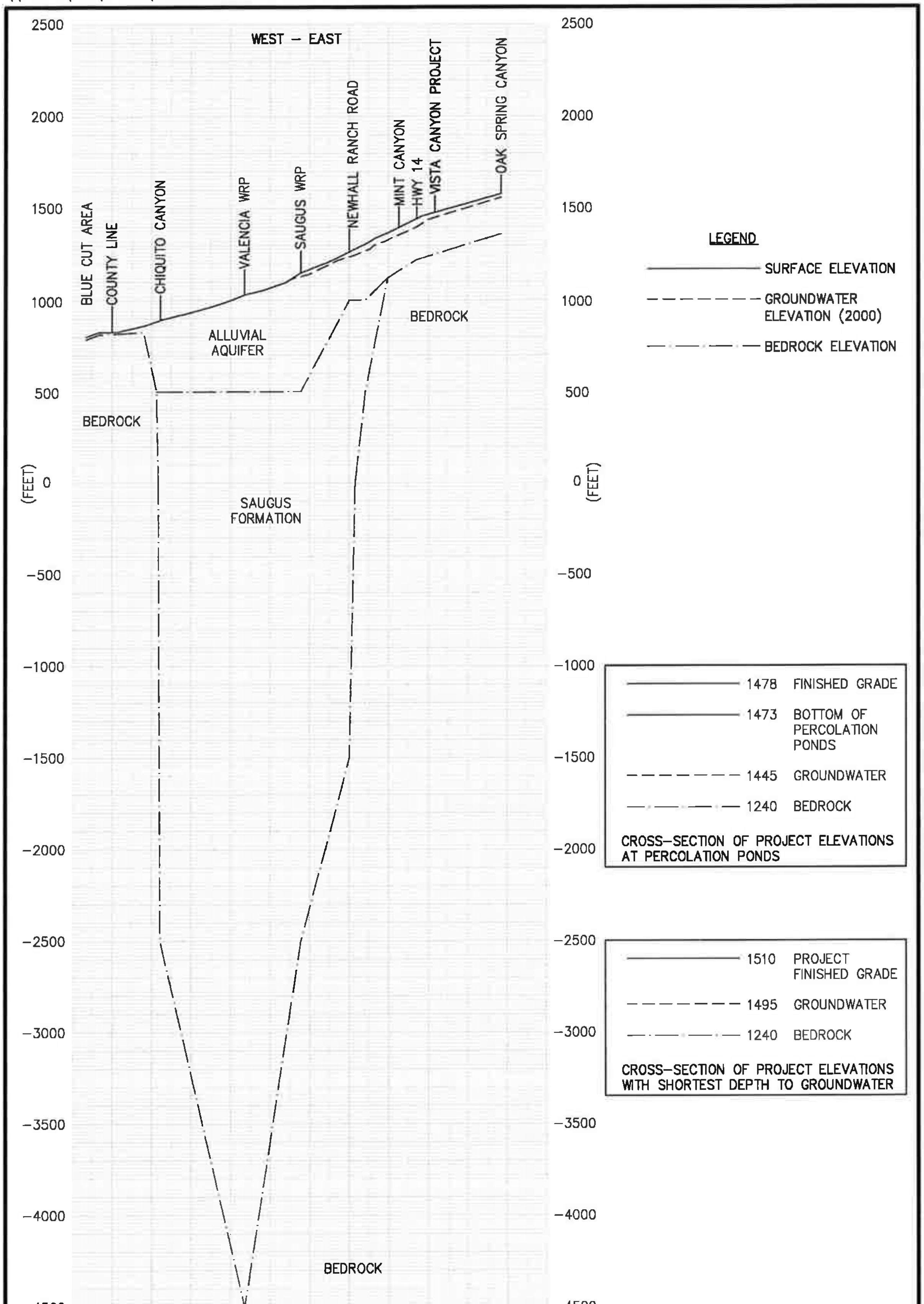
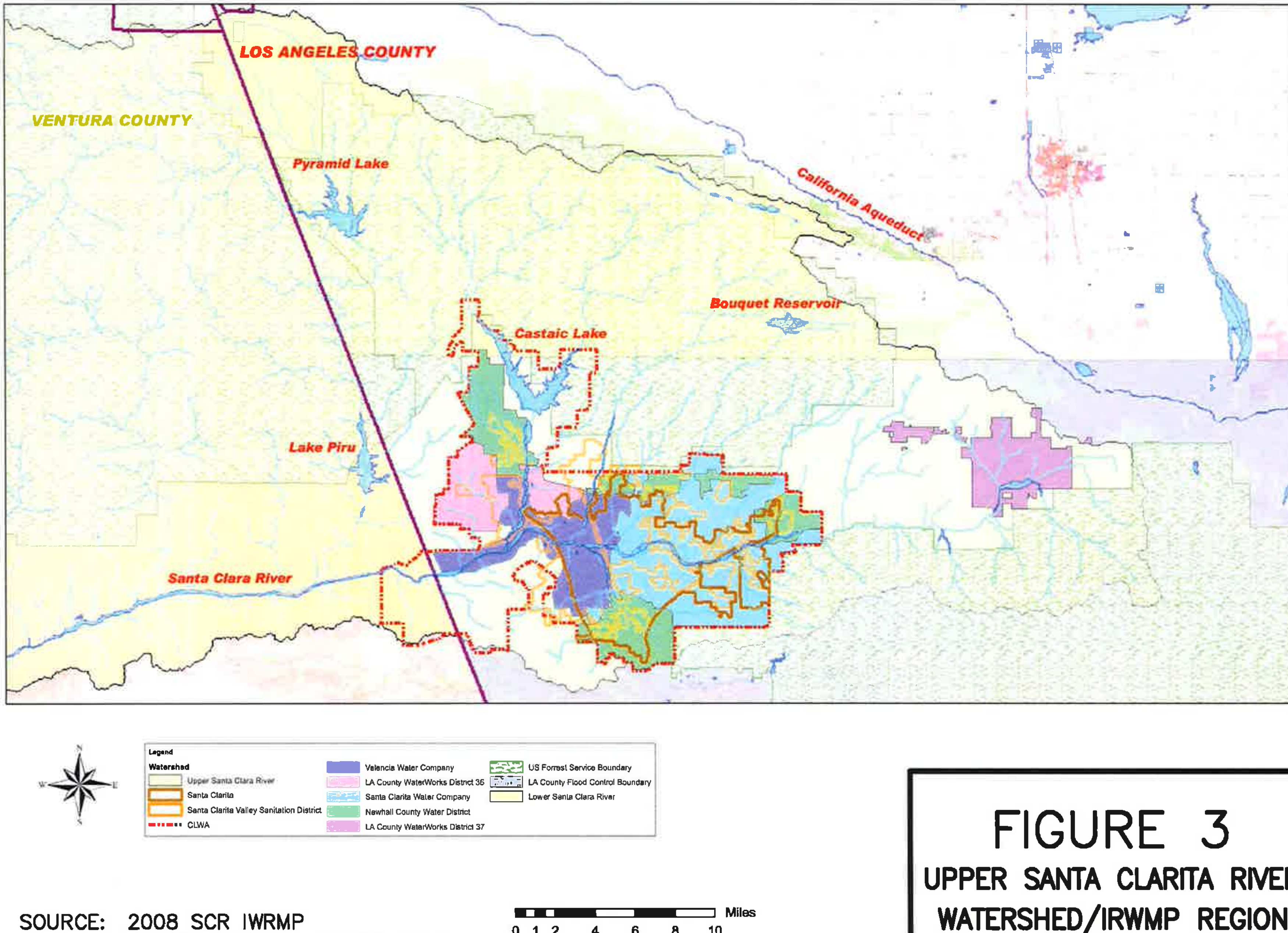


FIGURE 2
SANTA CLARA RIVER CENTERLINE CROSS SECTION AND PROJECT CROSS SECTIONS

\\PACIFIC\DWG\898004\FIGURE-3.DWG 11-17-11 10:14:01 LAYOUT: LAYOUT1



SOURCE: 2008 SCR IWRMP
KENNEDY/JENKS CONSULTANTS

FIGURE 3
UPPER SANTA CLARITA RIVER WATERSHED/IWRMP REGION

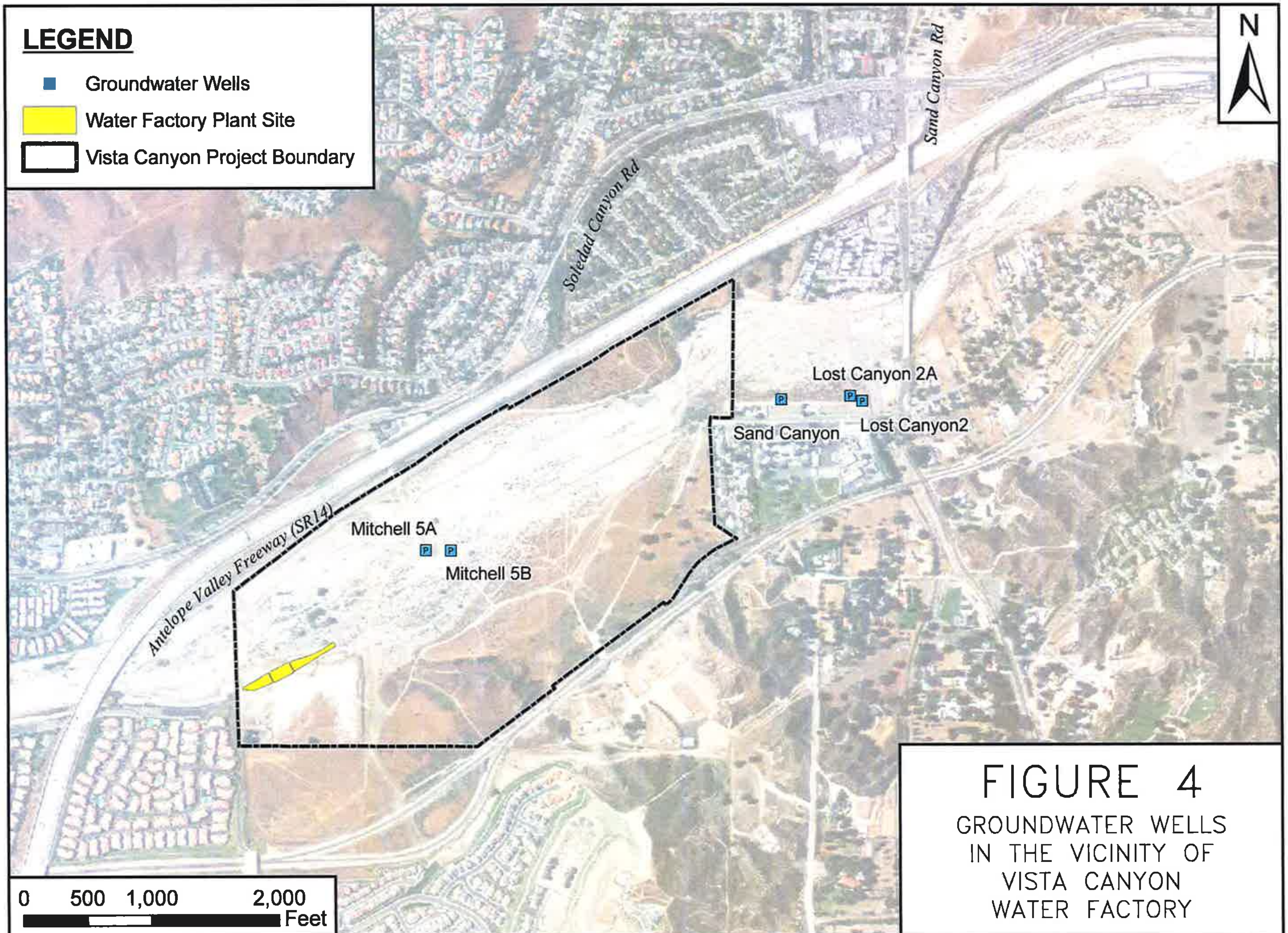
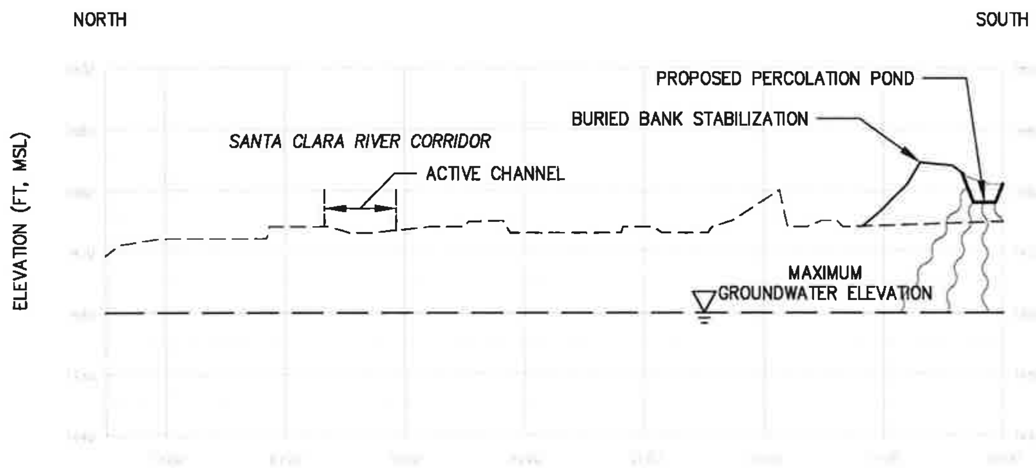
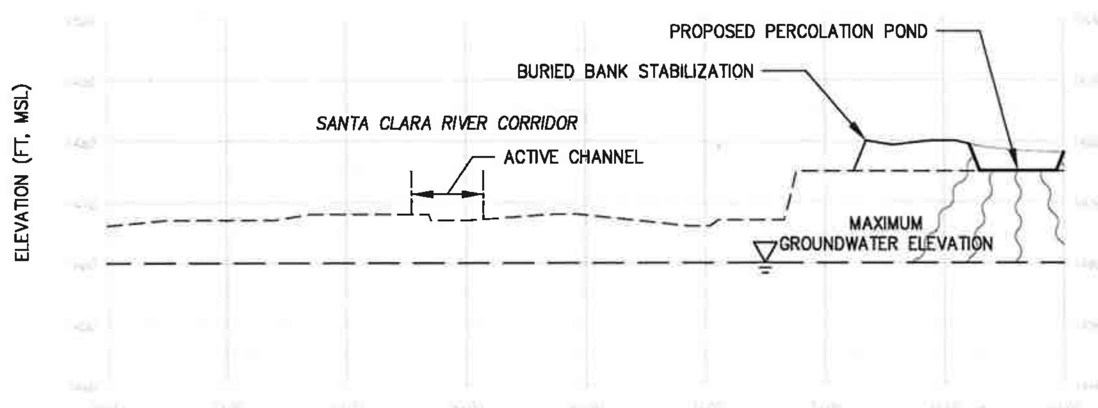


FIGURE 4
GROUNDWATER WELLS IN THE VICINITY OF VISTA CANYON WATER FACTORY



CROSS SECTION THROUGH EASTERN PERC POND
VERT SCALE: 1" = 20'
HORIZ SCALE: 1" = 100'



CROSS SECTION THROUGH WESTERN PERC POND
VERT SCALE: 1" = 20'
HORIZ SCALE: 1" = 100'

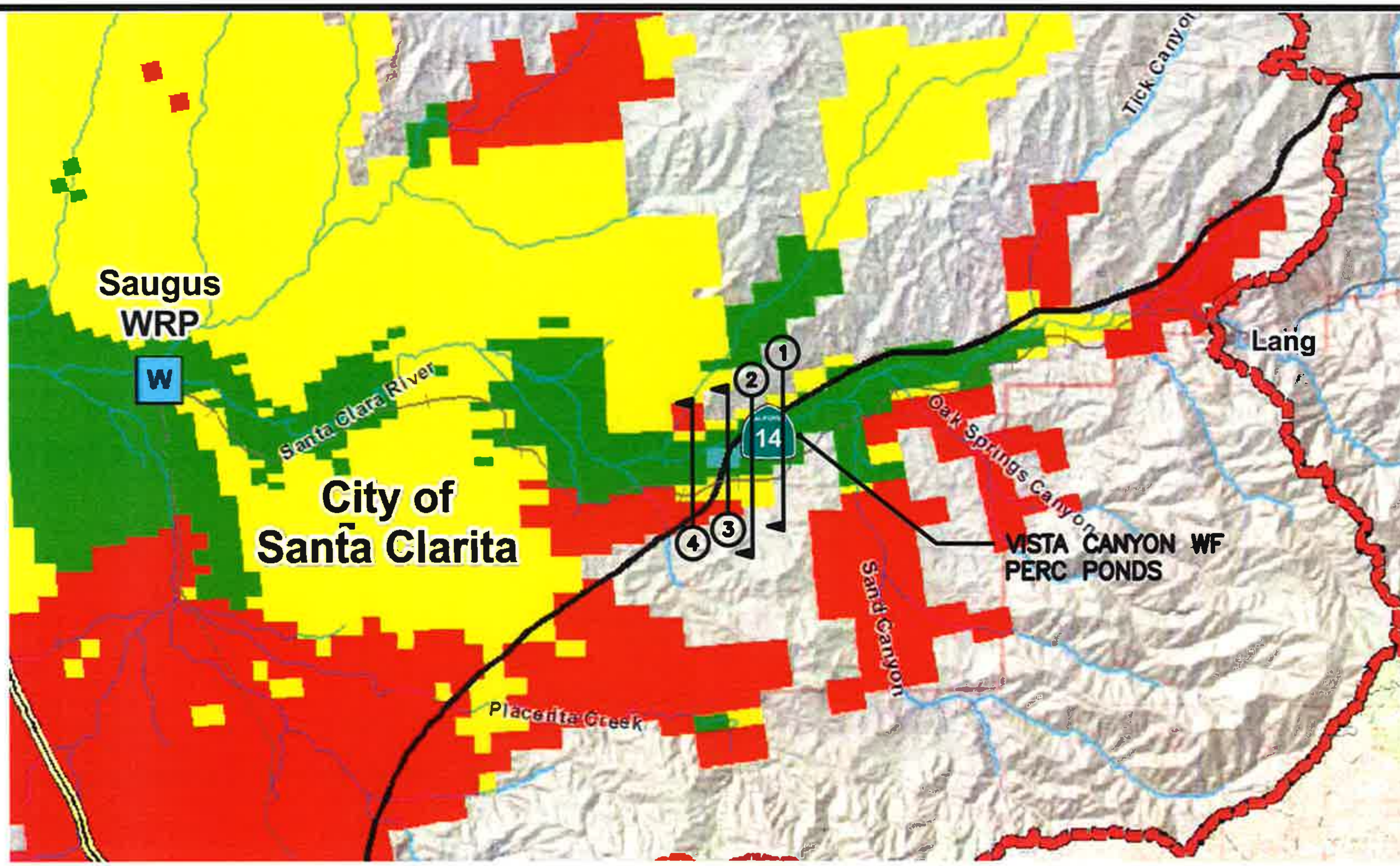
NOTE:
60-FOOT ACTIVE CHANNEL REPRESENTS TEMPORARY SURFACE FLOWS FOLLOWING A 2-5 YEAR STORM EVENT. ACTIVE CHANNEL MEANDERS THROUGH CORRIDOR.

FIGURE 5

PERC POND AND RIVER CROSS SECTIONS

\\PACIFIC\DWG\B9B004\FIGURE-5.DWG 01-25-12 15:56:02 LAYOUT: LAYOUT

\\PACIFIC\DWG\898004\FIGURE-6.DWG 01-24-12 09:59:55 LAYOUT: LAYOUT1



SOURCE: EXCERPT FROM FIGURE 3-16, CH2MHILL-HGL TASK 2B-1 REPORT, 2008

0 3 6 miles

LEGEND

GSWI STUDY AREA

SANTA CLARA RIVER WATERSHED

STREAM

TRANSPORTATION

INTERSTATE

STATE HIGHWAY

RAILROAD

MODEL LAYER THICKNESS (feet)

Up to 50

50 to 100

100 to 250

250 to 500

FIGURE 6

ALLUVIAL AQUIFER GEOMETRY

REFERENCES

CH2MHill and HGL, Model Preparation, 2006. Development, Calibration, and Sensitivity Analysis, Task 2A – Conceptual Model Development Upper Santa Clara River Chloride TMDL Collaborative Process Prepared for Sanitation Districts of Los Angeles County and Los Angeles Regional Water Quality Control Board, June.

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CLWA, 2003. Groundwater Management Plan - Santa Clara River Valley Groundwater Basin, East Subbasin, Los Angeles County, California. December.

Geosyntec Consultants, 2010. Vista Canyon Water Quality Technical Report, May.

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ATTACHMENTS

ATTACHMENT 1

LOCAL ANALYSIS DETAIL

The purpose of this attachment is toe detail the methodology utilized to develop the First Analysis – Local Analysis.

BACKGROUND

The GSWIM model was developed to evaluate the surface water and groundwater interactions of the Upper Santa Clara River, whose basin covers approximately 418 square miles. The East Subbasin consists of the Alluvial aquifer and Saugus Formation, which are estimated to contain 78,216,000,000 gallons and 537,735,000,000 gallons of water, respectively. For relative comparison, the Water Factory would produce 392,135 gallons per day of tertiary recycled water, of which 35,490,510 gallons per year (108.9 afy) would be discharged to the percolation ponds. Also for comparison, approximately 651,800,000 gallons per year is estimated to flow into the East Subbasin from the Acton Subbasin, which is located upstream of the Water Factory.

The East Subbasin has a general "bowl-like" vertical shape, as shown in Figure 2. The Vista Canyon Water Factory lies at the eastern edge of this bowl, as shown in Figures 2 and 4. As such, the boundary conditions are greatly simplified over other locations, such as the Valencia and Saugus WRPs, which are centrally-located within the basin. With the north-south limits and depth of the Alluvial aquifer being relatively confined in the vicinity of the Vista Canyon Water Factory, with respect to the rest of the basin, the Local Analysis developed in this memo capitalizes on the characterization of the aquifer that was completed as part of the GSWIM efforts.

As part of the GSWIM Alluvial aquifer characterization, the East Subbasin was divided into three dimensional grids and layers to assign relevant characteristics. These grids and layers are described in detail in the CH2MHILL-HGL 2006 and 2008 documents and are utilized as the basis for this Local Analysis. Generally, the basin was divided into nine vertical model layers where Layers 1 and 2 essentially represent the soil (1 and 5 feet, respectively), Layer 3 is the remainder of the Alluvium, and Layers 4 - 9 represent the Saugus Formation. In the immediate vicinity of the Vista Canyon Water Factory, no Saugus Formation is present; rather, the Alluvial aquifer is underlain by bedrock. As you proceed west, downstream, into the basin, the Saugus Formation begins. The Local Analysis herein exclusively focuses on the Alluvial aquifer since it is the only aquifer receiving discharge within potential impact area. Based on the finding that impacts to the Alluvial aquifer would not be adverse, studying a greater area would only further decrease the impact.

METHODOLOGY

The geometry of the groundwater basin at the location of the percolation ponds and immediately downstream was determined based on the characterization completed in the CH2MHILL-HGL 2008 report. Figure 6 is an excerpt from the report, which delineates the depth of GSWIM Layer 3 (the alluvial aquifer) where the color red represents an alluvium thickness of 0 to 50 feet, yellow represents 50-100 feet thick, green represents 100-250 feet thick, and light blue represents 250-500 feet. Section lines were drawn through the grid columns to determine the cross-sectional area of the Alluvial aquifer at the percolation ponds (Section 1) and the three grid columns downstream (Sections 2, 3, and 4). Grid columns east of Section 1 were not considered as groundwater in this area flows from east to west. Grid columns west of Section 4 were not considered as the impact of the percolation ponds becomes too insignificant. The cross-sectional areas of each grid column are shown on pages 1 and 2 of the enclosed calculations. The cross section is color coded to match the grid blocks in Figure 6. The average thickness was used as the representative thickness (e.g., red blocks were assumed to have a thickness of 25 feet). The north part of the section is the right side of the colored cross section. Table A1-1 summarizes the cross-sectional area of each grid column. Two areas are required for Sections 3 and 4 because there are two different specific yields within the section. This is explained further in subsequent paragraphs.

TABLE A1-1 CROSS-SECTIONAL AREA OF EACH GRID COLUMN	
Section	**Area, ft²**
1 (Vista Canyon Water Factory Location)	612,250
2	661,625
3	19,750 582,750
4	74,100 480,000

Next, the groundwater velocity was determined. This is a function of horizontal hydraulic conductivity, hydraulic gradient, and porosity. Basin-wide values were used for the hydraulic conductivity and hydraulic gradient (consistent with other regional modeling efforts). Porosity is a sum of the specific yield and specific retention. Assuming the specific retention is negligible, porosity is then equivalent to specific yield (a conservative assumption). Figure 3-39 of the CH2MHILL-HGL 2008 report provides a specific yield range for each of the grid blocks shown in Figure 6. The Local Analysis used the midpoint of the range to calculate the velocity. The porosity values for each area are shown as "n" in the colored cross-sections on pages 1 and 2 of the calculations. The velocity calculations can be found on page 3 and are summarized in Table A1-2.

TABLE A1-2 VELOCITY OF EACH GRID COLUMN	
Section	**Velocity, ft/day**
1 (Vista Canyon Water Factory Location)	5.8
2	5.8
3	10.5 5.8
4	10.5 7.5

Knowing the cross sectional area and groundwater flow velocity, the flow rate through each section of the alluvial aquifer was determined as product of the two (Q = VA). The flow rate through each section is summarized in Table A1-3.

TABLE A1-3
GROUNDWATER FLOW RATE THROUGH EACH SECTION

Section	Flow, afy
1 (Vista Canyon Water Factory Location)	29,790
2	32,192
3	30,084
4	36,518

The quality of the Vista Canyon Water Factory's effluent disposed of in the percolation ponds is based on the addition of constituents through a use cycle plus the quantity of the constituents in the background water supply. Therefore, for the analyses presented in this memo, the effluent chloride concentration is estimated to be 117 mg/L (80 mg/L per Table 4 plus 37 mg/L per Table A1-4), effluent TDS is estimated to be 1,028 mg/L (763 mg/L per Table 4 plus 265 mg/L per Table A1-4), and effluent boron is estimated to be 1.15 mg/L (1.0 mg/L per Table 4 plus 0.015 mg/L per Table A1-4).

TABLE A1-4
CONSTITUENT ADDITION FROM A USE CYCLE

Parameter	Estimated Addition, mg/L
TDS	265
Chloride *	37
Sulfate	23
Boron	0.15
Aluminum	0.15
Fluoride	0.3
Manganese	0.3

Source – Asano, 2007
* Source – SCVJSS Chloride Report, October 2002

With a known flow rate through each section and the quality and quantity of percolation pond water defined, the impact of the addition of the percolation pond water was determined. The analysis conservatively assumes conservation of mass (i.e. no sorption or decay of chloride, consistent with the GSWIM modeling) and conservation of volume (i.e. for each drop of water entering a section, a subsequent drop leaves). The analysis utilized a background chloride concentration of 80 mg/L, the Vista Canyon Water Factory effluent chloride concentration to be 117 mg/L, and the Vista Canyon Water Factory percolation pond disposal rate of 108.9 afy. The impact to Section 1 is determined by summing the products of the flowrate and chloride concentration of the percolation pond and background groundwater,

$$Q1*C1 + Q2*C2 = Q3*C3, \text{ where}$$

Q1 = Section 1 flowrate less perc pond flow (29,790 afy – 108.9 afy)	= 29,681 afy
C1 = Background chloride concentration	= 80 mg/L
Q2 = Percolation pond flowrate	= 108.9 afy
C2 = Perc pond chloride concentration	= 117 mg/L
Q3 = Section 1 flowrate	= 29,790 afy

therefore, C3 = 80.135 mg/L
a 0.169 % increase above background

The impact to subsequent sections is determined by then assuming that the flow (and quality) from the upstream section enters the section of interest and displaces an equivalent volume downstream. The chloride concentration is then recalculated. Table A1-5 summarizes the increase above background for each section. Further calculations can be found on page 4.

TABLE A1-5 IMPACT ANALYSIS FOR CHLORIDE		
Section	**Alluvial Aquifer Chloride Concentration, mg/L**	**% Increase Caused by the Vista Canyon Water Factory**
Background *	80.0	--
1	80.135	0.169
2	80.124	0.155
3	80.124	0.155
4	80.103	0.129

Based on a Water Factory effluent quality of 117 mg/L
* See Table 4

The same process was also used to evaluate the impact to background levels of TDS and boron. Table A1-6 summarizes the impact to TDS based on background groundwater concentration of 763 mg/L (Geosyntec 2010) and a Vista Canyon Water Factory effluent TDS of 1,028 mg/L. Table A1-7 summarizes the impact to boron based on a background groundwater concentration of 1.0 mg/L (Geosyntec 2010) and a Vista Canyon Water Factory effluent boron of 1.15 mg/L. Detailed calculations for TDS and boron can be found on pages 5 and 6 of the calculations.

TABLE A1-6 IMPACT ANALYSIS FOR TDS		
Section	**Alluvial Aquifer Chloride Concentration, mg/L**	**% Increase Caused by the Vista Canyon Water Factory**
Background *	763.0	--
1	763.967	0.127
2	763.885	0.116
3	763.885	0.116
4	763.739	0.097

Based on a Water Factory effluent quality of 1,028 mg/L
* See Table 4

TABLE A1-7 IMPACT ANALYSIS FOR BORON		
Section	**Alluvial Aquifer Chloride Concentration, mg/L**	**% Increase Caused by the Vista Canyon Water Factory**
Background *	1.0	--
1	1.001	0.055
2	1.000	0.049
3	1.000	0.049
4	1.000	0.042

Based on a Water Factory effluent quality of 1.15 mg/L
* See Table 4

LOCAL ANALYSIS CALCULATIONS

CROSS-SECTIONAL AREA AND FLOW CALCULATIONS

SECTION 1 (See Figure 5)

East/West Width (ft) =
1,580

Area (ft^2) = 175*3160+790*75
= 612,250

V (ft/d) = 5.8

Q (ft^3/d) = V*A
Q (ft^3/d) = 3,555,997
Q (MGD) = 26.6
Q (AFY) = 29,790

Aquifer Thickness
Per Fig 3-16
(CH2MHILL-
HGL,2008)

SECTION 2 (See Figure 5)

East/West Width (ft) =
1,738

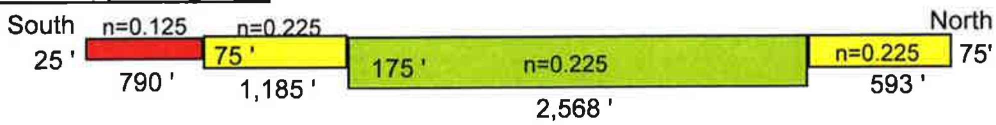
Area (ft^2) = 75*1580+175*2765+75*790
= 661,625

V (ft/d) = 5.8

Q (ft^3/d) = V*A
Q (ft^3/d) = 3,842,771
Q (MGD) = 28.7
Q (AFY) = 32,192

LOCAL ANALYSIS CALCULATIONS, continued.

SECTION 3 (See Figure 5)



East/West Width (ft) =
1,659

n=0.125	n=0.225
Area (ft^2) = 25*790	Area (ft^2) = 75*1185+175*2568+75*593
= 19,750	= 582,750
V (ft/d) = 10.5	V (ft/d) = 5.8
Q (ft^3/d) = V*A	Q (ft^3/d) = V*A
Q (ft^3/d) = 206,477	Q (ft^3/d) = 3,384,659
Q (MGD) = 1.5	Q (MGD) = 25.3
Q (AFY) = 1,730	Q (AFY) = 28,355

Total Q (ft^3/d) = 3,591,136
Q (MGD) = 26.9
Q (AFY) = 30,084

Note: Per Figure 5, there is a light blue block which represents an alluvial

SECTION 4 (See Figure 5)

East/West Width (ft) =
1,659

n=0.125	n=0.175
Area (ft^2) = 25*1185+75*593	Area (ft^2) = 75*870+175*2370
= 74,100	= 480,000
V (ft/d) = 10.5	V (ft/d) = 7.5
Q (ft^3/d) = V*A	Q (ft^3/d) = V*A
Q (ft^3/d) = 774,682	Q (ft^3/d) = 3,584,416
Q (MGD) = 5.8	Q (MGD) = 26.8
Q (AFY) = 6,490	Q (AFY) = 30,028

Total Q (ft^3/d) = 4,359,097
Q (MGD) = 32.6
Q (AFY) = 36,518

Note: Grid blocks north of the yellow grid block along the Santa Clara River were excluded as the groundwater gradient (flow direction) is toward the River.

LOCAL ANALYSIS CALCULATIONS, continued.

Velocity Calculations

$$V_a = \frac{\frac{K(h_1 - h_2)}{L}}{\eta}$$

Per Driscoll, Fletcher. *Groundwater and Wells*. Second Edition. 1986. Pg. 83

K = Horizontal Hydraulic Conductivity
= 100-200 ft/day (CH2MHill-HGL, 2008.Fig. 3-26)
= 150 ft/day for analysis

$\frac{h_1 - h_2}{L}$ = Hydraulic Gradient
= East to West at 46 ft/mile (Kennedy/Jenks, 2008.Pg.2-37)

η = Porosity
= sum of specific yield and specific retention
= specific yield (assumes specific retention minimal)

Specific Yield - per Figure 3-39 (CH2MHILL-HGL,2008)

Range Provided	Value for Analysis
0.10 - 0.15	0.125
0.15 - 0.20	0.175
0.20 - 0.25	0.225

Porosity	Velocity, ft/day
0.125	10.5
0.175	7.5
0.225	5.8

LOCAL ANALYSIS CALCULATIONS, continued.

CHLORIDE CONCENTRATION IMPACT BY SECTION

Background Groundwater Cl Concentration	80	mg/L (Table 4)
Water Factory Effluent Cl Concentration	117	mg/L
Water Factory Effluent Flow	108.9	afy

Impact to Section 1

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	29,790 - 108.9	C1 =	80	mg/L	Q1, C1 = Background
=	29,681 afy				
Q2 =	108.9 afy	C2 =	117	mg/L	Q2, C2 = Perc Pond
Q3 =	29,790 afy				Q3, C3 = Section 1
C3 =	**80.135 mg/L**				
=	**0.169 % above background**				

Impact to Section 2

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	32,192 - 29,790	C1 =	80	mg/L	Q1, C1 = Background
=	2,402 afy				
Q2 =	29,790 afy	C2 =	80.13506	mg/L	Q2, C2 = Section 1
Q3 =	32,192 afy				Q3, C3 = Section 2
C3 =	**80.124 mg/L**				
=	**0.155 % above background**				

Impact to Section 3

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	0	C1 =	80	mg/L	Q1, C1 = Background
=	0 afy				
Q2 =	32,192 afy	C2 =	80.12393	mg/L	Q2, C2 = Section 2
Q3 =	30,084 afy				Q3, C3 = Section 3
C3 =	**80.124 mg/L**				(concentration assumed to remain the same as Sect.2 is smaller than Sect.3)
=	**0.155 % above background**				

Impact to Section 4

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	36,518 - 30,084	C1 =	80	mg/L	Q1, C1 = Background
=	6,434 afy				
Q2 =	30,084 afy	C2 =	80.12393	mg/L	Q2, C2 = Section 3
Q3 =	36,518 afy				Q3, C3 = Section 4
C3 =	**80.103 mg/L**				
=	**0.129 % above background**				

LOCAL ANALYSIS CALCULATIONS, continued.

TDS IMPACT BY SECTION

Background Groundwater TDS	763	mg/L (Table 4)
Water Factory Effluent TDS	1028	mg/L
Water Factory Effluent Flow	108.9	afy

Impact to Section 1

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	29,790 - 108.9		C1 =	763	mg/L	Q1, C1 = Background
=	29,681	afy				
Q2 =	108.9	afy	C2 =	1028	mg/L	Q2, C2 = Perc Pond
Q3 =	29,790	afy				Q3, C3 = Section 1
C3 =	**763.967**	**mg/L**				
=	**0.127**	**% above background**				

Impact to Section 2

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	32,192 - 29,790		C1 =	763	mg/L	Q1, C1 = Background
=	2,402	afy				
Q2 =	29,790	afy	C2 =	763.9669	mg/L	Q2, C2 = Section 1
Q3 =	32,192	afy				Q3, C3 = Section 2
C3 =	**763.885**	**mg/L**				
=	**0.116**	**% above background**				

Impact to Section 3

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	0		C1 =	763	mg/L	Q1, C1 = Background
=	0	afy				
Q2 =	32,192	afy	C2 =	763.8847	mg/L	Q2, C2 = Section 2
Q3 =	30,084	afy				Q3, C3 = Section 3 (concentration assumed to remain the same as Sect.2 is smaller than Sect.3)
C3 =	**763.885**	**mg/L**				
=	**0.116**	**% above background**				

Impact to Section 4

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	36,518 - 30,084		C1 =	763	mg/L	Q1, C1 = Background
=	6,434	afy				
Q2 =	30,084	afy	C2 =	763.8847	mg/L	Q2, C2 = Section 3
Q3 =	36,518	afy				Q3, C3 = Section 4
C3 =	**763.739**	**mg/L**				
=	**0.097**	**% above background**				

LOCAL ANALYSIS CALCULATIONS, continued.

BORON IMPACT BY SECTION

Background Groundwater Boron	1.0 mg/L (Table 4)
Water Factory Effluent Boron	1.15 mg/L
Water Factory Effluent Flow	108.9 afy

Impact to Section 1

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	29,790 - 108.9	C1 =	1 mg/L	Q1, C1 = Background
=	29,681 afy			
Q2 =	108.9 afy	C2 =	1.15 mg/L	Q2, C2 = Perc Pond
Q3 =	29,790 afy			Q3, C3 = Section 1
C3 =	**1.001 mg/L**			
=	**0.055 % above background**			

Impact to Section 2

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	32,192 - 29,790	C1 =	1 mg/L	Q1, C1 = Background
=	2,402 afy			
Q2 =	29,790 afy	C2 =	1.000546 mg/L	Q2, C2 = Section 1
Q3 =	32,192 afy			Q3, C3 = Section 2
C3 =	**1.000 mg/L**			
=	**0.049 % above background**			

Impact to Section 3

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	0	C1 =	1 mg/L	Q1, C1 = Background
=	0 afy			
Q2 =	32,192 afy	C2 =	1.000492 mg/L	Q2, C2 = Section 2
Q3 =	30,084 afy			Q3, C3 = Section 3 (concentration assumed to remain the same as Sect.2 is smaller than Sect.3)
C3 =	**1.000 mg/L**			
=	**0.049 % above background**			

Impact to Section 4

Q1*C1 + Q2*C2 = Q3*C3

Q1 =	36,518 - 30,084	C1 =	1 mg/L	Q1, C1 = Background
=	6,434 afy			
Q2 =	30,084 afy	C2 =	1.000492 mg/L	Q2, C2 = Section 3
Q3 =	36,518 afy			Q3, C3 = Section 4
C3 =	**1.000 mg/L**			
=	**0.042 % above background**			

ATTACHMENT 2

RELATIVE ANALYSIS DETAIL AND BACKGROUND

The purpose of this attachment is the detail the methodology utilized to develop the Second Analysis – Relative Analysis.

In addition to disposing of treated wastewater via the percolation ponds, the Vista Canyon Project will also discharge stormwater to the adjacent Santa Clara River. Therefore, the Relative Analysis was developed to provide a simple illustration of the total impact of the Project to the river basin. The stormwater quantity and quality was developed as part of the EIR work for the Project. The Relative Analysis was only completed for chloride.

METHODOLOGY

The total average chloride concentration discharged into the basin was determined by summing the quantity and quality of stormwater flows discharged into the Santa Clara River with the quantity and quality of percolation pond water disposed of into the Alluvial aquifer. The total average annual flow discharged is 177.9 acre-feet per year at a chloride concentration of 79.77 mg/L (see calculations below). Note that the background chloride concentration, as reported in Table 4 of the memo, is 80 mg/L.

Annual Storm Drain Discharge to SC River =	69	af	(Geosyntec, 2010)
Chloride Concentration in Discharge =	21	mg/L	(Geosyntec, 2010)
Annual Water Factory Discharge to Ponds =	108.9	af	
Chloride Concentration in Discharge =	117	mg/L	

Calculate Combined Chloride Concentration

$Q1C1 + Q2C2 = Q3C3$

69 afy * 21 mg/L + 108.9 afy * 117 mg/L = 177.9 afy * C3

C3 = 79.77 mg/L

EXHIBIT 2

CHAPTER 1

OVERVIEW

This report provides information and analysis for the development of a municipal wastewater treatment plant, or water factory, in conjunction with the Vista Canyon mixed-use project. The project site is mostly disturbed, vacant land, with the exception of open storage and a residential use on the western portion of the site. Although most of the project site is not currently developed, it is surrounded by existing development. The project site also has been subject to repeated disturbance from utility construction and maintenance, illegal unauthorized dumping, unauthorized off-road vehicle activity, and various flood control activities.

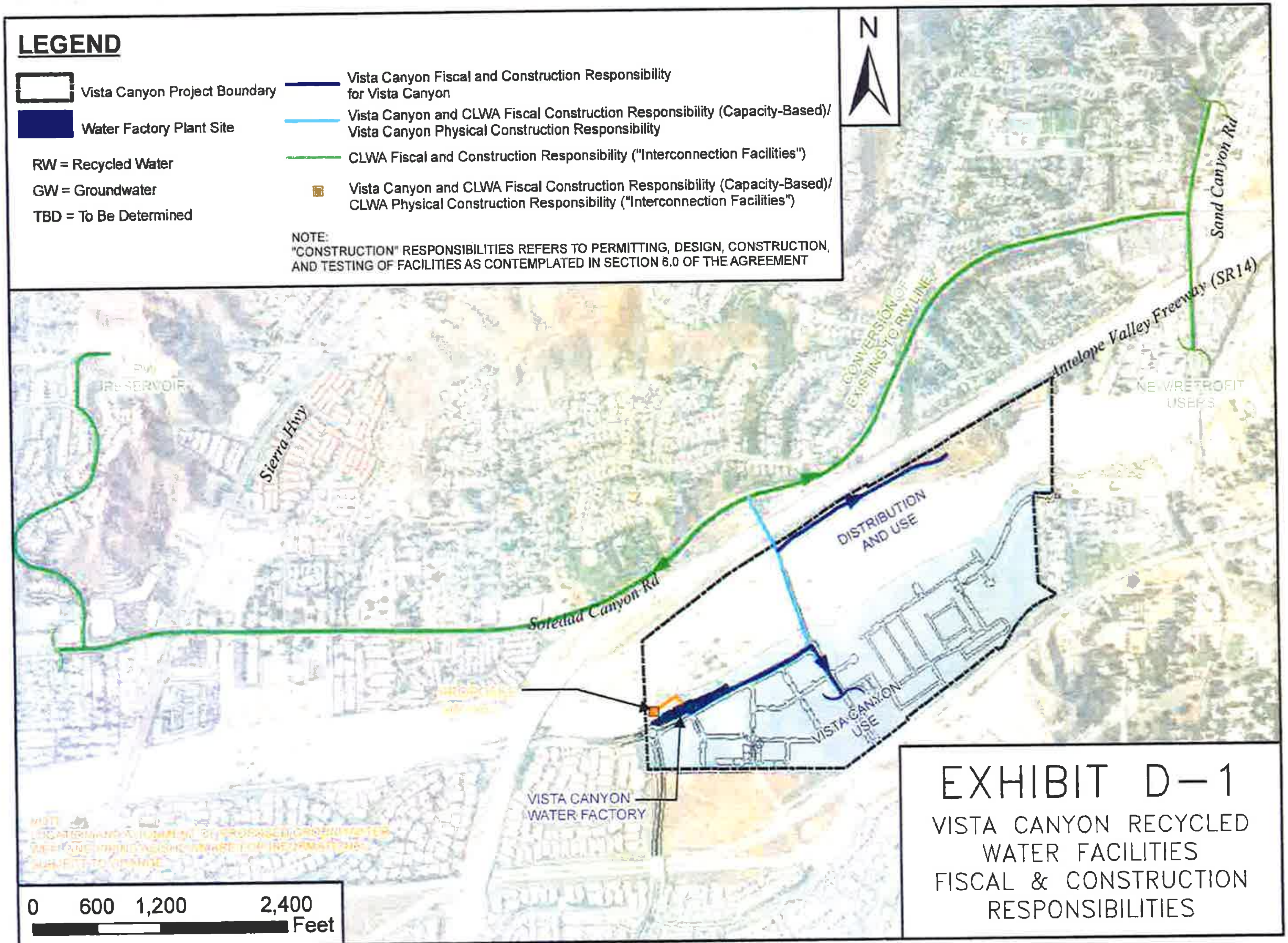
The approximately 185-acre project site is located immediately south of State Route 14 (SR-14), west of La Veda Avenue, north of the Metrolink rail line, and east of the Colony Townhome community in unincorporated Los Angeles County. The project applicant is Vista Canyon Ranch, LLC. The project applicant is proposing annexation of the project site and various surrounding areas to the City of Santa Clarita.

The project site is bisected by the Santa Clara River. The majority of the proposed development on the project site would be located south of the Santa Clara River, with a smaller commercial development proposed north of the River.

Project Description

The project applicant is proposing a Specific Plan (SP) designation for the project site, and has designed the Specific Plan so as to deliver a mixed-use, transit-oriented neighborhood to the eastern Santa Clarita Valley. The proposed land uses shown on the tentative tract map include 1,117 dwelling units (96 single family residential lots and 1,021 multi-family residential units) and up to 950,000 square feet of commercial and medical office, retail, theater, restaurant, and hotel uses within four Planning Areas ("PA"). A residential overlay over the corporate office campus site within PA-2 would allow for a conversion of up to 250,000 square feet of office floor area to 233 attached residential units. If implemented, this conversion would permit a maximum of 1,350 residential units and 700,000 square feet of commercial floor area. The proposed project would include various parks/recreation amenities, including the Oak Park, Town Green, Community Garden, and the River Education/Community Center, a Metrolink station, bus transfer station, private recreational facilities, and various trail, road, and buried bank stabilization protection improvements.

EXHIBIT 3


LEGEND
Vista Canyon Project Boundary
Water Factory Plant Site
RW = Recycled Water
GW = Groundwater
TBD = To Be Determined
Vista Canyon Fiscal and Construction Responsibility for Vista Canyon
Vista Canyon and CLWA Fiscal Construction Responsibility (Capacity-Based)/ Vista Canyon Physical Construction Responsibility
CLWA Fiscal and Construction Responsibility ("Interconnection Facilities")
Vista Canyon and CLWA Fiscal Construction Responsibility (Capacity-Based)/ CLWA Physical Construction Responsibility ("Interconnection Facilities")
NOTE:
"CONSTRUCTION" RESPONSIBILITIES REFERS TO PERMITTING, DESIGN, CONSTRUCTION, AND TESTING OF FACILITIES AS CONTEMPLATED IN SECTION 6.0 OF THE AGREEMENT
N
Sand Canyon Rd
Antelope Valley Freeway (SR14)
CONVERSION OF EXISTING TO RW LINE
NEW/RETROFIT USERS
RW RESERVOIR
Sierra Hwy
Soledad Canyon Rd
DISTRIBUTION AND USE
VISTA CANYON USE
VISTA CANYON WATER FACTORY
0 600 1,200 2,400 Feet
EXHIBIT D-1
VISTA CANYON RECYCLED WATER FACILITIES FISCAL & CONSTRUCTION RESPONSIBILITIES

Upper Santa Clara River East Subbasin
Salt and Nutrient Management Plan

Anti-Degradation Analysis

Projects Questionnaire

Santa Clarita Water Division Water Use Efficiency Programs

Questions

A) Do you have projects planned for implementation between 2014-2035 that will:

1) Change Land Use (*that might otherwise impact groundwater*) not already envisioned by OVOV, if so what is the change and what is the area of change;

None of the programs in this project should result in changes in land use patterns.

2) Change water use application, if so, what is the water use application change;

A couple of the programs in the project focus on landscape irrigation practices and methods. These may result in changes in the rate of water application and acreage that is irrigated.

3) Change water use volume, if so, what volume (annually);

If all ten programs are fully implemented, it is anticipated that 4,437 AF of water would be saved by 2020.

4) Change water quality, if so, what will the resultant water quality be? (include if you know or if you have initial assumptions)

Residential and commercial landscape runoff should be reduced resulting in less nutrients, salts and contaminants entering the storm drain system and subsequently surface waters. Also, a decrease in water demand will reduce the amount of water imported to the Valley and therefore, any nutrients, salts or contaminants associated with the imported water.

5) Change ground water recharge, if so, will it reduce or increase groundwater recharge, and by what volume (annually);

If reducing irrigation water runoff reduces groundwater recharge, then some of these programs may affect recharge. It would reduce recharge. My guess would be not by very much. Sorry, I really don't know.

6) Will the project increase use of recycled water, if so, by what volume;

None of these programs will increase use of recycled water.

7) Will project change septic to sewer use, if so by how many residential units or commercial units;

None of these projects will change septic to sewer use.

8) Will the project be phased? If so, please provide a sequence of phasing;

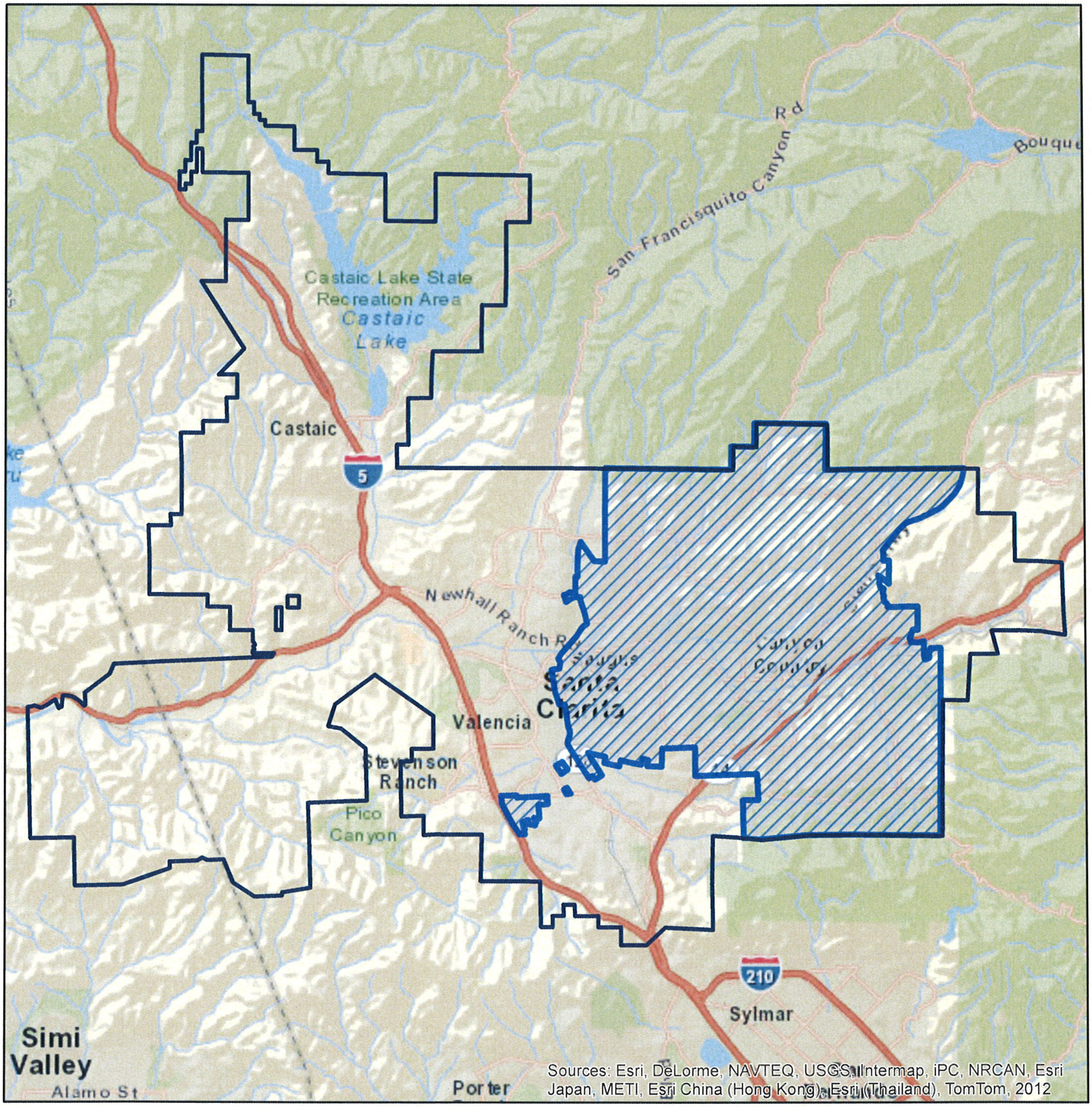
All ten projects should be initiated by 2014 and completed by 2020.

B) Describe Project:

SCWD's Water Use Efficiency Strategic Plan (SCWD Strategic Plan) was developed in July 2012 to identify, analyze and provide a roadmap for implementing programs that will allow SCWD to achieve its SBX7-7 requirements and reduce dependence on imported water sources. The SCWD Strategic Plan specifies ten water use efficiency incentive programs that, when fully implemented, will save 4,437 acre-feet (AF) of water by 2020.

C) Provide Location map showing project.

See below:



LEGEND

Santa Clarita Water Division Project Area

Castiac Lake Water Agency

N W E S

SCWD-2

Santa Clarita Water Division Water Use Efficiency Plan Program

Responses to Questions regarding the Newhall Ranch WRP

From: Dexter Engineering

Note that the Newhall Ranch Specific Plan area was included in OVOV and makes up the design flow of the Newhall WRP.

1. Anticipated time that plant will be online
    - 2023
2. Design Flow of the Plant
    - Initial Construction of 2.0 mgd and 4.0 mgd at buildout of Newhall Ranch Specific Plan
    - Note that the plant could also be expanded to accommodate the Val Verde area adding 1.3 mgd to the design flow. The remainder of the information provided herein does not include Val Verde.
    - Additionally there is potential for cross-boundary flows between the Newhall Ranch Sanitation District and the Santa Clarita Valley Sanitation District. At this time, flow projections assume there are no cross-boundary flows.
3. Will NRWRP production and discharge/land application be ramped up with time?
    - Yes
    - Startup in 2023 at 2.0 mgd
    - Buildout in 2033 at 4.0 mgd
    - Application of initial, non-NRWRP reclaimed water in 2015 for construction and 2017 for irrigation- reclaimed water source is VWRP
4. Anticipated Discharge to the SCR for wet, dry, and average years through to 2035
    - Even growth is assumed over time from construction of initial 2.0 mgd to 4.0 mgd.
    - Discharge to the Santa Clara River is seasonal and generally expected to occur during the months of November to March.

Year	Plant Capacity, mgd	Newhall WRP River Discharge, AFY
2023	2	283
2024	2.2	311
2025	2.4	340
2026	2.6	368
2027	2.8	396
2028	3	425
2029	3.2	453
2030	3.4	481
2031	3.6	509
2032	3.8	538
2033	4	566

5. Specific areas for landscape application of recycled water
   - See attached figure
   - At buildout, recycled water demand is approximately 4,774 AFY throughout the Newhall Ranch Specific Plan. 3,594 AFY shall be supplied by the Newhall WRP and 1,180 shall be supplied by the Valencia WRP.

Newhall Ranch and the Newhall Ranch WRP					
		Quantities in AFY			
Year	Discharge, mgd	RW from NRWRP	RW from VWRP	Total RW Demand	River Discharge
2023	2	1,797	590	2,387	283
2024	2.2	1,977	649	2,626	311
2025	2.4	2,156	708	2,864	340
2026	2.6	2,336	767	3,103	368
2027	2.8	2,516	826	3,342	396
2028	3	2,696	885	3,581	425
2029	3.2	2,875	944	3,819	453
2030	3.4	3,055	1,003	4,058	481
2031	3.6	3,235	1,062	4,297	509
2032	3.8	3,414	1,121	4,535	538
2033	4	3,594	1,180	**4,774**	566

NRWRP, Newhall Ranch WRP

VWRP, Valencia WRP

River Discharge at Newhall WRP

   - At buildout, recycled water demand is approximately 7,164 AFY for all Newhall Land-owned Westside Communities in total. The balance between the Westside Community Demand and the Newhall Ranch Demand shall be supplied by the Valencia WRP (2,390 AFY).

Other Westside Communities		
Year	Total Westside RW Demand, AFY	RW from VWRP, AFY
2023	3,556	1,169

2024	3,912	1,286
2025	4,267	1,403
2026	4,623	1,520
2027	4,978	1,637
2028	5,334	1,754
2029	5,690	1,870
2030	6,045	1,987
2031	6,401	2,104
2032	6,756	2,221
2033	**7,164**	**2,390**

6. Anticipated water quality (if there are any changes from the Tentative WDRs)
   - Tentative WDR is correct for river discharge quality
   - Recycled water chloride concentration expected to be 125 mg/L (only river discharge will receive RO treatment to have Cl of 100 mg/L)

APPENDIX I

Annual Water Balances and Mass Loading Tables for Single Projects and "All Projects"

2012-2035

GEOSCIENCE

APPENDIX I

ANNUAL WATER BALANCES AND MASS LOADING TABLES FOR SINGLE PROJECTS AND "ALL PROJECTS" – 2012-2035

No. Description Page No.

Table I-1

Summary of Changes to Model to Simulate Projects - East Subbasin Management Zones - 2012 through 2035

Agency	Project	Change in Water Use	Change in Source Water Quality	Changes to Model Caused by Projects
SCVSD	Wastewater Treatment Plant Chloride Compliance Program	None	Water reclamation plants would reduce chloride concentrations discharged to the SCR to 100 mg/L as a three month average	1. Starting from the year 2015, the effluent concentration of chloride in Valencia and Saugus wastewater treatment plant decreased from 117 mg/L to 100 mg/L. Calculating the mass change by multiplying the discharged volume in each year. 2. Based on the proportion of discharged wastewater amount to stream flow (458:3930 for Saugus and 1371:6469 for Valencia), calculating the change in mass in the stream. 3. Calculating the changed concentration in stream flow and considering it as the stream leakance concentration. 4. Calculating the change in concentrations.
SCWD	Water Use Efficiency Programs (10 programs between 2014-2020)	Conserve 4,437 acre-ft/yr, reduction in residential and commercial run-off	No Change	1. SCWD conserves 633.86 acre-ft in 2014 and starts to conserve an additional 633.86 acre-ft next year until 2020. 2. Assuming half of the conserved water comes from outdoor use (applied water) and another half comes from indoor use, which is the same as the amount discharged to the stream. 3. For the applied water, the reduction in each management zone depends on the proportion SCWD served in these management zones. 4. Considering the reduction of indoor water consumption, leads to the reduction of discharged water from Saugus WRP to stream; and then calculating the reduction of stream water leaking to the alluvium based on the proportion of wastewater amount to stream flow. 5. Considering the conserved water leads partially to the reduction in pumped water amount in these management zones. 6. Calculating the change in concentrations.
Vista Canyon Project	Vista Canyon Water Reclamation Plant (2014-2019)	The current project will generate 439 acre-ft/yr of recycled water. 190 acre ft/yr of recycled water will be used for landscape irrigation and 249 acre-ft/yr will be discharged to sewer for further treatment and discharged downstream. However, percolation to alluvium per the previous project description is included herein.	Proposed chloride concentration of 117 mg/L (from 763 mg/L to 812 mg/L TDS)	1. The Vista Canyon WRP will tertiaryly treat 439 acre-ft/year wastewater to potable quality. Among them, 190 acre-ft/yr is planned for landscape irrigation from 2014 to 2019. The previous project included percolation of excess recycled water to the alluvium which is conservative in comparison to the curent project and will therefore included herein. 2. For the recycled water, it will increase the mass as applied recycled water. Calculating the mass increase by multiplying the recycled volume and the project-provided water quality. 3. For the percolated volume, calculating the mass increase by multiplying the percolated volume and the effluent water quality provided by the project report. 4. Calculating the mass getting into the alluvium by multiplying the increased mass from project and absorption factor of soil. 5.Calculating the change in concentrations.
CLWA	Recycled Water Master Plan Phases 2A, 2B, and 2C; increase to 10,275 acre-ft/yr by 2035	Increase from 325 acre-ft/yr to 12,000 acre-ft/yr	Recycled Water will be at current effluent concentrations	
CLWA	SCV WUE SP (5 programs between 2015-2026)	Conserve 3,287 acre-ft/yr; Reduce SWP water by 380 acre-ft/yr. Reduce residential run-off.	No Change	1. CLWA conserves 683 acre-ft in 2010 and starts to conserve an additional 683 acre-ft/year next year until 2015. 2. Assuming half of the conserved water comes from outdoor use (applied water) and another half comes from indoor use, which is the same as the amount discharged to the stream. 3. For the applied water, the reduction in each management zone depends on the proportion each purveyor served in these management zones. 4. Considering the reduction of indoor water consumption leads to the reduction of discharged water from Saugus and Valencia WWTP to streamflow. And then calculating the reduction of stream water leaking to the alluvium based on the proportion of wastewater amount to streamflow. (The distribution between Saugus and Valencia are based on their capacities.) 5. Considering the 3,287 acre-ft/yr conserved water leads partially to the reduction in pumped water amount in these management zones. The 380 acre-ft/yr conserved water do not contribute to the reduction in pumped water because they are imported. 6. Calculating the change in concentrations.
CLWA	Recycled Water Master Plan (Phases 2A, 2B and 2C)	Increased use of recycled water from 325 acre-ft/yr to 2,000 acre-ft/yr	No Change (recycled water will be at current effluent concentrations)	1. CLWA plans to recycle 2,000 acre-ft/year until 2035 - 1,000 for upstream Saugus WWTP and about 1,000 for plan phase 2C. Currently, only 325 was recycled. 2. Assuming the recycled water is totally used outdoors, the increment is determined from the effluent water quality provided in the water management plan report. 3. Calculating the mass increase by multiplying recycled volume and project-provided water quality. 4. Calculating the mass getting into the alluvium by multiplying the increased mass from project and absorption factor of soil. 5. Calculating the change in concentrations.
Newhall Ranch	Water Reclamation Facility and Recycled Water Use (2023-2033)	None	Applied water inside the nine West Side Communities will be at proposed effluent concentrations	1. Applied water inside the nine West Side Communities is assigned as proposed effluent concentrations (see Appendix H); and will increase mass to groundwater. Calculating the mass increase by multiplying the applied water volume and the proposed project water quality. 2. Calculating the mass to the alluvium by multiplying the increased mass by absorption factor of soil. 3. Calculating the change in concentrations.

Projected TDS Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	100	442	777	758	2,240	0	0	15,281	722	5,429	722	3,551	723	30,583	27,295	11,058	1,231	1,151	13,877	70	27,387	26,745	69,600	750	3,196	72,795	722	70,950	71,499	549
2013	333	100	441	777	764	2,240	0	0	2,847	722	7,635	722	5,826	723	17,845	18,857	11,043	786	844	13,113	38	25,825	24,536	72,795	722	-7,980	64,815	747	71,499	65,820	-5,679
2014	2,767	100	441	777	770	2,240	0	0	8,005	722	7,025	722	3,735	723	22,743	21,615	5,194	818	785	13,815	43	20,656	20,178	64,815	747	2,087	66,902	739	65,820	67,256	1,436
2015	10,922	100	441	777	775	2,240	0	0	27,898	722	5,082	722	1,284	723	46,402	37,951	11,043	1,995	1,279	13,922	70	28,309	27,173	66,902	739	18,093	84,995	675	67,256	78,035	10,778
2016	0	100	442	777	781	2,240	0	0	3,784	722	6,676	722	5,368	723	17,052	18,395	11,058	1,485	1,297	14,163	64	28,066	24,577	84,995	675	-11,014	73,981	714	78,035	71,853	-6,182
2017	0	100	441	777	787	2,240	0	0	2,081	722	8,489	722	4,838	723	16,636	17,998	5,194	883	863	14,662	47	21,649	20,188	73,981	714	-5,013	68,968	743	71,853	69,663	-2,190
2018	2,209	100	441	777	793	2,240	0	0	5,510	722	7,672	722	4,354	723	20,979	20,404	5,194	769	760	14,795	47	21,564	21,014	68,968	743	-585	68,383	743	69,663	69,053	-610
2019	322	100	441	777	799	2,240	0	0	1,318	722	8,363	722	6,035	723	17,277	18,382	11,043	389	501	13,430	32	25,395	25,138	68,383	743	-8,118	60,265	760	69,053	62,297	-6,756
2020	1,284	100	442	777	805	2,240	0	0	2,532	722	8,820	722	4,660	723	18,542	18,820	5,201	361	408	14,129	34	20,134	20,391	60,265	760	-1,592	58,674	761	62,297	60,726	-1,571
2021	0	100	441	777	810	2,240	0	0	467	722	9,939	722	4,877	723	16,534	17,946	5,194	131	301	14,551	35	20,212	20,607	58,674	761	-3,678	54,996	777	60,726	58,065	-2,661
2022	0	100	441	777	816	2,240	0	0	960	722	10,486	722	4,616	723	17,319	18,728	5,194	120	269	14,643	34	20,260	21,107	54,996	777	-2,941	52,055	787	58,065	55,687	-2,378
2023	2,700	100	441	777	822	2,240	0	0	7,122	722	8,249	722	3,838	723	23,171	22,201	5,194	425	340	14,860	38	20,857	21,949	52,055	787	2,314	54,369	757	55,687	55,939	252
2024	7,651	100	442	777	828	2,240	0	0	23,652	722	3,248	722	1,708	723	37,529	32,116	5,201	2,480	1,236	15,376	58	24,351	23,782	54,369	757	13,177	67,546	700	55,939	64,273	8,334
2025	6,543	100	441	777	834	2,240	0	0	31,933	722	3,754	722	1,742	723	45,245	40,641	11,043	7,610	2,007	15,503	97	36,259	32,592	67,546	700	8,986	76,532	695	64,273	72,321	8,048
2026	0	100	441	777	840	2,240	0	0	3,032	722	6,806	722	5,988	723	17,106	18,570	11,043	1,230	1,052	14,109	52	27,486	24,979	76,532	695	-10,380	66,152	733	72,321	65,913	-6,409
2027	6,612	100	441	777	845	2,240	0	0	21,134	722	4,045	722	2,918	723	35,994	31,527	5,194	3,365	1,714	14,470	64	24,807	23,009	66,152	733	11,187	77,340	708	65,913	74,430	8,517
2028	2,395	100	442	777	851	2,240	0	0	6,994	722	4,905	722	5,952	723	21,540	20,922	11,058	1,893	1,442	13,646	51	28,090	25,645	77,340	708	-6,550	70,790	724	74,430	69,707	-4,723
2029	657	100	441	777	857	2,240	0	0	3,265	722	7,106	722	5,903	723	18,228	19,152	11,043	798	886	12,904	37	25,667	24,402	70,790	724	-7,439	63,351	748	69,707	64,457	-5,250
2030	8,133	100	441	777	863	2,240	0	0	49,426	722	3,965	722	-1,666	723	61,160	54,973	11,043	12,976	2,990	15,621	122	42,752	40,456	63,351	748	18,409	81,760	710	64,457	78,974	14,518
2031	0	100	441	777	869	2,240	0	0	1,172	722	7,529	722	6,268	723	16,278	17,818	11,043	919	1,135	14,194	51	27,343	25,315	81,760	710	-11,065	70,695	744	78,974	71,478	-7,496
2032	484	100	442	777	875	2,240	0	0	1,470	722	8,784	722	5,984	723	18,040	19,150	11,058	355	715	13,354	33	25,515	25,075	70,695	744	-7,476	63,219	763	71,478	65,553	-5,925
2033	3,549	100	441	777	880	2,240	0	0	10,413	722	7,475	722	3,523	723	26,281	24,655	5,194	650	777	14,023	40	20,684	20,642	63,219	763	5,597	68,817	743	65,553	69,566	4,013
2034	0	100	441	777	886	2,240	0	0	467	722	7,956	722	5,296	723	15,045	16,642	5,194	450	607	14,461	41	20,753	20,365	68,817	743	-5,707	63,109	767	69,566	65,843	-3,723
2035	1,203	100	441	777	892	2,240	0	0	3,800	722	8,693	722	4,358	723	19,386	19,896	5,194	386	505	14,526	42	20,654	21,021	63,109	767	-1,268	61,842	770	65,843	64,718	-1,125

Table I-2b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	113	758	326	0	0	15,281	89	5,429	98	3,551	34	30,583	3,416	11,058	1,231	1,151	13,877	70	27,387	3,127	69,600	88	3,196	72,795	87	8,294	8,584	290
2013	333	40	441	113	764	326	0	0	2,847	89	7,635	98	5,826	34	17,845	2,052	11,043	786	844	13,113	38	25,825	2,946	72,795	87	-7,980	64,815	87	8,584	7,690	-893
2014	2,767	40	441	113	770	326	0	0	8,005	89	7,025	98	3,735	34	22,743	2,634	5,194	818	785	13,815	43	20,656	2,358	64,815	87	2,087	66,902	88	7,690	7,967	277
2015	10,922	40	441	113	775	326	0	0	27,898	89	5,082	98	1,284	34	46,402	5,115	11,043	1,995	1,279	13,922	70	28,309	3,219	66,902	88	18,093	84,995	85	7,967	9,864	1,897
2016	0	40	442	113	781	326	0	0	3,784	89	6,676	98	5,368	34	17,052	2,007	11,058	1,485	1,297	14,163	64	28,066	3,107	84,995	85	-11,014	73,981	87	9,864	8,764	-1,100
2017	0	40	441	113	787	326	0	0	2,081	89	8,489	98	4,838	34	16,636	2,021	5,194	883	863	14,662	47	21,649	2,462	73,981	87	-5,013	68,968	89	8,764	8,322	-442
2018	2,209	40	441	113	793	326	0	0	5,510	89	7,672	98	4,354	34	20,979	2,427	5,194	769	760	14,795	47	21,564	2,510	68,968	89	-585	68,383	89	8,322	8,239	-83
2019	322	40	441	113	799	326	0	0	1,318	89	8,363	98	6,035	34	17,277	1,989	11,043	389	501	13,430	32	25,395	2,999	68,383	89	-8,118	60,265	88	8,239	7,229	-1,010
2020	1,284	40	442	113	805	326	0	0	2,532	89	8,820	98	4,660	34	18,542	2,189	5,201	361	408	14,129	34	20,134	2,366	60,265	88	-1,592	58,674	88	7,229	7,052	-177
2021	0	40	441	113	810	326	0	0	467	89	9,939	98	4,877	34	16,534	2,031	5,194	131	301	14,551	35	20,212	2,393	58,674	88	-3,678	54,996	89	7,052	6,689	-362
2022	0	40	441	113	816	326	0	0	960	89	10,486	98	4,616	34	17,319	2,154	5,194	120	269	14,643	34	20,260	2,432	54,996	89	-2,941	52,055	91	6,689	6,412	-278
2023	2,700	40	441	113	822	326	0	0	7,122	89	8,249	98	3,838	34	23,171	2,715	5,194	425	340	14,860	38	20,857	2,527	52,055	91	2,314	54,369	89	6,412	6,600	188
2024	7,651	40	442	113	828	326	0	0	23,652	89	3,248	98	1,708	34	37,529	4,223	5,201	2,480	1,236	15,376	58	24,351	2,806	54,369	89	13,177	67,546	87	6,600	8,016	1,417
2025	6,543	40	441	113	834	326	0	0	31,933	89	3,754	98	1,742	34	45,245	5,235	11,043	7,610	2,007	15,503	97	36,259	4,065	67,546	87	8,986	76,532	88	8,016	9,186	1,170
2026	0	40	441	113	840	326	0	0	3,032	89	6,806	98	5,988	34	17,106	1,987	11,043	1,230	1,052	14,109	52	27,486	3,173	76,532	88	-10,380	66,152	89	9,186	8,001	-1,186
2027	6,612	40	441	113	845	326	0	0	21,134	89	4,045	98	2,918	34	35,994	4,030	5,194	3,365	1,714	14,470	64	24,807	2,793	66,152	89	11,187	77,340	88	8,001	9,238	1,238
2028	2,395	40	442	113	851	326	0	0	6,994	89	4,905	98	5,952	34	21,540	2,347	11,058	1,893	1,442	13,646	51	28,090	3,183	77,340	88	-6,550	70,790	87	9,238	8,402	-836
2029	657	40	441	113	857	326	0	0	3,265	89	7,106	98	5,903	34	18,228	2,095	11,043	798	886	12,904	37	25,667	2,941	70,790	87	-7,439	63,351	88	8,402	7,556	-846
2030	8,133	40	441	113	863	326	0	0	49,426	89	3,965	98	-1,666	34	61,160	7,323	11,043	12,976	2,990	15,621	122	42,752	4,742	63,351	88	18,409	81,760	91	7,556	10,136	2,580
2031	0	40	441	113	869	326	0	0	1,172	89	7,529	98	6,268	34	16,278	1,884	11,043	919	1,135	14,194	51	27,343	3,249	81,760	91	-11,065	70,695	91	10,136	8,771	-1,365
2032	484	40	442	113	875	326	0	0	1,470	89	8,784	98	5,984	34	18,040	2,104	11,058	355	715	13,354	33	25,515	3,077	70,695	91	-7,476	63,219	91	8,771	7,798	-973
2033	3,549	40	441	113	880	326	0	0	10,413	89	7,475	98	3,523	34	26,281	3,068	5,194	650	777	14,023	40	20,684	2,456	63,219	91	5,597	68,817	90	7,798	8,410	612
2034	0	40	441	113	886	326	0	0	467	89	7,956	98	5,296	34	15,045	1,819	5,194	450	607	14,461	41	20,753	2,462	68,817	90	-5,707	63,109	91	8,410	7,767	-643
2035	1,203	40	441	113	892	326	0	0	3,800	89	8,693	98	4,358	34	19,386	2,346	5,194	386	505	14,526	42	20,654	2,480	63,109	91	-1,268	61,842	91	7,767	7,633	-134

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	9	442	45	758	16	0	0	15,281	20	5,429	17	3,551	20	30,583	740	11,058	1,231	1,151	13,877	70	27,387	714	69,600	20	3,196	72,795	**19**	1,894	1,920	**26**
2013	333	9	441	45	764	16	0	0	2,847	20	7,635	17	5,826	20	17,845	456	11,043	786	844	13,113	38	25,825	659	72,795	19	-7,980	64,815	**19**	1,920	1,717	**-203**
2014	2,767	9	441	45	770	16	0	0	8,005	20	7,025	17	3,735	20	22,743	555	5,194	818	785	13,815	43	20,656	526	64,815	19	2,087	66,902	**19**	1,717	1,746	**29**
2015	10,922	9	441	45	775	16	0	0	27,898	20	5,082	17	1,284	20	46,402	1,083	11,043	1,995	1,279	13,922	70	28,309	705	66,902	19	18,093	84,995	**18**	1,746	2,124	**378**
2016	0	9	442	45	781	16	0	0	3,784	20	6,676	17	5,368	20	17,052	444	11,058	1,485	1,297	14,163	64	28,066	669	84,995	18	-11,014	73,981	**19**	2,124	1,899	**-225**
2017	0	9	441	45	787	16	0	0	2,081	20	8,489	17	4,838	20	16,636	424	5,194	883	863	14,662	47	21,649	534	73,981	19	-5,013	68,968	**19**	1,899	1,790	**-109**
2018	2,209	9	441	45	793	16	0	0	5,510	20	7,672	17	4,354	20	20,979	513	5,194	769	760	14,795	47	21,564	540	68,968	19	-585	68,383	**19**	1,790	1,763	**-27**
2019	322	9	441	45	799	16	0	0	1,318	20	8,363	17	6,035	20	17,277	438	11,043	389	501	13,430	32	25,395	642	68,383	19	-8,118	60,265	**19**	1,763	1,558	**-204**
2020	1,284	9	442	45	805	16	0	0	2,532	20	8,820	17	4,660	20	18,542	455	5,201	361	408	14,129	34	20,134	510	60,265	19	-1,592	58,674	**19**	1,558	1,504	**-55**
2021	0	9	441	45	810	16	0	0	467	20	9,939	17	4,877	20	16,534	415	5,194	131	301	14,551	35	20,212	510	58,674	19	-3,678	54,996	**19**	1,504	1,408	**-95**
2022	0	9	441	45	816	16	0	0	960	20	10,486	17	4,616	20	17,319	434	5,194	120	269	14,643	34	20,260	512	54,996	19	-2,941	52,055	**19**	1,408	1,330	**-78**
2023	2,700	9	441	45	822	16	0	0	7,122	20	8,249	17	3,838	20	23,171	562	5,194	425	340	14,860	38	20,857	524	52,055	19	2,314	54,369	**19**	1,330	1,368	**38**
2024	7,651	9	442	45	828	16	0	0	23,652	20	3,248	17	1,708	20	37,529	900	5,201	2,480	1,236	15,376	58	24,351	582	54,369	19	13,177	67,546	**18**	1,368	1,686	**318**
2025	6,543	9	441	45	834	16	0	0	31,933	20	3,754	17	1,742	20	45,245	1,124	11,043	7,610	2,007	15,503	97	36,259	855	67,546	18	8,986	76,532	**19**	1,686	1,955	**269**
2026	0	9	441	45	840	16	0	0	3,032	20	6,806	17	5,988	20	17,106	445	11,043	1,230	1,052	14,109	52	27,486	675	76,532	19	-10,380	66,152	**19**	1,955	1,725	**-231**
2027	6,612	9	441	45	845	16	0	0	21,134	20	4,045	17	2,918	20	35,994	870	5,194	3,365	1,714	14,470	64	24,807	602	66,152	19	11,187	77,340	**19**	1,725	1,993	**268**
2028	2,395	9	442	45	851	16	0	0	6,994	20	4,905	17	5,952	20	21,540	537	11,058	1,893	1,442	13,646	51	28,090	687	77,340	19	-6,550	70,790	**19**	1,993	1,843	**-149**
2029	657	9	441	45	857	16	0	0	3,265	20	7,106	17	5,903	20	18,228	464	11,043	798	886	12,904	37	25,667	645	70,790	19	-7,439	63,351	**19**	1,843	1,662	**-182**
2030	8,133	9	441	45	863	16	0	0	49,426	20	3,965	17	-1,666	20	61,160	1,532	11,043	12,976	2,990	15,621	122	42,752	1,043	63,351	19	18,409	81,760	**19**	1,662	2,150	**489**
2031	0	9	441	45	869	16	0	0	1,172	20	7,529	17	6,268	20	16,278	419	11,043	919	1,135	14,194	51	27,343	689	81,760	19	-11,065	70,695	**20**	2,150	1,880	**-271**
2032	484	9	442	45	875	16	0	0	1,470	20	8,784	17	5,984	20	18,040	454	11,058	355	715	13,354	33	25,515	659	70,695	20	-7,476	63,219	**19**	1,880	1,674	**-206**
2033	3,549	9	441	45	880	16	0	0	10,413	20	7,475	17	3,523	20	26,281	637	5,194	650	777	14,023	40	20,684	527	63,219	19	5,597	68,817	**19**	1,674	1,784	**110**
2034	0	9	441	45	886	16	0	0	467	20	7,956	17	5,296	20	15,045	383	5,194	450	607	14,461	41	20,753	522	68,817	19	-5,707	63,109	**19**	1,784	1,645	**-139**
2035	1,203	9	441	45	892	16	0	0	3,800	20	8,693	17	4,358	20	19,386	479	5,194	386	505	14,526	42	20,654	525	63,109	19	-1,268	61,842	**19**	1,645	1,599	**-46**

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	124	758	358	0	0	15,281	140	5,429	108	3,551	235	30,583	5,553	11,058	1,231	1,151	13,877	70	27,387	5,739	69,600	161	3,196	72,795	152	15,223	15,038	-185
2013	333	40	441	124	764	358	0	0	2,847	140	7,635	108	5,826	235	17,845	3,987	11,043	786	844	13,113	38	25,825	5,161	72,795	152	-7,980	64,815	157	15,038	13,865	-1,173
2014	2,767	40	441	124	770	358	0	0	8,005	140	7,025	108	3,735	235	22,743	4,344	5,194	818	785	13,815	43	20,656	4,251	64,815	157	2,087	66,902	153	13,865	13,958	93
2015	10,922	40	441	124	775	358	0	0	27,898	140	5,082	108	1,284	235	46,402	7,496	11,043	1,995	1,279	13,922	70	28,309	5,639	66,902	153	18,093	84,995	137	13,958	15,814	1,856
2016	0	40	442	124	781	358	0	0	3,784	140	6,676	108	5,368	235	17,052	3,869	11,058	1,485	1,297	14,163	64	28,066	4,981	84,995	137	-11,014	73,981	146	15,814	14,702	-1,112
2017	0	40	441	124	787	358	0	0	2,081	140	8,489	108	4,838	235	16,636	3,645	5,194	883	863	14,662	47	21,649	4,131	73,981	146	-5,013	68,968	152	14,702	14,217	-486
2018	2,209	40	441	124	793	358	0	0	5,510	140	7,672	108	4,354	235	20,979	4,144	5,194	769	760	14,795	47	21,564	4,288	68,968	152	-585	68,383	151	14,217	14,072	-144
2019	322	40	441	124	799	358	0	0	1,318	140	8,363	108	6,035	235	17,277	3,887	11,043	389	501	13,430	32	25,395	5,123	68,383	151	-8,118	60,265	157	14,072	12,837	-1,235
2020	1,284	40	442	124	805	358	0	0	2,532	140	8,820	108	4,660	235	18,542	3,801	5,201	361	408	14,129	34	20,134	4,202	60,265	157	-1,592	58,674	156	12,837	12,436	-401
2021	0	40	441	124	810	358	0	0	467	140	9,939	108	4,877	235	16,534	3,576	5,194	131	301	14,551	35	20,212	4,220	58,674	156	-3,678	54,996	158	12,436	11,792	-644
2022	0	40	441	124	816	358	0	0	960	140	10,486	108	4,616	235	17,319	3,669	5,194	120	269	14,643	34	20,260	4,286	54,996	158	-2,941	52,055	158	11,792	11,174	-617
2023	2,700	40	441	124	822	358	0	0	7,122	140	8,249	108	3,838	235	23,171	4,410	5,194	425	340	14,860	38	20,857	4,404	52,055	158	2,314	54,369	151	11,174	11,180	6
2024	7,651	40	442	124	828	358	0	0	23,652	140	3,248	108	1,708	235	37,529	6,404	5,201	2,480	1,236	15,376	58	24,351	4,753	54,369	151	13,177	67,546	140	11,180	12,831	1,651
2025	6,543	40	441	124	834	358	0	0	31,933	140	3,754	108	1,742	235	45,245	8,003	11,043	7,610	2,007	15,503	97	36,259	6,507	67,546	140	8,986	76,532	138	12,831	14,327	1,496
2026	0	40	441	124	840	358	0	0	3,032	140	6,806	108	5,988	235	17,106	3,971	11,043	1,230	1,052	14,109	52	27,486	4,949	76,532	138	-10,380	66,152	148	14,327	13,350	-977
2027	6,612	40	441	124	845	358	0	0	21,134	140	4,045	108	2,918	235	35,994	6,382	5,194	3,365	1,714	14,470	64	24,807	4,660	66,152	148	11,187	77,340	143	13,350	15,071	1,721
2028	2,395	40	442	124	851	358	0	0	6,994	140	4,905	108	5,952	235	21,540	4,569	11,058	1,893	1,442	13,646	51	28,090	5,193	77,340	143	-6,550	70,790	150	15,071	14,447	-624
2029	657	40	441	124	857	358	0	0	3,265	140	7,106	108	5,903	235	18,228	4,077	11,043	798	886	12,904	37	25,667	5,058	70,790	150	-7,439	63,351	156	14,447	13,467	-981
2030	8,133	40	441	124	863	358	0	0	49,426	140	3,965	108	-1,666	235	61,160	10,364	11,043	12,976	2,990	15,621	122	42,752	8,452	63,351	156	18,409	81,760	138	13,467	15,379	1,912
2031	0	40	441	124	869	358	0	0	1,172	140	7,529	108	6,268	235	16,278	3,828	11,043	919	1,135	14,194	51	27,343	4,930	81,760	138	-11,065	70,695	149	15,379	14,277	-1,101
2032	484	40	442	124	875	358	0	0	1,470	140	8,784	108	5,984	235	18,040	4,008	11,058	355	715	13,354	33	25,515	5,009	70,695	149	-7,476	63,219	154	14,277	13,277	-1,000
2033	3,549	40	441	124	880	358	0	0	10,413	140	7,475	108	3,523	235	26,281	4,895	5,194	650	777	14,023	40	20,684	4,181	63,219	154	5,597	68,817	150	13,277	13,991	714
2034	0	40	441	124	886	358	0	0	467	140	7,956	108	5,296	235	15,045	3,455	5,194	450	607	14,461	41	20,753	4,096	68,817	150	-5,707	63,109	156	13,991	13,351	-641
2035	1,203	40	441	124	892	358	0	0	3,800	140	8,693	108	4,358	235	19,386	3,964	5,194	386	505	14,526	42	20,654	4,262	63,109	156	-1,268	61,842	155	13,351	13,052	-298

Projected TDS Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	100	30	777	52	2,240	0	0	1,047	722	372	722	243	723	2,096	1,871	758	84	79	951	5	1,877	1,979	69,600	810	219	69,819	806	76,620	76,511	-109
2013	23	100	30	777	52	2,240	0	0	195	722	523	722	399	723	1,223	1,292	757	54	58	899	3	1,770	1,876	69,819	806	-547	69,272	806	76,511	75,927	-584
2014	190	100	30	777	53	2,240	0	0	549	722	481	722	256	723	1,559	1,481	356	56	54	947	3	1,416	1,493	69,272	806	143	69,415	804	75,927	75,916	-11
2015	749	100	30	777	53	2,240	0	0	1,912	722	348	722	88	723	3,180	2,601	757	137	88	954	5	1,940	2,026	69,415	804	1,240	70,655	796	75,916	76,491	575
2016	0	100	30	777	54	2,240	0	0	259	722	458	722	368	723	1,169	1,261	758	102	89	971	4	1,923	1,986	70,655	796	-755	69,900	797	76,491	75,765	-725
2017	0	100	30	777	54	2,240	0	0	143	722	582	722	332	723	1,140	1,234	356	60	59	1,005	3	1,484	1,544	69,900	797	-344	69,556	798	75,765	75,455	-311
2018	151	100	30	777	54	2,240	0	0	378	722	526	722	298	723	1,438	1,398	356	53	52	1,014	3	1,478	1,547	69,556	798	-40	69,516	797	75,455	75,307	-148
2019	22	100	30	777	55	2,240	0	0	90	722	573	722	414	723	1,184	1,260	757	27	34	920	2	1,740	1,848	69,516	797	-556	68,960	797	75,307	74,718	-588
2020	88	100	30	777	55	2,240	0	0	174	722	605	722	319	723	1,271	1,290	356	25	28	968	2	1,380	1,465	68,960	797	-109	68,851	796	74,718	74,543	-175
2021	0	100	30	777	56	2,240	0	0	32	722	681	722	334	723	1,133	1,230	356	9	21	997	2	1,385	1,477	68,851	796	-252	68,599	797	74,543	74,296	-247
2022	0	100	30	777	56	2,240	0	0	66	722	719	722	316	723	1,187	1,284	356	8	18	1,004	2	1,389	1,484	68,599	797	-202	68,397	797	74,296	74,095	-200
2023	185	100	30	777	56	2,240	0	0	488	722	565	722	263	723	1,588	1,522	356	29	23	1,018	3	1,429	1,523	68,397	797	159	68,556	795	74,095	74,094	-2
2024	524	100	30	777	57	2,240	0	0	1,621	722	223	722	117	723	2,572	2,201	356	170	85	1,054	4	1,669	1,712	68,556	795	903	69,459	790	74,094	74,583	489
2025	448	100	30	777	57	2,240	0	0	2,189	722	257	722	119	723	3,101	2,785	757	522	138	1,062	7	2,485	2,521	69,459	790	616	70,075	786	74,583	74,847	265
2026	0	100	30	777	58	2,240	0	0	208	722	466	722	410	723	1,172	1,273	757	84	72	967	4	1,884	1,935	70,075	786	-711	69,363	787	74,847	74,185	-662
2027	453	100	30	777	58	2,240	0	0	1,448	722	277	722	200	723	2,467	2,161	356	231	117	992	4	1,700	1,693	69,363	787	767	70,130	783	74,185	74,653	468
2028	164	100	30	777	58	2,240	0	0	479	722	336	722	408	723	1,476	1,434	758	130	99	935	4	1,925	1,944	70,130	783	-449	69,681	783	74,653	74,143	-510
2029	45	100	30	777	59	2,240	0	0	224	722	487	722	405	723	1,249	1,313	757	55	61	884	3	1,759	1,807	69,681	783	-510	69,171	783	74,143	73,648	-495
2030	557	100	30	777	59	2,240	0	0	3,387	722	272	722	-114	723	4,192	3,768	757	889	205	1,071	8	2,930	2,901	69,171	783	1,262	70,433	778	73,648	74,514	866
2031	0	100	30	777	60	2,240	0	0	80	722	516	722	430	723	1,116	1,221	757	63	78	973	4	1,874	1,900	70,433	778	-758	69,675	779	74,514	73,835	-679
2032	33	100	30	777	60	2,240	0	0	101	722	602	722	410	723	1,236	1,312	758	24	49	915	2	1,749	1,801	69,675	779	-512	69,162	780	73,835	73,347	-489
2033	243	100	30	777	60	2,240	0	0	714	722	512	722	241	723	1,801	1,690	356	45	53	961	3	1,418	1,447	69,162	780	384	69,546	778	73,347	73,589	243
2034	0	100	30	777	61	2,240	0	0	32	722	545	722	363	723	1,031	1,141	356	31	42	991	3	1,422	1,461	69,546	778	-391	69,155	779	73,589	73,269	-320
2035	82	100	30	777	61	2,240	0	0	260	722	596	722	299	723	1,329	1,364	356	26	35	996	3	1,416	1,463	69,155	779	-87	69,068	779	73,269	73,170	-99

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	40	30	113	52	326	0	0	1,047	89	372	98	243	34	2,096	234	758	84	79	951	5	1,877	162	69,600	66	219	69,819	67	6,282	6,354	72
2013	23	40	30	113	52	326	0	0	195	89	523	98	399	34	1,223	141	757	54	58	899	3	1,770	156	69,819	67	-547	69,272	67	6,354	6,339	-15
2014	190	40	30	113	53	326	0	0	549	89	481	98	256	34	1,559	181	356	56	54	947	3	1,416	125	69,272	67	143	69,415	68	6,339	6,395	56
2015	749	40	30	113	53	326	0	0	1,912	89	348	98	88	34	3,180	351	757	137	88	954	5	1,940	171	69,415	68	1,240	70,655	68	6,395	6,575	180
2016	0	40	30	113	54	326	0	0	259	89	458	98	368	34	1,169	138	758	102	89	971	4	1,923	171	70,655	68	-755	69,900	69	6,575	6,541	-33
2017	0	40	30	113	54	326	0	0	143	89	582	98	332	34	1,140	138	356	60	59	1,005	3	1,484	133	69,900	69	-344	69,556	69	6,541	6,547	5
2018	151	40	30	113	54	326	0	0	378	89	526	98	298	34	1,438	166	356	53	52	1,014	3	1,478	134	69,556	69	-40	69,516	70	6,547	6,579	32
2019	22	40	30	113	55	326	0	0	90	89	573	98	414	34	1,184	136	757	27	34	920	2	1,740	161	69,516	70	-556	68,960	70	6,579	6,554	-25
2020	88	40	30	113	55	326	0	0	174	89	605	98	319	34	1,271	150	356	25	28	968	2	1,380	128	68,960	70	-109	68,851	70	6,554	6,575	22
2021	0	40	30	113	56	326	0	0	32	89	681	98	334	34	1,133	139	356	9	21	997	2	1,385	130	68,851	70	-252	68,599	71	6,575	6,584	9
2022	0	40	30	113	56	326	0	0	66	89	719	98	316	34	1,187	148	356	8	18	1,004	2	1,389	132	68,599	71	-202	68,397	71	6,584	6,600	16
2023	185	40	30	113	56	326	0	0	488	89	565	98	263	34	1,588	186	356	29	23	1,018	3	1,429	136	68,397	71	159	68,556	71	6,600	6,651	50
2024	524	40	30	113	57	326	0	0	1,621	89	223	98	117	34	2,572	289	356	170	85	1,054	4	1,669	154	68,556	71	903	69,459	72	6,651	6,786	136
2025	448	40	30	113	57	326	0	0	2,189	89	257	98	119	34	3,101	359	757	522	138	1,062	7	2,485	229	69,459	72	616	70,075	73	6,786	6,916	129
2026	0	40	30	113	58	326	0	0	208	89	466	98	410	34	1,172	136	757	84	72	967	4	1,884	179	70,075	73	-711	69,363	73	6,916	6,873	-43
2027	453	40	30	113	58	326	0	0	1,448	89	277	98	200	34	2,467	276	356	231	117	992	4	1,700	157	69,363	73	767	70,130	73	6,873	6,993	119
2028	164	40	30	113	58	326	0	0	479	89	336	98	408	34	1,476	161	758	130	99	935	4	1,925	182	70,130	73	-449	69,681	74	6,993	6,971	-21
2029	45	40	30	113	59	326	0	0	224	89	487	98	405	34	1,249	144	757	55	61	884	3	1,759	170	69,681	74	-510	69,171	74	6,971	6,945	-26
2030	557	40	30	113	59	326	0	0	3,387	89	272	98	-114	34	4,192	502	757	889	205	1,071	8	2,930	274	69,171	74	1,262	70,433	75	6,945	7,173	228
2031	0	40	30	113	60	326	0	0	80	89	516	98	430	34	1,116	129	757	63	78	973	4	1,874	183	70,433	75	-758	69,675	75	7,173	7,119	-54
2032	33	40	30	113	60	326	0	0	101	89	602	98	410	34	1,236	144	758	24	49	915	2	1,749	174	69,675	75	-512	69,162	75	7,119	7,090	-29
2033	243	40	30	113	60	326	0	0	714	89	512	98	241	34	1,801	210	356	45	53	961	3	1,418	140	69,162	75	384	69,546	76	7,090	7,160	70
2034	0	40	30	113	61	326	0	0	32	89	545	98	363	34	1,031	125	356	31	42	991	3	1,422	142	69,546	76	-391	69,155	76	7,160	7,143	-17
2035	82	40	30	113	61	326	0	0	260	89	596	98	299	34	1,329	161	356	26	35	996	3	1,416	143	69,155	76	-87	69,068	76	7,143	7,161	18

Table I-3c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	9	30	45	52	16	0	0	1,047	20	372	17	243	20	2,096	51	758	84	79	951	5	1,877	60	69,600	25	219	69,819	**24**	2,329	2,320	**-9**
2013	23	9	30	45	52	16	0	0	195	20	523	17	399	20	1,223	31	757	54	58	899	3	1,770	57	69,819	24	-547	69,272	**24**	2,320	2,294	**-26**
2014	190	9	30	45	53	16	0	0	549	20	481	17	256	20	1,559	38	356	56	54	947	3	1,416	45	69,272	24	143	69,415	**24**	2,294	2,287	**-7**
2015	749	9	30	45	53	16	0	0	1,912	20	348	17	88	20	3,180	74	757	137	88	954	5	1,940	61	69,415	24	1,240	70,655	**24**	2,287	2,300	**13**
2016	0	9	30	45	54	16	0	0	259	20	458	17	368	20	1,169	30	758	102	89	971	4	1,923	60	70,655	24	-755	69,900	**24**	2,300	2,271	**-29**
2017	0	9	30	45	54	16	0	0	143	20	582	17	332	20	1,140	29	356	60	59	1,005	3	1,484	46	69,900	24	-344	69,556	**24**	2,271	2,254	**-17**
2018	151	9	30	45	54	16	0	0	378	20	526	17	298	20	1,438	35	356	53	52	1,014	3	1,478	46	69,556	24	-40	69,516	**24**	2,254	2,243	**-11**
2019	22	9	30	45	55	16	0	0	90	20	573	17	414	20	1,184	30	757	27	34	920	2	1,740	55	69,516	24	-556	68,960	**24**	2,243	2,218	**-25**
2020	88	9	30	45	55	16	0	0	174	20	605	17	319	20	1,271	31	356	25	28	968	2	1,380	43	68,960	24	-109	68,851	**24**	2,218	2,205	**-12**
2021	0	9	30	45	56	16	0	0	32	20	681	17	334	20	1,133	28	356	9	21	997	2	1,385	44	68,851	24	-252	68,599	**23**	2,205	2,190	**-15**
2022	0	9	30	45	56	16	0	0	66	20	719	17	316	20	1,187	30	356	8	18	1,004	2	1,389	44	68,599	23	-202	68,397	**23**	2,190	2,176	**-14**
2023	185	9	30	45	56	16	0	0	488	20	565	17	263	20	1,588	39	356	29	23	1,018	3	1,429	45	68,397	23	159	68,556	**23**	2,176	2,170	**-6**
2024	524	9	30	45	57	16	0	0	1,621	20	223	17	117	20	2,572	62	356	170	85	1,054	4	1,669	50	68,556	23	903	69,459	**23**	2,170	2,181	**12**
2025	448	9	30	45	57	16	0	0	2,189	20	257	17	119	20	3,101	77	757	522	138	1,062	7	2,485	74	69,459	23	616	70,075	**23**	2,181	2,185	**3**
2026	0	9	30	45	58	16	0	0	208	20	466	17	410	20	1,172	30	757	84	72	967	4	1,884	56	70,075	23	-711	69,363	**23**	2,185	2,159	**-26**
2027	453	9	30	45	58	16	0	0	1,448	20	277	17	200	20	2,467	60	356	231	117	992	4	1,700	49	69,363	23	767	70,130	**23**	2,159	2,169	**10**
2028	164	9	30	45	58	16	0	0	479	20	336	17	408	20	1,476	37	758	130	99	935	4	1,925	56	70,130	23	-449	69,681	**23**	2,169	2,149	**-20**
2029	45	9	30	45	59	16	0	0	224	20	487	17	405	20	1,249	32	757	55	61	884	3	1,759	52	69,681	23	-510	69,171	**23**	2,149	2,129	**-21**
2030	557	9	30	45	59	16	0	0	3,387	20	272	17	-114	20	4,192	105	757	889	205	1,071	8	2,930	84	69,171	23	1,262	70,433	**22**	2,129	2,150	**21**
2031	0	9	30	45	60	16	0	0	80	20	516	17	430	20	1,116	29	757	63	78	973	4	1,874	55	70,433	22	-758	69,675	**22**	2,150	2,124	**-26**
2032	33	9	30	45	60	16	0	0	101	20	602	17	410	20	1,236	31	758	24	49	915	2	1,749	52	69,675	22	-512	69,162	**22**	2,124	2,103	**-21**
2033	243	9	30	45	60	16	0	0	714	20	512	17	241	20	1,801	44	356	45	53	961	3	1,418	41	69,162	22	384	69,546	**22**	2,103	2,105	**2**
2034	0	9	30	45	61	16	0	0	32	20	545	17	363	20	1,031	26	356	31	42	991	3	1,422	42	69,546	22	-391	69,155	**22**	2,105	2,090	**-16**
2035	82	9	30	45	61	16	0	0	260	20	596	17	299	20	1,329	33	356	26	35	996	3	1,416	42	69,155	22	-87	69,068	**22**	2,090	2,081	**-9**

Table I-3d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	40	30	124	52	358	0	0	1,047	140	372	108	243	235	2,096	381	758	84	79	951	5	1,877	612	69,600	250	219	69,819	**247**	23,705	23,473	**-232**
2013	23	40	30	124	52	358	0	0	195	140	523	108	399	235	1,223	273	757	54	58	899	3	1,770	576	69,819	247	-547	69,272	**246**	23,473	23,171	**-302**
2014	190	40	30	124	53	358	0	0	549	140	481	108	256	235	1,559	298	356	56	54	947	3	1,416	456	69,272	246	143	69,415	**244**	23,171	23,013	**-158**
2015	749	40	30	124	53	358	0	0	1,912	140	348	108	88	235	3,180	514	757	137	88	954	5	1,940	614	69,415	244	1,240	70,655	**239**	23,013	22,912	**-100**
2016	0	40	30	124	54	358	0	0	259	140	458	108	368	235	1,169	265	758	102	89	971	4	1,923	595	70,655	239	-755	69,900	**238**	22,912	22,583	**-330**
2017	0	40	30	124	54	358	0	0	143	140	582	108	332	235	1,140	250	356	60	59	1,005	3	1,484	460	69,900	238	-344	69,556	**237**	22,583	22,372	**-210**
2018	151	40	30	124	54	358	0	0	378	140	526	108	298	235	1,438	284	356	53	52	1,014	3	1,478	459	69,556	237	-40	69,516	**235**	22,372	22,198	**-175**
2019	22	40	30	124	55	358	0	0	90	140	573	108	414	235	1,184	266	757	27	34	920	2	1,740	545	69,516	235	-556	68,960	**234**	22,198	21,919	**-278**
2020	88	40	30	124	55	358	0	0	174	140	605	108	319	235	1,271	260	356	25	28	968	2	1,380	430	68,960	234	-109	68,851	**232**	21,919	21,750	**-169**
2021	0	40	30	124	56	358	0	0	32	140	681	108	334	235	1,133	245	356	9	21	997	2	1,385	431	68,851	232	-252	68,599	**231**	21,750	21,564	**-186**
2022	0	40	30	124	56	358	0	0	66	140	719	108	316	235	1,187	251	356	8	18	1,004	2	1,389	431	68,599	231	-202	68,397	**230**	21,564	21,385	**-179**
2023	185	40	30	124	56	358	0	0	488	140	565	108	263	235	1,588	302	356	29	23	1,018	3	1,429	440	68,397	230	159	68,556	**228**	21,385	21,247	**-137**
2024	524	40	30	124	57	358	0	0	1,621	140	223	108	117	235	2,572	439	356	170	85	1,054	4	1,669	491	68,556	228	903	69,459	**224**	21,247	21,195	**-52**
2025	448	40	30	124	57	358	0	0	2,189	140	257	108	119	235	3,101	548	757	522	138	1,062	7	2,485	716	69,459	224	616	70,075	**221**	21,195	21,027	**-168**
2026	0	40	30	124	58	358	0	0	208	140	466	108	410	235	1,172	272	757	84	72	967	4	1,884	544	70,075	221	-711	69,363	**220**	21,027	20,756	**-271**
2027	453	40	30	124	58	358	0	0	1,448	140	277	108	200	235	2,467	437	356	231	117	992	4	1,700	474	69,363	220	767	70,130	**217**	20,756	20,720	**-36**
2028	164	40	30	124	58	358	0	0	479	140	336	108	408	235	1,476	313	758	130	99	935	4	1,925	540	70,130	217	-449	69,681	**216**	20,720	20,493	**-226**
2029	45	40	30	124	59	358	0	0	224	140	487	108	405	235	1,249	279	757	55	61	884	3	1,759	500	69,681	216	-510	69,171	**216**	20,493	20,273	**-220**
2030	557	40	30	124	59	358	0	0	3,387	140	272	108	-114	235	4,192	710	757	889	205	1,071	8	2,930	799	69,171	216	1,262	70,433	**211**	20,273	20,185	**-88**
2031	0	40	30	124	60	358	0	0	80	140	516	108	430	235	1,116	262	757	63	78	973	4	1,874	515	70,433	211	-758	69,675	**210**	20,185	19,932	**-252**
2032	33	40	30	124	60	358	0	0	101	140	602	108	410	235	1,236	275	758	24	49	915	2	1,749	486	69,675	210	-512	69,162	**210**	19,932	19,721	**-212**
2033	243	40	30	124	60	358	0	0	714	140	512	108	241	235	1,801	335	356	45	53	961	3	1,418	389	69,162	210	384	69,546	**208**	19,721	19,667	**-54**
2034	0	40	30	124	61	358	0	0	32	140	545	108	363	235	1,031	237	356	31	42	991	3	1,422	390	69,546	208	-391	69,155	**208**	19,667	19,514	**-154**
2035	82	40	30	124	61	358	0	0	260	140	596	108	299	235	1,329	272	356	26	35	996	3	1,416	390	69,155	208	-87	69,068	**207**	19,514	19,396	**-118**

Table I-4a

Projected TDS Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Upstream Tributaries	TDS Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	100	270	808	88	2,330	0	0	1,438	532	0	0	220	647	2,683	1,899	0	0	941	292	754	1,987	1,489	7,647	1,047	695	8,342	996	10,883	11,294	411
2013	43	100	269	808	88	2,330	0	0	18	532	0	0	520	650	938	1,053	0	0	620	323	718	1,660	1,408	8,342	996	-722	7,620	1,056	11,294	10,939	-355
2014	360	100	269	808	89	2,330	0	0	1,029	532	0	0	413	648	2,160	1,734	0	0	764	309	718	1,792	1,475	7,620	1,056	368	7,988	1,031	10,939	11,198	259
2015	1,421	100	269	808	89	2,330	0	0	916	532	0	0	452	632	3,148	1,823	0	0	915	321	755	1,991	1,508	7,988	1,031	1,158	9,146	926	11,198	11,513	315
2016	0	100	270	808	90	2,330	0	0	0	532	0	0	515	630	875	1,022	0	0	765	341	749	1,854	1,371	9,146	926	-980	8,166	1,005	11,513	11,163	-349
2017	0	100	269	808	90	2,330	0	0	0	532	0	0	604	629	963	1,098	0	0	373	351	734	1,458	1,484	8,166	1,005	-495	7,671	1,033	11,163	10,777	-386
2018	288	100	269	808	90	2,330	0	0	796	532	0	0	542	629	1,985	1,661	0	0	544	359	743	1,646	1,547	7,671	1,033	340	8,011	1,000	10,777	10,891	114
2019	42	100	269	808	91	2,330	0	0	13	532	0	0	555	632	970	1,076	0	0	494	350	830	1,674	1,604	8,011	1,000	-704	7,307	1,043	10,891	10,363	-528
2020	167	100	270	808	91	2,330	0	0	412	532	0	0	603	634	1,543	1,427	0	0	477	365	903	1,745	1,798	7,307	1,043	-202	7,105	1,034	10,363	9,991	-372
2021	0	100	269	808	92	2,330	0	0	0	532	0	0	653	639	1,014	1,154	0	0	288	399	892	1,579	1,816	7,105	1,034	-566	6,539	1,049	9,991	9,329	-662
2022	0	100	269	808	92	2,330	0	0	0	532	0	0	661	644	1,023	1,167	0	0	189	407	918	1,514	1,891	6,539	1,049	-491	6,048	1,046	9,329	8,605	-724
2023	351	100	269	808	93	2,330	0	0	908	532	0	0	507	644	2,128	1,738	0	0	484	399	1,009	1,892	2,003	6,048	1,046	236	6,283	976	8,605	8,339	-266
2024	996	100	270	808	93	2,330	0	0	1,326	532	0	0	342	636	3,027	1,982	0	0	848	415	1,094	2,357	2,003	6,283	976	670	6,953	880	8,339	8,318	-21
2025	851	100	269	808	93	2,330	0	0	1,585	532	0	0	369	630	3,168	2,170	0	0	1,042	409	898	2,348	1,563	6,953	880	820	7,773	844	8,318	8,925	607
2026	0	100	269	808	94	2,330	0	0	0	532	0	0	603	635	966	1,114	0	0	779	382	852	2,013	1,417	7,773	844	-1,046	6,727	943	8,925	8,622	-303
2027	860	100	269	808	94	2,330	0	0	1,614	532	0	0	316	629	3,154	2,149	0	0	945	317	783	2,045	1,411	6,727	943	1,109	7,835	879	8,622	9,361	739
2028	312	100	270	808	95	2,330	0	0	874	532	0	0	370	630	1,920	1,588	0	0	881	306	737	1,924	1,245	7,835	879	-4	7,832	911	9,361	9,704	343
2029	86	100	269	808	95	2,330	0	0	152	532	0	0	498	634	1,100	1,148	0	0	717	295	696	1,707	1,227	7,832	911	-608	7,224	980	9,704	9,625	-79
2030	1,058	100	269	808	96	2,330	0	0	1,476	532	0	0	147	626	3,046	1,935	0	0	1,019	266	742	2,026	1,343	7,224	980	1,020	8,244	912	9,625	10,218	593
2031	0	100	269	808	96	2,330	0	0	0	532	0	0	572	632	938	1,092	0	0	594	305	697	1,596	1,242	8,244	912	-659	7,586	976	10,218	10,068	-150
2032	63	100	270	808	97	2,330	0	0	80	532	0	0	570	636	1,080	1,162	0	0	373	312	691	1,375	1,330	7,586	976	-296	7,290	999	10,068	9,899	-168
2033	462	100	269	808	97	2,330	0	0	1,032	532	0	0	439	635	2,299	1,791	0	0	586	314	816	1,716	1,534	7,290	999	584	7,873	949	9,899	10,156	257
2034	0	100	269	808	97	2,330	0	0	0	532	0	0	477	640	843	1,019	0	0	456	344	759	1,559	1,424	7,873	949	-716	7,158	1,002	10,156	9,752	-404
2035	157	100	269	808	98	2,330	0	0	378	532	0	0	544	643	1,446	1,377	0	0	419	347	727	1,493	1,463	7,158	1,002	-47	7,111	1,000	9,752	9,666	-87

Table I-4b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	40	270	89	88	256	0	0	1,438	65	0	0	220	39	2,683	239	0	0	941	292	754	1,987	161	7,647	114	695	8,342	**111**	1,180	1,258	**78**
2013	43	40	269	89	88	256	0	0	18	65	0	0	520	40	938	95	0	0	620	323	718	1,660	157	8,342	111	-722	7,620	**115**	1,258	1,196	**-61**
2014	360	40	269	89	89	256	0	0	1,029	65	0	0	413	40	2,160	197	0	0	764	309	718	1,792	161	7,620	115	368	7,988	**113**	1,196	1,232	**36**
2015	1,421	40	269	89	89	256	0	0	916	65	0	0	452	41	3,148	248	0	0	915	321	755	1,991	166	7,988	113	1,158	9,146	**106**	1,232	1,314	**82**
2016	0	40	270	89	90	256	0	0	0	65	0	0	515	41	875	92	0	0	765	341	749	1,854	157	9,146	106	-980	8,166	**113**	1,314	1,250	**-64**
2017	0	40	269	89	90	256	0	0	0	65	0	0	604	40	963	97	0	0	373	351	734	1,458	166	8,166	113	-495	7,671	**113**	1,250	1,181	**-69**
2018	288	40	269	89	90	256	0	0	796	65	0	0	542	41	1,985	181	0	0	544	359	743	1,646	169	7,671	113	340	8,011	**109**	1,181	1,192	**11**
2019	42	40	269	89	91	256	0	0	13	65	0	0	555	41	970	99	0	0	494	350	830	1,674	176	8,011	109	-704	7,307	**112**	1,192	1,115	**-77**
2020	167	40	270	89	91	256	0	0	412	65	0	0	603	42	1,543	145	0	0	477	365	903	1,745	194	7,307	112	-202	7,105	**110**	1,115	1,066	**-49**
2021	0	40	269	89	92	256	0	0	0	65	0	0	653	43	1,014	102	0	0	288	399	892	1,579	194	7,105	110	-566	6,539	**110**	1,066	975	**-91**
2022	0	40	269	89	92	256	0	0	0	65	0	0	661	44	1,023	104	0	0	189	407	918	1,514	198	6,539	110	-491	6,048	**107**	975	881	**-94**
2023	351	40	269	89	93	256	0	0	908	65	0	0	507	44	2,128	195	0	0	484	399	1,009	1,892	205	6,048	107	236	6,283	**102**	881	871	**-10**
2024	996	40	270	89	93	256	0	0	1,326	65	0	0	342	45	3,027	258	0	0	848	415	1,094	2,357	209	6,283	102	670	6,953	**97**	871	920	**49**
2025	851	40	269	89	93	256	0	0	1,585	65	0	0	369	46	3,168	276	0	0	1,042	409	898	2,348	173	6,953	97	820	7,773	**97**	920	1,023	**103**
2026	0	40	269	89	94	256	0	0	0	65	0	0	603	47	966	104	0	0	779	382	852	2,013	162	7,773	97	-1,046	6,727	**105**	1,023	965	**-58**
2027	860	40	269	89	94	256	0	0	1,614	65	0	0	316	48	3,154	276	0	0	945	317	783	2,045	158	6,727	105	1,109	7,835	**102**	965	1,083	**119**
2028	312	40	270	89	95	256	0	0	874	65	0	0	370	49	1,920	185	0	0	881	306	737	1,924	144	7,835	102	-4	7,832	**106**	1,083	1,124	**41**
2029	86	40	269	89	95	256	0	0	152	65	0	0	498	50	1,100	117	0	0	717	295	696	1,707	142	7,832	106	-608	7,224	**112**	1,124	1,099	**-25**
2030	1,058	40	269	89	96	256	0	0	1,476	65	0	0	147	50	3,046	265	0	0	1,019	266	742	2,026	153	7,224	112	1,020	8,244	**108**	1,099	1,211	**111**
2031	0	40	269	89	96	256	0	0	0	65	0	0	572	51	938	106	0	0	594	305	697	1,596	147	8,244	108	-659	7,586	**113**	1,211	1,169	**-41**
2032	63	40	270	89	97	256	0	0	80	65	0	0	570	52	1,080	117	0	0	373	312	691	1,375	155	7,586	113	-296	7,290	**114**	1,169	1,132	**-38**
2033	462	40	269	89	97	256	0	0	1,032	65	0	0	439	52	2,299	215	0	0	586	314	816	1,716	175	7,290	114	584	7,873	**109**	1,132	1,171	**39**
2034	0	40	269	89	97	256	0	0	0	65	0	0	477	53	843	101	0	0	456	344	759	1,559	164	7,873	109	-716	7,158	**114**	1,171	1,108	**-63**
2035	157	40	269	89	98	256	0	0	378	65	0	0	544	54	1,446	149	0	0	419	347	727	1,493	166	7,158	114	-47	7,111	**113**	1,108	1,090	**-18**

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	9	270	46	88	17	0	0	1,438	7	0	0	220	20	2,683	47	0	0	941	292	754	1,987	44	7,647	31	695	8,342	29	321	324	3
2013	43	9	269	46	88	17	0	0	18	7	0	0	520	20	938	34	0	0	620	323	718	1,660	40	8,342	29	-722	7,620	31	324	318	-7
2014	360	9	269	46	89	17	0	0	1,029	7	0	0	413	20	2,160	44	0	0	764	309	718	1,792	43	7,620	31	368	7,988	29	318	319	2
2015	1,421	9	269	46	89	17	0	0	916	7	0	0	452	20	3,148	57	0	0	915	321	755	1,991	43	7,988	29	1,158	9,146	27	319	333	14
2016	0	9	270	46	90	17	0	0	0	7	0	0	515	20	875	33	0	0	765	341	749	1,854	40	9,146	27	-980	8,166	29	333	326	-7
2017	0	9	269	46	90	17	0	0	0	7	0	0	604	20	963	35	0	0	373	351	734	1,458	43	8,166	29	-495	7,671	31	326	318	-8
2018	288	9	269	46	90	17	0	0	796	7	0	0	542	20	1,985	45	0	0	544	359	743	1,646	46	7,671	31	340	8,011	29	318	317	-1
2019	42	9	269	46	91	17	0	0	13	7	0	0	555	20	970	35	0	0	494	350	830	1,674	47	8,011	29	-704	7,307	31	317	305	-12
2020	167	9	270	46	91	17	0	0	412	7	0	0	603	20	1,543	41	0	0	477	365	903	1,745	53	7,307	31	-202	7,105	30	305	293	-12
2021	0	9	269	46	92	17	0	0	0	7	0	0	653	20	1,014	37	0	0	288	399	892	1,579	53	7,105	30	-566	6,539	31	293	276	-17
2022	0	9	269	46	92	17	0	0	0	7	0	0	661	20	1,023	37	0	0	189	407	918	1,514	56	6,539	31	-491	6,048	31	276	257	-19
2023	351	9	269	46	93	17	0	0	908	7	0	0	507	20	2,128	46	0	0	484	399	1,009	1,892	60	6,048	31	236	6,283	28	257	243	-14
2024	996	9	270	46	93	17	0	0	1,326	7	0	0	342	19	3,027	53	0	0	848	415	1,094	2,357	58	6,283	28	670	6,953	25	243	237	-5
2025	851	9	269	46	93	17	0	0	1,585	7	0	0	369	19	3,168	54	0	0	1,042	409	898	2,348	45	6,953	25	820	7,773	23	237	247	10
2026	0	9	269	46	94	17	0	0	0	7	0	0	603	19	966	35	0	0	779	382	852	2,013	39	7,773	23	-1,046	6,727	27	247	243	-4
2027	860	9	269	46	94	17	0	0	1,614	7	0	0	316	19	3,154	53	0	0	945	317	783	2,045	40	6,727	27	1,109	7,835	24	243	256	13
2028	312	9	270	46	95	17	0	0	874	7	0	0	370	19	1,920	41	0	0	881	306	737	1,924	34	7,835	24	-4	7,832	25	256	263	7
2029	86	9	269	46	95	17	0	0	152	7	0	0	498	19	1,100	34	0	0	717	295	696	1,707	33	7,832	25	-608	7,224	27	263	264	1
2030	1,058	9	269	46	96	17	0	0	1,476	7	0	0	147	19	3,046	50	0	0	1,019	266	742	2,026	37	7,224	27	1,020	8,244	25	264	277	13
2031	0	9	269	46	96	17	0	0	0	7	0	0	572	19	938	34	0	0	594	305	697	1,596	34	8,244	25	-659	7,586	27	277	277	0
2032	63	9	270	46	97	17	0	0	80	7	0	0	570	19	1,080	35	0	0	373	312	691	1,375	37	7,586	27	-296	7,290	28	277	276	-1
2033	462	9	269	46	97	17	0	0	1,032	7	0	0	439	19	2,299	46	0	0	586	314	816	1,716	43	7,290	28	584	7,873	26	276	279	3
2034	0	9	269	46	97	17	0	0	0	7	0	0	477	19	843	31	0	0	456	344	759	1,559	39	7,873	26	-716	7,158	28	279	271	-8
2035	157	9	269	46	98	17	0	0	378	7	0	0	544	19	1,446	39	0	0	419	347	727	1,493	41	7,158	28	-47	7,111	28	271	269	-2

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	40	270	170	88	490	0	0	1,438	103	0	0	220	266	2,683	437	0	0	941	292	754	1,987	330	7,647	232	695	8,342	**222**	2,410	2,518	**108**
2013	43	40	269	170	88	490	0	0	18	103	0	0	520	266	938	314	0	0	620	323	718	1,660	314	8,342	222	-722	7,620	**243**	2,518	2,518	**0**
2014	360	40	269	170	89	490	0	0	1,029	103	0	0	413	265	2,160	433	0	0	764	309	718	1,792	339	7,620	243	368	7,988	**240**	2,518	2,612	**94**
2015	1,421	40	269	170	89	490	0	0	916	103	0	0	452	257	3,148	485	0	0	915	321	755	1,991	352	7,988	240	1,158	9,146	**221**	2,612	2,745	**133**
2016	0	40	270	170	90	490	0	0	0	103	0	0	515	257	875	302	0	0	765	341	749	1,854	327	9,146	221	-980	8,166	**245**	2,745	2,720	**-25**
2017	0	40	269	170	90	490	0	0	0	103	0	0	604	258	963	334	0	0	373	351	734	1,458	362	8,166	245	-495	7,671	**258**	2,720	2,693	**-28**
2018	288	40	269	170	90	490	0	0	796	103	0	0	542	257	1,985	438	0	0	544	359	743	1,646	387	7,671	258	340	8,011	**252**	2,693	2,744	**52**
2019	42	40	269	170	91	490	0	0	13	103	0	0	555	257	970	321	0	0	494	350	830	1,674	404	8,011	252	-704	7,307	**268**	2,744	2,661	**-83**
2020	167	40	270	170	91	490	0	0	412	103	0	0	603	257	1,543	400	0	0	477	365	903	1,745	462	7,307	268	-202	7,105	**269**	2,661	2,599	**-62**
2021	0	40	269	170	92	490	0	0	0	103	0	0	653	257	1,014	352	0	0	288	399	892	1,579	472	7,105	269	-566	6,539	**279**	2,599	2,479	**-121**
2022	0	40	269	170	92	490	0	0	0	103	0	0	661	258	1,023	355	0	0	189	407	918	1,514	502	6,539	279	-491	6,048	**284**	2,479	2,332	**-147**
2023	351	40	269	170	93	490	0	0	908	103	0	0	507	256	2,128	446	0	0	484	399	1,009	1,892	543	6,048	284	236	6,283	**262**	2,332	2,235	**-97**
2024	996	40	270	170	93	490	0	0	1,326	103	0	0	342	251	3,027	480	0	0	848	415	1,094	2,357	537	6,283	262	670	6,953	**230**	2,235	2,178	**-57**
2025	851	40	269	170	93	490	0	0	1,585	103	0	0	369	246	3,168	515	0	0	1,042	409	898	2,348	409	6,953	230	820	7,773	**216**	2,178	2,285	**106**
2026	0	40	269	170	94	490	0	0	0	103	0	0	603	247	966	327	0	0	779	382	852	2,013	363	7,773	216	-1,046	6,727	**246**	2,285	2,249	**-35**
2027	860	40	269	170	94	490	0	0	1,614	103	0	0	316	243	3,154	502	0	0	945	317	783	2,045	368	6,727	246	1,109	7,835	**224**	2,249	2,383	**134**
2028	312	40	270	170	95	490	0	0	874	103	0	0	370	242	1,920	386	0	0	881	306	737	1,924	317	7,835	224	-4	7,832	**230**	2,383	2,452	**69**
2029	86	40	269	170	95	490	0	0	152	103	0	0	498	243	1,100	316	0	0	717	295	696	1,707	310	7,832	230	-608	7,224	**250**	2,452	2,458	**6**
2030	1,058	40	269	170	96	490	0	0	1,476	103	0	0	147	238	3,046	437	0	0	1,019	266	742	2,026	343	7,224	250	1,020	8,244	**228**	2,458	2,552	**94**
2031	0	40	269	170	96	490	0	0	0	103	0	0	572	239	938	312	0	0	594	305	697	1,596	310	8,244	228	-659	7,586	**248**	2,552	2,554	**2**
2032	63	40	270	170	97	490	0	0	80	103	0	0	570	239	1,080	327	0	0	373	312	691	1,375	337	7,586	248	-296	7,290	**257**	2,554	2,544	**-11**
2033	462	40	269	170	97	490	0	0	1,032	103	0	0	439	238	2,299	438	0	0	586	314	816	1,716	394	7,290	257	584	7,873	**242**	2,544	2,587	**44**
2034	0	40	269	170	97	490	0	0	0	103	0	0	477	239	843	282	0	0	456	344	759	1,559	363	7,873	242	-716	7,158	**258**	2,587	2,506	**-81**
2035	157	40	269	170	98	490	0	0	378	103	0	0	544	239	1,446	365	0	0	419	347	727	1,493	376	7,158	258	-47	7,111	**258**	2,506	2,496	**-11**

Projected TDS Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Upstream Tributaries	TDS Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	TDS Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	100	181	833	772	2,400	0	0	6,085	532	0	0	292	996	7,741	647	19,285	14,902	0	0	3,696	5,579	6,113	15,388	15,390	25,728	968	3,898	29,626	829	33,864	33,377	-487
2013	274	100	181	833	773	2,400	0	0	737	532	0	0	323	1,056	7,805	650	10,092	10,653	0	0	2,366	5,283	5,691	13,340	12,364	29,626	829	-3,248	26,378	883	33,377	31,666	-1,711
2014	2,277	100	181	833	773	2,400	0	0	4,962	532	0	0	309	1,031	5,898	648	14,400	12,255	0	0	3,004	4,371	5,819	13,193	12,232	26,378	883	1,207	27,584	845	31,666	31,688	23
2015	8,986	100	181	833	774	2,400	0	0	3,952	532	0	0	321	926	7,949	632	22,163	14,045	0	0	3,654	5,444	5,995	15,094	13,141	27,584	845	7,069	34,653	692	31,688	32,592	904
2016	0	100	181	833	774	2,400	0	0	0	532	0	0	341	1,005	7,973	630	9,269	10,027	0	0	2,869	5,612	5,895	14,376	10,823	34,653	692	-5,107	29,546	791	32,592	31,797	-796
2017	0	100	181	833	775	2,400	0	0	0	532	0	0	351	1,033	6,506	629	7,813	8,793	0	0	1,336	4,660	5,570	11,566	11,009	29,546	791	-3,753	25,793	843	31,797	29,581	-2,216
2018	1,818	100	181	833	775	2,400	0	0	3,992	532	0	0	359	1,000	6,610	629	13,735	12,009	0	0	1,990	4,603	5,635	12,228	11,741	25,793	843	1,507	27,300	804	29,581	29,848	268
2019	265	100	181	833	776	2,400	0	0	718	532	0	0	350	1,043	8,284	632	10,573	10,909	0	0	2,032	5,266	6,714	14,012	13,098	27,300	804	-3,439	23,861	853	29,848	27,659	-2,189
2020	1,056	100	181	833	777	2,400	0	0	2,381	532	0	0	365	1,034	6,737	634	11,497	10,929	0	0	1,988	4,526	7,631	14,145	14,091	23,861	853	-2,648	21,213	849	27,659	24,496	-3,163
2021	0	100	181	833	777	2,400	0	0	0	532	0	0	399	1,049	7,303	639	8,660	9,654	0	0	1,158	4,606	6,841	12,605	13,218	21,213	849	-3,945	17,268	892	24,496	20,932	-3,564
2022	0	100	181	833	778	2,400	0	0	0	532	0	0	407	1,046	7,656	644	9,022	10,024	0	0	641	4,695	7,299	12,634	14,539	17,268	892	-3,613	13,655	884	20,932	16,418	-4,515
2023	2,221	100	181	833	778	2,400	0	0	4,160	532	0	0	399	976	7,733	644	15,472	13,360	0	0	1,778	4,860	8,634	15,272	16,224	13,655	884	200	13,855	719	16,418	13,553	-2,865
2024	6,294	100	181	833	779	2,400	0	0	5,602	532	0	0	415	880	7,784	636	21,055	14,881	0	0	3,291	5,093	9,390	17,773	14,167	13,855	719	3,282	17,137	612	13,553	14,267	714
2025	5,383	100	181	833	779	2,400	0	0	6,749	532	0	0	409	844	9,956	630	23,456	17,355	0	0	3,925	6,385	6,698	17,008	10,892	17,137	612	6,448	23,585	646	14,267	20,730	6,463
2026	0	100	181	833	780	2,400	0	0	0	532	0	0	382	943	9,740	635	11,083	11,651	0	0	2,752	6,115	6,755	15,622	11,312	23,585	646	-4,539	19,046	814	20,730	21,070	340
2027	5,440	100	181	833	780	2,400	0	0	6,946	532	0	0	317	879	7,174	629	20,839	15,030	0	0	3,643	5,043	6,144	14,830	12,376	19,046	814	6,009	25,055	696	21,070	23,724	2,654
2028	1,971	100	181	833	781	2,400	0	0	3,950	532	0	0	306	911	8,915	630	16,103	13,896	0	0	3,258	5,909	5,878	15,046	11,161	25,055	696	1,057	26,111	745	23,724	26,459	2,735
2029	541	100	181	833	782	2,400	0	0	1,290	532	0	0	295	980	8,093	634	11,180	11,135	0	0	2,680	5,351	5,672	13,703	11,170	26,111	745	-2,523	23,588	824	26,459	26,424	-35
2030	6,691	100	181	833	782	2,400	0	0	6,310	532	0	0	266	912	8,894	626	23,124	16,132	0	0	4,022	6,386	6,317	16,725	14,230	23,588	824	6,399	29,987	695	26,424	28,326	1,902
2031	0	100	181	833	783	2,400	0	0	0	532	0	0	305	976	8,493	632	9,761	10,457	0	0	2,131	5,727	5,715	13,573	10,808	29,987	695	-3,813	26,175	786	28,326	27,975	-351
2032	398	100	181	833	783	2,400	0	0	988	532	0	0	312	999	8,113	636	10,775	10,968	0	0	1,578	5,357	5,540	12,475	11,646	26,175	786	-1,700	24,475	820	27,975	27,297	-678
2033	2,920	100	181	833	784	2,400	0	0	4,407	532	0	0	314	949	6,391	635	14,997	12,270	0	0	2,214	4,529	6,770	13,513	12,602	24,475	820	1,484	25,959	764	27,297	26,966	-331
2034	0	100	181	833	784	2,400	0	0	0	532	0	0	344	1,002	6,724	640	8,033	9,088	0	0	1,679	4,641	5,741	12,061	10,784	25,959	764	-4,027	21,932	847	26,966	25,270	-1,696
2035	990	100	181	833	785	2,400	0	0	2,240	532	0	0	347	1,000	6,695	643	11,237	10,849	0	0	1,470	4,544	5,450	11,464	11,515	21,932	847	-228	21,705	834	25,270	24,604	-666

Table I-5b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Chloride Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	40	181	95	772	275	0	0	6,085	65	0	0	292	111	7,741	39	19,285	1,541	0	0	3,696	5,579	6,113	15,388	1,636	25,728	103	3,898	29,626	87	3,600	3,505	-95
2013	274	40	181	95	773	275	0	0	737	65	0	0	323	115	7,805	40	10,092	866	0	0	2,366	5,283	5,691	13,340	1,298	29,626	87	-3,248	26,378	86	3,505	3,073	-432
2014	2,277	40	181	95	773	275	0	0	4,962	65	0	0	309	113	5,898	40	14,400	1,249	0	0	3,004	4,371	5,819	13,193	1,187	26,378	86	1,207	27,584	84	3,073	3,135	62
2015	8,986	40	181	95	774	275	0	0	3,952	65	0	0	321	106	7,949	41	22,163	1,641	0	0	3,654	5,444	5,995	15,094	1,300	27,584	84	7,069	34,653	74	3,135	3,476	341
2016	0	40	181	95	774	275	0	0	0	65	0	0	341	113	7,973	41	9,269	805	0	0	2,869	5,612	5,895	14,376	1,154	34,653	74	-5,107	29,546	78	3,476	3,126	-350
2017	0	40	181	95	775	275	0	0	0	65	0	0	351	113	6,506	40	7,813	724	0	0	1,336	4,660	5,570	11,566	1,082	29,546	78	-3,753	25,793	79	3,126	2,767	-359
2018	1,818	40	181	95	775	275	0	0	3,992	65	0	0	359	109	6,610	41	13,735	1,187	0	0	1,990	4,603	5,635	12,228	1,098	25,793	79	1,507	27,300	77	2,767	2,856	89
2019	265	40	181	95	776	275	0	0	718	65	0	0	350	112	8,284	41	10,573	911	0	0	2,032	5,266	6,714	14,012	1,253	27,300	77	-3,439	23,861	77	2,856	2,514	-342
2020	1,056	40	181	95	777	275	0	0	2,381	65	0	0	365	110	6,737	42	11,497	1,023	0	0	1,988	4,526	7,631	14,145	1,281	23,861	77	-2,648	21,213	78	2,514	2,256	-258
2021	0	40	181	95	777	275	0	0	0	65	0	0	399	110	7,303	43	8,660	798	0	0	1,158	4,606	6,841	12,605	1,217	21,213	78	-3,945	17,268	78	2,256	1,837	-419
2022	0	40	181	95	778	275	0	0	0	65	0	0	407	107	7,656	44	9,022	827	0	0	641	4,695	7,299	12,634	1,276	17,268	78	-3,613	13,655	75	1,837	1,388	-449
2023	2,221	40	181	95	778	275	0	0	4,160	65	0	0	399	102	7,733	44	15,472	1,328	0	0	1,778	4,860	8,634	15,272	1,371	13,655	75	200	13,855	71	1,388	1,344	-43
2024	6,294	40	181	95	779	275	0	0	5,602	65	0	0	415	97	7,784	45	21,055	1,691	0	0	3,291	5,093	9,390	17,773	1,405	13,855	71	3,282	17,137	70	1,344	1,630	286
2025	5,383	40	181	95	779	275	0	0	6,749	65	0	0	409	97	9,956	46	23,456	1,890	0	0	3,925	6,385	6,698	17,008	1,245	17,137	70	6,448	23,585	71	1,630	2,276	645
2026	0	40	181	95	780	275	0	0	0	65	0	0	382	105	9,740	47	11,083	996	0	0	2,752	6,115	6,755	15,622	1,242	23,585	71	-4,539	19,046	78	2,276	2,030	-246
2027	5,440	40	181	95	780	275	0	0	6,946	65	0	0	317	102	7,174	48	20,839	1,741	0	0	3,643	5,043	6,144	14,830	1,192	19,046	78	6,009	25,055	76	2,030	2,579	549
2028	1,971	40	181	95	781	275	0	0	3,950	65	0	0	306	106	8,915	49	16,103	1,410	0	0	3,258	5,909	5,878	15,046	1,213	25,055	76	1,057	26,111	78	2,579	2,775	196
2029	541	40	181	95	782	275	0	0	1,290	65	0	0	295	112	8,093	50	11,180	1,050	0	0	2,680	5,351	5,672	13,703	1,172	26,111	78	-2,523	23,588	83	2,775	2,654	-122
2030	6,691	40	181	95	782	275	0	0	6,310	65	0	0	266	108	8,894	50	23,124	1,888	0	0	4,022	6,386	6,317	16,725	1,429	23,588	83	6,399	29,987	76	2,654	3,113	459
2031	0	40	181	95	783	275	0	0	0	65	0	0	305	113	8,493	51	9,761	953	0	0	2,131	5,727	5,715	13,573	1,188	29,987	76	-3,813	26,175	81	3,113	2,878	-235
2032	398	40	181	95	783	275	0	0	988	65	0	0	312	114	8,113	52	10,775	1,045	0	0	1,578	5,357	5,540	12,475	1,198	26,175	81	-1,700	24,475	82	2,878	2,725	-153
2033	2,920	40	181	95	784	275	0	0	4,407	65	0	0	314	109	6,391	52	14,997	1,370	0	0	2,214	4,529	6,770	13,513	1,258	24,475	82	1,484	25,959	80	2,725	2,837	112
2034	0	40	181	95	784	275	0	0	0	65	0	0	344	114	6,724	53	8,033	856	0	0	1,679	4,641	5,741	12,061	1,134	25,959	80	-4,027	21,932	86	2,837	2,558	-278
2035	990	40	181	95	785	275	0	0	2,240	65	0	0	347	113	6,695	54	11,237	1,114	0	0	1,470	4,544	5,450	11,464	1,166	21,932	86	-228	21,705	85	2,558	2,506	-52

Table I-5c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Nitrate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	9	181	46	772	17	0	0	6,085	7	0	0	292	29	7,741	20	19,285	360	0	0	3,696	5,579	6,113	15,388	323	25,728	20	3,898	29,626	19	710	747	38
2013	274	9	181	46	773	17	0	0	737	7	0	0	323	31	7,805	20	10,092	265	0	0	2,366	5,283	5,691	13,340	277	29,626	19	-3,248	26,378	21	747	736	-11
2014	2,277	9	181	46	773	17	0	0	4,962	7	0	0	309	29	5,898	20	14,400	277	0	0	3,004	4,371	5,819	13,193	284	26,378	21	1,207	27,584	19	736	728	-8
2015	8,986	9	181	46	774	17	0	0	3,952	7	0	0	321	27	7,949	20	22,163	398	0	0	3,654	5,444	5,995	15,094	302	27,584	19	7,069	34,653	18	728	825	96
2016	0	9	181	46	774	17	0	0	0	7	0	0	341	29	7,973	20	9,269	255	0	0	2,869	5,612	5,895	14,376	274	34,653	18	-5,107	29,546	20	825	806	-18
2017	0	9	181	46	775	17	0	0	0	7	0	0	351	31	6,506	20	7,813	217	0	0	1,336	4,660	5,570	11,566	279	29,546	20	-3,753	25,793	21	806	744	-62
2018	1,818	9	181	46	775	17	0	0	3,992	7	0	0	359	29	6,610	20	13,735	280	0	0	1,990	4,603	5,635	12,228	295	25,793	21	1,507	27,300	20	744	729	-16
2019	265	9	181	46	776	17	0	0	718	7	0	0	350	31	8,284	20	10,573	275	0	0	2,032	5,266	6,714	14,012	320	27,300	20	-3,439	23,861	21	729	684	-45
2020	1,056	9	181	46	777	17	0	0	2,381	7	0	0	365	30	6,737	20	11,497	259	0	0	1,988	4,526	7,631	14,145	348	23,861	21	-2,648	21,213	21	684	595	-89
2021	0	9	181	46	777	17	0	0	0	7	0	0	399	31	7,303	20	8,660	241	0	0	1,158	4,606	6,841	12,605	321	21,213	21	-3,945	17,268	22	595	515	-80
2022	0	9	181	46	778	17	0	0	0	7	0	0	407	31	7,656	20	9,022	251	0	0	641	4,695	7,299	12,634	358	17,268	22	-3,613	13,655	22	515	408	-106
2023	2,221	9	181	46	778	17	0	0	4,160	7	0	0	399	28	7,733	20	15,472	317	0	0	1,778	4,860	8,634	15,272	404	13,655	22	200	13,855	17	408	322	-86
2024	6,294	9	181	46	779	17	0	0	5,602	7	0	0	415	25	7,784	19	21,055	377	0	0	3,291	5,093	9,390	17,773	337	13,855	17	3,282	17,137	16	322	362	40
2025	5,383	9	181	46	779	17	0	0	6,749	7	0	0	409	23	9,956	19	23,456	430	0	0	3,925	6,385	6,698	17,008	277	17,137	16	6,448	23,585	16	362	516	153
2026	0	9	181	46	780	17	0	0	0	7	0	0	382	27	9,740	19	11,083	296	0	0	2,752	6,115	6,755	15,622	281	23,585	16	-4,539	19,046	20	516	530	15
2027	5,440	9	181	46	780	17	0	0	6,946	7	0	0	317	24	7,174	19	20,839	356	0	0	3,643	5,043	6,144	14,830	312	19,046	20	6,009	25,055	17	530	575	45
2028	1,971	9	181	46	781	17	0	0	3,950	7	0	0	306	25	8,915	19	16,103	330	0	0	3,258	5,909	5,878	15,046	271	25,055	17	1,057	26,111	18	575	634	59
2029	541	9	181	46	782	17	0	0	1,290	7	0	0	295	27	8,093	19	11,180	267	0	0	2,680	5,351	5,672	13,703	268	26,111	18	-2,523	23,588	20	634	633	-1
2030	6,691	9	181	46	782	17	0	0	6,310	7	0	0	266	25	8,894	19	23,124	405	0	0	4,022	6,386	6,317	16,725	341	23,588	20	6,399	29,987	17	633	697	64
2031	0	9	181	46	783	17	0	0	0	7	0	0	305	27	8,493	19	9,761	256	0	0	2,131	5,727	5,715	13,573	266	29,987	17	-3,813	26,175	19	697	687	-10
2032	398	9	181	46	783	17	0	0	988	7	0	0	312	28	8,113	19	10,775	262	0	0	1,578	5,357	5,540	12,475	286	26,175	19	-1,700	24,475	20	687	663	-24
2033	2,920	9	181	46	784	17	0	0	4,407	7	0	0	314	26	6,391	19	14,997	280	0	0	2,214	4,529	6,770	13,513	306	24,475	20	1,484	25,959	18	663	637	-26
2034	0	9	181	46	784	17	0	0	0	7	0	0	344	28	6,724	19	8,033	213	0	0	1,679	4,641	5,741	12,061	255	25,959	18	-4,027	21,932	20	637	595	-42
2035	990	9	181	46	785	17	0	0	2,240	7	0	0	347	28	6,695	19	11,237	246	0	0	1,470	4,544	5,450	11,464	271	21,932	20	-228	21,705	19	595	570	-25

Table I-5d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	Sulfate Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,214	40	181	178	772	512	0	0	6,085	103	0	0	292	222	7,741	266	19,285	4,548	0	0	3,696	5,579	6,113	15,388	3,571	25,728	225	3,898	29,626	**219**	7,858	8,835	**977**
2013	274	40	181	178	773	512	0	0	737	103	0	0	323	243	7,805	266	10,092	3,633	0	0	2,366	5,283	5,691	13,340	3,273	29,626	219	-3,248	26,378	**256**	8,835	9,195	**360**
2014	2,277	40	181	178	773	512	0	0	4,962	103	0	0	309	240	5,898	265	14,400	3,622	0	0	3,004	4,371	5,819	13,193	3,552	26,378	256	1,207	27,584	**247**	9,195	9,266	**71**
2015	8,986	40	181	178	774	512	0	0	3,952	103	0	0	321	221	7,949	257	22,163	4,500	0	0	3,654	5,444	5,995	15,094	3,842	27,584	247	7,069	34,653	**211**	9,266	9,924	**658**
2016	0	40	181	178	774	512	0	0	0	103	0	0	341	245	7,973	257	9,269	3,486	0	0	2,869	5,612	5,895	14,376	3,295	34,653	211	-5,107	29,546	**252**	9,924	10,114	**191**
2017	0	40	181	178	775	512	0	0	0	103	0	0	351	258	6,506	258	7,813	2,986	0	0	1,336	4,660	5,570	11,566	3,502	29,546	252	-3,753	25,793	**274**	10,114	9,598	**-516**
2018	1,818	40	181	178	775	512	0	0	3,992	103	0	0	359	252	6,610	257	13,735	3,669	0	0	1,990	4,603	5,635	12,228	3,810	25,793	274	1,507	27,300	**255**	9,598	9,458	**-141**
2019	265	40	181	178	776	512	0	0	718	103	0	0	350	268	8,284	257	10,573	3,720	0	0	2,032	5,266	6,714	14,012	4,150	27,300	255	-3,439	23,861	**278**	9,458	9,028	**-430**
2020	1,056	40	181	178	777	512	0	0	2,381	103	0	0	365	269	6,737	257	11,497	3,458	0	0	1,988	4,526	7,631	14,145	4,599	23,861	278	-2,648	21,213	**273**	9,028	7,886	**-1,141**
2021	0	40	181	178	777	512	0	0	0	103	0	0	399	279	7,303	257	8,660	3,290	0	0	1,158	4,606	6,841	12,605	4,255	21,213	273	-3,945	17,268	**295**	7,886	6,921	**-965**
2022	0	40	181	178	778	512	0	0	0	103	0	0	407	284	7,656	258	9,022	3,426	0	0	641	4,695	7,299	12,634	4,807	17,268	295	-3,613	13,655	**298**	6,921	5,540	**-1,381**
2023	2,221	40	181	178	778	512	0	0	4,160	103	0	0	399	262	7,733	256	15,472	4,123	0	0	1,778	4,860	8,634	15,272	5,474	13,655	298	200	13,855	**222**	5,540	4,188	**-1,352**
2024	6,294	40	181	178	779	512	0	0	5,602	103	0	0	415	230	7,784	251	21,055	4,494	0	0	3,291	5,093	9,390	17,773	4,378	13,855	222	3,282	17,137	**185**	4,188	4,304	**116**
2025	5,383	40	181	178	779	512	0	0	6,749	103	0	0	409	216	9,956	246	23,456	5,277	0	0	3,925	6,385	6,698	17,008	3,286	17,137	185	6,448	23,585	**196**	4,304	6,295	**1,991**
2026	0	40	181	178	780	512	0	0	0	103	0	0	382	246	9,740	247	11,083	3,987	0	0	2,752	6,115	6,755	15,622	3,435	23,585	196	-4,539	19,046	**264**	6,295	6,848	**552**
2027	5,440	40	181	178	780	512	0	0	6,946	103	0	0	317	224	7,174	243	20,839	4,321	0	0	3,643	5,043	6,144	14,830	4,022	19,046	264	6,009	25,055	**210**	6,848	7,146	**299**
2028	1,971	40	181	178	781	512	0	0	3,950	103	0	0	306	230	8,915	242	16,103	4,279	0	0	3,258	5,909	5,878	15,046	3,362	25,055	210	1,057	26,111	**227**	7,146	8,063	**917**
2029	541	40	181	178	782	512	0	0	1,290	103	0	0	295	250	8,093	243	11,180	3,568	0	0	2,680	5,351	5,672	13,703	3,404	26,111	227	-2,523	23,588	**257**	8,063	8,227	**164**
2030	6,691	40	181	178	782	512	0	0	6,310	103	0	0	266	228	8,894	238	23,124	4,793	0	0	4,022	6,386	6,317	16,725	4,431	23,588	257	6,399	29,987	**211**	8,227	8,590	**363**
2031	0	40	181	178	783	512	0	0	0	103	0	0	305	248	8,493	239	9,761	3,450	0	0	2,131	5,727	5,715	13,573	3,278	29,987	211	-3,813	26,175	**246**	8,590	8,763	**173**
2032	398	40	181	178	783	512	0	0	988	103	0	0	312	257	8,113	239	10,775	3,499	0	0	1,578	5,357	5,540	12,475	3,648	26,175	246	-1,700	24,475	**259**	8,763	8,614	**-149**
2033	2,920	40	181	178	784	512	0	0	4,407	103	0	0	314	242	6,391	238	14,997	3,533	0	0	2,214	4,529	6,770	13,513	3,976	24,475	259	1,484	25,959	**231**	8,614	8,171	**-443**
2034	0	40	181	178	784	512	0	0	0	103	0	0	344	258	6,724	239	8,033	2,893	0	0	1,679	4,641	5,741	12,061	3,268	25,959	231	-4,027	21,932	**261**	8,171	7,796	**-375**
2035	990	40	181	178	785	512	0	0	2,240	103	0	0	347	258	6,695	239	11,237	3,251	0	0	1,470	4,544	5,450	11,464	3,552	21,932	261	-228	21,705	**254**	7,796	7,495	**-301**

Projected TDS Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	TDS Conc. for Saugus WRP Infiltration	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Upstream Tributaries	TDS Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	TDS Conc. for Inflow From MZ1	Inflow From MZ3	TDS Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	100	148	783	666	2,256	0	4,991	4,100	671	11,675	671	0	0	14,829	722	5,579	700	-5,182	700	36,707	32,199	13,388	6,543	1,102	7,025	2,202	30,260	29,526	78,359	745	6,447	84,807	711	79,349	82,022	2,673
2013	318	100	147	783	667	2,256	0	4,991	4,100	671	623	671	0	0	14,012	747	5,283	700	-1,853	700	23,297	24,048	13,370	5,290	763	7,327	2,152	28,902	27,215	84,807	711	-5,606	79,201	732	82,022	78,855	-3,168
2014	2,643	100	147	783	668	2,256	0	4,991	4,100	671	9,328	671	0	0	14,762	739	4,371	700	-1,307	700	34,712	32,572	19,000	4,129	642	8,008	1,988	33,766	32,979	79,201	732	946	80,147	720	78,855	78,447	-407
2015	10,432	100	147	783	669	2,256	0	4,991	4,100	671	7,637	671	0	0	14,876	675	5,444	700	-2,935	700	40,371	30,383	13,370	6,633	1,215	7,370	2,077	30,665	28,825	80,147	720	9,706	89,853	655	78,447	80,005	1,557
2016	0	100	148	783	671	2,256	0	4,991	4,100	671	22	671	0	0	15,133	714	5,612	700	-1,341	700	24,345	24,738	13,388	6,166	1,189	7,743	2,067	30,553	26,145	89,853	655	-6,208	83,645	691	80,005	78,598	-1,407
2017	0	100	147	783	672	2,256	0	4,991	4,100	671	1,107	671	0	0	15,667	743	4,660	700	848	700	27,201	28,036	19,000	3,885	533	8,261	1,907	33,586	31,058	83,645	691	-6,384	77,261	719	78,598	75,575	-3,022
2018	2,110	100	147	783	673	2,256	0	4,991	4,100	671	6,804	671	0	0	15,809	743	4,603	700	-1,083	700	33,163	31,770	19,000	3,363	368	8,124	1,874	32,729	31,654	77,261	719	434	77,695	716	75,575	75,691	116
2019	307	100	147	783	674	2,256	0	4,991	4,100	671	1,495	671	0	0	14,351	760	5,266	700	-3,014	700	23,326	24,349	13,370	3,153	354	7,742	2,770	27,388	26,337	77,695	716	-4,063	73,633	736	75,691	73,703	-1,988
2020	1,226	100	148	783	676	2,256	1	4,991	4,100	671	3,145	671	0	0	15,098	761	4,526	700	-549	700	28,371	28,427	19,025	1,993	233	8,101	3,847	33,200	32,998	73,633	736	-4,829	68,804	739	73,703	69,132	-4,571
2021	0	100	147	783	677	2,256	5	4,991	4,100	671	1,865	671	0	0	15,548	777	4,606	700	-1,231	700	25,717	27,338	19,000	1,039	145	7,777	2,964	30,926	30,927	68,804	739	-5,209	63,595	758	69,132	65,543	-3,589
2022	0	100	147	783	678	2,256	8	4,991	4,100	671	2,046	671	0	0	15,646	787	4,695	700	-1,738	700	25,582	27,448	19,000	446	103	7,575	3,913	31,037	31,881	63,595	758	-5,456	58,140	773	65,543	61,109	-4,433
2023	2,579	100	147	783	679	2,256	10	4,991	4,100	671	7,378	671	0	0	15,878	757	4,860	700	-3,762	700	31,870	30,511	19,000	116	59	7,195	5,828	32,198	33,781	58,140	773	-328	57,812	736	61,109	57,839	-3,270
2024	7,308	100	148	783	681	2,256	10	4,991	4,100	671	12,189	671	0	0	16,430	700	5,093	700	-6,421	700	39,537	32,540	19,025	89	57	6,910	6,185	32,266	32,225	57,812	736	7,270	65,082	657	57,839	58,155	315
2025	6,249	100	147	783	682	2,256	11	4,991	4,100	671	15,600	671	0	0	16,565	695	6,385	700	-11,665	700	38,074	31,773	13,370	1,542	341	6,661	3,074	24,988	22,023	65,082	657	13,086	78,168	639	58,155	67,905	9,750
2026	0	100	147	783	683	2,256	11	4,991	4,100	671	1,616	671	0	0	15,076	733	6,115	700	-6,621	700	21,128	22,083	13,370	2,478	340	7,167	3,302	26,658	22,862	78,168	639	-5,530	72,638	680	67,905	67,126	-779
2027	6,316	100	147	783	684	2,256	12	4,991	4,100	671	18,602	671	0	0	15,461	708	5,043	700	-7,168	700	43,198	36,763	19,000	3,486	848	7,540	2,460	33,333	30,020	72,638	680	9,865	82,503	659	67,126	73,869	6,743
2028	2,288	100	148	783	686	2,256	12	4,991	4,100	671	6,191	671	0	0	14,581	724	5,909	700	-6,388	700	27,526	25,943	13,388	3,997	959	7,278	2,396	28,018	24,227	82,503	659	-492	82,011	678	73,869	75,584	1,715
2029	628	100	147	783	687	2,256	12	4,991	4,100	671	1,321	671	0	0	13,788	748	5,351	700	-3,217	700	22,816	23,435	13,370	4,157	668	7,520	2,351	28,065	25,250	82,011	678	-5,249	76,761	707	75,584	73,768	-1,816
2030	7,768	100	147	783	688	2,256	12	4,991	4,100	671	10,899	671	0	0	16,691	710	6,386	700	-6,483	700	40,209	33,120	13,370	6,759	1,511	7,590	2,348	31,578	28,895	76,761	707	8,631	85,392	672	73,768	77,993	4,225
2031	0	100	147	783	689	2,256	12	4,991	4,100	671	334	671	0	0	15,167	744	5,727	700	-2,158	700	24,018	25,129	13,370	5,605	949	7,347	2,196	29,467	26,047	85,392	672	-5,449	79,943	709	77,993	77,075	-918
2032	462	100	148	783	691	2,256	12	4,991	4,100	671	908	671	0	0	14,269	763	5,357	700	-1,941	700	24,005	25,034	13,388	4,630	601	7,722	2,213	28,554	26,950	79,943	709	-4,549	75,394	733	77,075	75,160	-1,916
2033	3,390	100	147	783	692	2,256	12	4,991	4,100	671	9,510	671	0	0	14,985	743	4,529	700	-1,642	700	35,723	33,133	19,000	3,599	451	8,143	2,652	33,846	33,290	75,394	733	1,877	77,271	714	75,160	75,002	-157
2034	0	100	147	783	693	2,256	12	4,991	4,100	671	1,593	671	0	0	15,452	767	4,641	700	-826	700	25,812	27,309	19,000	2,424	274	8,055	2,052	31,805	30,605	77,271	714	-5,993	71,278	740	75,002	71,706	-3,296
2035	1,149	100	147	783	694	2,256	12	4,991	4,100	671	3,133	671	0	0	15,522	770	4,544	700	-670	700	28,631	29,054	19,000	2,279	233	7,800	1,914	31,226	31,179	71,278	740	-2,595	68,683	745	71,706	69,581	-2,126

Table I-6b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	Chloride Conc. for Saugus WRP Infiltration	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Chloride Conc. for Inflow From MZ1	Inflow From MZ3	Chloride Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	40	148	109	666	314	0	694	4,100	100	11,675	89	0	0	14,829	87	5,579	28	-5,182	28	36,707	4,305	13,388	6,543	1,102	7,025	2,202	30,260	3,811	78,359	96	6,447	84,807	93	10,241	10,735	495
2013	318	40	147	109	667	314	0	694	4,100	100	623	89	0	0	14,012	87	5,283	28	-1,853	28	23,297	2,750	13,370	5,290	763	7,327	2,152	28,902	3,562	84,807	93	-5,606	79,201	92	10,735	9,923	-812
2014	2,643	40	147	109	668	314	0	694	4,100	100	9,328	89	0	0	14,762	88	4,371	28	-1,307	28	34,712	4,011	19,000	4,129	642	8,008	1,988	33,766	4,150	79,201	92	946	80,147	90	9,923	9,784	-139
2015	10,432	40	147	109	669	314	0	694	4,100	100	7,637	89	0	0	14,876	85	5,444	28	-2,935	28	40,371	4,178	13,370	6,633	1,215	7,370	2,077	30,665	3,595	80,147	90	9,706	89,853	85	9,784	10,367	583
2016	0	40	148	109	671	314	0	694	4,100	100	22	89	0	0	15,133	87	5,612	28	-1,341	28	24,345	2,824	13,388	6,166	1,189	7,743	2,067	30,553	3,388	89,853	85	-6,208	83,645	86	10,367	9,803	-564
2017	0	40	147	109	672	314	0	694	4,100	100	1,107	89	0	0	15,667	89	4,660	28	848	28	27,201	3,100	19,000	3,885	533	8,261	1,907	33,586	3,873	83,645	86	-6,384	77,261	86	9,803	9,029	-773
2018	2,110	40	147	109	673	314	0	694	4,100	100	6,804	89	0	0	15,809	89	4,603	28	-1,083	28	33,163	3,843	19,000	3,363	368	8,124	1,874	32,729	3,782	77,261	86	434	77,695	86	9,029	9,090	61
2019	307	40	147	109	674	314	0	694	4,100	100	1,495	89	0	0	14,351	88	5,266	28	-3,014	28	23,326	2,872	13,370	3,153	354	7,742	2,770	27,388	3,163	77,695	86	-4,063	73,633	88	9,090	8,799	-291
2020	1,226	40	148	109	676	314	1	694	4,100	100	3,145	89	0	0	15,098	88	4,526	28	-549	28	28,371	3,282	19,025	1,993	233	8,101	3,847	33,200	3,939	73,633	88	-4,829	68,804	87	8,799	8,142	-657
2021	0	40	147	109	677	314	5	694	4,100	100	1,865	89	0	0	15,548	89	4,606	28	-1,231	28	25,717	3,118	19,000	1,039	145	7,777	2,964	30,926	3,642	68,804	87	-5,209	63,595	88	8,142	7,618	-524
2022	0	40	147	109	678	314	8	694	4,100	100	2,046	89	0	0	15,646	91	4,695	28	-1,738	28	25,582	3,163	19,000	446	103	7,575	3,913	31,037	3,705	63,595	88	-5,456	58,140	90	7,618	7,076	-542
2023	2,579	40	147	109	679	314	10	694	4,100	100	7,378	89	0	0	15,878	89	4,860	28	-3,762	28	31,870	3,880	19,000	116	59	7,195	5,828	32,198	3,911	58,140	90	-328	57,812	90	7,076	7,044	-31
2024	7,308	40	148	109	681	314	10	694	4,100	100	12,189	89	0	0	16,430	87	5,093	28	-6,421	28	39,537	4,651	19,025	89	57	6,910	6,185	32,266	3,925	57,812	90	7,270	65,082	88	7,044	7,770	726
2025	6,249	40	147	109	682	314	11	694	4,100	100	15,600	89	0	0	16,565	88	6,385	28	-11,665	28	38,074	4,894	13,370	1,542	341	6,661	3,074	24,988	2,943	65,082	88	13,086	78,168	91	7,770	9,722	1,952
2026	0	40	147	109	683	314	11	694	4,100	100	1,616	89	0	0	15,076	89	6,115	28	-6,621	28	21,128	2,881	13,370	2,478	340	7,167	3,302	26,658	3,273	78,168	91	-5,530	72,638	94	9,722	9,330	-392
2027	6,316	40	147	109	684	314	12	694	4,100	100	18,602	89	0	0	15,461	88	5,043	28	-7,168	28	43,198	5,242	19,000	3,486	848	7,540	2,460	33,333	4,173	72,638	94	9,865	82,503	93	9,330	10,399	1,069
2028	2,288	40	148	109	686	314	12	694	4,100	100	6,191	89	0	0	14,581	87	5,909	28	-6,388	28	27,526	3,469	13,388	3,997	959	7,278	2,396	28,018	3,411	82,503	93	-492	82,011	94	10,399	10,457	58
2029	628	40	147	109	687	314	12	694	4,100	100	1,321	89	0	0	13,788	88	5,351	28	-3,217	28	22,816	2,803	13,370	4,157	668	7,520	2,351	28,065	3,493	82,011	94	-5,249	76,761	94	10,457	9,767	-690
2030	7,768	40	147	109	688	314	12	694	4,100	100	10,899	89	0	0	16,691	91	6,386	28	-6,483	28	40,209	4,690	13,370	6,759	1,511	7,590	2,348	31,578	3,826	76,761	94	8,631	85,392	92	9,767	10,632	865
2031	0	40	147	109	689	314	12	694	4,100	100	334	89	0	0	15,167	91	5,727	28	-2,158	28	24,018	2,943	13,370	5,605	949	7,347	2,196	29,467	3,551	85,392	92	-5,449	79,943	92	10,632	10,024	-608
2032	462	40	148	109	691	314	12	694	4,100	100	908	89	0	0	14,269	91	5,357	28	-1,941	28	24,005	2,910	13,388	4,630	601	7,722	2,213	28,554	3,505	79,943	92	-4,549	75,394	92	10,024	9,429	-595
2033	3,390	40	147	109	692	314	12	694	4,100	100	9,510	89	0	0	14,985	90	4,529	28	-1,642	28	35,723	4,162	19,000	3,599	451	8,143	2,652	33,846	4,177	75,394	92	1,877	77,271	90	9,429	9,414	-15
2034	0	40	147	109	693	314	12	694	4,100	100	1,593	89	0	0	15,452	91	4,641	28	-826	28	25,812	3,126	19,000	2,424	274	8,055	2,052	31,805	3,842	77,271	90	-5,993	71,278	90	9,414	8,699	-716
2035	1,149	40	147	109	694	314	12	694	4,100	100	3,133	89	0	0	15,522	91	4,544	28	-670	28	28,631	3,392	19,000	2,279	233	7,800	1,914	31,226	3,782	71,278	90	-2,595	68,683	89	8,699	8,308	-391

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	Nitrate Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Nitrate Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Nitrate Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	9	148	44	666	16	0	35	4,100	20	11,675	20	0	0	14,829	19	5,579	20	-5,182	20	36,707	912	13,388	6,543	1,102	7,025	2,202	30,260	803	78,359	20	6,447	84,807	20	2,158	2,267	110
2013	318	9	147	44	667	16	0	35	4,100	20	623	20	0	0	14,012	19	5,283	20	-1,853	20	23,297	620	13,370	5,290	763	7,327	2,152	28,902	752	84,807	20	-5,606	79,201	20	2,267	2,135	-132
2014	2,643	9	147	44	668	16	0	35	4,100	20	9,328	20	0	0	14,762	19	4,371	20	-1,307	20	34,712	888	19,000	4,129	642	8,008	1,988	33,766	893	79,201	20	946	80,147	20	2,135	2,130	-4
2015	10,432	9	147	44	669	16	0	35	4,100	20	7,637	20	0	0	14,876	18	5,444	20	-2,935	20	40,371	907	13,370	6,633	1,215	7,370	2,077	30,665	783	80,147	20	9,706	89,853	18	2,130	2,255	124
2016	0	9	148	44	671	16	0	35	4,100	20	22	20	0	0	15,133	19	5,612	20	-1,341	20	24,345	640	13,388	6,166	1,189	7,743	2,067	30,553	737	89,853	18	-6,208	83,645	19	2,255	2,158	-97
2017	0	9	147	44	672	16	0	35	4,100	20	1,107	20	0	0	15,667	19	4,660	20	848	20	27,201	721	19,000	3,885	533	8,261	1,907	33,586	853	83,645	19	-6,384	77,261	19	2,158	2,026	-131
2018	2,110	9	147	44	673	16	0	35	4,100	20	6,804	20	0	0	15,809	19	4,603	20	-1,083	20	33,163	848	19,000	3,363	368	8,124	1,874	32,729	849	77,261	19	434	77,695	19	2,026	2,026	-1
2019	307	9	147	44	674	16	0	35	4,100	20	1,495	20	0	0	14,351	19	5,266	20	-3,014	20	23,326	611	13,370	3,153	354	7,742	2,770	27,388	705	77,695	19	-4,063	73,633	19	2,026	1,932	-93
2020	1,226	9	148	44	676	16	1	35	4,100	20	3,145	20	0	0	15,098	19	4,526	20	-549	20	28,371	730	19,025	1,993	233	8,101	3,847	33,200	865	73,633	19	-4,829	68,804	19	1,932	1,797	-135
2021	0	9	147	44	677	16	5	35	4,100	20	1,865	20	0	0	15,548	19	4,606	20	-1,231	20	25,717	676	19,000	1,039	145	7,777	2,964	30,926	804	68,804	19	-5,209	63,595	19	1,797	1,669	-128
2022	0	9	147	44	678	16	8	35	4,100	20	2,046	20	0	0	15,646	19	4,695	20	-1,738	20	25,582	671	19,000	446	103	7,575	3,913	31,037	812	63,595	19	-5,456	58,140	19	1,669	1,528	-141
2023	2,579	9	147	44	679	16	10	35	4,100	20	7,378	20	0	0	15,878	19	4,860	20	-3,762	20	31,870	796	19,000	116	59	7,195	5,828	32,198	845	58,140	19	-328	57,812	19	1,528	1,479	-49
2024	7,308	9	148	44	681	16	10	35	4,100	20	12,189	20	0	0	16,430	18	5,093	20	-6,421	20	39,537	928	19,025	89	57	6,910	6,185	32,266	824	57,812	19	7,270	65,082	18	1,479	1,583	104
2025	6,249	9	147	44	682	16	11	35	4,100	20	15,600	20	0	0	16,565	19	6,385	20	-11,665	20	38,074	914	13,370	1,542	341	6,661	3,074	24,988	600	65,082	18	13,086	78,168	18	1,583	1,898	314
2026	0	9	147	44	683	16	11	35	4,100	20	1,616	20	0	0	15,076	19	6,115	20	-6,621	20	21,128	559	13,370	2,478	340	7,167	3,302	26,658	639	78,168	18	-5,530	72,638	18	1,898	1,817	-80
2027	6,316	9	147	44	684	16	12	35	4,100	20	18,602	20	0	0	15,461	19	5,043	20	-7,168	20	43,198	1,057	19,000	3,486	848	7,540	2,460	33,333	813	72,638	18	9,865	82,503	18	1,817	2,062	245
2028	2,288	9	148	44	686	16	12	35	4,100	20	6,191	20	0	0	14,581	19	5,909	20	-6,388	20	27,526	698	13,388	3,997	959	7,278	2,396	28,018	676	82,503	18	-492	82,011	19	2,062	2,084	22
2029	628	9	147	44	687	16	12	35	4,100	20	1,321	20	0	0	13,788	19	5,351	20	-3,217	20	22,816	599	13,370	4,157	668	7,520	2,351	28,065	696	82,011	19	-5,249	76,761	19	2,084	1,986	-97
2030	7,768	9	147	44	688	16	12	35	4,100	20	10,899	20	0	0	16,691	19	6,386	20	-6,483	20	40,209	961	13,370	6,759	1,511	7,590	2,348	31,578	778	76,761	19	8,631	85,392	19	1,986	2,169	183
2031	0	9	147	44	689	16	12	35	4,100	20	334	20	0	0	15,167	20	5,727	20	-2,158	20	24,018	645	13,370	5,605	949	7,347	2,196	29,467	725	85,392	19	-5,449	79,943	19	2,169	2,090	-80
2032	462	9	148	44	691	16	12	35	4,100	20	908	20	0	0	14,269	19	5,357	20	-1,941	20	24,005	637	13,388	4,630	601	7,722	2,213	28,554	731	79,943	19	-4,549	75,394	19	2,090	1,996	-94
2033	3,390	9	147	44	692	16	12	35	4,100	20	9,510	20	0	0	14,985	19	4,529	20	-1,642	20	35,723	902	19,000	3,599	451	8,143	2,652	33,846	884	75,394	19	1,877	77,271	19	1,996	2,013	18
2034	0	9	147	44	693	16	12	35	4,100	20	1,593	20	0	0	15,452	19	4,641	20	-826	20	25,812	685	19,000	2,424	274	8,055	2,052	31,805	822	77,271	19	-5,993	71,278	19	2,013	1,877	-136
2035	1,149	9	147	44	694	16	12	35	4,100	20	3,133	20	0	0	15,522	19	4,544	20	-670	20	28,631	741	19,000	2,279	233	7,800	1,914	31,226	816	71,278	19	-2,595	68,683	19	1,877	1,802	-75

Table I-6d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	Sulfate Conc. for Saugus WRP Infiltration	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Sulfate Conc. for Inflow From MZ1	Inflow From MZ3	Sulfate Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	40	148	143	666	413	0	913	4,100	179	11,675	179	0	0	14,829	152	5,579	235	-5,182	235	36,707	7,687	13,388	6,543	1,102	7,025	2,202	30,260	7,598	78,359	192	6,447	84,807	178	20,419	20,509	89
2013	318	40	147	143	667	413	0	913	4,100	179	623	179	0	0	14,012	157	5,283	235	-1,853	235	23,297	5,660	13,370	5,290	763	7,327	2,152	28,902	6,805	84,807	178	-5,606	79,201	180	20,509	19,363	-1,145
2014	2,643	40	147	143	668	413	0	913	4,100	179	9,328	179	0	0	14,762	153	4,371	235	-1,307	235	34,712	7,865	19,000	4,129	642	8,008	1,988	33,766	8,098	79,201	180	946	80,147	176	19,363	19,130	-233
2015	10,432	40	147	143	669	413	0	913	4,100	179	7,637	179	0	0	14,876	137	5,444	235	-2,935	235	40,371	7,390	13,370	6,633	1,215	7,370	2,077	30,665	7,029	80,147	176	9,706	89,853	160	19,130	19,491	361
2016	0	40	148	143	671	413	0	913	4,100	179	22	179	0	0	15,133	146	5,612	235	-1,341	235	24,345	5,778	13,388	6,166	1,189	7,743	2,067	30,553	6,369	89,853	160	-6,208	83,645	166	19,491	18,899	-592
2017	0	40	147	143	672	413	0	913	4,100	179	1,107	179	0	0	15,667	152	4,660	235	848	235	27,201	6,659	19,000	3,885	533	8,261	1,907	33,586	7,468	83,645	166	-6,384	77,261	172	18,899	18,090	-809
2018	2,110	40	147	143	673	413	0	913	4,100	179	6,804	179	0	0	15,809	151	4,603	235	-1,083	235	33,163	7,545	19,000	3,363	368	8,124	1,874	32,729	7,577	77,261	172	434	77,695	171	18,090	18,058	-32
2019	307	40	147	143	674	413	0	913	4,100	179	1,495	179	0	0	14,351	157	5,266	235	-3,014	235	23,326	5,558	13,370	3,153	354	7,742	2,770	27,388	6,284	77,695	171	-4,063	73,633	173	18,058	17,333	-726
2020	1,226	40	148	143	676	413	1	913	4,100	179	3,145	179	0	0	15,098	156	4,526	235	-549	235	28,371	6,706	19,025	1,993	233	8,101	3,847	33,200	7,760	73,633	173	-4,829	68,804	174	17,333	16,278	-1,055
2021	0	40	147	143	677	413	5	913	4,100	179	1,865	179	0	0	15,548	158	4,606	235	-1,231	235	25,717	6,275	19,000	1,039	145	7,777	2,964	30,926	7,282	68,804	174	-5,209	63,595	177	16,278	15,271	-1,008
2022	0	40	147	143	678	413	8	913	4,100	179	2,046	179	0	0	15,646	158	4,695	235	-1,738	235	25,582	6,214	19,000	446	103	7,575	3,913	31,037	7,428	63,595	177	-5,456	58,140	178	15,271	14,056	-1,214
2023	2,579	40	147	143	679	413	10	913	4,100	179	7,378	179	0	0	15,878	151	4,860	235	-3,762	235	31,870	6,964	19,000	116	59	7,195	5,828	32,198	7,770	58,140	178	-328	57,812	169	14,056	13,250	-806
2024	7,308	40	148	143	681	413	10	913	4,100	179	12,189	179	0	0	16,430	140	5,093	235	-6,421	235	39,537	7,471	19,025	89	57	6,910	6,185	32,266	7,382	57,812	169	7,270	65,082	151	13,250	13,339	89
2025	6,249	40	147	143	682	413	11	913	4,100	179	15,600	179	0	0	16,565	138	6,385	235	-11,665	235	38,074	6,960	13,370	1,542	341	6,661	3,074	24,988	5,052	65,082	151	13,086	78,168	143	13,339	15,248	1,908
2026	0	40	147	143	683	413	11	913	4,100	179	1,616	179	0	0	15,076	148	6,115	235	-6,621	235	21,128	4,694	13,370	2,478	340	7,167	3,302	26,658	5,134	78,168	143	-5,530	72,638	150	15,248	14,808	-439
2027	6,316	40	147	143	684	413	12	913	4,100	179	18,602	179	0	0	15,461	143	5,043	235	-7,168	235	43,198	8,615	19,000	3,486	848	7,540	2,460	33,333	6,622	72,638	150	9,865	82,503	150	14,808	16,800	1,992
2028	2,288	40	148	143	686	413	12	913	4,100	179	6,191	179	0	0	14,581	150	5,909	235	-6,388	235	27,526	5,873	13,388	3,997	959	7,278	2,396	28,018	5,510	82,503	150	-492	82,011	154	16,800	17,163	363
2029	628	40	147	143	687	413	12	913	4,100	179	1,321	179	0	0	13,788	156	5,351	235	-3,217	235	22,816	5,391	13,370	4,157	668	7,520	2,351	28,065	5,734	82,011	154	-5,249	76,761	161	17,163	16,821	-342
2030	7,768	40	147	143	688	413	12	913	4,100	179	10,899	179	0	0	16,691	138	6,386	235	-6,483	235	40,209	7,601	13,370	6,759	1,511	7,590	2,348	31,578	6,589	76,761	161	8,631	85,392	154	16,821	17,833	1,013
2031	0	40	147	143	689	413	12	913	4,100	179	334	179	0	0	15,167	149	5,727	235	-2,158	235	24,018	5,710	13,370	5,605	949	7,347	2,196	29,467	5,956	85,392	154	-5,449	79,943	162	17,833	17,587	-246
2032	462	40	148	143	691	413	12	913	4,100	179	908	179	0	0	14,269	154	5,357	235	-1,941	235	24,005	5,760	13,388	4,630	601	7,722	2,213	28,554	6,150	79,943	162	-4,549	75,394	168	17,587	17,198	-390
2033	3,390	40	147	143	692	413	12	913	4,100	179	9,510	179	0	0	14,985	150	4,529	235	-1,642	235	35,723	7,888	19,000	3,599	451	8,143	2,652	33,846	7,617	75,394	168	1,877	77,271	166	17,198	17,469	271
2034	0	40	147	143	693	413	12	913	4,100	179	1,593	179	0	0	15,452	156	4,641	235	-826	235	25,812	6,302	19,000	2,424	274	8,055	2,052	31,805	7,128	77,271	166	-5,993	71,278	172	17,469	16,642	-826
2035	1,149	40	147	143	694	413	12	913	4,100	179	3,133	179	0	0	15,522	155	4,544	235	-670	235	28,631	6,765	19,000	2,279	233	7,800	1,914	31,226	7,236	71,278	172	-2,595	68,683	173	16,642	16,171	-471

Table I-7a

Projected TDS Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	TDS Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]
2012	4,402	100	102	758	157	2,186	0	4,835	15,920	762	1,705	274	0	0	7,025	917	7,024	550	36,335	32,310
2013	286	100	102	758	163	2,186	0	4,835	7,623	762	1,700	274	0	0	7,327	917	10,093	550	27,295	25,842
2014	2,378	100	102	758	168	2,186	0	4,835	12,252	762	1,700	274	0	0	8,008	917	8,591	550	33,199	30,663
2015	9,386	100	102	758	174	2,186	0	4,835	9,835	762	1,700	274	0	0	7,370	917	10,328	550	38,895	29,633
2016	0	100	102	758	179	2,186	0	4,835	5,803	762	1,705	274	0	0	7,743	917	11,610	550	27,142	25,620
2017	0	100	102	758	185	2,186	0	4,835	6,281	762	1,700	274	0	0	8,261	917	11,431	550	27,960	26,643
2018	1,899	100	102	758	190	2,186	5	4,835	10,488	762	1,700	274	0	0	8,124	917	9,355	550	31,864	29,588
2019	277	100	102	758	196	2,186	21	4,835	7,161	762	1,700	274	0	0	7,742	917	9,828	550	27,028	25,921
2020	1,103	100	102	758	201	2,186	48	4,835	9,538	762	1,705	274	0	0	8,101	917	8,519	550	29,317	28,159
2021	0	100	102	758	207	2,186	91	4,835	7,156	762	1,700	274	0	0	7,777	917	9,150	550	26,183	25,902
2022	0	100	102	758	212	2,186	126	4,835	7,472	762	1,700	274	0	0	7,575	917	8,559	550	25,747	25,786
2023	2,320	100	102	758	218	2,186	138	4,835	11,294	762	1,700	274	0	0	7,195	917	6,393	550	29,361	28,063
2024	6,575	100	102	758	223	2,186	146	4,835	18,685	762	1,705	274	0	0	6,910	917	3,779	550	38,125	34,059
2025	5,623	100	102	758	229	2,186	152	4,835	13,704	762	1,700	274	0	0	6,661	917	6,241	550	34,412	30,354
2026	0	100	102	758	234	2,186	157	4,835	7,875	762	1,700	274	0	0	7,167	917	8,447	550	25,683	25,878
2027	5,682	100	102	758	240	2,186	162	4,835	14,705	762	1,700	274	0	0	7,540	917	7,491	550	37,623	33,528
2028	2,058	100	102	758	246	2,186	169	4,835	9,915	762	1,705	274	0	0	7,278	917	8,907	550	30,381	28,867
2029	565	100	102	758	251	2,186	174	4,835	8,270	762	1,700	274	0	0	7,520	917	9,724	550	28,306	27,923
2030	6,989	100	102	758	257	2,186	180	4,835	12,708	762	1,700	274	0	0	7,590	917	8,826	550	38,353	32,866
2031	0	100	102	758	262	2,186	184	4,835	9,913	762	1,700	274	0	0	7,347	917	9,571	550	29,080	29,318
2032	416	100	102	758	268	2,186	188	4,835	8,577	762	1,705	274	0	0	7,722	917	10,062	550	29,040	28,866
2033	3,050	100	102	758	273	2,186	191	4,835	11,853	762	1,700	274	0	0	8,143	917	8,484	550	33,796	31,997
2034	0	100	102	758	279	2,186	192	4,835	6,543	762	1,700	274	0	0	8,055	917	10,772	550	27,643	27,703
2035	1,034	100	102	758	284	2,186	192	4,835	8,479	762	1,700	274	0	0	7,800	917	9,921	550	29,512	28,912

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	13,450	10,864	2,012	6,573	961	33,858	33,496	50,440	774	2,476	52,916	**721**	53,052	51,866	**-1,186**
2013	13,428	8,774	1,727	6,438	802	31,169	28,857	52,916	721	-3,874	49,042	**733**	51,866	48,851	**-3,015**
2014	15,448	8,078	1,748	6,487	675	32,436	30,568	49,042	733	763	49,805	**723**	48,851	48,946	**95**
2015	13,428	12,219	2,038	6,694	717	35,096	32,488	49,805	723	3,799	53,605	**632**	48,946	46,091	**-2,855**
2016	13,450	9,022	1,783	6,475	646	31,377	25,445	53,605	632	-4,235	49,370	**689**	46,091	46,266	**175**
2017	15,448	7,323	1,633	6,432	573	31,408	27,904	49,370	689	-3,448	45,922	**721**	46,266	45,005	**-1,261**
2018	15,448	7,442	1,652	6,480	589	31,612	29,361	45,922	721	252	46,174	**720**	45,005	45,233	**227**
2019	13,428	6,896	1,609	6,430	688	29,052	26,883	46,174	720	-2,023	44,151	**737**	45,233	44,271	**-962**
2020	15,472	5,888	1,550	6,464	941	30,315	28,843	44,151	737	-997	43,154	**743**	44,271	43,586	**-684**
2021	15,448	4,941	1,480	6,416	775	29,060	27,856	43,154	743	-2,877	40,277	**760**	43,586	41,632	**-1,954**
2022	15,448	4,345	1,404	6,407	973	28,577	28,087	40,277	760	-2,830	37,447	**772**	41,632	39,331	**-2,301**
2023	15,448	4,218	1,324	6,466	1,946	29,403	29,492	37,447	772	-42	37,405	**745**	39,331	37,902	**-1,429**
2024	15,472	5,446	1,429	6,617	2,336	31,302	30,269	37,405	745	6,823	44,229	**693**	37,902	41,691	**3,790**
2025	13,428	7,616	1,760	6,601	912	30,319	26,920	44,229	693	4,093	48,322	**687**	41,691	45,126	**3,434**
2026	13,428	6,603	1,609	6,433	908	28,982	25,563	48,322	687	-3,299	45,023	**742**	45,126	45,441	**315**
2027	15,448	9,206	1,808	6,592	773	33,826	32,316	45,023	742	3,797	48,820	**703**	45,441	46,653	**1,213**
2028	13,450	8,675	1,767	6,510	736	31,137	28,067	48,820	703	-757	48,063	**726**	46,653	47,453	**799**
2029	13,428	8,168	1,684	6,452	663	30,395	28,346	48,063	726	-2,089	45,974	**752**	47,453	47,030	**-423**
2030	13,428	11,423	1,914	6,638	679	34,083	32,907	45,974	752	4,270	50,244	**688**	47,030	46,988	**-42**
2031	13,428	9,091	1,723	6,445	739	31,426	27,779	50,244	688	-2,346	47,898	**745**	46,988	48,528	**1,540**
2032	13,450	8,368	1,685	6,462	609	30,573	29,268	47,898	745	-1,534	46,365	**763**	48,528	48,126	**-402**
2033	15,448	8,159	1,690	6,514	732	32,544	32,026	46,365	763	1,253	47,617	**743**	48,126	48,097	**-29**
2034	15,448	6,416	1,594	6,430	583	30,472	29,169	47,617	743	-2,829	44,789	**766**	48,097	46,631	**-1,465**
2035	15,448	6,593	1,608	6,451	574	30,673	30,261	44,789	766	-1,161	43,628	**763**	46,631	45,282	**-1,350**

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-7b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	Chloride Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,402	40	102	107	157	307	0	680	15,920	109	1,705	70	0	0	7,025	96	7,024	15	36,335	3,893	13,450	10,864	2,012	6,573	961	33,858	3,699	50,440	85	2,476	52,916	84	5,859	6,053	194
2013	286	40	102	107	163	307	0	680	7,623	109	1,700	70	0	0	7,327	96	10,093	15	27,295	2,548	13,428	8,774	1,727	6,438	802	31,169	3,368	52,916	84	-3,874	49,042	78	6,053	5,233	-820
2014	2,378	40	102	107	168	307	0	680	12,252	109	1,700	70	0	0	8,008	96	8,591	15	33,199	3,406	15,448	8,078	1,748	6,487	675	32,436	3,275	49,042	78	763	49,805	79	5,233	5,364	131
2015	9,386	40	102	107	174	307	0	680	9,835	109	1,700	70	0	0	7,370	96	10,328	15	38,895	3,384	13,428	12,219	2,038	6,694	717	35,096	3,560	49,805	79	3,799	53,605	71	5,364	5,188	-176
2016	0	40	102	107	179	307	0	680	5,803	109	1,705	70	0	0	7,743	96	11,610	15	27,142	2,356	13,450	9,022	1,783	6,475	646	31,377	2,864	53,605	71	-4,235	49,370	70	5,188	4,680	-508
2017	0	40	102	107	185	307	0	680	6,281	109	1,700	70	0	0	8,261	96	11,431	15	27,960	2,492	15,448	7,323	1,633	6,432	573	31,408	2,822	49,370	70	-3,448	45,922	70	4,680	4,350	-330
2018	1,899	40	102	107	190	307	5	680	10,488	109	1,700	70	0	0	8,124	96	9,355	15	31,864	3,164	15,448	7,442	1,652	6,480	589	31,612	2,838	45,922	70	252	46,174	74	4,350	4,676	326
2019	277	40	102	107	196	307	21	680	7,161	109	1,700	70	0	0	7,742	96	9,828	15	27,028	2,561	13,428	6,896	1,609	6,430	688	29,052	2,779	46,174	74	-2,023	44,151	74	4,676	4,458	-218
2020	1,103	40	102	107	201	307	48	680	9,538	109	1,705	70	0	0	8,101	96	8,519	15	29,317	3,005	15,472	5,888	1,550	6,464	941	30,315	2,905	44,151	74	-997	43,154	78	4,458	4,559	100
2021	0	40	102	107	207	307	91	680	7,156	109	1,700	70	0	0	7,777	96	9,150	15	26,183	2,605	15,448	4,941	1,480	6,416	775	29,060	2,914	43,154	78	-2,877	40,277	78	4,559	4,250	-309
2022	0	40	102	107	212	307	126	680	7,472	109	1,700	70	0	0	7,575	96	8,559	15	25,747	2,648	15,448	4,345	1,404	6,407	973	28,577	2,867	40,277	78	-2,830	37,447	79	4,250	4,031	-219
2023	2,320	40	102	107	218	307	138	680	11,294	109	1,700	70	0	0	7,195	96	6,393	15	29,361	3,259	15,448	4,218	1,324	6,466	1,946	29,403	3,023	37,447	79	-42	37,405	84	4,031	4,267	236
2024	6,575	40	102	107	223	307	146	680	18,685	109	1,705	70	0	0	6,910	96	3,779	15	38,125	4,502	15,472	5,446	1,429	6,617	2,336	31,302	3,408	37,405	84	6,823	44,229	89	4,267	5,361	1,094
2025	5,623	40	102	107	229	307	152	680	13,704	109	1,700	70	0	0	6,661	96	6,241	15	34,412	3,739	13,428	7,616	1,760	6,601	912	30,319	3,462	44,229	89	4,093	48,322	86	5,361	5,639	278
2026	0	40	102	107	234	307	157	680	7,875	109	1,700	70	0	0	7,167	96	8,447	15	25,683	2,690	13,428	6,603	1,609	6,433	908	28,982	3,194	48,322	86	-3,299	45,023	84	5,639	5,134	-504
2027	5,682	40	102	107	240	307	162	680	14,705	109	1,700	70	0	0	7,540	96	7,491	15	37,623	4,044	15,448	9,206	1,808	6,592	773	33,826	3,651	45,023	84	3,797	48,820	83	5,134	5,527	393
2028	2,058	40	102	107	246	307	169	680	9,915	109	1,705	70	0	0	7,278	96	8,907	15	30,381	3,143	13,450	8,675	1,767	6,510	736	31,137	3,325	48,820	83	-757	48,063	82	5,527	5,345	-182
2029	565	40	102	107	251	307	174	680	8,270	109	1,700	70	0	0	7,520	96	9,724	15	28,306	2,874	13,428	8,168	1,684	6,452	663	30,395	3,193	48,063	82	-2,089	45,974	80	5,345	5,026	-319
2030	6,989	40	102	107	257	307	180	680	12,708	109	1,700	70	0	0	7,590	96	8,826	15	38,353	3,878	13,428	11,423	1,914	6,638	679	34,083	3,517	45,974	80	4,270	50,244	79	5,026	5,387	361
2031	0	40	102	107	262	307	184	680	9,913	109	1,700	70	0	0	7,347	96	9,571	15	29,080	3,074	13,428	9,091	1,723	6,445	739	31,426	3,185	50,244	79	-2,346	47,898	81	5,387	5,277	-110
2032	416	40	102	107	268	307	188	680	8,577	109	1,705	70	0	0	7,722	96	10,062	15	29,040	2,965	13,450	8,368	1,685	6,462	609	30,573	3,182	47,898	81	-1,534	46,365	80	5,277	5,059	-218
2033	3,050	40	102	107	273	307	191	680	11,853	109	1,700	70	0	0	8,143	96	8,484	15	33,796	3,619	15,448	8,159	1,690	6,514	732	32,544	3,366	46,365	80	1,253	47,617	82	5,059	5,311	253
2034	0	40	102	107	279	307	192	680	6,543	109	1,700	70	0	0	8,055	96	10,772	15	27,643	2,707	15,448	6,416	1,594	6,430	583	30,472	3,221	47,617	82	-2,829	44,789	79	5,311	4,797	-514
2035	1,034	40	102	107	284	307	192	680	8,479	109	1,700	70	0	0	7,800	96	9,921	15	29,512	3,001	15,448	6,593	1,608	6,451	574	30,673	3,113	44,789	79	-1,161	43,628	79	4,797	4,685	-112

Table I-7c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Nitrate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	9	102	41	157	15	0	32	15,920	7	1,705	3	0	0	7,025	16	7,024	10	36,335	467	13,450	10,864	2,012	6,573	961	33,858	472	50,440	11	2,476	52,916	10	748	743	-5
2013	286	9	102	41	163	15	0	32	7,623	7	1,700	3	0	0	7,327	16	10,093	10	27,295	387	13,428	8,774	1,727	6,438	802	31,169	413	52,916	10	-3,874	49,042	11	743	717	-26
2014	2,378	9	102	41	168	15	0	32	12,252	7	1,700	3	0	0	8,008	16	8,591	10	33,199	451	15,448	8,078	1,748	6,487	675	32,436	449	49,042	11	763	49,805	11	717	719	2
2015	9,386	9	102	41	174	15	0	32	9,835	7	1,700	3	0	0	7,370	16	10,328	10	38,895	522	13,428	12,219	2,038	6,694	717	35,096	477	49,805	11	3,799	53,605	10	719	763	44
2016	0	9	102	41	179	15	0	32	5,803	7	1,705	3	0	0	7,743	16	11,610	10	27,142	397	13,450	9,022	1,783	6,475	646	31,377	421	53,605	10	-4,235	49,370	11	763	738	-25
2017	0	9	102	41	185	15	0	32	6,281	7	1,700	3	0	0	8,261	16	11,431	10	27,960	410	15,448	7,323	1,633	6,432	573	31,408	445	49,370	11	-3,448	45,922	11	738	703	-35
2018	1,899	9	102	41	190	15	5	32	10,488	7	1,700	3	0	0	8,124	16	9,355	10	31,864	442	15,448	7,442	1,652	6,480	589	31,612	459	45,922	11	252	46,174	11	703	686	-17
2019	277	9	102	41	196	15	21	32	7,161	7	1,700	3	0	0	7,742	16	9,828	10	27,028	390	13,428	6,896	1,609	6,430	688	29,052	408	46,174	11	-2,023	44,151	11	686	668	-18
2020	1,103	9	102	41	201	15	48	32	9,538	7	1,705	3	0	0	8,101	16	8,519	10	29,317	414	15,472	5,888	1,550	6,464	941	30,315	435	44,151	11	-997	43,154	11	668	646	-22
2021	0	9	102	41	207	15	91	32	7,156	7	1,700	3	0	0	7,777	16	9,150	10	26,183	381	15,448	4,941	1,480	6,416	775	29,060	413	43,154	11	-2,877	40,277	11	646	615	-32
2022	0	9	102	41	212	15	126	32	7,472	7	1,700	3	0	0	7,575	16	8,559	10	25,747	374	15,448	4,345	1,404	6,407	973	28,577	415	40,277	11	-2,830	37,447	11	615	573	-41
2023	2,320	9	102	41	218	15	138	32	11,294	7	1,700	3	0	0	7,195	16	6,393	10	29,361	401	15,448	4,218	1,324	6,466	1,946	29,403	430	37,447	11	-42	37,405	11	573	544	-29
2024	6,575	9	102	41	223	15	146	32	18,685	7	1,705	3	0	0	6,910	16	3,779	10	38,125	481	15,472	5,446	1,429	6,617	2,336	31,302	434	37,405	11	6,823	44,229	10	544	590	46
2025	5,623	9	102	41	229	15	152	32	13,704	7	1,700	3	0	0	6,661	16	6,241	10	34,412	450	13,428	7,616	1,760	6,601	912	30,319	381	44,229	10	4,093	48,322	10	590	659	69
2026	0	9	102	41	234	15	157	32	7,875	7	1,700	3	0	0	7,167	16	8,447	10	25,683	369	13,428	6,603	1,609	6,433	908	28,982	373	48,322	10	-3,299	45,023	11	659	655	-5
2027	5,682	9	102	41	240	15	162	32	14,705	7	1,700	3	0	0	7,540	16	7,491	10	37,623	497	15,448	9,206	1,808	6,592	773	33,826	465	45,023	11	3,797	48,820	10	655	686	32
2028	2,058	9	102	41	246	15	169	32	9,915	7	1,705	3	0	0	7,278	16	8,907	10	30,381	422	13,450	8,675	1,767	6,510	736	31,137	413	48,820	10	-757	48,063	11	686	696	9
2029	565	9	102	41	251	15	174	32	8,270	7	1,700	3	0	0	7,520	16	9,724	10	28,306	405	13,428	8,168	1,684	6,452	663	30,395	416	48,063	11	-2,089	45,974	11	696	685	-10
2030	6,989	9	102	41	257	15	180	32	12,708	7	1,700	3	0	0	7,590	16	8,826	10	38,353	514	13,428	11,423	1,914	6,638	679	34,083	480	45,974	11	4,270	50,244	11	685	720	35
2031	0	9	102	41	262	15	184	32	9,913	7	1,700	3	0	0	7,347	16	9,571	10	29,080	409	13,428	9,091	1,723	6,445	739	31,426	426	50,244	11	-2,346	47,898	11	720	703	-17
2032	416	9	102	41	268	15	188	32	8,577	7	1,705	3	0	0	7,722	16	10,062	10	29,040	416	13,450	8,368	1,685	6,462	609	30,573	424	47,898	11	-1,534	46,365	11	703	696	-8
2033	3,050	9	102	41	273	15	191	32	11,853	7	1,700	3	0	0	8,143	16	8,484	10	33,796	467	15,448	8,159	1,690	6,514	732	32,544	463	46,365	11	1,253	47,617	11	696	700	4
2034	0	9	102	41	279	15	192	32	6,543	7	1,700	3	0	0	8,055	16	10,772	10	27,643	409	15,448	6,416	1,594	6,430	583	30,472	424	47,617	11	-2,829	44,789	11	700	685	-15
2035	1,034	9	102	41	284	15	192	32	8,479	7	1,700	3	0	0	7,800	16	9,921	10	29,512	423	15,448	6,593	1,608	6,451	574	30,673	444	44,789	11	-1,161	43,628	11	685	664	-21

Table I-7d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Sulfate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	Sulfate Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]
2012	4,402	40	102	144	157	416	0	920	15,920	254	1,705	51	0	0	7,025	295	7,024	235	36,335	11,027
2013	286	40	102	144	163	416	0	920	7,623	254	1,700	51	0	0	7,327	295	10,093	235	27,295	9,042
2014	2,378	40	102	144	168	416	0	920	12,252	254	1,700	51	0	0	8,008	295	8,591	235	33,199	10,551
2015	9,386	40	102	144	174	416	0	920	9,835	254	1,700	51	0	0	7,370	295	10,328	235	38,895	10,400
2016	0	40	102	144	179	416	0	920	5,803	254	1,705	51	0	0	7,743	295	11,610	235	27,142	9,059
2017	0	40	102	144	185	416	0	920	6,281	254	1,700	51	0	0	8,261	295	11,431	235	27,960	9,378
2018	1,899	40	102	144	190	416	5	920	10,488	254	1,700	51	0	0	8,124	295	9,355	235	31,864	10,226
2019	277	40	102	144	196	416	21	920	7,161	254	1,700	51	0	0	7,742	295	9,828	235	27,028	9,010
2020	1,103	40	102	144	201	416	48	920	9,538	254	1,705	51	0	0	8,101	295	8,519	235	29,317	9,638
2021	0	40	102	144	207	416	91	920	7,156	254	1,700	51	0	0	7,777	295	9,150	235	26,183	8,883
2022	0	40	102	144	212	416	126	920	7,472	254	1,700	51	0	0	7,575	295	8,559	235	25,747	8,770
2023	2,320	40	102	144	218	416	138	920	11,294	254	1,700	51	0	0	7,195	295	6,393	235	29,361	9,390
2024	6,575	40	102	144	223	416	146	920	18,685	254	1,705	51	0	0	6,910	295	3,779	235	38,125	11,237
2025	5,623	40	102	144	229	416	152	920	13,704	254	1,700	51	0	0	6,661	295	6,241	235	34,412	10,163
2026	0	40	102	144	234	416	157	920	7,875	254	1,700	51	0	0	7,167	295	8,447	235	25,683	8,761
2027	5,682	40	102	144	240	416	162	920	14,705	254	1,700	51	0	0	7,540	295	7,491	235	37,623	11,282
2028	2,058	40	102	144	246	416	169	920	9,915	254	1,705	51	0	0	7,278	295	8,907	235	30,381	9,790
2029	565	40	102	144	251	416	174	920	8,270	254	1,700	51	0	0	7,520	295	9,724	235	28,306	9,508
2030	6,989	40	102	144	257	416	180	920	12,708	254	1,700	51	0	0	7,590	295	8,826	235	38,353	11,142
2031	0	40	102	144	262	416	184	920	9,913	254	1,700	51	0	0	7,347	295	9,571	235	29,080	9,946
2032	416	40	102	144	268	416	188	920	8,577	254	1,705	51	0	0	7,722	295	10,062	235	29,040	9,822
2033	3,050	40	102	144	273	416	191	920	11,853	254	1,700	51	0	0	8,143	295	8,484	235	33,796	10,768
2034	0	40	102	144	279	416	192	920	6,543	254	1,700	51	0	0	8,055	295	10,772	235	27,643	9,468
2035	1,034	40	102	144	284	416	192	920	8,479	254	1,700	51	0	0	7,800	295	9,921	235	29,512	9,822

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	13,450	10,864	2,012	6,573	961	33,858	10,866	50,440	251	2,476	52,916	241	17,209	17,370	161
2013	13,428	8,774	1,727	6,438	802	31,169	9,665	52,916	241	-3,874	49,042	251	17,370	16,748	-622
2014	15,448	8,078	1,748	6,487	675	32,436	10,480	49,042	251	763	49,805	248	16,748	16,819	71
2015	13,428	12,219	2,038	6,694	717	35,096	11,164	49,805	248	3,799	53,605	220	16,819	16,055	-764
2016	13,450	9,022	1,783	6,475	646	31,377	8,864	53,605	220	-4,235	49,370	242	16,055	16,251	196
2017	15,448	7,323	1,633	6,432	573	31,408	9,801	49,370	242	-3,448	45,922	253	16,251	15,828	-423
2018	15,448	7,442	1,652	6,480	589	31,612	10,326	45,922	253	252	46,174	251	15,828	15,728	-100
2019	13,428	6,896	1,609	6,430	688	29,052	9,347	46,174	251	-2,023	44,151	256	15,728	15,390	-337
2020	15,472	5,888	1,550	6,464	941	30,315	10,027	44,151	256	-997	43,154	256	15,390	15,001	-389
2021	15,448	4,941	1,480	6,416	775	29,060	9,587	43,154	256	-2,877	40,277	261	15,001	14,297	-704
2022	15,448	4,345	1,404	6,407	973	28,577	9,646	40,277	261	-2,830	37,447	264	14,297	13,422	-875
2023	15,448	4,218	1,324	6,466	1,946	29,403	10,064	37,447	264	-42	37,405	251	13,422	12,747	-674
2024	15,472	5,446	1,429	6,617	2,336	31,302	10,180	37,405	251	6,823	44,229	230	12,747	13,804	1,057
2025	13,428	7,616	1,760	6,601	912	30,319	8,914	44,229	230	4,093	48,322	229	13,804	15,054	1,249
2026	13,428	6,603	1,609	6,433	908	28,982	8,527	48,322	229	-3,299	45,023	250	15,054	15,287	233
2027	15,448	9,206	1,808	6,592	773	33,826	10,871	45,023	250	3,797	48,820	236	15,287	15,698	411
2028	13,450	8,675	1,767	6,510	736	31,137	9,444	48,820	236	-757	48,063	246	15,698	16,044	346
2029	13,428	8,168	1,684	6,452	663	30,395	9,584	48,063	246	-2,089	45,974	255	16,044	15,968	-76
2030	13,428	11,423	1,914	6,638	679	34,083	11,173	45,974	255	4,270	50,244	233	15,968	15,938	-31
2031	13,428	9,091	1,723	6,445	739	31,426	9,422	50,244	233	-2,346	47,898	253	15,938	16,462	524
2032	13,450	8,368	1,685	6,462	609	30,573	9,928	47,898	253	-1,534	46,365	259	16,462	16,356	-106
2033	15,448	8,159	1,690	6,514	732	32,544	10,884	46,365	259	1,253	47,617	251	16,356	16,239	-116
2034	15,448	6,416	1,594	6,430	583	30,472	9,849	47,617	251	-2,829	44,789	260	16,239	15,859	-380
2035	15,448	6,593	1,608	6,451	574	30,673	10,292	44,789	260	-1,161	43,628	259	15,859	15,389	-470

Table I-8a

Projected TDS Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]
2012	29,070	100	1,254	786	2,787	2,267	0	4,915	10	669	0	0	0	0	3,836	816	36,956	18,144
2013	1,890	100	1,250	786	2,834	2,267	0	4,915	0	669	0	0	0	0	-3,706	754	2,269	6,532
2014	15,703	100	1,250	786	2,882	2,267	0	4,915	0	669	0	0	0	0	-1,709	780	18,126	10,540
2015	61,979	100	1,250	786	2,929	2,267	0	4,915	7	669	0	0	0	0	-578	763	65,587	18,198
2016	0	100	1,254	786	2,977	2,267	0	4,915	0	669	0	0	0	0	-4,266	671	-35	6,625
2017	0	100	1,250	786	3,025	2,267	2	4,915	0	669	0	0	0	0	-6,108	728	-1,831	4,625
2018	12,538	100	1,250	786	3,072	2,267	40	4,915	0	669	0	0	0	0	-3,421	762	13,480	9,232
2019	1,826	100	1,250	786	3,120	2,267	140	4,915	0	669	0	0	0	0	-1,862	751	4,475	10,236
2020	7,285	100	1,254	786	3,168	2,267	264	4,915	0	669	0	0	0	0	59	777	12,030	13,921
2021	0	100	1,250	786	3,215	2,267	344	4,915	0	669	0	0	0	0	-1,798	778	3,011	11,638
2022	0	100	1,250	786	3,263	2,267	385	4,915	0	669	0	0	0	0	17	801	4,915	13,986
2023	15,322	100	1,250	786	3,310	2,267	404	4,915	0	669	0	0	0	0	6,827	809	27,114	23,831
2024	43,415	100	1,254	786	3,358	2,267	414	4,915	10	669	0	0	0	0	13,287	747	61,737	33,861
2025	37,127	100	1,250	786	3,406	2,267	420	4,915	10	669	0	0	0	0	10,964	673	53,176	29,731
2026	0	100	1,250	786	3,453	2,267	423	4,915	0	669	0	0	0	0	2,405	671	7,531	17,002
2027	37,522	100	1,250	786	3,501	2,267	426	4,915	8	669	0	0	0	0	4,507	745	47,214	24,649
2028	13,592	100	1,254	786	3,548	2,267	430	4,915	0	669	0	0	0	0	1,034	696	19,858	17,978
2029	3,729	100	1,250	786	3,596	2,267	434	4,915	0	669	0	0	0	0	-2,399	722	6,610	13,470
2030	46,150	100	1,250	786	3,644	2,267	437	4,915	10	669	0	0	0	0	6,011	762	57,502	27,995
2031	0	100	1,250	786	3,691	2,267	438	4,915	0	669	0	0	0	0	-3,371	696	2,009	12,449
2032	2,747	100	1,254	786	3,739	2,267	439	4,915	0	669	0	0	0	0	-4,658	751	3,520	11,410
2033	20,140	100	1,250	786	3,787	2,267	440	4,915	3	669	0	0	0	0	-1,594	775	24,026	17,005
2034	0	100	1,250	786	3,834	2,267	440	4,915	0	669	0	0	0	0	-4,025	746	1,499	12,006
2035	6,825	100	1,250	786	3,882	2,267	440	4,915	0	669	0	0	0	0	-4,054	784	8,343	12,843

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,841	0	2,499	0	2,751	18,090	13,831	1,650,000	652	18,866	1,668,866	**647**	1,463,642	1,467,956	**4,314**
2013	12,814	0	1,571	0	2,649	17,033	13,601	1,668,866	647	-14,764	1,654,102	**650**	1,467,956	1,460,887	**-7,069**
2014	12,814	0	1,717	0	2,727	17,258	13,726	1,654,102	650	868	1,654,969	**648**	1,460,887	1,457,701	**-3,186**
2015	12,814	0	3,511	0	2,815	19,140	13,766	1,654,969	648	46,447	1,701,416	**632**	1,457,701	1,462,133	**4,432**
2016	12,841	0	2,239	0	2,996	18,076	13,610	1,701,416	632	-18,111	1,683,305	**630**	1,462,133	1,441,899	**-6,985**
2017	12,814	0	1,545	0	2,821	17,180	13,393	1,683,305	630	-19,011	1,664,294	**629**	1,441,899	1,423,881	**-8,768**
2018	12,814	0	1,681	0	2,757	17,252	13,321	1,664,294	629	-3,772	1,660,523	**629**	1,423,881	1,419,792	**-4,090**
2019	19,123	0	1,378	0	2,000	22,500	18,060	1,660,523	629	-18,026	1,642,497	**632**	1,419,792	1,411,968	**-7,824**
2020	25,281	0	1,338	0	1,391	28,010	22,929	1,642,497	632	-15,981	1,626,516	**634**	1,411,968	1,402,959	**-9,008**
2021	19,123	0	1,152	0	1,453	21,728	17,748	1,626,516	634	-18,717	1,607,800	**639**	1,402,959	1,396,850	**-6,109**
2022	25,228	0	997	0	1,064	27,289	22,843	1,607,800	639	-22,374	1,585,426	**644**	1,396,850	1,387,993	**-8,857**
2023	34,977	0	1,191	0	649	36,818	31,190	1,585,426	644	-9,703	1,575,722	**644**	1,387,993	1,380,634	**-7,359**
2024	35,059	0	2,088	0	676	37,823	31,311	1,575,722	644	23,914	1,599,636	**636**	1,380,634	1,383,184	**2,550**
2025	12,814	0	2,893	0	1,588	17,295	12,453	1,599,636	636	35,881	1,635,517	**630**	1,383,184	1,400,461	**17,277**
2026	19,123	0	1,635	0	1,540	22,297	17,693	1,635,517	630	-14,766	1,620,751	**635**	1,400,461	1,399,770	**-691**
2027	12,814	0	2,728	0	2,230	17,772	12,993	1,620,751	635	29,442	1,650,193	**629**	1,399,770	1,411,426	**11,656**
2028	12,841	0	2,060	0	2,414	17,315	13,047	1,650,193	629	2,544	1,652,737	**630**	1,411,426	1,416,356	**4,930**
2029	12,814	0	1,729	0	2,419	16,962	13,054	1,652,737	630	-10,351	1,642,385	**634**	1,416,356	1,416,772	**416**
2030	12,814	0	3,238	0	2,803	18,855	13,472	1,642,385	634	38,648	1,681,033	**626**	1,416,772	1,431,296	**14,523**
2031	12,814	0	1,853	0	2,692	17,358	13,202	1,681,033	626	-15,350	1,665,683	**632**	1,431,296	1,430,543	**-753**
2032	12,841	0	1,551	0	2,621	17,013	13,279	1,665,683	632	-13,493	1,652,190	**636**	1,430,543	1,428,674	**-1,869**
2033	19,123	0	1,905	0	2,122	23,149	18,370	1,652,190	636	877	1,653,067	**635**	1,428,674	1,427,309	**-1,365**
2034	12,814	0	1,427	0	2,393	16,634	13,130	1,653,067	635	-15,135	1,637,932	**640**	1,427,309	1,426,185	**-1,124**
2035	12,814	0	1,377	0	2,402	16,592	13,248	1,637,932	640	-8,249	1,629,683	**643**	1,426,185	1,425,780	**-405**

Table I-8b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]
2012	29,070	40	1,254	105	2,787	302	0	687	10	89	0	0	0	0	3,836	93	36,956	3,395
2013	1,890	40	1,250	105	2,834	302	0	687	0	89	0	0	0	0	-3,706	88	2,269	1,001
2014	15,703	40	1,250	105	2,882	302	0	687	0	89	0	0	0	0	-1,709	86	18,126	2,017
2015	61,979	40	1,250	105	2,929	302	0	687	7	89	0	0	0	0	-578	85	65,587	4,688
2016	0	40	1,254	105	2,977	302	0	687	0	89	0	0	0	0	-4,266	79	-35	948
2017	0	40	1,250	105	3,025	302	2	687	0	89	0	0	0	0	-6,108	80	-1,831	762
2018	12,538	40	1,250	105	3,072	302	40	687	0	89	0	0	0	0	-3,421	80	13,480	1,789
2019	1,826	40	1,250	105	3,120	302	140	687	0	89	0	0	0	0	-1,862	81	4,475	1,487
2020	7,285	40	1,254	105	3,168	302	264	687	0	89	0	0	0	0	59	82	12,030	2,131
2021	0	40	1,250	105	3,215	302	344	687	0	89	0	0	0	0	-1,798	83	3,011	1,619
2022	0	40	1,250	105	3,263	302	385	687	0	89	0	0	0	0	17	83	4,915	1,882
2023	15,322	40	1,250	105	3,310	302	404	687	0	89	0	0	0	0	6,827	83	27,114	3,524
2024	43,415	40	1,254	105	3,358	302	414	687	10	89	0	0	0	0	13,287	84	61,737	5,822
2025	37,127	40	1,250	105	3,406	302	420	687	10	89	0	0	0	0	10,964	84	53,176	5,247
2026	0	40	1,250	105	3,453	302	423	687	0	89	0	0	0	0	2,405	85	7,531	2,271
2027	37,522	40	1,250	105	3,501	302	426	687	8	89	0	0	0	0	4,507	87	47,214	4,591
2028	13,592	40	1,254	105	3,548	302	430	687	0	89	0	0	0	0	1,034	85	19,858	2,899
2029	3,729	40	1,250	105	3,596	302	434	687	0	89	0	0	0	0	-2,399	86	6,610	1,985
2030	46,150	40	1,250	105	3,644	302	437	687	10	89	0	0	0	0	6,011	87	57,502	5,305
2031	0	40	1,250	105	3,691	302	438	687	0	89	0	0	0	0	-3,371	84	2,009	1,719
2032	2,747	40	1,254	105	3,739	302	439	687	0	89	0	0	0	0	-4,658	86	3,520	1,728
2033	20,140	40	1,250	105	3,787	302	440	687	3	89	0	0	0	0	-1,594	86	24,026	3,055
2034	0	40	1,250	105	3,834	302	440	687	0	89	0	0	0	0	-4,025	86	1,499	1,697
2035	6,825	40	1,250	105	3,882	302	440	687	0	89	0	0	0	0	-4,054	86	8,343	2,082

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,841	0	2,499	0	2,751	18,090	821	1,650,000	39	18,866	1,668,866	39	86,867	89,441	2,574
2013	12,814	0	1,571	0	2,649	17,033	829	1,668,866	39	-14,764	1,654,102	40	89,441	89,613	172
2014	12,814	0	1,717	0	2,727	17,258	842	1,654,102	40	868	1,654,969	40	89,613	90,788	1,175
2015	12,814	0	3,511	0	2,815	19,140	857	1,654,969	40	46,447	1,701,416	41	90,788	94,619	3,830
2016	12,841	0	2,239	0	2,996	18,076	881	1,701,416	41	-18,111	1,683,305	41	94,619	92,790	67
2017	12,814	0	1,545	0	2,821	17,180	862	1,683,305	41	-19,011	1,664,294	40	92,790	91,167	-100
2018	12,814	0	1,681	0	2,757	17,252	853	1,664,294	40	-3,772	1,660,523	41	91,167	92,102	936
2019	19,123	0	1,378	0	2,000	22,500	1,172	1,660,523	41	-18,026	1,642,497	41	92,102	92,417	315
2020	25,281	0	1,338	0	1,391	28,010	1,501	1,642,497	41	-15,981	1,626,516	42	92,417	93,047	630
2021	19,123	0	1,152	0	1,453	21,728	1,177	1,626,516	42	-18,717	1,607,800	43	93,047	93,490	442
2022	25,228	0	997	0	1,064	27,289	1,529	1,607,800	43	-22,374	1,585,426	44	93,490	93,843	353
2023	34,977	0	1,191	0	649	36,818	2,109	1,585,426	44	-9,703	1,575,722	44	93,843	95,257	1,415
2024	35,059	0	2,088	0	676	37,823	2,160	1,575,722	44	23,914	1,599,636	45	95,257	98,919	3,662
2025	12,814	0	2,893	0	1,588	17,295	891	1,599,636	45	35,881	1,635,517	46	98,919	103,276	4,356
2026	19,123	0	1,635	0	1,540	22,297	1,305	1,635,517	46	-14,766	1,620,751	47	103,276	104,241	966
2027	12,814	0	2,728	0	2,230	17,772	968	1,620,751	47	29,442	1,650,193	48	104,241	107,865	3,624
2028	12,841	0	2,060	0	2,414	17,315	997	1,650,193	48	2,544	1,652,737	49	107,865	109,767	1,902
2029	12,814	0	1,729	0	2,419	16,962	1,012	1,652,737	49	-10,351	1,642,385	50	109,767	110,740	973
2030	12,814	0	3,238	0	2,803	18,855	1,053	1,642,385	50	38,648	1,681,033	50	110,740	114,993	4,252
2031	12,814	0	1,853	0	2,692	17,358	1,061	1,681,033	50	-15,350	1,665,683	51	114,993	115,651	658
2032	12,841	0	1,551	0	2,621	17,013	1,074	1,665,683	51	-13,493	1,652,190	52	115,651	116,305	654
2033	19,123	0	1,905	0	2,122	23,149	1,495	1,652,190	52	877	1,653,067	52	116,305	117,864	1,559
2034	12,814	0	1,427	0	2,393	16,634	1,084	1,653,067	52	-15,135	1,637,932	53	117,864	118,477	613
2035	12,814	0	1,377	0	2,402	16,592	1,101	1,637,932	53	-8,249	1,629,683	54	118,477	119,459	982

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	9	1,254	43	2,787	16	0	34	10	13	0	0	0	0	3,836	18	36,956	574	12,841	0	2,499	0	2,751	18,090	428	1,650,000	20	18,866	1,668,866	20	45,318	45,464	146
2013	1,890	9	1,250	43	2,834	16	0	34	0	13	0	0	0	0	-3,706	17	2,269	72	12,814	0	1,571	0	2,649	17,033	421	1,668,866	20	-14,764	1,654,102	20	45,464	45,115	-350
2014	15,703	9	1,250	43	2,882	16	0	34	0	13	0	0	0	0	-1,709	18	18,126	282	12,814	0	1,717	0	2,727	17,258	424	1,654,102	20	868	1,654,969	20	45,115	44,973	-142
2015	61,979	9	1,250	43	2,929	16	0	34	7	13	0	0	0	0	-578	17	65,587	864	12,814	0	3,511	0	2,815	19,140	425	1,654,969	20	46,447	1,701,416	20	44,973	45,413	440
2016	0	9	1,254	43	2,977	16	0	34	0	13	0	0	0	0	-4,266	16	-35	44	12,841	0	2,239	0	2,996	18,076	423	1,701,416	20	-18,111	1,683,305	20	45,413	44,946	-379
2017	0	9	1,250	43	3,025	16	2	34	0	13	0	0	0	0	-6,108	17	-1,831	-4	12,814	0	1,545	0	2,821	17,180	417	1,683,305	20	-19,011	1,664,294	20	44,946	44,524	-422
2018	12,538	9	1,250	43	3,072	16	40	34	0	13	0	0	0	0	-3,421	18	13,480	209	12,814	0	1,681	0	2,757	17,252	417	1,664,294	20	-3,772	1,660,523	20	44,524	44,317	-208
2019	1,826	9	1,250	43	3,120	16	140	34	0	13	0	0	0	0	-1,862	17	4,475	125	19,123	0	1,378	0	2,000	22,500	564	1,660,523	20	-18,026	1,642,497	20	44,317	43,878	-439
2020	7,285	9	1,254	43	3,168	16	264	34	0	13	0	0	0	0	59	18	12,030	242	25,281	0	1,338	0	1,391	28,010	713	1,642,497	20	-15,981	1,626,516	20	43,878	43,408	-470
2021	0	9	1,250	43	3,215	16	344	34	0	13	0	0	0	0	-1,798	17	3,011	115	19,123	0	1,152	0	1,453	21,728	549	1,626,516	20	-18,717	1,607,800	20	43,408	42,974	-434
2022	0	9	1,250	43	3,263	16	385	34	0	13	0	0	0	0	17	18	4,915	161	25,228	0	997	0	1,064	27,289	703	1,607,800	20	-22,374	1,585,426	20	42,974	42,433	-541
2023	15,322	9	1,250	43	3,310	16	404	34	0	13	0	0	0	0	6,827	18	27,114	512	34,977	0	1,191	0	649	36,818	954	1,585,426	20	-9,703	1,575,722	20	42,433	41,991	-441
2024	43,415	9	1,254	43	3,358	16	414	34	10	13	0	0	0	0	13,287	16	61,737	979	35,059	0	2,088	0	676	37,823	952	1,575,722	20	23,914	1,599,636	19	41,991	42,018	27
2025	37,127	9	1,250	43	3,406	16	420	34	10	13	0	0	0	0	10,964	15	53,176	838	12,814	0	2,893	0	1,588	17,295	378	1,599,636	19	35,881	1,635,517	19	42,018	42,477	459
2026	0	9	1,250	43	3,453	16	423	34	0	13	0	0	0	0	2,405	15	7,531	217	19,123	0	1,635	0	1,540	22,297	537	1,635,517	19	-14,766	1,620,751	19	42,477	42,158	-319
2027	37,522	9	1,250	43	3,501	16	426	34	8	13	0	0	0	0	4,507	17	47,214	721	12,814	0	2,728	0	2,230	17,772	391	1,620,751	19	29,442	1,650,193	19	42,158	42,487	329
2028	13,592	9	1,254	43	3,548	16	430	34	0	13	0	0	0	0	1,034	16	19,858	354	12,841	0	2,060	0	2,414	17,315	393	1,650,193	19	2,544	1,652,737	19	42,487	42,449	-38
2029	3,729	9	1,250	43	3,596	16	434	34	0	13	0	0	0	0	-2,399	16	6,610	162	12,814	0	1,729	0	2,419	16,962	391	1,652,737	19	-10,351	1,642,385	19	42,449	42,219	-230
2030	46,150	9	1,250	43	3,644	16	437	34	10	13	0	0	0	0	6,011	17	57,502	863	12,814	0	3,238	0	2,803	18,855	401	1,642,385	19	38,648	1,681,033	19	42,219	42,681	462
2031	0	9	1,250	43	3,691	16	438	34	0	13	0	0	0	0	-3,371	16	2,009	99	12,814	0	1,853	0	2,692	17,358	394	1,681,033	19	-15,350	1,665,683	19	42,681	42,386	-295
2032	2,747	9	1,254	43	3,739	16	439	34	0	13	0	0	0	0	-4,658	17	3,520	99	12,841	0	1,551	0	2,621	17,013	393	1,665,683	19	-13,493	1,652,190	19	42,386	42,091	-294
2033	20,140	9	1,250	43	3,787	16	440	34	3	13	0	0	0	0	-1,594	17	24,026	378	19,123	0	1,905	0	2,122	23,149	541	1,652,190	19	877	1,653,067	19	42,091	41,928	-163
2034	0	9	1,250	43	3,834	16	440	34	0	13	0	0	0	0	-4,025	17	1,499	85	12,814	0	1,427	0	2,393	16,634	386	1,653,067	19	-15,135	1,637,932	19	41,928	41,627	-301
2035	6,825	9	1,250	43	3,882	16	440	34	0	13	0	0	0	0	-4,054	17	8,343	163	12,814	0	1,377	0	2,402	16,592	387	1,637,932	19	-8,249	1,629,683	19	41,627	41,404	-224

Table I-8d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - SCVSD Chloride Reduction - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Sulfate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]
2012	29,070	40	1,254	150	2,787	433	0	917	10	179	0	0	0	0	3,836	218	36,956	4,616
2013	1,890	40	1,250	150	2,834	433	0	917	0	179	0	0	0	0	-3,706	208	2,269	977
2014	15,703	40	1,250	150	2,882	433	0	917	0	179	0	0	0	0	-1,709	221	18,126	2,291
2015	61,979	40	1,250	150	2,929	433	0	917	7	179	0	0	0	0	-578	216	65,587	5,181
2016	0	40	1,254	150	2,977	433	0	917	0	179	0	0	0	0	-4,266	192	-35	893
2017	0	40	1,250	150	3,025	433	2	917	0	179	0	0	0	0	-6,108	212	-1,831	278
2018	12,538	40	1,250	150	3,072	433	40	917	0	179	0	0	0	0	-3,421	223	13,480	1,757
2019	1,826	40	1,250	150	3,120	433	140	917	0	179	0	0	0	0	-1,862	217	4,475	1,815
2020	7,285	40	1,254	150	3,168	433	264	917	0	179	0	0	0	0	59	226	12,030	2,863
2021	0	40	1,250	150	3,215	433	344	917	0	179	0	0	0	0	-1,798	225	3,011	2,025
2022	0	40	1,250	150	3,263	433	385	917	0	179	0	0	0	0	17	233	4,915	2,661
2023	15,322	40	1,250	150	3,310	433	404	917	0	179	0	0	0	0	6,827	235	27,114	5,720
2024	43,415	40	1,254	150	3,358	433	414	917	10	179	0	0	0	0	13,287	210	61,737	8,899
2025	37,127	40	1,250	150	3,406	433	420	917	10	179	0	0	0	0	10,964	187	53,176	7,589
2026	0	40	1,250	150	3,453	433	423	917	0	179	0	0	0	0	2,405	186	7,531	3,423
2027	37,522	40	1,250	150	3,501	433	426	917	8	179	0	0	0	0	4,507	211	47,214	6,185
2028	13,592	40	1,254	150	3,548	433	430	917	0	179	0	0	0	0	1,034	194	19,858	3,892
2029	3,729	40	1,250	150	3,596	433	434	917	0	179	0	0	0	0	-2,399	203	6,610	2,454
2030	46,150	40	1,250	150	3,644	433	437	917	10	179	0	0	0	0	6,011	216	57,502	7,221
2031	0	40	1,250	150	3,691	433	438	917	0	179	0	0	0	0	-3,371	194	2,009	2,084
2032	2,747	40	1,254	150	3,739	433	439	917	0	179	0	0	0	0	-4,658	212	3,520	1,809
2033	20,140	40	1,250	150	3,787	433	440	917	3	179	0	0	0	0	-1,594	220	24,026	3,651
2034	0	40	1,250	150	3,834	433	440	917	0	179	0	0	0	0	-4,025	210	1,499	1,912
2035	6,825	40	1,250	150	3,882	433	440	917	0	179	0	0	0	0	-4,054	222	8,343	2,235

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,841	0	2,499	0	2,751	18,090	5,715	1,650,000	270	18,866	1,668,866	**266**	604,840	603,741	**-1,099**
2013	12,814	0	1,571	0	2,649	17,033	5,594	1,668,866	266	-14,764	1,654,102	**266**	603,741	599,124	**-4,617**
2014	12,814	0	1,717	0	2,727	17,258	5,629	1,654,102	266	868	1,654,969	**265**	599,124	595,786	**-3,338**
2015	12,814	0	3,511	0	2,815	19,140	5,626	1,654,969	265	46,447	1,701,416	**257**	595,786	595,341	**-445**
2016	12,841	0	2,239	0	2,996	18,076	5,541	1,701,416	257	-18,111	1,683,305	**257**	595,341	588,907	**-4,649**
2017	12,814	0	1,545	0	2,821	17,180	5,470	1,683,305	257	-19,011	1,664,294	**258**	588,907	583,159	**-5,192**
2018	12,814	0	1,681	0	2,757	17,252	5,456	1,664,294	258	-3,772	1,660,523	**257**	583,159	579,460	**-3,699**
2019	19,123	0	1,378	0	2,000	22,500	7,371	1,660,523	257	-18,026	1,642,497	**257**	579,460	573,904	**-5,556**
2020	25,281	0	1,338	0	1,391	28,010	9,320	1,642,497	257	-15,981	1,626,516	**257**	573,904	567,448	**-6,456**
2021	19,123	0	1,152	0	1,453	21,728	7,178	1,626,516	257	-18,717	1,607,800	**257**	567,448	562,295	**-5,153**
2022	25,228	0	997	0	1,064	27,289	9,195	1,607,800	257	-22,374	1,585,426	**258**	562,295	555,760	**-6,534**
2023	34,977	0	1,191	0	649	36,818	12,489	1,585,426	258	-9,703	1,575,722	**256**	555,760	548,991	**-6,769**
2024	35,059	0	2,088	0	676	37,823	12,450	1,575,722	256	23,914	1,599,636	**251**	548,991	545,440	**-3,552**
2025	12,814	0	2,893	0	1,588	17,295	4,911	1,599,636	251	35,881	1,635,517	**246**	545,440	548,118	**2,678**
2026	19,123	0	1,635	0	1,540	22,297	6,925	1,635,517	246	-14,766	1,620,751	**247**	548,118	544,616	**-3,501**
2027	12,814	0	2,728	0	2,230	17,772	5,055	1,620,751	247	29,442	1,650,193	**243**	544,616	545,746	**1,130**
2028	12,841	0	2,060	0	2,414	17,315	5,045	1,650,193	243	2,544	1,652,737	**242**	545,746	544,594	**-1,153**
2029	12,814	0	1,729	0	2,419	16,962	5,019	1,652,737	242	-10,351	1,642,385	**243**	544,594	542,028	**-2,566**
2030	12,814	0	3,238	0	2,803	18,855	5,154	1,642,385	243	38,648	1,681,033	**238**	542,028	544,095	**2,067**
2031	12,814	0	1,853	0	2,692	17,358	5,019	1,681,033	238	-15,350	1,665,683	**239**	544,095	541,160	**-2,935**
2032	12,841	0	1,551	0	2,621	17,013	5,023	1,665,683	239	-13,493	1,652,190	**239**	541,160	537,945	**-3,215**
2033	19,123	0	1,905	0	2,122	23,149	6,917	1,652,190	239	877	1,653,067	**238**	537,945	534,679	**-3,266**
2034	12,814	0	1,427	0	2,393	16,634	4,918	1,653,067	238	-15,135	1,637,932	**239**	534,679	531,672	**-3,006**
2035	12,814	0	1,377	0	2,402	16,592	4,939	1,637,932	239	-8,249	1,629,683	**239**	531,672	528,968	**-2,704**

Table I-9a

Projected TDS Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	5,123	100	442	777	758	2,240	0	0	15,281	722	5,429	722	3,551	723	30,583	27,295	11,058	1,231	1,151	13,877	70	27,387	26,745	69,600	750	3,196	72,795	722	70,950	71,499	549
2013	333	100	441	777	764	2,240	0	0	2,847	722	7,635	722	5,826	723	17,845	18,857	11,043	786	844	13,113	38	25,825	24,536	72,795	722	-7,980	64,815	747	71,499	65,820	-5,679
2014	2,767	100	441	777	712	2,240	0	0	8,005	722	7,025	722	3,735	723	22,686	21,441	5,052	818	785	13,815	43	20,514	20,034	64,815	747	2,172	66,987	738	65,820	67,226	1,406
2015	10,922	100	441	777	661	2,240	0	0	27,898	722	5,082	722	1,284	723	46,288	37,603	10,759	1,995	1,279	13,922	70	28,026	26,842	66,987	738	18,262	85,249	673	67,226	77,988	10,762
2016	0	100	442	777	610	2,240	0	0	3,784	722	6,676	722	5,368	723	16,880	17,873	10,632	1,485	1,297	14,163	64	27,640	24,099	85,249	673	-10,760	74,489	709	77,988	71,762	-6,226
2017	0	100	441	777	558	2,240	0	0	2,081	722	8,489	722	4,838	723	16,407	17,302	4,626	883	863	14,662	47	21,081	19,478	74,489	709	-4,674	69,816	733	71,762	69,586	-2,176
2018	2,209	100	441	777	507	2,240	0	0	5,510	722	7,672	722	4,354	723	20,693	19,534	4,484	769	760	14,795	47	20,854	20,028	69,816	733	-161	69,654	730	69,586	69,091	-495
2019	322	100	441	777	456	2,240	0	0	1,318	722	8,363	722	6,035	723	16,934	17,338	10,192	389	501	13,430	32	24,544	23,848	69,654	730	-7,609	62,045	742	69,091	62,580	-6,511
2020	1,284	100	442	777	405	2,240	0	0	2,532	722	8,820	722	4,660	723	18,142	17,601	4,208	361	408	14,129	34	19,141	18,894	62,045	742	-998	61,047	738	62,580	61,288	-1,293
2021	0	100	441	777	410	2,240	0	0	467	722	9,939	722	4,877	723	16,134	16,728	4,201	131	301	14,551	35	19,219	18,992	61,047	738	-3,084	57,962	749	61,288	59,024	-2,264
2022	0	100	441	777	416	2,240	0	0	960	722	10,486	722	4,616	723	16,919	17,510	4,201	120	269	14,643	34	19,267	19,346	57,962	749	-2,348	55,614	756	59,024	57,188	-1,835
2023	2,700	100	441	777	422	2,240	0	0	7,122	722	8,249	722	3,838	723	22,771	20,982	4,201	425	340	14,860	38	19,864	20,077	55,614	756	2,908	58,522	730	57,188	58,094	906
2024	7,651	100	442	777	428	2,240	0	0	23,652	722	3,248	722	1,708	723	37,129	30,898	4,208	2,480	1,236	15,376	58	23,358	21,960	58,522	730	13,771	72,293	682	58,094	67,033	8,938
2025	6,543	100	441	777	434	2,240	0	0	31,933	722	3,754	722	1,742	723	44,845	39,422	10,050	7,610	2,007	15,503	97	35,266	30,839	72,293	682	9,579	81,872	679	67,033	75,616	8,584
2026	0	100	441	777	440	2,240	0	0	3,032	722	6,806	722	5,988	723	16,706	17,352	10,050	1,230	1,052	14,109	52	26,493	23,497	81,872	679	-9,787	72,085	709	75,616	69,472	-6,144
2027	6,612	100	441	777	445	2,240	0	0	21,134	722	4,045	722	2,918	723	35,594	30,308	4,201	3,365	1,714	14,470	64	23,814	21,298	72,085	709	11,781	83,866	688	69,472	78,482	9,010
2028	2,395	100	442	777	451	2,240	0	0	6,994	722	4,905	722	5,952	723	21,140	19,703	10,065	1,893	1,442	13,646	51	27,097	24,007	83,866	688	-5,957	77,909	700	78,482	74,178	-4,304
2029	657	100	441	777	457	2,240	0	0	3,265	722	7,106	722	5,903	723	17,828	17,934	10,050	798	886	12,904	37	24,674	22,649	77,909	700	-6,846	71,064	719	74,178	69,463	-4,715
2030	8,133	100	441	777	463	2,240	0	0	49,426	722	3,965	722	-1,666	723	60,760	53,755	10,050	12,976	2,990	15,621	122	41,758	37,895	71,064	719	19,002	90,066	697	69,463	85,323	15,860
2031	0	100	441	777	469	2,240	0	0	1,172	722	7,529	722	6,268	723	15,878	16,600	10,050	919	1,135	14,194	51	26,350	23,887	90,066	697	-10,471	79,594	721	85,323	78,036	-7,286
2032	484	100	442	777	475	2,240	0	0	1,470	722	8,784	722	5,984	723	17,640	17,932	10,065	355	715	13,354	33	24,522	23,341	79,594	721	-6,882	72,712	735	78,036	72,627	-5,409
2033	3,549	100	441	777	480	2,240	0	0	10,413	722	7,475	722	3,523	723	25,881	23,437	4,201	650	777	14,023	40	19,691	18,892	72,712	735	6,190	78,902	719	72,627	77,172	4,545
2034	0	100	441	777	486	2,240	0	0	467	722	7,956	722	5,296	723	14,645	15,424	4,201	450	607	14,461	41	19,759	18,733	78,902	719	-5,114	73,788	736	77,172	73,863	-3,309
2035	1,203	100	441	777	492	2,240	0	0	3,800	722	8,693	722	4,358	723	18,986	18,678	4,201	386	505	14,526	42	19,660	19,175	73,788	736	-674	73,114	738	73,863	73,367	-496

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	113	758	326	0	0	15,281	89	5,429	98	3,551	34	30,583	3,416	11,058	1,231	1,151	13,877	70	27,387	3,127	69,600	88	3,196	72,795	**87**	8,294	8,583	**289**
2013	333	40	441	113	764	326	0	0	2,847	89	7,635	98	5,826	34	17,845	2,052	11,043	786	844	13,113	38	25,825	2,946	72,795	87	-7,980	64,815	**87**	8,583	7,690	**-894**
2014	2,767	40	441	113	712	326	0	0	8,005	89	7,025	98	3,735	34	22,686	2,609	5,052	818	785	13,815	43	20,514	2,341	64,815	87	2,172	66,987	**87**	7,690	7,958	**268**
2015	10,922	40	441	113	661	326	0	0	27,898	89	5,082	98	1,284	34	46,288	5,064	10,759	1,995	1,279	13,922	70	28,026	3,177	66,987	87	18,262	85,249	**85**	7,958	9,845	**1,887**
2016	0	40	442	113	610	326	0	0	3,784	89	6,676	98	5,368	34	16,880	1,930	10,632	1,485	1,297	14,163	64	27,640	3,042	85,249	85	-10,760	74,489	**86**	9,845	8,733	**-1,112**
2017	0	40	441	113	558	326	0	0	2,081	89	8,489	98	4,838	34	16,407	1,919	4,626	883	863	14,662	47	21,081	2,370	74,489	86	-4,674	69,816	**87**	8,733	8,282	**-451**
2018	2,209	40	441	113	507	326	0	0	5,510	89	7,672	98	4,354	34	20,693	2,300	4,484	769	760	14,795	47	20,854	2,384	69,816	87	-161	69,654	**87**	8,282	8,198	**-84**
2019	322	40	441	113	456	326	0	0	1,318	89	8,363	98	6,035	34	16,934	1,836	10,192	389	501	13,430	32	24,544	2,830	69,654	87	-7,609	62,045	**85**	8,198	7,205	**-993**
2020	1,284	40	442	113	405	326	0	0	2,532	89	8,820	98	4,660	34	18,142	2,011	4,208	361	408	14,129	34	19,141	2,175	62,045	85	-998	61,047	**85**	7,205	7,041	**-164**
2021	0	40	441	113	410	326	0	0	467	89	9,939	98	4,877	34	16,134	1,853	4,201	131	301	14,551	35	19,219	2,182	61,047	85	-3,084	57,962	**85**	7,041	6,712	**-329**
2022	0	40	441	113	416	326	0	0	960	89	10,486	98	4,616	34	16,919	1,976	4,201	120	269	14,643	34	19,267	2,200	57,962	85	-2,348	55,614	**86**	6,712	6,488	**-224**
2023	2,700	40	441	113	422	326	0	0	7,122	89	8,249	98	3,838	34	22,771	2,537	4,201	425	340	14,860	38	19,864	2,278	55,614	86	2,908	58,522	**85**	6,488	6,748	**259**
2024	7,651	40	442	113	428	326	0	0	23,652	89	3,248	98	1,708	34	37,129	4,045	4,208	2,480	1,236	15,376	58	23,358	2,551	58,522	85	13,771	72,293	**84**	6,748	8,242	**1,494**
2025	6,543	40	441	113	434	326	0	0	31,933	89	3,754	98	1,742	34	44,845	5,057	10,050	7,610	2,007	15,503	97	35,266	3,792	72,293	84	9,579	81,872	**85**	8,242	9,507	**1,266**
2026	0	40	441	113	440	326	0	0	3,032	89	6,806	98	5,988	34	16,706	1,809	10,050	1,230	1,052	14,109	52	26,493	2,954	81,872	85	-9,787	72,085	**85**	9,507	8,363	**-1,145**
2027	6,612	40	441	113	445	326	0	0	21,134	89	4,045	98	2,918	34	35,594	3,853	4,201	3,365	1,714	14,470	64	23,814	2,564	72,085	85	11,781	83,866	**85**	8,363	9,652	**1,289**
2028	2,395	40	442	113	451	326	0	0	6,994	89	4,905	98	5,952	34	21,140	2,169	10,065	1,893	1,442	13,646	51	27,097	2,952	83,866	85	-5,957	77,909	**84**	9,652	8,868	**-783**
2029	657	40	441	113	457	326	0	0	3,265	89	7,106	98	5,903	34	17,828	1,917	10,050	798	886	12,904	37	24,674	2,708	77,909	84	-6,846	71,064	**84**	8,868	8,078	**-791**
2030	8,133	40	441	113	463	326	0	0	49,426	89	3,965	98	-1,666	34	60,760	7,145	10,050	12,976	2,990	15,621	122	41,758	4,407	71,064	84	19,002	90,066	**88**	8,078	10,816	**2,738**
2031	0	40	441	113	469	326	0	0	1,172	89	7,529	98	6,268	34	15,878	1,707	10,050	919	1,135	14,194	51	26,350	3,028	90,066	88	-10,471	79,594	**88**	10,816	9,494	**-1,321**
2032	484	40	442	113	475	326	0	0	1,470	89	8,784	98	5,984	34	17,640	1,926	10,065	355	715	13,354	33	24,522	2,840	79,594	88	-6,882	72,712	**87**	9,494	8,581	**-914**
2033	3,549	40	441	113	480	326	0	0	10,413	89	7,475	98	3,523	34	25,881	2,890	4,201	650	777	14,023	40	19,691	2,232	72,712	87	6,190	78,902	**86**	8,581	9,238	**658**
2034	0	40	441	113	486	326	0	0	467	89	7,956	98	5,296	34	14,645	1,642	4,201	450	607	14,461	41	19,759	2,243	78,902	86	-5,114	73,788	**86**	9,238	8,637	**-601**
2035	1,203	40	441	113	492	326	0	0	3,800	89	8,693	98	4,358	34	18,986	2,168	4,201	386	505	14,526	42	19,660	2,242	73,788	86	-674	73,114	**86**	8,637	8,563	**-74**

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentrati on	Change in GW Storage	Ending Storage	Ending Concentrat ion	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	9	442	45	758	16	0	0	15,281	20	5,429	17	3,551	20	30,583	740	11,058	1,231	1,151	13,877	70	27,387	714	69,600	20	3,196	72,795	19	1,894	1,920	26
2013	333	9	441	45	764	16	0	0	2,847	20	7,635	17	5,826	20	17,845	456	11,043	786	844	13,113	38	25,825	659	72,795	19	-7,980	64,815	19	1,920	1,717	-203
2014	2,767	9	441	45	712	16	0	0	8,005	20	7,025	17	3,735	20	22,686	554	5,052	818	785	13,815	43	20,514	523	64,815	19	2,172	66,987	19	1,717	1,749	31
2015	10,922	9	441	45	661	16	0	0	27,898	20	5,082	17	1,284	20	46,288	1,081	10,759	1,995	1,279	13,922	70	28,026	698	66,987	19	18,262	85,249	18	1,749	2,131	382
2016	0	9	442	45	610	16	0	0	3,784	20	6,676	17	5,368	20	16,880	440	10,632	1,485	1,297	14,163	64	27,640	659	85,249	18	-10,760	74,489	19	2,131	1,913	-218
2017	0	9	441	45	558	16	0	0	2,081	20	8,489	17	4,838	20	16,407	419	4,626	883	863	14,662	47	21,081	519	74,489	19	-4,674	69,816	19	1,913	1,813	-100
2018	2,209	9	441	45	507	16	0	0	5,510	20	7,672	17	4,354	20	20,693	506	4,484	769	760	14,795	47	20,854	522	69,816	19	-161	69,654	19	1,813	1,798	-16
2019	322	9	441	45	456	16	0	0	1,318	20	8,363	17	6,035	20	16,934	430	10,192	389	501	13,430	32	24,544	620	69,654	19	-7,609	62,045	19	1,798	1,607	-190
2020	1,284	9	442	45	405	16	0	0	2,532	20	8,820	17	4,660	20	18,142	446	4,208	361	408	14,129	34	19,141	485	62,045	19	-998	61,047	19	1,607	1,568	-39
2021	0	9	441	45	410	16	0	0	467	20	9,939	17	4,877	20	16,134	406	4,201	131	301	14,551	35	19,219	486	61,047	19	-3,084	57,962	19	1,568	1,489	-80
2022	0	9	441	45	416	16	0	0	960	20	10,486	17	4,616	20	16,919	425	4,201	120	269	14,643	34	19,267	488	57,962	19	-2,348	55,614	19	1,489	1,426	-63
2023	2,700	9	441	45	422	16	0	0	7,122	20	8,249	17	3,838	20	22,771	553	4,201	425	340	14,860	38	19,864	501	55,614	19	2,908	58,522	19	1,426	1,478	53
2024	7,651	9	442	45	428	16	0	0	23,652	20	3,248	17	1,708	20	37,129	891	4,208	2,480	1,236	15,376	58	23,358	559	58,522	19	13,771	72,293	18	1,478	1,811	332
2025	6,543	9	441	45	434	16	0	0	31,933	20	3,754	17	1,742	20	44,845	1,115	10,050	7,610	2,007	15,503	97	35,266	833	72,293	18	9,579	81,872	19	1,811	2,093	282
2026	0	9	441	45	440	16	0	0	3,032	20	6,806	17	5,988	20	16,706	436	10,050	1,230	1,052	14,109	52	26,493	650	81,872	19	-9,787	72,085	19	2,093	1,878	-214
2027	6,612	9	441	45	445	16	0	0	21,134	20	4,045	17	2,918	20	35,594	861	4,201	3,365	1,714	14,470	64	23,814	576	72,085	19	11,781	83,866	19	1,878	2,164	285
2028	2,395	9	442	45	451	16	0	0	6,994	20	4,905	17	5,952	20	21,140	529	10,065	1,893	1,442	13,646	51	27,097	662	83,866	19	-5,957	77,909	19	2,164	2,031	-133
2029	657	9	441	45	457	16	0	0	3,265	20	7,106	17	5,903	20	17,828	455	10,050	798	886	12,904	37	24,674	620	77,909	19	-6,846	71,064	19	2,031	1,865	-165
2030	8,133	9	441	45	463	16	0	0	49,426	20	3,965	17	-1,666	20	60,760	1,523	10,050	12,976	2,990	15,621	122	41,758	1,018	71,064	19	19,002	90,066	19	1,865	2,371	505
2031	0	9	441	45	469	16	0	0	1,172	20	7,529	17	6,268	20	15,878	410	10,050	919	1,135	14,194	51	26,350	664	90,066	19	-10,471	79,594	20	2,371	2,117	-254
2032	484	9	442	45	475	16	0	0	1,470	20	8,784	17	5,984	20	17,640	445	10,065	355	715	13,354	33	24,522	633	79,594	20	-6,882	72,712	20	2,117	1,928	-188
2033	3,549	9	441	45	480	16	0	0	10,413	20	7,475	17	3,523	20	25,881	628	4,201	650	777	14,023	40	19,691	502	72,712	20	6,190	78,902	19	1,928	2,055	126
2034	0	9	441	45	486	16	0	0	467	20	7,956	17	5,296	20	14,645	374	4,201	450	607	14,461	41	19,759	499	78,902	19	-5,114	73,788	19	2,055	1,930	-124
2035	1,203	9	441	45	492	16	0	0	3,800	20	8,693	17	4,358	20	18,986	471	4,201	386	505	14,526	42	19,660	501	73,788	19	-674	73,114	19	1,930	1,900	-30

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	124	758	358	0	0	15,281	140	5,429	108	3,551	235	30,583	5,553	11,058	1,231	1,151	13,877	70	27,387	5,739	69,600	161	3,196	72,795	152	15,223	15,038	-186
2013	333	40	441	124	764	358	0	0	2,847	140	7,635	108	5,826	235	17,845	3,987	11,043	786	844	13,113	38	25,825	5,160	72,795	152	-7,980	64,815	157	15,038	13,864	-1,174
2014	2,767	40	441	124	712	358	0	0	8,005	140	7,025	108	3,735	235	22,686	4,315	5,052	818	785	13,815	43	20,514	4,220	64,815	157	2,172	66,987	153	13,864	13,960	95
2015	10,922	40	441	124	661	358	0	0	27,898	140	5,082	108	1,284	235	46,288	7,440	10,759	1,995	1,279	13,922	70	28,026	5,574	66,987	153	18,262	85,249	137	13,960	15,826	1,866
2016	0	40	442	124	610	358	0	0	3,784	140	6,676	108	5,368	235	16,880	3,785	10,632	1,485	1,297	14,163	64	27,640	4,890	85,249	137	-10,760	74,489	145	15,826	14,720	-1,105
2017	0	40	441	124	558	358	0	0	2,081	140	8,489	108	4,838	235	16,407	3,533	4,626	883	863	14,662	47	21,081	3,995	74,489	145	-4,674	69,816	150	14,720	14,258	-462
2018	2,209	40	441	124	507	358	0	0	5,510	140	7,672	108	4,354	235	20,693	4,004	4,484	769	760	14,795	47	20,854	4,104	69,816	150	-161	69,654	150	14,258	14,159	-99
2019	322	40	441	124	456	358	0	0	1,318	140	8,363	108	6,035	235	16,934	3,720	10,192	389	501	13,430	32	24,544	4,887	69,654	150	-7,609	62,045	154	14,159	12,992	-1,167
2020	1,284	40	442	124	405	358	0	0	2,532	140	8,820	108	4,660	235	18,142	3,606	4,208	361	408	14,129	34	19,141	3,922	62,045	154	-998	61,047	153	12,992	12,675	-317
2021	0	40	441	124	410	358	0	0	467	140	9,939	108	4,877	235	16,134	3,381	4,201	131	301	14,551	35	19,219	3,928	61,047	153	-3,084	57,962	154	12,675	12,128	-547
2022	0	40	441	124	416	358	0	0	960	140	10,486	108	4,616	235	16,919	3,474	4,201	120	269	14,643	34	19,267	3,975	57,962	154	-2,348	55,614	154	12,128	11,627	-501
2023	2,700	40	441	124	422	358	0	0	7,122	140	8,249	108	3,838	235	22,771	4,215	4,201	425	340	14,860	38	19,864	4,082	55,614	154	2,908	58,522	148	11,627	11,760	134
2024	7,651	40	442	124	428	358	0	0	23,652	140	3,248	108	1,708	235	37,129	6,209	4,208	2,480	1,236	15,376	58	23,358	4,445	58,522	148	13,771	72,293	138	11,760	13,524	1,764
2025	6,543	40	441	124	434	358	0	0	31,933	140	3,754	108	1,742	235	44,845	7,807	10,050	7,610	2,007	15,503	97	35,266	6,222	72,293	138	9,579	81,872	136	13,524	15,110	1,586
2026	0	40	441	124	440	358	0	0	3,032	140	6,806	108	5,988	235	16,706	3,776	10,050	1,230	1,052	14,109	52	26,493	4,695	81,872	136	-9,787	72,085	145	15,110	14,191	-919
2027	6,612	40	441	124	445	358	0	0	21,134	140	4,045	108	2,918	235	35,594	6,186	4,201	3,365	1,714	14,470	64	23,814	4,351	72,085	145	11,781	83,866	141	14,191	16,027	1,836
2028	2,395	40	442	124	451	358	0	0	6,994	140	4,905	108	5,952	235	21,140	4,374	10,065	1,893	1,442	13,646	51	27,097	4,902	83,866	141	-5,957	77,909	146	16,027	15,498	-529
2029	657	40	441	124	457	358	0	0	3,265	140	7,106	108	5,903	235	17,828	3,882	10,050	798	886	12,904	37	24,674	4,732	77,909	146	-6,846	71,064	152	15,498	14,647	-850
2030	8,133	40	441	124	463	358	0	0	49,426	140	3,965	108	-1,666	235	60,760	10,169	10,050	12,976	2,990	15,621	122	41,758	7,991	71,064	152	19,002	90,066	137	14,647	16,826	2,178
2031	0	40	441	124	469	358	0	0	1,172	140	7,529	108	6,268	235	15,878	3,633	10,050	919	1,135	14,194	51	26,350	4,710	90,066	137	-10,471	79,594	146	16,826	15,748	-1,077
2032	484	40	442	124	475	358	0	0	1,470	140	8,784	108	5,984	235	17,640	3,813	10,065	355	715	13,354	33	24,522	4,710	79,594	146	-6,882	72,712	150	15,748	14,851	-897
2033	3,549	40	441	124	480	358	0	0	10,413	140	7,475	108	3,523	235	25,881	4,700	4,201	650	777	14,023	40	19,691	3,863	72,712	150	6,190	78,902	146	14,851	15,688	837
2034	0	40	441	124	486	358	0	0	467	140	7,956	108	5,296	235	14,645	3,260	4,201	450	607	14,461	41	19,759	3,808	78,902	146	-5,114	73,788	151	15,688	15,140	-548
2035	1,203	40	441	124	492	358	0	0	3,800	140	8,693	108	4,358	235	18,986	3,769	4,201	386	505	14,526	42	19,660	3,930	73,788	151	-674	73,114	151	15,140	14,979	-161

Projected TDS Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	100	30	777	52	2,240	0	0	1,047	722	372	722	243	723	2,096	1,871	758	84	79	951	5	1,877	1,979	69,600	810	219	69,819	**806**	76,620	76,511	**-109**
2013	23	100	30	777	52	2,240	0	0	195	722	523	722	399	723	1,223	1,292	757	54	58	899	3	1,770	1,876	69,819	806	-547	69,272	**806**	76,511	75,927	**-584**
2014	190	100	30	777	49	2,240	0	0	549	722	481	722	256	723	1,555	1,469	346	56	54	947	3	1,406	1,482	69,272	806	149	69,421	**804**	75,927	75,915	**-13**
2015	749	100	30	777	45	2,240	0	0	1,912	722	348	722	88	723	3,172	2,577	737	137	88	954	5	1,921	2,005	69,421	804	1,252	70,672	**796**	75,915	76,487	**573**
2016	0	100	30	777	42	2,240	0	0	259	722	458	722	368	723	1,157	1,225	729	102	89	971	4	1,894	1,954	70,672	796	-737	69,935	**797**	76,487	75,758	**-729**
2017	0	100	30	777	38	2,240	0	0	143	722	582	722	332	723	1,124	1,186	317	60	59	1,005	3	1,445	1,501	69,935	797	-320	69,614	**797**	75,758	75,443	**-315**
2018	151	100	30	777	35	2,240	0	0	378	722	526	722	298	723	1,418	1,339	307	53	52	1,014	3	1,429	1,492	69,614	797	-11	69,603	**796**	75,443	75,289	**-154**
2019	22	100	30	777	31	2,240	0	0	90	722	573	722	414	723	1,161	1,188	698	27	34	920	2	1,682	1,782	69,603	796	-522	69,082	**795**	75,289	74,695	**-594**
2020	88	100	30	777	28	2,240	0	0	174	722	605	722	319	723	1,243	1,206	288	25	28	968	2	1,312	1,388	69,082	795	-68	69,013	**794**	74,695	74,513	**-182**
2021	0	100	30	777	28	2,240	0	0	32	722	681	722	334	723	1,106	1,146	288	9	21	997	2	1,317	1,400	69,013	794	-211	68,802	**794**	74,513	74,260	**-253**
2022	0	100	30	777	29	2,240	0	0	66	722	719	722	316	723	1,160	1,200	288	8	18	1,004	2	1,320	1,405	68,802	794	-161	68,641	**793**	74,260	74,055	**-205**
2023	185	100	30	777	29	2,240	0	0	488	722	565	722	263	723	1,561	1,438	288	29	23	1,018	3	1,361	1,444	68,641	793	199	68,840	**791**	74,055	74,049	**-6**
2024	524	100	30	777	29	2,240	0	0	1,621	722	223	722	117	723	2,545	2,118	288	170	85	1,054	4	1,601	1,631	68,840	791	944	69,784	**786**	74,049	74,536	**487**
2025	448	100	30	777	30	2,240	0	0	2,189	722	257	722	119	723	3,073	2,702	689	522	138	1,062	7	2,417	2,435	69,784	786	657	70,441	**781**	74,536	74,803	**267**
2026	0	100	30	777	30	2,240	0	0	208	722	466	722	410	723	1,145	1,189	689	84	72	967	4	1,816	1,852	70,441	781	-671	69,770	**782**	74,803	74,141	**-662**
2027	453	100	30	777	31	2,240	0	0	1,448	722	277	722	200	723	2,439	2,077	288	231	117	992	4	1,632	1,609	69,770	782	807	70,577	**777**	74,141	74,608	**468**
2028	164	100	30	777	31	2,240	0	0	479	722	336	722	408	723	1,449	1,350	690	130	99	935	4	1,857	1,859	70,577	777	-408	70,169	**777**	74,608	74,100	**-508**
2029	45	100	30	777	31	2,240	0	0	224	722	487	722	405	723	1,222	1,229	689	55	61	884	3	1,691	1,722	70,169	777	-469	69,700	**777**	74,100	73,608	**-493**
2030	557	100	30	777	32	2,240	0	0	3,387	722	272	722	-114	723	4,164	3,684	689	889	205	1,071	8	2,862	2,806	69,700	777	1,302	71,002	**772**	73,608	74,486	**878**
2031	0	100	30	777	32	2,240	0	0	80	722	516	722	430	723	1,088	1,138	689	63	78	973	4	1,806	1,813	71,002	772	-718	70,285	**772**	74,486	73,811	**-675**
2032	33	100	30	777	33	2,240	0	0	101	722	602	722	410	723	1,209	1,229	690	24	49	915	2	1,681	1,713	70,285	772	-472	69,813	**772**	73,811	73,326	**-485**
2033	243	100	30	777	33	2,240	0	0	714	722	512	722	241	723	1,774	1,606	288	45	53	961	3	1,350	1,362	69,813	772	424	70,237	**770**	73,326	73,571	**245**
2034	0	100	30	777	33	2,240	0	0	32	722	545	722	363	723	1,004	1,057	288	31	42	991	3	1,354	1,375	70,237	770	-350	69,887	**771**	73,571	73,253	**-318**
2035	82	100	30	777	34	2,240	0	0	260	722	596	722	299	723	1,301	1,280	288	26	35	996	3	1,347	1,376	69,887	771	-46	69,841	**770**	73,253	73,157	**-96**

Table I-10b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	40	30	113	52	326	0	0	1,047	89	372	98	243	34	2,096	234	758	84	79	951	5	1,877	162	69,600	66	219	69,819	**67**	6,282	6,354	**72**
2013	23	40	30	113	52	326	0	0	195	89	523	98	399	34	1,223	141	757	54	58	899	3	1,770	156	69,819	67	-547	69,272	**67**	6,354	6,339	**-15**
2014	190	40	30	113	49	326	0	0	549	89	481	98	256	34	1,555	179	346	56	54	947	3	1,406	124	69,272	67	149	69,421	**68**	6,339	6,394	**55**
2015	749	40	30	113	45	326	0	0	1,912	89	348	98	88	34	3,172	347	737	137	88	954	5	1,921	169	69,421	68	1,252	70,672	**68**	6,394	6,572	**178**
2016	0	40	30	113	42	326	0	0	259	89	458	98	368	34	1,157	132	729	102	89	971	4	1,894	168	70,672	68	-737	69,935	**69**	6,572	6,536	**-36**
2017	0	40	30	113	38	326	0	0	143	89	582	98	332	34	1,124	132	317	60	59	1,005	3	1,445	130	69,935	69	-320	69,614	**69**	6,536	6,538	**2**
2018	151	40	30	113	35	326	0	0	378	89	526	98	298	34	1,418	158	307	53	52	1,014	3	1,429	129	69,614	69	-11	69,603	**69**	6,538	6,567	**28**
2019	22	40	30	113	31	326	0	0	90	89	573	98	414	34	1,161	126	698	27	34	920	2	1,682	155	69,603	69	-522	69,082	**70**	6,567	6,537	**-30**
2020	88	40	30	113	28	326	0	0	174	89	605	98	319	34	1,243	138	288	25	28	968	2	1,312	121	69,082	70	-68	69,013	**70**	6,537	6,554	**16**
2021	0	40	30	113	28	326	0	0	32	89	681	98	334	34	1,106	127	288	9	21	997	2	1,317	123	69,013	70	-211	68,802	**70**	6,554	6,557	**4**
2022	0	40	30	113	29	326	0	0	66	89	719	98	316	34	1,160	135	288	8	18	1,004	2	1,320	124	68,802	70	-161	68,641	**70**	6,557	6,569	**11**
2023	185	40	30	113	29	326	0	0	488	89	565	98	263	34	1,561	174	288	29	23	1,018	3	1,361	128	68,641	70	199	68,840	**71**	6,569	6,615	**46**
2024	524	40	30	113	29	326	0	0	1,621	89	223	98	117	34	2,545	277	288	170	85	1,054	4	1,601	146	68,840	71	944	69,784	**71**	6,615	6,746	**132**
2025	448	40	30	113	30	326	0	0	2,189	89	257	98	119	34	3,073	347	689	522	138	1,062	7	2,417	220	69,784	71	657	70,441	**72**	6,746	6,872	**126**
2026	0	40	30	113	30	326	0	0	208	89	466	98	410	34	1,145	124	689	84	72	967	4	1,816	170	70,441	72	-671	69,770	**72**	6,872	6,826	**-46**
2027	453	40	30	113	31	326	0	0	1,448	89	277	98	200	34	2,439	264	288	231	117	992	4	1,632	148	69,770	72	807	70,577	**72**	6,826	6,942	**116**
2028	164	40	30	113	31	326	0	0	479	89	336	98	408	34	1,449	149	690	130	99	935	4	1,857	173	70,577	72	-408	70,169	**73**	6,942	6,918	**-24**
2029	45	40	30	113	31	326	0	0	224	89	487	98	405	34	1,222	131	689	55	61	884	3	1,691	161	70,169	73	-469	69,700	**73**	6,918	6,889	**-29**
2030	557	40	30	113	32	326	0	0	3,387	89	272	98	-114	34	4,164	490	689	889	205	1,071	8	2,862	263	69,700	73	1,302	71,002	**74**	6,889	7,116	**227**
2031	0	40	30	113	32	326	0	0	80	89	516	98	430	34	1,088	117	689	63	78	973	4	1,806	173	71,002	74	-718	70,285	**74**	7,116	7,059	**-56**
2032	33	40	30	113	33	326	0	0	101	89	602	98	410	34	1,209	132	690	24	49	915	2	1,681	164	70,285	74	-472	69,813	**74**	7,059	7,028	**-32**
2033	243	40	30	113	33	326	0	0	714	89	512	98	241	34	1,774	198	288	45	53	961	3	1,350	130	69,813	74	424	70,237	**74**	7,028	7,095	**68**
2034	0	40	30	113	33	326	0	0	32	89	545	98	363	34	1,004	113	288	31	42	991	3	1,354	133	70,237	74	-350	69,887	**74**	7,095	7,075	**-20**
2035	82	40	30	113	34	326	0	0	260	89	596	98	299	34	1,301	149	288	26	35	996	3	1,347	133	69,887	74	-46	69,841	**75**	7,075	7,091	**16**

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-10c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	9	30	45	52	16	0	0	1,047	20	372	17	243	20	2,096	51	758	84	79	951	5	1,877	60	69,600	25	219	69,819	**24**	2,329	2,320	**-9**
2013	23	9	30	45	52	16	0	0	195	20	523	17	399	20	1,223	31	757	54	58	899	3	1,770	57	69,819	24	-547	69,272	**24**	2,320	2,294	**-26**
2014	190	9	30	45	49	16	0	0	549	20	481	17	256	20	1,555	38	346	56	54	947	3	1,406	45	69,272	24	149	69,421	**24**	2,294	2,287	**-7**
2015	749	9	30	45	45	16	0	0	1,912	20	348	17	88	20	3,172	74	737	137	88	954	5	1,921	60	69,421	24	1,252	70,672	**24**	2,287	2,301	**14**
2016	0	9	30	45	42	16	0	0	259	20	458	17	368	20	1,157	30	729	102	89	971	4	1,894	59	70,672	24	-737	69,935	**24**	2,301	2,272	**-29**
2017	0	9	30	45	38	16	0	0	143	20	582	17	332	20	1,124	29	317	60	59	1,005	3	1,445	45	69,935	24	-320	69,614	**24**	2,272	2,256	**-16**
2018	151	9	30	45	35	16	0	0	378	20	526	17	298	20	1,418	35	307	53	52	1,014	3	1,429	45	69,614	24	-11	69,603	**24**	2,256	2,246	**-10**
2019	22	9	30	45	31	16	0	0	90	20	573	17	414	20	1,161	29	698	27	34	920	2	1,682	53	69,603	24	-522	69,082	**24**	2,246	2,222	**-24**
2020	88	9	30	45	28	16	0	0	174	20	605	17	319	20	1,243	31	288	25	28	968	2	1,312	41	69,082	24	-68	69,013	**24**	2,222	2,212	**-11**
2021	0	9	30	45	28	16	0	0	32	20	681	17	334	20	1,106	28	288	9	21	997	2	1,317	42	69,013	24	-211	68,802	**23**	2,212	2,198	**-14**
2022	0	9	30	45	29	16	0	0	66	20	719	17	316	20	1,160	29	288	8	18	1,004	2	1,320	42	68,802	23	-161	68,641	**23**	2,198	2,186	**-12**
2023	185	9	30	45	29	16	0	0	488	20	565	17	263	20	1,561	38	288	29	23	1,018	3	1,361	43	68,641	23	199	68,840	**23**	2,186	2,181	**-5**
2024	524	9	30	45	29	16	0	0	1,621	20	223	17	117	20	2,545	61	288	170	85	1,054	4	1,601	48	68,840	23	944	69,784	**23**	2,181	2,194	**13**
2025	448	9	30	45	30	16	0	0	2,189	20	257	17	119	20	3,073	76	689	522	138	1,062	7	2,417	72	69,784	23	657	70,441	**23**	2,194	2,199	**5**
2026	0	9	30	45	30	16	0	0	208	20	466	17	410	20	1,145	30	689	84	72	967	4	1,816	54	70,441	23	-671	69,770	**23**	2,199	2,174	**-25**
2027	453	9	30	45	31	16	0	0	1,448	20	277	17	200	20	2,439	59	288	231	117	992	4	1,632	47	69,770	23	807	70,577	**23**	2,174	2,186	**12**
2028	164	9	30	45	31	16	0	0	479	20	336	17	408	20	1,449	36	690	130	99	935	4	1,857	54	70,577	23	-408	70,169	**23**	2,186	2,168	**-18**
2029	45	9	30	45	31	16	0	0	224	20	487	17	405	20	1,222	31	689	55	61	884	3	1,691	50	70,169	23	-469	69,700	**23**	2,168	2,149	**-19**
2030	557	9	30	45	32	16	0	0	3,387	20	272	17	-114	20	4,164	104	689	889	205	1,071	8	2,862	82	69,700	23	1,302	71,002	**22**	2,149	2,171	**22**
2031	0	9	30	45	32	16	0	0	80	20	516	17	430	20	1,088	28	689	63	78	973	4	1,806	53	71,002	22	-718	70,285	**22**	2,171	2,146	**-25**
2032	33	9	30	45	33	16	0	0	101	20	602	17	410	20	1,209	30	690	24	49	915	2	1,681	50	70,285	22	-472	69,813	**22**	2,146	2,127	**-19**
2033	243	9	30	45	33	16	0	0	714	20	512	17	241	20	1,774	43	288	45	53	961	3	1,350	39	69,813	22	424	70,237	**22**	2,127	2,130	**4**
2034	0	9	30	45	33	16	0	0	32	20	545	17	363	20	1,004	26	288	31	42	991	3	1,354	40	70,237	22	-350	69,887	**22**	2,130	2,116	**-14**
2035	82	9	30	45	34	16	0	0	260	20	596	17	299	20	1,301	32	288	26	35	996	3	1,347	40	69,887	22	-46	69,841	**22**	2,116	2,109	**-7**

Table I-10d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	40	30	124	52	358	0	0	1,047	140	372	108	243	235	2,096	381	758	84	79	951	5	1,877	612	69,600	250	219	69,819	247	23,705	23,473	-232
2013	23	40	30	124	52	358	0	0	195	140	523	108	399	235	1,223	273	757	54	58	899	3	1,770	576	69,819	247	-547	69,272	246	23,473	23,171	-302
2014	190	40	30	124	49	358	0	0	549	140	481	108	256	235	1,555	296	346	56	54	947	3	1,406	452	69,272	246	149	69,421	244	23,171	23,014	-156
2015	749	40	30	124	45	358	0	0	1,912	140	348	108	88	235	3,172	510	737	137	88	954	5	1,921	608	69,421	244	1,252	70,672	238	23,014	22,916	-98
2016	0	40	30	124	42	358	0	0	259	140	458	108	368	235	1,157	259	729	102	89	971	4	1,894	585	70,672	238	-737	69,935	238	22,916	22,590	-326
2017	0	40	30	124	38	358	0	0	143	140	582	108	332	235	1,124	242	317	60	59	1,005	3	1,445	448	69,935	238	-320	69,614	236	22,590	22,385	-205
2018	151	40	30	124	35	358	0	0	378	140	526	108	298	235	1,418	274	307	53	52	1,014	3	1,429	443	69,614	236	-11	69,603	235	22,385	22,216	-168
2019	22	40	30	124	31	358	0	0	90	140	573	108	414	235	1,161	255	698	27	34	920	2	1,682	526	69,603	235	-522	69,082	234	22,216	21,945	-271
2020	88	40	30	124	28	358	0	0	174	140	605	108	319	235	1,243	247	288	25	28	968	2	1,312	408	69,082	234	-68	69,013	232	21,945	21,785	-161
2021	0	40	30	124	28	358	0	0	32	140	681	108	334	235	1,106	232	288	9	21	997	2	1,317	409	69,013	232	-211	68,802	231	21,785	21,607	-178
2022	0	40	30	124	29	358	0	0	66	140	719	108	316	235	1,160	238	288	8	18	1,004	2	1,320	409	68,802	231	-161	68,641	230	21,607	21,436	-171
2023	185	40	30	124	29	358	0	0	488	140	565	108	263	235	1,561	289	288	29	23	1,018	3	1,361	418	68,641	230	199	68,840	228	21,436	21,307	-129
2024	524	40	30	124	29	358	0	0	1,621	140	223	108	117	235	2,545	426	288	170	85	1,054	4	1,601	469	68,840	228	944	69,784	224	21,307	21,264	-44
2025	448	40	30	124	30	358	0	0	2,189	140	257	108	119	235	3,073	535	689	522	138	1,062	7	2,417	695	69,784	224	657	70,441	220	21,264	21,104	-159
2026	0	40	30	124	30	358	0	0	208	140	466	108	410	235	1,145	259	689	84	72	967	4	1,816	522	70,441	220	-671	69,770	220	21,104	20,841	-264
2027	453	40	30	124	31	358	0	0	1,448	140	277	108	200	235	2,439	424	288	231	117	992	4	1,632	452	69,770	220	807	70,577	217	20,841	20,812	-28
2028	164	40	30	124	31	358	0	0	479	140	336	108	408	235	1,449	300	690	130	99	935	4	1,857	518	70,577	217	-408	70,169	216	20,812	20,593	-219
2029	45	40	30	124	31	358	0	0	224	140	487	108	405	235	1,222	266	689	55	61	884	3	1,691	478	70,169	216	-469	69,700	215	20,593	20,381	-212
2030	557	40	30	124	32	358	0	0	3,387	140	272	108	-114	235	4,164	697	689	889	205	1,071	8	2,862	777	69,700	215	1,302	71,002	210	20,381	20,301	-80
2031	0	40	30	124	32	358	0	0	80	140	516	108	430	235	1,088	249	689	63	78	973	4	1,806	494	71,002	210	-718	70,285	210	20,301	20,056	-245
2032	33	40	30	124	33	358	0	0	101	140	602	108	410	235	1,209	261	690	24	49	915	2	1,681	466	70,285	210	-472	69,813	209	20,056	19,852	-204
2033	243	40	30	124	33	358	0	0	714	140	512	108	241	235	1,774	322	288	45	53	961	3	1,350	369	69,813	209	424	70,237	207	19,852	19,805	-46
2034	0	40	30	124	33	358	0	0	32	140	545	108	363	235	1,004	223	288	31	42	991	3	1,354	370	70,237	207	-350	69,887	207	19,805	19,658	-147
2035	82	40	30	124	34	358	0	0	260	140	596	108	299	235	1,301	258	288	26	35	996	3	1,347	369	69,887	207	-46	69,841	206	19,658	19,547	-111

Projected TDS Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Upstream Tributaries	TDS Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	100	270	808	88	2,330	0	0	1,438	532	0	0	220	647	2,683	1,899	0	0	941	292	754	1,987	1,489	7,647	1,047	695	8,342	996	10,883	11,294	411
2013	43	100	269	808	88	2,330	0	0	18	532	0	0	520	650	938	1,053	0	0	620	323	718	1,660	1,408	8,342	996	-722	7,620	1,056	11,294	10,939	-355
2014	360	100	269	808	85	2,330	0	0	1,029	532	0	0	413	648	2,156	1,723	0	0	764	309	718	1,792	1,475	7,620	1,056	365	7,985	1,030	10,939	11,187	248
2015	1,421	100	269	808	82	2,330	0	0	916	532	0	0	452	632	3,141	1,801	0	0	915	321	755	1,991	1,507	7,985	1,030	1,151	9,135	924	11,187	11,480	293
2016	0	100	270	808	79	2,330	0	0	0	532	0	0	515	630	864	989	0	0	765	341	749	1,854	1,369	9,135	924	-990	8,145	1,002	11,480	11,100	-380
2017	0	100	269	808	76	2,330	0	0	0	532	0	0	604	629	949	1,053	0	0	373	351	734	1,458	1,479	8,145	1,002	-509	7,636	1,028	11,100	10,674	-426
2018	288	100	269	808	73	2,330	0	0	796	532	0	0	542	629	1,968	1,606	0	0	544	359	743	1,646	1,539	7,636	1,028	322	7,959	992	10,674	10,740	66
2019	42	100	269	808	70	2,330	0	0	13	532	0	0	555	632	949	1,010	0	0	494	350	830	1,674	1,592	7,959	992	-725	7,234	1,033	10,740	10,158	-583
2020	167	100	270	808	67	2,330	0	0	412	532	0	0	603	634	1,519	1,349	0	0	477	365	903	1,745	1,781	7,234	1,033	-227	7,007	1,021	10,158	9,726	-431
2021	0	100	269	808	67	2,330	0	0	0	532	0	0	653	639	989	1,076	0	0	288	399	892	1,579	1,793	7,007	1,021	-590	6,417	1,033	9,726	9,010	-716
2022	0	100	269	808	68	2,330	0	0	0	532	0	0	661	644	998	1,090	0	0	189	407	918	1,514	1,861	6,417	1,033	-516	5,901	1,027	9,010	8,239	-771
2023	351	100	269	808	68	2,330	0	0	908	532	0	0	507	644	2,103	1,660	0	0	484	399	1,009	1,892	1,966	5,901	1,027	211	6,112	955	8,239	7,933	-306
2024	996	100	270	808	69	2,330	0	0	1,326	532	0	0	342	636	3,002	1,904	0	0	848	415	1,094	2,357	1,958	6,112	955	645	6,758	857	7,933	7,879	-54
2025	851	100	269	808	69	2,330	0	0	1,585	532	0	0	369	630	3,144	2,092	0	0	1,042	409	898	2,348	1,523	6,758	857	796	7,553	823	7,879	8,448	569
2026	0	100	269	808	69	2,330	0	0	0	532	0	0	603	635	942	1,037	0	0	779	382	852	2,013	1,380	7,553	823	-1,071	6,482	920	8,448	8,104	-344
2027	860	100	269	808	70	2,330	0	0	1,614	532	0	0	316	629	3,130	2,072	0	0	945	317	783	2,045	1,376	6,482	920	1,084	7,567	855	8,104	8,800	696
2028	312	100	270	808	70	2,330	0	0	874	532	0	0	370	630	1,896	1,511	0	0	881	306	737	1,924	1,212	7,567	855	-28	7,539	888	8,800	9,099	298
2029	86	100	269	808	71	2,330	0	0	152	532	0	0	498	634	1,075	1,071	0	0	717	295	696	1,707	1,195	7,539	888	-632	6,907	956	9,099	8,974	-125
2030	1,058	100	269	808	71	2,330	0	0	1,476	532	0	0	147	626	3,022	1,858	0	0	1,019	266	742	2,026	1,309	6,907	956	995	7,902	886	8,974	9,523	549
2031	0	100	269	808	72	2,330	0	0	0	532	0	0	572	631	913	1,014	0	0	594	305	697	1,596	1,207	7,902	886	-683	7,219	950	9,523	9,329	-193
2032	63	100	270	808	72	2,330	0	0	80	532	0	0	570	636	1,055	1,084	0	0	373	312	691	1,375	1,295	7,219	950	-320	6,899	972	9,329	9,118	-211
2033	462	100	269	808	73	2,330	0	0	1,032	532	0	0	439	635	2,275	1,714	0	0	586	314	816	1,716	1,493	6,899	972	559	7,458	921	9,118	9,339	221
2034	0	100	269	808	73	2,330	0	0	0	532	0	0	477	640	819	942	0	0	456	344	759	1,559	1,382	7,458	921	-740	6,718	974	9,339	8,899	-440
2035	157	100	269	808	73	2,330	0	0	378	532	0	0	544	643	1,421	1,299	0	0	419	347	727	1,493	1,422	6,718	974	-71	6,647	971	8,899	8,775	-123

Table I-11b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	40	270	89	88	256	0	0	1,438	65	0	0	220	39	2,683	239	0	0	941	292	754	1,987	161	7,647	114	695	8,342	111	1,180	1,258	78
2013	43	40	269	89	88	256	0	0	18	65	0	0	520	40	938	95	0	0	620	323	718	1,660	157	8,342	111	-722	7,620	115	1,258	1,196	-61
2014	360	40	269	89	85	256	0	0	1,029	65	0	0	413	40	2,156	196	0	0	764	309	718	1,792	161	7,620	115	365	7,985	113	1,196	1,231	35
2015	1,421	40	269	89	82	256	0	0	916	65	0	0	452	41	3,141	245	0	0	915	321	755	1,991	166	7,985	113	1,151	9,135	105	1,231	1,310	79
2016	0	40	270	89	79	256	0	0	0	65	0	0	515	41	864	89	0	0	765	341	749	1,854	156	9,135	105	-990	8,145	112	1,310	1,243	-68
2017	0	40	269	89	76	256	0	0	0	65	0	0	604	40	949	92	0	0	373	351	734	1,458	166	8,145	112	-509	7,636	113	1,243	1,169	-73
2018	288	40	269	89	73	256	0	0	796	65	0	0	542	41	1,968	175	0	0	544	359	743	1,646	169	7,636	113	322	7,959	109	1,169	1,175	6
2019	42	40	269	89	70	256	0	0	13	65	0	0	555	41	949	92	0	0	494	350	830	1,674	174	7,959	109	-725	7,234	111	1,175	1,093	-83
2020	167	40	270	89	67	256	0	0	412	65	0	0	603	42	1,519	136	0	0	477	365	903	1,745	192	7,234	111	-227	7,007	109	1,093	1,037	-55
2021	0	40	269	89	67	256	0	0	0	65	0	0	653	43	989	94	0	0	288	399	892	1,579	191	7,007	109	-590	6,417	108	1,037	940	-97
2022	0	40	269	89	68	256	0	0	0	65	0	0	661	44	998	95	0	0	189	407	918	1,514	194	6,417	108	-516	5,901	105	940	841	-99
2023	351	40	269	89	68	256	0	0	908	65	0	0	507	44	2,103	187	0	0	484	399	1,009	1,892	201	5,901	105	211	6,112	100	841	827	-14
2024	996	40	270	89	69	256	0	0	1,326	65	0	0	342	45	3,002	250	0	0	848	415	1,094	2,357	204	6,112	100	645	6,758	95	827	873	46
2025	851	40	269	89	69	256	0	0	1,585	65	0	0	369	46	3,144	267	0	0	1,042	409	898	2,348	169	6,758	95	796	7,553	95	873	971	98
2026	0	40	269	89	69	256	0	0	0	65	0	0	603	47	942	96	0	0	779	382	852	2,013	159	7,553	95	-1,071	6,482	103	971	908	-63
2027	860	40	269	89	70	256	0	0	1,614	65	0	0	316	48	3,130	268	0	0	945	317	783	2,045	154	6,482	103	1,084	7,567	99	908	1,022	114
2028	312	40	270	89	70	256	0	0	874	65	0	0	370	49	1,896	176	0	0	881	306	737	1,924	141	7,567	99	-28	7,539	103	1,022	1,057	36
2029	86	40	269	89	71	256	0	0	152	65	0	0	498	50	1,075	109	0	0	717	295	696	1,707	139	7,539	103	-632	6,907	109	1,057	1,027	-30
2030	1,058	40	269	89	71	256	0	0	1,476	65	0	0	147	50	3,022	256	0	0	1,019	266	742	2,026	150	6,907	109	995	7,902	106	1,027	1,134	106
2031	0	40	269	89	72	256	0	0	0	65	0	0	572	51	913	97	0	0	594	305	697	1,596	144	7,902	106	-683	7,219	111	1,134	1,087	-46
2032	63	40	270	89	72	256	0	0	80	65	0	0	570	52	1,055	108	0	0	373	312	691	1,375	151	7,219	111	-320	6,899	111	1,087	1,045	-43
2033	462	40	269	89	73	256	0	0	1,032	65	0	0	439	52	2,275	206	0	0	586	314	816	1,716	171	6,899	111	559	7,458	106	1,045	1,080	35
2034	0	40	269	89	73	256	0	0	0	65	0	0	477	53	819	92	0	0	456	344	759	1,559	160	7,458	106	-740	6,718	111	1,080	1,012	-67
2035	157	40	269	89	73	256	0	0	378	65	0	0	544	54	1,421	140	0	0	419	347	727	1,493	162	6,718	111	-71	6,647	110	1,012	991	-22

Table I-11c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	9	270	46	88	17	0	0	1,438	7	0	0	220	20	2,683	47	0	0	941	292	754	1,987	44	7,647	31	695	8,342	29	321	324	3
2013	43	9	269	46	88	17	0	0	18	7	0	0	520	20	938	34	0	0	620	323	718	1,660	40	8,342	29	-722	7,620	31	324	318	-7
2014	360	9	269	46	85	17	0	0	1,029	7	0	0	413	20	2,156	44	0	0	764	309	718	1,792	43	7,620	31	365	7,985	29	318	319	2
2015	1,421	9	269	46	82	17	0	0	916	7	0	0	452	20	3,141	57	0	0	915	321	755	1,991	43	7,985	29	1,151	9,135	27	319	333	14
2016	0	9	270	46	79	17	0	0	0	7	0	0	515	20	864	33	0	0	765	341	749	1,854	40	9,135	27	-990	8,145	29	333	326	-7
2017	0	9	269	46	76	17	0	0	0	7	0	0	604	20	949	35	0	0	373	351	734	1,458	43	8,145	29	-509	7,636	31	326	317	-9
2018	288	9	269	46	73	17	0	0	796	7	0	0	542	20	1,968	44	0	0	544	359	743	1,646	46	7,636	31	322	7,959	29	317	316	-2
2019	42	9	269	46	70	17	0	0	13	7	0	0	555	20	949	34	0	0	494	350	830	1,674	47	7,959	29	-725	7,234	31	316	303	-13
2020	167	9	270	46	67	17	0	0	412	7	0	0	603	20	1,519	41	0	0	477	365	903	1,745	53	7,234	31	-227	7,007	30	303	291	-12
2021	0	9	269	46	67	17	0	0	0	7	0	0	653	20	989	36	0	0	288	399	892	1,579	54	7,007	30	-590	6,417	31	291	273	-18
2022	0	9	269	46	68	17	0	0	0	7	0	0	661	20	998	36	0	0	189	407	918	1,514	56	6,417	31	-516	5,901	32	273	253	-20
2023	351	9	269	46	68	17	0	0	908	7	0	0	507	20	2,103	45	0	0	484	399	1,009	1,892	60	5,901	32	211	6,112	29	253	237	-15
2024	996	9	270	46	69	17	0	0	1,326	7	0	0	342	19	3,002	52	0	0	848	415	1,094	2,357	59	6,112	29	645	6,758	25	237	231	-6
2025	851	9	269	46	69	17	0	0	1,585	7	0	0	369	19	3,144	54	0	0	1,042	409	898	2,348	45	6,758	25	796	7,553	23	231	240	9
2026	0	9	269	46	69	17	0	0	0	7	0	0	603	19	942	34	0	0	779	382	852	2,013	39	7,553	23	-1,071	6,482	27	240	235	-5
2027	860	9	269	46	70	17	0	0	1,614	7	0	0	316	19	3,130	53	0	0	945	317	783	2,045	40	6,482	27	1,084	7,567	24	235	248	13
2028	312	9	270	46	70	17	0	0	874	7	0	0	370	19	1,896	40	0	0	881	306	737	1,924	34	7,567	24	-28	7,539	25	248	254	6
2029	86	9	269	46	71	17	0	0	152	7	0	0	498	19	1,075	34	0	0	717	295	696	1,707	33	7,539	25	-632	6,907	27	254	254	1
2030	1,058	9	269	46	71	17	0	0	1,476	7	0	0	147	19	3,022	49	0	0	1,019	266	742	2,026	37	6,907	27	995	7,902	25	254	267	12
2031	0	9	269	46	72	17	0	0	0	7	0	0	572	19	913	33	0	0	594	305	697	1,596	34	7,902	25	-683	7,219	27	267	266	-1
2032	63	9	270	46	72	17	0	0	80	7	0	0	570	19	1,055	35	0	0	373	312	691	1,375	37	7,219	27	-320	6,899	28	266	264	-2
2033	462	9	269	46	73	17	0	0	1,032	7	0	0	439	19	2,275	45	0	0	586	314	816	1,716	43	6,899	28	559	7,458	26	264	266	2
2034	0	9	269	46	73	17	0	0	0	7	0	0	477	19	819	31	0	0	456	344	759	1,559	39	7,458	26	-740	6,718	28	266	257	-9
2035	157	9	269	46	73	17	0	0	378	7	0	0	544	19	1,421	38	0	0	419	347	727	1,493	41	6,718	28	-71	6,647	28	257	254	-3

Table I-11d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	40	270	170	88	490	0	0	1,438	103	0	0	220	266	2,683	437	0	0	941	292	754	1,987	330	7,647	232	695	8,342	**222**	2,410	2,518	**108**
2013	43	40	269	170	88	490	0	0	18	103	0	0	520	266	938	314	0	0	620	323	718	1,660	314	8,342	222	-722	7,620	**243**	2,518	2,518	**0**
2014	360	40	269	170	85	490	0	0	1,029	103	0	0	413	265	2,156	431	0	0	764	309	718	1,792	339	7,620	243	365	7,985	**240**	2,518	2,610	**91**
2015	1,421	40	269	170	82	490	0	0	916	103	0	0	452	257	3,141	480	0	0	915	321	755	1,991	352	7,985	240	1,151	9,135	**220**	2,610	2,738	**129**
2016	0	40	270	170	79	490	0	0	0	103	0	0	515	257	864	295	0	0	765	341	749	1,854	327	9,135	220	-990	8,145	**244**	2,738	2,707	**-31**
2017	0	40	269	170	76	490	0	0	0	103	0	0	604	258	949	324	0	0	373	351	734	1,458	361	8,145	244	-509	7,636	**257**	2,707	2,671	**-36**
2018	288	40	269	170	73	490	0	0	796	103	0	0	542	257	1,968	427	0	0	544	359	743	1,646	385	7,636	257	322	7,959	**251**	2,671	2,712	**42**
2019	42	40	269	170	70	490	0	0	13	103	0	0	555	257	949	307	0	0	494	350	830	1,674	402	7,959	251	-725	7,234	**266**	2,712	2,617	**-95**
2020	167	40	270	170	67	490	0	0	412	103	0	0	603	257	1,519	384	0	0	477	365	903	1,745	459	7,234	266	-227	7,007	**267**	2,617	2,542	**-75**
2021	0	40	269	170	67	490	0	0	0	103	0	0	653	257	989	335	0	0	288	399	892	1,579	469	7,007	267	-590	6,417	**276**	2,542	2,409	**-133**
2022	0	40	269	170	68	490	0	0	0	103	0	0	661	258	998	339	0	0	189	407	918	1,514	498	6,417	276	-516	5,901	**280**	2,409	2,251	**-158**
2023	351	40	269	170	68	490	0	0	908	103	0	0	507	256	2,103	430	0	0	484	399	1,009	1,892	537	5,901	280	211	6,112	**258**	2,251	2,144	**-107**
2024	996	40	270	170	69	490	0	0	1,326	103	0	0	342	251	3,002	464	0	0	848	415	1,094	2,357	529	6,112	258	645	6,758	**226**	2,144	2,078	**-65**
2025	851	40	269	170	69	490	0	0	1,585	103	0	0	369	246	3,144	499	0	0	1,042	409	898	2,348	402	6,758	226	796	7,553	**212**	2,078	2,176	**97**
2026	0	40	269	170	69	490	0	0	0	103	0	0	603	247	942	311	0	0	779	382	852	2,013	355	7,553	212	-1,071	6,482	**242**	2,176	2,131	**-44**
2027	860	40	269	170	70	490	0	0	1,614	103	0	0	316	243	3,130	485	0	0	945	317	783	2,045	362	6,482	242	1,084	7,567	**219**	2,131	2,255	**123**
2028	312	40	270	170	70	490	0	0	874	103	0	0	370	242	1,896	370	0	0	881	306	737	1,924	311	7,567	219	-28	7,539	**226**	2,255	2,314	**59**
2029	86	40	269	170	71	490	0	0	152	103	0	0	498	243	1,075	300	0	0	717	295	696	1,707	304	7,539	226	-632	6,907	**246**	2,314	2,310	**-5**
2030	1,058	40	269	170	71	490	0	0	1,476	103	0	0	147	238	3,022	421	0	0	1,019	266	742	2,026	337	6,907	246	995	7,902	**223**	2,310	2,393	**84**
2031	0	40	269	170	72	490	0	0	0	103	0	0	572	239	913	296	0	0	594	305	697	1,596	303	7,902	223	-683	7,219	**243**	2,393	2,386	**-8**
2032	63	40	270	170	72	490	0	0	80	103	0	0	570	239	1,055	311	0	0	373	312	691	1,375	331	7,219	243	-320	6,899	**252**	2,386	2,365	**-21**
2033	462	40	269	170	73	490	0	0	1,032	103	0	0	439	238	2,275	422	0	0	586	314	816	1,716	387	6,899	252	559	7,458	**237**	2,365	2,399	**34**
2034	0	40	269	170	73	490	0	0	0	103	0	0	477	239	819	266	0	0	456	344	759	1,559	355	7,458	237	-740	6,718	**253**	2,399	2,310	**-89**
2035	157	40	269	170	73	490	0	0	378	103	0	0	544	239	1,421	349	0	0	419	347	727	1,493	369	6,718	253	-71	6,647	**253**	2,310	2,290	**-20**

Table I-12a

Projected TDS Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	TDS Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,214	100	181	833	772	2,400	0	0	6,085	532	0	0	292	996	7,741	647	19,285	14,902	0	0	3,696	5,579	6,113	15,388	15,390	25,728	968	3,898	29,626	**829**	33,864	33,377	**-487**
2013	274	100	181	833	773	2,400	0	0	737	532	0	0	323	1,056	7,805	650	10,092	10,653	0	0	2,366	5,283	5,691	13,340	12,364	29,626	829	-3,248	26,378	**883**	33,377	31,666	**-1,711**
2014	2,277	100	181	833	764	2,400	0	0	4,962	532	0	0	309	1,030	5,898	648	14,391	12,225	0	0	3,004	4,371	5,819	13,193	12,232	26,378	883	1,198	27,575	**844**	31,666	31,659	**-7**
2015	8,986	100	181	833	756	2,400	0	0	3,952	532	0	0	321	924	7,949	632	22,145	13,986	0	0	3,654	5,444	5,995	15,094	13,133	27,575	844	7,051	34,626	**691**	31,659	32,511	**853**
2016	0	100	181	833	747	2,400	0	0	0	532	0	0	341	1,002	7,973	630	9,242	9,937	0	0	2,869	5,612	5,895	14,376	10,804	34,626	691	-5,134	29,492	**789**	32,511	31,644	**-867**
2017	0	100	181	833	739	2,400	0	0	0	532	0	0	351	1,028	6,506	629	7,777	8,673	0	0	1,336	4,660	5,570	11,566	10,976	29,492	789	-3,790	25,703	**840**	31,644	29,341	**-2,304**
2018	1,818	100	181	833	730	2,400	0	0	3,992	532	0	0	359	992	6,610	629	13,690	11,858	0	0	1,990	4,603	5,635	12,228	11,687	25,703	840	1,462	27,165	**799**	29,341	29,513	**172**
2019	265	100	181	833	722	2,400	0	0	718	532	0	0	350	1,033	8,284	632	10,519	10,728	0	0	2,032	5,266	6,714	14,012	13,015	27,165	799	-3,493	23,672	**846**	29,513	27,225	**-2,287**
2020	1,056	100	181	833	713	2,400	0	0	2,381	532	0	0	365	1,021	6,737	634	11,434	10,716	0	0	1,988	4,526	7,631	14,145	13,981	23,672	846	-2,711	20,961	**841**	27,225	23,960	**-3,265**
2021	0	100	181	833	714	2,400	0	0	0	532	0	0	399	1,033	7,303	639	8,597	9,440	0	0	1,158	4,606	6,841	12,605	13,085	20,961	841	-4,008	16,952	**881**	23,960	20,315	**-3,645**
2022	0	100	181	833	715	2,400	0	0	0	532	0	0	407	1,027	7,656	644	8,959	9,808	0	0	641	4,695	7,299	12,634	14,373	16,952	881	-3,676	13,277	**872**	20,315	15,751	**-4,565**
2023	2,221	100	181	833	715	2,400	0	0	4,160	532	0	0	399	955	7,733	644	15,409	13,142	0	0	1,778	4,860	8,634	15,272	16,008	13,277	872	137	13,414	**706**	15,751	12,884	**-2,867**
2024	6,294	100	181	833	716	2,400	0	0	5,602	532	0	0	415	857	7,784	636	20,992	14,661	0	0	3,291	5,093	9,390	17,773	13,910	13,414	706	3,219	16,632	**603**	12,884	13,634	**750**
2025	5,383	100	181	833	716	2,400	0	0	6,749	532	0	0	409	823	9,956	630	23,393	17,134	0	0	3,925	6,385	6,698	17,008	10,724	16,632	603	6,385	23,017	**640**	13,634	20,044	**6,410**
2026	0	100	181	833	717	2,400	0	0	0	532	0	0	382	920	9,740	635	11,020	11,430	0	0	2,752	6,115	6,755	15,622	11,207	23,017	640	-4,602	18,415	**809**	20,044	20,267	**224**
2027	5,440	100	181	833	717	2,400	0	0	6,946	532	0	0	317	855	7,174	629	20,776	14,812	0	0	3,643	5,043	6,144	14,830	12,312	18,415	809	5,946	24,361	**687**	20,267	22,767	**2,499**
2028	1,971	100	181	833	718	2,400	0	0	3,950	532	0	0	306	888	8,915	630	16,040	13,678	0	0	3,258	5,909	5,878	15,046	11,016	24,361	687	994	25,355	**738**	22,767	25,429	**2,662**
2029	541	100	181	833	719	2,400	0	0	1,290	532	0	0	295	956	8,093	634	11,117	10,917	0	0	2,680	5,351	5,672	13,703	11,055	25,355	738	-2,586	22,769	**817**	25,429	25,290	**-138**
2030	6,691	100	181	833	719	2,400	0	0	6,310	532	0	0	266	886	8,894	626	23,061	15,914	0	0	4,022	6,386	6,317	16,725	14,110	22,769	817	6,336	29,105	**685**	25,290	27,095	**1,804**
2031	0	100	181	833	720	2,400	0	0	0	532	0	0	305	950	8,493	631	9,698	10,237	0	0	2,131	5,727	5,715	13,573	10,652	29,105	685	-3,876	25,229	**778**	27,095	26,681	**-414**
2032	398	100	181	833	720	2,400	0	0	988	532	0	0	312	972	8,113	636	10,712	10,749	0	0	1,578	5,357	5,540	12,475	11,524	25,229	778	-1,763	23,467	**812**	26,681	25,906	**-775**
2033	2,920	100	181	833	721	2,400	0	0	4,407	532	0	0	314	921	6,391	635	14,934	12,051	0	0	2,214	4,529	6,770	13,513	12,473	23,467	812	1,421	24,888	**753**	25,906	25,483	**-422**
2034	0	100	181	833	721	2,400	0	0	0	532	0	0	344	974	6,724	640	7,970	8,868	0	0	1,679	4,641	5,741	12,061	10,630	24,888	753	-4,090	20,798	**839**	25,483	23,721	**-1,763**
2035	990	100	181	833	722	2,400	0	0	2,240	532	0	0	347	971	6,695	643	11,174	10,628	0	0	1,470	4,544	5,450	11,464	11,399	20,798	839	-291	20,507	**823**	23,721	22,951	**-770**

Table I-12b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	Chloride Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,214	40	181	95	772	275	0	0	6,085	65	0	0	292	111	7,741	39	19,285	1,541	0	0	3,696	5,579	6,113	15,388	1,636	25,728	103	3,898	29,626	87	3,600	3,505	-95
2013	274	40	181	95	773	275	0	0	737	65	0	0	323	115	7,805	40	10,092	866	0	0	2,366	5,283	5,691	13,340	1,298	29,626	87	-3,248	26,378	86	3,505	3,073	-432
2014	2,277	40	181	95	764	275	0	0	4,962	65	0	0	309	113	5,898	40	14,391	1,245	0	0	3,004	4,371	5,819	13,193	1,187	26,378	86	1,198	27,575	84	3,073	3,131	58
2015	8,986	40	181	95	756	275	0	0	3,952	65	0	0	321	105	7,949	41	22,145	1,634	0	0	3,654	5,444	5,995	15,094	1,299	27,575	84	7,051	34,626	74	3,131	3,466	335
2016	0	40	181	95	747	275	0	0	0	65	0	0	341	112	7,973	41	9,242	794	0	0	2,869	5,612	5,895	14,376	1,152	34,626	74	-5,134	29,492	78	3,466	3,109	-358
2017	0	40	181	95	739	275	0	0	0	65	0	0	351	113	6,506	40	7,777	710	0	0	1,336	4,660	5,570	11,566	1,078	29,492	78	-3,790	25,703	78	3,109	2,740	-369
2018	1,818	40	181	95	730	275	0	0	3,992	65	0	0	359	109	6,610	41	13,690	1,170	0	0	1,990	4,603	5,635	12,228	1,091	25,703	78	1,462	27,165	76	2,740	2,819	78
2019	265	40	181	95	722	275	0	0	718	65	0	0	350	111	8,284	41	10,519	890	0	0	2,032	5,266	6,714	14,012	1,243	27,165	76	-3,493	23,672	77	2,819	2,466	-353
2020	1,056	40	181	95	713	275	0	0	2,381	65	0	0	365	109	6,737	42	11,434	999	0	0	1,988	4,526	7,631	14,145	1,266	23,672	77	-2,711	20,961	77	2,466	2,198	-268
2021	0	40	181	95	714	275	0	0	0	65	0	0	399	108	7,303	43	8,597	773	0	0	1,158	4,606	6,841	12,605	1,201	20,961	77	-4,008	16,952	77	2,198	1,771	-427
2022	0	40	181	95	715	275	0	0	0	65	0	0	407	105	7,656	44	8,959	802	0	0	641	4,695	7,299	12,634	1,253	16,952	77	-3,676	13,277	73	1,771	1,320	-451
2023	2,221	40	181	95	715	275	0	0	4,160	65	0	0	399	100	7,733	44	15,409	1,303	0	0	1,778	4,860	8,634	15,272	1,341	13,277	73	137	13,414	70	1,320	1,281	-39
2024	6,294	40	181	95	716	275	0	0	5,602	65	0	0	415	95	7,784	45	20,992	1,666	0	0	3,291	5,093	9,390	17,773	1,383	13,414	70	3,219	16,632	69	1,281	1,564	283
2025	5,383	40	181	95	716	275	0	0	6,749	65	0	0	409	95	9,956	46	23,393	1,865	0	0	3,925	6,385	6,698	17,008	1,230	16,632	69	6,385	23,017	70	1,564	2,199	635
2026	0	40	181	95	717	275	0	0	0	65	0	0	382	103	9,740	47	11,020	971	0	0	2,752	6,115	6,755	15,622	1,229	23,017	70	-4,602	18,415	78	2,199	1,941	-258
2027	5,440	40	181	95	717	275	0	0	6,946	65	0	0	317	99	7,174	48	20,776	1,717	0	0	3,643	5,043	6,144	14,830	1,179	18,415	78	5,946	24,361	75	1,941	2,479	538
2028	1,971	40	181	95	718	275	0	0	3,950	65	0	0	306	103	8,915	49	16,040	1,385	0	0	3,258	5,909	5,878	15,046	1,199	24,361	75	994	25,355	77	2,479	2,664	186
2029	541	40	181	95	719	275	0	0	1,290	65	0	0	295	109	8,093	50	11,117	1,025	0	0	2,680	5,351	5,672	13,703	1,158	25,355	77	-2,586	22,769	82	2,664	2,531	-133
2030	6,691	40	181	95	719	275	0	0	6,310	65	0	0	266	106	8,894	50	23,061	1,864	0	0	4,022	6,386	6,317	16,725	1,412	22,769	82	6,336	29,105	75	2,531	2,983	451
2031	0	40	181	95	720	275	0	0	0	65	0	0	305	111	8,493	51	9,698	928	0	0	2,131	5,727	5,715	13,573	1,173	29,105	75	-3,876	25,229	80	2,983	2,738	-245
2032	398	40	181	95	720	275	0	0	988	65	0	0	312	111	8,113	52	10,712	1,020	0	0	1,578	5,357	5,540	12,475	1,183	25,229	80	-1,763	23,467	81	2,738	2,576	-162
2033	2,920	40	181	95	721	275	0	0	4,407	65	0	0	314	106	6,391	52	14,934	1,345	0	0	2,214	4,529	6,770	13,513	1,240	23,467	81	1,421	24,888	79	2,576	2,680	104
2034	0	40	181	95	721	275	0	0	0	65	0	0	344	111	6,724	53	7,970	831	0	0	1,679	4,641	5,741	12,061	1,118	24,888	79	-4,090	20,798	85	2,680	2,393	-287
2035	990	40	181	95	722	275	0	0	2,240	65	0	0	347	110	6,695	54	11,174	1,089	0	0	1,470	4,544	5,450	11,464	1,150	20,798	85	-291	20,507	84	2,393	2,332	-61

Table I-12c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Nitrate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	9	181	46	772	17	0	0	6,085	7	0	0	292	29	7,741	20	19,285	360	0	0	3,696	5,579	6,113	15,388	323	25,728	20	3,898	29,626	19	710	747	38
2013	274	9	181	46	773	17	0	0	737	7	0	0	323	31	7,805	20	10,092	265	0	0	2,366	5,283	5,691	13,340	277	29,626	19	-3,248	26,378	21	747	736	-11
2014	2,277	9	181	46	764	17	0	0	4,962	7	0	0	309	29	5,898	20	14,391	276	0	0	3,004	4,371	5,819	13,193	284	26,378	21	1,198	27,575	19	736	728	-8
2015	8,986	9	181	46	756	17	0	0	3,952	7	0	0	321	27	7,949	20	22,145	398	0	0	3,654	5,444	5,995	15,094	302	27,575	19	7,051	34,626	18	728	824	96
2016	0	9	181	46	747	17	0	0	0	7	0	0	341	29	7,973	20	9,242	255	0	0	2,869	5,612	5,895	14,376	274	34,626	18	-5,134	29,492	20	824	805	-19
2017	0	9	181	46	739	17	0	0	0	7	0	0	351	31	6,506	20	7,777	217	0	0	1,336	4,660	5,570	11,566	279	29,492	20	-3,790	25,703	21	805	742	-63
2018	1,818	9	181	46	730	17	0	0	3,992	7	0	0	359	29	6,610	20	13,690	279	0	0	1,990	4,603	5,635	12,228	296	25,703	21	1,462	27,165	20	742	725	-17
2019	265	9	181	46	722	17	0	0	718	7	0	0	350	31	8,284	20	10,519	274	0	0	2,032	5,266	6,714	14,012	320	27,165	20	-3,493	23,672	21	725	679	-46
2020	1,056	9	181	46	713	17	0	0	2,381	7	0	0	365	30	6,737	20	11,434	258	0	0	1,988	4,526	7,631	14,145	349	23,672	21	-2,711	20,961	21	679	588	-91
2021	0	9	181	46	714	17	0	0	0	7	0	0	399	31	7,303	20	8,597	240	0	0	1,158	4,606	6,841	12,605	321	20,961	21	-4,008	16,952	22	588	507	-82
2022	0	9	181	46	715	17	0	0	0	7	0	0	407	32	7,656	20	8,959	250	0	0	641	4,695	7,299	12,634	358	16,952	22	-3,676	13,277	22	507	398	-109
2023	2,221	9	181	46	715	17	0	0	4,160	7	0	0	399	29	7,733	20	15,409	316	0	0	1,778	4,860	8,634	15,272	405	13,277	22	137	13,414	17	398	309	-89
2024	6,294	9	181	46	716	17	0	0	5,602	7	0	0	415	25	7,784	19	20,992	376	0	0	3,291	5,093	9,390	17,773	334	13,414	17	3,219	16,632	16	309	351	42
2025	5,383	9	181	46	716	17	0	0	6,749	7	0	0	409	23	9,956	19	23,393	429	0	0	3,925	6,385	6,698	17,008	276	16,632	16	6,385	23,017	16	351	504	153
2026	0	9	181	46	717	17	0	0	0	7	0	0	382	27	9,740	19	11,020	295	0	0	2,752	6,115	6,755	15,622	282	23,017	16	-4,602	18,415	21	504	517	13
2027	5,440	9	181	46	717	17	0	0	6,946	7	0	0	317	24	7,174	19	20,776	355	0	0	3,643	5,043	6,144	14,830	314	18,415	21	5,946	24,361	17	517	558	41
2028	1,971	9	181	46	718	17	0	0	3,950	7	0	0	306	25	8,915	19	16,040	329	0	0	3,258	5,909	5,878	15,046	270	24,361	17	994	25,355	18	558	616	59
2029	541	9	181	46	719	17	0	0	1,290	7	0	0	295	27	8,093	19	11,117	265	0	0	2,680	5,351	5,672	13,703	268	25,355	18	-2,586	22,769	20	616	614	-3
2030	6,691	9	181	46	719	17	0	0	6,310	7	0	0	266	25	8,894	19	23,061	403	0	0	4,022	6,386	6,317	16,725	342	22,769	20	6,336	29,105	17	614	675	61
2031	0	9	181	46	720	17	0	0	0	7	0	0	305	27	8,493	19	9,698	255	0	0	2,131	5,727	5,715	13,573	265	29,105	17	-3,876	25,229	19	675	664	-10
2032	398	9	181	46	720	17	0	0	988	7	0	0	312	28	8,113	19	10,712	261	0	0	1,578	5,357	5,540	12,475	287	25,229	19	-1,763	23,467	20	664	638	-26
2033	2,920	9	181	46	721	17	0	0	4,407	7	0	0	314	26	6,391	19	14,934	278	0	0	2,214	4,529	6,770	13,513	307	23,467	20	1,421	24,888	18	638	609	-29
2034	0	9	181	46	721	17	0	0	0	7	0	0	344	28	6,724	19	7,970	212	0	0	1,679	4,641	5,741	12,061	254	24,888	18	-4,090	20,798	20	609	567	-42
2035	990	9	181	46	722	17	0	0	2,240	7	0	0	347	28	6,695	19	11,174	244	0	0	1,470	4,544	5,450	11,464	272	20,798	20	-291	20,507	19	567	539	-28

Table I-12d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Sulfate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	40	181	178	772	512	0	0	6,085	103	0	0	292	222	7,741	266	19,285	4,548	0	0	3,696	5,579	6,113	15,388	3,571	25,728	225	3,898	29,626	219	7,858	8,835	977
2013	274	40	181	178	773	512	0	0	737	103	0	0	323	243	7,805	266	10,092	3,633	0	0	2,366	5,283	5,691	13,340	3,273	29,626	219	-3,248	26,378	256	8,835	9,195	360
2014	2,277	40	181	178	764	512	0	0	4,962	103	0	0	309	240	5,898	265	14,391	3,616	0	0	3,004	4,371	5,819	13,193	3,552	26,378	256	1,198	27,575	247	9,195	9,259	64
2015	8,986	40	181	178	756	512	0	0	3,952	103	0	0	321	220	7,949	257	22,145	4,488	0	0	3,654	5,444	5,995	15,094	3,841	27,575	247	7,051	34,626	210	9,259	9,906	647
2016	0	40	181	178	747	512	0	0	0	103	0	0	341	244	7,973	257	9,242	3,467	0	0	2,869	5,612	5,895	14,376	3,292	34,626	210	-5,134	29,492	251	9,906	10,081	175
2017	0	40	181	178	739	512	0	0	0	103	0	0	351	257	6,506	258	7,777	2,961	0	0	1,336	4,660	5,570	11,566	3,497	29,492	251	-3,790	25,703	273	10,081	9,545	-536
2018	1,818	40	181	178	730	512	0	0	3,992	103	0	0	359	251	6,610	257	13,690	3,637	0	0	1,990	4,603	5,635	12,228	3,802	25,703	273	1,462	27,165	254	9,545	9,380	-165
2019	265	40	181	178	722	512	0	0	718	103	0	0	350	266	8,284	257	10,519	3,682	0	0	2,032	5,266	6,714	14,012	4,137	27,165	254	-3,493	23,672	277	9,380	8,925	-455
2020	1,056	40	181	178	713	512	0	0	2,381	103	0	0	365	267	6,737	257	11,434	3,413	0	0	1,988	4,526	7,631	14,145	4,583	23,672	277	-2,711	20,961	272	8,925	7,755	-1,171
2021	0	40	181	178	714	512	0	0	0	103	0	0	399	276	7,303	257	8,597	3,245	0	0	1,158	4,606	6,841	12,605	4,235	20,961	272	-4,008	16,952	293	7,755	6,764	-990
2022	0	40	181	178	715	512	0	0	0	103	0	0	407	280	7,656	258	8,959	3,380	0	0	641	4,695	7,299	12,634	4,786	16,952	293	-3,676	13,277	297	6,764	5,359	-1,405
2023	2,221	40	181	178	715	512	0	0	4,160	103	0	0	399	258	7,733	256	15,409	4,077	0	0	1,778	4,860	8,634	15,272	5,447	13,277	297	137	13,414	219	5,359	3,989	-1,370
2024	6,294	40	181	178	716	512	0	0	5,602	103	0	0	415	226	7,784	251	20,992	4,447	0	0	3,291	5,093	9,390	17,773	4,307	13,414	219	3,219	16,632	183	3,989	4,130	140
2025	5,383	40	181	178	716	512	0	0	6,749	103	0	0	409	212	9,956	246	23,393	5,230	0	0	3,925	6,385	6,698	17,008	3,248	16,632	183	6,385	23,017	195	4,130	6,112	1,982
2026	0	40	181	178	717	512	0	0	0	103	0	0	382	242	9,740	247	11,020	3,941	0	0	2,752	6,115	6,755	15,622	3,417	23,017	195	-4,602	18,415	265	6,112	6,635	524
2027	5,440	40	181	178	717	512	0	0	6,946	103	0	0	317	219	7,174	243	20,776	4,275	0	0	3,643	5,043	6,144	14,830	4,031	18,415	265	5,946	24,361	208	6,635	6,879	244
2028	1,971	40	181	178	718	512	0	0	3,950	103	0	0	306	226	8,915	242	16,040	4,233	0	0	3,258	5,909	5,878	15,046	3,329	24,361	208	994	25,355	226	6,879	7,783	904
2029	541	40	181	178	719	512	0	0	1,290	103	0	0	295	246	8,093	243	11,117	3,522	0	0	2,680	5,351	5,672	13,703	3,384	25,355	226	-2,586	22,769	256	7,783	7,922	138
2030	6,691	40	181	178	719	512	0	0	6,310	103	0	0	266	223	8,894	238	23,061	4,747	0	0	4,022	6,386	6,317	16,725	4,420	22,769	256	6,336	29,105	208	7,922	8,249	328
2031	0	40	181	178	720	512	0	0	0	103	0	0	305	243	8,493	239	9,698	3,404	0	0	2,131	5,727	5,715	13,573	3,243	29,105	208	-3,876	25,229	245	8,249	8,410	161
2032	398	40	181	178	720	512	0	0	988	103	0	0	312	252	8,113	239	10,712	3,453	0	0	1,578	5,357	5,540	12,475	3,633	25,229	245	-1,763	23,467	258	8,410	8,231	-180
2033	2,920	40	181	178	721	512	0	0	4,407	103	0	0	314	237	6,391	238	14,934	3,487	0	0	2,214	4,529	6,770	13,513	3,963	23,467	258	1,421	24,888	229	8,231	7,755	-476
2034	0	40	181	178	721	512	0	0	0	103	0	0	344	253	6,724	239	7,970	2,847	0	0	1,679	4,641	5,741	12,061	3,235	24,888	229	-4,090	20,798	261	7,755	7,367	-388
2035	990	40	181	178	722	512	0	0	2,240	103	0	0	347	253	6,695	239	11,174	3,205	0	0	1,470	4,544	5,450	11,464	3,540	20,798	261	-291	20,507	252	7,367	7,032	-335

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-13a

Projected TDS Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	TDS Conc. for Saugus WRP Infiltration	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Upstream Tributaries	TDS Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	TDS Conc. for Inflow From MZ1	Inflow From MZ3	TDS Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	100	148	783	666	2,256	0	4,991	4,100	671	11,675	671	0	0	14,829	722	5,579	700	-5,182	700	36,707	32,199	13,388	6,543	1,102	7,025	2,202	30,260	29,526	78,359	745	6,447	84,807	711	79,349	82,022	2,673
2013	318	100	147	783	667	2,256	0	4,991	4,100	671	623	671	0	0	14,012	747	5,283	700	-1,853	700	23,297	24,048	13,370	5,290	763	7,327	2,152	28,902	27,215	84,807	711	-5,606	79,201	732	82,022	78,855	-3,168
2014	2,643	100	147	783	643	2,256	0	4,991	4,100	671	9,291	671	0	0	14,762	738	4,371	700	-1,307	700	34,649	32,435	18,936	4,129	642	8,008	1,988	33,703	32,916	79,201	732	947	80,148	719	78,855	78,373	-481
2015	10,432	100	147	783	618	2,256	0	4,991	4,100	671	7,564	671	0	0	14,876	673	5,444	700	-2,935	700	40,247	30,110	13,243	6,633	1,215	7,370	2,077	30,538	28,674	80,148	719	9,708	89,856	653	78,373	79,809	1,436
2016	0	100	148	783	594	2,256	0	4,991	4,100	671	0	671	0	0	15,133	709	5,612	700	-1,341	700	24,247	24,365	13,198	6,166	1,189	7,743	2,067	30,363	25,912	89,856	653	-6,116	83,740	687	79,809	78,262	-1,547
2017	0	100	147	783	570	2,256	0	4,991	4,100	671	960	671	0	0	15,667	733	4,660	700	848	700	26,952	27,379	18,747	3,885	533	8,261	1,907	33,333	30,654	83,740	687	-6,381	77,359	713	78,262	74,987	-3,275
2018	2,110	100	147	783	546	2,256	0	4,991	4,100	671	6,619	671	0	0	15,809	730	4,603	700	-1,083	700	32,851	30,928	18,683	3,363	368	8,124	1,874	32,412	31,061	77,359	713	439	77,797	708	74,987	74,853	-134
2019	307	100	147	783	521	2,256	0	4,991	4,100	671	1,273	671	0	0	14,351	742	5,266	700	-3,014	700	22,951	23,318	12,990	3,153	354	7,742	2,770	27,009	25,646	77,797	708	-4,057	73,740	723	74,853	72,525	-2,329
2020	1,226	100	148	783	497	2,256	1	4,991	4,100	671	2,886	671	0	0	15,098	738	4,526	700	-549	700	27,934	27,175	18,582	1,993	233	8,101	3,847	32,757	31,987	73,740	723	-4,823	68,917	723	72,525	67,712	-4,812
2021	0	100	147	783	498	2,256	5	4,991	4,100	671	1,606	671	0	0	15,548	749	4,606	700	-1,231	700	25,280	25,972	18,557	1,039	145	7,777	2,964	30,483	29,807	68,917	723	-5,203	63,715	737	67,712	63,877	-3,835
2022	0	100	147	783	500	2,256	8	4,991	4,100	671	1,788	671	0	0	15,646	756	4,695	700	-1,738	700	25,145	26,016	18,557	446	103	7,575	3,913	30,594	30,569	63,715	737	-5,450	58,265	749	63,877	59,324	-4,553
2023	2,579	100	147	783	501	2,256	10	4,991	4,100	671	7,120	671	0	0	15,878	730	4,860	700	-3,762	700	31,433	29,153	18,557	116	59	7,195	5,828	31,755	32,272	58,265	749	-322	57,943	713	59,324	56,205	-3,119
2024	7,308	100	148	783	502	2,256	10	4,991	4,100	671	11,931	671	0	0	16,430	682	5,093	700	-6,421	700	39,100	31,358	18,582	89	57	6,910	6,185	31,823	30,814	57,943	713	7,277	65,220	640	56,205	56,749	544
2025	6,249	100	147	783	503	2,256	11	4,991	4,100	671	15,341	671	0	0	16,565	679	6,385	700	-11,665	700	37,637	30,636	12,927	1,542	341	6,661	3,074	24,545	21,060	65,220	640	13,092	78,312	623	56,749	66,325	9,576
2026	0	100	147	783	505	2,256	11	4,991	4,100	671	1,357	671	0	0	15,076	709	6,115	700	-6,621	700	20,691	20,808	12,927	2,478	340	7,167	3,302	26,215	21,914	78,312	623	-5,524	72,788	659	66,325	65,219	-1,106
2027	6,316	100	147	783	506	2,256	12	4,991	4,100	671	18,344	671	0	0	15,461	688	5,043	700	-7,168	700	42,761	35,569	18,557	3,486	848	7,540	2,460	32,890	28,710	72,788	659	9,871	82,658	641	65,219	72,078	6,859
2028	2,288	100	148	783	507	2,256	12	4,991	4,100	671	5,933	671	0	0	14,581	700	5,909	700	-6,388	700	27,089	24,684	12,945	3,997	959	7,278	2,396	27,575	23,209	82,658	641	-486	82,172	658	72,078	73,553	1,475
2029	628	100	147	783	508	2,256	12	4,991	4,100	671	1,062	671	0	0	13,788	719	5,351	700	-3,217	700	22,379	22,100	12,927	4,157	668	7,520	2,351	27,622	24,127	82,172	658	-5,243	76,929	684	73,553	71,526	-2,027
2030	7,768	100	147	783	510	2,256	12	4,991	4,100	671	10,641	671	0	0	16,691	697	6,386	700	-6,483	700	39,772	32,026	12,927	6,759	1,511	7,590	2,348	31,135	27,543	76,929	684	8,637	85,566	653	71,526	76,009	4,483
2031	0	100	147	783	511	2,256	12	4,991	4,100	671	76	671	0	0	15,167	721	5,727	700	-2,158	700	23,581	23,881	12,927	5,605	949	7,347	2,196	29,024	24,939	85,566	653	-5,443	80,123	688	76,009	74,951	-1,058
2032	462	100	148	783	512	2,256	12	4,991	4,100	671	649	671	0	0	14,269	735	5,357	700	-1,941	700	23,568	23,708	12,945	4,630	601	7,722	2,213	28,111	25,734	80,123	688	-4,543	75,580	710	74,951	72,925	-2,026
2033	3,390	100	147	783	513	2,256	12	4,991	4,100	671	9,251	671	0	0	14,985	719	4,529	700	-1,642	700	35,286	31,858	18,557	3,599	451	8,143	2,652	33,403	31,794	75,580	710	1,883	77,463	693	72,925	72,989	65
2034	0	100	147	783	515	2,256	12	4,991	4,100	671	1,335	671	0	0	15,452	736	4,641	700	-826	700	25,375	25,873	18,557	2,424	274	8,055	2,052	31,362	29,293	77,463	693	-5,987	71,476	716	72,989	69,569	-3,420
2035	1,149	100	147	783	516	2,256	12	4,991	4,100	671	2,874	671	0	0	15,522	738	4,544	700	-670	700	28,194	27,602	18,557	2,279	233	7,800	1,914	30,783	29,735	71,476	716	-2,589	68,887	720	69,569	67,436	-2,133

Projected Chloride Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	Chloride Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Chloride Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Chloride Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]
2012	4,893	40	148	109	666	314	0	694	4,100	126	11,675	89	0	0	14,829	87	5,579	28	-5,182	28	36,707	4,450
2013	318	40	147	109	667	314	0	694	4,100	126	623	89	0	0	14,012	87	5,283	28	-1,853	28	23,297	2,894
2014	2,643	40	147	109	643	314	0	694	4,100	126	9,291	89	0	0	14,762	87	4,371	28	-1,307	28	34,649	4,136
2015	10,432	40	147	109	618	314	0	694	4,100	126	7,564	89	0	0	14,876	85	5,444	28	-2,935	28	40,247	4,284
2016	0	40	148	109	594	314	0	694	4,100	126	0	89	0	0	15,133	86	5,612	28	-1,341	28	24,247	2,915
2017	0	40	147	109	570	314	0	694	4,100	126	960	89	0	0	15,667	87	4,660	28	848	28	26,952	3,152
2018	2,110	40	147	109	546	314	0	694	4,100	126	6,619	89	0	0	15,809	87	4,603	28	-1,083	28	32,851	3,867
2019	307	40	147	109	521	314	0	694	4,100	126	1,273	89	0	0	14,351	85	5,266	28	-3,014	28	22,951	2,870
2020	1,226	40	148	109	497	314	1	694	4,100	126	2,886	89	0	0	15,098	85	4,526	28	-549	28	27,934	3,246
2021	0	40	147	109	498	314	5	694	4,100	126	1,606	89	0	0	15,548	85	4,606	28	-1,231	28	25,280	3,065
2022	0	40	147	109	500	314	8	694	4,100	126	1,788	89	0	0	15,646	86	4,695	28	-1,738	28	25,145	3,099
2023	2,579	40	147	109	501	314	10	694	4,100	126	7,120	89	0	0	15,878	85	4,860	28	-3,762	28	31,433	3,821
2024	7,308	40	148	109	502	314	10	694	4,100	126	11,931	89	0	0	16,430	84	5,093	28	-6,421	28	39,100	4,611
2025	6,249	40	147	109	503	314	11	694	4,100	126	15,341	89	0	0	16,565	85	6,385	28	-11,665	28	37,637	4,867
2026	0	40	147	109	505	314	11	694	4,100	126	1,357	89	0	0	15,076	85	6,115	28	-6,621	28	20,691	2,844
2027	6,316	40	147	109	506	314	12	694	4,100	126	18,344	89	0	0	15,461	85	5,043	28	-7,168	28	42,761	5,212
2028	2,288	40	148	109	507	314	12	694	4,100	126	5,933	89	0	0	14,581	84	5,909	28	-6,388	28	27,089	3,435
2029	628	40	147	109	508	314	12	694	4,100	126	1,062	89	0	0	13,788	84	5,351	28	-3,217	28	22,379	2,764
2030	7,768	40	147	109	510	314	12	694	4,100	126	10,641	89	0	0	16,691	88	6,386	28	-6,483	28	39,772	4,663
2031	0	40	147	109	511	314	12	694	4,100	126	76	89	0	0	15,167	88	5,727	28	-2,158	28	23,581	2,908
2032	462	40	148	109	512	314	12	694	4,100	126	649	89	0	0	14,269	87	5,357	28	-1,941	28	23,568	2,872
2033	3,390	40	147	109	513	314	12	694	4,100	126	9,251	89	0	0	14,985	86	4,529	28	-1,642	28	35,286	4,122
2034	0	40	147	109	515	314	12	694	4,100	126	1,335	89	0	0	15,452	86	4,641	28	-826	28	25,375	3,071
2035	1,149	40	147	109	516	314	12	694	4,100	126	2,874	89	0	0	15,522	86	4,544	28	-670	28	28,194	3,331

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	13,388	6,543	1,102	7,025	2,202	30,260	3,811	78,359	96	6,447	84,807	94	10,241	10,880	639
2013	13,370	5,290	763	7,327	2,152	28,902	3,610	84,807	94	-5,606	79,201	94	10,880	10,165	-716
2014	18,936	4,129	642	8,008	1,988	33,703	4,243	79,201	94	947	80,148	92	10,165	10,058	-107
2015	13,243	6,633	1,215	7,370	2,077	30,538	3,680	80,148	92	9,708	89,856	87	10,058	10,662	604
2016	13,198	6,166	1,189	7,743	2,067	30,363	3,462	89,856	87	-6,116	83,740	89	10,662	10,115	-547
2017	18,747	3,885	533	8,261	1,907	33,333	3,962	83,740	89	-6,381	77,359	88	10,115	9,305	-810
2018	18,683	3,363	368	8,124	1,874	32,412	3,854	77,359	88	439	77,797	88	9,305	9,318	13
2019	12,990	3,153	354	7,742	2,770	27,009	3,192	77,797	88	-4,057	73,740	90	9,318	8,995	-323
2020	18,582	1,993	233	8,101	3,847	32,757	3,967	73,740	90	-4,823	68,917	88	8,995	8,274	-721
2021	18,557	1,039	145	7,777	2,964	30,483	3,642	68,917	88	-5,203	63,715	89	8,274	7,697	-577
2022	18,557	446	103	7,575	3,913	30,594	3,683	63,715	89	-5,450	58,265	90	7,697	7,112	-584
2023	18,557	116	59	7,195	5,828	31,755	3,869	58,265	90	-322	57,943	90	7,112	7,064	-48
2024	18,582	89	57	6,910	6,185	31,823	3,873	57,943	90	7,277	65,220	88	7,064	7,803	738
2025	12,927	1,542	341	6,661	3,074	24,545	2,896	65,220	88	13,092	78,312	92	7,803	9,774	1,972
2026	12,927	2,478	340	7,167	3,302	26,215	3,230	78,312	92	-5,524	72,788	95	9,774	9,389	-385
2027	18,557	3,486	848	7,540	2,460	32,890	4,133	72,788	95	9,871	82,658	93	9,389	10,467	1,078
2028	12,945	3,997	959	7,278	2,396	27,575	3,371	82,658	93	-486	82,172	94	10,467	10,532	65
2029	12,927	4,157	668	7,520	2,351	27,622	3,455	82,172	94	-5,243	76,929	94	10,532	9,841	-691
2030	12,927	6,759	1,511	7,590	2,348	31,135	3,790	76,929	94	8,637	85,566	92	9,841	10,715	873
2031	12,927	5,605	949	7,347	2,196	29,024	3,516	85,566	92	-5,443	80,123	93	10,715	10,107	-608
2032	12,945	4,630	601	7,722	2,213	28,111	3,470	80,123	93	-4,543	75,580	93	10,107	9,508	-598
2033	18,557	3,599	451	8,143	2,652	33,403	4,145	75,580	93	1,883	77,463	90	9,508	9,485	-23
2034	18,557	2,424	274	8,055	2,052	31,362	3,807	77,463	90	-5,987	71,476	90	9,485	8,749	-736
2035	18,557	2,279	233	7,800	1,914	30,783	3,740	71,476	90	-2,589	68,887	89	8,749	8,341	-408

Table I-13c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	Nitrate Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Nitrate Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Nitrate Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	9	148	44	666	16	0	35	4,100	20	11,675	20	0	0	14,829	19	5,579	20	-5,182	20	36,707	912	13,388	6,543	1,102	7,025	2,202	30,260	803	78,359	20	6,447	84,807	20	2,158	2,267	110
2013	318	9	147	44	667	16	0	35	4,100	20	623	20	0	0	14,012	19	5,283	20	-1,853	20	23,297	620	13,370	5,290	763	7,327	2,152	28,902	752	84,807	20	-5,606	79,201	20	2,267	2,135	-132
2014	2,643	9	147	44	643	16	0	35	4,100	20	9,291	20	0	0	14,762	19	4,371	20	-1,307	20	34,649	887	18,936	4,129	642	8,008	1,988	33,703	891	79,201	20	947	80,148	20	2,135	2,131	-4
2015	10,432	9	147	44	618	16	0	35	4,100	20	7,564	20	0	0	14,876	18	5,444	20	-2,935	20	40,247	904	13,243	6,633	1,215	7,370	2,077	30,538	780	80,148	20	9,708	89,856	18	2,131	2,255	125
2016	0	9	148	44	594	16	0	35	4,100	20	0	20	0	0	15,133	19	5,612	20	-1,341	20	24,247	638	13,198	6,166	1,189	7,743	2,067	30,363	732	89,856	18	-6,116	83,740	19	2,255	2,161	-94
2017	0	9	147	44	570	16	0	35	4,100	20	960	20	0	0	15,667	19	4,660	20	848	20	26,952	715	18,747	3,885	533	8,261	1,907	33,333	846	83,740	19	-6,381	77,359	19	2,161	2,030	-131
2018	2,110	9	147	44	546	16	0	35	4,100	20	6,619	20	0	0	15,809	19	4,603	20	-1,083	20	32,851	841	18,683	3,363	368	8,124	1,874	32,412	841	77,359	19	439	77,797	19	2,030	2,030	0
2019	307	9	147	44	521	16	0	35	4,100	20	1,273	20	0	0	14,351	19	5,266	20	-3,014	20	22,951	603	12,990	3,153	354	7,742	2,770	27,009	695	77,797	19	-4,057	73,740	19	2,030	1,937	-93
2020	1,226	9	148	44	497	16	1	35	4,100	20	2,886	20	0	0	15,098	19	4,526	20	-549	20	27,934	720	18,582	1,993	233	8,101	3,847	32,757	854	73,740	19	-4,823	68,917	19	1,937	1,803	-134
2021	0	9	147	44	498	16	5	35	4,100	20	1,606	20	0	0	15,548	19	4,606	20	-1,231	20	25,280	666	18,557	1,039	145	7,777	2,964	30,483	794	68,917	19	-5,203	63,715	19	1,803	1,675	-128
2022	0	9	147	44	500	16	8	35	4,100	20	1,788	20	0	0	15,646	19	4,695	20	-1,738	20	25,145	661	18,557	446	103	7,575	3,913	30,594	802	63,715	19	-5,450	58,265	19	1,675	1,535	-140
2023	2,579	9	147	44	501	16	10	35	4,100	20	7,120	20	0	0	15,878	19	4,860	20	-3,762	20	31,433	787	18,557	116	59	7,195	5,828	31,755	835	58,265	19	-322	57,943	19	1,535	1,487	-48
2024	7,308	9	148	44	502	16	10	35	4,100	20	11,931	20	0	0	16,430	18	5,093	20	-6,421	20	39,100	919	18,582	89	57	6,910	6,185	31,823	815	57,943	19	7,277	65,220	18	1,487	1,591	104
2025	6,249	9	147	44	503	16	11	35	4,100	20	15,341	20	0	0	16,565	19	6,385	20	-11,665	20	37,637	903	12,927	1,542	341	6,661	3,074	24,545	590	65,220	18	13,092	78,312	18	1,591	1,904	313
2026	0	9	147	44	505	16	11	35	4,100	20	1,357	20	0	0	15,076	19	6,115	20	-6,621	20	20,691	548	12,927	2,478	340	7,167	3,302	26,215	629	78,312	18	-5,524	72,788	18	1,904	1,822	-81
2027	6,316	9	147	44	506	16	12	35	4,100	20	18,344	20	0	0	15,461	19	5,043	20	-7,168	20	42,761	1,047	18,557	3,486	848	7,540	2,460	32,890	802	72,788	18	9,871	82,658	18	1,822	2,067	245
2028	2,288	9	148	44	507	16	12	35	4,100	20	5,933	20	0	0	14,581	19	5,909	20	-6,388	20	27,089	687	12,945	3,997	959	7,278	2,396	27,575	666	82,658	18	-486	82,172	19	2,067	2,089	22
2029	628	9	147	44	508	16	12	35	4,100	20	1,062	20	0	0	13,788	19	5,351	20	-3,217	20	22,379	588	12,927	4,157	668	7,520	2,351	27,622	685	82,172	19	-5,243	76,929	19	2,089	1,992	-97
2030	7,768	9	147	44	510	16	12	35	4,100	20	10,641	20	0	0	16,691	19	6,386	20	-6,483	20	39,772	951	12,927	6,759	1,511	7,590	2,348	31,135	767	76,929	19	8,637	85,566	19	1,992	2,176	184
2031	0	9	147	44	511	16	12	35	4,100	20	76	20	0	0	15,167	20	5,727	20	-2,158	20	23,581	634	12,927	5,605	949	7,347	2,196	29,024	714	85,566	19	-5,443	80,123	19	2,176	2,096	-80
2032	462	9	148	44	512	16	12	35	4,100	20	649	20	0	0	14,269	20	5,357	20	-1,941	20	23,568	626	12,945	4,630	601	7,722	2,213	28,111	720	80,123	19	-4,543	75,580	19	2,096	2,003	-93
2033	3,390	9	147	44	513	16	12	35	4,100	20	9,251	20	0	0	14,985	19	4,529	20	-1,642	20	35,286	893	18,557	3,599	451	8,143	2,652	33,403	873	75,580	19	1,883	77,463	19	2,003	2,022	20
2034	0	9	147	44	515	16	12	35	4,100	20	1,335	20	0	0	15,452	19	4,641	20	-826	20	25,375	676	18,557	2,424	274	8,055	2,052	31,362	812	77,463	19	-5,987	71,476	19	2,022	1,887	-135
2035	1,149	9	147	44	516	16	12	35	4,100	20	2,874	20	0	0	15,522	19	4,544	20	-670	20	28,194	733	18,557	2,279	233	7,800	1,914	30,783	806	71,476	19	-2,589	68,887	19	1,887	1,813	-74

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	Sulfate Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Sulfate Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Sulfate Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	40	148	143	666	413	0	913	4,100	179	11,675	179	0	0	14,829	152	5,579	235	-5,182	235	36,707	7,687	13,388	6,543	1,102	7,025	2,202	30,260	7,598	78,359	192	6,447	84,807	178	20,419	20,509	89
2013	318	40	147	143	667	413	0	913	4,100	179	623	179	0	0	14,012	157	5,283	235	-1,853	235	23,297	5,660	13,370	5,290	763	7,327	2,152	28,902	6,805	84,807	178	-5,606	79,201	180	20,509	19,364	-1,145
2014	2,643	40	147	143	643	413	0	913	4,100	179	9,291	179	0	0	14,762	153	4,371	235	-1,307	235	34,649	7,838	18,936	4,129	642	8,008	1,988	33,703	8,083	79,201	180	947	80,148	175	19,364	19,119	-245
2015	10,432	40	147	143	618	413	0	913	4,100	179	7,564	179	0	0	14,876	137	5,444	235	-2,935	235	40,247	7,337	13,243	6,633	1,215	7,370	2,077	30,538	6,995	80,148	175	9,708	89,856	159	19,119	19,461	342
2016	0	40	148	143	594	413	0	913	4,100	179	0	179	0	0	15,133	145	5,612	235	-1,341	235	24,247	5,713	13,198	6,166	1,189	7,743	2,067	30,363	6,319	89,856	159	-6,116	83,740	166	19,461	18,856	-606
2017	0	40	147	143	570	413	0	913	4,100	179	960	179	0	0	15,667	150	4,660	235	848	235	26,952	6,536	18,747	3,885	533	8,261	1,907	33,333	7,385	83,740	166	-6,381	77,359	171	18,856	18,006	-849
2018	2,110	40	147	143	546	413	0	913	4,100	179	6,619	179	0	0	15,809	150	4,603	235	-1,083	235	32,851	7,389	18,683	3,363	368	8,124	1,874	32,412	7,459	77,359	171	439	77,797	170	18,006	17,937	-69
2019	307	40	147	143	521	413	0	913	4,100	179	1,273	179	0	0	14,351	154	5,266	235	-3,014	235	22,951	5,367	12,990	3,153	354	7,742	2,770	27,009	6,146	77,797	170	-4,057	73,740	171	17,937	17,158	-779
2020	1,226	40	148	143	497	413	1	913	4,100	179	2,886	179	0	0	15,098	153	4,526	235	-549	235	27,934	6,478	18,582	1,993	233	8,101	3,847	32,757	7,568	73,740	171	-4,823	68,917	171	17,158	16,068	-1,090
2021	0	40	147	143	498	413	5	913	4,100	179	1,606	179	0	0	15,548	154	4,606	235	-1,231	235	25,280	6,032	18,557	1,039	145	7,777	2,964	30,483	7,073	68,917	171	-5,203	63,715	173	16,068	15,026	-1,042
2022	0	40	147	143	500	413	8	913	4,100	179	1,788	179	0	0	15,646	154	4,695	235	-1,738	235	25,145	5,963	18,557	446	103	7,575	3,913	30,594	7,191	63,715	173	-5,450	58,265	174	15,026	13,799	-1,228
2023	2,579	40	147	143	501	413	10	913	4,100	179	7,120	179	0	0	15,878	148	4,860	235	-3,762	235	31,433	6,727	18,557	116	59	7,195	5,828	31,755	7,506	58,265	174	-322	57,943	165	13,799	13,019	-779
2024	7,308	40	148	143	502	413	10	913	4,100	179	11,931	179	0	0	16,430	138	5,093	235	-6,421	235	39,100	7,261	18,582	89	57	6,910	6,185	31,823	7,138	57,943	165	7,277	65,220	148	13,019	13,143	123
2025	6,249	40	147	143	503	413	11	913	4,100	179	15,341	179	0	0	16,565	136	6,385	235	-11,665	235	37,637	6,753	12,927	1,542	341	6,661	3,074	24,545	4,877	65,220	148	13,092	78,312	141	13,143	15,018	1,876
2026	0	40	147	143	505	413	11	913	4,100	179	1,357	179	0	0	15,076	145	6,115	235	-6,621	235	20,691	4,457	12,927	2,478	340	7,167	3,302	26,215	4,962	78,312	141	-5,524	72,788	147	15,018	14,513	-505
2027	6,316	40	147	143	506	413	12	913	4,100	179	18,344	179	0	0	15,461	141	5,043	235	-7,168	235	42,761	8,394	18,557	3,486	848	7,540	2,460	32,890	6,389	72,788	147	9,871	82,658	147	14,513	16,518	2,005
2028	2,288	40	148	143	507	413	12	913	4,100	179	5,933	179	0	0	14,581	146	5,909	235	-6,388	235	27,089	5,635	12,945	3,997	959	7,278	2,396	27,575	5,319	82,658	147	-486	82,172	151	16,518	16,834	316
2029	628	40	147	143	508	413	12	913	4,100	179	1,062	179	0	0	13,788	152	5,351	235	-3,217	235	22,379	5,140	12,927	4,157	668	7,520	2,351	27,622	5,522	82,172	151	-5,243	76,929	157	16,834	16,452	-382
2030	7,768	40	147	143	510	413	12	913	4,100	179	10,641	179	0	0	16,691	137	6,386	235	-6,483	235	39,772	7,417	12,927	6,759	1,511	7,590	2,348	31,135	6,335	76,929	157	8,637	85,566	151	16,452	17,534	1,082
2031	0	40	147	143	511	413	12	913	4,100	179	76	179	0	0	15,167	146	5,727	235	-2,158	235	23,581	5,485	12,927	5,605	949	7,347	2,196	29,024	5,753	85,566	151	-5,443	80,123	158	17,534	17,265	-268
2032	462	40	148	143	512	413	12	913	4,100	179	649	179	0	0	14,269	150	5,357	235	-1,941	235	23,568	5,515	12,945	4,630	601	7,722	2,213	28,111	5,928	80,123	158	-4,543	75,580	164	17,265	16,852	-413
2033	3,390	40	147	143	513	413	12	913	4,100	179	9,251	179	0	0	14,985	146	4,529	235	-1,642	235	35,286	7,658	18,557	3,599	451	8,143	2,652	33,403	7,347	75,580	164	1,883	77,463	163	16,852	17,163	311
2034	0	40	147	143	515	413	12	913	4,100	179	1,335	179	0	0	15,452	151	4,641	235	-826	235	25,375	6,041	18,557	2,424	274	8,055	2,052	31,362	6,888	77,463	163	-5,987	71,476	168	17,163	16,316	-847
2035	1,149	40	147	143	516	413	12	913	4,100	179	2,874	179	0	0	15,522	151	4,544	235	-670	235	28,194	6,506	18,557	2,279	233	7,800	1,914	30,783	6,974	71,476	168	-2,589	68,887	169	16,316	15,848	-468

Table I-14a

Projected TDS Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	TDS Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,402	100	102	758	157	2,186	0	4,835	15,920	762	1,705	274	0	0	7,025	917	7,024	550	36,335	32,310	13,450	10,864	2,012	6,573	961	33,858	33,496	50,440	774	2,476	52,916	721	53,052	51,866	-1,186
2013	286	100	102	758	163	2,186	0	4,835	7,623	762	1,700	274	0	0	7,327	917	10,093	550	27,295	25,842	13,428	8,774	1,727	6,438	802	31,169	28,857	52,916	721	-3,874	49,042	733	51,866	48,851	-3,015
2014	2,378	100	102	758	168	2,186	0	4,835	12,252	762	1,700	274	0	0	8,008	917	8,591	550	33,199	30,663	15,448	8,078	1,748	6,487	675	32,436	30,568	49,042	733	763	49,805	723	48,851	48,946	95
2015	9,386	100	102	758	174	2,186	0	4,835	9,835	762	1,700	274	0	0	7,370	917	10,328	550	38,895	29,633	13,428	12,219	2,038	6,694	717	35,096	32,488	49,805	723	3,799	53,605	632	48,946	46,091	-2,855
2016	0	100	102	758	179	2,186	0	4,835	5,803	762	1,705	274	0	0	7,743	917	11,610	550	27,142	25,620	13,450	9,022	1,783	6,475	646	31,377	25,445	53,605	632	-4,235	49,370	689	46,091	46,266	175
2017	0	100	102	758	185	2,186	0	4,835	6,281	762	1,700	274	0	0	8,261	917	11,431	550	27,960	26,643	15,448	7,323	1,633	6,432	573	31,408	27,904	49,370	689	-3,448	45,922	721	46,266	45,005	-1,261
2018	1,899	100	102	758	190	2,186	5	4,835	10,488	762	1,700	274	0	0	8,124	917	9,355	550	31,864	29,588	15,448	7,442	1,652	6,480	589	31,612	29,361	45,922	721	252	46,174	720	45,005	45,233	227
2019	277	100	102	758	196	2,186	21	4,835	7,161	762	1,700	274	0	0	7,742	917	9,828	550	27,028	25,921	13,428	6,896	1,609	6,430	688	29,052	26,883	46,174	720	-2,023	44,151	737	45,233	44,271	-962
2020	1,103	100	102	758	201	2,186	48	4,835	9,538	762	1,705	274	0	0	8,101	917	8,519	550	29,317	28,159	15,472	5,888	1,550	6,464	941	30,315	28,843	44,151	737	-997	43,154	743	44,271	43,586	-684
2021	0	100	102	758	207	2,186	91	4,835	7,156	762	1,700	274	0	0	7,777	917	9,150	550	26,183	25,902	15,448	4,941	1,480	6,416	775	29,060	27,856	43,154	743	-2,877	40,277	760	43,586	41,632	-1,954
2022	0	100	102	758	212	2,186	126	4,835	7,472	762	1,700	274	0	0	7,575	917	8,559	550	25,747	25,786	15,448	4,345	1,404	6,407	973	28,577	28,087	40,277	760	-2,830	37,447	772	41,632	39,331	-2,301
2023	2,320	100	102	758	218	2,186	138	4,835	11,294	762	1,700	274	0	0	7,195	917	6,393	550	29,361	28,063	15,448	4,218	1,324	6,466	1,946	29,403	29,492	37,447	772	-42	37,405	745	39,331	37,902	-1,429
2024	6,575	100	102	758	223	2,186	146	4,835	18,685	762	1,705	274	0	0	6,910	917	3,779	550	38,125	34,059	15,472	5,446	1,429	6,617	2,336	31,302	30,269	37,405	745	6,823	44,229	693	37,902	41,691	3,790
2025	5,623	100	102	758	229	2,186	152	4,835	13,704	762	1,700	274	0	0	6,661	917	6,241	550	34,412	30,354	13,428	7,616	1,760	6,601	912	30,319	26,920	44,229	693	4,093	48,322	687	41,691	45,126	3,434
2026	0	100	102	758	234	2,186	157	4,835	7,875	762	1,700	274	0	0	7,167	917	8,447	550	25,683	25,878	13,428	6,603	1,609	6,433	908	28,982	25,563	48,322	687	-3,299	45,023	742	45,126	45,441	315
2027	5,682	100	102	758	240	2,186	162	4,835	14,705	762	1,700	274	0	0	7,540	917	7,491	550	37,623	33,528	15,448	9,206	1,808	6,592	773	33,826	32,316	45,023	742	3,797	48,820	703	45,441	46,653	1,213
2028	2,058	100	102	758	246	2,186	169	4,835	9,915	762	1,705	274	0	0	7,278	917	8,907	550	30,381	28,867	13,450	8,675	1,767	6,510	736	31,137	28,067	48,820	703	-757	48,063	726	46,653	47,453	799
2029	565	100	102	758	251	2,186	174	4,835	8,270	762	1,700	274	0	0	7,520	917	9,724	550	28,306	27,923	13,428	8,168	1,684	6,452	663	30,395	28,346	48,063	726	-2,089	45,974	752	47,453	47,030	-423
2030	6,989	100	102	758	257	2,186	180	4,835	12,708	762	1,700	274	0	0	7,590	917	8,826	550	38,353	32,866	13,428	11,423	1,914	6,638	679	34,083	32,907	45,974	752	4,270	50,244	688	47,030	46,988	-42
2031	0	100	102	758	262	2,186	184	4,835	9,913	762	1,700	274	0	0	7,347	917	9,571	550	29,080	29,318	13,428	9,091	1,723	6,445	739	31,426	27,779	50,244	688	-2,346	47,898	745	46,988	48,528	1,540
2032	416	100	102	758	268	2,186	188	4,835	8,577	762	1,705	274	0	0	7,722	917	10,062	550	29,040	28,866	13,450	8,368	1,685	6,462	609	30,573	29,268	47,898	745	-1,534	46,365	763	48,528	48,126	-402
2033	3,050	100	102	758	273	2,186	191	4,835	11,853	762	1,700	274	0	0	8,143	917	8,484	550	33,796	31,997	15,448	8,159	1,690	6,514	732	32,544	32,026	46,365	763	1,253	47,617	743	48,126	48,097	-29
2034	0	100	102	758	279	2,186	192	4,835	6,543	762	1,700	274	0	0	8,055	917	10,772	550	27,643	27,703	15,448	6,416	1,594	6,430	583	30,472	29,169	47,617	743	-2,829	44,789	766	48,097	46,631	-1,465
2035	1,034	100	102	758	284	2,186	192	4,835	8,479	762	1,700	274	0	0	7,800	917	9,921	550	29,512	28,912	15,448	6,593	1,608	6,451	574	30,673	30,261	44,789	766	-1,161	43,628	763	46,631	45,282	-1,350

Table I-14b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Castaic Dam Underflow	Chloride Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Chloride Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]
2012	4,402	40	102	107	157	307	0	680	15,920	109	1,705	70	0	0	7,025	96	7,024	15	36,335	3,893
2013	286	40	102	107	163	307	0	680	7,623	109	1,700	70	0	0	7,327	96	10,093	15	27,295	2,548
2014	2,378	40	102	107	168	307	0	680	12,252	109	1,700	70	0	0	8,008	96	8,591	15	33,199	3,406
2015	9,386	40	102	107	174	307	0	680	9,835	109	1,700	70	0	0	7,370	96	10,328	15	38,895	3,384
2016	0	40	102	107	179	307	0	680	5,803	109	1,705	70	0	0	7,743	96	11,610	15	27,142	2,356
2017	0	40	102	107	185	307	0	680	6,281	109	1,700	70	0	0	8,261	96	11,431	15	27,960	2,492
2018	1,899	40	102	107	190	307	5	680	10,488	109	1,700	70	0	0	8,124	96	9,355	15	31,864	3,164
2019	277	40	102	107	196	307	21	680	7,161	109	1,700	70	0	0	7,742	96	9,828	15	27,028	2,561
2020	1,103	40	102	107	201	307	48	680	9,538	109	1,705	70	0	0	8,101	96	8,519	15	29,317	3,005
2021	0	40	102	107	207	307	91	680	7,156	109	1,700	70	0	0	7,777	96	9,150	15	26,183	2,605
2022	0	40	102	107	212	307	126	680	7,472	109	1,700	70	0	0	7,575	96	8,559	15	25,747	2,648
2023	2,320	40	102	107	218	307	138	680	11,294	109	1,700	70	0	0	7,195	96	6,393	15	29,361	3,259
2024	6,575	40	102	107	223	307	146	680	18,685	109	1,705	70	0	0	6,910	96	3,779	15	38,125	4,502
2025	5,623	40	102	107	229	307	152	680	13,704	109	1,700	70	0	0	6,661	96	6,241	15	34,412	3,739
2026	0	40	102	107	234	307	157	680	7,875	109	1,700	70	0	0	7,167	96	8,447	15	25,683	2,690
2027	5,682	40	102	107	240	307	162	680	14,705	109	1,700	70	0	0	7,540	96	7,491	15	37,623	4,044
2028	2,058	40	102	107	246	307	169	680	9,915	109	1,705	70	0	0	7,278	96	8,907	15	30,381	3,143
2029	565	40	102	107	251	307	174	680	8,270	109	1,700	70	0	0	7,520	96	9,724	15	28,306	2,874
2030	6,989	40	102	107	257	307	180	680	12,708	109	1,700	70	0	0	7,590	96	8,826	15	38,353	3,878
2031	0	40	102	107	262	307	184	680	9,913	109	1,700	70	0	0	7,347	96	9,571	15	29,080	3,074
2032	416	40	102	107	268	307	188	680	8,577	109	1,705	70	0	0	7,722	96	10,062	15	29,040	2,965
2033	3,050	40	102	107	273	307	191	680	11,853	109	1,700	70	0	0	8,143	96	8,484	15	33,796	3,619
2034	0	40	102	107	279	307	192	680	6,543	109	1,700	70	0	0	8,055	96	10,772	15	27,643	2,707
2035	1,034	40	102	107	284	307	192	680	8,479	109	1,700	70	0	0	7,800	96	9,921	15	29,512	3,001

Year	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	13,450	10,864	2,012	6,573	961	33,858	3,699	50,440	85	2,476	52,916	**84**	5,859	6,053	**194**
2013	13,428	8,774	1,727	6,438	802	31,169	3,368	52,916	84	-3,874	49,042	**78**	6,053	5,233	**-820**
2014	15,448	8,078	1,748	6,487	675	32,436	3,275	49,042	78	763	49,805	**79**	5,233	5,364	**131**
2015	13,428	12,219	2,038	6,694	717	35,096	3,560	49,805	79	3,799	53,605	**71**	5,364	5,188	**-176**
2016	13,450	9,022	1,783	6,475	646	31,377	2,864	53,605	71	-4,235	49,370	**70**	5,188	4,680	**-508**
2017	15,448	7,323	1,633	6,432	573	31,408	2,822	49,370	70	-3,448	45,922	**70**	4,680	4,350	**-330**
2018	15,448	7,442	1,652	6,480	589	31,612	2,838	45,922	70	252	46,174	**74**	4,350	4,676	**326**
2019	13,428	6,896	1,609	6,430	688	29,052	2,779	46,174	74	-2,023	44,151	**74**	4,676	4,458	**-218**
2020	15,472	5,888	1,550	6,464	941	30,315	2,905	44,151	74	-997	43,154	**78**	4,458	4,559	**100**
2021	15,448	4,941	1,480	6,416	775	29,060	2,914	43,154	78	-2,877	40,277	**78**	4,559	4,250	**-309**
2022	15,448	4,345	1,404	6,407	973	28,577	2,867	40,277	78	-2,830	37,447	**79**	4,250	4,031	**-219**
2023	15,448	4,218	1,324	6,466	1,946	29,403	3,023	37,447	79	-42	37,405	**84**	4,031	4,267	**236**
2024	15,472	5,446	1,429	6,617	2,336	31,302	3,408	37,405	84	6,823	44,229	**89**	4,267	5,361	**1,094**
2025	13,428	7,616	1,760	6,601	912	30,319	3,462	44,229	89	4,093	48,322	**86**	5,361	5,639	**278**
2026	13,428	6,603	1,609	6,433	908	28,982	3,194	48,322	86	-3,299	45,023	**84**	5,639	5,134	**-504**
2027	15,448	9,206	1,808	6,592	773	33,826	3,651	45,023	84	3,797	48,820	**83**	5,134	5,527	**393**
2028	13,450	8,675	1,767	6,510	736	31,137	3,325	48,820	83	-757	48,063	**82**	5,527	5,345	**-182**
2029	13,428	8,168	1,684	6,452	663	30,395	3,193	48,063	82	-2,089	45,974	**80**	5,345	5,026	**-319**
2030	13,428	11,423	1,914	6,638	679	34,083	3,517	45,974	80	4,270	50,244	**79**	5,026	5,387	**361**
2031	13,428	9,091	1,723	6,445	739	31,426	3,185	50,244	79	-2,346	47,898	**81**	5,387	5,277	**-110**
2032	13,450	8,368	1,685	6,462	609	30,573	3,182	47,898	81	-1,534	46,365	**80**	5,277	5,059	**-218**
2033	15,448	8,159	1,690	6,514	732	32,544	3,366	46,365	80	1,253	47,617	**82**	5,059	5,311	**253**
2034	15,448	6,416	1,594	6,430	583	30,472	3,221	47,617	82	-2,829	44,789	**79**	5,311	4,797	**-514**
2035	15,448	6,593	1,608	6,451	574	30,673	3,113	44,789	79	-1,161	43,628	**79**	4,797	4,685	**-112**

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Nitrate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]
2012	4,402	9	102	41	157	15	0	32	15,920	7	1,705	3	0	0	7,025	16	7,024	10	36,335	467
2013	286	9	102	41	163	15	0	32	7,623	7	1,700	3	0	0	7,327	16	10,093	10	27,295	387
2014	2,378	9	102	41	168	15	0	32	12,252	7	1,700	3	0	0	8,008	16	8,591	10	33,199	451
2015	9,386	9	102	41	174	15	0	32	9,835	7	1,700	3	0	0	7,370	16	10,328	10	38,895	522
2016	0	9	102	41	179	15	0	32	5,803	7	1,705	3	0	0	7,743	16	11,610	10	27,142	397
2017	0	9	102	41	185	15	0	32	6,281	7	1,700	3	0	0	8,261	16	11,431	10	27,960	410
2018	1,899	9	102	41	190	15	5	32	10,488	7	1,700	3	0	0	8,124	16	9,355	10	31,864	442
2019	277	9	102	41	196	15	21	32	7,161	7	1,700	3	0	0	7,742	16	9,828	10	27,028	390
2020	1,103	9	102	41	201	15	48	32	9,538	7	1,705	3	0	0	8,101	16	8,519	10	29,317	414
2021	0	9	102	41	207	15	91	32	7,156	7	1,700	3	0	0	7,777	16	9,150	10	26,183	381
2022	0	9	102	41	212	15	126	32	7,472	7	1,700	3	0	0	7,575	16	8,559	10	25,747	373
2023	2,320	9	102	41	218	15	138	32	11,294	7	1,700	3	0	0	7,195	16	6,393	10	29,361	401
2024	6,575	9	102	41	223	15	146	32	18,685	7	1,705	3	0	0	6,910	16	3,779	10	38,125	481
2025	5,623	9	102	41	229	15	152	32	13,704	7	1,700	3	0	0	6,661	16	6,241	10	34,412	450
2026	0	9	102	41	234	15	157	32	7,875	7	1,700	3	0	0	7,167	16	8,447	10	25,683	369
2027	5,682	9	102	41	240	15	162	32	14,705	7	1,700	3	0	0	7,540	16	7,491	10	37,623	497
2028	2,058	9	102	41	246	15	169	32	9,915	7	1,705	3	0	0	7,278	16	8,907	10	30,381	422
2029	565	9	102	41	251	15	174	32	8,270	7	1,700	3	0	0	7,520	16	9,724	10	28,306	405
2030	6,989	9	102	41	257	15	180	32	12,708	7	1,700	3	0	0	7,590	16	8,826	10	38,353	514
2031	0	9	102	41	262	15	184	32	9,913	7	1,700	3	0	0	7,347	16	9,571	10	29,080	409
2032	416	9	102	41	268	15	188	32	8,577	7	1,705	3	0	0	7,722	16	10,062	10	29,040	416
2033	3,050	9	102	41	273	15	191	32	11,853	7	1,700	3	0	0	8,143	16	8,484	10	33,796	467
2034	0	9	102	41	279	15	192	32	6,543	7	1,700	3	0	0	8,055	16	10,772	10	27,643	409
2035	1,034	9	102	41	284	15	192	32	8,479	7	1,700	3	0	0	7,800	16	9,921	10	29,512	423

Year	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	13,450	10,864	2,012	6,573	961	33,858	472	50,440	11	2,476	52,916	10	748	743	-5
2013	13,428	8,774	1,727	6,438	802	31,169	413	52,916	10	-3,874	49,042	11	743	717	-26
2014	15,448	8,078	1,748	6,487	675	32,436	449	49,042	11	763	49,805	11	717	719	2
2015	13,428	12,219	2,038	6,694	717	35,096	477	49,805	11	3,799	53,605	10	719	763	44
2016	13,450	9,022	1,783	6,475	646	31,377	421	53,605	10	-4,235	49,370	11	763	738	-25
2017	15,448	7,323	1,633	6,432	573	31,408	445	49,370	11	-3,448	45,922	11	738	703	-35
2018	15,448	7,442	1,652	6,480	589	31,612	459	45,922	11	252	46,174	11	703	686	-17
2019	13,428	6,896	1,609	6,430	688	29,052	408	46,174	11	-2,023	44,151	11	686	668	-18
2020	15,472	5,888	1,550	6,464	941	30,315	435	44,151	11	-997	43,154	11	668	646	-22
2021	15,448	4,941	1,480	6,416	775	29,060	413	43,154	11	-2,877	40,277	11	646	615	-32
2022	15,448	4,345	1,404	6,407	973	28,577	415	40,277	11	-2,830	37,447	11	615	573	-41
2023	15,448	4,218	1,324	6,466	1,946	29,403	430	37,447	11	-42	37,405	11	573	544	-29
2024	15,472	5,446	1,429	6,617	2,336	31,302	434	37,405	11	6,823	44,229	10	544	590	46
2025	13,428	7,616	1,760	6,601	912	30,319	381	44,229	10	4,093	48,322	10	590	659	69
2026	13,428	6,603	1,609	6,433	908	28,982	373	48,322	10	-3,299	45,023	11	659	654	-5
2027	15,448	9,206	1,808	6,592	773	33,826	465	45,023	11	3,797	48,820	10	654	686	32
2028	13,450	8,675	1,767	6,510	736	31,137	413	48,820	10	-757	48,063	11	686	696	9
2029	13,428	8,168	1,684	6,452	663	30,395	416	48,063	11	-2,089	45,974	11	696	685	-10
2030	13,428	11,423	1,914	6,638	679	34,083	480	45,974	11	4,270	50,244	11	685	720	35
2031	13,428	9,091	1,723	6,445	739	31,426	426	50,244	11	-2,346	47,898	11	720	703	-17
2032	13,450	8,368	1,685	6,462	609	30,573	424	47,898	11	-1,534	46,365	11	703	696	-8
2033	15,448	8,159	1,690	6,514	732	32,544	463	46,365	11	1,253	47,617	11	696	700	4
2034	15,448	6,416	1,594	6,430	583	30,472	424	47,617	11	-2,829	44,789	11	700	685	-15
2035	15,448	6,593	1,608	6,451	574	30,673	444	44,789	11	-1,161	43,628	11	685	664	-21

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Sulfate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	40	102	144	157	416	0	920	15,920	254	1,705	51	0	0	7,025	295	7,024	235	36,335	11,027	13,450	10,864	2,012	6,573	961	33,858	10,866	50,440	251	2,476	52,916	**241**	17,209	17,370	**161**
2013	286	40	102	144	163	416	0	920	7,623	254	1,700	51	0	0	7,327	295	10,093	235	27,295	9,042	13,428	8,774	1,727	6,438	802	31,169	9,665	52,916	241	-3,874	49,042	**251**	17,370	16,748	**-622**
2014	2,378	40	102	144	168	416	0	920	12,252	254	1,700	51	0	0	8,008	295	8,591	235	33,199	10,551	15,448	8,078	1,748	6,487	675	32,436	10,480	49,042	251	763	49,805	**248**	16,748	16,819	**71**
2015	9,386	40	102	144	174	416	0	920	9,835	254	1,700	51	0	0	7,370	295	10,328	235	38,895	10,400	13,428	12,219	2,038	6,694	717	35,096	11,164	49,805	248	3,799	53,605	**220**	16,819	16,055	**-764**
2016	0	40	102	144	179	416	0	920	5,803	254	1,705	51	0	0	7,743	295	11,610	235	27,142	9,059	13,450	9,022	1,783	6,475	646	31,377	8,864	53,605	220	-4,235	49,370	**242**	16,055	16,251	**196**
2017	0	40	102	144	185	416	0	920	6,281	254	1,700	51	0	0	8,261	295	11,431	235	27,960	9,378	15,448	7,323	1,633	6,432	573	31,408	9,801	49,370	242	-3,448	45,922	**253**	16,251	15,828	**-423**
2018	1,899	40	102	144	190	416	5	920	10,488	254	1,700	51	0	0	8,124	295	9,355	235	31,864	10,226	15,448	7,442	1,652	6,480	589	31,612	10,326	45,922	253	252	46,174	**251**	15,828	15,728	**-100**
2019	277	40	102	144	196	416	21	920	7,161	254	1,700	51	0	0	7,742	295	9,828	235	27,028	9,010	13,428	6,896	1,609	6,430	688	29,052	9,347	46,174	251	-2,023	44,151	**256**	15,728	15,390	**-337**
2020	1,103	40	102	144	201	416	48	920	9,538	254	1,705	51	0	0	8,101	295	8,519	235	29,317	9,638	15,472	5,888	1,550	6,464	941	30,315	10,027	44,151	256	-997	43,154	**256**	15,390	15,001	**-389**
2021	0	40	102	144	207	416	91	920	7,156	254	1,700	51	0	0	7,777	295	9,150	235	26,183	8,883	15,448	4,941	1,480	6,416	775	29,060	9,587	43,154	256	-2,877	40,277	**261**	15,001	14,297	**-704**
2022	0	40	102	144	212	416	126	920	7,472	254	1,700	51	0	0	7,575	295	8,559	235	25,747	8,770	15,448	4,345	1,404	6,407	973	28,577	9,646	40,277	261	-2,830	37,447	**264**	14,297	13,422	**-875**
2023	2,320	40	102	144	218	416	138	920	11,294	254	1,700	51	0	0	7,195	295	6,393	235	29,361	9,390	15,448	4,218	1,324	6,466	1,946	29,403	10,064	37,447	264	-42	37,405	**251**	13,422	12,747	**-674**
2024	6,575	40	102	144	223	416	146	920	18,685	254	1,705	51	0	0	6,910	295	3,779	235	38,125	11,237	15,472	5,446	1,429	6,617	2,336	31,302	10,180	37,405	251	6,823	44,229	**230**	12,747	13,804	**1,057**
2025	5,623	40	102	144	229	416	152	920	13,704	254	1,700	51	0	0	6,661	295	6,241	235	34,412	10,163	13,428	7,616	1,760	6,601	912	30,319	8,914	44,229	230	4,093	48,322	**229**	13,804	15,054	**1,249**
2026	0	40	102	144	234	416	157	920	7,875	254	1,700	51	0	0	7,167	295	8,447	235	25,683	8,761	13,428	6,603	1,609	6,433	908	28,982	8,527	48,322	229	-3,299	45,023	**250**	15,054	15,287	**233**
2027	5,682	40	102	144	240	416	162	920	14,705	254	1,700	51	0	0	7,540	295	7,491	235	37,623	11,282	15,448	9,206	1,808	6,592	773	33,826	10,871	45,023	250	3,797	48,820	**236**	15,287	15,698	**411**
2028	2,058	40	102	144	246	416	169	920	9,915	254	1,705	51	0	0	7,278	295	8,907	235	30,381	9,790	13,450	8,675	1,767	6,510	736	31,137	9,444	48,820	236	-757	48,063	**246**	15,698	16,044	**346**
2029	565	40	102	144	251	416	174	920	8,270	254	1,700	51	0	0	7,520	295	9,724	235	28,306	9,508	13,428	8,168	1,684	6,452	663	30,395	9,584	48,063	246	-2,089	45,974	**255**	16,044	15,968	**-76**
2030	6,989	40	102	144	257	416	180	920	12,708	254	1,700	51	0	0	7,590	295	8,826	235	38,353	11,142	13,428	11,423	1,914	6,638	679	34,083	11,173	45,974	255	4,270	50,244	**233**	15,968	15,938	**-31**
2031	0	40	102	144	262	416	184	920	9,913	254	1,700	51	0	0	7,347	295	9,571	235	29,080	9,946	13,428	9,091	1,723	6,445	739	31,426	9,422	50,244	233	-2,346	47,898	**253**	15,938	16,462	**524**
2032	416	40	102	144	268	416	188	920	8,577	254	1,705	51	0	0	7,722	295	10,062	235	29,040	9,822	13,450	8,368	1,685	6,462	609	30,573	9,928	47,898	253	-1,534	46,365	**259**	16,462	16,356	**-106**
2033	3,050	40	102	144	273	416	191	920	11,853	254	1,700	51	0	0	8,143	295	8,484	235	33,796	10,768	15,448	8,159	1,690	6,514	732	32,544	10,884	46,365	259	1,253	47,617	**251**	16,356	16,239	**-116**
2034	0	40	102	144	279	416	192	920	6,543	254	1,700	51	0	0	8,055	295	10,772	235	27,643	9,468	15,448	6,416	1,594	6,430	583	30,472	9,849	47,617	251	-2,829	44,789	**260**	16,239	15,859	**-380**
2035	1,034	40	102	144	284	416	192	920	8,479	254	1,700	51	0	0	7,800	295	9,921	235	29,512	9,822	15,448	6,593	1,608	6,451	574	30,673	10,292	44,789	260	-1,161	43,628	**259**	15,859	15,389	**-470**

Table I-15a

Projected TDS Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]
2012	29,070	100	1,254	786	2,787	2,267	0	4,915	10	669	0	0	0	0	3,836	816	36,956	18,144
2013	1,890	100	1,250	786	2,834	2,267	0	4,915	0	669	0	0	0	0	-3,706	754	2,269	6,532
2014	15,703	100	1,250	786	2,882	2,267	0	4,915	0	669	0	0	0	0	-1,709	780	18,126	10,540
2015	61,979	100	1,250	786	2,929	2,267	0	4,915	7	669	0	0	0	0	-578	763	65,587	18,198
2016	0	100	1,254	786	2,977	2,267	0	4,915	0	669	0	0	0	0	-4,266	670	-35	6,631
2017	0	100	1,250	786	3,025	2,267	2	4,915	0	669	0	0	0	0	-6,108	726	-1,831	4,644
2018	12,538	100	1,250	786	3,072	2,267	40	4,915	0	669	0	0	0	0	-3,421	758	13,480	9,250
2019	1,826	100	1,250	786	3,120	2,267	140	4,915	0	669	0	0	0	0	-1,862	746	4,475	10,250
2020	7,285	100	1,254	786	3,168	2,267	264	4,915	0	669	0	0	0	0	59	769	12,030	13,920
2021	0	100	1,250	786	3,215	2,267	344	4,915	0	669	0	0	0	0	-1,798	769	3,011	11,662
2022	0	100	1,250	786	3,263	2,267	385	4,915	0	669	0	0	0	0	17	789	4,915	13,985
2023	15,322	100	1,250	786	3,310	2,267	404	4,915	0	669	0	0	0	0	6,827	795	27,114	23,704
2024	43,415	100	1,254	786	3,358	2,267	414	4,915	10	669	0	0	0	0	13,287	734	61,737	33,623
2025	37,127	100	1,250	786	3,406	2,267	420	4,915	10	669	0	0	0	0	10,964	663	53,176	29,581
2026	0	100	1,250	786	3,453	2,267	423	4,915	0	669	0	0	0	0	2,405	662	7,531	16,974
2027	37,522	100	1,250	786	3,501	2,267	426	4,915	8	669	0	0	0	0	4,507	734	47,214	24,584
2028	13,592	100	1,254	786	3,548	2,267	430	4,915	0	669	0	0	0	0	1,034	685	19,858	17,963
2029	3,729	100	1,250	786	3,596	2,267	434	4,915	0	669	0	0	0	0	-2,399	711	6,610	13,506
2030	46,150	100	1,250	786	3,644	2,267	437	4,915	10	669	0	0	0	0	6,011	749	57,502	27,894
2031	0	100	1,250	786	3,691	2,267	438	4,915	0	669	0	0	0	0	-3,371	686	2,009	12,497
2032	2,747	100	1,254	786	3,739	2,267	439	4,915	0	669	0	0	0	0	-4,658	740	3,520	11,484
2033	20,140	100	1,250	786	3,787	2,267	440	4,915	3	669	0	0	0	0	-1,594	762	24,026	17,033
2034	0	100	1,250	786	3,834	2,267	440	4,915	0	669	0	0	0	0	-4,025	734	1,499	12,073
2035	6,825	100	1,250	786	3,882	2,267	440	4,915	0	669	0	0	0	0	-4,054	771	8,343	12,917

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,841	0	2,499	0	2,751	18,090	13,831	1,650,000	652	18,866	1,668,866	**647**	1,463,642	1,467,956	**4,314**
2013	12,814	0	1,571	0	2,649	17,033	13,601	1,668,866	647	-14,764	1,654,102	**650**	1,467,956	1,460,887	**-7,069**
2014	12,814	0	1,717	0	2,727	17,258	13,726	1,654,102	650	868	1,654,969	**648**	1,460,887	1,457,701	**-3,186**
2015	12,814	0	3,511	0	2,815	19,140	13,766	1,654,969	648	46,447	1,701,416	**632**	1,457,701	1,462,134	**4,433**
2016	12,841	0	2,239	0	2,996	18,076	13,610	1,701,416	632	-18,111	1,683,305	**630**	1,462,134	1,441,893	**-6,979**
2017	12,814	0	1,545	0	2,821	17,180	13,393	1,683,305	630	-19,011	1,664,294	**629**	1,441,893	1,423,857	**-8,748**
2018	12,814	0	1,681	0	2,757	17,252	13,321	1,664,294	629	-3,772	1,660,523	**629**	1,423,857	1,419,786	**-4,071**
2019	19,123	0	1,378	0	2,000	22,500	18,060	1,660,523	629	-18,026	1,642,497	**632**	1,419,786	1,411,975	**-7,811**
2020	25,281	0	1,338	0	1,391	28,010	22,929	1,642,497	632	-15,981	1,626,516	**634**	1,411,975	1,402,966	**-9,009**
2021	19,123	0	1,152	0	1,453	21,728	17,748	1,626,516	634	-18,717	1,607,800	**639**	1,402,966	1,396,880	**-6,086**
2022	25,228	0	997	0	1,064	27,289	22,843	1,607,800	639	-22,374	1,585,426	**644**	1,396,880	1,388,022	**-8,858**
2023	34,977	0	1,191	0	649	36,818	31,191	1,585,426	644	-9,703	1,575,722	**644**	1,388,022	1,380,535	**-7,487**
2024	35,059	0	2,088	0	676	37,823	31,308	1,575,722	644	23,914	1,599,636	**636**	1,380,535	1,382,850	**2,315**
2025	12,814	0	2,893	0	1,588	17,295	12,450	1,599,636	636	35,881	1,635,517	**630**	1,382,850	1,399,981	**17,131**
2026	19,123	0	1,635	0	1,540	22,297	17,687	1,635,517	630	-14,766	1,620,751	**635**	1,399,981	1,399,268	**-713**
2027	12,814	0	2,728	0	2,230	17,772	12,988	1,620,751	635	29,442	1,650,193	**629**	1,399,268	1,410,864	**11,596**
2028	12,841	0	2,060	0	2,414	17,315	13,042	1,650,193	629	2,544	1,652,737	**630**	1,410,864	1,415,785	**4,921**
2029	12,814	0	1,729	0	2,419	16,962	13,049	1,652,737	630	-10,351	1,642,385	**634**	1,415,785	1,416,242	**457**
2030	12,814	0	3,238	0	2,803	18,855	13,467	1,642,385	634	38,648	1,681,033	**626**	1,416,242	1,430,670	**14,427**
2031	12,814	0	1,853	0	2,692	17,358	13,196	1,681,033	626	-15,350	1,665,683	**631**	1,430,670	1,429,970	**-700**
2032	12,841	0	1,551	0	2,621	17,013	13,274	1,665,683	631	-13,493	1,652,190	**636**	1,429,970	1,428,180	**-1,790**
2033	19,123	0	1,905	0	2,122	23,149	18,364	1,652,190	636	877	1,653,067	**635**	1,428,180	1,426,849	**-1,331**
2034	12,814	0	1,427	0	2,393	16,634	13,125	1,653,067	635	-15,135	1,637,932	**640**	1,426,849	1,425,796	**-1,052**
2035	12,814	0	1,377	0	2,402	16,592	13,245	1,637,932	640	-8,249	1,629,683	**643**	1,425,796	1,425,469	**-328**

Projected Chloride Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]
2012	29,070	40	1,254	105	2,787	302	0	687	10	89	0	0	0	0	3,836	93	36,956	3,394
2013	1,890	40	1,250	105	2,834	302	0	687	0	89	0	0	0	0	-3,706	89	2,269	999
2014	15,703	40	1,250	105	2,882	302	0	687	0	89	0	0	0	0	-1,709	87	18,126	2,015
2015	61,979	40	1,250	105	2,929	302	0	687	7	89	0	0	0	0	-578	86	65,587	4,687
2016	0	40	1,254	105	2,977	302	0	687	0	89	0	0	0	0	-4,266	79	-35	943
2017	0	40	1,250	105	3,025	302	2	687	0	89	0	0	0	0	-6,108	80	-1,831	756
2018	12,538	40	1,250	105	3,072	302	40	687	0	89	0	0	0	0	-3,421	81	13,480	1,786
2019	1,826	40	1,250	105	3,120	302	140	687	0	89	0	0	0	0	-1,862	81	4,475	1,486
2020	7,285	40	1,254	105	3,168	302	264	687	0	89	0	0	0	0	59	82	12,030	2,131
2021	0	40	1,250	105	3,215	302	344	687	0	89	0	0	0	0	-1,798	83	3,011	1,619
2022	0	40	1,250	105	3,263	302	385	687	0	89	0	0	0	0	17	83	4,915	1,882
2023	15,322	40	1,250	105	3,310	302	404	687	0	89	0	0	0	0	6,827	83	27,114	3,517
2024	43,415	40	1,254	105	3,358	302	414	687	10	89	0	0	0	0	13,287	83	61,737	5,810
2025	37,127	40	1,250	105	3,406	302	420	687	10	89	0	0	0	0	10,964	84	53,176	5,239
2026	0	40	1,250	105	3,453	302	423	687	0	89	0	0	0	0	2,405	84	7,531	2,269
2027	37,522	40	1,250	105	3,501	302	426	687	8	89	0	0	0	0	4,507	87	47,214	4,588
2028	13,592	40	1,254	105	3,548	302	430	687	0	89	0	0	0	0	1,034	85	19,858	2,899
2029	3,729	40	1,250	105	3,596	302	434	687	0	89	0	0	0	0	-2,399	86	6,610	1,986
2030	46,150	40	1,250	105	3,644	302	437	687	10	89	0	0	0	0	6,011	86	57,502	5,301
2031	0	40	1,250	105	3,691	302	438	687	0	89	0	0	0	0	-3,371	84	2,009	1,720
2032	2,747	40	1,254	105	3,739	302	439	687	0	89	0	0	0	0	-4,658	86	3,520	1,731
2033	20,140	40	1,250	105	3,787	302	440	687	3	89	0	0	0	0	-1,594	86	24,026	3,055
2034	0	40	1,250	105	3,834	302	440	687	0	89	0	0	0	0	-4,025	85	1,499	1,700
2035	6,825	40	1,250	105	3,882	302	440	687	0	89	0	0	0	0	-4,054	85	8,343	2,086

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,841	0	2,499	0	2,751	18,090	821	1,650,000	39	18,866	1,668,866	39	86,867	89,441	2,574
2013	12,814	0	1,571	0	2,649	17,033	829	1,668,866	39	-14,764	1,654,102	40	89,441	89,611	170
2014	12,814	0	1,717	0	2,727	17,258	842	1,654,102	40	868	1,654,969	40	89,611	90,784	1,173
2015	12,814	0	3,511	0	2,815	19,140	857	1,654,969	40	46,447	1,701,416	41	90,784	94,614	3,830
2016	12,841	0	2,239	0	2,996	18,076	881	1,701,416	41	-18,111	1,683,305	41	94,614	92,790	63
2017	12,814	0	1,545	0	2,821	17,180	862	1,683,305	41	-19,011	1,664,294	40	92,790	91,172	-106
2018	12,814	0	1,681	0	2,757	17,252	853	1,664,294	40	-3,772	1,660,523	41	91,172	92,105	933
2019	19,123	0	1,378	0	2,000	22,500	1,172	1,660,523	41	-18,026	1,642,497	41	92,105	92,419	314
2020	25,281	0	1,338	0	1,391	28,010	1,501	1,642,497	41	-15,981	1,626,516	42	92,419	93,049	630
2021	19,123	0	1,152	0	1,453	21,728	1,177	1,626,516	42	-18,717	1,607,800	43	93,049	93,491	442
2022	25,228	0	997	0	1,064	27,289	1,529	1,607,800	43	-22,374	1,585,426	44	93,491	93,844	353
2023	34,977	0	1,191	0	649	36,818	2,109	1,585,426	44	-9,703	1,575,722	44	93,844	95,252	1,408
2024	35,059	0	2,088	0	676	37,823	2,160	1,575,722	44	23,914	1,599,636	45	95,252	98,901	3,650
2025	12,814	0	2,893	0	1,588	17,295	890	1,599,636	45	35,881	1,635,517	46	98,901	103,250	4,349
2026	19,123	0	1,635	0	1,540	22,297	1,304	1,635,517	46	-14,766	1,620,751	47	103,250	104,215	965
2027	12,814	0	2,728	0	2,230	17,772	967	1,620,751	47	29,442	1,650,193	48	104,215	107,836	3,621
2028	12,841	0	2,060	0	2,414	17,315	997	1,650,193	48	2,544	1,652,737	49	107,836	109,738	1,902
2029	12,814	0	1,729	0	2,419	16,962	1,011	1,652,737	49	-10,351	1,642,385	50	109,738	110,712	975
2030	12,814	0	3,238	0	2,803	18,855	1,053	1,642,385	50	38,648	1,681,033	50	110,712	114,961	4,248
2031	12,814	0	1,853	0	2,692	17,358	1,060	1,681,033	50	-15,350	1,665,683	51	114,961	115,620	660
2032	12,841	0	1,551	0	2,621	17,013	1,073	1,665,683	51	-13,493	1,652,190	52	115,620	116,278	657
2033	19,123	0	1,905	0	2,122	23,149	1,495	1,652,190	52	877	1,653,067	52	116,278	117,838	1,560
2034	12,814	0	1,427	0	2,393	16,634	1,084	1,653,067	52	-15,135	1,637,932	53	117,838	118,454	616
2035	12,814	0	1,377	0	2,402	16,592	1,100	1,637,932	53	-8,249	1,629,683	54	118,454	119,439	985

Table I-15c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Nitrate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	9	1,254	43	2,787	16	0	34	10	13	0	0	0	0	3,836	18	36,956	574	12,841	0	2,499	0	2,751	18,090	428	1,650,000	20	18,866	1,668,866	20	45,318	45,464	146
2013	1,890	9	1,250	43	2,834	16	0	34	0	13	0	0	0	0	-3,706	17	2,269	72	12,814	0	1,571	0	2,649	17,033	421	1,668,866	20	-14,764	1,654,102	20	45,464	45,115	-350
2014	15,703	9	1,250	43	2,882	16	0	34	0	13	0	0	0	0	-1,709	18	18,126	282	12,814	0	1,717	0	2,727	17,258	424	1,654,102	20	868	1,654,969	20	45,115	44,973	-142
2015	61,979	9	1,250	43	2,929	16	0	34	7	13	0	0	0	0	-578	17	65,587	864	12,814	0	3,511	0	2,815	19,140	425	1,654,969	20	46,447	1,701,416	20	44,973	45,413	440
2016	0	9	1,254	43	2,977	16	0	34	0	13	0	0	0	0	-4,266	16	-35	44	12,841	0	2,239	0	2,996	18,076	423	1,701,416	20	-18,111	1,683,305	20	45,413	44,946	-379
2017	0	9	1,250	43	3,025	16	2	34	0	13	0	0	0	0	-6,108	17	-1,831	-4	12,814	0	1,545	0	2,821	17,180	417	1,683,305	20	-19,011	1,664,294	20	44,946	44,524	-422
2018	12,538	9	1,250	43	3,072	16	40	34	0	13	0	0	0	0	-3,421	18	13,480	209	12,814	0	1,681	0	2,757	17,252	417	1,664,294	20	-3,772	1,660,523	20	44,524	44,317	-208
2019	1,826	9	1,250	43	3,120	16	140	34	0	13	0	0	0	0	-1,862	17	4,475	125	19,123	0	1,378	0	2,000	22,500	564	1,660,523	20	-18,026	1,642,497	20	44,317	43,878	-439
2020	7,285	9	1,254	43	3,168	16	264	34	0	13	0	0	0	0	59	18	12,030	242	25,281	0	1,338	0	1,391	28,010	713	1,642,497	20	-15,981	1,626,516	20	43,878	43,408	-470
2021	0	9	1,250	43	3,215	16	344	34	0	13	0	0	0	0	-1,798	17	3,011	115	19,123	0	1,152	0	1,453	21,728	549	1,626,516	20	-18,717	1,607,800	20	43,408	42,974	-434
2022	0	9	1,250	43	3,263	16	385	34	0	13	0	0	0	0	17	18	4,915	161	25,228	0	997	0	1,064	27,289	703	1,607,800	20	-22,374	1,585,426	20	42,974	42,433	-541
2023	15,322	9	1,250	43	3,310	16	404	34	0	13	0	0	0	0	6,827	18	27,114	512	34,977	0	1,191	0	649	36,818	954	1,585,426	20	-9,703	1,575,722	20	42,433	41,992	-441
2024	43,415	9	1,254	43	3,358	16	414	34	10	13	0	0	0	0	13,287	16	61,737	979	35,059	0	2,088	0	676	37,823	952	1,575,722	20	23,914	1,599,636	19	41,992	42,018	27
2025	37,127	9	1,250	43	3,406	16	420	34	10	13	0	0	0	0	10,964	15	53,176	838	12,814	0	2,893	0	1,588	17,295	378	1,599,636	19	35,881	1,635,517	19	42,018	42,478	459
2026	0	9	1,250	43	3,453	16	423	34	0	13	0	0	0	0	2,405	15	7,531	217	19,123	0	1,635	0	1,540	22,297	537	1,635,517	19	-14,766	1,620,751	19	42,478	42,158	-319
2027	37,522	9	1,250	43	3,501	16	426	34	8	13	0	0	0	0	4,507	17	47,214	721	12,814	0	2,728	0	2,230	17,772	391	1,620,751	19	29,442	1,650,193	19	42,158	42,488	330
2028	13,592	9	1,254	43	3,548	16	430	34	0	13	0	0	0	0	1,034	16	19,858	354	12,841	0	2,060	0	2,414	17,315	393	1,650,193	19	2,544	1,652,737	19	42,488	42,449	-38
2029	3,729	9	1,250	43	3,596	16	434	34	0	13	0	0	0	0	-2,399	16	6,610	162	12,814	0	1,729	0	2,419	16,962	391	1,652,737	19	-10,351	1,642,385	19	42,449	42,220	-230
2030	46,150	9	1,250	43	3,644	16	437	34	10	13	0	0	0	0	6,011	17	57,502	863	12,814	0	3,238	0	2,803	18,855	401	1,642,385	19	38,648	1,681,033	19	42,220	42,682	462
2031	0	9	1,250	43	3,691	16	438	34	0	13	0	0	0	0	-3,371	16	2,009	99	12,814	0	1,853	0	2,692	17,358	394	1,681,033	19	-15,350	1,665,683	19	42,682	42,387	-295
2032	2,747	9	1,254	43	3,739	16	439	34	0	13	0	0	0	0	-4,658	17	3,520	99	12,841	0	1,551	0	2,621	17,013	393	1,665,683	19	-13,493	1,652,190	19	42,387	42,092	-295
2033	20,140	9	1,250	43	3,787	16	440	34	3	13	0	0	0	0	-1,594	17	24,026	378	19,123	0	1,905	0	2,122	23,149	541	1,652,190	19	877	1,653,067	19	42,092	41,929	-163
2034	0	9	1,250	43	3,834	16	440	34	0	13	0	0	0	0	-4,025	17	1,499	85	12,814	0	1,427	0	2,393	16,634	386	1,653,067	19	-15,135	1,637,932	19	41,929	41,628	-301
2035	6,825	9	1,250	43	3,882	16	440	34	0	13	0	0	0	0	-4,054	17	8,343	163	12,814	0	1,377	0	2,402	16,592	387	1,637,932	19	-8,249	1,629,683	19	41,628	41,404	-224

Table I-15d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - SCWD Water Use Efficiency Programs - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Sulfate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	40	1,254	150	2,787	433	0	917	10	179	0	0	0	0	3,836	218	36,956	4,616	12,841	0	2,499	0	2,751	18,090	5,715	1,650,000	270	18,866	1,668,866	266	604,840	603,741	-1,099
2013	1,890	40	1,250	150	2,834	433	0	917	0	179	0	0	0	0	-3,706	208	2,269	977	12,814	0	1,571	0	2,649	17,033	5,594	1,668,866	266	-14,764	1,654,102	266	603,741	599,124	-4,617
2014	15,703	40	1,250	150	2,882	433	0	917	0	179	0	0	0	0	-1,709	221	18,126	2,291	12,814	0	1,717	0	2,727	17,258	5,629	1,654,102	266	868	1,654,969	265	599,124	595,786	-3,338
2015	61,979	40	1,250	150	2,929	433	0	917	7	179	0	0	0	0	-578	216	65,587	5,181	12,814	0	3,511	0	2,815	19,140	5,626	1,654,969	265	46,447	1,701,416	257	595,786	595,341	-445
2016	0	40	1,254	150	2,977	433	0	917	0	179	0	0	0	0	-4,266	192	-35	894	12,841	0	2,239	0	2,996	18,076	5,541	1,701,416	257	-18,111	1,683,305	257	595,341	588,906	-4,648
2017	0	40	1,250	150	3,025	433	2	917	0	179	0	0	0	0	-6,108	212	-1,831	281	12,814	0	1,545	0	2,821	17,180	5,470	1,683,305	257	-19,011	1,664,294	258	588,906	583,155	-5,189
2018	12,538	40	1,250	150	3,072	433	40	917	0	179	0	0	0	0	-3,421	223	13,480	1,760	12,814	0	1,681	0	2,757	17,252	5,456	1,664,294	258	-3,772	1,660,523	257	583,155	579,459	-3,696
2019	1,826	40	1,250	150	3,120	433	140	917	0	179	0	0	0	0	-1,862	217	4,475	1,817	19,123	0	1,378	0	2,000	22,500	7,371	1,660,523	257	-18,026	1,642,497	257	579,459	573,905	-5,554
2020	7,285	40	1,254	150	3,168	433	264	917	0	179	0	0	0	0	59	225	12,030	2,863	25,281	0	1,338	0	1,391	28,010	9,320	1,642,497	257	-15,981	1,626,516	257	573,905	567,449	-6,456
2021	0	40	1,250	150	3,215	433	344	917	0	179	0	0	0	0	-1,798	223	3,011	2,029	19,123	0	1,152	0	1,453	21,728	7,178	1,626,516	257	-18,717	1,607,800	257	567,449	562,300	-5,149
2022	0	40	1,250	150	3,263	433	385	917	0	179	0	0	0	0	17	231	4,915	2,661	25,228	0	997	0	1,064	27,289	9,195	1,607,800	257	-22,374	1,585,426	258	562,300	555,766	-6,534
2023	15,322	40	1,250	150	3,310	433	404	917	0	179	0	0	0	0	6,827	233	27,114	5,702	34,977	0	1,191	0	649	36,818	12,489	1,585,426	258	-9,703	1,575,722	256	555,766	548,978	-6,787
2024	43,415	40	1,254	150	3,358	433	414	917	10	179	0	0	0	0	13,287	207	61,737	8,857	35,059	0	2,088	0	676	37,823	12,450	1,575,722	256	23,914	1,599,636	251	548,978	545,386	-3,593
2025	37,127	40	1,250	150	3,406	433	420	917	10	179	0	0	0	0	10,964	185	53,176	7,565	12,814	0	2,893	0	1,588	17,295	4,910	1,599,636	251	35,881	1,635,517	246	545,386	548,040	2,654
2026	0	40	1,250	150	3,453	433	423	917	0	179	0	0	0	0	2,405	185	7,531	3,419	19,123	0	1,635	0	1,540	22,297	6,924	1,635,517	246	-14,766	1,620,751	247	548,040	544,535	-3,505
2027	37,522	40	1,250	150	3,501	433	426	917	8	179	0	0	0	0	4,507	210	47,214	6,177	12,814	0	2,728	0	2,230	17,772	5,054	1,620,751	247	29,442	1,650,193	243	544,535	545,658	1,122
2028	13,592	40	1,254	150	3,548	433	430	917	0	179	0	0	0	0	1,034	192	19,858	3,890	12,841	0	2,060	0	2,414	17,315	5,044	1,650,193	243	2,544	1,652,737	242	545,658	544,504	-1,154
2029	3,729	40	1,250	150	3,596	433	434	917	0	179	0	0	0	0	-2,399	201	6,610	2,460	12,814	0	1,729	0	2,419	16,962	5,018	1,652,737	242	-10,351	1,642,385	243	544,504	541,945	-2,559
2030	46,150	40	1,250	150	3,644	433	437	917	10	179	0	0	0	0	6,011	214	57,502	7,205	12,814	0	3,238	0	2,803	18,855	5,153	1,642,385	243	38,648	1,681,033	238	541,945	543,997	2,052
2031	0	40	1,250	150	3,691	433	438	917	0	179	0	0	0	0	-3,371	192	2,009	2,092	12,814	0	1,853	0	2,692	17,358	5,018	1,681,033	238	-15,350	1,665,683	239	543,997	541,071	-2,926
2032	2,747	40	1,254	150	3,739	433	439	917	0	179	0	0	0	0	-4,658	210	3,520	1,820	12,841	0	1,551	0	2,621	17,013	5,023	1,665,683	239	-13,493	1,652,190	239	541,071	537,868	-3,203
2033	20,140	40	1,250	150	3,787	433	440	917	3	179	0	0	0	0	-1,594	218	24,026	3,655	19,123	0	1,905	0	2,122	23,149	6,916	1,652,190	239	877	1,653,067	238	537,868	534,607	-3,261
2034	0	40	1,250	150	3,834	433	440	917	0	179	0	0	0	0	-4,025	208	1,499	1,923	12,814	0	1,427	0	2,393	16,634	4,918	1,653,067	238	-15,135	1,637,932	239	534,607	531,612	-2,994
2035	6,825	40	1,250	150	3,882	433	440	917	0	179	0	0	0	0	-4,054	220	8,343	2,246	12,814	0	1,377	0	2,402	16,592	4,938	1,637,932	239	-8,249	1,629,683	239	531,612	528,920	-2,692

Table I-9a

Projected TDS Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	TDS Conc. For Applied Recycled Water	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	100	442	777	758	2,240	0	0	0	0	15,281	722	5,429	722	3,551	723	30,583	27,295	11,058	1,231	1,151	13,877	70	27,387	26,745	69,600	750	3,196	72,795	**722**	70,950	71,499	**549**
2013	333	100	441	777	764	2,240	0	0	0	0	2,847	722	7,635	722	5,826	723	17,845	18,857	11,043	786	844	13,113	38	25,825	24,536	72,795	722	-7,980	64,815	**747**	71,499	65,820	**-5,679**
2014	2,767	100	441	777	770	2,240	0	0	32	3,290	8,443	722	7,025	722	3,735	723	23,212	22,187	5,194	818	785	13,815	43	20,656	20,178	64,815	747	2,557	67,372	**740**	65,820	67,829	**2,009**
2015	10,922	100	441	777	775	2,240	0	0	32	3,290	28,335	722	5,082	722	1,284	723	46,871	38,524	11,043	1,995	1,279	13,922	70	28,309	27,213	67,372	740	18,562	85,934	**677**	67,829	79,140	**11,311**
2016	0	100	442	777	781	2,240	0	0	32	3,290	4,222	722	6,676	722	5,368	723	17,521	18,968	11,058	1,485	1,297	14,163	64	28,066	24,653	85,934	677	-10,545	75,389	**717**	79,140	73,455	**-5,685**
2017	0	100	441	777	787	2,240	0	0	32	3,290	2,519	722	8,489	722	4,838	723	17,105	18,571	5,194	883	863	14,662	47	21,649	20,253	75,389	717	-4,544	70,846	**745**	73,455	71,773	**-1,682**
2018	2,209	100	441	777	793	2,240	0	0	32	3,290	5,947	722	7,672	722	4,354	723	21,448	20,977	5,194	769	760	14,795	47	21,564	21,076	70,846	745	-115	70,730	**745**	71,773	71,673	**-100**
2019	322	100	441	777	799	2,240	0	0	32	3,290	1,755	722	8,363	722	6,035	723	17,747	18,955	11,043	389	501	13,430	32	25,395	25,226	70,730	745	-7,649	63,082	**763**	71,673	65,402	**-6,272**
2020	1,284	100	442	777	805	2,240	0	0	32	3,290	2,969	722	8,820	722	4,660	723	19,012	19,392	5,201	361	408	14,129	34	20,134	20,451	63,082	763	-1,122	61,960	**764**	65,402	64,343	**-1,059**
2021	0	100	441	777	810	2,240	0	0	32	3,290	904	722	9,939	722	4,877	723	17,004	18,519	5,194	131	301	14,551	35	20,212	20,677	61,960	764	-3,208	58,751	**778**	64,343	62,186	**-2,157**
2022	0	100	441	777	816	2,240	0	0	32	3,290	1,397	722	10,486	722	4,616	723	17,788	19,301	5,194	120	269	14,643	34	20,260	21,160	58,751	778	-2,472	56,280	**788**	62,186	60,327	**-1,858**
2023	2,700	100	441	777	822	2,240	0	0	32	3,290	7,559	722	8,249	722	3,838	723	23,641	22,773	5,194	425	340	14,860	38	20,857	21,993	56,280	788	2,784	59,063	**761**	60,327	61,108	**780**
2024	7,651	100	442	777	828	2,240	0	0	32	3,290	24,090	722	3,248	722	1,708	723	37,998	32,689	5,201	2,480	1,236	15,376	58	24,351	23,915	59,063	761	13,647	72,710	**707**	61,108	69,882	**8,774**
2025	6,543	100	441	777	834	2,240	0	0	32	3,290	32,370	722	3,754	722	1,742	723	45,715	41,213	11,043	7,610	2,007	15,503	97	36,259	32,920	72,710	707	9,455	82,166	**700**	69,882	78,176	**8,294**
2026	0	100	441	777	840	2,240	0	0	32	3,290	3,469	722	6,806	722	5,988	723	17,576	19,143	11,043	1,230	1,052	14,109	52	27,486	25,150	82,166	700	-9,910	72,255	**735**	78,176	72,169	**-6,007**
2027	6,612	100	441	777	845	2,240	0	0	32	3,290	21,571	722	4,045	722	2,918	723	36,464	32,099	5,194	3,365	1,714	14,470	64	24,807	23,065	72,255	735	11,657	83,912	**712**	72,169	81,203	**9,034**
2028	2,395	100	442	777	851	2,240	0	0	32	3,290	7,431	722	4,905	722	5,952	723	22,010	21,494	11,058	1,893	1,442	13,646	51	28,090	25,787	83,912	712	-6,080	77,832	**727**	81,203	76,910	**-4,293**
2029	657	100	441	777	857	2,240	0	0	32	3,290	3,702	722	7,106	722	5,903	723	18,698	19,725	11,043	798	886	12,904	37	25,667	24,488	77,832	727	-6,969	70,862	**749**	76,910	72,147	**-4,763**
2030	8,133	100	441	777	863	2,240	0	0	32	3,290	49,863	722	3,965	722	-1,666	723	61,630	55,546	11,043	12,976	2,990	15,621	122	42,752	40,483	70,862	749	18,878	89,740	**715**	72,147	87,210	**15,063**
2031	0	100	441	777	869	2,240	0	0	32	3,290	1,609	722	7,529	722	6,268	723	16,748	18,391	11,043	919	1,135	14,194	51	27,343	25,469	89,740	715	-10,595	79,145	**745**	87,210	80,133	**-7,078**
2032	484	100	442	777	875	2,240	0	0	32	3,290	1,908	722	8,784	722	5,984	723	18,509	19,723	11,058	355	715	13,354	33	25,515	25,110	79,145	745	-7,006	72,139	**762**	80,133	74,746	**-5,387**
2033	3,549	100	441	777	880	2,240	0	0	32	3,290	10,850	722	7,475	722	3,523	723	26,751	25,228	5,194	650	777	14,023	40	20,684	20,627	72,139	762	6,067	78,206	**746**	74,746	79,347	**4,601**
2034	0	100	441	777	886	2,240	0	0	32	3,290	904	722	7,956	722	5,296	723	15,515	17,215	5,194	450	607	14,461	41	20,753	20,440	78,206	746	-5,238	72,968	**767**	79,347	76,122	**-3,225**
2035	1,203	100	441	777	892	2,240	0	0	32	3,290	4,237	722	8,693	722	4,358	723	19,855	20,469	5,194	386	505	14,526	42	20,654	21,019	72,968	767	-798	72,170	**770**	76,122	75,572	**-550**

Table I-9b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Chloride Conc. For Applied Recycled Water	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	113	758	326	0	0	0	0	15,281	89	5,429	98	3,551	34	30,583	3,416	11,058	1,231	1,151	13,877	70	27,387	3,127	69,600	88	3,196	72,795	**87**	8,294	8,583	**289**
2013	333	40	441	113	764	326	0	0	0	0	2,847	89	7,635	98	5,826	34	17,845	2,052	11,043	786	844	13,113	38	25,825	2,946	72,795	87	-7,980	64,815	**87**	8,583	7,690	**-894**
2014	2,767	40	441	113	770	326	0	0	32	374	8,410	89	7,025	98	3,735	34	23,180	2,699	5,194	818	785	13,815	43	20,656	2,357	64,815	87	2,524	67,339	**88**	7,690	8,032	**342**
2015	10,922	40	441	113	775	326	0	0	32	374	28,303	89	5,082	98	1,284	34	46,839	5,180	11,043	1,995	1,279	13,922	70	28,309	3,224	67,339	88	18,530	85,869	**86**	8,032	9,988	**1,956**
2016	0	40	442	113	781	326	0	0	32	374	4,189	89	6,676	98	5,368	34	17,488	2,072	11,058	1,485	1,297	14,163	64	28,066	3,114	85,869	86	-10,577	75,292	**87**	9,988	8,946	**-1,042**
2017	0	40	441	113	787	326	0	0	32	374	2,486	89	8,489	98	4,838	34	17,073	2,086	5,194	883	863	14,662	47	21,649	2,470	75,292	87	-4,576	70,716	**89**	8,946	8,562	**-384**
2018	2,209	40	441	113	793	326	0	0	32	374	5,915	89	7,672	98	4,354	34	21,416	2,492	5,194	769	760	14,795	47	21,564	2,519	70,716	89	-148	70,568	**89**	8,562	8,535	**-27**
2019	322	40	441	113	799	326	0	0	32	374	1,722	89	8,363	98	6,035	34	17,714	2,054	11,043	389	501	13,430	32	25,395	3,011	70,568	89	-7,681	62,887	**89**	8,535	7,578	**-957**
2020	1,284	40	442	113	805	326	0	0	32	374	2,937	89	8,820	98	4,660	34	18,979	2,254	5,201	361	408	14,129	34	20,134	2,377	62,887	89	-1,155	61,732	**89**	7,578	7,455	**-123**
2021	0	40	441	113	810	326	0	0	32	374	872	89	9,939	98	4,877	34	16,971	2,096	5,194	131	301	14,551	35	20,212	2,404	61,732	89	-3,241	58,491	**90**	7,455	7,146	**-309**
2022	0	40	441	113	816	326	0	0	32	374	1,365	89	10,486	98	4,616	34	17,756	2,219	5,194	120	269	14,643	34	20,260	2,442	58,491	90	-2,504	55,987	**91**	7,146	6,922	**-223**
2023	2,700	40	441	113	822	326	0	0	32	374	7,527	89	8,249	98	3,838	34	23,608	2,780	5,194	425	340	14,860	38	20,857	2,537	55,987	91	2,751	58,738	**90**	6,922	7,165	**243**
2024	7,651	40	442	113	828	326	0	0	32	374	24,057	89	3,248	98	1,708	34	37,966	4,287	5,201	2,480	1,236	15,376	58	24,351	2,820	58,738	90	13,614	72,353	**88**	7,165	8,633	**1,468**
2025	6,543	40	441	113	834	326	0	0	32	374	32,338	89	3,754	98	1,742	34	45,682	5,300	11,043	7,610	2,007	15,503	97	36,259	4,087	72,353	88	9,423	81,775	**89**	8,633	9,846	**1,213**
2026	0	40	441	113	840	326	0	0	32	374	3,437	89	6,806	98	5,988	34	17,543	2,052	11,043	1,230	1,052	14,109	52	27,486	3,183	81,775	89	-9,943	71,833	**89**	9,846	8,715	**-1,131**
2027	6,612	40	441	113	845	326	0	0	32	374	21,539	89	4,045	98	2,918	34	36,431	4,095	5,194	3,365	1,714	14,470	64	24,807	2,802	71,833	89	11,624	83,457	**88**	8,715	10,009	**1,293**
2028	2,395	40	442	113	851	326	0	0	32	374	7,399	89	4,905	98	5,952	34	21,977	2,412	11,058	1,893	1,442	13,646	51	28,090	3,196	83,457	88	-6,113	77,344	**88**	10,009	9,225	**-784**
2029	657	40	441	113	857	326	0	0	32	374	3,670	89	7,106	98	5,903	34	18,665	2,160	11,043	798	886	12,904	37	25,667	2,956	77,344	88	-7,002	70,342	**88**	9,225	8,429	**-796**
2030	8,133	40	441	113	863	326	0	0	32	374	49,831	89	3,965	98	-1,666	34	61,597	7,387	11,043	12,976	2,990	15,621	122	42,752	4,765	70,342	88	18,846	89,187	**91**	8,429	11,052	**2,623**
2031	0	40	441	113	869	326	0	0	32	374	1,577	89	7,529	98	6,268	34	16,715	1,949	11,043	919	1,135	14,194	51	27,343	3,248	89,187	91	-10,628	78,560	**91**	11,052	9,753	**-1,298**
2032	484	40	442	113	875	326	0	0	32	374	1,875	89	8,784	98	5,984	34	18,477	2,169	11,058	355	715	13,354	33	25,515	3,079	78,560	91	-7,039	71,521	**91**	9,753	8,843	**-910**
2033	3,549	40	441	113	880	326	0	0	32	374	10,818	89	7,475	98	3,523	34	26,718	3,132	5,194	650	777	14,023	40	20,684	2,461	71,521	91	6,034	77,555	**90**	8,843	9,514	**671**
2034	0	40	441	113	886	326	0	0	32	374	872	89	7,956	98	5,296	34	15,482	1,884	5,194	450	607	14,461	41	20,753	2,471	77,555	90	-5,270	72,285	**91**	9,514	8,927	**-587**
2035	1,203	40	441	113	892	326	0	0	32	374	4,205	89	8,693	98	4,358	34	19,823	2,411	5,194	386	505	14,526	42	20,654	2,488	72,285	91	-831	71,454	**91**	8,927	8,849	**-78**

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Nitrate Conc. For Applied Recycled Water	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	9	442	45	758	16	0	0	0	0	15,281	20	5,429	17	3,551	20	30,583	740	11,058	1,231	1,151	13,877	70	27,387	714	69,600	20	3,196	72,795	**19**	1,894	1,920	**26**
2013	333	9	441	45	764	16	0	0	0	0	2,847	20	7,635	17	5,826	20	17,845	456	11,043	786	844	13,113	38	25,825	659	72,795	19	-7,980	64,815	**19**	1,920	1,717	**-203**
2014	2,767	9	441	45	770	16	0	0	32	64	8,643	20	7,025	17	3,735	20	23,412	575	5,194	818	785	13,815	43	20,656	526	64,815	19	2,757	67,572	**19**	1,717	1,766	**49**
2015	10,922	9	441	45	775	16	0	0	32	64	28,535	20	5,082	17	1,284	20	47,072	1,103	11,043	1,995	1,279	13,922	70	28,309	706	67,572	19	18,762	86,334	**18**	1,766	2,163	**397**
2016	0	9	442	45	781	16	0	0	32	64	4,422	20	6,676	17	5,368	20	17,721	464	11,058	1,485	1,297	14,163	64	28,066	671	86,334	18	-10,344	75,990	**19**	2,163	1,956	**-206**
2017	0	9	441	45	787	16	0	0	32	64	2,719	20	8,489	17	4,838	20	17,305	445	5,194	883	863	14,662	47	21,649	535	75,990	19	-4,343	71,646	**19**	1,956	1,866	**-91**
2018	2,209	9	441	45	793	16	0	0	32	64	6,147	20	7,672	17	4,354	20	21,648	533	5,194	769	760	14,795	47	21,564	542	71,646	19	85	71,731	**19**	1,866	1,857	**-9**
2019	322	9	441	45	799	16	0	0	32	64	1,955	20	8,363	17	6,035	20	17,947	458	11,043	389	501	13,430	32	25,395	644	71,731	19	-7,448	64,283	**19**	1,857	1,670	**-187**
2020	1,284	9	442	45	805	16	0	0	32	64	3,169	20	8,820	17	4,660	20	19,212	475	5,201	361	408	14,129	34	20,134	512	64,283	19	-922	63,361	**19**	1,670	1,633	**-37**
2021	0	9	441	45	810	16	0	0	32	64	1,104	20	9,939	17	4,877	20	17,204	435	5,194	131	301	14,551	35	20,212	513	63,361	19	-3,008	60,352	**19**	1,633	1,555	**-78**
2022	0	9	441	45	816	16	0	0	32	64	1,597	20	10,486	17	4,616	20	17,989	454	5,194	120	269	14,643	34	20,260	515	60,352	19	-2,272	58,081	**19**	1,555	1,494	**-61**
2023	2,700	9	441	45	822	16	0	0	32	64	7,759	20	8,249	17	3,838	20	23,841	582	5,194	425	340	14,860	38	20,857	528	58,081	19	2,984	61,065	**19**	1,494	1,548	**54**
2024	7,651	9	442	45	828	16	0	0	32	64	24,290	20	3,248	17	1,708	20	38,198	920	5,201	2,480	1,236	15,376	58	24,351	586	61,065	19	13,847	74,912	**18**	1,548	1,882	**334**
2025	6,543	9	441	45	834	16	0	0	32	64	32,570	20	3,754	17	1,742	20	45,915	1,144	11,043	7,610	2,007	15,503	97	36,259	861	74,912	18	9,655	84,567	**19**	1,882	2,166	**284**
2026	0	9	441	45	840	16	0	0	32	64	3,669	20	6,806	17	5,988	20	17,776	465	11,043	1,230	1,052	14,109	52	27,486	677	84,567	19	-9,710	74,857	**19**	2,166	1,953	**-212**
2027	6,612	9	441	45	845	16	0	0	32	64	21,771	20	4,045	17	2,918	20	36,664	890	5,194	3,365	1,714	14,470	64	24,807	603	74,857	19	11,857	86,714	**19**	1,953	2,241	**288**
2028	2,395	9	442	45	851	16	0	0	32	64	7,632	20	4,905	17	5,952	20	22,210	557	11,058	1,893	1,442	13,646	51	28,090	689	86,714	19	-5,880	80,833	**19**	2,241	2,110	**-131**
2029	657	9	441	45	857	16	0	0	32	64	3,902	20	7,106	17	5,903	20	18,898	484	11,043	798	886	12,904	37	25,667	647	80,833	19	-6,769	74,064	**19**	2,110	1,947	**-163**
2030	8,133	9	441	45	863	16	0	0	32	64	50,063	20	3,965	17	-1,666	20	61,830	1,552	11,043	12,976	2,990	15,621	122	42,752	1,045	74,064	19	19,078	93,142	**19**	1,947	2,453	**507**
2031	0	9	441	45	869	16	0	0	32	64	1,809	20	7,529	17	6,268	20	16,948	439	11,043	919	1,135	14,194	51	27,343	690	93,142	19	-10,395	82,747	**20**	2,453	2,202	**-252**
2032	484	9	442	45	875	16	0	0	32	64	2,108	20	8,784	17	5,984	20	18,709	474	11,058	355	715	13,354	33	25,515	660	82,747	20	-6,806	75,941	**20**	2,202	2,016	**-186**
2033	3,549	9	441	45	880	16	0	0	32	64	11,050	20	7,475	17	3,523	20	26,951	657	5,194	650	777	14,023	40	20,684	528	75,941	20	6,267	82,208	**19**	2,016	2,144	**129**
2034	0	9	441	45	886	16	0	0	32	64	1,104	20	7,956	17	5,296	20	15,715	403	5,194	450	607	14,461	41	20,753	525	82,208	19	-5,038	77,170	**19**	2,144	2,022	**-122**
2035	1,203	9	441	45	892	16	0	0	32	64	4,437	20	8,693	17	4,358	20	20,055	500	5,194	386	505	14,526	42	20,654	528	77,170	19	-598	76,572	**19**	2,022	1,994	**-28**

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	Sulfate Conc. For Applied Recycled Water [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	5,123	40	442	124	758	358	0	0	0	0	15,281	140	5,429	108	3,551	235	30,583	5,553	11,058	1,231	1,151	13,877	70	27,387	5,739	69,600	161	3,196	72,795	152	15,223	15,038	-186
2013	333	40	441	124	764	358	0	0	0	0	2,847	140	7,635	108	5,826	235	17,845	3,987	11,043	786	844	13,113	38	25,825	5,160	72,795	152	-7,980	64,815	157	15,038	13,864	-1,174
2014	2,767	40	441	124	770	358	0	0	32	515	8,361	140	7,025	108	3,735	235	23,130	4,433	5,194	818	785	13,815	43	20,656	4,250	64,815	157	2,474	67,290	154	13,864	14,047	183
2015	10,922	40	441	124	775	358	0	0	32	515	28,253	140	5,082	108	1,284	235	46,789	7,585	11,043	1,995	1,279	13,922	70	28,309	5,643	67,290	154	18,480	85,769	137	14,047	15,989	1,943
2016	0	40	442	124	781	358	0	0	32	515	4,139	140	6,676	108	5,368	235	17,439	3,958	11,058	1,485	1,297	14,163	64	28,066	4,990	85,769	137	-10,627	75,143	146	15,989	14,957	-1,032
2017	0	40	441	124	787	358	0	0	32	515	2,437	140	8,489	108	4,838	235	17,023	3,734	5,194	883	863	14,662	47	21,649	4,137	75,143	146	-4,626	70,517	152	14,957	14,554	-403
2018	2,209	40	441	124	793	358	0	0	32	515	5,865	140	7,672	108	4,354	235	21,366	4,233	5,194	769	760	14,795	47	21,564	4,294	70,517	152	-198	70,319	152	14,554	14,494	-60
2019	322	40	441	124	799	358	0	0	32	515	1,673	140	8,363	108	6,035	235	17,664	3,977	11,043	389	501	13,430	32	25,395	5,131	70,319	152	-7,731	62,588	157	14,494	13,340	-1,154
2020	1,284	40	442	124	805	358	0	0	32	515	2,887	140	8,820	108	4,660	235	18,930	3,890	5,201	361	408	14,129	34	20,134	4,204	62,588	157	-1,204	61,384	156	13,340	13,026	-314
2021	0	40	441	124	810	358	0	0	32	515	822	140	9,939	108	4,877	235	16,921	3,665	5,194	131	301	14,551	35	20,212	4,225	61,384	156	-3,291	58,093	158	13,026	12,466	-560
2022	0	40	441	124	816	358	0	0	32	515	1,315	140	10,486	108	4,616	235	17,706	3,758	5,194	120	269	14,643	34	20,260	4,290	58,093	158	-2,554	55,539	158	12,466	11,934	-531
2023	2,700	40	441	124	822	358	0	0	32	515	7,477	140	8,249	108	3,838	235	23,558	4,500	5,194	425	340	14,860	38	20,857	4,409	55,539	158	2,702	58,241	152	11,934	12,025	91
2024	7,651	40	442	124	828	358	0	0	32	515	24,007	140	3,248	108	1,708	235	37,916	6,494	5,201	2,480	1,236	15,376	58	24,351	4,773	58,241	152	13,565	71,805	141	12,025	13,746	1,721
2025	6,543	40	441	124	834	358	0	0	32	515	32,288	140	3,754	108	1,742	235	45,632	8,092	11,043	7,610	2,007	15,503	97	36,259	6,557	71,805	141	9,373	81,178	138	13,746	15,281	1,535
2026	0	40	441	124	840	358	0	0	32	515	3,387	140	6,806	108	5,988	235	17,493	4,061	11,043	1,230	1,052	14,109	52	27,486	4,976	81,178	138	-9,993	71,186	148	15,281	14,366	-915
2027	6,612	40	441	124	845	358	0	0	32	515	21,489	140	4,045	108	2,918	235	36,381	6,471	5,194	3,365	1,714	14,470	64	24,807	4,660	71,186	148	11,574	82,760	144	14,366	16,177	1,811
2028	2,395	40	442	124	851	358	0	0	32	515	7,349	140	4,905	108	5,952	235	21,927	4,658	11,058	1,893	1,442	13,646	51	28,090	5,209	82,760	144	-6,163	76,598	150	16,177	15,626	-550
2029	657	40	441	124	857	358	0	0	32	515	3,620	140	7,106	108	5,903	235	18,616	4,166	11,043	798	886	12,904	37	25,667	5,055	76,598	150	-7,052	69,546	156	15,626	14,737	-889
2030	8,133	40	441	124	863	358	0	0	32	515	49,781	140	3,965	108	-1,666	235	61,547	10,454	11,043	12,976	2,990	15,621	122	42,752	8,426	69,546	156	18,796	88,342	140	14,737	16,765	2,028
2031	0	40	441	124	869	358	0	0	32	515	1,527	140	7,529	108	6,268	235	16,666	3,918	11,043	919	1,135	14,194	51	27,343	4,973	88,342	140	-10,677	77,664	149	16,765	15,709	-1,056
2032	484	40	442	124	875	358	0	0	32	515	1,825	140	8,784	108	5,984	235	18,427	4,097	11,058	355	715	13,354	33	25,515	5,016	77,664	149	-7,089	70,576	154	15,709	14,790	-919
2033	3,549	40	441	124	880	358	0	0	32	515	10,768	140	7,475	108	3,523	235	26,668	4,985	5,194	650	777	14,023	40	20,684	4,172	70,576	154	5,984	76,560	150	14,790	15,603	813
2034	0	40	441	124	886	358	0	0	32	515	822	140	7,956	108	5,296	235	15,433	3,545	5,194	450	607	14,461	41	20,753	4,106	76,560	150	-5,320	71,240	155	15,603	15,042	-561
2035	1,203	40	441	124	892	358	0	0	32	515	4,155	140	8,693	108	4,358	235	19,773	4,054	5,194	386	505	14,526	42	20,654	4,254	71,240	155	-881	70,360	155	15,042	14,841	-201

Projected TDS Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	TDS Conc. For Applied Recycled Water [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	100	30	777	52	2,240	0	0	0	0	1,047	722	372	722	243	723	2,096	1,871	758	84	79	951	5	1,877	1,979	69,600	810	219	69,819	806	76,620	76,511	-109
2013	23	100	30	777	52	2,240	0	0	0	0	195	722	523	722	399	723	1,223	1,292	757	54	58	899	3	1,770	1,876	69,819	806	-547	69,272	806	76,511	75,927	-584
2014	190	100	30	777	53	2,240	0	0	2	3,290	579	722	481	722	256	723	1,591	1,521	356	56	54	947	3	1,416	1,493	69,272	806	175	69,447	804	75,927	75,955	28
2015	749	100	30	777	53	2,240	0	0	2	3,290	1,942	722	348	722	88	723	3,212	2,640	757	137	88	954	5	1,940	2,026	69,447	804	1,272	70,719	796	75,955	76,569	614
2016	0	100	30	777	54	2,240	0	0	2	3,290	289	722	458	722	368	723	1,201	1,300	758	102	89	971	4	1,923	1,986	70,719	796	-723	69,996	797	76,569	75,883	-686
2017	0	100	30	777	54	2,240	0	0	2	3,290	173	722	582	722	332	723	1,172	1,273	356	60	59	1,005	3	1,484	1,544	69,996	797	-311	69,685	798	75,883	75,611	-272
2018	151	100	30	777	54	2,240	0	0	2	3,290	408	722	526	722	298	723	1,470	1,438	356	53	52	1,014	3	1,478	1,547	69,685	798	-8	69,677	797	75,611	75,502	-109
2019	22	100	30	777	55	2,240	0	0	2	3,290	120	722	573	722	414	723	1,216	1,299	757	27	34	920	2	1,740	1,849	69,677	797	-524	69,153	797	75,502	74,952	-550
2020	88	100	30	777	55	2,240	0	0	2	3,290	204	722	605	722	319	723	1,303	1,329	356	25	28	968	2	1,380	1,465	69,153	797	-77	69,076	797	74,952	74,816	-136
2021	0	100	30	777	56	2,240	0	0	2	3,290	62	722	681	722	334	723	1,165	1,269	356	9	21	997	2	1,385	1,478	69,076	797	-220	68,856	797	74,816	74,607	-209
2022	0	100	30	777	56	2,240	0	0	2	3,290	96	722	719	722	316	723	1,219	1,323	356	8	18	1,004	2	1,389	1,485	68,856	797	-169	68,687	797	74,607	74,445	-162
2023	185	100	30	777	56	2,240	0	0	2	3,290	518	722	565	722	263	723	1,620	1,561	356	29	23	1,018	3	1,429	1,524	68,687	797	191	68,878	795	74,445	74,482	37
2024	524	100	30	777	57	2,240	0	0	2	3,290	1,651	722	223	722	117	723	2,604	2,240	356	170	85	1,054	4	1,669	1,713	68,878	795	935	69,813	790	74,482	75,009	527
2025	448	100	30	777	57	2,240	0	0	2	3,290	2,219	722	257	722	119	723	3,133	2,825	757	522	138	1,062	7	2,485	2,522	69,813	790	648	70,461	786	75,009	75,312	302
2026	0	100	30	777	58	2,240	0	0	2	3,290	238	722	466	722	410	723	1,205	1,312	757	84	72	967	4	1,884	1,936	70,461	786	-679	69,782	787	75,312	74,687	-624
2027	453	100	30	777	58	2,240	0	0	2	3,290	1,478	722	277	722	200	723	2,499	2,200	356	231	117	992	4	1,700	1,694	69,782	787	799	70,581	784	74,687	75,193	506
2028	164	100	30	777	58	2,240	0	0	2	3,290	509	722	336	722	408	723	1,508	1,473	758	130	99	935	4	1,925	1,946	70,581	784	-417	70,164	783	75,193	74,721	-473
2029	45	100	30	777	59	2,240	0	0	2	3,290	254	722	487	722	405	723	1,281	1,352	757	55	61	884	3	1,759	1,809	70,164	783	-478	69,686	784	74,721	74,264	-457
2030	557	100	30	777	59	2,240	0	0	2	3,290	3,417	722	272	722	-114	723	4,224	3,807	757	889	205	1,071	8	2,930	2,904	69,686	784	1,294	70,980	779	74,264	75,167	903
2031	0	100	30	777	60	2,240	0	0	2	3,290	110	722	516	722	430	723	1,148	1,260	757	63	78	973	4	1,874	1,902	70,980	779	-726	70,254	780	75,167	74,525	-642
2032	33	100	30	777	60	2,240	0	0	2	3,290	131	722	602	722	410	723	1,269	1,352	758	24	49	915	2	1,749	1,803	70,254	780	-480	69,774	781	74,525	74,074	-451
2033	243	100	30	777	60	2,240	0	0	2	3,290	744	722	512	722	241	723	1,833	1,729	356	45	53	961	3	1,418	1,448	69,774	781	416	70,189	779	74,074	74,354	281
2034	0	100	30	777	61	2,240	0	0	2	3,290	62	722	545	722	363	723	1,063	1,180	356	31	42	991	3	1,422	1,463	70,189	779	-359	69,831	780	74,354	74,072	-283
2035	82	100	30	777	61	2,240	0	0	2	3,290	290	722	596	722	299	723	1,361	1,403	356	26	35	996	3	1,416	1,465	69,831	780	-55	69,776	780	74,072	74,010	-62

Table I-10b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Chloride Conc. For Applied Recycled Water	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	40	30	113	52	326	0	0	0	0	1,047	89	372	98	243	34	2,096	234	758	84	79	951	5	1,877	162	69,600	66	219	69,819	67	6,282	6,354	72
2013	23	40	30	113	52	326	0	0	0	0	195	89	523	98	399	34	1,223	141	757	54	58	899	3	1,770	156	69,819	67	-547	69,272	67	6,354	6,339	-15
2014	190	40	30	113	53	326	0	0	2	374	576	89	481	98	256	34	1,589	185	356	56	54	947	3	1,416	125	69,272	67	173	69,445	68	6,339	6,399	60
2015	749	40	30	113	53	326	0	0	2	374	1,940	89	348	98	88	34	3,210	355	757	137	88	954	5	1,940	171	69,445	68	1,270	70,715	68	6,399	6,583	184
2016	0	40	30	113	54	326	0	0	2	374	287	89	458	98	368	34	1,199	142	758	102	89	971	4	1,923	171	70,715	68	-725	69,990	69	6,583	6,555	-29
2017	0	40	30	113	54	326	0	0	2	374	170	89	582	98	332	34	1,170	143	356	60	59	1,005	3	1,484	133	69,990	69	-314	69,676	69	6,555	6,564	10
2018	151	40	30	113	54	326	0	0	2	374	405	89	526	98	298	34	1,468	171	356	53	52	1,014	3	1,478	134	69,676	69	-10	69,666	70	6,564	6,601	36
2019	22	40	30	113	55	326	0	0	2	374	118	89	573	98	414	34	1,214	141	757	27	34	920	2	1,740	162	69,666	70	-526	69,140	70	6,601	6,580	-21
2020	88	40	30	113	55	326	0	0	2	374	201	89	605	98	319	34	1,301	154	356	25	28	968	2	1,380	129	69,140	70	-79	69,060	70	6,580	6,606	26
2021	0	40	30	113	56	326	0	0	2	374	60	89	681	98	334	34	1,163	144	356	9	21	997	2	1,385	131	69,060	70	-222	68,838	71	6,606	6,619	13
2022	0	40	30	113	56	326	0	0	2	374	94	89	719	98	316	34	1,217	152	356	8	18	1,004	2	1,389	132	68,838	71	-172	68,667	71	6,619	6,639	20
2023	185	40	30	113	56	326	0	0	2	374	516	89	565	98	263	34	1,618	191	356	29	23	1,018	3	1,429	136	68,667	71	189	68,855	71	6,639	6,694	55
2024	524	40	30	113	57	326	0	0	2	374	1,649	89	223	98	117	34	2,602	294	356	170	85	1,054	4	1,669	154	68,855	71	933	69,788	72	6,694	6,833	140
2025	448	40	30	113	57	326	0	0	2	374	2,216	89	257	98	119	34	3,131	363	757	522	138	1,062	7	2,485	230	69,788	72	646	70,434	73	6,833	6,967	133
2026	0	40	30	113	58	326	0	0	2	374	236	89	466	98	410	34	1,202	141	757	84	72	967	4	1,884	179	70,434	73	-681	69,753	73	6,967	6,928	-39
2027	453	40	30	113	58	326	0	0	2	374	1,476	89	277	98	200	34	2,497	281	356	231	117	992	4	1,700	157	69,753	73	797	70,549	74	6,928	7,052	123
2028	164	40	30	113	58	326	0	0	2	374	507	89	336	98	408	34	1,506	165	758	130	99	935	4	1,925	183	70,549	74	-419	70,130	74	7,052	7,034	-17
2029	45	40	30	113	59	326	0	0	2	374	251	89	487	98	405	34	1,279	148	757	55	61	884	3	1,759	170	70,130	74	-480	69,651	74	7,034	7,012	-22
2030	557	40	30	113	59	326	0	0	2	374	3,415	89	272	98	-114	34	4,222	506	757	889	205	1,071	8	2,930	274	69,651	74	1,292	70,942	75	7,012	7,244	232
2031	0	40	30	113	60	326	0	0	2	374	108	89	516	98	430	34	1,146	134	757	63	78	973	4	1,874	183	70,942	75	-728	70,214	75	7,244	7,194	-50
2032	33	40	30	113	60	326	0	0	2	374	129	89	602	98	410	34	1,266	149	758	24	49	915	2	1,749	174	70,214	75	-482	69,731	76	7,194	7,169	-26
2033	243	40	30	113	60	326	0	0	2	374	741	89	512	98	241	34	1,831	215	356	45	53	961	3	1,418	140	69,731	76	414	70,145	76	7,169	7,243	74
2034	0	40	30	113	61	326	0	0	2	374	60	89	545	98	363	34	1,061	129	356	31	42	991	3	1,422	143	70,145	76	-361	69,784	76	7,243	7,230	-13
2035	82	40	30	113	61	326	0	0	2	374	288	89	596	98	299	34	1,359	165	356	26	35	996	3	1,416	143	69,784	76	-57	69,727	76	7,230	7,252	22

Table I-10c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Nitrate Conc. For Applied Recycled Water	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	9	30	45	52	16	0	0	0	0	1,047	20	372	17	243	20	2,096	51	758	84	79	951	5	1,877	60	69,600	25	219	69,819	**24**	2,329	2,320	**-9**
2013	23	9	30	45	52	16	0	0	0	0	195	20	523	17	399	20	1,223	31	757	54	58	899	3	1,770	57	69,819	24	-547	69,272	**24**	2,320	2,294	**-26**
2014	190	9	30	45	53	16	0	0	2	64	592	20	481	17	256	20	1,605	39	356	56	54	947	3	1,416	45	69,272	24	189	69,461	**24**	2,294	2,288	**-6**
2015	749	9	30	45	53	16	0	0	2	64	1,956	20	348	17	88	20	3,226	76	757	137	88	954	5	1,940	61	69,461	24	1,286	70,747	**24**	2,288	2,303	**15**
2016	0	9	30	45	54	16	0	0	2	64	303	20	458	17	368	20	1,215	32	758	102	89	971	4	1,923	60	70,747	24	-709	70,038	**24**	2,303	2,275	**-28**
2017	0	9	30	45	54	16	0	0	2	64	186	20	582	17	332	20	1,186	30	356	60	59	1,005	3	1,484	46	70,038	24	-298	69,740	**24**	2,275	2,259	**-16**
2018	151	9	30	45	54	16	0	0	2	64	421	20	526	17	298	20	1,484	37	356	53	52	1,014	3	1,478	46	69,740	24	6	69,746	**24**	2,259	2,250	**-10**
2019	22	9	30	45	55	16	0	0	2	64	134	20	573	17	414	20	1,230	31	757	27	34	920	2	1,740	55	69,746	24	-510	69,235	**24**	2,250	2,226	**-24**
2020	88	9	30	45	55	16	0	0	2	64	217	20	605	17	319	20	1,317	33	356	25	28	968	2	1,380	43	69,235	24	-63	69,172	**24**	2,226	2,215	**-11**
2021	0	9	30	45	56	16	0	0	2	64	76	20	681	17	334	20	1,179	30	356	9	21	997	2	1,385	44	69,172	24	-206	68,966	**23**	2,215	2,201	**-14**
2022	0	9	30	45	56	16	0	0	2	64	109	20	719	17	316	20	1,233	31	356	8	18	1,004	2	1,389	44	68,966	23	-156	68,810	**23**	2,201	2,189	**-13**
2023	185	9	30	45	56	16	0	0	2	64	532	20	565	17	263	20	1,634	40	356	29	23	1,018	3	1,429	45	68,810	23	205	69,015	**23**	2,189	2,184	**-5**
2024	524	9	30	45	57	16	0	0	2	64	1,665	20	223	17	117	20	2,618	63	356	170	85	1,054	4	1,669	50	69,015	23	949	69,964	**23**	2,184	2,197	**13**
2025	448	9	30	45	57	16	0	0	2	64	2,232	20	257	17	119	20	3,147	78	757	522	138	1,062	7	2,485	74	69,964	23	662	70,625	**23**	2,197	2,201	**5**
2026	0	9	30	45	58	16	0	0	2	64	251	20	466	17	410	20	1,218	32	757	84	72	967	4	1,884	56	70,625	23	-665	69,960	**23**	2,201	2,177	**-25**
2027	453	9	30	45	58	16	0	0	2	64	1,492	20	277	17	200	20	2,513	61	356	231	117	992	4	1,700	49	69,960	23	813	70,773	**23**	2,177	2,188	**12**
2028	164	9	30	45	58	16	0	0	2	64	523	20	336	17	408	20	1,522	38	758	130	99	935	4	1,925	56	70,773	23	-403	70,370	**23**	2,188	2,170	**-18**
2029	45	9	30	45	59	16	0	0	2	64	267	20	487	17	405	20	1,295	33	757	55	61	884	3	1,759	52	70,370	23	-464	69,906	**23**	2,170	2,151	**-19**
2030	557	9	30	45	59	16	0	0	2	64	3,431	20	272	17	-114	20	4,238	106	757	889	205	1,071	8	2,930	84	69,906	23	1,308	71,213	**22**	2,151	2,173	**22**
2031	0	9	30	45	60	16	0	0	2	64	124	20	516	17	430	20	1,162	30	757	63	78	973	4	1,874	55	71,213	22	-712	70,501	**22**	2,173	2,149	**-25**
2032	33	9	30	45	60	16	0	0	2	64	144	20	602	17	410	20	1,282	32	758	24	49	915	2	1,749	52	70,501	22	-466	70,034	**22**	2,149	2,129	**-19**
2033	243	9	30	45	60	16	0	0	2	64	757	20	512	17	241	20	1,847	45	356	45	53	961	3	1,418	41	70,034	22	429	70,464	**22**	2,129	2,133	**4**
2034	0	9	30	45	61	16	0	0	2	64	76	20	545	17	363	20	1,077	28	356	31	42	991	3	1,422	42	70,464	22	-345	70,119	**22**	2,133	2,119	**-14**
2035	82	9	30	45	61	16	0	0	2	64	304	20	596	17	299	20	1,375	34	356	26	35	996	3	1,416	42	70,119	22	-41	70,078	**22**	2,119	2,111	**-7**

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	Sulfate Conc. For Applied Recycled Water [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	40	30	124	52	358	0	0	0	0	1,047	140	372	108	243	235	2,096	381	758	84	79	951	5	1,877	612	69,600	250	219	69,819	**247**	23,705	23,473	**-232**
2013	23	40	30	124	52	358	0	0	0	0	195	140	523	108	399	235	1,223	273	757	54	58	899	3	1,770	576	69,819	247	-547	69,272	**246**	23,473	23,171	**-302**
2014	190	40	30	124	53	358	0	0	2	515	573	140	481	108	256	235	1,585	304	356	56	54	947	3	1,416	456	69,272	246	170	69,441	**244**	23,171	23,019	**-152**
2015	749	40	30	124	53	358	0	0	2	515	1,936	140	348	108	88	235	3,207	520	757	137	88	954	5	1,940	614	69,441	244	1,267	70,708	**238**	23,019	22,925	**-94**
2016	0	40	30	124	54	358	0	0	2	515	284	140	458	108	368	235	1,195	271	758	102	89	971	4	1,923	595	70,708	238	-728	69,980	**238**	22,925	22,601	**-324**
2017	0	40	30	124	54	358	0	0	2	515	167	140	582	108	332	235	1,167	256	356	60	59	1,005	3	1,484	460	69,980	238	-317	69,663	**236**	22,601	22,397	**-204**
2018	151	40	30	124	54	358	0	0	2	515	402	140	526	108	298	235	1,464	290	356	53	52	1,014	3	1,478	458	69,663	236	-14	69,649	**235**	22,397	22,229	**-168**
2019	22	40	30	124	55	358	0	0	2	515	115	140	573	108	414	235	1,211	273	757	27	34	920	2	1,740	545	69,649	235	-530	69,119	**234**	22,229	21,957	**-272**
2020	88	40	30	124	55	358	0	0	2	515	198	140	605	108	319	235	1,297	267	356	25	28	968	2	1,380	429	69,119	234	-83	69,037	**232**	21,957	21,794	**-163**
2021	0	40	30	124	56	358	0	0	2	515	56	140	681	108	334	235	1,160	251	356	9	21	997	2	1,385	431	69,037	232	-226	68,811	**231**	21,794	21,614	**-180**
2022	0	40	30	124	56	358	0	0	2	515	90	140	719	108	316	235	1,214	258	356	8	18	1,004	2	1,389	430	68,811	231	-175	68,636	**230**	21,614	21,442	**-173**
2023	185	40	30	124	56	358	0	0	2	515	512	140	565	108	263	235	1,615	308	356	29	23	1,018	3	1,429	439	68,636	230	185	68,821	**228**	21,442	21,311	**-131**
2024	524	40	30	124	57	358	0	0	2	515	1,645	140	223	108	117	235	2,599	445	356	170	85	1,054	4	1,669	491	68,821	228	930	69,751	**224**	21,311	21,265	**-46**
2025	448	40	30	124	57	358	0	0	2	515	2,213	140	257	108	119	235	3,127	555	757	522	138	1,062	7	2,485	716	69,751	224	642	70,393	**220**	21,265	21,104	**-161**
2026	0	40	30	124	58	358	0	0	2	515	232	140	466	108	410	235	1,199	278	757	84	72	967	4	1,884	543	70,393	220	-685	69,708	**220**	21,104	20,839	**-265**
2027	453	40	30	124	58	358	0	0	2	515	1,473	140	277	108	200	235	2,493	443	356	231	117	992	4	1,700	473	69,708	220	793	70,502	**217**	20,839	20,810	**-30**
2028	164	40	30	124	58	358	0	0	2	515	504	140	336	108	408	235	1,503	319	758	130	99	935	4	1,925	539	70,502	217	-422	70,079	**216**	20,810	20,590	**-220**
2029	45	40	30	124	59	358	0	0	2	515	248	140	487	108	405	235	1,276	286	757	55	61	884	3	1,759	499	70,079	216	-483	69,596	**215**	20,590	20,376	**-213**
2030	557	40	30	124	59	358	0	0	2	515	3,412	140	272	108	-114	235	4,218	716	757	889	205	1,071	8	2,930	798	69,596	215	1,288	70,884	**211**	20,376	20,295	**-81**
2031	0	40	30	124	60	358	0	0	2	515	105	140	516	108	430	235	1,142	269	757	63	78	973	4	1,874	514	70,884	211	-732	70,152	**210**	20,295	20,049	**-246**
2032	33	40	30	124	60	358	0	0	2	515	125	140	602	108	410	235	1,263	281	758	24	49	915	2	1,749	486	70,152	210	-486	69,667	**209**	20,049	19,844	**-205**
2033	243	40	30	124	60	358	0	0	2	515	738	140	512	108	241	235	1,828	342	356	45	53	961	3	1,418	389	69,667	209	410	70,077	**208**	19,844	19,797	**-47**
2034	0	40	30	124	61	358	0	0	2	515	56	140	545	108	363	235	1,058	243	356	31	42	991	3	1,422	390	70,077	208	-365	69,712	**207**	19,797	19,650	**-147**
2035	82	40	30	124	61	358	0	0	2	515	285	140	596	108	299	235	1,355	278	356	26	35	996	3	1,416	389	69,712	207	-60	69,652	**206**	19,650	19,539	**-111**

Projected TDS Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	100	270	808	88	2,330	0	0	1,438	532	0	0	220	647	2,683	1,899	0	0	941	292	754	1,987	1,489	7,647	1,047	695	8,342	**996**	10,883	11,294	**411**
2013	43	100	269	808	88	2,330	0	0	18	532	0	0	520	650	938	1,053	0	0	620	323	718	1,660	1,408	8,342	996	-722	7,620	**1,056**	11,294	10,939	**-355**
2014	360	100	269	808	89	2,330	0	0	1,029	532	0	0	413	648	2,160	1,734	0	0	764	309	718	1,792	1,475	7,620	1,056	368	7,988	**1,031**	10,939	11,198	**259**
2015	1,421	100	269	808	89	2,330	0	0	916	532	0	0	452	632	3,148	1,823	0	0	915	321	755	1,991	1,508	7,988	1,031	1,158	9,146	**926**	11,198	11,513	**315**
2016	0	100	270	808	90	2,330	0	0	0	532	0	0	515	630	875	1,022	0	0	765	341	749	1,854	1,371	9,146	926	-980	8,166	**1,005**	11,513	11,163	**-349**
2017	0	100	269	808	90	2,330	0	0	0	532	0	0	604	629	963	1,098	0	0	373	351	734	1,458	1,484	8,166	1,005	-495	7,671	**1,033**	11,163	10,777	**-386**
2018	288	100	269	808	90	2,330	0	0	796	532	0	0	542	629	1,985	1,661	0	0	544	359	743	1,646	1,547	7,671	1,033	340	8,011	**1,000**	10,777	10,891	**114**
2019	42	100	269	808	91	2,330	0	0	13	532	0	0	555	632	970	1,076	0	0	494	350	830	1,674	1,604	8,011	1,000	-704	7,307	**1,043**	10,891	10,363	**-528**
2020	167	100	270	808	91	2,330	0	0	412	532	0	0	603	634	1,543	1,427	0	0	477	365	903	1,745	1,798	7,307	1,043	-202	7,105	**1,034**	10,363	9,991	**-372**
2021	0	100	269	808	92	2,330	0	0	0	532	0	0	653	639	1,014	1,154	0	0	288	399	892	1,579	1,816	7,105	1,034	-566	6,539	**1,049**	9,991	9,329	**-662**
2022	0	100	269	808	92	2,330	0	0	0	532	0	0	661	644	1,023	1,167	0	0	189	407	918	1,514	1,891	6,539	1,049	-491	6,048	**1,046**	9,329	8,605	**-724**
2023	351	100	269	808	93	2,330	0	0	908	532	0	0	507	644	2,128	1,738	0	0	484	399	1,009	1,892	2,003	6,048	1,046	236	6,283	**976**	8,605	8,339	**-266**
2024	996	100	270	808	93	2,330	0	0	1,326	532	0	0	342	636	3,027	1,982	0	0	848	415	1,094	2,357	2,003	6,283	976	670	6,953	**880**	8,339	8,318	**-21**
2025	851	100	269	808	93	2,330	0	0	1,585	532	0	0	369	630	3,168	2,170	0	0	1,042	409	898	2,348	1,563	6,953	880	820	7,773	**844**	8,318	8,925	**607**
2026	0	100	269	808	94	2,330	0	0	0	532	0	0	603	635	966	1,114	0	0	779	382	852	2,013	1,417	7,773	844	-1,046	6,727	**943**	8,925	8,622	**-303**
2027	860	100	269	808	94	2,330	0	0	1,614	532	0	0	316	629	3,154	2,149	0	0	945	317	783	2,045	1,411	6,727	943	1,109	7,835	**879**	8,622	9,361	**739**
2028	312	100	270	808	95	2,330	0	0	874	532	0	0	370	630	1,920	1,588	0	0	881	306	737	1,924	1,245	7,835	879	-4	7,832	**911**	9,361	9,704	**343**
2029	86	100	269	808	95	2,330	0	0	152	532	0	0	498	634	1,100	1,148	0	0	717	295	696	1,707	1,227	7,832	911	-608	7,224	**980**	9,704	9,625	**-79**
2030	1,058	100	269	808	96	2,330	0	0	1,476	532	0	0	147	626	3,046	1,935	0	0	1,019	266	742	2,026	1,343	7,224	980	1,020	8,244	**912**	9,625	10,218	**593**
2031	0	100	269	808	96	2,330	0	0	0	532	0	0	572	632	938	1,092	0	0	594	305	697	1,596	1,242	8,244	912	-659	7,586	**976**	10,218	10,068	**-150**
2032	63	100	270	808	97	2,330	0	0	80	532	0	0	570	636	1,080	1,162	0	0	373	312	691	1,375	1,330	7,586	976	-296	7,290	**999**	10,068	9,899	**-168**
2033	462	100	269	808	97	2,330	0	0	1,032	532	0	0	439	635	2,299	1,791	0	0	586	314	816	1,716	1,534	7,290	999	584	7,873	**949**	9,899	10,157	**257**
2034	0	100	269	808	97	2,330	0	0	0	532	0	0	477	640	843	1,019	0	0	456	344	759	1,559	1,424	7,873	949	-716	7,158	**1,002**	10,157	9,752	**-404**
2035	157	100	269	808	98	2,330	0	0	378	532	0	0	544	643	1,446	1,377	0	0	419	347	727	1,493	1,463	7,158	1,002	-47	7,111	**1,000**	9,752	9,666	**-87**

Projected Chloride Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	40	270	89	88	256	0	0	1,438	65	0	0	220	39	2,683	239	0	0	941	292	754	1,987	161	7,647	114	695	8,342	111	1,180	1,258	78
2013	43	40	269	89	88	256	0	0	18	65	0	0	520	40	938	95	0	0	620	323	718	1,660	157	8,342	111	-722	7,620	115	1,258	1,196	-61
2014	360	40	269	89	89	256	0	0	1,029	65	0	0	413	40	2,160	197	0	0	764	309	718	1,792	161	7,620	115	368	7,988	113	1,196	1,232	36
2015	1,421	40	269	89	89	256	0	0	916	65	0	0	452	41	3,148	248	0	0	915	321	755	1,991	166	7,988	113	1,158	9,146	106	1,232	1,314	82
2016	0	40	270	89	90	256	0	0	0	65	0	0	515	41	875	92	0	0	765	341	749	1,854	157	9,146	106	-980	8,166	113	1,314	1,250	-64
2017	0	40	269	89	90	256	0	0	0	65	0	0	604	40	963	97	0	0	373	351	734	1,458	166	8,166	113	-495	7,671	113	1,250	1,181	-69
2018	288	40	269	89	90	256	0	0	796	65	0	0	542	41	1,985	181	0	0	544	359	743	1,646	169	7,671	113	340	8,011	109	1,181	1,192	11
2019	42	40	269	89	91	256	0	0	13	65	0	0	555	41	970	99	0	0	494	350	830	1,674	176	8,011	109	-704	7,307	112	1,192	1,115	-77
2020	167	40	270	89	91	256	0	0	412	65	0	0	603	42	1,543	145	0	0	477	365	903	1,745	194	7,307	112	-202	7,105	110	1,115	1,066	-49
2021	0	40	269	89	92	256	0	0	0	65	0	0	653	43	1,014	102	0	0	288	399	892	1,579	194	7,105	110	-566	6,539	110	1,066	975	-91
2022	0	40	269	89	92	256	0	0	0	65	0	0	661	44	1,023	104	0	0	189	407	918	1,514	198	6,539	110	-491	6,048	107	975	881	-94
2023	351	40	269	89	93	256	0	0	908	65	0	0	507	44	2,128	195	0	0	484	399	1,009	1,892	205	6,048	107	236	6,283	102	881	871	-10
2024	996	40	270	89	93	256	0	0	1,326	65	0	0	342	45	3,027	258	0	0	848	415	1,094	2,357	209	6,283	102	670	6,953	97	871	920	49
2025	851	40	269	89	93	256	0	0	1,585	65	0	0	369	46	3,168	276	0	0	1,042	409	898	2,348	173	6,953	97	820	7,773	97	920	1,023	103
2026	0	40	269	89	94	256	0	0	0	65	0	0	603	47	966	104	0	0	779	382	852	2,013	162	7,773	97	-1,046	6,727	105	1,023	965	-58
2027	860	40	269	89	94	256	0	0	1,614	65	0	0	316	48	3,154	276	0	0	945	317	783	2,045	158	6,727	105	1,109	7,835	102	965	1,083	119
2028	312	40	270	89	95	256	0	0	874	65	0	0	370	49	1,920	185	0	0	881	306	737	1,924	144	7,835	102	-4	7,832	106	1,083	1,124	41
2029	86	40	269	89	95	256	0	0	152	65	0	0	498	50	1,100	117	0	0	717	295	696	1,707	142	7,832	106	-608	7,224	112	1,124	1,099	-25
2030	1,058	40	269	89	96	256	0	0	1,476	65	0	0	147	50	3,046	265	0	0	1,019	266	742	2,026	153	7,224	112	1,020	8,244	108	1,099	1,211	111
2031	0	40	269	89	96	256	0	0	0	65	0	0	572	51	938	106	0	0	594	305	697	1,596	147	8,244	108	-659	7,586	113	1,211	1,169	-41
2032	63	40	270	89	97	256	0	0	80	65	0	0	570	52	1,080	117	0	0	373	312	691	1,375	155	7,586	113	-296	7,290	114	1,169	1,132	-38
2033	462	40	269	89	97	256	0	0	1,032	65	0	0	439	52	2,299	215	0	0	586	314	816	1,716	175	7,290	114	584	7,873	109	1,132	1,171	39
2034	0	40	269	89	97	256	0	0	0	65	0	0	477	53	843	101	0	0	456	344	759	1,559	164	7,873	109	-716	7,158	114	1,171	1,108	-63
2035	157	40	269	89	98	256	0	0	378	65	0	0	544	54	1,446	149	0	0	419	347	727	1,493	166	7,158	114	-47	7,111	113	1,108	1,090	-18

Table I-11c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	9	270	46	88	17	0	0	1,438	7	0	0	220	20	2,683	47	0	0	941	292	754	1,987	44	7,647	31	695	8,342	**29**	321	324	**3**
2013	43	9	269	46	88	17	0	0	18	7	0	0	520	20	938	34	0	0	620	323	718	1,660	40	8,342	29	-722	7,620	**31**	324	318	**-7**
2014	360	9	269	46	89	17	0	0	1,029	7	0	0	413	20	2,160	44	0	0	764	309	718	1,792	43	7,620	31	368	7,988	**29**	318	319	**2**
2015	1,421	9	269	46	89	17	0	0	916	7	0	0	452	20	3,148	57	0	0	915	321	755	1,991	43	7,988	29	1,158	9,146	**27**	319	333	**14**
2016	0	9	270	46	90	17	0	0	0	7	0	0	515	20	875	33	0	0	765	341	749	1,854	40	9,146	27	-980	8,166	**29**	333	326	**-7**
2017	0	9	269	46	90	17	0	0	0	7	0	0	604	20	963	35	0	0	373	351	734	1,458	43	8,166	29	-495	7,671	**31**	326	318	**-8**
2018	288	9	269	46	90	17	0	0	796	7	0	0	542	20	1,985	45	0	0	544	359	743	1,646	46	7,671	31	340	8,011	**29**	318	317	**-1**
2019	42	9	269	46	91	17	0	0	13	7	0	0	555	20	970	35	0	0	494	350	830	1,674	47	8,011	29	-704	7,307	**31**	317	305	**-12**
2020	167	9	270	46	91	17	0	0	412	7	0	0	603	20	1,543	41	0	0	477	365	903	1,745	53	7,307	31	-202	7,105	**30**	305	293	**-12**
2021	0	9	269	46	92	17	0	0	0	7	0	0	653	20	1,014	37	0	0	288	399	892	1,579	53	7,105	30	-566	6,539	**31**	293	276	**-17**
2022	0	9	269	46	92	17	0	0	0	7	0	0	661	20	1,023	37	0	0	189	407	918	1,514	56	6,539	31	-491	6,048	**31**	276	257	**-19**
2023	351	9	269	46	93	17	0	0	908	7	0	0	507	20	2,128	46	0	0	484	399	1,009	1,892	60	6,048	31	236	6,283	**28**	257	243	**-14**
2024	996	9	270	46	93	17	0	0	1,326	7	0	0	342	19	3,027	53	0	0	848	415	1,094	2,357	58	6,283	28	670	6,953	**25**	243	237	**-5**
2025	851	9	269	46	93	17	0	0	1,585	7	0	0	369	19	3,168	54	0	0	1,042	409	898	2,348	45	6,953	25	820	7,773	**23**	237	247	**10**
2026	0	9	269	46	94	17	0	0	0	7	0	0	603	19	966	35	0	0	779	382	852	2,013	39	7,773	23	-1,046	6,727	**27**	247	243	**-4**
2027	860	9	269	46	94	17	0	0	1,614	7	0	0	316	19	3,154	53	0	0	945	317	783	2,045	40	6,727	27	1,109	7,835	**24**	243	256	**13**
2028	312	9	270	46	95	17	0	0	874	7	0	0	370	19	1,920	41	0	0	881	306	737	1,924	34	7,835	24	-4	7,832	**25**	256	263	**7**
2029	86	9	269	46	95	17	0	0	152	7	0	0	498	19	1,100	34	0	0	717	295	696	1,707	33	7,832	25	-608	7,224	**27**	263	264	**1**
2030	1,058	9	269	46	96	17	0	0	1,476	7	0	0	147	19	3,046	50	0	0	1,019	266	742	2,026	37	7,224	27	1,020	8,244	**25**	264	277	**13**
2031	0	9	269	46	96	17	0	0	0	7	0	0	572	19	938	34	0	0	594	305	697	1,596	34	8,244	25	-659	7,586	**27**	277	277	**0**
2032	63	9	270	46	97	17	0	0	80	7	0	0	570	19	1,080	35	0	0	373	312	691	1,375	37	7,586	27	-296	7,290	**28**	277	276	**-1**
2033	462	9	269	46	97	17	0	0	1,032	7	0	0	439	19	2,299	46	0	0	586	314	816	1,716	43	7,290	28	584	7,873	**26**	276	279	**3**
2034	0	9	269	46	97	17	0	0	0	7	0	0	477	19	843	31	0	0	456	344	759	1,559	39	7,873	26	-716	7,158	**28**	279	271	**-8**
2035	157	9	269	46	98	17	0	0	378	7	0	0	544	19	1,446	39	0	0	419	347	727	1,493	41	7,158	28	-47	7,111	**28**	271	269	**-2**

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	40	270	170	88	490	0	0	1,438	103	0	0	220	266	2,683	437	0	0	941	292	754	1,987	330	7,647	232	695	8,342	**222**	2,410	2,518	**108**
2013	43	40	269	170	88	490	0	0	18	103	0	0	520	266	938	314	0	0	620	323	718	1,660	314	8,342	222	-722	7,620	**243**	2,518	2,518	**0**
2014	360	40	269	170	89	490	0	0	1,029	103	0	0	413	265	2,160	433	0	0	764	309	718	1,792	339	7,620	243	368	7,988	**240**	2,518	2,612	**94**
2015	1,421	40	269	170	89	490	0	0	916	103	0	0	452	257	3,148	485	0	0	915	321	755	1,991	352	7,988	240	1,158	9,146	**221**	2,612	2,745	**133**
2016	0	40	270	170	90	490	0	0	0	103	0	0	515	257	875	302	0	0	765	341	749	1,854	327	9,146	221	-980	8,166	**245**	2,745	2,720	**-25**
2017	0	40	269	170	90	490	0	0	0	103	0	0	604	258	963	334	0	0	373	351	734	1,458	362	8,166	245	-495	7,671	**258**	2,720	2,693	**-28**
2018	288	40	269	170	90	490	0	0	796	103	0	0	542	257	1,985	438	0	0	544	359	743	1,646	387	7,671	258	340	8,011	**252**	2,693	2,744	**52**
2019	42	40	269	170	91	490	0	0	13	103	0	0	555	257	970	321	0	0	494	350	830	1,674	404	8,011	252	-704	7,307	**268**	2,744	2,661	**-83**
2020	167	40	270	170	91	490	0	0	412	103	0	0	603	257	1,543	400	0	0	477	365	903	1,745	462	7,307	268	-202	7,105	**269**	2,661	2,599	**-62**
2021	0	40	269	170	92	490	0	0	0	103	0	0	653	257	1,014	352	0	0	288	399	892	1,579	472	7,105	269	-566	6,539	**279**	2,599	2,479	**-121**
2022	0	40	269	170	92	490	0	0	0	103	0	0	661	258	1,023	355	0	0	189	407	918	1,514	502	6,539	279	-491	6,048	**284**	2,479	2,332	**-147**
2023	351	40	269	170	93	490	0	0	908	103	0	0	507	256	2,128	446	0	0	484	399	1,009	1,892	543	6,048	284	236	6,283	**262**	2,332	2,235	**-97**
2024	996	40	270	170	93	490	0	0	1,326	103	0	0	342	251	3,027	480	0	0	848	415	1,094	2,357	537	6,283	262	670	6,953	**230**	2,235	2,178	**-57**
2025	851	40	269	170	93	490	0	0	1,585	103	0	0	369	246	3,168	516	0	0	1,042	409	898	2,348	409	6,953	230	820	7,773	**216**	2,178	2,285	**106**
2026	0	40	269	170	94	490	0	0	0	103	0	0	603	247	966	327	0	0	779	382	852	2,013	363	7,773	216	-1,046	6,727	**246**	2,285	2,249	**-35**
2027	860	40	269	170	94	490	0	0	1,614	103	0	0	316	243	3,154	502	0	0	945	317	783	2,045	368	6,727	246	1,109	7,835	**224**	2,249	2,383	**134**
2028	312	40	270	170	95	490	0	0	874	103	0	0	370	242	1,920	386	0	0	881	306	737	1,924	317	7,835	224	-4	7,832	**230**	2,383	2,452	**69**
2029	86	40	269	170	95	490	0	0	152	103	0	0	498	243	1,100	316	0	0	717	295	696	1,707	310	7,832	230	-608	7,224	**250**	2,452	2,458	**6**
2030	1,058	40	269	170	96	490	0	0	1,476	103	0	0	147	238	3,046	437	0	0	1,019	266	742	2,026	343	7,224	250	1,020	8,244	**228**	2,458	2,552	**94**
2031	0	40	269	170	96	490	0	0	0	103	0	0	572	239	938	312	0	0	594	305	697	1,596	310	8,244	228	-659	7,586	**248**	2,552	2,554	**2**
2032	63	40	270	170	97	490	0	0	80	103	0	0	570	239	1,080	327	0	0	373	312	691	1,375	337	7,586	248	-296	7,290	**257**	2,554	2,544	**-11**
2033	462	40	269	170	97	490	0	0	1,032	103	0	0	439	238	2,299	438	0	0	586	314	816	1,716	394	7,290	257	584	7,873	**242**	2,544	2,587	**44**
2034	0	40	269	170	97	490	0	0	0	103	0	0	477	239	843	282	0	0	456	344	759	1,559	363	7,873	242	-716	7,158	**258**	2,587	2,506	**-81**
2035	157	40	269	170	98	490	0	0	378	103	0	0	544	239	1,446	365	0	0	419	347	727	1,493	376	7,158	258	-47	7,111	**258**	2,506	2,496	**-11**

Table I-12a

Projected TDS Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	TDS Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,214	100	181	833	772	2,400	0	0	6,085	532	0	0	292	996	7,741	647	19,285	14,902	0	0	3,696	5,579	6,113	15,388	15,390	25,728	968	3,898	29,626	**829**	33,864	33,377	**-487**
2013	274	100	181	833	773	2,400	0	0	737	532	0	0	323	1,056	7,805	650	10,092	10,653	0	0	2,366	5,283	5,691	13,340	12,364	29,626	829	-3,248	26,378	**883**	33,377	31,666	**-1,711**
2014	2,277	100	181	833	773	2,400	0	0	4,962	532	0	0	309	1,031	5,898	648	14,400	12,255	0	0	3,004	4,371	5,819	13,193	12,232	26,378	883	1,207	27,584	**845**	31,666	31,688	**23**
2015	8,986	100	181	833	774	2,400	0	0	3,952	532	0	0	321	926	7,949	632	22,163	14,045	0	0	3,654	5,444	5,995	15,094	13,141	27,584	845	7,069	34,653	**692**	31,688	32,592	**904**
2016	0	100	181	833	774	2,400	0	0	0	532	0	0	341	1,005	7,973	630	9,269	10,027	0	0	2,869	5,612	5,895	14,376	10,823	34,653	692	-5,107	29,546	**791**	32,592	31,797	**-796**
2017	0	100	181	833	775	2,400	0	0	0	532	0	0	351	1,033	6,506	629	7,813	8,793	0	0	1,336	4,660	5,570	11,566	11,009	29,546	791	-3,753	25,793	**843**	31,797	29,581	**-2,216**
2018	1,818	100	181	833	775	2,400	0	0	3,992	532	0	0	359	1,000	6,610	629	13,735	12,009	0	0	1,990	4,603	5,635	12,228	11,741	25,793	843	1,507	27,300	**804**	29,581	29,849	**268**
2019	265	100	181	833	776	2,400	0	0	718	532	0	0	350	1,043	8,284	632	10,573	10,909	0	0	2,032	5,266	6,714	14,012	13,098	27,300	804	-3,439	23,861	**853**	29,849	27,659	**-2,189**
2020	1,056	100	181	833	777	2,400	0	0	2,381	532	0	0	365	1,034	6,737	634	11,497	10,929	0	0	1,988	4,526	7,631	14,145	14,091	23,861	853	-2,648	21,213	**849**	27,659	24,496	**-3,163**
2021	0	100	181	833	777	2,400	0	0	0	532	0	0	399	1,049	7,303	639	8,660	9,654	0	0	1,158	4,606	6,841	12,605	13,218	21,213	849	-3,945	17,268	**892**	24,496	20,932	**-3,564**
2022	0	100	181	833	778	2,400	0	0	0	532	0	0	407	1,046	7,656	644	9,022	10,024	0	0	641	4,695	7,299	12,634	14,539	17,268	892	-3,613	13,655	**884**	20,932	16,418	**-4,515**
2023	2,221	100	181	833	778	2,400	0	0	4,160	532	0	0	399	976	7,733	644	15,472	13,360	0	0	1,778	4,860	8,634	15,272	16,224	13,655	884	200	13,855	**719**	16,418	13,553	**-2,865**
2024	6,294	100	181	833	779	2,400	0	0	5,602	532	0	0	415	880	7,784	636	21,055	14,881	0	0	3,291	5,093	9,390	17,773	14,167	13,855	719	3,282	17,137	**612**	13,553	14,267	**714**
2025	5,383	100	181	833	779	2,400	0	0	6,749	532	0	0	409	844	9,956	630	23,456	17,355	0	0	3,925	6,385	6,698	17,008	10,892	17,137	612	6,448	23,585	**646**	14,267	20,730	**6,463**
2026	0	100	181	833	780	2,400	0	0	0	532	0	0	382	943	9,740	635	11,083	11,652	0	0	2,752	6,115	6,755	15,622	11,312	23,585	646	-4,539	19,046	**814**	20,730	21,070	**340**
2027	5,440	100	181	833	780	2,400	0	0	6,946	532	0	0	317	879	7,174	629	20,839	15,030	0	0	3,643	5,043	6,144	14,830	12,376	19,046	814	6,009	25,055	**696**	21,070	23,724	**2,654**
2028	1,971	100	181	833	781	2,400	0	0	3,950	532	0	0	306	911	8,915	630	16,103	13,897	0	0	3,258	5,909	5,878	15,046	11,161	25,055	696	1,057	26,111	**745**	23,724	26,459	**2,735**
2029	541	100	181	833	782	2,400	0	0	1,290	532	0	0	295	980	8,093	634	11,180	11,135	0	0	2,680	5,351	5,672	13,703	11,170	26,111	745	-2,523	23,588	**824**	26,459	26,425	**-35**
2030	6,691	100	181	833	782	2,400	0	0	6,310	532	0	0	266	912	8,894	626	23,124	16,133	0	0	4,022	6,386	6,317	16,725	14,230	23,588	824	6,399	29,987	**695**	26,425	28,327	**1,902**
2031	0	100	181	833	783	2,400	0	0	0	532	0	0	305	976	8,493	632	9,761	10,457	0	0	2,131	5,727	5,715	13,573	10,808	29,987	695	-3,813	26,175	**786**	28,327	27,975	**-351**
2032	398	100	181	833	783	2,400	0	0	988	532	0	0	312	999	8,113	636	10,775	10,969	0	0	1,578	5,357	5,540	12,475	11,646	26,175	786	-1,700	24,475	**820**	27,975	27,298	**-678**
2033	2,920	100	181	833	784	2,400	0	0	4,407	532	0	0	314	949	6,391	635	14,997	12,271	0	0	2,214	4,529	6,770	13,513	12,602	24,475	820	1,484	25,959	**764**	27,298	26,966	**-331**
2034	0	100	181	833	784	2,400	0	0	0	532	0	0	344	1,002	6,724	640	8,033	9,088	0	0	1,679	4,641	5,741	12,061	10,785	25,959	764	-4,027	21,932	**847**	26,966	25,270	**-1,696**
2035	990	100	181	833	785	2,400	0	0	2,240	532	0	0	347	1,000	6,695	643	11,237	10,849	0	0	1,470	4,544	5,450	11,464	11,515	21,932	847	-228	21,705	**834**	25,270	24,604	**-666**

Table I-12b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	Chloride Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]
2012	4,214	40	181	95	772	275	0	0	6,085	65	0	0	292	111	7,741	39	19,285	1,541
2013	274	40	181	95	773	275	0	0	737	65	0	0	323	115	7,805	40	10,092	866
2014	2,277	40	181	95	773	275	0	0	4,962	65	0	0	309	113	5,898	40	14,400	1,249
2015	8,986	40	181	95	774	275	0	0	3,952	65	0	0	321	106	7,949	41	22,163	1,641
2016	0	40	181	95	774	275	0	0	0	65	0	0	341	113	7,973	41	9,269	805
2017	0	40	181	95	775	275	0	0	0	65	0	0	351	113	6,506	40	7,813	724
2018	1,818	40	181	95	775	275	0	0	3,992	65	0	0	359	109	6,610	41	13,735	1,187
2019	265	40	181	95	776	275	0	0	718	65	0	0	350	112	8,284	41	10,573	911
2020	1,056	40	181	95	777	275	0	0	2,381	65	0	0	365	110	6,737	42	11,497	1,023
2021	0	40	181	95	777	275	0	0	0	65	0	0	399	110	7,303	43	8,660	798
2022	0	40	181	95	778	275	0	0	0	65	0	0	407	107	7,656	44	9,022	827
2023	2,221	40	181	95	778	275	0	0	4,160	65	0	0	399	102	7,733	44	15,472	1,328
2024	6,294	40	181	95	779	275	0	0	5,602	65	0	0	415	97	7,784	45	21,055	1,691
2025	5,383	40	181	95	779	275	0	0	6,749	65	0	0	409	97	9,956	46	23,456	1,890
2026	0	40	181	95	780	275	0	0	0	65	0	0	382	105	9,740	47	11,083	996
2027	5,440	40	181	95	780	275	0	0	6,946	65	0	0	317	102	7,174	48	20,839	1,742
2028	1,971	40	181	95	781	275	0	0	3,950	65	0	0	306	106	8,915	49	16,103	1,410
2029	541	40	181	95	782	275	0	0	1,290	65	0	0	295	112	8,093	50	11,180	1,050
2030	6,691	40	181	95	782	275	0	0	6,310	65	0	0	266	108	8,894	50	23,124	1,889
2031	0	40	181	95	783	275	0	0	0	65	0	0	305	113	8,493	51	9,761	953
2032	398	40	181	95	783	275	0	0	988	65	0	0	312	114	8,113	52	10,775	1,046
2033	2,920	40	181	95	784	275	0	0	4,407	65	0	0	314	109	6,391	52	14,997	1,370
2034	0	40	181	95	784	275	0	0	0	65	0	0	344	114	6,724	53	8,033	856
2035	990	40	181	95	785	275	0	0	2,240	65	0	0	347	113	6,695	54	11,237	1,114

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	0	0	3,696	5,579	6,113	15,388	1,636	25,728	103	3,898	29,626	87	3,600	3,505	-95
2013	0	0	2,366	5,283	5,691	13,340	1,298	29,626	87	-3,248	26,378	86	3,505	3,073	-432
2014	0	0	3,004	4,371	5,819	13,193	1,187	26,378	86	1,207	27,584	84	3,073	3,135	62
2015	0	0	3,654	5,444	5,995	15,094	1,300	27,584	84	7,069	34,653	74	3,135	3,476	341
2016	0	0	2,869	5,612	5,895	14,376	1,154	34,653	74	-5,107	29,546	78	3,476	3,126	-350
2017	0	0	1,336	4,660	5,570	11,566	1,082	29,546	78	-3,753	25,793	79	3,126	2,767	-359
2018	0	0	1,990	4,603	5,635	12,228	1,098	25,793	79	1,507	27,300	77	2,767	2,856	89
2019	0	0	2,032	5,266	6,714	14,012	1,253	27,300	77	-3,439	23,861	77	2,856	2,514	-342
2020	0	0	1,988	4,526	7,631	14,145	1,281	23,861	77	-2,648	21,213	78	2,514	2,256	-258
2021	0	0	1,158	4,606	6,841	12,605	1,217	21,213	78	-3,945	17,268	78	2,256	1,837	-419
2022	0	0	641	4,695	7,299	12,634	1,276	17,268	78	-3,613	13,655	75	1,837	1,388	-449
2023	0	0	1,778	4,860	8,634	15,272	1,371	13,655	75	200	13,855	71	1,388	1,344	-43
2024	0	0	3,291	5,093	9,390	17,773	1,405	13,855	71	3,282	17,137	70	1,344	1,631	286
2025	0	0	3,925	6,385	6,698	17,008	1,245	17,137	70	6,448	23,585	71	1,631	2,276	646
2026	0	0	2,752	6,115	6,755	15,622	1,242	23,585	71	-4,539	19,046	78	2,276	2,031	-246
2027	0	0	3,643	5,043	6,144	14,830	1,193	19,046	78	6,009	25,055	76	2,031	2,580	549
2028	0	0	3,258	5,909	5,878	15,046	1,214	25,055	76	1,057	26,111	78	2,580	2,776	196
2029	0	0	2,680	5,351	5,672	13,703	1,172	26,111	78	-2,523	23,588	83	2,776	2,655	-121
2030	0	0	4,022	6,386	6,317	16,725	1,430	23,588	83	6,399	29,987	76	2,655	3,114	459
2031	0	0	2,131	5,727	5,715	13,573	1,188	29,987	76	-3,813	26,175	81	3,114	2,878	-235
2032	0	0	1,578	5,357	5,540	12,475	1,198	26,175	81	-1,700	24,475	82	2,878	2,726	-153
2033	0	0	2,214	4,529	6,770	13,513	1,258	24,475	82	1,484	25,959	80	2,726	2,837	111
2034	0	0	1,679	4,641	5,741	12,061	1,135	25,959	80	-4,027	21,932	86	2,837	2,559	-278
2035	0	0	1,470	4,544	5,450	11,464	1,166	21,932	86	-228	21,705	85	2,559	2,507	-52

Table I-12c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Nitrate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	9	181	46	772	17	0	0	6,085	7	0	0	292	29	7,741	20	19,285	360	0	0	3,696	5,579	6,113	15,388	323	25,728	20	3,898	29,626	19	710	747	38
2013	274	9	181	46	773	17	0	0	737	7	0	0	323	31	7,805	20	10,092	265	0	0	2,366	5,283	5,691	13,340	277	29,626	19	-3,248	26,378	21	747	736	-11
2014	2,277	9	181	46	773	17	0	0	4,962	7	0	0	309	29	5,898	20	14,400	277	0	0	3,004	4,371	5,819	13,193	284	26,378	21	1,207	27,584	19	736	728	-8
2015	8,986	9	181	46	774	17	0	0	3,952	7	0	0	321	27	7,949	20	22,163	398	0	0	3,654	5,444	5,995	15,094	302	27,584	19	7,069	34,653	18	728	825	96
2016	0	9	181	46	774	17	0	0	0	7	0	0	341	29	7,973	20	9,269	255	0	0	2,869	5,612	5,895	14,376	274	34,653	18	-5,107	29,546	20	825	806	-18
2017	0	9	181	46	775	17	0	0	0	7	0	0	351	31	6,506	20	7,813	217	0	0	1,336	4,660	5,570	11,566	279	29,546	20	-3,753	25,793	21	806	744	-62
2018	1,818	9	181	46	775	17	0	0	3,992	7	0	0	359	29	6,610	20	13,735	280	0	0	1,990	4,603	5,635	12,228	295	25,793	21	1,507	27,300	20	744	729	-16
2019	265	9	181	46	776	17	0	0	718	7	0	0	350	31	8,284	20	10,573	275	0	0	2,032	5,266	6,714	14,012	320	27,300	20	-3,439	23,861	21	729	684	-45
2020	1,056	9	181	46	777	17	0	0	2,381	7	0	0	365	30	6,737	20	11,497	259	0	0	1,988	4,526	7,631	14,145	348	23,861	21	-2,648	21,213	21	684	595	-89
2021	0	9	181	46	777	17	0	0	0	7	0	0	399	31	7,303	20	8,660	241	0	0	1,158	4,606	6,841	12,605	321	21,213	21	-3,945	17,268	22	595	515	-80
2022	0	9	181	46	778	17	0	0	0	7	0	0	407	31	7,656	20	9,022	251	0	0	641	4,695	7,299	12,634	358	17,268	22	-3,613	13,655	22	515	408	-106
2023	2,221	9	181	46	778	17	0	0	4,160	7	0	0	399	28	7,733	20	15,472	317	0	0	1,778	4,860	8,634	15,272	404	13,655	22	200	13,855	17	408	322	-86
2024	6,294	9	181	46	779	17	0	0	5,602	7	0	0	415	25	7,784	19	21,055	377	0	0	3,291	5,093	9,390	17,773	337	13,855	17	3,282	17,137	16	322	362	40
2025	5,383	9	181	46	779	17	0	0	6,749	7	0	0	409	23	9,956	19	23,456	430	0	0	3,925	6,385	6,698	17,008	277	17,137	16	6,448	23,585	16	362	516	153
2026	0	9	181	46	780	17	0	0	0	7	0	0	382	27	9,740	19	11,083	296	0	0	2,752	6,115	6,755	15,622	281	23,585	16	-4,539	19,046	20	516	530	15
2027	5,440	9	181	46	780	17	0	0	6,946	7	0	0	317	24	7,174	19	20,839	356	0	0	3,643	5,043	6,144	14,830	312	19,046	20	6,009	25,055	17	530	575	45
2028	1,971	9	181	46	781	17	0	0	3,950	7	0	0	306	25	8,915	19	16,103	330	0	0	3,258	5,909	5,878	15,046	271	25,055	17	1,057	26,111	18	575	634	59
2029	541	9	181	46	782	17	0	0	1,290	7	0	0	295	27	8,093	19	11,180	267	0	0	2,680	5,351	5,672	13,703	268	26,111	18	-2,523	23,588	20	634	633	-1
2030	6,691	9	181	46	782	17	0	0	6,310	7	0	0	266	25	8,894	19	23,124	405	0	0	4,022	6,386	6,317	16,725	341	23,588	20	6,399	29,987	17	633	697	64
2031	0	9	181	46	783	17	0	0	0	7	0	0	305	27	8,493	19	9,761	256	0	0	2,131	5,727	5,715	13,573	266	29,987	17	-3,813	26,175	19	697	687	-10
2032	398	9	181	46	783	17	0	0	988	7	0	0	312	28	8,113	19	10,775	262	0	0	1,578	5,357	5,540	12,475	286	26,175	19	-1,700	24,475	20	687	663	-24
2033	2,920	9	181	46	784	17	0	0	4,407	7	0	0	314	26	6,391	19	14,997	280	0	0	2,214	4,529	6,770	13,513	306	24,475	20	1,484	25,959	18	663	637	-26
2034	0	9	181	46	784	17	0	0	0	7	0	0	344	28	6,724	19	8,033	213	0	0	1,679	4,641	5,741	12,061	255	25,959	18	-4,027	21,932	20	637	595	-42
2035	990	9	181	46	785	17	0	0	2,240	7	0	0	347	28	6,695	19	11,237	246	0	0	1,470	4,544	5,450	11,464	271	21,932	20	-228	21,705	19	595	570	-25

Table I-12d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Sulfate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	40	181	178	772	512	0	0	6,085	103	0	0	292	222	7,741	266	19,285	4,548	0	0	3,696	5,579	6,113	15,388	3,571	25,728	225	3,898	29,626	219	7,858	8,835	977
2013	274	40	181	178	773	512	0	0	737	103	0	0	323	243	7,805	266	10,092	3,633	0	0	2,366	5,283	5,691	13,340	3,273	29,626	219	-3,248	26,378	256	8,835	9,195	360
2014	2,277	40	181	178	773	512	0	0	4,962	103	0	0	309	240	5,898	265	14,400	3,622	0	0	3,004	4,371	5,819	13,193	3,552	26,378	256	1,207	27,584	247	9,195	9,266	71
2015	8,986	40	181	178	774	512	0	0	3,952	103	0	0	321	221	7,949	257	22,163	4,500	0	0	3,654	5,444	5,995	15,094	3,842	27,584	247	7,069	34,653	211	9,266	9,924	658
2016	0	40	181	178	774	512	0	0	0	103	0	0	341	245	7,973	257	9,269	3,486	0	0	2,869	5,612	5,895	14,376	3,295	34,653	211	-5,107	29,546	252	9,924	10,114	191
2017	0	40	181	178	775	512	0	0	0	103	0	0	351	258	6,506	258	7,813	2,986	0	0	1,336	4,660	5,570	11,566	3,502	29,546	252	-3,753	25,793	274	10,114	9,598	-516
2018	1,818	40	181	178	775	512	0	0	3,992	103	0	0	359	252	6,610	257	13,735	3,669	0	0	1,990	4,603	5,635	12,228	3,810	25,793	274	1,507	27,300	255	9,598	9,458	-141
2019	265	40	181	178	776	512	0	0	718	103	0	0	350	268	8,284	257	10,573	3,720	0	0	2,032	5,266	6,714	14,012	4,150	27,300	255	-3,439	23,861	278	9,458	9,028	-430
2020	1,056	40	181	178	777	512	0	0	2,381	103	0	0	365	269	6,737	257	11,497	3,458	0	0	1,988	4,526	7,631	14,145	4,599	23,861	278	-2,648	21,213	273	9,028	7,886	-1,141
2021	0	40	181	178	777	512	0	0	0	103	0	0	399	279	7,303	257	8,660	3,290	0	0	1,158	4,606	6,841	12,605	4,255	21,213	273	-3,945	17,268	295	7,886	6,921	-965
2022	0	40	181	178	778	512	0	0	0	103	0	0	407	284	7,656	258	9,022	3,426	0	0	641	4,695	7,299	12,634	4,807	17,268	295	-3,613	13,655	298	6,921	5,540	-1,381
2023	2,221	40	181	178	778	512	0	0	4,160	103	0	0	399	262	7,733	256	15,472	4,123	0	0	1,778	4,860	8,634	15,272	5,474	13,655	298	200	13,855	222	5,540	4,188	-1,352
2024	6,294	40	181	178	779	512	0	0	5,602	103	0	0	415	230	7,784	251	21,055	4,494	0	0	3,291	5,093	9,390	17,773	4,378	13,855	222	3,282	17,137	185	4,188	4,304	116
2025	5,383	40	181	178	779	512	0	0	6,749	103	0	0	409	216	9,956	246	23,456	5,277	0	0	3,925	6,385	6,698	17,008	3,286	17,137	185	6,448	23,585	196	4,304	6,295	1,991
2026	0	40	181	178	780	512	0	0	0	103	0	0	382	246	9,740	247	11,083	3,987	0	0	2,752	6,115	6,755	15,622	3,435	23,585	196	-4,539	19,046	264	6,295	6,848	552
2027	5,440	40	181	178	780	512	0	0	6,946	103	0	0	317	224	7,174	243	20,839	4,321	0	0	3,643	5,043	6,144	14,830	4,022	19,046	264	6,009	25,055	210	6,848	7,147	299
2028	1,971	40	181	178	781	512	0	0	3,950	103	0	0	306	230	8,915	242	16,103	4,279	0	0	3,258	5,909	5,878	15,046	3,362	25,055	210	1,057	26,111	227	7,147	8,063	917
2029	541	40	181	178	782	512	0	0	1,290	103	0	0	295	250	8,093	243	11,180	3,568	0	0	2,680	5,351	5,672	13,703	3,404	26,111	227	-2,523	23,588	257	8,063	8,228	164
2030	6,691	40	181	178	782	512	0	0	6,310	103	0	0	266	228	8,894	238	23,124	4,793	0	0	4,022	6,386	6,317	16,725	4,431	23,588	257	6,399	29,987	211	8,228	8,590	363
2031	0	40	181	178	783	512	0	0	0	103	0	0	305	248	8,493	239	9,761	3,450	0	0	2,131	5,727	5,715	13,573	3,278	29,987	211	-3,813	26,175	246	8,590	8,763	173
2032	398	40	181	178	783	512	0	0	988	103	0	0	312	257	8,113	239	10,775	3,499	0	0	1,578	5,357	5,540	12,475	3,648	26,175	246	-1,700	24,475	259	8,763	8,614	-149
2033	2,920	40	181	178	784	512	0	0	4,407	103	0	0	314	242	6,391	238	14,997	3,534	0	0	2,214	4,529	6,770	13,513	3,977	24,475	259	1,484	25,959	231	8,614	8,171	-443
2034	0	40	181	178	784	512	0	0	0	103	0	0	344	258	6,724	239	8,033	2,893	0	0	1,679	4,641	5,741	12,061	3,268	25,959	231	-4,027	21,932	261	8,171	7,796	-375
2035	990	40	181	178	785	512	0	0	2,240	103	0	0	347	258	6,695	239	11,237	3,251	0	0	1,470	4,544	5,450	11,464	3,552	21,932	261	-228	21,705	254	7,796	7,495	-301

Table I-13a

Projected TDS Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	TDS Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	TDS Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	TDS Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	100	148	783	666	2,256	0	4,991	4,100	671	11,675	671	0	0	14,829	722	5,579	700	-5,182	700	36,707	32,199	13,388	6,543	1,102	7,025	2,202	30,260	29,526	78,359	745	6,447	84,807	711	79,349	82,022	2,673
2013	318	100	147	783	667	2,256	0	4,991	4,100	671	623	671	0	0	14,012	747	5,283	700	-1,853	700	23,297	24,048	13,370	5,290	763	7,327	2,152	28,902	27,215	84,807	711	-5,606	79,201	732	82,022	78,855	-3,168
2014	2,643	100	147	783	668	2,256	0	4,991	4,100	671	9,328	671	0	0	14,762	740	4,371	700	-1,307	700	34,712	32,594	19,000	4,129	642	8,008	1,988	33,766	32,979	79,201	732	946	80,147	720	78,855	78,469	-385
2015	10,432	100	147	783	669	2,256	0	4,991	4,100	671	7,637	671	0	0	14,876	677	5,444	700	-2,935	700	40,371	30,425	13,370	6,633	1,215	7,370	2,077	30,665	28,833	80,147	720	9,706	89,853	655	78,469	80,061	1,591
2016	0	100	148	783	671	2,256	0	4,991	4,100	671	22	671	0	0	15,133	717	5,612	700	-1,341	700	24,345	24,785	13,388	6,166	1,189	7,743	2,067	30,553	26,164	89,853	655	-6,208	83,645	692	80,061	78,682	-1,378
2017	0	100	147	783	672	2,256	0	4,991	4,100	671	1,107	671	0	0	15,667	745	4,660	700	848	700	27,201	28,083	19,000	3,885	533	8,261	1,907	33,586	31,091	83,645	692	-6,384	77,261	720	78,682	75,674	-3,009
2018	2,110	100	147	783	673	2,256	0	4,991	4,100	671	6,804	671	0	0	15,809	745	4,603	700	-1,083	700	33,163	31,826	19,000	3,363	368	8,124	1,874	32,729	31,695	77,261	720	434	77,695	718	75,674	75,804	130
2019	307	100	147	783	674	2,256	0	4,991	4,100	671	1,495	671	0	0	14,351	763	5,266	700	-3,014	700	23,326	24,393	13,370	3,153	354	7,742	2,770	27,388	26,376	77,695	718	-4,063	73,633	737	75,804	73,820	-1,984
2020	1,226	100	148	783	676	2,256	1	4,991	4,100	671	3,145	671	0	0	15,098	764	4,526	700	-549	700	28,371	28,480	19,025	1,993	233	8,101	3,847	33,200	33,050	73,633	737	-4,829	68,804	740	73,820	69,249	-4,571
2021	0	100	147	783	677	2,256	5	4,991	4,100	671	1,865	671	0	0	15,548	778	4,606	700	-1,231	700	25,717	27,379	19,000	1,039	145	7,777	2,964	30,926	30,980	68,804	740	-5,209	63,595	759	69,249	65,649	-3,601
2022	0	100	147	783	678	2,256	8	4,991	4,100	671	2,046	671	0	0	15,646	788	4,695	700	-1,738	700	25,582	27,481	19,000	446	103	7,575	3,913	31,037	31,933	63,595	759	-5,456	58,140	774	65,649	61,197	-4,451
2023	2,579	100	147	783	679	2,256	10	4,991	4,100	671	7,378	671	0	0	15,878	761	4,860	700	-3,762	700	31,870	30,602	19,000	116	59	7,195	5,828	32,198	33,829	58,140	774	-328	57,812	737	61,197	57,970	-3,228
2024	7,308	100	148	783	681	2,256	10	4,991	4,100	671	12,189	671	0	0	16,430	707	5,093	700	-6,421	700	39,537	32,697	19,025	89	57	6,910	6,185	32,266	32,297	57,812	737	7,270	65,082	660	57,970	58,370	400
2025	6,249	100	147	783	682	2,256	11	4,991	4,100	671	15,600	671	0	0	16,565	700	6,385	700	-11,665	700	38,074	31,880	13,370	1,542	341	6,661	3,074	24,988	22,105	65,082	660	13,086	78,168	641	58,370	68,145	9,776
2026	0	100	147	783	683	2,256	11	4,991	4,100	671	1,616	671	0	0	15,076	735	6,115	700	-6,621	700	21,128	22,120	13,370	2,478	340	7,167	3,302	26,658	22,943	78,168	641	-5,530	72,638	682	68,145	67,322	-823
2027	6,316	100	147	783	684	2,256	12	4,991	4,100	671	18,602	671	0	0	15,461	712	5,043	700	-7,168	700	43,198	36,846	19,000	3,486	848	7,540	2,460	33,333	30,108	72,638	682	9,865	82,503	660	67,322	74,060	6,738
2028	2,288	100	148	783	686	2,256	12	4,991	4,100	671	6,191	671	0	0	14,581	727	5,909	700	-6,388	700	27,526	25,993	13,388	3,997	959	7,278	2,396	28,018	24,290	82,503	660	-492	82,011	679	74,060	75,763	1,703
2029	628	100	147	783	687	2,256	12	4,991	4,100	671	1,321	671	0	0	13,788	749	5,351	700	-3,217	700	22,816	23,444	13,370	4,157	668	7,520	2,351	28,065	25,310	82,011	679	-5,249	76,761	708	75,763	73,897	-1,866
2030	7,768	100	147	783	688	2,256	12	4,991	4,100	671	10,899	671	0	0	16,691	715	6,386	700	-6,483	700	40,209	33,218	13,370	6,759	1,511	7,590	2,348	31,578	28,945	76,761	708	8,631	85,392	673	73,897	78,170	4,273
2031	0	100	147	783	689	2,256	12	4,991	4,100	671	334	671	0	0	15,167	745	5,727	700	-2,158	700	24,018	25,150	13,370	5,605	949	7,347	2,196	29,467	26,106	85,392	673	-5,449	79,943	710	78,170	77,214	-956
2032	462	100	148	783	691	2,256	12	4,991	4,100	671	908	671	0	0	14,269	762	5,357	700	-1,941	700	24,005	25,023	13,388	4,630	601	7,722	2,213	28,554	26,998	79,943	710	-4,549	75,394	734	77,214	75,239	-1,975
2033	3,390	100	147	783	692	2,256	12	4,991	4,100	671	9,510	671	0	0	14,985	746	4,529	700	-1,642	700	35,723	33,189	19,000	3,599	451	8,143	2,652	33,846	33,325	75,394	734	1,877	77,271	715	75,239	75,102	-137
2034	0	100	147	783	693	2,256	12	4,991	4,100	671	1,593	671	0	0	15,452	767	4,641	700	-826	700	25,812	27,308	19,000	2,424	274	8,055	2,052	31,805	30,646	77,271	715	-5,993	71,278	740	75,102	71,764	-3,338
2035	1,149	100	147	783	694	2,256	12	4,991	4,100	671	3,133	671	0	0	15,522	770	4,544	700	-670	700	28,631	29,063	19,000	2,279	233	7,800	1,914	31,226	31,204	71,278	740	-2,595	68,683	746	71,764	69,623	-2,141

Projected Chloride Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	Chloride Conc. for Saugus WRP Infiltration	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Chloride Conc. for Inflow From MZ1	Inflow From MZ3	Chloride Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]
2012	4,893	40	148	109	666	314	0	694	4,100	126	11,675	89	0	0	14,829	87	5,579	28	-5,182	28	36,707
2013	318	40	147	109	667	314	0	694	4,100	126	623	89	0	0	14,012	87	5,283	28	-1,853	28	23,297
2014	2,643	40	147	109	668	314	0	694	4,100	126	9,328	89	0	0	14,762	88	4,371	28	-1,307	28	34,712
2015	10,432	40	147	109	669	314	0	694	4,100	126	7,637	89	0	0	14,876	86	5,444	28	-2,935	28	40,371
2016	0	40	148	109	671	314	0	694	4,100	126	22	89	0	0	15,133	87	5,612	28	-1,341	28	24,345
2017	0	40	147	109	672	314	0	694	4,100	126	1,107	89	0	0	15,667	89	4,660	28	848	28	27,201
2018	2,110	40	147	109	673	314	0	694	4,100	126	6,804	89	0	0	15,809	89	4,603	28	-1,083	28	33,163
2019	307	40	147	109	674	314	0	694	4,100	126	1,495	89	0	0	14,351	89	5,266	28	-3,014	28	23,326
2020	1,226	40	148	109	676	314	1	694	4,100	126	3,145	89	0	0	15,098	89	4,526	28	-549	28	28,371
2021	0	40	147	109	677	314	5	694	4,100	126	1,865	89	0	0	15,548	90	4,606	28	-1,231	28	25,717
2022	0	40	147	109	678	314	8	694	4,100	126	2,046	89	0	0	15,646	91	4,695	28	-1,738	28	25,582
2023	2,579	40	147	109	679	314	10	694	4,100	126	7,378	89	0	0	15,878	90	4,860	28	-3,762	28	31,870
2024	7,308	40	148	109	681	314	10	694	4,100	126	12,189	89	0	0	16,430	88	5,093	28	-6,421	28	39,537
2025	6,249	40	147	109	682	314	11	694	4,100	126	15,600	89	0	0	16,565	89	6,385	28	-11,665	28	38,074
2026	0	40	147	109	683	314	11	694	4,100	126	1,616	89	0	0	15,076	89	6,115	28	-6,621	28	21,128
2027	6,316	40	147	109	684	314	12	694	4,100	126	18,602	89	0	0	15,461	88	5,043	28	-7,168	28	43,198
2028	2,288	40	148	109	686	314	12	694	4,100	126	6,191	89	0	0	14,581	88	5,909	28	-6,388	28	27,526
2029	628	40	147	109	687	314	12	694	4,100	126	1,321	89	0	0	13,788	88	5,351	28	-3,217	28	22,816
2030	7,768	40	147	109	688	314	12	694	4,100	126	10,899	89	0	0	16,691	91	6,386	28	-6,483	28	40,209
2031	0	40	147	109	689	314	12	694	4,100	126	334	89	0	0	15,167	91	5,727	28	-2,158	28	24,018
2032	462	40	148	109	691	314	12	694	4,100	126	908	89	0	0	14,269	91	5,357	28	-1,941	28	24,005
2033	3,390	40	147	109	692	314	12	694	4,100	126	9,510	89	0	0	14,985	90	4,529	28	-1,642	28	35,723
2034	0	40	147	109	693	314	12	694	4,100	126	1,593	89	0	0	15,452	91	4,641	28	-826	28	25,812
2035	1,149	40	147	109	694	314	12	694	4,100	126	3,133	89	0	0	15,522	91	4,544	28	-670	28	28,631

Year	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,450	13,388	6,543	1,102	7,025	2,202	30,260	3,811	78,359	96	6,447	84,807	**94**	10,241	10,880	**639**
2013	2,894	13,370	5,290	763	7,327	2,152	28,902	3,610	84,807	94	-5,606	79,201	**94**	10,880	10,165	**-716**
2014	4,159	19,000	4,129	642	8,008	1,988	33,766	4,251	79,201	94	946	80,147	**92**	10,165	10,072	**-93**
2015	4,327	13,370	6,633	1,215	7,370	2,077	30,665	3,701	80,147	92	9,706	89,853	**88**	10,072	10,698	**626**
2016	2,974	13,388	6,166	1,189	7,743	2,067	30,553	3,496	89,853	88	-6,208	83,645	**89**	10,698	10,176	**-522**
2017	3,252	19,000	3,885	533	8,261	1,907	33,586	4,021	83,645	89	-6,384	77,261	**90**	10,176	9,406	**-769**
2018	3,995	19,000	3,363	368	8,124	1,874	32,729	3,940	77,261	90	434	77,695	**90**	9,406	9,462	**55**
2019	3,025	13,370	3,153	354	7,742	2,770	27,388	3,292	77,695	90	-4,063	73,633	**92**	9,462	9,194	**-268**
2020	3,436	19,025	1,993	233	8,101	3,847	33,200	4,116	73,633	92	-4,829	68,804	**91**	9,194	8,513	**-681**
2021	3,272	19,000	1,039	145	7,777	2,964	30,926	3,809	68,804	91	-5,209	63,595	**92**	8,513	7,976	**-537**
2022	3,316	19,000	446	103	7,575	3,913	31,037	3,880	63,595	92	-5,456	58,140	**94**	7,976	7,412	**-564**
2023	4,035	19,000	116	59	7,195	5,828	32,198	4,097	58,140	94	-328	57,812	**93**	7,412	7,349	**-63**
2024	4,806	19,025	89	57	6,910	6,185	32,266	4,095	57,812	93	7,270	65,082	**91**	7,349	8,061	**711**
2025	5,046	13,370	1,542	341	6,661	3,074	24,988	3,053	65,082	91	13,086	78,168	**95**	8,061	10,054	**1,993**
2026	3,032	13,370	2,478	340	7,167	3,302	26,658	3,385	78,168	95	-5,530	72,638	**98**	10,054	9,701	**-353**
2027	5,394	19,000	3,486	848	7,540	2,460	33,333	4,338	72,638	98	9,865	82,503	**96**	9,701	10,756	**1,056**
2028	3,622	13,388	3,997	959	7,278	2,396	28,018	3,528	82,503	96	-492	82,011	**97**	10,756	10,851	**94**
2029	2,956	13,370	4,157	668	7,520	2,351	28,065	3,625	82,011	97	-5,249	76,761	**98**	10,851	10,182	**-669**
2030	4,834	13,370	6,759	1,511	7,590	2,348	31,578	3,988	76,761	98	8,631	85,392	**95**	10,182	11,028	**846**
2031	3,089	13,370	5,605	949	7,347	2,196	29,467	3,683	85,392	95	-5,449	79,943	**96**	11,028	10,434	**-594**
2032	3,060	13,388	4,630	601	7,722	2,213	28,554	3,648	79,943	96	-4,549	75,394	**96**	10,434	9,845	**-589**
2033	4,313	19,000	3,599	451	8,143	2,652	33,846	4,361	75,394	96	1,877	77,271	**93**	9,845	9,798	**-47**
2034	3,277	19,000	2,424	274	8,055	2,052	31,805	3,998	77,271	93	-5,993	71,278	**94**	9,798	9,077	**-721**
2035	3,543	19,000	2,279	233	7,800	1,914	31,226	3,947	71,278	94	-2,595	68,683	**93**	9,077	8,673	**-404**

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	Nitrate Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Nitrate Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Nitrate Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]
2012	4,893	9	148	44	666	16	0	35	4,100	20	11,675	20	0	0	14,829	19	5,579	20	-5,182	20	36,707	912
2013	318	9	147	44	667	16	0	35	4,100	20	623	20	0	0	14,012	19	5,283	20	-1,853	20	23,297	620
2014	2,643	9	147	44	668	16	0	35	4,100	20	9,328	20	0	0	14,762	19	4,371	20	-1,307	20	34,712	889
2015	10,432	9	147	44	669	16	0	35	4,100	20	7,637	20	0	0	14,876	18	5,444	20	-2,935	20	40,371	908
2016	0	9	148	44	671	16	0	35	4,100	20	22	20	0	0	15,133	19	5,612	20	-1,341	20	24,345	641
2017	0	9	147	44	672	16	0	35	4,100	20	1,107	20	0	0	15,667	19	4,660	20	848	20	27,201	723
2018	2,110	9	147	44	673	16	0	35	4,100	20	6,804	20	0	0	15,809	19	4,603	20	-1,083	20	33,163	850
2019	307	9	147	44	674	16	0	35	4,100	20	1,495	20	0	0	14,351	19	5,266	20	-3,014	20	23,326	613
2020	1,226	9	148	44	676	16	1	35	4,100	20	3,145	20	0	0	15,098	19	4,526	20	-549	20	28,371	732
2021	0	9	147	44	677	16	5	35	4,100	20	1,865	20	0	0	15,548	19	4,606	20	-1,231	20	25,717	678
2022	0	9	147	44	678	16	8	35	4,100	20	2,046	20	0	0	15,646	19	4,695	20	-1,738	20	25,582	674
2023	2,579	9	147	44	679	16	10	35	4,100	20	7,378	20	0	0	15,878	19	4,860	20	-3,762	20	31,870	799
2024	7,308	9	148	44	681	16	10	35	4,100	20	12,189	20	0	0	16,430	18	5,093	20	-6,421	20	39,537	931
2025	6,249	9	147	44	682	16	11	35	4,100	20	15,600	20	0	0	16,565	19	6,385	20	-11,665	20	38,074	915
2026	0	9	147	44	683	16	11	35	4,100	20	1,616	20	0	0	15,076	19	6,115	20	-6,621	20	21,128	559
2027	6,316	9	147	44	684	16	12	35	4,100	20	18,602	20	0	0	15,461	19	5,043	20	-7,168	20	43,198	1,059
2028	2,288	9	148	44	686	16	12	35	4,100	20	6,191	20	0	0	14,581	19	5,909	20	-6,388	20	27,526	699
2029	628	9	147	44	687	16	12	35	4,100	20	1,321	20	0	0	13,788	19	5,351	20	-3,217	20	22,816	599
2030	7,768	9	147	44	688	16	12	35	4,100	20	10,899	20	0	0	16,691	19	6,386	20	-6,483	20	40,209	962
2031	0	9	147	44	689	16	12	35	4,100	20	334	20	0	0	15,167	20	5,727	20	-2,158	20	24,018	645
2032	462	9	148	44	691	16	12	35	4,100	20	908	20	0	0	14,269	20	5,357	20	-1,941	20	24,005	637
2033	3,390	9	147	44	692	16	12	35	4,100	20	9,510	20	0	0	14,985	19	4,529	20	-1,642	20	35,723	904
2034	0	9	147	44	693	16	12	35	4,100	20	1,593	20	0	0	15,452	19	4,641	20	-826	20	25,812	688
2035	1,149	9	147	44	694	16	12	35	4,100	20	3,133	20	0	0	15,522	19	4,544	20	-670	20	28,631	744

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	13,388	6,543	1,102	7,025	2,202	30,260	803	78,359	20	6,447	84,807	**20**	2,158	2,267	**110**
2013	13,370	5,290	763	7,327	2,152	28,902	752	84,807	20	-5,606	79,201	**20**	2,267	2,135	**-132**
2014	19,000	4,129	642	8,008	1,988	33,766	893	79,201	20	946	80,147	**20**	2,135	2,131	**-4**
2015	13,370	6,633	1,215	7,370	2,077	30,665	783	80,147	20	9,706	89,853	**18**	2,131	2,256	**125**
2016	13,388	6,166	1,189	7,743	2,067	30,553	737	89,853	18	-6,208	83,645	**19**	2,256	2,160	**-96**
2017	19,000	3,885	533	8,261	1,907	33,586	853	83,645	19	-6,384	77,261	**19**	2,160	2,029	**-131**
2018	19,000	3,363	368	8,124	1,874	32,729	850	77,261	19	434	77,695	**19**	2,029	2,029	**0**
2019	13,370	3,153	354	7,742	2,770	27,388	706	77,695	19	-4,063	73,633	**19**	2,029	1,936	**-93**
2020	19,025	1,993	233	8,101	3,847	33,200	867	73,633	19	-4,829	68,804	**19**	1,936	1,802	**-135**
2021	19,000	1,039	145	7,777	2,964	30,926	806	68,804	19	-5,209	63,595	**19**	1,802	1,674	**-128**
2022	19,000	446	103	7,575	3,913	31,037	814	63,595	19	-5,456	58,140	**19**	1,674	1,533	**-140**
2023	19,000	116	59	7,195	5,828	32,198	848	58,140	19	-328	57,812	**19**	1,533	1,485	**-48**
2024	19,025	89	57	6,910	6,185	32,266	827	57,812	19	7,270	65,082	**18**	1,485	1,589	**104**
2025	13,370	1,542	341	6,661	3,074	24,988	602	65,082	18	13,086	78,168	**18**	1,589	1,902	**313**
2026	13,370	2,478	340	7,167	3,302	26,658	640	78,168	18	-5,530	72,638	**18**	1,902	1,821	**-81**
2027	19,000	3,486	848	7,540	2,460	33,333	814	72,638	18	9,865	82,503	**18**	1,821	2,065	**244**
2028	13,388	3,997	959	7,278	2,396	28,018	677	82,503	18	-492	82,011	**19**	2,065	2,087	**22**
2029	13,370	4,157	668	7,520	2,351	28,065	697	82,011	19	-5,249	76,761	**19**	2,087	1,989	**-98**
2030	13,370	6,759	1,511	7,590	2,348	31,578	779	76,761	19	8,631	85,392	**19**	1,989	2,172	**183**
2031	13,370	5,605	949	7,347	2,196	29,467	725	85,392	19	-5,449	79,943	**19**	2,172	2,092	**-80**
2032	13,388	4,630	601	7,722	2,213	28,554	731	79,943	19	-4,549	75,394	**19**	2,092	1,998	**-94**
2033	19,000	3,599	451	8,143	2,652	33,846	885	75,394	19	1,877	77,271	**19**	1,998	2,017	**19**
2034	19,000	2,424	274	8,055	2,052	31,805	823	77,271	19	-5,993	71,278	**19**	2,017	1,882	**-136**
2035	19,000	2,279	233	7,800	1,914	31,226	818	71,278	19	-2,595	68,683	**19**	1,882	1,808	**-74**

Table I-13d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	Sulfate Conc. for Saugus WRP Infiltration	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Sulfate Conc. for Inflow From MZ1	Inflow From MZ3	Sulfate Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	40	148	143	666	413	0	913	4,100	179	11,675	179	0	0	14,829	152	5,579	235	-5,182	235	36,707	7,687	13,388	6,543	1,102	7,025	2,202	30,260	7,598	78,359	192	6,447	84,807	178	20,419	20,509	89
2013	318	40	147	143	667	413	0	913	4,100	179	623	179	0	0	14,012	157	5,283	235	-1,853	235	23,297	5,660	13,370	5,290	763	7,327	2,152	28,902	6,805	84,807	178	-5,606	79,201	180	20,509	19,364	-1,145
2014	2,643	40	147	143	668	413	0	913	4,100	179	9,328	179	0	0	14,762	154	4,371	235	-1,307	235	34,712	7,867	19,000	4,129	642	8,008	1,988	33,766	8,098	79,201	180	946	80,147	176	19,364	19,132	-231
2015	10,432	40	147	143	669	413	0	913	4,100	179	7,637	179	0	0	14,876	137	5,444	235	-2,935	235	40,371	7,396	13,370	6,633	1,215	7,370	2,077	30,665	7,030	80,147	176	9,706	89,853	160	19,132	19,498	365
2016	0	40	148	143	671	413	0	913	4,100	179	22	179	0	0	15,133	146	5,612	235	-1,341	235	24,345	5,783	13,388	6,166	1,189	7,743	2,067	30,553	6,372	89,853	160	-6,208	83,645	166	19,498	18,909	-589
2017	0	40	147	143	672	413	0	913	4,100	179	1,107	179	0	0	15,667	152	4,660	235	848	235	27,201	6,663	19,000	3,885	533	8,261	1,907	33,586	7,472	83,645	166	-6,384	77,261	172	18,909	18,100	-809
2018	2,110	40	147	143	673	413	0	913	4,100	179	6,804	179	0	0	15,809	152	4,603	235	-1,083	235	33,163	7,551	19,000	3,363	368	8,124	1,874	32,729	7,581	77,261	172	434	77,695	171	18,100	18,070	-30
2019	307	40	147	143	674	413	0	913	4,100	179	1,495	179	0	0	14,351	157	5,266	235	-3,014	235	23,326	5,560	13,370	3,153	354	7,742	2,770	27,388	6,287	77,695	171	-4,063	73,633	173	18,070	17,342	-728
2020	1,226	40	148	143	676	413	1	913	4,100	179	3,145	179	0	0	15,098	156	4,526	235	-549	235	28,371	6,709	19,025	1,993	233	8,101	3,847	33,200	7,764	73,633	173	-4,829	68,804	174	17,342	16,287	-1,055
2021	0	40	147	143	677	413	5	913	4,100	179	1,865	179	0	0	15,548	158	4,606	235	-1,231	235	25,717	6,278	19,000	1,039	145	7,777	2,964	30,926	7,286	68,804	174	-5,209	63,595	177	16,287	15,278	-1,009
2022	0	40	147	143	678	413	8	913	4,100	179	2,046	179	0	0	15,646	158	4,695	235	-1,738	235	25,582	6,217	19,000	446	103	7,575	3,913	31,037	7,432	63,595	177	-5,456	58,140	178	15,278	14,064	-1,214
2023	2,579	40	147	143	679	413	10	913	4,100	179	7,378	179	0	0	15,878	152	4,860	235	-3,762	235	31,870	6,978	19,000	116	59	7,195	5,828	32,198	7,774	58,140	178	-328	57,812	169	14,064	13,267	-797
2024	7,308	40	148	143	681	413	10	913	4,100	179	12,189	179	0	0	16,430	141	5,093	235	-6,421	235	39,537	7,496	19,025	89	57	6,910	6,185	32,266	7,392	57,812	169	7,270	65,082	151	13,267	13,371	104
2025	6,249	40	147	143	682	413	11	913	4,100	179	15,600	179	0	0	16,565	138	6,385	235	-11,665	235	38,074	6,977	13,370	1,542	341	6,661	3,074	24,988	5,064	65,082	151	13,086	78,168	144	13,371	15,285	1,914
2026	0	40	147	143	683	413	11	913	4,100	179	1,616	179	0	0	15,076	148	6,115	235	-6,621	235	21,128	4,694	13,370	2,478	340	7,167	3,302	26,658	5,146	78,168	144	-5,530	72,638	150	15,285	14,833	-452
2027	6,316	40	147	143	684	413	12	913	4,100	179	18,602	179	0	0	15,461	144	5,043	235	-7,168	235	43,198	8,624	19,000	3,486	848	7,540	2,460	33,333	6,634	72,638	150	9,865	82,503	150	14,833	16,823	1,990
2028	2,288	40	148	143	686	413	12	913	4,100	179	6,191	179	0	0	14,581	150	5,909	235	-6,388	235	27,526	5,872	13,388	3,997	959	7,278	2,396	28,018	5,518	82,503	150	-492	82,011	154	16,823	17,178	354
2029	628	40	147	143	687	413	12	913	4,100	179	1,321	179	0	0	13,788	156	5,351	235	-3,217	235	22,816	5,382	13,370	4,157	668	7,520	2,351	28,065	5,739	82,011	154	-5,249	76,761	161	17,178	16,821	-356
2030	7,768	40	147	143	688	413	12	913	4,100	179	10,899	179	0	0	16,691	140	6,386	235	-6,483	235	40,209	7,629	13,370	6,759	1,511	7,590	2,348	31,578	6,589	76,761	161	8,631	85,392	154	16,821	17,862	1,041
2031	0	40	147	143	689	413	12	913	4,100	179	334	179	0	0	15,167	149	5,727	235	-2,158	235	24,018	5,715	13,370	5,605	949	7,347	2,196	29,467	5,965	85,392	154	-5,449	79,943	162	17,862	17,611	-251
2032	462	40	148	143	691	413	12	913	4,100	179	908	179	0	0	14,269	154	5,357	235	-1,941	235	24,005	5,753	13,388	4,630	601	7,722	2,213	28,554	6,158	79,943	162	-4,549	75,394	168	17,611	17,207	-405
2033	3,390	40	147	143	692	413	12	913	4,100	179	9,510	179	0	0	14,985	150	4,529	235	-1,642	235	35,723	7,896	19,000	3,599	451	8,143	2,652	33,846	7,621	75,394	168	1,877	77,271	166	17,207	17,481	274
2034	0	40	147	143	693	413	12	913	4,100	179	1,593	179	0	0	15,452	155	4,641	235	-826	235	25,812	6,296	19,000	2,424	274	8,055	2,052	31,805	7,133	77,271	166	-5,993	71,278	172	17,481	16,644	-838
2035	1,149	40	147	143	694	413	12	913	4,100	179	3,133	179	0	0	15,522	155	4,544	235	-670	235	28,631	6,763	19,000	2,279	233	7,800	1,914	31,226	7,237	71,278	172	-2,595	68,683	173	16,644	16,170	-474

Table I-14a

Projected TDS Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Castaic Dam Underflow	TDS Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	TDS Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	100	102	758	157	2,186	0	4,835	15,920	762	1,705	274	0	0	7,025	917	7,024	550	36,335	32,310	13,450	10,864	2,012	6,573	961	33,858	33,496	50,440	774	2,476	52,916	721	53,052	51,866	-1,186
2013	286	100	102	758	163	2,186	0	4,835	7,623	762	1,700	274	0	0	7,327	917	10,093	550	27,295	25,842	13,428	8,774	1,727	6,438	802	31,169	28,857	52,916	721	-3,874	49,042	733	51,866	48,851	-3,015
2014	2,378	100	102	758	168	2,186	0	4,835	12,252	762	1,700	274	0	0	8,008	917	8,591	550	33,199	30,663	15,448	8,078	1,748	6,487	675	32,436	30,568	49,042	733	763	49,805	723	48,851	48,946	95
2015	9,386	100	102	758	174	2,186	0	4,835	9,835	762	1,700	274	0	0	7,370	917	10,328	550	38,895	29,633	13,428	12,219	2,038	6,694	717	35,096	32,488	49,805	723	3,799	53,605	632	48,946	46,091	-2,855
2016	0	100	102	758	179	2,186	0	4,835	5,803	762	1,705	274	0	0	7,743	917	11,610	550	27,142	25,620	13,450	9,022	1,783	6,475	646	31,377	25,445	53,605	632	-4,235	49,370	689	46,091	46,266	175
2017	0	100	102	758	185	2,186	0	4,835	6,281	762	1,700	274	0	0	8,261	917	11,431	550	27,960	26,643	15,448	7,323	1,633	6,432	573	31,408	27,904	49,370	689	-3,448	45,922	721	46,266	45,005	-1,261
2018	1,899	100	102	758	190	2,186	5	4,835	10,488	762	1,700	274	0	0	8,124	917	9,355	550	31,864	29,588	15,448	7,442	1,652	6,480	589	31,612	29,361	45,922	721	252	46,174	720	45,005	45,233	227
2019	277	100	102	758	196	2,186	21	4,835	7,161	762	1,700	274	0	0	7,742	917	9,828	550	27,028	25,921	13,428	6,896	1,609	6,430	688	29,052	26,883	46,174	720	-2,023	44,151	737	45,233	44,271	-962
2020	1,103	100	102	758	201	2,186	48	4,835	9,538	762	1,705	274	0	0	8,101	917	8,519	550	29,317	28,159	15,472	5,888	1,550	6,464	941	30,315	28,843	44,151	737	-997	43,154	743	44,271	43,586	-684
2021	0	100	102	758	207	2,186	91	4,835	7,156	762	1,700	274	0	0	7,777	917	9,150	550	26,183	25,902	15,448	4,941	1,480	6,416	775	29,060	27,856	43,154	743	-2,877	40,277	760	43,586	41,632	-1,954
2022	0	100	102	758	212	2,186	126	4,835	7,472	762	1,700	274	0	0	7,575	917	8,559	550	25,747	25,786	15,448	4,345	1,404	6,407	973	28,577	28,087	40,277	760	-2,830	37,447	772	41,632	39,331	-2,301
2023	2,320	100	102	758	218	2,186	138	4,835	11,294	762	1,700	274	0	0	7,195	917	6,393	550	29,361	28,063	15,448	4,218	1,324	6,466	1,946	29,403	29,492	37,447	772	-42	37,405	745	39,331	37,902	-1,429
2024	6,575	100	102	758	223	2,186	146	4,835	18,685	762	1,705	274	0	0	6,910	917	3,779	550	38,125	34,059	15,472	5,446	1,429	6,617	2,336	31,302	30,269	37,405	745	6,823	44,229	693	37,902	41,691	3,790
2025	5,623	100	102	758	229	2,186	152	4,835	13,704	762	1,700	274	0	0	6,661	917	6,241	550	34,412	30,354	13,428	7,616	1,760	6,601	912	30,319	26,920	44,229	693	4,093	48,322	687	41,691	45,126	3,434
2026	0	100	102	758	234	2,186	157	4,835	7,875	762	1,700	274	0	0	7,167	917	8,447	550	25,683	25,878	13,428	6,603	1,609	6,433	908	28,982	25,563	48,322	687	-3,299	45,023	742	45,126	45,441	315
2027	5,682	100	102	758	240	2,186	162	4,835	14,705	762	1,700	274	0	0	7,540	917	7,491	550	37,623	33,528	15,448	9,206	1,808	6,592	773	33,826	32,316	45,023	742	3,797	48,820	703	45,441	46,653	1,213
2028	2,058	100	102	758	246	2,186	169	4,835	9,915	762	1,705	274	0	0	7,278	917	8,907	550	30,381	28,867	13,450	8,675	1,767	6,510	736	31,137	28,067	48,820	703	-757	48,063	726	46,653	47,453	799
2029	565	100	102	758	251	2,186	174	4,835	8,270	762	1,700	274	0	0	7,520	917	9,724	550	28,306	27,923	13,428	8,168	1,684	6,452	663	30,395	28,346	48,063	726	-2,089	45,974	752	47,453	47,030	-423
2030	6,989	100	102	758	257	2,186	180	4,835	12,708	762	1,700	274	0	0	7,590	917	8,826	550	38,353	32,866	13,428	11,423	1,914	6,638	679	34,083	32,907	45,974	752	4,270	50,244	688	47,030	46,988	-42
2031	0	100	102	758	262	2,186	184	4,835	9,913	762	1,700	274	0	0	7,347	917	9,571	550	29,080	29,318	13,428	9,091	1,723	6,445	739	31,426	27,779	50,244	688	-2,346	47,898	745	46,988	48,528	1,540
2032	416	100	102	758	268	2,186	188	4,835	8,577	762	1,705	274	0	0	7,722	917	10,062	550	29,040	28,866	13,450	8,368	1,685	6,462	609	30,573	29,268	47,898	745	-1,534	46,365	763	48,528	48,126	-402
2033	3,050	100	102	758	273	2,186	191	4,835	11,853	762	1,700	274	0	0	8,143	917	8,484	550	33,796	31,997	15,448	8,159	1,690	6,514	732	32,544	32,026	46,365	763	1,253	47,617	743	48,126	48,097	-29
2034	0	100	102	758	279	2,186	192	4,835	6,543	762	1,700	274	0	0	8,055	917	10,772	550	27,643	27,703	15,448	6,416	1,594	6,430	583	30,472	29,169	47,617	743	-2,829	44,789	766	48,097	46,631	-1,465
2035	1,034	100	102	758	284	2,186	192	4,835	8,479	762	1,700	274	0	0	7,800	917	9,921	550	29,512	28,912	15,448	6,593	1,608	6,451	574	30,673	30,261	44,789	766	-1,161	43,628	763	46,631	45,282	-1,350

Projected Chloride Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Castaic Dam Underflow	Chloride Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Chloride Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	40	102	107	157	307	0	680	15,920	109	1,705	70	0	0	7,025	96	7,024	15	36,335	3,893	13,450	10,864	2,012	6,573	961	33,858	3,699	50,440	85	2,476	52,916	84	5,859	6,053	194
2013	286	40	102	107	163	307	0	680	7,623	109	1,700	70	0	0	7,327	96	10,093	15	27,295	2,548	13,428	8,774	1,727	6,438	802	31,169	3,368	52,916	84	-3,874	49,042	78	6,053	5,233	-820
2014	2,378	40	102	107	168	307	0	680	12,252	109	1,700	70	0	0	8,008	96	8,591	15	33,199	3,406	15,448	8,078	1,748	6,487	675	32,436	3,275	49,042	78	763	49,805	79	5,233	5,364	131
2015	9,386	40	102	107	174	307	0	680	9,835	109	1,700	70	0	0	7,370	96	10,328	15	38,895	3,384	13,428	12,219	2,038	6,694	717	35,096	3,560	49,805	79	3,799	53,605	71	5,364	5,188	-176
2016	0	40	102	107	179	307	0	680	5,803	109	1,705	70	0	0	7,743	96	11,610	15	27,142	2,356	13,450	9,022	1,783	6,475	646	31,377	2,864	53,605	71	-4,235	49,370	70	5,188	4,680	-508
2017	0	40	102	107	185	307	0	680	6,281	109	1,700	70	0	0	8,261	96	11,431	15	27,960	2,492	15,448	7,323	1,633	6,432	573	31,408	2,822	49,370	70	-3,448	45,922	70	4,680	4,350	-330
2018	1,899	40	102	107	190	307	5	680	10,488	109	1,700	70	0	0	8,124	96	9,355	15	31,864	3,164	15,448	7,442	1,652	6,480	589	31,612	2,838	45,922	70	252	46,174	74	4,350	4,676	326
2019	277	40	102	107	196	307	21	680	7,161	109	1,700	70	0	0	7,742	96	9,828	15	27,028	2,561	13,428	6,896	1,609	6,430	688	29,052	2,779	46,174	74	-2,023	44,151	74	4,676	4,458	-218
2020	1,103	40	102	107	201	307	48	680	9,538	109	1,705	70	0	0	8,101	96	8,519	15	29,317	3,005	15,472	5,888	1,550	6,464	941	30,315	2,905	44,151	74	-997	43,154	78	4,458	4,559	100
2021	0	40	102	107	207	307	91	680	7,156	109	1,700	70	0	0	7,777	96	9,150	15	26,183	2,605	15,448	4,941	1,480	6,416	775	29,060	2,914	43,154	78	-2,877	40,277	78	4,559	4,250	-309
2022	0	40	102	107	212	307	126	680	7,472	109	1,700	70	0	0	7,575	96	8,559	15	25,747	2,648	15,448	4,345	1,404	6,407	973	28,577	2,867	40,277	78	-2,830	37,447	79	4,250	4,031	-219
2023	2,320	40	102	107	218	307	138	680	11,294	109	1,700	70	0	0	7,195	96	6,393	15	29,361	3,259	15,448	4,218	1,324	6,466	1,946	29,403	3,023	37,447	79	-42	37,405	84	4,031	4,267	236
2024	6,575	40	102	107	223	307	146	680	18,685	109	1,705	70	0	0	6,910	96	3,779	15	38,125	4,502	15,472	5,446	1,429	6,617	2,336	31,302	3,408	37,405	84	6,823	44,229	89	4,267	5,361	1,094
2025	5,623	40	102	107	229	307	152	680	13,704	109	1,700	70	0	0	6,661	96	6,241	15	34,412	3,739	13,428	7,616	1,760	6,601	912	30,319	3,462	44,229	89	4,093	48,322	86	5,361	5,639	278
2026	0	40	102	107	234	307	157	680	7,875	109	1,700	70	0	0	7,167	96	8,447	15	25,683	2,690	13,428	6,603	1,609	6,433	908	28,982	3,194	48,322	86	-3,299	45,023	84	5,639	5,134	-504
2027	5,682	40	102	107	240	307	162	680	14,705	109	1,700	70	0	0	7,540	96	7,491	15	37,623	4,044	15,448	9,206	1,808	6,592	773	33,826	3,651	45,023	84	3,797	48,820	83	5,134	5,527	393
2028	2,058	40	102	107	246	307	169	680	9,915	109	1,705	70	0	0	7,278	96	8,907	15	30,381	3,143	13,450	8,675	1,767	6,510	736	31,137	3,325	48,820	83	-757	48,063	82	5,527	5,345	-182
2029	565	40	102	107	251	307	174	680	8,270	109	1,700	70	0	0	7,520	96	9,724	15	28,306	2,874	13,428	8,168	1,684	6,452	663	30,395	3,193	48,063	82	-2,089	45,974	80	5,345	5,026	-319
2030	6,989	40	102	107	257	307	180	680	12,708	109	1,700	70	0	0	7,590	96	8,826	15	38,353	3,878	13,428	11,423	1,914	6,638	679	34,083	3,517	45,974	80	4,270	50,244	79	5,026	5,387	361
2031	0	40	102	107	262	307	184	680	9,913	109	1,700	70	0	0	7,347	96	9,571	15	29,080	3,074	13,428	9,091	1,723	6,445	739	31,426	3,185	50,244	79	-2,346	47,898	81	5,387	5,277	-110
2032	416	40	102	107	268	307	188	680	8,577	109	1,705	70	0	0	7,722	96	10,062	15	29,040	2,965	13,450	8,368	1,685	6,462	609	30,573	3,182	47,898	81	-1,534	46,365	80	5,277	5,059	-218
2033	3,050	40	102	107	273	307	191	680	11,853	109	1,700	70	0	0	8,143	96	8,484	15	33,796	3,619	15,448	8,159	1,690	6,514	732	32,544	3,366	46,365	80	1,253	47,617	82	5,059	5,311	253
2034	0	40	102	107	279	307	192	680	6,543	109	1,700	70	0	0	8,055	96	10,772	15	27,643	2,707	15,448	6,416	1,594	6,430	583	30,472	3,221	47,617	82	-2,829	44,789	79	5,311	4,797	-514
2035	1,034	40	102	107	284	307	192	680	8,479	109	1,700	70	0	0	7,800	96	9,921	15	29,512	3,001	15,448	6,593	1,608	6,451	574	30,673	3,113	44,789	79	-1,161	43,628	79	4,797	4,685	-112

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Nitrate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	Nitrate Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]
2012	4,402	9	102	41	157	15	0	32	15,920	7	1,705	3	0	0	7,025	16	7,024	10	36,335	467
2013	286	9	102	41	163	15	0	32	7,623	7	1,700	3	0	0	7,327	16	10,093	10	27,295	387
2014	2,378	9	102	41	168	15	0	32	12,252	7	1,700	3	0	0	8,008	16	8,591	10	33,199	451
2015	9,386	9	102	41	174	15	0	32	9,835	7	1,700	3	0	0	7,370	16	10,328	10	38,895	522
2016	0	9	102	41	179	15	0	32	5,803	7	1,705	3	0	0	7,743	16	11,610	10	27,142	397
2017	0	9	102	41	185	15	0	32	6,281	7	1,700	3	0	0	8,261	16	11,431	10	27,960	410
2018	1,899	9	102	41	190	15	5	32	10,488	7	1,700	3	0	0	8,124	16	9,355	10	31,864	442
2019	277	9	102	41	196	15	21	32	7,161	7	1,700	3	0	0	7,742	16	9,828	10	27,028	390
2020	1,103	9	102	41	201	15	48	32	9,538	7	1,705	3	0	0	8,101	16	8,519	10	29,317	414
2021	0	9	102	41	207	15	91	32	7,156	7	1,700	3	0	0	7,777	16	9,150	10	26,183	381
2022	0	9	102	41	212	15	126	32	7,472	7	1,700	3	0	0	7,575	16	8,559	10	25,747	373
2023	2,320	9	102	41	218	15	138	32	11,294	7	1,700	3	0	0	7,195	16	6,393	10	29,361	401
2024	6,575	9	102	41	223	15	146	32	18,685	7	1,705	3	0	0	6,910	16	3,779	10	38,125	481
2025	5,623	9	102	41	229	15	152	32	13,704	7	1,700	3	0	0	6,661	16	6,241	10	34,412	450
2026	0	9	102	41	234	15	157	32	7,875	7	1,700	3	0	0	7,167	16	8,447	10	25,683	369
2027	5,682	9	102	41	240	15	162	32	14,705	7	1,700	3	0	0	7,540	16	7,491	10	37,623	497
2028	2,058	9	102	41	246	15	169	32	9,915	7	1,705	3	0	0	7,278	16	8,907	10	30,381	422
2029	565	9	102	41	251	15	174	32	8,270	7	1,700	3	0	0	7,520	16	9,724	10	28,306	405
2030	6,989	9	102	41	257	15	180	32	12,708	7	1,700	3	0	0	7,590	16	8,826	10	38,353	514
2031	0	9	102	41	262	15	184	32	9,913	7	1,700	3	0	0	7,347	16	9,571	10	29,080	409
2032	416	9	102	41	268	15	188	32	8,577	7	1,705	3	0	0	7,722	16	10,062	10	29,040	416
2033	3,050	9	102	41	273	15	191	32	11,853	7	1,700	3	0	0	8,143	16	8,484	10	33,796	467
2034	0	9	102	41	279	15	192	32	6,543	7	1,700	3	0	0	8,055	16	10,772	10	27,643	409
2035	1,034	9	102	41	284	15	192	32	8,479	7	1,700	3	0	0	7,800	16	9,921	10	29,512	423

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	13,450	10,864	2,012	6,573	961	33,858	472	50,440	11	2,476	52,916	10	748	743	-5
2013	13,428	8,774	1,727	6,438	802	31,169	413	52,916	10	-3,874	49,042	11	743	717	-26
2014	15,448	8,078	1,748	6,487	675	32,436	449	49,042	11	763	49,805	11	717	719	2
2015	13,428	12,219	2,038	6,694	717	35,096	477	49,805	11	3,799	53,605	10	719	763	44
2016	13,450	9,022	1,783	6,475	646	31,377	421	53,605	10	-4,235	49,370	11	763	738	-25
2017	15,448	7,323	1,633	6,432	573	31,408	445	49,370	11	-3,448	45,922	11	738	703	-35
2018	15,448	7,442	1,652	6,480	589	31,612	459	45,922	11	252	46,174	11	703	686	-17
2019	13,428	6,896	1,609	6,430	688	29,052	408	46,174	11	-2,023	44,151	11	686	668	-18
2020	15,472	5,888	1,550	6,464	941	30,315	435	44,151	11	-997	43,154	11	668	646	-22
2021	15,448	4,941	1,480	6,416	775	29,060	413	43,154	11	-2,877	40,277	11	646	615	-32
2022	15,448	4,345	1,404	6,407	973	28,577	415	40,277	11	-2,830	37,447	11	615	573	-41
2023	15,448	4,218	1,324	6,466	1,946	29,403	430	37,447	11	-42	37,405	11	573	544	-29
2024	15,472	5,446	1,429	6,617	2,336	31,302	434	37,405	11	6,823	44,229	10	544	590	46
2025	13,428	7,616	1,760	6,601	912	30,319	381	44,229	10	4,093	48,322	10	590	659	69
2026	13,428	6,603	1,609	6,433	908	28,982	373	48,322	10	-3,299	45,023	11	659	654	-5
2027	15,448	9,206	1,808	6,592	773	33,826	465	45,023	11	3,797	48,820	10	654	686	32
2028	13,450	8,675	1,767	6,510	736	31,137	413	48,820	10	-757	48,063	11	686	696	9
2029	13,428	8,168	1,684	6,452	663	30,395	416	48,063	11	-2,089	45,974	11	696	685	-10
2030	13,428	11,423	1,914	6,638	679	34,083	480	45,974	11	4,270	50,244	11	685	720	35
2031	13,428	9,091	1,723	6,445	739	31,426	426	50,244	11	-2,346	47,898	11	720	703	-17
2032	13,450	8,368	1,685	6,462	609	30,573	424	47,898	11	-1,534	46,365	11	703	696	-8
2033	15,448	8,159	1,690	6,514	732	32,544	463	46,365	11	1,253	47,617	11	696	700	4
2034	15,448	6,416	1,594	6,430	583	30,472	424	47,617	11	-2,829	44,789	11	700	685	-15
2035	15,448	6,593	1,608	6,451	574	30,673	444	44,789	11	-1,161	43,628	11	685	664	-21

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Sulfate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	40	102	144	157	416	0	920	15,920	254	1,705	51	0	0	7,025	295	7,024	235	36,335	11,027	13,450	10,864	2,012	6,573	961	33,858	10,866	50,440	251	2,476	52,916	241	17,209	17,370	161
2013	286	40	102	144	163	416	0	920	7,623	254	1,700	51	0	0	7,327	295	10,093	235	27,295	9,042	13,428	8,774	1,727	6,438	802	31,169	9,665	52,916	241	-3,874	49,042	251	17,370	16,748	-622
2014	2,378	40	102	144	168	416	0	920	12,252	254	1,700	51	0	0	8,008	295	8,591	235	33,199	10,551	15,448	8,078	1,748	6,487	675	32,436	10,480	49,042	251	763	49,805	248	16,748	16,819	71
2015	9,386	40	102	144	174	416	0	920	9,835	254	1,700	51	0	0	7,370	295	10,328	235	38,895	10,400	13,428	12,219	2,038	6,694	717	35,096	11,164	49,805	248	3,799	53,605	220	16,819	16,055	-764
2016	0	40	102	144	179	416	0	920	5,803	254	1,705	51	0	0	7,743	295	11,610	235	27,142	9,059	13,450	9,022	1,783	6,475	646	31,377	8,864	53,605	220	-4,235	49,370	242	16,055	16,251	196
2017	0	40	102	144	185	416	0	920	6,281	254	1,700	51	0	0	8,261	295	11,431	235	27,960	9,378	15,448	7,323	1,633	6,432	573	31,408	9,801	49,370	242	-3,448	45,922	253	16,251	15,828	-423
2018	1,899	40	102	144	190	416	5	920	10,488	254	1,700	51	0	0	8,124	295	9,355	235	31,864	10,226	15,448	7,442	1,652	6,480	589	31,612	10,326	45,922	253	252	46,174	251	15,828	15,728	-100
2019	277	40	102	144	196	416	21	920	7,161	254	1,700	51	0	0	7,742	295	9,828	235	27,028	9,010	13,428	6,896	1,609	6,430	688	29,052	9,347	46,174	251	-2,023	44,151	256	15,728	15,390	-337
2020	1,103	40	102	144	201	416	48	920	9,538	254	1,705	51	0	0	8,101	295	8,519	235	29,317	9,638	15,472	5,888	1,550	6,464	941	30,315	10,027	44,151	256	-997	43,154	256	15,390	15,001	-389
2021	0	40	102	144	207	416	91	920	7,156	254	1,700	51	0	0	7,777	295	9,150	235	26,183	8,883	15,448	4,941	1,480	6,416	775	29,060	9,587	43,154	256	-2,877	40,277	261	15,001	14,297	-704
2022	0	40	102	144	212	416	126	920	7,472	254	1,700	51	0	0	7,575	295	8,559	235	25,747	8,770	15,448	4,345	1,404	6,407	973	28,577	9,646	40,277	261	-2,830	37,447	264	14,297	13,422	-875
2023	2,320	40	102	144	218	416	138	920	11,294	254	1,700	51	0	0	7,195	295	6,393	235	29,361	9,390	15,448	4,218	1,324	6,466	1,946	29,403	10,064	37,447	264	-42	37,405	251	13,422	12,747	-674
2024	6,575	40	102	144	223	416	146	920	18,685	254	1,705	51	0	0	6,910	295	3,779	235	38,125	11,237	15,472	5,446	1,429	6,617	2,336	31,302	10,180	37,405	251	6,823	44,229	230	12,747	13,804	1,057
2025	5,623	40	102	144	229	416	152	920	13,704	254	1,700	51	0	0	6,661	295	6,241	235	34,412	10,163	13,428	7,616	1,760	6,601	912	30,319	8,914	44,229	230	4,093	48,322	229	13,804	15,054	1,249
2026	0	40	102	144	234	416	157	920	7,875	254	1,700	51	0	0	7,167	295	8,447	235	25,683	8,761	13,428	6,603	1,609	6,433	908	28,982	8,527	48,322	229	-3,299	45,023	250	15,054	15,287	233
2027	5,682	40	102	144	240	416	162	920	14,705	254	1,700	51	0	0	7,540	295	7,491	235	37,623	11,282	15,448	9,206	1,808	6,592	773	33,826	10,871	45,023	250	3,797	48,820	236	15,287	15,698	411
2028	2,058	40	102	144	246	416	169	920	9,915	254	1,705	51	0	0	7,278	295	8,907	235	30,381	9,790	13,450	8,675	1,767	6,510	736	31,137	9,444	48,820	236	-757	48,063	246	15,698	16,044	346
2029	565	40	102	144	251	416	174	920	8,270	254	1,700	51	0	0	7,520	295	9,724	235	28,306	9,508	13,428	8,168	1,684	6,452	663	30,395	9,584	48,063	246	-2,089	45,974	255	16,044	15,968	-76
2030	6,989	40	102	144	257	416	180	920	12,708	254	1,700	51	0	0	7,590	295	8,826	235	38,353	11,142	13,428	11,423	1,914	6,638	679	34,083	11,173	45,974	255	4,270	50,244	233	15,968	15,938	-31
2031	0	40	102	144	262	416	184	920	9,913	254	1,700	51	0	0	7,347	295	9,571	235	29,080	9,946	13,428	9,091	1,723	6,445	739	31,426	9,422	50,244	233	-2,346	47,898	253	15,938	16,462	524
2032	416	40	102	144	268	416	188	920	8,577	254	1,705	51	0	0	7,722	295	10,062	235	29,040	9,822	13,450	8,368	1,685	6,462	609	30,573	9,928	47,898	253	-1,534	46,365	259	16,462	16,356	-106
2033	3,050	40	102	144	273	416	191	920	11,853	254	1,700	51	0	0	8,143	295	8,484	235	33,796	10,768	15,448	8,159	1,690	6,514	732	32,544	10,884	46,365	259	1,253	47,617	251	16,356	16,239	-116
2034	0	40	102	144	279	416	192	920	6,543	254	1,700	51	0	0	8,055	295	10,772	235	27,643	9,468	15,448	6,416	1,594	6,430	583	30,472	9,849	47,617	251	-2,829	44,789	260	16,239	15,859	-380
2035	1,034	40	102	144	284	416	192	920	8,479	254	1,700	51	0	0	7,800	295	9,921	235	29,512	9,822	15,448	6,593	1,608	6,451	574	30,673	10,292	44,789	260	-1,161	43,628	259	15,859	15,389	-470

Table I-15a

Projected TDS Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	100	1,254	786	2,787	2,267	0	4,915	10	669	0	0	0	0	3,836	816	36,956	18,144	12,841	0	2,499	0	2,751	18,090	13,831	1,650,000	652	18,866	1,668,866	647	1,463,642	1,467,956	4,314
2013	1,890	100	1,250	786	2,834	2,267	0	4,915	0	669	0	0	0	0	-3,706	754	2,269	6,532	12,814	0	1,571	0	2,649	17,033	13,601	1,668,866	647	-14,764	1,654,102	650	1,467,956	1,460,887	-7,069
2014	15,703	100	1,250	786	2,882	2,267	0	4,915	0	669	0	0	0	0	-1,709	780	18,126	10,540	12,814	0	1,717	0	2,727	17,258	13,726	1,654,102	650	868	1,654,969	648	1,460,887	1,457,701	-3,186
2015	61,979	100	1,250	786	2,929	2,267	0	4,915	7	669	0	0	0	0	-578	763	65,587	18,198	12,814	0	3,511	0	2,815	19,140	13,766	1,654,969	648	46,447	1,701,416	632	1,457,701	1,462,133	4,432
2016	0	100	1,254	786	2,977	2,267	0	4,915	0	669	0	0	0	0	-4,266	671	-35	6,623	12,841	0	2,239	0	2,996	18,076	13,610	1,701,416	632	-18,111	1,683,305	630	1,462,133	1,441,901	-6,987
2017	0	100	1,250	786	3,025	2,267	2	4,915	0	669	0	0	0	0	-6,108	729	-1,831	4,621	12,814	0	1,545	0	2,821	17,180	13,393	1,683,305	630	-19,011	1,664,294	629	1,441,901	1,423,887	-8,771
2018	12,538	100	1,250	786	3,072	2,267	40	4,915	0	669	0	0	0	0	-3,421	763	13,480	9,229	12,814	0	1,681	0	2,757	17,252	13,321	1,664,294	629	-3,772	1,660,523	629	1,423,887	1,419,795	-4,092
2019	1,826	100	1,250	786	3,120	2,267	140	4,915	0	669	0	0	0	0	-1,862	752	4,475	10,235	19,123	0	1,378	0	2,000	22,500	18,060	1,660,523	629	-18,026	1,642,497	632	1,419,795	1,411,969	-7,826
2020	7,285	100	1,254	786	3,168	2,267	264	4,915	0	669	0	0	0	0	59	777	12,030	13,921	25,281	0	1,338	0	1,391	28,010	22,929	1,642,497	632	-15,981	1,626,516	634	1,411,969	1,402,961	-9,008
2021	0	100	1,250	786	3,215	2,267	344	4,915	0	669	0	0	0	0	-1,798	779	3,011	11,637	19,123	0	1,152	0	1,453	21,728	17,748	1,626,516	634	-18,717	1,607,800	639	1,402,961	1,396,850	-6,111
2022	0	100	1,250	786	3,263	2,267	385	4,915	0	669	0	0	0	0	17	801	4,915	13,986	25,228	0	997	0	1,064	27,289	22,843	1,607,800	639	-22,374	1,585,426	644	1,396,850	1,387,993	-8,857
2023	15,322	100	1,250	786	3,310	2,267	404	4,915	0	669	0	0	0	0	6,827	809	27,114	23,835	34,977	0	1,191	0	649	36,818	31,190	1,585,426	644	-9,703	1,575,722	644	1,387,993	1,380,638	-7,355
2024	43,415	100	1,254	786	3,358	2,267	414	4,915	10	669	0	0	0	0	13,287	748	61,737	33,876	35,059	0	2,088	0	676	37,823	31,311	1,575,722	644	23,914	1,599,636	636	1,380,638	1,383,204	2,566
2025	37,127	100	1,250	786	3,406	2,267	420	4,915	10	669	0	0	0	0	10,964	675	53,176	29,751	12,814	0	2,893	0	1,588	17,295	12,454	1,599,636	636	35,881	1,635,517	630	1,383,204	1,400,501	17,297
2026	0	100	1,250	786	3,453	2,267	423	4,915	0	669	0	0	0	0	2,405	672	7,531	17,006	19,123	0	1,635	0	1,540	22,297	17,693	1,635,517	630	-14,766	1,620,751	635	1,400,501	1,399,814	-688
2027	37,522	100	1,250	786	3,501	2,267	426	4,915	8	669	0	0	0	0	4,507	746	47,214	24,654	12,814	0	2,728	0	2,230	17,772	12,993	1,620,751	635	29,442	1,650,193	629	1,399,814	1,411,474	11,660
2028	13,592	100	1,254	786	3,548	2,267	430	4,915	0	669	0	0	0	0	1,034	696	19,858	17,979	12,841	0	2,060	0	2,414	17,315	13,048	1,650,193	629	2,544	1,652,737	630	1,411,474	1,416,405	4,931
2029	3,729	100	1,250	786	3,596	2,267	434	4,915	0	669	0	0	0	0	-2,399	723	6,610	13,468	12,814	0	1,729	0	2,419	16,962	13,054	1,652,737	630	-10,351	1,642,385	634	1,416,405	1,416,818	413
2030	46,150	100	1,250	786	3,644	2,267	437	4,915	10	669	0	0	0	0	6,011	762	57,502	27,999	12,814	0	3,238	0	2,803	18,855	13,472	1,642,385	634	38,648	1,681,033	626	1,416,818	1,431,345	14,527
2031	0	100	1,250	786	3,691	2,267	438	4,915	0	669	0	0	0	0	-3,371	697	2,009	12,445	12,814	0	1,853	0	2,692	17,358	13,202	1,681,033	626	-15,350	1,665,683	632	1,431,345	1,430,588	-757
2032	2,747	100	1,254	786	3,739	2,267	439	4,915	0	669	0	0	0	0	-4,658	752	3,520	11,407	12,841	0	1,551	0	2,621	17,013	13,280	1,665,683	632	-13,493	1,652,190	636	1,430,588	1,428,715	-1,873
2033	20,140	100	1,250	786	3,787	2,267	440	4,915	3	669	0	0	0	0	-1,594	775	24,026	17,005	19,123	0	1,905	0	2,122	23,149	18,371	1,652,190	636	877	1,653,067	635	1,428,715	1,427,349	-1,366
2034	0	100	1,250	786	3,834	2,267	440	4,915	0	669	0	0	0	0	-4,025	747	1,499	12,003	12,814	0	1,427	0	2,393	16,634	13,130	1,653,067	635	-15,135	1,637,932	640	1,427,349	1,426,222	-1,127
2035	6,825	100	1,250	786	3,882	2,267	440	4,915	0	669	0	0	0	0	-4,054	784	8,343	12,842	12,814	0	1,377	0	2,402	16,592	13,249	1,637,932	640	-8,249	1,629,683	643	1,426,222	1,425,815	-407

Table I-15b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	40	1,254	105	2,787	302	0	687	10	89	0	0	0	0	3,836	93	36,956	3,394	12,841	0	2,499	0	2,751	18,090	821	1,650,000	39	18,866	1,668,866	39	86,867	89,441	2,574
2013	1,890	40	1,250	105	2,834	302	0	687	0	89	0	0	0	0	-3,706	89	2,269	999	12,814	0	1,571	0	2,649	17,033	829	1,668,866	39	-14,764	1,654,102	40	89,441	89,611	170
2014	15,703	40	1,250	105	2,882	302	0	687	0	89	0	0	0	0	-1,709	87	18,126	2,015	12,814	0	1,717	0	2,727	17,258	842	1,654,102	40	868	1,654,969	40	89,611	90,784	1,173
2015	61,979	40	1,250	105	2,929	302	0	687	7	89	0	0	0	0	-578	86	65,587	4,687	12,814	0	3,511	0	2,815	19,140	857	1,654,969	40	46,447	1,701,416	41	90,784	94,614	3,830
2016	0	40	1,254	105	2,977	302	0	687	0	89	0	0	0	0	-4,266	79	-35	942	12,841	0	2,239	0	2,996	18,076	881	1,701,416	41	-18,111	1,683,305	41	94,614	92,791	62
2017	0	40	1,250	105	3,025	302	2	687	0	89	0	0	0	0	-6,108	81	-1,831	753	12,814	0	1,545	0	2,821	17,180	862	1,683,305	41	-19,011	1,664,294	40	92,791	91,176	-109
2018	12,538	40	1,250	105	3,072	302	40	687	0	89	0	0	0	0	-3,421	81	13,480	1,783	12,814	0	1,681	0	2,757	17,252	853	1,664,294	40	-3,772	1,660,523	41	91,176	92,106	930
2019	1,826	40	1,250	105	3,120	302	140	687	0	89	0	0	0	0	-1,862	82	4,475	1,483	19,123	0	1,378	0	2,000	22,500	1,172	1,660,523	41	-18,026	1,642,497	41	92,106	92,418	312
2020	7,285	40	1,254	105	3,168	302	264	687	0	89	0	0	0	0	59	83	12,030	2,131	25,281	0	1,338	0	1,391	28,010	1,501	1,642,497	41	-15,981	1,626,516	42	92,418	93,048	630
2021	0	40	1,250	105	3,215	302	344	687	0	89	0	0	0	0	-1,798	84	3,011	1,616	19,123	0	1,152	0	1,453	21,728	1,177	1,626,516	42	-18,717	1,607,800	43	93,048	93,487	439
2022	0	40	1,250	105	3,263	302	385	687	0	89	0	0	0	0	17	84	4,915	1,882	25,228	0	997	0	1,064	27,289	1,529	1,607,800	43	-22,374	1,585,426	44	93,487	93,840	353
2023	15,322	40	1,250	105	3,310	302	404	687	0	89	0	0	0	0	6,827	85	27,114	3,537	34,977	0	1,191	0	649	36,818	2,109	1,585,426	44	-9,703	1,575,722	44	93,840	95,268	1,428
2024	43,415	40	1,254	105	3,358	302	414	687	10	89	0	0	0	0	13,287	85	61,737	5,846	35,059	0	2,088	0	676	37,823	2,161	1,575,722	44	23,914	1,599,636	45	95,268	98,953	3,685
2025	37,127	40	1,250	105	3,406	302	420	687	10	89	0	0	0	0	10,964	85	53,176	5,263	12,814	0	2,893	0	1,588	17,295	891	1,599,636	45	35,881	1,635,517	46	98,953	103,325	4,372
2026	0	40	1,250	105	3,453	302	423	687	0	89	0	0	0	0	2,405	86	7,531	2,274	19,123	0	1,635	0	1,540	22,297	1,305	1,635,517	46	-14,766	1,620,751	47	103,325	104,294	969
2027	37,522	40	1,250	105	3,501	302	426	687	8	89	0	0	0	0	4,507	88	47,214	4,599	12,814	0	2,728	0	2,230	17,772	968	1,620,751	47	29,442	1,650,193	48	104,294	107,924	3,631
2028	13,592	40	1,254	105	3,548	302	430	687	0	89	0	0	0	0	1,034	87	19,858	2,901	12,841	0	2,060	0	2,414	17,315	998	1,650,193	48	2,544	1,652,737	49	107,924	109,827	1,903
2029	3,729	40	1,250	105	3,596	302	434	687	0	89	0	0	0	0	-2,399	87	6,610	1,981	12,814	0	1,729	0	2,419	16,962	1,012	1,652,737	49	-10,351	1,642,385	50	109,827	110,796	968
2030	46,150	40	1,250	105	3,644	302	437	687	10	89	0	0	0	0	6,011	88	57,502	5,316	12,814	0	3,238	0	2,803	18,855	1,054	1,642,385	50	38,648	1,681,033	50	110,796	115,058	4,262
2031	0	40	1,250	105	3,691	302	438	687	0	89	0	0	0	0	-3,371	86	2,009	1,713	12,814	0	1,853	0	2,692	17,358	1,061	1,681,033	50	-15,350	1,665,683	51	115,058	115,710	652
2032	2,747	40	1,254	105	3,739	302	439	687	0	89	0	0	0	0	-4,658	88	3,520	1,720	12,841	0	1,551	0	2,621	17,013	1,074	1,665,683	51	-13,493	1,652,190	52	115,710	116,356	646
2033	20,140	40	1,250	105	3,787	302	440	687	3	89	0	0	0	0	-1,594	88	24,026	3,051	19,123	0	1,905	0	2,122	23,149	1,496	1,652,190	52	877	1,653,067	52	116,356	117,911	1,555
2034	0	40	1,250	105	3,834	302	440	687	0	89	0	0	0	0	-4,025	87	1,499	1,690	12,814	0	1,427	0	2,393	16,634	1,085	1,653,067	52	-15,135	1,637,932	53	117,911	118,517	606
2035	6,825	40	1,250	105	3,882	302	440	687	0	89	0	0	0	0	-4,054	87	8,343	2,075	12,814	0	1,377	0	2,402	16,592	1,101	1,637,932	53	-8,249	1,629,683	54	118,517	119,491	974

Table I-15c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	9	1,254	43	2,787	16	0	34	10	13	0	0	0	0	3,836	18	36,956	574	12,841	0	2,499	0	2,751	18,090	428	1,650,000	20	18,866	1,668,866	20	45,318	45,464	146
2013	1,890	9	1,250	43	2,834	16	0	34	0	13	0	0	0	0	-3,706	17	2,269	72	12,814	0	1,571	0	2,649	17,033	421	1,668,866	20	-14,764	1,654,102	20	45,464	45,115	-350
2014	15,703	9	1,250	43	2,882	16	0	34	0	13	0	0	0	0	-1,709	18	18,126	282	12,814	0	1,717	0	2,727	17,258	424	1,654,102	20	868	1,654,969	20	45,115	44,973	-142
2015	61,979	9	1,250	43	2,929	16	0	34	7	13	0	0	0	0	-578	17	65,587	864	12,814	0	3,511	0	2,815	19,140	425	1,654,969	20	46,447	1,701,416	20	44,973	45,413	440
2016	0	9	1,254	43	2,977	16	0	34	0	13	0	0	0	0	-4,266	16	-35	44	12,841	0	2,239	0	2,996	18,076	423	1,701,416	20	-18,111	1,683,305	20	45,413	44,946	-379
2017	0	9	1,250	43	3,025	16	2	34	0	13	0	0	0	0	-6,108	17	-1,831	-5	12,814	0	1,545	0	2,821	17,180	417	1,683,305	20	-19,011	1,664,294	20	44,946	44,524	-422
2018	12,538	9	1,250	43	3,072	16	40	34	0	13	0	0	0	0	-3,421	18	13,480	209	12,814	0	1,681	0	2,757	17,252	417	1,664,294	20	-3,772	1,660,523	20	44,524	44,317	-208
2019	1,826	9	1,250	43	3,120	16	140	34	0	13	0	0	0	0	-1,862	17	4,475	125	19,123	0	1,378	0	2,000	22,500	564	1,660,523	20	-18,026	1,642,497	20	44,317	43,878	-439
2020	7,285	9	1,254	43	3,168	16	264	34	0	13	0	0	0	0	59	18	12,030	242	25,281	0	1,338	0	1,391	28,010	713	1,642,497	20	-15,981	1,626,516	20	43,878	43,408	-470
2021	0	9	1,250	43	3,215	16	344	34	0	13	0	0	0	0	-1,798	17	3,011	115	19,123	0	1,152	0	1,453	21,728	549	1,626,516	20	-18,717	1,607,800	20	43,408	42,974	-434
2022	0	9	1,250	43	3,263	16	385	34	0	13	0	0	0	0	17	18	4,915	161	25,228	0	997	0	1,064	27,289	703	1,607,800	20	-22,374	1,585,426	20	42,974	42,433	-541
2023	15,322	9	1,250	43	3,310	16	404	34	0	13	0	0	0	0	6,827	18	27,114	512	34,977	0	1,191	0	649	36,818	954	1,585,426	20	-9,703	1,575,722	20	42,433	41,991	-441
2024	43,415	9	1,254	43	3,358	16	414	34	10	13	0	0	0	0	13,287	16	61,737	980	35,059	0	2,088	0	676	37,823	952	1,575,722	20	23,914	1,599,636	19	41,991	42,019	27
2025	37,127	9	1,250	43	3,406	16	420	34	10	13	0	0	0	0	10,964	15	53,176	838	12,814	0	2,893	0	1,588	17,295	378	1,599,636	19	35,881	1,635,517	19	42,019	42,478	460
2026	0	9	1,250	43	3,453	16	423	34	0	13	0	0	0	0	2,405	15	7,531	217	19,123	0	1,635	0	1,540	22,297	537	1,635,517	19	-14,766	1,620,751	19	42,478	42,159	-319
2027	37,522	9	1,250	43	3,501	16	426	34	8	13	0	0	0	0	4,507	17	47,214	721	12,814	0	2,728	0	2,230	17,772	391	1,620,751	19	29,442	1,650,193	19	42,159	42,488	329
2028	13,592	9	1,254	43	3,548	16	430	34	0	13	0	0	0	0	1,034	16	19,858	354	12,841	0	2,060	0	2,414	17,315	393	1,650,193	19	2,544	1,652,737	19	42,488	42,450	-38
2029	3,729	9	1,250	43	3,596	16	434	34	0	13	0	0	0	0	-2,399	16	6,610	162	12,814	0	1,729	0	2,419	16,962	391	1,652,737	19	-10,351	1,642,385	19	42,450	42,220	-230
2030	46,150	9	1,250	43	3,644	16	437	34	10	13	0	0	0	0	6,011	17	57,502	863	12,814	0	3,238	0	2,803	18,855	401	1,642,385	19	38,648	1,681,033	19	42,220	42,682	462
2031	0	9	1,250	43	3,691	16	438	34	0	13	0	0	0	0	-3,371	16	2,009	99	12,814	0	1,853	0	2,692	17,358	394	1,681,033	19	-15,350	1,665,683	19	42,682	42,387	-295
2032	2,747	9	1,254	43	3,739	16	439	34	0	13	0	0	0	0	-4,658	17	3,520	99	12,841	0	1,551	0	2,621	17,013	393	1,665,683	19	-13,493	1,652,190	19	42,387	42,092	-294
2033	20,140	9	1,250	43	3,787	16	440	34	3	13	0	0	0	0	-1,594	17	24,026	378	19,123	0	1,905	0	2,122	23,149	541	1,652,190	19	877	1,653,067	19	42,092	41,929	-163
2034	0	9	1,250	43	3,834	16	440	34	0	13	0	0	0	0	-4,025	17	1,499	85	12,814	0	1,427	0	2,393	16,634	386	1,653,067	19	-15,135	1,637,932	19	41,929	41,628	-301
2035	6,825	9	1,250	43	3,882	16	440	34	0	13	0	0	0	0	-4,054	17	8,343	163	12,814	0	1,377	0	2,402	16,592	387	1,637,932	19	-8,249	1,629,683	19	41,628	41,404	-224

Table I-15d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - Vista Canyon Water Reclamation Plan - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	40	1,254	150	2,787	433	0	917	10	179	0	0	0	0	3,836	218	36,956	4,616	12,841	0	2,499	0	2,751	18,090	5,715	1,650,000	270	18,866	1,668,866	266	604,840	603,741	-1,099
2013	1,890	40	1,250	150	2,834	433	0	917	0	179	0	0	0	0	-3,706	208	2,269	977	12,814	0	1,571	0	2,649	17,033	5,594	1,668,866	266	-14,764	1,654,102	266	603,741	599,124	-4,617
2014	15,703	40	1,250	150	2,882	433	0	917	0	179	0	0	0	0	-1,709	221	18,126	2,291	12,814	0	1,717	0	2,727	17,258	5,629	1,654,102	266	868	1,654,969	265	599,124	595,786	-3,338
2015	61,979	40	1,250	150	2,929	433	0	917	7	179	0	0	0	0	-578	216	65,587	5,181	12,814	0	3,511	0	2,815	19,140	5,626	1,654,969	265	46,447	1,701,416	257	595,786	595,341	-445
2016	0	40	1,254	150	2,977	433	0	917	0	179	0	0	0	0	-4,266	192	-35	892	12,841	0	2,239	0	2,996	18,076	5,541	1,701,416	257	-18,111	1,683,305	257	595,341	588,907	-4,649
2017	0	40	1,250	150	3,025	433	2	917	0	179	0	0	0	0	-6,108	212	-1,831	278	12,814	0	1,545	0	2,821	17,180	5,470	1,683,305	257	-19,011	1,664,294	258	588,907	583,159	-5,192
2018	12,538	40	1,250	150	3,072	433	40	917	0	179	0	0	0	0	-3,421	223	13,480	1,757	12,814	0	1,681	0	2,757	17,252	5,456	1,664,294	258	-3,772	1,660,523	257	583,159	579,460	-3,699
2019	1,826	40	1,250	150	3,120	433	140	917	0	179	0	0	0	0	-1,862	217	4,475	1,815	19,123	0	1,378	0	2,000	22,500	7,371	1,660,523	257	-18,026	1,642,497	257	579,460	573,905	-5,556
2020	7,285	40	1,254	150	3,168	433	264	917	0	179	0	0	0	0	59	226	12,030	2,864	25,281	0	1,338	0	1,391	28,010	9,320	1,642,497	257	-15,981	1,626,516	257	573,905	567,449	-6,456
2021	0	40	1,250	150	3,215	433	344	917	0	179	0	0	0	0	-1,798	225	3,011	2,025	19,123	0	1,152	0	1,453	21,728	7,178	1,626,516	257	-18,717	1,607,800	257	567,449	562,295	-5,153
2022	0	40	1,250	150	3,263	433	385	917	0	179	0	0	0	0	17	233	4,915	2,661	25,228	0	997	0	1,064	27,289	9,195	1,607,800	257	-22,374	1,585,426	258	562,295	555,761	-6,534
2023	15,322	40	1,250	150	3,310	433	404	917	0	179	0	0	0	0	6,827	235	27,114	5,720	34,977	0	1,191	0	649	36,818	12,489	1,585,426	258	-9,703	1,575,722	256	555,761	548,993	-6,769
2024	43,415	40	1,254	150	3,358	433	414	917	10	179	0	0	0	0	13,287	210	61,737	8,901	35,059	0	2,088	0	676	37,823	12,450	1,575,722	256	23,914	1,599,636	251	548,993	545,443	-3,550
2025	37,127	40	1,250	150	3,406	433	420	917	10	179	0	0	0	0	10,964	187	53,176	7,592	12,814	0	2,893	0	1,588	17,295	4,911	1,599,636	251	35,881	1,635,517	246	545,443	548,124	2,681
2026	0	40	1,250	150	3,453	433	423	917	0	179	0	0	0	0	2,405	186	7,531	3,424	19,123	0	1,635	0	1,540	22,297	6,925	1,635,517	246	-14,766	1,620,751	247	548,124	544,623	-3,501
2027	37,522	40	1,250	150	3,501	433	426	917	8	179	0	0	0	0	4,507	212	47,214	6,186	12,814	0	2,728	0	2,230	17,772	5,055	1,620,751	247	29,442	1,650,193	243	544,623	545,754	1,131
2028	13,592	40	1,254	150	3,548	433	430	917	0	179	0	0	0	0	1,034	194	19,858	3,893	12,841	0	2,060	0	2,414	17,315	5,045	1,650,193	243	2,544	1,652,737	242	545,754	544,601	-1,152
2029	3,729	40	1,250	150	3,596	433	434	917	0	179	0	0	0	0	-2,399	203	6,610	2,454	12,814	0	1,729	0	2,419	16,962	5,019	1,652,737	242	-10,351	1,642,385	243	544,601	542,036	-2,566
2030	46,150	40	1,250	150	3,644	433	437	917	10	179	0	0	0	0	6,011	216	57,502	7,221	12,814	0	3,238	0	2,803	18,855	5,154	1,642,385	243	38,648	1,681,033	238	542,036	544,102	2,067
2031	0	40	1,250	150	3,691	433	438	917	0	179	0	0	0	0	-3,371	194	2,009	2,083	12,814	0	1,853	0	2,692	17,358	5,019	1,681,033	238	-15,350	1,665,683	239	544,102	541,167	-2,936
2032	2,747	40	1,254	150	3,739	433	439	917	0	179	0	0	0	0	-4,658	212	3,520	1,808	12,841	0	1,551	0	2,621	17,013	5,024	1,665,683	239	-13,493	1,652,190	239	541,167	537,951	-3,215
2033	20,140	40	1,250	150	3,787	433	440	917	3	179	0	0	0	0	-1,594	220	24,026	3,651	19,123	0	1,905	0	2,122	23,149	6,917	1,652,190	239	877	1,653,067	238	537,951	534,685	-3,266
2034	0	40	1,250	150	3,834	433	440	917	0	179	0	0	0	0	-4,025	210	1,499	1,912	12,814	0	1,427	0	2,393	16,634	4,918	1,653,067	238	-15,135	1,637,932	239	534,685	531,678	-3,007
2035	6,825	40	1,250	150	3,882	433	440	917	0	179	0	0	0	0	-4,054	222	8,343	2,235	12,814	0	1,377	0	2,402	16,592	4,939	1,637,932	239	-8,249	1,629,683	239	531,678	528,975	-2,704

Projected TDS Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	100	442	777	665	2,240	0	0	15,281	722	5,429	722	3,551	723	30,490	27,011	10,531	1,231	1,151	13,877	70	26,860	26,208	69,600	750	3,629	73,229	721	70,950	71,753	803
2013	333	100	441	777	671	2,240	0	0	2,847	722	7,635	722	5,826	723	17,752	18,574	10,516	786	844	13,113	38	25,299	23,961	73,229	721	-7,547	65,682	743	71,753	66,365	-5,387
2014	2,767	100	441	777	676	2,240	0	0	8,005	722	7,025	722	3,735	723	22,650	21,331	4,667	818	785	13,815	43	20,129	19,545	65,682	743	2,521	68,203	735	66,365	68,152	1,787
2015	10,922	100	441	777	682	2,240	0	0	27,898	722	5,082	722	1,284	723	46,309	37,668	10,516	1,995	1,279	13,922	70	27,783	26,483	68,203	735	18,526	86,730	673	68,152	79,336	11,185
2016	0	100	442	777	688	2,240	0	0	3,784	722	6,676	722	5,368	723	16,958	18,112	10,531	1,485	1,297	14,163	64	27,539	24,005	86,730	673	-10,580	76,149	709	79,336	73,443	-5,894
2017	0	100	441	777	694	2,240	0	0	2,081	722	8,489	722	4,838	723	16,543	17,715	4,667	883	863	14,662	47	21,122	19,539	76,149	709	-4,579	71,570	736	73,443	71,618	-1,825
2018	2,209	100	441	777	700	2,240	0	0	5,510	722	7,672	722	4,354	723	20,886	20,120	4,667	769	760	14,795	47	21,037	20,291	71,570	736	-151	71,419	736	71,618	71,448	-170
2019	322	100	441	777	706	2,240	0	0	1,318	722	8,363	722	6,035	723	17,184	18,098	10,516	389	501	13,430	32	24,868	24,377	71,419	736	-7,684	63,734	752	71,448	65,169	-6,279
2020	1,284	100	442	777	711	2,240	0	0	2,532	722	8,820	722	4,660	723	18,449	18,536	4,674	361	408	14,129	34	19,607	19,631	63,734	752	-1,158	62,576	753	65,169	64,074	-1,095
2021	0	100	441	777	717	2,240	0	0	467	722	9,939	722	4,877	723	16,441	17,663	4,667	131	301	14,551	35	19,685	19,848	62,576	753	-3,244	59,332	767	64,074	61,889	-2,185
2022	0	100	441	777	723	2,240	0	0	960	722	10,486	722	4,616	723	17,226	18,445	4,667	120	269	14,643	34	19,734	20,303	59,332	767	-2,508	56,825	777	61,889	60,031	-1,858
2023	2,700	100	441	777	729	2,240	0	0	7,122	722	8,249	722	3,838	723	23,078	21,917	4,667	425	340	14,860	38	20,330	21,119	56,825	777	2,748	59,573	751	60,031	60,830	799
2024	7,651	100	442	777	735	2,240	0	0	23,652	722	3,248	722	1,708	723	37,436	31,833	4,674	2,480	1,236	15,376	58	23,825	23,065	59,573	751	13,611	73,184	699	60,830	69,598	8,768
2025	6,543	100	441	777	741	2,240	0	0	31,933	722	3,754	722	1,742	723	45,152	40,357	10,516	7,610	2,007	15,503	97	35,732	32,073	73,184	699	9,420	82,603	693	69,598	77,882	8,284
2026	0	100	441	777	746	2,240	0	0	3,032	722	6,806	722	5,988	723	17,013	18,287	10,516	1,230	1,052	14,109	52	26,959	24,426	82,603	693	-9,946	72,657	726	77,882	71,743	-6,139
2027	6,612	100	441	777	752	2,240	0	0	21,134	722	4,045	722	2,918	723	35,901	31,243	4,667	3,365	1,714	14,470	64	24,280	22,282	72,657	726	11,621	84,278	704	71,743	80,704	8,961
2028	2,395	100	442	777	758	2,240	0	0	6,994	722	4,905	722	5,952	723	21,447	20,638	10,531	1,893	1,442	13,646	51	27,563	25,013	84,278	704	-6,116	78,162	718	80,704	76,329	-4,375
2029	657	100	441	777	764	2,240	0	0	3,265	722	7,106	722	5,903	723	18,135	18,869	10,516	798	886	12,904	37	25,140	23,686	78,162	718	-7,005	71,157	739	76,329	71,512	-4,817
2030	8,133	100	441	777	770	2,240	0	0	49,426	722	3,965	722	-1,666	723	61,067	54,690	10,516	12,976	2,990	15,621	122	42,225	39,431	71,157	739	18,842	89,999	709	71,512	86,771	15,259
2031	0	100	441	777	776	2,240	0	0	1,172	722	7,529	722	6,268	723	16,185	17,535	10,516	919	1,135	14,194	51	26,816	24,760	89,999	709	-10,631	79,368	737	86,771	79,546	-7,225
2032	484	100	442	777	782	2,240	0	0	1,470	722	8,784	722	5,984	723	17,947	18,866	10,531	355	715	13,354	33	24,989	24,328	79,368	737	-7,042	72,326	753	79,546	74,085	-5,461
2033	3,549	100	441	777	787	2,240	0	0	10,413	722	7,475	722	3,523	723	26,188	24,372	4,667	650	777	14,023	40	20,157	19,852	72,326	753	6,031	78,357	738	74,085	78,605	4,520
2034	0	100	441	777	793	2,240	0	0	467	722	7,956	722	5,296	723	14,952	16,359	4,667	450	607	14,461	41	20,226	19,681	78,357	738	-5,274	73,083	758	78,605	75,282	-3,322
2035	1,203	100	441	777	799	2,240	0	0	3,800	722	8,693	722	4,358	723	19,293	19,613	4,667	386	505	14,526	42	20,127	20,212	73,083	758	-834	72,249	760	75,282	74,683	-599

Table I-23b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	113	665	326	0	0	15,281	89	5,429	98	3,551	34	30,490	3,375	10,531	1,231	1,151	13,877	70	26,860	3,064	69,600	88	3,629	73,229	86	8,294	8,605	311
2013	333	40	441	113	671	326	0	0	2,847	89	7,635	98	5,826	34	17,752	2,011	10,516	786	844	13,113	38	25,299	2,874	73,229	86	-7,547	65,682	87	8,605	7,742	-863
2014	2,767	40	441	113	676	326	0	0	8,005	89	7,025	98	3,735	34	22,650	2,593	4,667	818	785	13,815	43	20,129	2,280	65,682	87	2,521	68,203	87	7,742	8,055	313
2015	10,922	40	441	113	682	326	0	0	27,898	89	5,082	98	1,284	34	46,309	5,074	10,516	1,995	1,279	13,922	70	27,783	3,130	68,203	87	18,526	86,730	85	8,055	9,998	1,944
2016	0	40	442	113	688	326	0	0	3,784	89	6,676	98	5,368	34	16,958	1,965	10,531	1,485	1,297	14,163	64	27,539	3,025	86,730	85	-10,580	76,149	86	9,998	8,938	-1,060
2017	0	40	441	113	694	326	0	0	2,081	89	8,489	98	4,838	34	16,543	1,979	4,667	883	863	14,662	47	21,122	2,378	76,149	86	-4,579	71,570	88	8,938	8,539	-399
2018	2,209	40	441	113	700	326	0	0	5,510	89	7,672	98	4,354	34	20,886	2,385	4,667	769	760	14,795	47	21,037	2,419	71,570	88	-151	71,419	88	8,539	8,505	-34
2019	322	40	441	113	706	326	0	0	1,318	89	8,363	98	6,035	34	17,184	1,947	10,516	389	501	13,430	32	24,868	2,902	71,419	88	-7,684	63,734	87	8,505	7,551	-955
2020	1,284	40	442	113	711	326	0	0	2,532	89	8,820	98	4,660	34	18,449	2,147	4,674	361	408	14,129	34	19,607	2,275	63,734	87	-1,158	62,576	87	7,551	7,423	-127
2021	0	40	441	113	717	326	0	0	467	89	9,939	98	4,877	34	16,441	1,989	4,667	131	301	14,551	35	19,685	2,300	62,576	87	-3,244	59,332	88	7,423	7,113	-310
2022	0	40	441	113	723	326	0	0	960	89	10,486	98	4,616	34	17,226	2,112	4,667	120	269	14,643	34	19,734	2,333	59,332	88	-2,508	56,825	89	7,113	6,892	-221
2023	2,700	40	441	113	729	326	0	0	7,122	89	8,249	98	3,838	34	23,078	2,673	4,667	425	340	14,860	38	20,330	2,425	56,825	89	2,748	59,573	88	6,892	7,141	249
2024	7,651	40	442	113	735	326	0	0	23,652	89	3,248	98	1,708	34	37,436	4,181	4,674	2,480	1,236	15,376	58	23,825	2,708	59,573	88	13,611	73,184	87	7,141	8,614	1,473
2025	6,543	40	441	113	741	326	0	0	31,933	89	3,754	98	1,742	34	45,152	5,193	10,516	7,610	2,007	15,503	97	35,732	3,970	73,184	87	9,420	82,603	88	8,614	9,838	1,224
2026	0	40	441	113	746	326	0	0	3,032	89	6,806	98	5,988	34	17,013	1,946	10,516	1,230	1,052	14,109	52	26,959	3,085	82,603	88	-9,946	72,657	88	9,838	8,698	-1,140
2027	6,612	40	441	113	752	326	0	0	21,134	89	4,045	98	2,918	34	35,901	3,989	4,667	3,365	1,714	14,470	64	24,280	2,701	72,657	88	11,621	84,278	87	8,698	9,985	1,287
2028	2,395	40	442	113	758	326	0	0	6,994	89	4,905	98	5,952	34	21,447	2,305	10,531	1,893	1,442	13,646	51	27,563	3,095	84,278	87	-6,116	78,162	87	9,985	9,196	-789
2029	657	40	441	113	764	326	0	0	3,265	89	7,106	98	5,903	34	18,135	2,053	10,516	798	886	12,904	37	25,140	2,854	78,162	87	-7,005	71,157	87	9,196	8,395	-800
2030	8,133	40	441	113	770	326	0	0	49,426	89	3,965	98	-1,666	34	61,067	7,281	10,516	12,976	2,990	15,621	122	42,225	4,629	71,157	87	18,842	89,999	90	8,395	11,047	2,652
2031	0	40	441	113	776	326	0	0	1,172	89	7,529	98	6,268	34	16,185	1,843	10,516	919	1,135	14,194	51	26,816	3,152	89,999	90	-10,631	79,368	90	11,047	9,737	-1,310
2032	484	40	442	113	782	326	0	0	1,470	89	8,784	98	5,984	34	17,947	2,062	10,531	355	715	13,354	33	24,989	2,978	79,368	90	-7,042	72,326	90	9,737	8,821	-916
2033	3,549	40	441	113	787	326	0	0	10,413	89	7,475	98	3,523	34	26,188	3,026	4,667	650	777	14,023	40	20,157	2,364	72,326	90	6,031	78,357	89	8,821	9,484	662
2034	0	40	441	113	793	326	0	0	467	89	7,956	98	5,296	34	14,952	1,778	4,667	450	607	14,461	41	20,226	2,375	78,357	89	-5,274	73,083	89	9,484	8,887	-597
2035	1,203	40	441	113	799	326	0	0	3,800	89	8,693	98	4,358	34	19,293	2,304	4,667	386	505	14,526	42	20,127	2,386	73,083	89	-834	72,249	90	8,887	8,805	-82

Table I-23c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	9	442	45	665	16	0	0	15,281	20	5,429	17	3,551	20	30,490	738	10,531	1,231	1,151	13,877	70	26,860	700	69,600	20	3,629	73,229	19	1,894	1,932	38
2013	333	9	441	45	671	16	0	0	2,847	20	7,635	17	5,826	20	17,752	454	10,516	786	844	13,113	38	25,299	645	73,229	19	-7,547	65,682	19	1,932	1,741	-191
2014	2,767	9	441	45	676	16	0	0	8,005	20	7,025	17	3,735	20	22,650	553	4,667	818	785	13,815	43	20,129	513	65,682	19	2,521	68,203	19	1,741	1,782	40
2015	10,922	9	441	45	682	16	0	0	27,898	20	5,082	17	1,284	20	46,309	1,081	10,516	1,995	1,279	13,922	70	27,783	692	68,203	19	18,526	86,730	18	1,782	2,170	389
2016	0	9	442	45	688	16	0	0	3,784	20	6,676	17	5,368	20	16,958	442	10,531	1,485	1,297	14,163	64	27,539	657	86,730	18	-10,580	76,149	19	2,170	1,956	-215
2017	0	9	441	45	694	16	0	0	2,081	20	8,489	17	4,838	20	16,543	422	4,667	883	863	14,662	47	21,122	520	76,149	19	-4,579	71,570	19	1,956	1,858	-98
2018	2,209	9	441	45	700	16	0	0	5,510	20	7,672	17	4,354	20	20,886	511	4,667	769	760	14,795	47	21,037	526	71,570	19	-151	71,419	19	1,858	1,842	-16
2019	322	9	441	45	706	16	0	0	1,318	20	8,363	17	6,035	20	17,184	435	10,516	389	501	13,430	32	24,868	628	71,419	19	-7,684	63,734	19	1,842	1,649	-193
2020	1,284	9	442	45	711	16	0	0	2,532	20	8,820	17	4,660	20	18,449	453	4,674	361	408	14,129	34	19,607	497	63,734	19	-1,158	62,576	19	1,649	1,605	-44
2021	0	9	441	45	717	16	0	0	467	20	9,939	17	4,877	20	16,441	413	4,667	131	301	14,551	35	19,685	497	62,576	19	-3,244	59,332	19	1,605	1,521	-84
2022	0	9	441	45	723	16	0	0	960	20	10,486	17	4,616	20	17,226	432	4,667	120	269	14,643	34	19,734	499	59,332	19	-2,508	56,825	19	1,521	1,454	-67
2023	2,700	9	441	45	729	16	0	0	7,122	20	8,249	17	3,838	20	23,078	560	4,667	425	340	14,860	38	20,330	511	56,825	19	2,748	59,573	19	1,454	1,502	48
2024	7,651	9	442	45	735	16	0	0	23,652	20	3,248	17	1,708	20	37,436	898	4,674	2,480	1,236	15,376	58	23,825	570	59,573	19	13,611	73,184	18	1,502	1,830	328
2025	6,543	9	441	45	741	16	0	0	31,933	20	3,754	17	1,742	20	45,152	1,122	10,516	7,610	2,007	15,503	97	35,732	843	73,184	18	9,420	82,603	19	1,830	2,109	279
2026	0	9	441	45	746	16	0	0	3,032	20	6,806	17	5,988	20	17,013	443	10,516	1,230	1,052	14,109	52	26,959	661	82,603	19	-9,946	72,657	19	2,109	1,890	-219
2027	6,612	9	441	45	752	16	0	0	21,134	20	4,045	17	2,918	20	35,901	868	4,667	3,365	1,714	14,470	64	24,280	587	72,657	19	11,621	84,278	19	1,890	2,171	281
2028	2,395	9	442	45	758	16	0	0	6,994	20	4,905	17	5,952	20	21,447	535	10,531	1,893	1,442	13,646	51	27,563	673	84,278	19	-6,116	78,162	19	2,171	2,033	-138
2029	657	9	441	45	764	16	0	0	3,265	20	7,106	17	5,903	20	18,135	462	10,516	798	886	12,904	37	25,140	631	78,162	19	-7,005	71,157	19	2,033	1,864	-169
2030	8,133	9	441	45	770	16	0	0	49,426	20	3,965	17	-1,666	20	61,067	1,530	10,516	12,976	2,990	15,621	122	42,225	1,028	71,157	19	18,842	89,999	19	1,864	2,366	502
2031	0	9	441	45	776	16	0	0	1,172	20	7,529	17	6,268	20	16,185	417	10,516	919	1,135	14,194	51	26,816	675	89,999	19	-10,631	79,368	20	2,366	2,107	-258
2032	484	9	442	45	782	16	0	0	1,470	20	8,784	17	5,984	20	17,947	451	10,531	355	715	13,354	33	24,989	644	79,368	20	-7,042	72,326	19	2,107	1,914	-193
2033	3,549	9	441	45	787	16	0	0	10,413	20	7,475	17	3,523	20	26,188	635	4,667	650	777	14,023	40	20,157	513	72,326	19	6,031	78,357	19	1,914	2,036	122
2034	0	9	441	45	793	16	0	0	467	20	7,956	17	5,296	20	14,952	381	4,667	450	607	14,461	41	20,226	510	78,357	19	-5,274	73,083	19	2,036	1,907	-129
2035	1,203	9	441	45	799	16	0	0	3,800	20	8,693	17	4,358	20	19,293	477	4,667	386	505	14,526	42	20,127	512	73,083	19	-834	72,249	19	1,907	1,873	-35

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	124	665	358	0	0	15,281	140	5,429	108	3,551	235	30,490	5,508	10,531	1,231	1,151	13,877	70	26,860	5,623	69,600	161	3,629	73,229	152	15,223	15,108	-116
2013	333	40	441	124	671	358	0	0	2,847	140	7,635	108	5,826	235	17,752	3,942	10,516	786	844	13,113	38	25,299	5,045	73,229	152	-7,547	65,682	157	15,108	14,004	-1,103
2014	2,767	40	441	124	676	358	0	0	8,005	140	7,025	108	3,735	235	22,650	4,298	4,667	818	785	13,815	43	20,129	4,124	65,682	157	2,521	68,203	153	14,004	14,178	174
2015	10,922	40	441	124	682	358	0	0	27,898	140	5,082	108	1,284	235	46,309	7,450	10,516	1,995	1,279	13,922	70	27,783	5,509	68,203	153	18,526	86,730	137	14,178	16,119	1,941
2016	0	40	442	124	688	358	0	0	3,784	140	6,676	108	5,368	235	16,958	3,823	10,531	1,485	1,297	14,163	64	27,539	4,877	86,730	137	-10,580	76,149	145	16,119	15,065	-1,054
2017	0	40	441	124	694	358	0	0	2,081	140	8,489	108	4,838	235	16,543	3,599	4,667	883	863	14,662	47	21,122	4,008	76,149	145	-4,579	71,570	151	15,065	14,656	-408
2018	2,209	40	441	124	700	358	0	0	5,510	140	7,672	108	4,354	235	20,886	4,098	4,667	769	760	14,795	47	21,037	4,152	71,570	151	-151	71,419	150	14,656	14,602	-54
2019	322	40	441	124	706	358	0	0	1,318	140	8,363	108	6,035	235	17,184	3,842	10,516	389	501	13,430	32	24,868	4,982	71,419	150	-7,684	63,734	155	14,602	13,462	-1,140
2020	1,284	40	442	124	711	358	0	0	2,532	140	8,820	108	4,660	235	18,449	3,755	4,674	361	408	14,129	34	19,607	4,055	63,734	155	-1,158	62,576	155	13,462	13,162	-300
2021	0	40	441	124	717	358	0	0	467	140	9,939	108	4,877	235	16,441	3,530	4,667	131	301	14,551	35	19,685	4,077	62,576	155	-3,244	59,332	156	13,162	12,615	-547
2022	0	40	441	124	723	358	0	0	960	140	10,486	108	4,616	235	17,226	3,623	4,667	120	269	14,643	34	19,734	4,138	59,332	156	-2,508	56,825	157	12,615	12,100	-515
2023	2,700	40	441	124	729	358	0	0	7,122	140	8,249	108	3,838	235	23,078	4,365	4,667	425	340	14,860	38	20,330	4,257	56,825	157	2,748	59,573	151	12,100	12,208	108
2024	7,651	40	442	124	735	358	0	0	23,652	140	3,248	108	1,708	235	37,436	6,358	4,674	2,480	1,236	15,376	58	23,825	4,629	59,573	151	13,611	73,184	140	12,208	13,937	1,730
2025	6,543	40	441	124	741	358	0	0	31,933	140	3,754	108	1,742	235	45,152	7,957	10,516	7,610	2,007	15,503	97	35,732	6,423	73,184	140	9,420	82,603	138	13,937	15,471	1,534
2026	0	40	441	124	746	358	0	0	3,032	140	6,806	108	5,988	235	17,013	3,926	10,516	1,230	1,052	14,109	52	26,959	4,852	82,603	138	-9,946	72,657	147	15,471	14,545	-927
2027	6,612	40	441	124	752	358	0	0	21,134	140	4,045	108	2,918	235	35,901	6,336	4,667	3,365	1,714	14,470	64	24,280	4,517	72,657	147	11,621	84,278	143	14,545	16,363	1,819
2028	2,395	40	442	124	758	358	0	0	6,994	140	4,905	108	5,952	235	21,447	4,523	10,531	1,893	1,442	13,646	51	27,563	5,072	84,278	143	-6,116	78,162	149	16,363	15,815	-549
2029	657	40	441	124	764	358	0	0	3,265	140	7,106	108	5,903	235	18,135	4,031	10,516	798	886	12,904	37	25,140	4,908	78,162	149	-7,005	71,157	154	15,815	14,938	-877
2030	8,133	40	441	124	770	358	0	0	49,426	140	3,965	108	-1,666	235	61,067	10,318	10,516	12,976	2,990	15,621	122	42,225	8,237	71,157	154	18,842	89,999	139	14,938	17,020	2,082
2031	0	40	441	124	776	358	0	0	1,172	140	7,529	108	6,268	235	16,185	3,783	10,516	919	1,135	14,194	51	26,816	4,857	89,999	139	-10,631	79,368	148	17,020	15,946	-1,074
2032	484	40	442	124	782	358	0	0	1,470	140	8,784	108	5,984	235	17,947	3,962	10,531	355	715	13,354	33	24,989	4,877	79,368	148	-7,042	72,326	153	15,946	15,031	-914
2033	3,549	40	441	124	787	358	0	0	10,413	140	7,475	108	3,523	235	26,188	4,849	4,667	650	777	14,023	40	20,157	4,028	72,326	153	6,031	78,357	149	15,031	15,853	822
2034	0	40	441	124	793	358	0	0	467	140	7,956	108	5,296	235	14,952	3,409	4,667	450	607	14,461	41	20,226	3,969	78,357	149	-5,274	73,083	154	15,853	15,293	-560
2035	1,203	40	441	124	799	358	0	0	3,800	140	8,693	108	4,358	235	19,293	3,918	4,667	386	505	14,526	42	20,127	4,106	73,083	154	-834	72,249	154	15,293	15,106	-187

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-24a

Projected TDS Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentrati on	Change in GW Storage	Ending Storage	Ending Concentrat ion	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	100	30	777	46	2,240	0	0	1,047	722	372	722	243	723	2,090	1,851	722	84	79	951	5	1,841	1,940	69,600	810	249	69,848	806	76,620	76,531	-89
2013	23	100	30	777	46	2,240	0	0	195	722	523	722	399	723	1,217	1,273	721	54	58	899	3	1,734	1,836	69,848	806	-517	69,331	806	76,531	75,968	-563
2014	190	100	30	777	46	2,240	0	0	549	722	481	722	256	723	1,552	1,462	320	56	54	947	3	1,380	1,453	69,331	806	173	69,504	804	75,968	75,977	9
2015	749	100	30	777	47	2,240	0	0	1,912	722	348	722	88	723	3,174	2,582	721	137	88	954	5	1,904	1,986	69,504	804	1,270	70,774	796	75,977	76,573	596
2016	0	100	30	777	47	2,240	0	0	259	722	458	722	368	723	1,162	1,241	722	102	89	971	4	1,887	1,946	70,774	796	-725	70,049	797	76,573	75,869	-705
2017	0	100	30	777	48	2,240	0	0	143	722	582	722	332	723	1,134	1,214	320	60	59	1,005	3	1,448	1,504	70,049	797	-314	69,735	797	75,869	75,579	-290
2018	151	100	30	777	48	2,240	0	0	378	722	526	722	298	723	1,431	1,379	320	53	52	1,014	3	1,442	1,506	69,735	797	-10	69,724	796	75,579	75,452	-127
2019	22	100	30	777	48	2,240	0	0	90	722	573	722	414	723	1,178	1,240	721	27	34	920	2	1,704	1,807	69,724	796	-527	69,198	796	75,452	74,885	-567
2020	88	100	30	777	49	2,240	0	0	174	722	605	722	319	723	1,264	1,270	320	25	28	968	2	1,344	1,424	69,198	796	-79	69,118	795	74,885	74,731	-154
2021	0	100	30	777	49	2,240	0	0	32	722	681	722	334	723	1,127	1,211	320	9	21	997	2	1,349	1,436	69,118	795	-222	68,896	795	74,731	74,505	-226
2022	0	100	30	777	50	2,240	0	0	66	722	719	722	316	723	1,181	1,264	320	8	18	1,004	2	1,352	1,443	68,896	795	-172	68,724	795	74,505	74,327	-178
2023	185	100	30	777	50	2,240	0	0	488	722	565	722	263	723	1,582	1,502	320	29	23	1,018	3	1,393	1,482	68,724	795	188	68,912	793	74,327	74,347	20
2024	524	100	30	777	50	2,240	0	0	1,621	722	223	722	117	723	2,566	2,182	320	170	85	1,054	4	1,633	1,670	68,912	793	933	69,845	788	74,347	74,859	512
2025	448	100	30	777	51	2,240	0	0	2,189	722	257	722	119	723	3,095	2,766	721	522	138	1,062	7	2,449	2,477	69,845	788	646	70,491	784	74,859	75,147	289
2026	0	100	30	777	51	2,240	0	0	208	722	466	722	410	723	1,166	1,253	721	84	72	967	4	1,848	1,893	70,491	784	-682	69,809	785	75,147	74,508	-640
2027	453	100	30	777	52	2,240	0	0	1,448	722	277	722	200	723	2,461	2,141	320	231	117	992	4	1,664	1,651	69,809	785	796	70,606	781	74,508	74,999	491
2028	164	100	30	777	52	2,240	0	0	479	722	336	722	408	723	1,470	1,414	722	130	99	935	4	1,889	1,902	70,606	781	-419	70,186	781	74,999	74,511	-487
2029	45	100	30	777	52	2,240	0	0	224	722	487	722	405	723	1,243	1,293	721	55	61	884	3	1,723	1,765	70,186	781	-480	69,706	781	74,511	74,040	-472
2030	557	100	30	777	53	2,240	0	0	3,387	722	272	722	-114	723	4,185	3,748	721	889	205	1,071	8	2,894	2,856	69,706	781	1,291	70,998	776	74,040	74,932	892
2031	0	100	30	777	53	2,240	0	0	80	722	516	722	430	723	1,109	1,202	721	63	78	973	4	1,838	1,858	70,998	776	-729	70,269	777	74,932	74,276	-656
2032	33	100	30	777	54	2,240	0	0	101	722	602	722	410	723	1,230	1,293	722	24	49	915	2	1,713	1,758	70,269	777	-483	69,787	778	74,276	73,811	-465
2033	243	100	30	777	54	2,240	0	0	714	722	512	722	241	723	1,795	1,670	320	45	53	961	3	1,381	1,405	69,787	778	413	70,200	776	73,811	74,076	265
2034	0	100	30	777	54	2,240	0	0	32	722	545	722	363	723	1,025	1,121	320	31	42	991	3	1,386	1,419	70,200	776	-361	69,838	777	74,076	73,778	-298
2035	82	100	30	777	55	2,240	0	0	260	722	596	722	299	723	1,322	1,344	320	26	35	996	3	1,379	1,421	69,838	777	-57	69,781	777	73,778	73,702	-76

Table I-24b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]
2012	351	40	30	113	46	326	0	0	1,047	89	372	98	243	34	2,090	231
2013	23	40	30	113	46	326	0	0	195	89	523	98	399	34	1,217	138
2014	190	40	30	113	46	326	0	0	549	89	481	98	256	34	1,552	178
2015	749	40	30	113	47	326	0	0	1,912	89	348	98	88	34	3,174	348
2016	0	40	30	113	47	326	0	0	259	89	458	98	368	34	1,162	135
2017	0	40	30	113	48	326	0	0	143	89	582	98	332	34	1,134	136
2018	151	40	30	113	48	326	0	0	378	89	526	98	298	34	1,431	163
2019	22	40	30	113	48	326	0	0	90	89	573	98	414	34	1,178	133
2020	88	40	30	113	49	326	0	0	174	89	605	98	319	34	1,264	147
2021	0	40	30	113	49	326	0	0	32	89	681	98	334	34	1,127	136
2022	0	40	30	113	50	326	0	0	66	89	719	98	316	34	1,181	145
2023	185	40	30	113	50	326	0	0	488	89	565	98	263	34	1,582	183
2024	524	40	30	113	50	326	0	0	1,621	89	223	98	117	34	2,566	287
2025	448	40	30	113	51	326	0	0	2,189	89	257	98	119	34	3,095	356
2026	0	40	30	113	51	326	0	0	208	89	466	98	410	34	1,166	133
2027	453	40	30	113	52	326	0	0	1,448	89	277	98	200	34	2,461	273
2028	164	40	30	113	52	326	0	0	479	89	336	98	408	34	1,470	158
2029	45	40	30	113	52	326	0	0	224	89	487	98	405	34	1,243	141
2030	557	40	30	113	53	326	0	0	3,387	89	272	98	-114	34	4,185	499
2031	0	40	30	113	53	326	0	0	80	89	516	98	430	34	1,109	126
2032	33	40	30	113	54	326	0	0	101	89	602	98	410	34	1,230	141
2033	243	40	30	113	54	326	0	0	714	89	512	98	241	34	1,795	207
2034	0	40	30	113	54	326	0	0	32	89	545	98	363	34	1,025	122
2035	82	40	30	113	55	326	0	0	260	89	596	98	299	34	1,322	158

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	722	84	79	951	5	1,841	159	69,600	66	249	69,848	67	6,282	6,354	72
2013	721	54	58	899	3	1,734	152	69,848	67	-517	69,331	67	6,354	6,340	-15
2014	320	56	54	947	3	1,380	121	69,331	67	173	69,504	68	6,340	6,396	56
2015	721	137	88	954	5	1,904	167	69,504	68	1,270	70,774	68	6,396	6,577	181
2016	722	102	89	971	4	1,887	167	70,774	68	-725	70,049	69	6,577	6,544	-32
2017	320	60	59	1,005	3	1,448	130	70,049	69	-314	69,735	69	6,544	6,550	6
2018	320	53	52	1,014	3	1,442	131	69,735	69	-10	69,724	69	6,550	6,583	33
2019	721	27	34	920	2	1,704	158	69,724	69	-527	69,198	70	6,583	6,559	-24
2020	320	25	28	968	2	1,344	125	69,198	70	-79	69,118	70	6,559	6,581	22
2021	320	9	21	997	2	1,349	126	69,118	70	-222	68,896	70	6,581	6,591	10
2022	320	8	18	1,004	2	1,352	128	68,896	70	-172	68,724	71	6,591	6,608	17
2023	320	29	23	1,018	3	1,393	132	68,724	71	188	68,912	71	6,608	6,660	51
2024	320	170	85	1,054	4	1,633	150	68,912	71	933	69,845	72	6,660	6,797	137
2025	721	522	138	1,062	7	2,449	225	69,845	72	646	70,491	72	6,797	6,928	131
2026	721	84	72	967	4	1,848	174	70,491	72	-682	69,809	73	6,928	6,887	-41
2027	320	231	117	992	4	1,664	153	69,809	73	796	70,606	73	6,887	7,007	121
2028	722	130	99	935	4	1,889	178	70,606	73	-419	70,186	73	7,007	6,988	-20
2029	721	55	61	884	3	1,723	165	70,186	73	-480	69,706	73	6,988	6,963	-25
2030	721	889	205	1,071	8	2,894	269	69,706	73	1,291	70,998	75	6,963	7,193	230
2031	721	63	78	973	4	1,838	178	70,998	75	-729	70,269	75	7,193	7,141	-52
2032	722	24	49	915	2	1,713	169	70,269	75	-483	69,787	75	7,141	7,114	-28
2033	320	45	53	961	3	1,381	135	69,787	75	413	70,200	75	7,114	7,186	72
2034	320	31	42	991	3	1,386	138	70,200	75	-361	69,838	76	7,186	7,170	-16
2035	320	26	35	996	3	1,379	138	69,838	76	-57	69,781	76	7,170	7,190	20

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	9	30	45	46	16	0	0	1,047	20	372	17	243	20	2,090	51	722	84	79	951	5	1,841	59	69,600	25	249	69,848	24	2,329	2,321	-8
2013	23	9	30	45	46	16	0	0	195	20	523	17	399	20	1,217	31	721	54	58	899	3	1,734	56	69,848	24	-517	69,331	24	2,321	2,296	-25
2014	190	9	30	45	46	16	0	0	549	20	481	17	256	20	1,552	38	320	56	54	947	3	1,380	44	69,331	24	173	69,504	24	2,296	2,290	-6
2015	749	9	30	45	47	16	0	0	1,912	20	348	17	88	20	3,174	74	721	137	88	954	5	1,904	60	69,504	24	1,270	70,774	24	2,290	2,304	14
2016	0	9	30	45	47	16	0	0	259	20	458	17	368	20	1,162	30	722	102	89	971	4	1,887	59	70,774	24	-725	70,049	24	2,304	2,276	-28
2017	0	9	30	45	48	16	0	0	143	20	582	17	332	20	1,134	29	320	60	59	1,005	3	1,448	45	70,049	24	-314	69,735	24	2,276	2,260	-16
2018	151	9	30	45	48	16	0	0	378	20	526	17	298	20	1,431	35	320	53	52	1,014	3	1,442	45	69,735	24	-10	69,724	24	2,260	2,250	-10
2019	22	9	30	45	48	16	0	0	90	20	573	17	414	20	1,178	30	721	27	34	920	2	1,704	54	69,724	24	-527	69,198	24	2,250	2,226	-24
2020	88	9	30	45	49	16	0	0	174	20	605	17	319	20	1,264	31	320	25	28	968	2	1,344	42	69,198	24	-79	69,118	24	2,226	2,215	-11
2021	0	9	30	45	49	16	0	0	32	20	681	17	334	20	1,127	28	320	9	21	997	2	1,349	43	69,118	24	-222	68,896	23	2,215	2,200	-14
2022	0	9	30	45	50	16	0	0	66	20	719	17	316	20	1,181	30	320	8	18	1,004	2	1,352	43	68,896	23	-172	68,724	23	2,200	2,187	-13
2023	185	9	30	45	50	16	0	0	488	20	565	17	263	20	1,582	38	320	29	23	1,018	3	1,393	44	68,724	23	188	68,912	23	2,187	2,182	-5
2024	524	9	30	45	50	16	0	0	1,621	20	223	17	117	20	2,566	62	320	170	85	1,054	4	1,633	49	68,912	23	933	69,845	23	2,182	2,195	13
2025	448	9	30	45	51	16	0	0	2,189	20	257	17	119	20	3,095	77	721	522	138	1,062	7	2,449	73	69,845	23	646	70,491	23	2,195	2,199	4
2026	0	9	30	45	51	16	0	0	208	20	466	17	410	20	1,166	30	721	84	72	967	4	1,848	55	70,491	23	-682	69,809	23	2,199	2,174	-25
2027	453	9	30	45	52	16	0	0	1,448	20	277	17	200	20	2,461	59	320	231	117	992	4	1,664	48	69,809	23	796	70,606	23	2,174	2,185	11
2028	164	9	30	45	52	16	0	0	479	20	336	17	408	20	1,470	37	722	130	99	935	4	1,889	55	70,606	23	-419	70,186	23	2,185	2,166	-19
2029	45	9	30	45	52	16	0	0	224	20	487	17	405	20	1,243	32	721	55	61	884	3	1,723	51	70,186	23	-480	69,706	23	2,166	2,147	-20
2030	557	9	30	45	53	16	0	0	3,387	20	272	17	-114	20	4,185	105	721	889	205	1,071	8	2,894	83	69,706	23	1,291	70,998	22	2,147	2,169	22
2031	0	9	30	45	53	16	0	0	80	20	516	17	430	20	1,109	29	721	63	78	973	4	1,838	54	70,998	22	-729	70,269	22	2,169	2,144	-25
2032	33	9	30	45	54	16	0	0	101	20	602	17	410	20	1,230	31	722	24	49	915	2	1,713	51	70,269	22	-483	69,787	22	2,144	2,124	-20
2033	243	9	30	45	54	16	0	0	714	20	512	17	241	20	1,795	44	320	45	53	961	3	1,381	40	69,787	22	413	70,200	22	2,124	2,127	3
2034	0	9	30	45	54	16	0	0	32	20	545	17	363	20	1,025	26	320	31	42	991	3	1,386	41	70,200	22	-361	69,838	22	2,127	2,112	-15
2035	82	9	30	45	55	16	0	0	260	20	596	17	299	20	1,322	33	320	26	35	996	3	1,379	41	69,838	22	-57	69,781	22	2,112	2,104	-8

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	40	30	124	46	358	0	0	1,047	140	372	108	243	235	2,090	377	722	84	79	951	5	1,841	600	69,600	250	249	69,848	**247**	23,705	23,482	**-223**
2013	23	40	30	124	46	358	0	0	195	140	523	108	399	235	1,217	270	721	54	58	899	3	1,734	563	69,848	247	-517	69,331	**246**	23,482	23,189	**-293**
2014	190	40	30	124	46	358	0	0	549	140	481	108	256	235	1,552	295	320	56	54	947	3	1,380	443	69,331	246	173	69,504	**244**	23,189	23,040	**-149**
2015	749	40	30	124	47	358	0	0	1,912	140	348	108	88	235	3,174	511	721	137	88	954	5	1,904	602	69,504	244	1,270	70,774	**238**	23,040	22,948	**-92**
2016	0	40	30	124	47	358	0	0	259	140	458	108	368	235	1,162	262	722	102	89	971	4	1,887	583	70,774	238	-725	70,049	**238**	22,948	22,627	**-321**
2017	0	40	30	124	48	358	0	0	143	140	582	108	332	235	1,134	247	320	60	59	1,005	3	1,448	449	70,049	238	-314	69,735	**237**	22,627	22,425	**-202**
2018	151	40	30	124	48	358	0	0	378	140	526	108	298	235	1,431	281	320	53	52	1,014	3	1,442	447	69,735	237	-10	69,724	**235**	22,425	22,259	**-166**
2019	22	40	30	124	48	358	0	0	90	140	573	108	414	235	1,178	263	721	27	34	920	2	1,704	533	69,724	235	-527	69,198	**234**	22,259	21,990	**-270**
2020	88	40	30	124	49	358	0	0	174	140	605	108	319	235	1,264	257	320	25	28	968	2	1,344	418	69,198	234	-79	69,118	**232**	21,990	21,829	**-161**
2021	0	40	30	124	49	358	0	0	32	140	681	108	334	235	1,127	242	320	9	21	997	2	1,349	420	69,118	232	-222	68,896	**231**	21,829	21,651	**-178**
2022	0	40	30	124	50	358	0	0	66	140	719	108	316	235	1,181	248	320	8	18	1,004	2	1,352	419	68,896	231	-172	68,724	**230**	21,651	21,480	**-171**
2023	185	40	30	124	50	358	0	0	488	140	565	108	263	235	1,582	299	320	29	23	1,018	3	1,393	428	68,724	230	188	68,912	**228**	21,480	21,351	**-129**
2024	524	40	30	124	50	358	0	0	1,621	140	223	108	117	235	2,566	436	320	170	85	1,054	4	1,633	480	68,912	228	933	69,845	**224**	21,351	21,307	**-44**
2025	448	40	30	124	51	358	0	0	2,189	140	257	108	119	235	3,095	545	721	522	138	1,062	7	2,449	705	69,845	224	646	70,491	**221**	21,307	21,147	**-160**
2026	0	40	30	124	51	358	0	0	208	140	466	108	410	235	1,166	269	721	84	72	967	4	1,848	533	70,491	221	-682	69,809	**220**	21,147	20,884	**-264**
2027	453	40	30	124	52	358	0	0	1,448	140	277	108	200	235	2,461	434	320	231	117	992	4	1,664	463	69,809	220	796	70,606	**217**	20,884	20,855	**-28**
2028	164	40	30	124	52	358	0	0	479	140	336	108	408	235	1,470	310	722	130	99	935	4	1,889	529	70,606	217	-419	70,186	**216**	20,855	20,637	**-219**
2029	45	40	30	124	52	358	0	0	224	140	487	108	405	235	1,243	276	721	55	61	884	3	1,723	489	70,186	216	-480	69,706	**215**	20,637	20,424	**-212**
2030	557	40	30	124	53	358	0	0	3,387	140	272	108	-114	235	4,185	707	721	889	205	1,071	8	2,894	788	69,706	215	1,291	70,998	**211**	20,424	20,343	**-81**
2031	0	40	30	124	53	358	0	0	80	140	516	108	430	235	1,109	259	721	63	78	973	4	1,838	504	70,998	211	-729	70,269	**210**	20,343	20,098	**-245**
2032	33	40	30	124	54	358	0	0	101	140	602	108	410	235	1,230	272	722	24	49	915	2	1,713	476	70,269	210	-483	69,787	**210**	20,098	19,894	**-204**
2033	243	40	30	124	54	358	0	0	714	140	512	108	241	235	1,795	332	320	45	53	961	3	1,381	379	69,787	210	413	70,200	**208**	19,894	19,848	**-46**
2034	0	40	30	124	54	358	0	0	32	140	545	108	363	235	1,025	234	320	31	42	991	3	1,386	380	70,200	208	-361	69,838	**207**	19,848	19,701	**-147**
2035	82	40	30	124	55	358	0	0	260	140	596	108	299	235	1,322	269	320	26	35	996	3	1,379	379	69,838	207	-57	69,781	**206**	19,701	19,590	**-111**

Projected TDS Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	100	270	808	74	2,330	0	0	1,438	532	0	0	220	647	2,669	1,855	0	0	941	292	754	1,987	1,489	7,647	1,047	681	8,328	**993**	10,883	11,250	**367**
2013	43	100	269	808	74	2,330	0	0	18	532	0	0	520	650	924	1,009	0	0	620	323	718	1,660	1,405	8,328	993	-736	7,592	**1,051**	11,250	10,854	**-396**
2014	360	100	269	808	75	2,330	0	0	1,029	532	0	0	413	648	2,146	1,690	0	0	764	309	718	1,792	1,469	7,592	1,051	354	7,947	**1,025**	10,854	11,075	**221**
2015	1,421	100	269	808	75	2,330	0	0	916	532	0	0	452	632	3,134	1,779	0	0	915	321	755	1,991	1,500	7,947	1,025	1,144	9,090	**919**	11,075	11,354	**279**
2016	0	100	270	808	76	2,330	0	0	0	532	0	0	515	630	861	978	0	0	765	341	749	1,854	1,361	9,090	919	-993	8,097	**997**	11,354	10,971	**-383**
2017	0	100	269	808	76	2,330	0	0	0	532	0	0	604	629	949	1,053	0	0	373	351	734	1,458	1,471	8,097	997	-509	7,588	**1,023**	10,971	10,553	**-417**
2018	288	100	269	808	77	2,330	0	0	796	532	0	0	542	629	1,972	1,617	0	0	544	359	743	1,646	1,532	7,588	1,023	326	7,914	**989**	10,553	10,638	**85**
2019	42	100	269	808	77	2,330	0	0	13	532	0	0	555	632	956	1,032	0	0	494	350	830	1,674	1,586	7,914	989	-718	7,195	**1,031**	10,638	10,084	**-554**
2020	167	100	270	808	77	2,330	0	0	412	532	0	0	603	634	1,529	1,382	0	0	477	365	903	1,745	1,777	7,195	1,031	-216	6,979	**1,021**	10,084	9,689	**-395**
2021	0	100	269	808	78	2,330	0	0	0	532	0	0	653	639	1,000	1,109	0	0	288	399	892	1,579	1,793	6,979	1,021	-580	6,400	**1,035**	9,689	9,006	**-683**
2022	0	100	269	808	78	2,330	0	0	0	532	0	0	661	644	1,009	1,123	0	0	189	407	918	1,514	1,865	6,400	1,035	-505	5,894	**1,031**	9,006	8,263	**-742**
2023	351	100	269	808	79	2,330	0	0	908	532	0	0	507	644	2,114	1,693	0	0	484	399	1,009	1,892	1,974	5,894	1,031	222	6,116	**960**	8,263	7,983	**-281**
2024	996	100	270	808	79	2,330	0	0	1,326	532	0	0	342	636	3,013	1,937	0	0	848	415	1,094	2,357	1,970	6,116	960	656	6,772	**864**	7,983	7,951	**-32**
2025	851	100	269	808	80	2,330	0	0	1,585	532	0	0	369	630	3,154	2,126	0	0	1,042	409	898	2,348	1,534	6,772	864	806	7,578	**829**	7,951	8,542	**592**
2026	0	100	269	808	80	2,330	0	0	0	532	0	0	603	635	952	1,070	0	0	779	382	852	2,013	1,391	7,578	829	-1,060	6,517	**928**	8,542	8,221	**-321**
2027	860	100	269	808	80	2,330	0	0	1,614	532	0	0	316	629	3,140	2,105	0	0	945	317	783	2,045	1,388	6,517	928	1,095	7,612	**864**	8,221	8,938	**717**
2028	312	100	270	808	81	2,330	0	0	874	532	0	0	370	630	1,906	1,544	0	0	881	306	737	1,924	1,224	7,612	864	-18	7,595	**897**	8,938	9,258	**320**
2029	86	100	269	808	81	2,330	0	0	152	532	0	0	498	634	1,086	1,104	0	0	717	295	696	1,707	1,207	7,595	897	-622	6,973	**966**	9,258	9,155	**-103**
2030	1,058	100	269	808	82	2,330	0	0	1,476	532	0	0	147	626	3,032	1,891	0	0	1,019	266	742	2,026	1,323	6,973	966	1,006	7,979	**896**	9,155	9,723	**568**
2031	0	100	269	808	82	2,330	0	0	0	532	0	0	572	631	924	1,048	0	0	594	305	697	1,596	1,221	7,979	896	-672	7,307	**961**	9,723	9,549	**-173**
2032	63	100	270	808	83	2,330	0	0	80	532	0	0	570	636	1,066	1,118	0	0	373	312	691	1,375	1,310	7,307	961	-310	6,997	**984**	9,549	9,357	**-192**
2033	462	100	269	808	83	2,330	0	0	1,032	532	0	0	439	635	2,285	1,747	0	0	586	314	816	1,716	1,511	6,997	984	570	7,567	**932**	9,357	9,593	**236**
2034	0	100	269	808	83	2,330	0	0	0	532	0	0	477	640	829	975	0	0	456	344	759	1,559	1,399	7,567	932	-730	6,837	**986**	9,593	9,169	**-424**
2035	157	100	269	808	84	2,330	0	0	378	532	0	0	544	643	1,432	1,332	0	0	419	347	727	1,493	1,440	6,837	986	-61	6,776	**984**	9,169	9,061	**-108**

Projected Chloride Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	40	270	89	74	256	0	0	1,438	65	0	0	220	39	2,669	234	0	0	941	292	754	1,987	161	7,647	114	681	8,328	**111**	1,180	1,253	**73**
2013	43	40	269	89	74	256	0	0	18	65	0	0	520	40	924	91	0	0	620	323	718	1,660	157	8,328	111	-736	7,592	**115**	1,253	1,187	**-66**
2014	360	40	269	89	75	256	0	0	1,029	65	0	0	413	40	2,146	192	0	0	764	309	718	1,792	161	7,592	115	354	7,947	**113**	1,187	1,219	**32**
2015	1,421	40	269	89	75	256	0	0	916	65	0	0	452	41	3,134	243	0	0	915	321	755	1,991	165	7,947	113	1,144	9,090	**105**	1,219	1,296	**78**
2016	0	40	270	89	76	256	0	0	0	65	0	0	515	41	861	87	0	0	765	341	749	1,854	155	9,090	105	-993	8,097	**112**	1,296	1,229	**-68**
2017	0	40	269	89	76	256	0	0	0	65	0	0	604	40	949	92	0	0	373	351	734	1,458	165	8,097	112	-509	7,588	**112**	1,229	1,156	**-73**
2018	288	40	269	89	77	256	0	0	796	65	0	0	542	41	1,972	176	0	0	544	359	743	1,646	168	7,588	112	326	7,914	**108**	1,156	1,164	**8**
2019	42	40	269	89	77	256	0	0	13	65	0	0	555	41	956	94	0	0	494	350	830	1,674	174	7,914	108	-718	7,195	**111**	1,164	1,084	**-80**
2020	167	40	270	89	77	256	0	0	412	65	0	0	603	42	1,529	140	0	0	477	365	903	1,745	191	7,195	111	-216	6,979	**109**	1,084	1,033	**-51**
2021	0	40	269	89	78	256	0	0	0	65	0	0	653	43	1,000	98	0	0	288	399	892	1,579	191	6,979	109	-580	6,400	**108**	1,033	940	**-94**
2022	0	40	269	89	78	256	0	0	0	65	0	0	661	44	1,009	99	0	0	189	407	918	1,514	195	6,400	108	-505	5,894	**105**	940	844	**-96**
2023	351	40	269	89	79	256	0	0	908	65	0	0	507	44	2,114	190	0	0	484	399	1,009	1,892	202	5,894	105	222	6,116	**100**	844	833	**-11**
2024	996	40	270	89	79	256	0	0	1,326	65	0	0	342	45	3,013	253	0	0	848	415	1,094	2,357	205	6,116	100	656	6,772	**96**	833	881	**48**
2025	851	40	269	89	80	256	0	0	1,585	65	0	0	369	46	3,154	271	0	0	1,042	409	898	2,348	170	6,772	96	806	7,578	**95**	881	982	**101**
2026	0	40	269	89	80	256	0	0	0	65	0	0	603	47	952	99	0	0	779	382	852	2,013	160	7,578	95	-1,060	6,517	**104**	982	921	**-61**
2027	860	40	269	89	80	256	0	0	1,614	65	0	0	316	48	3,140	272	0	0	945	317	783	2,045	156	6,517	104	1,095	7,612	**100**	921	1,037	**116**
2028	312	40	270	89	81	256	0	0	874	65	0	0	370	49	1,906	180	0	0	881	306	737	1,924	142	7,612	100	-18	7,595	**104**	1,037	1,075	**38**
2029	86	40	269	89	81	256	0	0	152	65	0	0	498	50	1,086	113	0	0	717	295	696	1,707	140	7,595	104	-622	6,973	**110**	1,075	1,047	**-28**
2030	1,058	40	269	89	82	256	0	0	1,476	65	0	0	147	50	3,032	260	0	0	1,019	266	742	2,026	151	6,973	110	1,006	7,979	**107**	1,047	1,156	**109**
2031	0	40	269	89	82	256	0	0	0	65	0	0	572	51	924	101	0	0	594	305	697	1,596	145	7,979	107	-672	7,307	**112**	1,156	1,112	**-44**
2032	63	40	270	89	83	256	0	0	80	65	0	0	570	52	1,066	112	0	0	373	312	691	1,375	152	7,307	112	-310	6,997	**113**	1,112	1,071	**-40**
2033	462	40	269	89	83	256	0	0	1,032	65	0	0	439	52	2,285	210	0	0	586	314	816	1,716	173	6,997	113	570	7,567	**108**	1,071	1,108	**37**
2034	0	40	269	89	83	256	0	0	0	65	0	0	477	53	829	96	0	0	456	344	759	1,559	162	7,567	108	-730	6,837	**112**	1,108	1,042	**-65**
2035	157	40	269	89	84	256	0	0	378	65	0	0	544	54	1,432	144	0	0	419	347	727	1,493	164	6,837	112	-61	6,776	**111**	1,042	1,023	**-20**

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentrati on	Change in GW Storage	Ending Storage	Ending Concentrat ion	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	9	270	46	74	17	0	0	1,438	7	0	0	220	20	2,669	47	0	0	941	292	754	1,987	44	7,647	31	681	8,328	29	321	324	3
2013	43	9	269	46	74	17	0	0	18	7	0	0	520	20	924	34	0	0	620	323	718	1,660	40	8,328	29	-736	7,592	31	324	317	-7
2014	360	9	269	46	75	17	0	0	1,029	7	0	0	413	20	2,146	44	0	0	764	309	718	1,792	43	7,592	31	354	7,947	29	317	318	1
2015	1,421	9	269	46	75	17	0	0	916	7	0	0	452	20	3,134	57	0	0	915	321	755	1,991	43	7,947	29	1,144	9,090	27	318	332	14
2016	0	9	270	46	76	17	0	0	0	7	0	0	515	20	861	33	0	0	765	341	749	1,854	40	9,090	27	-993	8,097	29	332	324	-7
2017	0	9	269	46	76	17	0	0	0	7	0	0	604	20	949	35	0	0	373	351	734	1,458	43	8,097	29	-509	7,588	31	324	316	-9
2018	288	9	269	46	77	17	0	0	796	7	0	0	542	20	1,972	44	0	0	544	359	743	1,646	46	7,588	31	326	7,914	29	316	314	-2
2019	42	9	269	46	77	17	0	0	13	7	0	0	555	20	956	34	0	0	494	350	830	1,674	47	7,914	29	-718	7,195	31	314	302	-13
2020	167	9	270	46	77	17	0	0	412	7	0	0	603	20	1,529	41	0	0	477	365	903	1,745	53	7,195	31	-216	6,979	30	302	289	-12
2021	0	9	269	46	78	17	0	0	0	7	0	0	653	20	1,000	36	0	0	288	399	892	1,579	54	6,979	30	-580	6,400	31	289	272	-17
2022	0	9	269	46	78	17	0	0	0	7	0	0	661	20	1,009	36	0	0	189	407	918	1,514	56	6,400	31	-505	5,894	31	272	252	-20
2023	351	9	269	46	79	17	0	0	908	7	0	0	507	20	2,114	45	0	0	484	399	1,009	1,892	60	5,894	31	222	6,116	29	252	237	-15
2024	996	9	270	46	79	17	0	0	1,326	7	0	0	342	19	3,013	53	0	0	848	415	1,094	2,357	59	6,116	29	656	6,772	25	237	231	-6
2025	851	9	269	46	80	17	0	0	1,585	7	0	0	369	19	3,154	54	0	0	1,042	409	898	2,348	45	6,772	25	806	7,578	23	231	240	9
2026	0	9	269	46	80	17	0	0	0	7	0	0	603	19	952	34	0	0	779	382	852	2,013	39	7,578	23	-1,060	6,517	27	240	236	-5
2027	860	9	269	46	80	17	0	0	1,614	7	0	0	316	19	3,140	53	0	0	945	317	783	2,045	40	6,517	27	1,095	7,612	24	236	249	13
2028	312	9	270	46	81	17	0	0	874	7	0	0	370	19	1,906	41	0	0	881	306	737	1,924	34	7,612	24	-18	7,595	25	249	255	6
2029	86	9	269	46	81	17	0	0	152	7	0	0	498	19	1,086	34	0	0	717	295	696	1,707	33	7,595	25	-622	6,973	27	255	256	1
2030	1,058	9	269	46	82	17	0	0	1,476	7	0	0	147	19	3,032	49	0	0	1,019	266	742	2,026	37	6,973	27	1,006	7,979	25	256	269	12
2031	0	9	269	46	82	17	0	0	0	7	0	0	572	19	924	33	0	0	594	305	697	1,596	34	7,979	25	-672	7,307	27	269	268	0
2032	63	9	270	46	83	17	0	0	80	7	0	0	570	19	1,066	35	0	0	373	312	691	1,375	37	7,307	27	-310	6,997	28	268	266	-2
2033	462	9	269	46	83	17	0	0	1,032	7	0	0	439	19	2,285	46	0	0	586	314	816	1,716	43	6,997	28	570	7,567	26	266	269	2
2034	0	9	269	46	83	17	0	0	0	7	0	0	477	19	829	31	0	0	456	344	759	1,559	39	7,567	26	-730	6,837	28	269	261	-8
2035	157	9	269	46	84	17	0	0	378	7	0	0	544	19	1,432	38	0	0	419	347	727	1,493	41	6,837	28	-61	6,776	28	261	258	-3

Table I-25d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	40	270	170	74	490	0	0	1,438	103	0	0	220	266	2,669	428	0	0	941	292	754	1,987	330	7,647	232	681	8,328	**222**	2,410	2,509	**98**
2013	43	40	269	170	74	490	0	0	18	103	0	0	520	266	924	305	0	0	620	323	718	1,660	313	8,328	222	-736	7,592	**242**	2,509	2,500	**-8**
2014	360	40	269	170	75	490	0	0	1,029	103	0	0	413	265	2,146	424	0	0	764	309	718	1,792	338	7,592	242	354	7,947	**239**	2,500	2,586	**86**
2015	1,421	40	269	170	75	490	0	0	916	103	0	0	452	257	3,134	476	0	0	915	321	755	1,991	350	7,947	239	1,144	9,090	**219**	2,586	2,711	**126**
2016	0	40	270	170	76	490	0	0	0	103	0	0	515	257	861	293	0	0	765	341	749	1,854	325	9,090	219	-993	8,097	**243**	2,711	2,679	**-32**
2017	0	40	269	170	76	490	0	0	0	103	0	0	604	258	949	324	0	0	373	351	734	1,458	359	8,097	243	-509	7,588	**256**	2,679	2,645	**-35**
2018	288	40	269	170	77	490	0	0	796	103	0	0	542	257	1,972	429	0	0	544	359	743	1,646	384	7,588	256	326	7,914	**250**	2,645	2,690	**45**
2019	42	40	269	170	77	490	0	0	13	103	0	0	555	257	956	312	0	0	494	350	830	1,674	401	7,914	250	-718	7,195	**266**	2,690	2,600	**-90**
2020	167	40	270	170	77	490	0	0	412	103	0	0	603	257	1,529	391	0	0	477	365	903	1,745	458	7,195	266	-216	6,979	**267**	2,600	2,533	**-67**
2021	0	40	269	170	78	490	0	0	0	103	0	0	653	257	1,000	342	0	0	288	399	892	1,579	469	6,979	267	-580	6,400	**277**	2,533	2,407	**-126**
2022	0	40	269	170	78	490	0	0	0	103	0	0	661	258	1,009	346	0	0	189	407	918	1,514	498	6,400	277	-505	5,894	**281**	2,407	2,254	**-152**
2023	351	40	269	170	79	490	0	0	908	103	0	0	507	256	2,114	437	0	0	484	399	1,009	1,892	539	5,894	281	222	6,116	**259**	2,254	2,153	**-102**
2024	996	40	270	170	79	490	0	0	1,326	103	0	0	342	251	3,013	471	0	0	848	415	1,094	2,357	531	6,116	259	656	6,772	**227**	2,153	2,093	**-60**
2025	851	40	269	170	80	490	0	0	1,585	103	0	0	369	246	3,154	506	0	0	1,042	409	898	2,348	404	6,772	227	806	7,578	**213**	2,093	2,195	**102**
2026	0	40	269	170	80	490	0	0	0	103	0	0	603	247	952	318	0	0	779	382	852	2,013	357	7,578	213	-1,060	6,517	**243**	2,195	2,156	**-39**
2027	860	40	269	170	80	490	0	0	1,614	103	0	0	316	243	3,140	492	0	0	945	317	783	2,045	364	6,517	243	1,095	7,612	**221**	2,156	2,284	**128**
2028	312	40	270	170	81	490	0	0	874	103	0	0	370	242	1,906	377	0	0	881	306	737	1,924	313	7,612	221	-18	7,595	**227**	2,284	2,348	**64**
2029	86	40	269	170	81	490	0	0	152	103	0	0	498	243	1,086	307	0	0	717	295	696	1,707	306	7,595	227	-622	6,973	**248**	2,348	2,348	**0**
2030	1,058	40	269	170	82	490	0	0	1,476	103	0	0	147	238	3,032	428	0	0	1,019	266	742	2,026	339	6,973	248	1,006	7,979	**225**	2,348	2,437	**88**
2031	0	40	269	170	82	490	0	0	0	103	0	0	572	239	924	303	0	0	594	305	697	1,596	306	7,979	225	-672	7,307	**245**	2,437	2,434	**-3**
2032	63	40	270	170	83	490	0	0	80	103	0	0	570	239	1,066	318	0	0	373	312	691	1,375	334	7,307	245	-310	6,997	**254**	2,434	2,417	**-16**
2033	462	40	269	170	83	490	0	0	1,032	103	0	0	439	238	2,285	429	0	0	586	314	816	1,716	390	6,997	254	570	7,567	**239**	2,417	2,456	**38**
2034	0	40	269	170	83	490	0	0	0	103	0	0	477	239	829	273	0	0	456	344	759	1,559	358	7,567	239	-730	6,837	**255**	2,456	2,370	**-86**
2035	157	40	269	170	84	490	0	0	378	103	0	0	544	239	1,432	356	0	0	419	347	727	1,493	372	6,837	255	-61	6,776	**255**	2,370	2,354	**-16**

Table I-26a

Projected TDS Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	TDS Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,214	100	181	833	678	2,400	0	0	6,085	532	0	0	292	993	7,741	647	19,192	14,595	0	0	3,696	5,579	6,113	15,388	15,390	25,728	968	3,804	29,532	824	33,864	33,069	-795
2013	274	100	181	833	679	2,400	0	0	737	532	0	0	323	1,051	7,805	650	9,998	10,344	0	0	2,366	5,283	5,691	13,340	12,289	29,532	824	-3,342	26,190	874	33,069	31,125	-1,944
2014	2,277	100	181	833	679	2,400	0	0	4,962	532	0	0	309	1,025	5,898	648	14,306	11,946	0	0	3,004	4,371	5,819	13,193	12,109	26,190	874	1,113	27,302	834	31,125	30,961	-164
2015	8,986	100	181	833	680	2,400	0	0	3,952	532	0	0	321	919	7,949	632	22,069	13,736	0	0	3,654	5,444	5,995	15,094	12,972	27,302	834	6,975	34,278	681	30,961	31,725	764
2016	0	100	181	833	680	2,400	0	0	0	532	0	0	341	997	7,973	630	9,175	9,717	0	0	2,869	5,612	5,895	14,376	10,650	34,278	681	-5,201	29,077	779	31,725	30,791	-934
2017	0	100	181	833	681	2,400	0	0	0	532	0	0	351	1,023	6,506	629	7,719	8,481	0	0	1,336	4,660	5,570	11,566	10,833	29,077	779	-3,847	25,229	829	30,791	28,439	-2,352
2018	1,818	100	181	833	681	2,400	0	0	3,992	532	0	0	359	989	6,610	629	13,641	11,697	0	0	1,990	4,603	5,635	12,228	11,540	25,229	829	1,413	26,642	789	28,439	28,596	157
2019	265	100	181	833	682	2,400	0	0	718	532	0	0	350	1,031	8,284	632	10,479	10,597	0	0	2,032	5,266	6,714	14,012	12,859	26,642	789	-3,533	23,110	838	28,596	26,334	-2,262
2020	1,056	100	181	833	683	2,400	0	0	2,381	532	0	0	365	1,021	6,737	634	11,403	10,616	0	0	1,988	4,526	7,631	14,145	13,853	23,110	838	-2,742	20,368	834	26,334	23,097	-3,237
2021	0	100	181	833	683	2,400	0	0	0	532	0	0	399	1,035	7,303	639	8,566	9,340	0	0	1,158	4,606	6,841	12,605	12,981	20,368	834	-4,039	16,328	876	23,097	19,457	-3,640
2022	0	100	181	833	684	2,400	0	0	0	532	0	0	407	1,031	7,656	644	8,928	9,709	0	0	641	4,695	7,299	12,634	14,291	16,328	876	-3,707	12,622	867	19,457	14,875	-4,582
2023	2,221	100	181	833	684	2,400	0	0	4,160	532	0	0	399	960	7,733	644	15,378	13,044	0	0	1,778	4,860	8,634	15,272	15,903	12,622	867	106	12,728	694	14,875	12,016	-2,859
2024	6,294	100	181	833	685	2,400	0	0	5,602	532	0	0	415	864	7,784	636	20,961	14,563	0	0	3,291	5,093	9,390	17,773	13,672	12,728	694	3,188	15,916	596	12,016	12,907	891
2025	5,383	100	181	833	685	2,400	0	0	6,749	532	0	0	409	829	9,956	630	23,362	17,038	0	0	3,925	6,385	6,698	17,008	10,610	15,916	596	6,354	22,270	639	12,907	19,335	6,428
2026	0	100	181	833	686	2,400	0	0	0	532	0	0	382	928	9,740	635	10,989	11,335	0	0	2,752	6,115	6,755	15,622	11,173	22,270	639	-4,633	17,637	813	19,335	19,496	161
2027	5,440	100	181	833	687	2,400	0	0	6,946	532	0	0	317	864	7,174	629	20,745	14,715	0	0	3,643	5,043	6,144	14,830	12,367	17,637	813	5,915	23,552	682	19,496	21,845	2,348
2028	1,971	100	181	833	687	2,400	0	0	3,950	532	0	0	306	897	8,915	630	16,009	13,582	0	0	3,258	5,909	5,878	15,046	10,933	23,552	682	963	24,515	735	21,845	24,493	2,648
2029	541	100	181	833	688	2,400	0	0	1,290	532	0	0	295	966	8,093	634	11,086	10,821	0	0	2,680	5,351	5,672	13,703	11,013	24,515	735	-2,617	21,898	816	24,493	24,301	-193
2030	6,691	100	181	833	688	2,400	0	0	6,310	532	0	0	266	896	8,894	626	23,030	15,818	0	0	4,022	6,386	6,317	16,725	14,097	21,898	816	6,305	28,203	679	24,301	26,021	1,721
2031	0	100	181	833	689	2,400	0	0	0	532	0	0	305	961	8,493	631	9,667	10,142	0	0	2,131	5,727	5,715	13,573	10,557	28,203	679	-3,907	24,296	775	26,021	25,606	-415
2032	398	100	181	833	689	2,400	0	0	988	532	0	0	312	984	8,113	636	10,681	10,654	0	0	1,578	5,357	5,540	12,475	11,484	24,296	775	-1,794	22,503	810	25,606	24,776	-831
2033	2,920	100	181	833	690	2,400	0	0	4,407	532	0	0	314	932	6,391	635	14,903	11,956	0	0	2,214	4,529	6,770	13,513	12,440	22,503	810	1,390	23,893	748	24,776	24,291	-485
2034	0	100	181	833	690	2,400	0	0	0	532	0	0	344	986	6,724	640	7,940	8,773	0	0	1,679	4,641	5,741	12,061	10,555	23,893	748	-4,121	19,772	837	24,291	22,509	-1,782
2035	990	100	181	833	691	2,400	0	0	2,240	532	0	0	347	984	6,695	643	11,143	10,534	0	0	1,470	4,544	5,450	11,464	11,378	19,772	837	-322	19,451	819	22,509	21,666	-844

Table I-26b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	Chloride Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,214	40	181	95	678	275	0	0	6,085	65	0	0	292	111	7,741	39	19,192	1,506	0	0	3,696	5,579	6,113	15,388	1,636	25,728	103	3,804	29,532	86	3,600	3,470	-130
2013	274	40	181	95	679	275	0	0	737	65	0	0	323	115	7,805	40	9,998	831	0	0	2,366	5,283	5,691	13,340	1,289	29,532	86	-3,342	26,190	85	3,470	3,011	-459
2014	2,277	40	181	95	679	275	0	0	4,962	65	0	0	309	113	5,898	40	14,306	1,213	0	0	3,004	4,371	5,819	13,193	1,172	26,190	85	1,113	27,302	82	3,011	3,053	42
2015	8,986	40	181	95	680	275	0	0	3,952	65	0	0	321	105	7,949	41	22,069	1,606	0	0	3,654	5,444	5,995	15,094	1,279	27,302	82	6,975	34,278	73	3,053	3,379	326
2016	0	40	181	95	680	275	0	0	0	65	0	0	341	112	7,973	41	9,175	769	0	0	2,869	5,612	5,895	14,376	1,134	34,278	73	-5,201	29,077	76	3,379	3,014	-366
2017	0	40	181	95	681	275	0	0	0	65	0	0	351	112	6,506	40	7,719	688	0	0	1,336	4,660	5,570	11,566	1,060	29,077	76	-3,847	25,229	77	3,014	2,641	-373
2018	1,818	40	181	95	681	275	0	0	3,992	65	0	0	359	108	6,610	41	13,641	1,151	0	0	1,990	4,603	5,635	12,228	1,072	25,229	77	1,413	26,642	75	2,641	2,721	80
2019	265	40	181	95	682	275	0	0	718	65	0	0	350	111	8,284	41	10,479	875	0	0	2,032	5,266	6,714	14,012	1,224	26,642	75	-3,533	23,110	76	2,721	2,373	-348
2020	1,056	40	181	95	683	275	0	0	2,381	65	0	0	365	109	6,737	42	11,403	987	0	0	1,988	4,526	7,631	14,145	1,248	23,110	76	-2,742	20,368	76	2,373	2,112	-261
2021	0	40	181	95	683	275	0	0	0	65	0	0	399	108	7,303	43	8,566	762	0	0	1,158	4,606	6,841	12,605	1,187	20,368	76	-4,039	16,328	76	2,112	1,687	-425
2022	0	40	181	95	684	275	0	0	0	65	0	0	407	105	7,656	44	8,928	790	0	0	641	4,695	7,299	12,634	1,239	16,328	76	-3,707	12,622	72	1,687	1,238	-449
2023	2,221	40	181	95	684	275	0	0	4,160	65	0	0	399	100	7,733	44	15,378	1,292	0	0	1,778	4,860	8,634	15,272	1,324	12,622	72	106	12,728	70	1,238	1,206	-32
2024	6,294	40	181	95	685	275	0	0	5,602	65	0	0	415	96	7,784	45	20,961	1,655	0	0	3,291	5,093	9,390	17,773	1,372	12,728	70	3,188	15,916	69	1,206	1,489	283
2025	5,383	40	181	95	685	275	0	0	6,749	65	0	0	409	95	9,956	46	23,362	1,854	0	0	3,925	6,385	6,698	17,008	1,224	15,916	69	6,354	22,270	70	1,489	2,119	630
2026	0	40	181	95	686	275	0	0	0	65	0	0	382	104	9,740	47	10,989	960	0	0	2,752	6,115	6,755	15,622	1,225	22,270	70	-4,633	17,637	77	2,119	1,855	-264
2027	5,440	40	181	95	687	275	0	0	6,946	65	0	0	317	100	7,174	48	20,745	1,706	0	0	3,643	5,043	6,144	14,830	1,176	17,637	77	5,915	23,552	74	1,855	2,384	529
2028	1,971	40	181	95	687	275	0	0	3,950	65	0	0	306	104	8,915	49	16,009	1,374	0	0	3,258	5,909	5,878	15,046	1,193	23,552	74	963	24,515	77	2,384	2,565	181
2029	541	40	181	95	688	275	0	0	1,290	65	0	0	295	110	8,093	50	11,086	1,014	0	0	2,680	5,351	5,672	13,703	1,153	24,515	77	-2,617	21,898	81	2,565	2,426	-139
2030	6,691	40	181	95	688	275	0	0	6,310	65	0	0	266	107	8,894	50	23,030	1,852	0	0	4,022	6,386	6,317	16,725	1,407	21,898	81	6,305	28,203	75	2,426	2,871	445
2031	0	40	181	95	689	275	0	0	0	65	0	0	305	112	8,493	51	9,667	917	0	0	2,131	5,727	5,715	13,573	1,165	28,203	75	-3,907	24,296	79	2,871	2,623	-248
2032	398	40	181	95	689	275	0	0	988	65	0	0	312	113	8,113	52	10,681	1,009	0	0	1,578	5,357	5,540	12,475	1,176	24,296	79	-1,794	22,503	80	2,623	2,456	-167
2033	2,920	40	181	95	690	275	0	0	4,407	65	0	0	314	108	6,391	52	14,903	1,334	0	0	2,214	4,529	6,770	13,513	1,233	22,503	80	1,390	23,893	79	2,456	2,556	100
2034	0	40	181	95	690	275	0	0	0	65	0	0	344	112	6,724	53	7,940	820	0	0	1,679	4,641	5,741	12,061	1,111	23,893	79	-4,121	19,772	84	2,556	2,266	-291
2035	990	40	181	95	691	275	0	0	2,240	65	0	0	347	111	6,695	54	11,143	1,078	0	0	1,470	4,544	5,450	11,464	1,145	19,772	84	-322	19,451	83	2,266	2,198	-68

Table I-26c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Nitrate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	9	181	46	678	17	0	0	6,085	7	0	0	292	29	7,741	20	19,192	358	0	0	3,696	5,579	6,113	15,388	323	25,728	20	3,804	29,532	19	710	745	35
2013	274	9	181	46	679	17	0	0	737	7	0	0	323	31	7,805	20	9,998	263	0	0	2,366	5,283	5,691	13,340	277	29,532	19	-3,342	26,190	21	745	732	-14
2014	2,277	9	181	46	679	17	0	0	4,962	7	0	0	309	29	5,898	20	14,306	274	0	0	3,004	4,371	5,819	13,193	285	26,190	21	1,113	27,302	19	732	722	-10
2015	8,986	9	181	46	680	17	0	0	3,952	7	0	0	321	27	7,949	20	22,069	396	0	0	3,654	5,444	5,995	15,094	302	27,302	19	6,975	34,278	17	722	815	94
2016	0	9	181	46	680	17	0	0	0	7	0	0	341	29	7,973	20	9,175	253	0	0	2,869	5,612	5,895	14,376	274	34,278	17	-5,201	29,077	20	815	795	-20
2017	0	9	181	46	681	17	0	0	0	7	0	0	351	31	6,506	20	7,719	215	0	0	1,336	4,660	5,570	11,566	280	29,077	20	-3,847	25,229	21	795	731	-64
2018	1,818	9	181	46	681	17	0	0	3,992	7	0	0	359	29	6,610	20	13,641	278	0	0	1,990	4,603	5,635	12,228	296	25,229	21	1,413	26,642	20	731	712	-19
2019	265	9	181	46	682	17	0	0	718	7	0	0	350	31	8,284	20	10,479	273	0	0	2,032	5,266	6,714	14,012	320	26,642	20	-3,533	23,110	21	712	665	-47
2020	1,056	9	181	46	683	17	0	0	2,381	7	0	0	365	30	6,737	20	11,403	257	0	0	1,988	4,526	7,631	14,145	350	23,110	21	-2,742	20,368	21	665	572	-92
2021	0	9	181	46	683	17	0	0	0	7	0	0	399	31	7,303	20	8,566	239	0	0	1,158	4,606	6,841	12,605	322	20,368	21	-4,039	16,328	22	572	490	-83
2022	0	9	181	46	684	17	0	0	0	7	0	0	407	31	7,656	20	8,928	249	0	0	641	4,695	7,299	12,634	360	16,328	22	-3,707	12,622	22	490	379	-110
2023	2,221	9	181	46	684	17	0	0	4,160	7	0	0	399	29	7,733	20	15,378	315	0	0	1,778	4,860	8,634	15,272	405	12,622	22	106	12,728	17	379	289	-90
2024	6,294	9	181	46	685	17	0	0	5,602	7	0	0	415	25	7,784	19	20,961	375	0	0	3,291	5,093	9,390	17,773	329	12,728	17	3,188	15,916	15	289	335	46
2025	5,383	9	181	46	685	17	0	0	6,749	7	0	0	409	23	9,956	19	23,362	428	0	0	3,925	6,385	6,698	17,008	275	15,916	15	6,354	22,270	16	335	488	153
2026	0	9	181	46	686	17	0	0	0	7	0	0	382	27	9,740	19	10,989	294	0	0	2,752	6,115	6,755	15,622	282	22,270	16	-4,633	17,637	21	488	500	12
2027	5,440	9	181	46	687	17	0	0	6,946	7	0	0	317	24	7,174	19	20,745	354	0	0	3,643	5,043	6,144	14,830	317	17,637	21	5,915	23,552	17	500	537	37
2028	1,971	9	181	46	687	17	0	0	3,950	7	0	0	306	25	8,915	19	16,009	328	0	0	3,258	5,909	5,878	15,046	269	23,552	17	963	24,515	18	537	596	59
2029	541	9	181	46	688	17	0	0	1,290	7	0	0	295	27	8,093	19	11,086	265	0	0	2,680	5,351	5,672	13,703	268	24,515	18	-2,617	21,898	20	596	593	-3
2030	6,691	9	181	46	688	17	0	0	6,310	7	0	0	266	25	8,894	19	23,030	403	0	0	4,022	6,386	6,317	16,725	344	21,898	20	6,305	28,203	17	593	651	59
2031	0	9	181	46	689	17	0	0	0	7	0	0	305	27	8,493	19	9,667	254	0	0	2,131	5,727	5,715	13,573	264	28,203	17	-3,907	24,296	19	651	641	-10
2032	398	9	181	46	689	17	0	0	988	7	0	0	312	28	8,113	19	10,681	260	0	0	1,578	5,357	5,540	12,475	288	24,296	19	-1,794	22,503	20	641	613	-28
2033	2,920	9	181	46	690	17	0	0	4,407	7	0	0	314	26	6,391	19	14,903	278	0	0	2,214	4,529	6,770	13,513	308	22,503	20	1,390	23,893	18	613	583	-30
2034	0	9	181	46	690	17	0	0	0	7	0	0	344	28	6,724	19	7,940	211	0	0	1,679	4,641	5,741	12,061	253	23,893	18	-4,121	19,772	20	583	541	-42
2035	990	9	181	46	691	17	0	0	2,240	7	0	0	347	28	6,695	19	11,143	244	0	0	1,470	4,544	5,450	11,464	273	19,772	20	-322	19,451	19	541	511	-30

Table I-26d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Sulfate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	40	181	178	678	512	0	0	6,085	103	0	0	292	222	7,741	266	19,192	4,482	0	0	3,696	5,579	6,113	15,388	3,571	25,728	225	3,804	29,532	**218**	7,858	8,769	**911**
2013	274	40	181	178	679	512	0	0	737	103	0	0	323	242	7,805	266	9,998	3,567	0	0	2,366	5,283	5,691	13,340	3,259	29,532	218	-3,342	26,190	**255**	8,769	9,078	**309**
2014	2,277	40	181	178	679	512	0	0	4,962	103	0	0	309	239	5,898	265	14,306	3,557	0	0	3,004	4,371	5,819	13,193	3,532	26,190	255	1,113	27,302	**245**	9,078	9,103	**25**
2015	8,986	40	181	178	680	512	0	0	3,952	103	0	0	321	219	7,949	257	22,069	4,434	0	0	3,654	5,444	5,995	15,094	3,814	27,302	245	6,975	34,278	**209**	9,103	9,723	**621**
2016	0	40	181	178	680	512	0	0	0	103	0	0	341	243	7,973	257	9,175	3,420	0	0	2,869	5,612	5,895	14,376	3,264	34,278	209	-5,201	29,077	**250**	9,723	9,879	**156**
2017	0	40	181	178	681	512	0	0	0	103	0	0	351	256	6,506	258	7,719	2,920	0	0	1,336	4,660	5,570	11,566	3,476	29,077	250	-3,847	25,229	**272**	9,879	9,323	**-556**
2018	1,818	40	181	178	681	512	0	0	3,992	103	0	0	359	250	6,610	257	13,641	3,603	0	0	1,990	4,603	5,635	12,228	3,783	25,229	272	1,413	26,642	**252**	9,323	9,142	**-181**
2019	265	40	181	178	682	512	0	0	718	103	0	0	350	266	8,284	257	10,479	3,654	0	0	2,032	5,266	6,714	14,012	4,111	26,642	252	-3,533	23,110	**276**	9,142	8,685	**-457**
2020	1,056	40	181	178	683	512	0	0	2,381	103	0	0	365	267	6,737	257	11,403	3,391	0	0	1,988	4,526	7,631	14,145	4,569	23,110	276	-2,742	20,368	**271**	8,685	7,508	**-1,177**
2021	0	40	181	178	683	512	0	0	0	103	0	0	399	277	7,303	257	8,566	3,223	0	0	1,158	4,606	6,841	12,605	4,219	20,368	271	-4,039	16,328	**293**	7,508	6,512	**-996**
2022	0	40	181	178	684	512	0	0	0	103	0	0	407	281	7,656	258	8,928	3,359	0	0	641	4,695	7,299	12,634	4,783	16,328	293	-3,707	12,622	**296**	6,512	5,088	**-1,424**
2023	2,221	40	181	178	684	512	0	0	4,160	103	0	0	399	259	7,733	256	15,378	4,056	0	0	1,778	4,860	8,634	15,272	5,440	12,622	296	106	12,728	**214**	5,088	3,704	**-1,384**
2024	6,294	40	181	178	685	512	0	0	5,602	103	0	0	415	227	7,784	251	20,961	4,427	0	0	3,291	5,093	9,390	17,773	4,215	12,728	214	3,188	15,916	**181**	3,704	3,916	**212**
2025	5,383	40	181	178	685	512	0	0	6,749	103	0	0	409	213	9,956	246	23,362	5,210	0	0	3,925	6,385	6,698	17,008	3,219	15,916	181	6,354	22,270	**195**	3,916	5,907	**1,991**
2026	0	40	181	178	686	512	0	0	0	103	0	0	382	243	9,740	247	10,989	3,920	0	0	2,752	6,115	6,755	15,622	3,413	22,270	195	-4,633	17,637	**267**	5,907	6,414	**507**
2027	5,440	40	181	178	687	512	0	0	6,946	103	0	0	317	221	7,174	243	20,745	4,254	0	0	3,643	5,043	6,144	14,830	4,068	17,637	267	5,915	23,552	**206**	6,414	6,600	**186**
2028	1,971	40	181	178	687	512	0	0	3,950	103	0	0	306	227	8,915	242	16,009	4,212	0	0	3,258	5,909	5,878	15,046	3,303	23,552	206	963	24,515	**225**	6,600	7,509	**909**
2029	541	40	181	178	688	512	0	0	1,290	103	0	0	295	248	8,093	243	11,086	3,502	0	0	2,680	5,351	5,672	13,703	3,376	24,515	225	-2,617	21,898	**256**	7,509	7,634	**125**
2030	6,691	40	181	178	688	512	0	0	6,310	103	0	0	266	225	8,894	238	23,030	4,727	0	0	4,022	6,386	6,317	16,725	4,429	21,898	256	6,305	28,203	**207**	7,634	7,932	**298**
2031	0	40	181	178	689	512	0	0	0	103	0	0	305	245	8,493	239	9,667	3,384	0	0	2,131	5,727	5,715	13,573	3,218	28,203	207	-3,907	24,296	**245**	7,932	8,098	**166**
2032	398	40	181	178	689	512	0	0	988	103	0	0	312	254	8,113	239	10,681	3,432	0	0	1,578	5,357	5,540	12,475	3,632	24,296	245	-1,794	22,503	**258**	8,098	7,898	**-200**
2033	2,920	40	181	178	690	512	0	0	4,407	103	0	0	314	239	6,391	238	14,903	3,467	0	0	2,214	4,529	6,770	13,513	3,966	22,503	258	1,390	23,893	**228**	7,898	7,399	**-499**
2034	0	40	181	178	690	512	0	0	0	103	0	0	344	255	6,724	239	7,940	2,826	0	0	1,679	4,641	5,741	12,061	3,215	23,893	228	-4,121	19,772	**261**	7,399	7,010	**-389**
2035	990	40	181	178	691	512	0	0	2,240	103	0	0	347	255	6,695	239	11,143	3,185	0	0	1,470	4,544	5,450	11,464	3,543	19,772	261	-322	19,451	**252**	7,010	6,651	**-359**

Projected TDS Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	TDS Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	TDS Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	TDS Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	100	148	783	567	2,256	0	4,991	4,100	671	11,630	671	0	0	14,829	721	5,579	700	-5,182	700	36,564	31,822	12,832	6,543	1,102	7,025	2,202	29,704	28,963	78,359	745	6,861	85,220	**709**	79,349	82,209	**2,859**
2013	318	100	147	783	569	2,256	0	4,991	4,100	671	579	671	0	0	14,012	743	5,283	700	-1,853	700	23,154	23,634	12,814	5,290	763	7,327	2,152	28,346	26,608	85,220	709	-5,192	80,028	**728**	82,209	79,235	**-2,974**
2014	2,643	100	147	783	570	2,256	0	4,991	4,100	671	9,284	671	0	0	14,762	735	4,371	700	-1,307	700	34,569	32,141	18,444	4,129	642	8,008	1,988	33,210	32,245	80,028	728	1,359	81,388	**715**	79,235	79,131	**-104**
2015	10,432	100	147	783	571	2,256	0	4,991	4,100	671	7,593	671	0	0	14,876	673	5,444	700	-2,935	700	40,229	29,991	12,814	6,633	1,215	7,370	2,077	30,109	28,092	81,388	715	10,120	91,508	**651**	79,131	81,029	**1,899**
2016	0	100	148	783	572	2,256	0	4,991	4,100	671	0	671	0	0	15,133	709	5,612	700	-1,341	700	24,225	24,314	12,832	6,166	1,189	7,743	2,067	29,996	25,509	91,508	651	-5,772	85,736	**685**	81,029	79,835	**-1,194**
2017	0	100	147	783	574	2,256	0	4,991	4,100	671	1,063	671	0	0	15,667	736	4,660	700	848	700	27,059	27,546	18,444	3,885	533	8,261	1,907	33,029	30,260	85,736	685	-5,971	79,765	**711**	79,835	77,122	**-2,713**
2018	2,110	100	147	783	575	2,256	0	4,991	4,100	671	6,760	671	0	0	15,809	736	4,603	700	-1,083	700	33,020	31,280	18,444	3,363	368	8,124	1,874	32,172	30,750	79,765	711	848	80,613	**708**	77,122	77,651	**530**
2019	307	100	147	783	576	2,256	0	4,991	4,100	671	1,450	671	0	0	14,351	752	5,266	700	-3,014	700	23,183	23,846	12,814	3,153	354	7,742	2,770	26,832	25,505	80,613	708	-3,649	76,964	**726**	77,651	75,992	**-1,659**
2020	1,226	100	148	783	577	2,256	1	4,991	4,100	671	3,101	671	0	0	15,098	753	4,526	700	-549	700	28,228	27,918	18,469	1,993	233	8,101	3,847	32,643	32,001	76,964	726	-4,415	72,549	**729**	75,992	71,910	**-4,082**
2021	0	100	147	783	579	2,256	5	4,991	4,100	671	1,821	671	0	0	15,548	767	4,606	700	-1,231	700	25,574	26,799	18,444	1,039	145	7,777	2,964	30,369	29,958	72,549	729	-4,795	67,754	**746**	71,910	68,750	**-3,159**
2022	0	100	147	783	580	2,256	8	4,991	4,100	671	2,002	671	0	0	15,646	777	4,695	700	-1,738	700	25,439	26,897	18,444	446	103	7,575	3,913	30,481	30,824	67,754	746	-5,042	62,712	**760**	68,750	64,823	**-3,927**
2023	2,579	100	147	783	581	2,256	10	4,991	4,100	671	7,334	671	0	0	15,878	751	4,860	700	-3,762	700	31,728	30,045	18,444	116	59	7,195	5,828	31,642	32,646	62,712	760	86	62,798	**729**	64,823	62,223	**-2,601**
2024	7,308	100	148	783	582	2,256	10	4,991	4,100	671	12,145	671	0	0	16,430	699	5,093	700	-6,421	700	39,394	32,189	18,469	89	57	6,910	6,185	31,710	31,363	62,798	729	7,684	70,482	**658**	62,223	63,049	**826**
2025	6,249	100	147	783	584	2,256	11	4,991	4,100	671	15,556	671	0	0	16,565	693	6,385	700	-11,665	700	37,932	31,396	12,814	1,542	341	6,661	3,074	24,432	21,550	70,482	658	13,500	83,982	**638**	63,049	72,895	**9,846**
2026	0	100	147	783	585	2,256	11	4,991	4,100	671	1,572	671	0	0	15,076	726	6,115	700	-6,621	700	20,985	21,606	12,814	2,478	340	7,167	3,302	26,101	22,361	83,982	638	-5,116	78,865	**673**	72,895	72,141	**-754**
2027	6,316	100	147	783	586	2,256	12	4,991	4,100	671	18,558	671	0	0	15,461	704	5,043	700	-7,168	700	43,055	36,347	18,444	3,486	848	7,540	2,460	32,777	29,206	78,865	673	10,278	89,143	**654**	72,141	79,281	**7,141**
2028	2,288	100	148	783	587	2,256	12	4,991	4,100	671	6,147	671	0	0	14,581	718	5,909	700	-6,388	700	27,383	25,482	12,832	3,997	959	7,278	2,396	27,462	23,571	89,143	654	-78	89,065	**670**	79,281	81,193	**1,911**
2029	628	100	147	783	589	2,256	12	4,991	4,100	671	1,277	671	0	0	13,788	739	5,351	700	-3,217	700	22,674	22,921	12,814	4,157	668	7,520	2,351	27,509	24,469	89,065	670	-4,835	84,230	**695**	81,193	79,645	**-1,548**
2030	7,768	100	147	783	590	2,256	12	4,991	4,100	671	10,855	671	0	0	16,691	709	6,386	700	-6,483	700	40,067	32,748	12,814	6,759	1,511	7,590	2,348	31,022	27,905	84,230	695	9,045	93,274	**666**	79,645	84,488	**4,843**
2031	0	100	147	783	591	2,256	12	4,991	4,100	671	290	671	0	0	15,167	737	5,727	700	-2,158	700	23,876	24,653	12,814	5,605	949	7,347	2,196	28,911	25,328	93,274	666	-5,036	88,239	**699**	84,488	83,813	**-675**
2032	462	100	148	783	592	2,256	12	4,991	4,100	671	863	671	0	0	14,269	753	5,357	700	-1,941	700	23,862	24,513	12,832	4,630	601	7,722	2,213	27,998	26,023	88,239	699	-4,135	84,103	**720**	83,813	82,303	**-1,510**
2033	3,390	100	147	783	594	2,256	12	4,991	4,100	671	9,466	671	0	0	14,985	738	4,529	700	-1,642	700	35,580	32,675	18,444	3,599	451	8,143	2,652	33,289	32,135	84,103	720	2,291	86,394	**705**	82,303	82,844	**540**
2034	0	100	147	783	595	2,256	12	4,991	4,100	671	1,549	671	0	0	15,452	758	4,641	700	-826	700	25,669	26,763	18,444	2,424	274	8,055	2,052	31,249	29,702	86,394	705	-5,579	80,814	**727**	82,844	79,905	**-2,939**
2035	1,149	100	147	783	596	2,256	12	4,991	4,100	671	3,089	671	0	0	15,522	760	4,544	700	-670	700	28,489	28,513	18,444	2,279	233	7,800	1,914	30,670	30,094	80,814	727	-2,181	78,633	**733**	79,905	78,323	**-1,582**

Table I-27b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	Chloride Conc. for Saugus WRP Infiltration	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Chloride Conc. for Inflow From MZ1	Inflow From MZ3	Chloride Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	40	148	109	567	314	0	694	4,100	126	11,630	89	0	0	14,829	86	5,579	28	-5,182	28	36,564	4,397	12,832	6,543	1,102	7,025	2,202	29,704	3,738	78,359	96	6,861	85,220	94	10,241	10,900	659
2013	318	40	147	109	569	314	0	694	4,100	126	579	89	0	0	14,012	87	5,283	28	-1,853	28	23,154	2,836	12,814	5,290	763	7,327	2,152	28,346	3,528	85,220	94	-5,192	80,028	94	10,900	10,208	-691
2014	2,643	40	147	109	570	314	0	694	4,100	126	9,284	89	0	0	14,762	87	4,371	28	-1,307	28	34,569	4,094	18,444	4,129	642	8,008	1,988	33,210	4,154	80,028	94	1,359	81,388	92	10,208	10,148	-60
2015	10,432	40	147	109	571	314	0	694	4,100	126	7,593	89	0	0	14,876	85	5,444	28	-2,935	28	40,229	4,264	12,814	6,633	1,215	7,370	2,077	30,109	3,603	81,388	92	10,120	91,508	87	10,148	10,809	662
2016	0	40	148	109	572	314	0	694	4,100	126	0	89	0	0	15,133	86	5,612	28	-1,341	28	24,225	2,908	12,832	6,166	1,189	7,743	2,067	29,996	3,403	91,508	87	-5,772	85,736	88	10,809	10,314	-495
2017	0	40	147	109	574	314	0	694	4,100	126	1,063	89	0	0	15,667	88	4,660	28	848	28	27,059	3,177	18,444	3,885	533	8,261	1,907	33,029	3,909	85,736	88	-5,971	79,765	88	10,314	9,581	-733
2018	2,110	40	147	109	575	314	0	694	4,100	126	6,760	89	0	0	15,809	88	4,603	28	-1,083	28	33,020	3,919	18,444	3,363	368	8,124	1,874	32,172	3,820	79,765	88	848	80,613	88	9,581	9,680	98
2019	307	40	147	109	576	314	0	694	4,100	126	1,450	89	0	0	14,351	87	5,266	28	-3,014	28	23,183	2,948	12,814	3,153	354	7,742	2,770	26,832	3,179	80,613	88	-3,649	76,964	90	9,680	9,448	-231
2020	1,226	40	148	109	577	314	1	694	4,100	126	3,101	89	0	0	15,098	87	4,526	28	-549	28	28,228	3,356	18,469	1,993	233	8,101	3,847	32,643	3,979	76,964	90	-4,415	72,549	89	9,448	8,826	-623
2021	0	40	147	109	579	314	5	694	4,100	126	1,821	89	0	0	15,548	88	4,606	28	-1,231	28	25,574	3,189	18,444	1,039	145	7,777	2,964	30,369	3,677	72,549	89	-4,795	67,754	91	8,826	8,338	-488
2022	0	40	147	109	580	314	8	694	4,100	126	2,002	89	0	0	15,646	89	4,695	28	-1,738	28	25,439	3,231	18,444	446	103	7,575	3,913	30,481	3,738	67,754	91	-5,042	62,712	92	8,338	7,831	-507
2023	2,579	40	147	109	581	314	10	694	4,100	126	7,334	89	0	0	15,878	88	4,860	28	-3,762	28	31,728	3,954	18,444	116	59	7,195	5,828	31,642	3,944	62,712	92	86	62,798	92	7,831	7,841	10
2024	7,308	40	148	109	582	314	10	694	4,100	126	12,145	89	0	0	16,430	87	5,093	28	-6,421	28	39,394	4,732	18,469	89	57	6,910	6,185	31,710	3,952	62,798	92	7,684	70,482	90	7,841	8,621	780
2025	6,249	40	147	109	584	314	11	694	4,100	126	15,556	89	0	0	16,565	88	6,385	28	-11,665	28	37,932	4,977	12,814	1,542	341	6,661	3,074	24,432	2,947	70,482	90	13,500	83,982	93	8,621	10,651	2,030
2026	0	40	147	109	585	314	11	694	4,100	126	1,572	89	0	0	15,076	88	6,115	28	-6,621	28	20,985	2,960	12,814	2,478	340	7,167	3,302	26,101	3,267	83,982	93	-5,116	78,865	96	10,651	10,344	-307
2027	6,316	40	147	109	586	314	12	694	4,100	126	18,558	89	0	0	15,461	87	5,043	28	-7,168	28	43,055	5,324	18,444	3,486	848	7,540	2,460	32,777	4,188	78,865	96	10,278	89,143	95	10,344	11,480	1,136
2028	2,288	40	148	109	587	314	12	694	4,100	126	6,147	89	0	0	14,581	87	5,909	28	-6,388	28	27,383	3,551	12,832	3,997	959	7,278	2,396	27,462	3,413	89,143	95	-78	89,065	96	11,480	11,618	138
2029	628	40	147	109	589	314	12	694	4,100	126	1,277	89	0	0	13,788	87	5,351	28	-3,217	28	22,674	2,883	12,814	4,157	668	7,520	2,351	27,509	3,501	89,065	96	-4,835	84,230	96	11,618	11,000	-618
2030	7,768	40	147	109	590	314	12	694	4,100	126	10,855	89	0	0	16,691	90	6,386	28	-6,483	28	40,067	4,768	12,814	6,759	1,511	7,590	2,348	31,022	3,854	84,230	96	9,045	93,274	94	11,000	11,914	914
2031	0	40	147	109	591	314	12	694	4,100	126	290	89	0	0	15,167	90	5,727	28	-2,158	28	23,876	3,020	12,814	5,605	949	7,347	2,196	28,911	3,572	93,274	94	-5,036	88,239	95	11,914	11,362	-552
2032	462	40	148	109	592	314	12	694	4,100	126	863	89	0	0	14,269	90	5,357	28	-1,941	28	23,862	2,988	12,832	4,630	601	7,722	2,213	27,998	3,528	88,239	95	-4,135	84,103	95	11,362	10,822	-539
2033	3,390	40	147	109	594	314	12	694	4,100	126	9,466	89	0	0	14,985	89	4,529	28	-1,642	28	35,580	4,241	18,444	3,599	451	8,143	2,652	33,289	4,226	84,103	95	2,291	86,394	92	10,822	10,838	16
2034	0	40	147	109	595	314	12	694	4,100	126	1,549	89	0	0	15,452	89	4,641	28	-826	28	25,669	3,201	18,444	2,424	274	8,055	2,052	31,249	3,886	86,394	92	-5,579	80,814	92	10,838	10,153	-685
2035	1,149	40	147	109	596	314	12	694	4,100	126	3,089	89	0	0	15,522	90	4,544	28	-670	28	28,489	3,465	18,444	2,279	233	7,800	1,914	30,670	3,824	80,814	92	-2,181	78,633	92	10,153	9,794	-359

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	Nitrate Conc. for Saugus WRP Infiltration	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Nitrate Conc. for Inflow From MZ1	Inflow From MZ3	Nitrate Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	9	148	44	567	16	0	35	4,100	20	11,630	20	0	0	14,829	19	5,579	20	-5,182	20	36,564	909	12,832	6,543	1,102	7,025	2,202	29,704	788	78,359	20	6,861	85,220	**20**	2,158	2,279	**122**
2013	318	9	147	44	569	16	0	35	4,100	20	579	20	0	0	14,012	19	5,283	20	-1,853	20	23,154	617	12,814	5,290	763	7,327	2,152	28,346	738	85,220	20	-5,192	80,028	**20**	2,279	2,158	**-121**
2014	2,643	9	147	44	570	16	0	35	4,100	20	9,284	20	0	0	14,762	19	4,371	20	-1,307	20	34,569	885	18,444	4,129	642	8,008	1,988	33,210	878	80,028	20	1,359	81,388	**20**	2,158	2,165	**7**
2015	10,432	9	147	44	571	16	0	35	4,100	20	7,593	20	0	0	14,876	18	5,444	20	-2,935	20	40,229	904	12,814	6,633	1,215	7,370	2,077	30,109	769	81,388	20	10,120	91,508	**18**	2,165	2,301	**136**
2016	0	9	148	44	572	16	0	35	4,100	20	0	20	0	0	15,133	19	5,612	20	-1,341	20	24,225	637	12,832	6,166	1,189	7,743	2,067	29,996	724	91,508	18	-5,772	85,736	**19**	2,301	2,214	**-87**
2017	0	9	147	44	574	16	0	35	4,100	20	1,063	20	0	0	15,667	19	4,660	20	848	20	27,059	718	18,444	3,885	533	8,261	1,907	33,029	839	85,736	19	-5,971	79,765	**19**	2,214	2,093	**-121**
2018	2,110	9	147	44	575	16	0	35	4,100	20	6,760	20	0	0	15,809	19	4,603	20	-1,083	20	33,020	845	18,444	3,363	368	8,124	1,874	32,172	834	79,765	19	848	80,613	**19**	2,093	2,103	**11**
2019	307	9	147	44	576	16	0	35	4,100	20	1,450	20	0	0	14,351	19	5,266	20	-3,014	20	23,183	608	12,814	3,153	354	7,742	2,770	26,832	691	80,613	19	-3,649	76,964	**19**	2,103	2,021	**-83**
2020	1,226	9	148	44	577	16	1	35	4,100	20	3,101	20	0	0	15,098	19	4,526	20	-549	20	28,228	727	18,469	1,993	233	8,101	3,847	32,643	851	76,964	19	-4,415	72,549	**19**	2,021	1,897	**-124**
2021	0	9	147	44	579	16	5	35	4,100	20	1,821	20	0	0	15,548	19	4,606	20	-1,231	20	25,574	673	18,444	1,039	145	7,777	2,964	30,369	790	72,549	19	-4,795	67,754	**19**	1,897	1,779	**-118**
2022	0	9	147	44	580	16	8	35	4,100	20	2,002	20	0	0	15,646	19	4,695	20	-1,738	20	25,439	668	18,444	446	103	7,575	3,913	30,481	798	67,754	19	-5,042	62,712	**19**	1,779	1,650	**-130**
2023	2,579	9	147	44	581	16	10	35	4,100	20	7,334	20	0	0	15,878	19	4,860	20	-3,762	20	31,728	794	18,444	116	59	7,195	5,828	31,642	831	62,712	19	86	62,798	**19**	1,650	1,613	**-37**
2024	7,308	9	148	44	582	16	10	35	4,100	20	12,145	20	0	0	16,430	18	5,093	20	-6,421	20	39,394	926	18,469	89	57	6,910	6,185	31,710	813	62,798	19	7,684	70,482	**18**	1,613	1,726	**113**
2025	6,249	9	147	44	584	16	11	35	4,100	20	15,556	20	0	0	16,565	19	6,385	20	-11,665	20	37,932	910	12,814	1,542	341	6,661	3,074	24,432	590	70,482	18	13,500	83,982	**18**	1,726	2,046	**321**
2026	0	9	147	44	585	16	11	35	4,100	20	1,572	20	0	0	15,076	19	6,115	20	-6,621	20	20,985	554	12,814	2,478	340	7,167	3,302	26,101	628	83,982	18	-5,116	78,865	**18**	2,046	1,973	**-73**
2027	6,316	9	147	44	586	16	12	35	4,100	20	18,558	20	0	0	15,461	19	5,043	20	-7,168	20	43,055	1,054	18,444	3,486	848	7,540	2,460	32,777	799	78,865	18	10,278	89,143	**18**	1,973	2,228	**255**
2028	2,288	9	148	44	587	16	12	35	4,100	20	6,147	20	0	0	14,581	19	5,909	20	-6,388	20	27,383	694	12,832	3,997	959	7,278	2,396	27,462	663	89,143	18	-78	89,065	**19**	2,228	2,260	**32**
2029	628	9	147	44	589	16	12	35	4,100	20	1,277	20	0	0	13,788	19	5,351	20	-3,217	20	22,674	595	12,814	4,157	668	7,520	2,351	27,509	681	89,065	19	-4,835	84,230	**19**	2,260	2,174	**-86**
2030	7,768	9	147	44	590	16	12	35	4,100	20	10,855	20	0	0	16,691	19	6,386	20	-6,483	20	40,067	958	12,814	6,759	1,511	7,590	2,348	31,022	762	84,230	19	9,045	93,274	**19**	2,174	2,370	**196**
2031	0	9	147	44	591	16	12	35	4,100	20	290	20	0	0	15,167	20	5,727	20	-2,158	20	23,876	641	12,814	5,605	949	7,347	2,196	28,911	710	93,274	19	-5,036	88,239	**19**	2,370	2,301	**-69**
2032	462	9	148	44	592	16	12	35	4,100	20	863	20	0	0	14,269	19	5,357	20	-1,941	20	23,862	633	12,832	4,630	601	7,722	2,213	27,998	714	88,239	19	-4,135	84,103	**19**	2,301	2,219	**-81**
2033	3,390	9	147	44	594	16	12	35	4,100	20	9,466	20	0	0	14,985	19	4,529	20	-1,642	20	35,580	899	18,444	3,599	451	8,143	2,652	33,289	867	84,103	19	2,291	86,394	**19**	2,219	2,252	**33**
2034	0	9	147	44	595	16	12	35	4,100	20	1,549	20	0	0	15,452	19	4,641	20	-826	20	25,669	683	18,444	2,424	274	8,055	2,052	31,249	808	86,394	19	-5,579	80,814	**19**	2,252	2,127	**-125**
2035	1,149	9	147	44	596	16	12	35	4,100	20	3,089	20	0	0	15,522	19	4,544	20	-670	20	28,489	739	18,444	2,279	233	7,800	1,914	30,670	801	80,814	19	-2,181	78,633	**19**	2,127	2,065	**-62**

Table I-27d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	Sulfate Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Sulfate Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Sulfate Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]
2012	4,893	40	148	143	567	413	0	913	4,100	179	11,630	179	0	0	14,829	152	5,579	235	-5,182	235	36,564	7,617
2013	318	40	147	143	569	413	0	913	4,100	179	579	179	0	0	14,012	157	5,283	235	-1,853	235	23,154	5,584
2014	2,643	40	147	143	570	413	0	913	4,100	179	9,284	179	0	0	14,762	153	4,371	235	-1,307	235	34,569	7,788
2015	10,432	40	147	143	571	413	0	913	4,100	179	7,593	179	0	0	14,876	137	5,444	235	-2,935	235	40,229	7,321
2016	0	40	148	143	572	413	0	913	4,100	179	0	179	0	0	15,133	145	5,612	235	-1,341	235	24,225	5,704
2017	0	40	147	143	574	413	0	913	4,100	179	1,063	179	0	0	15,667	151	4,660	235	848	235	27,059	6,572
2018	2,110	40	147	143	575	413	0	913	4,100	179	6,760	179	0	0	15,809	150	4,603	235	-1,083	235	33,020	7,459
2019	307	40	147	143	576	413	0	913	4,100	179	1,450	179	0	0	14,351	155	5,266	235	-3,014	235	23,183	5,466
2020	1,226	40	148	143	577	413	1	913	4,100	179	3,101	179	0	0	15,098	155	4,526	235	-549	235	28,228	6,615
2021	0	40	147	143	579	413	5	913	4,100	179	1,821	179	0	0	15,548	156	4,606	235	-1,231	235	25,574	6,181
2022	0	40	147	143	580	413	8	913	4,100	179	2,002	179	0	0	15,646	157	4,695	235	-1,738	235	25,439	6,121
2023	2,579	40	147	143	581	413	10	913	4,100	179	7,334	179	0	0	15,878	151	4,860	235	-3,762	235	31,728	6,887
2024	7,308	40	148	143	582	413	10	913	4,100	179	12,145	179	0	0	16,430	140	5,093	235	-6,421	235	39,394	7,413
2025	6,249	40	147	143	584	413	11	913	4,100	179	15,556	179	0	0	16,565	138	6,385	235	-11,665	235	37,932	6,896
2026	0	40	147	143	585	413	11	913	4,100	179	1,572	179	0	0	15,076	147	6,115	235	-6,621	235	20,985	4,604
2027	6,316	40	147	143	586	413	12	913	4,100	179	18,558	179	0	0	15,461	143	5,043	235	-7,168	235	43,055	8,538
2028	2,288	40	148	143	587	413	12	913	4,100	179	6,147	179	0	0	14,581	149	5,909	235	-6,388	235	27,383	5,782
2029	628	40	147	143	589	413	12	913	4,100	179	1,277	179	0	0	13,788	154	5,351	235	-3,217	235	22,674	5,289
2030	7,768	40	147	143	590	413	12	913	4,100	179	10,855	179	0	0	16,691	139	6,386	235	-6,483	235	40,067	7,552
2031	0	40	147	143	591	413	12	913	4,100	179	290	179	0	0	15,167	148	5,727	235	-2,158	235	23,876	5,628
2032	462	40	148	143	592	413	12	913	4,100	179	863	179	0	0	14,269	153	5,357	235	-1,941	235	23,862	5,663
2033	3,390	40	147	143	594	413	12	913	4,100	179	9,466	179	0	0	14,985	149	4,529	235	-1,642	235	35,580	7,808
2034	0	40	147	143	595	413	12	913	4,100	179	1,549	179	0	0	15,452	154	4,641	235	-826	235	25,669	6,201
2035	1,149	40	147	143	596	413	12	913	4,100	179	3,089	179	0	0	15,522	154	4,544	235	-670	235	28,489	6,668

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,832	6,543	1,102	7,025	2,202	29,704	7,453	78,359	192	6,861	85,220	**178**	20,419	20,584	**164**
2013	12,814	5,290	763	7,327	2,152	28,346	6,662	85,220	178	-5,192	80,028	**179**	20,584	19,506	**-1,078**
2014	18,444	4,129	642	8,008	1,988	33,210	7,938	80,028	179	1,359	81,388	**175**	19,506	19,356	**-150**
2015	12,814	6,633	1,215	7,370	2,077	30,109	6,872	81,388	175	10,120	91,508	**159**	19,356	19,805	**450**
2016	12,832	6,166	1,189	7,743	2,067	29,996	6,235	91,508	159	-5,772	85,736	**165**	19,805	19,274	**-531**
2017	18,444	3,885	533	8,261	1,907	33,029	7,305	85,736	165	-5,971	79,765	**171**	19,274	18,541	**-734**
2018	18,444	3,363	368	8,124	1,874	32,172	7,393	79,765	171	848	80,613	**170**	18,541	18,607	**66**
2019	12,814	3,153	354	7,742	2,770	26,832	6,112	80,613	170	-3,649	76,964	**172**	18,607	17,962	**-645**
2020	18,469	1,993	233	8,101	3,847	32,643	7,564	76,964	172	-4,415	72,549	**172**	17,962	17,013	**-948**
2021	18,444	1,039	145	7,777	2,964	30,369	7,088	72,549	172	-4,795	67,754	**175**	17,013	16,106	**-907**
2022	18,444	446	103	7,575	3,913	30,481	7,221	67,754	175	-5,042	62,712	**176**	16,106	15,006	**-1,100**
2023	18,444	116	59	7,195	5,828	31,642	7,557	62,712	176	86	62,798	**168**	15,006	14,336	**-670**
2024	18,469	89	57	6,910	6,185	31,710	7,226	62,798	168	7,684	70,482	**152**	14,336	14,523	**187**
2025	12,814	1,542	341	6,661	3,074	24,432	4,964	70,482	152	13,500	83,982	**144**	14,523	16,455	**1,932**
2026	12,814	2,478	340	7,167	3,302	26,101	5,048	83,982	144	-5,116	78,865	**149**	16,455	16,011	**-444**
2027	18,444	3,486	848	7,540	2,460	32,777	6,482	78,865	149	10,278	89,143	**149**	16,011	18,067	**2,056**
2028	12,832	3,997	959	7,278	2,396	27,462	5,371	89,143	149	-78	89,065	**153**	18,067	18,477	**410**
2029	12,814	4,157	668	7,520	2,351	27,509	5,568	89,065	153	-4,835	84,230	**159**	18,477	18,198	**-279**
2030	12,814	6,759	1,511	7,590	2,348	31,022	6,376	84,230	159	9,045	93,274	**153**	18,198	19,375	**1,176**
2031	12,814	5,605	949	7,347	2,196	28,911	5,808	93,274	153	-5,036	88,239	**160**	19,375	19,195	**-180**
2032	12,832	4,630	601	7,722	2,213	27,998	5,960	88,239	160	-4,135	84,103	**165**	19,195	18,898	**-297**
2033	18,444	3,599	451	8,143	2,652	33,289	7,379	84,103	165	2,291	86,394	**165**	18,898	19,327	**429**
2034	18,444	2,424	274	8,055	2,052	31,249	6,929	86,394	165	-5,579	80,814	**169**	19,327	18,598	**-729**
2035	18,444	2,279	233	7,800	1,914	30,670	7,005	80,814	169	-2,181	78,633	**171**	18,598	18,262	**-336**

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-28a

Projected TDS Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	TDS Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,402	100	102	758	0	2,186	0	4,835	15,653	762	1,705	274	0	0	7,025	917	7,024	550	35,911	31,567	12,272	10,864	2,012	6,573	961	32,681	32,258	50,440	774	3,230	53,670	718	53,052	52,362	-690
2013	286	100	102	758	0	2,186	0	4,835	7,356	762	1,700	274	0	0	7,327	917	10,093	550	26,866	25,082	12,251	8,774	1,727	6,438	802	29,991	27,575	53,670	718	-3,126	50,544	726	52,362	49,869	-2,493
2014	2,378	100	102	758	0	2,186	0	4,835	11,985	762	1,700	274	0	0	8,008	917	8,591	550	32,764	29,887	14,271	8,078	1,748	6,487	675	31,259	29,116	50,544	726	1,506	52,050	716	49,869	50,640	771
2015	9,386	100	102	758	0	2,186	0	4,835	9,569	762	1,700	274	0	0	7,370	917	10,328	550	38,455	28,840	12,251	12,219	2,038	6,694	717	33,918	31,017	52,050	716	4,537	56,587	630	50,640	48,463	-2,177
2016	0	100	102	758	0	2,186	0	4,835	5,536	762	1,705	274	0	0	7,743	917	11,610	550	26,696	24,812	12,272	9,022	1,783	6,475	646	30,200	24,337	56,587	630	-3,503	53,083	678	48,463	48,938	475
2017	0	100	102	758	0	2,186	0	4,835	6,015	762	1,700	274	0	0	8,261	917	11,431	550	27,509	25,818	14,271	7,323	1,633	6,432	573	30,231	26,365	53,083	678	-2,722	50,362	707	48,938	48,391	-547
2018	1,899	100	102	758	0	2,186	5	4,835	10,222	762	1,700	274	0	0	8,124	917	9,355	550	31,407	28,747	14,271	7,442	1,652	6,480	589	30,434	27,656	50,362	707	973	51,335	709	48,391	49,483	1,091
2019	277	100	102	758	0	2,186	21	4,835	6,895	762	1,700	274	0	0	7,742	917	9,828	550	26,566	25,063	12,251	6,896	1,609	6,430	688	27,874	25,317	51,335	709	-1,308	50,026	724	49,483	49,228	-254
2020	1,103	100	102	758	0	2,186	48	4,835	9,271	762	1,705	274	0	0	8,101	917	8,519	550	28,850	27,284	14,295	5,888	1,550	6,464	941	29,137	27,147	50,026	724	-288	49,739	730	49,228	49,365	137
2021	0	100	102	758	0	2,186	91	4,835	6,889	762	1,700	274	0	0	7,777	917	9,150	550	25,710	25,011	14,271	4,941	1,480	6,416	775	27,883	26,204	49,739	730	-2,173	47,566	745	49,365	48,172	-1,193
2022	0	100	102	758	4	2,186	126	4,835	7,206	762	1,700	274	0	0	7,575	917	8,559	550	25,273	24,892	14,271	4,345	1,404	6,407	973	27,400	26,327	47,566	745	-2,127	45,439	756	48,172	46,738	-1,435
2023	2,320	100	102	758	10	2,186	138	4,835	11,028	762	1,700	274	0	0	7,195	917	6,393	550	28,887	27,169	14,271	4,218	1,324	6,466	1,946	28,226	27,671	45,439	756	661	46,100	738	46,738	46,235	-502
2024	6,575	100	102	758	15	2,186	146	4,835	18,418	762	1,705	274	0	0	6,910	917	3,779	550	37,650	33,164	14,295	5,446	1,429	6,617	2,336	30,124	28,779	46,100	738	7,526	53,627	694	46,235	50,621	4,385
2025	5,623	100	102	758	21	2,186	152	4,835	13,437	762	1,700	274	0	0	6,661	917	6,241	550	33,937	29,460	12,251	7,616	1,760	6,601	912	29,141	25,846	53,627	694	4,796	58,423	683	50,621	54,234	3,614
2026	0	100	102	758	26	2,186	157	4,835	7,608	762	1,700	274	0	0	7,167	917	8,447	550	25,208	24,984	12,251	6,603	1,609	6,433	908	27,805	24,318	58,423	683	-2,596	55,826	723	54,234	54,900	666
2027	5,682	100	102	758	32	2,186	162	4,835	14,439	762	1,700	274	0	0	7,540	917	7,491	550	37,149	32,634	14,271	9,206	1,808	6,592	773	32,649	30,329	55,826	723	4,500	60,326	697	54,900	57,205	2,305
2028	2,058	100	102	758	37	2,186	169	4,835	9,649	762	1,705	274	0	0	7,278	917	8,907	550	29,906	27,972	12,272	8,675	1,767	6,510	736	29,960	26,734	60,326	697	-54	60,273	713	57,205	58,443	1,238
2029	565	100	102	758	43	2,186	174	4,835	8,003	762	1,700	274	0	0	7,520	917	9,724	550	27,831	27,029	12,251	8,168	1,684	6,452	663	29,217	26,697	60,273	713	-1,386	58,886	734	58,443	58,774	331
2030	6,989	100	102	758	49	2,186	180	4,835	12,442	762	1,700	274	0	0	7,590	917	8,826	550	37,878	31,971	12,251	11,423	1,914	6,638	679	32,905	30,932	58,886	734	4,973	63,859	689	58,774	59,813	1,039
2031	0	100	102	758	54	2,186	184	4,835	9,647	762	1,700	274	0	0	7,347	917	9,571	550	28,606	28,424	12,251	9,091	1,723	6,445	739	30,249	26,719	63,859	689	-1,643	62,216	727	59,813	61,519	1,705
2032	416	100	102	758	60	2,186	188	4,835	8,310	762	1,705	274	0	0	7,722	917	10,062	550	28,565	27,972	12,272	8,368	1,685	6,462	609	29,396	27,400	62,216	727	-831	61,386	744	61,519	62,090	572
2033	3,050	100	102	758	65	2,186	191	4,835	11,587	762	1,700	274	0	0	8,143	917	8,484	550	33,322	31,103	14,271	8,159	1,690	6,514	732	31,366	30,017	61,386	744	1,955	63,341	734	62,090	63,176	1,085
2034	0	100	102	758	71	2,186	192	4,835	6,277	762	1,700	274	0	0	8,055	917	10,772	550	27,169	26,809	14,271	6,416	1,594	6,430	583	29,294	27,628	63,341	734	-2,126	61,216	749	63,176	62,357	-819
2035	1,034	100	102	758	76	2,186	192	4,835	8,213	762	1,700	274	0	0	7,800	917	9,921	550	29,038	28,017	14,271	6,593	1,608	6,451	574	29,496	28,408	61,216	749	-458	60,757	750	62,357	61,966	-391

Projected Chloride Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Castaic Dam Underflow	Chloride Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Chloride Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	40	102	107	0	307	0	680	15,653	109	1,705	70	0	0	7,025	96	7,024	15	35,911	3,788	12,272	10,864	2,012	6,573	961	32,681	3,563	50,440	85	3,230	53,670	**83**	5,859	6,085	**226**
2013	286	40	102	107	0	307	0	680	7,356	109	1,700	70	0	0	7,327	96	10,093	15	26,866	2,440	12,251	8,774	1,727	6,438	802	29,991	3,204	53,670	83	-3,126	50,544	**77**	6,085	5,321	**-764**
2014	2,378	40	102	107	0	307	0	680	11,985	109	1,700	70	0	0	8,008	96	8,591	15	32,764	3,296	14,271	8,078	1,748	6,487	675	31,259	3,107	50,544	77	1,506	52,050	**78**	5,321	5,510	**190**
2015	9,386	40	102	107	0	307	0	680	9,569	109	1,700	70	0	0	7,370	96	10,328	15	38,455	3,273	12,251	12,219	2,038	6,694	717	33,918	3,375	52,050	78	4,537	56,587	**70**	5,510	5,408	**-103**
2016	0	40	102	107	0	307	0	680	5,536	109	1,705	70	0	0	7,743	96	11,610	15	26,696	2,242	12,272	9,022	1,783	6,475	646	30,200	2,716	56,587	70	-3,503	53,083	**68**	5,408	4,934	**-474**
2017	0	40	102	107	0	307	0	680	6,015	109	1,700	70	0	0	8,261	96	11,431	15	27,509	2,376	14,271	7,323	1,633	6,432	573	30,231	2,658	53,083	68	-2,722	50,362	**68**	4,934	4,652	**-282**
2018	1,899	40	102	107	0	307	5	680	10,222	109	1,700	70	0	0	8,124	96	9,355	15	31,407	3,045	14,271	7,442	1,652	6,480	589	30,434	2,658	50,362	68	973	51,335	**72**	4,652	5,039	**387**
2019	277	40	102	107	0	307	21	680	6,895	109	1,700	70	0	0	7,742	96	9,828	15	26,566	2,440	12,251	6,896	1,609	6,430	688	27,874	2,578	51,335	72	-1,308	50,026	**72**	5,039	4,901	**-138**
2020	1,103	40	102	107	0	307	48	680	9,271	109	1,705	70	0	0	8,101	96	8,519	15	28,850	2,882	14,295	5,888	1,550	6,464	941	29,137	2,703	50,026	72	-288	49,739	**75**	4,901	5,080	**179**
2021	0	40	102	107	0	307	91	680	6,889	109	1,700	70	0	0	7,777	96	9,150	15	25,710	2,479	14,271	4,941	1,480	6,416	775	27,883	2,697	49,739	75	-2,173	47,566	**75**	5,080	4,863	**-217**
2022	0	40	102	107	4	307	126	680	7,206	109	1,700	70	0	0	7,575	96	8,559	15	25,273	2,522	14,271	4,345	1,404	6,407	973	27,400	2,657	47,566	75	-2,127	45,439	**77**	4,863	4,727	**-135**
2023	2,320	40	102	107	10	307	138	680	11,028	109	1,700	70	0	0	7,195	96	6,393	15	28,887	3,133	14,271	4,218	1,324	6,466	1,946	28,226	2,799	45,439	77	661	46,100	**81**	4,727	5,061	**334**
2024	6,575	40	102	107	15	307	146	680	18,418	109	1,705	70	0	0	6,910	96	3,779	15	37,650	4,375	14,295	5,446	1,429	6,617	2,336	30,124	3,150	46,100	81	7,526	53,627	**86**	5,061	6,286	**1,225**
2025	5,623	40	102	107	21	307	152	680	13,437	109	1,700	70	0	0	6,661	96	6,241	15	33,937	3,613	12,251	7,616	1,760	6,601	912	29,141	3,210	53,627	86	4,796	58,423	**84**	6,286	6,689	**403**
2026	0	40	102	107	26	307	157	680	7,608	109	1,700	70	0	0	7,167	96	8,447	15	25,208	2,564	12,251	6,603	1,609	6,433	908	27,805	2,999	58,423	84	-2,596	55,826	**82**	6,689	6,254	**-436**
2027	5,682	40	102	107	32	307	162	680	14,439	109	1,700	70	0	0	7,540	96	7,491	15	37,149	3,918	14,271	9,206	1,808	6,592	773	32,649	3,455	55,826	82	4,500	60,326	**82**	6,254	6,717	**463**
2028	2,058	40	102	107	37	307	169	680	9,649	109	1,705	70	0	0	7,278	96	8,907	15	29,906	3,017	12,272	8,675	1,767	6,510	736	29,960	3,139	60,326	82	-54	60,273	**80**	6,717	6,595	**-122**
2029	565	40	102	107	43	307	174	680	8,003	109	1,700	70	0	0	7,520	96	9,724	15	27,831	2,748	12,251	8,168	1,684	6,452	663	29,217	3,013	60,273	80	-1,386	58,886	**79**	6,595	6,330	**-265**
2030	6,989	40	102	107	49	307	180	680	12,442	109	1,700	70	0	0	7,590	96	8,826	15	37,878	3,751	12,251	11,423	1,914	6,638	679	32,905	3,331	58,886	79	4,973	63,859	**78**	6,330	6,750	**420**
2031	0	40	102	107	54	307	184	680	9,647	109	1,700	70	0	0	7,347	96	9,571	15	28,606	2,948	12,251	9,091	1,723	6,445	739	30,249	3,015	63,859	78	-1,643	62,216	**79**	6,750	6,683	**-67**
2032	416	40	102	107	60	307	188	680	8,310	109	1,705	70	0	0	7,722	96	10,062	15	28,565	2,838	12,272	8,368	1,685	6,462	609	29,396	2,977	62,216	79	-831	61,386	**78**	6,683	6,545	**-138**
2033	3,050	40	102	107	65	307	191	680	11,587	109	1,700	70	0	0	8,143	96	8,484	15	33,322	3,493	14,271	8,159	1,690	6,514	732	31,366	3,164	61,386	78	1,955	63,341	**80**	6,545	6,874	**329**
2034	0	40	102	107	71	307	192	680	6,277	109	1,700	70	0	0	8,055	96	10,772	15	27,169	2,581	14,271	6,416	1,594	6,430	583	29,294	3,006	63,341	80	-2,126	61,216	**77**	6,874	6,448	**-425**
2035	1,034	40	102	107	76	307	192	680	8,213	109	1,700	70	0	0	7,800	96	9,921	15	29,038	2,875	14,271	6,593	1,608	6,451	574	29,496	2,938	61,216	77	-458	60,757	**77**	6,448	6,385	**-63**

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-28c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Nitrate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	9	102	41	0	15	0	32	15,653	7	1,705	3	0	0	7,025	16	7,024	10	35,911	461	12,272	10,864	2,012	6,573	961	32,681	455	50,440	11	3,230	53,670	10	748	755	6
2013	286	9	102	41	0	15	0	32	7,356	7	1,700	3	0	0	7,327	16	10,093	10	26,866	382	12,251	8,774	1,727	6,438	802	29,991	397	53,670	10	-3,126	50,544	11	755	739	-16
2014	2,378	9	102	41	0	15	0	32	11,985	7	1,700	3	0	0	8,008	16	8,591	10	32,764	445	14,271	8,078	1,748	6,487	675	31,259	431	50,544	11	1,506	52,050	11	739	752	14
2015	9,386	9	102	41	0	15	0	32	9,569	7	1,700	3	0	0	7,370	16	10,328	10	38,455	516	12,251	12,219	2,038	6,694	717	33,918	461	52,050	11	4,537	56,587	10	752	807	55
2016	0	9	102	41	0	15	0	32	5,536	7	1,705	3	0	0	7,743	16	11,610	10	26,696	390	12,272	9,022	1,783	6,475	646	30,200	405	56,587	10	-3,503	53,083	11	807	792	-15
2017	0	9	102	41	0	15	0	32	6,015	7	1,700	3	0	0	8,261	16	11,431	10	27,509	404	14,271	7,323	1,633	6,432	573	30,231	427	53,083	11	-2,722	50,362	11	792	769	-23
2018	1,899	9	102	41	0	15	5	32	10,222	7	1,700	3	0	0	8,124	16	9,355	10	31,407	436	14,271	7,442	1,652	6,480	589	30,434	440	50,362	11	973	51,335	11	769	765	-4
2019	277	9	102	41	0	15	21	32	6,895	7	1,700	3	0	0	7,742	16	9,828	10	26,566	383	12,251	6,896	1,609	6,430	688	27,874	392	51,335	11	-1,308	50,026	11	765	757	-8
2020	1,103	9	102	41	0	15	48	32	9,271	7	1,705	3	0	0	8,101	16	8,519	10	28,850	407	14,295	5,888	1,550	6,464	941	29,137	417	50,026	11	-288	49,739	11	757	747	-10
2021	0	9	102	41	0	15	91	32	6,889	7	1,700	3	0	0	7,777	16	9,150	10	25,710	375	14,271	4,941	1,480	6,416	775	27,883	396	49,739	11	-2,173	47,566	11	747	725	-22
2022	0	9	102	41	4	15	126	32	7,206	7	1,700	3	0	0	7,575	16	8,559	10	25,273	367	14,271	4,345	1,404	6,407	973	27,400	396	47,566	11	-2,127	45,439	11	725	696	-29
2023	2,320	9	102	41	10	15	138	32	11,028	7	1,700	3	0	0	7,195	16	6,393	10	28,887	394	14,271	4,218	1,324	6,466	1,946	28,226	412	45,439	11	661	46,100	11	696	678	-18
2024	6,575	9	102	41	15	15	146	32	18,418	7	1,705	3	0	0	6,910	16	3,779	10	37,650	474	14,295	5,446	1,429	6,617	2,336	30,124	422	46,100	11	7,526	53,627	10	678	730	52
2025	5,623	9	102	41	21	15	152	32	13,437	7	1,700	3	0	0	6,661	16	6,241	10	33,937	443	12,251	7,616	1,760	6,601	912	29,141	373	53,627	10	4,796	58,423	10	730	801	71
2026	0	9	102	41	26	15	157	32	7,608	7	1,700	3	0	0	7,167	16	8,447	10	25,208	362	12,251	6,603	1,609	6,433	908	27,805	359	58,423	10	-2,596	55,826	11	801	804	3
2027	5,682	9	102	41	32	15	162	32	14,439	7	1,700	3	0	0	7,540	16	7,491	10	37,149	491	14,271	9,206	1,808	6,592	773	32,649	444	55,826	11	4,500	60,326	10	804	850	47
2028	2,058	9	102	41	37	15	169	32	9,649	7	1,705	3	0	0	7,278	16	8,907	10	29,906	416	12,272	8,675	1,767	6,510	736	29,960	397	60,326	10	-54	60,273	11	850	868	18
2029	565	9	102	41	43	15	174	32	8,003	7	1,700	3	0	0	7,520	16	9,724	10	27,831	399	12,251	8,168	1,684	6,452	663	29,217	397	60,273	11	-1,386	58,886	11	868	870	2
2030	6,989	9	102	41	49	15	180	32	12,442	7	1,700	3	0	0	7,590	16	8,826	10	37,878	507	12,251	11,423	1,914	6,638	679	32,905	458	58,886	11	4,973	63,859	11	870	920	49
2031	0	9	102	41	54	15	184	32	9,647	7	1,700	3	0	0	7,347	16	9,571	10	28,606	402	12,251	9,091	1,723	6,445	739	30,249	411	63,859	11	-1,643	62,216	11	920	911	-8
2032	416	9	102	41	60	15	188	32	8,310	7	1,705	3	0	0	7,722	16	10,062	10	28,565	410	12,272	8,368	1,685	6,462	609	29,396	406	62,216	11	-831	61,386	11	911	915	4
2033	3,050	9	102	41	65	15	191	32	11,587	7	1,700	3	0	0	8,143	16	8,484	10	33,322	460	14,271	8,159	1,690	6,514	732	31,366	442	61,386	11	1,955	63,341	11	915	933	18
2034	0	9	102	41	71	15	192	32	6,277	7	1,700	3	0	0	8,055	16	10,772	10	27,169	403	14,271	6,416	1,594	6,430	583	29,294	408	63,341	11	-2,126	61,216	11	933	928	-5
2035	1,034	9	102	41	76	15	192	32	8,213	7	1,700	3	0	0	7,800	16	9,921	10	29,038	416	14,271	6,593	1,608	6,451	574	29,496	423	61,216	11	-458	60,757	11	928	922	-6

Table I-28d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Sulfate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	40	102	144	0	416	0	920	15,653	254	1,705	51	0	0	7,025	295	7,024	235	35,911	10,846	12,272	10,864	2,012	6,573	961	32,681	10,464	50,440	251	3,230	53,670	241	17,209	17,591	382
2013	286	40	102	144	0	416	0	920	7,356	254	1,700	51	0	0	7,327	295	10,093	235	26,866	8,858	12,251	8,774	1,727	6,438	802	29,991	9,264	53,670	241	-3,126	50,544	250	17,591	17,186	-406
2014	2,378	40	102	144	0	416	0	920	11,985	254	1,700	51	0	0	8,008	295	8,591	235	32,764	10,364	14,271	8,078	1,748	6,487	675	31,259	10,034	50,544	250	1,506	52,050	247	17,186	17,515	330
2015	9,386	40	102	144	0	416	0	920	9,569	254	1,700	51	0	0	7,370	295	10,328	235	38,455	10,209	12,251	12,219	2,038	6,694	717	33,918	10,728	52,050	247	4,537	56,587	221	17,515	16,997	-519
2016	0	40	102	144	0	416	0	920	5,536	254	1,705	51	0	0	7,743	295	11,610	235	26,696	8,866	12,272	9,022	1,783	6,475	646	30,200	8,535	56,587	221	-3,503	53,083	240	16,997	17,327	331
2017	0	40	102	144	0	416	0	920	6,015	254	1,700	51	0	0	8,261	295	11,431	235	27,509	9,182	14,271	7,323	1,633	6,432	573	30,231	9,335	53,083	240	-2,722	50,362	251	17,327	17,174	-153
2018	1,899	40	102	144	0	416	5	920	10,222	254	1,700	51	0	0	8,124	295	9,355	235	31,407	10,026	14,271	7,442	1,652	6,480	589	30,434	9,815	50,362	251	973	51,335	249	17,174	17,385	211
2019	277	40	102	144	0	416	21	920	6,895	254	1,700	51	0	0	7,742	295	9,828	235	26,566	8,807	12,251	6,896	1,609	6,430	688	27,874	8,895	51,335	249	-1,308	50,026	254	17,385	17,297	-88
2020	1,103	40	102	144	0	416	48	920	9,271	254	1,705	51	0	0	8,101	295	8,519	235	28,850	9,432	14,295	5,888	1,550	6,464	941	29,137	9,539	50,026	254	-288	49,739	254	17,297	17,191	-107
2021	0	40	102	144	0	416	91	920	6,889	254	1,700	51	0	0	7,777	295	9,150	235	25,710	8,674	14,271	4,941	1,480	6,416	775	27,883	9,125	49,739	254	-2,173	47,566	259	17,191	16,740	-451
2022	0	40	102	144	4	416	126	920	7,206	254	1,700	51	0	0	7,575	295	8,559	235	25,273	8,560	14,271	4,345	1,404	6,407	973	27,400	9,148	47,566	259	-2,127	45,439	261	16,740	16,152	-588
2023	2,320	40	102	144	10	416	138	920	11,028	254	1,700	51	0	0	7,195	295	6,393	235	28,887	9,180	14,271	4,218	1,324	6,466	1,946	28,226	9,563	45,439	261	661	46,100	252	16,152	15,769	-382
2024	6,575	40	102	144	15	416	146	920	18,418	254	1,705	51	0	0	6,910	295	3,779	235	37,650	11,028	14,295	5,446	1,429	6,617	2,336	30,124	9,816	46,100	252	7,526	53,627	233	15,769	16,981	1,212
2025	5,623	40	102	144	21	416	152	920	13,437	254	1,700	51	0	0	6,661	295	6,241	235	33,937	9,953	12,251	7,616	1,760	6,601	912	29,141	8,671	53,627	233	4,796	58,423	230	16,981	18,264	1,282
2026	0	40	102	144	26	416	157	920	7,608	254	1,700	51	0	0	7,167	295	8,447	235	25,208	8,551	12,251	6,603	1,609	6,433	908	27,805	8,189	58,423	230	-2,596	55,826	245	18,264	18,626	362
2027	5,682	40	102	144	32	416	162	920	14,439	254	1,700	51	0	0	7,540	295	7,491	235	37,149	11,073	14,271	9,206	1,808	6,592	773	32,649	10,290	55,826	245	4,500	60,326	237	18,626	19,409	783
2028	2,058	40	102	144	37	416	169	920	9,649	254	1,705	51	0	0	7,278	295	8,907	235	29,906	9,580	12,272	8,675	1,767	6,510	736	29,960	9,071	60,326	237	-54	60,273	243	19,409	19,919	510
2029	565	40	102	144	43	416	174	920	8,003	254	1,700	51	0	0	7,520	295	9,724	235	27,831	9,299	12,251	8,168	1,684	6,452	663	29,217	9,099	60,273	243	-1,386	58,886	251	19,919	20,118	200
2030	6,989	40	102	144	49	416	180	920	12,442	254	1,700	51	0	0	7,590	295	8,826	235	37,878	10,933	12,251	11,423	1,914	6,638	679	32,905	10,588	58,886	251	4,973	63,859	236	20,118	20,463	345
2031	0	40	102	144	54	416	184	920	9,647	254	1,700	51	0	0	7,347	295	9,571	235	28,606	9,736	12,251	9,091	1,723	6,445	739	30,249	9,141	63,859	236	-1,643	62,216	249	20,463	21,058	596
2032	416	40	102	144	60	416	188	920	8,310	254	1,705	51	0	0	7,722	295	10,062	235	28,565	9,613	12,272	8,368	1,685	6,462	609	29,396	9,379	62,216	249	-831	61,386	255	21,058	21,292	233
2033	3,050	40	102	144	65	416	191	920	11,587	254	1,700	51	0	0	8,143	295	8,484	235	33,322	10,558	14,271	8,159	1,690	6,514	732	31,366	10,293	61,386	255	1,955	63,341	250	21,292	21,557	265
2034	0	40	102	144	71	416	192	920	6,277	254	1,700	51	0	0	8,055	295	10,772	235	27,169	9,258	14,271	6,416	1,594	6,430	583	29,294	9,427	63,341	250	-2,126	61,216	257	21,557	21,388	-169
2035	1,034	40	102	144	76	416	192	920	8,213	254	1,700	51	0	0	7,800	295	9,921	235	29,038	9,612	14,271	6,593	1,608	6,451	574	29,496	9,744	61,216	257	-458	60,757	257	21,388	21,256	-132

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-29a

Projected TDS Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	100	1,254	786	2,787	2,267	0	4,915	10	669	0	0	0	0	3,836	816	36,956	18,144	12,841	0	2,499	0	2,751	18,090	13,831	1,650,000	652	18,866	1,668,866	647	1,463,642	1,467,956	4,314
2013	1,890	100	1,250	786	2,834	2,267	0	4,915	0	669	0	0	0	0	-3,706	751	2,269	6,547	12,814	0	1,571	0	2,649	17,033	13,601	1,668,866	647	-14,764	1,654,102	650	1,467,956	1,460,902	-7,054
2014	15,703	100	1,250	786	2,882	2,267	0	4,915	0	669	0	0	0	0	-1,709	774	18,126	10,554	12,814	0	1,717	0	2,727	17,258	13,726	1,654,102	650	868	1,654,969	648	1,460,902	1,457,730	-3,172
2015	61,979	100	1,250	786	2,929	2,267	0	4,915	7	669	0	0	0	0	-578	756	65,587	18,203	12,814	0	3,511	0	2,815	19,140	13,766	1,654,969	648	46,447	1,701,416	632	1,457,730	1,462,167	4,437
2016	0	100	1,254	786	2,977	2,267	0	4,915	0	669	0	0	0	0	-4,266	666	-35	6,653	12,841	0	2,239	0	2,996	18,076	13,610	1,701,416	632	-18,111	1,683,305	630	1,462,167	1,441,904	-6,957
2017	0	100	1,250	786	3,025	2,267	2	4,915	0	669	0	0	0	0	-6,108	719	-1,831	4,700	12,814	0	1,545	0	2,821	17,180	13,393	1,683,305	630	-19,011	1,664,294	629	1,441,904	1,423,811	-8,693
2018	12,538	100	1,250	786	3,072	2,267	40	4,915	0	669	0	0	0	0	-3,421	751	13,480	9,284	12,814	0	1,681	0	2,757	17,252	13,321	1,664,294	629	-3,772	1,660,523	629	1,423,811	1,419,775	-4,037
2019	1,826	100	1,250	786	3,120	2,267	140	4,915	0	669	0	0	0	0	-1,862	741	4,475	10,263	19,123	0	1,378	0	2,000	22,500	18,060	1,660,523	629	-18,026	1,642,497	632	1,419,775	1,411,977	-7,798
2020	7,285	100	1,254	786	3,168	2,267	264	4,915	0	669	0	0	0	0	59	765	12,030	13,920	25,281	0	1,338	0	1,391	28,010	22,929	1,642,497	632	-15,981	1,626,516	634	1,411,977	1,402,968	-9,009
2021	0	100	1,250	786	3,215	2,267	344	4,915	0	669	0	0	0	0	-1,798	766	3,011	11,667	19,123	0	1,152	0	1,453	21,728	17,748	1,626,516	634	-18,717	1,607,800	639	1,402,968	1,396,887	-6,081
2022	0	100	1,250	786	3,263	2,267	385	4,915	0	669	0	0	0	0	17	788	4,915	13,985	25,228	0	997	0	1,064	27,289	22,843	1,607,800	639	-22,374	1,585,426	644	1,396,887	1,388,029	-8,858
2023	15,322	100	1,250	786	3,310	2,267	404	4,915	0	669	0	0	0	0	6,827	794	27,114	23,697	34,977	0	1,191	0	649	36,818	31,191	1,585,426	644	-9,703	1,575,722	644	1,388,029	1,380,535	-7,494
2024	43,415	100	1,254	786	3,358	2,267	414	4,915	10	669	0	0	0	0	13,287	736	61,737	33,657	35,059	0	2,088	0	676	37,823	31,308	1,575,722	644	23,914	1,599,636	636	1,380,535	1,382,884	2,348
2025	37,127	100	1,250	786	3,406	2,267	420	4,915	10	669	0	0	0	0	10,964	670	53,176	29,677	12,814	0	2,893	0	1,588	17,295	12,451	1,599,636	636	35,881	1,635,517	630	1,382,884	1,400,110	17,226
2026	0	100	1,250	786	3,453	2,267	423	4,915	0	669	0	0	0	0	2,405	667	7,531	16,989	19,123	0	1,635	0	1,540	22,297	17,688	1,635,517	630	-14,766	1,620,751	635	1,400,110	1,399,411	-699
2027	37,522	100	1,250	786	3,501	2,267	426	4,915	8	669	0	0	0	0	4,507	736	47,214	24,591	12,814	0	2,728	0	2,230	17,772	12,989	1,620,751	635	29,442	1,650,193	629	1,399,411	1,411,012	11,601
2028	13,592	100	1,254	786	3,548	2,267	430	4,915	0	669	0	0	0	0	1,034	688	19,858	17,968	12,841	0	2,060	0	2,414	17,315	13,044	1,650,193	629	2,544	1,652,737	630	1,411,012	1,415,936	4,924
2029	3,729	100	1,250	786	3,596	2,267	434	4,915	0	669	0	0	0	0	-2,399	713	6,610	13,502	12,814	0	1,729	0	2,419	16,962	13,050	1,652,737	630	-10,351	1,642,385	634	1,415,936	1,416,388	452
2030	46,150	100	1,250	786	3,644	2,267	437	4,915	10	669	0	0	0	0	6,011	749	57,502	27,893	12,814	0	3,238	0	2,803	18,855	13,468	1,642,385	634	38,648	1,681,033	626	1,416,388	1,430,814	14,425
2031	0	100	1,250	786	3,691	2,267	438	4,915	0	669	0	0	0	0	-3,371	690	2,009	12,475	12,814	0	1,853	0	2,692	17,358	13,197	1,681,033	626	-15,350	1,665,683	631	1,430,814	1,430,091	-722
2032	2,747	100	1,254	786	3,739	2,267	439	4,915	0	669	0	0	0	0	-4,658	739	3,520	11,490	12,841	0	1,551	0	2,621	17,013	13,275	1,665,683	631	-13,493	1,652,190	636	1,430,091	1,428,306	-1,785
2033	20,140	100	1,250	786	3,787	2,267	440	4,915	3	669	0	0	0	0	-1,594	761	24,026	17,036	19,123	0	1,905	0	2,122	23,149	18,366	1,652,190	636	877	1,653,067	635	1,428,306	1,426,976	-1,330
2034	0	100	1,250	786	3,834	2,267	440	4,915	0	669	0	0	0	0	-4,025	736	1,499	12,063	12,814	0	1,427	0	2,393	16,634	13,127	1,653,067	635	-15,135	1,637,932	640	1,426,976	1,425,913	-1,064
2035	6,825	100	1,250	786	3,882	2,267	440	4,915	0	669	0	0	0	0	-4,054	771	8,343	12,915	12,814	0	1,377	0	2,402	16,592	13,246	1,637,932	640	-8,249	1,629,683	643	1,425,913	1,425,581	-331

Table I-29b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Castaic Dam Underflow	Chloride Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	40	1,254	105	2,787	302	0	687	10	89	0	0	0	0	3,836	93	36,956	3,394	12,841	0	2,499	0	2,751	18,090	821	1,650,000	39	18,866	1,668,866	39	86,867	89,441	2,574
2013	1,890	40	1,250	105	2,834	302	0	687	0	89	0	0	0	0	-3,706	88	2,269	1,001	12,814	0	1,571	0	2,649	17,033	829	1,668,866	39	-14,764	1,654,102	40	89,441	89,614	173
2014	15,703	40	1,250	105	2,882	302	0	687	0	89	0	0	0	0	-1,709	86	18,126	2,017	12,814	0	1,717	0	2,727	17,258	842	1,654,102	40	868	1,654,969	40	89,614	90,789	1,175
2015	61,979	40	1,250	105	2,929	302	0	687	7	89	0	0	0	0	-578	85	65,587	4,688	12,814	0	3,511	0	2,815	19,140	857	1,654,969	40	46,447	1,701,416	41	90,789	94,619	3,830
2016	0	40	1,254	105	2,977	302	0	687	0	89	0	0	0	0	-4,266	79	-35	947	12,841	0	2,239	0	2,996	18,076	881	1,701,416	41	-18,111	1,683,305	41	94,619	92,791	67
2017	0	40	1,250	105	3,025	302	2	687	0	89	0	0	0	0	-6,108	80	-1,831	763	12,814	0	1,545	0	2,821	17,180	862	1,683,305	41	-19,011	1,664,294	40	92,791	91,166	-99
2018	12,538	40	1,250	105	3,072	302	40	687	0	89	0	0	0	0	-3,421	80	13,480	1,790	12,814	0	1,681	0	2,757	17,252	853	1,664,294	40	-3,772	1,660,523	41	91,166	92,103	937
2019	1,826	40	1,250	105	3,120	302	140	687	0	89	0	0	0	0	-1,862	81	4,475	1,488	19,123	0	1,378	0	2,000	22,500	1,172	1,660,523	41	-18,026	1,642,497	41	92,103	92,419	316
2020	7,285	40	1,254	105	3,168	302	264	687	0	89	0	0	0	0	59	81	12,030	2,131	25,281	0	1,338	0	1,391	28,010	1,501	1,642,497	41	-15,981	1,626,516	42	92,419	93,049	630
2021	0	40	1,250	105	3,215	302	344	687	0	89	0	0	0	0	-1,798	82	3,011	1,620	19,123	0	1,152	0	1,453	21,728	1,177	1,626,516	42	-18,717	1,607,800	43	93,049	93,492	443
2022	0	40	1,250	105	3,263	302	385	687	0	89	0	0	0	0	17	82	4,915	1,882	25,228	0	997	0	1,064	27,289	1,529	1,607,800	43	-22,374	1,585,426	44	93,492	93,845	353
2023	15,322	40	1,250	105	3,310	302	404	687	0	89	0	0	0	0	6,827	82	27,114	3,516	34,977	0	1,191	0	649	36,818	2,109	1,585,426	44	-9,703	1,575,722	44	93,845	95,252	1,407
2024	43,415	40	1,254	105	3,358	302	414	687	10	89	0	0	0	0	13,287	83	61,737	5,808	35,059	0	2,088	0	676	37,823	2,160	1,575,722	44	23,914	1,599,636	45	95,252	98,900	3,648
2025	37,127	40	1,250	105	3,406	302	420	687	10	89	0	0	0	0	10,964	84	53,176	5,238	12,814	0	2,893	0	1,588	17,295	890	1,599,636	45	35,881	1,635,517	46	98,900	103,247	4,347
2026	0	40	1,250	105	3,453	302	423	687	0	89	0	0	0	0	2,405	84	7,531	2,270	19,123	0	1,635	0	1,540	22,297	1,304	1,635,517	46	-14,766	1,620,751	47	103,247	104,212	965
2027	37,522	40	1,250	105	3,501	302	426	687	8	89	0	0	0	0	4,507	87	47,214	4,590	12,814	0	2,728	0	2,230	17,772	967	1,620,751	47	29,442	1,650,193	48	104,212	107,835	3,623
2028	13,592	40	1,254	105	3,548	302	430	687	0	89	0	0	0	0	1,034	85	19,858	2,899	12,841	0	2,060	0	2,414	17,315	997	1,650,193	48	2,544	1,652,737	49	107,835	109,737	1,902
2029	3,729	40	1,250	105	3,596	302	434	687	0	89	0	0	0	0	-2,399	86	6,610	1,985	12,814	0	1,729	0	2,419	16,962	1,011	1,652,737	49	-10,351	1,642,385	50	109,737	110,711	973
2030	46,150	40	1,250	105	3,644	302	437	687	10	89	0	0	0	0	6,011	87	57,502	5,305	12,814	0	3,238	0	2,803	18,855	1,053	1,642,385	50	38,648	1,681,033	50	110,711	114,963	4,252
2031	0	40	1,250	105	3,691	302	438	687	0	89	0	0	0	0	-3,371	84	2,009	1,719	12,814	0	1,853	0	2,692	17,358	1,060	1,681,033	50	-15,350	1,665,683	51	114,963	115,621	658
2032	2,747	40	1,254	105	3,739	302	439	687	0	89	0	0	0	0	-4,658	86	3,520	1,730	12,841	0	1,551	0	2,621	17,013	1,073	1,665,683	51	-13,493	1,652,190	52	115,621	116,277	656
2033	20,140	40	1,250	105	3,787	302	440	687	3	89	0	0	0	0	-1,594	86	24,026	3,055	19,123	0	1,905	0	2,122	23,149	1,495	1,652,190	52	877	1,653,067	52	116,277	117,837	1,560
2034	0	40	1,250	105	3,834	302	440	687	0	89	0	0	0	0	-4,025	85	1,499	1,699	12,814	0	1,427	0	2,393	16,634	1,084	1,653,067	52	-15,135	1,637,932	53	117,837	118,451	615
2035	6,825	40	1,250	105	3,882	302	440	687	0	89	0	0	0	0	-4,054	86	8,343	2,082	12,814	0	1,377	0	2,402	16,592	1,100	1,637,932	53	-8,249	1,629,683	54	118,451	119,433	982

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	9	1,254	43	2,787	16	0	34	10	13	0	0	0	0	3,836	18	36,956	574	12,841	0	2,499	0	2,751	18,090	428	1,650,000	20	18,866	1,668,866	20	45,318	45,464	146
2013	1,890	9	1,250	43	2,834	16	0	34	0	13	0	0	0	0	-3,706	17	2,269	72	12,814	0	1,571	0	2,649	17,033	421	1,668,866	20	-14,764	1,654,102	20	45,464	45,115	-350
2014	15,703	9	1,250	43	2,882	16	0	34	0	13	0	0	0	0	-1,709	18	18,126	282	12,814	0	1,717	0	2,727	17,258	424	1,654,102	20	868	1,654,969	20	45,115	44,973	-142
2015	61,979	9	1,250	43	2,929	16	0	34	7	13	0	0	0	0	-578	17	65,587	864	12,814	0	3,511	0	2,815	19,140	425	1,654,969	20	46,447	1,701,416	20	44,973	45,413	440
2016	0	9	1,254	43	2,977	16	0	34	0	13	0	0	0	0	-4,266	16	-35	44	12,841	0	2,239	0	2,996	18,076	423	1,701,416	20	-18,111	1,683,305	20	45,413	44,946	-379
2017	0	9	1,250	43	3,025	16	2	34	0	13	0	0	0	0	-6,108	17	-1,831	-5	12,814	0	1,545	0	2,821	17,180	417	1,683,305	20	-19,011	1,664,294	20	44,946	44,524	-422
2018	12,538	9	1,250	43	3,072	16	40	34	0	13	0	0	0	0	-3,421	18	13,480	209	12,814	0	1,681	0	2,757	17,252	417	1,664,294	20	-3,772	1,660,523	20	44,524	44,317	-208
2019	1,826	9	1,250	43	3,120	16	140	34	0	13	0	0	0	0	-1,862	17	4,475	125	19,123	0	1,378	0	2,000	22,500	564	1,660,523	20	-18,026	1,642,497	20	44,317	43,878	-439
2020	7,285	9	1,254	43	3,168	16	264	34	0	13	0	0	0	0	59	18	12,030	242	25,281	0	1,338	0	1,391	28,010	713	1,642,497	20	-15,981	1,626,516	20	43,878	43,408	-470
2021	0	9	1,250	43	3,215	16	344	34	0	13	0	0	0	0	-1,798	17	3,011	115	19,123	0	1,152	0	1,453	21,728	549	1,626,516	20	-18,717	1,607,800	20	43,408	42,974	-434
2022	0	9	1,250	43	3,263	16	385	34	0	13	0	0	0	0	17	18	4,915	161	25,228	0	997	0	1,064	27,289	703	1,607,800	20	-22,374	1,585,426	20	42,974	42,432	-541
2023	15,322	9	1,250	43	3,310	16	404	34	0	13	0	0	0	0	6,827	18	27,114	512	34,977	0	1,191	0	649	36,818	954	1,585,426	20	-9,703	1,575,722	20	42,432	41,991	-441
2024	43,415	9	1,254	43	3,358	16	414	34	10	13	0	0	0	0	13,287	16	61,737	979	35,059	0	2,088	0	676	37,823	952	1,575,722	20	23,914	1,599,636	19	41,991	42,018	26
2025	37,127	9	1,250	43	3,406	16	420	34	10	13	0	0	0	0	10,964	15	53,176	839	12,814	0	2,893	0	1,588	17,295	378	1,599,636	19	35,881	1,635,517	19	42,018	42,478	461
2026	0	9	1,250	43	3,453	16	423	34	0	13	0	0	0	0	2,405	15	7,531	217	19,123	0	1,635	0	1,540	22,297	537	1,635,517	19	-14,766	1,620,751	19	42,478	42,159	-319
2027	37,522	9	1,250	43	3,501	16	426	34	8	13	0	0	0	0	4,507	17	47,214	721	12,814	0	2,728	0	2,230	17,772	391	1,620,751	19	29,442	1,650,193	19	42,159	42,488	330
2028	13,592	9	1,254	43	3,548	16	430	34	0	13	0	0	0	0	1,034	16	19,858	354	12,841	0	2,060	0	2,414	17,315	393	1,650,193	19	2,544	1,652,737	19	42,488	42,450	-39
2029	3,729	9	1,250	43	3,596	16	434	34	0	13	0	0	0	0	-2,399	16	6,610	162	12,814	0	1,729	0	2,419	16,962	391	1,652,737	19	-10,351	1,642,385	19	42,450	42,220	-230
2030	46,150	9	1,250	43	3,644	16	437	34	10	13	0	0	0	0	6,011	17	57,502	863	12,814	0	3,238	0	2,803	18,855	401	1,642,385	19	38,648	1,681,033	19	42,220	42,682	462
2031	0	9	1,250	43	3,691	16	438	34	0	13	0	0	0	0	-3,371	16	2,009	99	12,814	0	1,853	0	2,692	17,358	394	1,681,033	19	-15,350	1,665,683	19	42,682	42,387	-295
2032	2,747	9	1,254	43	3,739	16	439	34	0	13	0	0	0	0	-4,658	17	3,520	99	12,841	0	1,551	0	2,621	17,013	393	1,665,683	19	-13,493	1,652,190	19	42,387	42,092	-294
2033	20,140	9	1,250	43	3,787	16	440	34	3	13	0	0	0	0	-1,594	17	24,026	378	19,123	0	1,905	0	2,122	23,149	541	1,652,190	19	877	1,653,067	19	42,092	41,929	-163
2034	0	9	1,250	43	3,834	16	440	34	0	13	0	0	0	0	-4,025	17	1,499	85	12,814	0	1,427	0	2,393	16,634	386	1,653,067	19	-15,135	1,637,932	19	41,929	41,628	-301
2035	6,825	9	1,250	43	3,882	16	440	34	0	13	0	0	0	0	-4,054	17	8,343	163	12,814	0	1,377	0	2,402	16,592	387	1,637,932	19	-8,249	1,629,683	19	41,628	41,405	-224

Table I-29d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - CLWA SCV WUE SP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Sulfate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]
2012	29,070	40	1,254	150	2,787	433	0	917	10	179	0	0	0	0	3,836	218	36,956	4,616
2013	1,890	40	1,250	150	2,834	433	0	917	0	179	0	0	0	0	-3,706	208	2,269	979
2014	15,703	40	1,250	150	2,882	433	0	917	0	179	0	0	0	0	-1,709	220	18,126	2,293
2015	61,979	40	1,250	150	2,929	433	0	917	7	179	0	0	0	0	-578	215	65,587	5,182
2016	0	40	1,254	150	2,977	433	0	917	0	179	0	0	0	0	-4,266	192	-35	895
2017	0	40	1,250	150	3,025	433	2	917	0	179	0	0	0	0	-6,108	210	-1,831	290
2018	12,538	40	1,250	150	3,072	433	40	917	0	179	0	0	0	0	-3,421	221	13,480	1,766
2019	1,826	40	1,250	150	3,120	433	140	917	0	179	0	0	0	0	-1,862	216	4,475	1,819
2020	7,285	40	1,254	150	3,168	433	264	917	0	179	0	0	0	0	59	224	12,030	2,863
2021	0	40	1,250	150	3,215	433	344	917	0	179	0	0	0	0	-1,798	223	3,011	2,029
2022	0	40	1,250	150	3,263	433	385	917	0	179	0	0	0	0	17	231	4,915	2,661
2023	15,322	40	1,250	150	3,310	433	404	917	0	179	0	0	0	0	6,827	233	27,114	5,702
2024	43,415	40	1,254	150	3,358	433	414	917	10	179	0	0	0	0	13,287	208	61,737	8,865
2025	37,127	40	1,250	150	3,406	433	420	917	10	179	0	0	0	0	10,964	187	53,176	7,595
2026	0	40	1,250	150	3,453	433	423	917	0	179	0	0	0	0	2,405	186	7,531	3,424
2027	37,522	40	1,250	150	3,501	433	426	917	8	179	0	0	0	0	4,507	210	47,214	6,179
2028	13,592	40	1,254	150	3,548	433	430	917	0	179	0	0	0	0	1,034	193	19,858	3,891
2029	3,729	40	1,250	150	3,596	433	434	917	0	179	0	0	0	0	-2,399	201	6,610	2,460
2030	46,150	40	1,250	150	3,644	433	437	917	10	179	0	0	0	0	6,011	214	57,502	7,202
2031	0	40	1,250	150	3,691	433	438	917	0	179	0	0	0	0	-3,371	194	2,009	2,086
2032	2,747	40	1,254	150	3,739	433	439	917	0	179	0	0	0	0	-4,658	210	3,520	1,823
2033	20,140	40	1,250	150	3,787	433	440	917	3	179	0	0	0	0	-1,594	217	24,026	3,657
2034	0	40	1,250	150	3,834	433	440	917	0	179	0	0	0	0	-4,025	208	1,499	1,922
2035	6,825	40	1,250	150	3,882	433	440	917	0	179	0	0	0	0	-4,054	220	8,343	2,247

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,841	0	2,499	0	2,751	18,090	5,715	1,650,000	270	18,866	1,668,866	**266**	604,840	603,741	**-1,099**
2013	12,814	0	1,571	0	2,649	17,033	5,594	1,668,866	266	-14,764	1,654,102	**266**	603,741	599,126	**-4,615**
2014	12,814	0	1,717	0	2,727	17,258	5,629	1,654,102	266	868	1,654,969	**265**	599,126	595,790	**-3,336**
2015	12,814	0	3,511	0	2,815	19,140	5,626	1,654,969	265	46,447	1,701,416	**257**	595,790	595,346	**-444**
2016	12,841	0	2,239	0	2,996	18,076	5,542	1,701,416	257	-18,111	1,683,305	**257**	595,346	588,910	**-4,646**
2017	12,814	0	1,545	0	2,821	17,180	5,470	1,683,305	257	-19,011	1,664,294	**258**	588,910	583,149	**-5,180**
2018	12,814	0	1,681	0	2,757	17,252	5,456	1,664,294	258	-3,772	1,660,523	**257**	583,149	579,459	**-3,690**
2019	19,123	0	1,378	0	2,000	22,500	7,371	1,660,523	257	-18,026	1,642,497	**257**	579,459	573,907	**-5,552**
2020	25,281	0	1,338	0	1,391	28,010	9,320	1,642,497	257	-15,981	1,626,516	**257**	573,907	567,451	**-6,456**
2021	19,123	0	1,152	0	1,453	21,728	7,178	1,626,516	257	-18,717	1,607,800	**257**	567,451	562,302	**-5,149**
2022	25,228	0	997	0	1,064	27,289	9,195	1,607,800	257	-22,374	1,585,426	**258**	562,302	555,768	**-6,534**
2023	34,977	0	1,191	0	649	36,818	12,489	1,585,426	258	-9,703	1,575,722	**256**	555,768	548,981	**-6,787**
2024	35,059	0	2,088	0	676	37,823	12,450	1,575,722	256	23,914	1,599,636	**251**	548,981	545,396	**-3,585**
2025	12,814	0	2,893	0	1,588	17,295	4,910	1,599,636	251	35,881	1,635,517	**246**	545,396	548,080	**2,684**
2026	19,123	0	1,635	0	1,540	22,297	6,924	1,635,517	246	-14,766	1,620,751	**247**	548,080	544,580	**-3,501**
2027	12,814	0	2,728	0	2,230	17,772	5,055	1,620,751	247	29,442	1,650,193	**243**	544,580	545,703	**1,124**
2028	12,841	0	2,060	0	2,414	17,315	5,045	1,650,193	243	2,544	1,652,737	**242**	545,703	544,550	**-1,154**
2029	12,814	0	1,729	0	2,419	16,962	5,019	1,652,737	242	-10,351	1,642,385	**243**	544,550	541,990	**-2,559**
2030	12,814	0	3,238	0	2,803	18,855	5,154	1,642,385	243	38,648	1,681,033	**238**	541,990	544,039	**2,048**
2031	12,814	0	1,853	0	2,692	17,358	5,018	1,681,033	238	-15,350	1,665,683	**239**	544,039	541,106	**-2,932**
2032	12,841	0	1,551	0	2,621	17,013	5,023	1,665,683	239	-13,493	1,652,190	**239**	541,106	537,906	**-3,200**
2033	19,123	0	1,905	0	2,122	23,149	6,917	1,652,190	239	877	1,653,067	**238**	537,906	534,646	**-3,260**
2034	12,814	0	1,427	0	2,393	16,634	4,918	1,653,067	238	-15,135	1,637,932	**239**	534,646	531,650	**-2,996**
2035	12,814	0	1,377	0	2,402	16,592	4,939	1,637,932	239	-8,249	1,629,683	**239**	531,650	528,958	**-2,691**

Table I-30a

Projected TDS Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	5,123	100	442	777	758	2,240	0	0	15,281	722	5,429	722	3,551	723	30,583	27,295	11,058	1,231	1,151	13,877	70	27,387	26,745	69,600	750	3,196	72,795	**722**	70,950	71,499	**549**
2013	333	100	441	777	764	2,240	0	0	2,847	722	7,635	722	5,826	723	17,845	18,857	11,043	786	844	13,113	38	25,825	24,536	72,795	722	-7,980	64,815	**747**	71,499	65,820	**-5,679**
2014	2,767	100	441	777	770	2,240	0	0	8,005	722	7,025	722	3,735	723	22,743	21,615	5,194	818	785	13,815	43	20,656	20,178	64,815	747	2,087	66,902	**739**	65,820	67,256	**1,436**
2015	10,922	100	441	777	775	2,240	0	0	27,898	722	5,082	722	1,284	723	46,402	37,951	11,043	1,995	1,279	13,922	70	28,309	27,173	66,902	739	18,093	84,995	**675**	67,256	78,035	**10,778**
2016	0	100	442	777	781	2,240	0	0	3,784	722	6,676	722	5,368	723	17,052	18,395	11,058	1,485	1,297	14,163	64	28,066	24,577	84,995	675	-11,014	73,981	**714**	78,035	71,853	**-6,182**
2017	0	100	441	777	787	2,240	0	0	2,081	722	8,489	722	4,838	723	16,636	17,998	5,194	883	863	14,662	47	21,649	20,188	73,981	714	-5,013	68,968	**743**	71,853	69,663	**-2,190**
2018	2,209	100	441	777	793	2,240	0	0	5,510	722	7,672	722	4,354	723	20,979	20,404	5,194	769	760	14,795	47	21,564	21,014	68,968	743	-585	68,383	**743**	69,663	69,053	**-610**
2019	322	100	441	777	799	2,240	0	0	1,318	722	8,363	722	6,035	723	17,277	18,382	11,043	389	501	13,430	32	25,395	25,138	68,383	743	-8,118	60,265	**760**	69,053	62,297	**-6,756**
2020	1,284	100	442	777	805	2,240	0	0	2,532	722	8,820	722	4,660	723	18,542	18,820	5,201	361	408	14,129	34	20,134	20,391	60,265	760	-1,592	58,674	**761**	62,297	60,726	**-1,571**
2021	0	100	441	777	810	2,240	0	0	467	722	9,939	722	4,877	723	16,534	17,946	5,194	131	301	14,551	35	20,212	20,607	58,674	761	-3,678	54,996	**777**	60,726	58,065	**-2,661**
2022	0	100	441	777	816	2,240	0	0	960	722	10,486	722	4,616	723	17,319	18,728	5,194	120	269	14,643	34	20,260	21,107	54,996	777	-2,941	52,055	**787**	58,065	55,687	**-2,378**
2023	2,700	100	441	777	822	2,240	0	0	7,122	722	8,249	722	3,838	723	23,171	22,201	5,194	425	340	14,860	38	20,857	21,949	52,055	787	2,314	54,369	**757**	55,687	55,939	**252**
2024	7,651	100	442	777	828	2,240	0	0	23,652	722	3,248	722	1,708	723	37,529	32,116	5,201	2,480	1,236	15,376	58	24,351	23,782	54,369	757	13,177	67,546	**700**	55,939	64,273	**8,334**
2025	6,543	100	441	777	834	2,240	0	0	31,933	722	3,754	722	1,742	723	45,245	40,641	11,043	7,610	2,007	15,503	97	36,259	32,592	67,546	700	8,986	76,532	**695**	64,273	72,321	**8,048**
2026	0	100	441	777	840	2,240	0	0	3,032	722	6,806	722	5,988	723	17,106	18,570	11,043	1,230	1,052	14,109	52	27,486	24,979	76,532	695	-10,380	66,152	**733**	72,321	65,913	**-6,409**
2027	6,612	100	441	777	845	2,240	0	0	21,134	722	4,045	722	2,918	723	35,994	31,527	5,194	3,365	1,714	14,470	64	24,807	23,009	66,152	733	11,187	77,340	**708**	65,913	74,430	**8,517**
2028	2,395	100	442	777	851	2,240	0	0	6,994	722	4,905	722	5,952	723	21,540	20,922	11,058	1,893	1,442	13,646	51	28,090	25,645	77,340	708	-6,550	70,790	**724**	74,430	69,707	**-4,723**
2029	657	100	441	777	857	2,240	0	0	3,265	722	7,106	722	5,903	723	18,228	19,152	11,043	798	886	12,904	37	25,667	24,402	70,790	724	-7,439	63,351	**748**	69,707	64,457	**-5,250**
2030	8,133	100	441	777	863	2,240	0	0	49,426	722	3,965	722	-1,666	723	61,160	54,973	11,043	12,976	2,990	15,621	122	42,752	40,456	63,351	748	18,409	81,760	**710**	64,457	78,974	**14,518**
2031	0	100	441	777	869	2,240	0	0	1,172	722	7,529	722	6,268	723	16,278	17,818	11,043	919	1,135	14,194	51	27,343	25,315	81,760	710	-11,065	70,695	**744**	78,974	71,478	**-7,496**
2032	484	100	442	777	875	2,240	0	0	1,470	722	8,784	722	5,984	723	18,040	19,150	11,058	355	715	13,354	33	25,515	25,075	70,695	744	-7,476	63,219	**763**	71,478	65,553	**-5,925**
2033	3,549	100	441	777	880	2,240	0	0	10,413	722	7,475	722	3,523	723	26,281	24,655	5,194	650	777	14,023	40	20,684	20,642	63,219	763	5,597	68,817	**743**	65,553	69,566	**4,013**
2034	0	100	441	777	886	2,240	0	0	467	722	7,956	722	5,296	723	15,045	16,642	5,194	450	607	14,461	41	20,753	20,365	68,817	743	-5,707	63,109	**767**	69,566	65,843	**-3,723**
2035	1,203	100	441	777	892	2,240	0	0	3,800	722	8,693	722	4,358	723	19,386	19,896	5,194	386	505	14,526	42	20,654	21,021	63,109	767	-1,268	61,842	**770**	65,843	64,718	**-1,125**

Table I-30b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	5,123	40	442	113	758	326	0	0	15,281	89	5,429	98	3,551	34	30,583	3,416	11,058	1,231	1,151	13,877	70	27,387	3,127	69,600	88	3,196	72,795	87	8,294	8,583	289
2013	333	40	441	113	764	326	0	0	2,847	89	7,635	98	5,826	34	17,845	2,052	11,043	786	844	13,113	38	25,825	2,946	72,795	87	-7,980	64,815	87	8,583	7,690	-894
2014	2,767	40	441	113	770	326	0	0	8,005	89	7,025	98	3,735	34	22,743	2,634	5,194	818	785	13,815	43	20,656	2,357	64,815	87	2,087	66,902	88	7,690	7,966	277
2015	10,922	40	441	113	775	326	0	0	27,898	89	5,082	98	1,284	34	46,402	5,115	11,043	1,995	1,279	13,922	70	28,309	3,219	66,902	88	18,093	84,995	85	7,966	9,863	1,896
2016	0	40	442	113	781	326	0	0	3,784	89	6,676	98	5,368	34	17,052	2,006	11,058	1,485	1,297	14,163	64	28,066	3,106	84,995	85	-11,014	73,981	87	9,863	8,763	-1,100
2017	0	40	441	113	787	326	0	0	2,081	89	8,489	98	4,838	34	16,636	2,020	5,194	883	863	14,662	47	21,649	2,462	73,981	87	-5,013	68,968	89	8,763	8,321	-442
2018	2,209	40	441	113	793	326	0	0	5,510	89	7,672	98	4,354	34	20,979	2,427	5,194	769	760	14,795	47	21,564	2,510	68,968	89	-585	68,383	89	8,321	8,238	-83
2019	322	40	441	113	799	326	0	0	1,318	89	8,363	98	6,035	34	17,277	1,988	11,043	389	501	13,430	32	25,395	2,999	68,383	89	-8,118	60,265	88	8,238	7,227	-1,010
2020	1,284	40	442	113	805	326	0	0	2,532	89	8,820	98	4,660	34	18,542	2,189	5,201	361	408	14,129	34	20,134	2,366	60,265	88	-1,592	58,674	88	7,227	7,050	-177
2021	0	40	441	113	810	326	0	0	467	89	9,939	98	4,877	34	16,534	2,030	5,194	131	301	14,551	35	20,212	2,392	58,674	88	-3,678	54,996	89	7,050	6,688	-362
2022	0	40	441	113	816	326	0	0	960	89	10,486	98	4,616	34	17,319	2,154	5,194	120	269	14,643	34	20,260	2,431	54,996	89	-2,941	52,055	91	6,688	6,411	-278
2023	2,700	40	441	113	822	326	0	0	7,122	89	8,249	98	3,838	34	23,171	2,715	5,194	425	340	14,860	38	20,857	2,527	52,055	91	2,314	54,369	89	6,411	6,598	188
2024	7,651	40	442	113	828	326	0	0	23,652	89	3,248	98	1,708	34	37,529	4,222	5,201	2,480	1,236	15,376	58	24,351	2,805	54,369	89	13,177	67,546	87	6,598	8,015	1,417
2025	6,543	40	441	113	834	326	0	0	31,933	89	3,754	98	1,742	34	45,245	5,235	11,043	7,610	2,007	15,503	97	36,259	4,064	67,546	87	8,986	76,532	88	8,015	9,185	1,170
2026	0	40	441	113	840	326	0	0	3,032	89	6,806	98	5,988	34	17,106	1,987	11,043	1,230	1,052	14,109	52	27,486	3,173	76,532	88	-10,380	66,152	89	9,185	8,000	-1,186
2027	6,612	40	441	113	845	326	0	0	21,134	89	4,045	98	2,918	34	35,994	4,030	5,194	3,365	1,714	14,470	64	24,807	2,793	66,152	89	11,187	77,340	88	8,000	9,237	1,237
2028	2,395	40	442	113	851	326	0	0	6,994	89	4,905	98	5,952	34	21,540	2,347	11,058	1,893	1,442	13,646	51	28,090	3,183	77,340	88	-6,550	70,790	87	9,237	8,401	-836
2029	657	40	441	113	857	326	0	0	3,265	89	7,106	98	5,903	34	18,228	2,094	11,043	798	886	12,904	37	25,667	2,941	70,790	87	-7,439	63,351	88	8,401	7,554	-847
2030	8,133	40	441	113	863	326	0	0	49,426	89	3,965	98	-1,666	34	61,160	7,322	11,043	12,976	2,990	15,621	122	42,752	4,742	63,351	88	18,409	81,760	91	7,554	10,135	2,581
2031	0	40	441	113	869	326	0	0	1,172	89	7,529	98	6,268	34	16,278	1,884	11,043	919	1,135	14,194	51	27,343	3,249	81,760	91	-11,065	70,695	91	10,135	8,770	-1,365
2032	484	40	442	113	875	326	0	0	1,470	89	8,784	98	5,984	34	18,040	2,103	11,058	355	715	13,354	33	25,515	3,077	70,695	91	-7,476	63,219	91	8,770	7,797	-973
2033	3,549	40	441	113	880	326	0	0	10,413	89	7,475	98	3,523	34	26,281	3,067	5,194	650	777	14,023	40	20,684	2,455	63,219	91	5,597	68,817	90	7,797	8,409	612
2034	0	40	441	113	886	326	0	0	467	89	7,956	98	5,296	34	15,045	1,819	5,194	450	607	14,461	41	20,753	2,462	68,817	90	-5,707	63,109	91	8,409	7,766	-643
2035	1,203	40	441	113	892	326	0	0	3,800	89	8,693	98	4,358	34	19,386	2,345	5,194	386	505	14,526	42	20,654	2,479	63,109	91	-1,268	61,842	91	7,766	7,632	-134

Table I-30c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	9	442	45	758	16	0	0	15,281	20	5,429	17	3,551	20	30,583	740	11,058	1,231	1,151	13,877	70	27,387	714	69,600	20	3,196	72,795	19	1,894	1,920	26
2013	333	9	441	45	764	16	0	0	2,847	20	7,635	17	5,826	20	17,845	456	11,043	786	844	13,113	38	25,825	659	72,795	19	-7,980	64,815	19	1,920	1,717	-203
2014	2,767	9	441	45	770	16	0	0	8,005	20	7,025	17	3,735	20	22,743	555	5,194	818	785	13,815	43	20,656	526	64,815	19	2,087	66,902	19	1,717	1,746	29
2015	10,922	9	441	45	775	16	0	0	27,898	20	5,082	17	1,284	20	46,402	1,083	11,043	1,995	1,279	13,922	70	28,309	705	66,902	19	18,093	84,995	18	1,746	2,124	378
2016	0	9	442	45	781	16	0	0	3,784	20	6,676	17	5,368	20	17,052	444	11,058	1,485	1,297	14,163	64	28,066	669	84,995	18	-11,014	73,981	19	2,124	1,899	-225
2017	0	9	441	45	787	16	0	0	2,081	20	8,489	17	4,838	20	16,636	424	5,194	883	863	14,662	47	21,649	534	73,981	19	-5,013	68,968	19	1,899	1,790	-109
2018	2,209	9	441	45	793	16	0	0	5,510	20	7,672	17	4,354	20	20,979	513	5,194	769	760	14,795	47	21,564	540	68,968	19	-585	68,383	19	1,790	1,763	-27
2019	322	9	441	45	799	16	0	0	1,318	20	8,363	17	6,035	20	17,277	437	11,043	389	501	13,430	32	25,395	642	68,383	19	-8,118	60,265	19	1,763	1,558	-204
2020	1,284	9	442	45	805	16	0	0	2,532	20	8,820	17	4,660	20	18,542	455	5,201	361	408	14,129	34	20,134	510	60,265	19	-1,592	58,674	19	1,558	1,503	-55
2021	0	9	441	45	810	16	0	0	467	20	9,939	17	4,877	20	16,534	415	5,194	131	301	14,551	35	20,212	510	58,674	19	-3,678	54,996	19	1,503	1,408	-95
2022	0	9	441	45	816	16	0	0	960	20	10,486	17	4,616	20	17,319	434	5,194	120	269	14,643	34	20,260	512	54,996	19	-2,941	52,055	19	1,408	1,330	-78
2023	2,700	9	441	45	822	16	0	0	7,122	20	8,249	17	3,838	20	23,171	562	5,194	425	340	14,860	38	20,857	524	52,055	19	2,314	54,369	19	1,330	1,368	38
2024	7,651	9	442	45	828	16	0	0	23,652	20	3,248	17	1,708	20	37,529	900	5,201	2,480	1,236	15,376	58	24,351	582	54,369	19	13,177	67,546	18	1,368	1,686	318
2025	6,543	9	441	45	834	16	0	0	31,933	20	3,754	17	1,742	20	45,245	1,124	11,043	7,610	2,007	15,503	97	36,259	855	67,546	18	8,986	76,532	19	1,686	1,955	269
2026	0	9	441	45	840	16	0	0	3,032	20	6,806	17	5,988	20	17,106	445	11,043	1,230	1,052	14,109	52	27,486	675	76,532	19	-10,380	66,152	19	1,955	1,724	-231
2027	6,612	9	441	45	845	16	0	0	21,134	20	4,045	17	2,918	20	35,994	870	5,194	3,365	1,714	14,470	64	24,807	602	66,152	19	11,187	77,340	19	1,724	1,993	268
2028	2,395	9	442	45	851	16	0	0	6,994	20	4,905	17	5,952	20	21,540	537	11,058	1,893	1,442	13,646	51	28,090	687	77,340	19	-6,550	70,790	19	1,993	1,843	-149
2029	657	9	441	45	857	16	0	0	3,265	20	7,106	17	5,903	20	18,228	464	11,043	798	886	12,904	37	25,667	645	70,790	19	-7,439	63,351	19	1,843	1,662	-182
2030	8,133	9	441	45	863	16	0	0	49,426	20	3,965	17	-1,666	20	61,160	1,532	11,043	12,976	2,990	15,621	122	42,752	1,043	63,351	19	18,409	81,760	19	1,662	2,150	489
2031	0	9	441	45	869	16	0	0	1,172	20	7,529	17	6,268	20	16,278	419	11,043	919	1,135	14,194	51	27,343	689	81,760	19	-11,065	70,695	20	2,150	1,880	-271
2032	484	9	442	45	875	16	0	0	1,470	20	8,784	17	5,984	20	18,040	453	11,058	355	715	13,354	33	25,515	659	70,695	20	-7,476	63,219	19	1,880	1,674	-206
2033	3,549	9	441	45	880	16	0	0	10,413	20	7,475	17	3,523	20	26,281	637	5,194	650	777	14,023	40	20,684	527	63,219	19	5,597	68,817	19	1,674	1,784	110
2034	0	9	441	45	886	16	0	0	467	20	7,956	17	5,296	20	15,045	383	5,194	450	607	14,461	41	20,753	522	68,817	19	-5,707	63,109	19	1,784	1,644	-139
2035	1,203	9	441	45	892	16	0	0	3,800	20	8,693	17	4,358	20	19,386	479	5,194	386	505	14,526	42	20,654	525	63,109	19	-1,268	61,842	19	1,644	1,599	-46

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	124	758	358	0	0	15,281	140	5,429	108	3,551	235	30,583	5,553	11,058	1,231	1,151	13,877	70	27,387	5,739	69,600	161	3,196	72,795	152	15,223	15,038	-185
2013	333	40	441	124	764	358	0	0	2,847	140	7,635	108	5,826	235	17,845	3,987	11,043	786	844	13,113	38	25,825	5,161	72,795	152	-7,980	64,815	157	15,038	13,865	-1,173
2014	2,767	40	441	124	770	358	0	0	8,005	140	7,025	108	3,735	235	22,743	4,344	5,194	818	785	13,815	43	20,656	4,251	64,815	157	2,087	66,902	153	13,865	13,958	93
2015	10,922	40	441	124	775	358	0	0	27,898	140	5,082	108	1,284	235	46,402	7,496	11,043	1,995	1,279	13,922	70	28,309	5,639	66,902	153	18,093	84,995	137	13,958	15,814	1,856
2016	0	40	442	124	781	358	0	0	3,784	140	6,676	108	5,368	235	17,052	3,869	11,058	1,485	1,297	14,163	64	28,066	4,981	84,995	137	-11,014	73,981	146	15,814	14,702	-1,112
2017	0	40	441	124	787	358	0	0	2,081	140	8,489	108	4,838	235	16,636	3,645	5,194	883	863	14,662	47	21,649	4,131	73,981	146	-5,013	68,968	152	14,702	14,217	-486
2018	2,209	40	441	124	793	358	0	0	5,510	140	7,672	108	4,354	235	20,979	4,144	5,194	769	760	14,795	47	21,564	4,288	68,968	152	-585	68,383	151	14,217	14,072	-144
2019	322	40	441	124	799	358	0	0	1,318	140	8,363	108	6,035	235	17,277	3,887	11,043	389	501	13,430	32	25,395	5,123	68,383	151	-8,118	60,265	157	14,072	12,837	-1,235
2020	1,284	40	442	124	805	358	0	0	2,532	140	8,820	108	4,660	235	18,542	3,801	5,201	361	408	14,129	34	20,134	4,202	60,265	157	-1,592	58,674	156	12,837	12,436	-401
2021	0	40	441	124	810	358	0	0	467	140	9,939	108	4,877	235	16,534	3,576	5,194	131	301	14,551	35	20,212	4,220	58,674	156	-3,678	54,996	158	12,436	11,792	-644
2022	0	40	441	124	816	358	0	0	960	140	10,486	108	4,616	235	17,319	3,669	5,194	120	269	14,643	34	20,260	4,286	54,996	158	-2,941	52,055	158	11,792	11,174	-617
2023	2,700	40	441	124	822	358	0	0	7,122	140	8,249	108	3,838	235	23,171	4,410	5,194	425	340	14,860	38	20,857	4,404	52,055	158	2,314	54,369	151	11,174	11,180	6
2024	7,651	40	442	124	828	358	0	0	23,652	140	3,248	108	1,708	235	37,529	6,404	5,201	2,480	1,236	15,376	58	24,351	4,753	54,369	151	13,177	67,546	140	11,180	12,831	1,651
2025	6,543	40	441	124	834	358	0	0	31,933	140	3,754	108	1,742	235	45,245	8,003	11,043	7,610	2,007	15,503	97	36,259	6,507	67,546	140	8,986	76,532	138	12,831	14,327	1,496
2026	0	40	441	124	840	358	0	0	3,032	140	6,806	108	5,988	235	17,106	3,971	11,043	1,230	1,052	14,109	52	27,486	4,949	76,532	138	-10,380	66,152	148	14,327	13,350	-977
2027	6,612	40	441	124	845	358	0	0	21,134	140	4,045	108	2,918	235	35,994	6,382	5,194	3,365	1,714	14,470	64	24,807	4,660	66,152	148	11,187	77,340	143	13,350	15,071	1,721
2028	2,395	40	442	124	851	358	0	0	6,994	140	4,905	108	5,952	235	21,540	4,569	11,058	1,893	1,442	13,646	51	28,090	5,193	77,340	143	-6,550	70,790	150	15,071	14,447	-624
2029	657	40	441	124	857	358	0	0	3,265	140	7,106	108	5,903	235	18,228	4,077	11,043	798	886	12,904	37	25,667	5,058	70,790	150	-7,439	63,351	156	14,447	13,467	-981
2030	8,133	40	441	124	863	358	0	0	49,426	140	3,965	108	-1,666	235	61,160	10,364	11,043	12,976	2,990	15,621	122	42,752	8,452	63,351	156	18,409	81,760	138	13,467	15,379	1,912
2031	0	40	441	124	869	358	0	0	1,172	140	7,529	108	6,268	235	16,278	3,828	11,043	919	1,135	14,194	51	27,343	4,930	81,760	138	-11,065	70,695	149	15,379	14,277	-1,101
2032	484	40	442	124	875	358	0	0	1,470	140	8,784	108	5,984	235	18,040	4,008	11,058	355	715	13,354	33	25,515	5,009	70,695	149	-7,476	63,219	154	14,277	13,277	-1,000
2033	3,549	40	441	124	880	358	0	0	10,413	140	7,475	108	3,523	235	26,281	4,895	5,194	650	777	14,023	40	20,684	4,181	63,219	154	5,597	68,817	150	13,277	13,991	714
2034	0	40	441	124	886	358	0	0	467	140	7,956	108	5,296	235	15,045	3,455	5,194	450	607	14,461	41	20,753	4,096	68,817	150	-5,707	63,109	156	13,991	13,351	-641
2035	1,203	40	441	124	892	358	0	0	3,800	140	8,693	108	4,358	235	19,386	3,964	5,194	386	505	14,526	42	20,654	4,262	63,109	156	-1,268	61,842	155	13,351	13,052	-298

Projected TDS Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	100	30	777	52	2,240	0	0	1,047	722	372	722	243	723	2,096	1,871	758	84	79	951	5	1,877	1,979	69,600	810	219	69,819	806	76,620	76,511	-109
2013	23	100	30	777	52	2,240	0	0	195	722	523	722	399	723	1,223	1,292	757	54	58	899	3	1,770	1,876	69,819	806	-547	69,272	806	76,511	75,927	-584
2014	190	100	30	777	53	2,240	0	0	549	722	481	722	256	723	1,559	1,481	356	56	54	947	3	1,416	1,493	69,272	806	143	69,415	804	75,927	75,916	-11
2015	749	100	30	777	53	2,240	0	0	1,912	722	348	722	88	723	3,180	2,601	757	137	88	954	5	1,940	2,026	69,415	804	1,240	70,655	796	75,916	76,491	575
2016	0	100	30	777	54	2,240	0	0	259	722	458	722	368	723	1,169	1,261	758	102	89	971	4	1,923	1,986	70,655	796	-755	69,900	797	76,491	75,765	-725
2017	0	100	30	777	54	2,240	0	0	143	722	582	722	332	723	1,140	1,234	356	60	59	1,005	3	1,484	1,544	69,900	797	-344	69,556	798	75,765	75,455	-311
2018	151	100	30	777	54	2,240	0	0	378	722	526	722	298	723	1,438	1,398	356	53	52	1,014	3	1,478	1,547	69,556	798	-40	69,516	797	75,455	75,307	-148
2019	22	100	30	777	55	2,240	0	0	90	722	573	722	414	723	1,184	1,260	757	27	34	920	2	1,740	1,848	69,516	797	-556	68,960	797	75,307	74,718	-588
2020	88	100	30	777	55	2,240	0	0	174	722	605	722	319	723	1,271	1,290	356	25	28	968	2	1,380	1,465	68,960	797	-109	68,851	796	74,718	74,543	-175
2021	0	100	30	777	56	2,240	0	0	32	722	681	722	334	723	1,133	1,230	356	9	21	997	2	1,385	1,477	68,851	796	-252	68,599	797	74,543	74,296	-247
2022	0	100	30	777	56	2,240	0	0	66	722	719	722	316	723	1,187	1,284	356	8	18	1,004	2	1,389	1,484	68,599	797	-202	68,397	797	74,296	74,095	-200
2023	185	100	30	777	56	2,240	0	0	488	722	565	722	263	723	1,588	1,522	356	29	23	1,018	3	1,429	1,523	68,397	797	159	68,556	795	74,095	74,094	-2
2024	524	100	30	777	57	2,240	0	0	1,621	722	223	722	117	723	2,572	2,201	356	170	85	1,054	4	1,669	1,712	68,556	795	903	69,459	790	74,094	74,583	489
2025	448	100	30	777	57	2,240	0	0	2,189	722	257	722	119	723	3,101	2,785	757	522	138	1,062	7	2,485	2,521	69,459	790	616	70,075	786	74,583	74,847	265
2026	0	100	30	777	58	2,240	0	0	208	722	466	722	410	723	1,172	1,273	757	84	72	967	4	1,884	1,935	70,075	786	-711	69,363	787	74,847	74,185	-662
2027	453	100	30	777	58	2,240	0	0	1,448	722	277	722	200	723	2,467	2,161	356	231	117	992	4	1,700	1,693	69,363	787	767	70,130	783	74,185	74,653	468
2028	164	100	30	777	58	2,240	0	0	479	722	336	722	408	723	1,476	1,434	758	130	99	935	4	1,925	1,944	70,130	783	-449	69,681	783	74,653	74,143	-510
2029	45	100	30	777	59	2,240	0	0	224	722	487	722	405	723	1,249	1,313	757	55	61	884	3	1,759	1,807	69,681	783	-510	69,171	783	74,143	73,648	-495
2030	557	100	30	777	59	2,240	0	0	3,387	722	272	722	-114	723	4,192	3,768	757	889	205	1,071	8	2,930	2,901	69,171	783	1,262	70,433	778	73,648	74,514	866
2031	0	100	30	777	60	2,240	0	0	80	722	516	722	430	723	1,116	1,221	757	63	78	973	4	1,874	1,900	70,433	778	-758	69,675	779	74,514	73,835	-679
2032	33	100	30	777	60	2,240	0	0	101	722	602	722	410	723	1,236	1,312	758	24	49	915	2	1,749	1,801	69,675	779	-512	69,162	780	73,835	73,347	-489
2033	243	100	30	777	60	2,240	0	0	714	722	512	722	241	723	1,801	1,690	356	45	53	961	3	1,418	1,447	69,162	780	384	69,546	778	73,347	73,589	243
2034	0	100	30	777	61	2,240	0	0	32	722	545	722	363	723	1,031	1,141	356	31	42	991	3	1,422	1,461	69,546	778	-391	69,155	779	73,589	73,269	-320
2035	82	100	30	777	61	2,240	0	0	260	722	596	722	299	723	1,329	1,364	356	26	35	996	3	1,416	1,463	69,155	779	-87	69,068	779	73,269	73,170	-99

Table I-31b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	40	30	113	52	326	0	0	1,047	89	372	98	243	34	2,096	234	758	84	79	951	5	1,877	162	69,600	66	219	69,819	67	6,282	6,354	72
2013	23	40	30	113	52	326	0	0	195	89	523	98	399	34	1,223	141	757	54	58	899	3	1,770	156	69,819	67	-547	69,272	67	6,354	6,339	-15
2014	190	40	30	113	53	326	0	0	549	89	481	98	256	34	1,559	181	356	56	54	947	3	1,416	125	69,272	67	143	69,415	68	6,339	6,395	56
2015	749	40	30	113	53	326	0	0	1,912	89	348	98	88	34	3,180	351	757	137	88	954	5	1,940	171	69,415	68	1,240	70,655	68	6,395	6,575	180
2016	0	40	30	113	54	326	0	0	259	89	458	98	368	34	1,169	138	758	102	89	971	4	1,923	171	70,655	68	-755	69,900	69	6,575	6,541	-33
2017	0	40	30	113	54	326	0	0	143	89	582	98	332	34	1,140	138	356	60	59	1,005	3	1,484	133	69,900	69	-344	69,556	69	6,541	6,546	5
2018	151	40	30	113	54	326	0	0	378	89	526	98	298	34	1,438	166	356	53	52	1,014	3	1,478	134	69,556	69	-40	69,516	70	6,546	6,579	32
2019	22	40	30	113	55	326	0	0	90	89	573	98	414	34	1,184	136	757	27	34	920	2	1,740	161	69,516	70	-556	68,960	70	6,579	6,553	-25
2020	88	40	30	113	55	326	0	0	174	89	605	98	319	34	1,271	150	356	25	28	968	2	1,380	128	68,960	70	-109	68,851	70	6,553	6,575	22
2021	0	40	30	113	56	326	0	0	32	89	681	98	334	34	1,133	139	356	9	21	997	2	1,385	130	68,851	70	-252	68,599	71	6,575	6,584	9
2022	0	40	30	113	56	326	0	0	66	89	719	98	316	34	1,187	148	356	8	18	1,004	2	1,389	131	68,599	71	-202	68,397	71	6,584	6,600	16
2023	185	40	30	113	56	326	0	0	488	89	565	98	263	34	1,588	186	356	29	23	1,018	3	1,429	136	68,397	71	159	68,556	71	6,600	6,650	50
2024	524	40	30	113	57	326	0	0	1,621	89	223	98	117	34	2,572	289	356	170	85	1,054	4	1,669	154	68,556	71	903	69,459	72	6,650	6,786	136
2025	448	40	30	113	57	326	0	0	2,189	89	257	98	119	34	3,101	359	757	522	138	1,062	7	2,485	229	69,459	72	616	70,075	73	6,786	6,915	129
2026	0	40	30	113	58	326	0	0	208	89	466	98	410	34	1,172	136	757	84	72	967	4	1,884	179	70,075	73	-711	69,363	73	6,915	6,873	-43
2027	453	40	30	113	58	326	0	0	1,448	89	277	98	200	34	2,467	276	356	231	117	992	4	1,700	157	69,363	73	767	70,130	73	6,873	6,992	119
2028	164	40	30	113	58	326	0	0	479	89	336	98	408	34	1,476	161	758	130	99	935	4	1,925	182	70,130	73	-449	69,681	74	6,992	6,971	-21
2029	45	40	30	113	59	326	0	0	224	89	487	98	405	34	1,249	144	757	55	61	884	3	1,759	170	69,681	74	-510	69,171	74	6,971	6,944	-26
2030	557	40	30	113	59	326	0	0	3,387	89	272	98	-114	34	4,192	502	757	889	205	1,071	8	2,930	274	69,171	74	1,262	70,433	75	6,944	7,173	228
2031	0	40	30	113	60	326	0	0	80	89	516	98	430	34	1,116	129	757	63	78	973	4	1,874	183	70,433	75	-758	69,675	75	7,173	7,119	-54
2032	33	40	30	113	60	326	0	0	101	89	602	98	410	34	1,236	144	758	24	49	915	2	1,749	174	69,675	75	-512	69,162	75	7,119	7,089	-30
2033	243	40	30	113	60	326	0	0	714	89	512	98	241	34	1,801	210	356	45	53	961	3	1,418	140	69,162	75	384	69,546	76	7,089	7,160	70
2034	0	40	30	113	61	326	0	0	32	89	545	98	363	34	1,031	125	356	31	42	991	3	1,422	142	69,546	76	-391	69,155	76	7,160	7,142	-17
2035	82	40	30	113	61	326	0	0	260	89	596	98	299	34	1,329	161	356	26	35	996	3	1,416	143	69,155	76	-87	69,068	76	7,142	7,160	18

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	9	30	45	52	16	0	0	1,047	20	372	17	243	20	2,096	51	758	84	79	951	5	1,877	60	69,600	25	219	69,819	24	2,329	2,320	-9
2013	23	9	30	45	52	16	0	0	195	20	523	17	399	20	1,223	31	757	54	58	899	3	1,770	57	69,819	24	-547	69,272	24	2,320	2,294	-26
2014	190	9	30	45	53	16	0	0	549	20	481	17	256	20	1,559	38	356	56	54	947	3	1,416	45	69,272	24	143	69,415	24	2,294	2,287	-7
2015	749	9	30	45	53	16	0	0	1,912	20	348	17	88	20	3,180	74	757	137	88	954	5	1,940	61	69,415	24	1,240	70,655	24	2,287	2,300	13
2016	0	9	30	45	54	16	0	0	259	20	458	17	368	20	1,169	30	758	102	89	971	4	1,923	60	70,655	24	-755	69,900	24	2,300	2,271	-29
2017	0	9	30	45	54	16	0	0	143	20	582	17	332	20	1,140	29	356	60	59	1,005	3	1,484	46	69,900	24	-344	69,556	24	2,271	2,254	-17
2018	151	9	30	45	54	16	0	0	378	20	526	17	298	20	1,438	35	356	53	52	1,014	3	1,478	46	69,556	24	-40	69,516	24	2,254	2,243	-11
2019	22	9	30	45	55	16	0	0	90	20	573	17	414	20	1,184	30	757	27	34	920	2	1,740	55	69,516	24	-556	68,960	24	2,243	2,218	-25
2020	88	9	30	45	55	16	0	0	174	20	605	17	319	20	1,271	31	356	25	28	968	2	1,380	43	68,960	24	-109	68,851	24	2,218	2,205	-12
2021	0	9	30	45	56	16	0	0	32	20	681	17	334	20	1,133	28	356	9	21	997	2	1,385	44	68,851	24	-252	68,599	23	2,205	2,190	-15
2022	0	9	30	45	56	16	0	0	66	20	719	17	316	20	1,187	30	356	8	18	1,004	2	1,389	44	68,599	23	-202	68,397	23	2,190	2,176	-14
2023	185	9	30	45	56	16	0	0	488	20	565	17	263	20	1,588	39	356	29	23	1,018	3	1,429	45	68,397	23	159	68,556	23	2,176	2,170	-6
2024	524	9	30	45	57	16	0	0	1,621	20	223	17	117	20	2,572	62	356	170	85	1,054	4	1,669	50	68,556	23	903	69,459	23	2,170	2,181	12
2025	448	9	30	45	57	16	0	0	2,189	20	257	17	119	20	3,101	77	757	522	138	1,062	7	2,485	74	69,459	23	616	70,075	23	2,181	2,185	3
2026	0	9	30	45	58	16	0	0	208	20	466	17	410	20	1,172	30	757	84	72	967	4	1,884	56	70,075	23	-711	69,363	23	2,185	2,159	-26
2027	453	9	30	45	58	16	0	0	1,448	20	277	17	200	20	2,467	60	356	231	117	992	4	1,700	49	69,363	23	767	70,130	23	2,159	2,169	10
2028	164	9	30	45	58	16	0	0	479	20	336	17	408	20	1,476	37	758	130	99	935	4	1,925	56	70,130	23	-449	69,681	23	2,169	2,149	-20
2029	45	9	30	45	59	16	0	0	224	20	487	17	405	20	1,249	32	757	55	61	884	3	1,759	52	69,681	23	-510	69,171	23	2,149	2,129	-21
2030	557	9	30	45	59	16	0	0	3,387	20	272	17	-114	20	4,192	105	757	889	205	1,071	8	2,930	84	69,171	23	1,262	70,433	22	2,129	2,150	21
2031	0	9	30	45	60	16	0	0	80	20	516	17	430	20	1,116	29	757	63	78	973	4	1,874	55	70,433	22	-758	69,675	22	2,150	2,124	-26
2032	33	9	30	45	60	16	0	0	101	20	602	17	410	20	1,236	31	758	24	49	915	2	1,749	52	69,675	22	-512	69,162	22	2,124	2,103	-21
2033	243	9	30	45	60	16	0	0	714	20	512	17	241	20	1,801	44	356	45	53	961	3	1,418	41	69,162	22	384	69,546	22	2,103	2,105	2
2034	0	9	30	45	61	16	0	0	32	20	545	17	363	20	1,031	26	356	31	42	991	3	1,422	42	69,546	22	-391	69,155	22	2,105	2,090	-16
2035	82	9	30	45	61	16	0	0	260	20	596	17	299	20	1,329	33	356	26	35	996	3	1,416	42	69,155	22	-87	69,068	22	2,090	2,081	-9

Table I-31d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	40	30	124	52	358	0	0	1,047	140	372	108	243	235	2,096	381	758	84	79	951	5	1,877	612	69,600	250	219	69,819	**247**	23,705	23,473	**-232**
2013	23	40	30	124	52	358	0	0	195	140	523	108	399	235	1,223	273	757	54	58	899	3	1,770	576	69,819	247	-547	69,272	**246**	23,473	23,171	**-302**
2014	190	40	30	124	53	358	0	0	549	140	481	108	256	235	1,559	298	356	56	54	947	3	1,416	456	69,272	246	143	69,415	**244**	23,171	23,013	**-158**
2015	749	40	30	124	53	358	0	0	1,912	140	348	108	88	235	3,180	514	757	137	88	954	5	1,940	614	69,415	244	1,240	70,655	**239**	23,013	22,912	**-100**
2016	0	40	30	124	54	358	0	0	259	140	458	108	368	235	1,169	265	758	102	89	971	4	1,923	595	70,655	239	-755	69,900	**238**	22,912	22,582	**-330**
2017	0	40	30	124	54	358	0	0	143	140	582	108	332	235	1,140	250	356	60	59	1,005	3	1,484	460	69,900	238	-344	69,556	**237**	22,582	22,372	**-210**
2018	151	40	30	124	54	358	0	0	378	140	526	108	298	235	1,438	284	356	53	52	1,014	3	1,478	459	69,556	237	-40	69,516	**235**	22,372	22,197	**-175**
2019	22	40	30	124	55	358	0	0	90	140	573	108	414	235	1,184	266	757	27	34	920	2	1,740	545	69,516	235	-556	68,960	**234**	22,197	21,919	**-278**
2020	88	40	30	124	55	358	0	0	174	140	605	108	319	235	1,271	260	356	25	28	968	2	1,380	430	68,960	234	-109	68,851	**232**	21,919	21,750	**-169**
2021	0	40	30	124	56	358	0	0	32	140	681	108	334	235	1,133	245	356	9	21	997	2	1,385	431	68,851	232	-252	68,599	**231**	21,750	21,564	**-186**
2022	0	40	30	124	56	358	0	0	66	140	719	108	316	235	1,187	251	356	8	18	1,004	2	1,389	431	68,599	231	-202	68,397	**230**	21,564	21,384	**-179**
2023	185	40	30	124	56	358	0	0	488	140	565	108	263	235	1,588	302	356	29	23	1,018	3	1,429	440	68,397	230	159	68,556	**228**	21,384	21,247	**-137**
2024	524	40	30	124	57	358	0	0	1,621	140	223	108	117	235	2,572	439	356	170	85	1,054	4	1,669	491	68,556	228	903	69,459	**224**	21,247	21,195	**-52**
2025	448	40	30	124	57	358	0	0	2,189	140	257	108	119	235	3,101	548	757	522	138	1,062	7	2,485	716	69,459	224	616	70,075	**221**	21,195	21,027	**-168**
2026	0	40	30	124	58	358	0	0	208	140	466	108	410	235	1,172	272	757	84	72	967	4	1,884	544	70,075	221	-711	69,363	**220**	21,027	20,756	**-271**
2027	453	40	30	124	58	358	0	0	1,448	140	277	108	200	235	2,467	437	356	231	117	992	4	1,700	474	69,363	220	767	70,130	**217**	20,756	20,719	**-36**
2028	164	40	30	124	58	358	0	0	479	140	336	108	408	235	1,476	313	758	130	99	935	4	1,925	540	70,130	217	-449	69,681	**216**	20,719	20,493	**-226**
2029	45	40	30	124	59	358	0	0	224	140	487	108	405	235	1,249	279	757	55	61	884	3	1,759	499	69,681	216	-510	69,171	**216**	20,493	20,273	**-220**
2030	557	40	30	124	59	358	0	0	3,387	140	272	108	-114	235	4,192	710	757	889	205	1,071	8	2,930	799	69,171	216	1,262	70,433	**211**	20,273	20,184	**-88**
2031	0	40	30	124	60	358	0	0	80	140	516	108	430	235	1,116	262	757	63	78	973	4	1,874	515	70,433	211	-758	69,675	**210**	20,184	19,932	**-252**
2032	33	40	30	124	60	358	0	0	101	140	602	108	410	235	1,236	275	758	24	49	915	2	1,749	486	69,675	210	-512	69,162	**210**	19,932	19,720	**-212**
2033	243	40	30	124	60	358	0	0	714	140	512	108	241	235	1,801	335	356	45	53	961	3	1,418	389	69,162	210	384	69,546	**208**	19,720	19,667	**-54**
2034	0	40	30	124	61	358	0	0	32	140	545	108	363	235	1,031	237	356	31	42	991	3	1,422	390	69,546	208	-391	69,155	**208**	19,667	19,513	**-154**
2035	82	40	30	124	61	358	0	0	260	140	596	108	299	235	1,329	272	356	26	35	996	3	1,416	390	69,155	208	-87	69,068	**207**	19,513	19,395	**-118**

Projected TDS Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	100	270	808	88	2,330	0	0	1,438	532	0	0	220	647	2,683	1,899	0	0	941	292	754	1,987	1,489	7,647	1,047	695	8,342	996	10,883	11,294	411
2013	43	100	269	808	88	2,330	0	0	18	532	0	0	520	650	938	1,053	0	0	620	323	718	1,660	1,408	8,342	996	-722	7,620	1,056	11,294	10,939	-355
2014	360	100	269	808	89	2,330	0	0	1,029	532	0	0	413	648	2,160	1,734	0	0	764	309	718	1,792	1,475	7,620	1,056	368	7,988	1,031	10,939	11,198	259
2015	1,421	100	269	808	89	2,330	0	0	916	532	0	0	452	632	3,148	1,823	0	0	915	321	755	1,991	1,508	7,988	1,031	1,158	9,146	926	11,198	11,513	315
2016	0	100	270	808	90	2,330	0	0	0	532	0	0	515	630	875	1,022	0	0	765	341	749	1,854	1,371	9,146	926	-980	8,166	1,005	11,513	11,163	-349
2017	0	100	269	808	90	2,330	0	0	0	532	0	0	604	629	963	1,098	0	0	373	351	734	1,458	1,484	8,166	1,005	-495	7,671	1,033	11,163	10,777	-386
2018	288	100	269	808	90	2,330	0	0	796	532	0	0	542	629	1,985	1,661	0	0	544	359	743	1,646	1,547	7,671	1,033	340	8,011	1,000	10,777	10,891	114
2019	42	100	269	808	91	2,330	0	0	13	532	0	0	555	632	970	1,076	0	0	494	350	830	1,674	1,604	8,011	1,000	-704	7,307	1,043	10,891	10,363	-528
2020	167	100	270	808	91	2,330	0	0	412	532	0	0	603	634	1,543	1,427	0	0	477	365	903	1,745	1,798	7,307	1,043	-202	7,105	1,034	10,363	9,991	-372
2021	0	100	269	808	92	2,330	0	0	0	532	0	0	653	639	1,014	1,154	0	0	288	399	892	1,579	1,816	7,105	1,034	-566	6,539	1,049	9,991	9,329	-662
2022	0	100	269	808	92	2,330	0	0	0	532	0	0	661	644	1,023	1,167	0	0	189	407	918	1,514	1,891	6,539	1,049	-491	6,048	1,046	9,329	8,605	-724
2023	351	100	269	808	93	2,330	0	0	908	532	0	0	507	644	2,128	1,738	0	0	484	399	1,009	1,892	2,003	6,048	1,046	236	6,283	976	8,605	8,339	-266
2024	996	100	270	808	93	2,330	0	0	1,326	532	0	0	342	636	3,027	1,982	0	0	848	415	1,094	2,357	2,003	6,283	976	670	6,953	880	8,339	8,318	-21
2025	851	100	269	808	93	2,330	0	0	1,585	532	0	0	369	630	3,168	2,170	0	0	1,042	409	898	2,348	1,563	6,953	880	820	7,773	844	8,318	8,925	607
2026	0	100	269	808	94	2,330	0	0	0	532	0	0	603	635	966	1,114	0	0	779	382	852	2,013	1,417	7,773	844	-1,046	6,727	943	8,925	8,623	-303
2027	860	100	269	808	94	2,330	0	0	1,614	532	0	0	316	629	3,154	2,150	0	0	945	317	783	2,045	1,411	6,727	943	1,109	7,835	879	8,623	9,361	739
2028	312	100	270	808	95	2,330	0	0	874	532	0	0	370	630	1,920	1,588	0	0	881	306	737	1,924	1,245	7,835	879	-4	7,832	911	9,361	9,704	343
2029	86	100	269	808	95	2,330	0	0	152	532	0	0	498	635	1,100	1,149	0	0	717	295	696	1,707	1,227	7,832	911	-608	7,224	980	9,704	9,625	-79
2030	1,058	100	269	808	96	2,330	0	0	1,476	532	0	0	147	626	3,046	1,935	0	0	1,019	266	742	2,026	1,343	7,224	980	1,020	8,244	912	9,625	10,218	593
2031	0	100	269	808	96	2,330	0	0	0	532	0	0	572	632	938	1,092	0	0	594	305	697	1,596	1,242	8,244	912	-659	7,586	976	10,218	10,068	-150
2032	63	100	270	808	97	2,330	0	0	80	532	0	0	570	636	1,080	1,162	0	0	373	312	691	1,375	1,330	7,586	976	-296	7,290	999	10,068	9,900	-168
2033	462	100	269	808	97	2,330	0	0	1,032	532	0	0	439	635	2,299	1,792	0	0	586	314	816	1,716	1,534	7,290	999	584	7,873	949	9,900	10,157	257
2034	0	100	269	808	97	2,330	0	0	0	532	0	0	477	641	843	1,020	0	0	456	344	759	1,559	1,424	7,873	949	-716	7,158	1,002	10,157	9,753	-404
2035	157	100	269	808	98	2,330	0	0	378	532	0	0	544	644	1,446	1,377	0	0	419	347	727	1,493	1,463	7,158	1,002	-47	7,111	1,000	9,753	9,666	-87

Projected Chloride Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	40	270	89	88	256	0	0	1,438	65	0	0	220	39	2,683	239	0	0	941	292	754	1,987	161	7,647	114	695	8,342	**111**	1,180	1,258	**78**
2013	43	40	269	89	88	256	0	0	18	65	0	0	520	40	938	95	0	0	620	323	718	1,660	157	8,342	111	-722	7,620	**115**	1,258	1,196	**-61**
2014	360	40	269	89	89	256	0	0	1,029	65	0	0	413	40	2,160	197	0	0	764	309	718	1,792	161	7,620	115	368	7,988	**113**	1,196	1,232	**36**
2015	1,421	40	269	89	89	256	0	0	916	65	0	0	452	41	3,148	248	0	0	915	321	755	1,991	166	7,988	113	1,158	9,146	**106**	1,232	1,314	**82**
2016	0	40	270	89	90	256	0	0	0	65	0	0	515	41	875	92	0	0	765	341	749	1,854	157	9,146	106	-980	8,166	**113**	1,314	1,250	**-64**
2017	0	40	269	89	90	256	0	0	0	65	0	0	604	40	963	97	0	0	373	351	734	1,458	166	8,166	113	-495	7,671	**113**	1,250	1,181	**-69**
2018	288	40	269	89	90	256	0	0	796	65	0	0	542	41	1,985	181	0	0	544	359	743	1,646	169	7,671	113	340	8,011	**109**	1,181	1,192	**11**
2019	42	40	269	89	91	256	0	0	13	65	0	0	555	41	970	99	0	0	494	350	830	1,674	176	8,011	109	-704	7,307	**112**	1,192	1,115	**-77**
2020	167	40	270	89	91	256	0	0	412	65	0	0	603	42	1,543	145	0	0	477	365	903	1,745	194	7,307	112	-202	7,105	**110**	1,115	1,066	**-49**
2021	0	40	269	89	92	256	0	0	0	65	0	0	653	43	1,014	102	0	0	288	399	892	1,579	194	7,105	110	-566	6,539	**110**	1,066	975	**-91**
2022	0	40	269	89	92	256	0	0	0	65	0	0	661	44	1,023	104	0	0	189	407	918	1,514	198	6,539	110	-491	6,048	**107**	975	881	**-94**
2023	351	40	269	89	93	256	0	0	908	65	0	0	507	44	2,128	195	0	0	484	399	1,009	1,892	205	6,048	107	236	6,283	**102**	881	871	**-10**
2024	996	40	270	89	93	256	0	0	1,326	65	0	0	342	46	3,027	258	0	0	848	415	1,094	2,357	209	6,283	102	670	6,953	**97**	871	920	**49**
2025	851	40	269	89	93	256	0	0	1,585	65	0	0	369	46	3,168	276	0	0	1,042	409	898	2,348	173	6,953	97	820	7,773	**97**	920	1,023	**103**
2026	0	40	269	89	94	256	0	0	0	65	0	0	603	47	966	104	0	0	779	382	852	2,013	162	7,773	97	-1,046	6,727	**105**	1,023	965	**-58**
2027	860	40	269	89	94	256	0	0	1,614	65	0	0	316	48	3,154	276	0	0	945	317	783	2,045	158	6,727	105	1,109	7,835	**102**	965	1,083	**119**
2028	312	40	270	89	95	256	0	0	874	65	0	0	370	49	1,920	185	0	0	881	306	737	1,924	144	7,835	102	-4	7,832	**106**	1,083	1,124	**41**
2029	86	40	269	89	95	256	0	0	152	65	0	0	498	50	1,100	117	0	0	717	295	696	1,707	142	7,832	106	-608	7,224	**112**	1,124	1,099	**-25**
2030	1,058	40	269	89	96	256	0	0	1,476	65	0	0	147	50	3,046	265	0	0	1,019	266	742	2,026	153	7,224	112	1,020	8,244	**108**	1,099	1,211	**111**
2031	0	40	269	89	96	256	0	0	0	65	0	0	572	51	938	106	0	0	594	305	697	1,596	147	8,244	108	-659	7,586	**113**	1,211	1,170	**-41**
2032	63	40	270	89	97	256	0	0	80	65	0	0	570	52	1,080	117	0	0	373	312	691	1,375	155	7,586	113	-296	7,290	**114**	1,170	1,132	**-38**
2033	462	40	269	89	97	256	0	0	1,032	65	0	0	439	52	2,299	215	0	0	586	314	816	1,716	175	7,290	114	584	7,873	**109**	1,132	1,171	**39**
2034	0	40	269	89	97	256	0	0	0	65	0	0	477	53	843	101	0	0	456	344	759	1,559	164	7,873	109	-716	7,158	**114**	1,171	1,108	**-63**
2035	157	40	269	89	98	256	0	0	378	65	0	0	544	54	1,446	149	0	0	419	347	727	1,493	166	7,158	114	-47	7,111	**113**	1,108	1,090	**-18**

Table I-32c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	9	270	46	88	17	0	0	1,438	7	0	0	220	20	2,683	47	0	0	941	292	754	1,987	44	7,647	31	695	8,342	**29**	321	324	**3**
2013	43	9	269	46	88	17	0	0	18	7	0	0	520	20	938	34	0	0	620	323	718	1,660	40	8,342	29	-722	7,620	**31**	324	318	**-7**
2014	360	9	269	46	89	17	0	0	1,029	7	0	0	413	20	2,160	44	0	0	764	309	718	1,792	43	7,620	31	368	7,988	**29**	318	319	**2**
2015	1,421	9	269	46	89	17	0	0	916	7	0	0	452	20	3,148	57	0	0	915	321	755	1,991	43	7,988	29	1,158	9,146	**27**	319	333	**14**
2016	0	9	270	46	90	17	0	0	0	7	0	0	515	20	875	33	0	0	765	341	749	1,854	40	9,146	27	-980	8,166	**29**	333	326	**-7**
2017	0	9	269	46	90	17	0	0	0	7	0	0	604	20	963	35	0	0	373	351	734	1,458	43	8,166	29	-495	7,671	**31**	326	318	**-8**
2018	288	9	269	46	90	17	0	0	796	7	0	0	542	20	1,985	45	0	0	544	359	743	1,646	46	7,671	31	340	8,011	**29**	318	317	**-1**
2019	42	9	269	46	91	17	0	0	13	7	0	0	555	20	970	35	0	0	494	350	830	1,674	47	8,011	29	-704	7,307	**31**	317	305	**-12**
2020	167	9	270	46	91	17	0	0	412	7	0	0	603	20	1,543	41	0	0	477	365	903	1,745	53	7,307	31	-202	7,105	**30**	305	293	**-12**
2021	0	9	269	46	92	17	0	0	0	7	0	0	653	20	1,014	37	0	0	288	399	892	1,579	53	7,105	30	-566	6,539	**31**	293	276	**-17**
2022	0	9	269	46	92	17	0	0	0	7	0	0	661	20	1,023	37	0	0	189	407	918	1,514	56	6,539	31	-491	6,048	**31**	276	257	**-19**
2023	351	9	269	46	93	17	0	0	908	7	0	0	507	20	2,128	46	0	0	484	399	1,009	1,892	60	6,048	31	236	6,283	**28**	257	243	**-14**
2024	996	9	270	46	93	17	0	0	1,326	7	0	0	342	19	3,027	53	0	0	848	415	1,094	2,357	58	6,283	28	670	6,953	**25**	243	237	**-5**
2025	851	9	269	46	93	17	0	0	1,585	7	0	0	369	19	3,168	54	0	0	1,042	409	898	2,348	45	6,953	25	820	7,773	**23**	237	247	**10**
2026	0	9	269	46	94	17	0	0	0	7	0	0	603	19	966	35	0	0	779	382	852	2,013	39	7,773	23	-1,046	6,727	**27**	247	243	**-4**
2027	860	9	269	46	94	17	0	0	1,614	7	0	0	316	19	3,154	53	0	0	945	317	783	2,045	40	6,727	27	1,109	7,835	**24**	243	256	**13**
2028	312	9	270	46	95	17	0	0	874	7	0	0	370	19	1,920	41	0	0	881	306	737	1,924	34	7,835	24	-4	7,832	**25**	256	263	**7**
2029	86	9	269	46	95	17	0	0	152	7	0	0	498	19	1,100	34	0	0	717	295	696	1,707	33	7,832	25	-608	7,224	**27**	263	264	**1**
2030	1,058	9	269	46	96	17	0	0	1,476	7	0	0	147	19	3,046	50	0	0	1,019	266	742	2,026	37	7,224	27	1,020	8,244	**25**	264	277	**13**
2031	0	9	269	46	96	17	0	0	0	7	0	0	572	19	938	34	0	0	594	305	697	1,596	34	8,244	25	-659	7,586	**27**	277	277	**0**
2032	63	9	270	46	97	17	0	0	80	7	0	0	570	19	1,080	35	0	0	373	312	691	1,375	37	7,586	27	-296	7,290	**28**	277	276	**-1**
2033	462	9	269	46	97	17	0	0	1,032	7	0	0	439	19	2,299	46	0	0	586	314	816	1,716	43	7,290	28	584	7,873	**26**	276	279	**3**
2034	0	9	269	46	97	17	0	0	0	7	0	0	477	19	843	31	0	0	456	344	759	1,559	39	7,873	26	-716	7,158	**28**	279	271	**-8**
2035	157	9	269	46	98	17	0	0	378	7	0	0	544	19	1,446	39	0	0	419	347	727	1,493	41	7,158	28	-47	7,111	**28**	271	269	**-2**

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	40	270	170	88	490	0	0	1,438	103	0	0	220	266	2,683	437	0	0	941	292	754	1,987	330	7,647	232	695	8,342	**222**	2,410	2,518	**108**
2013	43	40	269	170	88	490	0	0	18	103	0	0	520	266	938	314	0	0	620	323	718	1,660	314	8,342	222	-722	7,620	**243**	2,518	2,518	**0**
2014	360	40	269	170	89	490	0	0	1,029	103	0	0	413	265	2,160	433	0	0	764	309	718	1,792	339	7,620	243	368	7,988	**240**	2,518	2,612	**94**
2015	1,421	40	269	170	89	490	0	0	916	103	0	0	452	257	3,148	485	0	0	915	321	755	1,991	352	7,988	240	1,158	9,146	**221**	2,612	2,745	**133**
2016	0	40	270	170	90	490	0	0	0	103	0	0	515	257	875	302	0	0	765	341	749	1,854	327	9,146	221	-980	8,166	**245**	2,745	2,720	**-25**
2017	0	40	269	170	90	490	0	0	0	103	0	0	604	258	963	334	0	0	373	351	734	1,458	362	8,166	245	-495	7,671	**258**	2,720	2,693	**-28**
2018	288	40	269	170	90	490	0	0	796	103	0	0	542	257	1,985	438	0	0	544	359	743	1,646	387	7,671	258	340	8,011	**252**	2,693	2,744	**52**
2019	42	40	269	170	91	490	0	0	13	103	0	0	555	257	970	321	0	0	494	350	830	1,674	404	8,011	252	-704	7,307	**268**	2,744	2,661	**-83**
2020	167	40	270	170	91	490	0	0	412	103	0	0	603	257	1,543	400	0	0	477	365	903	1,745	462	7,307	268	-202	7,105	**269**	2,661	2,599	**-62**
2021	0	40	269	170	92	490	0	0	0	103	0	0	653	257	1,014	352	0	0	288	399	892	1,579	472	7,105	269	-566	6,539	**279**	2,599	2,479	**-121**
2022	0	40	269	170	92	490	0	0	0	103	0	0	661	258	1,023	355	0	0	189	407	918	1,514	502	6,539	279	-491	6,048	**284**	2,479	2,332	**-147**
2023	351	40	269	170	93	490	0	0	908	103	0	0	507	256	2,128	446	0	0	484	399	1,009	1,892	543	6,048	284	236	6,283	**262**	2,332	2,235	**-97**
2024	996	40	270	170	93	490	0	0	1,326	103	0	0	342	251	3,027	480	0	0	848	415	1,094	2,357	537	6,283	262	670	6,953	**230**	2,235	2,178	**-57**
2025	851	40	269	170	93	490	0	0	1,585	103	0	0	369	247	3,168	516	0	0	1,042	409	898	2,348	409	6,953	230	820	7,773	**216**	2,178	2,285	**106**
2026	0	40	269	170	94	490	0	0	0	103	0	0	603	247	966	328	0	0	779	382	852	2,013	363	7,773	216	-1,046	6,727	**246**	2,285	2,249	**-35**
2027	860	40	269	170	94	490	0	0	1,614	103	0	0	316	243	3,154	502	0	0	945	317	783	2,045	368	6,727	246	1,109	7,835	**224**	2,249	2,383	**134**
2028	312	40	270	170	95	490	0	0	874	103	0	0	370	242	1,920	386	0	0	881	306	737	1,924	317	7,835	224	-4	7,832	**230**	2,383	2,452	**69**
2029	86	40	269	170	95	490	0	0	152	103	0	0	498	243	1,100	316	0	0	717	295	696	1,707	310	7,832	230	-608	7,224	**250**	2,452	2,458	**6**
2030	1,058	40	269	170	96	490	0	0	1,476	103	0	0	147	238	3,046	437	0	0	1,019	266	742	2,026	343	7,224	250	1,020	8,244	**228**	2,458	2,552	**94**
2031	0	40	269	170	96	490	0	0	0	103	0	0	572	239	938	312	0	0	594	305	697	1,596	310	8,244	228	-659	7,586	**248**	2,552	2,554	**2**
2032	63	40	270	170	97	490	0	0	80	103	0	0	570	240	1,080	327	0	0	373	312	691	1,375	337	7,586	248	-296	7,290	**257**	2,554	2,544	**-11**
2033	462	40	269	170	97	490	0	0	1,032	103	0	0	439	238	2,299	438	0	0	586	314	816	1,716	394	7,290	257	584	7,873	**242**	2,544	2,587	**44**
2034	0	40	269	170	97	490	0	0	0	103	0	0	477	239	843	282	0	0	456	344	759	1,559	363	7,873	242	-716	7,158	**258**	2,587	2,507	**-81**
2035	157	40	269	170	98	490	0	0	378	103	0	0	544	239	1,446	365	0	0	419	347	727	1,493	376	7,158	258	-47	7,111	**258**	2,507	2,496	**-11**

Table I-33a

Projected TDS Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	TDS Conc. for Applied Recycled Water	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Upstream Tributaries	TDS Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	TDS Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	100	181	833	772	2,400	0	0	0	2,371	6,085	532	0	0	292	996	7,741	647	19,285	14,902	0	0	3,696	5,579	6,113	15,388	15,390	25,728	968	3,898	29,626	829	33,864	33,377	-487
2013	274	100	181	833	773	2,400	0	0	89	2,371	737	532	0	0	323	1,056	7,805	650	10,181	10,938	0	0	2,366	5,283	5,691	13,340	12,364	29,626	829	-3,159	26,466	888	33,377	31,951	-1,425
2014	2,277	100	181	833	773	2,400	0	0	96	2,371	4,962	532	0	0	309	1,031	5,898	648	14,496	12,564	0	0	3,004	4,371	5,819	13,193	12,301	26,466	888	1,303	27,769	853	31,951	32,214	263
2015	8,986	100	181	833	774	2,400	0	0	103	2,371	3,952	532	0	0	321	926	7,949	632	22,266	14,378	0	0	3,654	5,444	5,995	15,094	13,270	27,769	853	7,172	34,941	701	32,214	33,322	1,108
2016	0	100	181	833	774	2,400	0	0	111	2,371	0	532	0	0	341	1,005	7,973	630	9,380	10,384	0	0	2,869	5,612	5,895	14,376	10,974	34,941	701	-4,996	29,945	804	33,322	32,732	-590
2017	0	100	181	833	775	2,400	0	0	118	2,371	0	532	0	0	351	1,033	6,506	629	7,931	9,173	0	0	1,336	4,660	5,570	11,566	11,182	29,945	804	-3,636	26,309	859	32,732	30,723	-2,009
2018	1,818	100	181	833	775	2,400	0	0	125	2,371	3,992	532	0	0	359	1,000	6,610	629	13,860	12,413	0	0	1,990	4,603	5,635	12,228	11,955	26,309	859	1,632	27,942	821	30,723	31,181	458
2019	265	100	181	833	776	2,400	0	0	133	2,371	718	532	0	0	350	1,043	8,284	632	10,706	11,337	0	0	2,032	5,266	6,714	14,012	13,369	27,942	821	-3,306	24,635	870	31,181	29,148	-2,032
2020	1,056	100	181	833	777	2,400	0	0	140	2,371	2,381	532	0	0	365	1,034	6,737	634	11,637	11,380	0	0	1,988	4,526	7,631	14,145	14,383	24,635	870	-2,508	22,127	869	29,148	26,145	-3,004
2021	0	100	181	833	777	2,400	0	0	147	2,371	0	532	0	0	399	1,049	7,303	639	8,807	10,129	0	0	1,158	4,606	6,841	12,605	13,525	22,127	869	-3,798	18,329	913	26,145	22,749	-3,396
2022	0	100	181	833	778	2,400	0	0	155	2,371	0	532	0	0	407	1,046	7,656	644	9,176	10,523	0	0	641	4,695	7,299	12,634	14,885	18,329	913	-3,458	14,871	909	22,749	18,386	-4,363
2023	2,221	100	181	833	778	2,400	0	0	162	2,371	4,160	532	0	0	399	976	7,733	644	15,634	13,882	0	0	1,778	4,860	8,634	15,272	16,683	14,871	909	362	15,233	752	18,386	15,585	-2,801
2024	6,294	100	181	833	779	2,400	0	0	169	2,371	5,602	532	0	0	415	880	7,784	636	21,224	15,427	0	0	3,291	5,093	9,390	17,773	14,817	15,233	752	3,451	18,684	638	15,585	16,195	611
2025	5,383	100	181	833	779	2,400	0	0	177	2,371	6,749	532	0	0	409	844	9,956	630	23,633	17,926	0	0	3,925	6,385	6,698	17,008	11,340	18,684	638	6,625	25,309	662	16,195	22,782	6,586
2026	0	100	181	833	780	2,400	0	0	184	2,371	0	532	0	0	382	943	9,740	635	11,267	12,247	0	0	2,752	6,115	6,755	15,622	11,584	25,309	662	-4,355	20,954	823	22,782	23,444	662
2027	5,440	100	181	833	780	2,400	0	0	191	2,371	6,946	532	0	0	317	879	7,174	629	21,030	15,648	0	0	3,643	5,043	6,144	14,830	12,517	20,954	823	6,200	27,154	720	23,444	26,576	3,132
2028	1,971	100	181	833	781	2,400	0	0	199	2,371	3,950	532	0	0	306	911	8,915	630	16,301	14,539	0	0	3,258	5,909	5,878	15,046	11,536	27,154	720	1,255	28,409	766	26,576	29,578	3,003
2029	541	100	181	833	782	2,400	0	0	206	2,371	1,290	532	0	0	295	980	8,093	635	11,386	11,801	0	0	2,680	5,351	5,672	13,703	11,477	28,409	766	-2,317	26,092	843	29,578	29,902	324
2030	6,691	100	181	833	782	2,400	0	0	213	2,371	6,310	532	0	0	266	912	8,894	626	23,337	16,822	0	0	4,022	6,386	6,317	16,725	14,558	26,092	843	6,612	32,705	723	29,902	32,167	2,264
2031	0	100	181	833	783	2,400	0	0	221	2,371	0	532	0	0	305	976	8,493	632	9,981	11,170	0	0	2,131	5,727	5,715	13,573	11,254	32,705	723	-3,592	29,113	811	32,167	32,083	-84
2032	398	100	181	833	783	2,400	0	0	228	2,371	988	532	0	0	312	999	8,113	636	11,003	11,705	0	0	1,578	5,357	5,540	12,475	12,009	29,113	811	-1,472	27,641	846	32,083	31,780	-304
2033	2,920	100	181	833	784	2,400	0	0	235	2,371	4,407	532	0	0	314	949	6,391	635	15,232	13,030	0	0	2,214	4,529	6,770	13,513	12,991	27,641	846	1,720	29,361	797	31,780	31,819	40
2034	0	100	181	833	784	2,400	0	0	243	2,371	0	532	0	0	344	1,002	6,724	641	8,276	9,871	0	0	1,679	4,641	5,741	12,061	11,251	29,361	797	-3,784	25,576	875	31,819	30,439	-1,380
2035	990	100	181	833	785	2,400	0	0	250	2,371	2,240	532	0	0	347	1,000	6,695	644	11,487	11,656	0	0	1,470	4,544	5,450	11,464	11,894	25,576	875	22	25,599	868	30,439	30,201	-239

Table I-33b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Chloride Conc. for Applied Recycled Water	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Chloride Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	40	181	95	772	275	0	0	0	400	6,085	65	0	0	292	111	7,741	39	19,285	1,541	0	0	3,696	5,579	6,113	15,388	1,636	25,728	103	3,898	29,626	87	3,600	3,505	-95
2013	274	40	181	95	773	275	0	0	89	400	737	65	0	0	323	115	7,805	40	10,181	914	0	0	2,366	5,283	5,691	13,340	1,298	29,626	87	-3,159	26,466	87	3,505	3,121	-384
2014	2,277	40	181	95	773	275	0	0	96	400	4,962	65	0	0	309	113	5,898	40	14,496	1,301	0	0	3,004	4,371	5,819	13,193	1,202	26,466	87	1,303	27,769	85	3,121	3,220	99
2015	8,986	40	181	95	774	275	0	0	103	400	3,952	65	0	0	321	106	7,949	41	22,266	1,697	0	0	3,654	5,444	5,995	15,094	1,327	27,769	85	7,172	34,941	76	3,220	3,591	371
2016	0	40	181	95	774	275	0	0	111	400	0	65	0	0	341	113	7,973	41	9,380	865	0	0	2,869	5,612	5,895	14,376	1,183	34,941	76	-4,996	29,945	80	3,591	3,273	-318
2017	0	40	181	95	775	275	0	0	118	400	0	65	0	0	351	113	6,506	40	7,931	788	0	0	1,336	4,660	5,570	11,566	1,118	29,945	80	-3,636	26,309	82	3,273	2,943	-330
2018	1,818	40	181	95	775	275	0	0	125	400	3,992	65	0	0	359	109	6,610	41	13,860	1,255	0	0	1,990	4,603	5,635	12,228	1,145	26,309	82	1,632	27,942	80	2,943	3,053	110
2019	265	40	181	95	776	275	0	0	133	400	718	65	0	0	350	112	8,284	41	10,706	983	0	0	2,032	5,266	6,714	14,012	1,309	27,942	80	-3,306	24,635	81	3,053	2,727	-326
2020	1,056	40	181	95	777	275	0	0	140	400	2,381	65	0	0	365	110	6,737	42	11,637	1,099	0	0	1,988	4,526	7,631	14,145	1,346	24,635	81	-2,508	22,127	82	2,727	2,481	-247
2021	0	40	181	95	777	275	0	0	147	400	0	65	0	0	399	110	7,303	43	8,807	878	0	0	1,158	4,606	6,841	12,605	1,283	22,127	82	-3,798	18,329	83	2,481	2,075	-405
2022	0	40	181	95	778	275	0	0	155	400	0	65	0	0	407	107	7,656	44	9,176	911	0	0	641	4,695	7,299	12,634	1,358	18,329	83	-3,458	14,871	81	2,075	1,628	-447
2023	2,221	40	181	95	778	275	0	0	162	400	4,160	65	0	0	399	102	7,733	44	15,634	1,416	0	0	1,778	4,860	8,634	15,272	1,477	14,871	81	362	15,233	76	1,628	1,567	-61
2024	6,294	40	181	95	779	275	0	0	169	400	5,602	65	0	0	415	97	7,784	46	21,224	1,784	0	0	3,291	5,093	9,390	17,773	1,490	15,233	76	3,451	18,684	73	1,567	1,861	294
2025	5,383	40	181	95	779	275	0	0	177	400	6,749	65	0	0	409	97	9,956	46	23,633	1,987	0	0	3,925	6,385	6,698	17,008	1,303	18,684	73	6,625	25,309	74	1,861	2,545	684
2026	0	40	181	95	780	275	0	0	184	400	0	65	0	0	382	105	9,740	47	11,267	1,097	0	0	2,752	6,115	6,755	15,622	1,294	25,309	74	-4,355	20,954	82	2,545	2,348	-197
2027	5,440	40	181	95	780	275	0	0	191	400	6,946	65	0	0	317	102	7,174	48	21,030	1,846	0	0	3,643	5,043	6,144	14,830	1,253	20,954	82	6,200	27,154	80	2,348	2,940	593
2028	1,971	40	181	95	781	275	0	0	199	400	3,950	65	0	0	306	106	8,915	49	16,301	1,518	0	0	3,258	5,909	5,878	15,046	1,276	27,154	80	1,255	28,409	82	2,940	3,182	242
2029	541	40	181	95	782	275	0	0	206	400	1,290	65	0	0	295	112	8,093	50	11,386	1,163	0	0	2,680	5,351	5,672	13,703	1,235	28,409	82	-2,317	26,092	88	3,182	3,110	-72
2030	6,691	40	181	95	782	275	0	0	213	400	6,310	65	0	0	266	108	8,894	50	23,337	2,005	0	0	4,022	6,386	6,317	16,725	1,514	26,092	88	6,612	32,705	81	3,110	3,601	491
2031	0	40	181	95	783	275	0	0	221	400	0	65	0	0	305	113	8,493	51	9,981	1,073	0	0	2,131	5,727	5,715	13,573	1,260	32,705	81	-3,592	29,113	86	3,601	3,414	-187
2032	398	40	181	95	783	275	0	0	228	400	988	65	0	0	312	114	8,113	52	11,003	1,170	0	0	1,578	5,357	5,540	12,475	1,278	29,113	86	-1,472	27,641	88	3,414	3,306	-108
2033	2,920	40	181	95	784	275	0	0	235	400	4,407	65	0	0	314	109	6,391	52	15,232	1,498	0	0	2,214	4,529	6,770	13,513	1,352	27,641	88	1,720	29,361	86	3,306	3,453	146
2034	0	40	181	95	784	275	0	0	243	400	0	65	0	0	344	114	6,724	53	8,276	989	0	0	1,679	4,641	5,741	12,061	1,221	29,361	86	-3,784	25,576	93	3,453	3,220	-232
2035	990	40	181	95	785	275	0	0	250	400	2,240	65	0	0	347	113	6,695	54	11,487	1,250	0	0	1,470	4,544	5,450	11,464	1,258	25,576	93	22	25,599	92	3,220	3,212	-8

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-33c

Projected Chloride Mass Loading and Concentration Changes - Sensitivity Run - Management Zone 3 (South Fork Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Chloride Conc. for Applied Recycled Water	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Chloride Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	40	181	95	772	275	0	0	0	500	6,085	65	0	0	292	111	7,741	39	19,285	1,541	0	0	3,696	5,579	6,113	15,388	1,636	25,728	103	3,898	29,626	87	3,600	3,505	-95
2013	274	40	181	95	773	275	0	0	89	500	737	65	0	0	323	115	7,805	40	10,181	926	0	0	2,366	5,283	5,691	13,340	1,298	29,626	87	-3,159	26,466	87	3,505	3,133	-372
2014	2,277	40	181	95	773	275	0	0	96	500	4,962	65	0	0	309	113	5,898	40	14,496	1,314	0	0	3,004	4,371	5,819	13,193	1,206	26,466	87	1,303	27,769	86	3,133	3,241	108
2015	8,986	40	181	95	774	275	0	0	103	500	3,952	65	0	0	321	106	7,949	41	22,266	1,711	0	0	3,654	5,444	5,995	15,094	1,335	27,769	86	7,172	34,941	76	3,241	3,617	376
2016	0	40	181	95	774	275	0	0	111	500	0	65	0	0	341	113	7,973	41	9,380	880	0	0	2,869	5,612	5,895	14,376	1,191	34,941	76	-4,996	29,945	81	3,617	3,306	-311
2017	0	40	181	95	775	275	0	0	118	500	0	65	0	0	351	113	6,506	40	7,931	804	0	0	1,336	4,660	5,570	11,566	1,129	29,945	81	-3,636	26,309	83	3,306	2,980	-325
2018	1,818	40	181	95	775	275	0	0	125	500	3,992	65	0	0	359	109	6,610	41	13,860	1,272	0	0	1,990	4,603	5,635	12,228	1,160	26,309	83	1,632	27,942	81	2,980	3,093	113
2019	265	40	181	95	776	275	0	0	133	500	718	65	0	0	350	112	8,284	41	10,706	1,001	0	0	2,032	5,266	6,714	14,012	1,326	27,942	81	-3,306	24,635	83	3,093	2,768	-325
2020	1,056	40	181	95	777	275	0	0	140	500	2,381	65	0	0	365	110	6,737	42	11,637	1,118	0	0	1,988	4,526	7,631	14,145	1,366	24,635	83	-2,508	22,127	84	2,768	2,520	-248
2021	0	40	181	95	777	275	0	0	147	500	0	65	0	0	399	110	7,303	43	8,807	898	0	0	1,158	4,606	6,841	12,605	1,304	22,127	84	-3,798	18,329	85	2,520	2,115	-406
2022	0	40	181	95	778	275	0	0	155	500	0	65	0	0	407	107	7,656	44	9,176	932	0	0	641	4,695	7,299	12,634	1,384	18,329	85	-3,458	14,871	82	2,115	1,663	-452
2023	2,221	40	181	95	778	275	0	0	162	500	4,160	65	0	0	399	102	7,733	44	15,634	1,438	0	0	1,778	4,860	8,634	15,272	1,509	14,871	82	362	15,233	77	1,663	1,592	-71
2024	6,294	40	181	95	779	275	0	0	169	500	5,602	65	0	0	415	97	7,784	46	21,224	1,807	0	0	3,291	5,093	9,390	17,773	1,514	15,233	77	3,451	18,684	74	1,592	1,885	293
2025	5,383	40	181	95	779	275	0	0	177	500	6,749	65	0	0	409	97	9,956	46	23,633	2,011	0	0	3,925	6,385	6,698	17,008	1,320	18,684	74	6,625	25,309	75	1,885	2,576	691
2026	0	40	181	95	780	275	0	0	184	500	0	65	0	0	382	105	9,740	47	11,267	1,122	0	0	2,752	6,115	6,755	15,622	1,310	25,309	75	-4,355	20,954	84	2,576	2,388	-188
2027	5,440	40	181	95	780	275	0	0	191	500	6,946	65	0	0	317	102	7,174	48	21,030	1,872	0	0	3,643	5,043	6,144	14,830	1,275	20,954	84	6,200	27,154	81	2,388	2,985	597
2028	1,971	40	181	95	781	275	0	0	199	500	3,950	65	0	0	306	106	8,915	49	16,301	1,546	0	0	3,258	5,909	5,878	15,046	1,296	27,154	81	1,255	28,409	84	2,985	3,235	250
2029	541	40	181	95	782	275	0	0	206	500	1,290	65	0	0	295	112	8,093	50	11,386	1,191	0	0	2,680	5,351	5,672	13,703	1,255	28,409	84	-2,317	26,092	89	3,235	3,171	-64
2030	6,691	40	181	95	782	275	0	0	213	500	6,310	65	0	0	266	108	8,894	50	23,337	2,034	0	0	4,022	6,386	6,317	16,725	1,544	26,092	89	6,612	32,705	82	3,171	3,661	490
2031	0	40	181	95	783	275	0	0	221	500	0	65	0	0	305	113	8,493	51	9,981	1,103	0	0	2,131	5,727	5,715	13,573	1,281	32,705	82	-3,592	29,113	88	3,661	3,484	-178
2032	398	40	181	95	783	275	0	0	228	500	988	65	0	0	312	114	8,113	52	11,003	1,201	0	0	1,578	5,357	5,540	12,475	1,304	29,113	88	-1,472	27,641	90	3,484	3,381	-103
2033	2,920	40	181	95	784	275	0	0	235	500	4,407	65	0	0	314	109	6,391	52	15,232	1,530	0	0	2,214	4,529	6,770	13,513	1,382	27,641	90	1,720	29,361	88	3,381	3,529	148
2034	0	40	181	95	784	275	0	0	243	500	0	65	0	0	344	114	6,724	53	8,276	1,022	0	0	1,679	4,641	5,741	12,061	1,248	29,361	88	-3,784	25,576	95	3,529	3,303	-226
2035	990	40	181	95	785	275	0	0	250	500	2,240	65	0	0	347	113	6,695	54	11,487	1,284	0	0	1,470	4,544	5,450	11,464	1,290	25,576	95	22	25,599	95	3,303	3,296	-7

Table I-33d

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	Nitrate Conc. for Applied Recycled Water [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	Nitrate Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,214	9	181	46	772	17	0	0	0	51	6,085	7	0	0	292	29	7,741	20	19,285	360	0	0	3,696	5,579	6,113	15,388	323	25,728	20	3,898	29,626	19	710	747	38
2013	274	9	181	46	773	17	0	0	89	51	737	7	0	0	323	31	7,805	20	10,181	272	0	0	2,366	5,283	5,691	13,340	277	29,626	19	-3,159	26,466	21	747	742	-5
2014	2,277	9	181	46	773	17	0	0	96	51	4,962	7	0	0	309	29	5,898	20	14,496	283	0	0	3,004	4,371	5,819	13,193	286	26,466	21	1,303	27,769	20	742	740	-3
2015	8,986	9	181	46	774	17	0	0	103	51	3,952	7	0	0	321	27	7,949	20	22,266	406	0	0	3,654	5,444	5,995	15,094	305	27,769	20	7,172	34,941	18	740	841	101
2016	0	9	181	46	774	17	0	0	111	51	0	7	0	0	341	29	7,973	20	9,380	263	0	0	2,869	5,612	5,895	14,376	277	34,941	18	-4,996	29,945	20	841	827	-14
2017	0	9	181	46	775	17	0	0	118	51	0	7	0	0	351	31	6,506	20	7,931	226	0	0	1,336	4,660	5,570	11,566	282	29,945	20	-3,636	26,309	22	827	770	-57
2018	1,818	9	181	46	775	17	0	0	125	51	3,992	7	0	0	359	29	6,610	20	13,860	288	0	0	1,990	4,603	5,635	12,228	300	26,309	22	1,632	27,942	20	770	759	-11
2019	265	9	181	46	776	17	0	0	133	51	718	7	0	0	350	31	8,284	20	10,706	284	0	0	2,032	5,266	6,714	14,012	325	27,942	20	-3,306	24,635	21	759	717	-41
2020	1,056	9	181	46	777	17	0	0	140	51	2,381	7	0	0	365	30	6,737	20	11,637	269	0	0	1,988	4,526	7,631	14,145	354	24,635	21	-2,508	22,127	21	717	633	-85
2021	0	9	181	46	777	17	0	0	147	51	0	7	0	0	399	31	7,303	20	8,807	251	0	0	1,158	4,606	6,841	12,605	327	22,127	21	-3,798	18,329	22	633	556	-76
2022	0	9	181	46	778	17	0	0	155	51	0	7	0	0	407	31	7,656	20	9,176	262	0	0	641	4,695	7,299	12,634	364	18,329	22	-3,458	14,871	22	556	454	-102
2023	2,221	9	181	46	778	17	0	0	162	51	4,160	7	0	0	399	28	7,733	20	15,634	328	0	0	1,778	4,860	8,634	15,272	412	14,871	22	362	15,233	18	454	370	-84
2024	6,294	9	181	46	779	17	0	0	169	51	5,602	7	0	0	415	25	7,784	19	21,224	389	0	0	3,291	5,093	9,390	17,773	352	15,233	18	3,451	18,684	16	370	407	37
2025	5,383	9	181	46	779	17	0	0	177	51	6,749	7	0	0	409	23	9,956	19	23,633	442	0	0	3,925	6,385	6,698	17,008	285	18,684	16	6,625	25,309	16	407	564	157
2026	0	9	181	46	780	17	0	0	184	51	0	7	0	0	382	27	9,740	19	11,267	309	0	0	2,752	6,115	6,755	15,622	287	25,309	16	-4,355	20,954	21	564	586	22
2027	5,440	9	181	46	780	17	0	0	191	51	6,946	7	0	0	317	24	7,174	19	21,030	370	0	0	3,643	5,043	6,144	14,830	313	20,954	21	6,200	27,154	17	586	643	56
2028	1,971	9	181	46	781	17	0	0	199	51	3,950	7	0	0	306	25	8,915	19	16,301	344	0	0	3,258	5,909	5,878	15,046	279	27,154	17	1,255	28,409	18	643	708	65
2029	541	9	181	46	782	17	0	0	206	51	1,290	7	0	0	295	27	8,093	19	11,386	281	0	0	2,680	5,351	5,672	13,703	275	28,409	18	-2,317	26,092	20	708	714	7
2030	6,691	9	181	46	782	17	0	0	213	51	6,310	7	0	0	266	25	8,894	19	23,337	420	0	0	4,022	6,386	6,317	16,725	348	26,092	20	6,612	32,705	18	714	786	72
2031	0	9	181	46	783	17	0	0	221	51	0	7	0	0	305	27	8,493	19	9,981	272	0	0	2,131	5,727	5,715	13,573	275	32,705	18	-3,592	29,113	20	786	783	-3
2032	398	9	181	46	783	17	0	0	228	51	988	7	0	0	312	28	8,113	19	11,003	278	0	0	1,578	5,357	5,540	12,475	293	29,113	20	-1,472	27,641	20	783	767	-15
2033	2,920	9	181	46	784	17	0	0	235	51	4,407	7	0	0	314	26	6,391	19	15,232	296	0	0	2,214	4,529	6,770	13,513	314	27,641	20	1,720	29,361	19	767	750	-18
2034	0	9	181	46	784	17	0	0	243	51	0	7	0	0	344	28	6,724	19	8,276	230	0	0	1,679	4,641	5,741	12,061	265	29,361	19	-3,784	25,576	21	750	715	-35
2035	990	9	181	46	785	17	0	0	250	51	2,240	7	0	0	347	28	6,695	19	11,487	263	0	0	1,470	4,544	5,450	11,464	279	25,576	21	22	25,599	20	715	698	-16

Table I-33e

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Sulfate Conc.. for Applied Recycled Water	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Sulfate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	40	181	178	772	512	0	0	0	558	6,085	103	0	0	292	222	7,741	266	19,285	4,548	0	0	3,696	5,579	6,113	15,388	3,571	25,728	225	3,898	29,626	219	7,858	8,835	977
2013	274	40	181	178	773	512	0	0	89	558	737	103	0	0	323	243	7,805	266	10,181	3,700	0	0	2,366	5,283	5,691	13,340	3,273	29,626	219	-3,159	26,466	257	8,835	9,262	428
2014	2,277	40	181	178	773	512	0	0	96	558	4,962	103	0	0	309	240	5,898	265	14,496	3,695	0	0	3,004	4,371	5,819	13,193	3,566	26,466	257	1,303	27,769	249	9,262	9,392	129
2015	8,986	40	181	178	774	512	0	0	103	558	3,952	103	0	0	321	221	7,949	257	22,266	4,579	0	0	3,654	5,444	5,995	15,094	3,869	27,769	249	7,172	34,941	213	9,392	10,102	710
2016	0	40	181	178	774	512	0	0	111	558	0	103	0	0	341	245	7,973	257	9,380	3,570	0	0	2,869	5,612	5,895	14,376	3,327	34,941	213	-4,996	29,945	254	10,102	10,345	243
2017	0	40	181	178	775	512	0	0	118	558	0	103	0	0	351	258	6,506	258	7,931	3,076	0	0	1,336	4,660	5,570	11,566	3,534	29,945	254	-3,636	26,309	276	10,345	9,886	-458
2018	1,818	40	181	178	775	512	0	0	125	558	3,992	103	0	0	359	252	6,610	257	13,860	3,764	0	0	1,990	4,603	5,635	12,228	3,847	26,309	276	1,632	27,942	258	9,886	9,803	-83
2019	265	40	181	178	776	512	0	0	133	558	718	103	0	0	350	268	8,284	257	10,706	3,821	0	0	2,032	5,266	6,714	14,012	4,203	27,942	258	-3,306	24,635	281	9,803	9,421	-382
2020	1,056	40	181	178	777	512	0	0	140	558	2,381	103	0	0	365	269	6,737	257	11,637	3,564	0	0	1,988	4,526	7,631	14,145	4,649	24,635	281	-2,508	22,127	277	9,421	8,336	-1,085
2021	0	40	181	178	777	512	0	0	147	558	0	103	0	0	399	279	7,303	257	8,807	3,402	0	0	1,158	4,606	6,841	12,605	4,312	22,127	277	-3,798	18,329	298	8,336	7,426	-911
2022	0	40	181	178	778	512	0	0	155	558	0	103	0	0	407	284	7,656	258	9,176	3,543	0	0	641	4,695	7,299	12,634	4,859	18,329	298	-3,458	14,871	302	7,426	6,110	-1,316
2023	2,221	40	181	178	778	512	0	0	162	558	4,160	103	0	0	399	262	7,733	256	15,634	4,246	0	0	1,778	4,860	8,634	15,272	5,544	14,871	302	362	15,233	232	6,110	4,812	-1,298
2024	6,294	40	181	178	779	512	0	0	169	558	5,602	103	0	0	415	230	7,784	251	21,224	4,623	0	0	3,291	5,093	9,390	17,773	4,574	15,233	232	3,451	18,684	191	4,812	4,860	48
2025	5,383	40	181	178	779	512	0	0	177	558	6,749	103	0	0	409	216	9,956	247	23,633	5,412	0	0	3,925	6,385	6,698	17,008	3,403	18,684	191	6,625	25,309	200	4,860	6,869	2,009
2026	0	40	181	178	780	512	0	0	184	558	0	103	0	0	382	246	9,740	247	11,267	4,128	0	0	2,752	6,115	6,755	15,622	3,493	25,309	200	-4,355	20,954	263	6,869	7,504	635
2027	5,440	40	181	178	780	512	0	0	191	558	6,946	103	0	0	317	224	7,174	243	21,030	4,467	0	0	3,643	5,043	6,144	14,830	4,006	20,954	263	6,200	27,154	216	7,504	7,964	461
2028	1,971	40	181	178	781	512	0	0	199	558	3,950	103	0	0	306	230	8,915	242	16,301	4,430	0	0	3,258	5,909	5,878	15,046	3,457	27,154	216	1,255	28,409	231	7,964	8,937	973
2029	541	40	181	178	782	512	0	0	206	558	1,290	103	0	0	295	250	8,093	243	11,386	3,725	0	0	2,680	5,351	5,672	13,703	3,468	28,409	231	-2,317	26,092	259	8,937	9,195	257
2030	6,691	40	181	178	782	512	0	0	213	558	6,310	103	0	0	266	228	8,894	238	23,337	4,956	0	0	4,022	6,386	6,317	16,725	4,476	26,092	259	6,612	32,705	218	9,195	9,674	480
2031	0	40	181	178	783	512	0	0	221	558	0	103	0	0	305	248	8,493	239	9,981	3,618	0	0	2,131	5,727	5,715	13,573	3,385	32,705	218	-3,592	29,113	250	9,674	9,908	234
2032	398	40	181	178	783	512	0	0	228	558	988	103	0	0	312	257	8,113	240	11,003	3,672	0	0	1,578	5,357	5,540	12,475	3,708	29,113	250	-1,472	27,641	263	9,908	9,872	-36
2033	2,920	40	181	178	784	512	0	0	235	558	4,407	103	0	0	314	242	6,391	238	15,232	3,712	0	0	2,214	4,529	6,770	13,513	4,035	27,641	263	1,720	29,361	239	9,872	9,549	-323
2034	0	40	181	178	784	512	0	0	243	558	0	103	0	0	344	258	6,724	239	8,276	3,077	0	0	1,679	4,641	5,741	12,061	3,376	29,361	239	-3,784	25,576	266	9,549	9,250	-299
2035	990	40	181	178	785	512	0	0	250	558	2,240	103	0	0	347	258	6,695	239	11,487	3,441	0	0	1,470	4,544	5,450	11,464	3,614	25,576	266	22	25,599	261	9,250	9,077	-173

Table I-34a

Projected TDS Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	TDS Conc. for Applied Recycled Water [mg/L]	Saugus WRP Infiltration [acre-ft]	TDS Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	TDS Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	TDS Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	100	148	783	666	2,256	0	4,991	81	2,371	4,100	671	11,675	671	0	0	14,829	722	5,579	700	-5,182	700	36,788	32,461	13,388	6,543	1,102	7,025	2,202	30,260	29,526	78,359	745	6,528	84,888	713	79,349	82,284	2,935
2013	318	100	147	783	667	2,256	0	4,991	89	2,371	4,100	671	623	671	0	0	14,012	747	5,283	700	-1,853	700	23,385	24,333	13,370	5,290	763	7,327	2,152	28,902	27,276	84,888	713	-5,517	79,371	735	82,284	79,341	-2,943
2014	2,643	100	147	783	668	2,256	0	4,991	96	2,371	4,100	671	9,328	671	0	0	14,762	739	4,371	700	-1,307	700	34,808	32,881	19,000	4,129	642	8,008	1,988	33,766	33,112	79,371	735	1,042	80,413	724	79,341	79,111	-231
2015	10,432	100	147	783	669	2,256	0	4,991	103	2,371	4,100	671	7,637	671	0	0	14,876	675	5,444	700	-2,935	700	40,475	30,716	13,370	6,633	1,215	7,370	2,077	30,665	28,973	80,413	724	9,810	90,222	659	79,111	80,853	1,743
2016	0	100	148	783	671	2,256	0	4,991	111	2,371	4,100	671	22	671	0	0	15,133	714	5,612	700	-1,341	700	24,455	25,095	13,388	6,166	1,189	7,743	2,067	30,553	26,314	90,222	659	-6,097	84,125	696	80,853	79,633	-1,220
2017	0	100	147	783	672	2,256	0	4,991	118	2,371	4,100	671	1,107	671	0	0	15,667	743	4,660	700	848	700	27,319	28,416	19,000	3,885	533	8,261	1,907	33,586	31,288	84,125	696	-6,266	77,859	725	79,633	76,761	-2,872
2018	2,110	100	147	783	673	2,256	0	4,991	125	2,371	4,100	671	6,804	671	0	0	15,809	743	4,603	700	-1,083	700	33,288	32,174	19,000	3,363	368	8,124	1,874	32,729	31,904	77,859	725	560	78,418	722	76,761	77,031	269
2019	307	100	147	783	674	2,256	0	4,991	133	2,371	4,100	671	1,495	671	0	0	14,351	760	5,266	700	-3,014	700	23,458	24,776	13,370	3,153	354	7,742	2,770	27,388	26,556	78,418	722	-3,930	74,488	743	77,031	75,251	-1,780
2020	1,226	100	148	783	676	2,256	1	4,991	140	2,371	4,100	671	3,145	671	0	0	15,098	761	4,526	700	-549	700	28,511	28,878	19,025	1,993	233	8,101	3,847	33,200	33,304	74,488	743	-4,689	69,799	746	75,251	70,825	-4,426
2021	0	100	147	783	677	2,256	5	4,991	147	2,371	4,100	671	1,865	671	0	0	15,548	777	4,606	700	-1,231	700	25,864	27,813	19,000	1,039	145	7,777	2,964	30,926	31,233	69,799	746	-5,061	64,738	766	70,825	67,405	-3,420
2022	0	100	147	783	678	2,256	8	4,991	155	2,371	4,100	671	2,046	671	0	0	15,646	787	4,695	700	-1,738	700	25,736	27,946	19,000	446	103	7,575	3,913	31,037	32,208	64,738	766	-5,301	59,437	781	67,405	63,143	-4,262
2023	2,579	100	147	783	679	2,256	10	4,991	162	2,371	4,100	671	7,378	671	0	0	15,878	757	4,860	700	-3,762	700	32,032	31,033	19,000	116	59	7,195	5,828	32,198	34,143	59,437	781	-166	59,271	745	63,143	60,033	-3,110
2024	7,308	100	148	783	681	2,256	10	4,991	169	2,371	4,100	671	12,189	671	0	0	16,430	700	5,093	700	-6,421	700	39,706	33,086	19,025	89	57	6,910	6,185	32,266	32,623	59,271	745	7,440	66,711	667	60,033	60,495	462
2025	6,249	100	147	783	682	2,256	11	4,991	177	2,371	4,100	671	15,600	671	0	0	16,565	695	6,385	700	-11,665	700	38,251	32,343	13,370	1,542	341	6,661	3,074	24,988	22,350	66,711	667	13,263	79,973	648	60,495	70,487	9,992
2026	0	100	147	783	683	2,256	11	4,991	184	2,371	4,100	671	1,616	671	0	0	15,076	733	6,115	700	-6,621	700	21,312	22,676	13,370	2,478	340	7,167	3,302	26,658	23,196	79,973	648	-5,346	74,627	690	70,487	69,967	-520
2027	6,316	100	147	783	684	2,256	12	4,991	191	2,371	4,100	671	18,602	671	0	0	15,461	708	5,043	700	-7,168	700	43,389	37,380	19,000	3,486	848	7,540	2,460	33,333	30,457	74,627	690	10,056	84,683	668	69,967	76,890	6,923
2028	2,288	100	148	783	686	2,256	12	4,991	199	2,371	4,100	671	6,191	671	0	0	14,581	724	5,909	700	-6,388	700	27,725	26,583	13,388	3,997	959	7,278	2,396	28,018	24,569	84,683	668	-293	84,390	688	76,890	78,904	2,014
2029	628	100	147	783	687	2,256	12	4,991	206	2,371	4,100	671	1,321	671	0	0	13,788	748	5,351	700	-3,217	700	23,022	24,099	13,370	4,157	668	7,520	2,351	28,065	25,617	84,390	688	-5,043	79,347	717	78,904	77,387	-1,518
2030	7,768	100	147	783	688	2,256	12	4,991	213	2,371	4,100	671	10,899	671	0	0	16,691	710	6,386	700	-6,483	700	40,423	33,807	13,370	6,759	1,511	7,590	2,348	31,578	29,324	79,347	717	8,844	88,191	683	77,387	81,869	4,483
2031	0	100	147	783	689	2,256	12	4,991	221	2,371	4,100	671	334	671	0	0	15,167	744	5,727	700	-2,158	700	24,239	25,840	13,370	5,605	949	7,347	2,196	29,467	26,474	88,191	683	-5,229	82,962	720	81,869	81,236	-634
2032	462	100	148	783	691	2,256	12	4,991	228	2,371	4,100	671	908	671	0	0	14,269	763	5,357	700	-1,941	700	24,233	25,769	13,388	4,630	601	7,722	2,213	28,554	27,371	82,962	720	-4,321	78,641	745	81,236	79,634	-1,602
2033	3,390	100	147	783	692	2,256	12	4,991	235	2,371	4,100	671	9,510	671	0	0	14,985	743	4,529	700	-1,642	700	35,958	33,892	19,000	3,599	451	8,143	2,652	33,846	33,816	78,641	745	2,112	80,753	726	79,634	79,710	76
2034	0	100	147	783	693	2,256	12	4,991	243	2,371	4,100	671	1,593	671	0	0	15,452	767	4,641	700	-826	700	26,055	28,092	19,000	2,424	274	8,055	2,052	31,805	31,124	80,753	726	-5,750	75,003	752	79,710	76,678	-3,032
2035	1,149	100	147	783	694	2,256	12	4,991	250	2,371	4,100	671	3,133	671	0	0	15,522	770	4,544	700	-670	700	28,881	29,859	19,000	2,279	233	7,800	1,914	31,226	31,685	75,003	752	-2,345	72,658	758	76,678	74,852	-1,826

Table I-34b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Chloride Conc. for Applied Recycled Water	Saugus WRP Infiltration	Chloride Conc. for Saugus WRP Infiltration	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Chloride Conc. for Inflow From MZ1	Inflow From MZ3	Chloride Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]
2012	4,893	40	148	109	666	314	0	694	81	400	4,100	126	11,675	89	0	0	14,829	87	5,579	28	-5,182	28	36,788	4,494
2013	318	40	147	109	667	314	0	694	89	400	4,100	126	623	89	0	0	14,012	87	5,283	28	-1,853	28	23,385	2,943
2014	2,643	40	147	109	668	314	0	694	96	400	4,100	126	9,328	89	0	0	14,762	88	4,371	28	-1,307	28	34,808	4,208
2015	10,432	40	147	109	669	314	0	694	103	400	4,100	126	7,637	89	0	0	14,876	85	5,444	28	-2,935	28	40,475	4,379
2016	0	40	148	109	671	314	0	694	111	400	4,100	126	22	89	0	0	15,133	87	5,612	28	-1,341	28	24,455	3,028
2017	0	40	147	109	672	314	0	694	118	400	4,100	126	1,107	89	0	0	15,667	89	4,660	28	848	28	27,319	3,309
2018	2,110	40	147	109	673	314	0	694	125	400	4,100	126	6,804	89	0	0	15,809	89	4,603	28	-1,083	28	33,288	4,056
2019	307	40	147	109	674	314	0	694	133	400	4,100	126	1,495	89	0	0	14,351	88	5,266	28	-3,014	28	23,458	3,088
2020	1,226	40	148	109	676	314	1	694	140	400	4,100	126	3,145	89	0	0	15,098	88	4,526	28	-549	28	28,511	3,503
2021	0	40	147	109	677	314	5	694	147	400	4,100	126	1,865	89	0	0	15,548	89	4,606	28	-1,231	28	25,864	3,343
2022	0	40	147	109	678	314	8	694	155	400	4,100	126	2,046	89	0	0	15,646	91	4,695	28	-1,738	28	25,736	3,392
2023	2,579	40	147	109	679	314	10	694	162	400	4,100	126	7,378	89	0	0	15,878	89	4,860	28	-3,762	28	32,032	4,113
2024	7,308	40	148	109	681	314	10	694	169	400	4,100	126	12,189	89	0	0	16,430	87	5,093	28	-6,421	28	39,706	4,887
2025	6,249	40	147	109	682	314	11	694	177	400	4,100	126	15,600	89	0	0	16,565	88	6,385	28	-11,665	28	38,251	5,135
2026	0	40	147	109	683	314	11	694	184	400	4,100	126	1,616	89	0	0	15,076	89	6,115	28	-6,621	28	21,312	3,126
2027	6,316	40	147	109	684	314	12	694	191	400	4,100	126	18,602	89	0	0	15,461	88	5,043	28	-7,168	28	43,389	5,490
2028	2,288	40	148	109	686	314	12	694	199	400	4,100	126	6,191	89	0	0	14,581	87	5,909	28	-6,388	28	27,725	3,722
2029	628	40	147	109	687	314	12	694	206	400	4,100	126	1,321	89	0	0	13,788	88	5,351	28	-3,217	28	23,022	3,060
2030	7,768	40	147	109	688	314	12	694	213	400	4,100	126	10,899	89	0	0	16,691	91	6,386	28	-6,483	28	40,423	4,951
2031	0	40	147	109	689	314	12	694	221	400	4,100	126	334	89	0	0	15,167	91	5,727	28	-2,158	28	24,239	3,208
2032	462	40	148	109	691	314	12	694	228	400	4,100	126	908	89	0	0	14,269	91	5,357	28	-1,941	28	24,233	3,179
2033	3,390	40	147	109	692	314	12	694	235	400	4,100	126	9,510	89	0	0	14,985	90	4,529	28	-1,642	28	35,958	4,434
2034	0	40	147	109	693	314	12	694	243	400	4,100	126	1,593	89	0	0	15,452	91	4,641	28	-826	28	26,055	3,403
2035	1,149	40	147	109	694	314	12	694	250	400	4,100	126	3,133	89	0	0	15,522	91	4,544	28	-670	28	28,881	3,672

Year	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	13,388	6,543	1,102	7,025	2,202	30,260	3,811	78,359	96	6,528	84,888	95	10,241	10,924	684
2013	13,370	5,290	763	7,327	2,152	28,902	3,621	84,888	95	-5,517	79,371	95	10,924	10,246	-679
2014	19,000	4,129	642	8,008	1,988	33,766	4,276	79,371	95	1,042	80,413	93	10,246	10,178	-68
2015	13,370	6,633	1,215	7,370	2,077	30,665	3,727	80,413	93	9,810	90,222	88	10,178	10,829	651
2016	13,388	6,166	1,189	7,743	2,067	30,553	3,524	90,222	88	-6,097	84,125	90	10,829	10,333	-496
2017	19,000	3,885	533	8,261	1,907	33,586	4,060	84,125	90	-6,266	77,859	91	10,333	9,582	-751
2018	19,000	3,363	368	8,124	1,874	32,729	3,983	77,859	91	560	78,418	91	9,582	9,655	73
2019	13,370	3,153	354	7,742	2,770	27,388	3,329	78,418	91	-3,930	74,488	93	9,655	9,415	-240
2020	19,025	1,993	233	8,101	3,847	33,200	4,167	74,488	93	-4,689	69,799	92	9,415	8,751	-664
2021	19,000	1,039	145	7,777	2,964	30,926	3,859	69,799	92	-5,061	64,738	94	8,751	8,235	-516
2022	19,000	446	103	7,575	3,913	31,037	3,935	64,738	94	-5,301	59,437	95	8,235	7,692	-543
2023	19,000	116	59	7,195	5,828	32,198	4,159	59,437	95	-166	59,271	95	7,692	7,646	-46
2024	19,025	89	57	6,910	6,185	32,266	4,155	59,271	95	7,440	66,711	92	7,646	8,378	733
2025	13,370	1,542	341	6,661	3,074	24,988	3,095	66,711	92	13,263	79,973	96	8,378	10,418	2,040
2026	13,370	2,478	340	7,167	3,302	26,658	3,428	79,973	96	-5,346	74,627	100	10,418	10,115	-303
2027	19,000	3,486	848	7,540	2,460	33,333	4,403	74,627	100	10,056	84,683	97	10,115	11,202	1,087
2028	13,388	3,997	959	7,278	2,396	28,018	3,580	84,683	97	-293	84,390	99	11,202	11,344	142
2029	13,370	4,157	668	7,520	2,351	28,065	3,683	84,390	99	-5,043	79,347	99	11,344	10,721	-623
2030	13,370	6,759	1,511	7,590	2,348	31,578	4,063	79,347	99	8,844	88,191	97	10,721	11,610	889
2031	13,370	5,605	949	7,347	2,196	29,467	3,754	88,191	97	-5,229	82,962	98	11,610	11,063	-547
2032	13,388	4,630	601	7,722	2,213	28,554	3,728	82,962	98	-4,321	78,641	98	11,063	10,515	-548
2033	19,000	3,599	451	8,143	2,652	33,846	4,465	78,641	98	2,112	80,753	95	10,515	10,484	-31
2034	19,000	2,424	274	8,055	2,052	31,805	4,094	80,753	95	-5,750	75,003	96	10,484	9,793	-691
2035	19,000	2,279	233	7,800	1,914	31,226	4,047	75,003	96	-2,345	72,658	95	9,793	9,419	-374

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-34c

Projected Chloride Mass Loading and Concentration Changes - Sensitivity Run - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	Chloride Conc. for Applied Recycled Water [mg/L]	Saugus WRP Infiltration [acre-ft]	Chloride Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Chloride Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Chloride Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	40	148	109	666	314	0	694	81	500	4,100	126	11,675	89	0	0	14,829	87	5,579	28	-5,182	28	36,788	4,505	13,388	6,543	1,102	7,025	2,202	30,260	3,811	78,359	96	6,528	84,888	95	10,241	10,935	695
2013	318	40	147	109	667	314	0	694	89	500	4,100	126	623	89	0	0	14,012	87	5,283	28	-1,853	28	23,385	2,955	13,370	5,290	763	7,327	2,152	28,902	3,625	84,888	95	-5,517	79,371	95	10,935	10,265	-670
2014	2,643	40	147	109	668	314	0	694	96	500	4,100	126	9,328	89	0	0	14,762	88	4,371	28	-1,307	28	34,808	4,221	19,000	4,129	642	8,008	1,988	33,766	4,284	79,371	95	1,042	80,413	93	10,265	10,202	-63
2015	10,432	40	147	109	669	314	0	694	103	500	4,100	126	7,637	89	0	0	14,876	85	5,444	28	-2,935	28	40,475	4,393	13,370	6,633	1,215	7,370	2,077	30,665	3,736	80,413	93	9,810	90,222	89	10,202	10,859	657
2016	0	40	148	109	671	314	0	694	111	500	4,100	126	22	89	0	0	15,133	87	5,612	28	-1,341	28	24,455	3,044	13,388	6,166	1,189	7,743	2,067	30,553	3,534	90,222	89	-6,097	84,125	91	10,859	10,368	-491
2017	0	40	147	109	672	314	0	694	118	500	4,100	126	1,107	89	0	0	15,667	89	4,660	28	848	28	27,319	3,325	19,000	3,885	533	8,261	1,907	33,586	4,074	84,125	91	-6,266	77,859	91	10,368	9,620	-748
2018	2,110	40	147	109	673	314	0	694	125	500	4,100	126	6,804	89	0	0	15,809	89	4,603	28	-1,083	28	33,288	4,073	19,000	3,363	368	8,124	1,874	32,729	3,998	77,859	91	560	78,418	91	9,620	9,694	75
2019	307	40	147	109	674	314	0	694	133	500	4,100	126	1,495	89	0	0	14,351	88	5,266	28	-3,014	28	23,458	3,106	13,370	3,153	354	7,742	2,770	27,388	3,342	78,418	91	-3,930	74,488	93	9,694	9,459	-236
2020	1,226	40	148	109	676	314	1	694	140	500	4,100	126	3,145	89	0	0	15,098	88	4,526	28	-549	28	28,511	3,522	19,025	1,993	233	8,101	3,847	33,200	4,186	74,488	93	-4,689	69,799	93	9,459	8,794	-664
2021	0	40	147	109	677	314	5	694	147	500	4,100	126	1,865	89	0	0	15,548	89	4,606	28	-1,231	28	25,864	3,363	19,000	1,039	145	7,777	2,964	30,926	3,878	69,799	93	-5,061	64,738	94	8,794	8,279	-515
2022	0	40	147	109	678	314	8	694	155	500	4,100	126	2,046	89	0	0	15,646	91	4,695	28	-1,738	28	25,736	3,413	19,000	446	103	7,575	3,913	31,037	3,956	64,738	94	-5,301	59,437	96	8,279	7,736	-543
2023	2,579	40	147	109	679	314	10	694	162	500	4,100	126	7,378	89	0	0	15,878	89	4,860	28	-3,762	28	32,032	4,135	19,000	116	59	7,195	5,828	32,198	4,183	59,437	96	-166	59,271	95	7,736	7,688	-48
2024	7,308	40	148	109	681	314	10	694	169	500	4,100	126	12,189	89	0	0	16,430	87	5,093	28	-6,421	28	39,706	4,910	19,025	89	57	6,910	6,185	32,266	4,178	59,271	95	7,440	66,711	93	7,688	8,420	733
2025	6,249	40	147	109	682	314	11	694	177	500	4,100	126	15,600	89	0	0	16,565	88	6,385	28	-11,665	28	38,251	5,159	13,370	1,542	341	6,661	3,074	24,988	3,111	66,711	93	13,263	79,973	96	8,420	10,469	2,048
2026	0	40	147	109	683	314	11	694	184	500	4,100	126	1,616	89	0	0	15,076	89	6,115	28	-6,621	28	21,312	3,151	13,370	2,478	340	7,167	3,302	26,658	3,445	79,973	96	-5,346	74,627	100	10,469	10,174	-294
2027	6,316	40	147	109	684	314	12	694	191	500	4,100	126	18,602	89	0	0	15,461	88	5,043	28	-7,168	28	43,389	5,516	19,000	3,486	848	7,540	2,460	33,333	4,429	74,627	100	10,056	84,683	98	10,174	11,262	1,087
2028	2,288	40	148	109	686	314	12	694	199	500	4,100	126	6,191	89	0	0	14,581	87	5,909	28	-6,388	28	27,725	3,749	13,388	3,997	959	7,278	2,396	28,018	3,599	84,683	98	-293	84,390	99	11,262	11,412	150
2029	628	40	147	109	687	314	12	694	206	500	4,100	126	1,321	89	0	0	13,788	88	5,351	28	-3,217	28	23,022	3,088	13,370	4,157	668	7,520	2,351	28,065	3,705	84,390	99	-5,043	79,347	100	11,412	10,795	-617
2030	7,768	40	147	109	688	314	12	694	213	500	4,100	126	10,899	89	0	0	16,691	91	6,386	28	-6,483	28	40,423	4,980	13,370	6,759	1,511	7,590	2,348	31,578	4,091	79,347	100	8,844	88,191	97	10,795	11,685	890
2031	0	40	147	109	689	314	12	694	221	500	4,100	126	334	89	0	0	15,167	91	5,727	28	-2,158	28	24,239	3,238	13,370	5,605	949	7,347	2,196	29,467	3,778	88,191	97	-5,229	82,962	99	11,685	11,144	-541
2032	462	40	148	109	691	314	12	694	228	500	4,100	126	908	89	0	0	14,269	91	5,357	28	-1,941	28	24,233	3,210	13,388	4,630	601	7,722	2,213	28,554	3,755	82,962	99	-4,321	78,641	99	11,144	10,599	-545
2033	3,390	40	147	109	692	314	12	694	235	500	4,100	126	9,510	89	0	0	14,985	90	4,529	28	-1,642	28	35,958	4,466	19,000	3,599	451	8,143	2,652	33,846	4,501	78,641	99	2,112	80,753	96	10,599	10,565	-35
2034	0	40	147	109	693	314	12	694	243	500	4,100	126	1,593	89	0	0	15,452	91	4,641	28	-826	28	26,055	3,436	19,000	2,424	274	8,055	2,052	31,805	4,125	80,753	96	-5,750	75,003	97	10,565	9,875	-689
2035	1,149	40	147	109	694	314	12	694	250	500	4,100	126	3,133	89	0	0	15,522	91	4,544	28	-670	28	28,881	3,706	19,000	2,279	233	7,800	1,914	31,226	4,081	75,003	97	-2,345	72,658	96	9,875	9,501	-374

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-34d

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Nitrate Conc. for Applied Recycled Water	Saugus WRP Infiltration	Nitrate Conc. for Saugus WRP Infiltration	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Nitrate Conc. for Inflow From MZ1	Inflow From MZ3	Nitrate Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	9	148	44	666	16	0	35	81	51	4,100	20	11,675	20	0	0	14,829	19	5,579	20	-5,182	20	36,788	918	13,388	6,543	1,102	7,025	2,202	30,260	803	78,359	20	6,528	84,888	20	2,158	2,273	115
2013	318	9	147	44	667	16	0	35	89	51	4,100	20	623	20	0	0	14,012	19	5,283	20	-1,853	20	23,385	626	13,370	5,290	763	7,327	2,152	28,902	753	84,888	20	-5,517	79,371	20	2,273	2,146	-127
2014	2,643	9	147	44	668	16	0	35	96	51	4,100	20	9,328	20	0	0	14,762	19	4,371	20	-1,307	20	34,808	895	19,000	4,129	642	8,008	1,988	33,766	895	79,371	20	1,042	80,413	20	2,146	2,145	0
2015	10,432	9	147	44	669	16	0	35	103	51	4,100	20	7,637	20	0	0	14,876	18	5,444	20	-2,935	20	40,475	914	13,370	6,633	1,215	7,370	2,077	30,665	786	80,413	20	9,810	90,222	19	2,145	2,274	129
2016	0	9	148	44	671	16	0	35	111	51	4,100	20	22	20	0	0	15,133	19	5,612	20	-1,341	20	24,455	648	13,388	6,166	1,189	7,743	2,067	30,553	740	90,222	19	-6,097	84,125	19	2,274	2,181	-92
2017	0	9	147	44	672	16	0	35	118	51	4,100	20	1,107	20	0	0	15,667	19	4,660	20	848	20	27,319	729	19,000	3,885	533	8,261	1,907	33,586	857	84,125	19	-6,266	77,859	19	2,181	2,054	-128
2018	2,110	9	147	44	673	16	0	35	125	51	4,100	20	6,804	20	0	0	15,809	19	4,603	20	-1,083	20	33,288	857	19,000	3,363	368	8,124	1,874	32,729	854	77,859	19	560	78,418	19	2,054	2,057	3
2019	307	9	147	44	674	16	0	35	133	51	4,100	20	1,495	20	0	0	14,351	19	5,266	20	-3,014	20	23,458	621	13,370	3,153	354	7,742	2,770	27,388	709	78,418	19	-3,930	74,488	19	2,057	1,968	-89
2020	1,226	9	148	44	676	16	1	35	140	51	4,100	20	3,145	20	0	0	15,098	19	4,526	20	-549	20	28,511	740	19,025	1,993	233	8,101	3,847	33,200	871	74,488	19	-4,689	69,799	19	1,968	1,837	-131
2021	0	9	147	44	677	16	5	35	147	51	4,100	20	1,865	20	0	0	15,548	19	4,606	20	-1,231	20	25,864	686	19,000	1,039	145	7,777	2,964	30,926	810	69,799	19	-5,061	64,738	19	1,837	1,713	-124
2022	0	9	147	44	678	16	8	35	155	51	4,100	20	2,046	20	0	0	15,646	19	4,695	20	-1,738	20	25,736	682	19,000	446	103	7,575	3,913	31,037	818	64,738	19	-5,301	59,437	20	1,713	1,576	-137
2023	2,579	9	147	44	679	16	10	35	162	51	4,100	20	7,378	20	0	0	15,878	19	4,860	20	-3,762	20	32,032	807	19,000	116	59	7,195	5,828	32,198	852	59,437	20	-166	59,271	19	1,576	1,531	-45
2024	7,308	9	148	44	681	16	10	35	169	51	4,100	20	12,189	20	0	0	16,430	18	5,093	20	-6,421	20	39,706	940	19,025	89	57	6,910	6,185	32,266	832	59,271	19	7,440	66,711	18	1,531	1,639	108
2025	6,249	9	147	44	682	16	11	35	177	51	4,100	20	15,600	20	0	0	16,565	19	6,385	20	-11,665	20	38,251	926	13,370	1,542	341	6,661	3,074	24,988	606	66,711	18	13,263	79,973	18	1,639	1,960	321
2026	0	9	147	44	683	16	11	35	184	51	4,100	20	1,616	20	0	0	15,076	19	6,115	20	-6,621	20	21,312	571	13,370	2,478	340	7,167	3,302	26,658	645	79,973	18	-5,346	74,627	19	1,960	1,886	-74
2027	6,316	9	147	44	684	16	12	35	191	51	4,100	20	18,602	20	0	0	15,461	19	5,043	20	-7,168	20	43,389	1,071	19,000	3,486	848	7,540	2,460	33,333	821	74,627	19	10,056	84,683	19	1,886	2,136	250
2028	2,288	9	148	44	686	16	12	35	199	51	4,100	20	6,191	20	0	0	14,581	19	5,909	20	-6,388	20	27,725	712	13,388	3,997	959	7,278	2,396	28,018	683	84,683	19	-293	84,390	19	2,136	2,165	29
2029	628	9	147	44	687	16	12	35	206	51	4,100	20	1,321	20	0	0	13,788	19	5,351	20	-3,217	20	23,022	613	13,370	4,157	668	7,520	2,351	28,065	703	84,390	19	-5,043	79,347	19	2,165	2,075	-90
2030	7,768	9	147	44	688	16	12	35	213	51	4,100	20	10,899	20	0	0	16,691	19	6,386	20	-6,483	20	40,423	976	13,370	6,759	1,511	7,590	2,348	31,578	786	79,347	19	8,844	88,191	19	2,075	2,265	190
2031	0	9	147	44	689	16	12	35	221	51	4,100	20	334	20	0	0	15,167	20	5,727	20	-2,158	20	24,239	660	13,370	5,605	949	7,347	2,196	29,467	732	88,191	19	-5,229	82,962	19	2,265	2,193	-72
2032	462	9	148	44	691	16	12	35	228	51	4,100	20	908	20	0	0	14,269	19	5,357	20	-1,941	20	24,233	652	13,388	4,630	601	7,722	2,213	28,554	739	82,962	19	-4,321	78,641	20	2,193	2,106	-86
2033	3,390	9	147	44	692	16	12	35	235	51	4,100	20	9,510	20	0	0	14,985	19	4,529	20	-1,642	20	35,958	918	19,000	3,599	451	8,143	2,652	33,846	895	78,641	20	2,112	80,753	19	2,106	2,130	24
2034	0	9	147	44	693	16	12	35	243	51	4,100	20	1,593	20	0	0	15,452	19	4,641	20	-826	20	26,055	702	19,000	2,424	274	8,055	2,052	31,805	832	80,753	19	-5,750	75,003	20	2,130	2,001	-129
2035	1,149	9	147	44	694	16	12	35	250	51	4,100	20	3,133	20	0	0	15,522	19	4,544	20	-670	20	28,881	759	19,000	2,279	233	7,800	1,914	31,226	827	75,003	20	-2,345	72,658	20	2,001	1,933	-68

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-34e

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Sulfate Conc. for Applied Recycled Water	Saugus WRP Infiltration	Sulfate Conc. for Saugus WRP Infiltration	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Sulfate Conc. for Inflow From MZ1	Inflow From MZ3	Sulfate Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	40	148	143	666	413	0	913	81	558	4,100	179	11,675	179	0	0	14,829	152	5,579	235	-5,182	235	36,788	7,749	13,388	6,543	1,102	7,025	2,202	30,260	7,598	78,359	192	6,528	84,888	**178**	20,419	20,570	**151**
2013	318	40	147	143	667	413	0	913	89	558	4,100	179	623	179	0	0	14,012	157	5,283	235	-1,853	235	23,385	5,727	13,370	5,290	763	7,327	2,152	28,902	6,819	84,888	178	-5,517	79,371	**180**	20,570	19,479	**-1,092**
2014	2,643	40	147	143	668	413	0	913	96	558	4,100	179	9,328	179	0	0	14,762	153	4,371	235	-1,307	235	34,808	7,938	19,000	4,129	642	8,008	1,988	33,766	8,129	79,371	180	1,042	80,413	**176**	19,479	19,288	**-191**
2015	10,432	40	147	143	669	413	0	913	103	558	4,100	179	7,637	179	0	0	14,876	137	5,444	235	-2,935	235	40,475	7,469	13,370	6,633	1,215	7,370	2,077	30,665	7,064	80,413	176	9,810	90,222	**161**	19,288	19,692	**405**
2016	0	40	148	143	671	413	0	913	111	558	4,100	179	22	179	0	0	15,133	146	5,612	235	-1,341	235	24,455	5,862	13,388	6,166	1,189	7,743	2,067	30,553	6,409	90,222	161	-6,097	84,125	**167**	19,692	19,145	**-547**
2017	0	40	147	143	672	413	0	913	118	558	4,100	179	1,107	179	0	0	15,667	152	4,660	235	848	235	27,319	6,749	19,000	3,885	533	8,261	1,907	33,586	7,522	84,125	167	-6,266	77,859	**174**	19,145	18,372	**-773**
2018	2,110	40	147	143	673	413	0	913	125	558	4,100	179	6,804	179	0	0	15,809	151	4,603	235	-1,083	235	33,288	7,641	19,000	3,363	368	8,124	1,874	32,729	7,636	77,859	174	560	78,418	**172**	18,372	18,377	**5**
2019	307	40	147	143	674	413	0	913	133	558	4,100	179	1,495	179	0	0	14,351	157	5,266	235	-3,014	235	23,458	5,659	13,370	3,153	354	7,742	2,770	27,388	6,335	78,418	172	-3,930	74,488	**175**	18,377	17,700	**-677**
2020	1,226	40	148	143	676	413	1	913	140	558	4,100	179	3,145	179	0	0	15,098	156	4,526	235	-549	235	28,511	6,812	19,025	1,993	233	8,101	3,847	33,200	7,834	74,488	175	-4,689	69,799	**176**	17,700	16,678	**-1,022**
2021	0	40	147	143	677	413	5	913	147	558	4,100	179	1,865	179	0	0	15,548	158	4,606	235	-1,231	235	25,864	6,387	19,000	1,039	145	7,777	2,964	30,926	7,355	69,799	176	-5,061	64,738	**178**	16,678	15,710	**-968**
2022	0	40	147	143	678	413	8	913	155	558	4,100	179	2,046	179	0	0	15,646	158	4,695	235	-1,738	235	25,736	6,331	19,000	446	103	7,575	3,913	31,037	7,507	64,738	178	-5,301	59,437	**180**	15,710	14,535	**-1,175**
2023	2,579	40	147	143	679	413	10	913	162	558	4,100	179	7,378	179	0	0	15,878	151	4,860	235	-3,762	235	32,032	7,087	19,000	116	59	7,195	5,828	32,198	7,859	59,437	180	-166	59,271	**171**	14,535	13,763	**-772**
2024	7,308	40	148	143	681	413	10	913	169	558	4,100	179	12,189	179	0	0	16,430	140	5,093	235	-6,421	235	39,706	7,600	19,025	89	57	6,910	6,185	32,266	7,479	59,271	171	7,440	66,711	**153**	13,763	13,884	**121**
2025	6,249	40	147	143	682	413	11	913	177	558	4,100	179	15,600	179	0	0	16,565	138	6,385	235	-11,665	235	38,251	7,094	13,370	1,542	341	6,661	3,074	24,988	5,129	66,711	153	13,263	79,973	**146**	13,884	15,848	**1,965**
2026	0	40	147	143	683	413	11	913	184	558	4,100	179	1,616	179	0	0	15,076	148	6,115	235	-6,621	235	21,312	4,834	13,370	2,478	340	7,167	3,302	26,658	5,215	79,973	146	-5,346	74,627	**152**	15,848	15,467	**-382**
2027	6,316	40	147	143	684	413	12	913	191	558	4,100	179	18,602	179	0	0	15,461	143	5,043	235	-7,168	235	43,389	8,760	19,000	3,486	848	7,540	2,460	33,333	6,733	74,627	152	10,056	84,683	**152**	15,467	17,494	**2,027**
2028	2,288	40	148	143	686	413	12	913	199	558	4,100	179	6,191	179	0	0	14,581	150	5,909	235	-6,388	235	27,725	6,024	13,388	3,997	959	7,278	2,396	28,018	5,590	84,683	152	-293	84,390	**156**	17,494	17,928	**434**
2029	628	40	147	143	687	413	12	913	206	558	4,100	179	1,321	179	0	0	13,788	156	5,351	235	-3,217	235	23,022	5,548	13,370	4,157	668	7,520	2,351	28,065	5,820	84,390	156	-5,043	79,347	**164**	17,928	17,656	**-273**
2030	7,768	40	147	143	688	413	12	913	213	558	4,100	179	10,899	179	0	0	16,691	138	6,386	235	-6,483	235	40,423	7,763	13,370	6,759	1,511	7,590	2,348	31,578	6,690	79,347	164	8,844	88,191	**156**	17,656	18,729	**1,073**
2031	0	40	147	143	689	413	12	913	221	558	4,100	179	334	179	0	0	15,167	149	5,727	235	-2,158	235	24,239	5,877	13,370	5,605	949	7,347	2,196	29,467	6,056	88,191	156	-5,229	82,962	**164**	18,729	18,550	**-179**
2032	462	40	148	143	691	413	12	913	228	558	4,100	179	908	179	0	0	14,269	154	5,357	235	-1,941	235	24,233	5,933	13,388	4,630	601	7,722	2,213	28,554	6,250	82,962	164	-4,321	78,641	**171**	18,550	18,233	**-317**
2033	3,390	40	147	143	692	413	12	913	235	558	4,100	179	9,510	179	0	0	14,985	150	4,529	235	-1,642	235	35,958	8,067	19,000	3,599	451	8,143	2,652	33,846	7,742	78,641	171	2,112	80,753	**169**	18,233	18,557	**325**
2034	0	40	147	143	693	413	12	913	243	558	4,100	179	1,593	179	0	0	15,452	156	4,641	235	-826	235	26,055	6,486	19,000	2,424	274	8,055	2,052	31,805	7,246	80,753	169	-5,750	75,003	**175**	18,557	17,798	**-760**
2035	1,149	40	147	143	694	413	12	913	250	558	4,100	179	3,133	179	0	0	15,522	155	4,544	235	-670	235	28,881	6,955	19,000	2,279	233	7,800	1,914	31,226	7,354	75,003	175	-2,345	72,658	**176**	17,798	17,398	**-399**

Projected TDS Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Castaic Dam Underflow	TDS Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	TDS Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentrati on	Change in GW Storage	Ending Storage	Ending Concentr ation	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	100	102	758	157	2,186	0	4,835	15,920	762	1,705	274	0	0	7,025	917	7,024	550	36,335	32,310	13,450	10,864	2,012	6,573	961	33,858	33,496	50,440	774	2,476	52,916	721	53,052	51,866	-1,186
2013	286	100	102	758	163	2,186	0	4,835	7,623	762	1,700	274	0	0	7,327	917	10,093	550	27,295	25,842	13,428	8,774	1,727	6,438	802	31,169	28,857	52,916	721	-3,874	49,042	733	51,866	48,851	-3,015
2014	2,378	100	102	758	168	2,186	0	4,835	12,252	762	1,700	274	0	0	8,008	917	8,591	550	33,199	30,663	15,448	8,078	1,748	6,487	675	32,436	30,568	49,042	733	763	49,805	723	48,851	48,946	95
2015	9,386	100	102	758	174	2,186	0	4,835	9,835	762	1,700	274	0	0	7,370	917	10,328	550	38,895	29,633	13,428	12,219	2,038	6,694	717	35,096	32,488	49,805	723	3,799	53,605	632	48,946	46,091	-2,855
2016	0	100	102	758	179	2,186	0	4,835	5,803	762	1,705	274	0	0	7,743	917	11,610	550	27,142	25,620	13,450	9,022	1,783	6,475	646	31,377	25,445	53,605	632	-4,235	49,370	689	46,091	46,266	175
2017	0	100	102	758	185	2,186	0	4,835	6,281	762	1,700	274	0	0	8,261	917	11,431	550	27,960	26,643	15,448	7,323	1,633	6,432	573	31,408	27,904	49,370	689	-3,448	45,922	721	46,266	45,005	-1,261
2018	1,899	100	102	758	190	2,186	5	4,835	10,488	762	1,700	274	0	0	8,124	917	9,355	550	31,864	29,588	15,448	7,442	1,652	6,480	589	31,612	29,361	45,922	721	252	46,174	720	45,005	45,233	227
2019	277	100	102	758	196	2,186	21	4,835	7,161	762	1,700	274	0	0	7,742	917	9,828	550	27,028	25,921	13,428	6,896	1,609	6,430	688	29,052	26,883	46,174	720	-2,023	44,151	737	45,233	44,271	-962
2020	1,103	100	102	758	201	2,186	48	4,835	9,538	762	1,705	274	0	0	8,101	917	8,519	550	29,317	28,159	15,472	5,888	1,550	6,464	941	30,315	28,843	44,151	737	-997	43,154	743	44,271	43,586	-684
2021	0	100	102	758	207	2,186	91	4,835	7,156	762	1,700	274	0	0	7,777	917	9,150	550	26,183	25,902	15,448	4,941	1,480	6,416	775	29,060	27,856	43,154	743	-2,877	40,277	760	43,586	41,632	-1,954
2022	0	100	102	758	212	2,186	126	4,835	7,472	762	1,700	274	0	0	7,575	917	8,559	550	25,747	25,786	15,448	4,345	1,404	6,407	973	28,577	28,087	40,277	760	-2,830	37,447	772	41,632	39,331	-2,301
2023	2,320	100	102	758	218	2,186	138	4,835	11,294	762	1,700	274	0	0	7,195	917	6,393	550	29,361	28,063	15,448	4,218	1,324	6,466	1,946	29,403	29,492	37,447	772	-42	37,405	745	39,331	37,902	-1,429
2024	6,575	100	102	758	223	2,186	146	4,835	18,685	762	1,705	274	0	0	6,910	917	3,779	550	38,125	34,059	15,472	5,446	1,429	6,617	2,336	31,302	30,269	37,405	745	6,823	44,229	693	37,902	41,691	3,790
2025	5,623	100	102	758	229	2,186	152	4,835	13,704	762	1,700	274	0	0	6,661	917	6,241	550	34,412	30,354	13,428	7,616	1,760	6,601	912	30,319	26,920	44,229	693	4,093	48,322	687	41,691	45,126	3,434
2026	0	100	102	758	234	2,186	157	4,835	7,875	762	1,700	274	0	0	7,167	917	8,447	550	25,683	25,878	13,428	6,603	1,609	6,433	908	28,982	25,563	48,322	687	-3,299	45,023	742	45,126	45,441	315
2027	5,682	100	102	758	240	2,186	162	4,835	14,705	762	1,700	274	0	0	7,540	917	7,491	550	37,623	33,528	15,448	9,206	1,808	6,592	773	33,826	32,316	45,023	742	3,797	48,820	703	45,441	46,653	1,213
2028	2,058	100	102	758	246	2,186	169	4,835	9,915	762	1,705	274	0	0	7,278	917	8,907	550	30,381	28,867	13,450	8,675	1,767	6,510	736	31,137	28,067	48,820	703	-757	48,063	726	46,653	47,453	799
2029	565	100	102	758	251	2,186	174	4,835	8,270	762	1,700	274	0	0	7,520	917	9,724	550	28,306	27,923	13,428	8,168	1,684	6,452	663	30,395	28,346	48,063	726	-2,089	45,974	752	47,453	47,030	-423
2030	6,989	100	102	758	257	2,186	180	4,835	12,708	762	1,700	274	0	0	7,590	917	8,826	550	38,353	32,866	13,428	11,423	1,914	6,638	679	34,083	32,907	45,974	752	4,270	50,244	688	47,030	46,988	-42
2031	0	100	102	758	262	2,186	184	4,835	9,913	762	1,700	274	0	0	7,347	917	9,571	550	29,080	29,318	13,428	9,091	1,723	6,445	739	31,426	27,779	50,244	688	-2,346	47,898	745	46,988	48,528	1,540
2032	416	100	102	758	268	2,186	188	4,835	8,577	762	1,705	274	0	0	7,722	917	10,062	550	29,040	28,866	13,450	8,368	1,685	6,462	609	30,573	29,268	47,898	745	-1,534	46,365	763	48,528	48,126	-402
2033	3,050	100	102	758	273	2,186	191	4,835	11,853	762	1,700	274	0	0	8,143	917	8,484	550	33,796	31,997	15,448	8,159	1,690	6,514	732	32,544	32,026	46,365	763	1,253	47,617	743	48,126	48,097	-29
2034	0	100	102	758	279	2,186	192	4,835	6,543	762	1,700	274	0	0	8,055	917	10,772	550	27,643	27,703	15,448	6,416	1,594	6,430	583	30,472	29,169	47,617	743	-2,829	44,789	766	48,097	46,631	-1,465
2035	1,034	100	102	758	284	2,186	192	4,835	8,479	762	1,700	274	0	0	7,800	917	9,921	550	29,512	28,912	15,448	6,593	1,608	6,451	574	30,673	30,261	44,789	766	-1,161	43,628	763	46,631	45,282	-1,350

Table I-35b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Castaic Dam Underflow	Chloride Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Chloride Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	40	102	107	157	307	0	680	15,920	109	1,705	70	0	0	7,025	96	7,024	15	36,335	3,893	13,450	10,864	2,012	6,573	961	33,858	3,699	50,440	85	2,476	52,916	84	5,859	6,053	194
2013	286	40	102	107	163	307	0	680	7,623	109	1,700	70	0	0	7,327	96	10,093	15	27,295	2,548	13,428	8,774	1,727	6,438	802	31,169	3,368	52,916	84	-3,874	49,042	78	6,053	5,233	-820
2014	2,378	40	102	107	168	307	0	680	12,252	109	1,700	70	0	0	8,008	96	8,591	15	33,199	3,406	15,448	8,078	1,748	6,487	675	32,436	3,275	49,042	78	763	49,805	79	5,233	5,364	131
2015	9,386	40	102	107	174	307	0	680	9,835	109	1,700	70	0	0	7,370	96	10,328	15	38,895	3,384	13,428	12,219	2,038	6,694	717	35,096	3,560	49,805	79	3,799	53,605	71	5,364	5,188	-176
2016	0	40	102	107	179	307	0	680	5,803	109	1,705	70	0	0	7,743	96	11,610	15	27,142	2,356	13,450	9,022	1,783	6,475	646	31,377	2,864	53,605	71	-4,235	49,370	70	5,188	4,680	-508
2017	0	40	102	107	185	307	0	680	6,281	109	1,700	70	0	0	8,261	96	11,431	15	27,960	2,492	15,448	7,323	1,633	6,432	573	31,408	2,822	49,370	70	-3,448	45,922	70	4,680	4,350	-330
2018	1,899	40	102	107	190	307	5	680	10,488	109	1,700	70	0	0	8,124	96	9,355	15	31,864	3,164	15,448	7,442	1,652	6,480	589	31,612	2,838	45,922	70	252	46,174	74	4,350	4,676	326
2019	277	40	102	107	196	307	21	680	7,161	109	1,700	70	0	0	7,742	96	9,828	15	27,028	2,561	13,428	6,896	1,609	6,430	688	29,052	2,779	46,174	74	-2,023	44,151	74	4,676	4,458	-218
2020	1,103	40	102	107	201	307	48	680	9,538	109	1,705	70	0	0	8,101	96	8,519	15	29,317	3,005	15,472	5,888	1,550	6,464	941	30,315	2,905	44,151	74	-997	43,154	78	4,458	4,559	100
2021	0	40	102	107	207	307	91	680	7,156	109	1,700	70	0	0	7,777	96	9,150	15	26,183	2,605	15,448	4,941	1,480	6,416	775	29,060	2,914	43,154	78	-2,877	40,277	78	4,559	4,250	-309
2022	0	40	102	107	212	307	126	680	7,472	109	1,700	70	0	0	7,575	96	8,559	15	25,747	2,648	15,448	4,345	1,404	6,407	973	28,577	2,867	40,277	78	-2,830	37,447	79	4,250	4,031	-219
2023	2,320	40	102	107	218	307	138	680	11,294	109	1,700	70	0	0	7,195	96	6,393	15	29,361	3,259	15,448	4,218	1,324	6,466	1,946	29,403	3,023	37,447	79	-42	37,405	84	4,031	4,267	236
2024	6,575	40	102	107	223	307	146	680	18,685	109	1,705	70	0	0	6,910	96	3,779	15	38,125	4,502	15,472	5,446	1,429	6,617	2,336	31,302	3,408	37,405	84	6,823	44,229	89	4,267	5,361	1,094
2025	5,623	40	102	107	229	307	152	680	13,704	109	1,700	70	0	0	6,661	96	6,241	15	34,412	3,739	13,428	7,616	1,760	6,601	912	30,319	3,462	44,229	89	4,093	48,322	86	5,361	5,639	278
2026	0	40	102	107	234	307	157	680	7,875	109	1,700	70	0	0	7,167	96	8,447	15	25,683	2,690	13,428	6,603	1,609	6,433	908	28,982	3,194	48,322	86	-3,299	45,023	84	5,639	5,134	-504
2027	5,682	40	102	107	240	307	162	680	14,705	109	1,700	70	0	0	7,540	96	7,491	15	37,623	4,044	15,448	9,206	1,808	6,592	773	33,826	3,651	45,023	84	3,797	48,820	83	5,134	5,527	393
2028	2,058	40	102	107	246	307	169	680	9,915	109	1,705	70	0	0	7,278	96	8,907	15	30,381	3,143	13,450	8,675	1,767	6,510	736	31,137	3,325	48,820	83	-757	48,063	82	5,527	5,345	-182
2029	565	40	102	107	251	307	174	680	8,270	109	1,700	70	0	0	7,520	96	9,724	15	28,306	2,874	13,428	8,168	1,684	6,452	663	30,395	3,193	48,063	82	-2,089	45,974	80	5,345	5,026	-319
2030	6,989	40	102	107	257	307	180	680	12,708	109	1,700	70	0	0	7,590	96	8,826	15	38,353	3,878	13,428	11,423	1,914	6,638	679	34,083	3,517	45,974	80	4,270	50,244	79	5,026	5,387	361
2031	0	40	102	107	262	307	184	680	9,913	109	1,700	70	0	0	7,347	96	9,571	15	29,080	3,074	13,428	9,091	1,723	6,445	739	31,426	3,185	50,244	79	-2,346	47,898	81	5,387	5,277	-110
2032	416	40	102	107	268	307	188	680	8,577	109	1,705	70	0	0	7,722	96	10,062	15	29,040	2,965	13,450	8,368	1,685	6,462	609	30,573	3,182	47,898	81	-1,534	46,365	80	5,277	5,059	-218
2033	3,050	40	102	107	273	307	191	680	11,853	109	1,700	70	0	0	8,143	96	8,484	15	33,796	3,619	15,448	8,159	1,690	6,514	732	32,544	3,366	46,365	80	1,253	47,617	82	5,059	5,311	253
2034	0	40	102	107	279	307	192	680	6,543	109	1,700	70	0	0	8,055	96	10,772	15	27,643	2,707	15,448	6,416	1,594	6,430	583	30,472	3,221	47,617	82	-2,829	44,789	79	5,311	4,797	-514
2035	1,034	40	102	107	284	307	192	680	8,479	109	1,700	70	0	0	7,800	96	9,921	15	29,512	3,001	15,448	6,593	1,608	6,451	574	30,673	3,113	44,789	79	-1,161	43,628	79	4,797	4,685	-112

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-35c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Nitrate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	9	102	41	157	15	0	32	15,920	7	1,705	3	0	0	7,025	16	7,024	10	36,335	467	13,450	10,864	2,012	6,573	961	33,858	472	50,440	11	2,476	52,916	10	748	743	-5
2013	286	9	102	41	163	15	0	32	7,623	7	1,700	3	0	0	7,327	16	10,093	10	27,295	387	13,428	8,774	1,727	6,438	802	31,169	413	52,916	10	-3,874	49,042	11	743	717	-26
2014	2,378	9	102	41	168	15	0	32	12,252	7	1,700	3	0	0	8,008	16	8,591	10	33,199	451	15,448	8,078	1,748	6,487	675	32,436	449	49,042	11	763	49,805	11	717	719	2
2015	9,386	9	102	41	174	15	0	32	9,835	7	1,700	3	0	0	7,370	16	10,328	10	38,895	522	13,428	12,219	2,038	6,694	717	35,096	477	49,805	11	3,799	53,605	10	719	763	44
2016	0	9	102	41	179	15	0	32	5,803	7	1,705	3	0	0	7,743	16	11,610	10	27,142	397	13,450	9,022	1,783	6,475	646	31,377	421	53,605	10	-4,235	49,370	11	763	738	-25
2017	0	9	102	41	185	15	0	32	6,281	7	1,700	3	0	0	8,261	16	11,431	10	27,960	410	15,448	7,323	1,633	6,432	573	31,408	445	49,370	11	-3,448	45,922	11	738	703	-35
2018	1,899	9	102	41	190	15	5	32	10,488	7	1,700	3	0	0	8,124	16	9,355	10	31,864	442	15,448	7,442	1,652	6,480	589	31,612	459	45,922	11	252	46,174	11	703	686	-17
2019	277	9	102	41	196	15	21	32	7,161	7	1,700	3	0	0	7,742	16	9,828	10	27,028	390	13,428	6,896	1,609	6,430	688	29,052	408	46,174	11	-2,023	44,151	11	686	668	-18
2020	1,103	9	102	41	201	15	48	32	9,538	7	1,705	3	0	0	8,101	16	8,519	10	29,317	414	15,472	5,888	1,550	6,464	941	30,315	435	44,151	11	-997	43,154	11	668	646	-22
2021	0	9	102	41	207	15	91	32	7,156	7	1,700	3	0	0	7,777	16	9,150	10	26,183	381	15,448	4,941	1,480	6,416	775	29,060	413	43,154	11	-2,877	40,277	11	646	615	-32
2022	0	9	102	41	212	15	126	32	7,472	7	1,700	3	0	0	7,575	16	8,559	10	25,747	373	15,448	4,345	1,404	6,407	973	28,577	415	40,277	11	-2,830	37,447	11	615	573	-41
2023	2,320	9	102	41	218	15	138	32	11,294	7	1,700	3	0	0	7,195	16	6,393	10	29,361	401	15,448	4,218	1,324	6,466	1,946	29,403	430	37,447	11	-42	37,405	11	573	544	-29
2024	6,575	9	102	41	223	15	146	32	18,685	7	1,705	3	0	0	6,910	16	3,779	10	38,125	481	15,472	5,446	1,429	6,617	2,336	31,302	434	37,405	11	6,823	44,229	10	544	590	46
2025	5,623	9	102	41	229	15	152	32	13,704	7	1,700	3	0	0	6,661	16	6,241	10	34,412	450	13,428	7,616	1,760	6,601	912	30,319	381	44,229	10	4,093	48,322	10	590	659	69
2026	0	9	102	41	234	15	157	32	7,875	7	1,700	3	0	0	7,167	16	8,447	10	25,683	369	13,428	6,603	1,609	6,433	908	28,982	373	48,322	10	-3,299	45,023	11	659	654	-5
2027	5,682	9	102	41	240	15	162	32	14,705	7	1,700	3	0	0	7,540	16	7,491	10	37,623	497	15,448	9,206	1,808	6,592	773	33,826	465	45,023	11	3,797	48,820	10	654	686	32
2028	2,058	9	102	41	246	15	169	32	9,915	7	1,705	3	0	0	7,278	16	8,907	10	30,381	422	13,450	8,675	1,767	6,510	736	31,137	413	48,820	10	-757	48,063	11	686	696	9
2029	565	9	102	41	251	15	174	32	8,270	7	1,700	3	0	0	7,520	16	9,724	10	28,306	405	13,428	8,168	1,684	6,452	663	30,395	416	48,063	11	-2,089	45,974	11	696	685	-10
2030	6,989	9	102	41	257	15	180	32	12,708	7	1,700	3	0	0	7,590	16	8,826	10	38,353	514	13,428	11,423	1,914	6,638	679	34,083	480	45,974	11	4,270	50,244	11	685	720	35
2031	0	9	102	41	262	15	184	32	9,913	7	1,700	3	0	0	7,347	16	9,571	10	29,080	409	13,428	9,091	1,723	6,445	739	31,426	426	50,244	11	-2,346	47,898	11	720	703	-17
2032	416	9	102	41	268	15	188	32	8,577	7	1,705	3	0	0	7,722	16	10,062	10	29,040	416	13,450	8,368	1,685	6,462	609	30,573	424	47,898	11	-1,534	46,365	11	703	696	-8
2033	3,050	9	102	41	273	15	191	32	11,853	7	1,700	3	0	0	8,143	16	8,484	10	33,796	467	15,448	8,159	1,690	6,514	732	32,544	463	46,365	11	1,253	47,617	11	696	700	4
2034	0	9	102	41	279	15	192	32	6,543	7	1,700	3	0	0	8,055	16	10,772	10	27,643	409	15,448	6,416	1,594	6,430	583	30,472	424	47,617	11	-2,829	44,789	11	700	685	-15
2035	1,034	9	102	41	284	15	192	32	8,479	7	1,700	3	0	0	7,800	16	9,921	10	29,512	423	15,448	6,593	1,608	6,451	574	30,673	444	44,789	11	-1,161	43,628	11	685	664	-21

Table I-35d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Sulfate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	40	102	144	157	416	0	920	15,920	254	1,705	51	0	0	7,025	295	7,024	235	36,335	11,027	13,450	10,864	2,012	6,573	961	33,858	10,866	50,440	251	2,476	52,916	241	17,209	17,370	161
2013	286	40	102	144	163	416	0	920	7,623	254	1,700	51	0	0	7,327	295	10,093	235	27,295	9,042	13,428	8,774	1,727	6,438	802	31,169	9,665	52,916	241	-3,874	49,042	251	17,370	16,748	-622
2014	2,378	40	102	144	168	416	0	920	12,252	254	1,700	51	0	0	8,008	295	8,591	235	33,199	10,551	15,448	8,078	1,748	6,487	675	32,436	10,480	49,042	251	763	49,805	248	16,748	16,819	71
2015	9,386	40	102	144	174	416	0	920	9,835	254	1,700	51	0	0	7,370	295	10,328	235	38,895	10,400	13,428	12,219	2,038	6,694	717	35,096	11,164	49,805	248	3,799	53,605	220	16,819	16,055	-764
2016	0	40	102	144	179	416	0	920	5,803	254	1,705	51	0	0	7,743	295	11,610	235	27,142	9,059	13,450	9,022	1,783	6,475	646	31,377	8,864	53,605	220	-4,235	49,370	242	16,055	16,251	196
2017	0	40	102	144	185	416	0	920	6,281	254	1,700	51	0	0	8,261	295	11,431	235	27,960	9,378	15,448	7,323	1,633	6,432	573	31,408	9,801	49,370	242	-3,448	45,922	253	16,251	15,828	-423
2018	1,899	40	102	144	190	416	5	920	10,488	254	1,700	51	0	0	8,124	295	9,355	235	31,864	10,226	15,448	7,442	1,652	6,480	589	31,612	10,326	45,922	253	252	46,174	251	15,828	15,728	-100
2019	277	40	102	144	196	416	21	920	7,161	254	1,700	51	0	0	7,742	295	9,828	235	27,028	9,010	13,428	6,896	1,609	6,430	688	29,052	9,347	46,174	251	-2,023	44,151	256	15,728	15,390	-337
2020	1,103	40	102	144	201	416	48	920	9,538	254	1,705	51	0	0	8,101	295	8,519	235	29,317	9,638	15,472	5,888	1,550	6,464	941	30,315	10,027	44,151	256	-997	43,154	256	15,390	15,001	-389
2021	0	40	102	144	207	416	91	920	7,156	254	1,700	51	0	0	7,777	295	9,150	235	26,183	8,883	15,448	4,941	1,480	6,416	775	29,060	9,587	43,154	256	-2,877	40,277	261	15,001	14,297	-704
2022	0	40	102	144	212	416	126	920	7,472	254	1,700	51	0	0	7,575	295	8,559	235	25,747	8,770	15,448	4,345	1,404	6,407	973	28,577	9,646	40,277	261	-2,830	37,447	264	14,297	13,422	-875
2023	2,320	40	102	144	218	416	138	920	11,294	254	1,700	51	0	0	7,195	295	6,393	235	29,361	9,390	15,448	4,218	1,324	6,466	1,946	29,403	10,064	37,447	264	-42	37,405	251	13,422	12,747	-674
2024	6,575	40	102	144	223	416	146	920	18,685	254	1,705	51	0	0	6,910	295	3,779	235	38,125	11,237	15,472	5,446	1,429	6,617	2,336	31,302	10,180	37,405	251	6,823	44,229	230	12,747	13,804	1,057
2025	5,623	40	102	144	229	416	152	920	13,704	254	1,700	51	0	0	6,661	295	6,241	235	34,412	10,163	13,428	7,616	1,760	6,601	912	30,319	8,914	44,229	230	4,093	48,322	229	13,804	15,054	1,249
2026	0	40	102	144	234	416	157	920	7,875	254	1,700	51	0	0	7,167	295	8,447	235	25,683	8,761	13,428	6,603	1,609	6,433	908	28,982	8,527	48,322	229	-3,299	45,023	250	15,054	15,287	233
2027	5,682	40	102	144	240	416	162	920	14,705	254	1,700	51	0	0	7,540	295	7,491	235	37,623	11,282	15,448	9,206	1,808	6,592	773	33,826	10,871	45,023	250	3,797	48,820	236	15,287	15,698	411
2028	2,058	40	102	144	246	416	169	920	9,915	254	1,705	51	0	0	7,278	295	8,907	235	30,381	9,790	13,450	8,675	1,767	6,510	736	31,137	9,444	48,820	236	-757	48,063	246	15,698	16,044	346
2029	565	40	102	144	251	416	174	920	8,270	254	1,700	51	0	0	7,520	295	9,724	235	28,306	9,508	13,428	8,168	1,684	6,452	663	30,395	9,584	48,063	246	-2,089	45,974	255	16,044	15,968	-76
2030	6,989	40	102	144	257	416	180	920	12,708	254	1,700	51	0	0	7,590	295	8,826	235	38,353	11,142	13,428	11,423	1,914	6,638	679	34,083	11,173	45,974	255	4,270	50,244	233	15,968	15,938	-31
2031	0	40	102	144	262	416	184	920	9,913	254	1,700	51	0	0	7,347	295	9,571	235	29,080	9,946	13,428	9,091	1,723	6,445	739	31,426	9,422	50,244	233	-2,346	47,898	253	15,938	16,462	524
2032	416	40	102	144	268	416	188	920	8,577	254	1,705	51	0	0	7,722	295	10,062	235	29,040	9,822	13,450	8,368	1,685	6,462	609	30,573	9,928	47,898	253	-1,534	46,365	259	16,462	16,356	-106
2033	3,050	40	102	144	273	416	191	920	11,853	254	1,700	51	0	0	8,143	295	8,484	235	33,796	10,768	15,448	8,159	1,690	6,514	732	32,544	10,884	46,365	259	1,253	47,617	251	16,356	16,239	-116
2034	0	40	102	144	279	416	192	920	6,543	254	1,700	51	0	0	8,055	295	10,772	235	27,643	9,468	15,448	6,416	1,594	6,430	583	30,472	9,849	47,617	251	-2,829	44,789	260	16,239	15,859	-380
2035	1,034	40	102	144	284	416	192	920	8,479	254	1,700	51	0	0	7,800	295	9,921	235	29,512	9,822	15,448	6,593	1,608	6,451	574	30,673	10,292	44,789	260	-1,161	43,628	259	15,859	15,389	-470

Projected TDS Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	100	1,254	786	2,787	2,267	0	4,915	10	669	0	0	0	0	3,836	816	36,956	18,144	12,841	0	2,499	0	2,751	18,090	13,831	1,650,000	652	18,866	1,668,866	647	1,463,642	1,467,956	4,314
2013	1,890	100	1,250	786	2,834	2,267	0	4,915	0	669	0	0	0	0	-3,706	754	2,269	6,529	12,814	0	1,571	0	2,649	17,033	13,601	1,668,866	647	-14,764	1,654,102	650	1,467,956	1,460,884	-7,072
2014	15,703	100	1,250	786	2,882	2,267	0	4,915	0	669	0	0	0	0	-1,709	782	18,126	10,535	12,814	0	1,717	0	2,727	17,258	13,726	1,654,102	650	868	1,654,969	648	1,460,884	1,457,694	-3,190
2015	61,979	100	1,250	786	2,929	2,267	0	4,915	7	669	0	0	0	0	-578	766	65,587	18,196	12,814	0	3,511	0	2,815	19,140	13,766	1,654,969	648	46,447	1,701,416	632	1,457,694	1,462,124	4,430
2016	0	100	1,254	786	2,977	2,267	0	4,915	0	669	0	0	0	0	-4,266	674	-35	6,604	12,841	0	2,239	0	2,996	18,076	13,610	1,701,416	632	-18,111	1,683,305	630	1,462,124	1,441,910	-7,005
2017	0	100	1,250	786	3,025	2,267	2	4,915	0	669	0	0	0	0	-6,108	733	-1,831	4,588	12,814	0	1,545	0	2,821	17,180	13,393	1,683,305	630	-19,011	1,664,294	629	1,441,910	1,423,929	-8,804
2018	12,538	100	1,250	786	3,072	2,267	40	4,915	0	669	0	0	0	0	-3,421	767	13,480	9,207	12,814	0	1,681	0	2,757	17,252	13,322	1,664,294	629	-3,772	1,660,523	629	1,423,929	1,419,814	-4,114
2019	1,826	100	1,250	786	3,120	2,267	140	4,915	0	669	0	0	0	0	-1,862	757	4,475	10,222	19,123	0	1,378	0	2,000	22,500	18,061	1,660,523	629	-18,026	1,642,497	632	1,419,814	1,411,976	-7,839
2020	7,285	100	1,254	786	3,168	2,267	264	4,915	0	669	0	0	0	0	59	783	12,030	13,921	25,281	0	1,338	0	1,391	28,010	22,929	1,642,497	632	-15,981	1,626,516	634	1,411,976	1,402,968	-9,008
2021	0	100	1,250	786	3,215	2,267	344	4,915	0	669	0	0	0	0	-1,798	785	3,011	11,622	19,123	0	1,152	0	1,453	21,728	17,748	1,626,516	634	-18,717	1,607,800	639	1,402,968	1,396,842	-6,126
2022	0	100	1,250	786	3,263	2,267	385	4,915	0	669	0	0	0	0	17	808	4,915	13,986	25,228	0	997	0	1,064	27,289	22,842	1,607,800	639	-22,374	1,585,426	644	1,396,842	1,387,985	-8,857
2023	15,322	100	1,250	786	3,310	2,267	404	4,915	0	669	0	0	0	0	6,827	817	27,114	23,907	34,977	0	1,191	0	649	36,818	31,190	1,585,426	644	-9,703	1,575,722	644	1,387,985	1,380,702	-7,283
2024	43,415	100	1,254	786	3,358	2,267	414	4,915	10	669	0	0	0	0	13,287	757	61,737	34,045	35,059	0	2,088	0	676	37,823	31,312	1,575,722	644	23,914	1,599,636	636	1,380,702	1,383,435	2,733
2025	37,127	100	1,250	786	3,406	2,267	420	4,915	10	669	0	0	0	0	10,964	682	53,176	29,861	12,814	0	2,893	0	1,588	17,295	12,456	1,599,636	636	35,881	1,635,517	630	1,383,435	1,400,840	17,405
2026	0	100	1,250	786	3,453	2,267	423	4,915	0	669	0	0	0	0	2,405	678	7,531	17,023	19,123	0	1,635	0	1,540	22,297	17,698	1,635,517	630	-14,766	1,620,751	635	1,400,840	1,400,166	-674
2027	37,522	100	1,250	786	3,501	2,267	426	4,915	8	669	0	0	0	0	4,507	750	47,214	24,681	12,814	0	2,728	0	2,230	17,772	12,996	1,620,751	635	29,442	1,650,193	629	1,400,166	1,411,851	11,685
2028	13,592	100	1,254	786	3,548	2,267	430	4,915	0	669	0	0	0	0	1,034	704	19,858	17,989	12,841	0	2,060	0	2,414	17,315	13,051	1,650,193	629	2,544	1,652,737	630	1,411,851	1,416,788	4,938
2029	3,729	100	1,250	786	3,596	2,267	434	4,915	0	669	0	0	0	0	-2,399	730	6,610	13,445	12,814	0	1,729	0	2,419	16,962	13,058	1,652,737	630	-10,351	1,642,385	635	1,416,788	1,417,175	387
2030	46,150	100	1,250	786	3,644	2,267	437	4,915	10	669	0	0	0	0	6,011	769	57,502	28,057	12,814	0	3,238	0	2,803	18,855	13,475	1,642,385	635	38,648	1,681,033	626	1,417,175	1,431,757	14,582
2031	0	100	1,250	786	3,691	2,267	438	4,915	0	669	0	0	0	0	-3,371	706	2,009	12,404	12,814	0	1,853	0	2,692	17,358	13,206	1,681,033	626	-15,350	1,665,683	632	1,431,757	1,430,955	-803
2032	2,747	100	1,254	786	3,739	2,267	439	4,915	0	669	0	0	0	0	-4,658	760	3,520	11,353	12,841	0	1,551	0	2,621	17,013	13,283	1,665,683	632	-13,493	1,652,190	636	1,430,955	1,429,025	-1,930
2033	20,140	100	1,250	786	3,787	2,267	440	4,915	3	669	0	0	0	0	-1,594	784	24,026	16,985	19,123	0	1,905	0	2,122	23,149	18,375	1,652,190	636	877	1,653,067	635	1,429,025	1,427,635	-1,390
2034	0	100	1,250	786	3,834	2,267	440	4,915	0	669	0	0	0	0	-4,025	758	1,499	11,944	12,814	0	1,427	0	2,393	16,634	13,133	1,653,067	635	-15,135	1,637,932	641	1,427,635	1,426,446	-1,188
2035	6,825	100	1,250	786	3,882	2,267	440	4,915	0	669	0	0	0	0	-4,054	794	8,343	12,788	12,814	0	1,377	0	2,402	16,592	13,251	1,637,932	641	-8,249	1,629,683	644	1,426,446	1,425,983	-463

Table I-36b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	40	1,254	105	2,787	302	0	687	10	89	0	0	0	0	3,836	93	36,956	3,394	12,841	0	2,499	0	2,751	18,090	821	1,650,000	39	18,866	1,668,866	39	86,867	89,441	2,574
2013	1,890	40	1,250	105	2,834	302	0	687	0	89	0	0	0	0	-3,706	89	2,269	998	12,814	0	1,571	0	2,649	17,033	829	1,668,866	39	-14,764	1,654,102	40	89,441	89,611	170
2014	15,703	40	1,250	105	2,882	302	0	687	0	89	0	0	0	0	-1,709	87	18,126	2,014	12,814	0	1,717	0	2,727	17,258	842	1,654,102	40	868	1,654,969	40	89,611	90,783	1,172
2015	61,979	40	1,250	105	2,929	302	0	687	7	89	0	0	0	0	-578	87	65,587	4,686	12,814	0	3,511	0	2,815	19,140	857	1,654,969	40	46,447	1,701,416	41	90,783	94,612	3,829
2016	0	40	1,254	105	2,977	302	0	687	0	89	0	0	0	0	-4,266	80	-35	939	12,841	0	2,239	0	2,996	18,076	881	1,701,416	41	-18,111	1,683,305	41	94,612	92,792	58
2017	0	40	1,250	105	3,025	302	2	687	0	89	0	0	0	0	-6,108	82	-1,831	746	12,814	0	1,545	0	2,821	17,180	862	1,683,305	41	-19,011	1,664,294	40	92,792	91,185	-116
2018	12,538	40	1,250	105	3,072	302	40	687	0	89	0	0	0	0	-3,421	82	13,480	1,778	12,814	0	1,681	0	2,757	17,252	853	1,664,294	40	-3,772	1,660,523	41	91,185	92,110	925
2019	1,826	40	1,250	105	3,120	302	140	687	0	89	0	0	0	0	-1,862	83	4,475	1,481	19,123	0	1,378	0	2,000	22,500	1,172	1,660,523	41	-18,026	1,642,497	41	92,110	92,419	309
2020	7,285	40	1,254	105	3,168	302	264	687	0	89	0	0	0	0	59	84	12,030	2,131	25,281	0	1,338	0	1,391	28,010	1,501	1,642,497	41	-15,981	1,626,516	42	92,419	93,049	630
2021	0	40	1,250	105	3,215	302	344	687	0	89	0	0	0	0	-1,798	85	3,011	1,613	19,123	0	1,152	0	1,453	21,728	1,177	1,626,516	42	-18,717	1,607,800	43	93,049	93,485	435
2022	0	40	1,250	105	3,263	302	385	687	0	89	0	0	0	0	17	86	4,915	1,882	25,228	0	997	0	1,064	27,289	1,529	1,607,800	43	-22,374	1,585,426	44	93,485	93,838	353
2023	15,322	40	1,250	105	3,310	302	404	687	0	89	0	0	0	0	6,827	86	27,114	3,552	34,977	0	1,191	0	649	36,818	2,109	1,585,426	44	-9,703	1,575,722	44	93,838	95,281	1,444
2024	43,415	40	1,254	105	3,358	302	414	687	10	89	0	0	0	0	13,287	86	61,737	5,870	35,059	0	2,088	0	676	37,823	2,161	1,575,722	44	23,914	1,599,636	46	95,281	98,991	3,709
2025	37,127	40	1,250	105	3,406	302	420	687	10	89	0	0	0	0	10,964	86	53,176	5,280	12,814	0	2,893	0	1,588	17,295	891	1,599,636	46	35,881	1,635,517	46	98,991	103,379	4,388
2026	0	40	1,250	105	3,453	302	423	687	0	89	0	0	0	0	2,405	87	7,531	2,277	19,123	0	1,635	0	1,540	22,297	1,306	1,635,517	46	-14,766	1,620,751	47	103,379	104,350	971
2027	37,522	40	1,250	105	3,501	302	426	687	8	89	0	0	0	0	4,507	90	47,214	4,607	12,814	0	2,728	0	2,230	17,772	969	1,620,751	47	29,442	1,650,193	48	104,350	107,989	3,638
2028	13,592	40	1,254	105	3,548	302	430	687	0	89	0	0	0	0	1,034	88	19,858	2,902	12,841	0	2,060	0	2,414	17,315	998	1,650,193	48	2,544	1,652,737	49	107,989	109,893	1,904
2029	3,729	40	1,250	105	3,596	302	434	687	0	89	0	0	0	0	-2,399	89	6,610	1,976	12,814	0	1,729	0	2,419	16,962	1,013	1,652,737	49	-10,351	1,642,385	50	109,893	110,856	963
2030	46,150	40	1,250	105	3,644	302	437	687	10	89	0	0	0	0	6,011	90	57,502	5,329	12,814	0	3,238	0	2,803	18,855	1,054	1,642,385	50	38,648	1,681,033	50	110,856	115,131	4,275
2031	0	40	1,250	105	3,691	302	438	687	0	89	0	0	0	0	-3,371	87	2,009	1,706	12,814	0	1,853	0	2,692	17,358	1,062	1,681,033	50	-15,350	1,665,683	51	115,131	115,775	644
2032	2,747	40	1,254	105	3,739	302	439	687	0	89	0	0	0	0	-4,658	90	3,520	1,708	12,841	0	1,551	0	2,621	17,013	1,075	1,665,683	51	-13,493	1,652,190	52	115,775	116,409	633
2033	20,140	40	1,250	105	3,787	302	440	687	3	89	0	0	0	0	-1,594	90	24,026	3,047	19,123	0	1,905	0	2,122	23,149	1,497	1,652,190	52	877	1,653,067	52	116,409	117,959	1,550
2034	0	40	1,250	105	3,834	302	440	687	0	89	0	0	0	0	-4,025	89	1,499	1,679	12,814	0	1,427	0	2,393	16,634	1,085	1,653,067	52	-15,135	1,637,932	53	117,959	118,553	594
2035	6,825	40	1,250	105	3,882	302	440	687	0	89	0	0	0	0	-4,054	90	8,343	2,062	12,814	0	1,377	0	2,402	16,592	1,101	1,637,932	53	-8,249	1,629,683	54	118,553	119,514	961

Table I-36c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Nitrate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]
2012	29,070	9	1,254	43	2,787	16	0	34	10	13	0	0	0	0	3,836	18	36,956	574
2013	1,890	9	1,250	43	2,834	16	0	34	0	13	0	0	0	0	-3,706	17	2,269	72
2014	15,703	9	1,250	43	2,882	16	0	34	0	13	0	0	0	0	-1,709	18	18,126	282
2015	61,979	9	1,250	43	2,929	16	0	34	7	13	0	0	0	0	-578	17	65,587	864
2016	0	9	1,254	43	2,977	16	0	34	0	13	0	0	0	0	-4,266	16	-35	43
2017	0	9	1,250	43	3,025	16	2	34	0	13	0	0	0	0	-6,108	17	-1,831	-5
2018	12,538	9	1,250	43	3,072	16	40	34	0	13	0	0	0	0	-3,421	18	13,480	208
2019	1,826	9	1,250	43	3,120	16	140	34	0	13	0	0	0	0	-1,862	17	4,475	125
2020	7,285	9	1,254	43	3,168	16	264	34	0	13	0	0	0	0	59	18	12,030	242
2021	0	9	1,250	43	3,215	16	344	34	0	13	0	0	0	0	-1,798	18	3,011	115
2022	0	9	1,250	43	3,263	16	385	34	0	13	0	0	0	0	17	18	4,915	161
2023	15,322	9	1,250	43	3,310	16	404	34	0	13	0	0	0	0	6,827	18	27,114	514
2024	43,415	9	1,254	43	3,358	16	414	34	10	13	0	0	0	0	13,287	17	61,737	983
2025	37,127	9	1,250	43	3,406	16	420	34	10	13	0	0	0	0	10,964	15	53,176	840
2026	0	9	1,250	43	3,453	16	423	34	0	13	0	0	0	0	2,405	16	7,531	218
2027	37,522	9	1,250	43	3,501	16	426	34	8	13	0	0	0	0	4,507	17	47,214	721
2028	13,592	9	1,254	43	3,548	16	430	34	0	13	0	0	0	0	1,034	16	19,858	355
2029	3,729	9	1,250	43	3,596	16	434	34	0	13	0	0	0	0	-2,399	16	6,610	161
2030	46,150	9	1,250	43	3,644	16	437	34	10	13	0	0	0	0	6,011	17	57,502	864
2031	0	9	1,250	43	3,691	16	438	34	0	13	0	0	0	0	-3,371	16	2,009	98
2032	2,747	9	1,254	43	3,739	16	439	34	0	13	0	0	0	0	-4,658	17	3,520	98
2033	20,140	9	1,250	43	3,787	16	440	34	3	13	0	0	0	0	-1,594	17	24,026	378
2034	0	9	1,250	43	3,834	16	440	34	0	13	0	0	0	0	-4,025	17	1,499	83
2035	6,825	9	1,250	43	3,882	16	440	34	0	13	0	0	0	0	-4,054	18	8,343	162

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,841	0	2,499	0	2,751	18,090	428	1,650,000	20	18,866	1,668,866	20	45,318	45,464	146
2013	12,814	0	1,571	0	2,649	17,033	421	1,668,866	20	-14,764	1,654,102	20	45,464	45,115	-350
2014	12,814	0	1,717	0	2,727	17,258	424	1,654,102	20	868	1,654,969	20	45,115	44,973	-142
2015	12,814	0	3,511	0	2,815	19,140	425	1,654,969	20	46,447	1,701,416	20	44,973	45,413	440
2016	12,841	0	2,239	0	2,996	18,076	423	1,701,416	20	-18,111	1,683,305	20	45,413	44,947	-379
2017	12,814	0	1,545	0	2,821	17,180	417	1,683,305	20	-19,011	1,664,294	20	44,947	44,524	-423
2018	12,814	0	1,681	0	2,757	17,252	417	1,664,294	20	-3,772	1,660,523	20	44,524	44,316	-208
2019	19,123	0	1,378	0	2,000	22,500	564	1,660,523	20	-18,026	1,642,497	20	44,316	43,877	-439
2020	25,281	0	1,338	0	1,391	28,010	713	1,642,497	20	-15,981	1,626,516	20	43,877	43,407	-470
2021	19,123	0	1,152	0	1,453	21,728	549	1,626,516	20	-18,717	1,607,800	20	43,407	42,973	-434
2022	25,228	0	997	0	1,064	27,289	703	1,607,800	20	-22,374	1,585,426	20	42,973	42,431	-541
2023	34,977	0	1,191	0	649	36,818	953	1,585,426	20	-9,703	1,575,722	20	42,431	41,991	-440
2024	35,059	0	2,088	0	676	37,823	952	1,575,722	20	23,914	1,599,636	19	41,991	42,022	31
2025	12,814	0	2,893	0	1,588	17,295	378	1,599,636	19	35,881	1,635,517	19	42,022	42,484	462
2026	19,123	0	1,635	0	1,540	22,297	537	1,635,517	19	-14,766	1,620,751	19	42,484	42,165	-319
2027	12,814	0	2,728	0	2,230	17,772	391	1,620,751	19	29,442	1,650,193	19	42,165	42,494	330
2028	12,841	0	2,060	0	2,414	17,315	393	1,650,193	19	2,544	1,652,737	19	42,494	42,456	-38
2029	12,814	0	1,729	0	2,419	16,962	391	1,652,737	19	-10,351	1,642,385	19	42,456	42,226	-230
2030	12,814	0	3,238	0	2,803	18,855	402	1,642,385	19	38,648	1,681,033	19	42,226	42,689	463
2031	12,814	0	1,853	0	2,692	17,358	394	1,681,033	19	-15,350	1,665,683	19	42,689	42,393	-296
2032	12,841	0	1,551	0	2,621	17,013	394	1,665,683	19	-13,493	1,652,190	19	42,393	42,097	-296
2033	19,123	0	1,905	0	2,122	23,149	541	1,652,190	19	877	1,653,067	19	42,097	41,934	-164
2034	12,814	0	1,427	0	2,393	16,634	386	1,653,067	19	-15,135	1,637,932	19	41,934	41,631	-302
2035	12,814	0	1,377	0	2,402	16,592	387	1,637,932	19	-8,249	1,629,683	19	41,631	41,406	-225

Table I-36d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	40	1,254	150	2,787	433	0	917	10	179	0	0	0	0	3,836	218	36,956	4,617	12,841	0	2,499	0	2,751	18,090	5,715	1,650,000	270	18,866	1,668,866	266	604,840	603,742	-1,099
2013	1,890	40	1,250	150	2,834	433	0	917	0	179	0	0	0	0	-3,706	208	2,269	976	12,814	0	1,571	0	2,649	17,033	5,594	1,668,866	266	-14,764	1,654,102	266	603,742	599,124	-4,618
2014	15,703	40	1,250	150	2,882	433	0	917	0	179	0	0	0	0	-1,709	222	18,126	2,290	12,814	0	1,717	0	2,727	17,258	5,629	1,654,102	266	868	1,654,969	265	599,124	595,785	-3,339
2015	61,979	40	1,250	150	2,929	433	0	917	7	179	0	0	0	0	-578	217	65,587	5,181	12,814	0	3,511	0	2,815	19,140	5,626	1,654,969	265	46,447	1,701,416	257	595,785	595,340	-445
2016	0	40	1,254	150	2,977	433	0	917	0	179	0	0	0	0	-4,266	193	-35	888	12,841	0	2,239	0	2,996	18,076	5,541	1,701,416	257	-18,111	1,683,305	257	595,340	588,910	-4,653
2017	0	40	1,250	150	3,025	433	2	917	0	179	0	0	0	0	-6,108	213	-1,831	271	12,814	0	1,545	0	2,821	17,180	5,470	1,683,305	257	-19,011	1,664,294	258	588,910	583,169	-5,199
2018	12,538	40	1,250	150	3,072	433	40	917	0	179	0	0	0	0	-3,421	224	13,480	1,752	12,814	0	1,681	0	2,757	17,252	5,456	1,664,294	258	-3,772	1,660,523	257	583,169	579,465	-3,703
2019	1,826	40	1,250	150	3,120	433	140	917	0	179	0	0	0	0	-1,862	219	4,475	1,812	19,123	0	1,378	0	2,000	22,500	7,371	1,660,523	257	-18,026	1,642,497	257	579,465	573,907	-5,559
2020	7,285	40	1,254	150	3,168	433	264	917	0	179	0	0	0	0	59	227	12,030	2,864	25,281	0	1,338	0	1,391	28,010	9,320	1,642,497	257	-15,981	1,626,516	257	573,907	567,451	-6,456
2021	0	40	1,250	150	3,215	433	344	917	0	179	0	0	0	0	-1,798	226	3,011	2,022	19,123	0	1,152	0	1,453	21,728	7,178	1,626,516	257	-18,717	1,607,800	257	567,451	562,295	-5,156
2022	0	40	1,250	150	3,263	433	385	917	0	179	0	0	0	0	17	234	4,915	2,661	25,228	0	997	0	1,064	27,289	9,195	1,607,800	257	-22,374	1,585,426	258	562,295	555,761	-6,534
2023	15,322	40	1,250	150	3,310	433	404	917	0	179	0	0	0	0	6,827	236	27,114	5,734	34,977	0	1,191	0	649	36,818	12,489	1,585,426	258	-9,703	1,575,722	256	555,761	549,006	-6,755
2024	43,415	40	1,254	150	3,358	433	414	917	10	179	0	0	0	0	13,287	213	61,737	8,951	35,059	0	2,088	0	676	37,823	12,451	1,575,722	256	23,914	1,599,636	251	549,006	545,507	-3,499
2025	37,127	40	1,250	150	3,406	433	420	917	10	179	0	0	0	0	10,964	189	53,176	7,622	12,814	0	2,893	0	1,588	17,295	4,911	1,599,636	251	35,881	1,635,517	247	545,507	548,217	2,710
2026	0	40	1,250	150	3,453	433	423	917	0	179	0	0	0	0	2,405	188	7,531	3,428	19,123	0	1,635	0	1,540	22,297	6,926	1,635,517	247	-14,766	1,620,751	247	548,217	544,719	-3,498
2027	37,522	40	1,250	150	3,501	433	426	917	8	179	0	0	0	0	4,507	212	47,214	6,189	12,814	0	2,728	0	2,230	17,772	5,056	1,620,751	247	29,442	1,650,193	243	544,719	545,852	1,133
2028	13,592	40	1,254	150	3,548	433	430	917	0	179	0	0	0	0	1,034	196	19,858	3,895	12,841	0	2,060	0	2,414	17,315	5,046	1,650,193	243	2,544	1,652,737	242	545,852	544,702	-1,151
2029	3,729	40	1,250	150	3,596	433	434	917	0	179	0	0	0	0	-2,399	204	6,610	2,448	12,814	0	1,729	0	2,419	16,962	5,020	1,652,737	242	-10,351	1,642,385	243	544,702	542,130	-2,572
2030	46,150	40	1,250	150	3,644	433	437	917	10	179	0	0	0	0	6,011	217	57,502	7,232	12,814	0	3,238	0	2,803	18,855	5,155	1,642,385	243	38,648	1,681,033	238	542,130	544,207	2,078
2031	0	40	1,250	150	3,691	433	438	917	0	179	0	0	0	0	-3,371	196	2,009	2,073	12,814	0	1,853	0	2,692	17,358	5,020	1,681,033	238	-15,350	1,665,683	239	544,207	541,261	-2,946
2032	2,747	40	1,254	150	3,739	433	439	917	0	179	0	0	0	0	-4,658	214	3,520	1,798	12,841	0	1,551	0	2,621	17,013	5,024	1,665,683	239	-13,493	1,652,190	240	541,261	538,034	-3,227
2033	20,140	40	1,250	150	3,787	433	440	917	3	179	0	0	0	0	-1,594	222	24,026	3,647	19,123	0	1,905	0	2,122	23,149	6,918	1,652,190	240	877	1,653,067	238	538,034	534,764	-3,271
2034	0	40	1,250	150	3,834	433	440	917	0	179	0	0	0	0	-4,025	212	1,499	1,898	12,814	0	1,427	0	2,393	16,634	4,919	1,653,067	238	-15,135	1,637,932	239	534,764	531,742	-3,021
2035	6,825	40	1,250	150	3,882	433	440	917	0	179	0	0	0	0	-4,054	224	8,343	2,225	12,814	0	1,377	0	2,402	16,592	4,940	1,637,932	239	-8,249	1,629,683	239	531,742	529,028	-2,715

Table I-37a

Projected TDS Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	5,123	100	442	777	758	2,240	0	0	15,281	722	5,429	722	3,551	723	30,583	27,295	11,058	1,231	1,151	13,877	70	27,387	26,745	69,600	750	3,196	72,795	722	70,950	71,499	549
2013	333	100	441	777	764	2,240	0	0	2,847	722	7,635	722	5,826	723	17,845	18,857	11,043	786	844	13,113	38	25,825	24,536	72,795	722	-7,980	64,815	747	71,499	65,820	-5,679
2014	2,767	100	441	777	770	2,240	0	0	8,005	722	7,025	722	3,735	723	22,743	21,615	5,194	818	785	13,815	43	20,656	20,178	64,815	747	2,087	66,902	739	65,820	67,256	1,436
2015	10,922	100	441	777	775	2,240	0	0	27,898	722	5,082	722	1,284	723	46,402	37,951	11,043	1,995	1,279	13,922	70	28,309	27,173	66,902	739	18,093	84,995	675	67,256	78,035	10,778
2016	0	100	442	777	781	2,240	0	0	3,784	722	6,676	722	5,368	723	17,052	18,395	11,058	1,485	1,297	14,163	64	28,066	24,577	84,995	675	-11,014	73,981	714	78,035	71,853	-6,182
2017	0	100	441	777	787	2,240	0	0	2,081	722	8,489	722	4,838	723	16,636	17,998	5,194	883	863	14,662	47	21,649	20,188	73,981	714	-5,013	68,968	743	71,853	69,663	-2,190
2018	2,209	100	441	777	793	2,240	0	0	5,510	722	7,672	722	4,354	723	20,979	20,404	5,194	769	760	14,795	47	21,564	21,014	68,968	743	-585	68,383	743	69,663	69,053	-610
2019	322	100	441	777	799	2,240	0	0	1,318	722	8,363	722	6,035	723	17,277	18,382	11,043	389	501	13,430	32	25,395	25,138	68,383	743	-8,118	60,265	760	69,053	62,297	-6,756
2020	1,284	100	442	777	805	2,240	0	0	2,532	722	8,820	722	4,660	723	18,542	18,820	5,201	361	408	14,129	34	20,134	20,391	60,265	760	-1,592	58,674	761	62,297	60,726	-1,571
2021	0	100	441	777	810	2,240	0	0	467	722	9,939	722	4,877	723	16,534	17,946	5,194	131	301	14,551	35	20,212	20,607	58,674	761	-3,678	54,996	777	60,726	58,065	-2,661
2022	0	100	441	777	816	2,240	0	0	960	722	10,486	722	4,616	723	17,319	18,728	5,194	120	269	14,643	34	20,260	21,107	54,996	777	-2,941	52,055	787	58,065	55,687	-2,378
2023	2,700	100	441	777	822	2,240	0	0	7,122	722	8,249	722	3,838	723	23,171	22,201	5,194	425	340	14,860	38	20,857	21,949	52,055	787	2,314	54,369	757	55,687	55,939	252
2024	7,651	100	442	777	828	2,240	0	0	23,652	722	3,248	722	1,708	723	37,529	32,116	5,201	2,480	1,236	15,376	58	24,351	23,782	54,369	757	13,177	67,546	700	55,939	64,273	8,334
2025	6,543	100	441	777	834	2,240	0	0	31,933	722	3,754	722	1,742	723	45,245	40,641	11,043	7,610	2,007	15,503	97	36,259	32,592	67,546	700	8,986	76,532	695	64,273	72,321	8,048
2026	0	100	441	777	840	2,240	0	0	3,032	722	6,806	722	5,988	723	17,106	18,570	11,043	1,230	1,052	14,109	52	27,486	24,979	76,532	695	-10,380	66,152	733	72,321	65,913	-6,409
2027	6,612	100	441	777	845	2,240	0	0	21,134	722	4,045	722	2,918	723	35,994	31,527	5,194	3,365	1,714	14,470	64	24,807	23,009	66,152	733	11,187	77,340	708	65,913	74,430	8,517
2028	2,395	100	442	777	851	2,240	0	0	6,994	722	4,905	722	5,952	723	21,540	20,922	11,058	1,893	1,442	13,646	51	28,090	25,645	77,340	708	-6,550	70,790	724	74,430	69,707	-4,723
2029	657	100	441	777	857	2,240	0	0	3,265	722	7,106	722	5,903	723	18,228	19,152	11,043	798	886	12,904	37	25,667	24,402	70,790	724	-7,439	63,351	748	69,707	64,457	-5,250
2030	8,133	100	441	777	863	2,240	0	0	49,426	722	3,965	722	-1,666	723	61,160	54,973	11,043	12,976	2,990	15,621	122	42,752	40,456	63,351	748	18,409	81,760	710	64,457	78,974	14,518
2031	0	100	441	777	869	2,240	0	0	1,172	722	7,529	722	6,268	723	16,278	17,818	11,043	919	1,135	14,194	51	27,343	25,315	81,760	710	-11,065	70,695	744	78,974	71,478	-7,496
2032	484	100	442	777	875	2,240	0	0	1,470	722	8,784	722	5,984	723	18,040	19,150	11,058	355	715	13,354	33	25,515	25,075	70,695	744	-7,476	63,219	763	71,478	65,553	-5,925
2033	3,549	100	441	777	880	2,240	0	0	10,413	722	7,475	722	3,523	723	26,281	24,655	5,194	650	777	14,023	40	20,684	20,642	63,219	763	5,597	68,817	743	65,553	69,566	4,013
2034	0	100	441	777	886	2,240	0	0	467	722	7,956	722	5,296	723	15,045	16,642	5,194	450	607	14,461	41	20,753	20,365	68,817	743	-5,707	63,109	767	69,566	65,843	-3,723
2035	1,203	100	441	777	892	2,240	0	0	3,800	722	8,693	722	4,358	723	19,386	19,896	5,194	386	505	14,526	42	20,654	21,021	63,109	767	-1,268	61,842	770	65,843	64,718	-1,125

Table I-37b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	113	758	326	0	0	15,281	89	5,429	98	3,551	34	30,583	3,416	11,058	1,231	1,151	13,877	70	27,387	3,127	69,600	88	3,196	72,795	87	8,294	8,583	289
2013	333	40	441	113	764	326	0	0	2,847	89	7,635	98	5,826	34	17,845	2,052	11,043	786	844	13,113	38	25,825	2,946	72,795	87	-7,980	64,815	87	8,583	7,690	-894
2014	2,767	40	441	113	770	326	0	0	8,005	89	7,025	98	3,735	34	22,743	2,634	5,194	818	785	13,815	43	20,656	2,357	64,815	87	2,087	66,902	88	7,690	7,966	277
2015	10,922	40	441	113	775	326	0	0	27,898	89	5,082	98	1,284	34	46,402	5,115	11,043	1,995	1,279	13,922	70	28,309	3,219	66,902	88	18,093	84,995	85	7,966	9,863	1,896
2016	0	40	442	113	781	326	0	0	3,784	89	6,676	98	5,368	34	17,052	2,006	11,058	1,485	1,297	14,163	64	28,066	3,106	84,995	85	-11,014	73,981	87	9,863	8,763	-1,100
2017	0	40	441	113	787	326	0	0	2,081	89	8,489	98	4,838	34	16,636	2,020	5,194	883	863	14,662	47	21,649	2,462	73,981	87	-5,013	68,968	89	8,763	8,321	-442
2018	2,209	40	441	113	793	326	0	0	5,510	89	7,672	98	4,354	34	20,979	2,427	5,194	769	760	14,795	47	21,564	2,510	68,968	89	-585	68,383	89	8,321	8,238	-83
2019	322	40	441	113	799	326	0	0	1,318	89	8,363	98	6,035	34	17,277	1,988	11,043	389	501	13,430	32	25,395	2,999	68,383	89	-8,118	60,265	88	8,238	7,227	-1,010
2020	1,284	40	442	113	805	326	0	0	2,532	89	8,820	98	4,660	34	18,542	2,189	5,201	361	408	14,129	34	20,134	2,366	60,265	88	-1,592	58,674	88	7,227	7,050	-177
2021	0	40	441	113	810	326	0	0	467	89	9,939	98	4,877	34	16,534	2,030	5,194	131	301	14,551	35	20,212	2,392	58,674	88	-3,678	54,996	89	7,050	6,688	-362
2022	0	40	441	113	816	326	0	0	960	89	10,486	98	4,616	34	17,319	2,154	5,194	120	269	14,643	34	20,260	2,431	54,996	89	-2,941	52,055	91	6,688	6,411	-278
2023	2,700	40	441	113	822	326	0	0	7,122	89	8,249	98	3,838	34	23,171	2,715	5,194	425	340	14,860	38	20,857	2,527	52,055	91	2,314	54,369	89	6,411	6,598	188
2024	7,651	40	442	113	828	326	0	0	23,652	89	3,248	98	1,708	34	37,529	4,222	5,201	2,480	1,236	15,376	58	24,351	2,805	54,369	89	13,177	67,546	87	6,598	8,015	1,417
2025	6,543	40	441	113	834	326	0	0	31,933	89	3,754	98	1,742	34	45,245	5,235	11,043	7,610	2,007	15,503	97	36,259	4,064	67,546	87	8,986	76,532	88	8,015	9,185	1,170
2026	0	40	441	113	840	326	0	0	3,032	89	6,806	98	5,988	34	17,106	1,987	11,043	1,230	1,052	14,109	52	27,486	3,173	76,532	88	-10,380	66,152	89	9,185	8,000	-1,186
2027	6,612	40	441	113	845	326	0	0	21,134	89	4,045	98	2,918	34	35,994	4,030	5,194	3,365	1,714	14,470	64	24,807	2,793	66,152	89	11,187	77,340	88	8,000	9,237	1,237
2028	2,395	40	442	113	851	326	0	0	6,994	89	4,905	98	5,952	34	21,540	2,347	11,058	1,893	1,442	13,646	51	28,090	3,183	77,340	88	-6,550	70,790	87	9,237	8,401	-836
2029	657	40	441	113	857	326	0	0	3,265	89	7,106	98	5,903	34	18,228	2,094	11,043	798	886	12,904	37	25,667	2,941	70,790	87	-7,439	63,351	88	8,401	7,554	-847
2030	8,133	40	441	113	863	326	0	0	49,426	89	3,965	98	-1,666	34	61,160	7,322	11,043	12,976	2,990	15,621	122	42,752	4,742	63,351	88	18,409	81,760	91	7,554	10,135	2,581
2031	0	40	441	113	869	326	0	0	1,172	89	7,529	98	6,268	34	16,278	1,884	11,043	919	1,135	14,194	51	27,343	3,249	81,760	91	-11,065	70,695	91	10,135	8,770	-1,365
2032	484	40	442	113	875	326	0	0	1,470	89	8,784	98	5,984	34	18,040	2,103	11,058	355	715	13,354	33	25,515	3,077	70,695	91	-7,476	63,219	91	8,770	7,797	-973
2033	3,549	40	441	113	880	326	0	0	10,413	89	7,475	98	3,523	34	26,281	3,067	5,194	650	777	14,023	40	20,684	2,455	63,219	91	5,597	68,817	90	7,797	8,409	612
2034	0	40	441	113	886	326	0	0	467	89	7,956	98	5,296	34	15,045	1,819	5,194	450	607	14,461	41	20,753	2,462	68,817	90	-5,707	63,109	91	8,409	7,766	-643
2035	1,203	40	441	113	892	326	0	0	3,800	89	8,693	98	4,358	34	19,386	2,345	5,194	386	505	14,526	42	20,654	2,479	63,109	91	-1,268	61,842	91	7,766	7,632	-134

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	5,123	9	442	45	758	16	0	0	15,281	20	5,429	17	3,551	20	30,583	740	11,058	1,231	1,151	13,877	70	27,387	714	69,600	20	3,196	72,795	**19**	1,894	1,920	**26**
2013	333	9	441	45	764	16	0	0	2,847	20	7,635	17	5,826	20	17,845	456	11,043	786	844	13,113	38	25,825	659	72,795	19	-7,980	64,815	**19**	1,920	1,717	**-203**
2014	2,767	9	441	45	770	16	0	0	8,005	20	7,025	17	3,735	20	22,743	555	5,194	818	785	13,815	43	20,656	526	64,815	19	2,087	66,902	**19**	1,717	1,746	**29**
2015	10,922	9	441	45	775	16	0	0	27,898	20	5,082	17	1,284	20	46,402	1,083	11,043	1,995	1,279	13,922	70	28,309	705	66,902	19	18,093	84,995	**18**	1,746	2,124	**378**
2016	0	9	442	45	781	16	0	0	3,784	20	6,676	17	5,368	20	17,052	444	11,058	1,485	1,297	14,163	64	28,066	669	84,995	18	-11,014	73,981	**19**	2,124	1,899	**-225**
2017	0	9	441	45	787	16	0	0	2,081	20	8,489	17	4,838	20	16,636	424	5,194	883	863	14,662	47	21,649	534	73,981	19	-5,013	68,968	**19**	1,899	1,790	**-109**
2018	2,209	9	441	45	793	16	0	0	5,510	20	7,672	17	4,354	20	20,979	513	5,194	769	760	14,795	47	21,564	540	68,968	19	-585	68,383	**19**	1,790	1,763	**-27**
2019	322	9	441	45	799	16	0	0	1,318	20	8,363	17	6,035	20	17,277	437	11,043	389	501	13,430	32	25,395	642	68,383	19	-8,118	60,265	**19**	1,763	1,558	**-204**
2020	1,284	9	442	45	805	16	0	0	2,532	20	8,820	17	4,660	20	18,542	455	5,201	361	408	14,129	34	20,134	510	60,265	19	-1,592	58,674	**19**	1,558	1,503	**-55**
2021	0	9	441	45	810	16	0	0	467	20	9,939	17	4,877	20	16,534	415	5,194	131	301	14,551	35	20,212	510	58,674	19	-3,678	54,996	**19**	1,503	1,408	**-95**
2022	0	9	441	45	816	16	0	0	960	20	10,486	17	4,616	20	17,319	434	5,194	120	269	14,643	34	20,260	512	54,996	19	-2,941	52,055	**19**	1,408	1,330	**-78**
2023	2,700	9	441	45	822	16	0	0	7,122	20	8,249	17	3,838	20	23,171	562	5,194	425	340	14,860	38	20,857	524	52,055	19	2,314	54,369	**19**	1,330	1,368	**38**
2024	7,651	9	442	45	828	16	0	0	23,652	20	3,248	17	1,708	20	37,529	900	5,201	2,480	1,236	15,376	58	24,351	582	54,369	19	13,177	67,546	**18**	1,368	1,686	**318**
2025	6,543	9	441	45	834	16	0	0	31,933	20	3,754	17	1,742	20	45,245	1,124	11,043	7,610	2,007	15,503	97	36,259	855	67,546	18	8,986	76,532	**19**	1,686	1,955	**269**
2026	0	9	441	45	840	16	0	0	3,032	20	6,806	17	5,988	20	17,106	445	11,043	1,230	1,052	14,109	52	27,486	675	76,532	19	-10,380	66,152	**19**	1,955	1,724	**-231**
2027	6,612	9	441	45	845	16	0	0	21,134	20	4,045	17	2,918	20	35,994	870	5,194	3,365	1,714	14,470	64	24,807	602	66,152	19	11,187	77,340	**19**	1,724	1,993	**268**
2028	2,395	9	442	45	851	16	0	0	6,994	20	4,905	17	5,952	20	21,540	537	11,058	1,893	1,442	13,646	51	28,090	687	77,340	19	-6,550	70,790	**19**	1,993	1,843	**-149**
2029	657	9	441	45	857	16	0	0	3,265	20	7,106	17	5,903	20	18,228	464	11,043	798	886	12,904	37	25,667	645	70,790	19	-7,439	63,351	**19**	1,843	1,662	**-182**
2030	8,133	9	441	45	863	16	0	0	49,426	20	3,965	17	-1,666	20	61,160	1,532	11,043	12,976	2,990	15,621	122	42,752	1,043	63,351	19	18,409	81,760	**19**	1,662	2,150	**489**
2031	0	9	441	45	869	16	0	0	1,172	20	7,529	17	6,268	20	16,278	419	11,043	919	1,135	14,194	51	27,343	689	81,760	19	-11,065	70,695	**20**	2,150	1,880	**-271**
2032	484	9	442	45	875	16	0	0	1,470	20	8,784	17	5,984	20	18,040	453	11,058	355	715	13,354	33	25,515	659	70,695	20	-7,476	63,219	**19**	1,880	1,674	**-206**
2033	3,549	9	441	45	880	16	0	0	10,413	20	7,475	17	3,523	20	26,281	637	5,194	650	777	14,023	40	20,684	527	63,219	19	5,597	68,817	**19**	1,674	1,784	**110**
2034	0	9	441	45	886	16	0	0	467	20	7,956	17	5,296	20	15,045	383	5,194	450	607	14,461	41	20,753	522	68,817	19	-5,707	63,109	**19**	1,784	1,644	**-139**
2035	1,203	9	441	45	892	16	0	0	3,800	20	8,693	17	4,358	20	19,386	479	5,194	386	505	14,526	42	20,654	525	63,109	19	-1,268	61,842	**19**	1,644	1,599	**-46**

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	5,123	40	442	124	758	358	0	0	15,281	140	5,429	108	3,551	235	30,583	5,553	11,058	1,231	1,151	13,877	70	27,387	5,739	69,600	161	3,196	72,795	152	15,223	15,038	-185
2013	333	40	441	124	764	358	0	0	2,847	140	7,635	108	5,826	235	17,845	3,987	11,043	786	844	13,113	38	25,825	5,161	72,795	152	-7,980	64,815	157	15,038	13,865	-1,173
2014	2,767	40	441	124	770	358	0	0	8,005	140	7,025	108	3,735	235	22,743	4,344	5,194	818	785	13,815	43	20,656	4,251	64,815	157	2,087	66,902	153	13,865	13,958	93
2015	10,922	40	441	124	775	358	0	0	27,898	140	5,082	108	1,284	235	46,402	7,496	11,043	1,995	1,279	13,922	70	28,309	5,639	66,902	153	18,093	84,995	137	13,958	15,814	1,856
2016	0	40	442	124	781	358	0	0	3,784	140	6,676	108	5,368	235	17,052	3,869	11,058	1,485	1,297	14,163	64	28,066	4,981	84,995	137	-11,014	73,981	146	15,814	14,702	-1,112
2017	0	40	441	124	787	358	0	0	2,081	140	8,489	108	4,838	235	16,636	3,645	5,194	883	863	14,662	47	21,649	4,131	73,981	146	-5,013	68,968	152	14,702	14,217	-486
2018	2,209	40	441	124	793	358	0	0	5,510	140	7,672	108	4,354	235	20,979	4,144	5,194	769	760	14,795	47	21,564	4,288	68,968	152	-585	68,383	151	14,217	14,072	-144
2019	322	40	441	124	799	358	0	0	1,318	140	8,363	108	6,035	235	17,277	3,887	11,043	389	501	13,430	32	25,395	5,123	68,383	151	-8,118	60,265	157	14,072	12,837	-1,235
2020	1,284	40	442	124	805	358	0	0	2,532	140	8,820	108	4,660	235	18,542	3,801	5,201	361	408	14,129	34	20,134	4,202	60,265	157	-1,592	58,674	156	12,837	12,436	-401
2021	0	40	441	124	810	358	0	0	467	140	9,939	108	4,877	235	16,534	3,576	5,194	131	301	14,551	35	20,212	4,220	58,674	156	-3,678	54,996	158	12,436	11,792	-644
2022	0	40	441	124	816	358	0	0	960	140	10,486	108	4,616	235	17,319	3,669	5,194	120	269	14,643	34	20,260	4,286	54,996	158	-2,941	52,055	158	11,792	11,174	-617
2023	2,700	40	441	124	822	358	0	0	7,122	140	8,249	108	3,838	235	23,171	4,410	5,194	425	340	14,860	38	20,857	4,404	52,055	158	2,314	54,369	151	11,174	11,180	6
2024	7,651	40	442	124	828	358	0	0	23,652	140	3,248	108	1,708	235	37,529	6,404	5,201	2,480	1,236	15,376	58	24,351	4,753	54,369	151	13,177	67,546	140	11,180	12,831	1,651
2025	6,543	40	441	124	834	358	0	0	31,933	140	3,754	108	1,742	235	45,245	8,003	11,043	7,610	2,007	15,503	97	36,259	6,507	67,546	140	8,986	76,532	138	12,831	14,327	1,496
2026	0	40	441	124	840	358	0	0	3,032	140	6,806	108	5,988	235	17,106	3,971	11,043	1,230	1,052	14,109	52	27,486	4,949	76,532	138	-10,380	66,152	148	14,327	13,350	-977
2027	6,612	40	441	124	845	358	0	0	21,134	140	4,045	108	2,918	235	35,994	6,382	5,194	3,365	1,714	14,470	64	24,807	4,660	66,152	148	11,187	77,340	143	13,350	15,071	1,721
2028	2,395	40	442	124	851	358	0	0	6,994	140	4,905	108	5,952	235	21,540	4,569	11,058	1,893	1,442	13,646	51	28,090	5,193	77,340	143	-6,550	70,790	150	15,071	14,447	-624
2029	657	40	441	124	857	358	0	0	3,265	140	7,106	108	5,903	235	18,228	4,077	11,043	798	886	12,904	37	25,667	5,058	70,790	150	-7,439	63,351	156	14,447	13,467	-981
2030	8,133	40	441	124	863	358	0	0	49,426	140	3,965	108	-1,666	235	61,160	10,364	11,043	12,976	2,990	15,621	122	42,752	8,452	63,351	156	18,409	81,760	138	13,467	15,379	1,912
2031	0	40	441	124	869	358	0	0	1,172	140	7,529	108	6,268	235	16,278	3,828	11,043	919	1,135	14,194	51	27,343	4,930	81,760	138	-11,065	70,695	149	15,379	14,277	-1,101
2032	484	40	442	124	875	358	0	0	1,470	140	8,784	108	5,984	235	18,040	4,008	11,058	355	715	13,354	33	25,515	5,009	70,695	149	-7,476	63,219	154	14,277	13,277	-1,000
2033	3,549	40	441	124	880	358	0	0	10,413	140	7,475	108	3,523	235	26,281	4,895	5,194	650	777	14,023	40	20,684	4,181	63,219	154	5,597	68,817	150	13,277	13,991	714
2034	0	40	441	124	886	358	0	0	467	140	7,956	108	5,296	235	15,045	3,455	5,194	450	607	14,461	41	20,753	4,096	68,817	150	-5,707	63,109	156	13,991	13,351	-641
2035	1,203	40	441	124	892	358	0	0	3,800	140	8,693	108	4,358	235	19,386	3,964	5,194	386	505	14,526	42	20,654	4,262	63,109	156	-1,268	61,842	155	13,351	13,052	-298

Projected TDS Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	100	30	777	52	2,240	0	0	1,047	722	372	722	243	723	2,096	1,871	758	84	79	951	5	1,877	1,979	69,600	810	219	69,819	806	76,620	76,511	-109
2013	23	100	30	777	52	2,240	0	0	195	722	523	722	399	723	1,223	1,292	757	54	58	899	3	1,770	1,876	69,819	806	-547	69,272	806	76,511	75,927	-584
2014	190	100	30	777	53	2,240	0	0	549	722	481	722	256	723	1,559	1,481	356	56	54	947	3	1,416	1,493	69,272	806	143	69,415	804	75,927	75,916	-11
2015	749	100	30	777	53	2,240	0	0	1,912	722	348	722	88	723	3,180	2,601	757	137	88	954	5	1,940	2,026	69,415	804	1,240	70,655	796	75,916	76,491	575
2016	0	100	30	777	54	2,240	0	0	259	722	458	722	368	723	1,169	1,261	758	102	89	971	4	1,923	1,986	70,655	796	-755	69,900	797	76,491	75,765	-725
2017	0	100	30	777	54	2,240	0	0	143	722	582	722	332	723	1,140	1,234	356	60	59	1,005	3	1,484	1,544	69,900	797	-344	69,556	798	75,765	75,455	-311
2018	151	100	30	777	54	2,240	0	0	378	722	526	722	298	723	1,438	1,398	356	53	52	1,014	3	1,478	1,547	69,556	798	-40	69,516	797	75,455	75,307	-148
2019	22	100	30	777	55	2,240	0	0	90	722	573	722	414	723	1,184	1,260	757	27	34	920	2	1,740	1,848	69,516	797	-556	68,960	797	75,307	74,718	-588
2020	88	100	30	777	55	2,240	0	0	174	722	605	722	319	723	1,271	1,290	356	25	28	968	2	1,380	1,465	68,960	797	-109	68,851	796	74,718	74,543	-175
2021	0	100	30	777	56	2,240	0	0	32	722	681	722	334	723	1,133	1,230	356	9	21	997	2	1,385	1,477	68,851	796	-252	68,599	797	74,543	74,296	-247
2022	0	100	30	777	56	2,240	0	0	66	722	719	722	316	723	1,187	1,284	356	8	18	1,004	2	1,389	1,484	68,599	797	-202	68,397	797	74,296	74,095	-200
2023	185	100	30	777	56	2,240	0	0	488	722	565	722	263	723	1,588	1,522	356	29	23	1,018	3	1,429	1,523	68,397	797	159	68,556	795	74,095	74,094	-2
2024	524	100	30	777	57	2,240	0	0	1,621	722	223	722	117	723	2,572	2,201	356	170	85	1,054	4	1,669	1,712	68,556	795	903	69,459	790	74,094	74,583	489
2025	448	100	30	777	57	2,240	0	0	2,189	722	257	722	119	723	3,101	2,785	757	522	138	1,062	7	2,485	2,521	69,459	790	616	70,075	786	74,583	74,847	265
2026	0	100	30	777	58	2,240	0	0	208	722	466	722	410	723	1,172	1,273	757	84	72	967	4	1,884	1,935	70,075	786	-711	69,363	787	74,847	74,185	-662
2027	453	100	30	777	58	2,240	0	0	1,448	722	277	722	200	723	2,467	2,161	356	231	117	992	4	1,700	1,693	69,363	787	767	70,130	783	74,185	74,653	468
2028	164	100	30	777	58	2,240	0	0	479	722	336	722	408	723	1,476	1,434	758	130	99	935	4	1,925	1,944	70,130	783	-449	69,681	783	74,653	74,143	-510
2029	45	100	30	777	59	2,240	0	0	224	722	487	722	405	723	1,249	1,313	757	55	61	884	3	1,759	1,807	69,681	783	-510	69,171	783	74,143	73,648	-495
2030	557	100	30	777	59	2,240	0	0	3,387	722	272	722	-114	723	4,192	3,768	757	889	205	1,071	8	2,930	2,901	69,171	783	1,262	70,433	778	73,648	74,514	866
2031	0	100	30	777	60	2,240	0	0	80	722	516	722	430	723	1,116	1,221	757	63	78	973	4	1,874	1,900	70,433	778	-758	69,675	779	74,514	73,835	-679
2032	33	100	30	777	60	2,240	0	0	101	722	602	722	410	723	1,236	1,312	758	24	49	915	2	1,749	1,801	69,675	779	-512	69,162	780	73,835	73,347	-489
2033	243	100	30	777	60	2,240	0	0	714	722	512	722	241	723	1,801	1,690	356	45	53	961	3	1,418	1,447	69,162	780	384	69,546	778	73,347	73,589	243
2034	0	100	30	777	61	2,240	0	0	32	722	545	722	363	723	1,031	1,141	356	31	42	991	3	1,422	1,461	69,546	778	-391	69,155	779	73,589	73,269	-320
2035	82	100	30	777	61	2,240	0	0	260	722	596	722	299	723	1,329	1,364	356	26	35	996	3	1,416	1,463	69,155	779	-87	69,068	779	73,269	73,170	-99

Table I-38b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	40	30	113	52	326	0	0	1,047	89	372	98	243	34	2,096	234	758	84	79	951	5	1,877	162	69,600	66	219	69,819	67	6,282	6,354	72
2013	23	40	30	113	52	326	0	0	195	89	523	98	399	34	1,223	141	757	54	58	899	3	1,770	156	69,819	67	-547	69,272	67	6,354	6,339	-15
2014	190	40	30	113	53	326	0	0	549	89	481	98	256	34	1,559	181	356	56	54	947	3	1,416	125	69,272	67	143	69,415	68	6,339	6,395	56
2015	749	40	30	113	53	326	0	0	1,912	89	348	98	88	34	3,180	351	757	137	88	954	5	1,940	171	69,415	68	1,240	70,655	68	6,395	6,575	180
2016	0	40	30	113	54	326	0	0	259	89	458	98	368	34	1,169	138	758	102	89	971	4	1,923	171	70,655	68	-755	69,900	69	6,575	6,541	-33
2017	0	40	30	113	54	326	0	0	143	89	582	98	332	34	1,140	138	356	60	59	1,005	3	1,484	133	69,900	69	-344	69,556	69	6,541	6,546	5
2018	151	40	30	113	54	326	0	0	378	89	526	98	298	34	1,438	166	356	53	52	1,014	3	1,478	134	69,556	69	-40	69,516	70	6,546	6,579	32
2019	22	40	30	113	55	326	0	0	90	89	573	98	414	34	1,184	136	757	27	34	920	2	1,740	161	69,516	70	-556	68,960	70	6,579	6,553	-25
2020	88	40	30	113	55	326	0	0	174	89	605	98	319	34	1,271	150	356	25	28	968	2	1,380	128	68,960	70	-109	68,851	70	6,553	6,575	22
2021	0	40	30	113	56	326	0	0	32	89	681	98	334	34	1,133	139	356	9	21	997	2	1,385	130	68,851	70	-252	68,599	71	6,575	6,584	9
2022	0	40	30	113	56	326	0	0	66	89	719	98	316	34	1,187	148	356	8	18	1,004	2	1,389	131	68,599	71	-202	68,397	71	6,584	6,600	16
2023	185	40	30	113	56	326	0	0	488	89	565	98	263	34	1,588	186	356	29	23	1,018	3	1,429	136	68,397	71	159	68,556	71	6,600	6,650	50
2024	524	40	30	113	57	326	0	0	1,621	89	223	98	117	34	2,572	289	356	170	85	1,054	4	1,669	154	68,556	71	903	69,459	72	6,650	6,786	136
2025	448	40	30	113	57	326	0	0	2,189	89	257	98	119	34	3,101	359	757	522	138	1,062	7	2,485	229	69,459	72	616	70,075	73	6,786	6,915	129
2026	0	40	30	113	58	326	0	0	208	89	466	98	410	34	1,172	136	757	84	72	967	4	1,884	179	70,075	73	-711	69,363	73	6,915	6,873	-43
2027	453	40	30	113	58	326	0	0	1,448	89	277	98	200	34	2,467	276	356	231	117	992	4	1,700	157	69,363	73	767	70,130	73	6,873	6,992	119
2028	164	40	30	113	58	326	0	0	479	89	336	98	408	34	1,476	161	758	130	99	935	4	1,925	182	70,130	73	-449	69,681	74	6,992	6,971	-21
2029	45	40	30	113	59	326	0	0	224	89	487	98	405	34	1,249	144	757	55	61	884	3	1,759	170	69,681	74	-510	69,171	74	6,971	6,944	-26
2030	557	40	30	113	59	326	0	0	3,387	89	272	98	-114	34	4,192	502	757	889	205	1,071	8	2,930	274	69,171	74	1,262	70,433	75	6,944	7,173	228
2031	0	40	30	113	60	326	0	0	80	89	516	98	430	34	1,116	129	757	63	78	973	4	1,874	183	70,433	75	-758	69,675	75	7,173	7,119	-54
2032	33	40	30	113	60	326	0	0	101	89	602	98	410	34	1,236	144	758	24	49	915	2	1,749	174	69,675	75	-512	69,162	75	7,119	7,089	-30
2033	243	40	30	113	60	326	0	0	714	89	512	98	241	34	1,801	210	356	45	53	961	3	1,418	140	69,162	75	384	69,546	76	7,089	7,160	70
2034	0	40	30	113	61	326	0	0	32	89	545	98	363	34	1,031	125	356	31	42	991	3	1,422	142	69,546	76	-391	69,155	76	7,160	7,142	-17
2035	82	40	30	113	61	326	0	0	260	89	596	98	299	34	1,329	161	356	26	35	996	3	1,416	143	69,155	76	-87	69,068	76	7,142	7,160	18

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	9	30	45	52	16	0	0	1,047	20	372	17	243	20	2,096	51	758	84	79	951	5	1,877	60	69,600	25	219	69,819	**24**	2,329	2,320	**-9**
2013	23	9	30	45	52	16	0	0	195	20	523	17	399	20	1,223	31	757	54	58	899	3	1,770	57	69,819	24	-547	69,272	**24**	2,320	2,294	**-26**
2014	190	9	30	45	53	16	0	0	549	20	481	17	256	20	1,559	38	356	56	54	947	3	1,416	45	69,272	24	143	69,415	**24**	2,294	2,287	**-7**
2015	749	9	30	45	53	16	0	0	1,912	20	348	17	88	20	3,180	74	757	137	88	954	5	1,940	61	69,415	24	1,240	70,655	**24**	2,287	2,300	**13**
2016	0	9	30	45	54	16	0	0	259	20	458	17	368	20	1,169	30	758	102	89	971	4	1,923	60	70,655	24	-755	69,900	**24**	2,300	2,271	**-29**
2017	0	9	30	45	54	16	0	0	143	20	582	17	332	20	1,140	29	356	60	59	1,005	3	1,484	46	69,900	24	-344	69,556	**24**	2,271	2,254	**-17**
2018	151	9	30	45	54	16	0	0	378	20	526	17	298	20	1,438	35	356	53	52	1,014	3	1,478	46	69,556	24	-40	69,516	**24**	2,254	2,243	**-11**
2019	22	9	30	45	55	16	0	0	90	20	573	17	414	20	1,184	30	757	27	34	920	2	1,740	55	69,516	24	-556	68,960	**24**	2,243	2,218	**-25**
2020	88	9	30	45	55	16	0	0	174	20	605	17	319	20	1,271	31	356	25	28	968	2	1,380	43	68,960	24	-109	68,851	**24**	2,218	2,205	**-12**
2021	0	9	30	45	56	16	0	0	32	20	681	17	334	20	1,133	28	356	9	21	997	2	1,385	44	68,851	24	-252	68,599	**23**	2,205	2,190	**-15**
2022	0	9	30	45	56	16	0	0	66	20	719	17	316	20	1,187	30	356	8	18	1,004	2	1,389	44	68,599	23	-202	68,397	**23**	2,190	2,176	**-14**
2023	185	9	30	45	56	16	0	0	488	20	565	17	263	20	1,588	39	356	29	23	1,018	3	1,429	45	68,397	23	159	68,556	**23**	2,176	2,170	**-6**
2024	524	9	30	45	57	16	0	0	1,621	20	223	17	117	20	2,572	62	356	170	85	1,054	4	1,669	50	68,556	23	903	69,459	**23**	2,170	2,181	**12**
2025	448	9	30	45	57	16	0	0	2,189	20	257	17	119	20	3,101	77	757	522	138	1,062	7	2,485	74	69,459	23	616	70,075	**23**	2,181	2,185	**3**
2026	0	9	30	45	58	16	0	0	208	20	466	17	410	20	1,172	30	757	84	72	967	4	1,884	56	70,075	23	-711	69,363	**23**	2,185	2,159	**-26**
2027	453	9	30	45	58	16	0	0	1,448	20	277	17	200	20	2,467	60	356	231	117	992	4	1,700	49	69,363	23	767	70,130	**23**	2,159	2,169	**10**
2028	164	9	30	45	58	16	0	0	479	20	336	17	408	20	1,476	37	758	130	99	935	4	1,925	56	70,130	23	-449	69,681	**23**	2,169	2,149	**-20**
2029	45	9	30	45	59	16	0	0	224	20	487	17	405	20	1,249	32	757	55	61	884	3	1,759	52	69,681	23	-510	69,171	**23**	2,149	2,129	**-21**
2030	557	9	30	45	59	16	0	0	3,387	20	272	17	-114	20	4,192	105	757	889	205	1,071	8	2,930	84	69,171	23	1,262	70,433	**22**	2,129	2,150	**21**
2031	0	9	30	45	60	16	0	0	80	20	516	17	430	20	1,116	29	757	63	78	973	4	1,874	55	70,433	22	-758	69,675	**22**	2,150	2,124	**-26**
2032	33	9	30	45	60	16	0	0	101	20	602	17	410	20	1,236	31	758	24	49	915	2	1,749	52	69,675	22	-512	69,162	**22**	2,124	2,103	**-21**
2033	243	9	30	45	60	16	0	0	714	20	512	17	241	20	1,801	44	356	45	53	961	3	1,418	41	69,162	22	384	69,546	**22**	2,103	2,105	**2**
2034	0	9	30	45	61	16	0	0	32	20	545	17	363	20	1,031	26	356	31	42	991	3	1,422	42	69,546	22	-391	69,155	**22**	2,105	2,090	**-16**
2035	82	9	30	45	61	16	0	0	260	20	596	17	299	20	1,329	33	356	26	35	996	3	1,416	42	69,155	22	-87	69,068	**22**	2,090	2,081	**-9**

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-38d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentrati on [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentrat ion [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	351	40	30	124	52	358	0	0	1,047	140	372	108	243	235	2,096	381	758	84	79	951	5	1,877	612	69,600	250	219	69,819	247	23,705	23,473	-232
2013	23	40	30	124	52	358	0	0	195	140	523	108	399	235	1,223	273	757	54	58	899	3	1,770	576	69,819	247	-547	69,272	246	23,473	23,171	-302
2014	190	40	30	124	53	358	0	0	549	140	481	108	256	235	1,559	298	356	56	54	947	3	1,416	456	69,272	246	143	69,415	244	23,171	23,013	-158
2015	749	40	30	124	53	358	0	0	1,912	140	348	108	88	235	3,180	514	757	137	88	954	5	1,940	614	69,415	244	1,240	70,655	239	23,013	22,912	-100
2016	0	40	30	124	54	358	0	0	259	140	458	108	368	235	1,169	265	758	102	89	971	4	1,923	595	70,655	239	-755	69,900	238	22,912	22,582	-330
2017	0	40	30	124	54	358	0	0	143	140	582	108	332	235	1,140	250	356	60	59	1,005	3	1,484	460	69,900	238	-344	69,556	237	22,582	22,372	-210
2018	151	40	30	124	54	358	0	0	378	140	526	108	298	235	1,438	284	356	53	52	1,014	3	1,478	459	69,556	237	-40	69,516	235	22,372	22,197	-175
2019	22	40	30	124	55	358	0	0	90	140	573	108	414	235	1,184	266	757	27	34	920	2	1,740	545	69,516	235	-556	68,960	234	22,197	21,919	-278
2020	88	40	30	124	55	358	0	0	174	140	605	108	319	235	1,271	260	356	25	28	968	2	1,380	430	68,960	234	-109	68,851	232	21,919	21,750	-169
2021	0	40	30	124	56	358	0	0	32	140	681	108	334	235	1,133	245	356	9	21	997	2	1,385	431	68,851	232	-252	68,599	231	21,750	21,564	-186
2022	0	40	30	124	56	358	0	0	66	140	719	108	316	235	1,187	251	356	8	18	1,004	2	1,389	431	68,599	231	-202	68,397	230	21,564	21,384	-179
2023	185	40	30	124	56	358	0	0	488	140	565	108	263	235	1,588	302	356	29	23	1,018	3	1,429	440	68,397	230	159	68,556	228	21,384	21,247	-137
2024	524	40	30	124	57	358	0	0	1,621	140	223	108	117	235	2,572	439	356	170	85	1,054	4	1,669	491	68,556	228	903	69,459	224	21,247	21,195	-52
2025	448	40	30	124	57	358	0	0	2,189	140	257	108	119	235	3,101	548	757	522	138	1,062	7	2,485	716	69,459	224	616	70,075	221	21,195	21,027	-168
2026	0	40	30	124	58	358	0	0	208	140	466	108	410	235	1,172	272	757	84	72	967	4	1,884	544	70,075	221	-711	69,363	220	21,027	20,756	-271
2027	453	40	30	124	58	358	0	0	1,448	140	277	108	200	235	2,467	437	356	231	117	992	4	1,700	474	69,363	220	767	70,130	217	20,756	20,719	-36
2028	164	40	30	124	58	358	0	0	479	140	336	108	408	235	1,476	313	758	130	99	935	4	1,925	540	70,130	217	-449	69,681	216	20,719	20,493	-226
2029	45	40	30	124	59	358	0	0	224	140	487	108	405	235	1,249	279	757	55	61	884	3	1,759	499	69,681	216	-510	69,171	216	20,493	20,273	-220
2030	557	40	30	124	59	358	0	0	3,387	140	272	108	-114	235	4,192	710	757	889	205	1,071	8	2,930	799	69,171	216	1,262	70,433	211	20,273	20,184	-88
2031	0	40	30	124	60	358	0	0	80	140	516	108	430	235	1,116	262	757	63	78	973	4	1,874	515	70,433	211	-758	69,675	210	20,184	19,932	-252
2032	33	40	30	124	60	358	0	0	101	140	602	108	410	235	1,236	275	758	24	49	915	2	1,749	486	69,675	210	-512	69,162	210	19,932	19,720	-212
2033	243	40	30	124	60	358	0	0	714	140	512	108	241	235	1,801	335	356	45	53	961	3	1,418	389	69,162	210	384	69,546	208	19,720	19,667	-54
2034	0	40	30	124	61	358	0	0	32	140	545	108	363	235	1,031	237	356	31	42	991	3	1,422	390	69,546	208	-391	69,155	208	19,667	19,513	-154
2035	82	40	30	124	61	358	0	0	260	140	596	108	299	235	1,329	272	356	26	35	996	3	1,416	390	69,155	208	-87	69,068	207	19,513	19,395	-118

Table I-39a

Projected TDS Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Upstream Tributaries	TDS Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	100	270	808	88	2,330	0	0	1,438	532	0	0	220	647	2,683	1,899	0	0	941	292	754	1,987	1,489	7,647	1,047	695	8,342	**996**	10,883	11,294	**411**
2013	43	100	269	808	88	2,330	0	0	18	532	0	0	520	650	938	1,053	0	0	620	323	718	1,660	1,408	8,342	996	-722	7,620	**1,056**	11,294	10,939	**-355**
2014	360	100	269	808	89	2,330	0	0	1,029	532	0	0	413	648	2,160	1,734	0	0	764	309	718	1,792	1,475	7,620	1,056	368	7,988	**1,031**	10,939	11,198	**259**
2015	1,421	100	269	808	89	2,330	0	0	916	532	0	0	452	632	3,148	1,823	0	0	915	321	755	1,991	1,508	7,988	1,031	1,158	9,146	**926**	11,198	11,513	**315**
2016	0	100	270	808	90	2,330	0	0	0	532	0	0	515	630	875	1,022	0	0	765	341	749	1,854	1,371	9,146	926	-980	8,166	**1,005**	11,513	11,163	**-349**
2017	0	100	269	808	90	2,330	0	0	0	532	0	0	604	629	963	1,098	0	0	373	351	734	1,458	1,484	8,166	1,005	-495	7,671	**1,033**	11,163	10,777	**-386**
2018	288	100	269	808	90	2,330	0	0	796	532	0	0	542	629	1,985	1,661	0	0	544	359	743	1,646	1,547	7,671	1,033	340	8,011	**1,000**	10,777	10,891	**114**
2019	42	100	269	808	91	2,330	0	0	13	532	0	0	555	632	970	1,076	0	0	494	350	830	1,674	1,604	8,011	1,000	-704	7,307	**1,043**	10,891	10,363	**-528**
2020	167	100	270	808	91	2,330	0	0	412	532	0	0	603	634	1,543	1,427	0	0	477	365	903	1,745	1,798	7,307	1,043	-202	7,105	**1,034**	10,363	9,991	**-372**
2021	0	100	269	808	92	2,330	0	0	0	532	0	0	653	639	1,014	1,154	0	0	288	399	892	1,579	1,816	7,105	1,034	-566	6,539	**1,049**	9,991	9,329	**-662**
2022	0	100	269	808	92	2,330	0	0	0	532	0	0	661	644	1,023	1,167	0	0	189	407	918	1,514	1,891	6,539	1,049	-491	6,048	**1,046**	9,329	8,605	**-724**
2023	351	100	269	808	93	2,330	0	0	908	532	0	0	507	645	2,128	1,738	0	0	484	399	1,009	1,892	2,004	6,048	1,046	236	6,283	**976**	8,605	8,339	**-266**
2024	996	100	270	808	93	2,330	0	0	1,326	532	0	0	342	636	3,027	1,982	0	0	848	415	1,094	2,357	2,003	6,283	976	670	6,953	**880**	8,339	8,319	**-21**
2025	851	100	269	808	93	2,330	0	0	1,585	532	0	0	369	630	3,168	2,170	0	0	1,042	409	898	2,348	1,563	6,953	880	820	7,773	**845**	8,319	8,926	**607**
2026	0	100	269	808	94	2,330	0	0	0	532	0	0	603	636	966	1,115	0	0	779	382	852	2,013	1,417	7,773	845	-1,046	6,727	**943**	8,926	8,623	**-302**
2027	860	100	269	808	94	2,330	0	0	1,614	532	0	0	316	630	3,154	2,150	0	0	945	317	783	2,045	1,411	6,727	943	1,109	7,835	**879**	8,623	9,362	**739**
2028	312	100	270	808	95	2,330	0	0	874	532	0	0	370	631	1,920	1,588	0	0	881	306	737	1,924	1,245	7,835	879	-4	7,832	**911**	9,362	9,705	**343**
2029	86	100	269	808	95	2,330	0	0	152	532	0	0	498	635	1,100	1,149	0	0	717	295	696	1,707	1,227	7,832	911	-608	7,224	**980**	9,705	9,627	**-79**
2030	1,058	100	269	808	96	2,330	0	0	1,476	532	0	0	147	627	3,046	1,935	0	0	1,019	266	742	2,026	1,343	7,224	980	1,020	8,244	**912**	9,627	10,219	**593**
2031	0	100	269	808	96	2,330	0	0	0	532	0	0	572	633	938	1,093	0	0	594	305	697	1,596	1,242	8,244	912	-659	7,586	**976**	10,219	10,070	**-149**
2032	63	100	270	808	97	2,330	0	0	80	532	0	0	570	637	1,080	1,163	0	0	373	312	691	1,375	1,331	7,586	976	-296	7,290	**999**	10,070	9,902	**-168**
2033	462	100	269	808	97	2,330	0	0	1,032	532	0	0	439	636	2,299	1,792	0	0	586	314	816	1,716	1,535	7,290	999	584	7,873	**949**	9,902	10,159	**257**
2034	0	100	269	808	97	2,330	0	0	0	532	0	0	477	642	843	1,020	0	0	456	344	759	1,559	1,424	7,873	949	-716	7,158	**1,002**	10,159	9,756	**-404**
2035	157	100	269	808	98	2,330	0	0	378	532	0	0	544	645	1,446	1,378	0	0	419	347	727	1,493	1,464	7,158	1,002	-47	7,111	**1,000**	9,756	9,670	**-86**

Projected Chloride Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	40	270	89	88	256	0	0	1,438	65	0	0	220	39	2,683	239	0	0	941	292	754	1,987	161	7,647	114	695	8,342	111	1,180	1,258	78
2013	43	40	269	89	88	256	0	0	18	65	0	0	520	40	938	95	0	0	620	323	718	1,660	157	8,342	111	-722	7,620	115	1,258	1,196	-61
2014	360	40	269	89	89	256	0	0	1,029	65	0	0	413	40	2,160	197	0	0	764	309	718	1,792	161	7,620	115	368	7,988	113	1,196	1,232	36
2015	1,421	40	269	89	89	256	0	0	916	65	0	0	452	41	3,148	248	0	0	915	321	755	1,991	166	7,988	113	1,158	9,146	106	1,232	1,314	82
2016	0	40	270	89	90	256	0	0	0	65	0	0	515	41	875	92	0	0	765	341	749	1,854	157	9,146	106	-980	8,166	113	1,314	1,250	-64
2017	0	40	269	89	90	256	0	0	0	65	0	0	604	40	963	97	0	0	373	351	734	1,458	166	8,166	113	-495	7,671	113	1,250	1,181	-69
2018	288	40	269	89	90	256	0	0	796	65	0	0	542	41	1,985	181	0	0	544	359	743	1,646	169	7,671	113	340	8,011	109	1,181	1,192	11
2019	42	40	269	89	91	256	0	0	13	65	0	0	555	41	970	99	0	0	494	350	830	1,674	176	8,011	109	-704	7,307	112	1,192	1,115	-77
2020	167	40	270	89	91	256	0	0	412	65	0	0	603	42	1,543	145	0	0	477	365	903	1,745	194	7,307	112	-202	7,105	110	1,115	1,066	-49
2021	0	40	269	89	92	256	0	0	0	65	0	0	653	43	1,014	103	0	0	288	399	892	1,579	194	7,105	110	-566	6,539	110	1,066	975	-91
2022	0	40	269	89	92	256	0	0	0	65	0	0	661	44	1,023	104	0	0	189	407	918	1,514	198	6,539	110	-491	6,048	107	975	881	-94
2023	351	40	269	89	93	256	0	0	908	65	0	0	507	45	2,128	195	0	0	484	399	1,009	1,892	205	6,048	107	236	6,283	102	881	872	-10
2024	996	40	270	89	93	256	0	0	1,326	65	0	0	342	46	3,027	258	0	0	848	415	1,094	2,357	209	6,283	102	670	6,953	97	872	921	49
2025	851	40	269	89	93	256	0	0	1,585	65	0	0	369	47	3,168	276	0	0	1,042	409	898	2,348	173	6,953	97	820	7,773	97	921	1,024	103
2026	0	40	269	89	94	256	0	0	0	65	0	0	603	48	966	104	0	0	779	382	852	2,013	163	7,773	97	-1,046	6,727	106	1,024	965	-58
2027	860	40	269	89	94	256	0	0	1,614	65	0	0	316	48	3,154	277	0	0	945	317	783	2,045	158	6,727	106	1,109	7,835	102	965	1,084	119
2028	312	40	270	89	95	256	0	0	874	65	0	0	370	49	1,920	185	0	0	881	306	737	1,924	144	7,835	102	-4	7,832	106	1,084	1,125	41
2029	86	40	269	89	95	256	0	0	152	65	0	0	498	50	1,100	118	0	0	717	295	696	1,707	142	7,832	106	-608	7,224	112	1,125	1,100	-24
2030	1,058	40	269	89	96	256	0	0	1,476	65	0	0	147	51	3,046	265	0	0	1,019	266	742	2,026	153	7,224	112	1,020	8,244	108	1,100	1,212	111
2031	0	40	269	89	96	256	0	0	0	65	0	0	572	52	938	106	0	0	594	305	697	1,596	147	8,244	108	-659	7,586	114	1,212	1,171	-41
2032	63	40	270	89	97	256	0	0	80	65	0	0	570	52	1,080	117	0	0	373	312	691	1,375	155	7,586	114	-296	7,290	114	1,171	1,134	-37
2033	462	40	269	89	97	256	0	0	1,032	65	0	0	439	53	2,299	215	0	0	586	314	816	1,716	176	7,290	114	584	7,873	110	1,134	1,173	39
2034	0	40	269	89	97	256	0	0	0	65	0	0	477	54	843	101	0	0	456	344	759	1,559	164	7,873	110	-716	7,158	114	1,173	1,110	-63
2035	157	40	269	89	98	256	0	0	378	65	0	0	544	55	1,446	149	0	0	419	347	727	1,493	167	7,158	114	-47	7,111	113	1,110	1,093	-17

Table I-39c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	9	270	46	88	17	0	0	1,438	7	0	0	220	20	2,683	47	0	0	941	292	754	1,987	44	7,647	31	695	8,342	29	321	324	3
2013	43	9	269	46	88	17	0	0	18	7	0	0	520	20	938	34	0	0	620	323	718	1,660	40	8,342	29	-722	7,620	31	324	318	-7
2014	360	9	269	46	89	17	0	0	1,029	7	0	0	413	20	2,160	44	0	0	764	309	718	1,792	43	7,620	31	368	7,988	29	318	319	2
2015	1,421	9	269	46	89	17	0	0	916	7	0	0	452	20	3,148	57	0	0	915	321	755	1,991	43	7,988	29	1,158	9,146	27	319	333	14
2016	0	9	270	46	90	17	0	0	0	7	0	0	515	20	875	33	0	0	765	341	749	1,854	40	9,146	27	-980	8,166	29	333	326	-7
2017	0	9	269	46	90	17	0	0	0	7	0	0	604	20	963	35	0	0	373	351	734	1,458	43	8,166	29	-495	7,671	31	326	318	-8
2018	288	9	269	46	90	17	0	0	796	7	0	0	542	20	1,985	45	0	0	544	359	743	1,646	46	7,671	31	340	8,011	29	318	317	-1
2019	42	9	269	46	91	17	0	0	13	7	0	0	555	20	970	35	0	0	494	350	830	1,674	47	8,011	29	-704	7,307	31	317	305	-12
2020	167	9	270	46	91	17	0	0	412	7	0	0	603	20	1,543	41	0	0	477	365	903	1,745	53	7,307	31	-202	7,105	30	305	293	-12
2021	0	9	269	46	92	17	0	0	0	7	0	0	653	20	1,014	37	0	0	288	399	892	1,579	53	7,105	30	-566	6,539	31	293	276	-17
2022	0	9	269	46	92	17	0	0	0	7	0	0	661	20	1,023	37	0	0	189	407	918	1,514	56	6,539	31	-491	6,048	31	276	257	-19
2023	351	9	269	46	93	17	0	0	908	7	0	0	507	20	2,128	46	0	0	484	399	1,009	1,892	60	6,048	31	236	6,283	28	257	243	-14
2024	996	9	270	46	93	17	0	0	1,326	7	0	0	342	19	3,027	53	0	0	848	415	1,094	2,357	58	6,283	28	670	6,953	25	243	237	-5
2025	851	9	269	46	93	17	0	0	1,585	7	0	0	369	19	3,168	54	0	0	1,042	409	898	2,348	45	6,953	25	820	7,773	23	237	247	10
2026	0	9	269	46	94	17	0	0	0	7	0	0	603	19	966	35	0	0	779	382	852	2,013	39	7,773	23	-1,046	6,727	27	247	243	-4
2027	860	9	269	46	94	17	0	0	1,614	7	0	0	316	19	3,154	53	0	0	945	317	783	2,045	40	6,727	27	1,109	7,835	24	243	256	13
2028	312	9	270	46	95	17	0	0	874	7	0	0	370	19	1,920	41	0	0	881	306	737	1,924	34	7,835	24	-4	7,832	25	256	263	7
2029	86	9	269	46	95	17	0	0	152	7	0	0	498	19	1,100	34	0	0	717	295	696	1,707	33	7,832	25	-608	7,224	27	263	264	1
2030	1,058	9	269	46	96	17	0	0	1,476	7	0	0	147	19	3,046	50	0	0	1,019	266	742	2,026	37	7,224	27	1,020	8,244	25	264	277	13
2031	0	9	269	46	96	17	0	0	0	7	0	0	572	19	938	34	0	0	594	305	697	1,596	34	8,244	25	-659	7,586	27	277	277	0
2032	63	9	270	46	97	17	0	0	80	7	0	0	570	19	1,080	35	0	0	373	312	691	1,375	37	7,586	27	-296	7,290	28	277	276	-1
2033	462	9	269	46	97	17	0	0	1,032	7	0	0	439	19	2,299	46	0	0	586	314	816	1,716	43	7,290	28	584	7,873	26	276	279	3
2034	0	9	269	46	97	17	0	0	0	7	0	0	477	19	843	31	0	0	456	344	759	1,559	39	7,873	26	-716	7,158	28	279	271	-8
2035	157	9	269	46	98	17	0	0	378	7	0	0	544	19	1,446	39	0	0	419	347	727	1,493	41	7,158	28	-47	7,111	28	271	269	-2

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-39d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	40	270	170	88	490	0	0	1,438	103	0	0	220	266	2,683	437	0	0	941	292	754	1,987	330	7,647	232	695	8,342	**222**	2,410	2,518	**108**
2013	43	40	269	170	88	490	0	0	18	103	0	0	520	266	938	314	0	0	620	323	718	1,660	314	8,342	222	-722	7,620	**243**	2,518	2,518	**0**
2014	360	40	269	170	89	490	0	0	1,029	103	0	0	413	265	2,160	433	0	0	764	309	718	1,792	339	7,620	243	368	7,988	**240**	2,518	2,612	**94**
2015	1,421	40	269	170	89	490	0	0	916	103	0	0	452	257	3,148	485	0	0	915	321	755	1,991	352	7,988	240	1,158	9,146	**221**	2,612	2,745	**133**
2016	0	40	270	170	90	490	0	0	0	103	0	0	515	257	875	302	0	0	765	341	749	1,854	327	9,146	221	-980	8,166	**245**	2,745	2,720	**-25**
2017	0	40	269	170	90	490	0	0	0	103	0	0	604	258	963	334	0	0	373	351	734	1,458	362	8,166	245	-495	7,671	**258**	2,720	2,693	**-28**
2018	288	40	269	170	90	490	0	0	796	103	0	0	542	257	1,985	438	0	0	544	359	743	1,646	387	7,671	258	340	8,011	**252**	2,693	2,744	**52**
2019	42	40	269	170	91	490	0	0	13	103	0	0	555	257	970	321	0	0	494	350	830	1,674	404	8,011	252	-704	7,307	**268**	2,744	2,661	**-83**
2020	167	40	270	170	91	490	0	0	412	103	0	0	603	257	1,543	400	0	0	477	365	903	1,745	462	7,307	268	-202	7,105	**269**	2,661	2,599	**-62**
2021	0	40	269	170	92	490	0	0	0	103	0	0	653	257	1,014	352	0	0	288	399	892	1,579	472	7,105	269	-566	6,539	**279**	2,599	2,479	**-121**
2022	0	40	269	170	92	490	0	0	0	103	0	0	661	258	1,023	356	0	0	189	407	918	1,514	502	6,539	279	-491	6,048	**284**	2,479	2,332	**-147**
2023	351	40	269	170	93	490	0	0	908	103	0	0	507	257	2,128	447	0	0	484	399	1,009	1,892	543	6,048	284	236	6,283	**262**	2,332	2,236	**-96**
2024	996	40	270	170	93	490	0	0	1,326	103	0	0	342	251	3,027	480	0	0	848	415	1,094	2,357	537	6,283	262	670	6,953	**230**	2,236	2,179	**-57**
2025	851	40	269	170	93	490	0	0	1,585	103	0	0	369	247	3,168	516	0	0	1,042	409	898	2,348	409	6,953	230	820	7,773	**216**	2,179	2,285	**106**
2026	0	40	269	170	94	490	0	0	0	103	0	0	603	248	966	328	0	0	779	382	852	2,013	363	7,773	216	-1,046	6,727	**246**	2,285	2,250	**-35**
2027	860	40	269	170	94	490	0	0	1,614	103	0	0	316	244	3,154	502	0	0	945	317	783	2,045	368	6,727	246	1,109	7,835	**224**	2,250	2,384	**134**
2028	312	40	270	170	95	490	0	0	874	103	0	0	370	243	1,920	387	0	0	881	306	737	1,924	317	7,835	224	-4	7,832	**230**	2,384	2,454	**69**
2029	86	40	269	170	95	490	0	0	152	103	0	0	498	243	1,100	316	0	0	717	295	696	1,707	310	7,832	230	-608	7,224	**250**	2,454	2,460	**6**
2030	1,058	40	269	170	96	490	0	0	1,476	103	0	0	147	239	3,046	437	0	0	1,019	266	742	2,026	343	7,224	250	1,020	8,244	**228**	2,460	2,554	**94**
2031	0	40	269	170	96	490	0	0	0	103	0	0	572	240	938	313	0	0	594	305	697	1,596	310	8,244	228	-659	7,586	**248**	2,554	2,556	**3**
2032	63	40	270	170	97	490	0	0	80	103	0	0	570	240	1,080	328	0	0	373	312	691	1,375	338	7,586	248	-296	7,290	**257**	2,556	2,546	**-10**
2033	462	40	269	170	97	490	0	0	1,032	103	0	0	439	239	2,299	439	0	0	586	314	816	1,716	395	7,290	257	584	7,873	**242**	2,546	2,590	**44**
2034	0	40	269	170	97	490	0	0	0	103	0	0	477	240	843	283	0	0	456	344	759	1,559	363	7,873	242	-716	7,158	**258**	2,590	2,510	**-80**
2035	157	40	269	170	98	490	0	0	378	103	0	0	544	240	1,446	366	0	0	419	347	727	1,493	377	7,158	258	-47	7,111	**259**	2,510	2,499	**-10**

Table I-40a

Projected TDS Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Upstream Tributaries	TDS Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	TDS Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	100	181	833	772	2,400	0	0	6,085	532	0	0	292	996	7,741	647	19,285	14,902	0	0	3,696	5,579	6,113	15,388	15,390	25,728	968	3,898	29,626	829	33,864	33,377	-487
2013	274	100	181	833	773	2,400	0	0	737	532	0	0	323	1,056	7,805	650	10,092	10,653	0	0	2,366	5,283	5,691	13,340	12,364	29,626	829	-3,248	26,378	883	33,377	31,666	-1,711
2014	2,277	100	181	833	773	2,400	0	0	4,962	532	0	0	309	1,031	5,898	648	14,400	12,255	0	0	3,004	4,371	5,819	13,193	12,232	26,378	883	1,207	27,584	845	31,666	31,688	23
2015	8,986	100	181	833	774	2,400	0	0	3,952	532	0	0	321	926	7,949	632	22,163	14,045	0	0	3,654	5,444	5,995	15,094	13,141	27,584	845	7,069	34,653	692	31,688	32,592	904
2016	0	100	181	833	774	2,400	0	0	0	532	0	0	341	1,005	7,973	630	9,269	10,027	0	0	2,869	5,612	5,895	14,376	10,823	34,653	692	-5,107	29,546	791	32,592	31,797	-796
2017	0	100	181	833	775	2,400	0	0	0	532	0	0	351	1,033	6,506	629	7,813	8,793	0	0	1,336	4,660	5,570	11,566	11,009	29,546	791	-3,753	25,793	843	31,797	29,581	-2,216
2018	1,818	100	181	833	775	2,400	0	0	3,992	532	0	0	359	1,000	6,610	629	13,735	12,009	0	0	1,990	4,603	5,635	12,228	11,741	25,793	843	1,507	27,300	804	29,581	29,849	268
2019	265	100	181	833	776	2,400	0	0	718	532	0	0	350	1,043	8,284	632	10,573	10,910	0	0	2,032	5,266	6,714	14,012	13,098	27,300	804	-3,439	23,861	853	29,849	27,660	-2,189
2020	1,056	100	181	833	777	2,400	0	0	2,381	532	0	0	365	1,034	6,737	634	11,497	10,929	0	0	1,988	4,526	7,631	14,145	14,092	23,861	853	-2,648	21,213	849	27,660	24,497	-3,162
2021	0	100	181	833	777	2,400	0	0	0	532	0	0	399	1,049	7,303	639	8,660	9,656	0	0	1,158	4,606	6,841	12,605	13,219	21,213	849	-3,945	17,268	892	24,497	20,934	-3,563
2022	0	100	181	833	778	2,400	0	0	0	532	0	0	407	1,046	7,656	644	9,022	10,027	0	0	641	4,695	7,299	12,634	14,540	17,268	892	-3,613	13,655	884	20,934	16,421	-4,513
2023	2,221	100	181	833	778	2,400	0	0	4,160	532	0	0	399	976	7,733	645	15,472	13,363	0	0	1,778	4,860	8,634	15,272	16,227	13,655	884	200	13,855	720	16,421	13,557	-2,864
2024	6,294	100	181	833	779	2,400	0	0	5,602	532	0	0	415	880	7,784	636	21,055	14,885	0	0	3,291	5,093	9,390	17,773	14,171	13,855	720	3,282	17,137	612	13,557	14,271	714
2025	5,383	100	181	833	779	2,400	0	0	6,749	532	0	0	409	845	9,956	630	23,456	17,361	0	0	3,925	6,385	6,698	17,008	10,895	17,137	612	6,448	23,585	647	14,271	20,737	6,466
2026	0	100	181	833	780	2,400	0	0	0	532	0	0	382	943	9,740	636	11,083	11,659	0	0	2,752	6,115	6,755	15,622	11,316	23,585	647	-4,539	19,046	814	20,737	21,080	343
2027	5,440	100	181	833	780	2,400	0	0	6,946	532	0	0	317	879	7,174	630	20,839	15,036	0	0	3,643	5,043	6,144	14,830	12,382	19,046	814	6,009	25,055	697	21,080	23,734	2,654
2028	1,971	100	181	833	781	2,400	0	0	3,950	532	0	0	306	911	8,915	631	16,103	13,905	0	0	3,258	5,909	5,878	15,046	11,166	25,055	697	1,057	26,111	746	23,734	26,473	2,739
2029	541	100	181	833	782	2,400	0	0	1,290	532	0	0	295	980	8,093	635	11,180	11,144	0	0	2,680	5,351	5,672	13,703	11,176	26,111	746	-2,523	23,588	824	26,473	26,441	-32
2030	6,691	100	181	833	782	2,400	0	0	6,310	532	0	0	266	912	8,894	627	23,124	16,143	0	0	4,022	6,386	6,317	16,725	14,239	23,588	824	6,399	29,987	695	26,441	28,345	1,903
2031	0	100	181	833	783	2,400	0	0	0	532	0	0	305	976	8,493	633	9,761	10,468	0	0	2,131	5,727	5,715	13,573	10,815	29,987	695	-3,813	26,175	787	28,345	27,997	-347
2032	398	100	181	833	783	2,400	0	0	988	532	0	0	312	999	8,113	637	10,775	10,980	0	0	1,578	5,357	5,540	12,475	11,656	26,175	787	-1,700	24,475	821	27,997	27,322	-676
2033	2,920	100	181	833	784	2,400	0	0	4,407	532	0	0	314	949	6,391	636	14,997	12,280	0	0	2,214	4,529	6,770	13,513	12,613	24,475	821	1,484	25,959	765	27,322	26,989	-333
2034	0	100	181	833	784	2,400	0	0	0	532	0	0	344	1,002	6,724	642	8,033	9,099	0	0	1,679	4,641	5,741	12,061	10,794	25,959	765	-4,027	21,932	848	26,989	25,294	-1,694
2035	990	100	181	833	785	2,400	0	0	2,240	532	0	0	347	1,000	6,695	645	11,237	10,861	0	0	1,470	4,544	5,450	11,464	11,526	21,932	848	-228	21,705	835	25,294	24,629	-665

Table I-40b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Chloride Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	40	181	95	772	275	0	0	6,085	65	0	0	292	111	7,741	39	19,285	1,541	0	0	3,696	5,579	6,113	15,388	1,636	25,728	103	3,898	29,626	87	3,600	3,505	-95
2013	274	40	181	95	773	275	0	0	737	65	0	0	323	115	7,805	40	10,092	866	0	0	2,366	5,283	5,691	13,340	1,298	29,626	87	-3,248	26,378	86	3,505	3,073	-432
2014	2,277	40	181	95	773	275	0	0	4,962	65	0	0	309	113	5,898	40	14,400	1,249	0	0	3,004	4,371	5,819	13,193	1,187	26,378	86	1,207	27,584	84	3,073	3,135	62
2015	8,986	40	181	95	774	275	0	0	3,952	65	0	0	321	106	7,949	41	22,163	1,641	0	0	3,654	5,444	5,995	15,094	1,300	27,584	84	7,069	34,653	74	3,135	3,476	341
2016	0	40	181	95	774	275	0	0	0	65	0	0	341	113	7,973	41	9,269	805	0	0	2,869	5,612	5,895	14,376	1,154	34,653	74	-5,107	29,546	78	3,476	3,126	-350
2017	0	40	181	95	775	275	0	0	0	65	0	0	351	113	6,506	40	7,813	724	0	0	1,336	4,660	5,570	11,566	1,082	29,546	78	-3,753	25,793	79	3,126	2,767	-359
2018	1,818	40	181	95	775	275	0	0	3,992	65	0	0	359	109	6,610	41	13,735	1,187	0	0	1,990	4,603	5,635	12,228	1,098	25,793	79	1,507	27,300	77	2,767	2,856	89
2019	265	40	181	95	776	275	0	0	718	65	0	0	350	112	8,284	41	10,573	911	0	0	2,032	5,266	6,714	14,012	1,253	27,300	77	-3,439	23,861	77	2,856	2,514	-342
2020	1,056	40	181	95	777	275	0	0	2,381	65	0	0	365	110	6,737	42	11,497	1,024	0	0	1,988	4,526	7,631	14,145	1,281	23,861	77	-2,648	21,213	78	2,514	2,257	-257
2021	0	40	181	95	777	275	0	0	0	65	0	0	399	110	7,303	43	8,660	799	0	0	1,158	4,606	6,841	12,605	1,218	21,213	78	-3,945	17,268	78	2,257	1,838	-419
2022	0	40	181	95	778	275	0	0	0	65	0	0	407	107	7,656	44	9,022	828	0	0	641	4,695	7,299	12,634	1,277	17,268	78	-3,613	13,655	75	1,838	1,389	-449
2023	2,221	40	181	95	778	275	0	0	4,160	65	0	0	399	102	7,733	45	15,472	1,330	0	0	1,778	4,860	8,634	15,272	1,373	13,655	75	200	13,855	71	1,389	1,346	-43
2024	6,294	40	181	95	779	275	0	0	5,602	65	0	0	415	97	7,784	46	21,055	1,694	0	0	3,291	5,093	9,390	17,773	1,407	13,855	71	3,282	17,137	70	1,346	1,633	287
2025	5,383	40	181	95	779	275	0	0	6,749	65	0	0	409	97	9,956	47	23,456	1,894	0	0	3,925	6,385	6,698	17,008	1,247	17,137	70	6,448	23,585	71	1,633	2,281	647
2026	0	40	181	95	780	275	0	0	0	65	0	0	382	106	9,740	48	11,083	1,001	0	0	2,752	6,115	6,755	15,622	1,244	23,585	71	-4,539	19,046	79	2,281	2,037	-243
2027	5,440	40	181	95	780	275	0	0	6,946	65	0	0	317	102	7,174	48	20,839	1,745	0	0	3,643	5,043	6,144	14,830	1,197	19,046	79	6,009	25,055	76	2,037	2,586	549
2028	1,971	40	181	95	781	275	0	0	3,950	65	0	0	306	106	8,915	49	16,103	1,415	0	0	3,258	5,909	5,878	15,046	1,217	25,055	76	1,057	26,111	78	2,586	2,785	199
2029	541	40	181	95	782	275	0	0	1,290	65	0	0	295	112	8,093	50	11,180	1,056	0	0	2,680	5,351	5,672	13,703	1,176	26,111	78	-2,523	23,588	83	2,785	2,665	-120
2030	6,691	40	181	95	782	275	0	0	6,310	65	0	0	266	108	8,894	51	23,124	1,895	0	0	4,022	6,386	6,317	16,725	1,435	23,588	83	6,399	29,987	77	2,665	3,125	460
2031	0	40	181	95	783	275	0	0	0	65	0	0	305	114	8,493	52	9,761	959	0	0	2,131	5,727	5,715	13,573	1,192	29,987	77	-3,813	26,175	81	3,125	2,892	-233
2032	398	40	181	95	783	275	0	0	988	65	0	0	312	114	8,113	52	10,775	1,052	0	0	1,578	5,357	5,540	12,475	1,204	26,175	81	-1,700	24,475	82	2,892	2,740	-151
2033	2,920	40	181	95	784	275	0	0	4,407	65	0	0	314	110	6,391	53	14,997	1,376	0	0	2,214	4,529	6,770	13,513	1,265	24,475	82	1,484	25,959	81	2,740	2,851	110
2034	0	40	181	95	784	275	0	0	0	65	0	0	344	114	6,724	54	8,033	863	0	0	1,679	4,641	5,741	12,061	1,140	25,959	81	-4,027	21,932	86	2,851	2,574	-277
2035	990	40	181	95	785	275	0	0	2,240	65	0	0	347	113	6,695	55	11,237	1,121	0	0	1,470	4,544	5,450	11,464	1,173	21,932	86	-228	21,705	85	2,574	2,522	-52

Table I-40c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Nitrate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	9	181	46	772	17	0	0	6,085	7	0	0	292	29	7,741	20	19,285	360	0	0	3,696	5,579	6,113	15,388	323	25,728	20	3,898	29,626	**19**	710	747	**38**
2013	274	9	181	46	773	17	0	0	737	7	0	0	323	31	7,805	20	10,092	265	0	0	2,366	5,283	5,691	13,340	277	29,626	19	-3,248	26,378	**21**	747	736	**-11**
2014	2,277	9	181	46	773	17	0	0	4,962	7	0	0	309	29	5,898	20	14,400	277	0	0	3,004	4,371	5,819	13,193	284	26,378	21	1,207	27,584	**19**	736	728	**-8**
2015	8,986	9	181	46	774	17	0	0	3,952	7	0	0	321	27	7,949	20	22,163	398	0	0	3,654	5,444	5,995	15,094	302	27,584	19	7,069	34,653	**18**	728	825	**96**
2016	0	9	181	46	774	17	0	0	0	7	0	0	341	29	7,973	20	9,269	255	0	0	2,869	5,612	5,895	14,376	274	34,653	18	-5,107	29,546	**20**	825	806	**-18**
2017	0	9	181	46	775	17	0	0	0	7	0	0	351	31	6,506	20	7,813	217	0	0	1,336	4,660	5,570	11,566	279	29,546	20	-3,753	25,793	**21**	806	744	**-62**
2018	1,818	9	181	46	775	17	0	0	3,992	7	0	0	359	29	6,610	20	13,735	280	0	0	1,990	4,603	5,635	12,228	295	25,793	21	1,507	27,300	**20**	744	729	**-16**
2019	265	9	181	46	776	17	0	0	718	7	0	0	350	31	8,284	20	10,573	275	0	0	2,032	5,266	6,714	14,012	320	27,300	20	-3,439	23,861	**21**	729	684	**-45**
2020	1,056	9	181	46	777	17	0	0	2,381	7	0	0	365	30	6,737	20	11,497	259	0	0	1,988	4,526	7,631	14,145	348	23,861	21	-2,648	21,213	**21**	684	595	**-89**
2021	0	9	181	46	777	17	0	0	0	7	0	0	399	31	7,303	20	8,660	241	0	0	1,158	4,606	6,841	12,605	321	21,213	21	-3,945	17,268	**22**	595	515	**-80**
2022	0	9	181	46	778	17	0	0	0	7	0	0	407	31	7,656	20	9,022	251	0	0	641	4,695	7,299	12,634	357	17,268	22	-3,613	13,655	**22**	515	408	**-106**
2023	2,221	9	181	46	778	17	0	0	4,160	7	0	0	399	28	7,733	20	15,472	317	0	0	1,778	4,860	8,634	15,272	403	13,655	22	200	13,855	**17**	408	322	**-86**
2024	6,294	9	181	46	779	17	0	0	5,602	7	0	0	415	25	7,784	19	21,055	377	0	0	3,291	5,093	9,390	17,773	336	13,855	17	3,282	17,137	**16**	322	362	**40**
2025	5,383	9	181	46	779	17	0	0	6,749	7	0	0	409	23	9,956	19	23,456	430	0	0	3,925	6,385	6,698	17,008	276	17,137	16	6,448	23,585	**16**	362	515	**153**
2026	0	9	181	46	780	17	0	0	0	7	0	0	382	27	9,740	19	11,083	296	0	0	2,752	6,115	6,755	15,622	281	23,585	16	-4,539	19,046	**20**	515	530	**14**
2027	5,440	9	181	46	780	17	0	0	6,946	7	0	0	317	24	7,174	19	20,839	356	0	0	3,643	5,043	6,144	14,830	311	19,046	20	6,009	25,055	**17**	530	574	**45**
2028	1,971	9	181	46	781	17	0	0	3,950	7	0	0	306	25	8,915	19	16,103	329	0	0	3,258	5,909	5,878	15,046	270	25,055	17	1,057	26,111	**18**	574	634	**59**
2029	541	9	181	46	782	17	0	0	1,290	7	0	0	295	27	8,093	19	11,180	266	0	0	2,680	5,351	5,672	13,703	267	26,111	18	-2,523	23,588	**20**	634	632	**-1**
2030	6,691	9	181	46	782	17	0	0	6,310	7	0	0	266	25	8,894	19	23,124	404	0	0	4,022	6,386	6,317	16,725	340	23,588	20	6,399	29,987	**17**	632	696	**64**
2031	0	9	181	46	783	17	0	0	0	7	0	0	305	27	8,493	19	9,761	256	0	0	2,131	5,727	5,715	13,573	266	29,987	17	-3,813	26,175	**19**	696	686	**-10**
2032	398	9	181	46	783	17	0	0	988	7	0	0	312	28	8,113	19	10,775	261	0	0	1,578	5,357	5,540	12,475	286	26,175	19	-1,700	24,475	**20**	686	661	**-24**
2033	2,920	9	181	46	784	17	0	0	4,407	7	0	0	314	26	6,391	19	14,997	279	0	0	2,214	4,529	6,770	13,513	305	24,475	20	1,484	25,959	**18**	661	635	**-26**
2034	0	9	181	46	784	17	0	0	0	7	0	0	344	28	6,724	19	8,033	212	0	0	1,679	4,641	5,741	12,061	254	25,959	18	-4,027	21,932	**20**	635	594	**-42**
2035	990	9	181	46	785	17	0	0	2,240	7	0	0	347	28	6,695	19	11,237	245	0	0	1,470	4,544	5,450	11,464	270	21,932	20	-228	21,705	**19**	594	568	**-25**

Table I-40d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Sulfate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	40	181	178	772	512	0	0	6,085	103	0	0	292	222	7,741	266	19,285	4,548	0	0	3,696	5,579	6,113	15,388	3,571	25,728	225	3,898	29,626	219	7,858	8,835	977
2013	274	40	181	178	773	512	0	0	737	103	0	0	323	243	7,805	266	10,092	3,633	0	0	2,366	5,283	5,691	13,340	3,273	29,626	219	-3,248	26,378	256	8,835	9,195	360
2014	2,277	40	181	178	773	512	0	0	4,962	103	0	0	309	240	5,898	265	14,400	3,622	0	0	3,004	4,371	5,819	13,193	3,552	26,378	256	1,207	27,584	247	9,195	9,266	71
2015	8,986	40	181	178	774	512	0	0	3,952	103	0	0	321	221	7,949	257	22,163	4,500	0	0	3,654	5,444	5,995	15,094	3,842	27,584	247	7,069	34,653	211	9,266	9,924	658
2016	0	40	181	178	774	512	0	0	0	103	0	0	341	245	7,973	257	9,269	3,486	0	0	2,869	5,612	5,895	14,376	3,295	34,653	211	-5,107	29,546	252	9,924	10,114	191
2017	0	40	181	178	775	512	0	0	0	103	0	0	351	258	6,506	258	7,813	2,986	0	0	1,336	4,660	5,570	11,566	3,502	29,546	252	-3,753	25,793	274	10,114	9,598	-516
2018	1,818	40	181	178	775	512	0	0	3,992	103	0	0	359	252	6,610	257	13,735	3,669	0	0	1,990	4,603	5,635	12,228	3,810	25,793	274	1,507	27,300	255	9,598	9,458	-141
2019	265	40	181	178	776	512	0	0	718	103	0	0	350	268	8,284	257	10,573	3,721	0	0	2,032	5,266	6,714	14,012	4,150	27,300	255	-3,439	23,861	278	9,458	9,028	-430
2020	1,056	40	181	178	777	512	0	0	2,381	103	0	0	365	269	6,737	257	11,497	3,459	0	0	1,988	4,526	7,631	14,145	4,599	23,861	278	-2,648	21,213	273	9,028	7,887	-1,141
2021	0	40	181	178	777	512	0	0	0	103	0	0	399	279	7,303	257	8,660	3,291	0	0	1,158	4,606	6,841	12,605	4,256	21,213	273	-3,945	17,268	295	7,887	6,923	-964
2022	0	40	181	178	778	512	0	0	0	103	0	0	407	284	7,656	258	9,022	3,428	0	0	641	4,695	7,299	12,634	4,808	17,268	295	-3,613	13,655	299	6,923	5,543	-1,380
2023	2,221	40	181	178	778	512	0	0	4,160	103	0	0	399	262	7,733	257	15,472	4,126	0	0	1,778	4,860	8,634	15,272	5,477	13,655	299	200	13,855	222	5,543	4,191	-1,351
2024	6,294	40	181	178	779	512	0	0	5,602	103	0	0	415	230	7,784	251	21,055	4,498	0	0	3,291	5,093	9,390	17,773	4,381	13,855	222	3,282	17,137	185	4,191	4,308	117
2025	5,383	40	181	178	779	512	0	0	6,749	103	0	0	409	216	9,956	247	23,456	5,283	0	0	3,925	6,385	6,698	17,008	3,289	17,137	185	6,448	23,585	197	4,308	6,303	1,994
2026	0	40	181	178	780	512	0	0	0	103	0	0	382	246	9,740	248	11,083	3,995	0	0	2,752	6,115	6,755	15,622	3,439	23,585	197	-4,539	19,046	265	6,303	6,858	555
2027	5,440	40	181	178	780	512	0	0	6,946	103	0	0	317	224	7,174	244	20,839	4,327	0	0	3,643	5,043	6,144	14,830	4,028	19,046	265	6,009	25,055	210	6,858	7,157	299
2028	1,971	40	181	178	781	512	0	0	3,950	103	0	0	306	230	8,915	243	16,103	4,287	0	0	3,258	5,909	5,878	15,046	3,367	25,055	210	1,057	26,111	228	7,157	8,077	920
2029	541	40	181	178	782	512	0	0	1,290	103	0	0	295	250	8,093	243	11,180	3,577	0	0	2,680	5,351	5,672	13,703	3,410	26,111	228	-2,523	23,588	257	8,077	8,244	167
2030	6,691	40	181	178	782	512	0	0	6,310	103	0	0	266	228	8,894	239	23,124	4,804	0	0	4,022	6,386	6,317	16,725	4,440	23,588	257	6,399	29,987	211	8,244	8,608	364
2031	0	40	181	178	783	512	0	0	0	103	0	0	305	248	8,493	240	9,761	3,461	0	0	2,131	5,727	5,715	13,573	3,284	29,987	211	-3,813	26,175	247	8,608	8,784	177
2032	398	40	181	178	783	512	0	0	988	103	0	0	312	257	8,113	240	10,775	3,510	0	0	1,578	5,357	5,540	12,475	3,657	26,175	247	-1,700	24,475	260	8,784	8,637	-147
2033	2,920	40	181	178	784	512	0	0	4,407	103	0	0	314	242	6,391	239	14,997	3,543	0	0	2,214	4,529	6,770	13,513	3,987	24,475	260	1,484	25,959	232	8,637	8,193	-445
2034	0	40	181	178	784	512	0	0	0	103	0	0	344	258	6,724	240	8,033	2,904	0	0	1,679	4,641	5,741	12,061	3,277	25,959	232	-4,027	21,932	262	8,193	7,820	-373
2035	990	40	181	178	785	512	0	0	2,240	103	0	0	347	259	6,695	240	11,237	3,263	0	0	1,470	4,544	5,450	11,464	3,563	21,932	262	-228	21,705	255	7,820	7,519	-301

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Table I-41a

Projected TDS Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	TDS Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	TDS Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	TDS Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	100	148	783	666	2,256	0	5,245	4,100	671	11,675	671	0	0	14,829	722	5,579	700	-5,182	700	36,707	32,199	13,388	6,543	1,102	7,025	2,202	30,260	29,526	78,359	745	6,447	84,807	711	79,349	82,022	2,673
2013	318	100	147	783	667	2,256	0	5,245	4,100	671	623	671	0	0	14,012	747	5,283	700	-1,853	700	23,297	24,048	13,370	5,290	763	7,327	2,152	28,902	27,215	84,807	711	-5,606	79,201	732	82,022	78,855	-3,168
2014	2,643	100	147	783	668	2,256	0	5,245	4,100	671	9,328	671	0	0	14,762	739	4,371	700	-1,307	700	34,712	32,572	19,000	4,129	642	8,008	1,988	33,766	32,979	79,201	732	946	80,147	720	78,855	78,447	-407
2015	10,432	100	147	783	669	2,256	0	5,245	4,100	671	7,637	671	0	0	14,876	675	5,444	700	-2,935	700	40,371	30,383	13,370	6,633	1,215	7,370	2,077	30,665	28,825	80,147	720	9,706	89,853	655	78,447	80,005	1,557
2016	0	100	148	783	671	2,256	0	5,245	4,100	671	22	671	0	0	15,133	714	5,612	700	-1,341	700	24,345	24,738	13,388	6,166	1,189	7,743	2,067	30,553	26,145	89,853	655	-6,208	83,645	691	80,005	78,598	-1,407
2017	0	100	147	783	672	2,256	0	5,245	4,100	671	1,107	671	0	0	15,667	743	4,660	700	848	700	27,201	28,036	19,000	3,885	533	8,261	1,907	33,586	31,058	83,645	691	-6,384	77,261	719	78,598	75,575	-3,022
2018	2,110	100	147	783	673	2,256	0	5,245	4,100	671	6,804	671	0	0	15,809	743	4,603	700	-1,083	700	33,163	31,770	19,000	3,363	368	8,124	1,874	32,729	31,654	77,261	719	434	77,695	716	75,575	75,691	116
2019	307	100	147	783	674	2,256	0	5,245	4,100	671	1,495	671	0	0	14,351	760	5,266	700	-3,014	700	23,326	24,349	13,370	3,153	354	7,742	2,770	27,388	26,337	77,695	716	-4,063	73,633	736	75,691	73,703	-1,988
2020	1,226	100	148	783	676	2,256	1	5,245	4,100	671	3,145	671	0	0	15,098	761	4,526	700	-549	700	28,371	28,428	19,025	1,993	233	8,101	3,847	33,200	32,998	73,633	736	-4,829	68,804	739	73,703	69,132	-4,570
2021	0	100	147	783	677	2,256	5	5,245	4,100	671	1,865	671	0	0	15,548	777	4,606	700	-1,231	700	25,717	27,340	19,000	1,039	145	7,777	2,964	30,926	30,927	68,804	739	-5,209	63,595	758	69,132	65,545	-3,588
2022	0	100	147	783	678	2,256	8	5,245	4,100	671	2,046	671	0	0	15,646	787	4,695	700	-1,738	700	25,582	27,451	19,000	446	103	7,575	3,913	31,037	31,882	63,595	758	-5,456	58,140	773	65,545	61,113	-4,432
2023	2,579	100	147	783	679	2,256	10	5,245	4,100	671	7,378	671	0	0	15,878	757	4,860	700	-3,762	700	31,870	30,514	19,000	116	59	7,195	5,828	32,198	33,783	58,140	773	-328	57,812	736	61,113	57,844	-3,269
2024	7,308	100	148	783	681	2,256	10	5,245	4,100	671	12,189	671	0	0	16,430	700	5,093	700	-6,421	700	39,537	32,544	19,025	89	57	6,910	6,185	32,266	32,228	57,812	736	7,270	65,082	657	57,844	58,160	316
2025	6,249	100	147	783	682	2,256	11	5,245	4,100	671	15,600	671	0	0	16,565	695	6,385	700	-11,665	700	38,074	31,777	13,370	1,542	341	6,661	3,074	24,988	22,026	65,082	657	13,086	78,168	639	58,160	67,912	9,752
2026	0	100	147	783	683	2,256	11	5,245	4,100	671	1,616	671	0	0	15,076	733	6,115	700	-6,621	700	21,128	22,087	13,370	2,478	340	7,167	3,302	26,658	22,865	78,168	639	-5,530	72,638	680	67,912	67,134	-778
2027	6,316	100	147	783	684	2,256	12	5,245	4,100	671	18,602	671	0	0	15,461	708	5,043	700	-7,168	700	43,198	36,767	19,000	3,486	848	7,540	2,460	33,333	30,024	72,638	680	9,865	82,503	659	67,134	73,878	6,743
2028	2,288	100	148	783	686	2,256	12	5,245	4,100	671	6,191	671	0	0	14,581	724	5,909	700	-6,388	700	27,526	25,947	13,388	3,997	959	7,278	2,396	28,018	24,230	82,503	659	-492	82,011	678	73,878	75,594	1,716
2029	628	100	147	783	687	2,256	12	5,245	4,100	671	1,321	671	0	0	13,788	748	5,351	700	-3,217	700	22,816	23,439	13,370	4,157	668	7,520	2,351	28,065	25,254	82,011	678	-5,249	76,761	707	75,594	73,779	-1,815
2030	7,768	100	147	783	688	2,256	12	5,245	4,100	671	10,899	671	0	0	16,691	710	6,386	700	-6,483	700	40,209	33,124	13,370	6,759	1,511	7,590	2,348	31,578	28,899	76,761	707	8,631	85,392	672	73,779	78,004	4,225
2031	0	100	147	783	689	2,256	12	5,245	4,100	671	334	671	0	0	15,167	744	5,727	700	-2,158	700	24,018	25,133	13,370	5,605	949	7,347	2,196	29,467	26,051	85,392	672	-5,449	79,943	709	78,004	77,086	-918
2032	462	100	148	783	691	2,256	12	5,245	4,100	671	908	671	0	0	14,269	763	5,357	700	-1,941	700	24,005	25,038	13,388	4,630	601	7,722	2,213	28,554	26,954	79,943	709	-4,549	75,394	733	77,086	75,171	-1,915
2033	3,390	100	147	783	692	2,256	12	5,245	4,100	671	9,510	671	0	0	14,985	743	4,529	700	-1,642	700	35,723	33,137	19,000	3,599	451	8,143	2,652	33,846	33,295	75,394	733	1,877	77,271	714	75,171	75,013	-158
2034	0	100	147	783	693	2,256	12	5,245	4,100	671	1,593	671	0	0	15,452	767	4,641	700	-826	700	25,812	27,314	19,000	2,424	274	8,055	2,052	31,805	30,610	77,271	714	-5,993	71,278	740	75,013	71,717	-3,296
2035	1,149	100	147	783	694	2,256	12	5,245	4,100	671	3,133	671	0	0	15,522	770	4,544	700	-670	700	28,631	29,058	19,000	2,279	233	7,800	1,914	31,226	31,184	71,278	740	-2,595	68,683	745	71,717	69,591	-2,126

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Table I-41b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	Chloride Conc. for Saugus WRP Infiltration	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Chloride Conc. for Inflow From MZ1	Inflow From MZ3	Chloride Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	40	148	109	666	314	0	885	4,100	126	11,675	89	0	0	14,829	87	5,579	28	-5,182	28	36,707	4,450	13,388	6,543	1,102	7,025	2,202	30,260	3,811	78,359	96	6,447	84,807	94	10,241	10,880	639
2013	318	40	147	109	667	314	0	885	4,100	126	623	89	0	0	14,012	87	5,283	28	-1,853	28	23,297	2,894	13,370	5,290	763	7,327	2,152	28,902	3,610	84,807	94	-5,606	79,201	94	10,880	10,165	-716
2014	2,643	40	147	109	668	314	0	885	4,100	126	9,328	89	0	0	14,762	88	4,371	28	-1,307	28	34,712	4,156	19,000	4,129	642	8,008	1,988	33,766	4,251	79,201	94	946	80,147	92	10,165	10,069	-95
2015	10,432	40	147	109	669	314	0	885	4,100	126	7,637	89	0	0	14,876	85	5,444	28	-2,935	28	40,371	4,323	13,370	6,633	1,215	7,370	2,077	30,665	3,700	80,147	92	9,706	89,853	88	10,069	10,692	623
2016	0	40	148	109	671	314	0	885	4,100	126	22	89	0	0	15,133	87	5,612	28	-1,341	28	24,345	2,968	13,388	6,166	1,189	7,743	2,067	30,553	3,494	89,853	88	-6,208	83,645	89	10,692	10,166	-526
2017	0	40	147	109	672	314	0	885	4,100	126	1,107	89	0	0	15,667	89	4,660	28	848	28	27,201	3,245	19,000	3,885	533	8,261	1,907	33,586	4,017	83,645	89	-6,384	77,261	89	10,166	9,394	-772
2018	2,110	40	147	109	673	314	0	885	4,100	126	6,804	89	0	0	15,809	89	4,603	28	-1,083	28	33,163	3,988	19,000	3,363	368	8,124	1,874	32,729	3,935	77,261	89	434	77,695	89	9,394	9,447	53
2019	307	40	147	109	674	314	0	885	4,100	126	1,495	89	0	0	14,351	88	5,266	28	-3,014	28	23,326	3,016	13,370	3,153	354	7,742	2,770	27,388	3,287	77,695	89	-4,063	73,633	92	9,447	9,176	-271
2020	1,226	40	148	109	676	314	1	885	4,100	126	3,145	89	0	0	15,098	88	4,526	28	-549	28	28,371	3,427	19,025	1,993	233	8,101	3,847	33,200	4,108	73,633	92	-4,829	68,804	91	9,176	8,495	-681
2021	0	40	147	109	677	314	5	885	4,100	126	1,865	89	0	0	15,548	89	4,606	28	-1,231	28	25,717	3,264	19,000	1,039	145	7,777	2,964	30,926	3,800	68,804	91	-5,209	63,595	92	8,495	7,959	-536
2022	0	40	147	109	678	314	8	885	4,100	126	2,046	89	0	0	15,646	91	4,695	28	-1,738	28	25,582	3,310	19,000	446	103	7,575	3,913	31,037	3,871	63,595	92	-5,456	58,140	94	7,959	7,397	-562
2023	2,579	40	147	109	679	314	10	885	4,100	126	7,378	89	0	0	15,878	89	4,860	28	-3,762	28	31,870	4,027	19,000	116	59	7,195	5,828	32,198	4,089	58,140	94	-328	57,812	93	7,397	7,335	-62
2024	7,308	40	148	109	681	314	10	885	4,100	126	12,189	89	0	0	16,430	87	5,093	28	-6,421	28	39,537	4,798	19,025	89	57	6,910	6,185	32,266	4,087	57,812	93	7,270	65,082	91	7,335	8,047	711
2025	6,249	40	147	109	682	314	11	885	4,100	126	15,600	89	0	0	16,565	88	6,385	28	-11,665	28	38,074	5,042	13,370	1,542	341	6,661	3,074	24,988	3,047	65,082	91	13,086	78,168	94	8,047	10,041	1,995
2026	0	40	147	109	683	314	11	885	4,100	126	1,616	89	0	0	15,076	89	6,115	28	-6,621	28	21,128	3,029	13,370	2,478	340	7,167	3,302	26,658	3,381	78,168	94	-5,530	72,638	98	10,041	9,689	-352
2027	6,316	40	147	109	684	314	12	885	4,100	126	18,602	89	0	0	15,461	88	5,043	28	-7,168	28	43,198	5,389	19,000	3,486	848	7,540	2,460	33,333	4,333	72,638	98	9,865	82,503	96	9,689	10,745	1,056
2028	2,288	40	148	109	686	314	12	885	4,100	126	6,191	89	0	0	14,581	87	5,909	28	-6,388	28	27,526	3,617	13,388	3,997	959	7,278	2,396	28,018	3,524	82,503	96	-492	82,011	97	10,745	10,838	92
2029	628	40	147	109	687	314	12	885	4,100	126	1,321	89	0	0	13,788	88	5,351	28	-3,217	28	22,816	2,951	13,370	4,157	668	7,520	2,351	28,065	3,621	82,011	97	-5,249	76,761	97	10,838	10,168	-669
2030	7,768	40	147	109	688	314	12	885	4,100	126	10,899	89	0	0	16,691	91	6,386	28	-6,483	28	40,209	4,838	13,370	6,759	1,511	7,590	2,348	31,578	3,983	76,761	97	8,631	85,392	95	10,168	11,024	855
2031	0	40	147	109	689	314	12	885	4,100	126	334	89	0	0	15,167	91	5,727	28	-2,158	28	24,018	3,091	13,370	5,605	949	7,347	2,196	29,467	3,682	85,392	95	-5,449	79,943	96	11,024	10,433	-591
2032	462	40	148	109	691	314	12	885	4,100	126	908	89	0	0	14,269	91	5,357	28	-1,941	28	24,005	3,058	13,388	4,630	601	7,722	2,213	28,554	3,648	79,943	96	-4,549	75,394	96	10,433	9,843	-590
2033	3,390	40	147	109	692	314	12	885	4,100	126	9,510	89	0	0	14,985	90	4,529	28	-1,642	28	35,723	4,309	19,000	3,599	451	8,143	2,652	33,846	4,360	75,394	96	1,877	77,271	93	9,843	9,793	-51
2034	0	40	147	109	693	314	12	885	4,100	126	1,593	89	0	0	15,452	91	4,641	28	-826	28	25,812	3,274	19,000	2,424	274	8,055	2,052	31,805	3,996	77,271	93	-5,993	71,278	94	9,793	9,070	-722
2035	1,149	40	147	109	694	314	12	885	4,100	126	3,133	89	0	0	15,522	91	4,544	28	-670	28	28,631	3,539	19,000	2,279	233	7,800	1,914	31,226	3,944	71,278	94	-2,595	68,683	93	9,070	8,666	-405

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-41c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Saugus WRP Infiltration	Nitrate Conc. for Saugus WRP Infiltration	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. or Inflow From Upstream Tributaries	Inflow From MZ1	Nitrate Conc. for Inflow From MZ1	Inflow From MZ3	Nitrate Conc. for Inflow From MZ3	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ5	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,893	9	148	44	666	16	0	14	4,100	20	11,675	20	0	0	14,829	19	5,579	20	-5,182	20	36,707	912	13,388	6,543	1,102	7,025	2,202	30,260	803	78,359	20	6,447	84,807	20	2,158	2,267	110
2013	318	9	147	44	667	16	0	14	4,100	20	623	20	0	0	14,012	19	5,283	20	-1,853	20	23,297	620	13,370	5,290	763	7,327	2,152	28,902	752	84,807	20	-5,606	79,201	20	2,267	2,135	-132
2014	2,643	9	147	44	668	16	0	14	4,100	20	9,328	20	0	0	14,762	19	4,371	20	-1,307	20	34,712	888	19,000	4,129	642	8,008	1,988	33,766	893	79,201	20	946	80,147	20	2,135	2,130	-4
2015	10,432	9	147	44	669	16	0	14	4,100	20	7,637	20	0	0	14,876	18	5,444	20	-2,935	20	40,371	907	13,370	6,633	1,215	7,370	2,077	30,665	783	80,147	20	9,706	89,853	18	2,130	2,255	124
2016	0	9	148	44	671	16	0	14	4,100	20	22	20	0	0	15,133	19	5,612	20	-1,341	20	24,345	640	13,388	6,166	1,189	7,743	2,067	30,553	737	89,853	18	-6,208	83,645	19	2,255	2,158	-97
2017	0	9	147	44	672	16	0	14	4,100	20	1,107	20	0	0	15,667	19	4,660	20	848	20	27,201	721	19,000	3,885	533	8,261	1,907	33,586	853	83,645	19	-6,384	77,261	19	2,158	2,026	-131
2018	2,110	9	147	44	673	16	0	14	4,100	20	6,804	20	0	0	15,809	19	4,603	20	-1,083	20	33,163	848	19,000	3,363	368	8,124	1,874	32,729	849	77,261	19	434	77,695	19	2,026	2,026	-1
2019	307	9	147	44	674	16	0	14	4,100	20	1,495	20	0	0	14,351	19	5,266	20	-3,014	20	23,326	611	13,370	3,153	354	7,742	2,770	27,388	705	77,695	19	-4,063	73,633	19	2,026	1,932	-93
2020	1,226	9	148	44	676	16	1	14	4,100	20	3,145	20	0	0	15,098	19	4,526	20	-549	20	28,371	730	19,025	1,993	233	8,101	3,847	33,200	865	73,633	19	-4,829	68,804	19	1,932	1,797	-135
2021	0	9	147	44	677	16	5	14	4,100	20	1,865	20	0	0	15,548	19	4,606	20	-1,231	20	25,717	676	19,000	1,039	145	7,777	2,964	30,926	804	68,804	19	-5,209	63,595	19	1,797	1,669	-128
2022	0	9	147	44	678	16	8	14	4,100	20	2,046	20	0	0	15,646	19	4,695	20	-1,738	20	25,582	671	19,000	446	103	7,575	3,913	31,037	812	63,595	19	-5,456	58,140	19	1,669	1,528	-141
2023	2,579	9	147	44	679	16	10	14	4,100	20	7,378	20	0	0	15,878	19	4,860	20	-3,762	20	31,870	796	19,000	116	59	7,195	5,828	32,198	845	58,140	19	-328	57,812	19	1,528	1,479	-49
2024	7,308	9	148	44	681	16	10	14	4,100	20	12,189	20	0	0	16,430	18	5,093	20	-6,421	20	39,537	928	19,025	89	57	6,910	6,185	32,266	824	57,812	19	7,270	65,082	18	1,479	1,583	104
2025	6,249	9	147	44	682	16	11	14	4,100	20	15,600	20	0	0	16,565	19	6,385	20	-11,665	20	38,074	914	13,370	1,542	341	6,661	3,074	24,988	599	65,082	18	13,086	78,168	18	1,583	1,897	314
2026	0	9	147	44	683	16	11	14	4,100	20	1,616	20	0	0	15,076	19	6,115	20	-6,621	20	21,128	558	13,370	2,478	340	7,167	3,302	26,658	639	78,168	18	-5,530	72,638	18	1,897	1,817	-80
2027	6,316	9	147	44	684	16	12	14	4,100	20	18,602	20	0	0	15,461	19	5,043	20	-7,168	20	43,198	1,057	19,000	3,486	848	7,540	2,460	33,333	812	72,638	18	9,865	82,503	18	1,817	2,061	245
2028	2,288	9	148	44	686	16	12	14	4,100	20	6,191	20	0	0	14,581	19	5,909	20	-6,388	20	27,526	698	13,388	3,997	959	7,278	2,396	28,018	676	82,503	18	-492	82,011	19	2,061	2,083	21
2029	628	9	147	44	687	16	12	14	4,100	20	1,321	20	0	0	13,788	19	5,351	20	-3,217	20	22,816	598	13,370	4,157	668	7,520	2,351	28,065	696	82,011	19	-5,249	76,761	19	2,083	1,985	-98
2030	7,768	9	147	44	688	16	12	14	4,100	20	10,899	20	0	0	16,691	19	6,386	20	-6,483	20	40,209	961	13,370	6,759	1,511	7,590	2,348	31,578	778	76,761	19	8,631	85,392	19	1,985	2,169	183
2031	0	9	147	44	689	16	12	14	4,100	20	334	20	0	0	15,167	20	5,727	20	-2,158	20	24,018	645	13,370	5,605	949	7,347	2,196	29,467	724	85,392	19	-5,449	79,943	19	2,169	2,089	-80
2032	462	9	148	44	691	16	12	14	4,100	20	908	20	0	0	14,269	19	5,357	20	-1,941	20	24,005	636	13,388	4,630	601	7,722	2,213	28,554	730	79,943	19	-4,549	75,394	19	2,089	1,995	-94
2033	3,390	9	147	44	692	16	12	14	4,100	20	9,510	20	0	0	14,985	19	4,529	20	-1,642	20	35,723	901	19,000	3,599	451	8,143	2,652	33,846	884	75,394	19	1,877	77,271	19	1,995	2,013	18
2034	0	9	147	44	693	16	12	14	4,100	20	1,593	20	0	0	15,452	19	4,641	20	-826	20	25,812	685	19,000	2,424	274	8,055	2,052	31,805	821	77,271	19	-5,993	71,278	19	2,013	1,876	-136
2035	1,149	9	147	44	694	16	12	14	4,100	20	3,133	20	0	0	15,522	19	4,544	20	-670	20	28,631	741	19,000	2,279	233	7,800	1,914	31,226	816	71,278	19	-2,595	68,683	19	1,876	1,802	-75

Table I-41d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Saugus WRP Infiltration [acre-ft]	Sulfate Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Sulfate Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Sulfate Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	40	148	143	666	413	0	1,235	4,100	179	11,675	179	0	0	14,829	152	5,579	235	-5,182	235	36,707	7,687	13,388	6,543	1,102	7,025	2,202	30,260	7,598	78,359	192	6,447	84,807	178	20,419	20,509	89
2013	318	40	147	143	667	413	0	1,235	4,100	179	623	179	0	0	14,012	157	5,283	235	-1,853	235	23,297	5,660	13,370	5,290	763	7,327	2,152	28,902	6,805	84,807	178	-5,606	79,201	180	20,509	19,364	-1,145
2014	2,643	40	147	143	668	413	0	1,235	4,100	179	9,328	179	0	0	14,762	153	4,371	235	-1,307	235	34,712	7,865	19,000	4,129	642	8,008	1,988	33,766	8,098	79,201	180	946	80,147	176	19,364	19,130	-233
2015	10,432	40	147	143	669	413	0	1,235	4,100	179	7,637	179	0	0	14,876	137	5,444	235	-2,935	235	40,371	7,390	13,370	6,633	1,215	7,370	2,077	30,665	7,029	80,147	176	9,706	89,853	160	19,130	19,491	361
2016	0	40	148	143	671	413	0	1,235	4,100	179	22	179	0	0	15,133	146	5,612	235	-1,341	235	24,345	5,778	13,388	6,166	1,189	7,743	2,067	30,553	6,370	89,853	160	-6,208	83,645	166	19,491	18,899	-592
2017	0	40	147	143	672	413	0	1,235	4,100	179	1,107	179	0	0	15,667	152	4,660	235	848	235	27,201	6,659	19,000	3,885	533	8,261	1,907	33,586	7,468	83,645	166	-6,384	77,261	172	18,899	18,090	-809
2018	2,110	40	147	143	673	413	0	1,235	4,100	179	6,804	179	0	0	15,809	151	4,603	235	-1,083	235	33,163	7,546	19,000	3,363	368	8,124	1,874	32,729	7,577	77,261	172	434	77,695	171	18,090	18,059	-32
2019	307	40	147	143	674	413	0	1,235	4,100	179	1,495	179	0	0	14,351	157	5,266	235	-3,014	235	23,326	5,558	13,370	3,153	354	7,742	2,770	27,388	6,284	77,695	171	-4,063	73,633	173	18,059	17,333	-726
2020	1,226	40	148	143	676	413	1	1,235	4,100	179	3,145	179	0	0	15,098	156	4,526	235	-549	235	28,371	6,706	19,025	1,993	233	8,101	3,847	33,200	7,760	73,633	173	-4,829	68,804	174	17,333	16,279	-1,054
2021	0	40	147	143	677	413	5	1,235	4,100	179	1,865	179	0	0	15,548	158	4,606	235	-1,231	235	25,717	6,277	19,000	1,039	145	7,777	2,964	30,926	7,283	68,804	174	-5,209	63,595	177	16,279	15,274	-1,006
2022	0	40	147	143	678	413	8	1,235	4,100	179	2,046	179	0	0	15,646	158	4,695	235	-1,738	235	25,582	6,217	19,000	446	103	7,575	3,913	31,037	7,429	63,595	177	-5,456	58,140	178	15,274	14,062	-1,212
2023	2,579	40	147	143	679	413	10	1,235	4,100	179	7,378	179	0	0	15,878	151	4,860	235	-3,762	235	31,870	6,968	19,000	116	59	7,195	5,828	32,198	7,773	58,140	178	-328	57,812	169	14,062	13,257	-805
2024	7,308	40	148	143	681	413	10	1,235	4,100	179	12,189	179	0	0	16,430	140	5,093	235	-6,421	235	39,537	7,476	19,025	89	57	6,910	6,185	32,266	7,386	57,812	169	7,270	65,082	151	13,257	13,347	90
2025	6,249	40	147	143	682	413	11	1,235	4,100	179	15,600	179	0	0	16,565	138	6,385	235	-11,665	235	38,074	6,965	13,370	1,542	341	6,661	3,074	24,988	5,055	65,082	151	13,086	78,168	144	13,347	15,257	1,910
2026	0	40	147	143	683	413	11	1,235	4,100	179	1,616	179	0	0	15,076	148	6,115	235	-6,621	235	21,128	4,699	13,370	2,478	340	7,167	3,302	26,658	5,137	78,168	144	-5,530	72,638	150	15,257	14,820	-438
2027	6,316	40	147	143	684	413	12	1,235	4,100	179	18,602	179	0	0	15,461	143	5,043	235	-7,168	235	43,198	8,620	19,000	3,486	848	7,540	2,460	33,333	6,628	72,638	150	9,865	82,503	150	14,820	16,812	1,992
2028	2,288	40	148	143	686	413	12	1,235	4,100	179	6,191	179	0	0	14,581	150	5,909	235	-6,388	235	27,526	5,878	13,388	3,997	959	7,278	2,396	28,018	5,514	82,503	150	-492	82,011	154	16,812	17,176	365
2029	628	40	147	143	687	413	12	1,235	4,100	179	1,321	179	0	0	13,788	156	5,351	235	-3,217	235	22,816	5,397	13,370	4,157	668	7,520	2,351	28,065	5,738	82,011	154	-5,249	76,761	161	17,176	16,835	-341
2030	7,768	40	147	143	688	413	12	1,235	4,100	179	10,899	179	0	0	16,691	138	6,386	235	-6,483	235	40,209	7,607	13,370	6,759	1,511	7,590	2,348	31,578	6,594	76,761	161	8,631	85,392	154	16,835	17,847	1,012
2031	0	40	147	143	689	413	12	1,235	4,100	179	334	179	0	0	15,167	149	5,727	235	-2,158	235	24,018	5,715	13,370	5,605	949	7,347	2,196	29,467	5,960	85,392	154	-5,449	79,943	162	17,847	17,602	-245
2032	462	40	148	143	691	413	12	1,235	4,100	179	908	179	0	0	14,269	154	5,357	235	-1,941	235	24,005	5,765	13,388	4,630	601	7,722	2,213	28,554	6,155	79,943	162	-4,549	75,394	168	17,602	17,212	-390
2033	3,390	40	147	143	692	413	12	1,235	4,100	179	9,510	179	0	0	14,985	150	4,529	235	-1,642	235	35,723	7,894	19,000	3,599	451	8,143	2,652	33,846	7,624	75,394	168	1,877	77,271	166	17,212	17,482	270
2034	0	40	147	143	693	413	12	1,235	4,100	179	1,593	179	0	0	15,452	156	4,641	235	-826	235	25,812	6,307	19,000	2,424	274	8,055	2,052	31,805	7,134	77,271	166	-5,993	71,278	172	17,482	16,656	-827
2035	1,149	40	147	143	694	413	12	1,235	4,100	179	3,133	179	0	0	15,522	155	4,544	235	-670	235	28,631	6,770	19,000	2,279	233	7,800	1,914	31,226	7,242	71,278	172	-2,595	68,683	173	16,656	16,184	-472

Table I-42a

Projected TDS Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	TDS Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,402	100	102	758	157	2,186	0	5,245	15,920	762	1,705	274	0	0	7,025	917	7,024	550	36,335	32,310	13,450	10,864	2,012	6,573	961	33,858	33,496	50,440	774	2,476	52,916	721	53,052	51,866	-1,186
2013	286	100	102	758	163	2,186	0	5,245	7,623	762	1,700	274	0	0	7,327	917	10,093	550	27,295	25,842	13,428	8,774	1,727	6,438	802	31,169	28,857	52,916	721	-3,874	49,042	733	51,866	48,851	-3,015
2014	2,378	100	102	758	168	2,186	0	5,245	12,252	762	1,700	274	0	0	8,008	917	8,591	550	33,199	30,663	15,448	8,078	1,748	6,487	675	32,436	30,568	49,042	733	763	49,805	723	48,851	48,946	95
2015	9,386	100	102	758	174	2,186	0	5,245	9,835	762	1,700	274	0	0	7,370	917	10,328	550	38,895	29,633	13,428	12,219	2,038	6,694	717	35,096	32,488	49,805	723	3,799	53,605	632	48,946	46,091	-2,855
2016	0	100	102	758	179	2,186	0	5,245	5,803	762	1,705	274	0	0	7,743	917	11,610	550	27,142	25,620	13,450	9,022	1,783	6,475	646	31,377	25,445	53,605	632	-4,235	49,370	689	46,091	46,266	175
2017	0	100	102	758	185	2,186	0	5,245	6,281	762	1,700	274	0	0	8,261	917	11,431	550	27,960	26,643	15,448	7,323	1,633	6,432	573	31,408	27,904	49,370	689	-3,448	45,922	721	46,266	45,005	-1,261
2018	1,899	100	102	758	190	2,186	5	5,245	10,488	762	1,700	274	0	0	8,124	917	9,355	550	31,864	29,591	15,448	7,442	1,652	6,480	589	31,612	29,361	45,922	721	252	46,174	721	45,005	45,236	230
2019	277	100	102	758	196	2,186	21	5,245	7,161	762	1,700	274	0	0	7,742	917	9,828	550	27,028	25,933	13,428	6,896	1,609	6,430	688	29,052	26,884	46,174	721	-2,023	44,151	738	45,236	44,284	-952
2020	1,103	100	102	758	201	2,186	48	5,245	9,538	762	1,705	274	0	0	8,101	917	8,519	550	29,317	28,186	15,472	5,888	1,550	6,464	941	30,315	28,852	44,151	738	-997	43,154	743	44,284	43,618	-666
2021	0	100	102	758	207	2,186	91	5,245	7,156	762	1,700	274	0	0	7,777	917	9,150	550	26,183	25,952	15,448	4,941	1,480	6,416	775	29,060	27,876	43,154	743	-2,877	40,277	761	43,618	41,694	-1,924
2022	0	100	102	758	212	2,186	126	5,245	7,472	762	1,700	274	0	0	7,575	917	8,559	550	25,747	25,857	15,448	4,345	1,404	6,407	973	28,577	28,129	40,277	761	-2,830	37,447	774	41,694	39,422	-2,272
2023	2,320	100	102	758	218	2,186	138	5,245	11,294	762	1,700	274	0	0	7,195	917	6,393	550	29,361	28,140	15,448	4,218	1,324	6,466	1,946	29,403	29,560	37,447	774	-42	37,405	747	39,422	38,001	-1,420
2024	6,575	100	102	758	223	2,186	146	5,245	18,685	762	1,705	274	0	0	6,910	917	3,779	550	38,125	34,140	15,472	5,446	1,429	6,617	2,336	31,302	30,348	37,405	747	6,823	44,229	695	38,001	41,793	3,792
2025	5,623	100	102	758	229	2,186	152	5,245	13,704	762	1,700	274	0	0	6,661	917	6,241	550	34,412	30,439	13,428	7,616	1,760	6,601	912	30,319	26,986	44,229	695	4,093	48,322	689	41,793	45,246	3,453
2026	0	100	102	758	234	2,186	157	5,245	7,875	762	1,700	274	0	0	7,167	917	8,447	550	25,683	25,965	13,428	6,603	1,609	6,433	908	28,982	25,631	48,322	689	-3,299	45,023	745	45,246	45,580	334
2027	5,682	100	102	758	240	2,186	162	5,245	14,705	762	1,700	274	0	0	7,540	917	7,491	550	37,623	33,619	15,448	9,206	1,808	6,592	773	33,826	32,415	45,023	745	3,797	48,820	705	45,580	46,784	1,204
2028	2,058	100	102	758	246	2,186	169	5,245	9,915	762	1,705	274	0	0	7,278	917	8,907	550	30,381	28,961	13,450	8,675	1,767	6,510	736	31,137	28,146	48,820	705	-757	48,063	728	46,784	47,599	815
2029	565	100	102	758	251	2,186	174	5,245	8,270	762	1,700	274	0	0	7,520	917	9,724	550	28,306	28,020	13,428	8,168	1,684	6,452	663	30,395	28,433	48,063	728	-2,089	45,974	755	47,599	47,186	-413
2030	6,989	100	102	758	257	2,186	180	5,245	12,708	762	1,700	274	0	0	7,590	917	8,826	550	38,353	32,966	13,428	11,423	1,914	6,638	679	34,083	33,017	45,974	755	4,270	50,244	690	47,186	47,135	-51
2031	0	100	102	758	262	2,186	184	5,245	9,913	762	1,700	274	0	0	7,347	917	9,571	550	29,080	29,421	13,428	9,091	1,723	6,445	739	31,426	27,866	50,244	690	-2,346	47,898	748	47,135	48,691	1,556
2032	416	100	102	758	268	2,186	188	5,245	8,577	762	1,705	274	0	0	7,722	917	10,062	550	29,040	28,971	13,450	8,368	1,685	6,462	609	30,573	29,366	47,898	748	-1,534	46,365	766	48,691	48,295	-396
2033	3,050	100	102	758	273	2,186	191	5,245	11,853	762	1,700	274	0	0	8,143	917	8,484	550	33,796	32,103	15,448	8,159	1,690	6,514	732	32,544	32,139	46,365	766	1,253	47,617	745	48,295	48,260	-36
2034	0	100	102	758	279	2,186	192	5,245	6,543	762	1,700	274	0	0	8,055	917	10,772	550	27,643	27,810	15,448	6,416	1,594	6,430	583	30,472	29,267	47,617	745	-2,829	44,789	769	48,260	46,802	-1,457
2035	1,034	100	102	758	284	2,186	192	5,245	8,479	762	1,700	274	0	0	7,800	917	9,921	550	29,512	29,018	15,448	6,593	1,608	6,451	574	30,673	30,372	44,789	769	-1,161	43,628	766	46,802	45,448	-1,354

Table I-42b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Chloride Conc. for Stream Leakage	Castaic Dam Underflow	Chloride Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Chloride Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentrati on	Change in GW Storage	Ending Storage	Ending Concentr ation	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	40	102	107	157	307	0	885	15,920	109	1,705	70	0	0	7,025	96	7,024	15	36,335	3,893	13,450	10,864	2,012	6,573	961	33,858	3,699	50,440	85	2,476	52,916	84	5,859	6,053	194
2013	286	40	102	107	163	307	0	885	7,623	109	1,700	70	0	0	7,327	96	10,093	15	27,295	2,548	13,428	8,774	1,727	6,438	802	31,169	3,368	52,916	84	-3,874	49,042	78	6,053	5,233	-820
2014	2,378	40	102	107	168	307	0	885	12,252	109	1,700	70	0	0	8,008	96	8,591	15	33,199	3,406	15,448	8,078	1,748	6,487	675	32,436	3,275	49,042	78	763	49,805	79	5,233	5,364	131
2015	9,386	40	102	107	174	307	0	885	9,835	109	1,700	70	0	0	7,370	96	10,328	15	38,895	3,384	13,428	12,219	2,038	6,694	717	35,096	3,560	49,805	79	3,799	53,605	71	5,364	5,188	-176
2016	0	40	102	107	179	307	0	885	5,803	109	1,705	70	0	0	7,743	96	11,610	15	27,142	2,356	13,450	9,022	1,783	6,475	646	31,377	2,864	53,605	71	-4,235	49,370	70	5,188	4,680	-508
2017	0	40	102	107	185	307	0	885	6,281	109	1,700	70	0	0	8,261	96	11,431	15	27,960	2,492	15,448	7,323	1,633	6,432	573	31,408	2,822	49,370	70	-3,448	45,922	70	4,680	4,350	-330
2018	1,899	40	102	107	190	307	5	885	10,488	109	1,700	70	0	0	8,124	96	9,355	15	31,864	3,166	15,448	7,442	1,652	6,480	589	31,612	2,838	45,922	70	252	46,174	75	4,350	4,678	328
2019	277	40	102	107	196	307	21	885	7,161	109	1,700	70	0	0	7,742	96	9,828	15	27,028	2,567	13,428	6,896	1,609	6,430	688	29,052	2,780	46,174	75	-2,023	44,151	74	4,678	4,465	-213
2020	1,103	40	102	107	201	307	48	885	9,538	109	1,705	70	0	0	8,101	96	8,519	15	29,317	3,019	15,472	5,888	1,550	6,464	941	30,315	2,909	44,151	74	-997	43,154	78	4,465	4,575	110
2021	0	40	102	107	207	307	91	885	7,156	109	1,700	70	0	0	7,777	96	9,150	15	26,183	2,630	15,448	4,941	1,480	6,416	775	29,060	2,924	43,154	78	-2,877	40,277	78	4,575	4,281	-294
2022	0	40	102	107	212	307	126	885	7,472	109	1,700	70	0	0	7,575	96	8,559	15	25,747	2,684	15,448	4,345	1,404	6,407	973	28,577	2,888	40,277	78	-2,830	37,447	80	4,281	4,076	-205
2023	2,320	40	102	107	218	307	138	885	11,294	109	1,700	70	0	0	7,195	96	6,393	15	29,361	3,297	15,448	4,218	1,324	6,466	1,946	29,403	3,057	37,447	80	-42	37,405	85	4,076	4,317	241
2024	6,575	40	102	107	223	307	146	885	18,685	109	1,705	70	0	0	6,910	96	3,779	15	38,125	4,542	15,472	5,446	1,429	6,617	2,336	31,302	3,448	37,405	85	6,823	44,229	90	4,317	5,412	1,095
2025	5,623	40	102	107	229	307	152	885	13,704	109	1,700	70	0	0	6,661	96	6,241	15	34,412	3,782	13,428	7,616	1,760	6,601	912	30,319	3,494	44,229	90	4,093	48,322	87	5,412	5,699	287
2026	0	40	102	107	234	307	157	885	7,875	109	1,700	70	0	0	7,167	96	8,447	15	25,683	2,734	13,428	6,603	1,609	6,433	908	28,982	3,228	48,322	87	-3,299	45,023	85	5,699	5,204	-495
2027	5,682	40	102	107	240	307	162	885	14,705	109	1,700	70	0	0	7,540	96	7,491	15	37,623	4,090	15,448	9,206	1,808	6,592	773	33,826	3,701	45,023	85	3,797	48,820	84	5,204	5,593	389
2028	2,058	40	102	107	246	307	169	885	9,915	109	1,705	70	0	0	7,278	96	8,907	15	30,381	3,190	13,450	8,675	1,767	6,510	736	31,137	3,365	48,820	84	-757	48,063	83	5,593	5,418	-175
2029	565	40	102	107	251	307	174	885	8,270	109	1,700	70	0	0	7,520	96	9,724	15	28,306	2,923	13,428	8,168	1,684	6,452	663	30,395	3,237	48,063	83	-2,089	45,974	82	5,418	5,104	-314
2030	6,989	40	102	107	257	307	180	885	12,708	109	1,700	70	0	0	7,590	96	8,826	15	38,353	3,928	13,428	11,423	1,914	6,638	679	34,083	3,572	45,974	82	4,270	50,244	80	5,104	5,461	356
2031	0	40	102	107	262	307	184	885	9,913	109	1,700	70	0	0	7,347	96	9,571	15	29,080	3,126	13,428	9,091	1,723	6,445	739	31,426	3,228	50,244	80	-2,346	47,898	82	5,461	5,358	-102
2032	416	40	102	107	268	307	188	885	8,577	109	1,705	70	0	0	7,722	96	10,062	15	29,040	3,017	13,450	8,368	1,685	6,462	609	30,573	3,232	47,898	82	-1,534	46,365	82	5,358	5,144	-215
2033	3,050	40	102	107	273	307	191	885	11,853	109	1,700	70	0	0	8,143	96	8,484	15	33,796	3,672	15,448	8,159	1,690	6,514	732	32,544	3,423	46,365	82	1,253	47,617	83	5,144	5,393	249
2034	0	40	102	107	279	307	192	885	6,543	109	1,700	70	0	0	8,055	96	10,772	15	27,643	2,760	15,448	6,416	1,594	6,430	583	30,472	3,271	47,617	83	-2,829	44,789	80	5,393	4,883	-510
2035	1,034	40	102	107	284	307	192	885	8,479	109	1,700	70	0	0	7,800	96	9,921	15	29,512	3,054	15,448	6,593	1,608	6,451	574	30,673	3,169	44,789	80	-1,161	43,628	80	4,883	4,768	-114

Table I-42c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Nitrate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	9	102	41	157	15	0	14	15,920	7	1,705	3	0	0	7,025	16	7,024	10	36,335	467	13,450	10,864	2,012	6,573	961	33,858	472	50,440	11	2,476	52,916	10	748	743	-5
2013	286	9	102	41	163	15	0	14	7,623	7	1,700	3	0	0	7,327	16	10,093	10	27,295	387	13,428	8,774	1,727	6,438	802	31,169	413	52,916	10	-3,874	49,042	11	743	717	-26
2014	2,378	9	102	41	168	15	0	14	12,252	7	1,700	3	0	0	8,008	16	8,591	10	33,199	451	15,448	8,078	1,748	6,487	675	32,436	449	49,042	11	763	49,805	11	717	719	2
2015	9,386	9	102	41	174	15	0	14	9,835	7	1,700	3	0	0	7,370	16	10,328	10	38,895	522	13,428	12,219	2,038	6,694	717	35,096	477	49,805	11	3,799	53,605	10	719	763	44
2016	0	9	102	41	179	15	0	14	5,803	7	1,705	3	0	0	7,743	16	11,610	10	27,142	397	13,450	9,022	1,783	6,475	646	31,377	421	53,605	10	-4,235	49,370	11	763	738	-25
2017	0	9	102	41	185	15	0	14	6,281	7	1,700	3	0	0	8,261	16	11,431	10	27,960	410	15,448	7,323	1,633	6,432	573	31,408	445	49,370	11	-3,448	45,922	11	738	703	-35
2018	1,899	9	102	41	190	15	5	14	10,488	7	1,700	3	0	0	8,124	16	9,355	10	31,864	442	15,448	7,442	1,652	6,480	589	31,612	459	45,922	11	252	46,174	11	703	686	-17
2019	277	9	102	41	196	15	21	14	7,161	7	1,700	3	0	0	7,742	16	9,828	10	27,028	389	13,428	6,896	1,609	6,430	688	29,052	408	46,174	11	-2,023	44,151	11	686	668	-19
2020	1,103	9	102	41	201	15	48	14	9,538	7	1,705	3	0	0	8,101	16	8,519	10	29,317	412	15,472	5,888	1,550	6,464	941	30,315	435	44,151	11	-997	43,154	11	668	645	-23
2021	0	9	102	41	207	15	91	14	7,156	7	1,700	3	0	0	7,777	16	9,150	10	26,183	379	15,448	4,941	1,480	6,416	775	29,060	412	43,154	11	-2,877	40,277	11	645	612	-33
2022	0	9	102	41	212	15	126	14	7,472	7	1,700	3	0	0	7,575	16	8,559	10	25,747	370	15,448	4,345	1,404	6,407	973	28,577	413	40,277	11	-2,830	37,447	11	612	569	-42
2023	2,320	9	102	41	218	15	138	14	11,294	7	1,700	3	0	0	7,195	16	6,393	10	29,361	397	15,448	4,218	1,324	6,466	1,946	29,403	427	37,447	11	-42	37,405	11	569	540	-30
2024	6,575	9	102	41	223	15	146	14	18,685	7	1,705	3	0	0	6,910	16	3,779	10	38,125	477	15,472	5,446	1,429	6,617	2,336	31,302	431	37,405	11	6,823	44,229	10	540	586	46
2025	5,623	9	102	41	229	15	152	14	13,704	7	1,700	3	0	0	6,661	16	6,241	10	34,412	446	13,428	7,616	1,760	6,601	912	30,319	378	44,229	10	4,093	48,322	10	586	654	68
2026	0	9	102	41	234	15	157	14	7,875	7	1,700	3	0	0	7,167	16	8,447	10	25,683	365	13,428	6,603	1,609	6,433	908	28,982	370	48,322	10	-3,299	45,023	11	654	648	-6
2027	5,682	9	102	41	240	15	162	14	14,705	7	1,700	3	0	0	7,540	16	7,491	10	37,623	493	15,448	9,206	1,808	6,592	773	33,826	461	45,023	11	3,797	48,820	10	648	680	32
2028	2,058	9	102	41	246	15	169	14	9,915	7	1,705	3	0	0	7,278	16	8,907	10	30,381	418	13,450	8,675	1,767	6,510	736	31,137	409	48,820	10	-757	48,063	11	680	689	9
2029	565	9	102	41	251	15	174	14	8,270	7	1,700	3	0	0	7,520	16	9,724	10	28,306	401	13,428	8,168	1,684	6,452	663	30,395	412	48,063	11	-2,089	45,974	11	689	678	-11
2030	6,989	9	102	41	257	15	180	14	12,708	7	1,700	3	0	0	7,590	16	8,826	10	38,353	510	13,428	11,423	1,914	6,638	679	34,083	475	45,974	11	4,270	50,244	10	678	713	35
2031	0	9	102	41	262	15	184	14	9,913	7	1,700	3	0	0	7,347	16	9,571	10	29,080	405	13,428	9,091	1,723	6,445	739	31,426	422	50,244	10	-2,346	47,898	11	713	696	-17
2032	416	9	102	41	268	15	188	14	8,577	7	1,705	3	0	0	7,722	16	10,062	10	29,040	412	13,450	8,368	1,685	6,462	609	30,573	420	47,898	11	-1,534	46,365	11	696	688	-8
2033	3,050	9	102	41	273	15	191	14	11,853	7	1,700	3	0	0	8,143	16	8,484	10	33,796	462	15,448	8,159	1,690	6,514	732	32,544	458	46,365	11	1,253	47,617	11	688	693	4
2034	0	9	102	41	279	15	192	14	6,543	7	1,700	3	0	0	8,055	16	10,772	10	27,643	405	15,448	6,416	1,594	6,430	583	30,472	420	47,617	11	-2,829	44,789	11	693	677	-15
2035	1,034	9	102	41	284	15	192	14	8,479	7	1,700	3	0	0	7,800	16	9,921	10	29,512	418	15,448	6,593	1,608	6,451	574	30,673	439	44,789	11	-1,161	43,628	11	677	656	-21

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-42d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Sulfate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	40	102	144	157	416	0	1,235	15,920	254	1,705	51	0	0	7,025	295	7,024	235	36,335	11,027	13,450	10,864	2,012	6,573	961	33,858	10,866	50,440	251	2,476	52,916	241	17,209	17,370	161
2013	286	40	102	144	163	416	0	1,235	7,623	254	1,700	51	0	0	7,327	295	10,093	235	27,295	9,042	13,428	8,774	1,727	6,438	802	31,169	9,665	52,916	241	-3,874	49,042	251	17,370	16,748	-622
2014	2,378	40	102	144	168	416	0	1,235	12,252	254	1,700	51	0	0	8,008	295	8,591	235	33,199	10,551	15,448	8,078	1,748	6,487	675	32,436	10,480	49,042	251	763	49,805	248	16,748	16,819	71
2015	9,386	40	102	144	174	416	0	1,235	9,835	254	1,700	51	0	0	7,370	295	10,328	235	38,895	10,400	13,428	12,219	2,038	6,694	717	35,096	11,164	49,805	248	3,799	53,605	220	16,819	16,055	-764
2016	0	40	102	144	179	416	0	1,235	5,803	254	1,705	51	0	0	7,743	295	11,610	235	27,142	9,059	13,450	9,022	1,783	6,475	646	31,377	8,864	53,605	220	-4,235	49,370	242	16,055	16,251	196
2017	0	40	102	144	185	416	0	1,235	6,281	254	1,700	51	0	0	8,261	295	11,431	235	27,960	9,378	15,448	7,323	1,633	6,432	573	31,408	9,801	49,370	242	-3,448	45,922	253	16,251	15,828	-423
2018	1,899	40	102	144	190	416	5	1,235	10,488	254	1,700	51	0	0	8,124	295	9,355	235	31,864	10,228	15,448	7,442	1,652	6,480	589	31,612	10,326	45,922	253	252	46,174	251	15,828	15,730	-98
2019	277	40	102	144	196	416	21	1,235	7,161	254	1,700	51	0	0	7,742	295	9,828	235	27,028	9,019	13,428	6,896	1,609	6,430	688	29,052	9,349	46,174	251	-2,023	44,151	257	15,730	15,400	-330
2020	1,103	40	102	144	201	416	48	1,235	9,538	254	1,705	51	0	0	8,101	295	8,519	235	29,317	9,659	15,472	5,888	1,550	6,464	941	30,315	10,034	44,151	257	-997	43,154	256	15,400	15,026	-375
2021	0	40	102	144	207	416	91	1,235	7,156	254	1,700	51	0	0	7,777	295	9,150	235	26,183	8,922	15,448	4,941	1,480	6,416	775	29,060	9,603	43,154	256	-2,877	40,277	262	15,026	14,345	-681
2022	0	40	102	144	212	416	126	1,235	7,472	254	1,700	51	0	0	7,575	295	8,559	235	25,747	8,824	15,448	4,345	1,404	6,407	973	28,577	9,678	40,277	262	-2,830	37,447	265	14,345	13,491	-853
2023	2,320	40	102	144	218	416	138	1,235	11,294	254	1,700	51	0	0	7,195	295	6,393	235	29,361	9,449	15,448	4,218	1,324	6,466	1,946	29,403	10,116	37,447	265	-42	37,405	252	13,491	12,824	-667
2024	6,575	40	102	144	223	416	146	1,235	18,685	254	1,705	51	0	0	6,910	295	3,779	235	38,125	11,300	15,472	5,446	1,429	6,617	2,336	31,302	10,241	37,405	252	6,823	44,229	231	12,824	13,882	1,059
2025	5,623	40	102	144	229	416	152	1,235	13,704	254	1,700	51	0	0	6,661	295	6,241	235	34,412	10,228	13,428	7,616	1,760	6,601	912	30,319	8,964	44,229	231	4,093	48,322	231	13,882	15,146	1,264
2026	0	40	102	144	234	416	157	1,235	7,875	254	1,700	51	0	0	7,167	295	8,447	235	25,683	8,828	13,428	6,603	1,609	6,433	908	28,982	8,580	48,322	231	-3,299	45,023	251	15,146	15,394	248
2027	5,682	40	102	144	240	416	162	1,235	14,705	254	1,700	51	0	0	7,540	295	7,491	235	37,623	11,352	15,448	9,206	1,808	6,592	773	33,826	10,948	45,023	251	3,797	48,820	238	15,394	15,798	404
2028	2,058	40	102	144	246	416	169	1,235	9,915	254	1,705	51	0	0	7,278	295	8,907	235	30,381	9,862	13,450	8,675	1,767	6,510	736	31,137	9,504	48,820	238	-757	48,063	247	15,798	16,156	358
2029	565	40	102	144	251	416	174	1,235	8,270	254	1,700	51	0	0	7,520	295	9,724	235	28,306	9,583	13,428	8,168	1,684	6,452	663	30,395	9,651	48,063	247	-2,089	45,974	257	16,156	16,088	-68
2030	6,989	40	102	144	257	416	180	1,235	12,708	254	1,700	51	0	0	7,590	295	8,826	235	38,353	11,219	13,428	11,423	1,914	6,638	679	34,083	11,257	45,974	257	4,270	50,244	235	16,088	16,051	-38
2031	0	40	102	144	262	416	184	1,235	9,913	254	1,700	51	0	0	7,347	295	9,571	235	29,080	10,025	13,428	9,091	1,723	6,445	739	31,426	9,489	50,244	235	-2,346	47,898	255	16,051	16,587	536
2032	416	40	102	144	268	416	188	1,235	8,577	254	1,705	51	0	0	7,722	295	10,062	235	29,040	9,903	13,450	8,368	1,685	6,462	609	30,573	10,004	47,898	255	-1,534	46,365	262	16,587	16,486	-101
2033	3,050	40	102	144	273	416	191	1,235	11,853	254	1,700	51	0	0	8,143	295	8,484	235	33,796	10,850	15,448	8,159	1,690	6,514	732	32,544	10,971	46,365	262	1,253	47,617	253	16,486	16,365	-121
2034	0	40	102	144	279	416	192	1,235	6,543	254	1,700	51	0	0	8,055	295	10,772	235	27,643	9,550	15,448	6,416	1,594	6,430	583	30,472	9,924	47,617	253	-2,829	44,789	263	16,365	15,990	-374
2035	1,034	40	102	144	284	416	192	1,235	8,479	254	1,700	51	0	0	7,800	295	9,921	235	29,512	9,904	15,448	6,593	1,608	6,451	574	30,673	10,377	44,789	263	-1,161	43,628	262	15,990	15,517	-473

Table I-43a

Projected TDS Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	100	1,254	786	2,787	2,267	0	5,245	10	669	0	0	0	0	3,836	816	36,956	18,144	12,841	0	2,499	0	2,751	18,090	13,831	1,650,000	652	18,866	1,668,866	647	1,463,642	1,467,956	4,314
2013	1,890	100	1,250	786	2,834	2,267	0	5,245	0	669	0	0	0	0	-3,706	754	2,269	6,532	12,814	0	1,571	0	2,649	17,033	13,601	1,668,866	647	-14,764	1,654,102	650	1,467,956	1,460,887	-7,069
2014	15,703	100	1,250	786	2,882	2,267	0	5,245	0	669	0	0	0	0	-1,709	780	18,126	10,540	12,814	0	1,717	0	2,727	17,258	13,726	1,654,102	650	868	1,654,969	648	1,460,887	1,457,701	-3,186
2015	61,979	100	1,250	786	2,929	2,267	0	5,245	7	669	0	0	0	0	-578	763	65,587	18,198	12,814	0	3,511	0	2,815	19,140	13,766	1,654,969	648	46,447	1,701,416	632	1,457,701	1,462,133	4,432
2016	0	100	1,254	786	2,977	2,267	0	5,245	0	669	0	0	0	0	-4,266	671	-35	6,625	12,841	0	2,239	0	2,996	18,076	13,610	1,701,416	632	-18,111	1,683,305	630	1,462,133	1,441,899	-6,985
2017	0	100	1,250	786	3,025	2,267	2	5,245	0	669	0	0	0	0	-6,108	728	-1,831	4,626	12,814	0	1,545	0	2,821	17,180	13,393	1,683,305	630	-19,011	1,664,294	629	1,441,899	1,423,880	-8,767
2018	12,538	100	1,250	786	3,072	2,267	40	5,245	0	669	0	0	0	0	-3,421	762	13,480	9,250	12,814	0	1,681	0	2,757	17,252	13,321	1,664,294	629	-3,772	1,660,523	629	1,423,880	1,419,809	-4,072
2019	1,826	100	1,250	786	3,120	2,267	140	5,245	0	669	0	0	0	0	-1,862	751	4,475	10,299	19,123	0	1,378	0	2,000	22,500	18,061	1,660,523	629	-18,026	1,642,497	632	1,419,809	1,412,047	-7,762
2020	7,285	100	1,254	786	3,168	2,267	264	5,245	0	669	0	0	0	0	59	777	12,030	14,039	25,281	0	1,338	0	1,391	28,010	22,930	1,642,497	632	-15,981	1,626,516	634	1,412,047	1,403,156	-8,891
2021	0	100	1,250	786	3,215	2,267	344	5,245	0	669	0	0	0	0	-1,798	778	3,011	11,792	19,123	0	1,152	0	1,453	21,728	17,750	1,626,516	634	-18,717	1,607,800	639	1,403,156	1,397,198	-5,958
2022	0	100	1,250	786	3,263	2,267	385	5,245	0	669	0	0	0	0	17	801	4,915	14,159	25,228	0	997	0	1,064	27,289	22,848	1,607,800	639	-22,374	1,585,426	644	1,397,198	1,388,508	-8,690
2023	15,322	100	1,250	786	3,310	2,267	404	5,245	0	669	0	0	0	0	6,827	809	27,114	24,018	34,977	0	1,191	0	649	36,818	31,202	1,585,426	644	-9,703	1,575,722	645	1,388,508	1,381,324	-7,184
2024	43,415	100	1,254	786	3,358	2,267	414	5,245	10	669	0	0	0	0	13,287	748	61,737	34,058	35,059	0	2,088	0	676	37,823	31,326	1,575,722	645	23,914	1,599,636	636	1,381,324	1,384,057	2,732
2025	37,127	100	1,250	786	3,406	2,267	420	5,245	10	669	0	0	0	0	10,964	674	53,176	29,928	12,814	0	2,893	0	1,588	17,295	12,461	1,599,636	636	35,881	1,635,517	630	1,384,057	1,401,523	17,466
2026	0	100	1,250	786	3,453	2,267	423	5,245	0	669	0	0	0	0	2,405	672	7,531	17,194	19,123	0	1,635	0	1,540	22,297	17,706	1,635,517	630	-14,766	1,620,751	636	1,401,523	1,401,011	-512
2027	37,522	100	1,250	786	3,501	2,267	426	5,245	8	669	0	0	0	0	4,507	746	47,214	24,845	12,814	0	2,728	0	2,230	17,772	13,004	1,620,751	636	29,442	1,650,193	630	1,401,011	1,412,852	11,841
2028	13,592	100	1,254	786	3,548	2,267	430	5,245	0	669	0	0	0	0	1,034	696	19,858	18,172	12,841	0	2,060	0	2,414	17,315	13,061	1,650,193	630	2,544	1,652,737	631	1,412,852	1,417,963	5,111
2029	3,729	100	1,250	786	3,596	2,267	434	5,245	0	669	0	0	0	0	-2,399	723	6,610	13,662	12,814	0	1,729	0	2,419	16,962	13,069	1,652,737	631	-10,351	1,642,385	635	1,417,963	1,418,556	593
2030	46,150	100	1,250	786	3,644	2,267	437	5,245	10	669	0	0	0	0	6,011	763	57,502	28,199	12,814	0	3,238	0	2,803	18,855	13,489	1,642,385	635	38,648	1,681,033	627	1,418,556	1,433,266	14,710
2031	0	100	1,250	786	3,691	2,267	438	5,245	0	669	0	0	0	0	-3,371	697	2,009	12,642	12,814	0	1,853	0	2,692	17,358	13,220	1,681,033	627	-15,350	1,665,683	633	1,433,266	1,432,688	-578
2032	2,747	100	1,254	786	3,739	2,267	439	5,245	0	669	0	0	0	0	-4,658	752	3,520	11,601	12,841	0	1,551	0	2,621	17,013	13,299	1,665,683	633	-13,493	1,652,190	637	1,432,688	1,430,990	-1,698
2033	20,140	100	1,250	786	3,787	2,267	440	5,245	3	669	0	0	0	0	-1,594	776	24,026	17,200	19,123	0	1,905	0	2,122	23,149	18,400	1,652,190	637	877	1,653,067	636	1,430,990	1,429,790	-1,200
2034	0	100	1,250	786	3,834	2,267	440	5,245	0	669	0	0	0	0	-4,025	747	1,499	12,198	12,814	0	1,427	0	2,393	16,634	13,152	1,653,067	636	-15,135	1,637,932	642	1,429,790	1,428,835	-955
2035	6,825	100	1,250	786	3,882	2,267	440	5,245	0	669	0	0	0	0	-4,054	785	8,343	13,034	12,814	0	1,377	0	2,402	16,592	13,273	1,637,932	642	-8,249	1,629,683	645	1,428,835	1,428,596	-239

Table I-43b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	40	1,254	105	2,787	302	0	885	10	89	0	0	0	0	3,836	93	36,956	3,394	12,841	0	2,499	0	2,751	18,090	821	1,650,000	39	18,866	1,668,866	39	86,867	89,441	2,574
2013	1,890	40	1,250	105	2,834	302	0	885	0	89	0	0	0	0	-3,706	89	2,269	999	12,814	0	1,571	0	2,649	17,033	829	1,668,866	39	-14,764	1,654,102	40	89,441	89,611	170
2014	15,703	40	1,250	105	2,882	302	0	885	0	89	0	0	0	0	-1,709	87	18,126	2,015	12,814	0	1,717	0	2,727	17,258	842	1,654,102	40	868	1,654,969	40	89,611	90,784	1,173
2015	61,979	40	1,250	105	2,929	302	0	885	7	89	0	0	0	0	-578	86	65,587	4,687	12,814	0	3,511	0	2,815	19,140	857	1,654,969	40	46,447	1,701,416	41	90,784	94,614	3,830
2016	0	40	1,254	105	2,977	302	0	885	0	89	0	0	0	0	-4,266	79	-35	942	12,841	0	2,239	0	2,996	18,076	881	1,701,416	41	-18,111	1,683,305	41	94,614	92,791	62
2017	0	40	1,250	105	3,025	302	2	885	0	89	0	0	0	0	-6,108	81	-1,831	754	12,814	0	1,545	0	2,821	17,180	862	1,683,305	41	-19,011	1,664,294	40	92,791	91,175	-108
2018	12,538	40	1,250	105	3,072	302	40	885	0	89	0	0	0	0	-3,421	81	13,480	1,794	12,814	0	1,681	0	2,757	17,252	853	1,664,294	40	-3,772	1,660,523	41	91,175	92,116	941
2019	1,826	40	1,250	105	3,120	302	140	885	0	89	0	0	0	0	-1,862	82	4,475	1,521	19,123	0	1,378	0	2,000	22,500	1,172	1,660,523	41	-18,026	1,642,497	41	92,116	92,466	350
2020	7,285	40	1,254	105	3,168	302	264	885	0	89	0	0	0	0	59	83	12,030	2,202	25,281	0	1,338	0	1,391	28,010	1,502	1,642,497	41	-15,981	1,626,516	42	92,466	93,166	701
2021	0	40	1,250	105	3,215	302	344	885	0	89	0	0	0	0	-1,798	84	3,011	1,708	19,123	0	1,152	0	1,453	21,728	1,179	1,626,516	42	-18,717	1,607,800	43	93,166	93,696	530
2022	0	40	1,250	105	3,263	302	385	885	0	89	0	0	0	0	17	85	4,915	1,986	25,228	0	997	0	1,064	27,289	1,532	1,607,800	43	-22,374	1,585,426	44	93,696	94,149	453
2023	15,322	40	1,250	105	3,310	302	404	885	0	89	0	0	0	0	6,827	85	27,114	3,647	34,977	0	1,191	0	649	36,818	2,116	1,585,426	44	-9,703	1,575,722	45	94,149	95,681	1,532
2024	43,415	40	1,254	105	3,358	302	414	885	10	89	0	0	0	0	13,287	85	61,737	5,961	35,059	0	2,088	0	676	37,823	2,170	1,575,722	45	23,914	1,599,636	46	95,681	99,473	3,792
2025	37,127	40	1,250	105	3,406	302	420	885	10	89	0	0	0	0	10,964	86	53,176	5,379	12,814	0	2,893	0	1,588	17,295	896	1,599,636	46	35,881	1,635,517	47	99,473	103,956	4,484
2026	0	40	1,250	105	3,453	302	423	885	0	89	0	0	0	0	2,405	86	7,531	2,389	19,123	0	1,635	0	1,540	22,297	1,313	1,635,517	47	-14,766	1,620,751	48	103,956	105,032	1,075
2027	37,522	40	1,250	105	3,501	302	426	885	8	89	0	0	0	0	4,507	89	47,214	4,716	12,814	0	2,728	0	2,230	17,772	975	1,620,751	48	29,442	1,650,193	48	105,032	108,772	3,741
2028	13,592	40	1,254	105	3,548	302	430	885	0	89	0	0	0	0	1,034	87	19,858	3,017	12,841	0	2,060	0	2,414	17,315	1,006	1,650,193	48	2,544	1,652,737	49	108,772	110,784	2,011
2029	3,729	40	1,250	105	3,596	302	434	885	0	89	0	0	0	0	-2,399	88	6,610	2,096	12,814	0	1,729	0	2,419	16,962	1,021	1,652,737	49	-10,351	1,642,385	50	110,784	111,859	1,075
2030	46,150	40	1,250	105	3,644	302	437	885	10	89	0	0	0	0	6,011	89	57,502	5,437	12,814	0	3,238	0	2,803	18,855	1,064	1,642,385	50	38,648	1,681,033	51	111,859	116,232	4,373
2031	0	40	1,250	105	3,691	302	438	885	0	89	0	0	0	0	-3,371	86	2,009	1,829	12,814	0	1,853	0	2,692	17,358	1,072	1,681,033	51	-15,350	1,665,683	52	116,232	116,990	757
2032	2,747	40	1,254	105	3,739	302	439	885	0	89	0	0	0	0	-4,658	88	3,520	1,835	12,841	0	1,551	0	2,621	17,013	1,086	1,665,683	52	-13,493	1,652,190	52	116,990	117,739	749
2033	20,140	40	1,250	105	3,787	302	440	885	3	89	0	0	0	0	-1,594	88	24,026	3,169	19,123	0	1,905	0	2,122	23,149	1,514	1,652,190	52	877	1,653,067	53	117,739	119,394	1,655
2034	0	40	1,250	105	3,834	302	440	885	0	89	0	0	0	0	-4,025	87	1,499	1,806	12,814	0	1,427	0	2,393	16,634	1,098	1,653,067	53	-15,135	1,637,932	54	119,394	120,101	708
2035	6,825	40	1,250	105	3,882	302	440	885	0	89	0	0	0	0	-4,054	88	8,343	2,190	12,814	0	1,377	0	2,402	16,592	1,116	1,637,932	54	-8,249	1,629,683	55	120,101	121,176	1,075

Table I-43c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	9	1,254	43	2,787	16	0	14	10	13	0	0	0	0	3,836	18	36,956	574	12,841	0	2,499	0	2,751	18,090	428	1,650,000	20	18,866	1,668,866	20	45,318	45,464	146
2013	1,890	9	1,250	43	2,834	16	0	14	0	13	0	0	0	0	-3,706	17	2,269	72	12,814	0	1,571	0	2,649	17,033	421	1,668,866	20	-14,764	1,654,102	20	45,464	45,115	-350
2014	15,703	9	1,250	43	2,882	16	0	14	0	13	0	0	0	0	-1,709	18	18,126	282	12,814	0	1,717	0	2,727	17,258	424	1,654,102	20	868	1,654,969	20	45,115	44,973	-142
2015	61,979	9	1,250	43	2,929	16	0	14	7	13	0	0	0	0	-578	17	65,587	864	12,814	0	3,511	0	2,815	19,140	425	1,654,969	20	46,447	1,701,416	20	44,973	45,413	440
2016	0	9	1,254	43	2,977	16	0	14	0	13	0	0	0	0	-4,266	16	-35	44	12,841	0	2,239	0	2,996	18,076	423	1,701,416	20	-18,111	1,683,305	20	45,413	44,946	-379
2017	0	9	1,250	43	3,025	16	2	14	0	13	0	0	0	0	-6,108	17	-1,831	-5	12,814	0	1,545	0	2,821	17,180	417	1,683,305	20	-19,011	1,664,294	20	44,946	44,524	-422
2018	12,538	9	1,250	43	3,072	16	40	14	0	13	0	0	0	0	-3,421	18	13,480	208	12,814	0	1,681	0	2,757	17,252	417	1,664,294	20	-3,772	1,660,523	20	44,524	44,316	-209
2019	1,826	9	1,250	43	3,120	16	140	14	0	13	0	0	0	0	-1,862	17	4,475	121	19,123	0	1,378	0	2,000	22,500	564	1,660,523	20	-18,026	1,642,497	20	44,316	43,873	-442
2020	7,285	9	1,254	43	3,168	16	264	14	0	13	0	0	0	0	59	18	12,030	235	25,281	0	1,338	0	1,391	28,010	712	1,642,497	20	-15,981	1,626,516	20	43,873	43,396	-477
2021	0	9	1,250	43	3,215	16	344	14	0	13	0	0	0	0	-1,798	17	3,011	106	19,123	0	1,152	0	1,453	21,728	549	1,626,516	20	-18,717	1,607,800	20	43,396	42,953	-443
2022	0	9	1,250	43	3,263	16	385	14	0	13	0	0	0	0	17	18	4,915	151	25,228	0	997	0	1,064	27,289	702	1,607,800	20	-22,374	1,585,426	20	42,953	42,402	-551
2023	15,322	9	1,250	43	3,310	16	404	14	0	13	0	0	0	0	6,827	18	27,114	501	34,977	0	1,191	0	649	36,818	953	1,585,426	20	-9,703	1,575,722	20	42,402	41,950	-452
2024	43,415	9	1,254	43	3,358	16	414	14	10	13	0	0	0	0	13,287	16	61,737	967	35,059	0	2,088	0	676	37,823	951	1,575,722	20	23,914	1,599,636	19	41,950	41,967	16
2025	37,127	9	1,250	43	3,406	16	420	14	10	13	0	0	0	0	10,964	15	53,176	826	12,814	0	2,893	0	1,588	17,295	378	1,599,636	19	35,881	1,635,517	19	41,967	42,415	448
2026	0	9	1,250	43	3,453	16	423	14	0	13	0	0	0	0	2,405	15	7,531	206	19,123	0	1,635	0	1,540	22,297	536	1,635,517	19	-14,766	1,620,751	19	42,415	42,085	-330
2027	37,522	9	1,250	43	3,501	16	426	14	8	13	0	0	0	0	4,507	17	47,214	709	12,814	0	2,728	0	2,230	17,772	391	1,620,751	19	29,442	1,650,193	19	42,085	42,403	318
2028	13,592	9	1,254	43	3,548	16	430	14	0	13	0	0	0	0	1,034	16	19,858	343	12,841	0	2,060	0	2,414	17,315	392	1,650,193	19	2,544	1,652,737	19	42,403	42,354	-49
2029	3,729	9	1,250	43	3,596	16	434	14	0	13	0	0	0	0	-2,399	16	6,610	150	12,814	0	1,729	0	2,419	16,962	390	1,652,737	19	-10,351	1,642,385	19	42,354	42,114	-240
2030	46,150	9	1,250	43	3,644	16	437	14	10	13	0	0	0	0	6,011	17	57,502	851	12,814	0	3,238	0	2,803	18,855	400	1,642,385	19	38,648	1,681,033	19	42,114	42,565	451
2031	0	9	1,250	43	3,691	16	438	14	0	13	0	0	0	0	-3,371	16	2,009	87	12,814	0	1,853	0	2,692	17,358	393	1,681,033	19	-15,350	1,665,683	19	42,565	42,259	-305
2032	2,747	9	1,254	43	3,739	16	439	14	0	13	0	0	0	0	-4,658	17	3,520	88	12,841	0	1,551	0	2,621	17,013	392	1,665,683	19	-13,493	1,652,190	19	42,259	41,955	-305
2033	20,140	9	1,250	43	3,787	16	440	14	3	13	0	0	0	0	-1,594	17	24,026	367	19,123	0	1,905	0	2,122	23,149	539	1,652,190	19	877	1,653,067	19	41,955	41,782	-173
2034	0	9	1,250	43	3,834	16	440	14	0	13	0	0	0	0	-4,025	17	1,499	73	12,814	0	1,427	0	2,393	16,634	384	1,653,067	19	-15,135	1,637,932	19	41,782	41,471	-311
2035	6,825	9	1,250	43	3,882	16	440	14	0	13	0	0	0	0	-4,054	17	8,343	152	12,814	0	1,377	0	2,402	16,592	385	1,637,932	19	-8,249	1,629,683	19	41,471	41,237	-234

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - Newhall WRP - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Castaic Dam Underflow	Sulfate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	40	1,254	150	2,787	433	0	1,235	10	179	0	0	0	0	3,836	218	36,956	4,617	12,841	0	2,499	0	2,751	18,090	5,715	1,650,000	270	18,866	1,668,866	266	604,840	603,742	-1,099
2013	1,890	40	1,250	150	2,834	433	0	1,235	0	179	0	0	0	0	-3,706	208	2,269	977	12,814	0	1,571	0	2,649	17,033	5,594	1,668,866	266	-14,764	1,654,102	266	603,742	599,125	-4,617
2014	15,703	40	1,250	150	2,882	433	0	1,235	0	179	0	0	0	0	-1,709	221	18,126	2,291	12,814	0	1,717	0	2,727	17,258	5,629	1,654,102	266	868	1,654,969	265	599,125	595,787	-3,338
2015	61,979	40	1,250	150	2,929	433	0	1,235	7	179	0	0	0	0	-578	216	65,587	5,182	12,814	0	3,511	0	2,815	19,140	5,626	1,654,969	265	46,447	1,701,416	257	595,787	595,342	-445
2016	0	40	1,254	150	2,977	433	0	1,235	0	179	0	0	0	0	-4,266	192	-35	893	12,841	0	2,239	0	2,996	18,076	5,541	1,701,416	257	-18,111	1,683,305	257	595,342	588,907	-4,649
2017	0	40	1,250	150	3,025	433	2	1,235	0	179	0	0	0	0	-6,108	212	-1,831	279	12,814	0	1,545	0	2,821	17,180	5,470	1,683,305	257	-19,011	1,664,294	258	588,907	583,158	-5,190
2018	12,538	40	1,250	150	3,072	433	40	1,235	0	179	0	0	0	0	-3,421	223	13,480	1,774	12,814	0	1,681	0	2,757	17,252	5,456	1,664,294	258	-3,772	1,660,523	257	583,158	579,477	-3,681
2019	1,826	40	1,250	150	3,120	433	140	1,235	0	179	0	0	0	0	-1,862	217	4,475	1,876	19,123	0	1,378	0	2,000	22,500	7,371	1,660,523	257	-18,026	1,642,497	257	579,477	573,982	-5,495
2020	7,285	40	1,254	150	3,168	433	264	1,235	0	179	0	0	0	0	59	226	12,030	2,978	25,281	0	1,338	0	1,391	28,010	9,321	1,642,497	257	-15,981	1,626,516	257	573,982	567,639	-6,343
2021	0	40	1,250	150	3,215	433	344	1,235	0	179	0	0	0	0	-1,798	225	3,011	2,174	19,123	0	1,152	0	1,453	21,728	7,181	1,626,516	257	-18,717	1,607,800	257	567,639	562,632	-5,007
2022	0	40	1,250	150	3,263	433	385	1,235	0	179	0	0	0	0	17	233	4,915	2,828	25,228	0	997	0	1,064	27,289	9,201	1,607,800	257	-22,374	1,585,426	258	562,632	556,259	-6,373
2023	15,322	40	1,250	150	3,310	433	404	1,235	0	179	0	0	0	0	6,827	235	27,114	5,899	34,977	0	1,191	0	649	36,818	12,500	1,585,426	258	-9,703	1,575,722	257	556,259	549,658	-6,601
2024	43,415	40	1,254	150	3,358	433	414	1,235	10	179	0	0	0	0	13,287	210	61,737	9,088	35,059	0	2,088	0	676	37,823	12,465	1,575,722	257	23,914	1,599,636	251	549,658	546,281	-3,378
2025	37,127	40	1,250	150	3,406	433	420	1,235	10	179	0	0	0	0	10,964	187	53,176	7,778	12,814	0	2,893	0	1,588	17,295	4,918	1,599,636	251	35,881	1,635,517	247	546,281	549,140	2,859
2026	0	40	1,250	150	3,453	433	423	1,235	0	179	0	0	0	0	2,405	187	7,531	3,608	19,123	0	1,635	0	1,540	22,297	6,938	1,635,517	247	-14,766	1,620,751	248	549,140	545,811	-3,329
2027	37,522	40	1,250	150	3,501	433	426	1,235	8	179	0	0	0	0	4,507	212	47,214	6,374	12,814	0	2,728	0	2,230	17,772	5,066	1,620,751	248	29,442	1,650,193	244	545,811	547,118	1,308
2028	13,592	40	1,254	150	3,548	433	430	1,235	0	179	0	0	0	0	1,034	195	19,858	4,080	12,841	0	2,060	0	2,414	17,315	5,058	1,650,193	244	2,544	1,652,737	243	547,118	546,140	-978
2029	3,729	40	1,250	150	3,596	433	434	1,235	0	179	0	0	0	0	-2,399	203	6,610	2,640	12,814	0	1,729	0	2,419	16,962	5,034	1,652,737	243	-10,351	1,642,385	243	546,140	543,746	-2,394
2030	46,150	40	1,250	150	3,644	433	437	1,235	10	179	0	0	0	0	6,011	217	57,502	7,416	12,814	0	3,238	0	2,803	18,855	5,170	1,642,385	243	38,648	1,681,033	239	543,746	545,992	2,246
2031	0	40	1,250	150	3,691	433	438	1,235	0	179	0	0	0	0	-3,371	195	2,009	2,270	12,814	0	1,853	0	2,692	17,358	5,036	1,681,033	239	-15,350	1,665,683	240	545,992	543,227	-2,766
2032	2,747	40	1,254	150	3,739	433	439	1,235	0	179	0	0	0	0	-4,658	213	3,520	1,994	12,841	0	1,551	0	2,621	17,013	5,043	1,665,683	240	-13,493	1,652,190	240	543,227	540,178	-3,049
2033	20,140	40	1,250	150	3,787	433	440	1,235	3	179	0	0	0	0	-1,594	221	24,026	3,840	19,123	0	1,905	0	2,122	23,149	6,946	1,652,190	240	877	1,653,067	239	540,178	537,072	-3,106
2034	0	40	1,250	150	3,834	433	440	1,235	0	179	0	0	0	0	-4,025	210	1,499	2,098	12,814	0	1,427	0	2,393	16,634	4,940	1,653,067	239	-15,135	1,637,932	240	537,072	534,229	-2,842
2035	6,825	40	1,250	150	3,882	433	440	1,235	0	179	0	0	0	0	-4,054	223	8,343	2,420	12,814	0	1,377	0	2,402	16,592	4,963	1,637,932	240	-8,249	1,629,683	240	534,229	531,687	-2,542

Projected TDS Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	TDS Conc. for Applied Recycled Water	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	100	442	777	665	2,240	0	0	0	0	15,281	722	5,429	722	3,551	723	30,490	27,011	10,531	1,231	1,151	13,877	70	26,860	26,208	69,600	750	3,629	73,229	721	70,950	71,753	803
2013	333	100	441	777	671	2,240	0	0	0	0	2,847	722	7,635	722	5,826	723	17,752	18,574	10,516	786	844	13,113	38	25,299	23,961	73,229	721	-7,547	65,682	743	71,753	66,365	-5,387
2014	2,767	100	441	777	619	2,240	0	0	32	3,290	8,443	722	7,025	722	3,735	723	23,062	21,730	4,525	818	785	13,815	43	19,987	19,401	65,682	743	3,075	68,757	735	66,365	68,694	2,329
2015	10,922	100	441	777	568	2,240	0	0	32	3,290	28,335	722	5,082	722	1,284	723	46,664	37,892	10,233	1,995	1,279	13,922	70	27,499	26,195	68,757	735	19,165	87,923	672	68,694	80,391	11,697
2016	0	100	442	777	517	2,240	0	0	32	3,290	4,222	722	6,676	722	5,368	723	17,256	18,162	10,105	1,485	1,297	14,163	64	27,113	23,605	87,923	672	-9,857	78,066	706	80,391	74,948	-5,443
2017	0	100	441	777	465	2,240	0	0	32	3,290	2,519	722	8,489	722	4,838	723	16,784	17,591	4,100	883	863	14,662	47	20,555	18,905	78,066	706	-3,771	74,295	729	74,948	73,634	-1,314
2018	2,209	100	441	777	414	2,240	0	0	32	3,290	5,947	722	7,672	722	4,354	723	21,069	19,823	3,958	769	760	14,795	47	20,327	19,394	74,295	729	742	75,037	726	73,634	74,064	429
2019	322	100	441	777	363	2,240	0	0	32	3,290	1,755	722	8,363	722	6,035	723	17,311	17,627	9,665	389	501	13,430	32	24,017	23,211	75,037	726	-6,706	68,331	737	74,064	68,480	-5,584
2020	1,284	100	442	777	311	2,240	0	0	32	3,290	2,969	722	8,820	722	4,660	723	18,519	17,891	3,681	361	408	14,129	34	18,614	18,245	68,331	737	-95	68,236	734	68,480	68,125	-355
2021	0	100	441	777	317	2,240	0	0	32	3,290	904	722	9,939	722	4,877	723	16,511	17,017	3,674	131	301	14,551	35	18,692	18,361	68,236	734	-2,181	66,054	744	68,125	66,782	-1,343
2022	0	100	441	777	323	2,240	0	0	32	3,290	1,397	722	10,486	722	4,616	723	17,295	17,799	3,674	120	269	14,643	34	18,740	18,674	66,054	744	-1,445	64,610	750	66,782	65,907	-875
2023	2,700	100	441	777	329	2,240	0	0	32	3,290	7,559	722	8,249	722	3,838	723	23,148	21,272	3,674	425	340	14,860	38	19,337	19,379	64,610	750	3,811	68,420	729	65,907	67,800	1,893
2024	7,651	100	442	777	335	2,240	0	0	32	3,290	24,090	722	3,248	722	1,708	723	37,505	31,187	3,681	2,480	1,236	15,376	58	22,831	21,399	68,420	729	14,674	83,094	687	67,800	77,588	9,788
2025	6,543	100	441	777	341	2,240	0	0	32	3,290	32,370	722	3,754	722	1,742	723	45,221	39,712	9,523	7,610	2,007	15,503	97	34,739	30,563	83,094	687	10,482	93,576	682	77,588	86,737	9,148
2026	0	100	441	777	346	2,240	0	0	32	3,290	3,469	722	6,806	722	5,988	723	17,083	17,641	9,523	1,230	1,052	14,109	52	25,966	23,093	93,576	682	-8,883	84,693	706	86,737	81,285	-5,451
2027	6,612	100	441	777	352	2,240	0	0	32	3,290	21,571	722	4,045	722	2,918	723	35,971	30,598	3,674	3,365	1,714	14,470	64	23,287	20,705	84,693	706	12,684	97,377	689	81,285	91,178	9,893
2028	2,395	100	442	777	358	2,240	0	0	32	3,290	7,431	722	4,905	722	5,952	723	21,516	19,992	9,538	1,893	1,442	13,646	51	26,570	23,528	97,377	689	-5,053	92,323	698	91,178	87,643	-3,535
2029	657	100	441	777	364	2,240	0	0	32	3,290	3,702	722	7,106	722	5,903	723	18,205	18,223	9,523	798	886	12,904	37	24,147	22,082	92,323	698	-5,942	86,381	713	87,643	83,784	-3,859
2030	8,133	100	441	777	370	2,240	0	0	32	3,290	49,863	722	3,965	722	-1,666	723	61,137	54,044	9,523	12,976	2,990	15,621	122	41,232	37,092	86,381	713	19,905	106,286	697	83,784	100,736	16,952
2031	0	100	441	777	376	2,240	0	0	32	3,290	1,609	722	7,529	722	6,268	723	16,255	16,889	9,523	919	1,135	14,194	51	25,823	23,399	106,286	697	-9,568	96,718	717	100,736	94,227	-6,509
2032	484	100	442	777	382	2,240	0	0	32	3,290	1,908	722	8,784	722	5,984	723	18,016	18,221	9,538	355	715	13,354	33	23,995	22,681	96,718	717	-5,979	90,738	728	94,227	89,767	-4,460
2033	3,549	100	441	777	387	2,240	0	0	32	3,290	10,850	722	7,475	722	3,523	723	26,257	23,726	3,674	650	777	14,023	40	19,164	18,191	90,738	728	7,094	97,832	716	89,767	95,303	5,536
2034	0	100	441	777	393	2,240	0	0	32	3,290	904	722	7,956	722	5,296	723	15,022	15,713	3,674	450	607	14,461	41	19,233	18,145	97,832	716	-4,211	93,621	730	95,303	92,871	-2,431
2035	1,203	100	441	777	399	2,240	0	0	32	3,290	4,237	722	8,693	722	4,358	723	19,362	18,967	3,674	386	505	14,526	42	19,134	18,479	93,621	730	229	93,850	732	92,871	93,360	488

Table I-44b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Chloride Conc. for Applied Recycled Water	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	113	665	326	0	0	0	0	15,281	89	5,429	98	3,551	34	30,490	3,375	10,531	1,231	1,151	13,877	70	26,860	3,064	69,600	88	3,629	73,229	86	8,294	8,605	311
2013	333	40	441	113	671	326	0	0	0	0	2,847	89	7,635	98	5,826	34	17,752	2,011	10,516	786	844	13,113	38	25,299	2,874	73,229	86	-7,547	65,682	87	8,605	7,742	-863
2014	2,767	40	441	113	619	326	0	0	32	374	8,410	89	7,025	98	3,735	34	23,030	2,633	4,525	818	785	13,815	43	19,987	2,263	65,682	87	3,043	68,725	87	7,742	8,111	369
2015	10,922	40	441	113	568	326	0	0	32	374	28,303	89	5,082	98	1,284	34	46,632	5,088	10,233	1,995	1,279	13,922	70	27,499	3,095	68,725	87	19,133	87,858	85	8,111	10,105	1,994
2016	0	40	442	113	517	326	0	0	32	374	4,189	89	6,676	98	5,368	34	17,224	1,954	10,105	1,485	1,297	14,163	64	27,113	2,969	87,858	85	-9,889	77,969	86	10,105	9,090	-1,015
2017	0	40	441	113	465	326	0	0	32	374	2,486	89	8,489	98	4,838	34	16,751	1,943	4,100	883	863	14,662	47	20,555	2,296	77,969	86	-3,803	74,165	87	9,090	8,737	-353
2018	2,209	40	441	113	414	326	0	0	32	374	5,915	89	7,672	98	4,354	34	21,037	2,324	3,958	769	760	14,795	47	20,327	2,305	74,165	87	710	74,875	86	8,737	8,756	19
2019	322	40	441	113	363	326	0	0	32	374	1,722	89	8,363	98	6,035	34	17,278	1,861	9,665	389	501	13,430	32	24,017	2,750	74,875	86	-6,739	68,136	85	8,756	7,867	-890
2020	1,284	40	442	113	311	326	0	0	32	374	2,937	89	8,820	98	4,660	34	18,486	2,035	3,681	361	408	14,129	34	18,614	2,102	68,136	85	-128	68,008	84	7,867	7,800	-67
2021	0	40	441	113	317	326	0	0	32	374	872	89	9,939	98	4,877	34	16,478	1,877	3,674	131	301	14,551	35	18,692	2,109	68,008	84	-2,214	65,794	85	7,800	7,568	-232
2022	0	40	441	113	323	326	0	0	32	374	1,365	89	10,486	98	4,616	34	17,263	2,000	3,674	120	269	14,643	34	18,740	2,125	65,794	85	-1,477	64,317	85	7,568	7,443	-124
2023	2,700	40	441	113	329	326	0	0	32	374	7,527	89	8,249	98	3,838	34	23,115	2,561	3,674	425	340	14,860	38	19,337	2,199	64,317	85	3,778	68,095	84	7,443	7,806	363
2024	7,651	40	442	113	335	326	0	0	32	374	24,057	89	3,248	98	1,708	34	37,473	4,069	3,681	2,480	1,236	15,376	58	22,831	2,476	68,095	84	14,641	82,736	84	7,806	9,399	1,593
2025	6,543	40	441	113	341	326	0	0	32	374	32,338	89	3,754	98	1,742	34	45,189	5,081	9,523	7,610	2,007	15,503	97	34,739	3,719	82,736	84	10,450	93,186	85	9,399	10,762	1,363
2026	0	40	441	113	346	326	0	0	32	374	3,437	89	6,806	98	5,988	34	17,050	1,833	9,523	1,230	1,052	14,109	52	25,966	2,877	93,186	85	-8,916	84,270	85	10,762	9,718	-1,044
2027	6,612	40	441	113	352	326	0	0	32	374	21,539	89	4,045	98	2,918	34	35,938	3,877	3,674	3,365	1,714	14,470	64	23,287	2,488	84,270	85	12,651	96,921	84	9,718	11,107	1,389
2028	2,395	40	442	113	358	326	0	0	32	374	7,399	89	4,905	98	5,952	34	21,484	2,193	9,538	1,893	1,442	13,646	51	26,570	2,880	96,921	84	-5,086	91,835	83	11,107	10,421	-686
2029	657	40	441	113	364	326	0	0	32	374	3,670	89	7,106	98	5,903	34	18,172	1,941	9,523	798	886	12,904	37	24,147	2,640	91,835	83	-5,975	85,860	83	10,421	9,722	-698
2030	8,133	40	441	113	370	326	0	0	32	374	49,831	89	3,965	98	-1,666	34	61,104	7,169	9,523	12,976	2,990	15,621	122	41,232	4,330	85,860	83	19,872	105,733	87	9,722	12,561	2,838
2031	0	40	441	113	376	326	0	0	32	374	1,577	89	7,529	98	6,268	34	16,222	1,731	9,523	919	1,135	14,194	51	25,823	2,933	105,733	87	-9,601	96,132	87	12,561	11,359	-1,202
2032	484	40	442	113	382	326	0	0	32	374	1,875	89	8,784	98	5,984	34	17,984	1,950	9,538	355	715	13,354	33	23,995	2,751	96,132	87	-6,012	90,120	86	11,359	10,558	-801
2033	3,549	40	441	113	387	326	0	0	32	374	10,818	89	7,475	98	3,523	34	26,225	2,914	3,674	650	777	14,023	40	19,164	2,154	90,120	86	7,061	97,181	86	10,558	11,318	760
2034	0	40	441	113	393	326	0	0	32	374	872	89	7,956	98	5,296	34	14,989	1,666	3,674	450	607	14,461	41	19,233	2,169	97,181	86	-4,243	92,938	86	11,318	10,814	-504
2035	1,203	40	441	113	399	326	0	0	32	374	4,205	89	8,693	98	4,358	34	19,330	2,192	3,674	386	505	14,526	42	19,134	2,168	92,938	86	196	93,134	86	10,814	10,839	24

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Nitrate Conc. for Applied Recycled Water	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	9	442	45	665	16	0	0	0	0	15,281	20	5,429	17	3,551	20	30,490	738	10,531	1,231	1,151	13,877	70	26,860	700	69,600	20	3,629	73,229	19	1,894	1,932	38
2013	333	9	441	45	671	16	0	0	0	0	2,847	20	7,635	17	5,826	20	17,752	454	10,516	786	844	13,113	38	25,299	645	73,229	19	-7,547	65,682	19	1,932	1,741	-191
2014	2,767	9	441	45	619	16	0	0	32	64	8,643	20	7,025	17	3,735	20	23,262	572	4,525	818	785	13,815	43	19,987	509	65,682	19	3,275	68,958	19	1,741	1,804	63
2015	10,922	9	441	45	568	16	0	0	32	64	28,535	20	5,082	17	1,284	20	46,864	1,099	10,233	1,995	1,279	13,922	70	27,499	686	68,958	19	19,365	88,323	18	1,804	2,217	413
2016	0	9	442	45	517	16	0	0	32	64	4,422	20	6,676	17	5,368	20	17,457	458	10,105	1,485	1,297	14,163	64	27,113	648	88,323	18	-9,657	78,666	19	2,217	2,027	-190
2017	0	9	441	45	465	16	0	0	32	64	2,719	20	8,489	17	4,838	20	16,984	438	4,100	883	863	14,662	47	20,555	507	78,666	19	-3,571	75,096	19	2,027	1,957	-70
2018	2,209	9	441	45	414	16	0	0	32	64	6,147	20	7,672	17	4,354	20	21,270	524	3,958	769	760	14,795	47	20,327	510	75,096	19	942	76,038	19	1,957	1,972	14
2019	322	9	441	45	363	16	0	0	32	64	1,955	20	8,363	17	6,035	20	17,511	448	9,665	389	501	13,430	32	24,017	610	76,038	19	-6,506	69,532	19	1,972	1,810	-162
2020	1,284	9	442	45	311	16	0	0	32	64	3,169	20	8,820	17	4,660	20	18,719	465	3,681	361	408	14,129	34	18,614	474	69,532	19	105	69,637	19	1,810	1,801	-9
2021	0	9	441	45	317	16	0	0	32	64	1,104	20	9,939	17	4,877	20	16,711	424	3,674	131	301	14,551	35	18,692	476	69,637	19	-1,981	67,655	19	1,801	1,749	-51
2022	0	9	441	45	323	16	0	0	32	64	1,597	20	10,486	17	4,616	20	17,496	443	3,674	120	269	14,643	34	18,740	478	67,655	19	-1,245	66,411	19	1,749	1,715	-34
2023	2,700	9	441	45	329	16	0	0	32	64	7,759	20	8,249	17	3,838	20	23,348	571	3,674	425	340	14,860	38	19,337	491	66,411	19	4,011	70,421	19	1,715	1,796	81
2024	7,651	9	442	45	335	16	0	0	32	64	24,290	20	3,248	17	1,708	20	37,705	909	3,681	2,480	1,236	15,376	58	22,831	551	70,421	19	14,874	85,295	19	1,796	2,154	358
2025	6,543	9	441	45	341	16	0	0	32	64	32,570	20	3,754	17	1,742	20	45,422	1,133	9,523	7,610	2,007	15,503	97	34,739	827	85,295	19	10,682	95,978	19	2,154	2,461	307
2026	0	9	441	45	346	16	0	0	32	64	3,669	20	6,806	17	5,988	20	17,283	454	9,523	1,230	1,052	14,109	52	25,966	639	95,978	19	-8,683	87,295	19	2,461	2,276	-185
2027	6,612	9	441	45	352	16	0	0	32	64	21,771	20	4,045	17	2,918	20	36,171	879	3,674	3,365	1,714	14,470	64	23,287	562	87,295	19	12,884	100,178	19	2,276	2,593	317
2028	2,395	9	442	45	358	16	0	0	32	64	7,632	20	4,905	17	5,952	20	21,717	547	9,538	1,893	1,442	13,646	51	26,570	650	100,178	19	-4,853	95,325	19	2,593	2,489	-104
2029	657	9	441	45	364	16	0	0	32	64	3,902	20	7,106	17	5,903	20	18,405	473	9,523	798	886	12,904	37	24,147	607	95,325	19	-5,742	89,583	19	2,489	2,355	-134
2030	8,133	9	441	45	370	16	0	0	32	64	50,063	20	3,965	17	-1,666	20	61,337	1,541	9,523	12,976	2,990	15,621	122	41,232	1,005	89,583	19	20,105	109,688	19	2,355	2,890	536
2031	0	9	441	45	376	16	0	0	32	64	1,809	20	7,529	17	6,268	20	16,455	428	9,523	919	1,135	14,194	51	25,823	651	109,688	19	-9,368	100,320	20	2,890	2,668	-223
2032	484	9	442	45	382	16	0	0	32	64	2,108	20	8,784	17	5,984	20	18,216	463	9,538	355	715	13,354	33	23,995	619	100,320	20	-5,779	94,541	20	2,668	2,512	-156
2033	3,549	9	441	45	387	16	0	0	32	64	11,050	20	7,475	17	3,523	20	26,458	646	3,674	650	777	14,023	40	19,164	488	94,541	20	7,294	101,834	19	2,512	2,669	158
2034	0	9	441	45	393	16	0	0	32	64	1,104	20	7,956	17	5,296	20	15,222	392	3,674	450	607	14,461	41	19,233	488	101,834	19	-4,011	97,823	19	2,669	2,573	-96
2035	1,203	9	441	45	399	16	0	0	32	64	4,437	20	8,693	17	4,358	20	19,562	489	3,674	386	505	14,526	42	19,134	490	97,823	19	429	98,252	19	2,573	2,572	-1

Table I-44d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1a (Santa Clara - Mint Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Sulfate Conc. for Applied Recycled Water	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	5,123	40	442	124	665	358	0	0	0	0	15,281	140	5,429	108	3,551	235	30,490	5,508	10,531	1,231	1,151	13,877	70	26,860	5,623	69,600	161	3,629	73,229	**152**	15,223	15,108	**-116**
2013	333	40	441	124	671	358	0	0	0	0	2,847	140	7,635	108	5,826	235	17,752	3,942	10,516	786	844	13,113	38	25,299	5,045	73,229	152	-7,547	65,682	**157**	15,108	14,004	**-1,103**
2014	2,767	40	441	124	619	358	0	0	32	515	8,361	140	7,025	108	3,735	235	22,980	4,360	4,525	818	785	13,815	43	19,987	4,094	65,682	157	2,993	68,675	**153**	14,004	14,270	**266**
2015	10,922	40	441	124	568	358	0	0	32	515	28,253	140	5,082	108	1,284	235	46,582	7,484	10,233	1,995	1,279	13,922	70	27,499	5,448	68,675	153	19,083	87,758	**137**	14,270	16,306	**2,036**
2016	0	40	442	124	517	358	0	0	32	515	4,139	140	6,676	108	5,368	235	17,174	3,829	10,105	1,485	1,297	14,163	64	27,113	4,797	87,758	137	-9,939	77,819	**145**	16,306	15,339	**-968**
2017	0	40	441	124	465	358	0	0	32	515	2,437	140	8,489	108	4,838	235	16,701	3,578	4,100	883	863	14,662	47	20,555	3,881	77,819	145	-3,853	73,966	**150**	15,339	15,035	**-303**
2018	2,209	40	441	124	414	358	0	0	32	515	5,865	140	7,672	108	4,354	235	20,987	4,049	3,958	769	760	14,795	47	20,327	3,978	73,966	150	660	74,626	**149**	15,035	15,107	**71**
2019	322	40	441	124	363	358	0	0	32	515	1,673	140	8,363	108	6,035	235	17,228	3,765	9,665	389	501	13,430	32	24,017	4,760	74,626	149	-6,789	67,837	**153**	15,107	14,111	**-996**
2020	1,284	40	442	124	311	358	0	0	32	515	2,887	140	8,820	108	4,660	235	18,436	3,650	3,681	361	408	14,129	34	18,614	3,787	67,837	153	-177	67,660	**152**	14,111	13,974	**-137**
2021	0	40	441	124	317	358	0	0	32	515	822	140	9,939	108	4,877	235	16,428	3,425	3,674	131	301	14,551	35	18,692	3,798	67,660	152	-2,264	65,396	**153**	13,974	13,601	**-373**
2022	0	40	441	124	323	358	0	0	32	515	1,315	140	10,486	108	4,616	235	17,213	3,518	3,674	120	269	14,643	34	18,740	3,842	65,396	153	-1,527	63,869	**153**	13,601	13,278	**-323**
2023	2,700	40	441	124	329	358	0	0	32	515	7,477	140	8,249	108	3,838	235	23,065	4,260	3,674	425	340	14,860	38	19,337	3,949	63,869	153	3,728	67,598	**148**	13,278	13,588	**311**
2024	7,651	40	442	124	335	358	0	0	32	515	24,007	140	3,248	108	1,708	235	37,423	6,254	3,681	2,480	1,236	15,376	58	22,831	4,341	67,598	148	14,592	82,189	**139**	13,588	15,501	**1,913**
2025	6,543	40	441	124	341	358	0	0	32	515	32,288	140	3,754	108	1,742	235	45,139	7,852	9,523	7,610	2,007	15,503	97	34,739	6,173	82,189	139	10,400	92,589	**136**	15,501	17,180	**1,679**
2026	0	40	441	124	346	358	0	0	32	515	3,387	140	6,806	108	5,988	235	17,000	3,821	9,523	1,230	1,052	14,109	52	25,966	4,623	92,589	136	-8,966	83,623	**144**	17,180	16,378	**-802**
2027	6,612	40	441	124	352	358	0	0	32	515	21,489	140	4,045	108	2,918	235	35,888	6,231	3,674	3,365	1,714	14,470	64	23,287	4,225	83,623	144	12,601	96,225	**141**	16,378	18,384	**2,006**
2028	2,395	40	442	124	358	358	0	0	32	515	7,349	140	4,905	108	5,952	235	21,434	4,418	9,538	1,893	1,442	13,646	51	26,570	4,801	96,225	141	-5,136	91,089	**145**	18,384	18,001	**-382**
2029	657	40	441	124	364	358	0	0	32	515	3,620	140	7,106	108	5,903	235	18,122	3,926	9,523	798	886	12,904	37	24,147	4,597	91,089	145	-6,025	85,064	**150**	18,001	17,330	**-671**
2030	8,133	40	441	124	370	358	0	0	32	515	49,781	140	3,965	108	-1,666	235	61,054	10,214	9,523	12,976	2,990	15,621	122	41,232	7,791	85,064	150	19,823	104,887	**139**	17,330	19,753	**2,422**
2031	0	40	441	124	376	358	0	0	32	515	1,527	140	7,529	108	6,268	235	16,172	3,678	9,523	919	1,135	14,194	51	25,823	4,649	104,887	139	-9,650	95,237	**145**	19,753	18,781	**-971**
2032	484	40	442	124	382	358	0	0	32	515	1,825	140	8,784	108	5,984	235	17,934	3,857	9,538	355	715	13,354	33	23,995	4,591	95,237	145	-6,062	89,175	**149**	18,781	18,048	**-734**
2033	3,549	40	441	124	387	358	0	0	32	515	10,768	140	7,475	108	3,523	235	26,175	4,745	3,674	650	777	14,023	40	19,164	3,721	89,175	149	7,011	96,186	**146**	18,048	19,071	**1,023**
2034	0	40	441	124	393	358	0	0	32	515	822	140	7,956	108	5,296	235	14,940	3,305	3,674	450	607	14,461	41	19,233	3,693	96,186	146	-4,293	91,893	**150**	19,071	18,682	**-388**
2035	1,203	40	441	124	399	358	0	0	32	515	4,155	140	8,693	108	4,358	235	19,280	3,814	3,674	386	505	14,526	42	19,134	3,787	91,893	150	146	92,040	**149**	18,682	18,709	**26**

Projected TDS Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	TDS Conc. for Applied Recycled Water	Stream Leakage	TDS Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentrati on	Change in GW Storage	Ending Storage	Ending Concentrat ion	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	100	30	777	46	2,240	0	0	0	0	1,047	722	372	722	243	723	2,090	1,851	722	84	79	951	5	1,841	1,940	69,600	810	249	69,848	806	76,620	76,531	-89
2013	23	100	30	777	46	2,240	0	0	0	0	195	722	523	722	399	723	1,217	1,273	721	54	58	899	3	1,734	1,836	69,848	806	-517	69,331	806	76,531	75,968	-563
2014	190	100	30	777	42	2,240	0	0	2	3,290	579	722	481	722	256	723	1,581	1,489	310	56	54	947	3	1,370	1,442	69,331	806	211	69,542	804	75,968	76,015	47
2015	749	100	30	777	39	2,240	0	0	2	3,290	1,942	722	348	722	88	723	3,198	2,597	701	137	88	954	5	1,885	1,964	69,542	804	1,314	70,855	796	76,015	76,648	633
2016	0	100	30	777	35	2,240	0	0	2	3,290	289	722	458	722	368	723	1,183	1,245	693	102	89	971	4	1,858	1,914	70,855	796	-676	70,180	796	76,648	75,979	-669
2017	0	100	30	777	32	2,240	0	0	2	3,290	173	722	582	722	332	723	1,150	1,206	281	60	59	1,005	3	1,409	1,461	70,180	796	-258	69,921	796	75,979	75,723	-255
2018	151	100	30	777	28	2,240	0	0	2	3,290	408	722	526	722	298	723	1,444	1,359	271	53	52	1,014	3	1,393	1,452	69,921	796	51	69,972	795	75,723	75,629	-94
2019	22	100	30	777	25	2,240	0	0	2	3,290	120	722	573	722	414	723	1,186	1,208	662	27	34	920	2	1,646	1,742	69,972	795	-460	69,513	795	75,629	75,096	-534
2020	88	100	30	777	21	2,240	0	0	2	3,290	204	722	605	722	319	723	1,269	1,226	252	25	28	968	2	1,276	1,348	69,513	795	-7	69,506	793	75,096	74,974	-122
2021	0	100	30	777	22	2,240	0	0	2	3,290	62	722	681	722	334	723	1,132	1,166	252	9	21	997	2	1,281	1,360	69,506	793	-149	69,357	793	74,974	74,781	-193
2022	0	100	30	777	22	2,240	0	0	2	3,290	96	722	719	722	316	723	1,185	1,220	252	8	18	1,004	2	1,284	1,365	69,357	793	-99	69,258	793	74,781	74,635	-145
2023	185	100	30	777	23	2,240	0	0	2	3,290	518	722	565	722	263	723	1,586	1,458	252	29	23	1,018	3	1,325	1,403	69,258	793	261	69,519	790	74,635	74,690	55
2024	524	100	30	777	23	2,240	0	0	2	3,290	1,651	722	223	722	117	723	2,570	2,137	252	170	85	1,054	4	1,565	1,590	69,519	790	1,006	70,525	785	74,690	75,238	547
2025	448	100	30	777	23	2,240	0	0	2	3,290	2,219	722	257	722	119	723	3,099	2,722	653	522	138	1,062	7	2,381	2,393	70,525	785	718	71,243	780	75,238	75,566	328
2026	0	100	30	777	24	2,240	0	0	2	3,290	238	722	466	722	410	723	1,171	1,209	653	84	72	967	4	1,780	1,811	71,243	780	-609	70,634	781	75,566	74,964	-602
2027	453	100	30	777	24	2,240	0	0	2	3,290	1,478	722	277	722	200	723	2,465	2,097	252	231	117	992	4	1,596	1,569	70,634	781	869	71,503	776	74,964	75,492	528
2028	164	100	30	777	25	2,240	0	0	2	3,290	509	722	336	722	408	723	1,475	1,370	654	130	99	935	4	1,821	1,818	71,503	776	-346	71,157	776	75,492	75,044	-448
2029	45	100	30	777	25	2,240	0	0	2	3,290	254	722	487	722	405	723	1,248	1,249	653	55	61	884	3	1,655	1,681	71,157	776	-407	70,750	776	75,044	74,612	-432
2030	557	100	30	777	25	2,240	0	0	2	3,290	3,417	722	272	722	-114	723	4,190	3,704	653	889	205	1,071	8	2,826	2,764	70,750	776	1,364	72,114	771	74,612	75,551	940
2031	0	100	30	777	26	2,240	0	0	2	3,290	110	722	516	722	430	723	1,114	1,158	653	63	78	973	4	1,770	1,773	72,114	771	-656	71,458	771	75,551	74,936	-615
2032	33	100	30	777	26	2,240	0	0	2	3,290	131	722	602	722	410	723	1,235	1,249	654	24	49	915	2	1,645	1,673	71,458	771	-410	71,048	771	74,936	74,512	-424
2033	243	100	30	777	27	2,240	0	0	2	3,290	744	722	512	722	241	723	1,800	1,626	252	45	53	961	3	1,313	1,322	71,048	771	486	71,535	769	74,512	74,816	304
2034	0	100	30	777	27	2,240	0	0	2	3,290	62	722	545	722	363	723	1,030	1,077	252	31	42	991	3	1,318	1,335	71,535	769	-289	71,246	770	74,816	74,558	-258
2035	82	100	30	777	27	2,240	0	0	2	3,290	290	722	596	722	299	723	1,327	1,300	252	26	35	996	3	1,311	1,336	71,246	770	16	71,262	769	74,558	74,522	-36

Table I-45b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Chloride Conc. for Applied Recycled Water	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentrati on	Change in GW Storage	Ending Storage	Ending Concentrat ion	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	40	30	113	46	326	0	0	0	0	1,047	89	372	98	243	34	2,090	231	722	84	79	951	5	1,841	159	69,600	66	249	69,848	**67**	6,282	6,354	**72**
2013	23	40	30	113	46	326	0	0	0	0	195	89	523	98	399	34	1,217	138	721	54	58	899	3	1,734	152	69,848	67	-517	69,331	**67**	6,354	6,340	**-15**
2014	190	40	30	113	42	326	0	0	2	374	576	89	481	98	256	34	1,578	180	310	56	54	947	3	1,370	120	69,331	67	209	69,540	**68**	6,340	6,400	**60**
2015	749	40	30	113	39	326	0	0	2	374	1,940	89	348	98	88	34	3,196	349	701	137	88	954	5	1,885	165	69,540	68	1,311	70,851	**68**	6,400	6,583	**183**
2016	0	40	30	113	35	326	0	0	2	374	287	89	458	98	368	34	1,180	134	693	102	89	971	4	1,858	164	70,851	68	-678	70,173	**69**	6,583	6,553	**-30**
2017	0	40	30	113	32	326	0	0	2	374	170	89	582	98	332	34	1,148	133	281	60	59	1,005	3	1,409	126	70,173	69	-261	69,913	**69**	6,553	6,560	**7**
2018	151	40	30	113	28	326	0	0	2	374	405	89	526	98	298	34	1,442	159	271	53	52	1,014	3	1,393	126	69,913	69	49	69,961	**69**	6,560	6,593	**33**
2019	22	40	30	113	25	326	0	0	2	374	118	89	573	98	414	34	1,184	128	662	27	34	920	2	1,646	152	69,961	69	-462	69,499	**70**	6,593	6,569	**-24**
2020	88	40	30	113	21	326	0	0	2	374	201	89	605	98	319	34	1,267	139	252	25	28	968	2	1,276	118	69,499	70	-9	69,491	**70**	6,569	6,590	**22**
2021	0	40	30	113	22	326	0	0	2	374	60	89	681	98	334	34	1,129	129	252	9	21	997	2	1,281	120	69,491	70	-152	69,339	**70**	6,590	6,600	**9**
2022	0	40	30	113	22	326	0	0	2	374	94	89	719	98	316	34	1,183	137	252	8	18	1,004	2	1,284	120	69,339	70	-101	69,238	**70**	6,600	6,616	**17**
2023	185	40	30	113	23	326	0	0	2	374	516	89	565	98	263	34	1,584	176	252	29	23	1,018	3	1,325	124	69,238	70	259	69,497	**71**	6,616	6,667	**51**
2024	524	40	30	113	23	326	0	0	2	374	1,649	89	223	98	117	34	2,568	279	252	170	85	1,054	4	1,565	142	69,497	71	1,003	70,500	**71**	6,667	6,804	**137**
2025	448	40	30	113	23	326	0	0	2	374	2,216	89	257	98	119	34	3,097	348	653	522	138	1,062	7	2,381	217	70,500	71	716	71,216	**72**	6,804	6,936	**132**
2026	0	40	30	113	24	326	0	0	2	374	236	89	466	98	410	34	1,169	126	653	84	72	967	4	1,780	166	71,216	72	-611	70,605	**72**	6,936	6,895	**-41**
2027	453	40	30	113	24	326	0	0	2	374	1,476	89	277	98	200	34	2,463	266	252	231	117	992	4	1,596	144	70,605	72	867	71,472	**72**	6,895	7,017	**121**
2028	164	40	30	113	25	326	0	0	2	374	507	89	336	98	408	34	1,472	150	654	130	99	935	4	1,821	169	71,472	72	-349	71,124	**72**	7,017	6,998	**-19**
2029	45	40	30	113	25	326	0	0	2	374	251	89	487	98	405	34	1,245	133	653	55	61	884	3	1,655	157	71,124	72	-409	70,714	**73**	6,998	6,974	**-24**
2030	557	40	30	113	25	326	0	0	2	374	3,415	89	272	98	-114	34	4,188	491	653	889	205	1,071	8	2,826	258	70,714	73	1,362	72,076	**74**	6,974	7,207	**233**
2031	0	40	30	113	26	326	0	0	2	374	108	89	516	98	430	34	1,112	119	653	63	78	973	4	1,770	169	72,076	74	-658	71,418	**74**	7,207	7,156	**-51**
2032	33	40	30	113	26	326	0	0	2	374	129	89	602	98	410	34	1,233	134	654	24	49	915	2	1,645	160	71,418	74	-412	71,006	**74**	7,156	7,130	**-26**
2033	243	40	30	113	27	326	0	0	2	374	741	89	512	98	241	34	1,797	200	252	45	53	961	3	1,313	127	71,006	74	484	71,490	**74**	7,130	7,203	**73**
2034	0	40	30	113	27	326	0	0	2	374	60	89	545	98	363	34	1,027	114	252	31	42	991	3	1,318	129	71,490	74	-291	71,199	**74**	7,203	7,189	**-14**
2035	82	40	30	113	27	326	0	0	2	374	288	89	596	98	299	34	1,325	150	252	26	35	996	3	1,311	129	71,199	74	13	71,213	**74**	7,189	7,210	**21**

Table I-45c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Nitrate Conc. for Applied Recycled Water	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentrati on	Change in GW Storage	Ending Storage	Ending Concentrat ion	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	9	30	45	46	16	0	0	0	0	1,047	20	372	17	243	20	2,090	51	722	84	79	951	5	1,841	59	69,600	25	249	69,848	**24**	2,329	2,321	**-8**
2013	23	9	30	45	46	16	0	0	0	0	195	20	523	17	399	20	1,217	31	721	54	58	899	3	1,734	56	69,848	24	-517	69,331	**24**	2,321	2,296	**-25**
2014	190	9	30	45	42	16	0	0	2	64	592	20	481	17	256	20	1,594	39	310	56	54	947	3	1,370	44	69,331	24	224	69,556	**24**	2,296	2,292	**-4**
2015	749	9	30	45	39	16	0	0	2	64	1,956	20	348	17	88	20	3,212	75	701	137	88	954	5	1,885	59	69,556	24	1,327	70,883	**24**	2,292	2,308	**16**
2016	0	9	30	45	35	16	0	0	2	64	303	20	458	17	368	20	1,196	31	693	102	89	971	4	1,858	58	70,883	24	-662	70,221	**24**	2,308	2,282	**-26**
2017	0	9	30	45	32	16	0	0	2	64	186	20	582	17	332	20	1,164	30	281	60	59	1,005	3	1,409	44	70,221	24	-245	69,976	**24**	2,282	2,268	**-14**
2018	151	9	30	45	28	16	0	0	2	64	421	20	526	17	298	20	1,458	36	271	53	52	1,014	3	1,393	43	69,976	24	65	70,041	**24**	2,268	2,260	**-8**
2019	22	9	30	45	25	16	0	0	2	64	134	20	573	17	414	20	1,200	31	662	27	34	920	2	1,646	52	70,041	24	-446	69,595	**24**	2,260	2,239	**-21**
2020	88	9	30	45	21	16	0	0	2	64	217	20	605	17	319	20	1,283	32	252	25	28	968	2	1,276	40	69,595	24	7	69,602	**24**	2,239	2,231	**-8**
2021	0	9	30	45	22	16	0	0	2	64	76	20	681	17	334	20	1,145	29	252	9	21	997	2	1,281	40	69,602	24	-136	69,466	**23**	2,231	2,219	**-11**
2022	0	9	30	45	22	16	0	0	2	64	109	20	719	17	316	20	1,199	30	252	8	18	1,004	2	1,284	40	69,466	23	-85	69,381	**23**	2,219	2,209	**-10**
2023	185	9	30	45	23	16	0	0	2	64	532	20	565	17	263	20	1,600	39	252	29	23	1,018	3	1,325	41	69,381	23	275	69,656	**23**	2,209	2,207	**-2**
2024	524	9	30	45	23	16	0	0	2	64	1,665	20	223	17	117	20	2,584	62	252	170	85	1,054	4	1,565	47	69,656	23	1,019	70,675	**23**	2,207	2,222	**15**
2025	448	9	30	45	23	16	0	0	2	64	2,232	20	257	17	119	20	3,113	78	653	522	138	1,062	7	2,381	71	70,675	23	732	71,408	**23**	2,222	2,230	**7**
2026	0	9	30	45	24	16	0	0	2	64	251	20	466	17	410	20	1,184	31	653	84	72	967	4	1,780	53	71,408	23	-595	70,812	**23**	2,230	2,207	**-22**
2027	453	9	30	45	24	16	0	0	2	64	1,492	20	277	17	200	20	2,479	60	252	231	117	992	4	1,596	46	70,812	23	883	71,695	**23**	2,207	2,222	**14**
2028	164	9	30	45	25	16	0	0	2	64	523	20	336	17	408	20	1,488	37	654	130	99	935	4	1,821	53	71,695	23	-333	71,363	**23**	2,222	2,206	**-16**
2029	45	9	30	45	25	16	0	0	2	64	267	20	487	17	405	20	1,261	32	653	55	61	884	3	1,655	49	71,363	23	-394	70,969	**23**	2,206	2,189	**-17**
2030	557	9	30	45	25	16	0	0	2	64	3,431	20	272	17	-114	20	4,204	106	653	889	205	1,071	8	2,826	81	70,969	23	1,378	72,347	**23**	2,189	2,214	**25**
2031	0	9	30	45	26	16	0	0	2	64	124	20	516	17	430	20	1,128	29	653	63	78	973	4	1,770	52	72,347	23	-642	71,705	**22**	2,214	2,191	**-22**
2032	33	9	30	45	26	16	0	0	2	64	144	20	602	17	410	20	1,248	32	654	24	49	915	2	1,645	49	71,705	22	-396	71,309	**22**	2,191	2,174	**-17**
2033	243	9	30	45	27	16	0	0	2	64	757	20	512	17	241	20	1,813	44	252	45	53	961	3	1,313	38	71,309	22	500	71,809	**22**	2,174	2,180	**6**
2034	0	9	30	45	27	16	0	0	2	64	76	20	545	17	363	20	1,043	27	252	31	42	991	3	1,318	39	71,809	22	-275	71,534	**22**	2,180	2,168	**-12**
2035	82	9	30	45	27	16	0	0	2	64	304	20	596	17	299	20	1,341	33	252	26	35	996	3	1,311	39	71,534	22	29	71,563	**22**	2,168	2,163	**-5**

Table I-45d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 1b (Santa Clara - Mint Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Sulfate Conc. for Applied Recycled Water	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Acton Basin and Other Upstream Tributaries	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	351	40	30	124	46	358	0	0	0	0	1,047	140	372	108	243	235	2,090	377	722	84	79	951	5	1,841	600	69,600	250	249	69,848	**247**	23,705	23,482	**-223**
2013	23	40	30	124	46	358	0	0	0	0	195	140	523	108	399	235	1,217	270	721	54	58	899	3	1,734	563	69,848	247	-517	69,331	**246**	23,482	23,189	**-293**
2014	190	40	30	124	42	358	0	0	2	515	573	140	481	108	256	235	1,575	299	310	56	54	947	3	1,370	440	69,331	246	205	69,536	**244**	23,189	23,047	**-141**
2015	749	40	30	124	39	358	0	0	2	515	1,936	140	348	108	88	235	3,193	513	701	137	88	954	5	1,885	596	69,536	244	1,308	70,844	**238**	23,047	22,965	**-83**
2016	0	40	30	124	35	358	0	0	2	515	284	140	458	108	368	235	1,177	262	693	102	89	971	4	1,858	574	70,844	238	-681	70,163	**237**	22,965	22,654	**-311**
2017	0	40	30	124	32	358	0	0	2	515	167	140	582	108	332	235	1,145	245	281	60	59	1,005	3	1,409	436	70,163	237	-264	69,899	**236**	22,654	22,463	**-191**
2018	151	40	30	124	28	358	0	0	2	515	402	140	526	108	298	235	1,438	277	271	53	52	1,014	3	1,393	431	69,899	236	45	69,944	**235**	22,463	22,310	**-153**
2019	22	40	30	124	25	358	0	0	2	515	115	140	573	108	414	235	1,181	258	662	27	34	920	2	1,646	514	69,944	235	-465	69,479	**233**	22,310	22,054	**-256**
2020	88	40	30	124	21	358	0	0	2	515	198	140	605	108	319	235	1,264	250	252	25	28	968	2	1,276	396	69,479	233	-12	69,467	**232**	22,054	21,908	**-146**
2021	0	40	30	124	22	358	0	0	2	515	56	140	681	108	334	235	1,126	235	252	9	21	997	2	1,281	397	69,467	232	-155	69,312	**231**	21,908	21,745	**-163**
2022	0	40	30	124	22	358	0	0	2	515	90	140	719	108	316	235	1,180	241	252	8	18	1,004	2	1,284	397	69,312	231	-105	69,207	**229**	21,745	21,589	**-156**
2023	185	40	30	124	23	358	0	0	2	515	512	140	565	108	263	235	1,581	292	252	29	23	1,018	3	1,325	406	69,207	229	256	69,462	**227**	21,589	21,475	**-114**
2024	524	40	30	124	23	358	0	0	2	515	1,645	140	223	108	117	235	2,565	429	252	170	85	1,054	4	1,565	458	69,462	227	1,000	70,462	**224**	21,475	21,446	**-29**
2025	448	40	30	124	23	358	0	0	2	515	2,213	140	257	108	119	235	3,094	538	653	522	138	1,062	7	2,381	683	70,462	224	713	71,175	**220**	21,446	21,301	**-145**
2026	0	40	30	124	24	358	0	0	2	515	232	140	466	108	410	235	1,165	262	653	84	72	967	4	1,780	511	71,175	220	-614	70,561	**219**	21,301	21,052	**-249**
2027	453	40	30	124	24	358	0	0	2	515	1,473	140	277	108	200	235	2,460	427	252	231	117	992	4	1,596	441	70,561	219	864	71,424	**217**	21,052	21,038	**-14**
2028	164	40	30	124	25	358	0	0	2	515	504	140	336	108	408	235	1,469	303	654	130	99	935	4	1,821	507	71,424	217	-352	71,072	**216**	21,038	20,834	**-204**
2029	45	40	30	124	25	358	0	0	2	515	248	140	487	108	405	235	1,242	269	653	55	61	884	3	1,655	467	71,072	216	-413	70,660	**215**	20,834	20,635	**-198**
2030	557	40	30	124	25	358	0	0	2	515	3,412	140	272	108	-114	235	4,184	700	653	889	205	1,071	8	2,826	765	70,660	215	1,359	72,018	**210**	20,635	20,570	**-65**
2031	0	40	30	124	26	358	0	0	2	515	105	140	516	108	430	235	1,108	252	653	63	78	973	4	1,770	483	72,018	210	-661	71,357	**210**	20,570	20,339	**-231**
2032	33	40	30	124	26	358	0	0	2	515	125	140	602	108	410	235	1,229	264	654	24	49	915	2	1,645	455	71,357	210	-415	70,941	**209**	20,339	20,148	**-190**
2033	243	40	30	124	27	358	0	0	2	515	738	140	512	108	241	235	1,794	325	252	45	53	961	3	1,313	358	70,941	209	481	71,422	**207**	20,148	20,116	**-33**
2034	0	40	30	124	27	358	0	0	2	515	56	140	545	108	363	235	1,024	226	252	31	42	991	3	1,318	360	71,422	207	-294	71,128	**207**	20,116	19,982	**-133**
2035	82	40	30	124	27	358	0	0	2	515	285	140	596	108	299	235	1,321	261	252	26	35	996	3	1,311	359	71,128	207	10	71,138	**206**	19,982	19,885	**-97**

Projected TDS Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	100	270	808	74	2,330	0	0	1,438	532	0	0	220	647	2,669	1,855	0	0	941	292	754	1,987	1,489	7,647	1,047	681	8,328	**993**	10,883	11,250	**367**
2013	43	100	269	808	74	2,330	0	0	18	532	0	0	520	650	924	1,009	0	0	620	323	718	1,660	1,405	8,328	993	-736	7,592	**1,051**	11,250	10,854	**-396**
2014	360	100	269	808	71	2,330	0	0	1,029	532	0	0	413	648	2,142	1,679	0	0	764	309	718	1,792	1,469	7,592	1,051	351	7,943	**1,024**	10,854	11,064	**210**
2015	1,421	100	269	808	68	2,330	0	0	916	532	0	0	452	632	3,127	1,757	0	0	915	321	755	1,991	1,499	7,943	1,024	1,137	9,080	**917**	11,064	11,322	**258**
2016	0	100	270	808	65	2,330	0	0	0	532	0	0	515	630	850	944	0	0	765	341	749	1,854	1,358	9,080	917	-1,004	8,076	**993**	11,322	10,908	**-414**
2017	0	100	269	808	62	2,330	0	0	0	532	0	0	604	629	935	1,009	0	0	373	351	734	1,458	1,466	8,076	993	-523	7,553	**1,018**	10,908	10,451	**-457**
2018	288	100	269	808	59	2,330	0	0	796	532	0	0	542	629	1,954	1,561	0	0	544	359	743	1,646	1,524	7,553	1,018	309	7,861	**981**	10,451	10,488	**38**
2019	42	100	269	808	56	2,330	0	0	13	532	0	0	555	632	935	966	0	0	494	350	830	1,674	1,574	7,861	981	-739	7,122	**1,020**	10,488	9,880	**-609**
2020	167	100	270	808	53	2,330	0	0	412	532	0	0	603	634	1,505	1,305	0	0	477	365	903	1,745	1,759	7,122	1,020	-241	6,881	**1,007**	9,880	9,426	**-454**
2021	0	100	269	808	53	2,330	0	0	0	532	0	0	653	639	975	1,032	0	0	288	399	892	1,579	1,769	6,881	1,007	-604	6,277	**1,018**	9,426	8,689	**-737**
2022	0	100	269	808	54	2,330	0	0	0	532	0	0	661	644	984	1,046	0	0	189	407	918	1,514	1,835	6,277	1,018	-530	5,748	**1,011**	8,689	7,900	**-789**
2023	351	100	269	808	54	2,330	0	0	908	532	0	0	507	645	2,089	1,616	0	0	484	399	1,009	1,892	1,935	5,748	1,011	197	5,945	**938**	7,900	7,581	**-319**
2024	996	100	270	808	55	2,330	0	0	1,326	532	0	0	342	636	2,988	1,860	0	0	848	415	1,094	2,357	1,924	5,945	938	631	6,576	**841**	7,581	7,517	**-64**
2025	851	100	269	808	55	2,330	0	0	1,585	532	0	0	369	630	3,130	2,048	0	0	1,042	409	898	2,348	1,493	6,576	841	782	7,358	**807**	7,517	8,072	**555**
2026	0	100	269	808	56	2,330	0	0	0	532	0	0	603	636	928	993	0	0	779	382	852	2,013	1,354	7,358	807	-1,085	6,273	**904**	8,072	7,711	**-361**
2027	860	100	269	808	56	2,330	0	0	1,614	532	0	0	316	630	3,116	2,028	0	0	945	317	783	2,045	1,353	6,273	904	1,070	7,343	**840**	7,711	8,386	**675**
2028	312	100	270	808	56	2,330	0	0	874	532	0	0	370	631	1,882	1,467	0	0	881	306	737	1,924	1,190	7,343	840	-42	7,301	**873**	8,386	8,663	**276**
2029	86	100	269	808	57	2,330	0	0	152	532	0	0	498	635	1,061	1,027	0	0	717	295	696	1,707	1,175	7,301	873	-646	6,655	**941**	8,663	8,515	**-148**
2030	1,058	100	269	808	57	2,330	0	0	1,476	532	0	0	147	627	3,008	1,814	0	0	1,019	266	742	2,026	1,289	6,655	941	981	7,637	**871**	8,515	9,039	**525**
2031	0	100	269	808	58	2,330	0	0	0	532	0	0	572	632	899	971	0	0	594	305	697	1,596	1,186	7,637	871	-697	6,940	**935**	9,039	8,824	**-215**
2032	63	100	270	808	58	2,330	0	0	80	532	0	0	570	637	1,041	1,041	0	0	373	312	691	1,375	1,274	6,940	935	-334	6,606	**956**	8,824	8,591	**-234**
2033	462	100	269	808	59	2,330	0	0	1,032	532	0	0	439	636	2,261	1,670	0	0	586	314	816	1,716	1,469	6,606	956	545	7,151	**904**	8,591	8,792	**201**
2034	0	100	269	808	59	2,330	0	0	0	532	0	0	477	641	805	899	0	0	456	344	759	1,559	1,357	7,151	904	-754	6,397	**958**	8,792	8,334	**-458**
2035	157	100	269	808	59	2,330	0	0	378	532	0	0	544	645	1,407	1,256	0	0	419	347	727	1,493	1,399	6,397	958	-85	6,312	**954**	8,334	8,190	**-143**

Table I-46b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	40	270	89	74	256	0	0	1,438	65	0	0	220	39	2,669	234	0	0	941	292	754	1,987	161	7,647	114	681	8,328	111	1,180	1,253	73
2013	43	40	269	89	74	256	0	0	18	65	0	0	520	40	924	91	0	0	620	323	718	1,660	157	8,328	111	-736	7,592	115	1,253	1,187	-66
2014	360	40	269	89	71	256	0	0	1,029	65	0	0	413	40	2,142	191	0	0	764	309	718	1,792	161	7,592	115	351	7,943	113	1,187	1,218	31
2015	1,421	40	269	89	68	256	0	0	916	65	0	0	452	41	3,127	240	0	0	915	321	755	1,991	165	7,943	113	1,137	9,080	105	1,218	1,293	75
2016	0	40	270	89	65	256	0	0	0	65	0	0	515	41	850	84	0	0	765	341	749	1,854	155	9,080	105	-1,004	8,076	111	1,293	1,222	-71
2017	0	40	269	89	62	256	0	0	0	65	0	0	604	40	935	87	0	0	373	351	734	1,458	164	8,076	111	-523	7,553	111	1,222	1,145	-77
2018	288	40	269	89	59	256	0	0	796	65	0	0	542	41	1,954	170	0	0	544	359	743	1,646	167	7,553	111	309	7,861	107	1,145	1,147	3
2019	42	40	269	89	56	256	0	0	13	65	0	0	555	41	935	87	0	0	494	350	830	1,674	172	7,861	107	-739	7,122	110	1,147	1,062	-85
2020	167	40	270	89	53	256	0	0	412	65	0	0	603	42	1,505	131	0	0	477	365	903	1,745	189	7,122	110	-241	6,881	107	1,062	1,004	-58
2021	0	40	269	89	53	256	0	0	0	65	0	0	653	43	975	89	0	0	288	399	892	1,579	188	6,881	107	-604	6,277	106	1,004	905	-99
2022	0	40	269	89	54	256	0	0	0	65	0	0	661	44	984	91	0	0	189	407	918	1,514	191	6,277	106	-530	5,748	103	905	805	-100
2023	351	40	269	89	54	256	0	0	908	65	0	0	507	45	2,089	182	0	0	484	399	1,009	1,892	197	5,748	103	197	5,945	98	805	789	-15
2024	996	40	270	89	55	256	0	0	1,326	65	0	0	342	46	2,988	245	0	0	848	415	1,094	2,357	200	5,945	98	631	6,576	93	789	834	45
2025	851	40	269	89	55	256	0	0	1,585	65	0	0	369	47	3,130	262	0	0	1,042	409	898	2,348	166	6,576	93	782	7,358	93	834	931	97
2026	0	40	269	89	56	256	0	0	0	65	0	0	603	48	928	91	0	0	779	382	852	2,013	156	7,358	93	-1,085	6,273	101	931	866	-65
2027	860	40	269	89	56	256	0	0	1,614	65	0	0	316	48	3,116	263	0	0	945	317	783	2,045	152	6,273	101	1,070	7,343	98	866	977	111
2028	312	40	270	89	56	256	0	0	874	65	0	0	370	49	1,882	172	0	0	881	306	737	1,924	139	7,343	98	-42	7,301	102	977	1,010	33
2029	86	40	269	89	57	256	0	0	152	65	0	0	498	50	1,061	104	0	0	717	295	696	1,707	137	7,301	102	-646	6,655	108	1,010	977	-33
2030	1,058	40	269	89	57	256	0	0	1,476	65	0	0	147	51	3,008	251	0	0	1,019	266	742	2,026	148	6,655	108	981	7,637	104	977	1,081	103
2031	0	40	269	89	58	256	0	0	0	65	0	0	572	52	899	93	0	0	594	305	697	1,596	142	7,637	104	-697	6,940	109	1,081	1,032	-49
2032	63	40	270	89	58	256	0	0	80	65	0	0	570	52	1,041	104	0	0	373	312	691	1,375	149	6,940	109	-334	6,606	110	1,032	987	-45
2033	462	40	269	89	59	256	0	0	1,032	65	0	0	439	53	2,261	202	0	0	586	314	816	1,716	169	6,606	110	545	7,151	105	987	1,020	33
2034	0	40	269	89	59	256	0	0	0	65	0	0	477	54	805	88	0	0	456	344	759	1,559	157	7,151	105	-754	6,397	109	1,020	950	-69
2035	157	40	269	89	59	256	0	0	378	65	0	0	544	55	1,407	136	0	0	419	347	727	1,493	160	6,397	109	-85	6,312	108	950	927	-24

Table I-46c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. or Inflow From Upstream Tributaries [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ3 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	667	9	270	46	74	17	0	0	1,438	7	0	0	220	20	2,669	47	0	0	941	292	754	1,987	44	7,647	31	681	8,328	**29**	321	324	**3**
2013	43	9	269	46	74	17	0	0	18	7	0	0	520	20	924	34	0	0	620	323	718	1,660	40	8,328	29	-736	7,592	**31**	324	317	**-7**
2014	360	9	269	46	71	17	0	0	1,029	7	0	0	413	20	2,142	44	0	0	764	309	718	1,792	43	7,592	31	351	7,943	**29**	317	318	**1**
2015	1,421	9	269	46	68	17	0	0	916	7	0	0	452	20	3,127	56	0	0	915	321	755	1,991	43	7,943	29	1,137	9,080	**27**	318	331	**13**
2016	0	9	270	46	65	17	0	0	0	7	0	0	515	20	850	32	0	0	765	341	749	1,854	40	9,080	27	-1,004	8,076	**30**	331	324	**-7**
2017	0	9	269	46	62	17	0	0	0	7	0	0	604	20	935	35	0	0	373	351	734	1,458	44	8,076	30	-523	7,553	**31**	324	315	**-9**
2018	288	9	269	46	59	17	0	0	796	7	0	0	542	20	1,954	44	0	0	544	359	743	1,646	46	7,553	31	309	7,861	**29**	315	313	**-2**
2019	42	9	269	46	56	17	0	0	13	7	0	0	555	20	935	34	0	0	494	350	830	1,674	47	7,861	29	-739	7,122	**31**	313	300	**-13**
2020	167	9	270	46	53	17	0	0	412	7	0	0	603	20	1,505	40	0	0	477	365	903	1,745	53	7,122	31	-241	6,881	**31**	300	287	**-13**
2021	0	9	269	46	53	17	0	0	0	7	0	0	653	20	975	36	0	0	288	399	892	1,579	54	6,881	31	-604	6,277	**31**	287	269	**-18**
2022	0	9	269	46	54	17	0	0	0	7	0	0	661	20	984	36	0	0	189	407	918	1,514	57	6,277	31	-530	5,748	**32**	269	248	**-21**
2023	351	9	269	46	54	17	0	0	908	7	0	0	507	20	2,089	45	0	0	484	399	1,009	1,892	61	5,748	32	197	5,945	**29**	248	232	**-16**
2024	996	9	270	46	55	17	0	0	1,326	7	0	0	342	19	2,988	52	0	0	848	415	1,094	2,357	59	5,945	29	631	6,576	**25**	232	225	**-7**
2025	851	9	269	46	55	17	0	0	1,585	7	0	0	369	19	3,130	53	0	0	1,042	409	898	2,348	45	6,576	25	782	7,358	**23**	225	234	**9**
2026	0	9	269	46	56	17	0	0	0	7	0	0	603	19	928	34	0	0	779	382	852	2,013	39	7,358	23	-1,085	6,273	**27**	234	228	**-5**
2027	860	9	269	46	56	17	0	0	1,614	7	0	0	316	19	3,116	52	0	0	945	317	783	2,045	40	6,273	27	1,070	7,343	**24**	228	240	**12**
2028	312	9	270	46	56	17	0	0	874	7	0	0	370	19	1,882	40	0	0	881	306	737	1,924	34	7,343	24	-42	7,301	**25**	240	246	**6**
2029	86	9	269	46	57	17	0	0	152	7	0	0	498	19	1,061	34	0	0	717	295	696	1,707	33	7,301	25	-646	6,655	**27**	246	246	**0**
2030	1,058	9	269	46	57	17	0	0	1,476	7	0	0	147	19	3,008	49	0	0	1,019	266	742	2,026	37	6,655	27	981	7,637	**25**	246	258	**12**
2031	0	9	269	46	58	17	0	0	0	7	0	0	572	19	899	33	0	0	594	305	697	1,596	34	7,637	25	-697	6,940	**27**	258	257	**-1**
2032	63	9	270	46	58	17	0	0	80	7	0	0	570	19	1,041	34	0	0	373	312	691	1,375	37	6,940	27	-334	6,606	**28**	257	254	**-3**
2033	462	9	269	46	59	17	0	0	1,032	7	0	0	439	19	2,261	45	0	0	586	314	816	1,716	43	6,606	28	545	7,151	**26**	254	256	**1**
2034	0	9	269	46	59	17	0	0	0	7	0	0	477	19	805	30	0	0	456	344	759	1,559	39	7,151	26	-754	6,397	**28**	256	247	**-9**
2035	157	9	269	46	59	17	0	0	378	7	0	0	544	19	1,407	38	0	0	419	347	727	1,493	41	6,397	28	-85	6,312	**28**	247	243	**-4**

Table I-46d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 2 (Placerita Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. or Inflow From Upstream Tributaries	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Sulfate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ3	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Sulfate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	667	40	270	170	74	490	0	0	1,438	103	0	0	220	266	2,669	428	0	0	941	292	754	1,987	330	7,647	232	681	8,328	222	2,410	2,509	98
2013	43	40	269	170	74	490	0	0	18	103	0	0	520	266	924	305	0	0	620	323	718	1,660	313	8,328	222	-736	7,592	242	2,509	2,500	-8
2014	360	40	269	170	71	490	0	0	1,029	103	0	0	413	265	2,142	422	0	0	764	309	718	1,792	338	7,592	242	351	7,943	239	2,500	2,583	83
2015	1,421	40	269	170	68	490	0	0	916	103	0	0	452	257	3,127	471	0	0	915	321	755	1,991	350	7,943	239	1,137	9,080	219	2,583	2,705	121
2016	0	40	270	170	65	490	0	0	0	103	0	0	515	257	850	286	0	0	765	341	749	1,854	324	9,080	219	-1,004	8,076	243	2,705	2,666	-38
2017	0	40	269	170	62	490	0	0	0	103	0	0	604	258	935	315	0	0	373	351	734	1,458	358	8,076	243	-523	7,553	255	2,666	2,623	-43
2018	288	40	269	170	59	490	0	0	796	103	0	0	542	257	1,954	417	0	0	544	359	743	1,646	382	7,553	255	309	7,861	249	2,623	2,658	35
2019	42	40	269	170	56	490	0	0	13	103	0	0	555	257	935	298	0	0	494	350	830	1,674	399	7,861	249	-739	7,122	264	2,658	2,557	-101
2020	167	40	270	170	53	490	0	0	412	103	0	0	603	257	1,505	375	0	0	477	365	903	1,745	455	7,122	264	-241	6,881	265	2,557	2,476	-81
2021	0	40	269	170	53	490	0	0	0	103	0	0	653	257	975	326	0	0	288	399	892	1,579	465	6,881	265	-604	6,277	274	2,476	2,338	-138
2022	0	40	269	170	54	490	0	0	0	103	0	0	661	258	984	330	0	0	189	407	918	1,514	494	6,277	274	-530	5,748	278	2,338	2,174	-163
2023	351	40	269	170	54	490	0	0	908	103	0	0	507	257	2,089	421	0	0	484	399	1,009	1,892	533	5,748	278	197	5,945	255	2,174	2,062	-112
2024	996	40	270	170	55	490	0	0	1,326	103	0	0	342	251	2,988	455	0	0	848	415	1,094	2,357	523	5,945	255	631	6,576	223	2,062	1,994	-69
2025	851	40	269	170	55	490	0	0	1,585	103	0	0	369	247	3,130	490	0	0	1,042	409	898	2,348	396	6,576	223	782	7,358	209	1,994	2,088	94
2026	0	40	269	170	56	490	0	0	0	103	0	0	603	248	928	302	0	0	779	382	852	2,013	350	7,358	209	-1,085	6,273	239	2,088	2,040	-48
2027	860	40	269	170	56	490	0	0	1,614	103	0	0	316	244	3,116	476	0	0	945	317	783	2,045	358	6,273	239	1,070	7,343	216	2,040	2,158	118
2028	312	40	270	170	56	490	0	0	874	103	0	0	370	243	1,882	361	0	0	881	306	737	1,924	306	7,343	216	-42	7,301	223	2,158	2,213	55
2029	86	40	269	170	57	490	0	0	152	103	0	0	498	243	1,061	291	0	0	717	295	696	1,707	300	7,301	223	-646	6,655	244	2,213	2,204	-9
2030	1,058	40	269	170	57	490	0	0	1,476	103	0	0	147	239	3,008	412	0	0	1,019	266	742	2,026	334	6,655	244	981	7,637	220	2,204	2,281	78
2031	0	40	269	170	58	490	0	0	0	103	0	0	572	240	899	287	0	0	594	305	697	1,596	299	7,637	220	-697	6,940	241	2,281	2,269	-12
2032	63	40	270	170	58	490	0	0	80	103	0	0	570	240	1,041	302	0	0	373	312	691	1,375	328	6,940	241	-334	6,606	250	2,269	2,244	-26
2033	462	40	269	170	59	490	0	0	1,032	103	0	0	439	239	2,261	413	0	0	586	314	816	1,716	384	6,606	250	545	7,151	234	2,244	2,273	29
2034	0	40	269	170	59	490	0	0	0	103	0	0	477	240	805	257	0	0	456	344	759	1,559	351	7,151	234	-754	6,397	251	2,273	2,179	-94
2035	157	40	269	170	59	490	0	0	378	103	0	0	544	240	1,407	341	0	0	419	347	727	1,493	366	6,397	251	-85	6,312	251	2,179	2,154	-25

Table I-47a

Projected TDS Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	TDS Conc. for Applied Recycled Water [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	TDS Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,214	100	181	833	678	2,400	0	0	0	2,371	6,085	532	0	0	292	993	7,741	647	19,192	14,595	0	0	3,696	5,579	6,113	15,388	15,390	25,728	968	3,804	29,532	824	33,864	33,069	-795
2013	274	100	181	833	679	2,400	0	0	89	2,371	737	532	0	0	323	1,051	7,805	650	10,087	10,630	0	0	2,366	5,283	5,691	13,340	12,289	29,532	824	-3,253	26,278	879	33,069	31,410	-1,659
2014	2,277	100	181	833	670	2,400	0	0	96	2,371	4,962	532	0	0	309	1,024	5,898	648	14,393	12,225	0	0	3,004	4,371	5,819	13,193	12,179	26,278	879	1,200	27,478	842	31,410	31,456	46
2015	8,986	100	181	833	662	2,400	0	0	103	2,371	3,952	532	0	0	321	917	7,949	632	22,154	14,009	0	0	3,654	5,444	5,995	15,094	13,095	27,478	842	7,060	34,538	689	31,456	32,370	914
2016	0	100	181	833	653	2,400	0	0	111	2,371	0	532	0	0	341	993	7,973	630	9,259	9,984	0	0	2,869	5,612	5,895	14,376	10,785	34,538	689	-5,117	29,421	789	32,370	31,569	-801
2017	0	100	181	833	645	2,400	0	0	118	2,371	0	532	0	0	351	1,018	6,506	629	7,801	8,741	0	0	1,336	4,660	5,570	11,566	10,977	29,421	789	-3,766	25,656	841	31,569	29,334	-2,235
2018	1,818	100	181	833	636	2,400	0	0	125	2,371	3,992	532	0	0	359	981	6,610	629	13,721	11,950	0	0	1,990	4,603	5,635	12,228	11,705	25,656	841	1,493	27,149	801	29,334	29,579	245
2019	265	100	181	833	628	2,400	0	0	133	2,371	718	532	0	0	350	1,020	8,284	632	10,558	10,843	0	0	2,032	5,266	6,714	14,012	13,052	27,149	801	-3,454	23,695	850	29,579	27,370	-2,209
2020	1,056	100	181	833	620	2,400	0	0	140	2,371	2,381	532	0	0	365	1,007	6,737	634	11,480	10,855	0	0	1,988	4,526	7,631	14,145	14,042	23,695	850	-2,665	21,030	846	27,370	24,183	-3,187
2021	0	100	181	833	620	2,400	0	0	147	2,371	0	532	0	0	399	1,018	7,303	639	8,650	9,602	0	0	1,158	4,606	6,841	12,605	13,163	21,030	846	-3,955	17,075	888	24,183	20,622	-3,561
2022	0	100	181	833	621	2,400	0	0	155	2,371	0	532	0	0	407	1,011	7,656	644	9,019	9,994	0	0	641	4,695	7,299	12,634	14,485	17,075	888	-3,615	13,460	881	20,622	16,130	-4,491
2023	2,221	100	181	833	621	2,400	0	0	162	2,371	4,160	532	0	0	399	938	7,733	645	15,477	13,352	0	0	1,778	4,860	8,634	15,272	16,171	13,460	881	205	13,664	716	16,130	13,310	-2,820
2024	6,294	100	181	833	622	2,400	0	0	169	2,371	5,602	532	0	0	415	841	7,784	636	21,067	14,895	0	0	3,291	5,093	9,390	17,773	14,107	13,664	716	3,294	16,959	611	13,310	14,098	788
2025	5,383	100	181	833	622	2,400	0	0	177	2,371	6,749	532	0	0	409	807	9,956	630	23,476	17,395	0	0	3,925	6,385	6,698	17,008	10,876	16,959	611	6,468	23,426	647	14,098	20,618	6,519
2026	0	100	181	833	623	2,400	0	0	184	2,371	0	532	0	0	382	904	9,740	636	11,110	11,717	0	0	2,752	6,115	6,755	15,622	11,326	23,426	647	-4,512	18,914	817	20,618	21,009	391
2027	5,440	100	181	833	623	2,400	0	0	191	2,371	6,946	532	0	0	317	840	7,174	630	20,873	15,122	0	0	3,643	5,043	6,144	14,830	12,426	18,914	817	6,043	24,958	699	21,009	23,705	2,696
2028	1,971	100	181	833	624	2,400	0	0	199	2,371	3,950	532	0	0	306	873	8,915	631	16,144	14,015	0	0	3,258	5,909	5,878	15,046	11,196	24,958	699	1,098	26,056	749	23,705	26,524	2,819
2029	541	100	181	833	625	2,400	0	0	206	2,371	1,290	532	0	0	295	941	8,093	635	11,229	11,278	0	0	2,680	5,351	5,672	13,703	11,221	26,056	749	-2,474	23,582	829	26,524	26,581	57
2030	6,691	100	181	833	625	2,400	0	0	213	2,371	6,310	532	0	0	266	871	8,894	627	23,180	16,301	0	0	4,022	6,386	6,317	16,725	14,319	23,582	829	6,455	30,037	699	26,581	28,564	1,982
2031	0	100	181	833	626	2,400	0	0	221	2,371	0	532	0	0	305	935	8,493	632	9,824	10,648	0	0	2,131	5,727	5,715	13,573	10,881	30,037	699	-3,749	26,289	793	28,564	28,331	-233
2032	398	100	181	833	626	2,400	0	0	228	2,371	988	532	0	0	312	956	8,113	637	10,846	11,183	0	0	1,578	5,357	5,540	12,475	11,743	26,289	793	-1,629	24,660	828	28,331	27,770	-560
2033	2,920	100	181	833	627	2,400	0	0	235	2,371	4,407	532	0	0	314	904	6,391	636	15,075	12,506	0	0	2,214	4,529	6,770	13,513	12,724	24,660	828	1,563	26,223	773	27,770	27,552	-218
2034	0	100	181	833	627	2,400	0	0	243	2,371	0	532	0	0	344	958	6,724	641	8,119	9,347	0	0	1,679	4,641	5,741	12,061	10,908	26,223	773	-3,941	22,281	858	27,552	25,991	-1,561
2035	990	100	181	833	628	2,400	0	0	250	2,371	2,240	532	0	0	347	954	6,695	645	11,330	11,132	0	0	1,470	4,544	5,450	11,464	11,658	22,281	858	-135	22,147	846	25,991	25,465	-526

Table I-47b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Chloride Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Chloride Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Chloride Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Chloride Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Chloride Conc. for Applied Recycled Water	Stream Leakage	Chloride Conc. for Stream Leakage	Inflow From Upstream Tributaries	Chloride Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Chloride Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Chloride
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]
2012	4,214	40	181	95	678	275	0	0	0	400	6,085	65	0	0	292	111	7,741	39	19,192	1,506
2013	274	40	181	95	679	275	0	0	89	400	737	65	0	0	323	115	7,805	40	10,087	879
2014	2,277	40	181	95	670	275	0	0	96	400	4,962	65	0	0	309	113	5,898	40	14,393	1,262
2015	8,986	40	181	95	662	275	0	0	103	400	3,952	65	0	0	321	105	7,949	41	22,154	1,655
2016	0	40	181	95	653	275	0	0	111	400	0	65	0	0	341	111	7,973	41	9,259	819
2017	0	40	181	95	645	275	0	0	118	400	0	65	0	0	351	111	6,506	40	7,801	738
2018	1,818	40	181	95	636	275	0	0	125	400	3,992	65	0	0	359	107	6,610	41	13,721	1,202
2019	265	40	181	95	628	275	0	0	133	400	718	65	0	0	350	110	8,284	41	10,558	927
2020	1,056	40	181	95	620	275	0	0	140	400	2,381	65	0	0	365	107	6,737	42	11,480	1,039
2021	0	40	181	95	620	275	0	0	147	400	0	65	0	0	399	106	7,303	43	8,650	818
2022	0	40	181	95	621	275	0	0	155	400	0	65	0	0	407	103	7,656	44	9,019	851
2023	2,221	40	181	95	621	275	0	0	162	400	4,160	65	0	0	399	98	7,733	45	15,477	1,357
2024	6,294	40	181	95	622	275	0	0	169	400	5,602	65	0	0	415	93	7,784	46	21,067	1,725
2025	5,383	40	181	95	622	275	0	0	177	400	6,749	65	0	0	409	93	9,956	47	23,476	1,928
2026	0	40	181	95	623	275	0	0	184	400	0	65	0	0	382	101	9,740	48	11,110	1,039
2027	5,440	40	181	95	623	275	0	0	191	400	6,946	65	0	0	317	98	7,174	48	20,873	1,788
2028	1,971	40	181	95	624	275	0	0	199	400	3,950	65	0	0	306	102	8,915	49	16,144	1,462
2029	541	40	181	95	625	275	0	0	206	400	1,290	65	0	0	295	108	8,093	50	11,229	1,107
2030	6,691	40	181	95	625	275	0	0	213	400	6,310	65	0	0	266	104	8,894	51	23,180	1,950
2031	0	40	181	95	626	275	0	0	221	400	0	65	0	0	305	109	8,493	52	9,824	1,018
2032	398	40	181	95	626	275	0	0	228	400	988	65	0	0	312	110	8,113	52	10,846	1,115
2033	2,920	40	181	95	627	275	0	0	235	400	4,407	65	0	0	314	105	6,391	53	15,075	1,442
2034	0	40	181	95	627	275	0	0	243	400	0	65	0	0	344	109	6,724	54	8,119	933
2035	990	40	181	95	628	275	0	0	250	400	2,240	65	0	0	347	108	6,695	55	11,330	1,195

Year	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Chloride	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	0	0	3,696	5,579	6,113	15,388	1,636	25,728	103	3,804	29,532	86	3,600	3,470	-130
2013	0	0	2,366	5,283	5,691	13,340	1,289	29,532	86	-3,253	26,278	86	3,470	3,059	-410
2014	0	0	3,004	4,371	5,819	13,193	1,186	26,278	86	1,200	27,478	84	3,059	3,135	76
2015	0	0	3,654	5,444	5,995	15,094	1,305	27,478	84	7,060	34,538	74	3,135	3,485	350
2016	0	0	2,869	5,612	5,895	14,376	1,161	34,538	74	-5,117	29,421	79	3,485	3,143	-342
2017	0	0	1,336	4,660	5,570	11,566	1,093	29,421	79	-3,766	25,656	80	3,143	2,788	-355
2018	0	0	1,990	4,603	5,635	12,228	1,113	25,656	80	1,493	27,149	78	2,788	2,878	90
2019	0	0	2,032	5,266	6,714	14,012	1,270	27,149	78	-3,454	23,695	79	2,878	2,535	-343
2020	0	0	1,988	4,526	7,631	14,145	1,301	23,695	79	-2,665	21,030	80	2,535	2,274	-261
2021	0	0	1,158	4,606	6,841	12,605	1,238	21,030	80	-3,955	17,075	80	2,274	1,855	-419
2022	0	0	641	4,695	7,299	12,634	1,303	17,075	80	-3,615	13,460	77	1,855	1,403	-452
2023	0	0	1,778	4,860	8,634	15,272	1,407	13,460	77	205	13,664	73	1,403	1,353	-50
2024	0	0	3,291	5,093	9,390	17,773	1,434	13,664	73	3,294	16,959	71	1,353	1,644	290
2025	0	0	3,925	6,385	6,698	17,008	1,268	16,959	71	6,468	23,426	72	1,644	2,304	661
2026	0	0	2,752	6,115	6,755	15,622	1,266	23,426	72	-4,512	18,914	81	2,304	2,077	-227
2027	0	0	3,643	5,043	6,144	14,830	1,229	18,914	81	6,043	24,958	78	2,077	2,637	560
2028	0	0	3,258	5,909	5,878	15,046	1,245	24,958	78	1,098	26,056	81	2,637	2,853	216
2029	0	0	2,680	5,351	5,672	13,703	1,207	26,056	81	-2,474	23,582	86	2,853	2,753	-101
2030	0	0	4,022	6,386	6,317	16,725	1,483	23,582	86	6,455	30,037	79	2,753	3,219	467
2031	0	0	2,131	5,727	5,715	13,573	1,226	30,037	79	-3,749	26,289	84	3,219	3,011	-208
2032	0	0	1,578	5,357	5,540	12,475	1,248	26,289	84	-1,629	24,660	86	3,011	2,878	-133
2033	0	0	2,214	4,529	6,770	13,513	1,319	24,660	86	1,563	26,223	84	2,878	3,001	124
2034	0	0	1,679	4,641	5,741	12,061	1,188	26,223	84	-3,941	22,281	91	3,001	2,747	-255
2035	0	0	1,470	4,544	5,450	11,464	1,232	22,281	91	-135	22,147	90	2,747	2,710	-37

Table I-47c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Nitrate Conc. for Applied Recycled Water	Stream Leakage	Nitrate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Nitrate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Nitrate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	9	181	46	678	17	0	0	0	51	6,085	7	0	0	292	29	7,741	20	19,192	358	0	0	3,696	5,579	6,113	15,388	323	25,728	20	3,804	29,532	19	710	745	35
2013	274	9	181	46	679	17	0	0	89	51	737	7	0	0	323	31	7,805	20	10,087	270	0	0	2,366	5,283	5,691	13,340	277	29,532	19	-3,253	26,278	21	745	738	-7
2014	2,277	9	181	46	670	17	0	0	96	51	4,962	7	0	0	309	29	5,898	20	14,393	281	0	0	3,004	4,371	5,819	13,193	286	26,278	21	1,200	27,478	20	738	733	-5
2015	8,986	9	181	46	662	17	0	0	103	51	3,952	7	0	0	321	27	7,949	20	22,154	403	0	0	3,654	5,444	5,995	15,094	305	27,478	20	7,060	34,538	18	733	831	98
2016	0	9	181	46	653	17	0	0	111	51	0	7	0	0	341	30	7,973	20	9,259	260	0	0	2,869	5,612	5,895	14,376	277	34,538	18	-5,117	29,421	20	831	814	-16
2017	0	9	181	46	645	17	0	0	118	51	0	7	0	0	351	31	6,506	20	7,801	223	0	0	1,336	4,660	5,570	11,566	283	29,421	20	-3,766	25,656	22	814	754	-60
2018	1,818	9	181	46	636	17	0	0	125	51	3,992	7	0	0	359	29	6,610	20	13,721	285	0	0	1,990	4,603	5,635	12,228	301	25,656	22	1,493	27,149	20	754	738	-15
2019	265	9	181	46	628	17	0	0	133	51	718	7	0	0	350	31	8,284	20	10,558	281	0	0	2,032	5,266	6,714	14,012	326	27,149	20	-3,454	23,695	22	738	693	-45
2020	1,056	9	181	46	620	17	0	0	140	51	2,381	7	0	0	365	31	6,737	20	11,480	266	0	0	1,988	4,526	7,631	14,145	356	23,695	22	-2,665	21,030	21	693	603	-90
2021	0	9	181	46	620	17	0	0	147	51	0	7	0	0	399	31	7,303	20	8,650	248	0	0	1,158	4,606	6,841	12,605	328	21,030	21	-3,955	17,075	23	603	523	-81
2022	0	9	181	46	621	17	0	0	155	51	0	7	0	0	407	32	7,656	20	9,019	258	0	0	641	4,695	7,299	12,634	367	17,075	23	-3,615	13,460	23	523	414	-109
2023	2,221	9	181	46	621	17	0	0	162	51	4,160	7	0	0	399	29	7,733	20	15,477	325	0	0	1,778	4,860	8,634	15,272	415	13,460	23	205	13,664	17	414	324	-90
2024	6,294	9	181	46	622	17	0	0	169	51	5,602	7	0	0	415	25	7,784	19	21,067	385	0	0	3,291	5,093	9,390	17,773	343	13,664	17	3,294	16,959	16	324	366	42
2025	5,383	9	181	46	622	17	0	0	177	51	6,749	7	0	0	409	23	9,956	19	23,476	438	0	0	3,925	6,385	6,698	17,008	282	16,959	16	6,468	23,426	16	366	522	156
2026	0	9	181	46	623	17	0	0	184	51	0	7	0	0	382	27	9,740	19	11,110	305	0	0	2,752	6,115	6,755	15,622	287	23,426	16	-4,512	18,914	21	522	540	18
2027	5,440	9	181	46	623	17	0	0	191	51	6,946	7	0	0	317	24	7,174	19	20,873	366	0	0	3,643	5,043	6,144	14,830	320	18,914	21	6,043	24,958	17	540	586	46
2028	1,971	9	181	46	624	17	0	0	199	51	3,950	7	0	0	306	25	8,915	19	16,144	340	0	0	3,258	5,909	5,878	15,046	277	24,958	17	1,098	26,056	18	586	649	63
2029	541	9	181	46	625	17	0	0	206	51	1,290	7	0	0	295	27	8,093	19	11,229	277	0	0	2,680	5,351	5,672	13,703	275	26,056	18	-2,474	23,582	20	649	652	3
2030	6,691	9	181	46	625	17	0	0	213	51	6,310	7	0	0	266	25	8,894	19	23,180	416	0	0	4,022	6,386	6,317	16,725	351	23,582	20	6,455	30,037	18	652	716	64
2031	0	9	181	46	626	17	0	0	221	51	0	7	0	0	305	27	8,493	19	9,824	268	0	0	2,131	5,727	5,715	13,573	273	30,037	18	-3,749	26,289	20	716	711	-5
2032	398	9	181	46	626	17	0	0	228	51	988	7	0	0	312	28	8,113	19	10,846	274	0	0	1,578	5,357	5,540	12,475	295	26,289	20	-1,629	24,660	21	711	690	-21
2033	2,920	9	181	46	627	17	0	0	235	51	4,407	7	0	0	314	26	6,391	19	15,075	292	0	0	2,214	4,529	6,770	13,513	316	24,660	21	1,563	26,223	19	690	666	-24
2034	0	9	181	46	627	17	0	0	243	51	0	7	0	0	344	28	6,724	19	8,119	226	0	0	1,679	4,641	5,741	12,061	264	26,223	19	-3,941	22,281	21	666	628	-38
2035	990	9	181	46	628	17	0	0	250	51	2,240	7	0	0	347	28	6,695	19	11,330	259	0	0	1,470	4,544	5,450	11,464	282	22,281	21	-135	22,147	20	628	606	-23

Table I-47d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 3 (South Fork Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Sulfate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Sulfate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Sulfate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Sulfate Conc. for Applied Water Recharge Inside West Side Villages	Applied Recycled Water	Sulfate Conc. for Applied Recycled Water	Stream Leakage	Sulfate Conc. for Stream Leakage	Inflow From Upstream Tributaries	Sulfate Conc. For Inflow From Upstream Tributaries	Inflow From MZ2	Sulfate Conc. for Inflow From MZ2	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Outflow to MZ4	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,214	40	181	178	678	512	0	0	0	558	6,085	103	0	0	292	222	7,741	266	19,192	4,482	0	0	3,696	5,579	6,113	15,388	3,571	25,728	225	3,804	29,532	218	7,858	8,769	911
2013	274	40	181	178	679	512	0	0	89	558	737	103	0	0	323	242	7,805	266	10,087	3,634	0	0	2,366	5,283	5,691	13,340	3,259	29,532	218	-3,253	26,278	256	8,769	9,145	376
2014	2,277	40	181	178	670	512	0	0	96	558	4,962	103	0	0	309	239	5,898	265	14,393	3,623	0	0	3,004	4,371	5,819	13,193	3,546	26,278	256	1,200	27,478	247	9,145	9,222	77
2015	8,986	40	181	178	662	512	0	0	103	558	3,952	103	0	0	321	219	7,949	257	22,154	4,500	0	0	3,654	5,444	5,995	15,094	3,839	27,478	247	7,060	34,538	210	9,222	9,883	661
2016	0	40	181	178	653	512	0	0	111	558	0	103	0	0	341	243	7,973	257	9,259	3,485	0	0	2,869	5,612	5,895	14,376	3,293	34,538	210	-5,117	29,421	252	9,883	10,075	192
2017	0	40	181	178	645	512	0	0	118	558	0	103	0	0	351	255	6,506	258	7,801	2,984	0	0	1,336	4,660	5,570	11,566	3,503	29,421	252	-3,766	25,656	274	10,075	9,556	-519
2018	1,818	40	181	178	636	512	0	0	125	558	3,992	103	0	0	359	249	6,610	257	13,721	3,666	0	0	1,990	4,603	5,635	12,228	3,813	25,656	274	1,493	27,149	255	9,556	9,408	-147
2019	265	40	181	178	628	512	0	0	133	558	718	103	0	0	350	264	8,284	257	10,558	3,717	0	0	2,032	5,266	6,714	14,012	4,152	27,149	255	-3,454	23,695	279	9,408	8,973	-435
2020	1,056	40	181	178	620	512	0	0	140	558	2,381	103	0	0	365	265	6,737	257	11,480	3,453	0	0	1,988	4,526	7,631	14,145	4,604	23,695	279	-2,665	21,030	274	8,973	7,823	-1,150
2021	0	40	181	178	620	512	0	0	147	558	0	103	0	0	399	274	7,303	257	8,650	3,291	0	0	1,158	4,606	6,841	12,605	4,258	21,030	274	-3,955	17,075	295	7,823	6,856	-967
2022	0	40	181	178	621	512	0	0	155	558	0	103	0	0	407	278	7,656	258	9,019	3,433	0	0	641	4,695	7,299	12,634	4,816	17,075	295	-3,615	13,460	299	6,856	5,474	-1,382
2023	2,221	40	181	178	621	512	0	0	162	558	4,160	103	0	0	399	255	7,733	257	15,477	4,136	0	0	1,778	4,860	8,634	15,272	5,488	13,460	299	205	13,664	222	5,474	4,122	-1,352
2024	6,294	40	181	178	622	512	0	0	169	558	5,602	103	0	0	415	223	7,784	251	21,067	4,513	0	0	3,291	5,093	9,390	17,773	4,369	13,664	222	3,294	16,959	185	4,122	4,266	144
2025	5,383	40	181	178	622	512	0	0	177	558	6,749	103	0	0	409	209	9,956	247	23,476	5,304	0	0	3,925	6,385	6,698	17,008	3,291	16,959	185	6,468	23,426	197	4,266	6,279	2,013
2026	0	40	181	178	623	512	0	0	184	558	0	103	0	0	382	239	9,740	248	11,110	4,021	0	0	2,752	6,115	6,755	15,622	3,449	23,426	197	-4,512	18,914	266	6,279	6,851	572
2027	5,440	40	181	178	623	512	0	0	191	558	6,946	103	0	0	317	216	7,174	244	20,873	4,360	0	0	3,643	5,043	6,144	14,830	4,052	18,914	266	6,043	24,958	211	6,851	7,158	308
2028	1,971	40	181	178	624	512	0	0	199	558	3,950	103	0	0	306	223	8,915	243	16,144	4,325	0	0	3,258	5,909	5,878	15,046	3,381	24,958	211	1,098	26,056	229	7,158	8,103	945
2029	541	40	181	178	625	512	0	0	206	558	1,290	103	0	0	295	244	8,093	243	11,229	3,621	0	0	2,680	5,351	5,672	13,703	3,428	26,056	229	-2,474	23,582	259	8,103	8,296	193
2030	6,691	40	181	178	625	512	0	0	213	558	6,310	103	0	0	266	220	8,894	239	23,180	4,853	0	0	4,022	6,386	6,317	16,725	4,469	23,582	259	6,455	30,037	213	8,296	8,680	384
2031	0	40	181	178	626	512	0	0	221	558	0	103	0	0	305	241	8,493	240	9,824	3,516	0	0	2,131	5,727	5,715	13,573	3,306	30,037	213	-3,749	26,289	249	8,680	8,890	209
2032	398	40	181	178	626	512	0	0	228	558	988	103	0	0	312	250	8,113	240	10,846	3,571	0	0	1,578	5,357	5,540	12,475	3,685	26,289	249	-1,629	24,660	262	8,890	8,775	-114
2033	2,920	40	181	178	627	512	0	0	235	558	4,407	103	0	0	314	234	6,391	239	15,075	3,609	0	0	2,214	4,529	6,770	13,513	4,021	24,660	262	1,563	26,223	235	8,775	8,363	-412
2034	0	40	181	178	627	512	0	0	243	558	0	103	0	0	344	251	6,724	240	8,119	2,975	0	0	1,679	4,641	5,741	12,061	3,311	26,223	235	-3,941	22,281	265	8,363	8,027	-336
2035	990	40	181	178	628	512	0	0	250	558	2,240	103	0	0	347	251	6,695	240	11,330	3,339	0	0	1,470	4,544	5,450	11,464	3,600	22,281	265	-135	22,147	258	8,027	7,766	-261

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-48a

Projected TDS Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	TDS Conc. for Applied Recycled Water [mg/L]	Saugus WRP Infiltration [acre-ft]	TDS Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	TDS Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	TDS Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	TDS Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	100	148	783	567	2,256	0	5,245	81	2,371	4,100	671	11,630	671	0	0	14,829	721	5,579	700	-5,182	700	36,646	32,084	12,832	6,543	1,102	7,025	2,202	29,704	28,963	78,359	745	6,942	85,301	711	79,349	82,470	3,121
2013	318	100	147	783	569	2,256	0	5,245	89	2,371	4,100	671	579	671	0	0	14,012	743	5,283	700	-1,853	650	23,243	24,047	12,814	5,290	763	7,327	2,152	28,346	26,667	85,301	711	-5,103	80,198	732	82,470	79,850	-2,621
2014	2,643	100	147	783	544	2,256	0	5,245	96	2,371	4,100	671	9,247	671	0	0	14,762	735	4,371	700	-1,307	648	34,603	32,428	18,418	4,129	642	8,008	1,988	33,184	32,401	80,198	732	1,418	81,617	720	79,850	79,877	27
2015	10,432	100	147	783	520	2,256	0	5,245	103	2,371	4,100	671	7,519	671	0	0	14,876	672	5,444	700	-2,935	632	40,207	30,365	12,763	6,633	1,215	7,370	2,077	30,058	28,228	81,617	720	10,149	91,766	657	79,877	82,014	2,137
2016	0	100	148	783	496	2,256	0	5,245	111	2,371	4,100	671	0	671	0	0	15,133	706	5,612	700	-1,341	630	24,259	24,497	12,755	6,166	1,189	7,743	2,067	29,920	25,678	91,766	657	-5,661	86,105	690	82,014	80,834	-1,181
2017	0	100	147	783	472	2,256	0	5,245	118	2,371	4,100	671	915	671	0	0	15,667	729	4,660	700	848	629	26,927	27,248	18,342	3,885	533	8,261	1,907	32,928	30,411	86,105	690	-6,001	80,104	713	80,834	77,670	-3,164
2018	2,110	100	147	783	447	2,256	0	5,245	125	2,371	4,100	671	6,575	671	0	0	15,809	726	4,603	700	-1,083	629	32,834	31,017	18,316	3,363	368	8,124	1,874	32,045	30,714	80,104	713	788	80,893	709	77,670	77,973	303
2019	307	100	147	783	423	2,256	0	5,245	133	2,371	4,100	671	1,229	671	0	0	14,351	737	5,266	700	-3,014	632	22,941	23,588	12,661	3,153	354	7,742	2,770	26,679	25,375	80,893	709	-3,738	77,155	726	77,973	76,186	-1,787
2020	1,226	100	148	783	399	2,256	1	5,245	140	2,371	4,100	671	2,842	671	0	0	15,098	734	4,526	700	-549	634	27,931	27,250	18,291	1,993	233	8,101	3,847	32,465	31,827	77,155	726	-4,534	72,621	725	76,186	71,609	-4,577
2021	0	100	147	783	400	2,256	5	5,245	147	2,371	4,100	671	1,562	671	0	0	15,548	744	4,606	700	-1,231	639	25,285	26,095	18,265	1,039	145	7,777	2,964	30,191	29,627	72,621	725	-4,906	67,715	739	71,609	68,077	-3,532
2022	0	100	147	783	401	2,256	8	5,245	155	2,371	4,100	671	1,744	671	0	0	15,646	750	4,695	700	-1,738	644	25,157	26,178	18,265	446	103	7,575	3,913	30,303	30,361	67,715	739	-5,146	62,569	751	68,077	63,894	-4,182
2023	2,579	100	147	783	403	2,256	10	5,245	162	2,371	4,100	671	7,075	671	0	0	15,878	729	4,860	700	-3,762	645	31,453	29,591	18,265	116	59	7,195	5,828	31,464	32,070	62,569	751	-11	62,558	722	63,894	61,416	-2,478
2024	7,308	100	148	783	404	2,256	10	5,245	169	2,371	4,100	671	11,886	671	0	0	16,430	687	5,093	700	-6,421	636	39,127	32,229	18,291	89	57	6,910	6,185	31,532	30,900	62,558	722	7,595	70,153	658	61,416	62,745	1,329
2025	6,249	100	147	783	405	2,256	11	5,245	177	2,371	4,100	671	15,297	671	0	0	16,565	682	6,385	700	-11,665	630	37,671	32,031	12,635	1,542	341	6,661	3,074	24,254	21,387	70,153	658	13,418	83,571	646	62,745	73,389	10,644
2026	0	100	147	783	406	2,256	11	5,245	184	2,371	4,100	671	1,313	671	0	0	15,076	706	6,115	700	-6,621	636	20,732	21,583	12,635	2,478	340	7,167	3,302	25,923	22,466	83,571	646	-5,191	78,380	680	73,389	72,505	-883
2027	6,316	100	147	783	408	2,256	12	5,245	191	2,371	4,100	671	18,299	671	0	0	15,461	689	5,043	700	-7,168	630	42,810	36,543	18,265	3,486	848	7,540	2,460	32,599	29,371	78,380	680	10,211	88,591	661	72,505	79,678	7,172
2028	2,288	100	148	783	409	2,256	12	5,245	199	2,371	4,100	671	5,888	671	0	0	14,581	698	5,909	700	-6,388	631	27,145	25,547	12,653	3,997	959	7,278	2,396	27,283	23,676	88,591	661	-138	88,452	678	79,678	81,549	1,871
2029	628	100	147	783	410	2,256	12	5,245	206	2,371	4,100	671	1,018	671	0	0	13,788	713	5,351	700	-3,217	635	22,443	22,607	12,635	4,157	668	7,520	2,351	27,331	24,582	88,452	678	-4,888	83,564	700	81,549	79,574	-1,975
2030	7,768	100	147	783	411	2,256	12	5,245	213	2,371	4,100	671	10,596	671	0	0	16,691	697	6,386	700	-6,483	627	39,843	33,028	12,635	6,759	1,511	7,590	2,348	30,844	27,932	83,564	700	8,999	92,564	673	79,574	84,670	5,096
2031	0	100	147	783	413	2,256	12	5,245	221	2,371	4,100	671	31	671	0	0	15,167	717	5,727	700	-2,158	632	23,659	24,359	12,635	5,605	949	7,347	2,196	28,733	25,414	92,564	673	-5,073	87,490	703	84,670	83,615	-1,055
2032	462	100	148	783	414	2,256	12	5,245	228	2,371	4,100	671	605	671	0	0	14,269	728	5,357	700	-1,941	637	23,653	24,136	12,653	4,630	601	7,722	2,213	27,819	26,013	87,490	703	-4,166	83,324	721	83,615	81,738	-1,877
2033	3,390	100	147	783	415	2,256	12	5,245	235	2,371	4,100	671	9,207	671	0	0	14,985	716	4,529	700	-1,642	636	35,378	32,363	18,265	3,599	451	8,143	2,652	33,111	32,038	83,324	721	2,267	85,592	705	81,738	82,063	325
2034	0	100	147	783	416	2,256	12	5,245	243	2,371	4,100	671	1,291	671	0	0	15,452	730	4,641	700	-826	641	25,475	26,244	18,265	2,424	274	8,055	2,052	31,070	29,527	85,592	705	-5,595	79,996	724	82,063	78,780	-3,283
2035	1,149	100	147	783	418	2,256	12	5,245	250	2,371	4,100	671	2,830	671	0	0	15,522	732	4,544	700	-670	645	28,302	27,986	18,265	2,279	233	7,800	1,914	30,492	29,798	79,996	724	-2,190	77,807	728	78,780	76,968	-1,812

Table I-48b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	Chloride Conc. for Applied Recycled Water [mg/L]	Saugus WRP Infiltration [acre-ft]	Chloride Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Chloride Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Chloride Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	40	148	109	567	314	0	885	81	400	4,100	100	11,630	89	0	0	14,829	86	5,579	28	-5,182	28	36,646	4,296	12,832	6,543	1,102	7,025	2,202	29,704	3,738	78,359	96	6,942	85,301	93	10,241	10,799	558
2013	318	40	147	109	569	314	0	885	89	400	4,100	100	579	89	0	0	14,012	87	5,283	28	-1,853	28	23,243	2,740	12,814	5,290	763	7,327	2,152	28,346	3,492	85,301	93	-5,103	80,198	92	10,799	10,047	-752
2014	2,643	40	147	109	544	314	0	885	96	400	4,100	100	9,247	89	0	0	14,762	87	4,371	28	-1,307	28	34,603	3,985	18,418	4,129	642	8,008	1,988	33,184	4,077	80,198	92	1,418	81,617	90	10,047	9,955	-92
2015	10,432	40	147	109	520	314	0	885	103	400	4,100	100	7,519	89	0	0	14,876	85	5,444	28	-2,935	28	40,207	4,141	12,763	6,633	1,215	7,370	2,077	30,058	3,518	81,617	90	10,149	91,766	85	9,955	10,578	623
2016	0	40	148	109	496	314	0	885	111	400	4,100	100	0	89	0	0	15,133	86	5,612	28	-1,341	28	24,259	2,778	12,755	6,166	1,189	7,743	2,067	29,920	3,312	91,766	85	-5,661	86,105	86	10,578	10,044	-534
2017	0	40	147	109	472	314	0	885	118	400	4,100	100	915	89	0	0	15,667	87	4,660	28	848	28	26,927	3,011	18,342	3,885	533	8,261	1,907	32,928	3,779	86,105	86	-6,001	80,104	85	10,044	9,276	-768
2018	2,110	40	147	109	447	314	0	885	125	400	4,100	100	6,575	89	0	0	15,809	86	4,603	28	-1,083	28	32,834	3,731	18,316	3,363	368	8,124	1,874	32,045	3,668	80,104	85	788	80,893	85	9,276	9,339	63
2019	307	40	147	109	423	314	0	885	133	400	4,100	100	1,229	89	0	0	14,351	85	5,266	28	-3,014	28	22,941	2,740	12,661	3,153	354	7,742	2,770	26,679	3,039	80,893	85	-3,738	77,155	86	9,339	9,040	-299
2020	1,226	40	148	109	399	314	1	885	140	400	4,100	100	2,842	89	0	0	15,098	84	4,526	28	-549	28	27,931	3,121	18,291	1,993	233	8,101	3,847	32,465	3,776	77,155	86	-4,534	72,621	85	9,040	8,384	-656
2021	0	40	147	109	400	314	5	885	147	400	4,100	100	1,562	89	0	0	15,548	85	4,606	28	-1,231	28	25,285	2,942	18,265	1,039	145	7,777	2,964	30,191	3,469	72,621	85	-4,906	67,715	85	8,384	7,858	-527
2022	0	40	147	109	401	314	8	885	155	400	4,100	100	1,744	89	0	0	15,646	85	4,695	28	-1,738	28	25,157	2,978	18,265	446	103	7,575	3,913	30,303	3,504	67,715	85	-5,146	62,569	86	7,858	7,331	-526
2023	2,579	40	147	109	403	314	10	885	162	400	4,100	100	7,075	89	0	0	15,878	84	4,860	28	-3,762	28	31,453	3,709	18,265	116	59	7,195	5,828	31,464	3,680	62,569	86	-11	62,558	87	7,331	7,360	29
2024	7,308	40	148	109	404	314	10	885	169	400	4,100	100	11,886	89	0	0	16,430	84	5,093	28	-6,421	28	39,127	4,507	18,291	89	57	6,910	6,185	31,532	3,703	62,558	87	7,595	70,153	86	7,360	8,165	804
2025	6,249	40	147	109	405	314	11	885	177	400	4,100	100	15,297	89	0	0	16,565	85	6,385	28	-11,665	28	37,671	4,763	12,635	1,542	341	6,661	3,074	24,254	2,783	70,153	86	13,418	83,571	89	8,165	10,145	1,980
2026	0	40	147	109	406	314	11	885	184	400	4,100	100	1,313	89	0	0	15,076	85	6,115	28	-6,621	28	20,732	2,745	12,635	2,478	340	7,167	3,302	25,923	3,106	83,571	89	-5,191	78,380	92	10,145	9,784	-361
2027	6,316	40	147	109	408	314	12	885	191	400	4,100	100	18,299	89	0	0	15,461	84	5,043	28	-7,168	28	42,810	5,119	18,265	3,486	848	7,540	2,460	32,599	3,963	78,380	92	10,211	88,591	91	9,784	10,939	1,156
2028	2,288	40	148	109	409	314	12	885	199	400	4,100	100	5,888	89	0	0	14,581	83	5,909	28	-6,388	28	27,145	3,349	12,653	3,997	959	7,278	2,396	27,283	3,251	88,591	91	-138	88,452	92	10,939	11,038	98
2029	628	40	147	109	410	314	12	885	206	400	4,100	100	1,018	89	0	0	13,788	83	5,351	28	-3,217	28	22,443	2,681	12,635	4,157	668	7,520	2,351	27,331	3,327	88,452	92	-4,888	83,564	91	11,038	10,391	-647
2030	7,768	40	147	109	411	314	12	885	213	400	4,100	100	10,596	89	0	0	16,691	87	6,386	28	-6,483	28	39,843	4,568	12,635	6,759	1,511	7,590	2,348	30,844	3,647	83,564	91	8,999	92,564	90	10,391	11,312	921
2031	0	40	147	109	413	314	12	885	221	400	4,100	100	31	89	0	0	15,167	87	5,727	28	-2,158	28	23,659	2,822	12,635	5,605	949	7,347	2,196	28,733	3,395	92,564	90	-5,073	87,490	90	11,312	10,738	-574
2032	462	40	148	109	414	314	12	885	228	400	4,100	100	605	89	0	0	14,269	86	5,357	28	-1,941	28	23,653	2,794	12,653	4,630	601	7,722	2,213	27,819	3,341	87,490	90	-4,166	83,324	90	10,738	10,192	-546
2033	3,390	40	147	109	415	314	12	885	235	400	4,100	100	9,207	89	0	0	14,985	86	4,529	28	-1,642	28	35,378	4,052	18,265	3,599	451	8,143	2,652	33,111	3,995	83,324	90	2,267	85,592	88	10,192	10,249	57
2034	0	40	147	109	416	314	12	885	243	400	4,100	100	1,291	89	0	0	15,452	86	4,641	28	-826	28	25,475	3,003	18,265	2,424	274	8,055	2,052	31,070	3,688	85,592	88	-5,595	79,996	88	10,249	9,564	-685
2035	1,149	40	147	109	418	314	12	885	250	400	4,100	100	2,830	89	0	0	15,522	86	4,544	28	-670	28	28,302	3,266	18,265	2,279	233	7,800	1,914	30,492	3,617	79,996	88	-2,190	77,807	87	9,564	9,213	-351

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Nitrate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Nitrate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Nitrate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	Nitrate Conc. for Applied Recycled Water [mg/L]	Saugus WRP Infiltration [acre-ft]	Nitrate Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Nitrate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Nitrate Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Nitrate Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Nitrate Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Nitrate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Nitrate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	9	148	44	567	16	0	14	81	51	4,100	20	11,630	20	0	0	14,829	19	5,579	20	-5,182	20	36,646	915	12,832	6,543	1,102	7,025	2,202	29,704	788	78,359	20	6,942	85,301	**20**	2,158	2,285	**127**
2013	318	9	147	44	569	16	0	14	89	51	4,100	20	579	20	0	0	14,012	19	5,283	20	-1,853	20	23,243	623	12,814	5,290	763	7,327	2,152	28,346	739	85,301	20	-5,103	80,198	**20**	2,285	2,169	**-116**
2014	2,643	9	147	44	544	16	0	14	96	51	4,100	20	9,247	20	0	0	14,762	19	4,371	20	-1,307	20	34,603	891	18,418	4,129	642	8,008	1,988	33,184	880	80,198	20	1,418	81,617	**20**	2,169	2,180	**11**
2015	10,432	9	147	44	520	16	0	14	103	51	4,100	20	7,519	20	0	0	14,876	18	5,444	20	-2,935	20	40,207	910	12,763	6,633	1,215	7,370	2,077	30,058	770	81,617	20	10,149	91,766	**19**	2,180	2,319	**139**
2016	0	9	148	44	496	16	0	14	111	51	4,100	20	0	20	0	0	15,133	19	5,612	20	-1,341	20	24,259	645	12,755	6,166	1,189	7,743	2,067	29,920	726	91,766	19	-5,661	86,105	**19**	2,319	2,238	**-81**
2017	0	9	147	44	472	16	0	14	118	51	4,100	20	915	20	0	0	15,667	19	4,660	20	848	20	26,927	722	18,342	3,885	533	8,261	1,907	32,928	842	86,105	19	-6,001	80,104	**19**	2,238	2,118	**-120**
2018	2,110	9	147	44	447	16	0	14	125	51	4,100	20	6,575	20	0	0	15,809	19	4,603	20	-1,083	20	32,834	848	18,316	3,363	368	8,124	1,874	32,045	837	80,104	19	788	80,893	**19**	2,118	2,128	**11**
2019	307	9	147	44	423	16	0	14	133	51	4,100	20	1,229	20	0	0	14,351	19	5,266	20	-3,014	20	22,941	610	12,661	3,153	354	7,742	2,770	26,679	693	80,893	19	-3,738	77,155	**20**	2,128	2,046	**-82**
2020	1,226	9	148	44	399	16	1	14	140	51	4,100	20	2,842	20	0	0	15,098	19	4,526	20	-549	20	27,931	729	18,291	1,993	233	8,101	3,847	32,465	855	77,155	20	-4,534	72,621	**19**	2,046	1,921	**-126**
2021	0	9	147	44	400	16	5	14	147	51	4,100	20	1,562	20	0	0	15,548	19	4,606	20	-1,231	20	25,285	675	18,265	1,039	145	7,777	2,964	30,191	795	72,621	19	-4,906	67,715	**20**	1,921	1,801	**-119**
2022	0	9	147	44	401	16	8	14	155	51	4,100	20	1,744	20	0	0	15,646	19	4,695	20	-1,738	20	25,157	672	18,265	446	103	7,575	3,913	30,303	803	67,715	20	-5,146	62,569	**20**	1,801	1,670	**-132**
2023	2,579	9	147	44	403	16	10	14	162	51	4,100	20	7,075	20	0	0	15,878	19	4,860	20	-3,762	20	31,453	798	18,265	116	59	7,195	5,828	31,464	838	62,569	20	-11	62,558	**19**	1,670	1,630	**-40**
2024	7,308	9	148	44	404	16	10	14	169	51	4,100	20	11,886	20	0	0	16,430	19	5,093	20	-6,421	20	39,127	930	18,291	89	57	6,910	6,185	31,532	820	62,558	19	7,595	70,153	**18**	1,630	1,740	**110**
2025	6,249	9	147	44	405	16	11	14	177	51	4,100	20	15,297	20	0	0	16,565	19	6,385	20	-11,665	20	37,671	913	12,635	1,542	341	6,661	3,074	24,254	593	70,153	18	13,418	83,571	**18**	1,740	2,060	**320**
2026	0	9	147	44	406	16	11	14	184	51	4,100	20	1,313	20	0	0	15,076	19	6,115	20	-6,621	20	20,732	557	12,635	2,478	340	7,167	3,302	25,923	631	83,571	18	-5,191	78,380	**19**	2,060	1,987	**-74**
2027	6,316	9	147	44	408	16	12	14	191	51	4,100	20	18,299	20	0	0	15,461	19	5,043	20	-7,168	20	42,810	1,058	18,265	3,486	848	7,540	2,460	32,599	805	78,380	19	10,211	88,591	**19**	1,987	2,240	**253**
2028	2,288	9	148	44	409	16	12	14	199	51	4,100	20	5,888	20	0	0	14,581	19	5,909	20	-6,388	20	27,145	698	12,653	3,997	959	7,278	2,396	27,283	666	88,591	19	-138	88,452	**19**	2,240	2,273	**33**
2029	628	9	147	44	410	16	12	14	206	51	4,100	20	1,018	20	0	0	13,788	19	5,351	20	-3,217	20	22,443	599	12,635	4,157	668	7,520	2,351	27,331	685	88,452	19	-4,888	83,564	**19**	2,273	2,187	**-86**
2030	7,768	9	147	44	411	16	12	14	213	51	4,100	20	10,596	20	0	0	16,691	19	6,386	20	-6,483	20	39,843	962	12,635	6,759	1,511	7,590	2,348	30,844	768	83,564	19	8,999	92,564	**19**	2,187	2,382	**195**
2031	0	9	147	44	413	16	12	14	221	51	4,100	20	31	20	0	0	15,167	20	5,727	20	-2,158	20	23,659	646	12,635	5,605	949	7,347	2,196	28,733	715	92,564	19	-5,073	87,490	**19**	2,382	2,313	**-69**
2032	462	9	148	44	414	16	12	14	228	51	4,100	20	605	20	0	0	14,269	20	5,357	20	-1,941	20	23,653	639	12,653	4,630	601	7,722	2,213	27,819	720	87,490	19	-4,166	83,324	**20**	2,313	2,232	**-80**
2033	3,390	9	147	44	415	16	12	14	235	51	4,100	20	9,207	20	0	0	14,985	19	4,529	20	-1,642	20	35,378	908	18,265	3,599	451	8,143	2,652	33,111	875	83,324	20	2,267	85,592	**19**	2,232	2,265	**33**
2034	0	9	147	44	416	16	12	14	243	51	4,100	20	1,291	20	0	0	15,452	19	4,641	20	-826	20	25,475	692	18,265	2,424	274	8,055	2,052	31,070	815	85,592	19	-5,595	79,996	**20**	2,265	2,142	**-123**
2035	1,149	9	147	44	418	16	12	14	250	51	4,100	20	2,830	20	0	0	15,522	19	4,544	20	-670	20	28,302	749	18,265	2,279	233	7,800	1,914	30,492	810	79,996	20	-2,190	77,807	**20**	2,142	2,081	**-61**

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-48d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	Sulfate Conc. for Applied Recycled Water [mg/L]	Saugus WRP Infiltration [acre-ft]	Sulfate Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Sulfate Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Sulfate Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Sulfate Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]
2012	4,893	40	148	143	567	413	0	1,235	81	558	4,100	179	11,630	179	0	0	14,829	152	5,579	235	-5,182	235	36,646	7,679
2013	318	40	147	143	569	413	0	1,235	89	558	4,100	179	579	179	0	0	14,012	157	5,283	235	-1,853	235	23,243	5,651
2014	2,643	40	147	143	544	413	0	1,235	96	558	4,100	179	9,247	179	0	0	14,762	153	4,371	235	-1,307	235	34,603	7,836
2015	10,432	40	147	143	520	413	0	1,235	103	558	4,100	179	7,519	179	0	0	14,876	137	5,444	235	-2,935	235	40,207	7,352
2016	0	40	148	143	496	413	0	1,235	111	558	4,100	179	0	179	0	0	15,133	145	5,612	235	-1,341	235	24,259	5,734
2017	0	40	147	143	472	413	0	1,235	118	558	4,100	179	915	179	0	0	15,667	150	4,660	235	848	235	26,927	6,545
2018	2,110	40	147	143	447	413	0	1,235	125	558	4,100	179	6,575	179	0	0	15,809	149	4,603	235	-1,083	235	32,834	7,405
2019	307	40	147	143	423	413	0	1,235	133	558	4,100	179	1,229	179	0	0	14,351	153	5,266	235	-3,014	235	22,941	5,381
2020	1,226	40	148	143	399	413	1	1,235	140	558	4,100	179	2,842	179	0	0	15,098	152	4,526	235	-549	235	27,931	6,502
2021	0	40	147	143	400	413	5	1,235	147	558	4,100	179	1,562	179	0	0	15,548	153	4,606	235	-1,231	235	25,285	6,060
2022	0	40	147	143	401	413	8	1,235	155	558	4,100	179	1,744	179	0	0	15,646	153	4,695	235	-1,738	235	25,157	6,000
2023	2,579	40	147	143	403	413	10	1,235	162	558	4,100	179	7,075	179	0	0	15,878	148	4,860	235	-3,762	235	31,453	6,789
2024	7,308	40	148	143	404	413	10	1,235	169	558	4,100	179	11,886	179	0	0	16,430	139	5,093	235	-6,421	235	39,127	7,353
2025	6,249	40	147	143	405	413	11	1,235	177	558	4,100	179	15,297	179	0	0	16,565	136	6,385	235	-11,665	235	37,671	6,843
2026	0	40	147	143	406	413	11	1,235	184	558	4,100	179	1,313	179	0	0	15,076	144	6,115	235	-6,621	235	20,732	4,520
2027	6,316	40	147	143	408	413	12	1,235	191	558	4,100	179	18,299	179	0	0	15,461	141	5,043	235	-7,168	235	42,810	8,477
2028	2,288	40	148	143	409	413	12	1,235	199	558	4,100	179	5,888	179	0	0	14,581	145	5,909	235	-6,388	235	27,145	5,706
2029	628	40	147	143	410	413	12	1,235	206	558	4,100	179	1,018	179	0	0	13,788	150	5,351	235	-3,217	235	22,443	5,202
2030	7,768	40	147	143	411	413	12	1,235	213	558	4,100	179	10,596	179	0	0	16,691	139	6,386	235	-6,483	235	39,843	7,543
2031	0	40	147	143	413	413	12	1,235	221	558	4,100	179	31	179	0	0	15,167	145	5,727	235	-2,158	235	23,659	5,582
2032	462	40	148	143	414	413	12	1,235	228	558	4,100	179	605	179	0	0	14,269	149	5,357	235	-1,941	235	23,653	5,600
2033	3,390	40	147	143	415	413	12	1,235	235	558	4,100	179	9,207	179	0	0	14,985	146	4,529	235	-1,642	235	35,378	7,768
2034	0	40	147	143	416	413	12	1,235	243	558	4,100	179	1,291	179	0	0	15,452	150	4,641	235	-826	235	25,475	6,135
2035	1,149	40	147	143	418	413	12	1,235	250	558	4,100	179	2,830	179	0	0	15,522	149	4,544	235	-670	235	28,302	6,610

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,832	6,543	1,102	7,025	2,202	29,704	7,453	78,359	192	6,942	85,301	**178**	20,419	20,645	**226**
2013	12,814	5,290	763	7,327	2,152	28,346	6,676	85,301	178	-5,103	80,198	**180**	20,645	19,621	**-1,025**
2014	18,418	4,129	642	8,008	1,988	33,184	7,962	80,198	180	1,418	81,617	**176**	19,621	19,496	**-125**
2015	12,763	6,633	1,215	7,370	2,077	30,058	6,890	81,617	176	10,149	91,766	**160**	19,496	19,958	**463**
2016	12,755	6,166	1,189	7,743	2,067	29,920	6,249	91,766	160	-5,661	86,105	**166**	19,958	19,443	**-515**
2017	18,342	3,885	533	8,261	1,907	32,928	7,315	86,105	166	-6,001	80,104	**171**	19,443	18,673	**-770**
2018	18,316	3,363	368	8,124	1,874	32,045	7,384	80,104	171	788	80,893	**170**	18,673	18,694	**21**
2019	12,661	3,153	354	7,742	2,770	26,679	6,084	80,893	170	-3,738	77,155	**172**	18,694	17,992	**-702**
2020	18,291	1,993	233	8,101	3,847	32,465	7,516	77,155	172	-4,534	72,621	**172**	17,992	16,978	**-1,014**
2021	18,265	1,039	145	7,777	2,964	30,191	7,024	72,621	172	-4,906	67,715	**174**	16,978	16,013	**-964**
2022	18,265	446	103	7,575	3,913	30,303	7,142	67,715	174	-5,146	62,569	**175**	16,013	14,872	**-1,142**
2023	18,265	116	59	7,195	5,828	31,464	7,464	62,569	175	-11	62,558	**167**	14,872	14,196	**-675**
2024	18,291	89	57	6,910	6,185	31,532	7,143	62,558	167	7,595	70,153	**151**	14,196	14,407	**211**
2025	12,635	1,542	341	6,661	3,074	24,254	4,911	70,153	151	13,418	83,571	**144**	14,407	16,339	**1,932**
2026	12,635	2,478	340	7,167	3,302	25,923	5,002	83,571	144	-5,191	78,380	**149**	16,339	15,857	**-482**
2027	18,265	3,486	848	7,540	2,460	32,599	6,424	78,380	149	10,211	88,591	**149**	15,857	17,911	**2,054**
2028	12,653	3,997	959	7,278	2,396	27,283	5,322	88,591	149	-138	88,452	**152**	17,911	18,295	**384**
2029	12,635	4,157	668	7,520	2,351	27,331	5,515	88,452	152	-4,888	83,564	**158**	18,295	17,982	**-312**
2030	12,635	6,759	1,511	7,590	2,348	30,844	6,312	83,564	158	8,999	92,564	**153**	17,982	19,214	**1,231**
2031	12,635	5,605	949	7,347	2,196	28,733	5,767	92,564	153	-5,073	87,490	**160**	19,214	19,028	**-185**
2032	12,653	4,630	601	7,722	2,213	27,819	5,920	87,490	160	-4,166	83,324	**165**	19,028	18,709	**-319**
2033	18,265	3,599	451	8,143	2,652	33,111	7,333	83,324	165	2,267	85,592	**164**	18,709	19,144	**435**
2034	18,265	2,424	274	8,055	2,052	31,070	6,888	85,592	164	-5,595	79,996	**169**	19,144	18,391	**-753**
2035	18,265	2,279	233	7,800	1,914	30,492	6,956	79,996	169	-2,190	77,807	**171**	18,391	18,045	**-346**

Table I-49a

Projected TDS Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	TDS Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	TDS Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	TDS Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	TDS Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	TDS Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	TDS Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	TDS Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of TDS [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of TDS [tons]	Starting Storage [acre-ft]	Starting Concentrati on [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentr ation [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,402	100	102	758	0	2,186	0	5,245	15,653	762	1,705	274	0	0	7,025	917	7,024	550	35,911	31,567	12,272	10,864	2,012	6,573	961	32,681	32,258	50,440	774	3,230	53,670	718	53,052	52,362	-690
2013	286	100	102	758	0	2,186	0	5,245	7,356	762	1,700	274	0	0	7,327	917	10,093	550	26,866	25,082	12,251	8,774	1,727	6,438	802	29,991	27,575	53,670	718	-3,126	50,544	726	52,362	49,869	-2,493
2014	2,378	100	102	758	0	2,186	0	5,245	11,985	762	1,700	274	0	0	8,008	917	8,591	550	32,764	29,887	14,271	8,078	1,748	6,487	675	31,259	29,116	50,544	726	1,506	52,050	716	49,869	50,640	771
2015	9,386	100	102	758	0	2,186	0	5,245	9,569	762	1,700	274	0	0	7,370	917	10,328	550	38,455	28,840	12,251	12,219	2,038	6,694	717	33,918	31,017	52,050	716	4,537	56,587	630	50,640	48,463	-2,177
2016	0	100	102	758	0	2,186	0	5,245	5,536	762	1,705	274	0	0	7,743	917	11,610	550	26,696	24,812	12,272	9,022	1,783	6,475	646	30,200	24,337	56,587	630	-3,503	53,083	678	48,463	48,938	475
2017	0	100	102	758	0	2,186	0	5,245	6,015	762	1,700	274	0	0	8,261	917	11,431	550	27,509	25,818	14,271	7,323	1,633	6,432	573	30,231	26,365	53,083	678	-2,722	50,362	707	48,938	48,391	-547
2018	1,899	100	102	758	0	2,186	5	5,245	10,222	762	1,700	274	0	0	8,124	917	9,355	550	31,407	28,750	14,271	7,442	1,652	6,480	589	30,434	27,656	50,362	707	973	51,335	709	48,391	49,486	1,094
2019	277	100	102	758	0	2,186	21	5,245	6,895	762	1,700	274	0	0	7,742	917	9,828	550	26,566	25,075	12,251	6,896	1,609	6,430	688	27,874	25,319	51,335	709	-1,308	50,026	724	49,486	49,242	-244
2020	1,103	100	102	758	0	2,186	48	5,245	9,271	762	1,705	274	0	0	8,101	917	8,519	550	28,850	27,311	14,295	5,888	1,550	6,464	941	29,137	27,155	50,026	724	-288	49,739	730	49,242	49,398	156
2021	0	100	102	758	0	2,186	91	5,245	6,889	762	1,700	274	0	0	7,777	917	9,150	550	25,710	25,062	14,271	4,941	1,480	6,416	775	27,883	26,221	49,739	730	-2,173	47,566	746	49,398	48,238	-1,160
2022	0	100	102	758	4	2,186	126	5,245	7,206	762	1,700	274	0	0	7,575	917	8,559	550	25,273	24,962	14,271	4,345	1,404	6,407	973	27,400	26,363	47,566	746	-2,127	45,439	758	48,238	46,838	-1,400
2023	2,320	100	102	758	10	2,186	138	5,245	11,028	762	1,700	274	0	0	7,195	917	6,393	550	28,887	27,245	14,271	4,218	1,324	6,466	1,946	28,226	27,730	45,439	758	661	46,100	740	46,838	46,353	-485
2024	6,575	100	102	758	15	2,186	146	5,245	18,418	762	1,705	274	0	0	6,910	917	3,779	550	37,650	33,246	14,295	5,446	1,429	6,617	2,336	30,124	28,852	46,100	740	7,526	53,627	696	46,353	50,747	4,393
2025	5,623	100	102	758	21	2,186	152	5,245	13,437	762	1,700	274	0	0	6,661	917	6,241	550	33,937	29,545	12,251	7,616	1,760	6,601	912	29,141	25,911	53,627	696	4,796	58,423	685	50,747	54,381	3,634
2026	0	100	102	758	26	2,186	157	5,245	7,608	762	1,700	274	0	0	7,167	917	8,447	550	25,208	25,071	12,251	6,603	1,609	6,433	908	27,805	24,383	58,423	685	-2,596	55,826	725	54,381	55,068	687
2027	5,682	100	102	758	32	2,186	162	5,245	14,439	762	1,700	274	0	0	7,540	917	7,491	550	37,149	32,724	14,271	9,206	1,808	6,592	773	32,649	30,422	55,826	725	4,500	60,326	699	55,068	57,371	2,302
2028	2,058	100	102	758	37	2,186	169	5,245	9,649	762	1,705	274	0	0	7,278	917	8,907	550	29,906	28,066	12,272	8,675	1,767	6,510	736	29,960	26,812	60,326	699	-54	60,273	715	57,371	58,625	1,255
2029	565	100	102	758	43	2,186	174	5,245	8,003	762	1,700	274	0	0	7,520	917	9,724	550	27,831	27,126	12,251	8,168	1,684	6,452	663	29,217	26,781	60,273	715	-1,386	58,886	737	58,625	58,970	345
2030	6,989	100	102	758	49	2,186	180	5,245	12,442	762	1,700	274	0	0	7,590	917	8,826	550	37,878	32,072	12,251	11,423	1,914	6,638	679	32,905	31,035	58,886	737	4,973	63,859	691	58,970	60,007	1,036
2031	0	100	102	758	54	2,186	184	5,245	9,647	762	1,700	274	0	0	7,347	917	9,571	550	28,606	28,527	12,251	9,091	1,723	6,445	739	30,249	26,805	63,859	691	-1,643	62,216	730	60,007	61,728	1,722
2032	416	100	102	758	60	2,186	188	5,245	8,310	762	1,705	274	0	0	7,722	917	10,062	550	28,565	28,077	12,272	8,368	1,685	6,462	609	29,396	27,494	62,216	730	-831	61,386	747	61,728	62,311	583
2033	3,050	100	102	758	65	2,186	191	5,245	11,587	762	1,700	274	0	0	8,143	917	8,484	550	33,322	31,209	14,271	8,159	1,690	6,514	732	31,366	30,124	61,386	747	1,955	63,341	736	62,311	63,396	1,085
2034	0	100	102	758	71	2,186	192	5,245	6,277	762	1,700	274	0	0	8,055	917	10,772	550	27,169	26,916	14,271	6,416	1,594	6,430	583	29,294	27,724	63,341	736	-2,126	61,216	752	63,396	62,587	-809
2035	1,034	100	102	758	76	2,186	192	5,245	8,213	762	1,700	274	0	0	7,800	917	9,921	550	29,038	28,124	14,271	6,593	1,608	6,451	574	29,496	28,513	61,216	752	-458	60,757	753	62,587	62,198	-389

Projected Chloride Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	Chloride Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,402	40	102	107	0	307	0	885	15,653	100	1,705	70	0	0	7,025	96	7,024	15	35,911	3,604	12,272	10,864	2,012	6,573	961	32,681	3,563	50,440	85	3,230	53,670	81	5,859	5,901	42
2013	286	40	102	107	0	307	0	885	7,356	100	1,700	70	0	0	7,327	96	10,093	15	26,866	2,354	12,251	8,774	1,727	6,438	802	29,991	3,107	53,670	81	-3,126	50,544	75	5,901	5,147	-754
2014	2,378	40	102	107	0	307	0	885	11,985	100	1,700	70	0	0	8,008	96	8,591	15	32,764	3,155	14,271	8,078	1,748	6,487	675	31,259	3,005	50,544	75	1,506	52,050	75	5,147	5,297	150
2015	9,386	40	102	107	0	307	0	885	9,569	100	1,700	70	0	0	7,370	96	10,328	15	38,455	3,160	12,251	12,219	2,038	6,694	717	33,918	3,244	52,050	75	4,537	56,587	68	5,297	5,213	-85
2016	0	40	102	107	0	307	0	885	5,536	100	1,705	70	0	0	7,743	96	11,610	15	26,696	2,176	12,272	9,022	1,783	6,475	646	30,200	2,618	56,587	68	-3,503	53,083	66	5,213	4,771	-441
2017	0	40	102	107	0	307	0	885	6,015	100	1,700	70	0	0	8,261	96	11,431	15	27,509	2,305	14,271	7,323	1,633	6,432	573	30,231	2,571	53,083	66	-2,722	50,362	66	4,771	4,506	-266
2018	1,899	40	102	107	0	307	5	885	10,222	100	1,700	70	0	0	8,124	96	9,355	15	31,407	2,927	14,271	7,442	1,652	6,480	589	30,434	2,575	50,362	66	973	51,335	70	4,506	4,857	351
2019	277	40	102	107	0	307	21	885	6,895	100	1,700	70	0	0	7,742	96	9,828	15	26,566	2,365	12,251	6,896	1,609	6,430	688	27,874	2,485	51,335	70	-1,308	50,026	70	4,857	4,737	-120
2020	1,103	40	102	107	0	307	48	885	9,271	100	1,705	70	0	0	8,101	96	8,519	15	28,850	2,786	14,295	5,888	1,550	6,464	941	29,137	2,612	50,026	70	-288	49,739	73	4,737	4,911	174
2021	0	40	102	107	0	307	91	885	6,889	100	1,700	70	0	0	7,777	96	9,150	15	25,710	2,423	14,271	4,941	1,480	6,416	775	27,883	2,607	49,739	73	-2,173	47,566	73	4,911	4,728	-184
2022	0	40	102	107	4	307	126	885	7,206	100	1,700	70	0	0	7,575	96	8,559	15	25,273	2,473	14,271	4,345	1,404	6,407	973	27,400	2,584	47,566	73	-2,127	45,439	75	4,728	4,616	-111
2023	2,320	40	102	107	10	307	138	885	11,028	100	1,700	70	0	0	7,195	96	6,393	15	28,887	3,041	14,271	4,218	1,324	6,466	1,946	28,226	2,733	45,439	75	661	46,100	79	4,616	4,925	308
2024	6,575	40	102	107	15	307	146	885	18,418	100	1,705	70	0	0	6,910	96	3,779	15	37,650	4,199	14,295	5,446	1,429	6,617	2,336	30,124	3,065	46,100	79	7,526	53,627	83	4,925	6,059	1,134
2025	5,623	40	102	107	21	307	152	885	13,437	100	1,700	70	0	0	6,661	96	6,241	15	33,937	3,497	12,251	7,616	1,760	6,601	912	29,141	3,094	53,627	83	4,796	58,423	81	6,059	6,463	404
2026	0	40	102	107	26	307	157	885	7,608	100	1,700	70	0	0	7,167	96	8,447	15	25,208	2,518	12,251	6,603	1,609	6,433	908	27,805	2,898	58,423	81	-2,596	55,826	80	6,463	6,083	-380
2027	5,682	40	102	107	32	307	162	885	14,439	100	1,700	70	0	0	7,540	96	7,491	15	37,149	3,793	14,271	9,206	1,808	6,592	773	32,649	3,360	55,826	80	4,500	60,326	79	6,083	6,516	433
2028	2,058	40	102	107	37	307	169	885	9,649	100	1,705	70	0	0	7,278	96	8,907	15	29,906	2,950	12,272	8,675	1,767	6,510	736	29,960	3,045	60,326	79	-54	60,273	78	6,516	6,421	-95
2029	565	40	102	107	43	307	174	885	8,003	100	1,700	70	0	0	7,520	96	9,724	15	27,831	2,702	12,251	8,168	1,684	6,452	663	29,217	2,933	60,273	78	-1,386	58,886	77	6,421	6,190	-231
2030	6,989	40	102	107	49	307	180	885	12,442	100	1,700	70	0	0	7,590	96	8,826	15	37,878	3,655	12,251	11,423	1,914	6,638	679	32,905	3,258	58,886	77	4,973	63,859	76	6,190	6,588	397
2031	0	40	102	107	54	307	184	885	9,647	100	1,700	70	0	0	7,347	96	9,571	15	28,606	2,886	12,251	9,091	1,723	6,445	739	30,249	2,943	63,859	76	-1,643	62,216	77	6,588	6,531	-57
2032	416	40	102	107	60	307	188	885	8,310	100	1,705	70	0	0	7,722	96	10,062	15	28,565	2,793	12,272	8,368	1,685	6,462	609	29,396	2,909	62,216	77	-831	61,386	77	6,531	6,415	-116
2033	3,050	40	102	107	65	307	191	885	11,587	100	1,700	70	0	0	8,143	96	8,484	15	33,322	3,410	14,271	8,159	1,690	6,514	732	31,366	3,101	61,386	77	1,955	63,341	78	6,415	6,724	308
2034	0	40	102	107	71	307	192	885	6,277	100	1,700	70	0	0	8,055	96	10,772	15	27,169	2,560	14,271	6,416	1,594	6,430	583	29,294	2,940	63,341	78	-2,126	61,216	76	6,724	6,343	-380
2035	1,034	40	102	107	76	307	192	885	8,213	100	1,700	70	0	0	7,800	96	9,921	15	29,038	2,831	14,271	6,593	1,608	6,451	574	29,496	2,890	61,216	76	-458	60,757	76	6,343	6,285	-59

Table I-49c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Inflow From MZ4	Nitrate Conc. for Inflow From MZ4	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Downward Leakage to Saugus	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	4,402	9	102	41	0	15	0	14	15,653	7	1,705	3	0	0	7,025	16	7,024	10	35,911	461	12,272	10,864	2,012	6,573	961	32,681	455	50,440	11	3,230	53,670	10	748	755	6
2013	286	9	102	41	0	15	0	14	7,356	7	1,700	3	0	0	7,327	16	10,093	10	26,866	382	12,251	8,774	1,727	6,438	802	29,991	397	53,670	10	-3,126	50,544	11	755	739	-16
2014	2,378	9	102	41	0	15	0	14	11,985	7	1,700	3	0	0	8,008	16	8,591	10	32,764	445	14,271	8,078	1,748	6,487	675	31,259	431	50,544	11	1,506	52,050	11	739	752	14
2015	9,386	9	102	41	0	15	0	14	9,569	7	1,700	3	0	0	7,370	16	10,328	10	38,455	516	12,251	12,219	2,038	6,694	717	33,918	461	52,050	11	4,537	56,587	10	752	807	55
2016	0	9	102	41	0	15	0	14	5,536	7	1,705	3	0	0	7,743	16	11,610	10	26,696	390	12,272	9,022	1,783	6,475	646	30,200	405	56,587	10	-3,503	53,083	11	807	792	-15
2017	0	9	102	41	0	15	0	14	6,015	7	1,700	3	0	0	8,261	16	11,431	10	27,509	404	14,271	7,323	1,633	6,432	573	30,231	427	53,083	11	-2,722	50,362	11	792	769	-23
2018	1,899	9	102	41	0	15	5	14	10,222	7	1,700	3	0	0	8,124	16	9,355	10	31,407	435	14,271	7,442	1,652	6,480	589	30,434	440	50,362	11	973	51,335	11	769	765	-4
2019	277	9	102	41	0	15	21	14	6,895	7	1,700	3	0	0	7,742	16	9,828	10	26,566	383	12,251	6,896	1,609	6,430	688	27,874	391	51,335	11	-1,308	50,026	11	765	756	-9
2020	1,103	9	102	41	0	15	48	14	9,271	7	1,705	3	0	0	8,101	16	8,519	10	28,850	406	14,295	5,888	1,550	6,464	941	29,137	417	50,026	11	-288	49,739	11	756	745	-11
2021	0	9	102	41	0	15	91	14	6,889	7	1,700	3	0	0	7,777	16	9,150	10	25,710	372	14,271	4,941	1,480	6,416	775	27,883	396	49,739	11	-2,173	47,566	11	745	722	-23
2022	0	9	102	41	4	15	126	14	7,206	7	1,700	3	0	0	7,575	16	8,559	10	25,273	364	14,271	4,345	1,404	6,407	973	27,400	395	47,566	11	-2,127	45,439	11	722	691	-31
2023	2,320	9	102	41	10	15	138	14	11,028	7	1,700	3	0	0	7,195	16	6,393	10	28,887	390	14,271	4,218	1,324	6,466	1,946	28,226	409	45,439	11	661	46,100	11	691	672	-19
2024	6,575	9	102	41	15	15	146	14	18,418	7	1,705	3	0	0	6,910	16	3,779	10	37,650	470	14,295	5,446	1,429	6,617	2,336	30,124	419	46,100	11	7,526	53,627	10	672	724	52
2025	5,623	9	102	41	21	15	152	14	13,437	7	1,700	3	0	0	6,661	16	6,241	10	33,937	440	12,251	7,616	1,760	6,601	912	29,141	370	53,627	10	4,796	58,423	10	724	794	70
2026	0	9	102	41	26	15	157	14	7,608	7	1,700	3	0	0	7,167	16	8,447	10	25,208	358	12,251	6,603	1,609	6,433	908	27,805	356	58,423	10	-2,596	55,826	10	794	796	2
2027	5,682	9	102	41	32	15	162	14	14,439	7	1,700	3	0	0	7,540	16	7,491	10	37,149	486	14,271	9,206	1,808	6,592	773	32,649	440	55,826	10	4,500	60,326	10	796	843	47
2028	2,058	9	102	41	37	15	169	14	9,649	7	1,705	3	0	0	7,278	16	8,907	10	29,906	411	12,272	8,675	1,767	6,510	736	29,960	394	60,326	10	-54	60,273	10	843	860	17
2029	565	9	102	41	43	15	174	14	8,003	7	1,700	3	0	0	7,520	16	9,724	10	27,831	394	12,251	8,168	1,684	6,452	663	29,217	393	60,273	10	-1,386	58,886	11	860	862	1
2030	6,989	9	102	41	49	15	180	14	12,442	7	1,700	3	0	0	7,590	16	8,826	10	37,878	503	12,251	11,423	1,914	6,638	679	32,905	453	58,886	11	4,973	63,859	10	862	911	50
2031	0	9	102	41	54	15	184	14	9,647	7	1,700	3	0	0	7,347	16	9,571	10	28,606	398	12,251	9,091	1,723	6,445	739	30,249	407	63,859	10	-1,643	62,216	11	911	902	-9
2032	416	9	102	41	60	15	188	14	8,310	7	1,705	3	0	0	7,722	16	10,062	10	28,565	405	12,272	8,368	1,685	6,462	609	29,396	402	62,216	11	-831	61,386	11	902	905	3
2033	3,050	9	102	41	65	15	191	14	11,587	7	1,700	3	0	0	8,143	16	8,484	10	33,322	456	14,271	8,159	1,690	6,514	732	31,366	438	61,386	11	1,955	63,341	11	905	923	18
2034	0	9	102	41	71	15	192	14	6,277	7	1,700	3	0	0	8,055	16	10,772	10	27,169	398	14,271	6,416	1,594	6,430	583	29,294	404	63,341	11	-2,126	61,216	11	923	918	-6
2035	1,034	9	102	41	76	15	192	14	8,213	7	1,700	3	0	0	7,800	16	9,921	10	29,038	412	14,271	6,593	1,608	6,451	574	29,496	418	61,216	11	-458	60,757	11	918	911	-6

Table I-49d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 5 (Castaic Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Sulfate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Inflow From MZ4 [acre-ft]	Sulfate Conc. for Inflow From MZ4 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,402	40	102	144	0	416	0	1,235	15,653	254	1,705	51	0	0	7,025	295	7,024	235	35,911	10,846	12,272	10,864	2,012	6,573	961	32,681	10,464	50,440	251	3,230	53,670	241	17,209	17,591	382
2013	286	40	102	144	0	416	0	1,235	7,356	254	1,700	51	0	0	7,327	295	10,093	235	26,866	8,858	12,251	8,774	1,727	6,438	802	29,991	9,264	53,670	241	-3,126	50,544	250	17,591	17,186	-406
2014	2,378	40	102	144	0	416	0	1,235	11,985	254	1,700	51	0	0	8,008	295	8,591	235	32,764	10,364	14,271	8,078	1,748	6,487	675	31,259	10,034	50,544	250	1,506	52,050	247	17,186	17,515	330
2015	9,386	40	102	144	0	416	0	1,235	9,569	254	1,700	51	0	0	7,370	295	10,328	235	38,455	10,209	12,251	12,219	2,038	6,694	717	33,918	10,728	52,050	247	4,537	56,587	221	17,515	16,997	-519
2016	0	40	102	144	0	416	0	1,235	5,536	254	1,705	51	0	0	7,743	295	11,610	235	26,696	8,866	12,272	9,022	1,783	6,475	646	30,200	8,535	56,587	221	-3,503	53,083	240	16,997	17,327	331
2017	0	40	102	144	0	416	0	1,235	6,015	254	1,700	51	0	0	8,261	295	11,431	235	27,509	9,182	14,271	7,323	1,633	6,432	573	30,231	9,335	53,083	240	-2,722	50,362	251	17,327	17,174	-153
2018	1,899	40	102	144	0	416	5	1,235	10,222	254	1,700	51	0	0	8,124	295	9,355	235	31,407	10,028	14,271	7,442	1,652	6,480	589	30,434	9,815	50,362	251	973	51,335	249	17,174	17,387	214
2019	277	40	102	144	0	416	21	1,235	6,895	254	1,700	51	0	0	7,742	295	9,828	235	26,566	8,816	12,251	6,896	1,609	6,430	688	27,874	8,896	51,335	249	-1,308	50,026	254	17,387	17,308	-80
2020	1,103	40	102	144	0	416	48	1,235	9,271	254	1,705	51	0	0	8,101	295	8,519	235	28,850	9,453	14,295	5,888	1,550	6,464	941	29,137	9,544	50,026	254	-288	49,739	255	17,308	17,216	-92
2021	0	40	102	144	0	416	91	1,235	6,889	254	1,700	51	0	0	7,777	295	9,150	235	25,710	8,713	14,271	4,941	1,480	6,416	775	27,883	9,139	49,739	255	-2,173	47,566	260	17,216	16,790	-426
2022	0	40	102	144	4	416	126	1,235	7,206	254	1,700	51	0	0	7,575	295	8,559	235	25,273	8,614	14,271	4,345	1,404	6,407	973	27,400	9,176	47,566	260	-2,127	45,439	263	16,790	16,229	-562
2023	2,320	40	102	144	10	416	138	1,235	11,028	254	1,700	51	0	0	7,195	295	6,393	235	28,887	9,239	14,271	4,218	1,324	6,466	1,946	28,226	9,608	45,439	263	661	46,100	253	16,229	15,860	-369
2024	6,575	40	102	144	15	416	146	1,235	18,418	254	1,705	51	0	0	6,910	295	3,779	235	37,650	11,090	14,295	5,446	1,429	6,617	2,336	30,124	9,872	46,100	253	7,526	53,627	234	15,860	17,078	1,218
2025	5,623	40	102	144	21	416	152	1,235	13,437	254	1,700	51	0	0	6,661	295	6,241	235	33,937	10,018	12,251	7,616	1,760	6,601	912	29,141	8,720	53,627	234	4,796	58,423	231	17,078	18,376	1,298
2026	0	40	102	144	26	416	157	1,235	7,608	254	1,700	51	0	0	7,167	295	8,447	235	25,208	8,618	12,251	6,603	1,609	6,433	908	27,805	8,240	58,423	231	-2,596	55,826	247	18,376	18,755	378
2027	5,682	40	102	144	32	416	162	1,235	14,439	254	1,700	51	0	0	7,540	295	7,491	235	37,149	11,142	14,271	9,206	1,808	6,592	773	32,649	10,361	55,826	247	4,500	60,326	238	18,755	19,536	781
2028	2,058	40	102	144	37	416	169	1,235	9,649	254	1,705	51	0	0	7,278	295	8,907	235	29,906	9,653	12,272	8,675	1,767	6,510	736	29,960	9,130	60,326	238	-54	60,273	245	19,536	20,058	523
2029	565	40	102	144	43	416	174	1,235	8,003	254	1,700	51	0	0	7,520	295	9,724	235	27,831	9,373	12,251	8,168	1,684	6,452	663	29,217	9,163	60,273	245	-1,386	58,886	253	20,058	20,269	210
2030	6,989	40	102	144	49	416	180	1,235	12,442	254	1,700	51	0	0	7,590	295	8,826	235	37,878	11,010	12,251	11,423	1,914	6,638	679	32,905	10,667	58,886	253	4,973	63,859	237	20,269	20,611	343
2031	0	40	102	144	54	416	184	1,235	9,647	254	1,700	51	0	0	7,347	295	9,571	235	28,606	9,815	12,251	9,091	1,723	6,445	739	30,249	9,207	63,859	237	-1,643	62,216	251	20,611	21,219	608
2032	416	40	102	144	60	416	188	1,235	8,310	254	1,705	51	0	0	7,722	295	10,062	235	28,565	9,693	12,272	8,368	1,685	6,462	609	29,396	9,451	62,216	251	-831	61,386	257	21,219	21,461	242
2033	3,050	40	102	144	65	416	191	1,235	11,587	254	1,700	51	0	0	8,143	295	8,484	235	33,322	10,640	14,271	8,159	1,690	6,514	732	31,366	10,375	61,386	257	1,955	63,341	252	21,461	21,726	264
2034	0	40	102	144	71	416	192	1,235	6,277	254	1,700	51	0	0	8,055	295	10,772	235	27,169	9,340	14,271	6,416	1,594	6,430	583	29,294	9,501	63,341	252	-2,126	61,216	259	21,726	21,565	-161
2035	1,034	40	102	144	76	416	192	1,235	8,213	254	1,700	51	0	0	7,800	295	9,921	235	29,038	9,694	14,271	6,593	1,608	6,451	574	29,496	9,824	61,216	259	-458	60,757	259	21,565	21,435	-130

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-50a

Projected TDS Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	TDS Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	TDS Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	TDS Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	TDS Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	TDS Conc. for Stream Leakage	Castaic Dam Underflow	TDS Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	TDS Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TDS Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of TDS	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of TDS	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	100	1,254	786	2,787	2,267	0	5,245	10	669	0	0	0	0	3,836	816	36,956	18,145	12,841	0	2,499	0	2,751	18,090	13,831	1,650,000	652	18,866	1,668,866	647	1,463,642	1,467,956	4,314
2013	1,890	100	1,250	786	2,834	2,267	0	5,245	0	669	0	0	0	0	-3,706	751	2,269	6,544	12,814	0	1,571	0	2,649	17,033	13,601	1,668,866	647	-14,764	1,654,102	650	1,467,956	1,460,900	-7,056
2014	15,703	100	1,250	786	2,882	2,267	0	5,245	0	669	0	0	0	0	-1,709	777	18,126	10,549	12,814	0	1,717	0	2,727	17,258	13,726	1,654,102	650	868	1,654,969	648	1,460,900	1,457,723	-3,177
2015	61,979	100	1,250	786	2,929	2,267	0	5,245	7	669	0	0	0	0	-578	760	65,587	18,201	12,814	0	3,511	0	2,815	19,140	13,766	1,654,969	648	46,447	1,701,416	632	1,457,723	1,462,158	4,435
2016	0	100	1,254	786	2,977	2,267	0	5,245	0	669	0	0	0	0	-4,266	670	-35	6,631	12,841	0	2,239	0	2,996	18,076	13,610	1,701,416	632	-18,111	1,683,305	630	1,462,158	1,441,917	-6,979
2017	0	100	1,250	786	3,025	2,267	2	5,245	0	669	0	0	0	0	-6,108	723	-1,831	4,671	12,814	0	1,545	0	2,821	17,180	13,393	1,683,305	630	-19,011	1,664,294	629	1,441,917	1,423,853	-8,722
2018	12,538	100	1,250	786	3,072	2,267	40	5,245	0	669	0	0	0	0	-3,421	753	13,480	9,291	12,814	0	1,681	0	2,757	17,252	13,321	1,664,294	629	-3,772	1,660,523	629	1,423,853	1,419,823	-4,030
2019	1,826	100	1,250	786	3,120	2,267	140	5,245	0	669	0	0	0	0	-1,862	742	4,475	10,322	19,123	0	1,378	0	2,000	22,500	18,061	1,660,523	629	-18,026	1,642,497	632	1,419,823	1,412,084	-7,739
2020	7,285	100	1,254	786	3,168	2,267	264	5,245	0	669	0	0	0	0	59	766	12,030	14,039	25,281	0	1,338	0	1,391	28,010	22,931	1,642,497	632	-15,981	1,626,516	634	1,412,084	1,403,192	-8,892
2021	0	100	1,250	786	3,215	2,267	344	5,245	0	669	0	0	0	0	-1,798	766	3,011	11,823	19,123	0	1,152	0	1,453	21,728	17,751	1,626,516	634	-18,717	1,607,800	639	1,403,192	1,397,265	-5,928
2022	0	100	1,250	786	3,263	2,267	385	5,245	0	669	0	0	0	0	17	786	4,915	14,159	25,228	0	997	0	1,064	27,289	22,849	1,607,800	639	-22,374	1,585,426	644	1,397,265	1,388,574	-8,691
2023	15,322	100	1,250	786	3,310	2,267	404	5,245	0	669	0	0	0	0	6,827	792	27,114	23,859	34,977	0	1,191	0	649	36,818	31,203	1,585,426	644	-9,703	1,575,722	645	1,388,574	1,381,230	-7,344
2024	43,415	100	1,254	786	3,358	2,267	414	5,245	10	669	0	0	0	0	13,287	736	61,737	33,854	35,059	0	2,088	0	676	37,823	31,324	1,575,722	645	23,914	1,599,636	636	1,381,230	1,383,760	2,530
2025	37,127	100	1,250	786	3,406	2,267	420	5,245	10	669	0	0	0	0	10,964	672	53,176	29,894	12,814	0	2,893	0	1,588	17,295	12,459	1,599,636	636	35,881	1,635,517	630	1,383,760	1,401,195	17,435
2026	0	100	1,250	786	3,453	2,267	423	5,245	0	669	0	0	0	0	2,405	670	7,531	17,190	19,123	0	1,635	0	1,540	22,297	17,702	1,635,517	630	-14,766	1,620,751	636	1,401,195	1,400,684	-512
2027	37,522	100	1,250	786	3,501	2,267	426	5,245	8	669	0	0	0	0	4,507	737	47,214	24,792	12,814	0	2,728	0	2,230	17,772	13,001	1,620,751	636	29,442	1,650,193	630	1,400,684	1,412,474	11,790
2028	13,592	100	1,254	786	3,548	2,267	430	5,245	0	669	0	0	0	0	1,034	693	19,858	18,168	12,841	0	2,060	0	2,414	17,315	13,057	1,650,193	630	2,544	1,652,737	631	1,412,474	1,417,584	5,110
2029	3,729	100	1,250	786	3,596	2,267	434	5,245	0	669	0	0	0	0	-2,399	716	6,610	13,686	12,814	0	1,729	0	2,419	16,962	13,065	1,652,737	631	-10,351	1,642,385	635	1,417,584	1,418,205	620
2030	46,150	100	1,250	786	3,644	2,267	437	5,245	10	669	0	0	0	0	6,011	752	57,502	28,108	12,814	0	3,238	0	2,803	18,855	13,485	1,642,385	635	38,648	1,681,033	627	1,418,205	1,432,827	14,623
2031	0	100	1,250	786	3,691	2,267	438	5,245	0	669	0	0	0	0	-3,371	696	2,009	12,648	12,814	0	1,853	0	2,692	17,358	13,216	1,681,033	627	-15,350	1,665,683	632	1,432,827	1,432,259	-568
2032	2,747	100	1,254	786	3,739	2,267	439	5,245	0	669	0	0	0	0	-4,658	742	3,520	11,666	12,841	0	1,551	0	2,621	17,013	13,295	1,665,683	632	-13,493	1,652,190	637	1,432,259	1,430,630	-1,629
2033	20,140	100	1,250	786	3,787	2,267	440	5,245	3	669	0	0	0	0	-1,594	763	24,026	17,229	19,123	0	1,905	0	2,122	23,149	18,396	1,652,190	637	877	1,653,067	636	1,430,630	1,429,463	-1,167
2034	0	100	1,250	786	3,834	2,267	440	5,245	0	669	0	0	0	0	-4,025	739	1,499	12,242	12,814	0	1,427	0	2,393	16,634	13,149	1,653,067	636	-15,135	1,637,932	641	1,429,463	1,428,555	-908
2035	6,825	100	1,250	786	3,882	2,267	440	5,245	0	669	0	0	0	0	-4,054	772	8,343	13,107	12,814	0	1,377	0	2,402	16,592	13,270	1,637,932	641	-8,249	1,629,683	645	1,428,555	1,428,392	-164

Table I-50b

Projected Chloride Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]
2012	29,070	40	1,254	105	2,787	302	0	885	10	86	0	0	0	0	3,836	93	36,956	3,394
2013	1,890	40	1,250	105	2,834	302	0	885	0	86	0	0	0	0	-3,706	87	2,269	1,007
2014	15,703	40	1,250	105	2,882	302	0	885	0	86	0	0	0	0	-1,709	85	18,126	2,020
2015	61,979	40	1,250	105	2,929	302	0	885	7	86	0	0	0	0	-578	84	65,587	4,689
2016	0	40	1,254	105	2,977	302	0	885	0	86	0	0	0	0	-4,266	77	-35	954
2017	0	40	1,250	105	3,025	302	2	885	0	86	0	0	0	0	-6,108	79	-1,831	773
2018	12,538	40	1,250	105	3,072	302	40	885	0	86	0	0	0	0	-3,421	79	13,480	1,806
2019	1,826	40	1,250	105	3,120	302	140	885	0	86	0	0	0	0	-1,862	79	4,475	1,529
2020	7,285	40	1,254	105	3,168	302	264	885	0	86	0	0	0	0	59	80	12,030	2,202
2021	0	40	1,250	105	3,215	302	344	885	0	86	0	0	0	0	-1,798	80	3,011	1,717
2022	0	40	1,250	105	3,263	302	385	885	0	86	0	0	0	0	17	81	4,915	1,986
2023	15,322	40	1,250	105	3,310	302	404	885	0	86	0	0	0	0	6,827	81	27,114	3,608
2024	43,415	40	1,254	105	3,358	302	414	885	10	86	0	0	0	0	13,287	81	61,737	5,881
2025	37,127	40	1,250	105	3,406	302	420	885	10	86	0	0	0	0	10,964	81	53,176	5,318
2026	0	40	1,250	105	3,453	302	423	885	0	86	0	0	0	0	2,405	82	7,531	2,377
2027	37,522	40	1,250	105	3,501	302	426	885	8	86	0	0	0	0	4,507	85	47,214	4,694
2028	13,592	40	1,254	105	3,548	302	430	885	0	86	0	0	0	0	1,034	84	19,858	3,012
2029	3,729	40	1,250	105	3,596	302	434	885	0	86	0	0	0	0	-2,399	84	6,610	2,107
2030	46,150	40	1,250	105	3,644	302	437	885	10	86	0	0	0	0	6,011	85	57,502	5,410
2031	0	40	1,250	105	3,691	302	438	885	0	86	0	0	0	0	-3,371	83	2,009	1,843
2032	2,747	40	1,254	105	3,739	302	439	885	0	86	0	0	0	0	-4,658	85	3,520	1,856
2033	20,140	40	1,250	105	3,787	302	440	885	3	86	0	0	0	0	-1,594	85	24,026	3,176
2034	0	40	1,250	105	3,834	302	440	885	0	86	0	0	0	0	-4,025	84	1,499	1,823
2035	6,825	40	1,250	105	3,882	302	440	885	0	86	0	0	0	0	-4,054	85	8,343	2,206

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,841	0	2,499	0	2,751	18,090	821	1,650,000	39	18,866	1,668,866	39	86,867	89,441	2,574
2013	12,814	0	1,571	0	2,649	17,033	829	1,668,866	39	-14,764	1,654,102	40	89,441	89,619	178
2014	12,814	0	1,717	0	2,727	17,258	842	1,654,102	40	868	1,654,969	40	89,619	90,797	1,178
2015	12,814	0	3,511	0	2,815	19,140	857	1,654,969	40	46,447	1,701,416	41	90,797	94,628	3,831
2016	12,841	0	2,239	0	2,996	18,076	881	1,701,416	41	-18,111	1,683,305	41	94,628	92,793	73
2017	12,814	0	1,545	0	2,821	17,180	862	1,683,305	41	-19,011	1,664,294	40	92,793	91,158	-89
2018	12,814	0	1,681	0	2,757	17,252	853	1,664,294	40	-3,772	1,660,523	41	91,158	92,112	953
2019	19,123	0	1,378	0	2,000	22,500	1,172	1,660,523	41	-18,026	1,642,497	41	92,112	92,469	357
2020	25,281	0	1,338	0	1,391	28,010	1,502	1,642,497	41	-15,981	1,626,516	42	92,469	93,169	700
2021	19,123	0	1,152	0	1,453	21,728	1,179	1,626,516	42	-18,717	1,607,800	43	93,169	93,708	539
2022	25,228	0	997	0	1,064	27,289	1,532	1,607,800	43	-22,374	1,585,426	44	93,708	94,161	453
2023	34,977	0	1,191	0	649	36,818	2,116	1,585,426	44	-9,703	1,575,722	45	94,161	95,653	1,492
2024	35,059	0	2,088	0	676	37,823	2,169	1,575,722	45	23,914	1,599,636	46	95,653	99,364	3,711
2025	12,814	0	2,893	0	1,588	17,295	895	1,599,636	46	35,881	1,635,517	47	99,364	103,787	4,423
2026	19,123	0	1,635	0	1,540	22,297	1,311	1,635,517	47	-14,766	1,620,751	48	103,787	104,853	1,066
2027	12,814	0	2,728	0	2,230	17,772	973	1,620,751	48	29,442	1,650,193	48	104,853	108,574	3,720
2028	12,841	0	2,060	0	2,414	17,315	1,004	1,650,193	48	2,544	1,652,737	49	108,574	110,582	2,009
2029	12,814	0	1,729	0	2,419	16,962	1,019	1,652,737	49	-10,351	1,642,385	50	110,582	111,670	1,088
2030	12,814	0	3,238	0	2,803	18,855	1,062	1,642,385	50	38,648	1,681,033	51	111,670	116,019	4,348
2031	12,814	0	1,853	0	2,692	17,358	1,070	1,681,033	51	-15,350	1,665,683	52	116,019	116,791	773
2032	12,841	0	1,551	0	2,621	17,013	1,084	1,665,683	52	-13,493	1,652,190	52	116,791	117,563	772
2033	19,123	0	1,905	0	2,122	23,149	1,512	1,652,190	52	877	1,653,067	53	117,563	119,227	1,664
2034	12,814	0	1,427	0	2,393	16,634	1,097	1,653,067	53	-15,135	1,637,932	54	119,227	119,954	727
2035	12,814	0	1,377	0	2,402	16,592	1,114	1,637,932	54	-8,249	1,629,683	55	119,954	121,045	1,091

Table I-50c

Projected Nitrate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - All Projects - 2012 through 2035

Year	Deep Perc of Precip	Nitrate Conc. for Deep Perc of Precip	Deep Perc from Septic Systems	Nitrate Conc. for Deep Perc from Septic Systems	Applied Water Recharge Outside West Side Villages	Nitrate Conc. for Applied Water Recharge Outside West Side Villages	Applied Water Recharge Inside West Side Villages	Nitrate Conc. for Applied Water Recharge Inside West Side Villages	Stream Leakage	Nitrate Conc. for Stream Leakage	Castaic Dam Underflow	Nitrate Conc. for Castaic Dam Underflow	Inflow From Acton Basin and Other Upstream Tributaries	Nitrate Conc. for Inflow From Acton Basin and Other Upstream Tributaries	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	Nitrate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units	TOTAL INFLOW	TOTAL INFLOW MASS of Nitrate	Pumping	GW Discharge to Streams	Evapo-trans-piration	Subsurface Outflow at Blue Cut (County Line)	Upward Leakage to Alluvium	TOTAL OUTFLOW	TOTAL OUTFLOW MASS of Nitrate	Starting Storage	Starting Concentration	Change in GW Storage	Ending Storage	Ending Concentration	Starting Mass in GW Storage	Ending Mass in GW Storage	Mass change
	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[mg/L]	[acre-ft]	[tons]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[acre-ft]	[tons]	[acre-ft]	[mg/L]	[acre-ft]	[acre-ft]	[mg/L]	[ton]	[ton]	[tons]
2012	29,070	9	1,254	43	2,787	16	0	14	10	13	0	0	0	0	3,836	18	36,956	574	12,841	0	2,499	0	2,751	18,090	428	1,650,000	20	18,866	1,668,866	**20**	45,318	45,464	**146**
2013	1,890	9	1,250	43	2,834	16	0	14	0	13	0	0	0	0	-3,706	17	2,269	72	12,814	0	1,571	0	2,649	17,033	421	1,668,866	20	-14,764	1,654,102	**20**	45,464	45,115	**-350**
2014	15,703	9	1,250	43	2,882	16	0	14	0	13	0	0	0	0	-1,709	18	18,126	282	12,814	0	1,717	0	2,727	17,258	424	1,654,102	20	868	1,654,969	**20**	45,115	44,973	**-142**
2015	61,979	9	1,250	43	2,929	16	0	14	7	13	0	0	0	0	-578	17	65,587	864	12,814	0	3,511	0	2,815	19,140	425	1,654,969	20	46,447	1,701,416	**20**	44,973	45,412	**440**
2016	0	9	1,254	43	2,977	16	0	14	0	13	0	0	0	0	-4,266	16	-35	43	12,841	0	2,239	0	2,996	18,076	423	1,701,416	20	-18,111	1,683,305	**20**	45,412	44,947	**-380**
2017	0	9	1,250	43	3,025	16	2	14	0	13	0	0	0	0	-6,108	17	-1,831	-5	12,814	0	1,545	0	2,821	17,180	417	1,683,305	20	-19,011	1,664,294	**20**	44,947	44,524	**-423**
2018	12,538	9	1,250	43	3,072	16	40	14	0	13	0	0	0	0	-3,421	18	13,480	207	12,814	0	1,681	0	2,757	17,252	417	1,664,294	20	-3,772	1,660,523	**20**	44,524	44,314	**-209**
2019	1,826	9	1,250	43	3,120	16	140	14	0	13	0	0	0	0	-1,862	17	4,475	121	19,123	0	1,378	0	2,000	22,500	564	1,660,523	20	-18,026	1,642,497	**20**	44,314	43,872	**-443**
2020	7,285	9	1,254	43	3,168	16	264	14	0	13	0	0	0	0	59	18	12,030	235	25,281	0	1,338	0	1,391	28,010	712	1,642,497	20	-15,981	1,626,516	**20**	43,872	43,394	**-477**
2021	0	9	1,250	43	3,215	16	344	14	0	13	0	0	0	0	-1,798	18	3,011	106	19,123	0	1,152	0	1,453	21,728	549	1,626,516	20	-18,717	1,607,800	**20**	43,394	42,951	**-443**
2022	0	9	1,250	43	3,263	16	385	14	0	13	0	0	0	0	17	18	4,915	151	25,228	0	997	0	1,064	27,289	702	1,607,800	20	-22,374	1,585,426	**20**	42,951	42,400	**-551**
2023	15,322	9	1,250	43	3,310	16	404	14	0	13	0	0	0	0	6,827	18	27,114	504	34,977	0	1,191	0	649	36,818	953	1,585,426	20	-9,703	1,575,722	**20**	42,400	41,951	**-449**
2024	43,415	9	1,254	43	3,358	16	414	14	10	13	0	0	0	0	13,287	17	61,737	972	35,059	0	2,088	0	676	37,823	951	1,575,722	20	23,914	1,599,636	**19**	41,951	41,972	**21**
2025	37,127	9	1,250	43	3,406	16	420	14	10	13	0	0	0	0	10,964	16	53,176	830	12,814	0	2,893	0	1,588	17,295	378	1,599,636	19	35,881	1,635,517	**19**	41,972	42,424	**452**
2026	0	9	1,250	43	3,453	16	423	14	0	13	0	0	0	0	2,405	16	7,531	206	19,123	0	1,635	0	1,540	22,297	536	1,635,517	19	-14,766	1,620,751	**19**	42,424	42,094	**-330**
2027	37,522	9	1,250	43	3,501	16	426	14	8	13	0	0	0	0	4,507	17	47,214	710	12,814	0	2,728	0	2,230	17,772	391	1,620,751	19	29,442	1,650,193	**19**	42,094	42,414	**319**
2028	13,592	9	1,254	43	3,548	16	430	14	0	13	0	0	0	0	1,034	16	19,858	343	12,841	0	2,060	0	2,414	17,315	392	1,650,193	19	2,544	1,652,737	**19**	42,414	42,365	**-49**
2029	3,729	9	1,250	43	3,596	16	434	14	0	13	0	0	0	0	-2,399	16	6,610	150	12,814	0	1,729	0	2,419	16,962	390	1,652,737	19	-10,351	1,642,385	**19**	42,365	42,124	**-241**
2030	46,150	9	1,250	43	3,644	16	437	14	10	13	0	0	0	0	6,011	17	57,502	853	12,814	0	3,238	0	2,803	18,855	401	1,642,385	19	38,648	1,681,033	**19**	42,124	42,576	**452**
2031	0	9	1,250	43	3,691	16	438	14	0	13	0	0	0	0	-3,371	16	2,009	86	12,814	0	1,853	0	2,692	17,358	393	1,681,033	19	-15,350	1,665,683	**19**	42,576	42,270	**-307**
2032	2,747	9	1,254	43	3,739	16	439	14	0	13	0	0	0	0	-4,658	17	3,520	86	12,841	0	1,551	0	2,621	17,013	392	1,665,683	19	-13,493	1,652,190	**19**	42,270	41,964	**-306**
2033	20,140	9	1,250	43	3,787	16	440	14	3	13	0	0	0	0	-1,594	17	24,026	366	19,123	0	1,905	0	2,122	23,149	540	1,652,190	19	877	1,653,067	**19**	41,964	41,790	**-173**
2034	0	9	1,250	43	3,834	16	440	14	0	13	0	0	0	0	-4,025	17	1,499	72	12,814	0	1,427	0	2,393	16,634	384	1,653,067	19	-15,135	1,637,932	**19**	41,790	41,477	**-313**
2035	6,825	9	1,250	43	3,882	16	440	14	0	13	0	0	0	0	-4,054	18	8,343	150	12,814	0	1,377	0	2,402	16,592	385	1,637,932	19	-8,249	1,629,683	**19**	41,477	41,242	**-235**

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table I-50d

Projected Sulfate Mass Loading and Concentration Changes - Management Zone 6 (Saugus Formation) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Sulfate Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Sulfate Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Sulfate Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Sulfate Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Sulfate Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Sulfate Conc. Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Sulfate Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Sulfate [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Sulfate [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	40	1,254	150	2,787	433	0	1,235	10	179	0	0	0	0	3,836	218	36,956	4,616	12,841	0	2,499	0	2,751	18,090	5,715	1,650,000	270	18,866	1,668,866	266	604,840	603,741	-1,099
2013	1,890	40	1,250	150	2,834	433	0	1,235	0	179	0	0	0	0	-3,706	208	2,269	978	12,814	0	1,571	0	2,649	17,033	5,594	1,668,866	266	-14,764	1,654,102	266	603,741	599,126	-4,616
2014	15,703	40	1,250	150	2,882	433	0	1,235	0	179	0	0	0	0	-1,709	221	18,126	2,292	12,814	0	1,717	0	2,727	17,258	5,629	1,654,102	266	868	1,654,969	265	599,126	595,789	-3,337
2015	61,979	40	1,250	150	2,929	433	0	1,235	7	179	0	0	0	0	-578	216	65,587	5,182	12,814	0	3,511	0	2,815	19,140	5,626	1,654,969	265	46,447	1,701,416	257	595,789	595,344	-445
2016	0	40	1,254	150	2,977	433	0	1,235	0	179	0	0	0	0	-4,266	192	-35	891	12,841	0	2,239	0	2,996	18,076	5,542	1,701,416	257	-18,111	1,683,305	257	595,344	588,911	-4,650
2017	0	40	1,250	150	3,025	433	2	1,235	0	179	0	0	0	0	-6,108	211	-1,831	286	12,814	0	1,545	0	2,821	17,180	5,470	1,683,305	257	-19,011	1,664,294	258	588,911	583,155	-5,184
2018	12,538	40	1,250	150	3,072	433	40	1,235	0	179	0	0	0	0	-3,421	222	13,480	1,780	12,814	0	1,681	0	2,757	17,252	5,456	1,664,294	258	-3,772	1,660,523	257	583,155	579,480	-3,675
2019	1,826	40	1,250	150	3,120	433	140	1,235	0	179	0	0	0	0	-1,862	216	4,475	1,879	19,123	0	1,378	0	2,000	22,500	7,371	1,660,523	257	-18,026	1,642,497	257	579,480	573,987	-5,493
2020	7,285	40	1,254	150	3,168	433	264	1,235	0	179	0	0	0	0	59	224	12,030	2,978	25,281	0	1,338	0	1,391	28,010	9,321	1,642,497	257	-15,981	1,626,516	257	573,987	567,644	-6,343
2021	0	40	1,250	150	3,215	433	344	1,235	0	179	0	0	0	0	-1,798	223	3,011	2,178	19,123	0	1,152	0	1,453	21,728	7,181	1,626,516	257	-18,717	1,607,800	257	567,644	562,641	-5,003
2022	0	40	1,250	150	3,263	433	385	1,235	0	179	0	0	0	0	17	231	4,915	2,828	25,228	0	997	0	1,064	27,289	9,201	1,607,800	257	-22,374	1,585,426	258	562,641	556,268	-6,373
2023	15,322	40	1,250	150	3,310	433	404	1,235	0	179	0	0	0	0	6,827	233	27,114	5,879	34,977	0	1,191	0	649	36,818	12,500	1,585,426	258	-9,703	1,575,722	257	556,268	549,646	-6,621
2024	43,415	40	1,254	150	3,358	433	414	1,235	10	179	0	0	0	0	13,287	209	61,737	9,070	35,059	0	2,088	0	676	37,823	12,465	1,575,722	257	23,914	1,599,636	251	549,646	546,251	-3,395
2025	37,127	40	1,250	150	3,406	433	420	1,235	10	179	0	0	0	0	10,964	188	53,176	7,789	12,814	0	2,893	0	1,588	17,295	4,918	1,599,636	251	35,881	1,635,517	247	546,251	549,123	2,871
2026	0	40	1,250	150	3,453	433	423	1,235	0	179	0	0	0	0	2,405	187	7,531	3,609	19,123	0	1,635	0	1,540	22,297	6,937	1,635,517	247	-14,766	1,620,751	248	549,123	545,794	-3,329
2027	37,522	40	1,250	150	3,501	433	426	1,235	8	179	0	0	0	0	4,507	210	47,214	6,361	12,814	0	2,728	0	2,230	17,772	5,066	1,620,751	248	29,442	1,650,193	244	545,794	547,089	1,295
2028	13,592	40	1,254	150	3,548	433	430	1,235	0	179	0	0	0	0	1,034	194	19,858	4,078	12,841	0	2,060	0	2,414	17,315	5,057	1,650,193	244	2,544	1,652,737	243	547,089	546,110	-979
2029	3,729	40	1,250	150	3,596	433	434	1,235	0	179	0	0	0	0	-2,399	202	6,610	2,645	12,814	0	1,729	0	2,419	16,962	5,033	1,652,737	243	-10,351	1,642,385	243	546,110	543,722	-2,388
2030	46,150	40	1,250	150	3,644	433	437	1,235	10	179	0	0	0	0	6,011	214	57,502	7,394	12,814	0	3,238	0	2,803	18,855	5,170	1,642,385	243	38,648	1,681,033	239	543,722	545,946	2,224
2031	0	40	1,250	150	3,691	433	438	1,235	0	179	0	0	0	0	-3,371	195	2,009	2,268	12,814	0	1,853	0	2,692	17,358	5,036	1,681,033	239	-15,350	1,665,683	240	545,946	543,179	-2,767
2032	2,747	40	1,254	150	3,739	433	439	1,235	0	179	0	0	0	0	-4,658	211	3,520	2,006	12,841	0	1,551	0	2,621	17,013	5,042	1,665,683	240	-13,493	1,652,190	240	543,179	540,143	-3,036
2033	20,140	40	1,250	150	3,787	433	440	1,235	3	179	0	0	0	0	-1,594	218	24,026	3,845	19,123	0	1,905	0	2,122	23,149	6,945	1,652,190	240	877	1,653,067	239	540,143	537,042	-3,101
2034	0	40	1,250	150	3,834	433	440	1,235	0	179	0	0	0	0	-4,025	210	1,499	2,103	12,814	0	1,427	0	2,393	16,634	4,940	1,653,067	239	-15,135	1,637,932	240	537,042	534,205	-2,837
2035	6,825	40	1,250	150	3,882	433	440	1,235	0	179	0	0	0	0	-4,054	221	8,343	2,432	12,814	0	1,377	0	2,402	16,592	4,962	1,637,932	240	-8,249	1,629,683	240	534,205	531,674	-2,530

APPENDIX J

Chloride Concentrations in Discharge for Irrigation – Chloride Concentration Sensitivity Analysis

2012-2035

GEOSCIENCE

APPENDIX J

CHLORIDE CONCENTRATIONS IN DISCHARGE FOR IRRIGATION – CHLORIDE CONCENTRATION SENSITIVITY ANALYSIS – 2012-2035

Castaic Lake Water Agency
Salt and Nutrient Management Plan
Santa Clara River Valley East Subbasin

Table J-1

Projected Chloride Mass Loading and Concentration Changes - Sensitivity Run - Management Zone 3 (South Fork Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	Chloride Conc. for Applied Recycled Water [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	Chloride Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-transpiration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,214	40	181	95	772	275	0	0	0	500	6,085	65	0	0	292	111	7,741	39	19,285	1,541	0	0	3,696	5,579	6,113	15,388	1,636	25,728	103	3,898	29,626	87	3,600	3,505	-95
2013	274	40	181	95	773	275	0	0	89	500	737	65	0	0	323	115	7,805	40	10,181	926	0	0	2,366	5,283	5,691	13,340	1,298	29,626	87	-3,159	26,466	87	3,505	3,133	-372
2014	2,277	40	181	95	773	275	0	0	96	500	4,962	65	0	0	309	113	5,898	40	14,496	1,314	0	0	3,004	4,371	5,819	13,193	1,206	26,466	87	1,303	27,769	86	3,133	3,241	108
2015	8,986	40	181	95	774	275	0	0	103	500	3,952	65	0	0	321	106	7,949	41	22,266	1,711	0	0	3,654	5,444	5,995	15,094	1,335	27,769	86	7,172	34,941	76	3,241	3,617	376
2016	0	40	181	95	774	275	0	0	111	500	0	65	0	0	341	113	7,973	41	9,380	880	0	0	2,869	5,612	5,895	14,376	1,191	34,941	76	-4,996	29,945	81	3,617	3,306	-311
2017	0	40	181	95	775	275	0	0	118	500	0	65	0	0	351	113	6,506	40	7,931	804	0	0	1,336	4,660	5,570	11,566	1,129	29,945	81	-3,636	26,309	83	3,306	2,980	-325
2018	1,818	40	181	95	775	275	0	0	125	500	3,992	65	0	0	359	109	6,610	41	13,860	1,272	0	0	1,990	4,603	5,635	12,228	1,160	26,309	83	1,632	27,942	81	2,980	3,093	113
2019	265	40	181	95	776	275	0	0	133	500	718	65	0	0	350	112	8,284	41	10,706	1,001	0	0	2,032	5,266	6,714	14,012	1,326	27,942	81	-3,306	24,635	83	3,093	2,768	-325
2020	1,056	40	181	95	777	275	0	0	140	500	2,381	65	0	0	365	110	6,737	42	11,637	1,118	0	0	1,988	4,526	7,631	14,145	1,366	24,635	83	-2,508	22,127	84	2,768	2,520	-248
2021	0	40	181	95	777	275	0	0	147	500	0	65	0	0	399	110	7,303	43	8,807	898	0	0	1,158	4,606	6,841	12,605	1,304	22,127	84	-3,798	18,329	85	2,520	2,115	-406
2022	0	40	181	95	778	275	0	0	155	500	0	65	0	0	407	107	7,656	44	9,176	932	0	0	641	4,695	7,299	12,634	1,384	18,329	85	-3,458	14,871	82	2,115	1,663	-452
2023	2,221	40	181	95	778	275	0	0	162	500	4,160	65	0	0	399	102	7,733	44	15,634	1,438	0	0	1,778	4,860	8,634	15,272	1,509	14,871	82	362	15,233	77	1,663	1,592	-71
2024	6,294	40	181	95	779	275	0	0	169	500	5,602	65	0	0	415	97	7,784	46	21,224	1,807	0	0	3,291	5,093	9,390	17,773	1,514	15,233	77	3,451	18,684	74	1,592	1,885	293
2025	5,383	40	181	95	779	275	0	0	177	500	6,749	65	0	0	409	97	9,956	46	23,633	2,011	0	0	3,925	6,385	6,698	17,008	1,320	18,684	74	6,625	25,309	75	1,885	2,576	691
2026	0	40	181	95	780	275	0	0	184	500	0	65	0	0	382	105	9,740	47	11,267	1,122	0	0	2,752	6,115	6,755	15,622	1,310	25,309	75	-4,355	20,954	84	2,576	2,388	-188
2027	5,440	40	181	95	780	275	0	0	191	500	6,946	65	0	0	317	102	7,174	48	21,030	1,872	0	0	3,643	5,043	6,144	14,830	1,275	20,954	84	6,200	27,154	81	2,388	2,985	597
2028	1,971	40	181	95	781	275	0	0	199	500	3,950	65	0	0	306	106	8,915	49	16,301	1,546	0	0	3,258	5,909	5,878	15,046	1,296	27,154	81	1,255	28,409	84	2,985	3,235	250
2029	541	40	181	95	782	275	0	0	206	500	1,290	65	0	0	295	112	8,093	50	11,386	1,191	0	0	2,680	5,351	5,672	13,703	1,255	28,409	84	-2,317	26,092	89	3,235	3,171	-64
2030	6,691	40	181	95	782	275	0	0	213	500	6,310	65	0	0	266	108	8,894	50	23,337	2,034	0	0	4,022	6,386	6,317	16,725	1,544	26,092	89	6,612	32,705	82	3,171	3,661	490
2031	0	40	181	95	783	275	0	0	221	500	0	65	0	0	305	113	8,493	51	9,981	1,103	0	0	2,131	5,727	5,715	13,573	1,281	32,705	82	-3,592	29,113	88	3,661	3,484	-178
2032	398	40	181	95	783	275	0	0	228	500	988	65	0	0	312	114	8,113	52	11,003	1,201	0	0	1,578	5,357	5,540	12,475	1,304	29,113	88	-1,472	27,641	90	3,484	3,381	-103
2033	2,920	40	181	95	784	275	0	0	235	500	4,407	65	0	0	314	109	6,391	52	15,232	1,530	0	0	2,214	4,529	6,770	13,513	1,382	27,641	90	1,720	29,361	88	3,381	3,529	148
2034	0	40	181	95	784	275	0	0	243	500	0	65	0	0	344	114	6,724	53	8,276	1,022	0	0	1,679	4,641	5,741	12,061	1,248	29,361	88	-3,784	25,576	95	3,529	3,303	-226
2035	990	40	181	95	785	275	0	0	250	500	2,240	65	0	0	347	113	6,695	54	11,487	1,284	0	0	1,470	4,544	5,450	11,464	1,290	25,576	95	22	25,599	95	3,303	3,296	-7

Table J-2

Projected Chloride Mass Loading and Concentration Changes - Sensitivity Run - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	Chloride Conc. for Applied Recycled Water [mg/L]	Saugus WRP Infiltration [acre-ft]	Chloride Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Chloride Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Chloride Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,893	40	148	109	666	314	0	694	81	500	4,100	126	11,675	89	0	0	14,829	87	5,579	28	-5,182	28	36,788	4,505	13,388	6,543	1,102	7,025	2,202	30,260	3,811	78,359	96	6,528	84,888	**95**	10,241	10,935	**695**
2013	318	40	147	109	667	314	0	694	89	500	4,100	126	623	89	0	0	14,012	87	5,283	28	-1,853	28	23,385	2,955	13,370	5,290	763	7,327	2,152	28,902	3,625	84,888	95	-5,517	79,371	**95**	10,935	10,265	**-670**
2014	2,643	40	147	109	668	314	0	694	96	500	4,100	126	9,328	89	0	0	14,762	88	4,371	28	-1,307	28	34,808	4,221	19,000	4,129	642	8,008	1,988	33,766	4,284	79,371	95	1,042	80,413	**93**	10,265	10,202	**-63**
2015	10,432	40	147	109	669	314	0	694	103	500	4,100	126	7,637	89	0	0	14,876	85	5,444	28	-2,935	28	40,475	4,393	13,370	6,633	1,215	7,370	2,077	30,665	3,736	80,413	93	9,810	90,222	**89**	10,202	10,859	**657**
2016	0	40	148	109	671	314	0	694	111	500	4,100	126	22	89	0	0	15,133	87	5,612	28	-1,341	28	24,455	3,044	13,388	6,166	1,189	7,743	2,067	30,553	3,534	90,222	89	-6,097	84,125	**91**	10,859	10,368	**-491**
2017	0	40	147	109	672	314	0	694	118	500	4,100	126	1,107	89	0	0	15,667	89	4,660	28	848	28	27,319	3,325	19,000	3,885	533	8,261	1,907	33,586	4,074	84,125	91	-6,266	77,859	**91**	10,368	9,620	**-748**
2018	2,110	40	147	109	673	314	0	694	125	500	4,100	126	6,804	89	0	0	15,809	89	4,603	28	-1,083	28	33,288	4,073	19,000	3,363	368	8,124	1,874	32,729	3,998	77,859	91	560	78,418	**91**	9,620	9,694	**75**
2019	307	40	147	109	674	314	0	694	133	500	4,100	126	1,495	89	0	0	14,351	88	5,266	28	-3,014	28	23,458	3,106	13,370	3,153	354	7,742	2,770	27,388	3,342	78,418	91	-3,930	74,488	**93**	9,694	9,459	**-236**
2020	1,226	40	148	109	676	314	1	694	140	500	4,100	126	3,145	89	0	0	15,098	88	4,526	28	-549	28	28,511	3,522	19,025	1,993	233	8,101	3,847	33,200	4,186	74,488	93	-4,689	69,799	**93**	9,459	8,794	**-664**
2021	0	40	147	109	677	314	5	694	147	500	4,100	126	1,865	89	0	0	15,548	89	4,606	28	-1,231	28	25,864	3,363	19,000	1,039	145	7,777	2,964	30,926	3,878	69,799	93	-5,061	64,738	**94**	8,794	8,279	**-515**
2022	0	40	147	109	678	314	8	694	155	500	4,100	126	2,046	89	0	0	15,646	91	4,695	28	-1,738	28	25,736	3,413	19,000	446	103	7,575	3,913	31,037	3,956	64,738	94	-5,301	59,437	**96**	8,279	7,736	**-543**
2023	2,579	40	147	109	679	314	10	694	162	500	4,100	126	7,378	89	0	0	15,878	89	4,860	28	-3,762	28	32,032	4,135	19,000	116	59	7,195	5,828	32,198	4,183	59,437	96	-166	59,271	**95**	7,736	7,688	**-48**
2024	7,308	40	148	109	681	314	10	694	169	500	4,100	126	12,189	89	0	0	16,430	87	5,093	28	-6,421	28	39,706	4,910	19,025	89	57	6,910	6,185	32,266	4,178	59,271	95	7,440	66,711	**93**	7,688	8,420	**733**
2025	6,249	40	147	109	682	314	11	694	177	500	4,100	126	15,600	89	0	0	16,565	88	6,385	28	-11,665	28	38,251	5,159	13,370	1,542	341	6,661	3,074	24,988	3,111	66,711	93	13,263	79,973	**96**	8,420	10,469	**2,048**
2026	0	40	147	109	683	314	11	694	184	500	4,100	126	1,616	89	0	0	15,076	89	6,115	28	-6,621	28	21,312	3,151	13,370	2,478	340	7,167	3,302	26,658	3,445	79,973	96	-5,346	74,627	**100**	10,469	10,174	**-294**
2027	6,316	40	147	109	684	314	12	694	191	500	4,100	126	18,602	89	0	0	15,461	88	5,043	28	-7,168	28	43,389	5,516	19,000	3,486	848	7,540	2,460	33,333	4,429	74,627	100	10,056	84,683	**98**	10,174	11,262	**1,087**
2028	2,288	40	148	109	686	314	12	694	199	500	4,100	126	6,191	89	0	0	14,581	87	5,909	28	-6,388	28	27,725	3,749	13,388	3,997	959	7,278	2,396	28,018	3,599	84,683	98	-293	84,390	**99**	11,262	11,412	**150**
2029	628	40	147	109	687	314	12	694	206	500	4,100	126	1,321	89	0	0	13,788	88	5,351	28	-3,217	28	23,022	3,088	13,370	4,157	668	7,520	2,351	28,065	3,705	84,390	99	-5,043	79,347	**100**	11,412	10,795	**-617**
2030	7,768	40	147	109	688	314	12	694	213	500	4,100	126	10,899	89	0	0	16,691	91	6,386	28	-6,483	28	40,423	4,980	13,370	6,759	1,511	7,590	2,348	31,578	4,091	79,347	100	8,844	88,191	**97**	10,795	11,685	**890**
2031	0	40	147	109	689	314	12	694	221	500	4,100	126	334	89	0	0	15,167	91	5,727	28	-2,158	28	24,239	3,238	13,370	5,605	949	7,347	2,196	29,467	3,778	88,191	97	-5,229	82,962	**99**	11,685	11,144	**-541**
2032	462	40	148	109	691	314	12	694	228	500	4,100	126	908	89	0	0	14,269	91	5,357	28	-1,941	28	24,233	3,210	13,388	4,630	601	7,722	2,213	28,554	3,755	82,962	99	-4,321	78,641	**99**	11,144	10,599	**-545**
2033	3,390	40	147	109	692	314	12	694	235	500	4,100	126	9,510	89	0	0	14,985	90	4,529	28	-1,642	28	35,958	4,466	19,000	3,599	451	8,143	2,652	33,846	4,501	78,641	99	2,112	80,753	**96**	10,599	10,565	**-35**
2034	0	40	147	109	693	314	12	694	243	500	4,100	126	1,593	89	0	0	15,452	91	4,641	28	-826	28	26,055	3,436	19,000	2,424	274	8,055	2,052	31,805	4,125	80,753	96	-5,750	75,003	**97**	10,565	9,875	**-689**
2035	1,149	40	147	109	694	314	12	694	250	500	4,100	126	3,133	89	0	0	15,522	91	4,544	28	-670	28	28,881	3,706	19,000	2,279	233	7,800	1,914	31,226	4,081	75,003	97	-2,345	72,658	**96**	9,875	9,501	**-374**

Table J-3

Projected Chloride Mass Loading and Concentration Changes - Sensitivity Run - Management Zone 6 (Saugus Formation) - CLWA Recycled Water Master Plan - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	40	1,254	105	2,787	302	0	687	10	89	0	0	0	0	3,836	93	36,956	3,394	12,841	0	2,499	0	2,751	18,090	821	1,650,000	39	18,866	1,668,866	39	86,867	89,441	2,574
2013	1,890	40	1,250	105	2,834	302	0	687	0	89	0	0	0	0	-3,706	89	2,269	998	12,814	0	1,571	0	2,649	17,033	829	1,668,866	39	-14,764	1,654,102	40	89,441	89,610	169
2014	15,703	40	1,250	105	2,882	302	0	687	0	89	0	0	0	0	-1,709	88	18,126	2,014	12,814	0	1,717	0	2,727	17,258	842	1,654,102	40	868	1,654,969	40	89,610	90,782	1,172
2015	61,979	40	1,250	105	2,929	302	0	687	7	89	0	0	0	0	-578	87	65,587	4,686	12,814	0	3,511	0	2,815	19,140	857	1,654,969	40	46,447	1,701,416	41	90,782	94,611	3,829
2016	0	40	1,254	105	2,977	302	0	687	0	89	0	0	0	0	-4,266	80	-35	938	12,841	0	2,239	0	2,996	18,076	881	1,701,416	41	-18,111	1,683,305	41	94,611	92,793	57
2017	0	40	1,250	105	3,025	302	2	687	0	89	0	0	0	0	-6,108	82	-1,831	743	12,814	0	1,545	0	2,821	17,180	862	1,683,305	41	-19,011	1,664,294	40	92,793	91,188	-118
2018	12,538	40	1,250	105	3,072	302	40	687	0	89	0	0	0	0	-3,421	83	13,480	1,776	12,814	0	1,681	0	2,757	17,252	853	1,664,294	40	-3,772	1,660,523	41	91,188	92,111	923
2019	1,826	40	1,250	105	3,120	302	140	687	0	89	0	0	0	0	-1,862	84	4,475	1,480	19,123	0	1,378	0	2,000	22,500	1,172	1,660,523	41	-18,026	1,642,497	41	92,111	92,419	308
2020	7,285	40	1,254	105	3,168	302	264	687	0	89	0	0	0	0	59	85	12,030	2,131	25,281	0	1,338	0	1,391	28,010	1,501	1,642,497	41	-15,981	1,626,516	42	92,419	93,049	630
2021	0	40	1,250	105	3,215	302	344	687	0	89	0	0	0	0	-1,798	86	3,011	1,611	19,123	0	1,152	0	1,453	21,728	1,177	1,626,516	42	-18,717	1,607,800	43	93,049	93,484	434
2022	0	40	1,250	105	3,263	302	385	687	0	89	0	0	0	0	17	86	4,915	1,882	25,228	0	997	0	1,064	27,289	1,529	1,607,800	43	-22,374	1,585,426	44	93,484	93,837	353
2023	15,322	40	1,250	105	3,310	302	404	687	0	89	0	0	0	0	6,827	87	27,114	3,558	34,977	0	1,191	0	649	36,818	2,109	1,585,426	44	-9,703	1,575,722	44	93,837	95,286	1,449
2024	43,415	40	1,254	105	3,358	302	414	687	10	89	0	0	0	0	13,287	87	61,737	5,878	35,059	0	2,088	0	676	37,823	2,161	1,575,722	44	23,914	1,599,636	46	95,286	99,003	3,717
2025	37,127	40	1,250	105	3,406	302	420	687	10	89	0	0	0	0	10,964	87	53,176	5,285	12,814	0	2,893	0	1,588	17,295	891	1,599,636	46	35,881	1,635,517	46	99,003	103,397	4,394
2026	0	40	1,250	105	3,453	302	423	687	0	89	0	0	0	0	2,405	87	7,531	2,278	19,123	0	1,635	0	1,540	22,297	1,306	1,635,517	46	-14,766	1,620,751	47	103,397	104,369	972
2027	37,522	40	1,250	105	3,501	302	426	687	8	89	0	0	0	0	4,507	90	47,214	4,610	12,814	0	2,728	0	2,230	17,772	969	1,620,751	47	29,442	1,650,193	48	104,369	108,010	3,641
2028	13,592	40	1,254	105	3,548	302	430	687	0	89	0	0	0	0	1,034	88	19,858	2,903	12,841	0	2,060	0	2,414	17,315	998	1,650,193	48	2,544	1,652,737	49	108,010	109,915	1,905
2029	3,729	40	1,250	105	3,596	302	434	687	0	89	0	0	0	0	-2,399	89	6,610	1,974	12,814	0	1,729	0	2,419	16,962	1,013	1,652,737	49	-10,351	1,642,385	50	109,915	110,876	961
2030	46,150	40	1,250	105	3,644	302	437	687	10	89	0	0	0	0	6,011	90	57,502	5,334	12,814	0	3,238	0	2,803	18,855	1,054	1,642,385	50	38,648	1,681,033	50	110,876	115,156	4,280
2031	0	40	1,250	105	3,691	302	438	687	0	89	0	0	0	0	-3,371	88	2,009	1,704	12,814	0	1,853	0	2,692	17,358	1,062	1,681,033	50	-15,350	1,665,683	51	115,156	115,797	641
2032	2,747	40	1,254	105	3,739	302	439	687	0	89	0	0	0	0	-4,658	90	3,520	1,704	12,841	0	1,551	0	2,621	17,013	1,075	1,665,683	51	-13,493	1,652,190	52	115,797	116,427	629
2033	20,140	40	1,250	105	3,787	302	440	687	3	89	0	0	0	0	-1,594	90	24,026	3,045	19,123	0	1,905	0	2,122	23,149	1,497	1,652,190	52	877	1,653,067	52	116,427	117,975	1,548
2034	0	40	1,250	105	3,834	302	440	687	0	89	0	0	0	0	-4,025	90	1,499	1,675	12,814	0	1,427	0	2,393	16,634	1,085	1,653,067	52	-15,135	1,637,932	53	117,975	118,565	590
2035	6,825	40	1,250	105	3,882	302	440	687	0	89	0	0	0	0	-4,054	90	8,343	2,058	12,814	0	1,377	0	2,402	16,592	1,101	1,637,932	53	-8,249	1,629,683	54	118,565	119,522	957

Table J-4

Projected Chloride Mass Loading and Concentration Changes - Sensitivity Run - Management Zone 3 (South Fork Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	Chloride Conc. for Applied Recycled Water [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. For Inflow From Upstream Tributaries [mg/L]	Inflow From MZ2 [acre-ft]	Chloride Conc. for Inflow From MZ2 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ4 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	4,214	40	181	95	678	275	0	0	0	500	6,085	65	0	0	292	111	7,741	39	19,192	1,506	0	0	3,696	5,579	6,113	15,388	1,636	25,728	103	3,804	29,532	86	3,600	3,470	-130
2013	274	40	181	95	679	275	0	0	89	500	737	65	0	0	323	115	7,805	40	10,087	891	0	0	2,366	5,283	5,691	13,340	1,289	29,532	86	-3,253	26,278	86	3,470	3,071	-398
2014	2,277	40	181	95	670	275	0	0	96	500	4,962	65	0	0	309	113	5,898	40	14,393	1,275	0	0	3,004	4,371	5,819	13,193	1,191	26,278	86	1,200	27,478	84	3,071	3,156	84
2015	8,986	40	181	95	662	275	0	0	103	500	3,952	65	0	0	321	105	7,949	41	22,154	1,669	0	0	3,654	5,444	5,995	15,094	1,314	27,478	84	7,060	34,538	75	3,156	3,511	355
2016	0	40	181	95	653	275	0	0	111	500	0	65	0	0	341	111	7,973	41	9,259	834	0	0	2,869	5,612	5,895	14,376	1,170	34,538	75	-5,117	29,421	79	3,511	3,175	-336
2017	0	40	181	95	645	275	0	0	118	500	0	65	0	0	351	111	6,506	40	7,801	754	0	0	1,336	4,660	5,570	11,566	1,104	29,421	79	-3,766	25,656	81	3,175	2,825	-350
2018	1,818	40	181	95	636	275	0	0	125	500	3,992	65	0	0	359	107	6,610	41	13,721	1,219	0	0	1,990	4,603	5,635	12,228	1,127	25,656	81	1,493	27,149	79	2,825	2,917	92
2019	265	40	181	95	628	275	0	0	133	500	718	65	0	0	350	110	8,284	41	10,558	945	0	0	2,032	5,266	6,714	14,012	1,287	27,149	79	-3,454	23,695	80	2,917	2,575	-342
2020	1,056	40	181	95	620	275	0	0	140	500	2,381	65	0	0	365	107	6,737	42	11,480	1,059	0	0	1,988	4,526	7,631	14,145	1,321	23,695	80	-2,665	21,030	81	2,575	2,312	-263
2021	0	40	181	95	620	275	0	0	147	500	0	65	0	0	399	106	7,303	43	8,650	838	0	0	1,158	4,606	6,841	12,605	1,259	21,030	81	-3,955	17,075	82	2,312	1,892	-420
2022	0	40	181	95	621	275	0	0	155	500	0	65	0	0	407	103	7,656	44	9,019	872	0	0	641	4,695	7,299	12,634	1,329	17,075	82	-3,615	13,460	78	1,892	1,435	-457
2023	2,221	40	181	95	621	275	0	0	162	500	4,160	65	0	0	399	98	7,733	45	15,477	1,379	0	0	1,778	4,860	8,634	15,272	1,439	13,460	78	205	13,664	74	1,435	1,375	-60
2024	6,294	40	181	95	622	275	0	0	169	500	5,602	65	0	0	415	93	7,784	46	21,067	1,748	0	0	3,291	5,093	9,390	17,773	1,458	13,664	74	3,294	16,959	72	1,375	1,665	290
2025	5,383	40	181	95	622	275	0	0	177	500	6,749	65	0	0	409	93	9,956	47	23,476	1,953	0	0	3,925	6,385	6,698	17,008	1,285	16,959	72	6,468	23,426	73	1,665	2,333	668
2026	0	40	181	95	623	275	0	0	184	500	0	65	0	0	382	101	9,740	48	11,110	1,064	0	0	2,752	6,115	6,755	15,622	1,282	23,426	73	-4,512	18,914	82	2,333	2,116	-217
2027	5,440	40	181	95	623	275	0	0	191	500	6,946	65	0	0	317	98	7,174	48	20,873	1,814	0	0	3,643	5,043	6,144	14,830	1,251	18,914	82	6,043	24,958	79	2,116	2,679	563
2028	1,971	40	181	95	624	275	0	0	199	500	3,950	65	0	0	306	102	8,915	49	16,144	1,489	0	0	3,258	5,909	5,878	15,046	1,265	24,958	79	1,098	26,056	82	2,679	2,903	224
2029	541	40	181	95	625	275	0	0	206	500	1,290	65	0	0	295	108	8,093	50	11,229	1,135	0	0	2,680	5,351	5,672	13,703	1,228	26,056	82	-2,474	23,582	88	2,903	2,809	-93
2030	6,691	40	181	95	625	275	0	0	213	500	6,310	65	0	0	266	104	8,894	51	23,180	1,979	0	0	4,022	6,386	6,317	16,725	1,513	23,582	88	6,455	30,037	80	2,809	3,275	465
2031	0	40	181	95	626	275	0	0	221	500	0	65	0	0	305	109	8,493	52	9,824	1,048	0	0	2,131	5,727	5,715	13,573	1,247	30,037	80	-3,749	26,289	86	3,275	3,076	-199
2032	398	40	181	95	626	275	0	0	228	500	988	65	0	0	312	110	8,113	52	10,846	1,146	0	0	1,578	5,357	5,540	12,475	1,275	26,289	86	-1,629	24,660	88	3,076	2,947	-129
2033	2,920	40	181	95	627	275	0	0	235	500	4,407	65	0	0	314	105	6,391	53	15,075	1,474	0	0	2,214	4,529	6,770	13,513	1,350	24,660	88	1,563	26,223	86	2,947	3,071	124
2034	0	40	181	95	627	275	0	0	243	500	0	65	0	0	344	109	6,724	54	8,119	967	0	0	1,679	4,641	5,741	12,061	1,216	26,223	86	-3,941	22,281	93	3,071	2,822	-249
2035	990	40	181	95	628	275	0	0	250	500	2,240	65	0	0	347	108	6,695	55	11,330	1,229	0	0	1,470	4,544	5,450	11,464	1,266	22,281	93	-135	22,147	92	2,822	2,785	-36

Table J-5

Projected Chloride Mass Loading and Concentration Changes - Sensitivity Run - Management Zone 4 (Santa Clara - Bouquet and San Francisquito Canyon Subunit) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Applied Recycled Water [acre-ft]	Chloride Conc. for Applied Recycled Water [mg/L]	Saugus WRP Infiltration [acre-ft]	Chloride Conc. for Saugus WRP Infiltration [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Inflow From Upstream Tributaries [acre-ft]	Chloride Conc. or Inflow From Upstream Tributaries [mg/L]	Inflow From MZ1 [acre-ft]	Chloride Conc. for Inflow From MZ1 [mg/L]	Inflow From MZ3 [acre-ft]	Chloride Conc. for Inflow From MZ3 [mg/L]	Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Upward Leakage from Saugus + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]
2012	4,893	40	148	109	567	314	0	885	81	500	4,100	100	11,630	89	0	0	14,829	86	5,579	28	-5,182	28	36,646	4,307
2013	318	40	147	109	569	314	0	885	89	500	4,100	100	579	89	0	0	14,012	87	5,283	28	-1,853	28	23,243	2,752
2014	2,643	40	147	109	544	314	0	885	96	500	4,100	100	9,247	89	0	0	14,762	87	4,371	28	-1,307	28	34,603	3,998
2015	10,432	40	147	109	520	314	0	885	103	500	4,100	100	7,519	89	0	0	14,876	85	5,444	28	-2,935	28	40,207	4,155
2016	0	40	148	109	496	314	0	885	111	500	4,100	100	0	89	0	0	15,133	86	5,612	28	-1,341	28	24,259	2,793
2017	0	40	147	109	472	314	0	885	118	500	4,100	100	915	89	0	0	15,667	87	4,660	28	848	28	26,927	3,027
2018	2,110	40	147	109	447	314	0	885	125	500	4,100	100	6,575	89	0	0	15,809	86	4,603	28	-1,083	28	32,834	3,748
2019	307	40	147	109	423	314	0	885	133	500	4,100	100	1,229	89	0	0	14,351	85	5,266	28	-3,014	28	22,941	2,758
2020	1,226	40	148	109	399	314	1	885	140	500	4,100	100	2,842	89	0	0	15,098	84	4,526	28	-549	28	27,931	3,140
2021	0	40	147	109	400	314	5	885	147	500	4,100	100	1,562	89	0	0	15,548	85	4,606	28	-1,231	28	25,285	2,962
2022	0	40	147	109	401	314	8	885	155	500	4,100	100	1,744	89	0	0	15,646	85	4,695	28	-1,738	28	25,157	2,999
2023	2,579	40	147	109	403	314	10	885	162	500	4,100	100	7,075	89	0	0	15,878	84	4,860	28	-3,762	28	31,453	3,731
2024	7,308	40	148	109	404	314	10	885	169	500	4,100	100	11,886	89	0	0	16,430	84	5,093	28	-6,421	28	39,127	4,530
2025	6,249	40	147	109	405	314	11	885	177	500	4,100	100	15,297	89	0	0	16,565	85	6,385	28	-11,665	28	37,671	4,787
2026	0	40	147	109	406	314	11	885	184	500	4,100	100	1,313	89	0	0	15,076	85	6,115	28	-6,621	28	20,732	2,770
2027	6,316	40	147	109	408	314	12	885	191	500	4,100	100	18,299	89	0	0	15,461	84	5,043	28	-7,168	28	42,810	5,145
2028	2,288	40	148	109	409	314	12	885	199	500	4,100	100	5,888	89	0	0	14,581	83	5,909	28	-6,388	28	27,145	3,376
2029	628	40	147	109	410	314	12	885	206	500	4,100	100	1,018	89	0	0	13,788	83	5,351	28	-3,217	28	22,443	2,709
2030	7,768	40	147	109	411	314	12	885	213	500	4,100	100	10,596	89	0	0	16,691	87	6,386	28	-6,483	28	39,843	4,597
2031	0	40	147	109	413	314	12	885	221	500	4,100	100	31	89	0	0	15,167	87	5,727	28	-2,158	28	23,659	2,852
2032	462	40	148	109	414	314	12	885	228	500	4,100	100	605	89	0	0	14,269	86	5,357	28	-1,941	28	23,653	2,825
2033	3,390	40	147	109	415	314	12	885	235	500	4,100	100	9,207	89	0	0	14,985	86	4,529	28	-1,642	28	35,378	4,084
2034	0	40	147	109	416	314	12	885	243	500	4,100	100	1,291	89	0	0	15,452	86	4,641	28	-826	28	25,475	3,036
2035	1,149	40	147	109	418	314	12	885	250	500	4,100	100	2,830	89	0	0	15,522	86	4,544	28	-670	28	28,302	3,301

Year	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Outflow to MZ5 [acre-ft]	Downward Leakage to Saugus [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	12,832	6,543	1,102	7,025	2,202	29,704	3,738	78,359	96	6,942	85,301	93	10,241	10,810	569
2013	12,814	5,290	763	7,327	2,152	28,346	3,495	85,301	93	-5,103	80,198	92	10,810	10,066	-744
2014	18,418	4,129	642	8,008	1,988	33,184	4,085	80,198	92	1,418	81,617	90	10,066	9,979	-87
2015	12,763	6,633	1,215	7,370	2,077	30,058	3,527	81,617	90	10,149	91,766	85	9,979	10,608	628
2016	12,755	6,166	1,189	7,743	2,067	29,920	3,321	91,766	85	-5,661	86,105	86	10,608	10,080	-528
2017	18,342	3,885	533	8,261	1,907	32,928	3,792	86,105	86	-6,001	80,104	86	10,080	9,314	-765
2018	18,316	3,363	368	8,124	1,874	32,045	3,683	80,104	86	788	80,893	85	9,314	9,379	65
2019	12,661	3,153	354	7,742	2,770	26,679	3,052	80,893	85	-3,738	77,155	87	9,379	9,085	-294
2020	18,291	1,993	233	8,101	3,847	32,465	3,795	77,155	87	-4,534	72,621	85	9,085	8,430	-655
2021	18,265	1,039	145	7,777	2,964	30,191	3,488	72,621	85	-4,906	67,715	86	8,430	7,904	-525
2022	18,265	446	103	7,575	3,913	30,303	3,525	67,715	86	-5,146	62,569	87	7,904	7,378	-526
2023	18,265	116	59	7,195	5,828	31,464	3,703	62,569	87	-11	62,558	87	7,378	7,406	28
2024	18,291	89	57	6,910	6,185	31,532	3,726	62,558	87	7,595	70,153	86	7,406	8,210	804
2025	12,635	1,542	341	6,661	3,074	24,254	2,798	70,153	86	13,418	83,571	90	8,210	10,199	1,989
2026	12,635	2,478	340	7,167	3,302	25,923	3,122	83,571	90	-5,191	78,380	92	10,199	9,846	-353
2027	18,265	3,486	848	7,540	2,460	32,599	3,989	78,380	92	10,211	88,591	91	9,846	11,003	1,156
2028	12,653	3,997	959	7,278	2,396	27,283	3,269	88,591	91	-138	88,452	92	11,003	11,109	107
2029	12,635	4,157	668	7,520	2,351	27,331	3,349	88,452	92	-4,888	83,564	92	11,109	10,469	-640
2030	12,635	6,759	1,511	7,590	2,348	30,844	3,675	83,564	92	8,999	92,564	91	10,469	11,392	923
2031	12,635	5,605	949	7,347	2,196	28,733	3,419	92,564	91	-5,073	87,490	91	11,392	10,824	-568
2032	12,653	4,630	601	7,722	2,213	27,819	3,367	87,490	91	-4,166	83,324	91	10,824	10,282	-542
2033	18,265	3,599	451	8,143	2,652	33,111	4,030	83,324	91	2,267	85,592	89	10,282	10,336	54
2034	18,265	2,424	274	8,055	2,052	31,070	3,719	85,592	89	-5,595	79,996	89	10,336	9,652	-683
2035	18,265	2,279	233	7,800	1,914	30,492	3,651	79,996	89	-2,190	77,807	88	9,652	9,302	-350

Projected Chloride Mass Loading and Concentration Changes - Sensitivity Run - Management Zone 6 (Saugus Formation) - All Projects - 2012 through 2035

Year	Deep Perc of Precip [acre-ft]	Chloride Conc. for Deep Perc of Precip [mg/L]	Deep Perc from Septic Systems [acre-ft]	Chloride Conc. for Deep Perc from Septic Systems [mg/L]	Applied Water Recharge Outside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Outside West Side Villages [mg/L]	Applied Water Recharge Inside West Side Villages [acre-ft]	Chloride Conc. for Applied Water Recharge Inside West Side Villages [mg/L]	Stream Leakage [acre-ft]	Chloride Conc. for Stream Leakage [mg/L]	Castaic Dam Underflow [acre-ft]	Chloride Conc. for Castaic Dam Underflow [mg/L]	Inflow From Acton Basin and Other Upstream Tributaries [acre-ft]	Chloride Conc. for Inflow From Acton Basin and Other Upstream Tributaries [mg/L]	Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [acre-ft]	Chloride Conc. for Downward Leakage from Alluvium + Net Lateral Inflow from Adjoining Units [mg/L]	TOTAL INFLOW [acre-ft]	TOTAL INFLOW MASS of Chloride [tons]	Pumping [acre-ft]	GW Discharge to Streams [acre-ft]	Evapo-trans-piration [acre-ft]	Subsurface Outflow at Blue Cut (County Line) [acre-ft]	Upward Leakage to Alluvium [acre-ft]	TOTAL OUTFLOW [acre-ft]	TOTAL OUTFLOW MASS of Chloride [tons]	Starting Storage [acre-ft]	Starting Concentration [mg/L]	Change in GW Storage [acre-ft]	Ending Storage [acre-ft]	Ending Concentration [mg/L]	Starting Mass in GW Storage [ton]	Ending Mass in GW Storage [ton]	Mass change [tons]
2012	29,070	40	1,254	105	2,787	302	0	885	10	86	0	0	0	0	3,836	93	36,956	3,394	12,841	0	2,499	0	2,751	18,090	821	1,650,000	39	18,866	1,668,866	**39**	86,867	89,441	**2,574**
2013	1,890	40	1,250	105	2,834	302	0	885	0	86	0	0	0	0	-3,706	87	2,269	1,007	12,814	0	1,571	0	2,649	17,033	829	1,668,866	39	-14,764	1,654,102	**40**	89,441	89,619	**178**
2014	15,703	40	1,250	105	2,882	302	0	885	0	86	0	0	0	0	-1,709	85	18,126	2,019	12,814	0	1,717	0	2,727	17,258	842	1,654,102	40	868	1,654,969	**40**	89,619	90,796	**1,177**
2015	61,979	40	1,250	105	2,929	302	0	885	7	86	0	0	0	0	-578	84	65,587	4,688	12,814	0	3,511	0	2,815	19,140	857	1,654,969	40	46,447	1,701,416	**41**	90,796	94,627	**3,831**
2016	0	40	1,254	105	2,977	302	0	885	0	86	0	0	0	0	-4,266	78	-35	953	12,841	0	2,239	0	2,996	18,076	881	1,701,416	41	-18,111	1,683,305	**41**	94,627	92,794	**72**
2017	0	40	1,250	105	3,025	302	2	885	0	86	0	0	0	0	-6,108	79	-1,831	770	12,814	0	1,545	0	2,821	17,180	862	1,683,305	41	-19,011	1,664,294	**40**	92,794	91,161	**-91**
2018	12,538	40	1,250	105	3,072	302	40	885	0	86	0	0	0	0	-3,421	79	13,480	1,804	12,814	0	1,681	0	2,757	17,252	853	1,664,294	40	-3,772	1,660,523	**41**	91,161	92,113	**952**
2019	1,826	40	1,250	105	3,120	302	140	885	0	86	0	0	0	0	-1,862	79	4,475	1,528	19,123	0	1,378	0	2,000	22,500	1,172	1,660,523	41	-18,026	1,642,497	**41**	92,113	92,469	**357**
2020	7,285	40	1,254	105	3,168	302	264	885	0	86	0	0	0	0	59	80	12,030	2,202	25,281	0	1,338	0	1,391	28,010	1,502	1,642,497	41	-15,981	1,626,516	**42**	92,469	93,170	**700**
2021	0	40	1,250	105	3,215	302	344	885	0	86	0	0	0	0	-1,798	81	3,011	1,716	19,123	0	1,152	0	1,453	21,728	1,179	1,626,516	42	-18,717	1,607,800	**43**	93,170	93,707	**538**
2022	0	40	1,250	105	3,263	302	385	885	0	86	0	0	0	0	17	81	4,915	1,986	25,228	0	997	0	1,064	27,289	1,532	1,607,800	43	-22,374	1,585,426	**44**	93,707	94,160	**453**
2023	15,322	40	1,250	105	3,310	302	404	885	0	86	0	0	0	0	6,827	81	27,114	3,613	34,977	0	1,191	0	649	36,818	2,116	1,585,426	44	-9,703	1,575,722	**45**	94,160	95,657	**1,497**
2024	43,415	40	1,254	105	3,358	302	414	885	10	86	0	0	0	0	13,287	81	61,737	5,889	35,059	0	2,088	0	676	37,823	2,169	1,575,722	45	23,914	1,599,636	**46**	95,657	99,377	**3,719**
2025	37,127	40	1,250	105	3,406	302	420	885	10	86	0	0	0	0	10,964	82	53,176	5,323	12,814	0	2,893	0	1,588	17,295	895	1,599,636	46	35,881	1,635,517	**47**	99,377	103,805	**4,428**
2026	0	40	1,250	105	3,453	302	423	885	0	86	0	0	0	0	2,405	83	7,531	2,378	19,123	0	1,635	0	1,540	22,297	1,311	1,635,517	47	-14,766	1,620,751	**48**	103,805	104,872	**1,067**
2027	37,522	40	1,250	105	3,501	302	426	885	8	86	0	0	0	0	4,507	86	47,214	4,697	12,814	0	2,728	0	2,230	17,772	973	1,620,751	48	29,442	1,650,193	**48**	104,872	108,595	**3,723**
2028	13,592	40	1,254	105	3,548	302	430	885	0	86	0	0	0	0	1,034	84	19,858	3,013	12,841	0	2,060	0	2,414	17,315	1,004	1,650,193	48	2,544	1,652,737	**49**	108,595	110,604	**2,009**
2029	3,729	40	1,250	105	3,596	302	434	885	0	86	0	0	0	0	-2,399	85	6,610	2,105	12,814	0	1,729	0	2,419	16,962	1,019	1,652,737	49	-10,351	1,642,385	**50**	110,604	111,690	**1,086**
2030	46,150	40	1,250	105	3,644	302	437	885	10	86	0	0	0	0	6,011	86	57,502	5,415	12,814	0	3,238	0	2,803	18,855	1,062	1,642,385	50	38,648	1,681,033	**51**	111,690	116,044	**4,353**
2031	0	40	1,250	105	3,691	302	438	885	0	86	0	0	0	0	-3,371	83	2,009	1,841	12,814	0	1,853	0	2,692	17,358	1,070	1,681,033	51	-15,350	1,665,683	**52**	116,044	116,814	**770**
2032	2,747	40	1,254	105	3,739	302	439	885	0	86	0	0	0	0	-4,658	85	3,520	1,852	12,841	0	1,551	0	2,621	17,013	1,084	1,665,683	52	-13,493	1,652,190	**52**	116,814	117,582	**768**
2033	20,140	40	1,250	105	3,787	302	440	885	3	86	0	0	0	0	-1,594	86	24,026	3,174	19,123	0	1,905	0	2,122	23,149	1,512	1,652,190	52	877	1,653,067	**53**	117,582	119,244	**1,662**
2034	0	40	1,250	105	3,834	302	440	885	0	86	0	0	0	0	-4,025	85	1,499	1,820	12,814	0	1,427	0	2,393	16,634	1,097	1,653,067	53	-15,135	1,637,932	**54**	119,244	119,967	**723**
2035	6,825	40	1,250	105	3,882	302	440	885	0	86	0	0	0	0	-4,054	86	8,343	2,201	12,814	0	1,377	0	2,402	16,592	1,114	1,637,932	54	-8,249	1,629,683	**55**	119,967	121,053	**1,087**

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