Hydrostratigraphic Unit	Formation	Age	Aquifer System	United Model Layer
Shallow Alluvial Deposits (rarely used for water supply)	Unnamed alluvium	Holocene to Recent	Shallow	1
Fine-grained Pleistocene deposits (behaves as an aquitard; abuts or interfingers with Oxnard Aquifer along southern boundary of Mound Basin)	Unnamed alluvium	Late Pleistocene	Upper Aquifer System	2
				3
				4
Mugu Aquifer	Unnamed alluvium		Upper Aquifer System	5
unconformity				
Mugu – Hueneme aquitard	San Pedro Formation	Pleistocene	Lower Aquifer System	6
Hueneme Aquifer	San Pedro Formation	Pleistocene	Lower Aquifer System	7
Hueneme – Fox Canyon aquitard	San Pedro Formation	Pleistocene	Lower Aquifer System	8
Fox Canyon Aquifer – main	San Pedro Formation	Pleistocene	Lower Aquifer System	9
Fox Canyon upper-basal aquitard	San Pedro Formation	Pleistocene	Lower Aquifer System	10
Fox Canyon Aquifer – basal (low hydraulic conductivity in Mound Basin)	San Pedro Formation	Pleistocene	Lower Aquifer System	11

Figure 3.1-04 Schematic Illustration of HSUs, Aquifer Systems, Formations, Ages, and Model Layers.

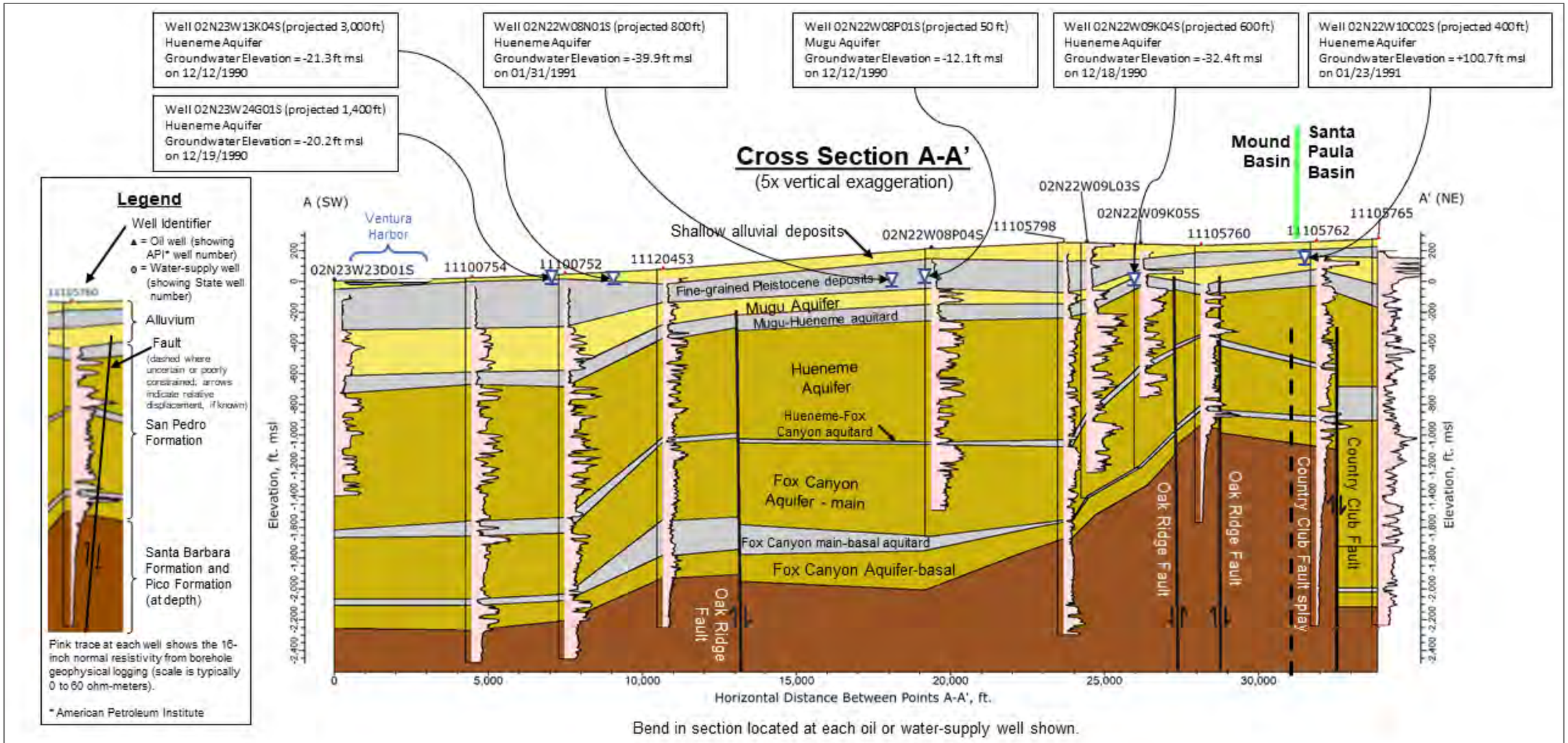


*Figure 3.1-02 is the source map.

Figure 3.1-05 Cross-Section A-A' (longitudinal).

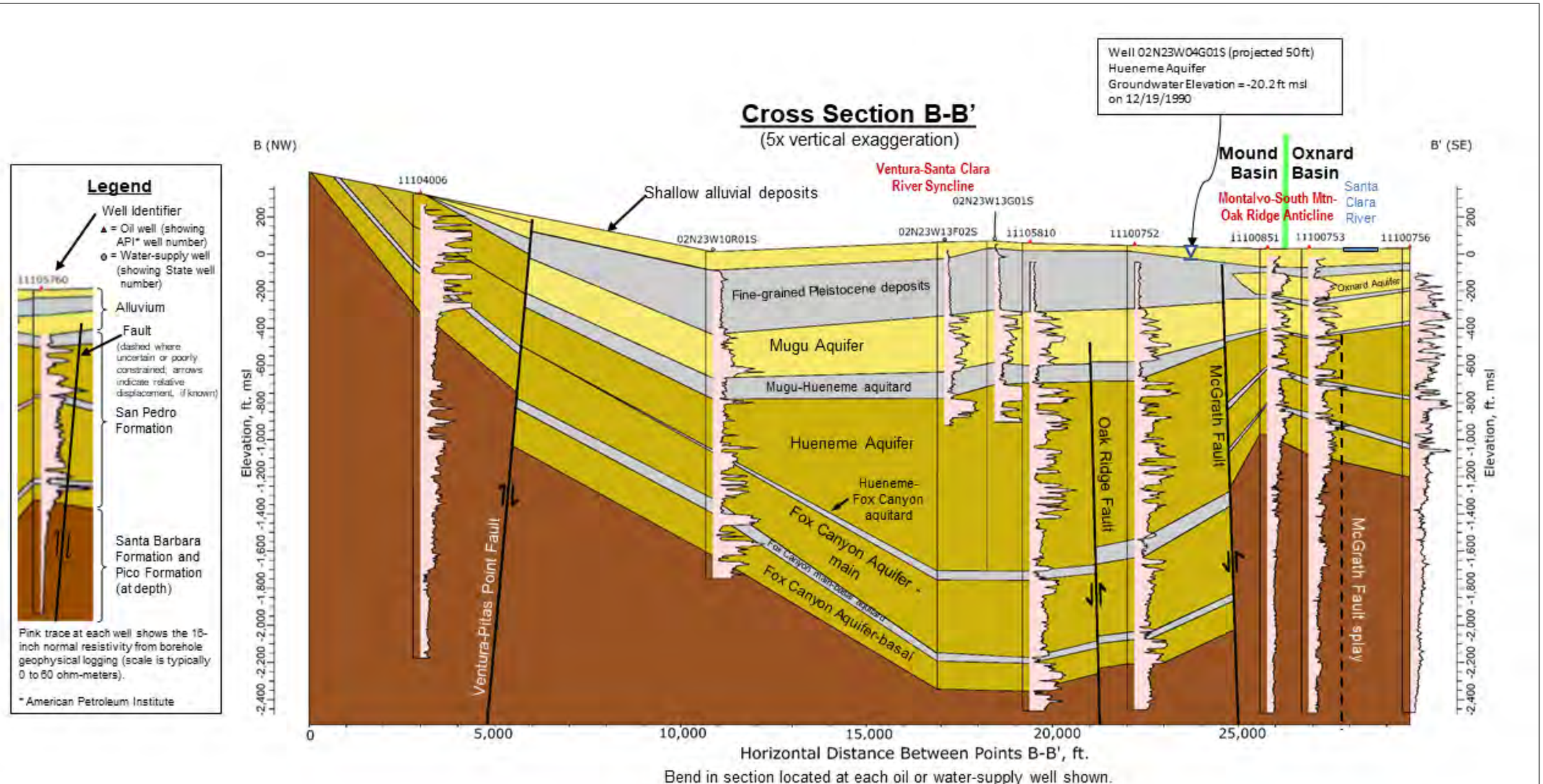


*Figure 3.1-02 is the source map.

Figure 3.1-06 Cross-Section B-B' (transverse).

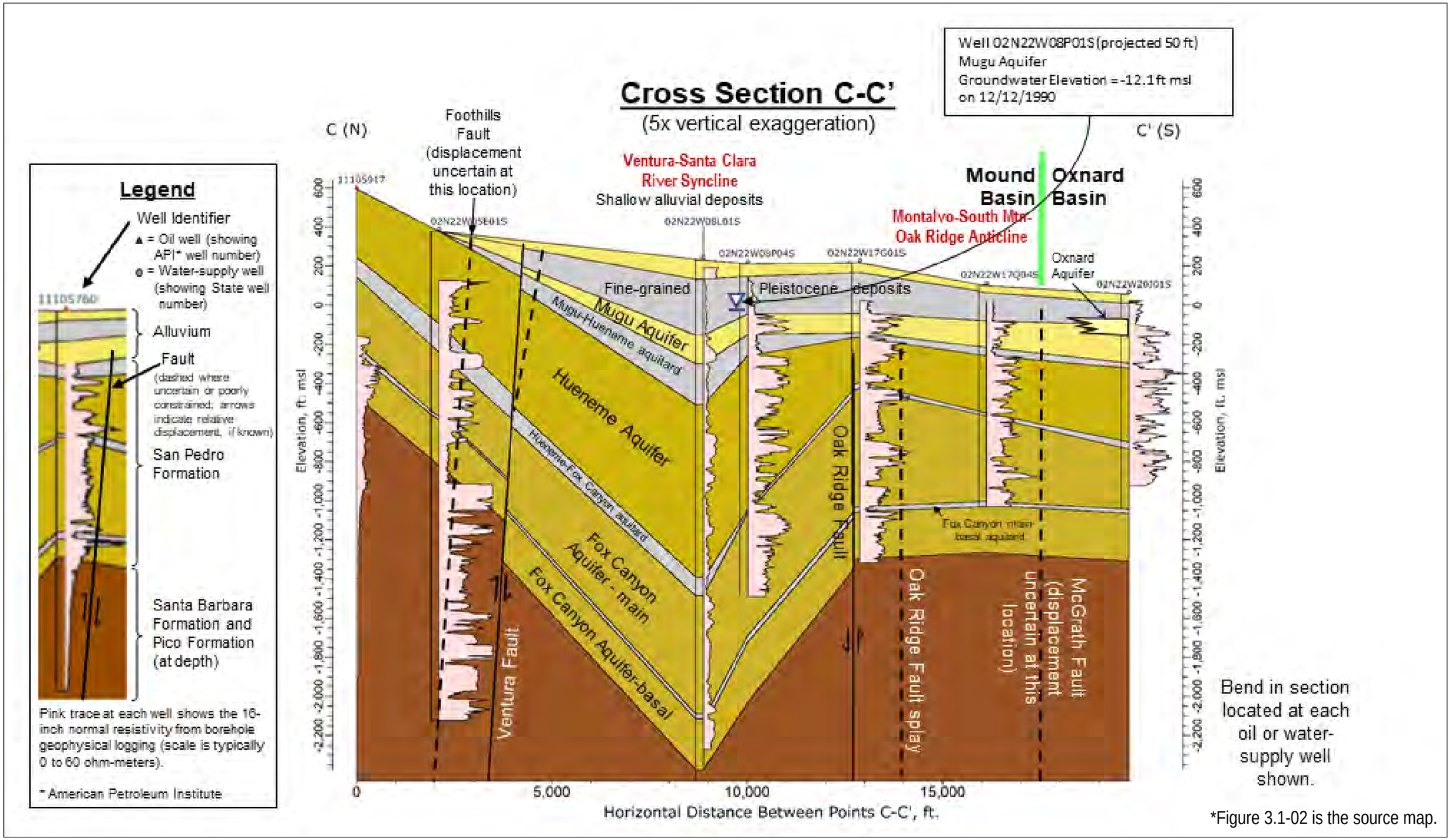


*Figure 3.1-02 is the source map.

Figure 3.1-07 Cross Section C-C' (transverse).

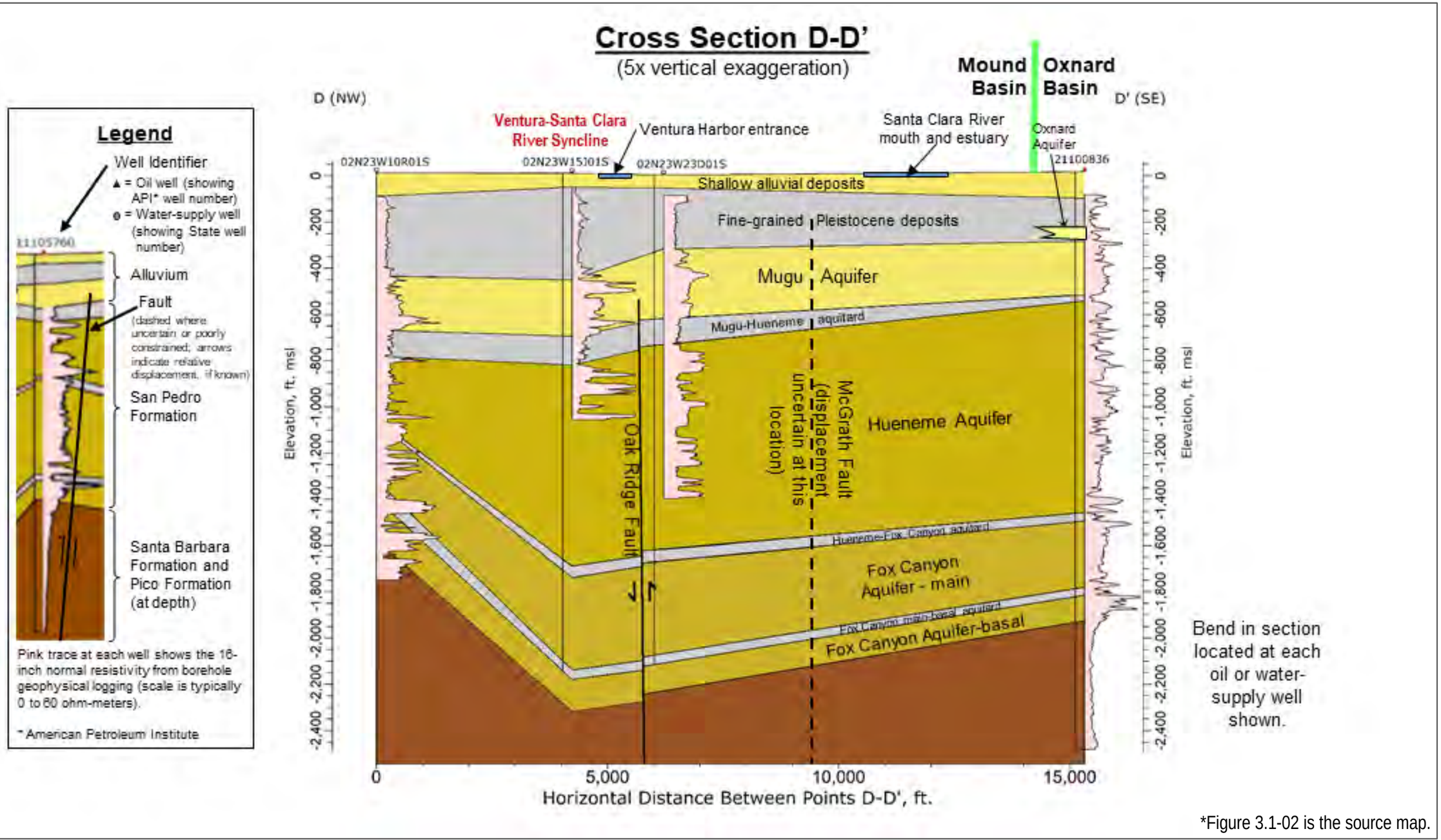


*Figure 3.1-02 is the source map.

Figure 3.1-08 Cross Section D-D' (transverse).

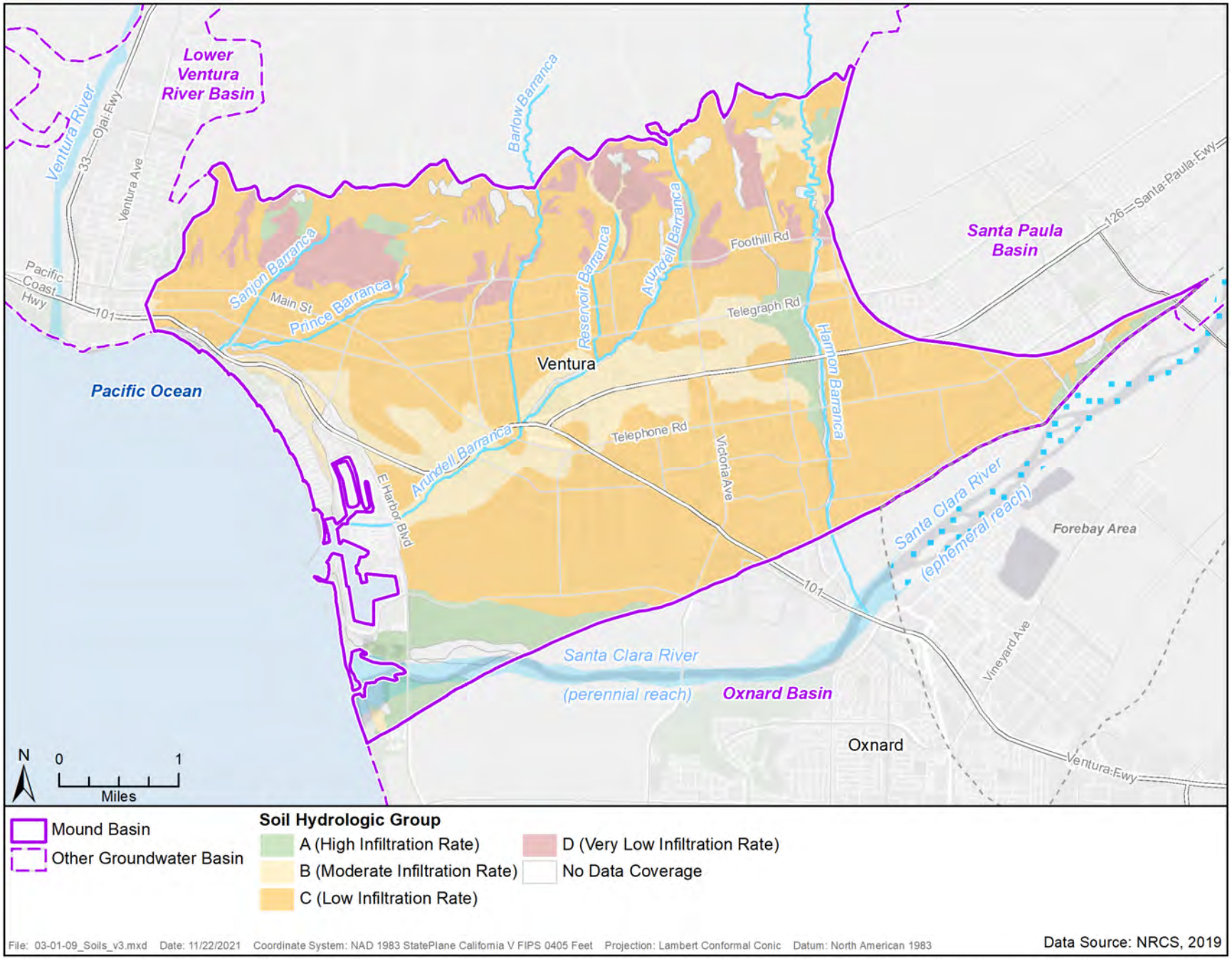


Figure 3.1-09 Soil Characteristics Map.

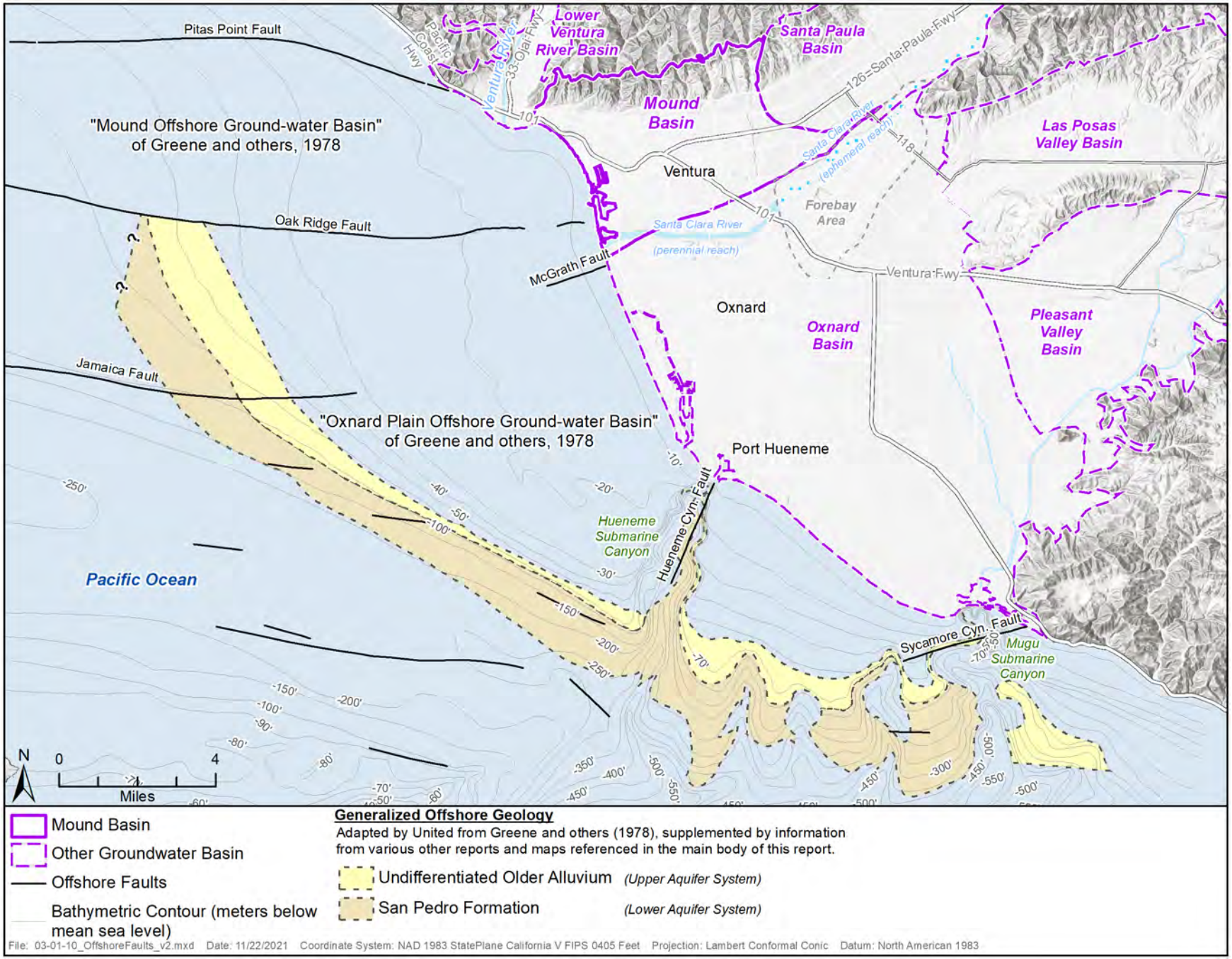


Figure 3.1-10 Offshore Geologic Conditions Influencing Potential for Seawater Intrusion.

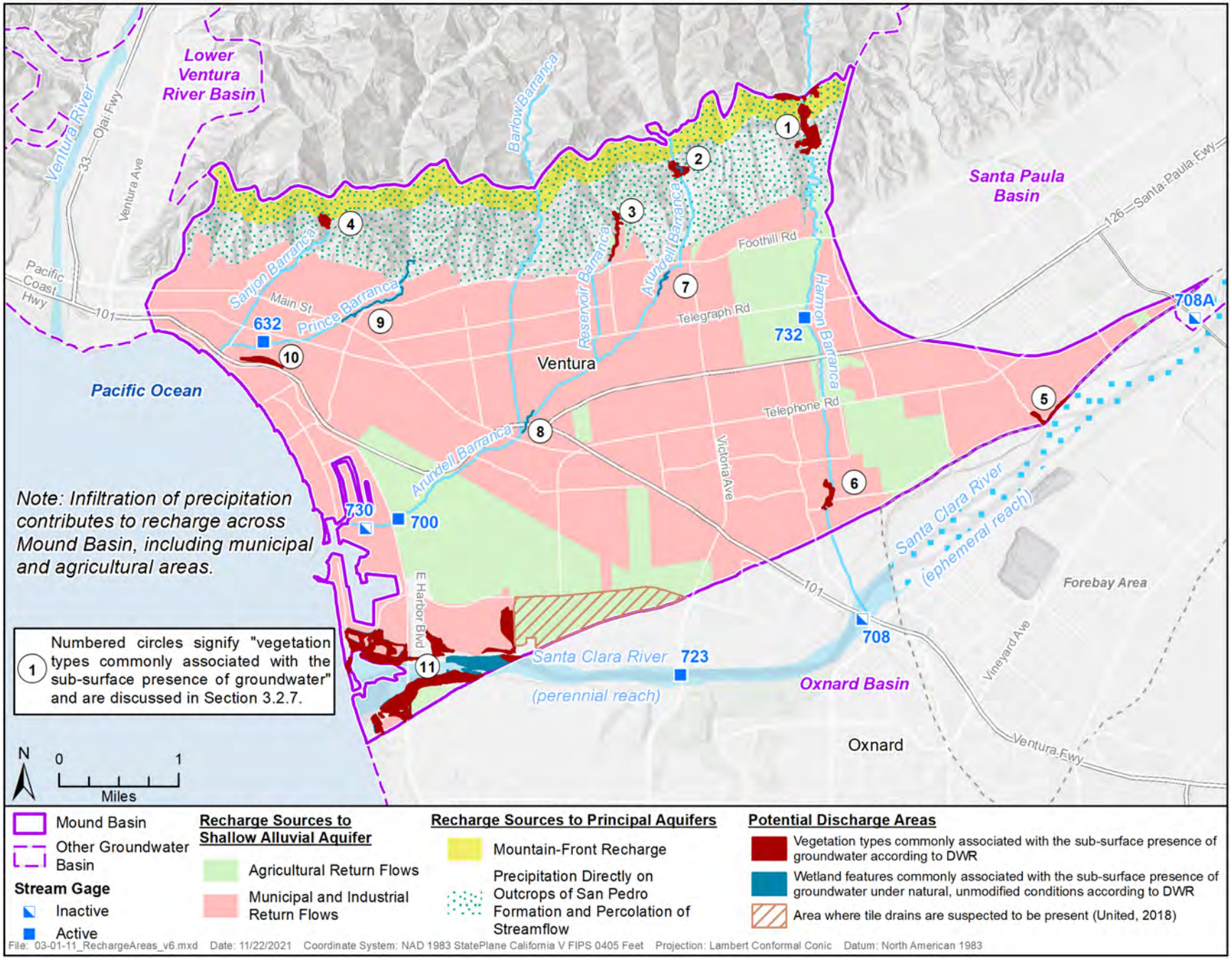


Figure 3.1-11 Map of Groundwater Recharge and Discharge Areas in Mound Basin.

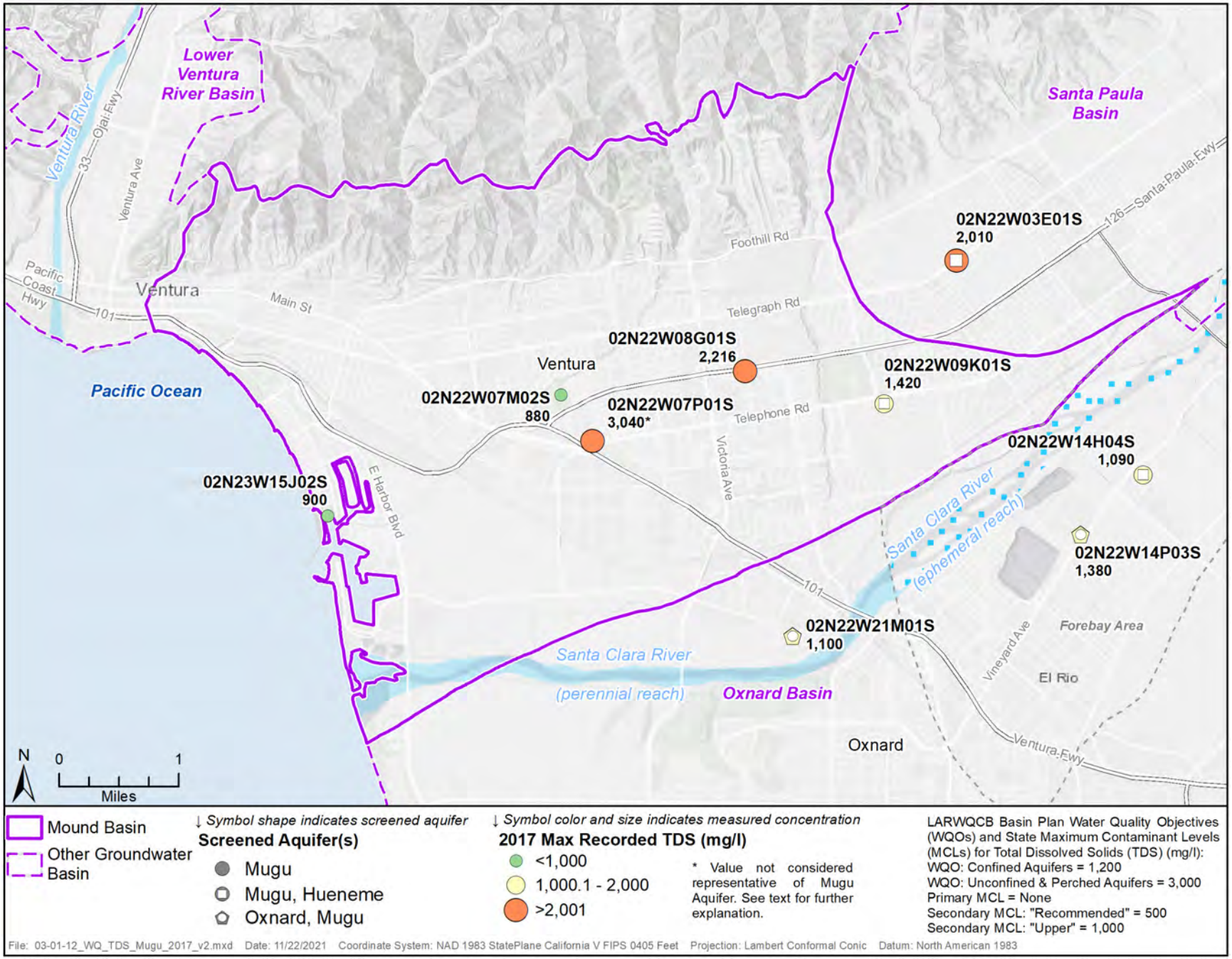


Figure 3.1-12 Maximum TDS Concentrations Detected in Mugu Aquifer during 2017.

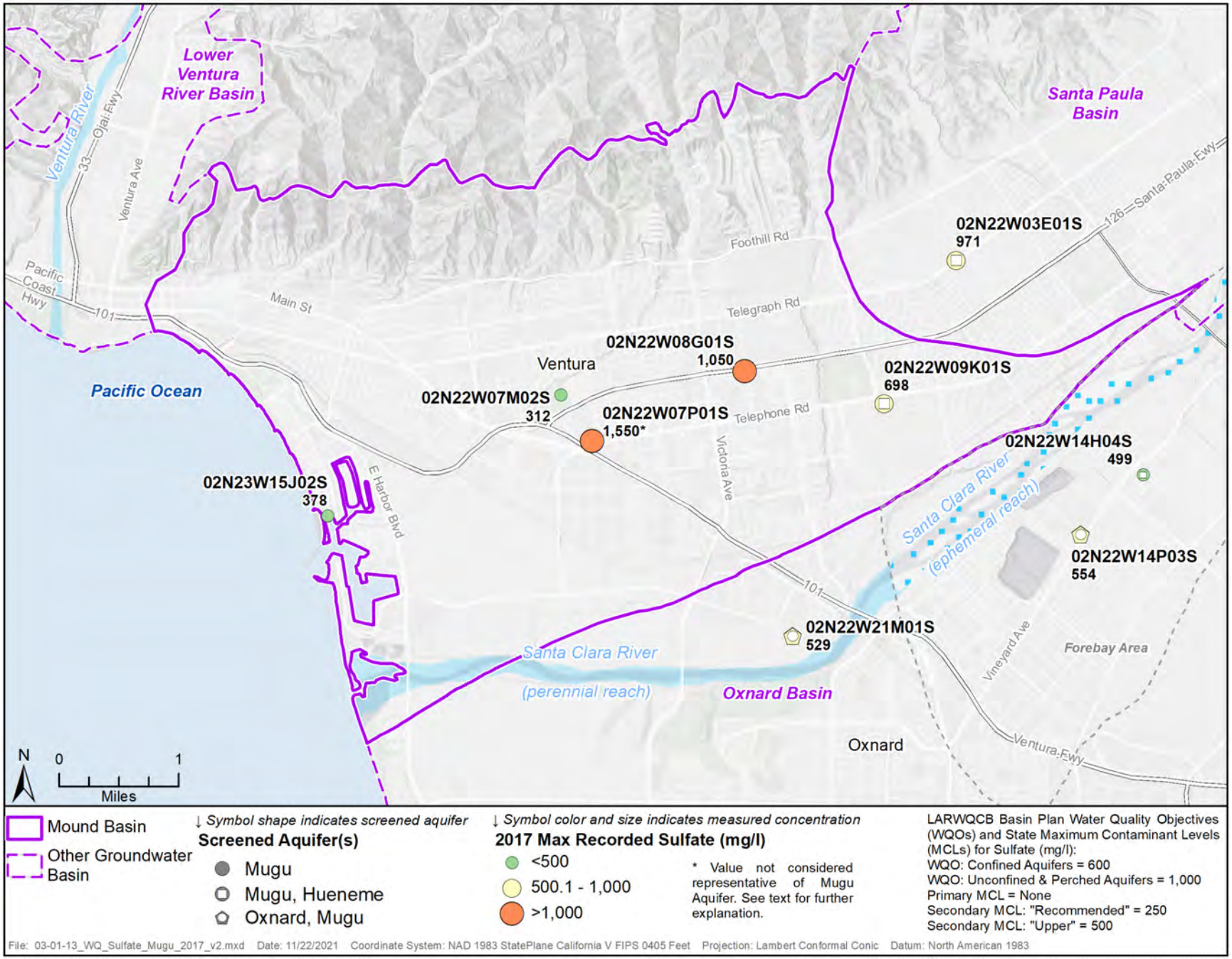


Figure 3.1-13 Maximum Sulfate Concentrations Detected in Mugu Aquifer during 2017.

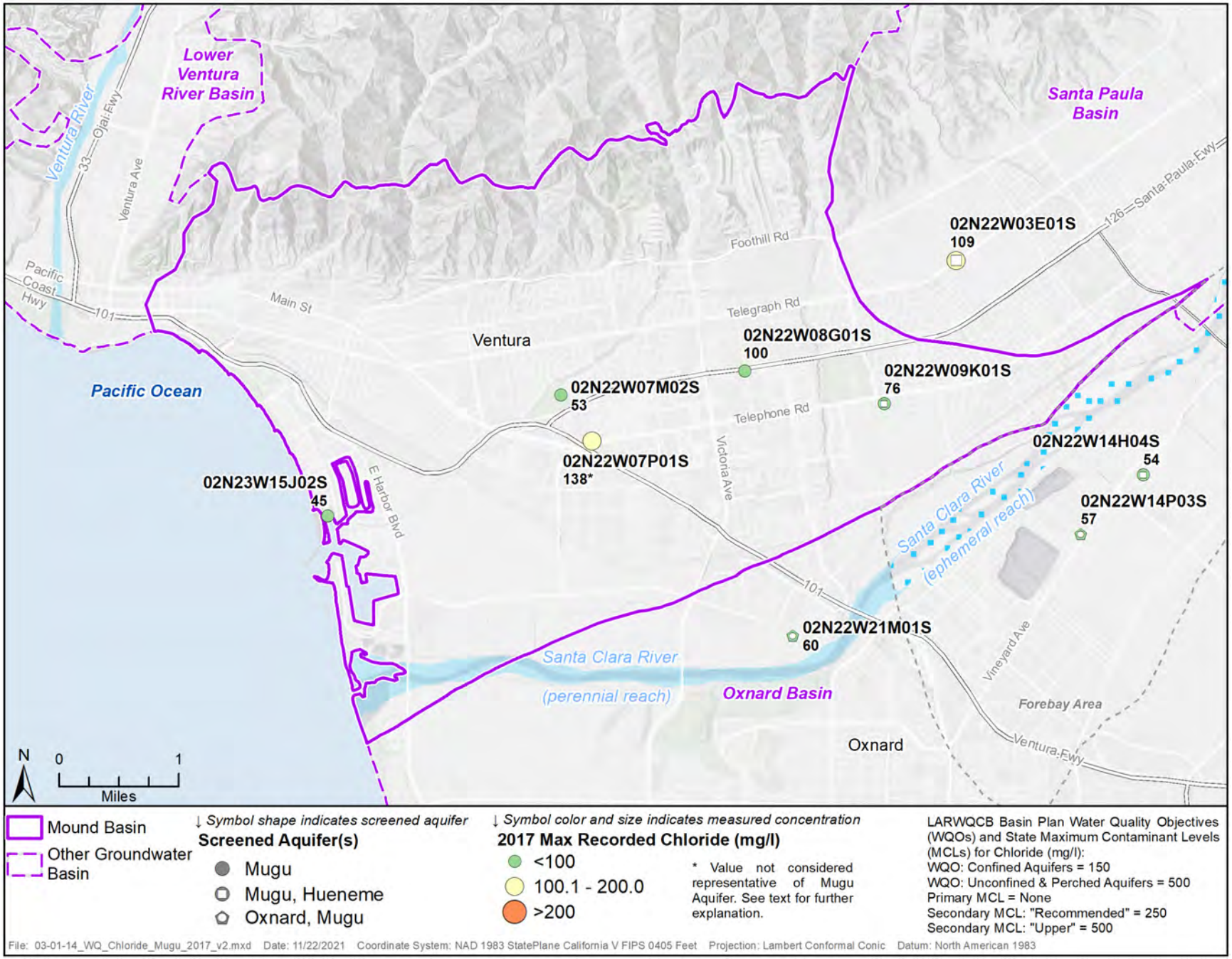


Figure 3.1-14 Maximum Chloride Concentrations Detected in Mugu Aquifer during 2017.

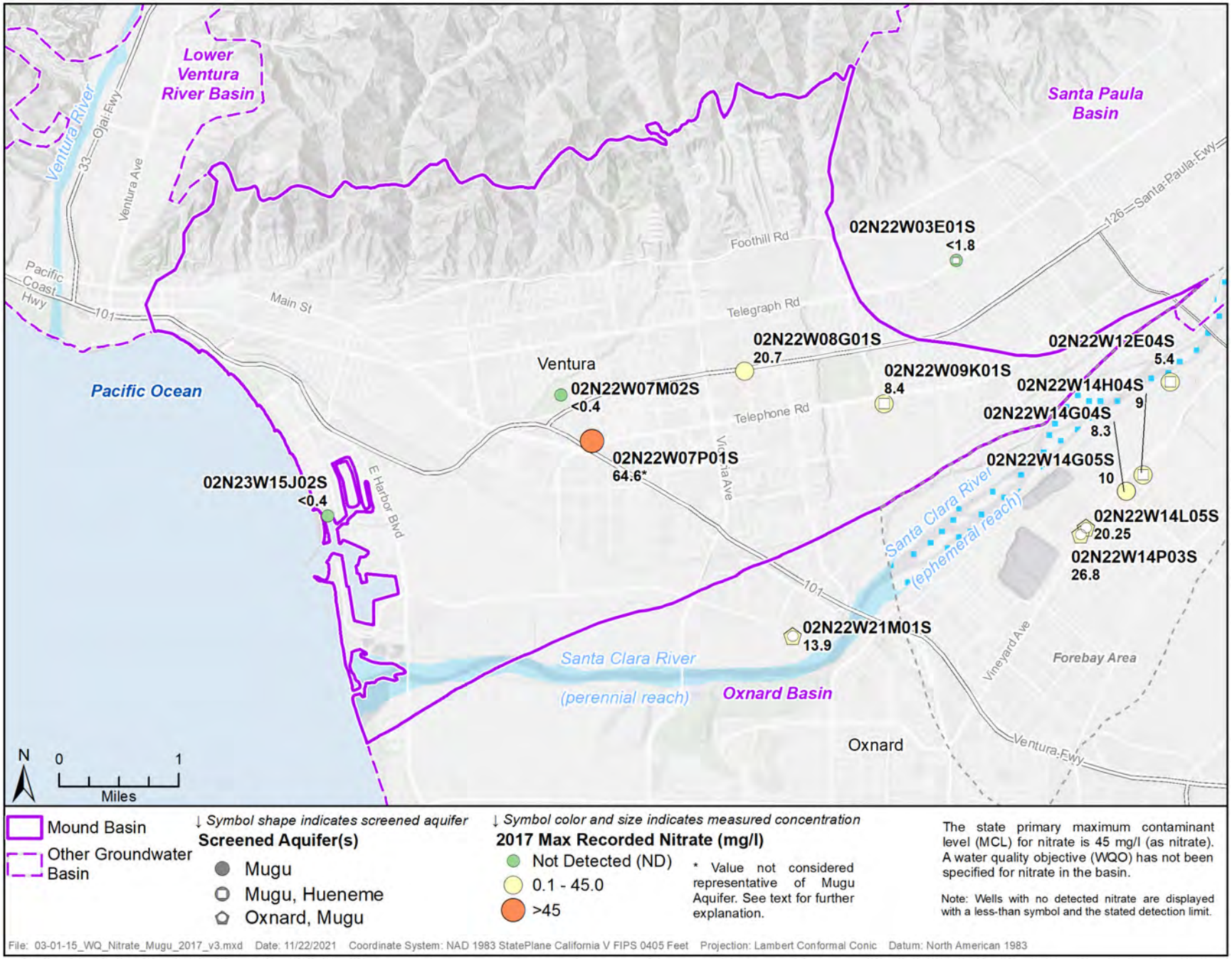


Figure 3.1-15 Maximum Nitrate Concentrations Detected in Mugu Aquifer during 2017.

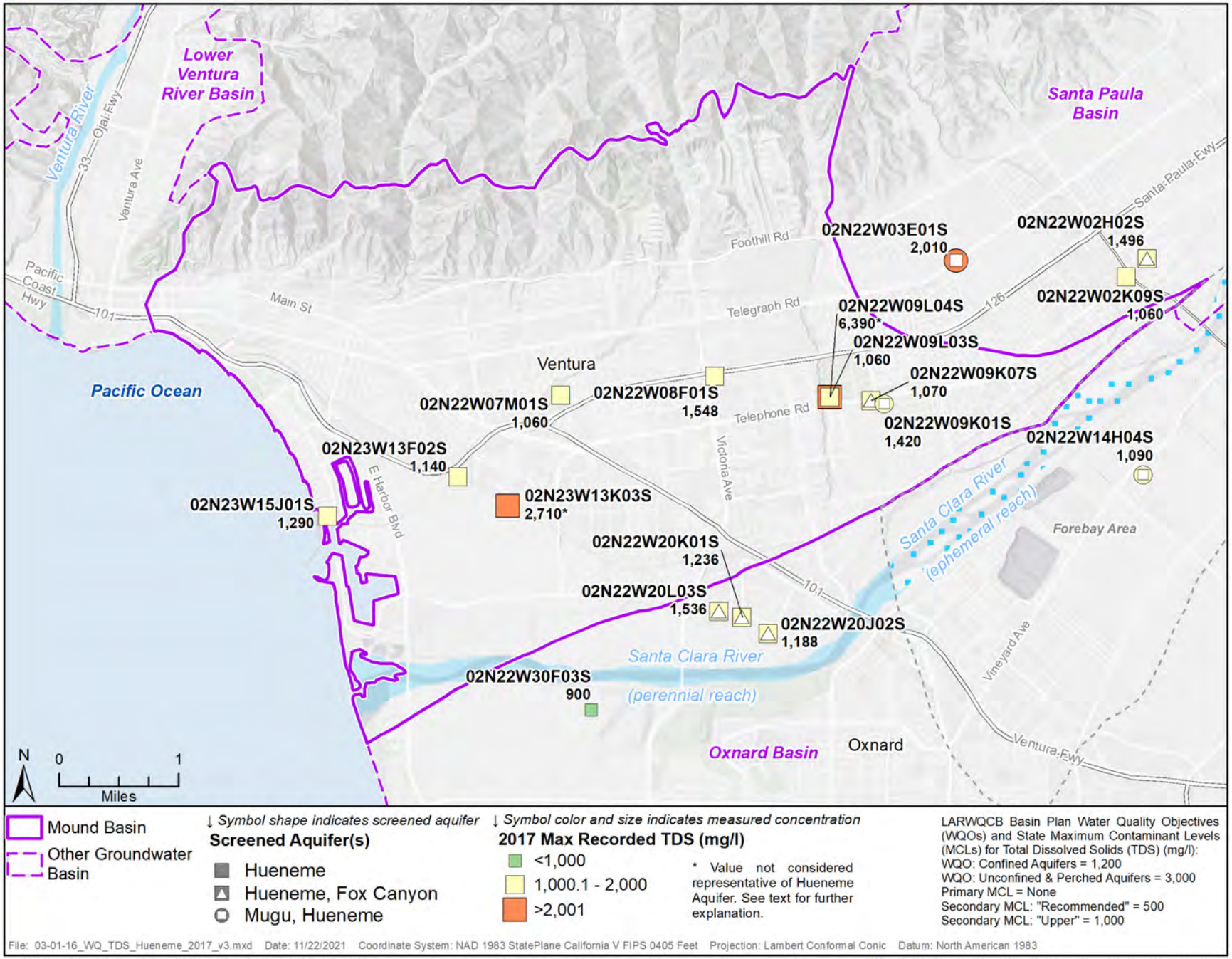


Figure 3.1-16 Maximum TDS Concentrations Detected in Hueneme Aquifer during 2017.

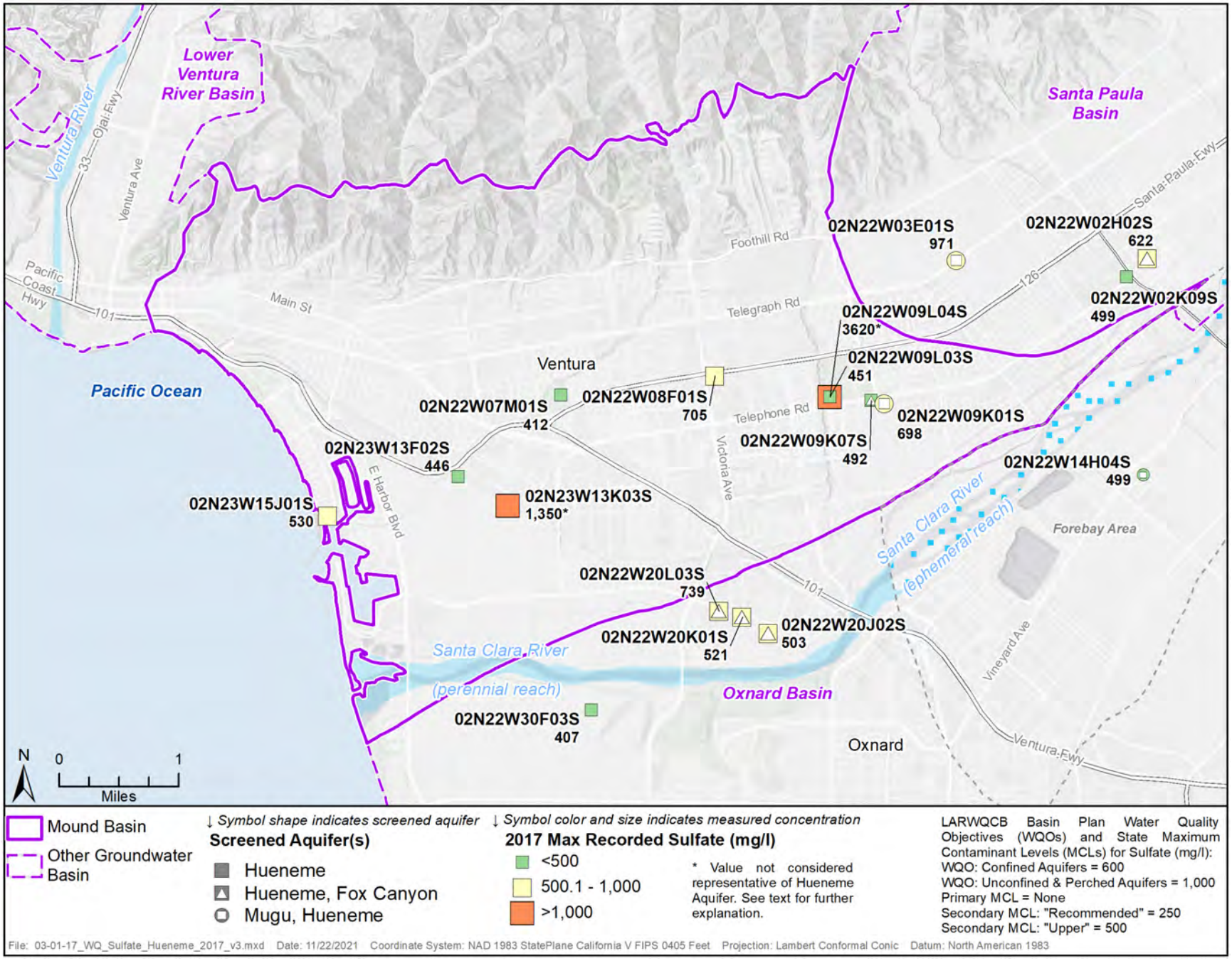


Figure 3.1-17 Maximum Sulfate Concentrations Detected in Hueneme Aquifer during 2017.

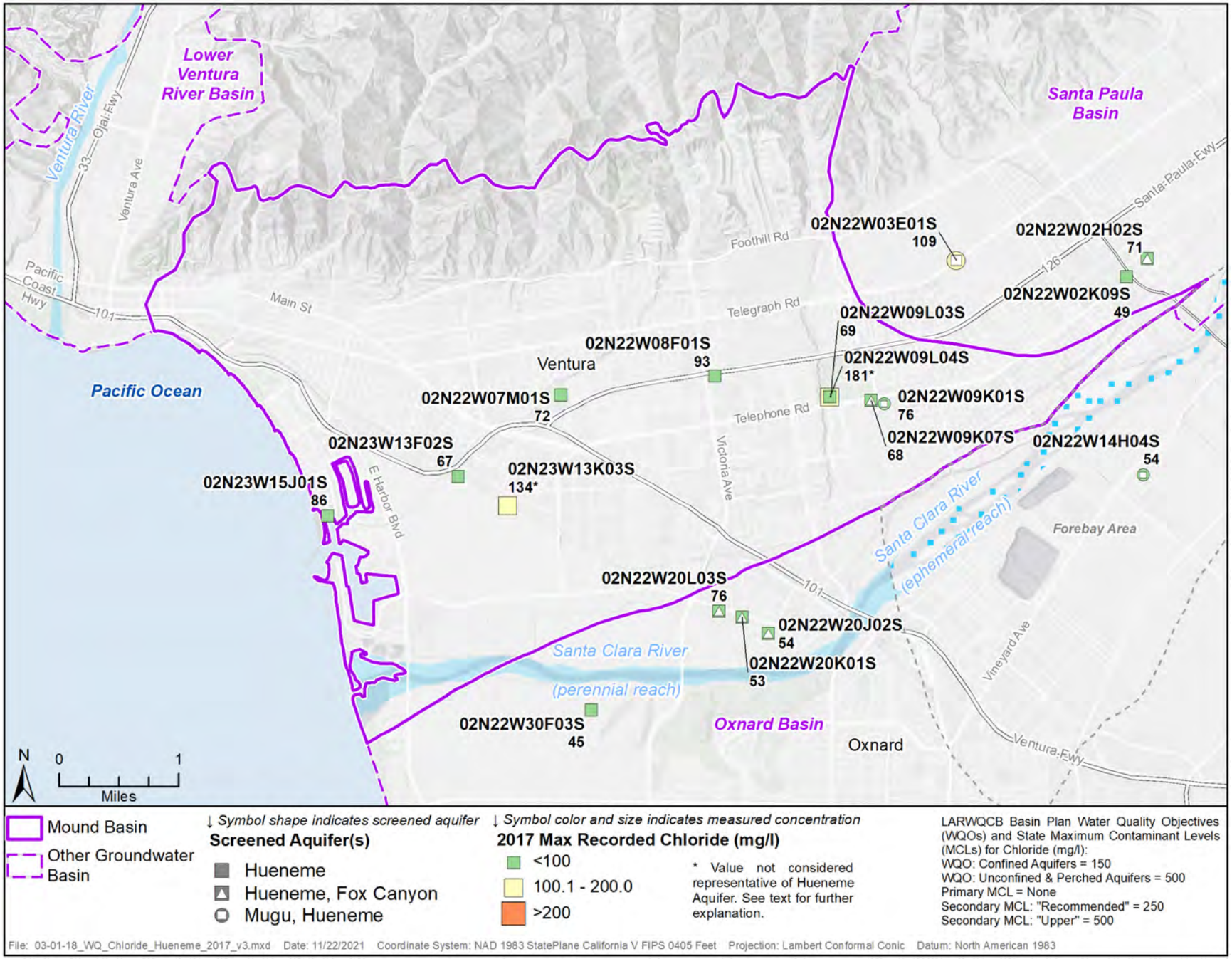


Figure 3.1-18 Maximum Chloride Concentrations Detected in Hueneme Aquifer during 2017.

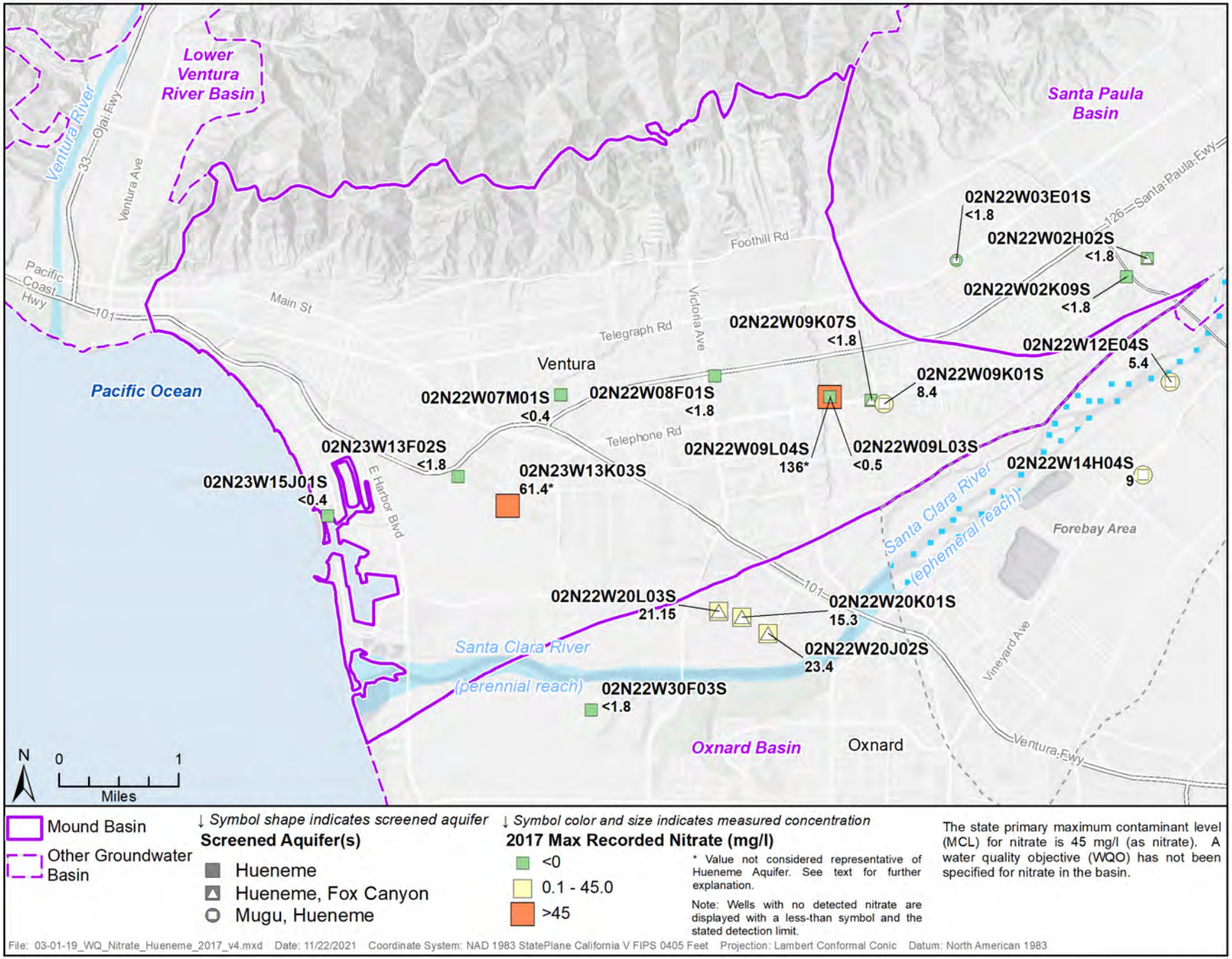


Figure 3.1-19 Maximum Nitrate Concentrations Detected in Hueneme Aquifer during 2017.

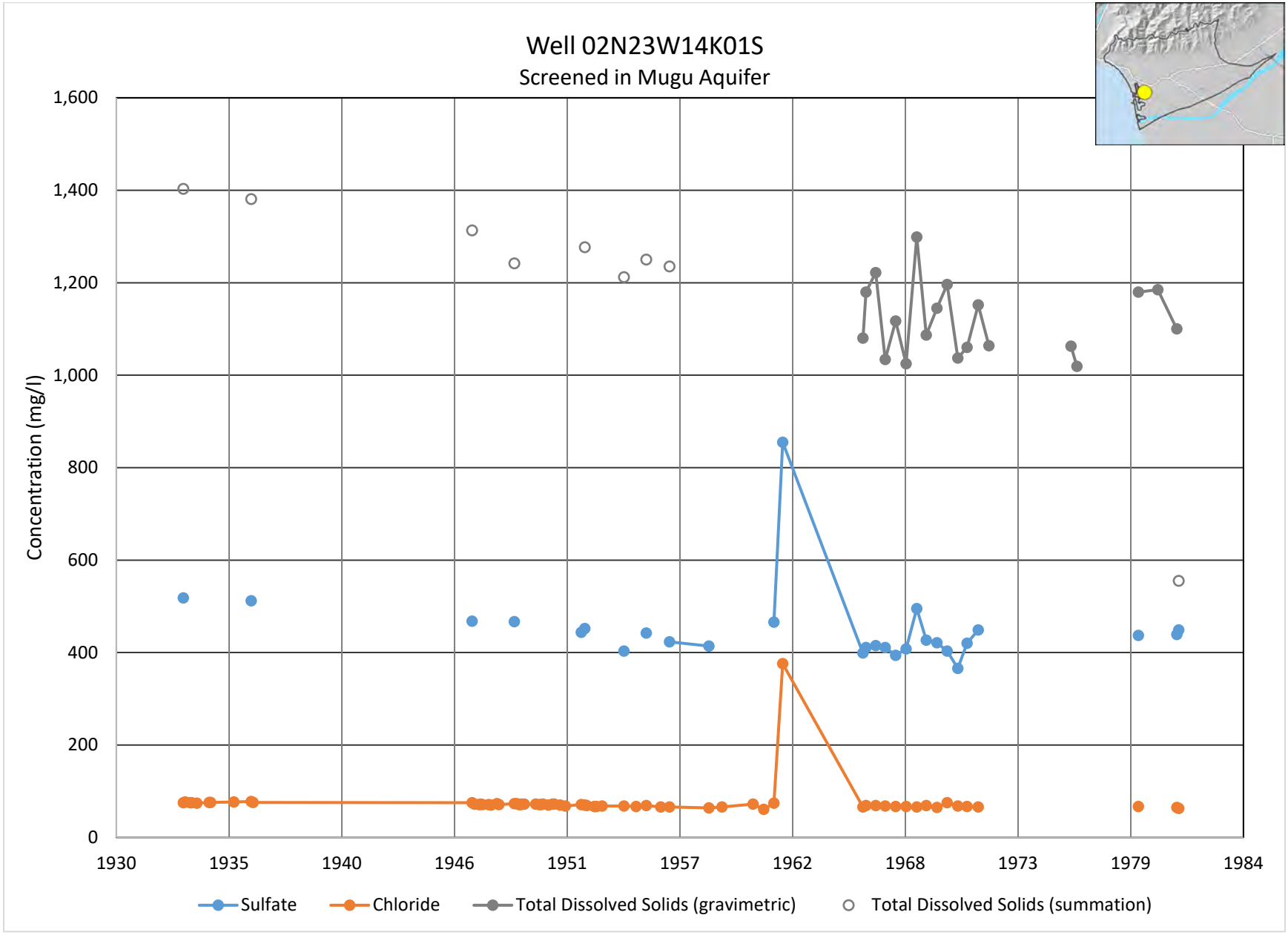
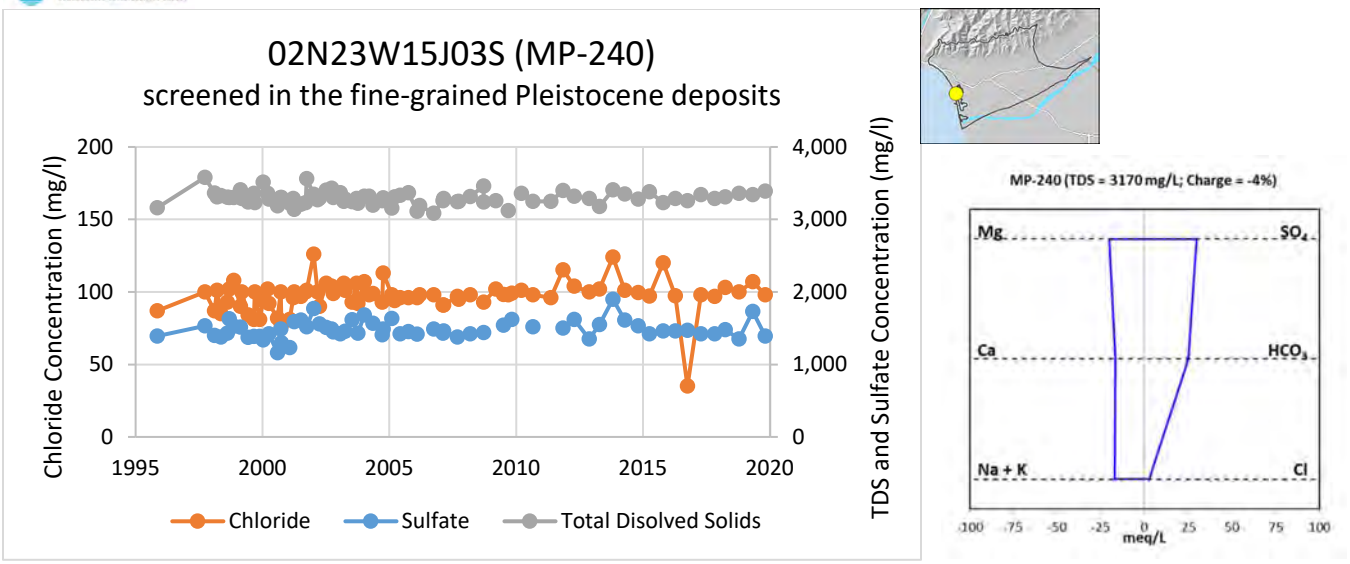
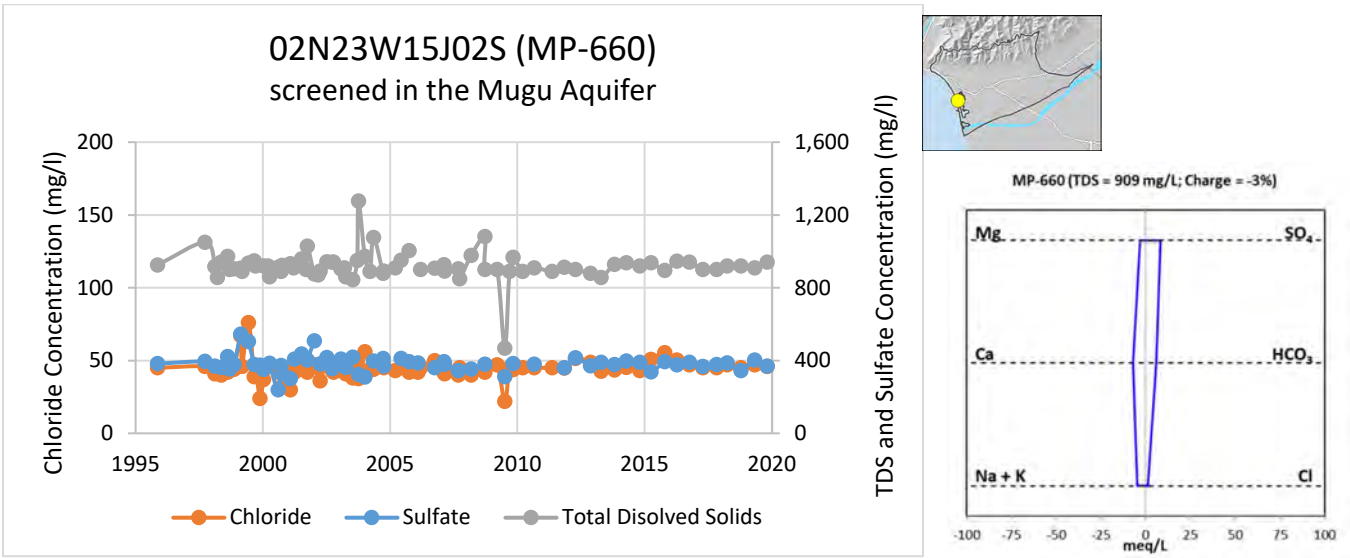


Figure 3.1-20 Well 02N23W14K01S Time Series Data: TDS, Sulfate, and Chloride Records.



Note: To more clearly depict concentration trends for TDS and sulfate, the vertical axis on the right side of the plot above has a different scale than the vertical axis on the right side of the plots below.



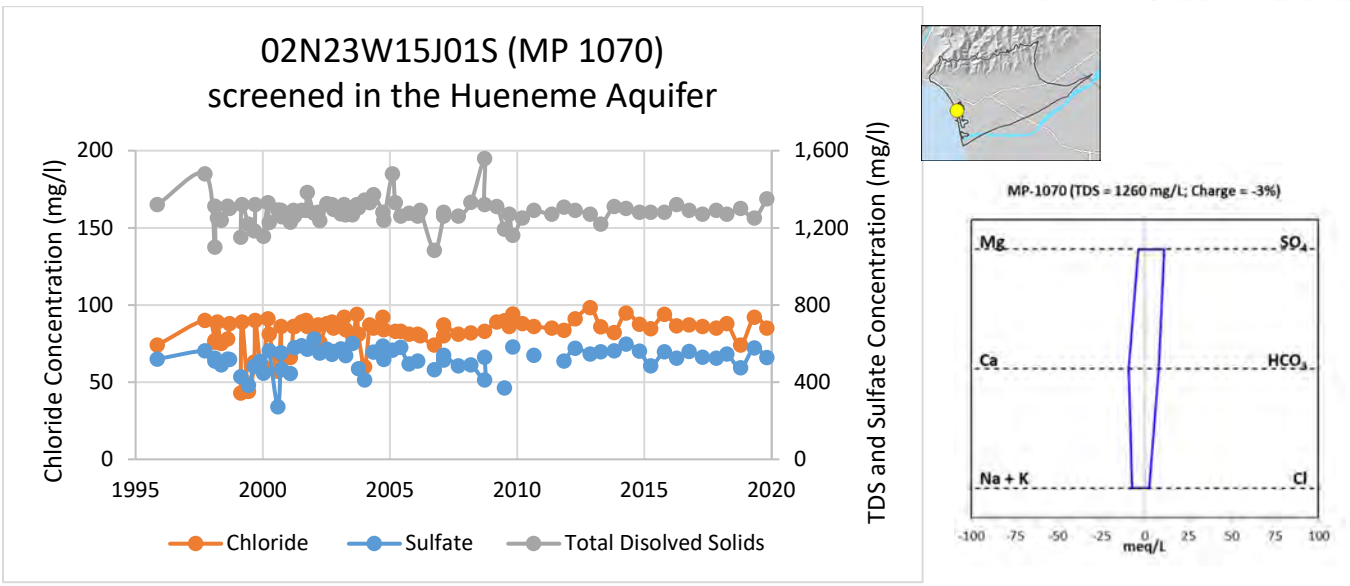
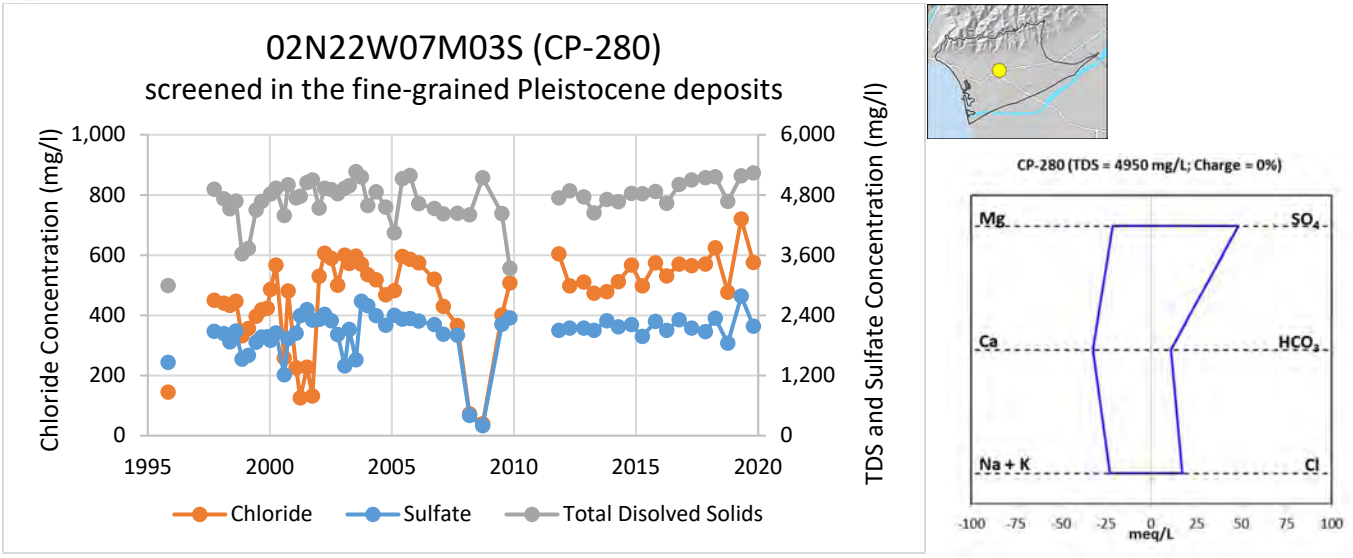
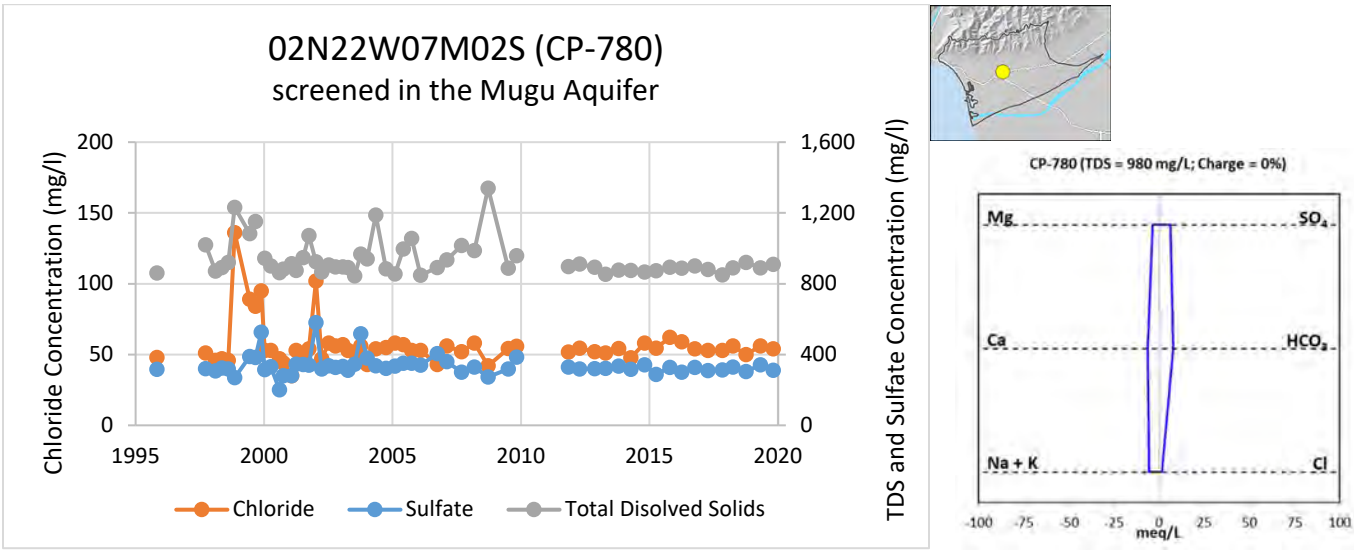


Figure 3.1-21 Monitoring Well Marina Park Time Series Data with Stiff Diagrams: TDS, Sulfate, and Chloride Records.



Note: To more clearly depict concentration trends for chloride, TDS and sulfate, the vertical axis on the left and right side of the plot above have different scales than the vertical axes on both sides of the plots below.



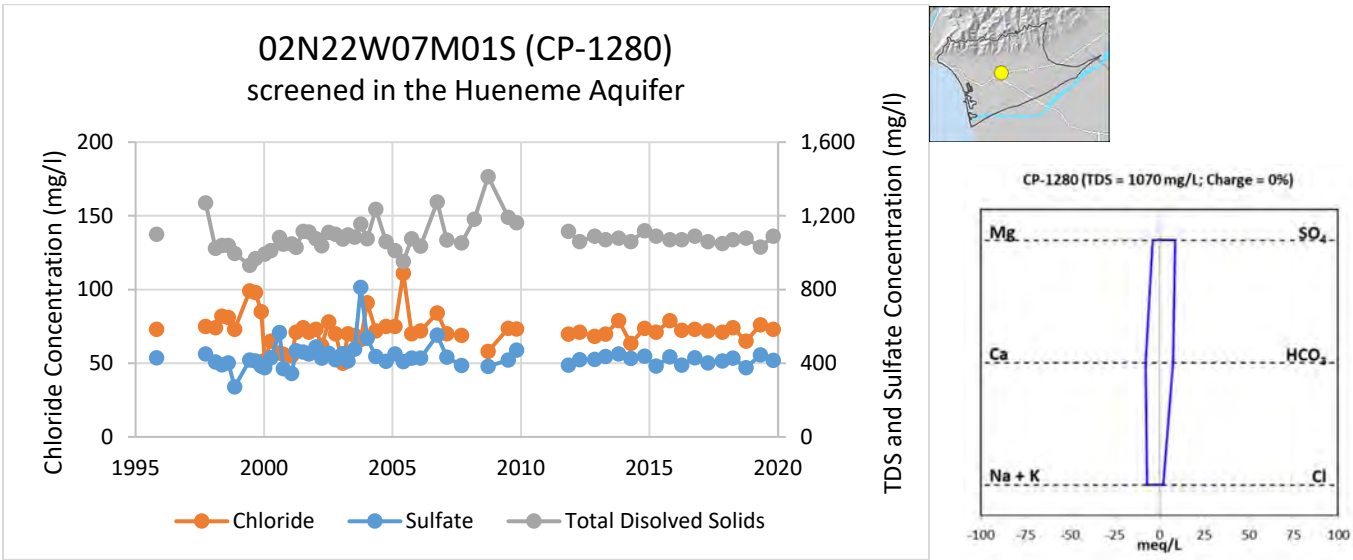
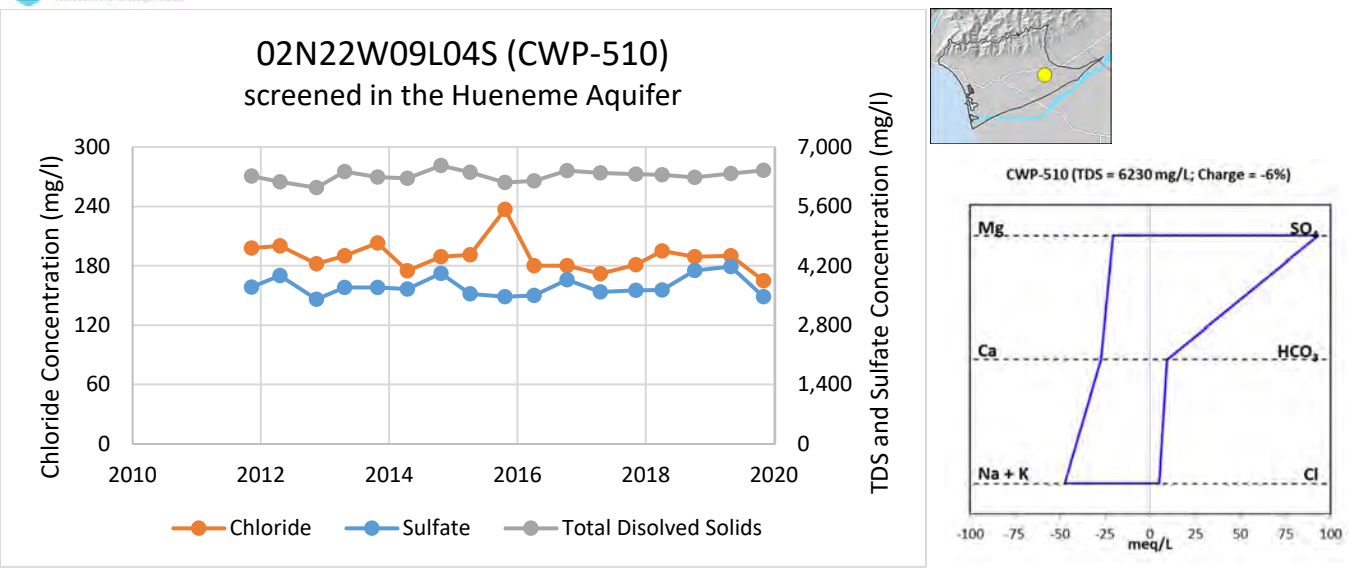


Figure 3.1-22 Monitoring Well Camino Real Park Time Series Data with Stiff Diagrams: TDS, Sulfate, and Chloride Records.



Note: To more clearly depict concentration trends for chloride, TDS and sulfate, the vertical axis on the left and right side of the plot above have different scales than the vertical axes on both sides of the plot below.

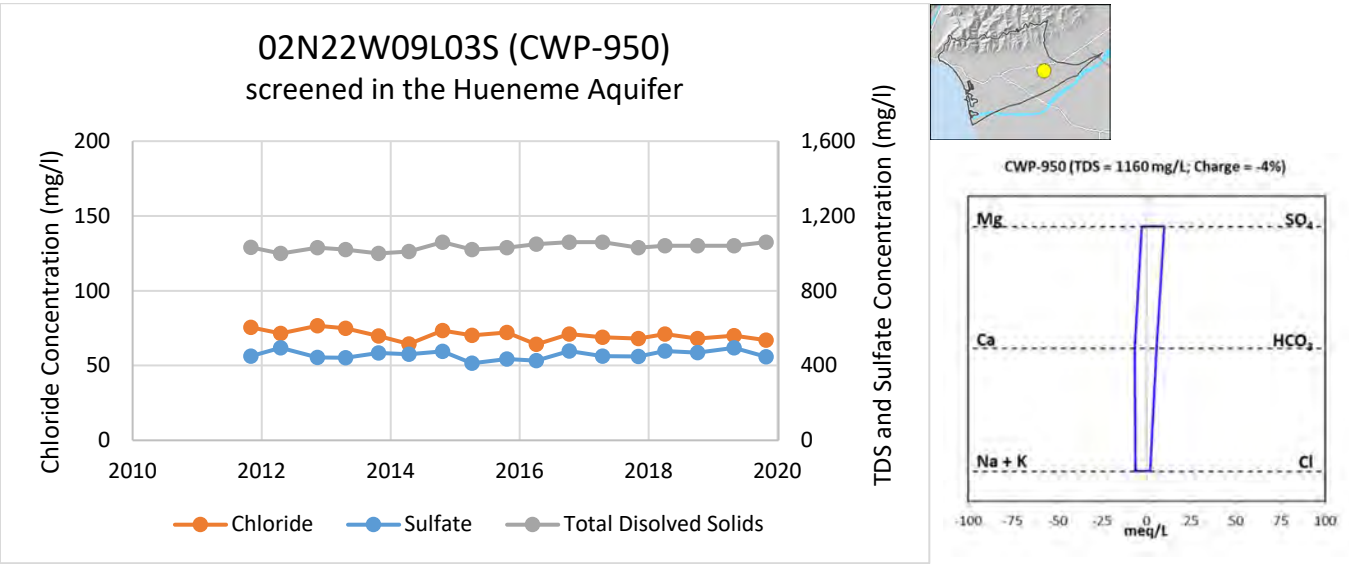


Figure 3.1-23 Monitoring Well Community Water Park Time Series Data with Stiff Diagrams: TDS, Sulfate, and Chloride Records.

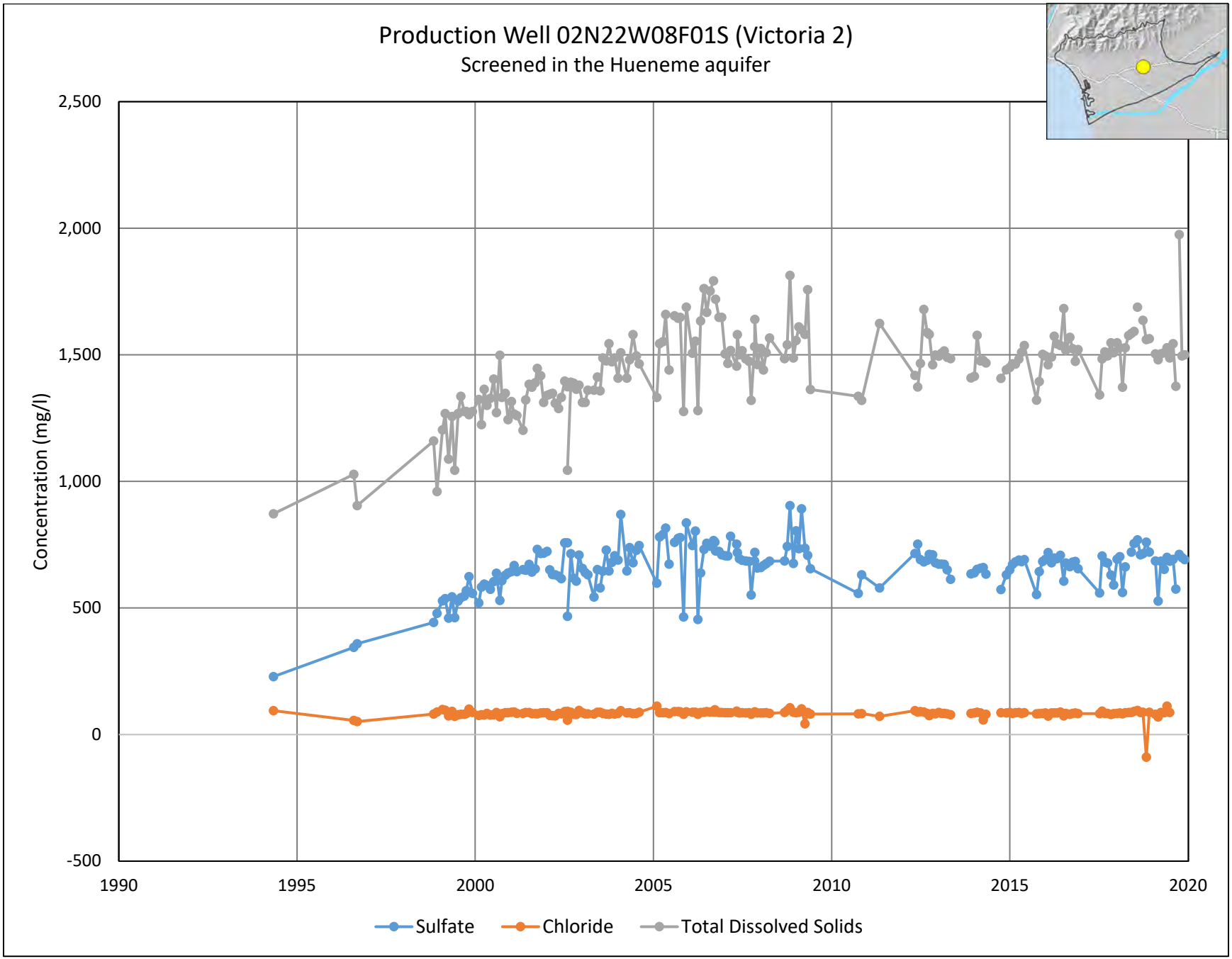


Figure 3.1-24 Well 02N22W08F01S Time Series Data: TDS, Sulfate, and Chloride Records.

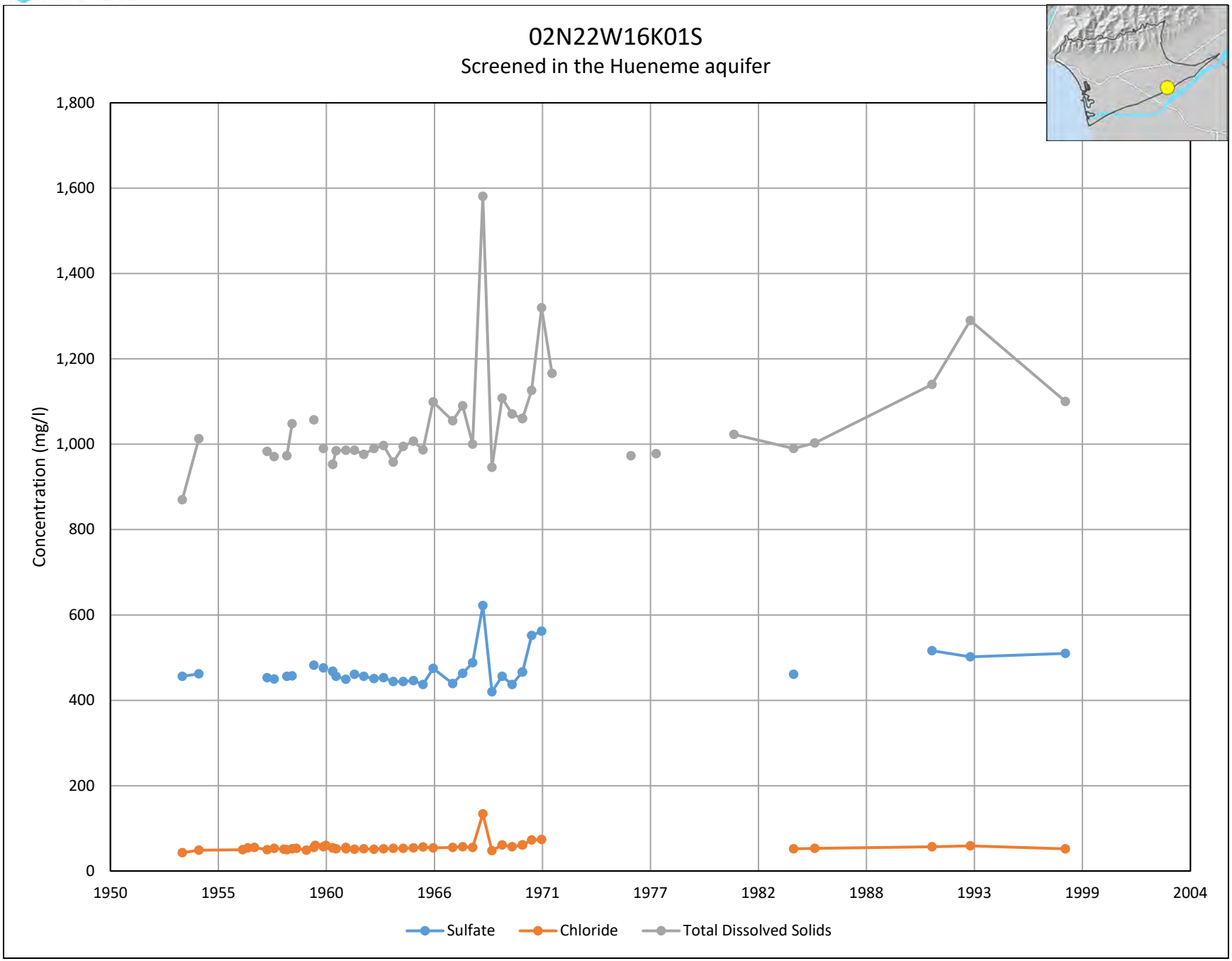


Figure 3.1-25 Well 02N23W16K01S Time Series Data: TDS, Sulfate, and Chloride Records.

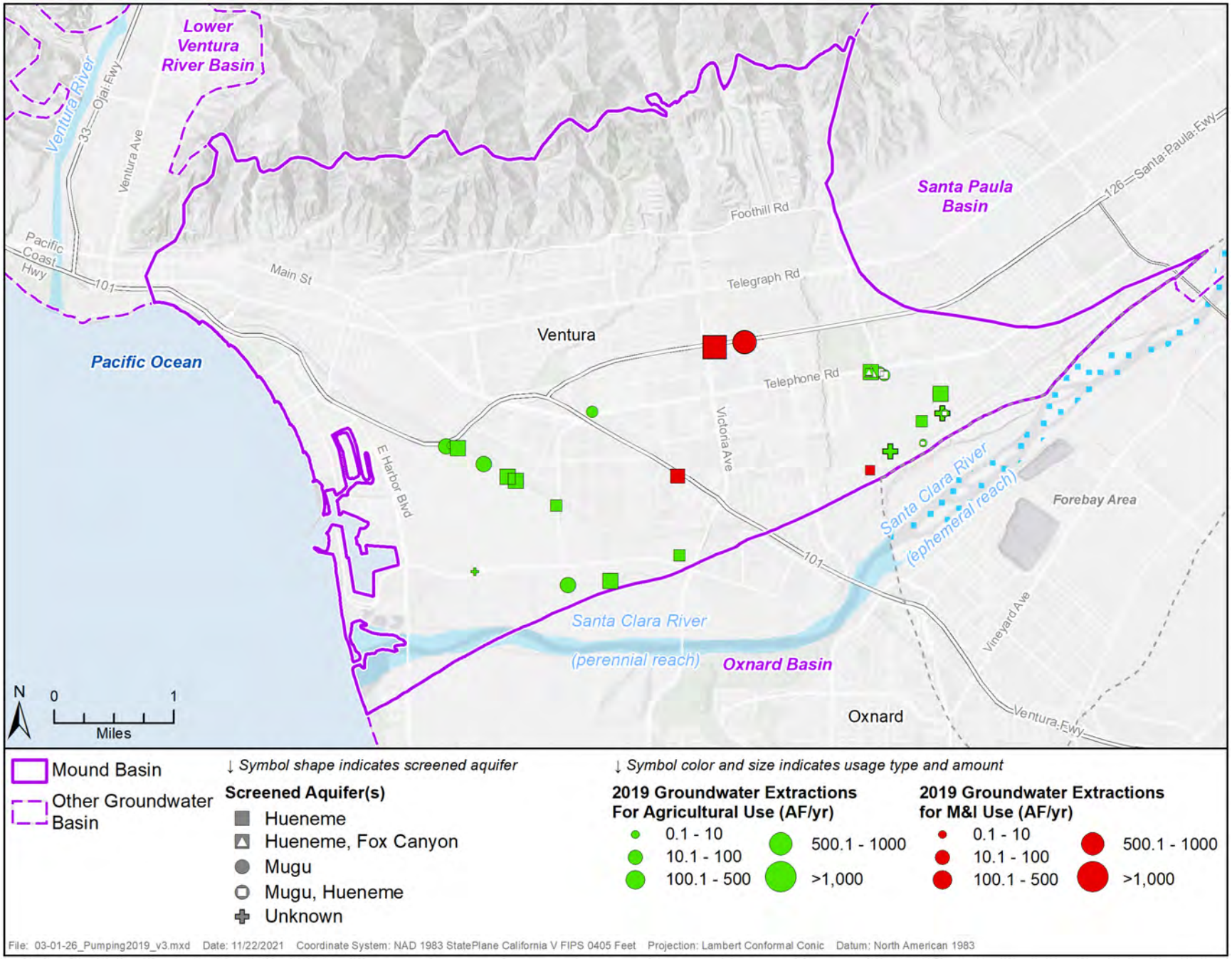


Figure 3.1-26 Map of Active Water Supply Wells in Mound Basin, Showing Groundwater Extractions in 2019.

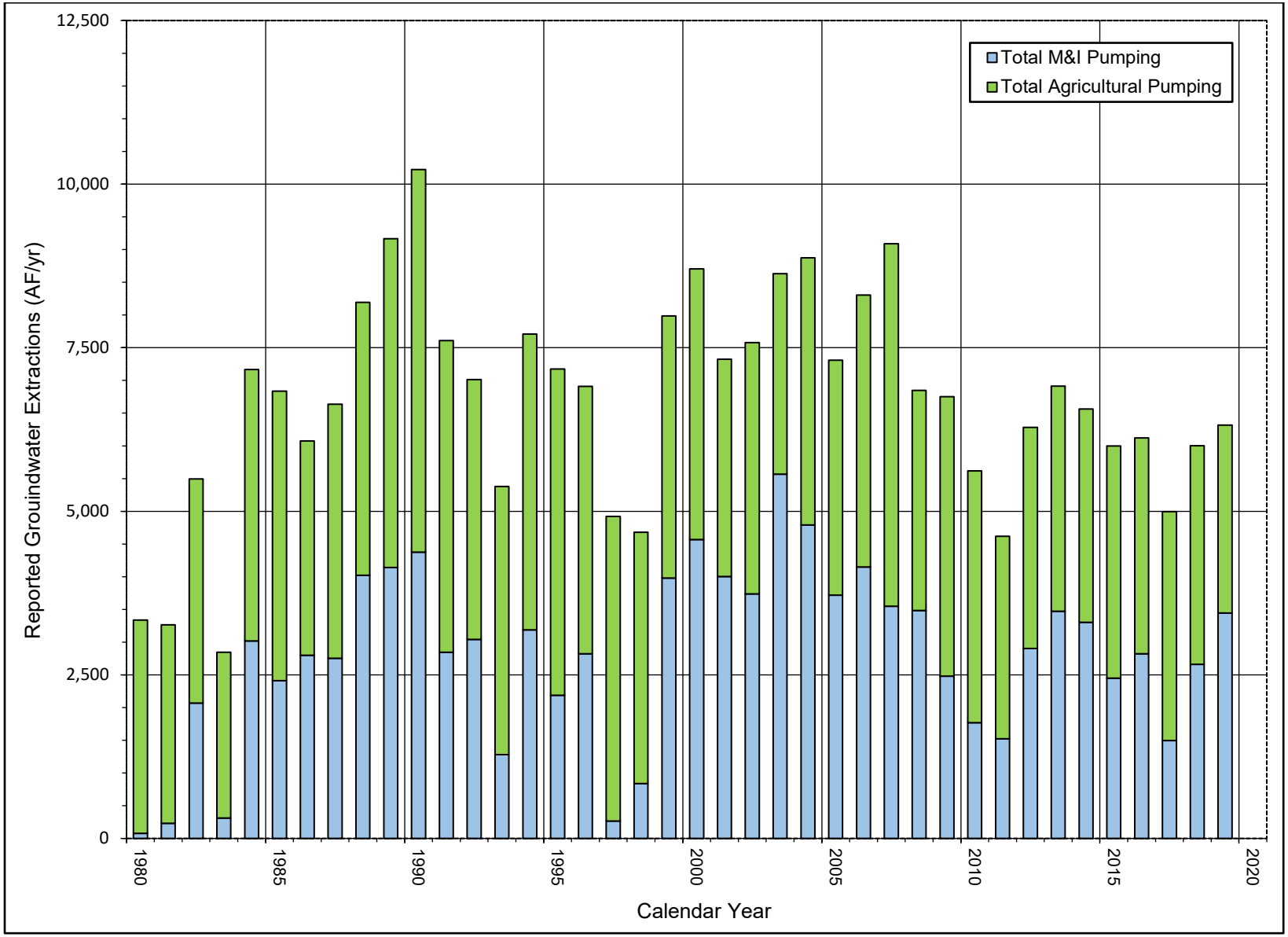


Figure 3.1-27 Graph of Historical (1980-2019) Groundwater Extractions from Mound Basin by Use Sector.

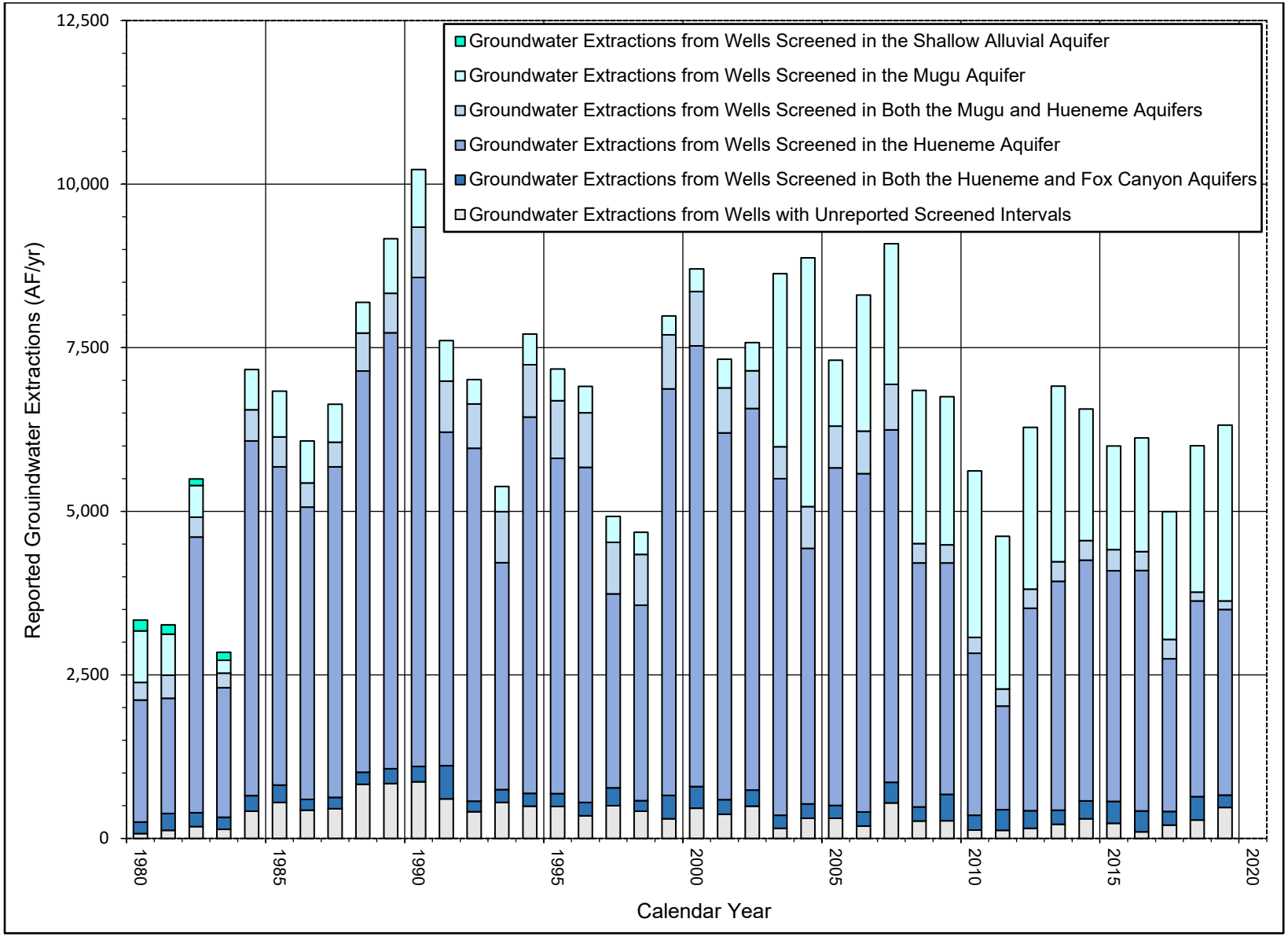


Figure 3.1-28 Graph of Historical (1980-2019) Groundwater Extractions from Mound Basin by Aquifer.

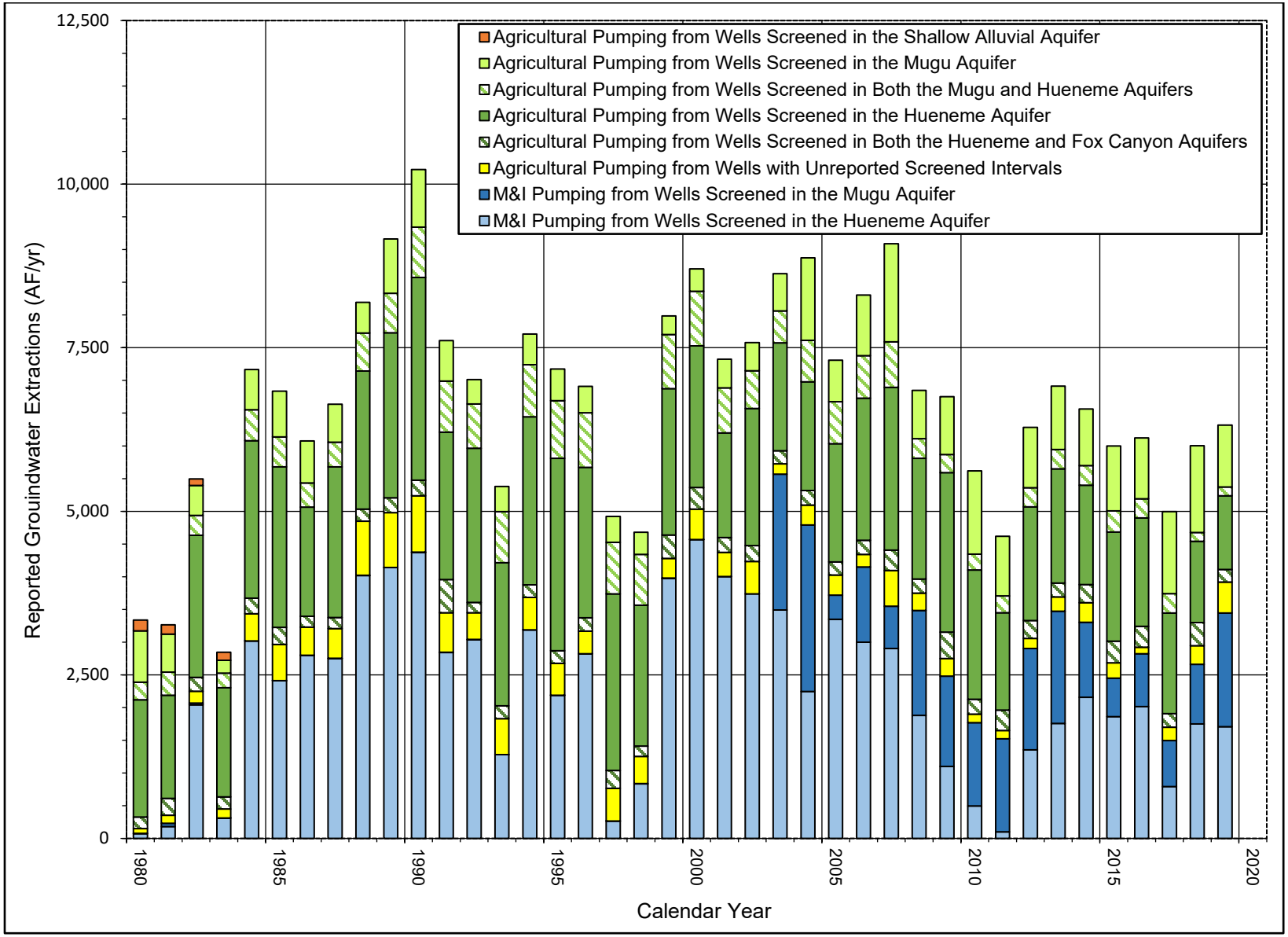


Figure 3.1-29 Graph of Historical (1980-2019) Groundwater Extractions from Mound Basin by Use Sector and Aquifer.

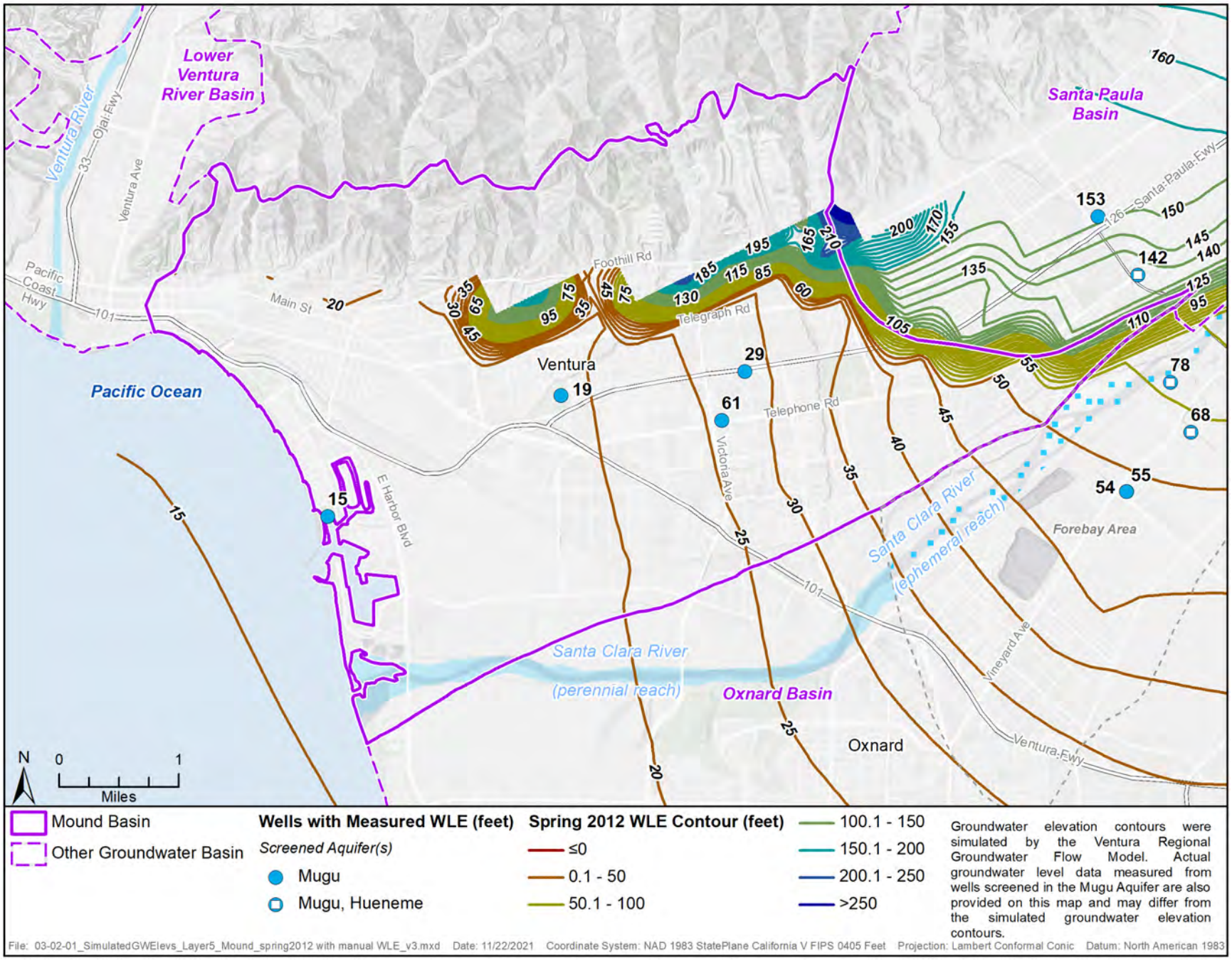


Figure 3.2-01 Water Level Elevation in Mugu Aquifer, Spring 2012.

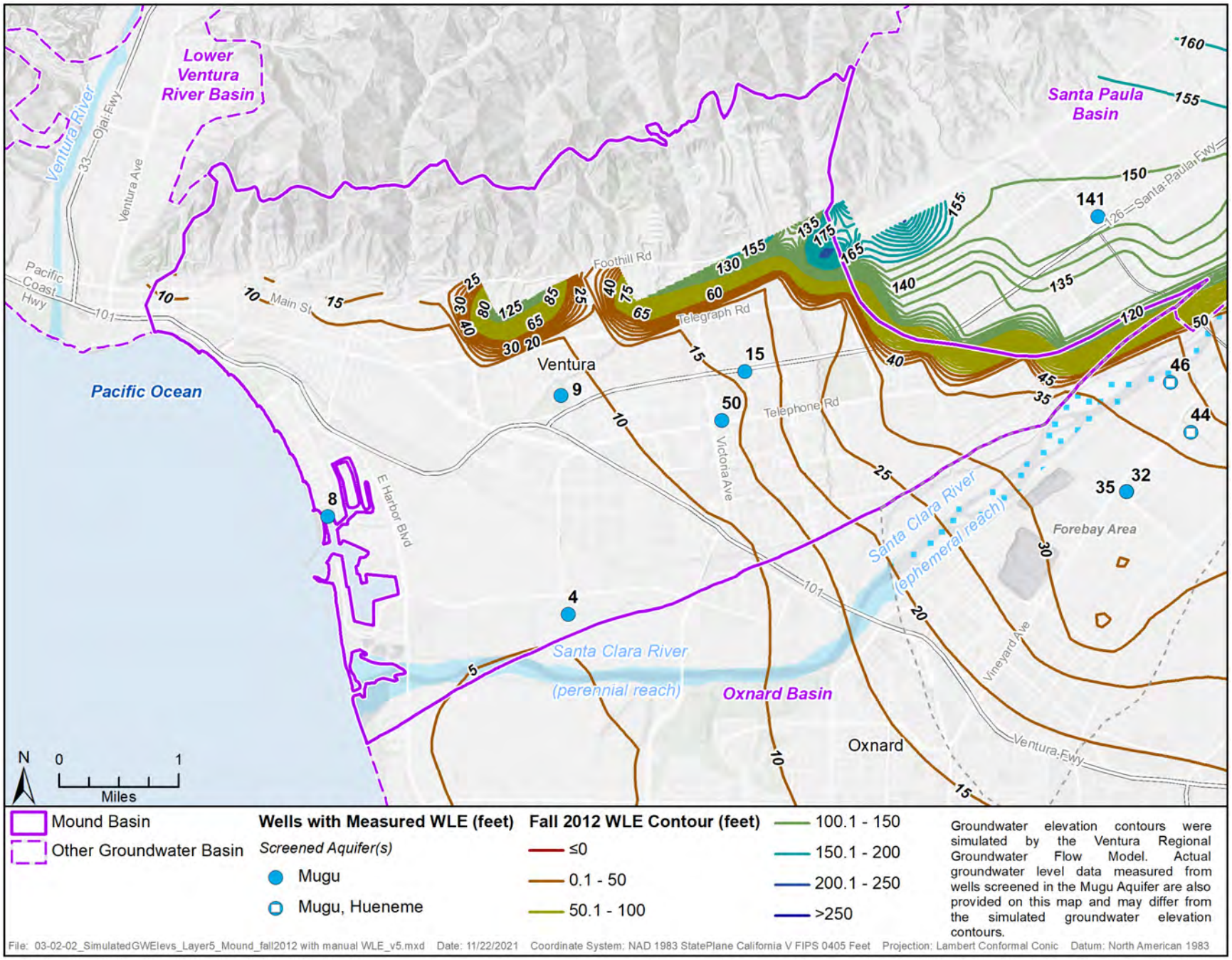


Figure 3.2-02 Water Level Elevation in Mugu Aquifer, Fall 2012.

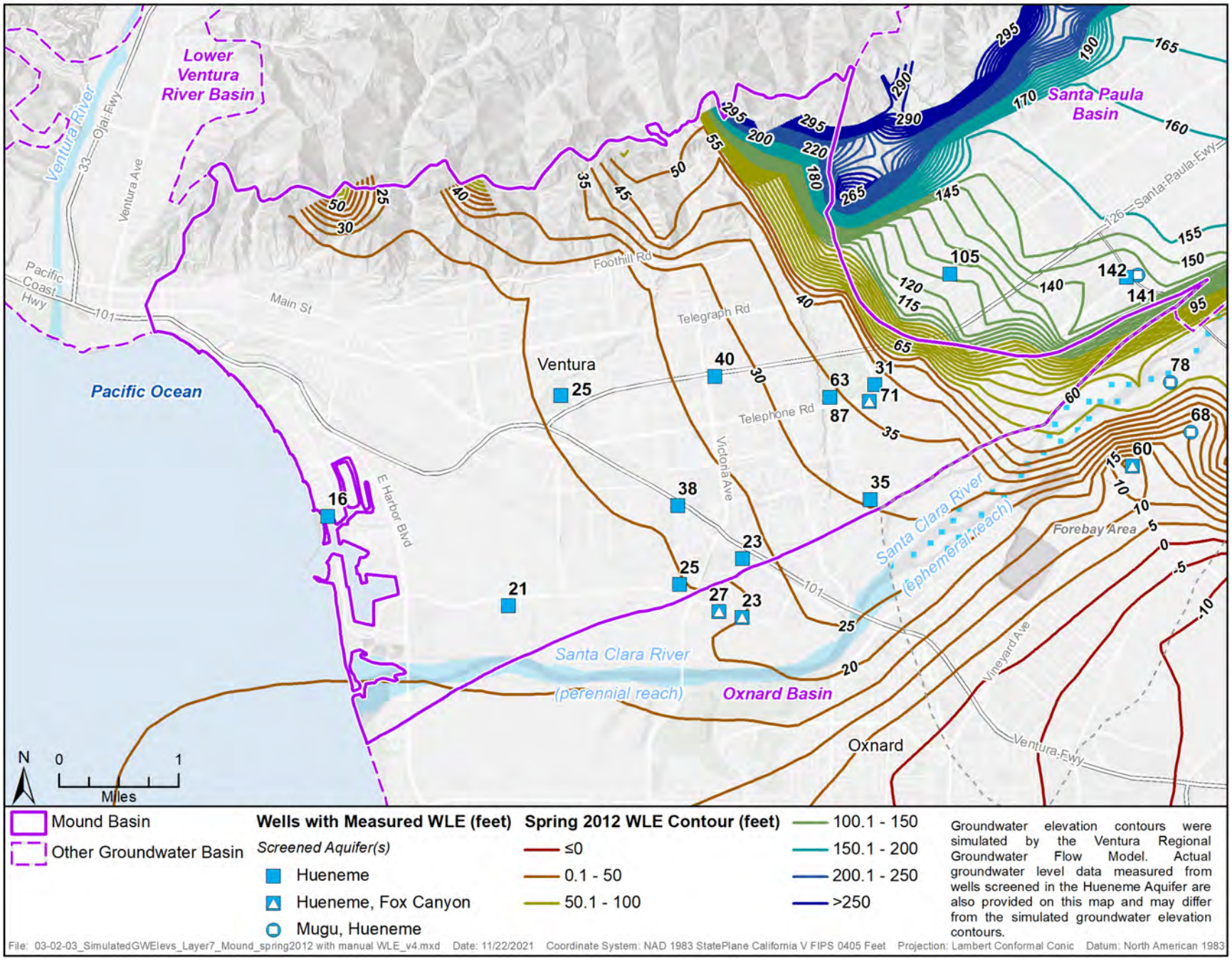


Figure 3.2-03 Water Level Elevation in Hueneme Aquifer, Spring 2012.

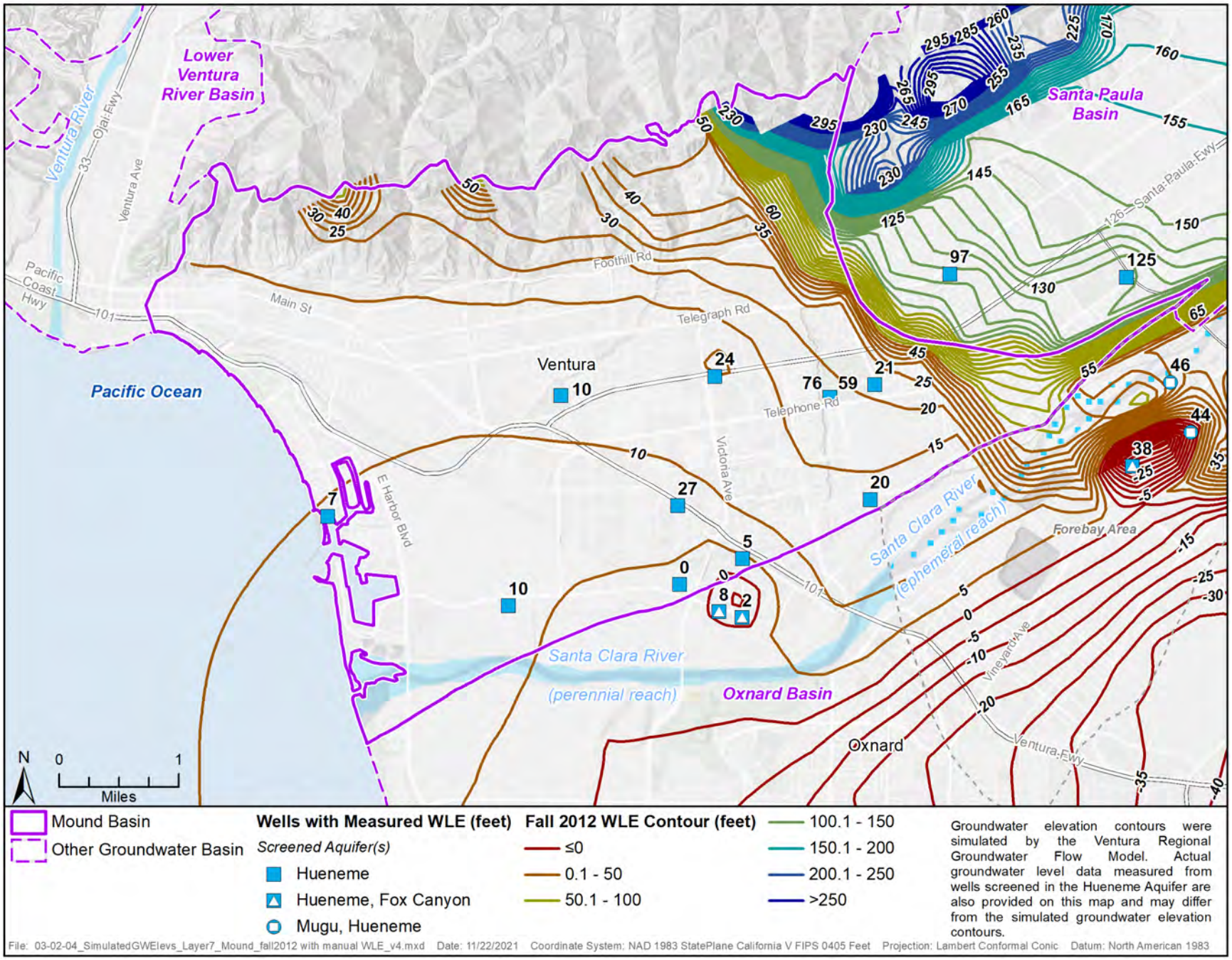


Figure 3.2-04 Water Level Elevation in Hueneme Aquifer, Fall 2012.

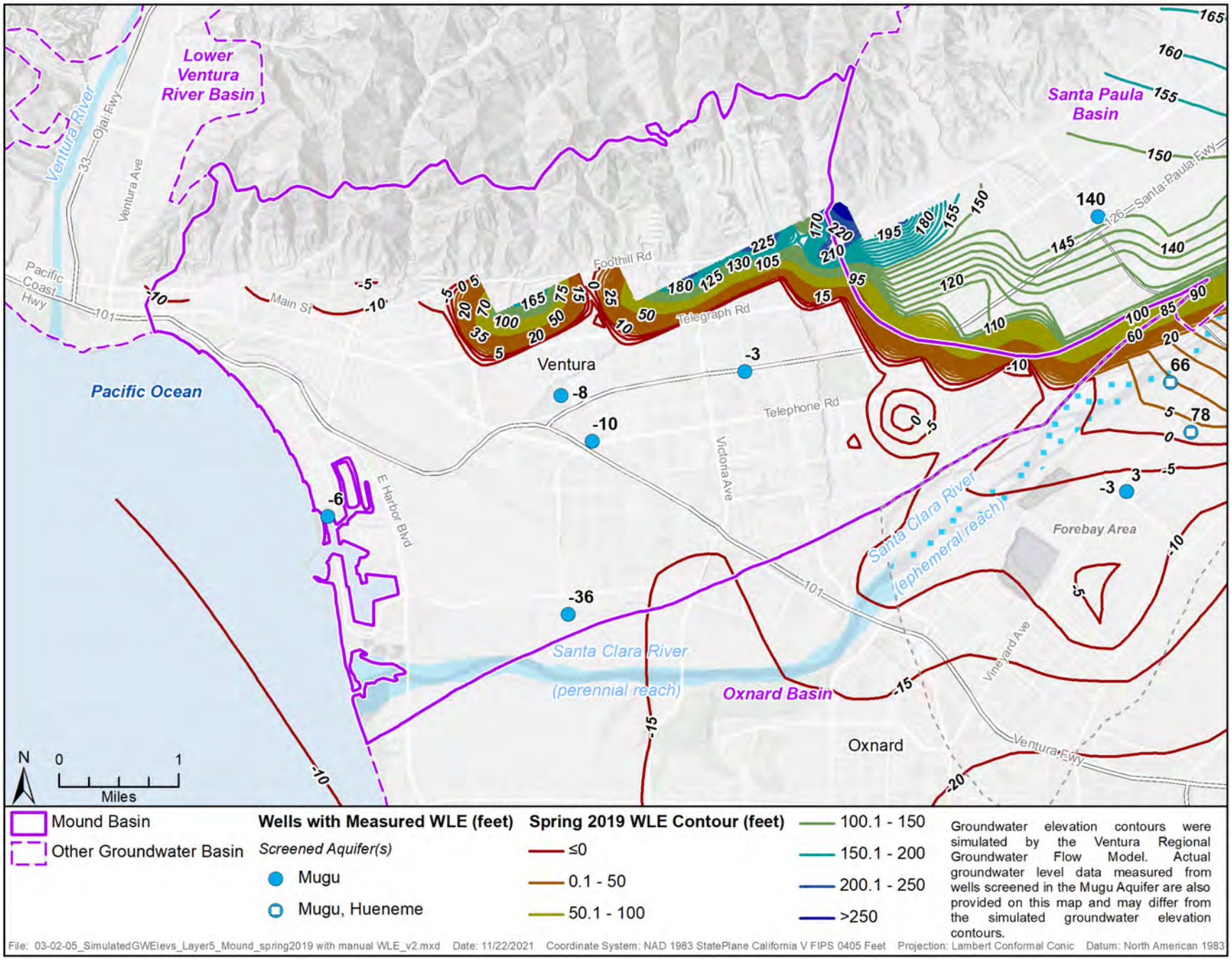


Figure 3.2-05 Water Level Elevation in Mugu Aquifer, Spring 2019.

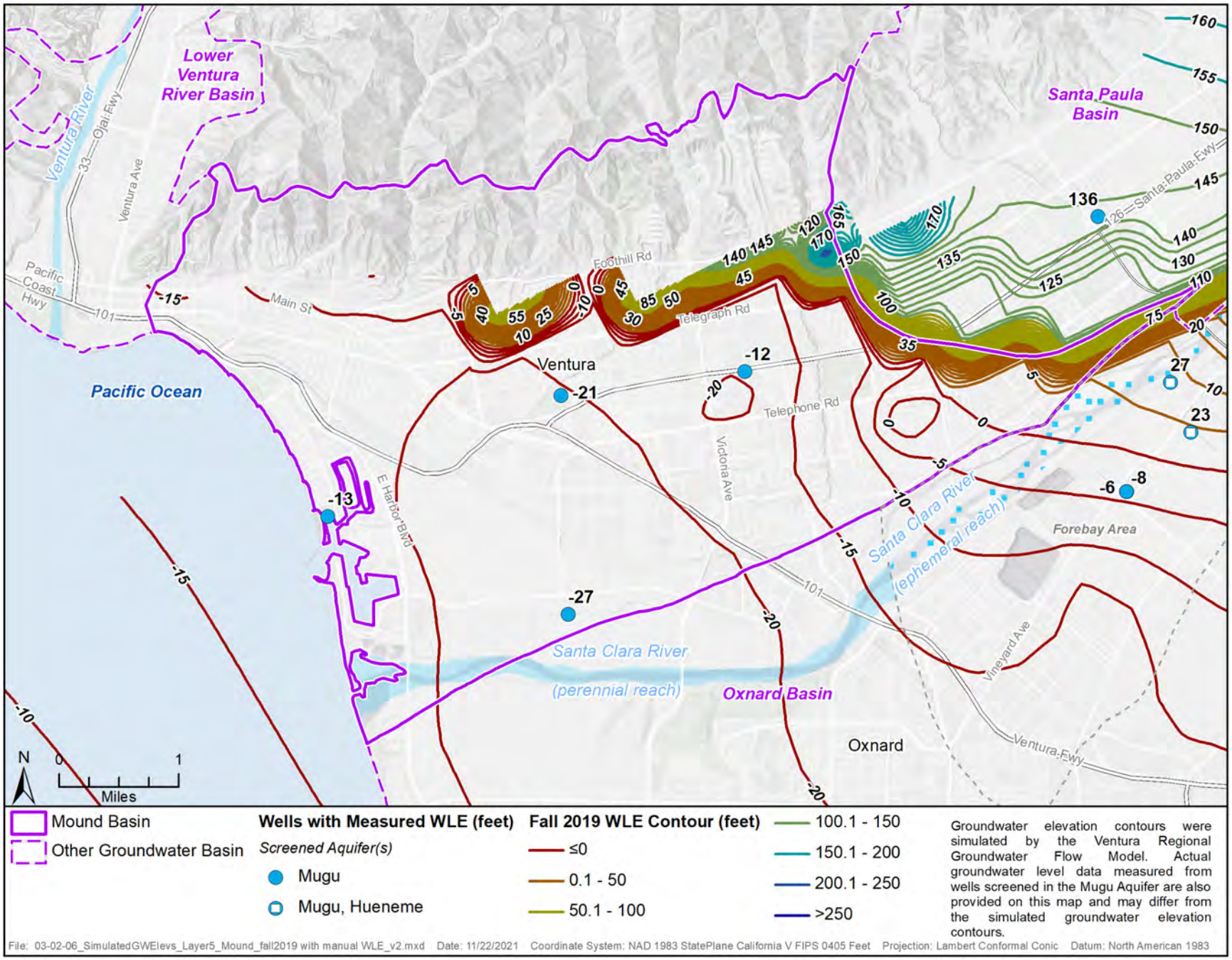


Figure 3.2-06 Water Level Elevation in Mugu Aquifer, Fall 2019.

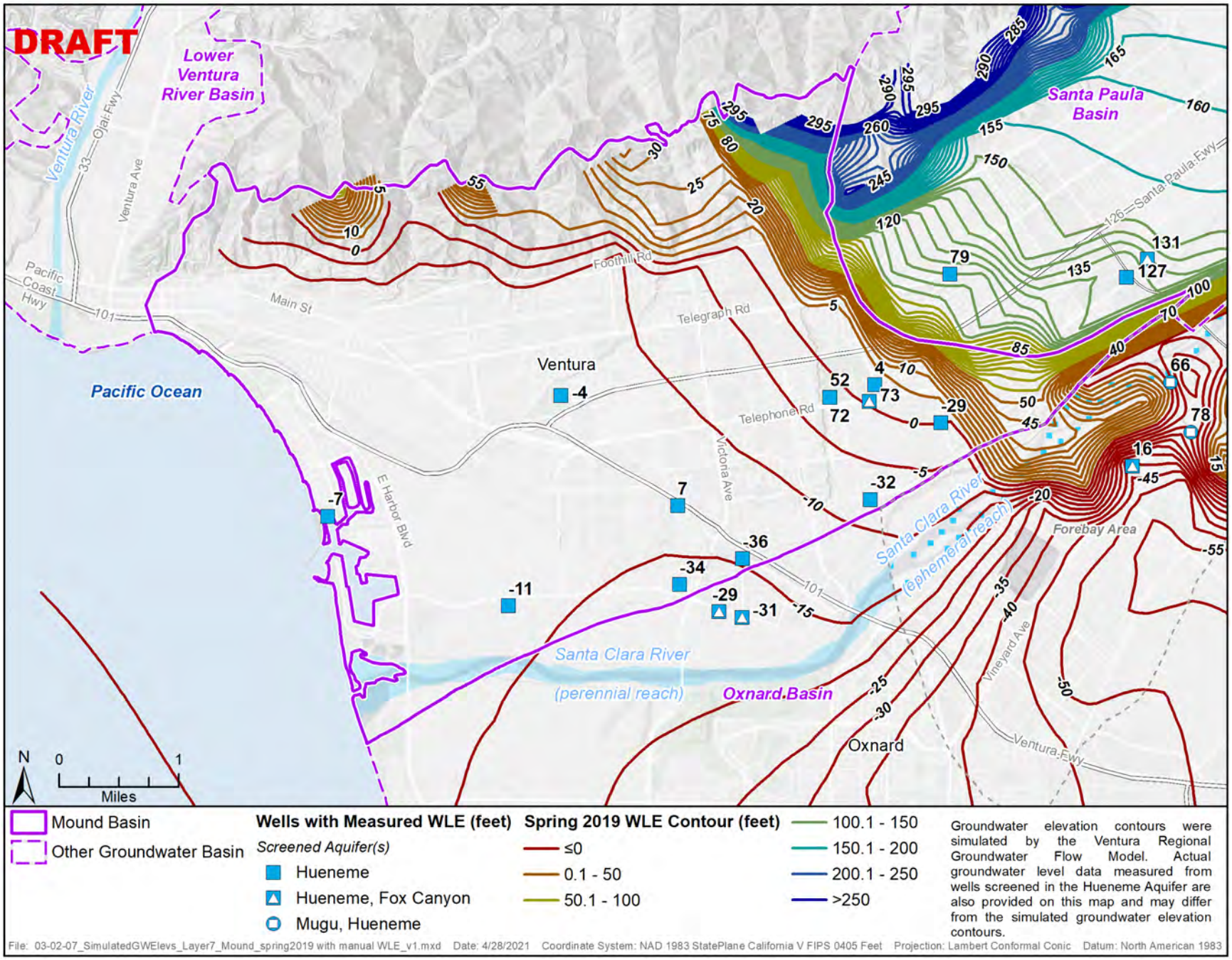


Figure 3.2-07 Water Level Elevation in Hueneme Aquifer, Spring 2019.

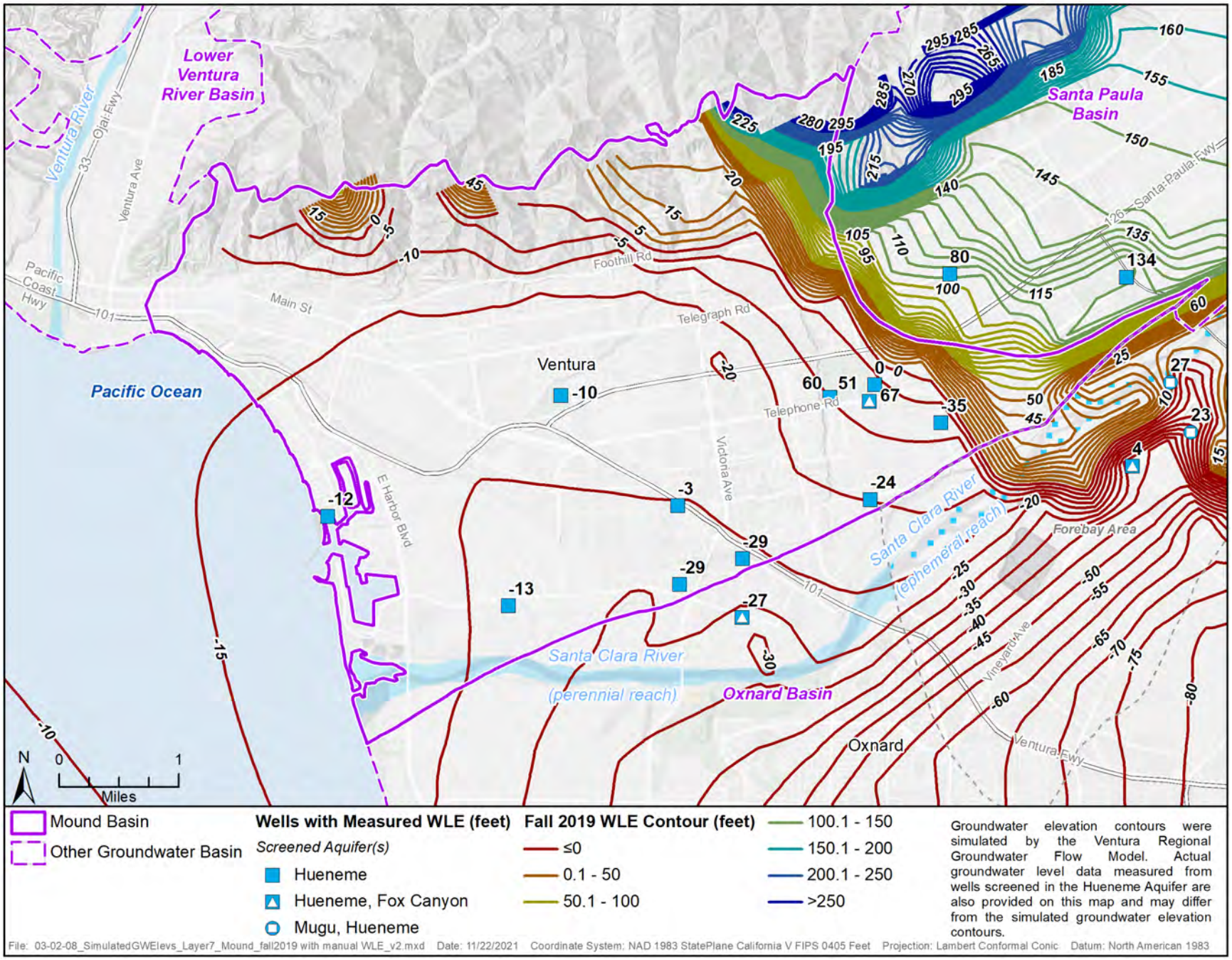


Figure 3.2-08 Water Level Elevation in Hueneme Aquifer, Fall 2019.

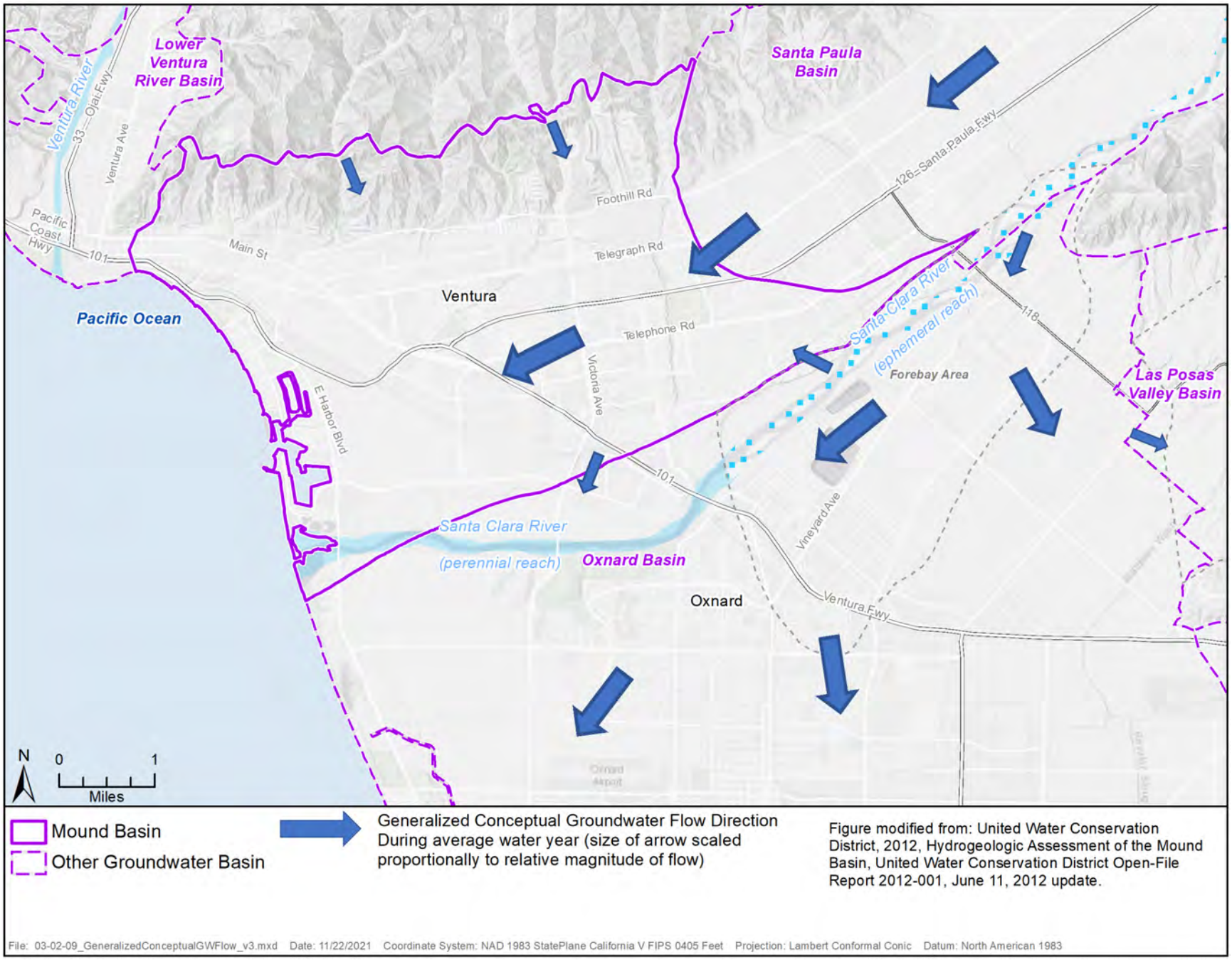


Figure 3.2-09 Generalized Conceptual Groundwater Flow Paths in Principal Aquifers.

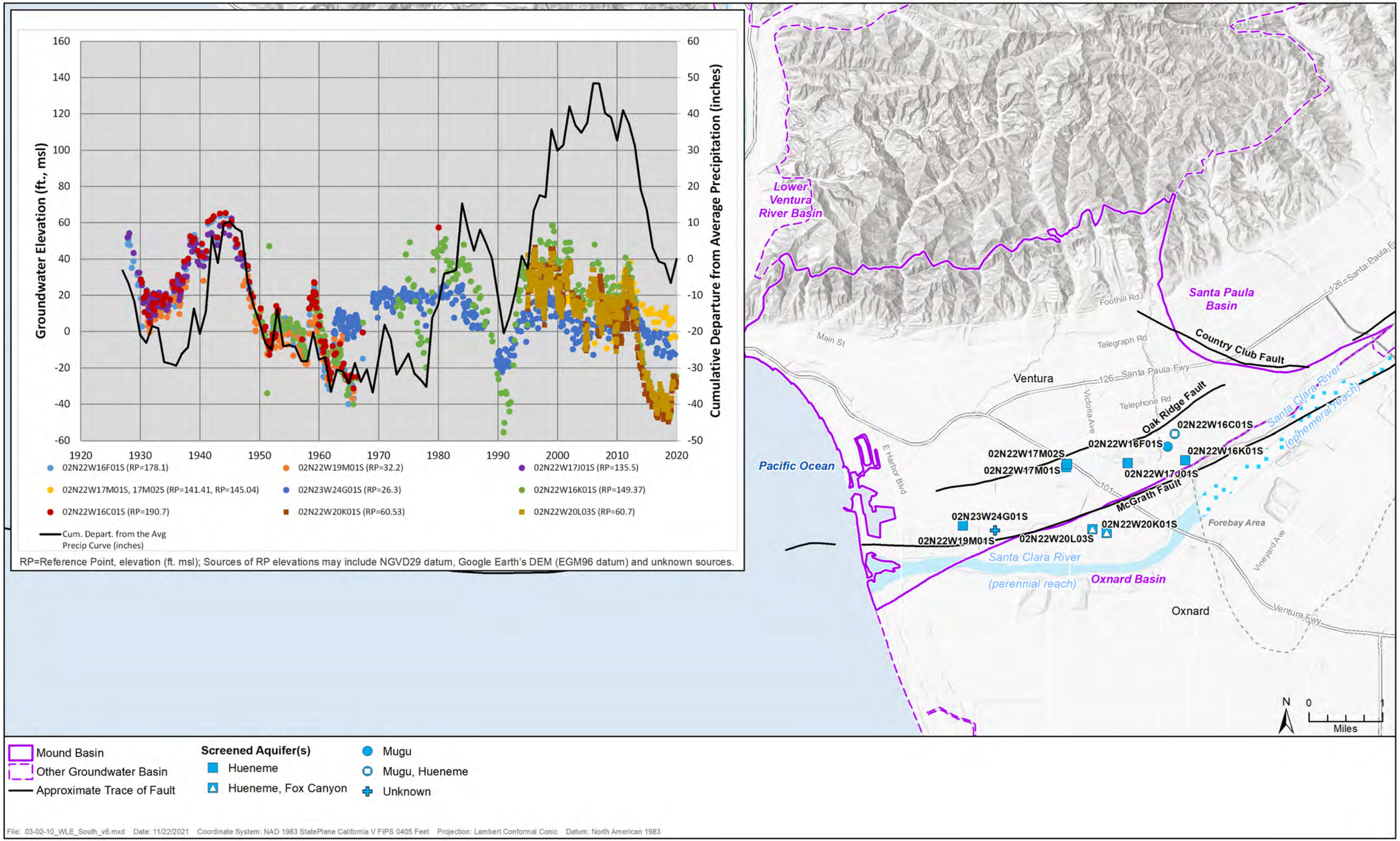


Figure 3.2-10 Location Map for Southern Mound Basin Wells with Recorded Groundwater Elevations.

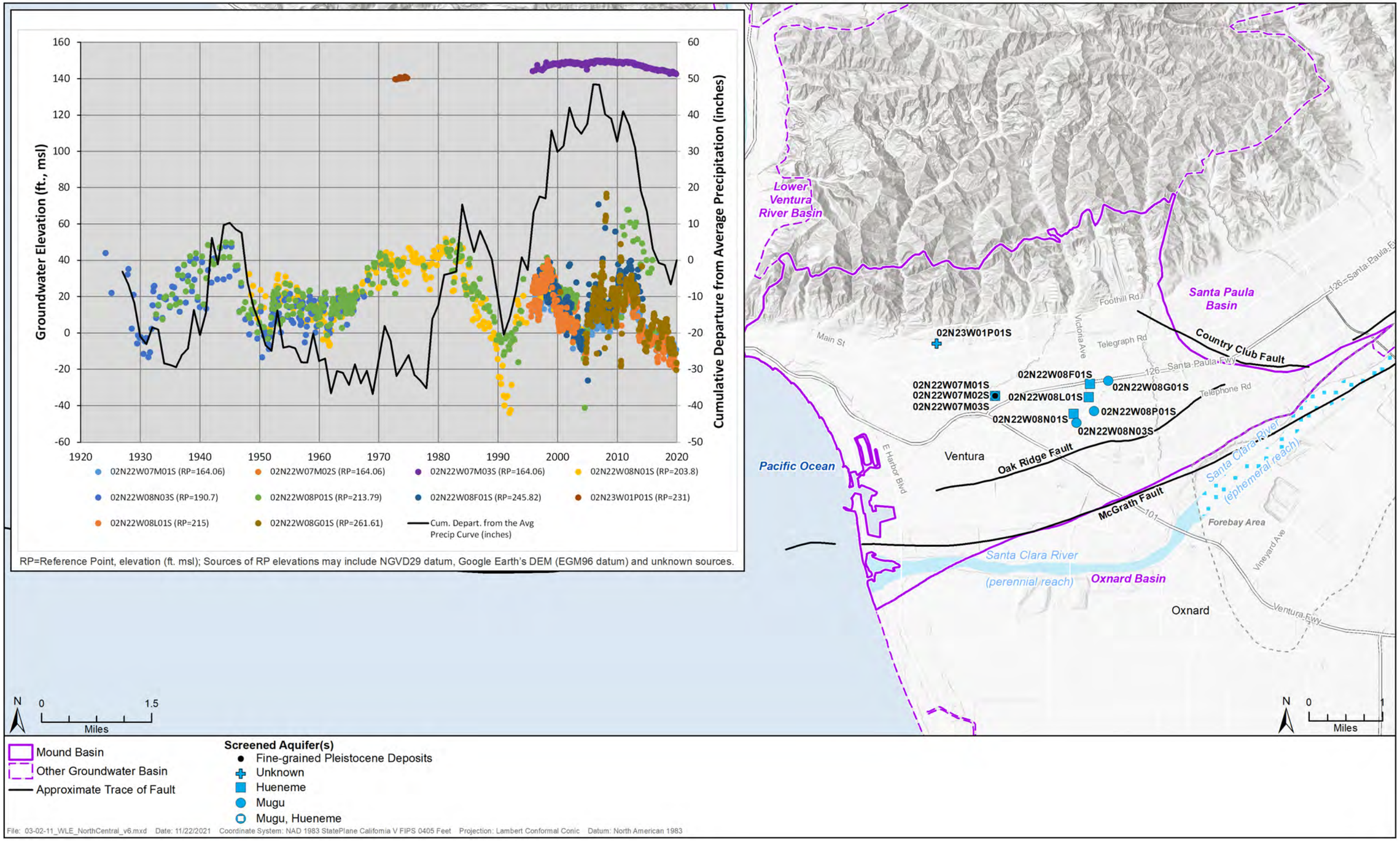


Figure 3.2-11 Location Map for North and Central Mound Basin Wells with Recorded Groundwater Elevations.

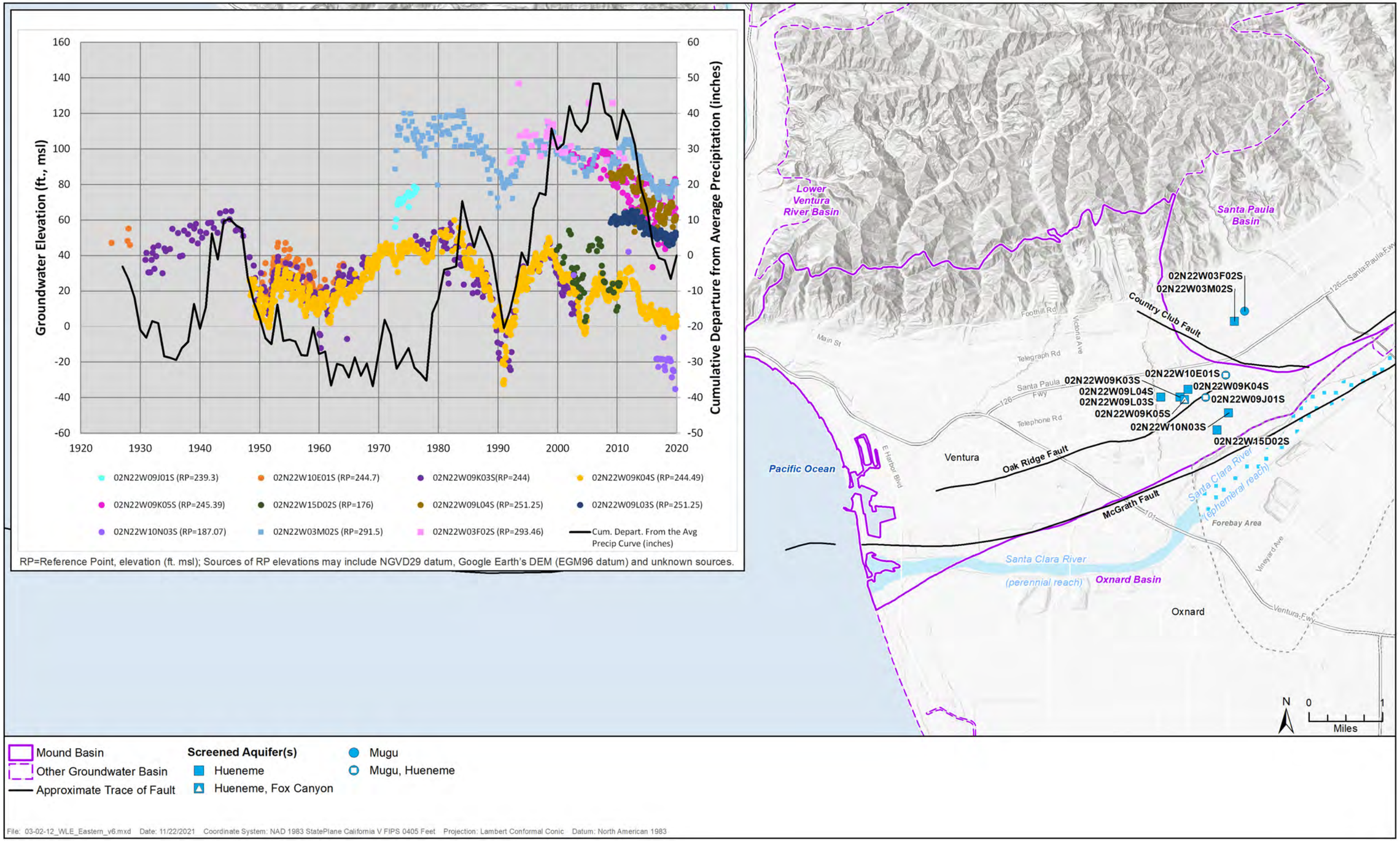


Figure 3.2-12 Location Map for Eastern Mound Basin Wells with Recorded Groundwater Elevations.

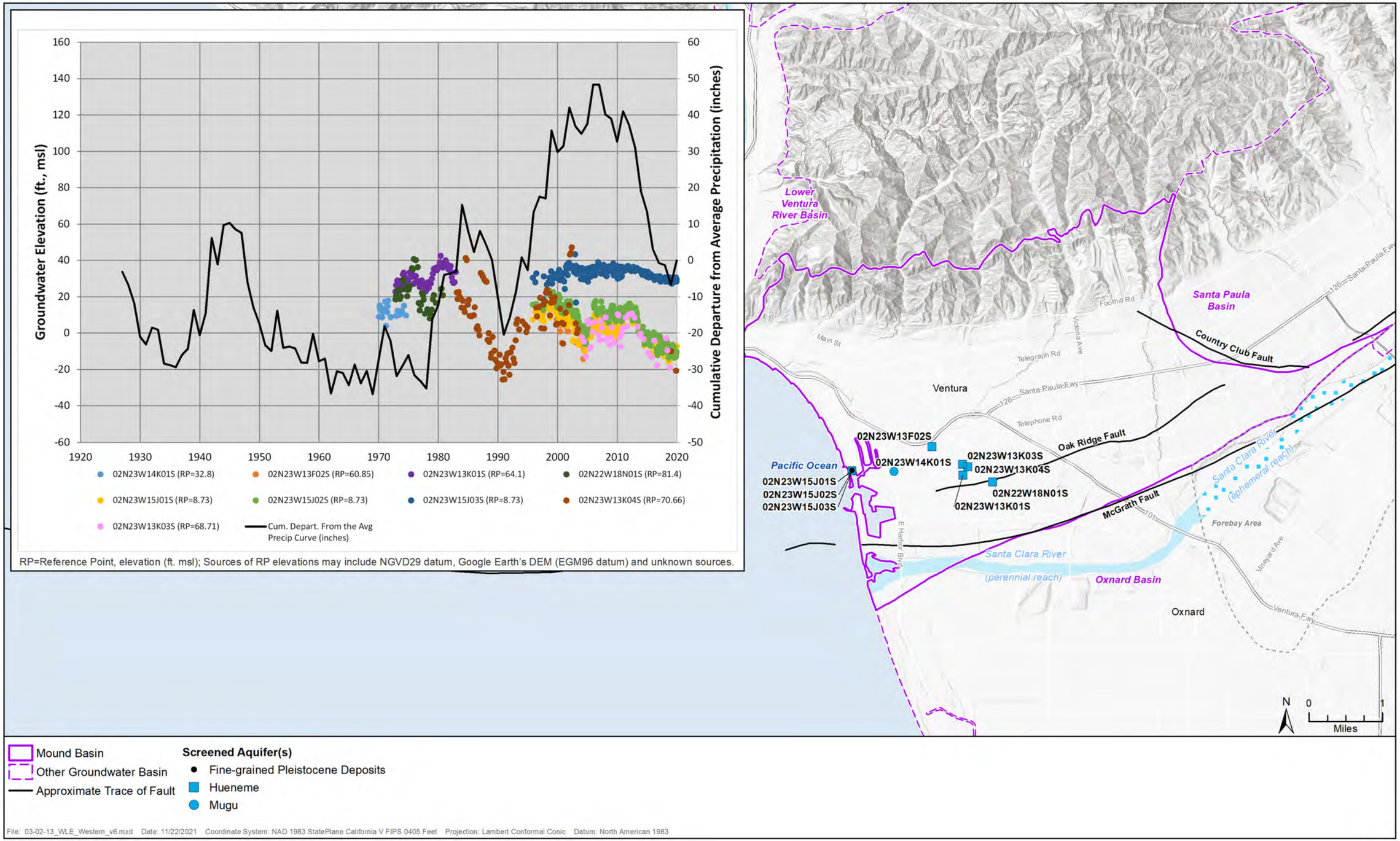


Figure 3.2-13 Location Map for Western Mound Basin Wells with Recorded Groundwater Elevations.

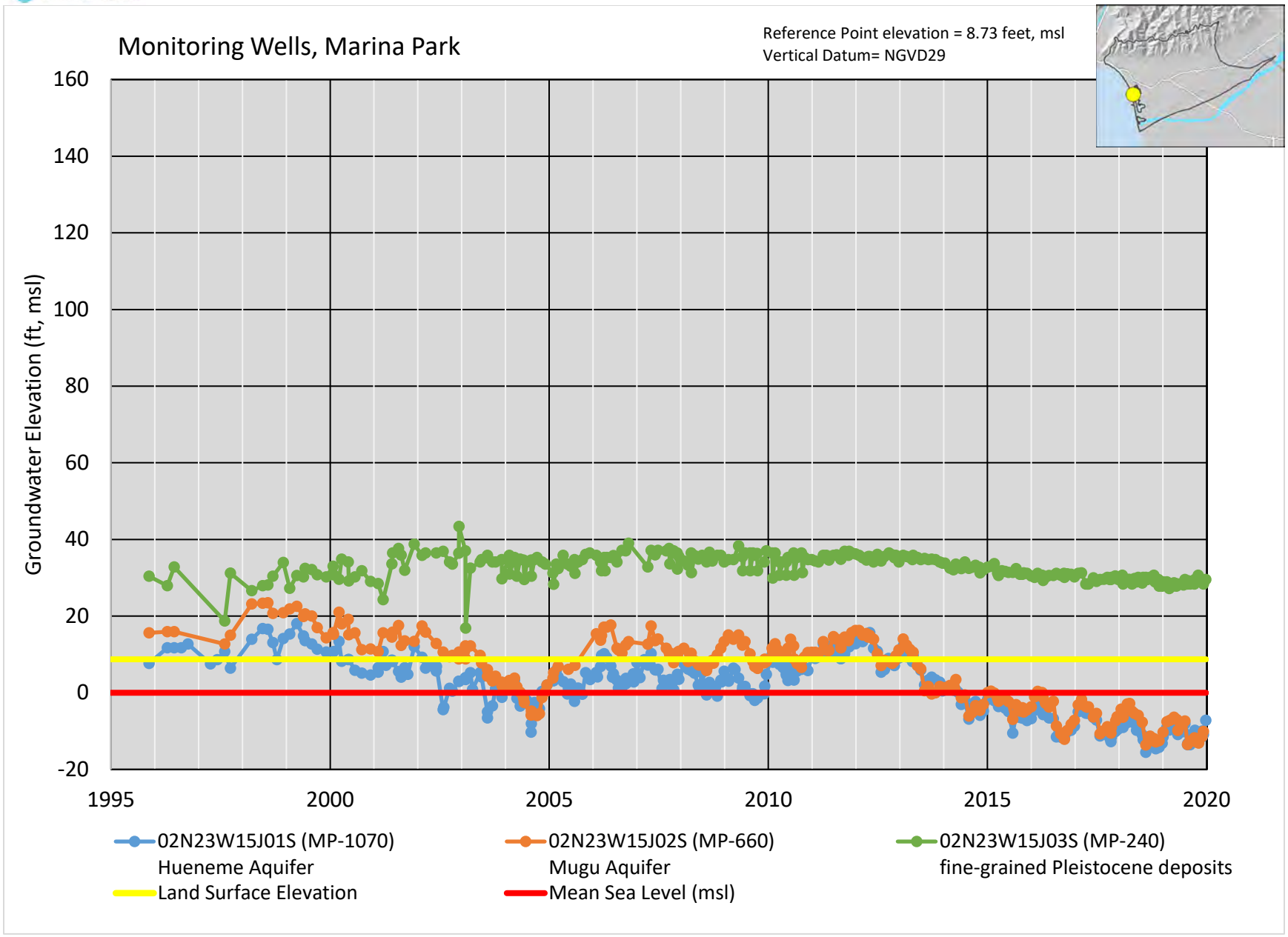


Figure 3.2-14 Groundwater Level Records for Marina Park Monitoring Wells.

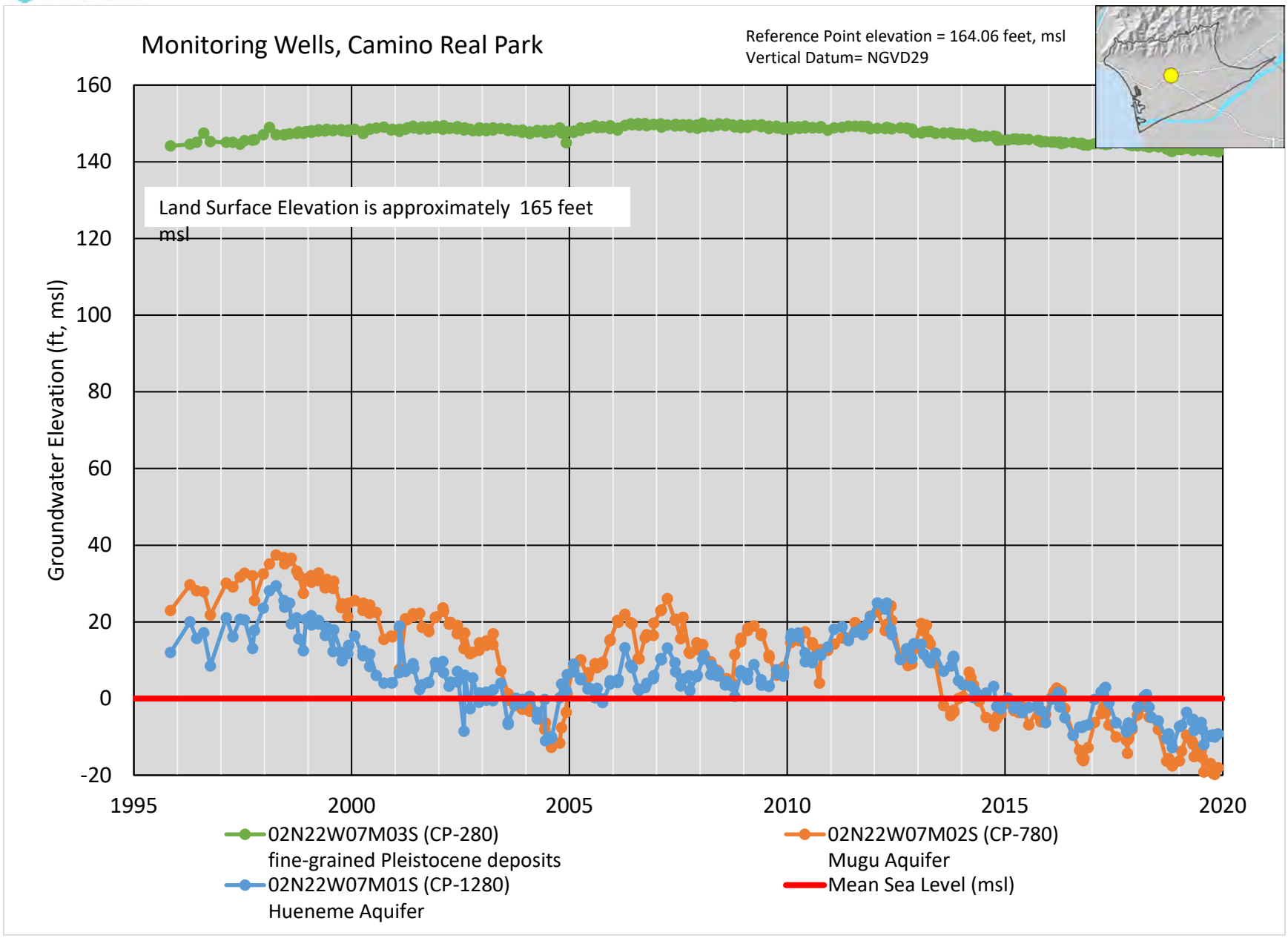


Figure 3.2-15 Groundwater Level Records for Camino Real Park Monitoring Wells.

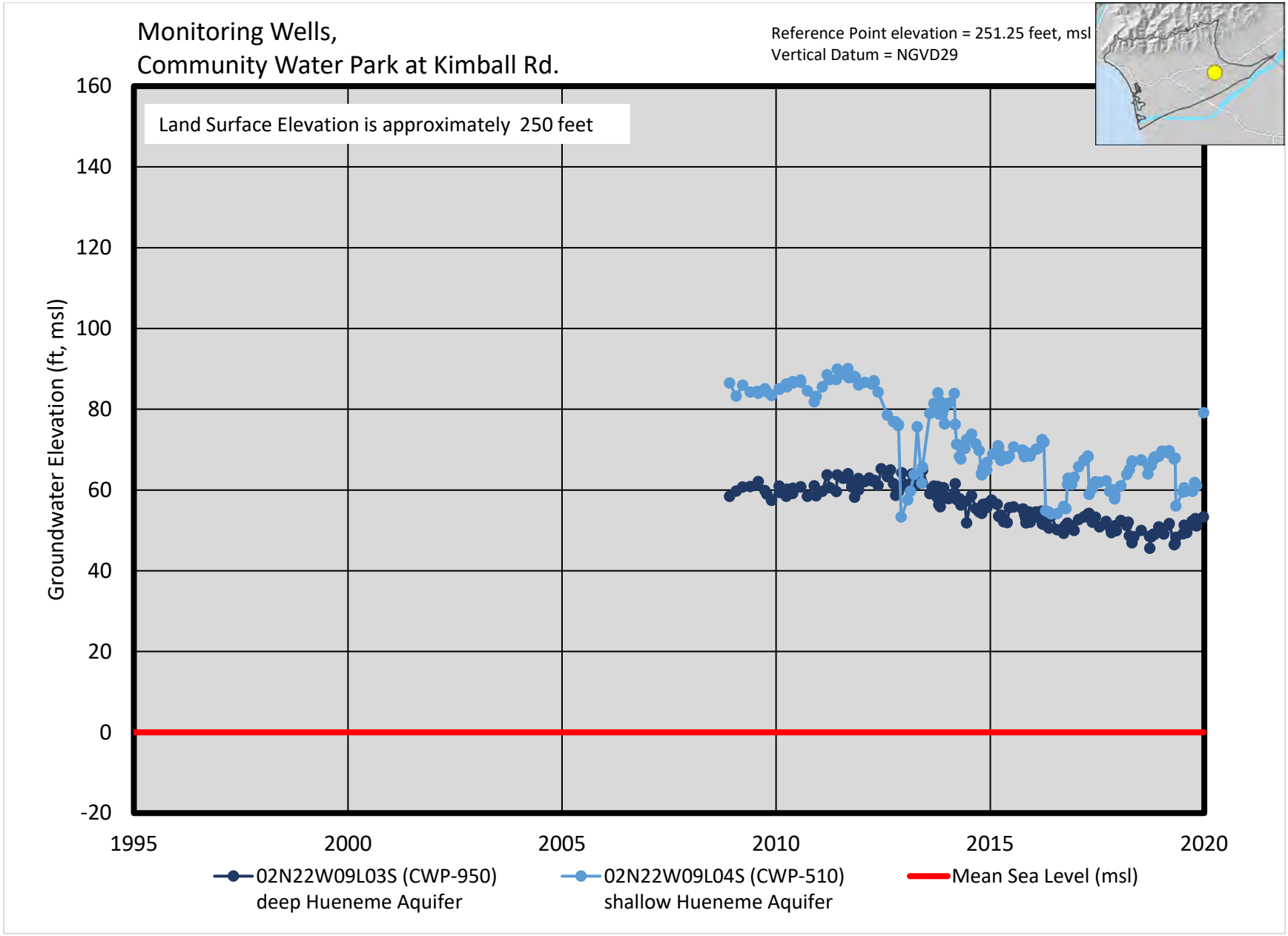


Figure 3.2-16 Groundwater Level Records for Community Water Park at Kimball Road Monitoring Wells.

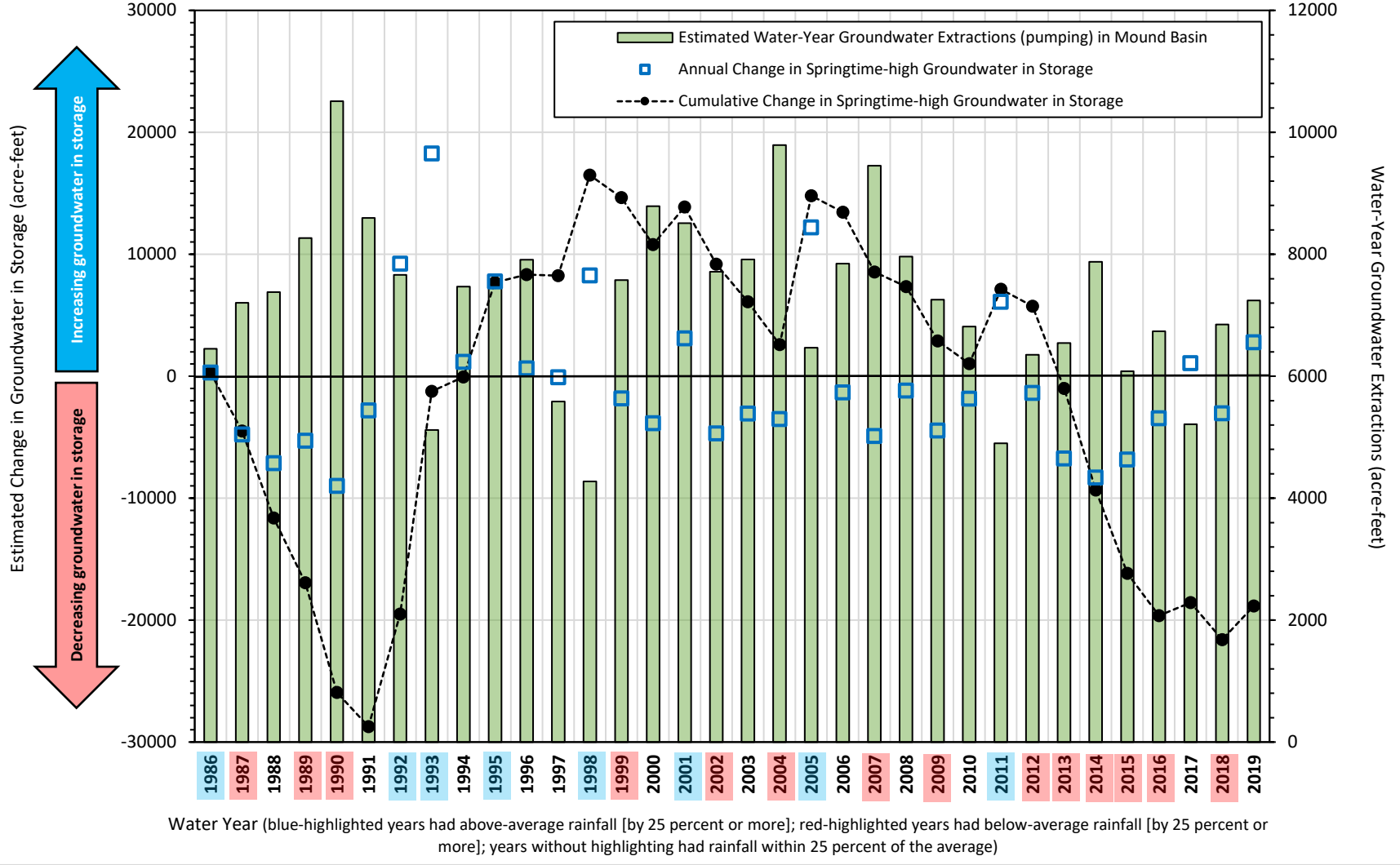


Figure 3.2-17 Change in Storage.

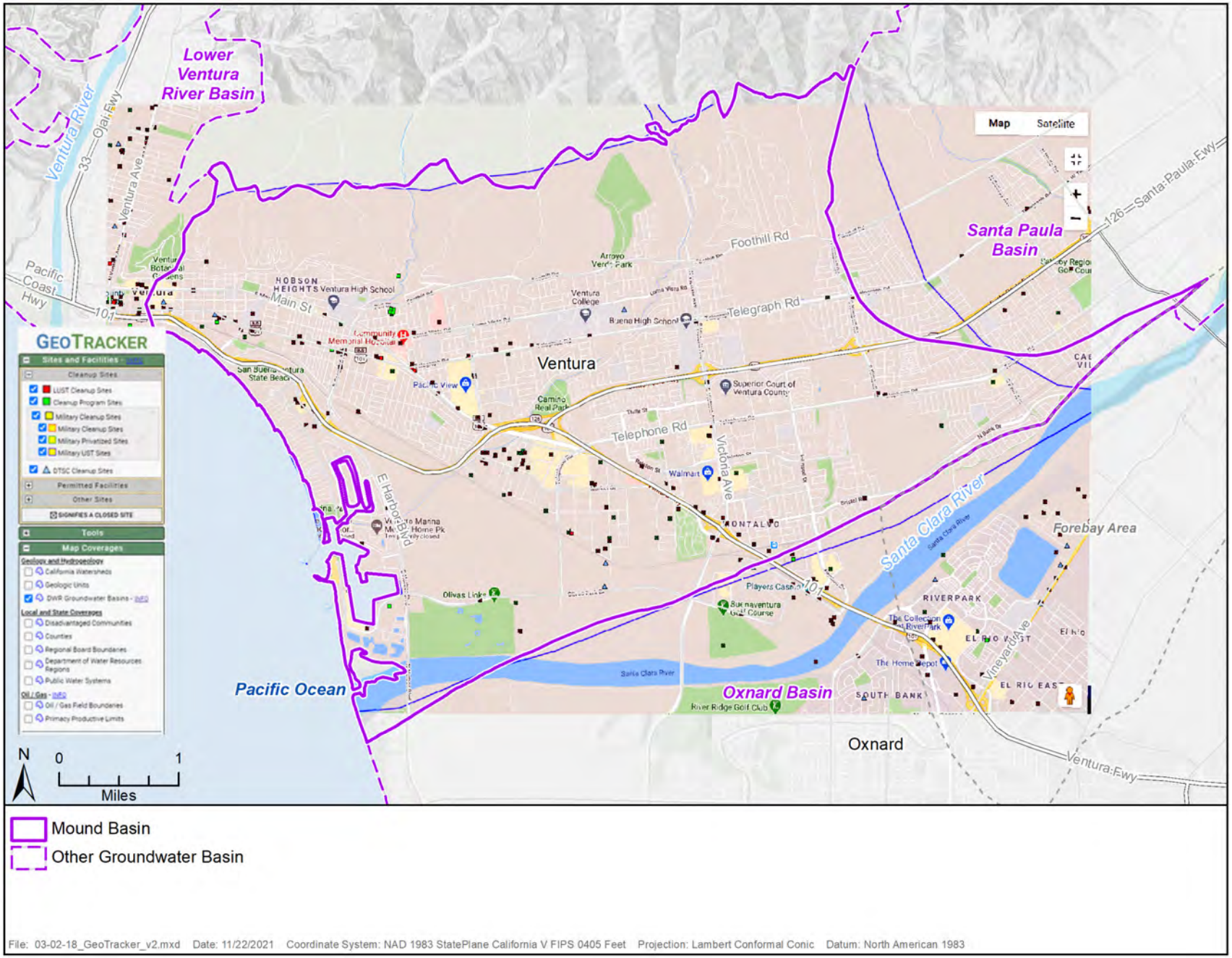


Figure 3.2-18 Map of Cleanup Sites and Facilities from Geotracker Database Mapping Website (https://geotracker.waterboards.ca.gov/, screenshot taken June 17, 2020).

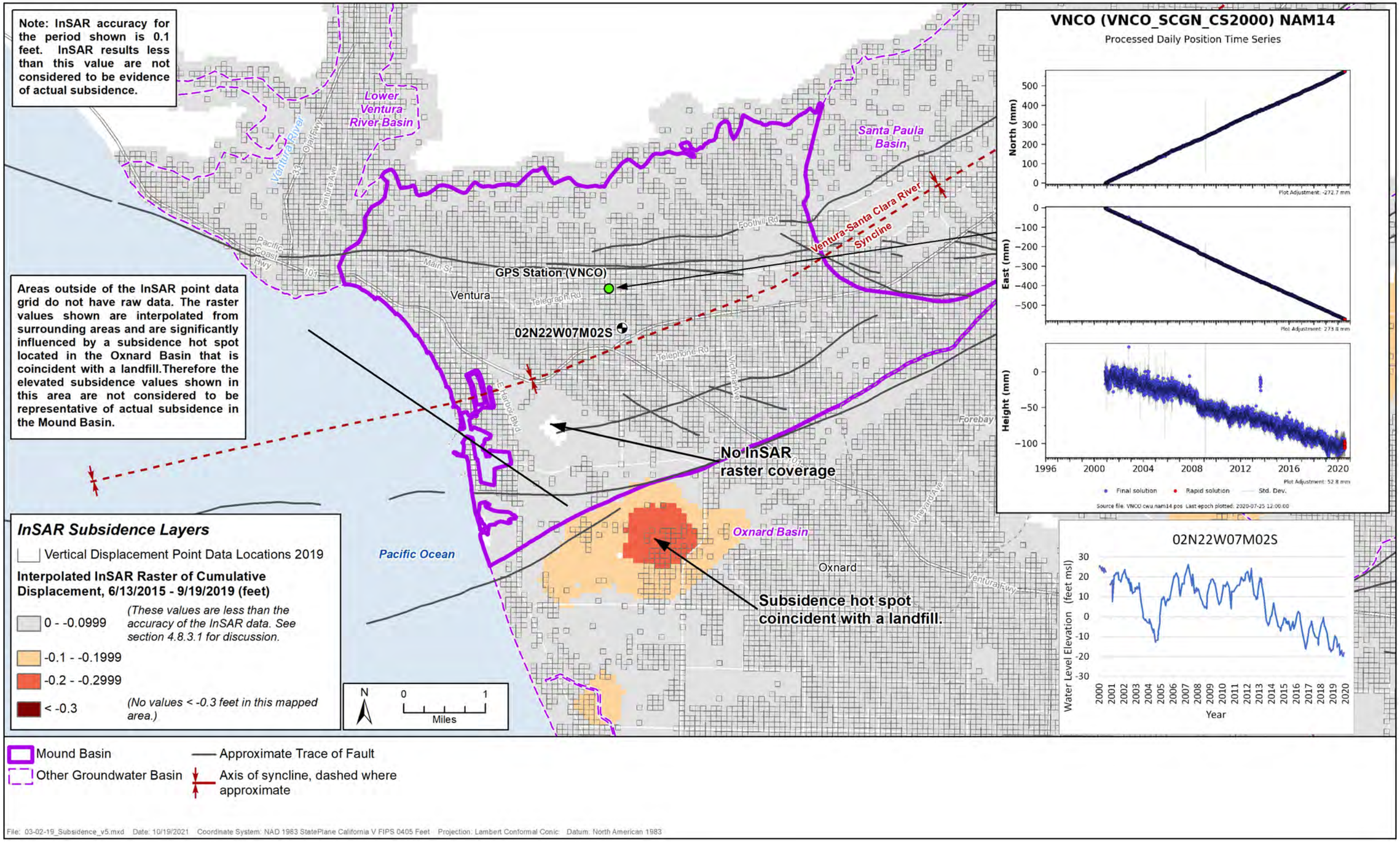


Figure 3.2-19 Cumulative Vertical Displacement from 2015 – 2019.

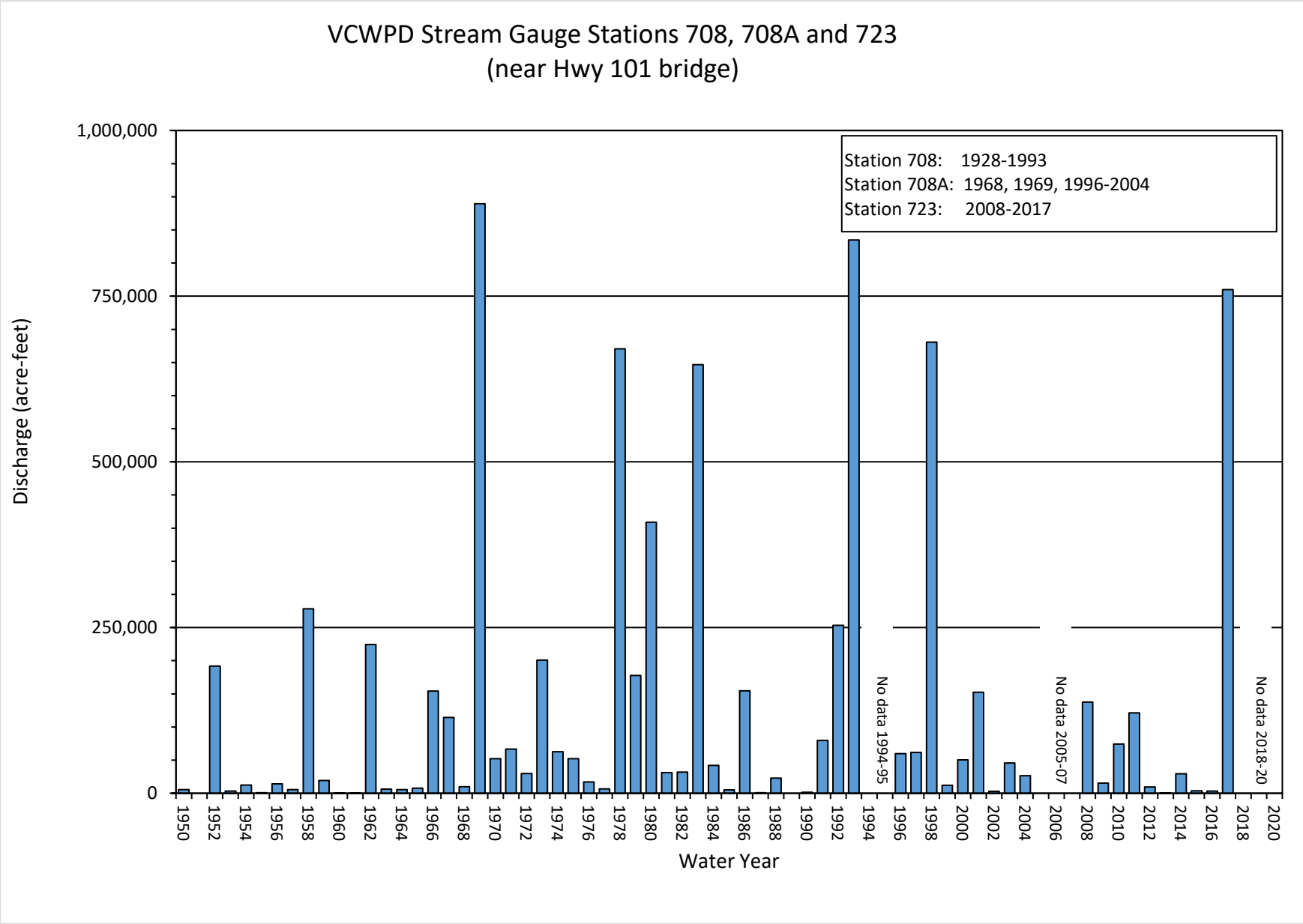


Figure 3.2-20 Annual Discharge of Santa Clara River near Mound Basin.

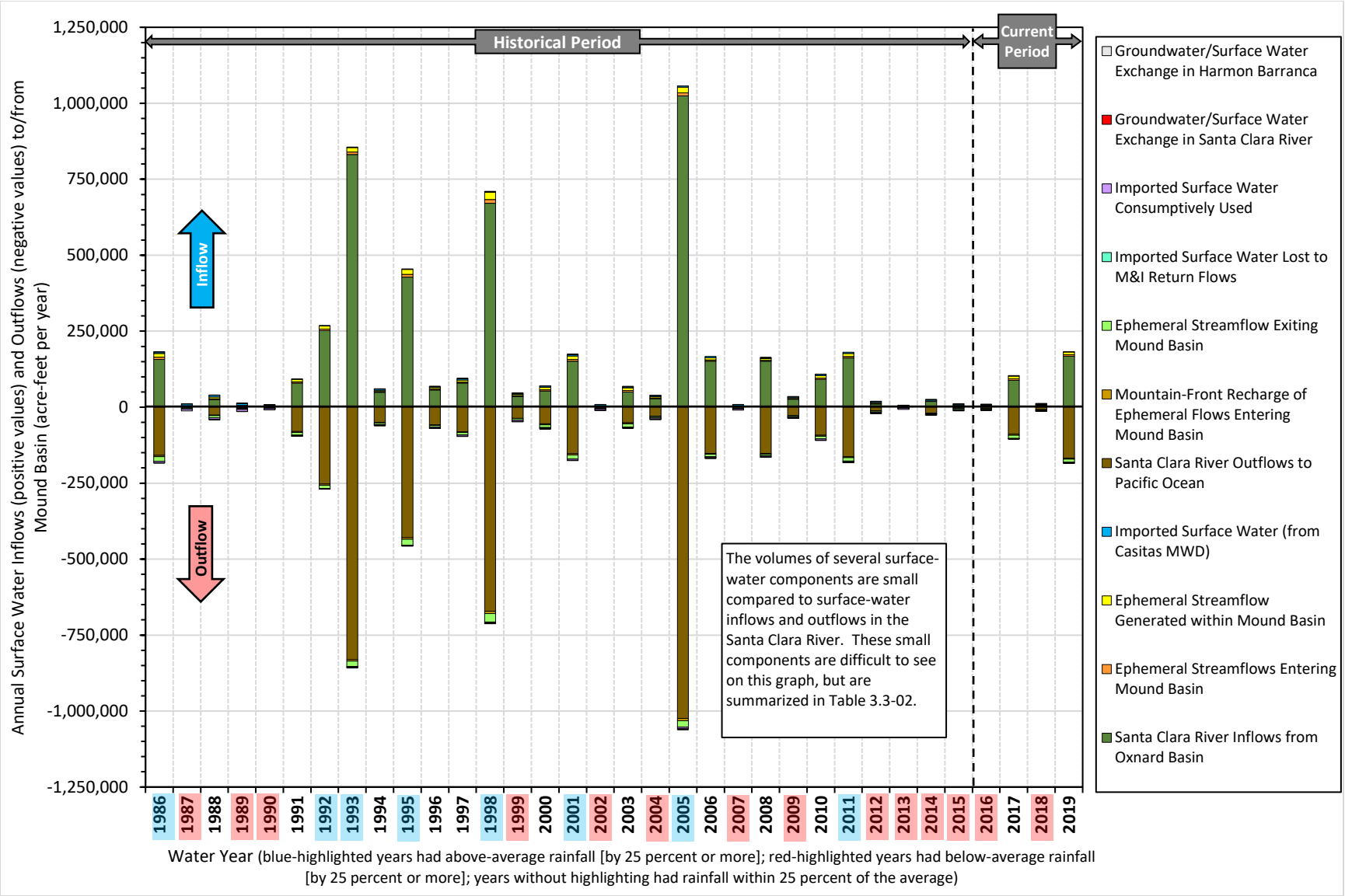


Figure 3.3-01 Annual Surface Water Inflows (positive values) and Outflows (negative values) to/from Mound Basin (acre-feet per year).

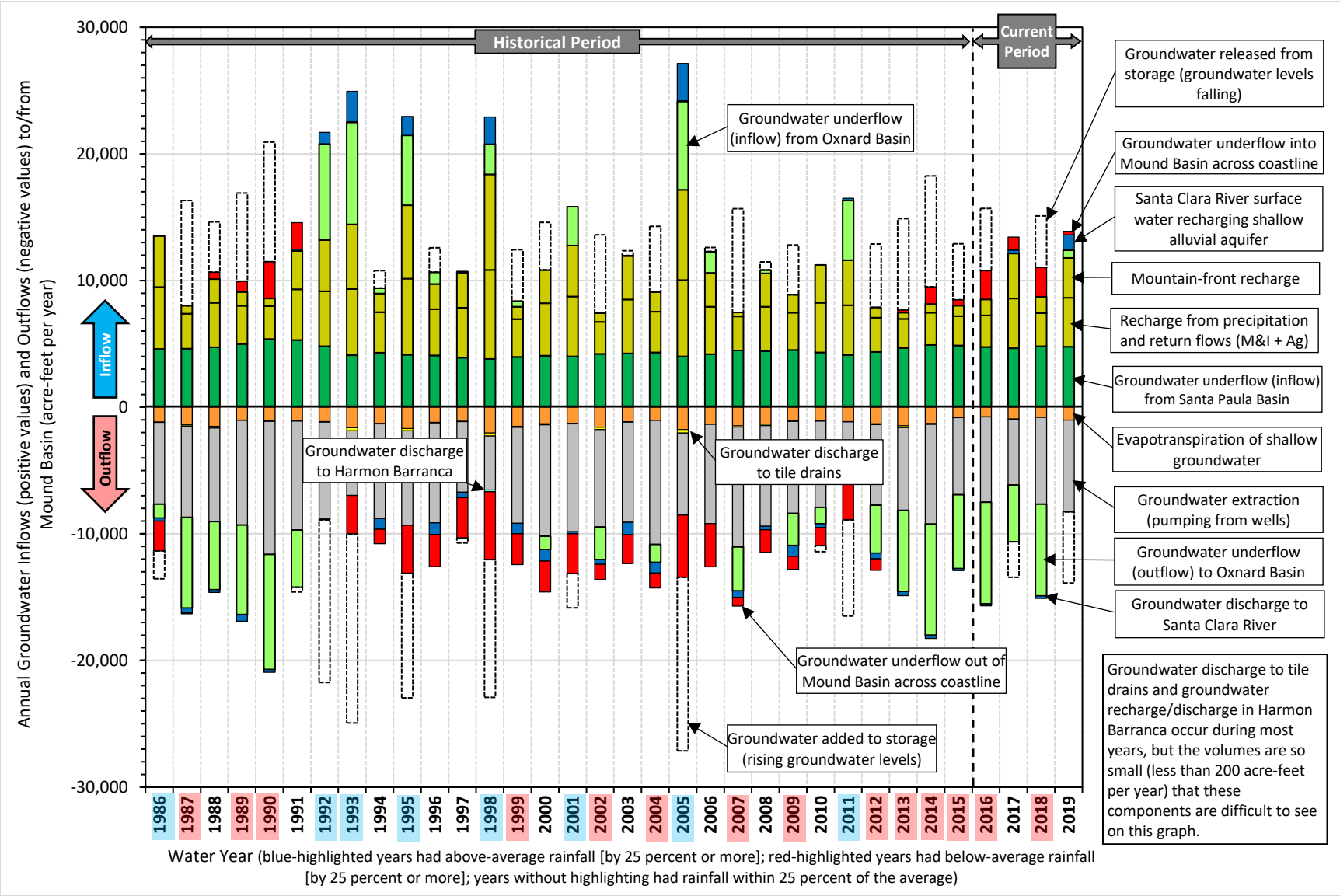


Figure 3.3-02 Annual Groundwater Inflows (positive values) and Outflows (negative values) to/from Mound Basin (acre-feet per year).

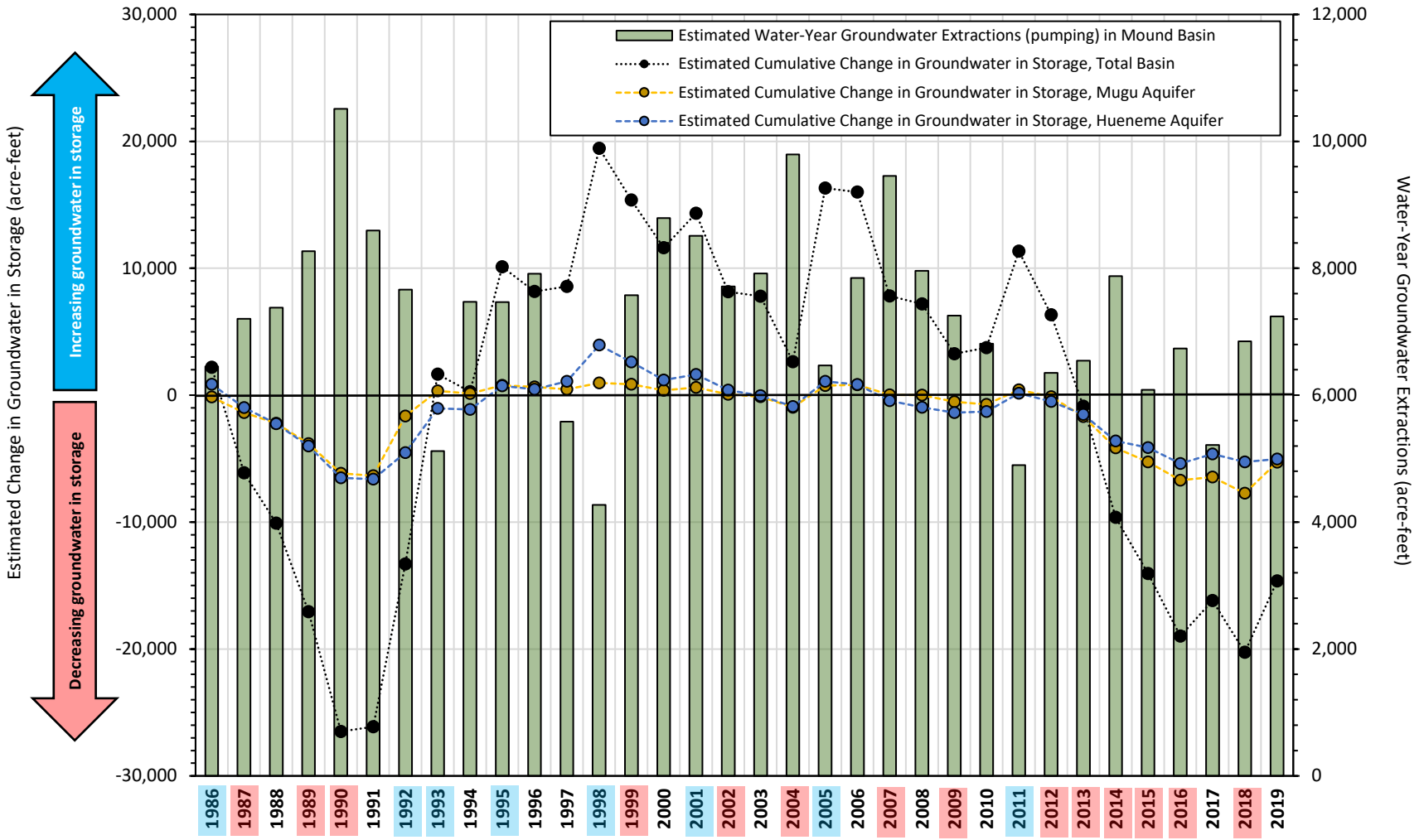


Figure 3.3-03 Estimated Change in Groundwater in Storage (acre-feet) and Water Year Extraction Volumes (acre-feet).

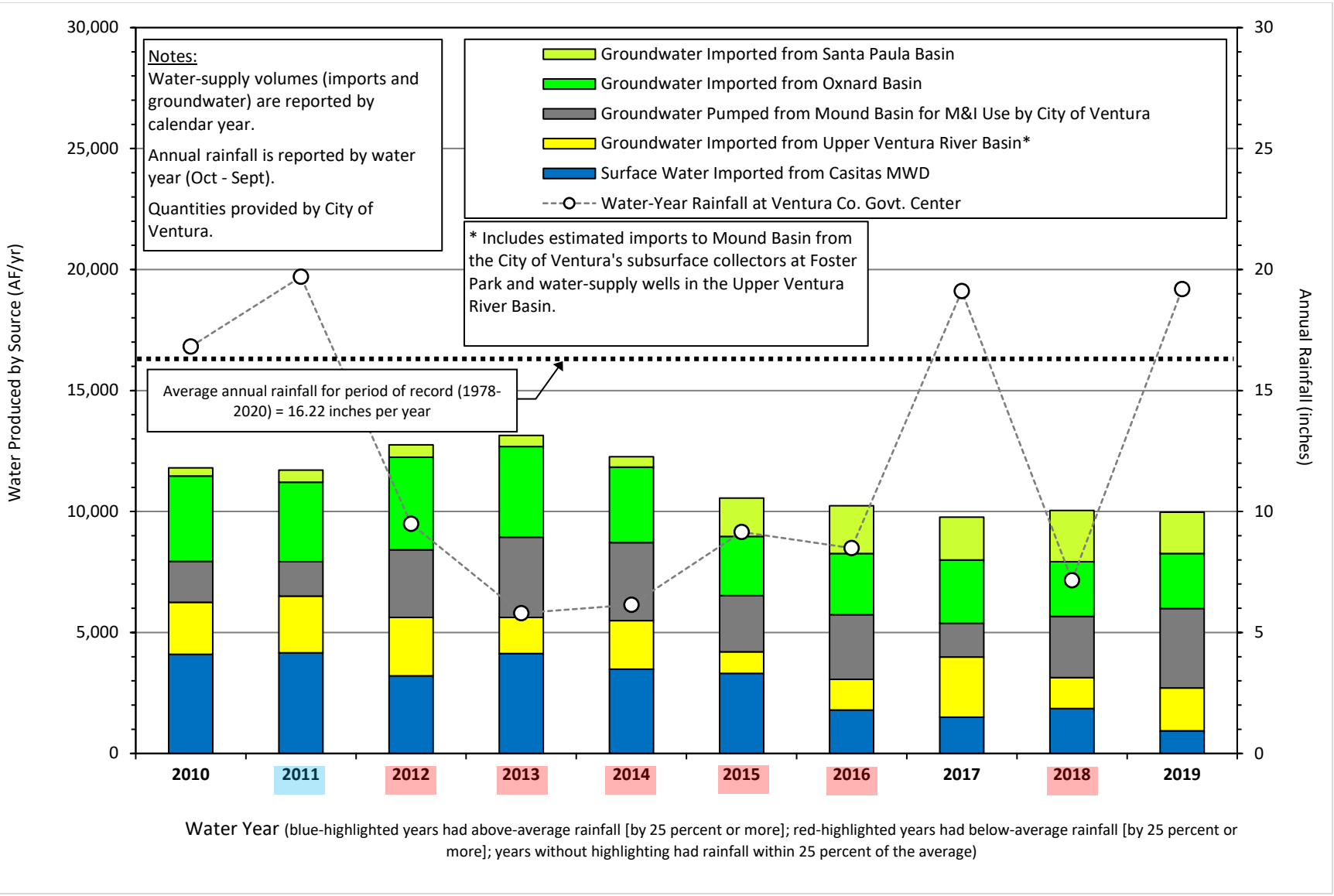


Figure 3.3-04 City of Ventura 10-Year Historical Surface Water Deliveries and Groundwater Production (acre-feet per year).

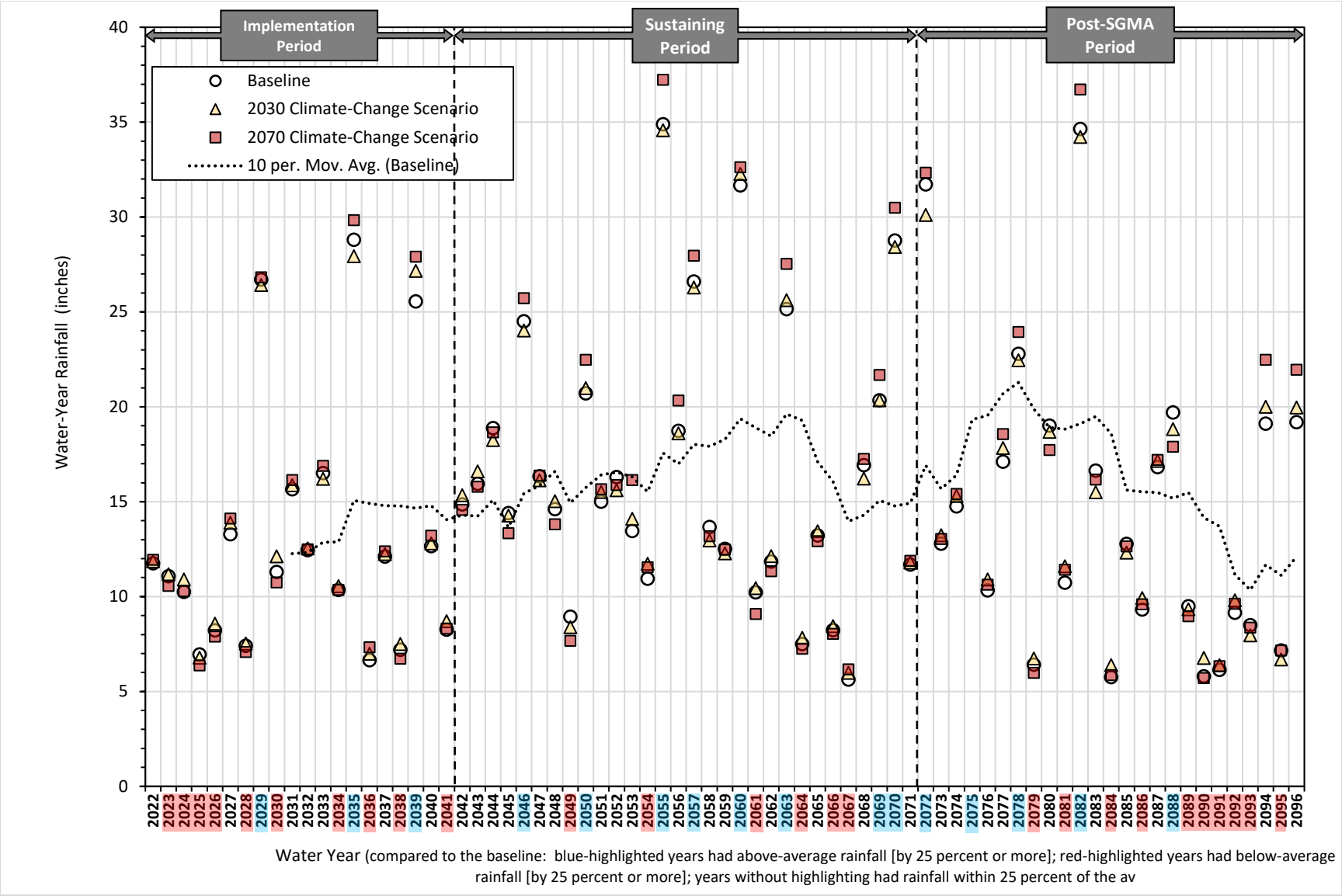


Figure 3.3-05 Projected Annual Rainfall Rates Assumed under Future Baseline, the 2030 Climate Change Scenario, and the 2070 Climate Change Scenario.

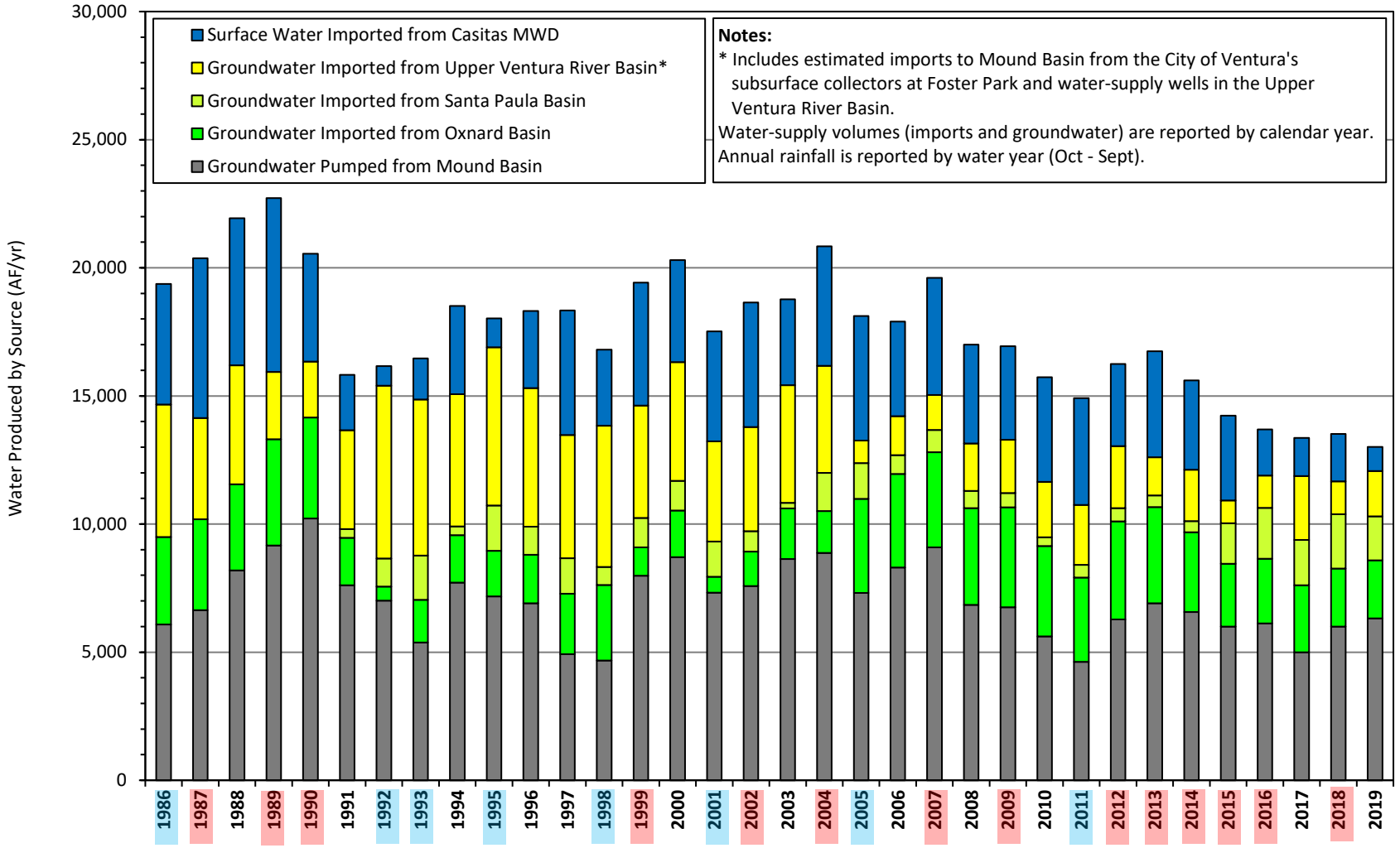


Figure 3.3-06 Long-Term Historical Surface Water Deliveries and Groundwater Production (acre-feet per year).

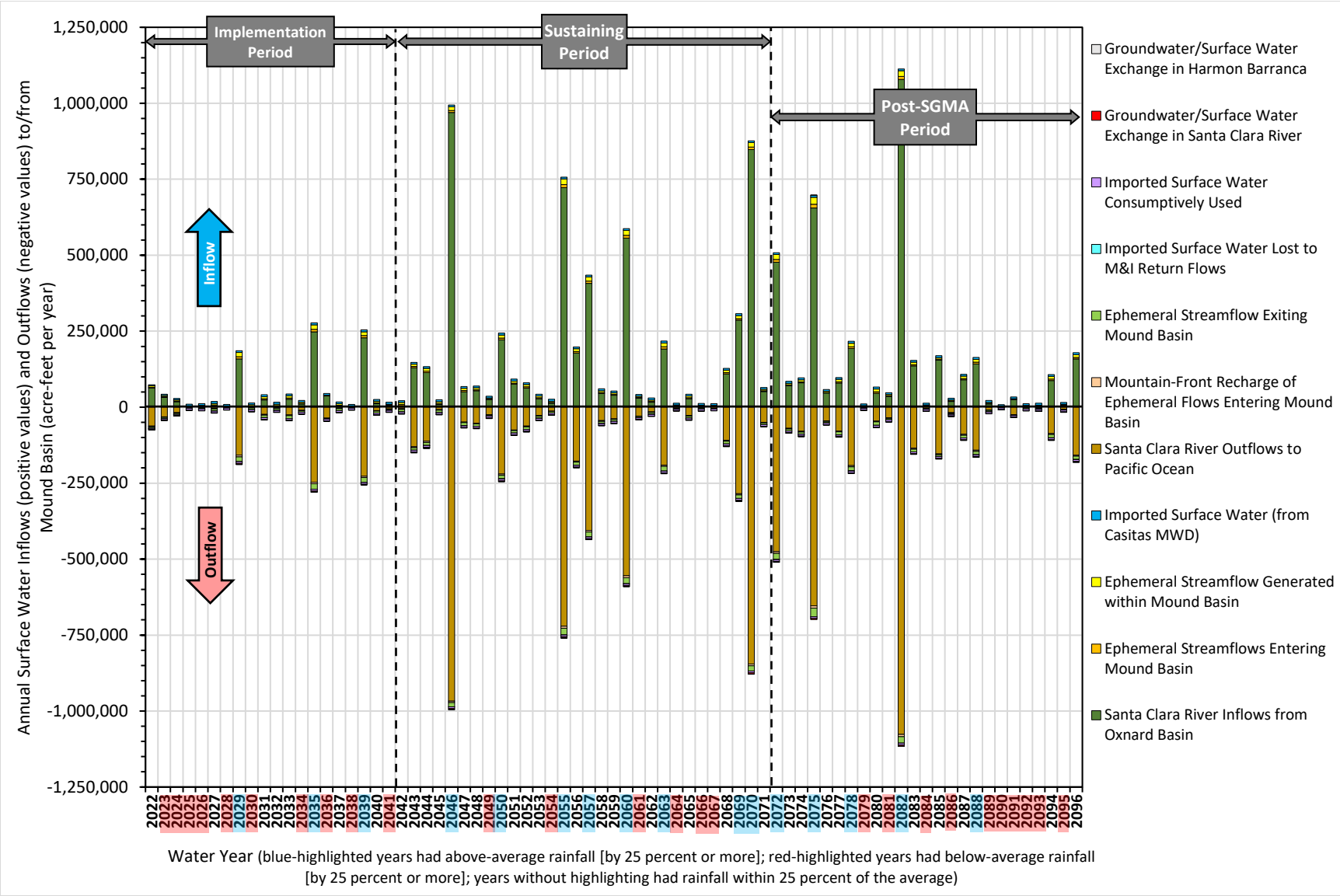


Figure 3.3-07 Baseline Projected Annual Surface Water Inflows (positive values) and Outflows (negative values) to/from Mound Basin (acre-feet per year).

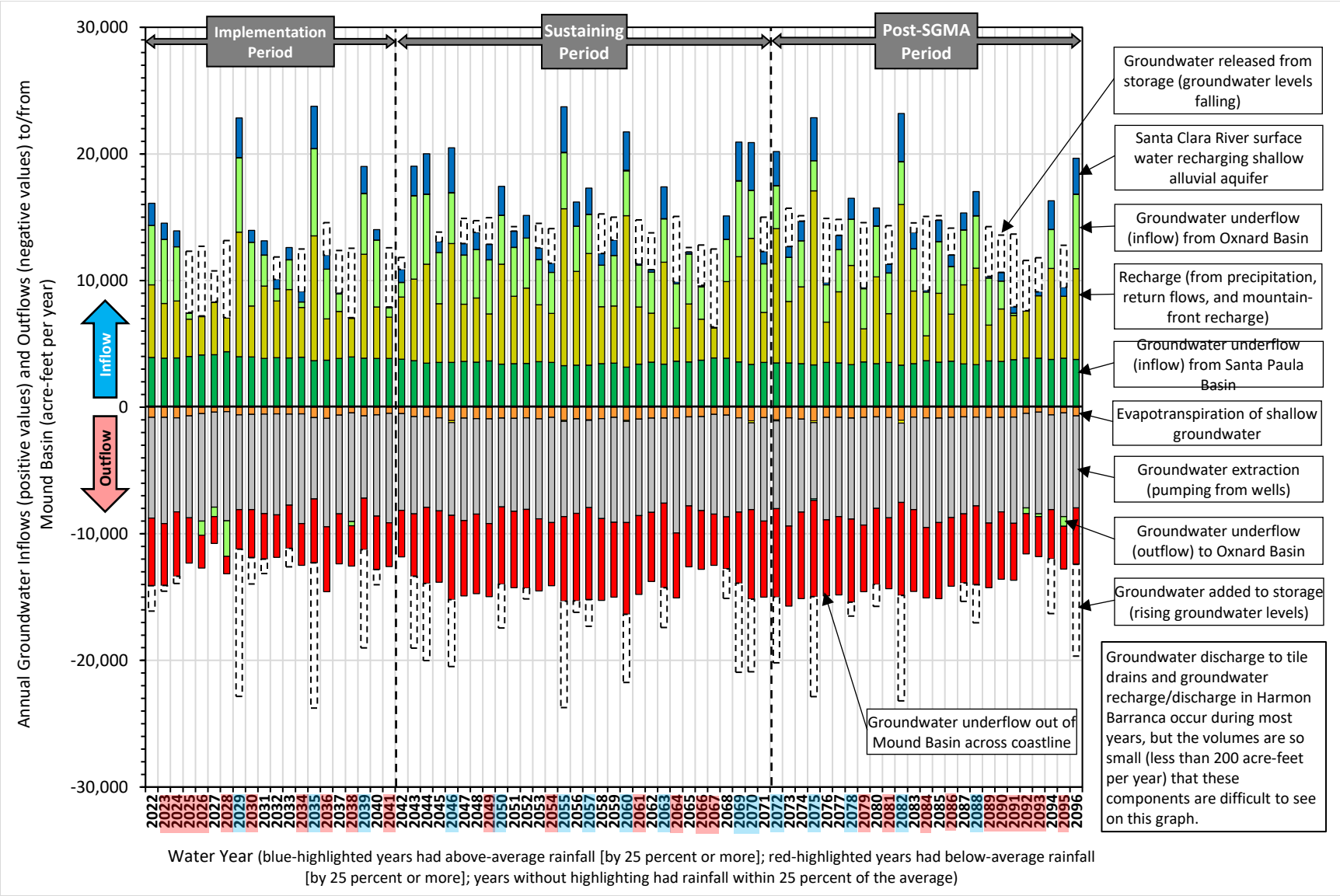


Figure 3.3-08 Baseline Projected Change in Groundwater in Storage (acre-feet) and Water Year Extraction Volumes (acre-feet).

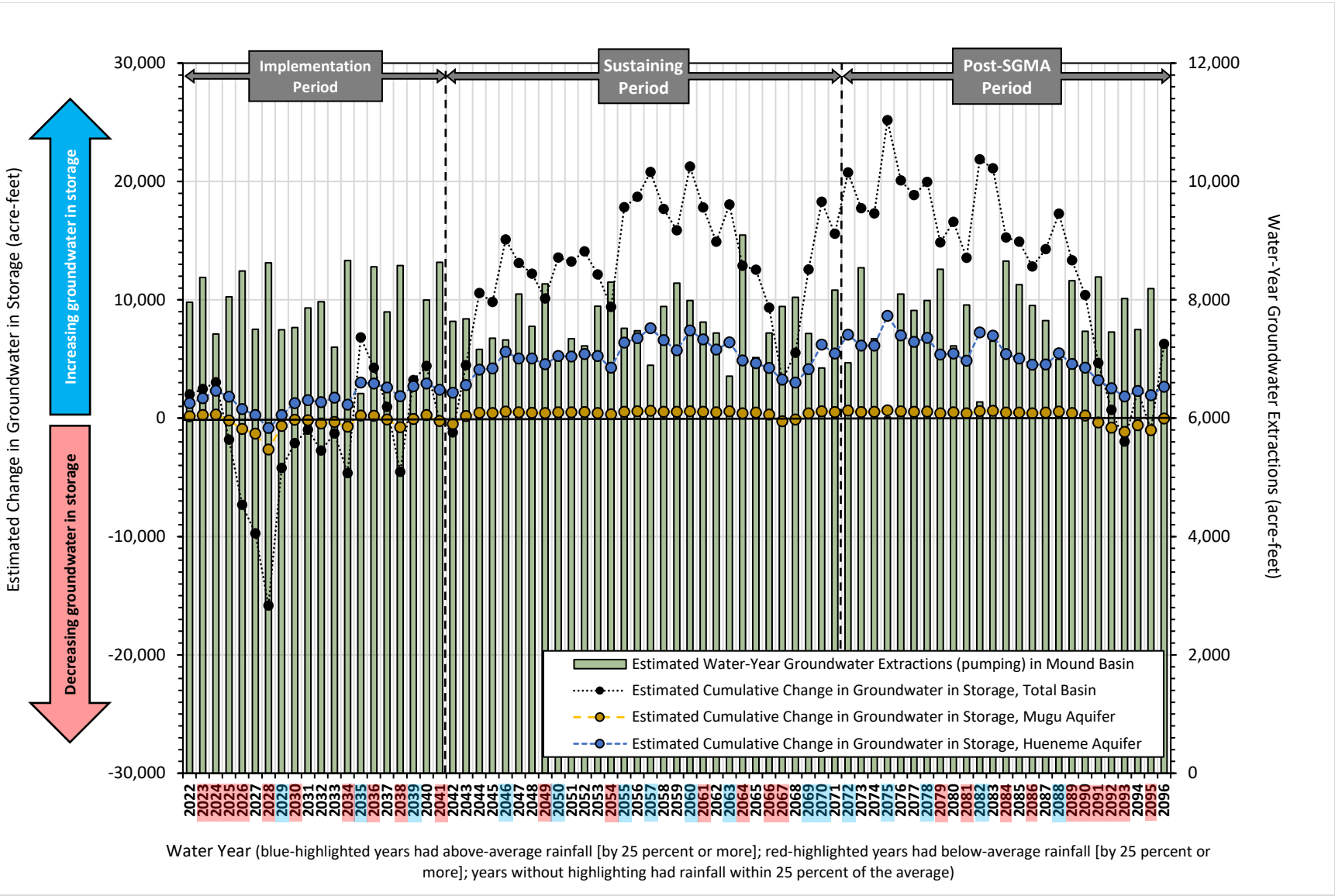


Figure 3.3-09 Projected Baseline Change in Groundwater in Storage (acre-feet) and Water Year Extraction Volumes (acre-feet).

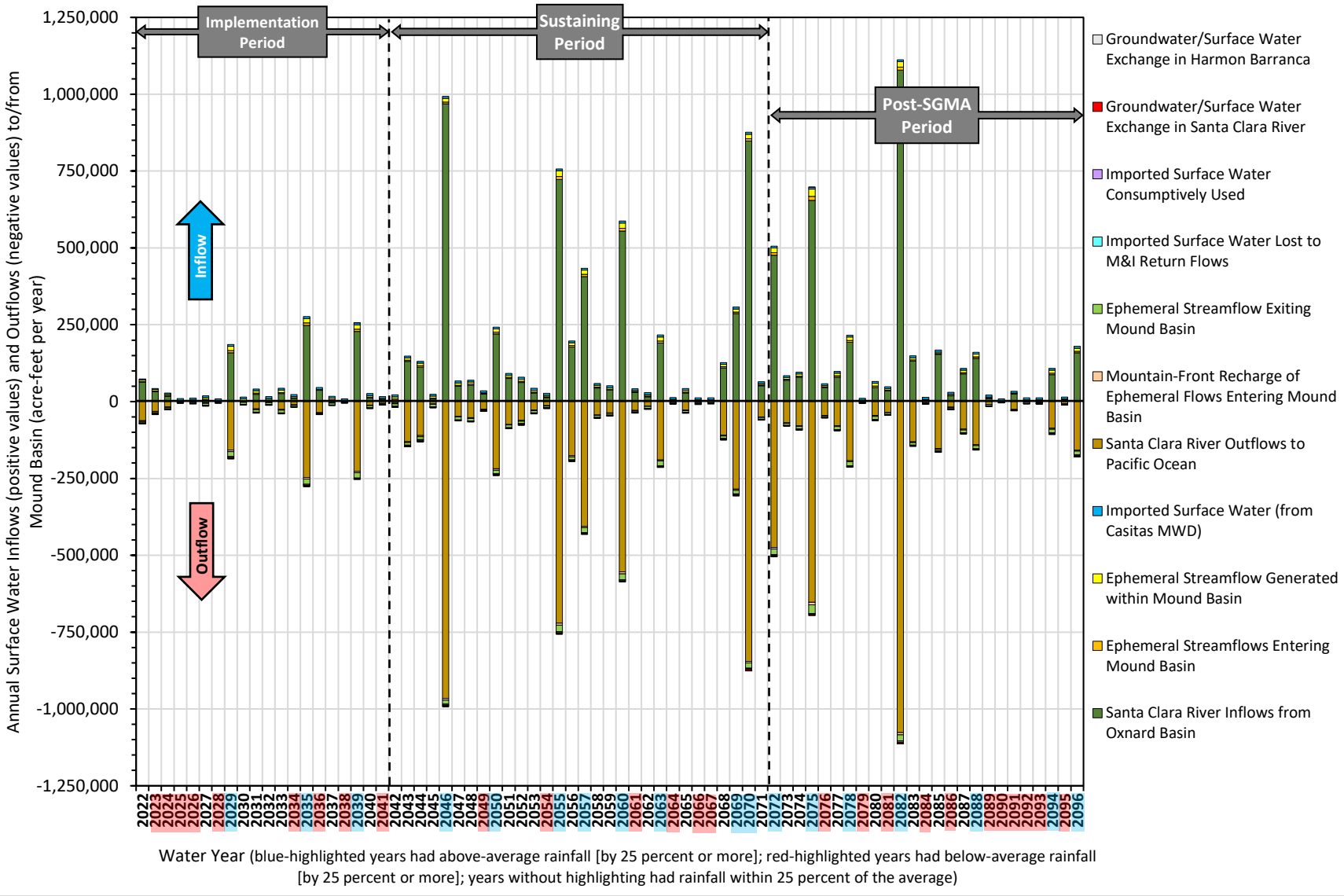


Figure 3.3-10 Projected Surface Water Budget Components under the 2030 Climate Change Scenario.

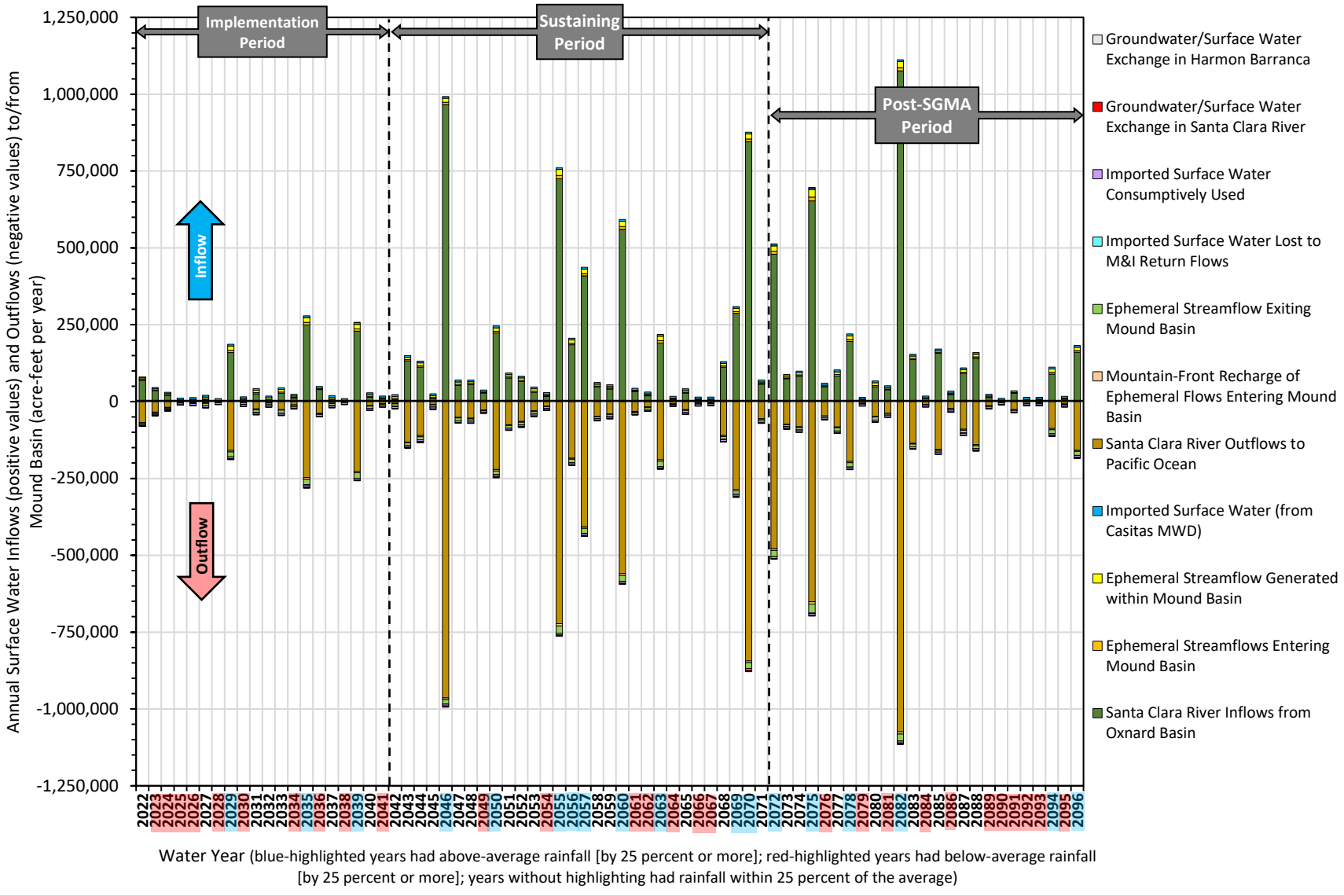


Figure 3.3-11 Projected Surface Water Budget Components under the 2070 Climate Change Scenario.

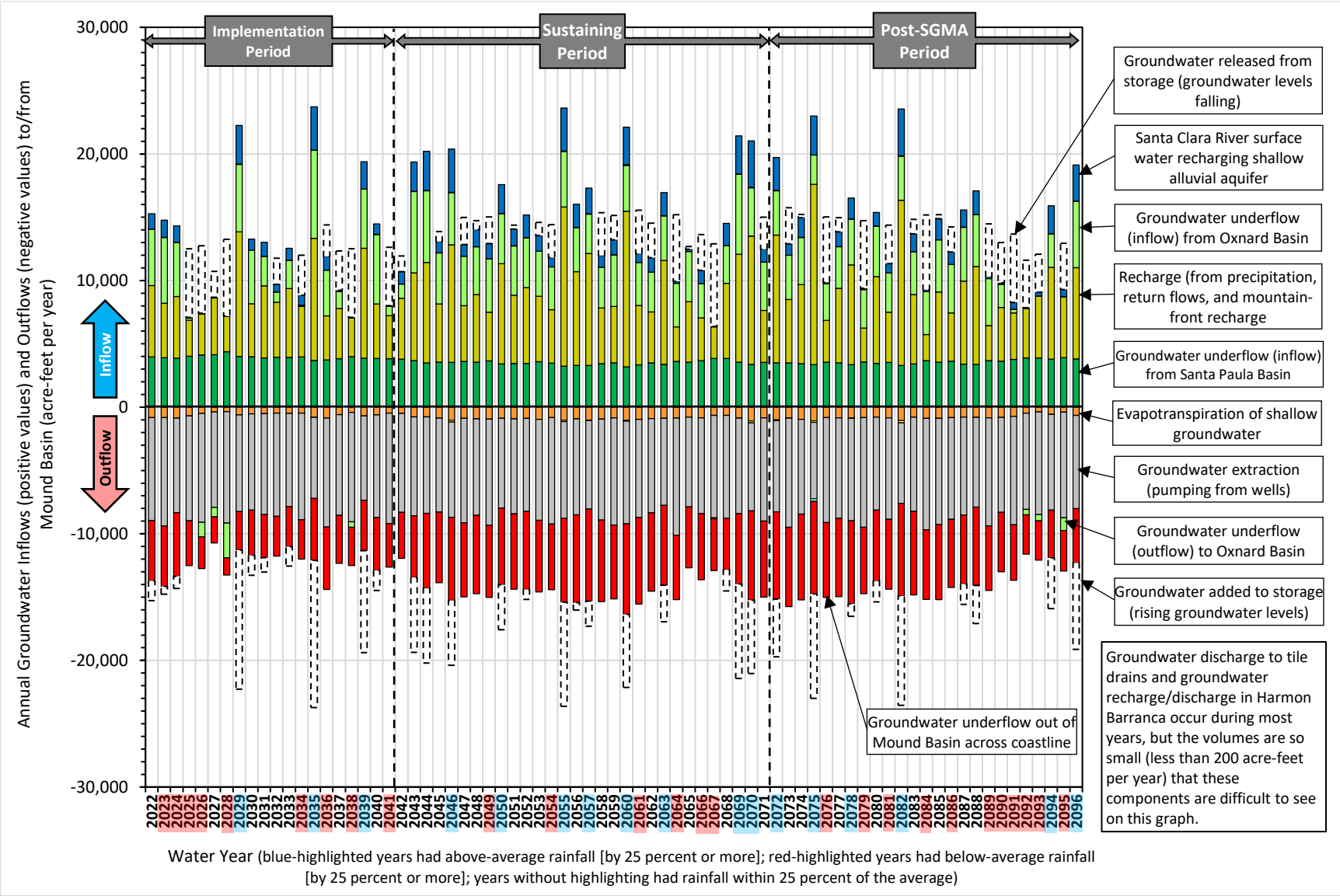


Figure 3.3-12 Projected Groundwater Budget Components under the 2030 Climate Change Scenario.

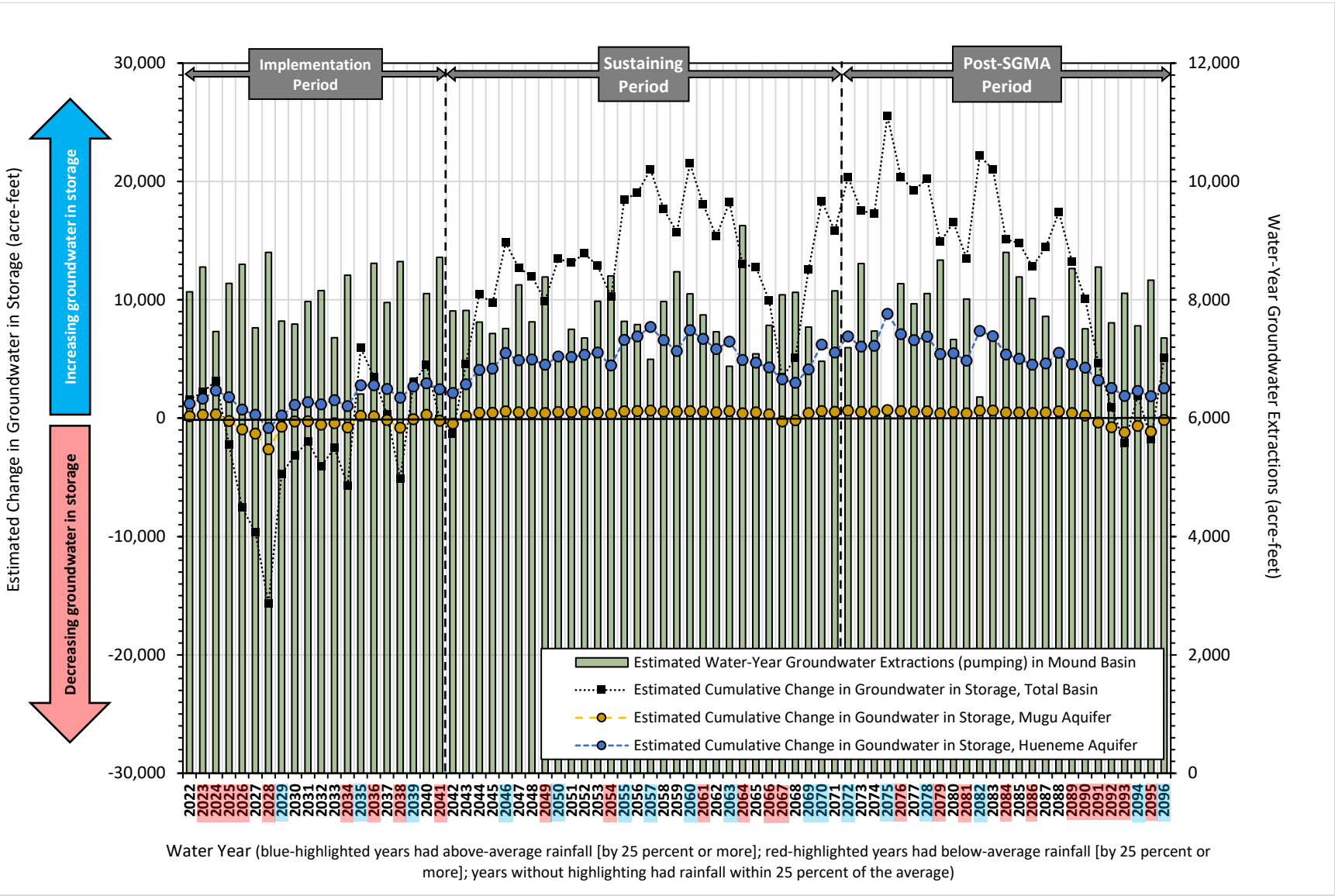


Figure 3.3-13 Projected Change in Groundwater Storage and Water Year Extraction Volumes under the 2030 Climate Change Scenario.

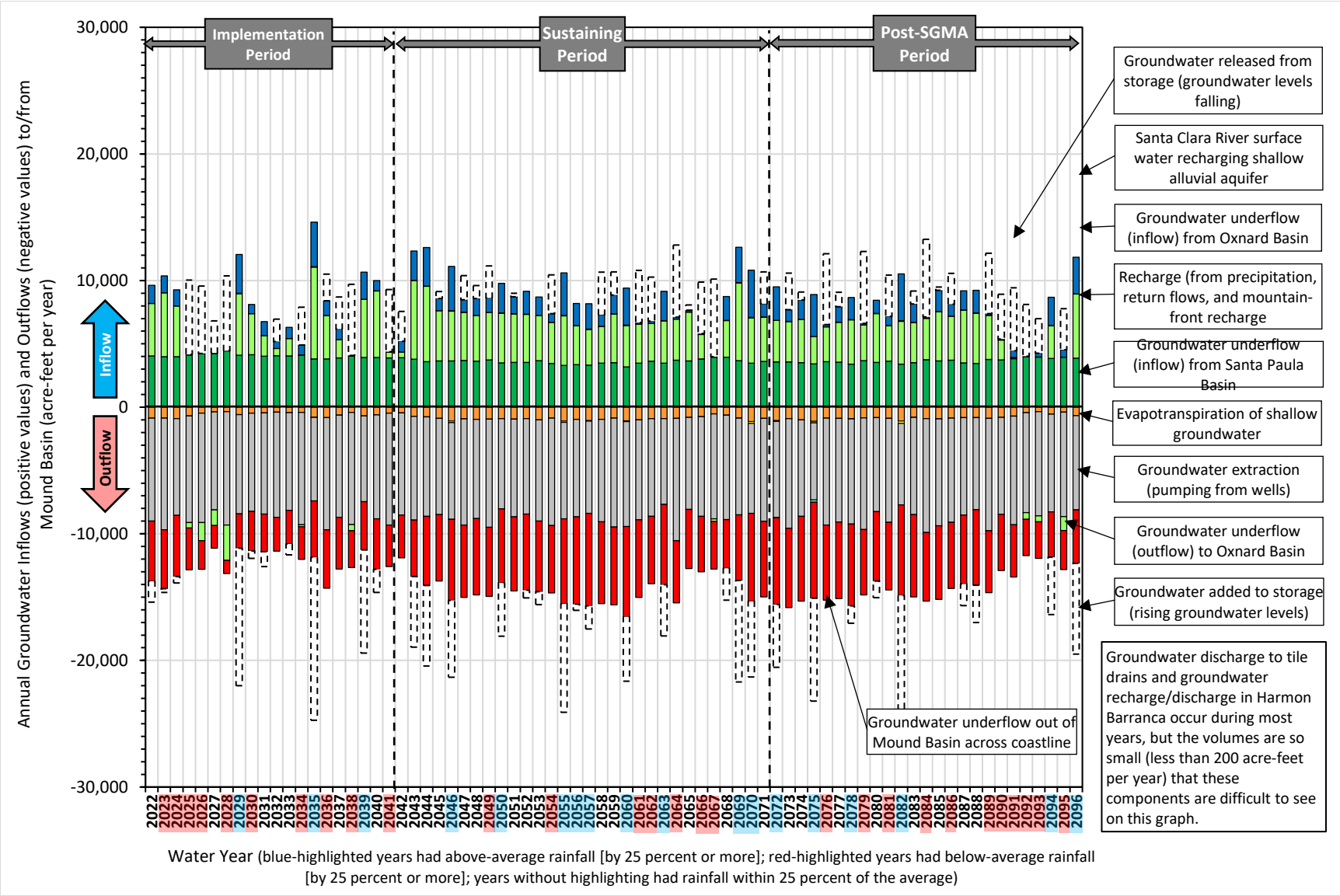


Figure 3.3-14 Projected Groundwater Budget Components under the 2070 Climate Change Scenario.

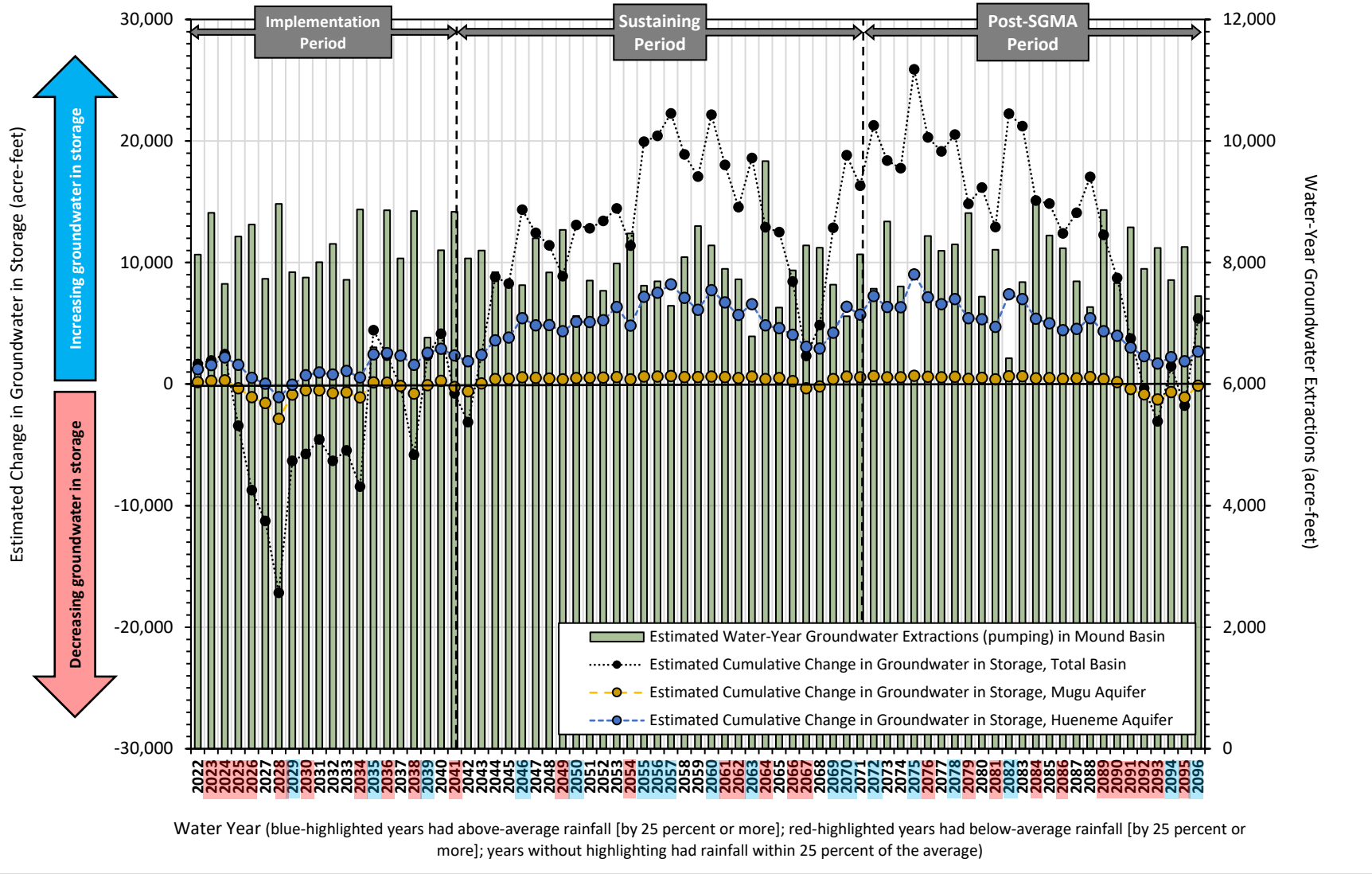


Figure 3.3-15 Projected Change in Groundwater Storage and Water Year Extraction Volumes under the 2070 Climate Change Scenario.

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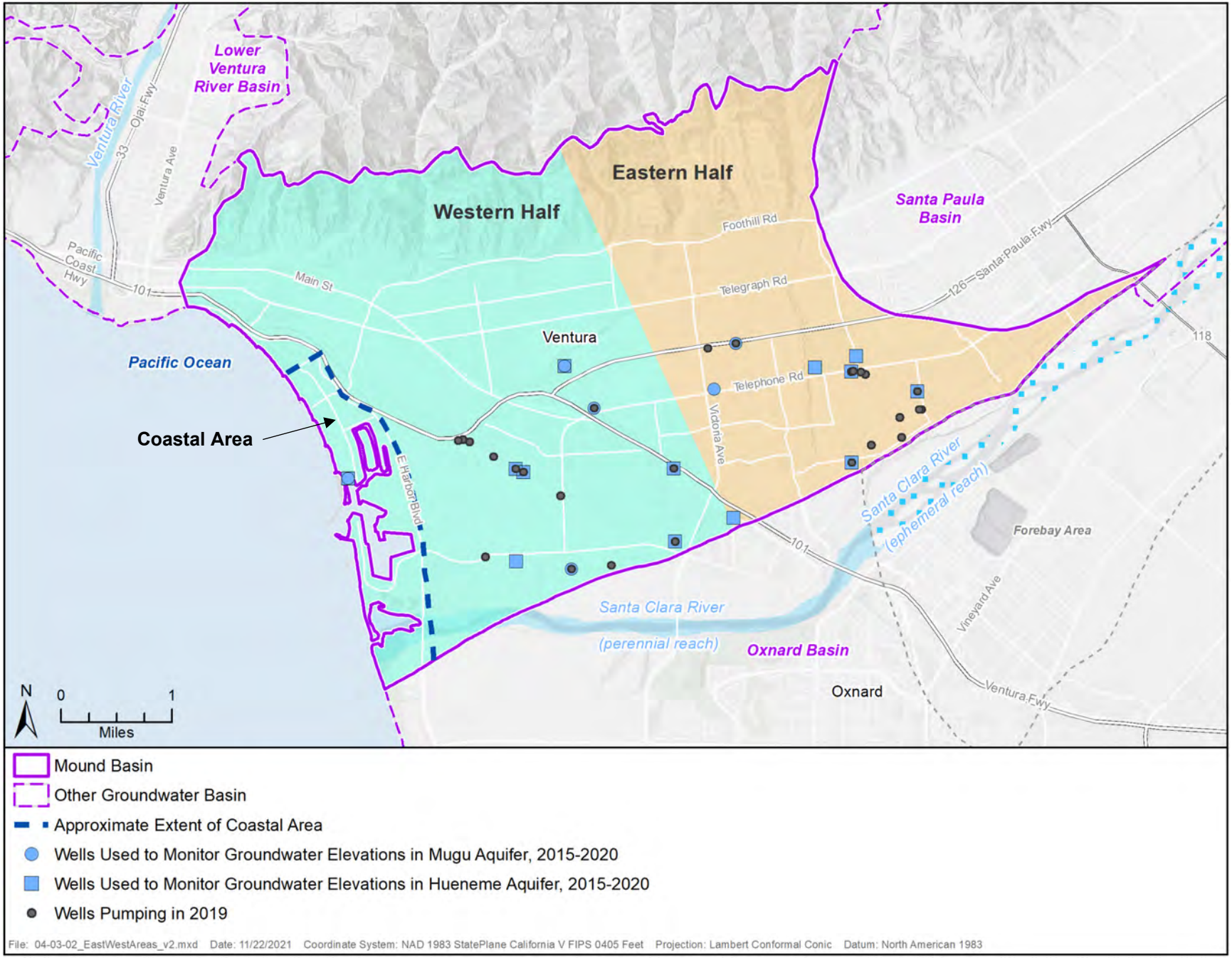

Figure 4.1-01 Mound Basin Eastern Half, Western Half, and Coastal Areas.

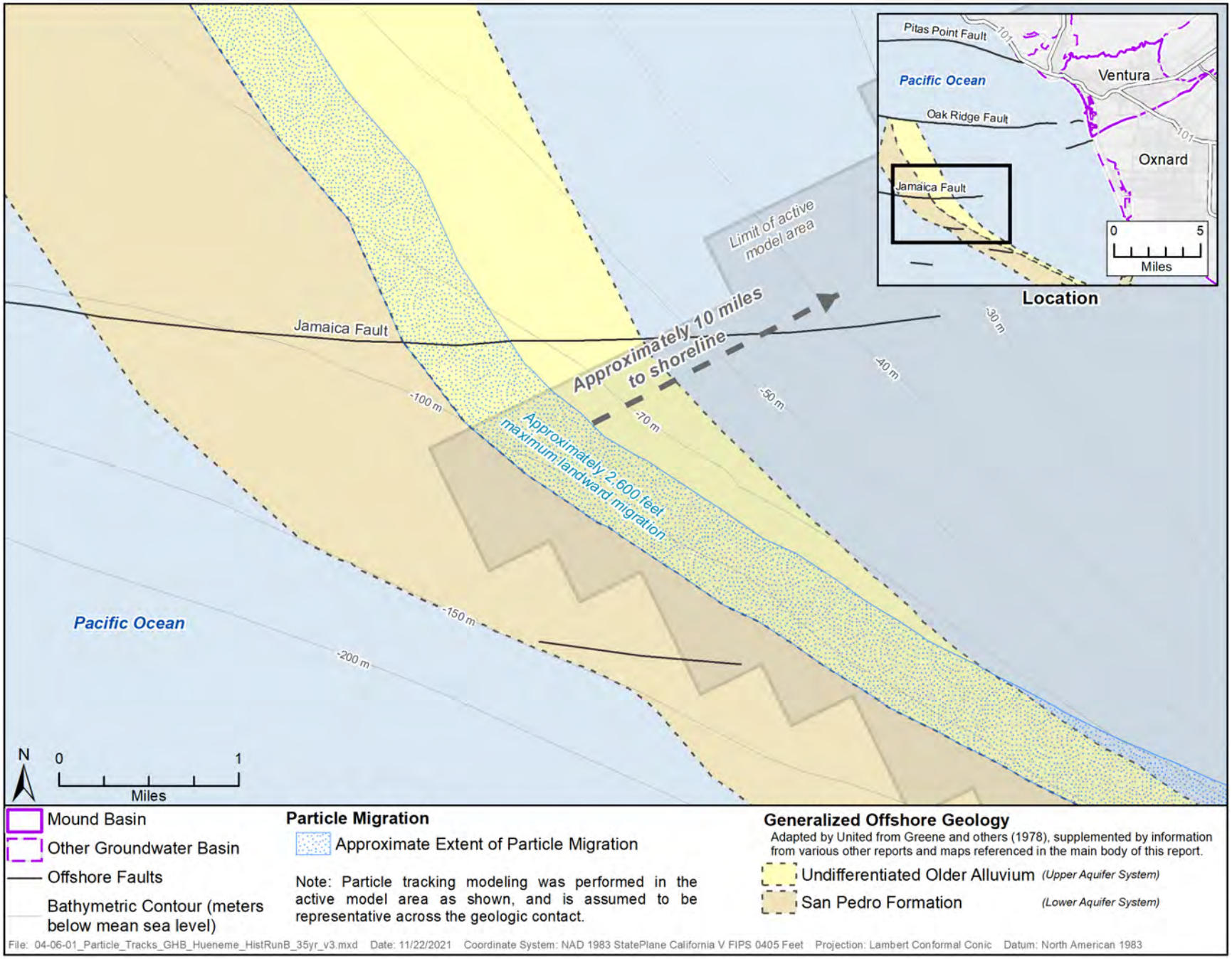

Figure 4.6-01 Estimated Historical Extent of Landward Seawater Movement in the Hueneme Aquifer.

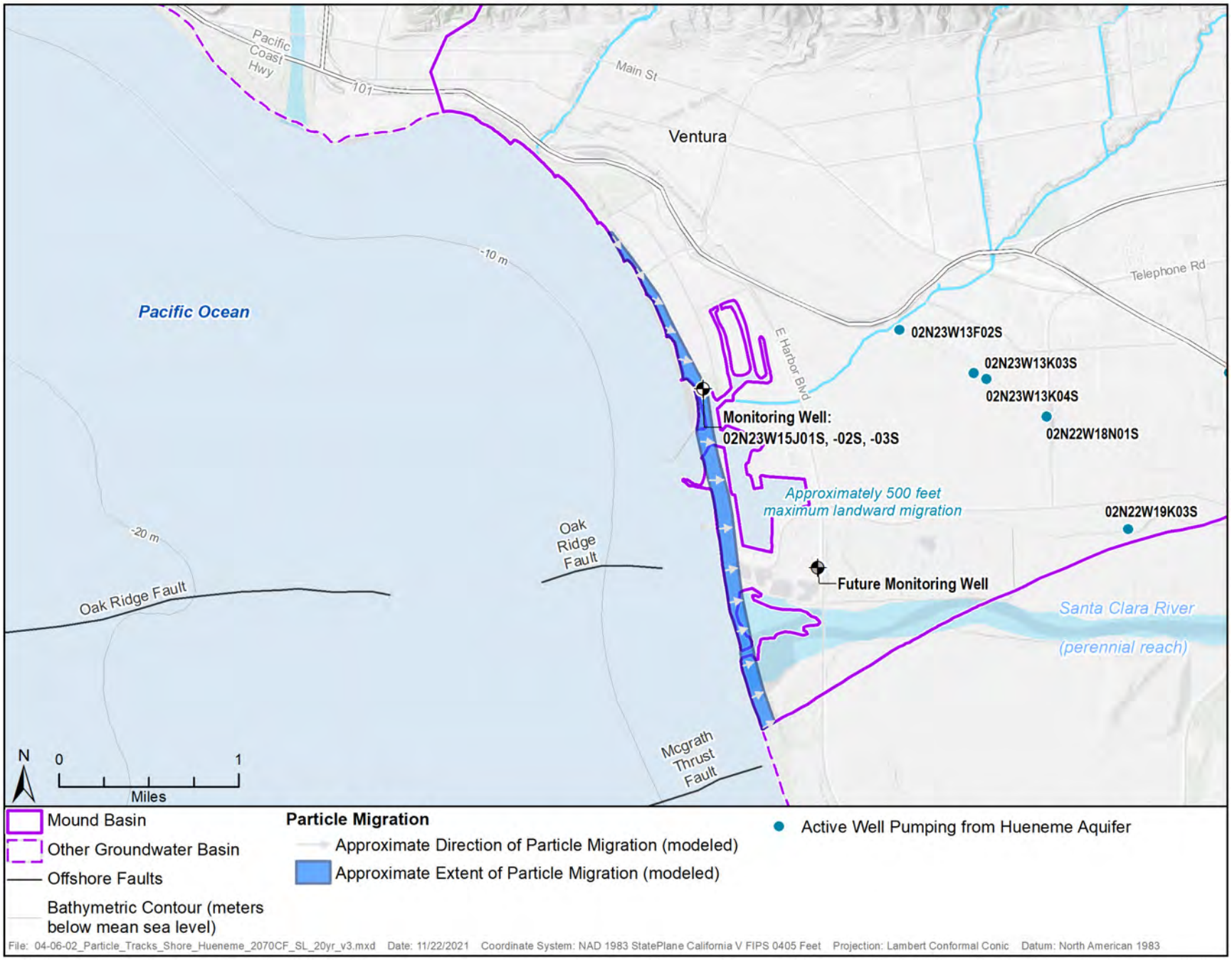

Figure 4.6-02 Estimated Landward Movement of Groundwater During 20-Year GSP Implementation Period (with 2070 Climate Change and Sea Level Rise).

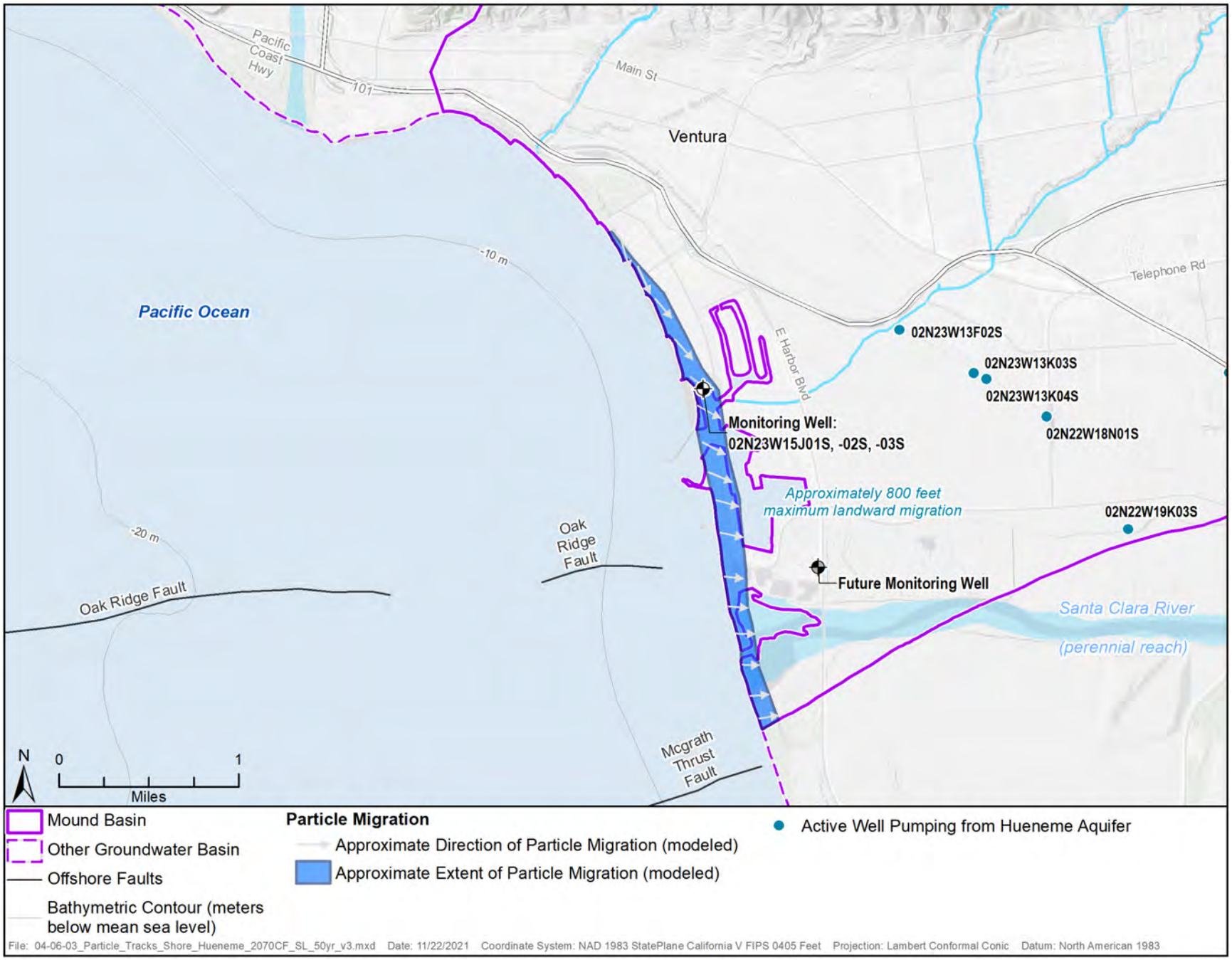

Figure 4.6-03 Estimated Landward Movement of Groundwater During 50-Year SGMA Planning Period (with 2070 Climate Change and Sea Level Rise).

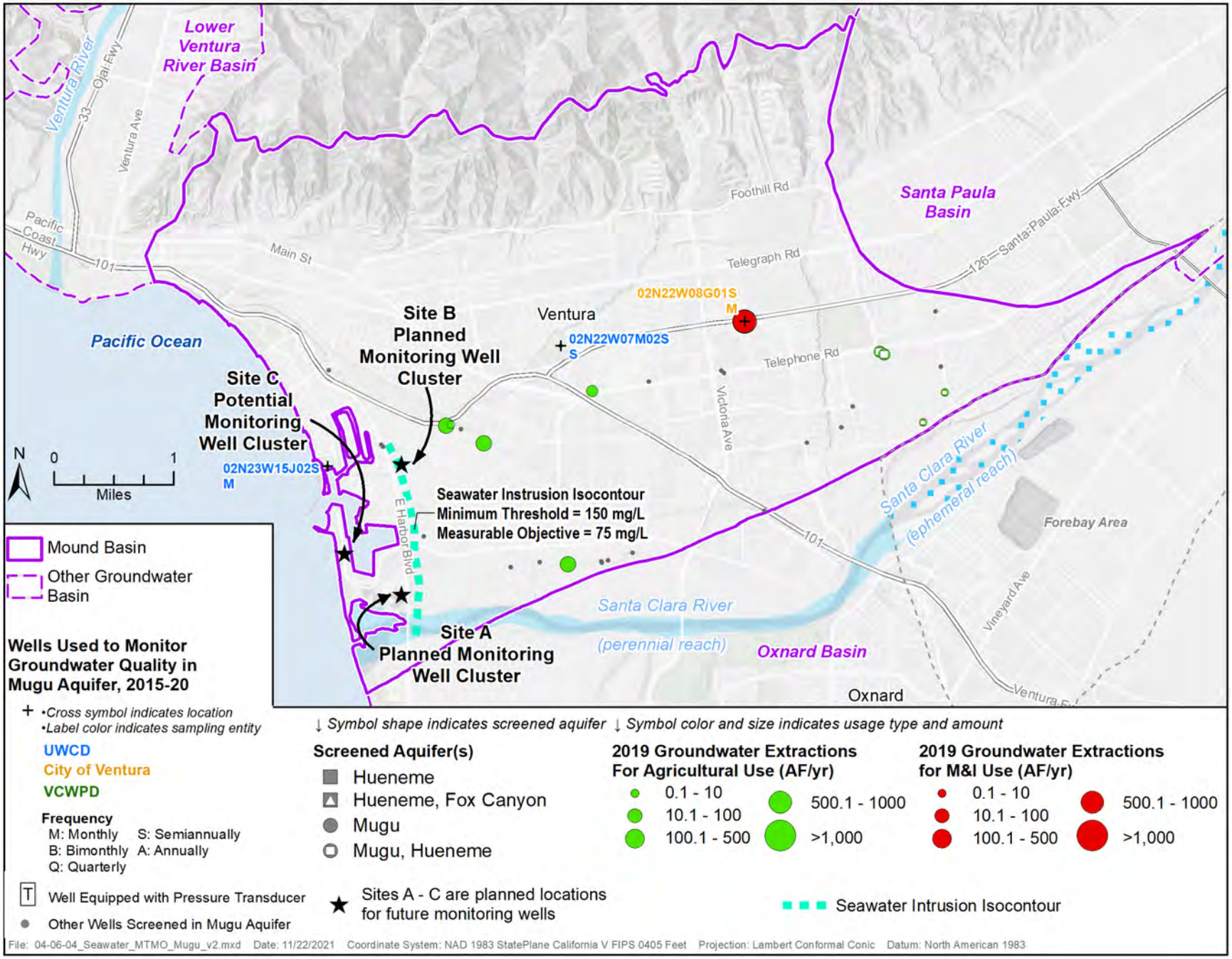

Figure 4.6-04 Map Showing Seawater Intrusion Minimum Threshold and Measurable Objective, Mugu Aquifer.

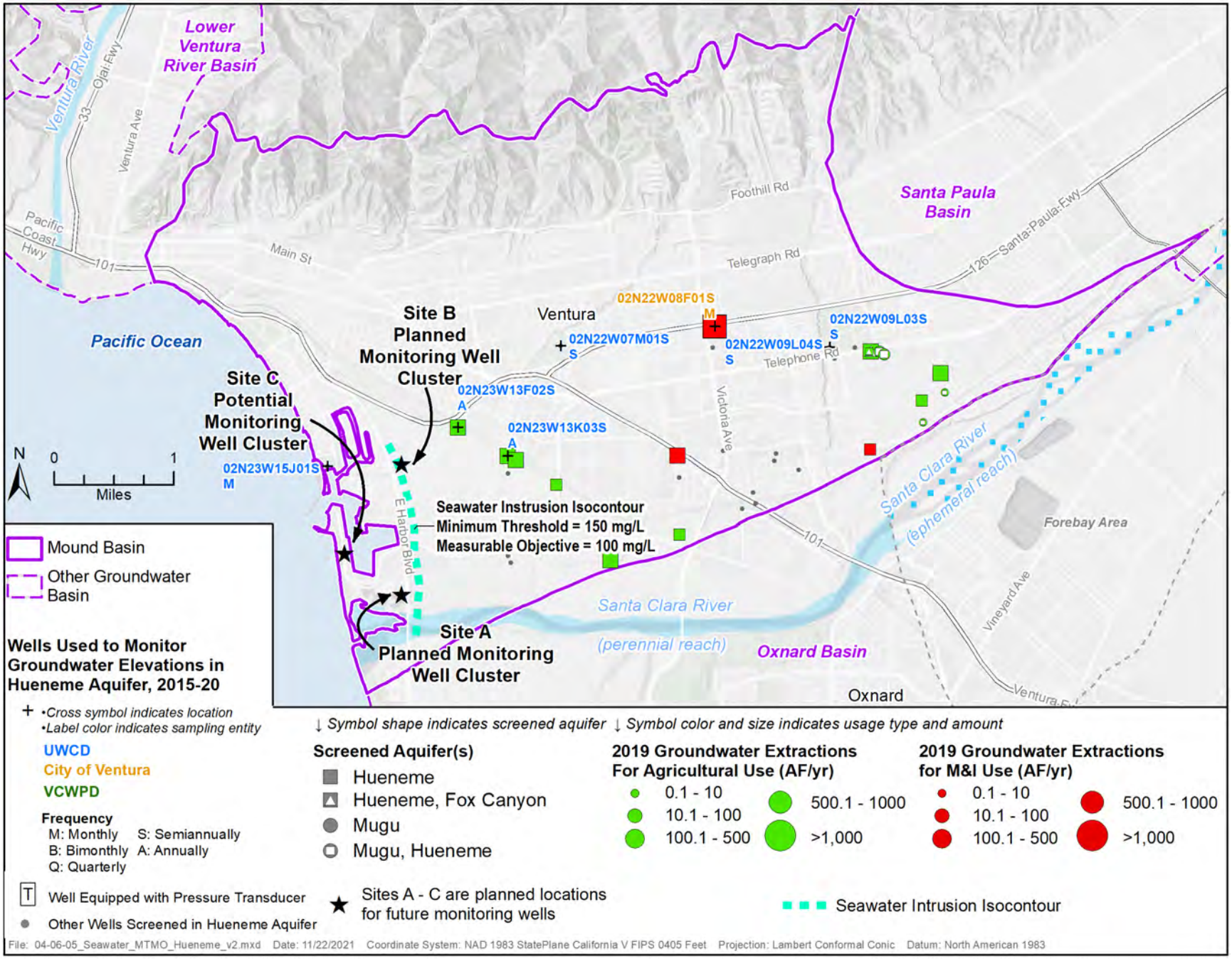

Figure 4.6-05 Map Showing Seawater Intrusion Minimum Threshold and Measurable Objective, Hueneme Aquifer.

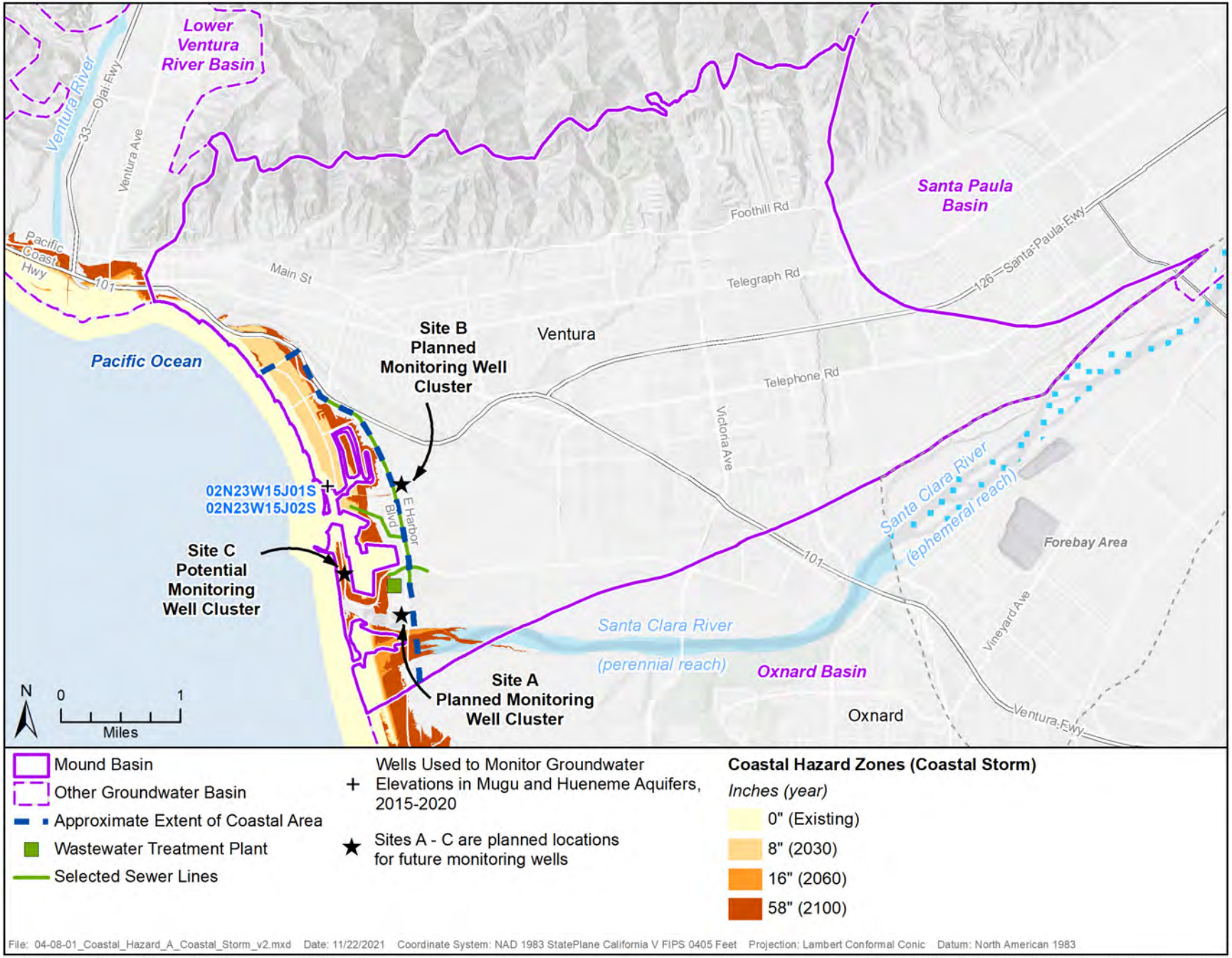

Figure 4.8-01a Seal Level Rise Associated with Coastal Storm Hazard.

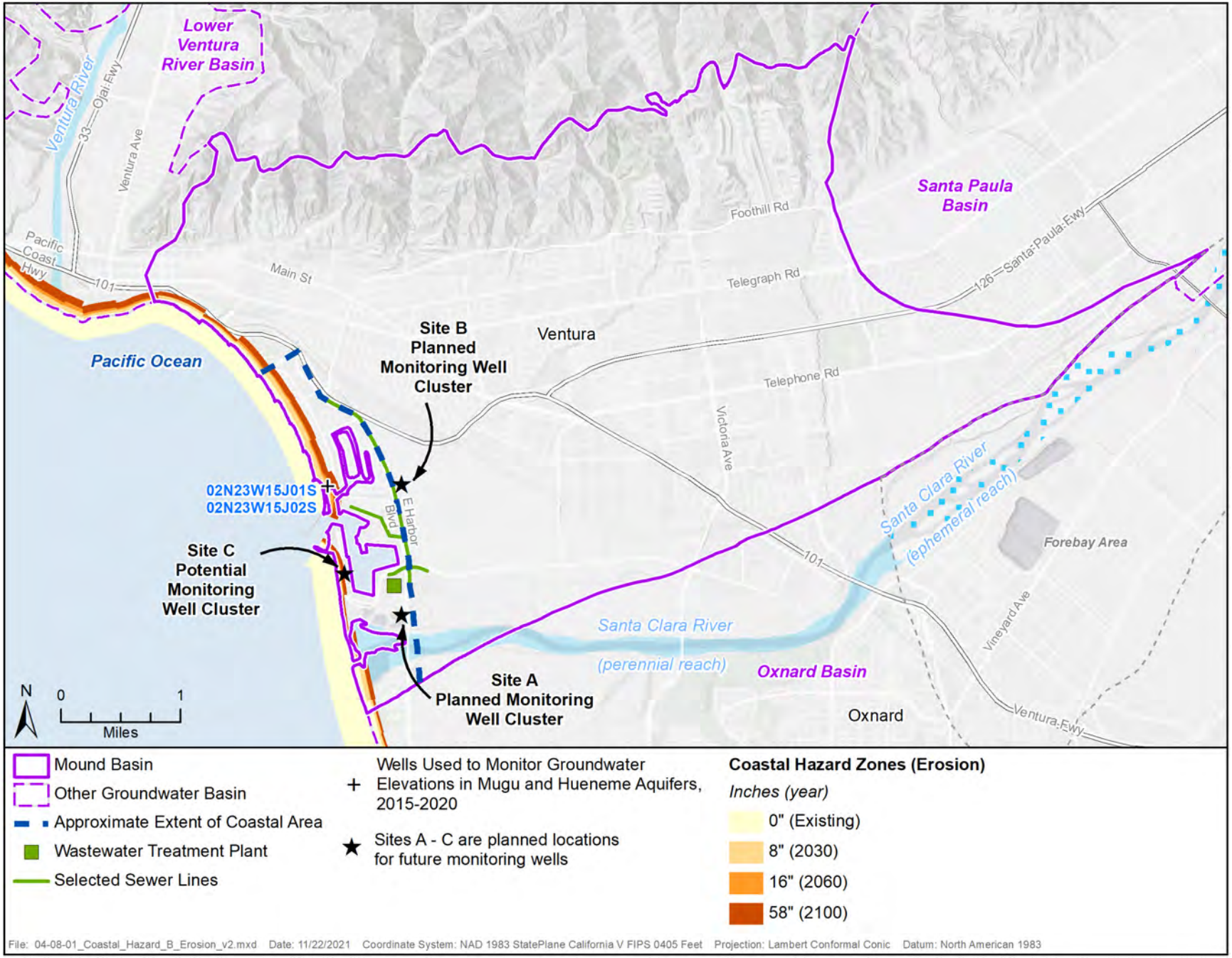

Figure 4.8-01b Sea Level Rise Associated with Coastal Erosion Hazard.

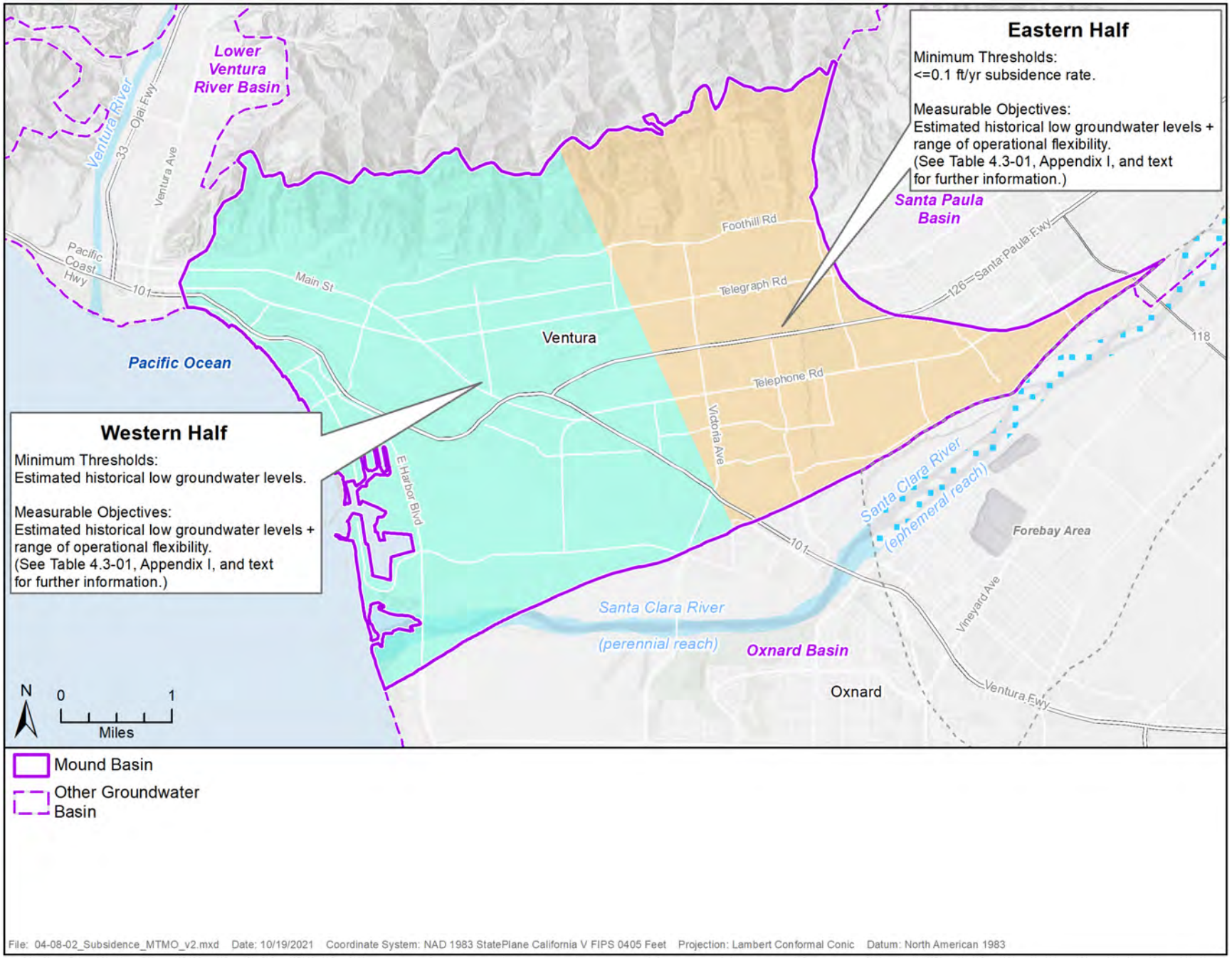

Figure 4.8-02 Map Showing Land Subsidence Minimum Thresholds and Measurable Objectives.

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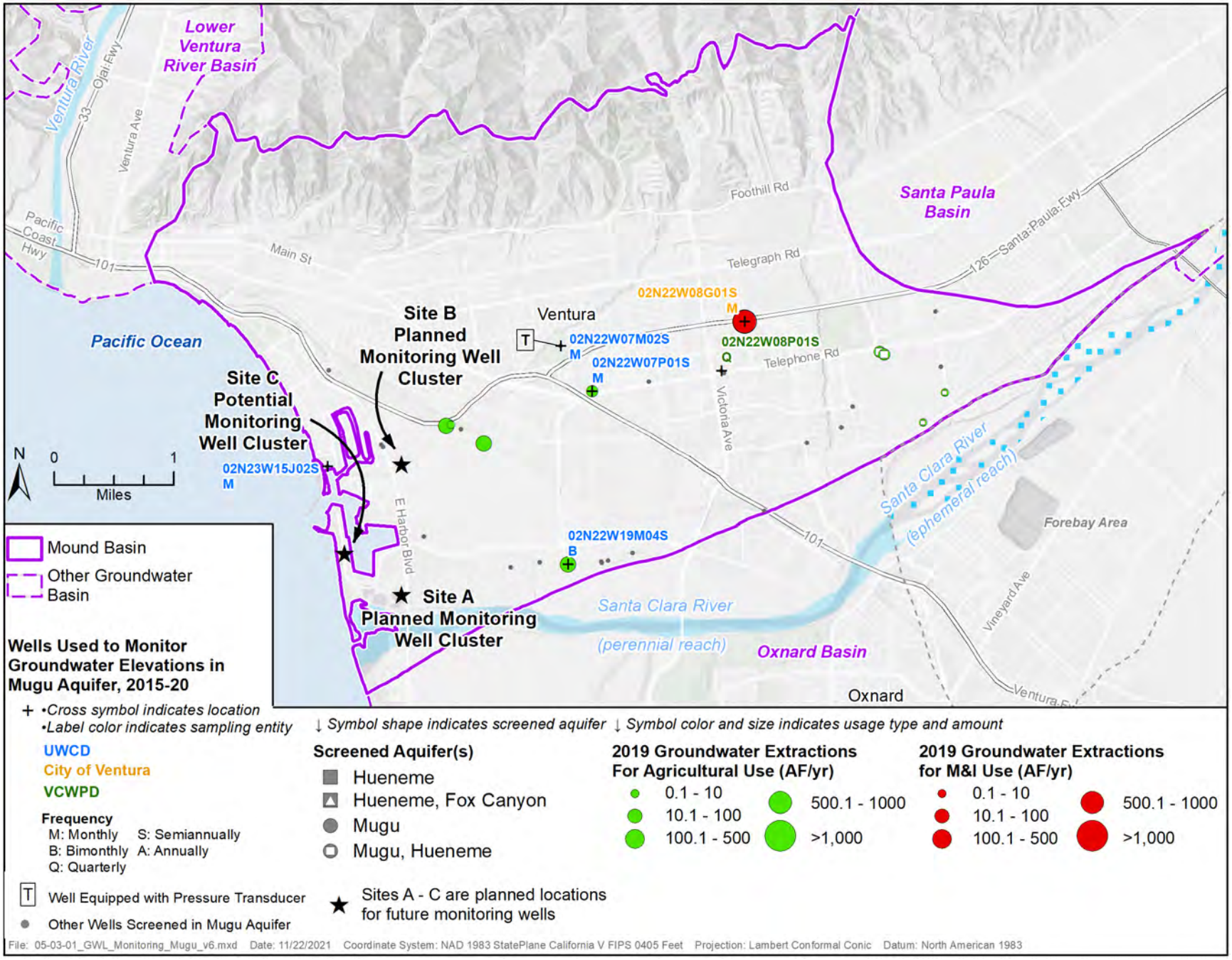

Figure 5.3-01 Map Showing the Groundwater Elevation Monitoring Network in the Mugu Aquifer of Mound Basin.

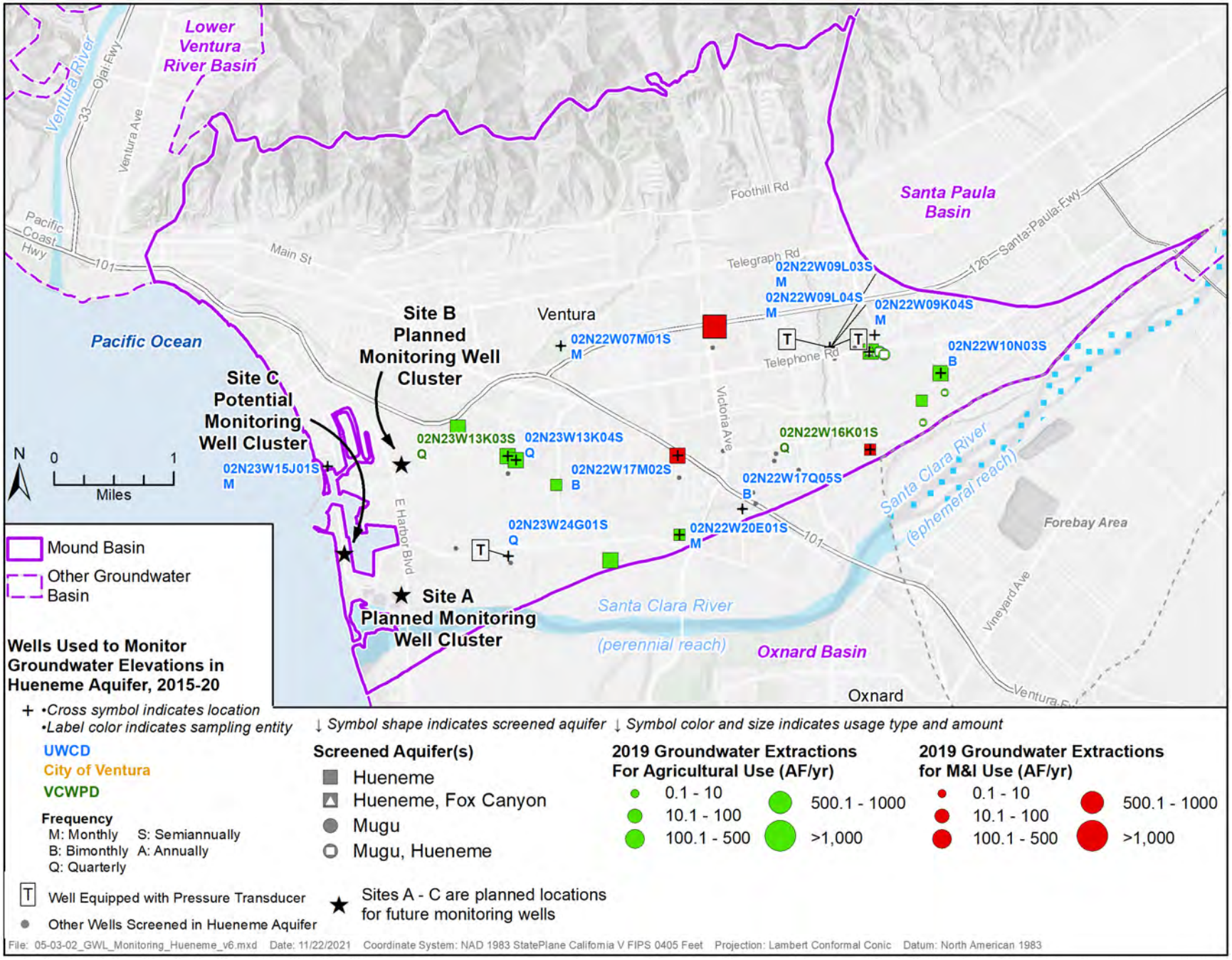

Figure 5.3-02 Map Showing the Groundwater Elevation Monitoring Network in the Hueneme Aquifer of Mound Basin.

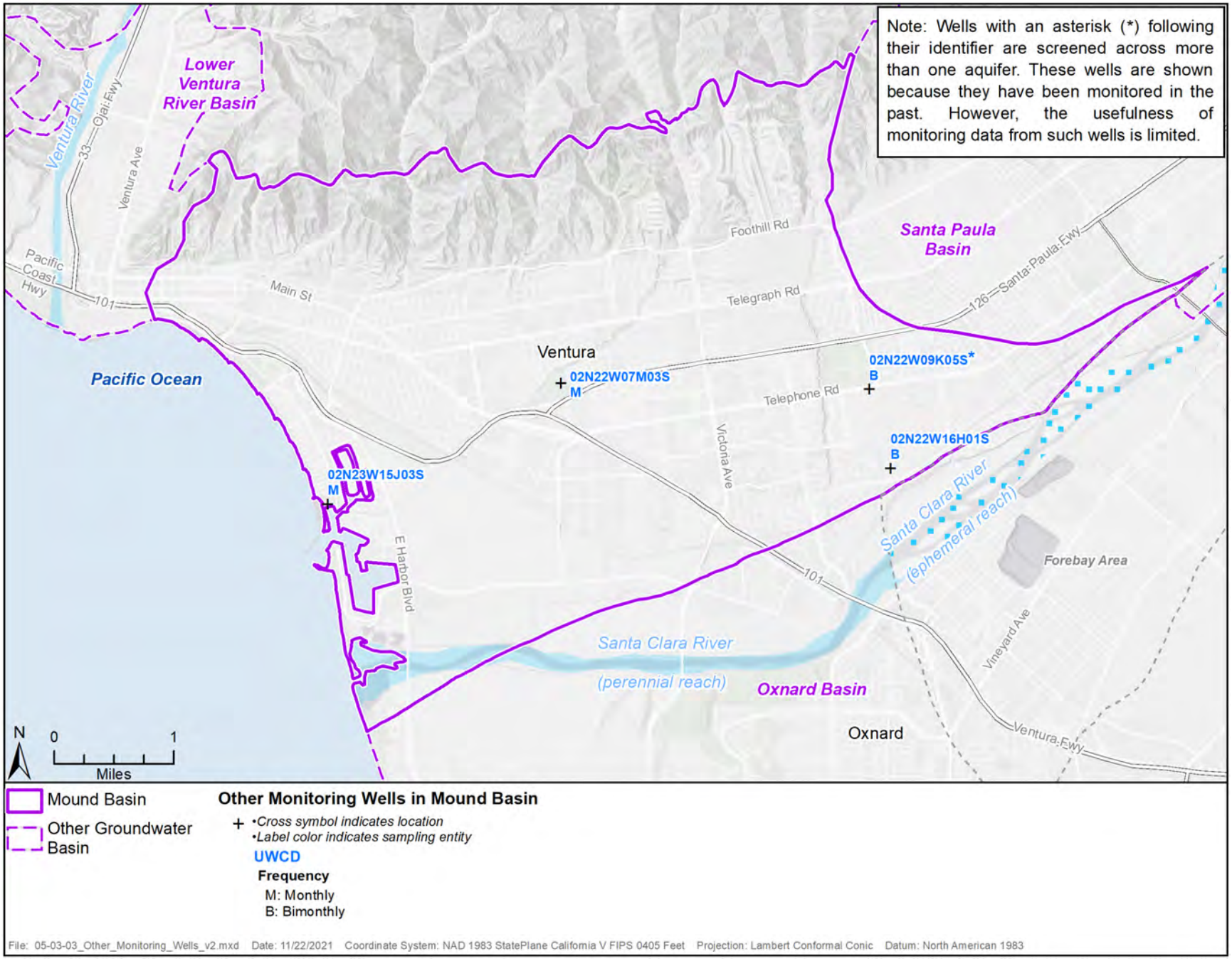

Figure 5.3-03 Map Showing Other Monitoring Wells in Mound Basin.

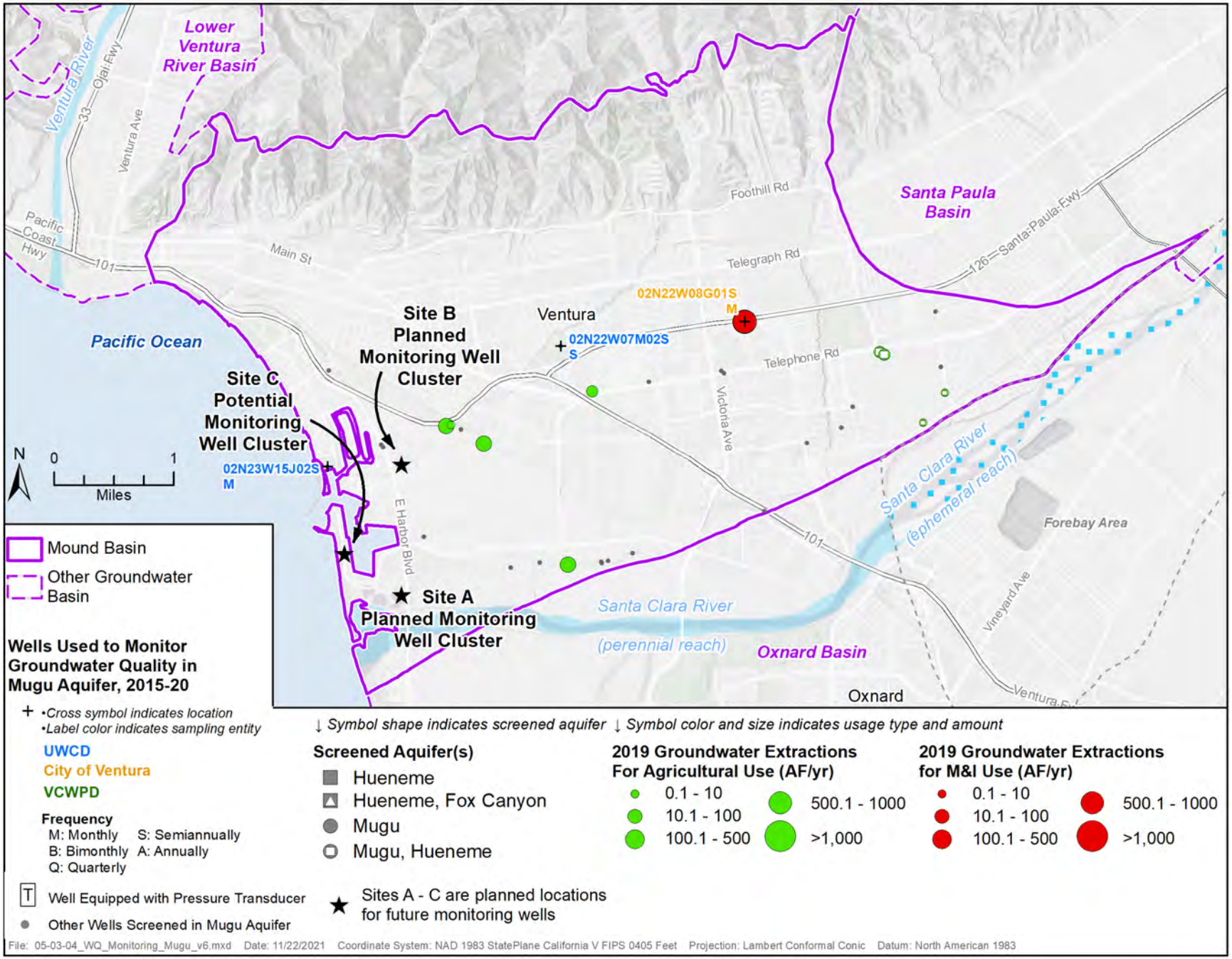

Figure 5.3-04 Map Showing the Groundwater Quality and Seawater Intrusion Monitoring Networks in the Mugu Aquifer of Mound Basin.

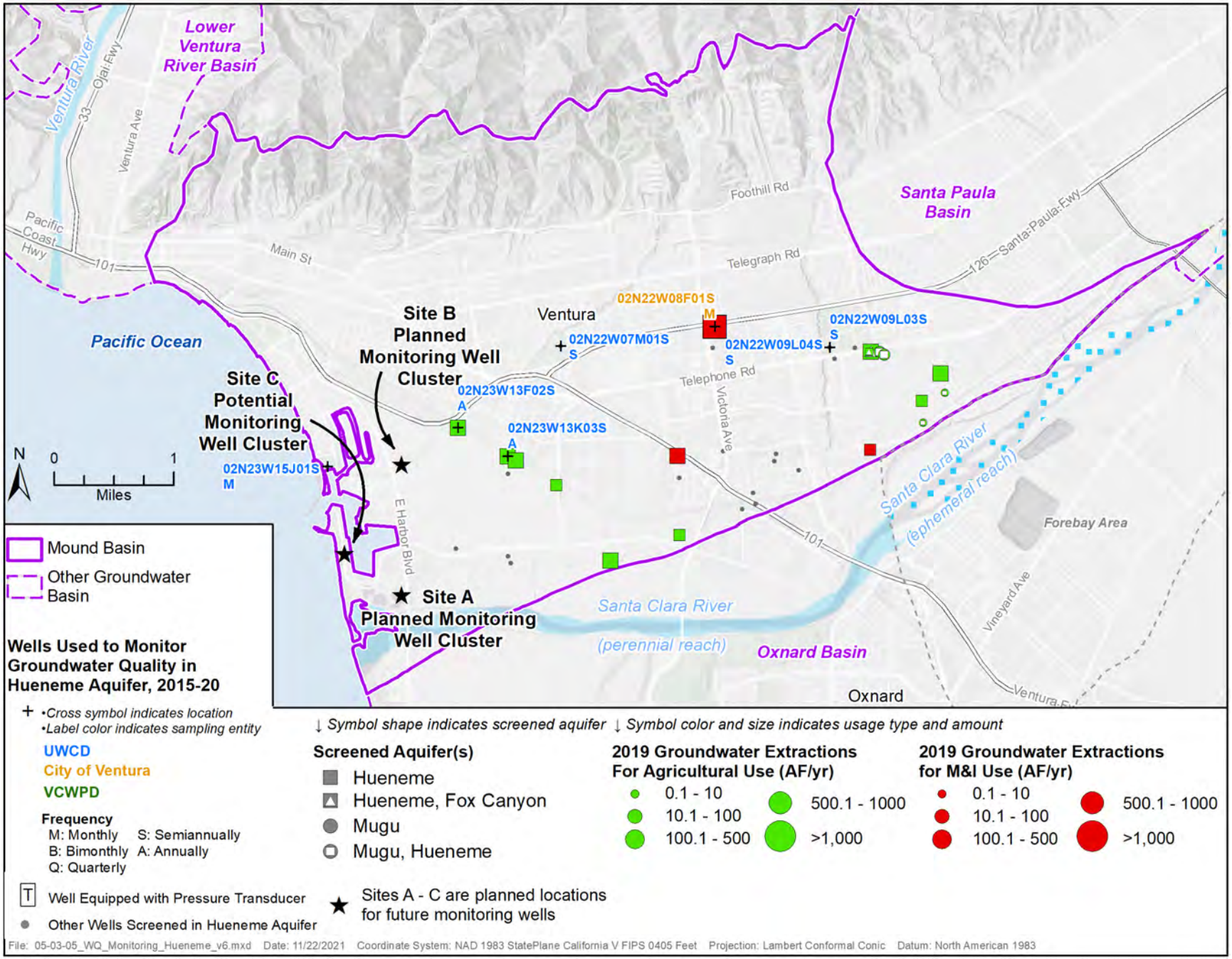

Figure 5.3-05 Map Showing the Groundwater Quality and Seawater Intrusion Monitoring Networks in the Hueneme Aquifer of Mound Basin.

Figure

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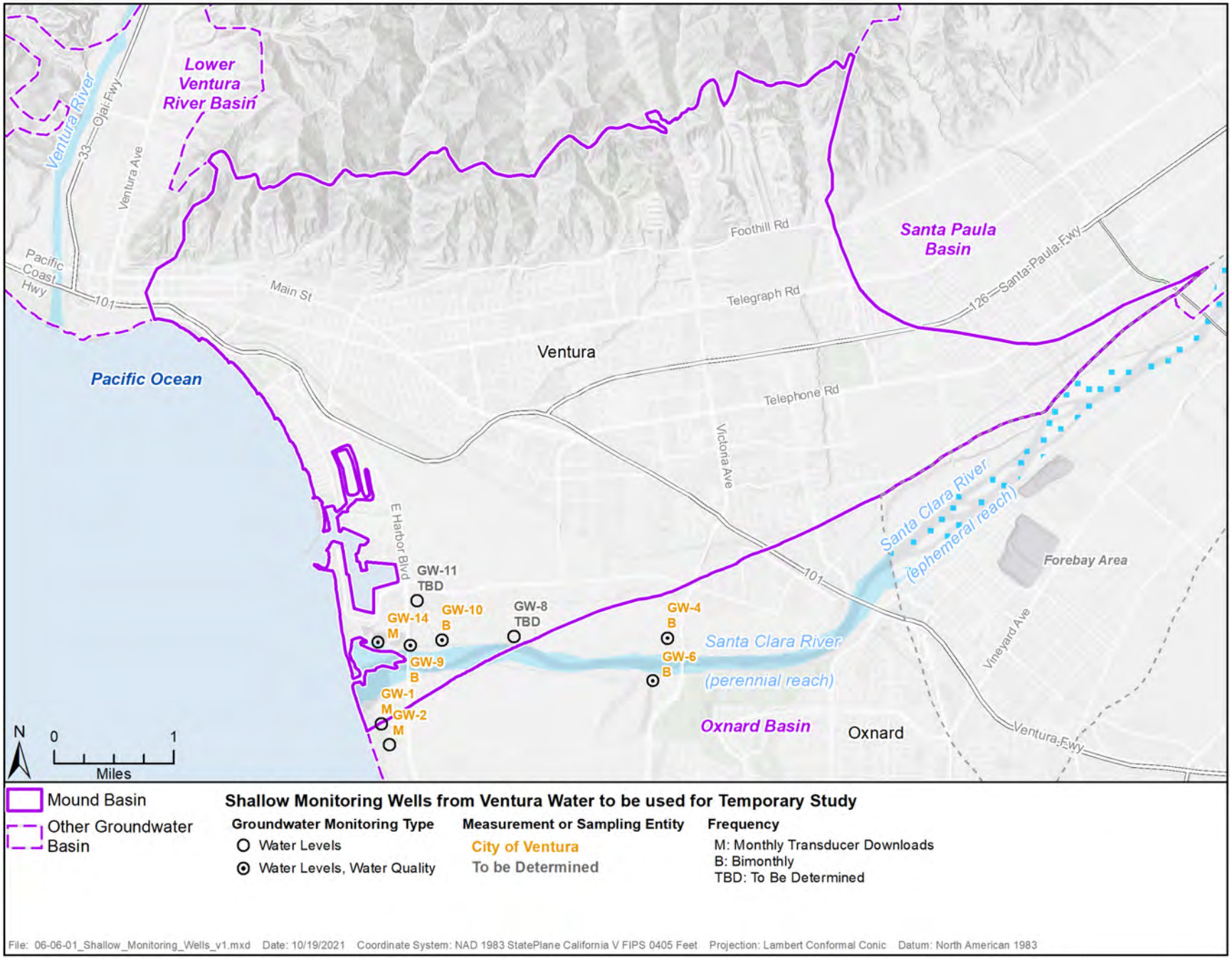


Figure 6.6-01 Monitoring Locations for Interim Shallow Groundwater Data Collection Project.

Tables

Tables

Section 2

Table 2.2-01 Water Resources Monitoring Programs Relevant to the Mound Basin GSP.

Program	Agency	Parameter(s)	Description	Reference
United Groundwater Extraction Reporting	United Water Conservation District	Groundwater Extraction	Semi-annual self-reporting of groundwater extractions records for two 6-month periods (January 1 through June 30 and July 1 through December 31)	California Water Code Sections 74500-74554
United Groundwater Monitoring Program	United Water Conservation District	Groundwater Levels Groundwater Quality	Districtwide groundwater monitoring program	https://www.unitedwater.org/key-documents/#groundwater-conditions
Countywide Groundwater Monitoring Program	Ventura County Watershed Protection District	Groundwater Levels Groundwater Quality	Countywide groundwater monitoring program	https://s29422.pcdn.co/wp-content/uploads/2018/08/2015-Annual-Report-Final-Reduced.pdf
Division of Drinking Water Compliance Monitoring	City of Ventura (Ventura Water)	Groundwater Quality	Ventura Water monitors the quality of groundwater from its municipal wells in the Mound Basin.	https://www.cityofventura.ca.gov/DocumentCenter/View/21807/2020-Consumer-Confidence-Report
California Statewide Groundwater Elevation Monitoring (CASGEM)	Ventura County Watershed Protection District	Groundwater Levels	VCWPD is the CASGEM monitoring entity for the Ventura County. Data is compiled from the Countywide Groundwater Monitoring Program and cooperative entities.	https://water.ca.gov/Programs/Groundwater-Management/Groundwater-Elevation-Monitoring--CASGEM
Groundwater Ambient Monitoring and Assessment Program (GAMA)	State Water Resources Control Board	Groundwater Quality	SWRCB Program implemented in 2000 (modified by Assembly Bill 599 in 2001) to monitor and assess groundwater basins throughout the state.	https://www.waterboards.ca.gov/water_issues/programs/gama/
GeoTracker	State Water Resources Control Board	Groundwater Quality	Records for contamination remediation sites.	https://geotracker.waterboards.ca.gov/
Lower Santa Clara River Salt and Nutrient Management Plan (SNMP)	Los Angeles Regional Water Quality Control Board and regulated entities	Groundwater Quality	Monitoring program for plan implementation of the SNMP to meet the requirements of the Recycled Water Policy (SWRCB Resolution 2009-0011). Monitoring program relies primarily on existing monitoring programs listed on other of this table.	https://www.waterboards.ca.gov/losangeles/water_issues/programs/salt_and_nutrient_management/docs/lscr/3_FinalLSCRSNMP_pg38-376.pdf
Countywide Precipitation Monitoring	Ventura County Watershed Protection District	Precipitation	Countywide rainfall monitoring program (3 active stations located within Mound Basin See Figure 3.1-01)	https://www.vcwatershed.net/hydrodata/
Countywide Stream Flow Monitoring	Ventura County Watershed Protection District	Stream flow	Countywide stream flow monitoring program (4 stations located within Mound Basin – See Figure 3.1-01)	https://www.vcwatershed.net/hydrodata/
Countywide Evaporation Monitoring	Ventura County Watershed Protection District	Evaporation	Countywide evaporation monitoring program (no stations located within Mound Basin, but data is useful for estimating conditions in the Basin)	https://www.vcwatershed.net/hydrodata/
California Irrigation Management Information System (CIMIS)	California Department of Water Resources	Weather Station (multiple parameters)	Statewide weather station network (no stations located within Mound Basin, but data is useful for estimating conditions in the Basin)	https://cimis.water.ca.gov/
National Water Information System	United States Geologic Survey	Groundwater Levels Groundwater Quality Stream Flow Spring Flow	Countrywide monitoring network (no sites are located within Mound Basin, but data is relevant for regional context)	https://maps.waterdata.usgs.gov/mapper/index.html

Table 2.2-02 Water Resources Management Programs Relevant to the Mound Basin GSP.

Program	Agency	Parameter(s)	Description	Reference
City of Ventura Urban Water Management Plan	City of Ventura (Ventura Water)	Water Supply	Planning tool that generally guides the actions related to water supply issues for the Ventura Water service area.	https://www.cityofventura.ca.gov/DocumentCenter/View/5623/2015-Urban-Water-Management-Plan-Main-Text
Casitas Municipal Water District Urban Water Management Plan	Casitas Municipal Water District	Water Supply	Planning tool that generally guides the actions related to water supply issues for the Casitas Municipal Water District service area.	https://www.casitaswater.org/home/showpublisheddocument/163/636896291075730000
Integrated Regional Water Management (IRWM) Program and Plan	Watershed Coalition of Ventura County (WCVC)	Water Supply Groundwater Levels Groundwater Levels Surface Water Quality	Initiated with Proposition 50 in 2006, the program provides competitive grant funds for projects and studies in accordance with a comprehensive IRWM Plan.	http://wcvc.ventura.org/ http://www.scrwatershed.org/
Freeman Diversion and Related Facilities	United Water Conservation District	Groundwater Recharge	Diversion of Santa Clara River flood flows for managed aquifer groundwater recharge and direct water deliveries in-lieu of groundwater pumping in the adjacent Oxnard Subbasin. Although these water management activities occur in the adjacent Oxnard Basin, groundwater levels benefits are realized in the Mound Basin.	https://www.unitedwater.org/about-us/#facilities-strategies
Lower Santa Clara River Salt and Nutrient Management Plan (SNMP)	Los Angeles Regional Water Quality Control Board and regulated entities	Groundwater Quality	Plan to meet the requirements of the Recycled Water Policy (SWRCB Resolution 2009-0011).	https://www.waterboards.ca.gov/losangeles/water_issues/programs/salt_and_nutrient_management/docs/lscr/3_FinalLSCRSNMP_pg38-376.pdf
Ventura County Stormwater Quality Monitoring Program	Ventura County Watershed Protection District and City Partners	Surface Water Quality	Program meets the requirements of the Ventura County Stormwater Permits. Includes water quality sampling, watershed assessments, business inspections, and pollution prevention programs.	http://www.vcstormwater.org/
VCAILG Water Quality Management Plan	Los Angeles Regional Water Quality Control Board and regulated entities. Program is managed by the Ventura County Farm Bureau	Surface Water Quality Groundwater Quality	VCAILG's Water Quality Management Plan (WQMP) serves as the roadmap to meet local water quality standards and goals. These plans are prepared and submitted to the Los Angeles Regional Water Quality Control Board (Regional Board) to comply with the agricultural conditional waiver of waste discharge requirements. The plan addresses measurement and control of discharges from irrigated farmland to protect surface water quality.	http://www.farmbureauvc.com/issues/water-issues/water-quality/vcailg

Tables

Section 3

Table 3.1-01 Summary of Hydraulic Parameters for Mound Basin Hydrostratigraphic Units.

Hydrostratigraphic Unit (aquifer or aquitard)	Horizontal Hydraulic Conductivity (feet per day)	Vertical Hydraulic Conductivity (feet per day)	Specific Yield (percent)	Storage Coefficient (unitless)
Shallow Alluvial Deposits	200	20	15	N/A
Fine-grained Pleistocene deposits	0.01	0.001	5	0.001
Mugu Aquifer	100	10	15	0.001
Mugu-Hueneme aquitard	0.01	0.001	5	0.0005
Hueneme Aquifer	20	2	10	0.0005
Hueneme-Fox Canyon aquitard	0.1	0.01	5	0.0005
Fox Canyon Aquifer-main	10	1	10	0.0005
Fox Canyon upper-basal aquitard	0.1	0.01	5	0.0005
Fox Canyon Aquifer – basal	10	1	10	0.0005

Notes:
N/A = Not applicable

Table 3.1-02 Aquifers and Pumping Rates for Active Water Supply Wells in Mound Basin During 2019.

State Well Identification Number	Reported Groundwater Use	Year Well Constructed	Depth of Screened Interval(s) (feet bgs)[b]	Aquifers Screened	Groundwater Pumped in 2019 for Agricultural Use[b] (acre-feet)	Groundwater Pumped in 2019 for Municipal and Industrial Use[b] (acre-feet)	Total Groundwater Pumped in 2019[b] (acre-feet)
02N22W07P01S	Agriculture	2000	460-580	Mugu	28	0	28
02N22W08G01S	M&I	2000	580-650	Mugu[c]	0	1,740	1,740
02N22W19M04S	Agriculture	2004	343-493	Mugu	155	0	155
02N23W13E01S	Agriculture	1983	523-1123	Mugu	2	0	2
02N23W13G01S	Agriculture	2010	360-860	Mugu	470	0	470
02N23W14H01S	Agriculture	2016	407-717, 877-977, 1077-1137	Mugu	293	0	293
02N22W09K01S	Agriculture	---	236-336	Mugu & Hueneme	51	0	51
02N22W09K08S	Agriculture	2010	224-284, 304-324, 404-465	Mugu & Hueneme	73	0	73
02N22W10N02S	Agriculture	1947	200-251, 279-354	Mugu & Hueneme	9	0	9
02N22W15E02S	Agriculture	2014	120-320	Mugu & Hueneme	1	0	1
02N22W08F01S	M&I	1994	580-640, 900-940, 1060-1180	Hueneme	0	1,546	1,546
02N22W10N03S	Agriculture	2002	200-280	Hueneme	115	0	115
02N23W13F02S	Agriculture	1990	521-982	Hueneme[d]	279	0	279
02N22W15D02S	Agriculture	1973	227-379	Hueneme	74	0	74
02N22W16K01S	M&I	1934	292-345	Hueneme	0	28	28
02N22W17M02S	M&I	2001	550-850	Hueneme	0	133	133
02N22W18N01S	Agriculture	1957	660-696, 804-876, 912-1020, 1056-1200	Hueneme	25	0	25
02N22W19K03S	Agriculture	2007	450-470, 490-510, 560-600	Hueneme	107	0	107
02N22W20E01S	Agriculture	1991	462-592, 612-723, 737-818	Hueneme	91	0	91

State Well Identification Number	Reported Groundwater Use	Year Well Constructed	Depth of Screened Interval(s) (feet bgs)[b]	Aquifers Screened	Groundwater Pumped in 2019 for Agricultural Use[b] (acre-feet)	Groundwater Pumped in 2019 for Municipal and Industrial Use[b] (acre-feet)	Total Groundwater Pumped in 2019[b] (acre-feet)
02N23W13K03S	Agriculture	1977	800-1200	Hueneme	251	0	251
02N23W13K04S	Agriculture	1981	800-1200	Hueneme	187	0	187
02N22W09K05S	Agriculture	1975	625-1455	Hueneme & Fox Canyon	8	0	8
02N22W09K07S	Agriculture	2003	640-1440	Hueneme & Fox Canyon	183	0	183
02N22W10N04S	Agriculture	2017(?)	---	unknown[e]	336	0	336
02N22W16H01S	Agriculture	---	---	unknown[e]	135	0	135
02N23W24F01S	Agriculture	---	---	unknown[e]	2	0	2
				Totals:	***2,873***	***3,446***	***6,319***

Notes:

"---" = Not reported.

M&I = Municipal and industrial.

a feet bgs = Feet below ground surface, reported by driller (updated by video survey by United Water Conservation District in some wells).

b Reported by owner to United Water Conservation District for calendar year 2019.

c This well may be partially screened in the Hueneme Aquifer; however, groundwater extracted from this well likely is derived primarily from the Mugu Aquifer.

d This well is screened primarily in the Hueneme Aquifer with a small length of its screen in the Mugu Aquifer. Sample results from this well appear to be consistent with sample results from other wells screened in the Hueneme Aquifer, indicating that groundwater extracted from this well is derived primarily from the Hueneme Aquifer.

e Agricultural water-supply wells with unknown screen depths are assumed in United's (2021) groundwater model to be constructed to extract groundwater from the shallowest principal aquifer, which is the Mugu Aquifer in the area of this well.

Table 3.1-03 Groundwater Quality Objectives for Mound Basin.

Constituent	Groundwater Quality Objective (Unconfined Aquifers)	Groundwater Quality Objective (Confined Aquifers)
TDS (mg/L)	3,000	1,200
Sulfate (mg/L)	1,000	600
Chloride (mg/L)	500	150
Boron (mg/L)	N/A	1.0

Notes:
N/A = not applicable.
TDS = total dissolved solids.

Table 3.2-01 Vertical Hydraulic Gradients Calculated at Clustered Monitoring Wells in Mound Basin.

Location	Well IDs	Screened Intervals	Screened Aquifers	Data Record Time Period	Minimum Vertical Gradient (ft/ft)	Maximum Vertical Gradient (ft/ft)	Average Vertical Gradient (ft/ft)
Marina Park	02N23W15J03S, 02N23W15J02S	170-240, 480-660	fine-grained Pleistocene deposits, Mugu	1995-2019	0.009	0.120	0.075
	02N23W15J02S, 02N23W15J01S	480-660, 970-1070	Mugu, Hueneme	1995-2019	-0.020	0.033	0.008
Camino Real Park	02N22W07M03S, 02N22W07M02S	210-280, 710-780	fine-grained Pleistocene deposits, Mugu	1995-2019	0.219	0.325	0.276
	02N22W07M02S, 02N22W07M01S	710-780, 1200-1280	Mugu, Hueneme	1995-2019	-0.028	0.043	0.008
Community Water Park, Kimball Rd.	02N22W09L04S, 02N22W09L03S	480-510, 890-950	Hueneme, Hueneme	2008-2019	-0.018	0.070	0.038

Note:
A positive vertical gradient value represents downward flow; a negative vertical gradient value represents an upward flow.

Table 3.3-01 Summary of Data Sources for Water Budget Components.

Water Budget Component	Data Source or Estimation Method
Directly measured components:	
Precipitation (i.e., rainfall)	• Historical and current: Precipitation data for Ventura County Government Center and other rain gauges in Ventura County collected and maintained by Ventura County Watershed Protection District (VCWPD) at https://www.vcwatershed.net/hydrodata/. • Projected: VCWPD precipitation data as noted above (assume repeat of water year 1945-2019 rainfall amounts), modified in accordance with central-tendency climate-change precipitation factors for 2030 and 2070, as recommended by California Department of Water Resources (2018).
Surface water imports	• Historical and current: Annual volumes of surface water from Casitas MWD used within City of Ventura reported by Ventura Water (2020a), scaled proportionally to percentage of Ventura Water's service area in Mound Basin. • Projected: Planned surface-water imports to City of Ventura (Ventura Water, 2020b), scaled proportionally to percentage of Ventura Water's service area in Mound Basin.
Groundwater imports	• Historical and current: Annual or long-term average volumes of groundwater imported by agricultural users and Ventura Water (described in Section 3.1.1.3), scaled proportionally to percentage of application area within Mound Basin (Alta MWC, 2020; FICO, 2017a; Ventura Water, 2020a). • Projected: Planned long-term average groundwater imports to City of Ventura (Ventura Water, 2020b), scaled proportionally to percentage of Ventura Water's service area in Mound Basin. Application of imported groundwater by Alta MWC and FICO assumed to remain constant over the long-term average.
Groundwater extractions (pumping)	• Historical and current: Groundwater extraction reported by users to United semiannually (for periods January 1-June 30 and July 1 through December 31 of each year), with monthly pumping estimated from semiannual totals based on monthly rainfall. • Projected: United groundwater extraction data as noted above (assume repeat of water year 1945-2019 rainfall amounts), modified in accordance with central-tendency climate-change evapotranspiration factors for 2030 and 2070, as recommended by California Department of Water Resources (2018).
Components estimated using related data:	
Ephemeral stream flows entering and exiting Mound Basin in barrancas	• Historical, current, and projected: Annual streamflows reported by VCWPD (https://www.vcwatershed.net/hydrodata/) for Arundell Barranca from 1986 through 2006 were correlated to rainfall at Ventura County Government Center (described above), and extrapolated to the remainder of Mound Basin (described further in Section 3.3) based on historical, current, and projected annual rainfall.
Surface flows entering and exiting Mound Basin in Santa Clara River	• Historical, current, and projected: Estimated based on past and assumed future rainfall in the Santa Clara River watershed, based on surface-water and groundwater modeling conducted by United (2021a, 2021b, and 2021c).

Water Budget Component	Data Source or Estimation Method
Components estimated by groundwater flow modeling:	
Interaction (exchanges) of groundwater and surface water within Mound Basin	• Historical, current, and projected: Calculated for the Santa Clara River and Harmon Barranca by United's groundwater flow model based on factors including river stage, groundwater elevation, and hydraulic parameters within and directly below the riverbed (United, 2021a, 2021b, and 2021c). River stage and surface flows in the Santa Clara River are a function of rainfall throughout the Santa Clara River watershed, as noted above.
Recharge (including infiltration of precipitation, agricultural and M&I return flows, and mountain-front)	• Historical, current, and projected: Infiltration of precipitation and mountain-front recharge were estimated based on model calibration as a function of monthly rainfall (United, 2021a, 2021b, and 2021c). M&I and agricultural return flows were also estimated based on model calibration, but are a function of water applied to farmland or used for M&I purposes, as described further in Section 3.3. The volume of water applied to farmland in the future was modified in accordance with central-tendency climate-change evapotranspiration factors for 2030 and 2070, as recommended by California Department of Water Resources (2018).
Direct evapotranspiration (ET) of groundwater in aquifers	• Historical, current, and projected: Significant rates of ET directly from aquifers in Mound Basin area assumed to occur solely along the Santa Clara River, and are calculated by United's groundwater flow model based on factors including maximum ET rate, ET extinction depth, and, groundwater elevations (United, 2021a, 2021b, and 2021c). Future maximum ET rates were modified in accordance with central-tendency climate-change evapotranspiration factors for 2030 and 2070, as recommended by California Department of Water Resources (2018).
Discharge of shallow groundwater to tile drains	• Historical, current, and projected: Where tile drains are present (southern Mound Basin), rates of discharge were calculated by United's groundwater flow model based on factors including drain depth, hydraulic parameters of the drains, and groundwater elevations in the Shallow Alluvial Deposits (United, 2021a, 2021b, and 2021c).
Groundwater underflow into or out of Mound Basin (from adjacent basins or offshore)	• Historical, current, and projected: Calculated by United's groundwater flow model based on aquifer parameters (most notably transmissivity) and hydraulic gradients between Mound Basin and adjacent basins or offshore areas (United, 2021a, 2021b, and 2021c).
Vertical groundwater flow between aquifers (and other HSUs) within Mound Basin	• Historical, current, and projected: Calculated by United's groundwater flow model based on aquifer parameters (most notably vertical conductance) and vertical hydraulic gradients between each aquifer and aquitard within Mound Basin (United, 2021a, 2021b, and 2021c).

Table 3.3-02 Mound Basin Surface Water Inflows and Outflows by Water Year, Historical and Current Periods.

				Surface Water Gains and Inflows (acre-feet per year)				Surface Water Losses and Outflows (acre-feet per year)					Surface Water Inflow and Outflow Components (acre-feet per year)[g]		Summary (acre-feet per year)		
Water Year	Annual Rainfall at Ventura County Govt. Center (inches)	Water-Year Type Based on Local Rainfall[a]	California Dept. of Water Resources "Water Year Type"[b]	Santa Clara River at Boundary Between Oxnard and Mound Basins	Ephemeral Streamflow Entering Mound Basin from Northern Foothills[c]	Ephemeral Streamflow Generated Within Mound Basin in Response to Rainfall[c]	Imported Surface Water (from Casitas MWD)[d]	Santa Clara River at Pacific Ocean[e]	Mountain-Front Recharge of Surface Flows in Ephemeral Streams in Northern Mound Basin[e]	Ephemeral Streams, Barrancas, and Storm Drain Discharges Exiting Mound Basin[c]	Fate of Imported Surface Water (from Casitas MWD)		Groundwater/ Surface Water Exchange in the Santa Clara River[e]	Groundwater/ Surface Water Exchange in Harmon Barranca[e]	Sum of Inflows	Sum of Outflows	Difference[h]
											M&I Return Flows[e]	Consumptive Use[f]					
Historical period (water years 1985 through 2015)																	
1986	25.15	Above Average	Above Normal	157,512	6,814	12,828	4,706	-158,857	-4,036	-15,606	-235	-4,470	244	-30	182,103	-183,234	-1,131
1987	7.50	Below Average	Dry	1,287	1,170	2,202	6,229	-3,044	-622	-2,750	-311	-5,918	363	0	11,251	-12,645	-1,394
1988	13.22	Near Average	Dry	24,862	2,999	5,646	5,740	-26,229	-1,872	-6,772	-287	-5,453	221	-6	39,468	-40,619	-1,152
1989	8.23	Below Average	Dry	1,403	1,403	2,642	6,780	-2,805	-1,081	-2,964	-339	-6,441	527	-4	12,755	-13,634	-879
1990	5.62	Below Average	Critical	1,577	569	1,070	4,217	-2,901	-578	-1,061	-211	-4,006	217	0	7,650	-8,757	-1,107
1991	16.92	Near Average	Dry	79,289	4,182	7,873	2,162	-80,387	-3,029	-9,026	-108	-2,054	-112	-23	93,506	-94,740	-1,233
1992	20.34	Above Average	Wet	251,991	5,276	9,932	768	-252,632	-4,035	-11,173	-38	-730	-896	-26	267,967	-269,530	-1,562
1993	28.76	Above Average	Wet	831,337	7,969	15,001	1,607	-830,609	-5,115	-17,854	-80	-1,526	-2,402	-40	855,913	-857,627	-1,714
1994	11.68	Near Average	Above Normal	48,785	2,507	4,719	3,440	-50,028	-1,468	-5,757	-172	-3,268	844	-9	60,294	-60,702	-408
1995	31.72	Above Average	Wet	427,824	8,915	16,783	1,126	-428,589	-5,808	-19,890	-56	-1,070	-1,500	-8	454,648	-456,921	-2,273
1996	12.79	Near Average	Above Normal	56,652	2,862	5,387	3,005	-58,198	-1,981	-6,267	-150	-2,855	923	-11	68,828	-69,462	-634
1997	14.75	Near Average	Below Normal	79,380	3,488	6,567	4,855	-81,048	-2,762	-7,293	-243	-4,612	431	-15	94,721	-95,973	-1,251
1998	42.54	Above Average	Wet	671,093	12,375	23,296	2,972	-671,626	-7,531	-28,140	-149	-2,823	-2,148	142	709,878	-712,417	-2,539
1999	10.33	Below Average	Wet	35,400	2,075	3,906	4,806	-36,943	-984	-4,997	-240	-4,566	819	-2	47,005	-47,731	-726
2000	17.11	Near Average	Dry	53,289	4,243	7,987	3,985	-55,147	-2,619	-9,612	-199	-3,786	915	-18	70,420	-71,381	-961
2001	22.79	Above Average	Above Normal	151,353	6,059	11,407	4,297	-153,137	-4,021	-13,445	-215	-4,082	172	-29	173,288	-174,928	-1,641
2002	6.41	Below Average	Critical	1,001	821	1,546	4,867	-3,002	-690	-1,677	-243	-4,623	375	-3	8,611	-10,239	-1,628
2003	19.00	Near Average	Below Normal	50,124	4,847	9,125	3,354	-51,683	-3,446	-10,527	-168	-3,187	987	-20	68,438	-69,030	-593
2004	10.73	Below Average	Below Normal	27,751	2,203	4,147	4,666	-29,289	-1,549	-4,801	-233	-4,433	842	-8	39,609	-40,312	-703
2005	34.64	Above Average	Wet	1,024,362	9,849	18,540	4,859	-1,024,403	-7,132	-21,258	-243	-4,616	-2,934	-55	1,057,610	-1,060,640	-3,030
2006	16.64	Near Average	Wet	151,093	4,093	7,704	3,686	-152,133	-2,671	-9,126	-184	-3,502	-3	-12	166,576	-167,631	-1,055
2007	5.75	Below Average	Critical	1,867	610	1,149	4,575	-3,728	-331	-1,428	-229	-4,346	511	0	8,711	-10,062	-1,351
2008	12.77	Near Average	Critical	151,068	2,855	5,375	3,864	-152,501	-2,646	-5,583	-193	-3,671	266	-17	163,429	-164,613	-1,184
2009	9.32	Below Average	Below Normal	25,903	1,752	3,298	3,659	-27,394	-1,404	-3,645	-183	-3,476	856	-5	35,468	-36,107	-639
2010	16.82	Near Average	Above Normal	91,609	4,150	7,813	4,093	-92,623	-2,992	-8,971	-205	-3,888	299	-15	107,964	-108,694	-729
2011	19.70	Above Average	Wet	161,886	5,071	9,547	4,160	-162,851	-3,555	-11,062	-208	-3,952	-161	-21	180,664	-181,811	-1,148
2012	9.49	Below Average	Below Normal	10,630	1,806	3,400	3,203	-11,917	-806	-4,401	-160	-3,043	451	0	19,490	-20,326	-836
2013	5.80	Below Average	Critical	34	626	1,179	4,133	-1,445	-483	-1,322	-207	-3,927	298	0	6,270	-7,384	-1,114
2014	6.14	Below Average	Critical	18,733	735	1,383	3,482	-19,991	-703	-1,416	-174	-3,308	259	-3	24,592	-25,595	-1,003
2015	9.15	Below Average	Critical	2,391	1,697	3,196	3,311	-3,543	-819	-4,074	-166	-3,145	156	-3	10,750	-11,750	-999
Average:	*15.73*			*153,050*	*3,801*	*7,155*	*3,887*	*-154,289*	*-2,559*	*-8,397*	*-194*	*-3,692*	*27*	*-8*	*168,263*	*-169,483*	*-1,221*

Water Year	Annual Rainfall at Ventura County Govt. Center (inches)	Water-Year Type Based on Local Rainfall[a]	California Dept. of Water Resources "Water Year Type"[b]	Surface Water Gains and Inflows (acre-feet per year)				Surface Water Losses and Outflows (acre-feet per year)					Surface Water Inflow and Outflow Components (acre-feet per year)[g]		Summary (acre-feet per year)		
				Santa Clara River at Boundary Between Oxnard and Mound Basins	Ephemeral Streamflow Entering Mound Basin from Northern Foothills[c]	Ephemeral Streamflow Generated Within Mound Basin in Response to Rainfall[c]	Imported Surface Water (from Casitas MWD)[d]	Santa Clara River at Pacific Ocean[e]	Mountain-Front Recharge of Surface Flows in Ephemeral Streams in Northern Mound Basin[e]	Ephemeral Streams, Barrancas, and Storm Drain Discharges Exiting Mound Basin[c]	Fate of Imported Surface Water (from Casitas MWD)		Groundwater/ Surface Water Exchange in the Santa Clara River[e]	Groundwater/ Surface Water Exchange in Harmon Barranca[e]	Sum of Inflows	Sum of Outflows	Difference[h]
											M&I Return Flows[e]	Consumptive Use[f]					
Current period (water years 2016 through 2019)																	
2016	8.49	Below Average	Critical	2,651	1,486	2,798	1,799	-3,739	-1,259	-3,026	-90	-1,709	167	-5	8,902	-9,828	-926
2017	19.11	Near Average	Below Normal	88,032	4,883	9,191	1,494	-88,693	-3,555	-10,519	-75	-1,419	-256	-24	103,600	-104,541	-941
2018	7.16	Below Average	Dry	6,837	1,061	1,998	1,855	-7,888	-1,300	-1,759	-93	-1,762	196	-7	11,947	-12,809	-862
2019	19.19	Near Average	not listed	167,440	4,908	9,240	937	-167,724	-3,151	-10,997	-47	-890	-1,188	-19	182,525	-184,015	-1,491
Average:	*13.49*			*66,240*	*3,085*	*5,807*	*1,521*	*-67,011*	*-2,316*	*-6,575*	*-76*	*-1,445*	*-270*	*-14*	*76,743*	*-77,798*	*-1,055*
Average 1986-2019:	***15.46***			***142,837***	***3,717***	***6,996***	***3,609***	***-144,021***	***-2,530***	***-8,182***	***-180***	***-3,428***	***-8***	***-9***	***157,496***	***-158,697***	***-1,201***

Notes:

Positive values represent inflows or gains of surface-water flows in Mound Basin, and negative numbers represent outflows or losses of surface-water flows in Mound Basin.

a See Section 3.3 for an explanation of how water-year types were classified in this GSP.

b The California Department of Water Resources classification approach is described in Section 3.3.

c Inflows of ephemeral surface water to Mound Basin are estimated based on an empirical relationship between measured streamflow in Arundell Barranca and annual (water year) rainfall measured at Ventura County Government Center, applied to the watershed areas of streams (barrancas) within Mound Basin and upstream from Mound Basin (in stream channels that flow across the basin's northern boundary). Outflows are assumed equal to inflows across the northern basin boundary plus surface flows generated by rainfall within Mound Basin, minus mountain-front recharge of inflows immediately south of the northern boundary of Mound Basin."

d The annual volume of imported surface water from Casitas MWD to Mound Basin is estimated by multiplying the total volume of Ventura Water's Casitas MWD imports by the fraction of Ventura Water's service area that is within Mound Basin.

e Estimated using United's (2021a) groundwater flow model or resulting from model calibration.

f "Consumptive use" represents loss of imported surface water from Casitas MWD to evaporation and wastewater discharges after M&I use, and in this table is equal to imported surface water (from Casitas MWD) minus M&I return flows.

g These components can comprise either net gains or losses of surface water from streams within Mound Basin, depending on hydrogeologic conditions that vary over time.

h Inflows and outflows of surface water in Mound Basin should be equal, resulting in a difference of zero. Although the long-term average difference is less than 1 percent of the long-term average inflows or outflows, indicating good overall agreement, the apparent difference between inflows and outflows is larger during years with above-average rainfall. This likely is a result of minor deviations of actual streamflow in Arundell Barranca in a given water year compared to the empirical relationship developed to estimate basinwide ephemeral flows across the basin."

Table 3.3-03 Mound Basin Groundwater Inflows and Outflows by Water Year, Historical and Current Periods.

				Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Groundwater Inflow and Outflow Components (acre-feet per year)[e]					Summary (acre-feet per year)				All Aquifers Combined				Mugu Aquifer				Hueneme Aquifer			
Water Year	Annual Rainfall at Ventura County Govt. Center (inches)	Water-Year Type Based on Local Rainfall[a]	California Department of Water Resources "Water Year Type"[b]	Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)	Mountain-Front Recharge	Evapo-transpiration[c]	Groundwater Extraction (pumping from wells)	Discharge of Groundwater to Tile Drains[d]	Groundwater/ Surface Water Interaction in the Santa Clara River[f]	Groundwater/ Surface Water Interaction in Harmon Barranca[g]	Groundwater Underflow to/from Santa Paula Basin	Groundwater Underflow to/from Oxnard Basin	Groundwater Underflow to/from Offshore (south and west of the coastline)	Sum of Inflows	Sum of Outflows	Groundwater Released from Storage per Water Year[h]	Groundwater Released from Storage Between Seasonal Highs[i]	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Cumulative Change in Storage per Water Year	Water-Year Pumping for Change in Storage Graph	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year
Historical period (water years 1985 through 2015)																													
1986	25.15	Above Average	Above Normal	4,880	4,036	-1,171	-6,452	-31	-244	30	4,603	-1,105	-2,341	13,548	-11,345	-2,203	-294	294	294	2,203	6,452	-530	-530	-135	-135	2,302	2,302	859	859
1987	7.50	Below Average	Dry	2,775	622	-1,391	-7,204	-109	-363	0	4,609	-7,166	-91	8,007	-16,324	8,317	4,794	-4,794	-4,500	-6,114	7,204	-385	-914	-1,234	-1,369	-1,723	579	-1,834	-975
1988	13.22	Near Average	Dry	3,525	1,872	-1,515	-7,381	-131	-221	6	4,723	-5,392	536	10,662	-14,639	3,978	7,129	-7,129	-11,629	-10,091	7,381	-1,416	-2,331	-849	-2,217	-1,968	-1,389	-1,283	-2,258
1989	8.23	Below Average	Dry	3,034	1,081	-1,025	-8,267	-14	-527	4	4,985	-7,075	834	9,939	-16,908	6,969	5,299	-5,299	-16,928	-17,060	8,267	-1,097	-3,428	-1,612	-3,829	-1,463	-2,853	-1,744	-4,002
1990	5.62	Below Average	Critical	2,623	578	-1,090	-10,511	-23	-217	0	5,379	-9,091	2,913	11,492	-20,932	9,439	9,004	-9,004	-25,932	-26,499	10,511	-2,139	-5,567	-2,340	-6,169	-2,483	-5,336	-2,519	-6,521
1991	16.92	Near Average	Dry	3,990	3,029	-1,089	-8,595	-14	112	23	5,309	-4,527	2,105	14,568	-14,225	-367	2,803	-2,803	-28,735	-26,132	8,595	-1,687	-7,254	-185	-6,354	364	-4,972	-98	-6,619
1992	20.34	Above Average	Wet	4,339	4,035	-1,133	-7,662	-41	896	26	4,820	7,575	-67	21,692	-8,903	-12,833	-9,228	9,228	-19,506	-13,299	7,662	2,821	-4,433	4,708	-1,647	1,043	-3,929	2,097	-4,522
1993	28.76	Above Average	Wet	5,214	5,115	-1,637	-5,118	-223	2,402	40	4,112	8,054	-3,013	24,937	-9,990	-14,946	-18,265	18,265	-1,241	1,647	5,118	4,163	-270	1,977	330	3,622	-307	3,471	-1,051
1994	11.68	Near Average	Above Normal	3,208	1,468	-1,292	-7,469	-29	-844	9	4,299	420	-1,152	9,403	-10,785	1,382	-1,177	1,177	-64	265	7,469	314	45	-193	138	150	-157	-73	-1,123
1995	31.72	Above Average	Wet	6,006	5,808	-1,690	-7,468	-176	1,500	8	4,141	5,501	-3,787	22,965	-13,121	-9,841	-7,756	7,756	7,692	10,106	7,468	284	329	627	765	2,589	2,433	1,852	729
1996	12.79	Near Average	Above Normal	3,654	1,981	-1,201	-7,912	-27	-923	11	4,078	932	-2,527	10,655	-12,590	1,935	-641	641	8,334	8,172	7,912	134	463	-118	647	-491	1,941	-264	465
1997	14.75	Near Average	Below Normal	3,957	2,762	-1,114	-5,585	-18	-431	15	3,898	88	-3,188	10,721	-10,335	-386	96	-96	8,237	8,558	5,585	-180	283	-185	461	-196	1,745	634	1,099
1998	42.54	Above Average	Wet	7,033	7,531	-2,037	-4,273	-232	2,148	-142	3,814	2,393	-5,345	22,918	-12,029	-10,886	-8,253	8,253	16,491	19,444	4,273	93	376	503	964	3,681	5,425	2,845	3,944
1999	10.33	Below Average	Wet	2,984	984	-1,507	-7,576	-88	-819	2	3,970	419	-2,444	8,359	-12,434	4,076	1,834	-1,834	14,657	15,368	7,576	164	540	-111	853	-2,016	3,409	-1,339	2,605
2000	17.11	Near Average	Dry	4,143	2,619	-1,321	-8,789	-81	-915	18	4,064	-1,057	-2,427	10,843	-14,590	3,747	3,869	-3,869	10,789	11,621	8,789	-451	89	-475	378	-351	3,058	-1,402	1,203
2001	22.79	Above Average	Above Normal	4,738	4,021	-1,283	-8,512	-36	-172	29	3,997	3,066	-3,127	15,851	-13,130	-2,720	-3,094	3,094	13,883	14,341	8,512	133	222	231	609	639	3,697	418	1,622
2002	6.41	Below Average	Critical	2,536	690	-1,593	-7,714	-168	-375	3	4,196	-2,569	-1,190	7,425	-13,609	6,185	4,697	-4,697	9,186	8,157	7,714	-117	105	-543	66	-2,415	1,282	-1,232	390
2003	19.00	Near Average	Below Normal	4,252	3,446	-1,155	-7,916	-20	-987	20	4,242	24	-2,271	11,984	-12,349	365	3,071	-3,071	6,115	7,792	7,916	-674	-569	-197	-131	54	1,336	-427	-37
2004	10.73	Below Average	Below Normal	3,233	1,549	-1,035	-9,792	-5	-842	8	4,315	-1,418	-1,180	9,105	-14,272	5,167	3,514	-3,514	2,600	2,625	9,792	-366	-935	-819	-951	-1,256	79	-850	-887
2005	34.64	Above Average	Wet	6,021	7,132	-1,769	-6,468	-280	2,934	55	4,014	6,978	-4,919	27,133	-13,437	-13,695	-12,191	12,191	14,791	16,320	6,468	947	12	1,698	747	3,370	3,449	1,966	1,079
2006	16.64	Near Average	Wet	3,747	2,671	-1,327	-7,845	-27	3	12	4,190	1,661	-3,408	12,285	-12,606	322	1,345	-1,345	13,446	15,998	7,845	354	366	61	808	-1,752	1,697	-231	847
2007	5.75	Below Average	Critical	2,677	331	-1,474	-9,454	-103	-511	0	4,482	-3,478	-690	7,490	-15,710	8,182	4,908	-4,908	8,538	7,816	9,454	-295	71	-793	15	-1,571	126	-1,291	-443
2008	12.77	Near Average	Critical	3,501	2,646	-1,345	-7,962	-100	-266	17	4,424	246	-1,797	10,835	-11,470	636	1,184	-1,184	7,354	7,180	7,962	-341	-270	-12	3	8	134	-514	-957
2009	9.32	Below Average	Below Normal	2,960	1,404	-1,099	-7,254	-26	-856	5	4,513	-2,540	-1,026	8,882	-12,800	3,919	4,463	-4,463	2,891	3,262	7,254	-349	-619	-530	-528	-897	-764	-416	-1,373
2010	16.82	Near Average	Above Normal	3,914	2,992	-1,094	-6,812	-14	-299	15	4,329	-1,285	-1,431	11,250	-10,937	-482	1,858	-1,858	1,033	3,744	6,812	-740	-1,359	-192	-719	223	-541	71	-1,302
2011	19.70	Above Average	Wet	3,930	3,555	-1,139	-4,898	-15	161	21	4,123	4,709	-2,837	16,499	-8,889	-7,610	-6,103	6,103	7,136	11,354	4,898	826	-533	1,138	419	1,365	824	1,447	145

				Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Groundwater Inflow and Outflow Components (acre-feet per year)[e]					Summary (acre-feet per year)				All Aquifers Combined				Mugu Aquifer				Hueneme Aquifer			
Water Year	Annual Rainfall at Ventura County Govt. Center (inches)	Water-Year Type Based on Local Rainfall[a]	California Department of Water Resources "Water Year Type"[b]	Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)	Mountain-Front Recharge	Evapo-transpiration[c]	Groundwater Extraction (pumping from wells)	Discharge of Groundwater to Tile Drains[d]	Groundwater/ Surface Water Interaction in the Santa Clara River[f]	Groundwater/ Surface Water Interaction in Harmon Barranca[g]	Groundwater Underflow to/from Santa Paula Basin	Groundwater Underflow to/from Oxnard Basin	Groundwater Underflow to/from Offshore (south and west of the coastline)	Sum of Inflows	Sum of Outflows	Groundwater Released from Storage per Water Year[h]	Groundwater Released from Storage Between Seasonal Highs[i]	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Cumulative Change in Storage per Water Year	Water-Year Pumping for Change in Storage Graph	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year
2012	9.49	Below Average	Below Normal	2,700	806	-1,319	-6,351	-63	-451	0	4,367	-3,799	-906	7,873	-12,889	5,016	1,389	-1,389	5,747	6,338	6,351	351	-181	-537	-118	-732	92	-640	-495
2013	5.80	Below Average	Critical	2,316	483	-1,481	-6,544	-132	-298	0	4,664	-6,425	212	7,675	-14,880	7,205	6,760	-6,760	-1,014	-867	6,544	-1,005	-1,186	-1,563	-1,681	-1,094	-1,002	-1,037	-1,531
2014	6.14	Below Average	Critical	2,560	703	-1,288	-7,876	-67	-259	3	4,902	-8,784	1,337	9,504	-18,274	8,770	8,316	-8,316	-9,330	-9,637	7,876	-2,309	-3,495	-2,482	-4,163	-1,576	-2,579	-2,082	-3,613
2015	9.15	Below Average	Critical	2,330	819	-824	-6,084	-5	-156	3	4,862	-5,832	460	8,475	-12,899	4,424	6,837	-6,837	-16,166	-14,061	6,084	-1,647	-5,142	-1,088	-5,251	-1,565	-4,144	-518	-4,132
Average:	*15.73*			*3,759*	*2,559*	*-1,315*	*-7,391*	*-77*	*-27*	*8*	*4,414*	*-983*	*-1,426*	*12,766*	*-13,243*	*469*	*539*													
Current period (water years 2016 through 2019)																													
2016	8.49	Below Average	Critical	2,500	1,259	-765	-6,736	0	-167	5	4,755	-8,031	2,255	10,773	-15,700	4,927	3,459	-3,459	-19,625	-18,988	6,736	-1,258	-6,399	-1,452	-6,703	-349	-4,493	-1,253	-5,385
2017	19.11	Near Average	Below Normal	3,928	3,555	-935	-5,214	-6	256	24	4,650	-4,473	1,021	13,434	-10,627	-2,807	-1,064	1,064	-18,561	-16,181	5,214	-315	-6,714	247	-6,456	531	-3,961	757	-4,628
2018	7.16	Below Average	Dry	2,623	1,300	-809	-6,848	0	-196	7	4,806	-7,249	2,293	11,029	-15,102	4,074	3,051	-3,051	-21,613	-20,254	6,848	-800	-7,514	-1,275	-7,731	-458	-4,419	-638	-5,266
2019	19.19	Near Average	not listed	3,856	3,151	-1,015	-7,242	-13	1,188	19	4,777	610	274	13,875	-8,270	-5,605	-2,775	2,775	-18,838	-14,649	7,242	485	-7,029	2,452	-5,279	562	-3,857	240	-5,026
Average:	*13.49*			*3,227*	*2,316*	*-881*	*-6,510*	*-5*	*270*	*14*	*4,747*	*-4,786*	*1,461*	*12,278*	*-12,425*	*147*	*668*													
Average 1986-2019:	***15.46***			***3,697***	***2,530***	***-1,264***	***-7,288***	***-68***	***8***	***9***	***4,453***	***-1,430***	***-1,086***	***12,708***	***-13,147***	***431***	***554***													

Notes:

N/A = Not applicable

Positive values represent inflows to the Mound Basin, and negative numbers represent outflows from the basin

a See Section 3.3 for an explanation of how water-year types were classified in this report.

b The California Department of Water Resources classification approach is described in Section 3.3.

c The Shallow Alluvial Deposits is modeled to be the sole hydrostratigraphic unit in Mound Basin with saturated conditions consistently shallow enough to be significantly affected by evapotranspiration.

d Tile drains are only known or suspected to be present in the Shallow Alluvial Deposits in Mound Basin.

e These components can comprise either net inflows to or outflows from each aquifer, depending on hydrogeologic conditions that vary over time (e.g., hydraulic gradients).

f Within Mound Basin, the sole hydrostratigraphic unit known or suspected to be in direct hydraulic communication with the Santa Clara River is the Shallow Alluvial Deposits.

g United (2021) modeled Harmon Barranca using MODFLOW's "Stream package," as described in Section 3.3 of this report, allowing the model to simulate direct hydraulic communication with the Shallow Alluvial Deposits, as well as with the fine-grained Pleistocene deposits.

h Water-year changes in storage are calculated from October 1 of the preceding calendar year to September 30 of the indicated year. Positive values for groundwater released from storage represent inflows to the basin, same as all other components on this table.

However, specific to this parameter, inflow of groundwater from storage is associated with declining groundwater levels (or potentiometric heads) in the basin. Negative values are associated with increasing groundwater-levels (or potentiometric heads), as a result of groundwater being ""added to storage.

i Represents change in groundwater storage between April 1 of the preceding year and March 30 of the indicated year; groundwater levels are commonly at their highest in spring.

Table 3.3-04 Mound Basin Average Groundwater Inflows and Outflows by Aquifer, Historical and Current Periods.

	Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Groundwater Inflow and Outflow Components (acre-feet per year)[a]							Summary (acre-feet per year)		
Aquifer	**Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)**	**Mountain-Front Recharge**	**Evapo-transpiration[b]**	**Groundwater Extraction**	**Discharge of Groundwater to Tile Drains[c]**	**Groundwater/ Surface Water Interaction in the Santa Clara River[d]**	**Groundwater/ Surface Water Interaction in Harmon Barranca[e]**	**Groundwater Underflow to/from Santa Paula Basin**	**Groundwater Underflow to/from Oxnard Basin**	**Groundwater Underflow to/from Offshore (south and west of the coastline)**	**Vertical Groundwater Flow to/from the Overlying Aquifer**	**Vertical Groundwater Flow to/from the Underlying Aquifer**	**Sum of Inflows**	**Sum of Outflows**	**Groundwater Released from Storage[f]**
Averages during historical period (water years 1986 through 2015)															
Shallow Alluvial Deposits	2,970	0	-1,315	0	-77	-27	103	-1	1,641	-1,768	N/A	-1,553	4,714	-4,740	26
Fine-grained Pleistocene deposits[g]	203	0	N/A	-22	N/A	N/A	110	7	960	4	1,553	-2,655	2,836	-2,677	-159
Mugu Aquifer	0	0	N/A	-1,917	N/A	N/A	0	312	320	-142	2,655	-1,404	3,287	-3,462	175
Hueneme Aquifer[h]	587	2,559	N/A	-5,255	N/A	N/A	-205	2,253	-2,299	496	1,404	312	7,612	-7,758	138
Fox Canyon Aquifer[i]	0	0	N/A	-198	N/A	N/A	0	1,842	-1,605	-16	-312	N/A	1,842	-2,131	289
Basin Total:	***3,759***	***2,559***	***-1,315***	***-7,391***	***-77***	***-27***	***8***	***4,414***	***-983***	***-1,426***	***5,299***	***-5,299***	***20,291***	***-20,768***	***469***
Averages during current period (water years 2016 through 2019)															
Shallow Alluvial Deposits	2,579	0	-881	0	-5	270	44	0	1,028	-1,215	N/A	-1,609	3,922	-3,710	-213
Fine-grained Pleistocene deposits[g]	151	0	N/A	-11	N/A	N/A	144	3	-76	130	1,609	-2,219	2,036	-2,306	269
Mugu Aquifer	0	0	N/A	-2,046	N/A	N/A	0	344	-1,109	1,486	2,219	-902	4,050	-4,057	7
Hueneme Aquifer[h]	497	2,316	N/A	-4,236	N/A	N/A	-175	2,413	-2,721	901	902	-120	7,029	-7,252	224
Fox Canyon Aquifer[i]	0	0	N/A	-217	N/A	N/A	0	1,987	-1,909	159	120	N/A	2,266	-2,126	-140
Basin Total:	***3,227***	***2,316***	***-881***	***-6,510***	***-5***	***270***	***14***	***4,747***	***-4,786***	***1,461***	***4,850***	***-4,850***	***19,303***	***-19,450***	***147***

Notes:

N/A = Not applicable

Positive values represent inflows to an aquifer; negative numbers represent outflows from an aquifer.

a These components can comprise either net inflows to or outflows from each aquifer, depending on hydrogeologic conditions that vary over time (e.g., hydraulic gradients).

b The Shallow Alluvial Deposits is the sole hydrostratigraphic unit in Mound Basin with saturated conditions consistently shallow enough to be significantly affected by evapotranspiration.

c Tile drains are only known or suspected to be present in the Shallow Alluvial Deposits in Mound Basin.

d Within Mound Basin, the sole hydrostratigraphic unit known or suspected to be in direct hydraulic communication with the Santa Clara River is the Shallow Alluvial Deposits.

e United (2021) modeled Harmon Barranca using MODFLOW's "Stream package," as described in Section 3.3 of this report, allowing the model to simulate direct hydraulic communication with the Shallow Alluvial Deposits and the fine-grained Pleistocene deposits.

f Positive values for groundwater released from storage represent inflows to an aquifer, same as all other components on this page. Inflow of groundwater from storage is associated with declining groundwater levels (or potentiometric heads) in that aquifer. Negative values are associated with increasing groundwater-levels (or potentiometric-heads), as a result of groundwater being "added to storage."

g Although the fine-grained Pleistocene deposits in Mound Basin are not considered a principal aquifer due to their low hydraulic conductivity, they have a substantial thickness and are stratigraphically adjacent to the Oxnard Aquifer in the Oxnard Basin (see Section 3.1 for more information). The fine-grained Pleistocene deposits are included in this table for completeness in depicting the groundwater budget for Mound Basin

h To provide a complete and balanced water budget (the sum of water-budget components for all units should be zero), the values shown in this row include both the Hueneme Aquifer and the overlying Mugu-Hueneme aquitard, which is thin and has low hydraulic conductivity. For these reasons, inflows and outflows from the aquitard are small compared to those from the aquifer.

i To provide a complete and balanced water budget (the sum of water-budget components for all units should be zero), the values shown in this row include the Fox Canyon Aquifer (main and basal) and the overlying and intervening aquitards, which are thin and have low hydraulic conductivity. For these reasons, inflows and outflows from the aquitards are small compared to those from the aquifer.

Table 3.3-05 Imports of Casitas MWD Surface Water to Mound Basin by City of Ventura, 2010-2019.

Water Year	Annual Rainfall at Ventura County Govt. Center (inches)	Water-Year Type Based on Local Rainfall[a]	Estimated Available Supply of Casitas MWD Surface Water[a] (acre-feet)	Source	Actual Imports of Casitas MWD Surface Water[b] (acre-feet)	Difference Between Planned and Actual Imports (acre-feet)	Difference Between Planned and Actual Imports (percent)
2010	16.82	Near Average	6,000	2010 UWMP	5,994	-6	0%
2011	19.70	Above Average	6,000	2010 UWMP	6,092	92	2%
2012	9.49	Below Average	6,000	2010 UWMP	4,690	-1,310	-22%
2013	5.80	Below Average	6,000	2010 UWMP	6,053	53	1%
2014	6.14	Below Average	6,000	2010 UWMP	5,099	-901	-15%
2015	9.15	Below Average	6,000	2010 UWMP	4,848	-1,152	-19%
2016	8.49	Below Average	4,593	2015 UWMP	2,634	-1,959	-43%
2017	19.11	Near Average	5,741	2015 UWMP	2,188	-3,553	-62%
2018	7.16	Below Average	5,741	2015 UWMP	2,716	-3,025	-53%
2019	19.19	Near Average	5,741	2015 UWMP	1,372	-4,369	-76%
Average:	*12.11*		*5,782*		*4,169*	-1,613	-29%

Notes:

a Assumed based on City of Ventura's 2010 and 2015 Urban Water Management Plans (Kennedy/Jenks Consultants, 2011; 2016).

b Includes all Casitas MWD imports by the City of Ventura for use within their service area, not just Mound Basin (Ventura Water, 2020a).

Table 3.3-06 Mound Basin Projected Surface Water Inflows and Outflows by Water Year, Future Baseline Conditions.

			Surface Water Gains and Inflows (acre-feet per year)				Surface Water Losses and Outflows (acre-feet per year)					Surface Water Inflow and Outflow Components (acre-feet per year)[g]		Summary (acre-feet per year)		
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Santa Clara River at Boundary Between Oxnard and Mound Basins	Ephemeral Streamflow Entering Mound Basin from Northern Foothills[c]	Ephemeral Streamflow Generated Within Mound Basin in Response to Rainfall[c]	Imported Surface Water (from Casitas MWD)[d]	Santa Clara River at Pacific Ocean[e]	Mountain-Front Recharge of Surface Flows in Ephemeral Streams in Northern Mound Basin[e]	Ephemeral Streams, Barrancas, and Storm Drain Discharges Exiting Mound Basin[c]	Fate of Imported Surface Water (from Casitas MWD)		Groundwater/ Surface Water Exchange in the Santa Clara River within Mound Basin[e]	Groundwater/ Surface Water Exchange in Harmon Barranca[e]	Sum of Inflows	Sum of Outflows	Difference[h]
										M&I Return Flows[e]	Consumptive Use[f]					
Implementation Period (water years 2022 through 2041)																
2022	1945	11.75	62,783	2,529	4,761	3,362	-61,973	-2,710	-4,580	-168	-3,194	-1,746	-14	73,435	-74,385	-950
2023	1946	11.07	32,202	2,311	4,351	4,000	-31,740	-1,789	-4,874	-200	-3,800	-1,276	-8	42,865	-43,687	-822
2024	1947	10.24	18,361	2,046	3,852	4,000	-17,732	-1,805	-4,093	-200	-3,800	-1,244	-11	28,259	-28,885	-626
2025	1948	6.95	1,150	994	1,871	5,816	-1,120	-788	-2,077	-291	-5,525	-47	-2	9,831	-9,850	-19
2026	1949	8.22	1,580	1,400	2,636	5,816	-1,549	-744	-3,291	-291	-5,525	-44	0	11,432	-11,444	-12
2027	1950	13.28	3,964	3,018	5,682	5,816	-3,912	-1,433	-7,267	-291	-5,525	-63	-6	18,480	-18,497	-17
2028	1951	7.40	0	1,138	2,142	5,816	0	-527	-2,753	-291	-5,525	-16	0	9,096	-9,112	-16
2029	1952	26.70	159,051	7,310	13,761	5,816	-158,176	-5,084	-15,986	-291	-5,525	-3,116	-34	185,938	-188,213	-2,276
2030	1953	11.30	984	2,385	4,490	5,977	-969	-1,485	-5,390	-299	-5,678	-949	-6	13,836	-14,776	-940
2031	1954	15.65	23,856	3,776	7,109	5,977	-23,592	-2,517	-8,368	-299	-5,678	-1,135	-13	40,718	-41,601	-883
2032	1955	12.45	2,150	2,753	5,182	5,977	-2,110	-1,607	-6,328	-299	-5,678	-753	-6	16,062	-16,780	-719
2033	1956	16.50	25,845	4,048	7,620	5,977	-25,646	-2,213	-9,455	-299	-5,678	-955	-13	43,490	-44,259	-769
2034	1957	10.35	10,347	2,081	3,918	5,977	-10,241	-1,394	-4,605	-299	-5,678	-823	-5	22,323	-23,045	-721
2035	1958	28.80	248,105	7,981	15,025	5,977	-246,776	-5,226	-17,781	-299	-5,678	-3,334	-33	277,088	-279,126	-2,038
2036	1959	6.65	36,601	898	1,691	5,977	-36,294	-1,200	-1,388	-299	-5,678	-1,101	-4	45,166	-45,965	-798
2037	1960	12.10	3,618	2,641	4,971	5,977	-3,530	-1,163	-6,450	-299	-5,678	-102	-4	17,207	-17,225	-18
2038	1961	7.20	0	1,074	2,022	5,977	0	-984	-2,112	-299	-5,678	-39	-5	9,073	-9,117	-44
2039	1962	25.55	228,317	6,942	13,068	5,977	-227,574	-4,111	-15,899	-299	-5,678	-2,130	-29	254,304	-255,719	-1,415
2040	1963	12.65	11,665	2,817	5,303	5,977	-11,544	-1,512	-6,607	-299	-5,678	-815	-8	25,761	-26,463	-702
2041	1964	8.25	6,124	1,410	2,654	5,977	-6,035	-938	-3,125	-299	-5,678	-47	-2	16,165	-16,123	41
Average:		*13.15*	*43,835*	*2,978*	*5,605*	*5,608*	*-43,526*	*-1,961*	*-6,622*	*-280*	*-5,328*	*-987*	*-10*	*58,026*	*-58,714*	*-687*
Sustaining Period (water years 2042 through 2071)																
2042	1965	14.85	5,286	3,520	6,627	5,977	-5,218	-2,036	-8,111	-299	-5,678	-1,030	-12	21,410	-22,385	-974
2043	1966	15.94	130,499	3,869	7,283	5,977	-130,004	-3,057	-8,095	-299	-5,678	-2,313	-20	147,628	-149,466	-1,838
2044	1967	18.88	113,441	4,809	9,053	5,977	-111,974	-4,078	-9,784	-299	-5,678	-3,189	-20	133,280	-135,022	-1,741
2045	1968	14.40	8,670	3,376	6,356	5,977	-8,028	-1,727	-8,005	-299	-5,678	-855	-10	24,379	-24,602	-223
2046	1969	24.50	969,376	6,606	12,436	5,977	-966,843	-5,039	-14,003	-299	-5,678	-3,536	-38	994,396	-995,436	-1,040
2047	1970	16.34	50,488	3,997	7,524	5,977	-49,264	-1,759	-9,762	-299	-5,678	-909	-7	67,985	-67,678	307
2048	1971	14.61	54,000	3,444	6,482	5,977	-52,955	-2,232	-7,694	-299	-5,678	-1,354	-14	69,903	-70,226	-323
2049	1972	8.94	25,593	1,630	3,069	5,977	-24,864	-1,431	-3,269	-299	-5,678	-1,229	-10	36,269	-36,779	-510
2050	1973	20.71	221,954	5,394	10,155	5,977	-220,473	-4,073	-11,475	-299	-5,678	-2,278	-24	243,480	-244,300	-820
2051	1974	15.00	76,002	3,568	6,717	5,977	-74,892	-2,318	-7,967	-299	-5,678	-1,288	-14	92,265	-92,457	-193
2052	1975	16.30	63,069	3,984	7,500	5,977	-61,908	-2,803	-8,680	-299	-5,678	-1,777	-15	80,530	-81,161	-631
2053	1976	13.46	27,920	3,076	5,790	5,977	-27,362	-1,812	-7,054	-299	-5,678	-915	-10	42,763	-43,131	-368
2054	1977	10.94	13,374	2,270	4,273	5,977	-13,206	-1,413	-5,130	-299	-5,678	-714	-6	25,894	-26,445	-551

			Surface Water Gains and Inflows (acre-feet per year)				Surface Water Losses and Outflows (acre-feet per year)					Surface Water Inflow and Outflow Components (acre-feet per year)[g]		Summary (acre-feet per year)		
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Santa Clara River at Boundary Between Oxnard and Mound Basins	Ephemeral Streamflow Entering Mound Basin from Northern Foothills[c]	Ephemeral Streamflow Generated Within Mound Basin in Response to Rainfall[c]	Imported Surface Water (from Casitas MWD)[d]	Santa Clara River at Pacific Ocean[e]	Mountain-Front Recharge of Surface Flows in Ephemeral Streams in Northern Mound Basin[e]	Ephemeral Streams, Barrancas, and Storm Drain Discharges Exiting Mound Basin[c]	Fate of Imported Surface Water (from Casitas MWD)		Groundwater/ Surface Water Exchange in the Santa Clara River within Mound Basin[e]	Groundwater/ Surface Water Exchange in Harmon Barranca[e]	Sum of Inflows	Sum of Outflows	Difference[h]
										M&I Return Flows[e]	Consumptive Use[f]					
2055	1978	34.88	722,655	9,926	18,685	5,977	-720,778	-6,712	-21,899	-299	-5,678	-3,595	-49	757,242	-759,009	-1,767
2056	1979	18.73	178,691	4,761	8,963	5,977	-177,421	-3,566	-10,158	-299	-5,678	-1,897	-21	198,392	-199,040	-648
2057	1980	26.60	407,422	7,278	13,700	5,977	-406,176	-4,366	-16,612	-299	-5,678	-2,052	-34	434,377	-435,216	-840
2058	1981	13.66	45,299	3,140	5,911	5,977	-44,448	-1,804	-7,246	-299	-5,678	-920	-9	60,326	-60,403	-78
2059	1982	12.51	39,451	2,772	5,218	5,977	-38,471	-1,786	-6,204	-299	-5,678	-1,215	-6	53,418	-53,660	-241
2060	1983	31.66	556,293	8,896	16,747	5,977	-555,004	-6,311	-19,332	-299	-5,678	-3,027	-42	587,912	-589,692	-1,780
2061	1984	10.22	29,799	2,040	3,840	5,977	-29,199	-1,849	-4,031	-299	-5,678	-120	-9	41,656	-41,185	471
2062	1985	11.84	16,759	2,558	4,815	5,977	-15,787	-1,353	-6,019	-299	-5,678	-193	-5	30,108	-29,335	774
2063	1986	25.15	191,726	6,814	12,828	5,977	-190,665	-3,879	-15,763	-299	-5,678	-2,520	-25	217,345	-218,828	-1,483
2064	1987	7.50	3,862	1,170	2,202	5,977	-3,299	-521	-2,851	-299	-5,678	-156	0	13,211	-12,804	407
2065	1988	13.22	28,139	2,999	5,646	5,977	-27,371	-1,755	-6,890	-299	-5,678	-165	-4	42,761	-42,162	599
2066	1989	8.23	2,223	1,403	2,642	5,977	-2,101	-1,026	-3,019	-299	-5,678	-97	-5	12,245	-12,225	20
2067	1990	5.62	4,102	569	1,070	5,977	-4,015	-610	-1,029	-299	-5,678	-56	0	11,718	-11,687	32
2068	1991	16.92	109,595	4,182	7,873	5,977	-109,124	-2,886	-9,169	-299	-5,678	-1,845	-23	127,627	-129,024	-1,397
2069	1992	20.34	286,136	5,276	9,932	5,977	-284,791	-4,250	-10,958	-299	-5,678	-3,059	-28	307,321	-309,062	-1,741
2070	1993	28.76	847,789	7,969	15,001	5,977	-845,234	-5,409	-17,561	-299	-5,678	-3,754	-35	876,735	-877,970	-1,235
2071	1994	11.68	51,294	2,507	4,719	5,977	-50,031	-1,468	-5,757	-299	-5,678	-958	-7	64,496	-64,199	298
Average:		*16.75*	*176,030*	*4,127*	*7,768*	*5,977*	*-175,030*	*-2,778*	*-9,118*	*-299*	*-5,678*	*-1,567*	*-17*	*193,902*	*-194,486*	*-584*
Post-SGMA period (water years 2072 through 2096)																
2072	1995	31.72	476,805	8,915	16,783	5,977	-475,316	-5,580	-20,118	-299	-5,678	-2,689	-30	508,480	-509,708	-1,229
2073	1996	12.79	70,704	2,862	5,387	5,977	-69,962	-1,966	-6,282	-299	-5,678	-857	-11	84,930	-85,055	-125
2074	1997	14.75	80,131	3,488	6,567	5,977	-79,142	-2,831	-7,224	-299	-5,678	-1,533	-15	96,163	-96,722	-559
2075	1998	42.54	655,150	12,375	23,296	5,977	-653,802	-7,413	-28,259	-299	-5,678	-3,388	127	696,925	-698,838	-1,914
2076	1999	10.33	46,493	2,075	3,906	5,977	-45,918	-834	-5,147	-299	-5,678	-169	-1	58,451	-58,046	404
2077	2000	17.11	79,537	4,243	7,987	5,977	-78,750	-2,410	-9,820	-299	-5,678	-1,128	-15	97,745	-98,101	-356
2078	2001	22.79	193,162	6,059	11,407	5,977	-192,366	-3,931	-13,535	-299	-5,678	-1,632	-24	216,606	-217,466	-860
2079	2002	6.41	2,201	821	1,546	5,977	-1,826	-584	-1,783	-299	-5,678	-101	-2	10,545	-10,274	271
2080	2003	19.00	46,105	4,847	9,125	5,977	-45,450	-3,129	-10,844	-299	-5,678	-1,429	-17	66,055	-66,846	-791
2081	2004	10.73	35,344	2,203	4,147	5,977	-34,978	-1,490	-4,860	-299	-5,678	-688	-7	47,671	-48,000	-329
2082	2005	34.64	1,078,780	9,849	18,540	5,977	-1,077,144	-6,996	-21,394	-299	-5,678	-3,791	-51	1,113,146	-1,115,352	-2,206
2083	2006	16.64	136,241	4,093	7,704	5,977	-135,390	-2,654	-9,143	-299	-5,678	-1,294	-13	154,015	-154,471	-456
2084	2007	5.75	5,738	610	1,149	5,977	-5,135	-183	-1,576	-299	-5,678	-135	0	13,474	-13,006	469
2085	2008	12.77	154,943	2,855	5,375	5,977	-153,952	-2,485	-5,745	-299	-5,678	-1,687	-14	169,150	-169,860	-710
2086	2009	9.32	18,549	1,752	3,298	5,977	-18,020	-1,353	-3,697	-299	-5,678	-915	-5	29,575	-29,966	-391
2087	2010	16.82	89,966	4,150	7,813	5,977	-89,285	-2,916	-9,048	-299	-5,678	-1,336	-13	107,906	-108,574	-668
2088	2011	19.70	142,654	5,071	9,547	5,977	-141,629	-3,742	-10,876	-299	-5,678	-1,900	-23	163,249	-164,147	-898
2089	2012	9.49	10,710	1,806	3,400	5,977	-10,119	-624	-4,583	-299	-5,678	-123	0	21,893	-21,425	469
2090	2013	5.80	325	626	1,179	5,977	-49	-1,559	-246	-299	-5,678	-677	-9	8,107	-8,516	-409

			Surface Water Gains and Inflows (acre-feet per year)				Surface Water Losses and Outflows (acre-feet per year)					Surface Water Inflow and Outflow Components (acre-feet per year)[g]		Summary (acre-feet per year)		
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Santa Clara River at Boundary Between Oxnard and Mound Basins	Ephemeral Streamflow Entering Mound Basin from Northern Foothills[c]	Ephemeral Streamflow Generated Within Mound Basin in Response to Rainfall[c]	Imported Surface Water (from Casitas MWD)[d]	Santa Clara River at Pacific Ocean[e]	Mountain-Front Recharge of Surface Flows in Ephemeral Streams in Northern Mound Basin[e]	Ephemeral Streams, Barrancas, and Storm Drain Discharges Exiting Mound Basin[c]	Fate of Imported Surface Water (from Casitas MWD)		Groundwater/ Surface Water Exchange in the Santa Clara River within Mound Basin[e]	Groundwater/ Surface Water Exchange in Harmon Barranca[e]	Sum of Inflows	Sum of Outflows	Difference[h]
										M&I Return Flows[e]	Consumptive Use[f]					
2091	2014	6.14	25,475	735	1,383	5,977	-25,336	-1,245	-873	-299	-5,678	-501	-4	33,570	-33,936	-366
2092	2015	9.15	605	1,697	3,196	5,977	-597	-1,185	-3,708	-299	-5,678	-38	-3	11,475	-11,508	-33
2093	2016	8.49	2,492	1,486	2,798	5,977	-2,447	-1,980	-2,304	-299	-5,678	-312	-10	12,753	-13,031	-277
2094	2017	19.11	87,303	4,883	9,191	5,977	-86,819	-3,571	-10,503	-299	-5,678	-2,259	-20	107,354	-109,148	-1,794
2095	2018	7.16	6,421	1,061	1,998	5,977	-6,334	-1,950	-1,109	-299	-5,678	-699	-8	15,457	-16,076	-619
2096	2019	19.19	158,890	4,908	9,240	5,977	-157,961	-3,571	-10,577	-299	-5,678	-2,832	-20	179,015	-180,937	-1,923
Average:		*15.53*	*144,189*	*3,739*	*7,038*	*5,977*	*-143,509*	*-2,647*	*-8,130*	*-299*	*-5,678*	*-1,284*	*-8*	*160,948*	*-161,560*	*-612*
Average 2022-2096:		***15.38***	***130,164***	***3,691***	***6,948***	***5,879***	***-129,455***	***-2,517***	***-8,123***	***-294***	***-5,585***	***-1,318***	***-12***	***146,684***	***-147,305***	***-621***

Notes

Positive values represent inflows or gains of surface-water flows in Mound Basin, and negative numbers represent outflows or losses of surface-water flows in Mound Basin.

a See Section 3.3 for an explanation of how water-year types were classified in this report.

b The California Department of Water Resources classification approach is described in Section 3.3.

c Inflows of ephemeral surface water to Mound Basin are projected based on an empirical relationship between measured streamflow in Arundell Barranca and annual (water year) rainfall measured at Ventura County Government Center, applied to the watershed areas of streams (barrancas) within Mound Basin and upstream from Mound Basin (in stream channels that flow across the basin's northern boundary). Outflows are assumed equal to inflows across the northern basin boundary plus surface flows generated by rainfall within Mound Basin, minus mountain-front recharge of inflows immediately south of the northern boundary of Mound Basin.

d Projected imports are from Ventura Water, 2020b.

e Estimated using United's (2021a) groundwater flow model or resulting from model calibration.

f "Consumptive use" represents loss of imported surface water from Casitas MWD to evaporation and wastewater discharges after M&I use, and in this table is equal to imported surface water (from Casitas MWD) minus M&I return flows.

g These components can comprise either net gains or losses of surface water from streams within Mound Basin, depending on hydrogeologic conditions that vary over time.

h Inflows and outflows of surface water in Mound Basin should be equal, resulting in a difference of zero. Although the long-term average difference is less than 1 percent of the long-term average inflows or outflows, indicating good overall agreement, the apparent difference between inflows and outflows is larger during years with above-average rainfall. This likely is a result of minor deviations of actual streamflow in Arundell Barranca in a given water year compared to the empirical relationship developed to estimate basinwide ephemeral flows across the basin.

Table 3.3-07 Mound Basin Projected Groundwater Inflows and Outflows by Water Year, Future Baseline Conditions.

			Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Groundwater Inflow and Outflow Components (acre-feet per year)[e]					Summary (acre-feet per year)			All Aquifers Combined			Mugu Aquifer				Hueneme Aquifer			
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)	Mountain-Front Recharge	Evapo-transpiration[c]	Groundwater Extraction (pumping from wells)	Discharge of Groundwater to Tile Drains[d]	Groundwater/ Surface Water Interaction in the Santa Clara River[f]	Groundwater/ Surface Water Interaction in Harmon Barranca[g]	Groundwater Underflow to/from Santa Paula Basin	Groundwater Underflow to/from Oxnard Basin	Groundwater Underflow to/from Offshore (south and west of the coastline)	Sum of Inflows	Sum of Outflows	Groundwater Released from Storage per Water Year[h]	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year
Implementation Period (water years 2022 through 2041)																											
2022	1945	11.75	3,007	2,710	-801	-7,961	0	1,746	14	3,936	4,695	-5,345	16,109	-14,107	-2,002	3,978	3,978	2,002	605	605	158	158	1,768	1,768	1,266	1,266
2023	1946	11.07	2,525	1,789	-804	-8,377	0	1,276	8	3,874	5,068	-4,906	14,540	-14,088	-452	65	4,042	2,454	74	679	103	261	133	1,901	425	1,691
2024	1947	10.24	2,702	1,805	-847	-7,424	0	1,244	11	3,883	4,273	-5,075	13,917	-13,347	-571	400	4,442	3,024	35	714	36	297	189	2,090	613	2,304
2025	1948	6.95	2,159	788	-685	-8,052	0	47	2	4,002	475	-3,582	7,473	-12,320	4,847	-3,532	911	-1,822	-209	505	-499	-202	11	2,101	-490	1,814
2026	1949	8.22	2,286	744	-508	-8,487	0	44	0	4,125	-1,123	-2,582	7,199	-12,699	5,501	-4,830	-3,919	-7,323	-681	-175	-703	-906	-782	1,319	-1,048	766
2027	1950	13.28	2,689	1,433	-387	-7,501	0	63	6	4,149	-753	-2,120	8,340	-10,762	2,422	-2,996	-6,916	-9,745	-451	-626	-401	-1,306	-721	598	-501	265
2028	1951	7.40	2,147	527	-350	-8,627	0	16	0	4,380	-2,813	-1,367	7,070	-13,157	6,086	-6,125	-13,041	-15,831	-1,012	-1,638	-1,340	-2,646	-988	-391	-1,096	-831
2029	1952	26.70	4,765	5,084	-601	-7,496	0	3,116	34	3,986	5,848	-3,114	22,834	-11,211	-11,623	7,445	-5,596	-4,208	516	-1,122	1,988	-657	1,687	1,296	1,085	253
2030	1953	11.30	2,541	1,485	-566	-7,532	0	949	6	3,961	5,029	-3,779	13,972	-11,878	-2,094	5,298	-298	-2,114	1,455	334	516	-142	-571	725	1,003	1,256
2031	1954	15.65	3,202	2,517	-549	-7,863	0	1,135	13	3,852	2,429	-3,592	13,147	-12,005	-1,142	1,345	1,047	-973	-123	211	-30	-172	1,660	2,385	261	1,518
2032	1955	12.45	2,871	1,607	-539	-7,966	0	753	6	3,904	958	-3,362	10,099	-11,868	1,769	-2,956	-1,909	-2,742	-232	-21	-290	-462	-1,023	1,362	-165	1,353
2033	1956	16.50	3,180	2,213	-545	-7,200	0	955	13	3,890	2,352	-3,401	12,603	-11,146	-1,457	949	-960	-1,285	-66	-88	128	-334	213	1,575	376	1,729
2034	1957	10.35	2,519	1,394	-535	-8,665	0	823	5	3,957	436	-3,290	9,133	-12,489	3,356	-933	-1,893	-4,641	-70	-158	-380	-714	-4	1,572	-584	1,145
2035	1958	28.80	4,642	5,226	-820	-6,415	-10	3,334	33	3,673	6,858	-5,052	23,766	-12,297	-11,469	5,410	3,517	6,828	132	-26	923	209	1,808	3,379	1,866	3,011
2036	1959	6.65	2,070	1,200	-877	-8,560	0	1,101	4	3,711	3,920	-5,136	12,006	-14,574	2,567	3,279	6,795	4,261	719	693	-11	198	-439	2,940	-99	2,912
2037	1960	12.10	2,557	1,163	-637	-7,795	0	102	4	3,845	1,381	-3,932	9,050	-12,364	3,314	-3,152	3,643	947	-163	531	-323	-125	-95	2,845	-324	2,588
2038	1961	7.20	2,072	984	-451	-8,579	0	39	5	3,965	-346	-3,165	7,064	-12,541	5,477	-5,125	-1,482	-4,530	-564	-33	-632	-757	-890	1,955	-734	1,853
2039	1962	25.55	4,103	4,111	-678	-6,502	0	2,130	29	3,865	4,772	-4,078	19,010	-11,257	-7,753	5,449	3,967	3,223	58	25	692	-65	1,643	3,598	844	2,697
2040	1963	12.65	2,559	1,512	-612	-7,995	0	815	8	3,843	5,279	-4,218	14,017	-12,825	-1,191	227	4,194	4,415	455	480	319	254	-655	2,942	215	2,912
2041	1964	8.25	2,322	938	-489	-8,634	0	47	2	3,850	748	-3,458	7,906	-12,581	4,675	-1,851	2,343	-261	-65	415	-505	-252	-355	2,587	-521	2,392
Average:		*13.15*	*2,846*	*1,961*	*-614*	*-7,882*	*-1*	*987*	*10*	*3,933*	*2,474*	*-3,728*	*12,463*	*-12,476*	*13*											
Sustaining Period (water years 2042 through 2071)																										
2042	1965	14.85	2,870	2,036	-511	-7,637	0	1,030	12	3,788	1,151	-3,678	10,888	-11,825	937	-3,882	-1,539	-1,198	-461	-46	-233	-485	-671	1,916	-245	2,147
2043	1966	15.94	3,390	3,057	-751	-7,680	0	2,313	20	3,675	6,577	-4,927	19,032	-13,357	-5,675	8,051	6,512	4,477	563	517	655	170	1,035	2,952	656	2,803
2044	1967	18.88	3,729	4,078	-756	-7,162	0	3,189	20	3,479	5,524	-6,013	20,020	-13,931	-6,089	3,890	10,402	10,566	299	815	281	451	1,120	4,071	1,287	4,089
2045	1968	14.40	2,897	1,727	-837	-7,351	0	855	10	3,541	4,049	-5,638	13,079	-13,825	746	1,922	12,324	9,819	115	930	-14	437	598	4,669	110	4,199
2046	1969	24.50	4,333	5,039	-1,056	-7,323	-157	3,536	38	3,542	3,991	-6,665	20,479	-15,201	-5,278	5,971	18,294	15,098	155	1,085	118	555	2,138	6,807	1,403	5,602
2047	1970	16.34	2,760	1,759	-859	-8,097	0	909	7	3,606	3,881	-5,952	12,922	-14,908	1,985	-2,020	16,274	13,112	-81	1,004	-62	493	-595	6,212	-568	5,034
2048	1971	14.61	2,832	2,232	-897	-7,554	0	1,354	14	3,561	3,822	-6,269	13,814	-14,720	906	-1,544	14,730	12,206	-88	916	-40	454	-758	5,454	5	5,039
2049	1972	8.94	2,282	1,431	-920	-8,271	0	1,229	10	3,646	4,270	-5,774	12,868	-14,965	2,097	-2,432	12,298	10,109	-52	864	-28	425	-753	4,701	-477	4,562
2050	1973	20.71	3,814	4,073	-868	-6,995	-4	2,278	24	3,400	3,853	-6,113	17,442	-13,980	-3,462	4,416	16,714	13,572	134	998	74	499	2,004	6,705	680	5,242
2051	1974	15.00	3,002	2,318	-885	-7,344	0	1,288	14	3,444	3,847	-6,025	13,914	-14,254	340	-800	15,914	13,231	-9	989	2	501	-739	5,966	-31	5,211
2052	1975	16.30	3,133	2,803	-848	-7,220	0	1,777	15	3,463	3,950	-6,222	15,141	-14,289	-851	328	16,242	14,082	-21	968	12	513	270	6,236	196	5,407
2053	1976	13.46	2,677	1,812	-931	-7,893	0	915	10	3,602	3,559	-5,687	12,576	-14,510	1,934	-3,342	12,900	12,148	-115	853	-78	435	-1,224	5,012	-159	5,248
2054	1977	10.94	2,465	1,413	-806	-8,297	0	714	6	3,529	3,237	-5,002	11,363	-14,106	2,742	-1,622	11,278	9,406	-99	753	-121	314	-617	4,395	-992	4,256
2055	1978	34.88	5,698	6,712	-1,033	-7,517	-91	3,595	49	3,270	4,404	-6,679	23,727	-15,320	-8,407	9,111	20,389	17,813	302	1,055	227	541	3,796	8,191	2,123	6,379
2056	1979	18.73	3,840	3,566	-904	-7,479	-11	1,897	21	3,323	3,547	-6,911	16,193	-15,305	-888	2,223	22,613	18,701	-2	1,053	36	578	241	8,431	375	6,755
2057	1980	26.60	4,443	4,366	-994	-6,893	-52	2,052	34	3,320	3,085	-7,271	17,300	-15,209	-2,090	2,425	25,037	20,791	109	1,163	40	618	942	9,373	842	7,596
2058	1981	13.66	2,693	1,804	-905	-7,890	0	920	9	3,441	3,276	-6,474	12,143	-15,269	3,126	-3,966	21,071	17,666	-136	1,026	-87	531	-1,396	7,978	-1,007	6,590
2059	1982	12.51	2,721	1,786	-814	-8,282	0	1,215	6	3,484	3,988	-5,906	13,201	-15,001	1,801	-3,139	17,933	15,865	-53	973	-7	523	-1,405	6,572	-866	5,724
2060	1983	31.66	5,636	6,311	-1,043	-7,987	-79	3,027	42	3,168	3,552	-7,244	21,735	-16,352	-5,392	7,087	25,020	21,257	204	1,177	60	583	2,827	9,399	1,679	7,402
2061	1984	10.22	2,676	1,849	-941	-7,623	0	120	9	3,389	3,307	-6,232	11,349	-14,796	3,446	-4,077	20,943	17,810	-194	983	-45	538	-2,105	7,295	-747	6,655
2062	1985	11.84	2,523	1,353	-863	-7,441	0	193	5	3,550	3,242	-5,473	10,866	-13,776	2,911	-2,888	18,056	14,900	23	1,006	-45	493	-716	6,578	-871	5,784
2063	1986	25.15	4,187	3,879	-860	-6,711	-6	2,520	25	3,389	3,401	-6,678	17,402	-14,255	-3,146	2,806	20,861	18,046	49	1,055	86	579	1,129	7,707	611	6,395
2064	1987	7.50	2,097	521	-838	-9,093	0	156	0	3,634	3,489	-5,126	9,897	-15,058	5,160	-4,680	16,181	12,886	-105	950	-177	402	-2,017	5,691	-1,515	4,879
2065	1988	13.22	2,818	1,755	-772	-7,025	0	165	4	3,583	3,937	-4,817	12,262	-12,614	351	-2,214	13,967	12,534	-59	892	64	466	-766	4,924	-245	4,634

Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Groundwater Inflow and Outflow Components (acre-feet per year)[e]					Summary (acre-feet per year)			All Aquifers Combined			Mugu Aquifer				Hueneme Aquifer			
			Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)	Mountain-Front Recharge	Evapo-transpiration[c]	Groundwater Extraction (pumping from wells)	Discharge of Groundwater to Tile Drains[d]	Groundwater/ Surface Water Interaction in the Santa Clara River[f]	Groundwater/ Surface Water Interaction in Harmon Barranca[g]	Groundwater Underflow to/from Santa Paula Basin	Groundwater Underflow to/from Oxnard Basin	Groundwater Underflow to/from Offshore (south and west of the coastline)	Sum of Inflows	Sum of Outflows	Groundwater Released from Storage per Water Year[h]	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year
2066	1989	8.23	2,221	1,026	-740	-7,439	0	97	5	3,710	2,556	-4,633	9,614	-12,812	3,198	-2,016	11,951	9,336	-70	822	-163	304	-494	4,430	-392	4,242
2067	1990	5.62	1,779	610	-566	-7,887	0	56	0	3,884	15	-4,035	6,343	-12,488	6,145	-5,557	6,394	3,191	-395	427	-577	-273	-914	3,516	-982	3,260
2068	1991	16.92	3,155	2,886	-625	-8,042	0	1,845	23	3,866	3,324	-4,105	15,100	-12,772	-2,328	-488	5,907	5,519	-422	6	166	-107	881	4,398	-246	3,015
2069	1992	20.34	4,069	4,250	-850	-7,430	-3	3,059	28	3,569	5,967	-5,619	20,943	-13,902	-7,041	8,351	14,257	12,560	696	702	514	407	1,145	5,542	1,119	4,134
2070	1993	28.76	4,556	5,409	-1,089	-6,850	-144	3,754	35	3,378	3,755	-7,072	20,887	-15,156	-5,731	8,068	22,325	18,291	466	1,168	177	584	2,274	7,817	2,072	6,205
2071	1994	11.68	2,485	1,468	-828	-8,163	0	958	7	3,538	3,828	-6,016	12,284	-15,006	2,722	-3,954	18,370	15,569	-167	1,001	-72	512	-1,543	6,274	-742	5,463
Average:		*16.75*	*3,259*	*2,778*	*-853*	*-7,619*	*-18*	*1,567*	*17*	*3,526*	*3,680*	*-5,808*	*14,826*	*-14,299*	*-528*											
Post-SGMA period (water years 2072 through 2096)																										
2072	1995	31.72	5,022	5,580	-1,006	-6,937	-74	2,689	30	3,503	3,366	-6,986	20,189	-15,002	-5,186	6,280	24,651	20,756	223	1,225	120	632	2,569	8,844	1,580	7,043
2073	1996	12.79	2,877	1,966	-841	-8,542	0	857	11	3,500	3,484	-6,333	12,694	-15,716	3,022	-3,157	21,494	17,734	-136	1,088	-115	517	-1,438	7,406	-917	6,126
2074	1997	14.75	3,230	2,831	-943	-7,342	0	1,533	15	3,440	3,630	-6,836	14,680	-15,122	442	-1,007	20,487	17,292	-98	990	12	529	-471	6,934	11	6,137
2075	1998	42.54	6,336	7,413	-1,081	-6,019	-139	3,388	-127	3,333	2,385	-7,607	22,855	-14,972	-7,882	7,658	28,145	25,174	186	1,176	124	653	3,363	10,297	2,514	8,652
2076	1999	10.33	2,337	834	-807	-8,096	0	169	1	3,543	2,948	-6,009	9,832	-14,913	5,081	-5,429	22,716	20,094	-139	1,037	-83	571	-2,575	7,722	-1,669	6,983
2077	2000	17.11	3,201	2,410	-814	-7,821	0	1,128	15	3,495	3,329	-6,183	13,578	-14,819	1,241	-1,390	21,326	18,853	33	1,070	-33	538	-329	7,393	-532	6,451
2078	2001	22.79	3,916	3,931	-843	-7,987	-15	1,632	24	3,355	3,629	-6,546	16,487	-15,390	-1,097	2,357	23,683	19,950	-13	1,058	15	553	1,186	8,579	323	6,774
2079	2002	6.41	2,027	584	-797	-8,517	0	101	2	3,579	3,166	-5,249	9,460	-14,563	5,103	-5,821	17,861	14,847	-137	921	-145	407	-2,686	5,893	-1,405	5,369
2080	2003	19.00	3,722	3,129	-765	-7,220	0	1,429	17	3,431	4,011	-6,025	15,739	-14,010	-1,730	891	18,752	16,577	30	951	91	499	397	6,290	82	5,450
2081	2004	10.73	2,361	1,490	-825	-7,914	0	688	7	3,528	3,215	-5,588	11,289	-14,327	3,038	-2,125	16,628	13,539	-72	879	-97	401	-855	5,435	-601	4,850
2082	2005	34.64	5,698	6,996	-1,049	-6,272	-208	3,791	51	3,311	3,354	-7,339	23,201	-14,868	-8,332	9,529	26,156	21,872	285	1,164	205	606	3,594	9,029	2,392	7,241
2083	2006	16.64	3,081	2,654	-782	-7,302	-12	1,294	13	3,441	3,313	-6,454	13,796	-14,551	755	-4,001	22,156	21,117	-134	1,029	7	613	-1,584	7,444	-268	6,974
2084	2007	5.75	1,789	183	-846	-8,653	0	135	0	3,672	3,443	-5,569	9,221	-15,068	5,847	-4,314	17,842	15,270	-85	944	-150	462	-1,569	5,875	-1,561	5,412
2085	2008	12.77	2,949	2,485	-861	-8,258	-3	1,687	14	3,561	4,072	-5,998	14,770	-15,120	350	148	17,990	14,919	31	975	2	464	-112	5,763	-374	5,038
2086	2009	9.32	2,374	1,353	-807	-7,905	0	915	5	3,627	3,751	-5,419	12,025	-14,131	2,106	-2,606	15,384	12,813	-89	886	-49	415	-877	4,886	-514	4,524
2087	2010	16.82	3,327	2,916	-768	-7,649	0	1,336	13	3,416	4,326	-5,460	15,334	-13,877	-1,457	1,021	16,404	14,270	4	890	47	462	433	5,319	21	4,545
2088	2011	19.70	3,882	3,742	-782	-6,996	-9	1,900	23	3,361	4,115	-6,228	17,024	-14,015	-3,009	3,906	20,310	17,279	157	1,047	96	559	1,371	6,690	943	5,488
2089	2012	9.49	2,196	624	-822	-8,323	0	123	0	3,658	3,721	-5,111	10,321	-14,256	3,935	-5,160	15,151	13,344	-131	916	-128	431	-1,861	4,828	-914	4,575
2090	2013	5.80	2,581	1,559	-806	-7,470	0	677	9	3,611	2,202	-5,307	10,640	-13,583	2,944	-1,224	13,927	10,400	-77	839	-203	228	-369	4,459	-307	4,268
2091	2014	6.14	2,244	1,245	-782	-8,388	0	501	4	3,759	176	-4,502	7,929	-13,673	5,743	-5,305	8,621	4,657	-530	308	-598	-370	-617	3,843	-1,068	3,199
2092	2015	9.15	2,513	1,185	-491	-7,454	0	38	3	3,890	-461	-3,172	7,629	-11,578	3,950	-4,625	3,996	707	-426	-118	-430	-800	-852	2,991	-675	2,524
2093	2016	8.49	2,949	1,980	-401	-8,022	0	312	10	3,866	-222	-3,165	9,117	-11,811	2,694	-2,811	1,185	-1,986	-390	-507	-365	-1,165	-354	2,636	-689	1,835
2094	2017	19.11	3,623	3,571	-600	-7,497	0	2,259	20	3,762	3,065	-3,882	16,299	-11,979	-4,320	3,827	5,011	2,333	268	-239	574	-592	959	3,596	458	2,293
2095	2018	7.16	2,936	1,950	-456	-8,188	0	699	8	3,873	-768	-3,379	9,465	-12,791	3,326	-2,411	2,600	-992	-132	-371	-433	-1,025	-501	3,094	-345	1,948
2096	2019	19.19	3,583	3,571	-679	-7,266	0	2,832	20	3,777	5,885	-4,461	19,667	-12,406	-7,261	3,788	6,388	6,269	239	-132	995	-29	670	3,765	700	2,648
Average:		*15.53*	*3,230*	*2,647*	*-786*	*-7,682*	*-18*	*1,284*	*8*	*3,572*	*2,925*	*-5,552*	*13,730*	*-14,102*	*372*											
Average 2022-2096:		***15.38***	***3,139***	***2,517***	***-767***	***-7,710***	***-14***	***1,318***	***12***	***3,650***	***3,107***	***-5,168***	***13,830***	***-13,747***	***-84***											

Notes:

N/A = Not applicable.

Positive values represent inflows to the Mound Basin negative numbers represent outflows from the basin.

a The representative historical water year used as the basis for assumptions regarding rainfall and surface flows about future years, as described in Section 3.3.

b See Section 3.3 for an explanation of how water-year types were classified in this report.

c The Shallow Alluvial Deposits is modeled to be the sole hydrostratigraphic unit in Mound Basin with saturated conditions consistently shallow enough to be significantly affected by evapotranspiration.

d Tile drains are only known or suspected to be present in the Shallow Alluvial Deposits in Mound Basin.

e These components can comprise either net inflows to or outflows from each aquifer, depending on hydrogeologic conditions that vary over time (e.g., hydraulic gradients).

f Within Mound Basin, the sole hydrostratigraphic unit known or suspected to be in direct hydraulic communication with the Santa Clara River is the Shallow Alluvial Deposits.

g United (2021) modeled Harmon Barranca using MODFLOW's ""Stream package,"" as described in Section 3.3 of this report, allowing the model to simulate direct hydraulic communication with the Shallow Alluvial Deposits, as well as with the fine-grained Pleistocene deposits.

h Water-year changes in storage are calculated from October 1 of the preceding calendar year to September 30 of the indicated year. Positive values for groundwater released from storage represent inflows to the basin, same as all other components on this table. However, specific to this parameter, inflow of groundwater from storage is associated with declining groundwater levels (or potentiometric heads) in the basin. Negative values are associated with increasing groundwater-levels (or potentiometric heads), as a result of groundwater being "added to storage."

Table 3.3-08 Mound Basin Projected Average Inflows and Outflows by Aquifer, Baseline Future Conditions.

	Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Groundwater Inflow and Outflow Components (acre-feet per year)[a]							Summary (acre-feet per year)		
Aquifer	**Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)**	**Mountain-Front Recharge**	**Evapo-transpiration[b]**	**Groundwater Extraction**	**Discharge of Groundwater to Tile Drains[c]**	**Groundwater/ Surface Water Interaction in the Santa Clara River[d]**	**Groundwater/ Surface Water Interaction in Harmon Barranca[e]**	**Groundwater Underflow to/from Santa Paula Basin**	**Groundwater Underflow to/from Oxnard Basin**	**Groundwater Underflow to/from Offshore (south and west of the coastline)**	**Vertical Groundwater Flow to/from the Overlying Aquifer**	**Vertical Groundwater Flow to/from the Underlying Aquifer**	**Sum of Inflows**	**Sum of Outflows**	**Groundwater Released from Storage[f]**
Averages during Implementation Period (water years 2022 through 2041)															
Shallow Alluvial Deposits	2,269	0	-614	0	-1	987	45	0	1,145	-3,055	N/A	-923	4,446	-4,592	146
Fine-grained Pleistocene deposits[g]	139	0	N/A	-6	N/A	N/A	70	7	1,593	-77	923	-2,701	2,732	-2,783	52
Mugu Aquifer	0	0	N/A	-2,560	N/A	N/A	0	219	1,659	-918	2,701	-1,113	4,579	-4,592	13
Hueneme Aquifer[h]	438	1,961	N/A	-4,701	N/A	N/A	-105	1,972	-921	318	1,113	43	5,847	-5,727	-120
Fox Canyon Aquifer[i]	0	0	N/A	-615	N/A	N/A	0	1,734	-1,002	4	-43	N/A	1,738	-1,660	-78
Basin Total:	***2,846***	***1,961***	***-614***	***-7,882***	***-1***	***987***	***10***	***3,933***	***2,474***	***-3,728***	***4,694***	***-4,694***	***19,342***	***-19,355***	***13***
Averages during Sustaining Period (water years 2042 through 2071)															
Shallow Alluvial Deposits	2,550	0	-853	0	-18	1,567	99	0	1,565	-3,862	N/A	-963	5,781	-5,696	-85
Fine-grained Pleistocene deposits[g]	163	0	N/A	-4	N/A	N/A	131	7	1,811	-125	963	-2,746	3,075	-2,875	-200
Mugu Aquifer	0	0	N/A	-2,437	N/A	N/A	0	191	2,031	-1,598	2,746	-907	4,968	-4,943	-25
Hueneme Aquifer[h]	546	2,778	N/A	-4,570	N/A	N/A	-213	1,704	-848	-72	907	-131	5,935	-5,833	-102
Fox Canyon Aquifer[i]	0	0	N/A	-608	N/A	N/A	0	1,624	-880	-151	131	N/A	1,755	-1,639	-116
Basin Total:	***3,259***	***2,778***	***-853***	***-7,619***	***-18***	***1,567***	***17***	***3,526***	***3,680***	***-5,808***	***4,748***	***-4,748***	***21,515***	***-20,987***	***-528***
Averages during post-SGMA period (water years 2072 through 2096):															
Shallow Alluvial Deposits	2,533	0	-786	0	-18	1,284	101	0	1,522	-3,729	N/A	-975	5,440	-5,509	69
Fine-grained Pleistocene deposits[g]	163	0	N/A	-4	N/A	N/A	123	7	1,576	-115	975	-2,806	2,843	-2,925	82
Mugu Aquifer	0	0	N/A	-2,431	N/A	N/A	0	211	1,689	-1,476	2,806	-821	4,706	-4,728	22
Hueneme Aquifer[h]	535	2,647	N/A	-4,635	N/A	N/A	-216	1,728	-944	-74	821	26	5,756	-5,868	113
Fox Canyon Aquifer[i]	0	0	N/A	-612	N/A	N/A	0	1,627	-918	-159	-26	N/A	1,627	-1,714	87
Basin Total:	***3,230***	***2,647***	***-786***	***-7,682***	***-18***	***1,284***	***8***	***3,572***	***2,925***	***-5,552***	***4,576***	***-4,576***	***20,372***	***-20,743***	***372***

Notes:

N/A = Not applicable

Positive values represent inflows to an aquifer; negative numbers represent outflows from an aquifer.

a These components can comprise either net inflows to or outflows from each aquifer, depending on hydrogeologic conditions that vary over time (e.g., hydraulic gradients).

b The Shallow Alluvial Deposits is the sole hydrostratigraphic unit in Mound Basin with saturated conditions consistently shallow enough to be significantly affected by evapotranspiration.

c Tile drains are only known or suspected to be present in the Shallow Alluvial Deposits in Mound Basin.

d Within Mound Basin, the sole hydrostratigraphic unit known or suspected to be in direct hydraulic communication with the Santa Clara River is the Shallow Alluvial Deposits.

e United (2021) modeled Harmon Barranca using MODFLOW's "Stream package," as described in Section 3.3 of this report, allowing the model to simulate direct hydraulic communication with the Shallow Alluvial Deposits and the fine-grained Pleistocene deposits.

f Positive values for groundwater released from storage represent inflows to an aquifer, same as all other components on this page. Inflow of groundwater from storage is associated with declining groundwater levels (or potentiometric heads) in that aquifer. Negative values are associated with increasing groundwater-levels (or potentiometric-heads), as a result of groundwater being "added to storage."

g Although the fine-grained Pleistocene deposits in Mound Basin are not considered a principal aquifer due to their low hydraulic conductivity, they have a substantial thickness and are stratigraphically adjacent to the Oxnard Aquifer in the Oxnard Basin (see Section 3.1 for more information). The fine-grained Pleistocene deposits are included in this table for completeness in depicting the groundwater budget for Mound Basin.

h To provide a complete and balanced water budget (the sum of water-budget components for all units should be zero), the values shown in this row include both the Hueneme Aquifer and the overlying Mugu-Hueneme aquitard, which is thin and has low hydraulic conductivity. For these reasons, inflows and outflows from the aquitard are small compared to those from the aquifer.

i To provide a complete and balanced water budget (the sum of water-budget components for all units should be zero), the values shown in this row include the Fox Canyon Aquifer (main and basal) and the overlying and intervening aquitards, which are thin and have low hydraulic conductivity. For these reasons, inflows and outflows from the aquitards are small compared to those from the aquifer.

j See Section 3.3 for an explanation of how water-year types were classified in this report.

Table 3.3-09 Mound Basin Projected Surface Water Inflows and Outflows by Water Year, 2030 Climate Change and Sea Level Rise Factors.

			Surface Water Gains and Inflows (acre-feet per year)				Surface Water Losses and Outflows (acre-feet per year)					Surface Water Inflow and Outflow Components (acre-feet per year)[g]		Summary (acre-feet per year)		
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Santa Clara River at Boundary Between Oxnard and Mound Basins	Ephemeral Streamflow Entering Mound Basin from Northern Foothills[c]	Ephemeral Streamflow Generated Within Mound Basin in Response to Rainfall[c]	Imported Surface Water (from Casitas MWD)[d]	Santa Clara River at Pacific Ocean[e]	Mountain-Front Recharge of Surface Flows in Ephemeral Streams in Northern Mound Basin[e]	Ephemeral Streams, Barrancas, and Storm Drain Discharges Exiting Mound Basin[c]	Fate of Imported Surface Water (from Casitas MWD)		Groundwater/ Surface Water Exchange in the Santa Clara River within Mound Basin[e]	Groundwater/ Surface Water Exchange in Harmon Barranca[e]	Sum of Inflows	Sum of Outflows	Difference[h]
										M&I Return Flows[e]	Consumptive Use[f]					
Implementation Period (water years 2022 through 2041)																
2022	1945	11.86	62,752	2,565	4,828	3,362	-61,943	-2,670	-4,723	-168	-3,194	-1,209	-14	73,507	-73,920	-413
2023	1946	11.18	32,165	2,347	4,418	4,000	-31,731	-1,752	-5,013	-200	-3,800	-1,370	-8	42,930	-43,875	-944
2024	1947	10.90	17,467	2,259	4,252	4,000	-16,864	-2,009	-4,502	-200	-3,800	-1,299	-13	27,978	-28,687	-709
2025	1948	6.77	1,147	938	1,766	5,816	-1,119	-717	-1,987	-291	-5,525	-43	-2	9,667	-9,684	-17
2026	1949	8.57	1,580	1,513	2,848	5,816	-1,549	-863	-3,498	-291	-5,525	-43	0	11,757	-11,768	-12
2027	1950	13.88	3,965	3,211	6,045	5,816	-3,912	-1,603	-7,653	-291	-5,525	-63	-7	19,036	-19,054	-18
2028	1951	7.53	0	1,178	2,218	5,816	0	-546	-2,851	-291	-5,525	-15	-1	9,213	-9,229	-16
2029	1952	26.42	159,048	7,220	13,592	5,816	-158,170	-5,059	-15,753	-291	-5,525	-3,057	-34	185,677	-187,889	-2,213
2030	1953	12.12	983	2,647	4,983	5,977	-968	-1,547	-6,082	-299	-5,678	-865	-6	14,590	-15,445	-856
2031	1954	15.86	23,853	3,842	7,233	5,977	-23,589	-2,480	-8,595	-299	-5,678	-1,106	-13	40,905	-41,760	-855
2032	1955	12.53	2,148	2,780	5,233	5,977	-2,109	-1,515	-6,497	-299	-5,678	-609	-5	16,138	-16,713	-575
2033	1956	16.21	25,839	3,954	7,444	5,977	-25,641	-2,230	-9,168	-299	-5,678	-936	-13	43,214	-43,965	-750
2034	1957	10.55	10,345	2,146	4,040	5,977	-10,239	-1,462	-4,725	-299	-5,678	-780	-6	22,509	-23,189	-680
2035	1958	27.93	248,075	7,702	14,500	5,977	-246,748	-5,070	-17,132	-299	-5,678	-3,410	-31	276,254	-278,368	-2,114
2036	1959	6.99	36,594	1,007	1,896	5,977	-36,288	-1,329	-1,574	-299	-5,678	-1,082	-5	45,474	-46,254	-779
2037	1960	12.24	3,616	2,685	5,055	5,977	-3,528	-1,303	-6,436	-299	-5,678	-102	-4	17,333	-17,351	-19
2038	1961	7.50	0	1,169	2,201	5,977	0	-952	-2,418	-299	-5,678	-38	-4	9,347	-9,389	-42
2039	1962	27.16	228,325	7,458	14,040	5,977	-227,575	-4,396	-17,101	-299	-5,678	-2,159	9	255,809	-257,209	-1,400
2040	1963	12.80	11,667	2,865	5,394	5,977	-11,546	-1,622	-6,637	-299	-5,678	-841	-9	25,903	-26,632	-729
2041	1964	8.70	6,128	1,553	2,923	5,977	-6,038	-1,022	-3,454	-299	-5,678	-46	-2	16,581	-16,539	41
Average:		*13.39*	*43,785*	*3,052*	*5,745*	*5,608*	*-43,478*	*-2,007*	*-6,790*	*-280*	*-5,328*	*-954*	*-8*	*58,191*	*-58,846*	*-655*
Sustaining Period (water years 2042 through 2071)																
2042	1965	15.34	5,288	3,676	6,919	5,977	-5,220	-1,918	-8,677	-299	-5,678	-973	-10	21,860	-22,775	-916
2043	1966	16.59	130,532	4,077	7,675	5,977	-130,011	-3,313	-8,438	-299	-5,678	-2,322	-23	148,260	-150,084	-1,824
2044	1967	18.25	112,063	4,608	8,674	5,977	-110,645	-4,099	-9,183	-299	-5,678	-3,099	-20	131,322	-133,023	-1,701
2045	1968	14.27	8,268	3,334	6,276	5,977	-7,673	-1,649	-7,961	-299	-5,678	-878	-10	23,855	-24,148	-292
2046	1969	24.02	968,493	6,452	12,145	5,977	-965,949	-4,955	-13,642	-299	-5,678	-3,409	-37	993,067	-993,969	-902
2047	1970	16.13	49,571	3,929	7,396	5,977	-48,414	-1,668	-9,657	-299	-5,678	-928	-7	66,873	-66,651	222
2048	1971	15.02	53,373	3,574	6,728	5,977	-52,393	-2,324	-7,978	-299	-5,678	-1,355	-15	69,653	-70,043	-390
2049	1972	8.39	24,837	1,453	2,735	5,977	-24,296	-1,492	-2,696	-299	-5,678	-1,198	-11	35,002	-35,671	-668
2050	1973	20.98	220,376	5,480	10,317	5,977	-218,890	-4,096	-11,701	-299	-5,678	-2,275	-24	242,150	-242,963	-813
2051	1974	15.51	75,257	3,730	7,021	5,977	-74,173	-2,328	-8,423	-299	-5,678	-1,314	-16	91,984	-92,230	-246
2052	1975	15.60	62,319	3,761	7,080	5,977	-61,171	-2,817	-8,024	-299	-5,678	-1,790	-16	79,137	-79,796	-659
2053	1976	14.10	27,763	3,281	6,176	5,977	-27,342	-2,191	-7,266	-299	-5,678	-1,218	-13	43,197	-44,007	-810

			Surface Water Gains and Inflows (acre-feet per year)				Surface Water Losses and Outflows (acre-feet per year)					Surface Water Inflow and Outflow Components (acre-feet per year)[g]		Summary (acre-feet per year)		
										Fate of Imported Surface Water (from Casitas MWD)						
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Santa Clara River at Boundary Between Oxnard and Mound Basins	Ephemeral Streamflow Entering Mound Basin from Northern Foothills[c]	Ephemeral Streamflow Generated Within Mound Basin in Response to Rainfall[c]	Imported Surface Water (from Casitas MWD)[d]	Santa Clara River at Pacific Ocean[e]	Mountain-Front Recharge of Surface Flows in Ephemeral Streams in Northern Mound Basin[e]	Ephemeral Streams, Barrancas, and Storm Drain Discharges Exiting Mound Basin[c]	M&I Return Flows[e]	Consumptive Use[f]	Groundwater/ Surface Water Exchange in the Santa Clara River within Mound Basin[e]	Groundwater/ Surface Water Exchange in Harmon Barranca[e]	Sum of Inflows	Sum of Outflows	Difference[h]
2054	1977	11.73	13,380	2,521	4,746	5,977	-13,206	-1,549	-5,719	-299	-5,678	-713	-6	26,625	-27,170	-545
2055	1978	34.58	722,565	9,829	18,502	5,977	-720,695	-6,781	-21,550	-299	-5,678	-3,386	-49	756,873	-758,438	-1,565
2056	1979	18.60	177,566	4,721	8,887	5,977	-176,287	-3,537	-10,071	-299	-5,678	-1,816	-21	197,151	-197,708	-557
2057	1980	26.28	407,091	7,176	13,509	5,977	-405,799	-4,365	-16,320	-299	-5,678	-2,026	-34	433,753	-434,521	-768
2058	1981	12.96	44,443	2,915	5,487	5,977	-43,555	-1,713	-6,689	-299	-5,678	-929	-9	58,822	-58,871	-49
2059	1982	12.28	37,493	2,697	5,078	5,977	-36,504	-1,723	-6,052	-299	-5,678	-1,187	-6	51,245	-51,449	-203
2060	1983	32.27	555,084	9,091	17,114	5,977	-553,750	-6,421	-19,784	-299	-5,678	-2,980	-43	587,266	-588,954	-1,688
2061	1984	10.44	29,625	2,110	3,971	5,977	-29,035	-1,956	-4,125	-299	-5,678	-687	-10	41,683	-41,789	-106
2062	1985	12.13	15,444	2,651	4,991	5,977	-14,480	-1,444	-6,199	-299	-5,678	-1,136	-5	29,063	-29,240	-177
2063	1986	25.61	190,583	6,963	13,107	5,977	-189,498	-3,969	-16,101	-299	-5,678	-1,835	-26	216,630	-217,407	-777
2064	1987	7.82	3,445	1,272	2,395	5,977	-2,882	-569	-3,098	-299	-5,678	-159	0	13,090	-12,685	405
2065	1988	13.44	27,954	3,068	5,776	5,977	-27,187	-1,865	-6,978	-299	-5,678	-164	-5	42,775	-42,177	598
2066	1989	8.44	2,230	1,471	2,768	5,977	-2,101	-1,088	-3,151	-299	-5,678	-1,028	-5	12,446	-13,350	-904
2067	1990	5.98	4,104	684	1,288	5,977	-4,017	-681	-1,290	-299	-5,678	-56	0	12,052	-12,021	31
2068	1991	16.22	109,593	3,959	7,453	5,977	-109,121	-2,799	-8,612	-299	-5,678	-1,733	-22	126,982	-128,264	-1,282
2069	1992	20.34	286,099	5,277	9,933	5,977	-284,754	-4,338	-10,871	-299	-5,678	-3,010	-30	307,285	-308,980	-1,695
2070	1993	28.42	847,487	7,860	14,796	5,977	-844,908	-5,463	-17,193	-299	-5,678	-3,669	-37	876,120	-877,247	-1,127
2071	1994	11.79	51,540	2,540	4,782	5,977	-50,244	-1,544	-5,778	-299	-5,678	-1,007	-8	64,840	-64,559	281
Average:		*16.78*	*175,462*	*4,139*	*7,791*	*5,977*	*-174,473*	*-2,822*	*-9,108*	*-299*	*-5,678*	*-1,609*	*-17*	*193,369*	*-194,006*	*-638*
Post-SGMA period (water years 2072 through 2096)																
2072	1995	30.11	475,895	8,401	15,815	5,977	-474,335	-5,276	-18,940	-299	-5,678	-2,603	-42	506,089	-507,174	-1,085
2073	1996	13.23	69,724	3,002	5,650	5,977	-68,939	-2,026	-6,626	-299	-5,678	-900	-11	84,353	-84,480	-127
2074	1997	15.29	79,281	3,662	6,894	5,977	-78,265	-2,915	-7,641	-299	-5,678	-1,557	-16	95,814	-96,370	-557
2075	1998	43.89	654,521	12,806	24,107	5,977	-653,151	-7,725	-29,188	-299	-5,678	-3,078	201	697,612	-699,118	-1,506
2076	1999	10.90	46,015	2,256	4,247	5,977	-45,402	-888	-5,615	-299	-5,678	-93	-2	58,495	-57,976	519
2077	2000	17.82	79,620	4,470	8,415	5,977	-78,795	-2,560	-10,326	-299	-5,678	-1,162	-16	98,482	-98,836	-353
2078	2001	22.45	192,786	5,951	11,203	5,977	-191,956	-3,920	-13,233	-299	-5,678	-1,637	-25	215,917	-216,749	-833
2079	2002	6.74	1,898	927	1,745	5,977	-1,511	-602	-2,071	-299	-5,678	-107	-2	10,548	-10,270	277
2080	2003	18.68	45,748	4,744	8,930	5,977	-45,094	-3,150	-10,524	-299	-5,678	-1,066	-17	65,399	-65,828	-429
2081	2004	11.59	35,245	2,478	4,665	5,977	-34,921	-1,479	-5,664	-299	-5,678	-734	-8	48,365	-48,783	-418
2082	2005	34.22	1,078,445	9,714	18,287	5,977	-1,076,751	-7,177	-20,825	-299	-5,678	-3,711	-53	1,112,423	-1,114,495	-2,072
2083	2006	15.50	131,916	3,728	7,018	5,977	-131,023	-2,482	-8,265	-299	-5,678	-1,413	-12	148,639	-149,171	-532
2084	2007	6.38	5,233	811	1,527	5,977	-4,587	-243	-2,094	-299	-5,678	-124	0	13,548	-13,025	522
2085	2008	12.32	153,718	2,710	5,102	5,977	-152,759	-2,518	-5,295	-299	-5,678	-1,660	-15	167,507	-168,223	-716
2086	2009	9.92	18,614	1,944	3,660	5,977	-18,067	-1,384	-4,220	-299	-5,678	-978	-5	30,196	-30,632	-436
2087	2010	17.14	90,022	4,254	8,008	5,977	-89,318	-3,084	-9,178	-299	-5,678	-1,360	-14	108,261	-108,932	-671

Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Surface Water Gains and Inflows (acre-feet per year)				Surface Water Losses and Outflows (acre-feet per year)					Surface Water Inflow and Outflow Components (acre-feet per year)[g]		Summary (acre-feet per year)		
			Santa Clara River at Boundary Between Oxnard and Mound Basins	Ephemeral Streamflow Entering Mound Basin from Northern Foothills[c]	Ephemeral Streamflow Generated Within Mound Basin in Response to Rainfall[c]	Imported Surface Water (from Casitas MWD)[d]	Santa Clara River at Pacific Ocean[e]	Mountain-Front Recharge of Surface Flows in Ephemeral Streams in Northern Mound Basin[e]	Ephemeral Streams, Barrancas, and Storm Drain Discharges Exiting Mound Basin[c]	Fate of Imported Surface Water (from Casitas MWD)		Groundwater/ Surface Water Exchange in the Santa Clara River within Mound Basin[e]	Groundwater/ Surface Water Exchange in Harmon Barranca[e]	Sum of Inflows	Sum of Outflows	Difference[h]
										M&I Return Flows[e]	Consumptive Use[f]					
2088	2011	18.82	140,667	4,791	9,020	5,977	-139,628	-3,749	-10,062	-299	-5,678	-1,858	-23	160,455	-161,298	-843
2089	2012	9.33	9,997	1,754	3,303	5,977	-9,393	-602	-4,455	-299	-5,678	-130	0	21,030	-20,557	473
2090	2013	6.77	270	936	1,762	5,977	-21	-1,637	-1,061	-299	-5,678	-102	-8	8,945	-8,806	139
2091	2014	6.39	25,475	814	1,532	5,977	-25,335	-1,340	-1,007	-299	-5,678	-536	-5	33,798	-34,198	-400
2092	2015	9.80	605	1,905	3,587	5,977	-597	-1,316	-4,177	-299	-5,678	-39	-4	12,075	-12,109	-35
2093	2016	7.96	2,492	1,317	2,478	5,977	-2,447	-1,951	-1,844	-299	-5,678	-296	-11	12,264	-12,526	-262
2094	2017	20.00	87,307	5,166	9,725	5,977	-86,817	-3,575	-11,315	-299	-5,678	-2,210	-20	108,175	-109,915	-1,740
2095	2018	6.69	6,420	909	1,712	5,977	-6,332	-1,865	-756	-299	-5,678	-576	-8	15,018	-15,515	-497
2096	2019	19.96	158,881	5,155	9,705	5,977	-157,946	-3,575	-11,285	-299	-5,678	-2,858	-20	179,718	-181,662	-1,943
Average:		*15.68*	*143,632*	*3,784*	*7,124*	*5,977*	*-142,936*	*-2,682*	*-8,227*	*-299*	*-5,678*	*-1,232*	*-5*	*160,525*	*-161,066*	*-541*
Average 2022-2096:		***15.51***	***129,738***	***3,731***	***7,023***	***5,879***	***-129,029***	***-2,558***	***-8,196***	***-294***	***-5,585***	***-1,309***	***-11***	***146,373***	***-146,983***	***-610***

Notes

Positive values represent inflows or gains of surface-water flows in Mound Basin, and negative numbers represent outflows or losses of surface-water flows in Mound Basin.

a See Section 3.3 for an explanation of how water-year types were classified in this report.

b The California Department of Water Resources classification approach is described in Section 3.3.

c Inflows of ephemeral surface water to Mound Basin are projected based on an empirical relationship between measured streamflow in Arundell Barranca and annual (water year) rainfall measured at Ventura County Government Center, applied to the watershed areas of streams (barrancas) within Mound Basin and upstream from Mound Basin (in stream channels that flow across the basin's northern boundary). Outflows are assumed equal to inflows across the northern basin boundary plus surface flows generated by rainfall within Mound Basin, minus mountain-front recharge of inflows immediately south of the northern boundary of Mound Basin.

d Projected imports are from Ventura Water, 2020b.

e Estimated using United's (2021a) groundwater flow model or resulting from model calibration.

f "Consumptive use" represents loss of imported surface water from Casitas MWD to evaporation and wastewater discharges after M&I use, and in this table is equal to imported surface water (from Casitas MWD) minus M&I return flows.

g These components can comprise either net gains or losses of surface water from streams within Mound Basin, depending on hydrogeologic conditions that vary over time.

h Inflows and outflows of surface water in Mound Basin should be equal, resulting in a difference of zero. Although the long-term average difference is less than 1 percent of the long-term average inflows or outflows, indicating good overall agreement, the apparent difference between inflows and outflows is larger during years with above-average rainfall. This likely is a result of minor deviations of actual streamflow in Arundell Barranca in a given water year compared to the empirical relationship developed to estimate basinwide ephemeral flows across the basin.

Table 3.3-10 Mound Basin Projected Surface Water Inflows and Outflows by Water Year, 2070 Climate Change and Sea Level Rise Factors.

			Surface Water Gains and Inflows (acre-feet per year)				Surface Water Losses and Outflows (acre-feet per year)					Surface Water Inflow and Outflow Components (acre-feet per year)[g]		Summary (acre-feet per year)		
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Santa Clara River at Boundary Between Oxnard and Mound Basins	Ephemeral Streamflow Entering Mound Basin from Northern Foothills[c]	Ephemeral Streamflow Generated Within Mound Basin in Response to Rainfall[c]	Imported Surface Water (from Casitas MWD)[d]	Santa Clara River at Pacific Ocean[e]	Mountain-Front Recharge of Surface Flows in Ephemeral Streams in Northern Mound Basin[e]	Ephemeral Streams, Barrancas, and Storm Drain Discharges Exiting Mound Basin[c]	Fate of Imported Surface Water (from Casitas MWD)		Groundwater/ Surface Water Exchange in the Santa Clara River within Mound Basin[e]	Groundwater/ Surface Water Exchange in Harmon Barranca[e]	Sum of Inflows	Sum of Outflows	Difference[h]
										M&I Return Flows[e]	Consumptive Use[f]					
Implementation Period (water years 2022 through 2041)																
2022	1945	11.93	69,224	2,588	4,871	3,362	-67,803	-2,753	-4,706	-168	-3,194	-1,420	-14	80,045	-80,059	-14
2023	1946	10.57	35,599	2,150	4,048	4,000	-34,378	-1,699	-4,499	-200	-3,800	-1,335	-8	45,797	-45,919	-122
2024	1947	10.28	20,182	2,059	3,876	4,000	-19,057	-1,831	-4,103	-200	-3,800	-1,275	-12	30,116	-30,279	-162
2025	1948	6.37	3,448	807	1,519	5,816	-2,443	-652	-1,674	-291	-5,525	-38	-2	11,590	-10,625	965
2026	1949	7.89	3,341	1,296	2,439	5,816	-2,362	-849	-2,885	-291	-5,525	-35	0	12,892	-11,948	943
2027	1950	14.11	5,475	3,283	6,180	5,816	-4,516	-1,522	-7,940	-291	-5,525	-55	-7	20,753	-19,856	897
2028	1951	7.07	689	1,033	1,944	5,816	-67	-607	-2,370	-291	-5,525	-13	-2	9,483	-8,875	608
2029	1952	26.82	159,903	7,349	13,834	5,816	-158,435	-5,123	-16,060	-291	-5,525	-3,067	-36	186,902	-188,537	-1,635
2030	1953	10.75	3,185	2,208	4,156	5,977	-2,243	-1,305	-5,059	-299	-5,678	-734	-3	15,526	-15,321	205
2031	1954	16.13	25,135	3,930	7,398	5,977	-24,044	-2,562	-8,766	-299	-5,678	-1,092	-14	42,440	-42,456	-16
2032	1955	12.49	3,921	2,765	5,206	5,977	-2,974	-1,587	-6,384	-299	-5,678	-554	-7	17,869	-17,483	386
2033	1956	16.88	26,948	4,170	7,849	5,977	-25,877	-2,195	-9,825	-299	-5,678	-871	-13	44,945	-44,757	187
2034	1957	10.35	11,831	2,081	3,918	5,977	-10,889	-1,503	-4,497	-299	-5,678	-804	-7	23,808	-23,676	131
2035	1958	29.83	249,188	8,311	15,645	5,977	-247,302	-5,377	-18,579	-299	-5,678	-3,507	-33	279,122	-280,776	-1,655
2036	1959	7.32	39,598	1,113	2,095	5,977	-38,365	-1,534	-1,674	-299	-5,678	-1,165	-6	48,783	-48,722	61
2037	1960	12.38	6,013	2,732	5,143	5,977	-5,001	-1,416	-6,459	-299	-5,678	-819	-5	19,864	-19,677	188
2038	1961	6.72	1,411	921	1,735	5,977	-497	-873	-1,783	-299	-5,678	-36	-4	10,044	-9,171	873
2039	1962	27.90	228,942	7,695	14,485	5,977	-227,372	-4,436	-17,744	-299	-5,678	-2,157	3	257,102	-257,686	-584
2040	1963	13.20	14,273	2,994	5,635	5,977	-13,228	-1,783	-6,846	-299	-5,678	-813	-9	28,878	-28,656	222
2041	1964	8.31	8,136	1,430	2,693	5,977	-7,117	-928	-3,195	-299	-5,678	-40	-1	18,236	-17,258	978
Average:		*13.37*	*45,822*	*3,046*	*5,734*	*5,608*	*-44,698*	*-2,027*	*-6,752*	*-280*	*-5,328*	*-992*	*-9*	*60,210*	*-60,087*	*123*
Sustaining Period (water years 2042 through 2071)																
2042	1965	14.57	6,836	3,431	6,459	5,977	-5,853	-1,616	-8,274	-299	-5,678	-842	-9	22,704	-22,572	132
2043	1966	15.79	132,745	3,820	7,191	5,977	-131,358	-3,078	-7,933	-299	-5,678	-2,308	-21	149,733	-150,675	-942
2044	1967	18.65	112,219	4,734	8,912	5,977	-110,527	-4,042	-9,605	-299	-5,678	-3,044	-20	131,843	-133,215	-1,372
2045	1968	13.34	10,394	3,036	5,716	5,977	-9,301	-1,665	-7,087	-299	-5,678	-953	-10	25,123	-24,994	129
2046	1969	25.72	966,585	6,997	13,173	5,977	-963,947	-5,563	-14,607	-299	-5,678	-3,504	-33	992,732	-993,630	-899
2047	1970	16.37	52,580	4,007	7,543	5,977	-51,235	-1,787	-9,764	-299	-5,678	-988	-9	70,107	-69,760	348
2048	1971	13.80	55,355	3,185	5,996	5,977	-54,082	-2,277	-6,904	-299	-5,678	-1,322	-15	70,514	-70,577	-63
2049	1972	7.66	27,939	1,221	2,299	5,977	-26,817	-1,430	-2,090	-299	-5,678	-1,132	-10	37,437	-37,457	-20
2050	1973	22.47	222,987	5,958	11,216	5,977	-221,284	-4,311	-12,863	-299	-5,678	-2,340	-27	246,138	-246,802	-663
2051	1974	15.65	76,825	3,777	7,111	5,977	-75,474	-2,408	-8,481	-299	-5,678	-1,345	-16	93,690	-93,701	-11

			Surface Water Gains and Inflows (acre-feet per year)				Surface Water Losses and Outflows (acre-feet per year)					Surface Water Inflow and Outflow Components (acre-feet per year)[g]		Summary (acre-feet per year)		
										Fate of Imported Surface Water (from Casitas MWD)						
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Santa Clara River at Boundary Between Oxnard and Mound Basins	Ephemeral Streamflow Entering Mound Basin from Northern Foothills[c]	Ephemeral Streamflow Generated Within Mound Basin in Response to Rainfall[c]	Imported Surface Water (from Casitas MWD)[d]	Santa Clara River at Pacific Ocean[e]	Mountain-Front Recharge of Surface Flows in Ephemeral Streams in Northern Mound Basin[e]	Ephemeral Streams, Barrancas, and Storm Drain Discharges Exiting Mound Basin[c]	M&I Return Flows[e]	Consumptive Use[f]	Groundwater/ Surface Water Exchange in the Santa Clara River within Mound Basin[e]	Groundwater/ Surface Water Exchange in Harmon Barranca[e]	Sum of Inflows	Sum of Outflows	Difference[h]
2052	1975	15.87	65,705	3,847	7,242	5,977	-64,354	-2,758	-8,330	-299	-5,678	-1,797	-16	82,770	-83,232	-462
2053	1976	16.13	30,304	3,930	7,399	5,977	-29,134	-3,243	-8,086	-299	-5,678	-1,448	-23	47,610	-47,910	-300
2054	1977	11.55	16,201	2,464	4,639	5,977	-15,125	-1,589	-5,514	-299	-5,678	-693	-7	29,281	-28,906	375
2055	1978	37.23	724,631	10,676	20,097	5,977	-722,783	-7,317	-23,456	-299	-5,678	-3,351	-54	761,381	-762,938	-1,557
2056	1979	20.33	184,970	5,274	9,928	5,977	-183,852	-3,826	-11,376	-299	-5,678	-1,750	-24	206,149	-206,805	-656
2057	1980	27.96	408,788	7,714	14,521	5,977	-407,556	-4,708	-17,526	-299	-5,678	-2,014	-36	436,999	-437,818	-819
2058	1981	13.18	48,001	2,985	5,620	5,977	-47,085	-1,995	-6,610	-299	-5,678	-928	-11	62,583	-62,607	-23
2059	1982	12.47	41,074	2,758	5,192	5,977	-40,026	-1,978	-5,973	-299	-5,678	-1,485	-8	55,002	-55,446	-444
2060	1983	32.62	560,277	9,202	17,322	5,977	-558,968	-6,434	-20,090	-299	-5,678	-2,911	-44	592,778	-594,424	-1,646
2061	1984	9.08	32,348	1,676	3,156	5,977	-31,660	-1,591	-3,241	-299	-5,678	-120	-8	43,157	-42,598	559
2062	1985	11.33	18,539	2,396	4,510	5,977	-17,447	-1,206	-5,699	-299	-5,678	-179	-3	31,421	-30,512	909
2063	1986	27.53	190,547	7,574	14,259	5,977	-189,406	-4,370	-17,463	-299	-5,678	-2,317	-29	218,357	-219,562	-1,205
2064	1987	7.25	7,667	1,091	2,053	5,977	-6,828	-454	-2,690	-299	-5,678	-154	0	16,788	-16,103	685
2065	1988	12.92	27,555	2,902	5,464	5,977	-26,526	-1,790	-6,577	-299	-5,678	-153	-5	41,898	-41,028	870
2066	1989	8.03	4,956	1,339	2,521	5,977	-3,961	-951	-2,910	-299	-5,678	-72	-4	14,794	-13,874	920
2067	1990	6.17	6,331	744	1,400	5,977	-5,316	-806	-1,337	-299	-5,678	-55	-1	14,452	-13,493	958
2068	1991	17.24	112,028	4,286	8,068	5,977	-110,702	-3,176	-9,178	-299	-5,678	-1,882	-25	130,359	-130,940	-581
2069	1992	21.67	287,295	5,702	10,733	5,977	-285,442	-4,666	-11,769	-299	-5,678	-2,777	-33	309,706	-310,663	-957
2070	1993	30.48	846,052	8,519	16,037	5,977	-843,572	-5,691	-18,865	-299	-5,678	-3,730	-39	876,584	-877,874	-1,290
2071	1994	11.88	56,812	2,570	4,838	5,977	-55,551	-1,667	-5,741	-299	-5,678	-1,035	-9	70,198	-69,981	217
Average:		*17.16*	*177,818*	*4,261*	*8,021*	*5,977*	*-176,506*	*-2,946*	*-9,335*	*-299*	*-5,678*	*-1,554*	*-18*	*196,076*	*-196,337*	*-260*
Post-SGMA period (water years 2072 through 2096)																
2072	1995	32.33	479,886	9,110	17,150	5,977	-478,382	-5,901	-20,359	-299	-5,678	-2,638	38	512,161	-513,257	-1,096
2073	1996	13.03	74,223	2,938	5,531	5,977	-73,405	-2,202	-6,267	-299	-5,678	-941	-13	88,669	-88,805	-136
2074	1997	15.40	82,779	3,696	6,958	5,977	-81,706	-2,892	-7,761	-299	-5,678	-1,538	-17	99,409	-99,892	-483
2075	1998	44.22	652,633	12,913	24,309	5,977	-651,248	-7,785	-29,437	-299	-5,678	-3,333	184	696,017	-697,780	-1,764
2076	1999	10.62	47,209	2,168	4,082	5,977	-46,538	-804	-5,446	-299	-5,678	-189	-1	59,437	-58,956	481
2077	2000	18.57	83,272	4,709	8,864	5,977	-82,368	-2,664	-10,908	-299	-5,678	-1,213	-17	102,821	-103,147	-325
2078	2001	23.94	195,387	6,428	12,100	5,977	-194,513	-4,234	-14,293	-299	-5,678	-1,740	-29	219,891	-220,786	-894
2079	2002	5.98	6,298	683	1,285	5,977	-5,580	-494	-1,474	-299	-5,678	-112	-1	14,243	-13,638	605
2080	2003	17.72	48,198	4,437	8,353	5,977	-47,366	-2,877	-9,913	-299	-5,678	-1,039	-17	66,965	-67,189	-224
2081	2004	11.41	38,203	2,419	4,555	5,977	-37,302	-1,535	-5,439	-299	-5,678	-725	-9	51,154	-50,987	167
2082	2005	36.72	1,076,121	10,513	19,791	5,977	-1,074,418	-7,586	-22,718	-299	-5,678	-3,710	-57	1,112,403	-1,114,467	-2,064
2083	2006	16.16	136,880	3,940	7,417	5,977	-135,989	-2,659	-8,699	-299	-5,678	-1,446	-14	154,215	-154,784	-569

			Surface Water Gains and Inflows (acre-feet per year)				Surface Water Losses and Outflows (acre-feet per year)					Surface Water Inflow and Outflow Components (acre-feet per year)[g]		Summary (acre-feet per year)		
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Santa Clara River at Boundary Between Oxnard and Mound Basins	Ephemeral Streamflow Entering Mound Basin from Northern Foothills[c]	Ephemeral Streamflow Generated Within Mound Basin in Response to Rainfall[c]	Imported Surface Water (from Casitas MWD)[d]	Santa Clara River at Pacific Ocean[e]	Mountain-Front Recharge of Surface Flows in Ephemeral Streams in Northern Mound Basin[e]	Ephemeral Streams, Barrancas, and Storm Drain Discharges Exiting Mound Basin[c]	Fate of Imported Surface Water (from Casitas MWD)		Groundwater/ Surface Water Exchange in the Santa Clara River within Mound Basin[e]	Groundwater/ Surface Water Exchange in Harmon Barranca[e]	Sum of Inflows	Sum of Outflows	Difference[h]
										M&I Return Flows[e]	Consumptive Use[f]					
2084	2007	5.86	10,287	647	1,218	5,977	-9,444	-208	-1,657	-299	-5,678	-127	0	18,129	-17,413	716
2085	2008	12.64	157,205	2,814	5,298	5,977	-156,004	-2,604	-5,508	-299	-5,678	-1,662	-16	171,294	-171,771	-477
2086	2009	9.59	22,916	1,838	3,460	5,977	-21,878	-1,321	-3,976	-299	-5,678	-938	-6	34,191	-34,096	94
2087	2010	17.19	91,477	4,270	8,038	5,977	-90,352	-3,026	-9,282	-299	-5,678	-1,515	-15	109,762	-110,167	-405
2088	2011	17.89	140,766	4,493	8,457	5,977	-139,714	-3,775	-9,175	-299	-5,678	-1,791	-25	159,693	-160,457	-763
2089	2012	8.96	12,951	1,637	3,081	5,977	-12,008	-444	-4,273	-299	-5,678	-136	0	23,646	-22,838	808
2090	2013	5.70	2,937	594	1,119	5,977	-1,986	-1,384	-329	-299	-5,678	-75	-7	10,627	-9,759	869
2091	2014	6.33	27,271	794	1,495	5,977	-26,213	-1,563	-727	-299	-5,678	-519	-6	35,538	-35,005	533
2092	2015	9.62	2,417	1,848	3,479	5,977	-1,448	-1,098	-4,229	-299	-5,678	-39	-4	13,721	-12,795	926
2093	2016	8.36	4,032	1,445	2,720	5,977	-3,063	-2,027	-2,137	-299	-5,678	-295	-12	14,174	-13,512	662
2094	2017	22.47	88,857	5,958	11,216	5,977	-87,530	-3,849	-13,325	-299	-5,678	-2,219	-24	112,008	-112,924	-916
2095	2018	7.16	8,383	1,060	1,995	5,977	-7,372	-2,050	-1,006	-299	-5,678	-588	-11	17,416	-17,003	412
2096	2019	21.95	160,024	5,792	10,904	5,977	-158,373	-3,849	-12,847	-299	-5,678	-2,886	-24	182,697	-183,956	-1,259
Average:		*15.99*	*146,025*	*3,886*	*7,315*	*5,977*	*-144,968*	*-2,753*	*-8,447*	*-299*	*-5,678*	*-1,257*	*-4*	*163,211*	*-163,415*	*-204*
Average 2022-2096:		***15.76***	***132,021***	***3,812***	***7,175***	***5,879***	***-130,845***	***-2,637***	***-8,350***	***-294***	***-5,585***	***-1,305***	***-11***	***148,890***	***-149,030***	***-139***

Notes

Positive values represent inflows or gains of surface-water flows in Mound Basin, and negative numbers represent outflows or losses of surface-water flows in Mound Basin.

a See Section 3.3 for an explanation of how water-year types were classified in this report.

b The California Department of Water Resources classification approach is described in Section 3.3.

c Inflows of ephemeral surface water to Mound Basin are projected based on an empirical relationship between measured streamflow in Arundell Barranca and annual (water year) rainfall measured at Ventura County Government Center, applied to the watershed areas of streams (barrancas) within Mound Basin and upstream from Mound Basin (in stream channels that flow across the basin's northern boundary). Outflows are assumed equal to inflows across the northern basin boundary plus surface flows generated by rainfall within Mound Basin, minus mountain-front recharge of inflows immediately south of the northern boundary of Mound Basin.

d Projected imports are from Ventura Water, 2020b.

e Estimated using United's (2021a) groundwater flow model or resulting from model calibration.

f "Consumptive use" represents loss of imported surface water from Casitas MWD to evaporation and wastewater discharges after M&I use, and in this table is equal to imported surface water (from Casitas MWD) minus M&I return flows.

g These components can comprise either net gains or losses of surface water from streams within Mound Basin, depending on hydrogeologic conditions that vary over time.

h Inflows and outflows of surface water in Mound Basin should be equal, resulting in a difference of zero. Although the long-term average difference is less than 1 percent of the long-term average inflows or outflows, indicating good overall agreement, the apparent difference between inflows and outflows is larger during years with above-average rainfall. This likely is a result of minor deviations of actual streamflow in Arundell Barranca in a given water year compared to the empirical relationship developed to estimate basinwide ephemeral flows across the basin.

Table 3.3-11 Mound Basin Projected Groundwater Inflows and Outflows by Water Year, 2030 Climate Change and Sea Level Rise Factors.

			Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Groundwater Inflow and Outflow Components (acre-feet per year)[e]					Summary (acre-feet per year)			All Aquifers Combined			Mugu Aquifer				Hueneme Aquifer			
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)	Mountain-Front Recharge	Evapo-transpiration[c]	Groundwater Extraction (pumping from wells)	Discharge of Groundwater to Tile Drains[d]	Groundwater/ Surface Water Interaction in the Santa Clara River[f]	Groundwater/ Surface Water Interaction in Harmon Barranca[g]	Groundwater Underflow to/from Santa Paula Basin	Groundwater Underflow to/from Oxnard Basin	Groundwater Underflow to/from Offshore (south and west of the coastline)	Sum of Inflows	Sum of Outflows	Groundwater Released from Storage per Water Year[h]	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year
Implementation Period (water years 2022 through 2041)																											
2022	1945	11.86	2,972	2,670	-827	-8,136	0	1,209	14	3,958	4,454	-4,741	15,277	-13,703	-1,574	3,647	3,647	1,574	640	640	156	156	1,580	1,580	1,223	1,223
2023	1946	11.18	2,563	1,752	-827	-8,555	0	1,370	8	3,899	5,184	-4,779	14,777	-14,161	-616	72	3,719	2,190	76	716	119	275	94	1,674	423	1,646
2024	1947	10.90	2,866	2,009	-864	-7,465	0	1,299	13	3,871	4,256	-5,017	14,314	-13,345	-968	954	4,673	3,159	62	778	46	321	368	2,042	692	2,338
2025	1948	6.77	2,129	717	-688	-8,279	0	43	2	4,018	180	-3,534	7,090	-12,501	5,411	-4,113	559	-2,252	-266	512	-563	-242	-101	1,942	-562	1,776
2026	1949	8.57	2,382	863	-499	-8,602	0	43	0	4,128	-1,152	-2,492	7,415	-12,746	5,330	-4,703	-4,143	-7,583	-692	-180	-710	-952	-770	1,172	-1,057	719
2027	1950	13.88	2,877	1,603	-382	-7,529	0	63	7	4,136	-748	-2,071	8,685	-10,729	2,044	-2,627	-6,770	-9,627	-426	-606	-361	-1,313	-619	552	-440	279
2028	1951	7.53	2,251	546	-353	-8,802	0	15	1	4,379	-2,745	-1,347	7,192	-13,248	6,055	-6,042	-12,812	-15,682	-988	-1,594	-1,309	-2,622	-1,024	-472	-1,105	-826
2029	1952	26.42	4,780	5,059	-601	-7,642	0	3,057	34	4,014	5,316	-3,044	22,260	-11,287	-10,973	7,127	-5,685	-4,708	447	-1,147	1,892	-730	1,645	1,174	1,051	225
2030	1953	12.12	2,644	1,547	-535	-7,589	0	865	6	3,985	4,231	-3,588	13,278	-11,712	-1,566	4,524	-1,161	-3,142	1,388	241	449	-280	-576	598	896	1,121
2031	1954	15.86	3,214	2,480	-509	-7,971	0	1,106	13	3,894	2,315	-3,403	13,023	-11,883	-1,140	995	-166	-2,002	-137	104	8	-272	1,463	2,061	231	1,353
2032	1955	12.53	2,829	1,515	-473	-8,158	0	609	5	3,951	790	-3,127	9,699	-11,758	2,059	-2,865	-3,031	-4,061	-179	-75	-288	-560	-998	1,064	-195	1,158
2033	1956	16.21	3,223	2,230	-494	-7,359	0	936	13	3,920	2,222	-3,164	12,543	-11,016	-1,527	849	-2,182	-2,533	-76	-151	138	-422	194	1,258	356	1,514
2034	1957	10.55	2,520	1,462	-473	-8,414	0	780	6	3,969	105	-3,102	8,841	-11,990	3,149	-755	-2,937	-5,682	-48	-199	-359	-781	28	1,285	-492	1,022
2035	1958	27.93	4,568	5,070	-803	-6,407	-6	3,410	31	3,691	6,954	-4,887	23,723	-12,103	-11,620	5,471	2,534	5,938	135	-63	981	200	1,826	3,111	1,750	2,772
2036	1959	6.99	2,157	1,329	-856	-8,618	0	1,082	5	3,723	3,604	-4,927	11,900	-14,401	2,501	3,566	6,100	3,437	769	706	-39	161	-425	2,686	-5	2,766
2037	1960	12.24	2,656	1,303	-597	-7,954	0	102	4	3,836	1,328	-3,787	9,230	-12,337	3,107	-3,027	3,073	330	-178	528	-327	-166	-33	2,653	-300	2,466
2038	1961	7.50	2,106	952	-415	-8,646	0	38	4	3,983	-424	-3,031	7,084	-12,516	5,432	-5,123	-2,051	-5,102	-566	-39	-636	-802	-891	1,762	-731	1,735
2039	1962	27.16	4,286	4,396	-678	-6,677	0	2,159	-9	3,876	4,662	-3,974	19,379	-11,338	-8,041	5,802	3,751	2,939	62	24	706	-95	1,793	3,555	939	2,674
2040	1963	12.80	2,668	1,622	-605	-8,106	0	841	9	3,851	5,491	-4,175	14,482	-12,887	-1,595	424	4,175	4,534	479	503	371	275	-684	2,871	269	2,943
2041	1964	8.70	2,379	1,022	-479	-8,718	0	46	2	3,835	725	-3,437	8,010	-12,634	4,624	-1,658	2,517	-90	-38	465	-501	-226	-361	2,510	-507	2,435
Average:		*13.39*	*2,903*	*2,007*	*-598*	*-7,981*	*0*	*954*	*8*	*3,946*	*2,337*	*-3,581*	*12,410*	*-12,415*	*4*											
Sustaining Period (water years 2042 through 2071)																										
2042	1965	15.34	2,898	1,918	-493	-7,814	0	973	10	3,794	1,109	-3,642	10,702	-11,950	1,248	-3,757	-1,240	-1,338	-454	11	-247	-473	-594	1,916	-314	2,121
2043	1966	16.59	3,619	3,313	-757	-7,819	0	2,322	23	3,680	6,411	-4,877	19,368	-13,453	-5,915	7,989	6,749	4,577	551	562	645	172	1,013	2,929	733	2,854
2044	1967	18.25	3,840	4,099	-772	-7,622	0	3,099	20	3,497	5,653	-5,895	20,208	-14,289	-5,919	4,005	10,754	10,496	294	856	272	444	1,201	4,130	1,216	4,069
2045	1968	14.27	2,940	1,649	-861	-7,430	0	878	10	3,563	4,033	-5,569	13,072	-13,860	788	1,506	12,261	9,709	111	967	1	445	377	4,507	110	4,179
2046	1969	24.02	4,320	4,955	-1,050	-7,515	-132	3,409	37	3,540	4,123	-6,563	20,384	-15,259	-5,124	5,749	18,010	14,833	157	1,124	122	567	2,115	6,621	1,327	5,507
2047	1970	16.13	2,741	1,668	-883	-8,255	0	928	7	3,606	3,900	-5,849	12,850	-14,987	2,137	-2,173	15,837	12,696	-81	1,043	-68	499	-746	5,875	-623	4,883
2048	1971	15.02	3,007	2,324	-922	-7,627	0	1,355	15	3,561	3,770	-6,178	14,032	-14,727	696	-1,179	14,658	12,000	-76	966	-42	457	-581	5,294	73	4,956
2049	1972	8.39	2,358	1,492	-940	-8,385	0	1,198	11	3,647	4,220	-5,694	12,927	-15,019	2,092	-2,473	12,185	9,908	-60	907	-28	429	-773	4,521	-441	4,515
2050	1973	20.98	3,813	4,096	-882	-7,089	-3	2,275	24	3,413	3,953	-6,044	17,574	-14,018	-3,556	4,355	16,541	13,463	125	1,032	85	514	2,003	6,524	689	5,204
2051	1974	15.51	3,064	2,328	-913	-7,503	0	1,314	16	3,449	3,884	-5,969	14,055	-14,385	330	-737	15,803	13,133	5	1,037	1	515	-710	5,814	-34	5,170
2052	1975	15.60	3,158	2,817	-876	-7,357	0	1,790	16	3,463	3,934	-6,168	15,179	-14,401	-778	353	16,156	13,911	-25	1,013	9	524	250	6,065	193	5,363
2053	1976	14.10	2,963	2,191	-959	-7,977	0	1,218	13	3,603	3,553	-5,660	13,541	-14,595	1,054	-3,392	12,764	12,857	-134	878	-70	453	-1,176	4,889	177	5,539
2054	1977	11.73	2,671	1,549	-829	-8,403	0	713	6	3,480	3,378	-5,192	11,797	-14,424	2,627	-754	12,010	10,229	-63	815	-98	355	-453	4,436	-1,092	4,447
2055	1978	34.58	5,801	6,781	-1,047	-7,636	-89	3,386	49	3,237	4,366	-6,626	23,620	-15,398	-8,222	9,184	21,195	18,451	308	1,123	219	574	3,889	8,325	2,161	6,608
2056	1979	18.60	3,851	3,537	-920	-7,583	-9	1,816	21	3,309	3,487	-6,917	16,021	-15,430	-591	1,882	23,076	19,042	-16	1,107	24	598	157	8,482	297	6,905
2057	1980	26.28	4,461	4,365	-1,014	-6,997	-47	2,026	34	3,309	3,106	-7,266	17,300	-15,325	-1,975	2,205	25,281	21,017	108	1,215	42	640	884	9,366	788	7,693
2058	1981	12.96	2,683	1,713	-935	-7,974	0	929	9	3,439	3,216	-6,443	11,989	-15,352	3,363	-4,233	21,048	17,655	-146	1,070	-95	545	-1,544	7,822	-1,095	6,598
2059	1982	12.28	2,749	1,723	-839	-8,474	0	1,187	6	3,487	4,068	-5,835	13,221	-15,148	1,927	-3,313	17,735	15,728	-58	1,012	-1	544	-1,496	6,326	-931	5,667
2060	1983	32.27	5,882	6,421	-1,042	-8,100	-67	2,980	43	3,172	3,622	-7,141	22,119	-16,350	-5,787	7,209	24,944	21,514	192	1,204	62	606	2,919	9,245	1,755	7,422
2061	1984	10.44	2,738	1,956	-968	-7,747	0	687	10	3,330	3,398	-6,834	12,118	-15,550	3,431	-3,671	21,274	18,083	-170	1,034	-47	559	-2,010	7,235	-731	6,691
2062	1985	12.13	2,581	1,444	-896	-7,459	0	1,136	5	3,495	3,144	-6,182	11,804	-14,538	2,734	-2,471	18,802	15,349	30	1,064	-58	501	-684	6,551	-852	5,839
2063	1986	25.61	4,242	3,969	-881	-6,877	-3	1,835	26	3,376	3,509	-6,294	16,957	-14,055	-2,902	2,115	20,917	18,252	21	1,085	98	599	1,062	7,612	619	6,457
2064	1987	7.82	2,162	569	-859	-9,253	0	159	0	3,616	3,431	-5,086	9,938	-15,197	5,260	-4,507	16,411	12,992	-90	995	-186	413	-2,004	5,609	-1,550	4,907
2065	1988	13.44	2,907	1,865	-785	-7,088	0	164	5	3,558	3,965	-4,813	12,465	-12,685	220	-2,080	14,331	12,772	-52	943	70	483	-697	4,911	-220	4,687
2066	1989	8.44	2,281	1,088	-842	-7,568	0	1,028	5	3,672	2,718	-5,219	10,792	-13,630	2,838	-1,515	12,816	9,934	-59	885	-152	331	-498	4,414	-407	4,280

			Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Groundwater Inflow and Outflow Components (acre-feet per year)[e]					Summary (acre-feet per year)			All Aquifers Combined			Mugu Aquifer				Hueneme Aquifer			
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)	Mountain-Front Recharge	Evapo-transpiration[c]	Groundwater Extraction (pumping from wells)	Discharge of Groundwater to Tile Drains[d]	Groundwater/ Surface Water Interaction in the Santa Clara River[f]	Groundwater/ Surface Water Interaction in Harmon Barranca[g]	Groundwater Underflow to/from Santa Paula Basin	Groundwater Underflow to/from Oxnard Basin	Groundwater Underflow to/from Offshore (south and west of the coastline)	Sum of Inflows	Sum of Outflows	Groundwater Released from Storage per Water Year[h]	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year
2067	1990	5.98	1,801	681	-652	-8,085	0	56	0	3,851	-83	-4,079	6,389	-12,899	6,509	-5,888	6,927	3,425	-410	475	-618	-287	-974	3,440	-991	3,288
2068	1991	16.22	3,132	2,799	-648	-8,128	0	1,733	22	3,847	2,972	-4,064	14,504	-12,841	-1,663	-906	6,021	5,088	-446	29	110	-177	792	4,232	-308	2,980
2069	1992	20.34	4,171	4,338	-866	-7,538	-1	3,010	30	3,562	6,322	-5,557	21,434	-13,962	-7,471	8,198	14,219	12,559	688	718	597	420	1,166	5,398	1,135	4,116
2070	1993	28.42	4,675	5,463	-1,105	-6,960	-127	3,669	37	3,373	3,807	-7,038	21,024	-15,230	-5,794	8,158	22,377	18,354	494	1,212	183	603	2,294	7,692	2,092	6,207
2071	1994	11.79	2,562	1,544	-851	-8,151	0	1,007	8	3,543	3,808	-6,006	12,472	-15,008	2,536	-3,748	18,628	15,818	-158	1,054	-65	538	-1,443	6,249	-667	5,540
Average:		*16.78*	*3,336*	*2,822*	*-876*	*-7,747*	*-16*	*1,609*	*17*	*3,516*	*3,693*	*-5,823*	*14,995*	*-14,465*	*-530*											
Post-SGMA period (water years 2072 through 2096)																										
2072	1995	30.11	4,822	5,276	-1,008	-7,194	-56	2,603	42	3,486	3,493	-6,906	19,723	-15,165	-4,558	5,577	24,206	20,376	211	1,265	107	645	2,278	8,526	1,367	6,908
2073	1996	13.23	2,992	2,026	-865	-8,611	0	900	11	3,491	3,484	-6,270	12,905	-15,746	2,841	-2,796	21,410	17,535	-121	1,144	-118	528	-1,267	7,259	-873	6,035
2074	1997	15.29	3,329	2,915	-972	-7,473	0	1,557	16	3,439	3,714	-6,781	14,970	-15,226	255	-931	20,479	17,279	-109	1,035	19	546	-449	6,810	83	6,117
2075	1998	43.89	6,509	7,725	-1,074	-6,035	-125	3,078	-201	3,357	2,329	-7,311	22,998	-14,747	-8,251	8,121	28,600	25,530	194	1,229	129	676	3,660	10,470	2,696	8,813
2076	1999	10.90	2,400	888	-833	-8,273	0	93	2	3,559	2,920	-5,915	9,861	-15,021	5,160	-5,500	23,100	20,370	-142	1,087	-87	589	-2,712	7,758	-1,720	7,093
2077	2000	17.82	3,334	2,560	-842	-7,934	0	1,162	16	3,490	3,280	-6,197	13,842	-14,972	1,130	-1,164	21,936	19,240	40	1,127	-33	556	-251	7,507	-505	6,588
2078	2001	22.45	3,967	3,920	-866	-8,105	-13	1,637	25	3,355	3,605	-6,551	16,510	-15,535	-975	2,121	24,057	20,215	-13	1,114	17	573	1,062	8,569	295	6,882
2079	2002	6.74	2,058	602	-821	-8,673	0	107	2	3,578	3,048	-5,229	9,395	-14,723	5,328	-5,963	18,094	14,887	-147	967	-158	415	-2,709	5,860	-1,472	5,411
2080	2003	18.68	3,721	3,150	-793	-7,328	0	1,066	17	3,448	3,983	-5,611	15,385	-13,732	-1,653	685	18,779	16,540	26	993	95	510	386	6,246	78	5,489
2081	2004	11.59	2,482	1,479	-852	-8,014	0	734	8	3,544	3,092	-5,517	11,339	-14,383	3,044	-1,951	16,828	13,496	-64	930	-104	406	-785	5,461	-639	4,850
2082	2005	34.22	5,865	7,177	-1,057	-6,358	-189	3,711	53	3,303	3,447	-7,295	23,556	-14,899	-8,657	9,659	26,487	22,153	284	1,214	222	628	3,616	9,077	2,510	7,360
2083	2006	15.50	2,989	2,482	-783	-7,439	-1	1,413	12	3,426	3,374	-6,606	13,695	-14,828	1,133	-4,159	22,329	21,020	-138	1,076	9	637	-1,721	7,356	-426	6,934
2084	2007	6.38	1,811	243	-875	-8,803	0	124	0	3,678	3,408	-5,501	9,265	-15,179	5,914	-4,567	17,762	15,106	-84	992	-164	473	-1,643	5,713	-1,560	5,374
2085	2008	12.32	3,012	2,518	-888	-8,387	-2	1,660	15	3,557	4,123	-5,916	14,884	-15,193	309	110	17,872	14,797	28	1,019	-2	471	-99	5,615	-365	5,010
2086	2009	9.92	2,425	1,384	-834	-8,023	0	978	5	3,627	3,841	-5,387	12,260	-14,245	1,985	-2,401	15,471	12,813	-78	942	-35	436	-818	4,797	-504	4,506
2087	2010	17.14	3,465	3,084	-795	-7,721	0	1,360	14	3,402	4,244	-5,450	15,571	-13,967	-1,604	1,269	16,740	14,417	-1	940	37	473	519	5,315	107	4,613
2088	2011	18.82	3,990	3,749	-801	-7,083	-7	1,858	23	3,370	4,093	-6,190	17,084	-14,081	-3,003	3,837	20,577	17,419	154	1,094	102	575	1,330	6,645	915	5,528
2089	2012	9.33	2,180	602	-854	-8,531	0	130	0	3,664	3,708	-5,083	10,284	-14,467	4,184	-5,442	15,135	13,235	-141	953	-137	438	-1,949	4,696	-967	4,561
2090	2013	6.77	2,617	1,637	-801	-7,511	0	102	8	3,630	1,826	-4,683	9,820	-12,995	3,175	-1,418	13,717	10,060	-73	880	-228	210	-332	4,364	-298	4,262
2091	2014	6.39	2,327	1,340	-736	-8,555	0	536	5	3,777	283	-4,382	8,268	-13,672	5,405	-5,172	8,545	4,656	-550	330	-573	-363	-611	3,753	-1,059	3,204
2092	2015	9.80	2,599	1,316	-464	-7,610	0	39	4	3,890	-422	-3,118	7,847	-11,614	3,766	-4,330	4,215	890	-397	-67	-413	-776	-831	2,921	-654	2,550
2093	2016	7.96	2,925	1,951	-373	-8,109	0	296	11	3,893	-488	-3,108	9,074	-12,078	3,003	-3,078	1,137	-2,114	-415	-483	-437	-1,213	-398	2,523	-673	1,877
2094	2017	20.00	3,663	3,575	-572	-7,561	0	2,210	20	3,793	2,655	-3,770	15,916	-11,903	-4,012	3,549	4,685	1,899	238	-245	554	-660	979	3,502	418	2,294
2095	2018	6.69	2,939	1,865	-398	-8,333	0	576	8	3,906	-1,006	-3,212	9,294	-12,950	3,656	-2,810	1,875	-1,757	-171	-416	-488	-1,147	-685	2,817	-448	1,846
2096	2019	19.96	3,624	3,575	-654	-7,356	0	2,858	20	3,812	5,248	-4,282	19,137	-12,292	-6,845	3,737	5,612	5,088	240	-176	985	-162	702	3,519	674	2,520
Average:		*15.68*	*3,282*	*2,682*	*-792*	*-7,801*	*-16*	*1,232*	*5*	*3,579*	*2,851*	*-5,451*	*13,715*	*-14,144*	*429*											
Average 2022-2096:		***15.51***	***3,202***	***2,558***	***-774***	***-7,827***	***-12***	***1,309***	***11***	***3,651***	***3,051***	***-5,101***	***13,879***	***-13,812***	***-68***											

Notes

N/A = Not applicable

Positive values represent inflows to the Mound Basin negative numbers represent outflows from the basin.

a The representative historical water year used as the basis for assumptions regarding rainfall and surface flows about future years, as described in Section 3.3.

b See Section 3.3 for an explanation of how water-year types were classified in this report.

c The Shallow Alluvial Deposits is modeled to be the sole hydrostratigraphic unit in Mound Basin with saturated conditions consistently shallow enough to be significantly affected by evapotranspiration.

d Tile drains are only known or suspected to be present in the Shallow Alluvial Deposits in Mound Basin.

e These components can comprise either net inflows to or outflows from each aquifer, depending on hydrogeologic conditions that vary over time (e.g., hydraulic gradients).

f Within Mound Basin, the sole hydrostratigraphic unit known or suspected to be in direct hydraulic communication with the Santa Clara River is the Shallow Alluvial Deposits.

g United (2021) modeled Harmon Barranca using MODFLOW's "Stream package," as described in Section 3.3 of this report, allowing the model to simulate direct hydraulic communication with the Shallow Alluvial Deposits, as well as with the fine-grained Pleistocene deposits."

h Water-year changes in storage are calculated from October 1 of the preceding calendar year to September 30 of the indicated year. Positive values for groundwater released from storage represent inflows to the basin, same as all other components on this table. However, specific to this parameter, inflow of groundwater from storage is associated with declining groundwater levels (or potentiometric heads) in the basin. Negative values are associated with increasing groundwater-levels (or potentiometric heads), as a result of groundwater being "added to storage."

Table 3.3-12 Mound Basin Projected Average Inflows and Outflows by Aquifer, 2030 Climate Change and Sea Level Rise Factors.

	Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Groundwater Inflow and Outflow Components (acre-feet per year)[a]							Summary (acre-feet per year)		
Aquifer	**Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)**	**Mountain-Front Recharge**	**Evapo-transpiration[b]**	**Groundwater Extraction**	**Discharge of Groundwater to Tile Drains[c]**	**Groundwater/ Surface Water Interaction in the Santa Clara River[d]**	**Groundwater/ Surface Water Interaction in Harmon Barranca[e]**	**Groundwater Underflow to/from Santa Paula Basin**	**Groundwater Underflow to/from Oxnard Basin**	**Groundwater Underflow to/from Offshore (south and west of the coastline)**	**Vertical Groundwater Flow to/from the Overlying Aquifer**	**Vertical Groundwater Flow to/from the Underlying Aquifer**	**Sum of Inflows**	**Sum of Outflows**	**Groundwater Released from Storage[f]**
Averages during Implementation Period (water years 2022 through 2041)															
Shallow Alluvial Deposits	2,316	0	-598	0	0	954	47	0	1,081	-3,001	N/A	-943	4,398	-4,543	145
Fine-grained Pleistocene deposits[g]	141	0	N/A	-6	N/A	N/A	71	7	1,552	-73	943	-2,685	2,715	-2,764	49
Mugu Aquifer	0	0	N/A	-2,600	N/A	N/A	0	223	1,628	-856	2,685	-1,092	4,536	-4,547	11
Hueneme Aquifer[h]	446	2,007	N/A	-4,755	N/A	N/A	-110	1,979	-919	340	1,092	42	5,906	-5,784	-122
Fox Canyon Aquifer[i]	0	0	N/A	-620	N/A	N/A	0	1,737	-1,004	9	-42	N/A	1,745	-1,666	-79
Basin Total:	***2,903***	***2,007***	***-598***	***-7,981***	***0***	***954***	***8***	***3,946***	***2,337***	***-3,581***	***4,678***	***-4,678***	***19,300***	***-19,305***	***4***
Averages during Sustaining Period (water years 2042 through 2071)															
Shallow Alluvial Deposits	2,611	0	-876	0	-16	1,609	102	0	1,571	-3,929	N/A	-986	5,893	-5,807	-86
Fine-grained Pleistocene deposits[g]	166	0	N/A	-4	N/A	N/A	131	7	1,809	-123	986	-2,769	3,099	-2,897	-202
Mugu Aquifer	0	0	N/A	-2,502	N/A	N/A	0	191	2,032	-1,562	2,769	-902	4,991	-4,966	-25
Hueneme Aquifer[h]	559	2,822	N/A	-4,627	N/A	N/A	-215	1,699	-840	-60	902	-138	5,982	-5,879	-103
Fox Canyon Aquifer[i]	0	0	N/A	-614	N/A	N/A	0	1,619	-879	-149	138	N/A	1,756	-1,643	-113
Basin Total:	***3,336***	***2,822***	***-876***	***-7,747***	***-16***	***1,609***	***17***	***3,516***	***3,693***	***-5,823***	***4,795***	***-4,795***	***21,722***	***-21,193***	***-530***
Averages during post-SGMA period (water years 2072 through 2096)															
Shallow Alluvial Deposits	2,577	0	-792	0	-16	1,232	103	0	1,493	-3,682	N/A	-989	5,404	-5,480	76
Fine-grained Pleistocene deposits[g]	164	0	N/A	-5	N/A	N/A	127	7	1,555	-113	989	-2,835	2,843	-2,953	110
Mugu Aquifer	0	0	N/A	-2,488	N/A	N/A	0	213	1,664	-1,436	2,835	-816	4,712	-4,740	28
Hueneme Aquifer[h]	540	2,682	N/A	-4,691	N/A	N/A	-224	1,729	-942	-62	816	31	5,798	-5,919	121
Fox Canyon Aquifer[i]	0	0	N/A	-618	N/A	N/A	0	1,631	-919	-157	-31	N/A	1,631	-1,725	94
Basin Total:	***3,282***	***2,682***	***-792***	***-7,801***	***-16***	***1,232***	***5***	***3,579***	***2,851***	***-5,451***	***4,609***	***-4,609***	***20,388***	***-20,817***	***429***

Notes

N/A = Not applicable

Positive values represent inflows to an aquifer; negative numbers represent outflows from an aquifer.

a These components can comprise either net inflows to or outflows from each aquifer, depending on hydrogeologic conditions that vary over time (e.g., hydraulic gradients).

b The Shallow Alluvial Deposits is the sole hydrostratigraphic unit in Mound Basin with saturated conditions consistently shallow enough to be significantly affected by evapotranspiration.

c Tile drains are only known or suspected to be present in the Shallow Alluvial Deposits in Mound Basin.

d Within Mound Basin, the sole hydrostratigraphic unit known or suspected to be in direct hydraulic communication with the Santa Clara River is the Shallow Alluvial Deposits.

e United (2021) modeled Harmon Barranca using MODFLOW's "Stream package," as described in Section 3.3 of this report, allowing the model to simulate direct hydraulic communication with the Shallow Alluvial Deposits and the fine-grained Pleistocene deposits.

f Positive values for groundwater released from storage represent inflows to an aquifer, same as all other components on this page. Inflow of groundwater from storage is associated with declining groundwater levels (or potentiometric heads) in that aquifer. Negative values are associated with increasing groundwater-levels (or potentiometric-heads), as a result of groundwater being "added to storage."

g Although the fine-grained Pleistocene deposits in Mound Basin are not considered a principal aquifer due to their low hydraulic conductivity, they have a substantial thickness and are stratigraphically adjacent to the Oxnard Aquifer in the Oxnard Basin (see Section 3.1 for more information). The fine-grained Pleistocene deposits are included in this table for completeness in depicting the groundwater budget for Mound Basin

h To provide a complete and balanced water budget (the sum of water-budget components for all units should be zero), the values shown in this row include both the Hueneme Aquifer and the overlying Mugu-Hueneme aquitard, which is thin and has low hydraulic conductivity. For these reasons, inflows and outflows from the aquitard are small compared to those from the aquifer.

i To provide a complete and balanced water budget (the sum of water-budget components for all units should be zero), the values shown in this row include the Fox Canyon Aquifer (main and basal) and the overlying and intervening aquitards, which are thin and have low hydraulic conductivity. For these reasons, inflows and outflows from the aquitards are small compared to those from the aquifer.

j See Section 3.3 for an explanation of how water-year types were classified in this report.

Table 3.3-13 Mound Basin Projected Groundwater Inflows and Outflows by Water Year, 2070 Climate Change and Sea Level Rise Factors.

			Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Groundwater Inflow and Outflow Components (acre-feet per year)[e]					Summary (acre-feet per year)			All Aquifers Combined			Mugu Aquifer				Hueneme Aquifer			
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)	Mountain-Front Recharge	Evapo-transpiration[c]	Groundwater Extraction (pumping from wells)	Discharge of Groundwater to Tile Drains[d]	Groundwater/ Surface Water Interaction in the Santa Clara River[f]	Groundwater/ Surface Water Interaction in Harmon Barranca[g]	Groundwater Underflow to/from Santa Paula Basin	Groundwater Underflow to/from Oxnard Basin	Groundwater Underflow to/from Offshore (south and west of the coastline)	Sum of Inflows	Sum of Outflows	Groundwater Released from Storage per Water Year[h]	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year
Implementation Period (water years 2022 through 2041)																											
2022	1945	11.93	3,027	2,753	-855	-8,131	0	1,420	14	4,049	4,131	-4,760	15,395	-13,746	-1,649	3,445	3,445	1,649	586	586	147	147	1,563	1,563	1,226	1,226
2023	1946	10.57	2,547	1,699	-860	-8,818	0	1,335	8	3,996	5,038	-4,655	14,622	-14,334	-288	-256	3,189	1,937	57	643	118	266	-76	1,487	343	1,569
2024	1947	10.28	2,786	1,831	-894	-7,651	0	1,275	12	3,979	4,007	-4,830	13,890	-13,374	-516	567	3,756	2,454	59	702	34	299	271	1,758	625	2,194
2025	1948	6.37	2,155	652	-682	-8,429	0	38	2	4,116	-433	-3,295	6,962	-12,839	5,877	-4,569	-813	-3,423	-329	372	-637	-337	-82	1,676	-621	1,573
2026	1949	7.89	2,382	849	-480	-8,626	0	35	0	4,215	-1,438	-2,254	7,481	-12,798	5,315	-4,837	-5,650	-8,738	-711	-339	-737	-1,074	-819	857	-1,055	518
2027	1950	14.11	2,798	1,522	-375	-7,733	0	55	7	4,229	-1,244	-1,792	8,610	-11,144	2,533	-2,963	-8,613	-11,272	-503	-842	-489	-1,563	-658	199	-492	26
2028	1951	7.07	2,162	607	-344	-8,964	0	13	2	4,448	-2,786	-1,053	7,232	-13,147	5,910	-6,139	-14,752	-17,182	-1,086	-1,928	-1,296	-2,859	-1,087	-888	-1,098	-1,072
2029	1952	26.82	4,816	5,123	-589	-7,843	0	3,067	36	4,113	4,843	-2,707	21,998	-11,139	-10,861	7,290	-7,462	-6,321	484	-1,444	1,993	-866	1,785	897	1,018	-54
2030	1953	10.75	2,511	1,305	-470	-7,752	0	734	3	4,134	3,248	-3,138	11,936	-11,360	-575	3,491	-3,972	-5,746	1,419	-24	354	-513	-817	80	781	727
2031	1954	16.13	3,274	2,562	-448	-8,006	0	1,092	14	4,016	1,631	-2,949	12,590	-11,403	-1,187	1,057	-2,915	-4,559	-162	-187	3	-510	1,557	1,636	228	955
2032	1955	12.49	2,839	1,587	-400	-8,305	0	554	7	4,064	562	-2,667	9,613	-11,371	1,757	-2,830	-5,744	-6,316	-159	-345	-228	-738	-1,072	564	-166	790
2033	1956	16.88	3,180	2,195	-430	-7,718	0	871	13	4,043	1,371	-2,663	11,673	-10,810	-863	775	-4,970	-5,453	-39	-384	54	-684	149	714	281	1,071
2034	1957	10.35	2,609	1,503	-408	-8,873	0	804	7	4,108	-159	-2,569	9,030	-12,010	2,978	-955	-5,925	-8,432	-136	-520	-410	-1,094	53	767	-542	528
2035	1958	29.83	4,745	5,377	-799	-6,607	-3	3,507	33	3,803	7,261	-4,450	24,727	-11,859	-12,869	6,227	302	4,437	195	-325	1,219	126	2,088	2,855	1,911	2,440
2036	1959	7.32	2,245	1,534	-823	-8,861	0	1,165	6	3,813	3,422	-4,605	12,186	-14,289	2,104	4,376	4,679	2,333	918	592	-1	124	-445	2,409	97	2,537
2037	1960	12.38	2,685	1,416	-633	-8,068	0	819	5	3,887	1,451	-4,091	10,262	-12,792	2,530	-2,203	2,476	-196	-126	466	-278	-154	27	2,436	-206	2,331
2038	1961	6.72	2,089	873	-418	-8,849	0	36	4	4,043	-494	-2,908	7,046	-12,669	5,623	-5,678	-3,202	-5,819	-576	-110	-641	-795	-979	1,457	-744	1,586
2039	1962	27.90	4,320	4,436	-689	-6,764	0	2,157	-3	3,924	4,590	-3,821	19,427	-11,278	-8,149	5,957	2,755	2,330	59	-51	701	-93	1,918	3,375	973	2,560
2040	1963	13.20	2,843	1,783	-607	-8,204	0	813	9	3,922	5,251	-3,992	14,622	-12,804	-1,818	512	3,266	4,148	477	426	360	267	-691	2,684	342	2,901
2041	1964	8.31	2,361	928	-478	-8,835	0	40	1	3,890	449	-3,270	7,670	-12,583	4,913	-1,560	1,707	-765	-35	391	-512	-245	-342	2,342	-548	2,353
Average:		*13.37*	*2,919*	*2,027*	*-584*	*-8,152*	*0*	*992*	*9*	*4,040*	*2,035*	*-3,323*	*12,349*	*-12,387*	*38*	*85*	*-1,922*	*-3,247*	*20*	*-116*	*-12*	*-515*	*117*	*1,443*	*118*	*1,338*
Sustaining Period (water years 2042 through 2071)																											
2042	1965	14.57	2,710	1,616	-455	-8,069	0	842	9	3,904	448	-3,368	9,529	-11,892	2,362	-4,740	-3,033	-3,127	-523	-131	-354	-599	-745	1,597	-480	1,873
2043	1966	15.79	3,537	3,078	-723	-8,197	0	2,308	21	3,789	6,211	-4,450	18,944	-13,370	-5,574	7,243	4,210	2,447	496	364	659	59	736	2,333	529	2,402
2044	1967	18.65	3,791	4,042	-772	-7,840	0	3,044	20	3,589	5,959	-5,460	20,444	-14,071	-6,373	4,401	8,611	8,819	373	738	352	411	1,189	3,523	1,193	3,595
2045	1968	13.34	2,943	1,665	-891	-7,591	0	953	10	3,650	3,965	-5,249	13,186	-13,731	545	1,821	10,432	8,275	132	869	7	419	453	3,976	228	3,824
2046	1969	25.72	4,643	5,563	-1,091	-7,628	-137	3,504	33	3,647	3,934	-6,395	21,324	-15,251	-6,073	6,753	17,185	14,348	158	1,027	135	553	2,548	6,524	1,585	5,409
2047	1970	16.37	2,852	1,787	-915	-8,401	0	988	9	3,700	3,783	-5,717	13,119	-15,033	1,913	-1,900	15,285	12,434	-53	974	-52	502	-683	5,841	-571	4,838
2048	1971	13.80	2,957	2,277	-961	-7,839	0	1,322	15	3,639	3,600	-6,036	13,810	-14,836	1,026	-1,429	13,856	11,409	-73	900	-53	449	-752	5,089	13	4,851
2049	1972	7.66	2,361	1,430	-947	-8,537	0	1,132	10	3,737	3,742	-5,465	12,413	-14,949	2,535	-2,783	11,073	8,873	-81	820	-59	390	-829	4,259	-509	4,343
2050	1973	22.47	3,997	4,311	-902	-7,121	-3	2,340	27	3,497	3,920	-5,856	18,091	-13,881	-4,210	4,680	15,754	13,083	113	933	110	501	2,187	6,447	788	5,131
2051	1974	15.65	3,108	2,408	-952	-7,705	0	1,345	16	3,530	3,833	-5,850	14,239	-14,506	267	-597	15,156	12,816	45	978	18	519	-774	5,672	-26	5,105
2052	1975	15.87	3,157	2,758	-909	-7,535	0	1,797	16	3,545	3,786	-6,017	15,057	-14,461	-597	315	15,472	13,413	-29	949	4	523	207	5,879	137	5,242
2053	1976	16.13	3,658	3,243	-1,011	-7,986	0	1,448	23	3,664	3,561	-5,565	15,596	-14,563	-1,034	-3,468	12,004	14,447	-137	812	43	566	-1,177	4,702	1,086	6,328
2054	1977	11.55	2,631	1,589	-861	-8,478	0	693	7	3,460	3,228	-5,330	11,609	-14,670	3,061	1,301	13,305	11,386	2	815	-172	394	219	4,921	-1,523	4,805
2055	1978	37.23	6,167	7,317	-1,100	-7,621	-93	3,351	54	3,298	3,902	-6,719	24,089	-15,533	-8,556	9,034	22,339	19,942	295	1,109	218	612	3,979	8,900	2,379	7,184
2056	1979	20.33	4,038	3,826	-954	-7,691	-12	1,750	24	3,349	3,064	-6,905	16,050	-15,562	-487	2,034	24,372	20,429	-47	1,062	8	619	266	9,166	329	7,513
2057	1980	27.96	4,641	4,708	-1,056	-7,287	-50	2,014	36	3,327	2,800	-7,294	17,527	-15,687	-1,840	2,112	26,484	22,269	115	1,177	40	660	795	9,962	700	8,213
2058	1981	13.18	2,851	1,995	-964	-8,087	0	928	11	3,471	2,895	-6,468	12,151	-15,519	3,368	-4,279	22,205	18,901	-152	1,026	-92	568	-1,580	8,382	-1,127	7,086
2059	1982	12.47	2,945	1,978	-873	-8,599	0	1,485	8	3,518	3,839	-6,140	13,773	-15,612	1,838	-3,449	18,756	17,063	-59	967	9	577	-1,626	6,756	-969	6,117
2060	1983	32.62	5,798	6,434	-1,075	-8,281	-72	2,911	44	3,177	3,267	-7,132	21,631	-16,560	-5,089	7,187	25,943	22,152	232	1,199	49	627	2,929	9,685	1,598	7,715
2061	1984	9.08	2,620	1,591	-1,004	-7,895	0	120	8	3,478	3,080	-6,119	10,898	-15,017	4,120	-5,028	20,915	18,032	-221	978	-62	565	-2,534	7,151	-996	6,720
2062	1985	11.33	2,464	1,206	-902	-7,726	0	179	3	3,642	2,967	-5,315	10,462	-13,943	3,481	-3,355	17,560	14,551	17	995	-65	500	-857	6,293	-1,022	5,698
2063	1986	27.53	4,539	4,370	-896	-6,785	-5	2,317	29	3,475	3,339	-6,331	18,069	-14,015	-4,054	3,152	20,712	18,605	30	1,025	113	613	1,356	7,649	863	6,561
2064	1987	7.25	2,185	454	-876	-9,670	0	154	0	3,706	3,245	-4,903	9,745	-15,449	5,704	-4,608	16,104	12,901	-92	933	-203	410	-2,179	5,470	-1,723	4,838
2065	1988	12.92	2,879	1,790	-805	-7,259	0	153	5	3,656	3,854	-4,676	12,337	-12,740	403	-2,431	13,673	12,498	-70	863	77	487	-804	4,666	-240	4,598
2066	1989	8.03	2,172	951	-745	-7,873	0	72	4	3,803	1,941	-4,382	8,942	-12,999	4,057	-2,622	11,051	8,441	-90	773	-240	247	-575	4,091	-540	4,058

			Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Groundwater Inflow and Outflow Components (acre-feet per year)[e]					Summary (acre-feet per year)			All Aquifers Combined			Mugu Aquifer				Hueneme Aquifer			
Projected Water Year	Analogous Historical Water Year[a]	Assumed Annual Rainfall at Ventura County Govt. Center (inches)[b]	Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)	Mountain-Front Recharge	Evapo-transpiration[c]	Groundwater Extraction (pumping from wells)	Discharge of Groundwater to Tile Drains[d]	Groundwater/ Surface Water Interaction in the Santa Clara River[f]	Groundwater/ Surface Water Interaction in Harmon Barranca[g]	Groundwater Underflow to/from Santa Paula Basin	Groundwater Underflow to/from Oxnard Basin	Groundwater Underflow to/from Offshore (south and west of the coastline)	Sum of Inflows	Sum of Outflows	Groundwater Released from Storage per Water Year[h]	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year	Annual Change in Spring-high Storage	Cumulative Change in Spring-high Storage	Annual Change in Storage per Water Year	Cumulative Change in Storage per Water Year
2067	1990	6.17	1,869	806	-530	-8,284	0	55	1	3,939	-216	-3,760	6,671	-12,791	6,120	-5,656	5,396	2,321	-433	340	-599	-352	-948	3,143	-993	3,066
2068	1991	17.24	3,341	3,176	-622	-8,246	0	1,882	25	3,948	2,877	-3,850	15,249	-12,717	-2,532	-112	5,284	4,853	-421	-80	147	-204	1,064	4,207	-152	2,913
2069	1992	21.67	4,418	4,666	-872	-7,636	0	2,777	33	3,672	6,136	-5,189	21,702	-13,698	-8,004	8,903	14,187	12,856	728	647	621	417	1,332	5,539	1,317	4,230
2070	1993	30.48	4,795	5,691	-1,143	-7,118	-128	3,730	39	3,469	3,590	-6,946	21,315	-15,335	-5,980	8,440	22,627	18,837	500	1,147	193	609	2,307	7,846	2,128	6,358
2071	1994	11.88	2,631	1,667	-884	-8,134	0	1,035	9	3,613	3,505	-5,960	12,461	-14,977	2,516	-3,780	18,847	16,321	-133	1,014	-55	554	-1,506	6,339	-640	5,718
Average:		*17.16*	*3,423*	*2,946*	*-890*	*-7,904*	*-17*	*1,554*	*18*	*3,596*	*3,469*	*-5,628*	*15,014*	*-14,446*	*-570*	*571*	*15,192*	*12,986*	*21*	*841*	*27*	*407*	*133*	*5,867*	*112*	*5,211*
Post-SGMA period (water years 2072 through 2096)																										
2072	1995	32.33	5,153	5,901	-1,063	-7,570	-63	2,638	-38	3,574	3,285	-6,867	20,552	-15,601	-4,950	6,149	24,997	21,271	198	1,212	105	659	2,563	8,903	1,523	7,242
2073	1996	13.03	3,038	2,202	-896	-8,677	0	941	13	3,570	3,183	-6,259	12,947	-15,831	2,884	-2,905	22,091	18,387	-120	1,092	-110	549	-1,321	7,582	-897	6,345
2074	1997	15.40	3,333	2,892	-1,005	-7,609	0	1,538	17	3,514	3,398	-6,707	14,692	-15,321	629	-1,326	20,765	17,758	-105	987	6	556	-589	6,992	-30	6,315
2075	1998	44.22	6,525	7,785	-1,118	-6,080	-121	3,333	-184	3,408	2,164	-7,573	23,215	-15,076	-8,139	7,932	28,697	25,896	177	1,164	131	686	3,639	10,631	2,710	9,024
2076	1999	10.62	2,308	804	-866	-8,436	0	189	1	3,600	2,735	-5,935	9,638	-15,237	5,599	-5,928	22,769	20,297	-139	1,026	-89	597	-2,927	7,704	-1,888	7,137
2077	2000	18.57	3,387	2,664	-875	-8,192	0	1,213	17	3,558	3,138	-6,064	13,977	-15,132	1,155	-1,204	21,566	19,143	37	1,063	-37	560	-266	7,438	-571	6,566
2078	2001	23.94	4,183	4,234	-910	-8,299	-16	1,740	29	3,402	3,482	-6,466	17,070	-15,691	-1,379	2,643	24,208	20,522	35	1,097	28	588	1,285	8,724	416	6,982
2079	2002	5.98	2,023	494	-854	-8,814	0	112	1	3,667	2,830	-5,152	9,128	-14,821	5,693	-6,403	17,805	14,829	-179	918	-167	421	-2,934	5,789	-1,574	5,409
2080	2003	17.72	3,734	2,877	-817	-7,437	0	1,039	17	3,528	3,857	-5,470	15,052	-13,725	-1,328	364	18,169	16,157	12	930	97	518	217	6,006	-76	5,332
2081	2004	11.41	2,475	1,535	-883	-8,210	0	725	9	3,633	2,811	-5,337	11,187	-14,431	3,243	-2,199	15,970	12,913	-62	868	-127	391	-809	5,197	-638	4,694
2082	2005	36.72	6,068	7,586	-1,095	-6,426	-189	3,710	57	3,397	3,370	-7,157	24,190	-14,867	-9,322	10,319	26,289	22,236	272	1,141	238	630	3,878	9,075	2,684	7,378
2083	2006	16.16	3,155	2,659	-810	-7,679	-1	1,446	14	3,514	3,170	-6,488	13,957	-14,978	1,021	-3,975	22,314	21,215	-126	1,015	5	635	-1,647	7,428	-381	6,998
2084	2007	5.86	1,856	208	-910	-8,980	0	127	0	3,749	3,258	-5,426	9,199	-15,317	6,118	-4,730	17,583	15,097	-75	940	-154	480	-1,784	5,644	-1,633	5,365
2085	2008	12.64	3,101	2,604	-918	-8,446	-3	1,662	16	3,644	3,905	-5,819	14,932	-15,186	254	9	17,593	14,843	25	964	1	481	-98	5,546	-359	5,006
2086	2009	9.59	2,427	1,321	-863	-8,236	0	938	6	3,720	3,461	-5,225	11,873	-14,323	2,450	-2,677	14,916	12,393	-93	872	-62	419	-925	4,620	-568	4,438
2087	2010	17.19	3,459	3,026	-828	-7,691	0	1,515	15	3,494	4,166	-5,450	15,674	-13,969	-1,705	1,138	16,053	14,097	-15	857	47	466	530	5,151	99	4,537
2088	2011	17.89	4,002	3,775	-817	-7,266	-5	1,791	25	3,452	3,961	-5,976	17,004	-14,064	-2,940	3,762	19,816	17,037	164	1,021	100	566	1,312	6,462	877	5,415
2089	2012	8.96	2,054	444	-891	-8,865	0	136	0	3,765	3,486	-4,893	9,885	-14,649	4,765	-5,774	14,041	12,273	-149	872	-154	412	-2,098	4,365	-1,076	4,339
2090	2013	5.70	2,591	1,384	-801	-7,660	0	75	7	3,736	1,561	-4,436	9,354	-12,898	3,544	-1,829	12,212	8,729	-74	797	-253	160	-445	3,920	-376	3,962
2091	2014	6.33	2,408	1,563	-706	-8,580	0	519	6	3,832	92	-4,119	8,419	-13,405	4,986	-5,012	7,200	3,743	-584	213	-568	-408	-426	3,494	-960	3,002
2092	2015	9.62	2,514	1,098	-429	-7,897	0	39	4	3,990	-536	-2,869	7,645	-11,731	4,086	-4,662	2,538	-343	-415	-202	-445	-853	-965	2,530	-699	2,303
2093	2016	8.36	2,916	2,027	-351	-8,239	0	295	12	3,956	-462	-2,881	9,206	-11,932	2,725	-2,791	-253	-3,069	-426	-627	-406	-1,259	-282	2,247	-626	1,676
2094	2017	22.47	3,850	3,849	-556	-7,712	0	2,219	24	3,851	2,577	-3,573	16,370	-11,841	-4,529	4,182	3,929	1,460	299	-328	590	-669	1,194	3,442	527	2,203
2095	2018	7.16	3,013	2,050	-390	-8,258	0	588	11	3,946	-1,087	-3,097	9,607	-12,831	3,223	-2,502	1,426	-1,763	-148	-476	-440	-1,109	-653	2,789	-327	1,876
2096	2019	21.95	3,800	3,849	-671	-7,447	0	2,886	24	3,860	5,079	-4,212	19,498	-12,330	-7,169	4,496	5,922	5,405	292	-184	970	-139	899	3,688	787	2,663
Average:		*15.99*	*3,335*	*2,753*	*-813*	*-7,948*	*-16*	*1,257*	*4*	*3,654*	*2,675*	*-5,338*	*13,771*	*-14,207*	*437*	*-517*	*15,945*	*13,221*	*-48*	*689*	*-28*	*213*	*-106*	*5,815*	*-122*	*5,048*
Average 2022-2096:		***15.76***	***3,259***	***2,637***	***-783***	***-7,985***	***-12***	***1,305***	***11***	***3,734***	***2,822***	***-4,917***	***13,889***	***-13,817***	***-72***	***79***	***10,879***	***8,736***	***-2***	***535***	***-2***	***96***	***49***	***4,670***	***36***	***4,124***

Notes

N/A = Not applicable

Positive values represent inflows to the Mound Basin negative numbers represent outflows from the basin.

a The representative historical water year used as the basis for assumptions regarding rainfall and surface flows about future years, as described in Section 3.3.

b See Section 3.3 for an explanation of how water-year types were classified in this GSP.

c The Shallow Alluvial Deposits is modeled to be the sole hydrostratigraphic unit in Mound Basin with saturated conditions consistently shallow enough to be significantly affected by evapotranspiration.

d Tile drains are only known or suspected to be present in the Shallow Deposits Aquifer in Mound Basin.

e These components can comprise either net inflows to or outflows from each aquifer, depending on hydrogeologic conditions that vary over time (e.g., hydraulic gradients).

f Within Mound Basin, the sole hydrostratigraphic unit known or suspected to be in direct hydraulic communication with the Santa Clara River is the Shallow Alluvial Deposits.

g United (2021) modeled Harmon Barranca using MODFLOW's ""Stream package,"" as described in Section 3.3 of this report, allowing the model to simulate direct hydraulic communication with the Shallow Alluvial Deposits, as well as with the fine-grained Pleistocene deposits."

h Water-year changes in storage are calculated from October 1 of the preceding calendar year to September 30 of the indicated year. Positive values for groundwater released from storage represent inflows to the basin, same as all other components on this table. However, specific to this parameter, inflow of groundwater from storage is associated with declining groundwater levels (or potentiometric heads) in the basin. Negative values are associated with increasing groundwater-levels (or potentiometric heads), as a result of groundwater being "added to storage."

Table 3.3-14 Mound Basin Projected Average Groundwater Inflows and Outflows by Aquifer, 2070 Climate Change and Sea Level Rise Factors.

	Groundwater Inflows (acre-feet per year)		Groundwater Outflows (acre-feet per year)			Variable Groundwater Flow Components (acre-feet per year)[a]							Summary (acre-feet per year)		
Aquifer	**Areal Recharge (includes infiltration of precipitation, agricultural return flows, and M&I return flows)**	**Mountain-Front Recharge**	**Evapo-transpiration[b]**	**Groundwater Extraction**	**Discharge of Groundwater to Tile Drains[c]**	**Groundwater/ Surface Water Interaction in the Santa Clara River[d]**	**Groundwater/ Surface Water Interaction in Harmon Barranca[e]**	**Groundwater Underflow to/from Santa Paula Basin**	**Groundwater Underflow to/from Oxnard Basin**	**Groundwater Underflow to/from Offshore (south and west of the coastline)**	**Vertical Groundwater Flow to/from the Overlying Aquifer**	**Vertical Groundwater Flow to/from the Underlying Aquifer**	**Sum of Inflows**	**Sum of Outflows**	**Groundwater Released from Storage[f]**
Averages during Implementation Period (water years 2022 through 2041)															
Shallow Alluvial Deposits	2,338	0	-584	0	0	992	55	0	1,016	-3,000	N/A	-966	4,401	-4,550	149
Fine-grained Pleistocene deposits[g]	140	0	N/A	-7	N/A	N/A	78	7	1,362	-65	966	-2,548	2,552	-2,619	67
Mugu Aquifer	0	0	N/A	-2,175	N/A	N/A	0	223	1,353	-757	2,548	-1,204	4,123	-4,136	12
Hueneme Aquifer[h]	441	2,027	N/A	-5,340	N/A	N/A	-123	2,036	-739	458	1,204	155	6,319	-6,202	-118
Fox Canyon Aquifer[i]	0	0	N/A	-630	N/A	N/A	0	1,774	-957	41	-155	N/A	1,815	-1,742	-73
Basin Total:	***2,919***	***2,027***	***-584***	***-8,152***	***0***	***992***	***9***	***4,040***	***2,035***	***-3,323***	***4,563***	***-4,563***	***19,211***	***-19,250***	***38***
Averages during Sustaining Period (water years 2042 through 2071)															
Shallow Alluvial Deposits	2,684	0	-890	0	-17	1,554	133	0	1,533	-3,875	N/A	-1,031	5,904	-5,813	-91
Fine-grained Pleistocene deposits[g]	169	0	N/A	-5	N/A	N/A	143	8	1,648	-120	1,031	-2,657	2,998	-2,782	-216
Mugu Aquifer	0	0	N/A	-2,089	N/A	N/A	0	186	1,809	-1,536	2,657	-1,001	4,652	-4,626	-27
Hueneme Aquifer[h]	571	2,946	N/A	-5,186	N/A	N/A	-258	1,750	-679	31	1,001	-64	6,298	-6,187	-112
Fox Canyon Aquifer[i]	0	0	N/A	-624	N/A	N/A	0	1,653	-842	-128	64	N/A	1,717	-1,594	-123
Basin Total:	***3,423***	***2,946***	***-890***	***-7,904***	***-17***	***1,554***	***18***	***3,596***	***3,469***	***-5,628***	***4,754***	***-4,754***	***21,570***	***-21,001***	***-570***
Averages during post-SGMA period (water years 2072 through 2096)															
Shallow Alluvial Deposits	2,624	0	-813	0	-16	1,257	124	0	1,476	-3,711	N/A	-1,019	5,481	-5,559	78
Fine-grained Pleistocene deposits[g]	165	0	N/A	-5	N/A	N/A	140	7	1,408	-110	1,019	-2,738	2,739	-2,852	113
Mugu Aquifer	0	0	N/A	-2,094	N/A	N/A	0	208	1,446	-1,420	2,738	-906	4,392	-4,420	28
Hueneme Aquifer[h]	546	2,753	N/A	-5,223	N/A	N/A	-260	1,772	-778	34	906	127	6,139	-6,262	122
Fox Canyon Aquifer[i]	0	0	N/A	-627	N/A	N/A	0	1,667	-877	-132	-127	N/A	1,667	-1,763	95
Basin Total:	***3,335***	***2,753***	***-813***	***-7,948***	***-16***	***1,257***	***4***	***3,654***	***2,675***	***-5,338***	***4,536***	***-4,536***	***20,418***	***-20,855***	***437***

Notes

N/A = Not applicable.

Positive values represent inflows to an aquifer; negative numbers represent outflows from an aquifer.

a These components can comprise either net inflows to or outflows from each aquifer, depending on hydrogeologic conditions that vary over time (e.g., hydraulic gradients).

b The Shallow Alluvial Deposits is the sole hydrostratigraphic unit in Mound Basin with saturated conditions consistently shallow enough to be significantly affected by evapotranspiration.

c Tile drains are only known or suspected to be present in the Shallow Alluvial Deposits in Mound Basin.

d Within Mound Basin, the sole hydrostratigraphic unit known or suspected to be in direct hydraulic communication with the Santa Clara River is the Shallow Alluvial Deposits.

e United (2021) modeled Harmon Barranca using MODFLOW's "Stream package," as described in Section 3.3 of this report, allowing the model to simulate direct hydraulic communication with the Shallow Alluvial Deposits and the fine-grained Pleistocene deposits.

f Positive values for groundwater released from storage represent inflows to an aquifer, same as all other components on this page. Inflow of groundwater from storage is associated with declining groundwater levels (or potentiometric heads) in that aquifer. Negative values are associated with increasing groundwater-levels (or potentiometric-heads), as a result of groundwater being "added to storage."

g Although the fine-grained Pleistocene deposits in Mound Basin are not considered a principal aquifer due to their low hydraulic conductivity, they have a substantial thickness and are stratigraphically adjacent to the Oxnard Aquifer in the Oxnard Basin (see Section 3.1 for more information). The fine-grained Pleistocene deposits are included in this table for completeness in depicting the groundwater budget for Mound Basin

h To provide a complete and balanced water budget (the sum of water-budget components for all units should be zero), the values shown in this row include both the Hueneme Aquifer and the overlying Mugu-Hueneme aquitard, which is thin and has low hydraulic conductivity. For these reasons, inflows and outflows from the aquitard are small compared to those from the aquifer.

i To provide a complete and balanced water budget (the sum of water-budget components for all units should be zero), the values shown in this row include the Fox Canyon Aquifer (main and basal) and the overlying and intervening aquitards, which are thin and have low hydraulic conductivity. For these reasons, inflows and outflows from the aquitards are small compared to those from the aquifer.

j See Section 3.3 for an explanation of how water-year types were classified in this report.

Tables

Section 4

Table 4.1-01 Sustainable Mangement Criteria for the Chronic Lowering of Groundwater Levels and Land Subsidence Sustainability Indicators.

State Well Identification Number	Aquifers Monitored	Frequency of Groundwater Elevation Measurement 2015-2020	Basin Half	Land Subsidence MT (ft amsl)	Land Subsidence MO (ft amsl)	Chronic Lowering of GW Levels MT (ft amsl)	Chronic Lowering of GW Levels MO (ft amsl)	IM 5-year (ft amsl)	IM 10-year (ft amsl)	IM 15-year (ft amsl)	IM 20-year (ft amsl)
02N22W08G01S	Mugu	Monthly	Eastern	≥ 0.1 ft/yr*	≥ 0.1 ft/yr*	-20.39	5.21	-13.99	-7.59	-1.19	5.21
02N22W08P01S	Mugu	Quarterly	Eastern	≥ 0.1 ft/yr*	≥ 0.1 ft/yr*	-16.11	7.93	-10.10	-4.09	1.92	7.93
02N22W07M02S	Mugu	Monthly	Western	-19.77	1.00	-19.77	1.00	-14.58	-9.38	-4.19	1.00
02N22W07P01S	Mugu	Monthly	Western	-21.00	0.88	-21.00	0.88	-15.53	-10.06	-4.59	0.88
02N22W19M04S	Mugu	Bimonthly	Western	-64.19	-43.98	-64.19	-43.98	-59.14	-54.08	-49.03	-43.98
02N23W15J02S	Mugu	Monthly	Western	-18.64	-0.96	-18.64	-0.96	-14.22	-9.80	-5.38	-0.96
TBD	Mugu	Quarterly	Western	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
TBD	Mugu	Quarterly	Western	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
TBD	Mugu	Quarterly	Western	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
02N22W09K04S	Hueneme	Monthly	Eastern	≥ 0.1 ft/yr*	≥ 0.1 ft/yr*	-32.41	-10.31	-26.88	-21.36	-15.83	-10.31
02N22W09L03S	Hueneme	Monthly	Eastern	≥ 0.1 ft/yr*	≥ 0.1 ft/yr*	28.27	50.37	33.80	39.32	44.85	50.37
02N22W09L04S	Hueneme	Monthly	Eastern	≥ 0.1 ft/yr*	≥ 0.1 ft/yr*	42.28	64.39	47.81	53.34	58.86	64.39
02N22W10N03S	Hueneme	Bimonthly	Eastern	≥ 0.1 ft/yr*	≥ 0.1 ft/yr*	-38.20	-15.40	-32.50	-26.80	-21.10	-15.40
02N22W16K01S	Hueneme	Quarterly	Eastern	≥ 0.1 ft/yr*	≥ 0.1 ft/yr*	-56.09	-33.73	-50.50	-44.91	-39.32	-33.73
02N22W17Q05S	Hueneme	Bimonthly	Eastern	≥ 0.1 ft/yr*	≥ 0.1 ft/yr*	-66.73	-45.48	-61.42	-56.11	-50.79	-45.48
02N22W07M01S	Hueneme	Monthly	Western	-25.21	-4.59	-25.21	-4.59	-20.06	-14.90	-9.75	-4.59
02N22W17M02S	Hueneme	Bimonthly	Western	-18.76	2.51	-18.76	2.51	-13.44	-8.12	-2.81	2.51
02N22W20E01S	Hueneme	Monthly	Western	-72.79	-51.82	-72.79	-51.82	-67.55	-62.31	-57.07	-51.82
02N23W13K03S	Hueneme	Quarterly	Western	-34.23	-14.44	-34.23	-14.44	-29.28	-24.33	-19.39	-14.44
02N23W13K04S	Hueneme	Quarterly	Western	-25.60	-5.81	-25.60	-5.81	-20.65	-15.71	-10.76	-5.81
02N23W15J01S	Hueneme	Monthly	Western	-25.86	-7.30	-25.86	-7.30	-21.22	-16.58	-11.94	-7.30
02N23W24G01S	Hueneme	Quarterly	Western	-22.30	-3.21	-22.30	-3.21	-17.53	-12.75	-7.98	-3.21
TBD	Hueneme	Quarterly	Western	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
TBD	Hueneme	Quarterly	Western	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
TBD	Hueneme	Quarterly	Western	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Notes:

GW = Groundwater
MT = Minimum Threshold
MO = Measurable Objective
IM = Interim Measure
SMC = Sustainable Management Criteria
TBD = SMC to be determined following future monitoring well construction and data collection
* MT/MO based on land subsidence measurements

Table 4.1-02 Water Quality Minimum Thresholds and Measurable Objectives.

Constituent	MCL (mg/L)	Sec. MCL (R/U/ST)[1] (mg/L)	RWQCB WQO (mg/L)	Average Conc. Representative Monitoring Wells Last 10 Years (mg/l)	Proposed MT[2] (mg/L)	MT Rationale	Proposed MO[3] (mg/L)	MO Rationale
Mugu Aquifer								
Nitrate	45	N/A	45	Non-Detect	45	Protect water quality for potable uses.	5	Preserve existing water quality for potable uses.
TDS	N/A	500/1,000/1,500	1,200	902	1,200	Protect agricultural, municipal, and industrial beneficial uses consistent with RWQCB WQOs.	1,000	Preserve existing water quality for agricultural, municipal, and industrial beneficial uses. MO is set at Upper Consumer Acceptance Level to support potable uses.
Sulfate	N/A	250/500/600	600	350	600	Protect municipal beneficial use consistent with RWQCB WQOs and prevent exceedances of Short-Term Consumer Acceptance Level.	500	Preserve existing water quality for municipal beneficial use. MO is set at Upper Consumer Acceptance Level to support potable uses.
Chloride	N/A	250/500/600	150	50	150	Protect agricultural beneficial use consistent with RWQCB WQOs.	75	Preserve existing water quality for agricultural beneficial use. MO is selected to preserve existing water quality.
Boron	N/A	N/A	1	0.47	1	Protect agricultural beneficial use consistent with RWQCB WQOs.	0.75	Preserve existing water quality for agricultural beneficial use. MO is selected to preserve existing water quality.

Constituent	MCL (mg/L)	Sec. MCL (R/U/ST)[1] (mg/L)	RWQCB WQO (mg/L)	Average Conc. Representative Monitoring Wells Last 10 Years (mg/l)	Proposed MT[2] (mg/L)	MT Rationale	Proposed MO[3] (mg/L)	MO Rationale
Hueneme Aquifer								
Nitrate	45	N/A	45	Non-Detect	45	Protect water quality for potable uses.	5	Preserve existing water quality for potable uses.
TDS	N/A	500/1,000/1,500	1,200	1,171	1,400	Protect agricultural, municipal, and industrial beneficial uses. MT is 200 mg/L higher than RWQCB WQO based on current and historical data at representative monitoring wells (set at upper range of data from past ten years).	1,400	Preserve existing water quality for agricultural, municipal, and industrial beneficial uses.
Sulfate	N/A	250/500/600	600	488	600	Protect municipal beneficial use consistent with RWQCB WQOs and prevent exceedances of Short Term Consumer Acceptance Level.	600	Preserve existing water quality for municipal beneficial use.
Chloride	N/A	250/500/600	150	76	150	Protect agricultural beneficial use consistent with RWQCB WQOs.	100	Preserve existing water quality for agricultural beneficial use. MO is selected to preserve existing water quality.
Boron	N/A	N/A	1	0.62	1	Protect agricultural beneficial use consistent with RWQCB WQOs.	0.75	Preserve existing water quality for agricultural beneficial use. MO is selected to preserve existing water quality.

Notes:

1 Consumer Acceptance Levels, where R = Recommended, U = Upper, and ST = Short Term

2 Undesirable results are considered to occur when all representative monitoring wells in a principal aquifer exceed the minimum threshold concentration for a constituent for two consecutive years.

3 Sustainability Goal for degraded water quality for a given constituent is considered to be met when the two-year running average concentration for at least one representative monitoring well is below the measurable objective.

MCL = Maximum Concentration Limit.
mg/L = milligrams per liter.
MO = Measurable Objective.
MT = Minimum Threshold.

Table 4.1-03 Water Quality and Seawater Intrusion Minimum Thresholds and Measurable Objectives.

State Well Identification Number	Local Well Identifier	Aquifers Monitored	Frequency of Groundwater Quality Sampling 2015-2020	Measurement or Sampling Entity[d]	Degraded WQ Nitrate MT	Degraded WQ Nitrate MO	Degraded WQ TDS MT	Degraded WQ TDS MO	Degraded WQ Sulfate MT	Degraded WQ Sulfate MO	Degraded WQ Chloride MT	Degraded WQ Chloride MO	Degraded WQ Boron MT	Degraded WQ Boron MO	Seawater Intrusion Chloride MT	Seawater Intrusion Chloride MO	IM 5YR	IM 10YR	IM 15YR	IM 20YR	SMC Notes
02N22W08G01S	Mound #1	Mugu[e]	Monthly	City of Ventura	Not used - water quality is anomalous																
02N22W07M02S	CP-780	Mugu	Semiannually	United	45	5	1200	1000	600	500	150	75	1	0.75			Same as MOs	Same as MOs	Same as MOs	Same as MOs	
02N23W15J02S	MP-660	Mugu	Semiannually	United	45	5	1200	1000	600	500	150	75	1	0.75			Same as MOs	Same as MOs	Same as MOs	Same as MOs	
TBD	Site A	Mugu	Semiannually	TBD	45	5	1200	1000	600	500	150	75	1	1			Same as MOs	Same as MOs	Same as MOs	Same as MOs	Future Monitoring Well
TBD	Site B	Mugu	Semiannually	TBD	45	5	1200	1000	600	500	150	75	1	1	150	75	Same as MOs	Same as MOs	Same as MOs	Same as MOs	Future Monitoring Well
TBD	Site C	Mugu	Semiannually	TBD	45	5	1200	1000	600	500	150	75	1	1	150	75	Same as MOs	Same as MOs	Same as MOs	Same as MOs	Future Monitoring Well
02N22W08F01S	Victoria #2	Hueneme	Monthly	City of Ventura	Not used - water quality is anomalous																
02N22W09L03S	CWP-950	Hueneme	Semiannually	United	45	5	1400	1200	600	500	150	100	1	0.75			Same as MOs	Same as MOs	Same as MOs	Same as MOs	
02N22W09L04S	CWP-510	Hueneme	Semiannually	United	Not used - water quality is anomalous																
02N23W13F02S	---	Hueneme[f]	Annually	United	45	5	1400	1200	600	500	150	100	1	0.75			Same as MOs	Same as MOs	Same as MOs	Same as MOs	
02N22W07M01S	CP-1280	Hueneme	Semiannually	United	45	5	1400	1200	600	500	150	100	1	0.75			Same as MOs	Same as MOs	Same as MOs	Same as MOs	
02N23W13K03S	---	Hueneme	Annually	VCWPD	Not used - water quality is anomalous																
02N23W15J01S	MP-1070	Hueneme	Semiannually	United	45	5	1400	1200	600	500	150	100	1	0.75			Same as MOs	Same as MOs	Same as MOs	Same as MOs	
TBD	Site A	Hueneme	Semiannually	TBD	45	5	1400	1200	600	500	150	100	1	1			Same as MOs	Same as MOs	Same as MOs	Same as MOs	Future Monitoring Well
TBD	Site B	Hueneme	Semiannually	TBD	45	5	1400	1200	600	500	150	100	1	1	150	100	Same as MOs	Same as MOs	Same as MOs	Same as MOs	Future Monitoring Well
TBD	Site C	Hueneme	Semiannually	TBD	45	5	1400	1200	600	500	150	100	1	1	150	100	Same as MOs	Same as MOs	Same as MOs	Same as MOs	Future Monitoring Well

Notes:
MO = Measurable Objective.
MT = Minimum Threshold.
SMC = sustainable management criteria.
WQ = water quality.

Table 4.8-01. Land Subsidence Literature Review.

Reference	Title	Period of Observation	Subsidence Rate (in/yr)	Cumulative Subsidence (ft)	Reported Damage	Location
Leon et al., 2018	Land Subsidence and its Effects on the Urban Area of Tepic City, Mexico	2007 - 2011	2.4 - 2.8	Not reported	Surface cracking, sidewalks and planters; ruptured pipes and walls in houses. It is noted that the damage caused by this phenomenon has not been sufficiently noticeable to alarm governments or those affected.	Tepic City, Mexico
Dinary et al., 2020	Land Subsidence: The Forgotten Enigma of Groundwater (Over)Extraction	1950 - 1957(through early 1970s)	1.2	0.7	Subsidence exacerbated the impact of sea level rise including, delta, erosion, shoreline retreat, and morphological changes to spits and lagoons. Land uses were impacted by the combined effects of subsidence and sea level rise.	Po River delta, Italy
Dinary et al., 2020	Land Subsidence: The Forgotten Enigma of Groundwater (Over)Extraction	1993 - 2004, 2004 - 2008	Not reported	0.6	300 building complaints and estimated damages of nearly 50 million euro. Groundwater use is now managed to prevent more than 2 cm (0.8 inch) of subsidence per year.	Murcia, Spain
Dinary et al., 2020	Land Subsidence: The Forgotten Enigma of Groundwater (Over)Extraction	1987 - 1995	3.1	2.2	Ground fissuring that resulted in damage to existing infrastructure.	Chino Basin, California
He et al., 2019	Land Subsidence Control Zone and Policy for the Environmental Protection of Shanghai	Since ~1986	2.3	8.0	Increased risk of coastal hazards such as marine flooding, storm surges, and tsunamis.	Shanghai, China
Lawrence Berkeley National Laboratory, 1979	Environmental and Economic Effects of Subsidence	1948 - 1967	4.5	7.5 - 10	Ground fissuring increased maintenance on highways and railroads, disrupted ditch irrigation systems, increased erosion (along fissures), embankment failure at Picacho Reservoir, and impacted aqueduct routing. Well damage was also reported.	Arizona
Lawrence Berkeley National Laboratory, 1979	Environmental and Economic Effects of Subsidence	1924 - 1964	3	10	Minor sidewalk cracks and well damages. Differential movement on pre-existing faults a dam failure.	Baldwin Hills, California
Lawrence Berkeley National Laboratory, 1979	Environmental and Economic Effects of Subsidence	1906 - 1973	1.5	8.5	Damage to structures and cracks in roads and sewer systems associated with differential movement along pre-existing faults. Subsidence also cause shoreline retreatment in coastal areas.	Houston-Galveston, Texas
Lawrence Berkeley National Laboratory, 1979	Environmental and Economic Effects of Subsidence	1935- 1974	1.5	5	Ground fissuring damaged wells, reservoirs, pipelines, homes, roads, and railroads.	Las Vegas Valley,
Lawrence Berkeley National Laboratory, 1979	Environmental and Economic Effects of Subsidence	1934 - 1967	2.9	8	Well sewer, and bridge damages. Aggravated flood hazard.	Santa Clara Valley, CA
		Range:	1.2- 4.5 in/yr	0.6 – 10 ft		

Tables

Section 5

Table 5.3-01 Existing Monitoring Well Information.

State Well Identification Number	Local Well Identifier	CASGEM Master Site Code	Year Well Constructed	Easting Coordinate[a]	Northing Coordinate[a]	Ground Surface Elevation (feet msl)[b]	Reference Point Elevation (feet msl)[b]	Reference Point Description	Reported (Original) Well Use	Well Pumping Status	Well Configuration	Depth of Screened Interval(s) (feet bgs)[c,h]	Borehole Depth (feet bgs)[c]	Total Well (Casing) Depth (feet bgs)[c]	Casing Diameter (inches)	Aquifers Monitored	Frequency of Groundwater Elevation Measurement 2015-2020	Frequency of Groundwater Quality Sampling 2015-2020	Measurement or Sampling Entity[d]	Notes
02N22W07M02S	CP-780	342703N1192342W002	1995	6,188,662	1,922,431	164.56	164.06	Ground surface (flush-mount vault)	Monitoring	---	Cluster	710-780	790	790	2	Mugu	Monthly	Semiannually	United	
02N22W07P01S	---	not currently in CASGEM	2000	6,190,044	1,920,430	150 (approx.)	150.21	Top of casing cover plate (at 1/2" access hole)	Irrigation	Active	Single casing	460-580	580	580	10	Mugu	Monthly	---	United	Water quality is anomalous
02N22W08G01S	Mound #1	not currently in CASGEM	2000	6,196,790	1,923,509	260 (approx.)	261.61	Lip of sounder access port	Municipal Supply	Active	Single casing	580-650	720	660	18	Mugu[e]	Monthly	Monthly	City of Ventura	Water quality is anomalous
02N22W08P01S	---	342658N1192109W001	1932	6,195,769	1,921,338	215.29	213.79	Lip of sounder access port	Irrigation	Inactive	Single casing	160-321	364	321	10	Mugu	Quarterly	---	VCWPD	
02N22W19M04S	---	not currently in CASGEM	2004	6,188,984	1,912,787	48.18	49.68	Lip of 1" access port at base of pump pedestal	Irrigation	Active	Single casing	343-493	500	500	12	Mugu	Bimonthly	---	United	
02N23W15J02S	MP-660	342533N1192690W001	1995	6,178,364	1,917,108	8.73	8.23	Ground surface (flush-mount vault)	Monitoring	---	Cluster	480-660	660	660	2	Mugu	Monthly	Semiannually	United	
02N22W07M01S	CP-1280	342703N1192342W001	1995	6,188,662	1,922,431	164.56	164.06	Ground surface (flush-mount vault)	Monitoring	---	Cluster	1,200-1,280	1,280	1,280	2	Hueneme	Monthly	Semiannually	United	
02N22W08F01S	Victoria #2	not currently in CASGEM	1994	6,195,468	1,923,287	245 (approx.)	245.82	Lip of sounder access port	Municipal Supply	Active	Single casing	580-640, 900-940, 1,060-1,180	1,310	1,190	14	Hueneme	---	Monthly	City of Ventura	Water quality is anomalous
02N22W09K04S	---	342703N1191881W001	1935	6,202,524	1,922,919	244.89	244.49	Lip of 2" sounder access pipe	Irrigation	Inactive	Single casing	521-794	548	548	14	Hueneme	Monthly	---	United	
02N22W09L03S	CWP-950	342688N1191952W001	2008	6,200,555	1,922,367	253.25	251 .25	Lip of 2" PVC casing	Monitoring	---	Cluster	890-950	1,480	950	3	Hueneme	Monthly	Semiannually	United	
02N22W09L04S	CWP-510	342688N1191952W002	2008	6,200,555	1,922,367	253.25	251.25	Lip of 2" PVC casing	Monitoring	---	Cluster	480-510	510	510	2	Hueneme	Monthly	Semiannually	United	Water quality is anomalous
02N22W10N03S	Well 2	not currently in CASGEM	2002	6,205,442	1,921,235	185 (approx.)	187.07	Lip of 2" sounder access pipe	Irrigation	Active	Single casing	200-280	280	280	12	Hueneme	Bimonthly	---	United	
02N23W13F02S	---	not currently in CASGEM	1990	6,184,131	1,918,834	60 (approx.)	60.85	Lip of sounder access port	Irrigation	Active	Single casing	521-982	997	982	14	Hueneme[f]	---	Annually	United	
02N22W16K01S	---	342564N1191892W001	1934	6,202,316	1,917,850	150.74	149.37	Lip of sounder access port	Industrial	Active	Single casing	292-345	354	354	12	Hueneme	Quarterly	---	VCWPD	
02N22W17M02S	---	342555N1192173W001	2001	6,193,835	1,917,580	143.44	145.04	Lip of 2" sounder access pipe	Irrigation	Active	Single casing	550-850	853	850	14	Hueneme	Bimonthly	---	United	
02N22W17Q05S	---	342491N1192078W001	1965	6,196,677	1,915,235	88.60	89.60	Top of casing cover plate (at access hole)	Irrigation	Inactive	Single casing	365-483	506	500	not reported	Hueneme	Bimonthly	---	United	
02N22W20E01S	Olivas-Victoria	342459N1192169W001	1991	6,193,910	1,914,098	74.15	72.15	Lip of 1" access port at base of pump pedestal	Irrigation	Active	Single casing	462-592, 612-723, 737-818	818	818	10	Hueneme	Monthly	---	United	
02N23W13K03S	---	342552N1192422W001	1977	6,186,323	1,917,561	68.71	68.71	Lip of sounder access port	Irrigation	Active	Single casing	800-1,200	1,200	1,200	16	Hueneme	Quarterly	Annually	VCWPD	Water quality is anomalous

State Well Identification Number	Local Well Identifier	CASGEM Master Site Code	Year Well Constructed	Easting Coordinate[a]	Northing Coordinate[a]	Ground Surface Elevation (feet msl)[b]	Reference Point Elevation (feet msl)[b]	Reference Point Description	Reported (Original) Well Use	Well Pumping Status	Well Configuration	Depth of Screened Interval(s) (feet bgs)[c,h]	Borehole Depth (feet bgs)[c]	Total Well (Casing) Depth (feet bgs)[c]	Casing Diameter (inches)	Aquifers Monitored	Frequency of Groundwater Elevation Measurement 2015-2020	Frequency of Groundwater Quality Sampling 2015-2020	Measurement or Sampling Entity[d]	Notes
02N23W13K04S	---	not currently in CASGEM	1981	6,186,689	1,917,396	70 (approx.)	70.66	Lip of 2" sounder access pipe	Irrigation	Active	Single casing	800-1,200	1,215	1,200	14	Hueneme	Quarterly	---	United	
02N23W15J01S	MP-1070	342533N1192676W001	1995	6,178,365	1,917,106	8.73	8.23	Ground surface (flush-mount vault)	Monitoring	---	Cluster	970-1,070	1,110	1,070	2	Hueneme	Monthly	Semiannually	United	
02N23W24G01S	Olivas (old)	not currently in CASGEM	1948	6,186,343	1,913,155	25 (approx.)	26.30	Lip of 3" access port at base of pump pedestal	Municipal Supply	Inactive	Single casing	742-754, 795-825, 898-927	932	932	not reported	Hueneme	Quarterly	---	United	
02N22W09K05S	---	342684N1191895W001	1975	6,202,284	1,922,175	244.89	245.39	Lip of 1.5" sounder access pipe	Irrigation	Active	Single casing	625-1,455	1,468	1,455	16	Hueneme and Fox Canyon[g]	Bimonthly	---	United	
02N22W07M03S	CP-280	342703N1192342W003	1995	6,188,662	1,922,431	164.56	164.06	Ground surface (flush-mount vault)	Monitoring	---	Cluster	210-280	290	290	2	Fine-grained Pleistocene deposits	Monthly	---	United	
02N23W15J03S	MP-240	342533N1192690W002	1995	6,178,364	1,917,109	8.73	8.23	Ground surface (flush-mount vault)	Monitoring	---	Cluster	170-240	250	240	2	Fine-grained Pleistocene deposits	Monthly	---	United	
02N22W16H01S		not currently in CASGEM	not reported	6,203,225	1,918,690	155 (approx.)	158.47	Lip of 2" sounder access pipe	not reported	Active	Single casing	not reported	not reported	not reported	not reported	unknown	Bimonthly		United	

Notes:

"---" = Not applicable

a Coordinate system is North American Datum 1983 (NAD83), State Plane, California Zone 5, in feet.

b from light detecting and ranging (LiDAR) data to an accuracy of 0.5 feet or better (except where listed as "approx."), referenced to North American Vertical Datum 1988 (NAVD88).

c reported by driller (updated by video survey by United Water Conservation District in some wells).

d United = United Water Conservation District; VCWPD = Ventura County Watershed Protection District.

e This well may be partially screened in the Hueneme Aquifer.

f This well is screened primarily in the Hueneme Aquifer with a small length of its screen in the Mugu Aquifer. Sample results from this well appear to be consistent with sample results from other wells screened in the Hueneme Aquifer.

g This well is screened through substantial intervals of both the Hueneme and Fox Canyon Aquifers. This well is part of the existing monitoring program in Mound Basin and is included in this table for reference only.

h note, some wells are screened across multiple aquifers.

CASGEM = California Statewide Groundwater Elevation Monitoring

feet bgs = feet below ground surface.

feet msl = feet above mean sea level.

Table 5.3-02 Planned and New Groundwater Monitoring Well Information.

Location[a]	Ground Surface Elevation (feet msl)[b]	Planned Well Use	Proposed Well Configuration	Planned Depth of Screened Interval (feet bgs)[c]	Planned Borehole Depth (feet bgs)[c]	Planned Total Well (Casing) Depth (feet bgs)[c]	Planned Casing Diameter (inches)	Aquifer to be Monitored	Minimum Frequency of Groundwater Elevation Measurement	Minimum Frequency of Groundwater Quality Sampling[d]	Measurement or Sampling Entity
Site A	12	Monitoring	Cluster	480-660	670	665	2 or 3	Mugu	Quarterly	Semiannually	TBD
Site B	31	Monitoring	Cluster	500-680	690	685	2 or 3	Mugu	Quarterly	Semiannually	TBD
Site C	16	Monitoring	Cluster	490-670	680	675	2 or 3	Mugu	Quarterly	Semiannually	TBD
Site A	12	Monitoring	Cluster	970-1,070	1,080	1,075	2 or 3	Hueneme	Quarterly	Semiannually	TBD
Site B	31	Monitoring	Cluster	990-1,090	1,100	1,095	2 or 3	Hueneme	Quarterly	Semiannually	TBD
Site C	16	Monitoring	Cluster	980-1,080	1,090	1,085	2 or 3	Hueneme	Quarterly	Semiannually	TBD

Notes:

"TBD" = To be determined.

a Locations of planned monitoring well Sites A, B, and C are shown on Figures 5.3-01, -02, -04, and -05.

b feet msl = Feet above mean sea level, estimated from Google Earth digital elevation model data.

c feet bgs = Feet below ground surface (approximate), estimated based on depth of Mugu and Hueneme Aquifers at well 02N23W15J01S in Marina Park (location shown on Figures 5.3-02 and 5.3-04).

d See Table 5.6-01 for the analyte list for water quality samples obtained from these wells.

Table 5.6-01. Proposed Water Quality Sampling.

Type of Monitoring Network	State Well Identification Number	Local Well Identifier	CASGEM Master Site Code	Aquifers Monitored	Minimum Frequency of Groundwater Quality Sampling	Current Monitoring Entity[a]	Notes	Analytes for Spring Sampling Events	Analytes for Fall Sampling Events
Degraded Water Quality	02N22W07M02S	CP-780	342703N1192342W002	Mugu	Semiannually	United		**Field** • hydrogen ion activity (pH), temperature **Laboratory** • Method 300.0: sulfate, chloride, nitrate (as nitrate [NO3]), nitrate (as nitrogen [N]) • Method 2510B: specific conductance • Method 2540CE: total dissolved solids (total filterable residue [TFR])	**Field** • pH, temperature **Laboratory** • Method 200.7: total hardness (as calcium carbonate [$CaCO_3$]), calcium, magnesium, potassium, sodium, total cations, boron, copper, iron, manganese, zinc, sodium absorption ratio (SAR) • Method 300.0: sulfate, chloride, nitrate (as NO_3), nitrate (as N), nitrite (as N), nitrate+ nitrite (as N), fluoride • Method 2320B: total alkalinity (as $CaCO_3$), hydroxide (as OH), carbonate (as CO_3), bicarbonate (as HCO_3), total anions • Method 2510B: specific conductance • Method 2540CE: total dissolved solids (TFR) • Method 4500-H B: pH, aggressiveness index, Langelier index (20°C) • Method 5540C: methylene blue active substances (MBAS) screen
	02N22W08G01S	Mound #1	not currently in CASGEM	Mugu[b]	Monthly	City of Ventura	Water quality is anomalous		
	02N22W07M01S	CP-1280	342703N1192342W001	Hueneme	Semiannually	United			
	02N22W08F01S	Victoria #2	not currently in CASGEM	Hueneme	Semiannually	City of Ventura	Water quality is anomalous		
	02N22W09L03S	CWP-950	342688N1191952W001	Hueneme	Semiannually	United			
	02N22W09L04S	CWP-510	342688N1191952W002	Hueneme	Semiannually	United	Water quality is anomalous		
	02N23W13F02S	---	not currently in CASGEM	Hueneme[c]	Semiannually	United			
	02N23W13K03S	---	342552N1192422W001	Hueneme	Semiannually	VCWPD	Water quality is anomalous		
Seawater Intrusion	02N23W15J02S	MP-660	342533N1192690W001	Mugu	Semiannually	United			
	TBD	Site A[d]	TBD	Mugu	Semiannually				
	TBD	Site B[d]	TBD	Mugu	Semiannually				
	TBD	Site C[d]	TBD	Mugu	Semiannually				
	02N23W15J01S	MP-1070	342533N1192676W001	Hueneme	Semiannually	United			
	TBD	Site A[d]	TBD	Hueneme	Semiannually				
	TBD	Site B[d]	TBD	Hueneme	Semiannually				
	TBD	Site C[d]	TBD	Hueneme	Semiannually				

Notes:

--- = Not applicable.

TBD = To be determined.

a United = United Water Conservation District; VCWPD = Ventura County Watershed Protection District.

b This well may be partially screened in the Hueneme Aquifer.

c This well is screened primarily in the Hueneme Aquifer with a small length of its screen in the Mugu Aquifer. Sample results from this well appear to be consistent with sample results from other wells screened in the Hueneme Aquifer."

d Locations of planned monitoring well Sites A, B, and C are shown on Figures 5.3-01, -02, -04, and -05.

Table

Section 6

Table 6.6-01 Monitoring Locations for Interim Shallow Groundwater Data Collection Project.

Location	Latitude	Longitude	Reference Point	Reference Point Elevation (ft amsl)	Aquifer to be Monitored	Groundwater Monitoring Type	Monitoring Frequency	Measurement or Sampling Entity
GW-1	34.22703500000	-119.26029800000	Top of Casing	15.78233267720	Shallow Alluvial Deposits	Water Levels	transducer monthly downloads	Ventura Water
GW-2	34.22454600000	-119.25906100000	Top of Casing	14.34585629920	Shallow Alluvial Deposits	Water Levels	transducer monthly downloads	Ventura Water
GW-4	34.23788700000	-119.21859100000	Top of Casing	47.07079068240	Shallow Alluvial Deposits	Water Levels, Water Quality	manual 2/month	Ventura Water
GW-6	34.23271340000	-119.22067230000	Top of Casing	41.30000000000	Shallow Alluvial Deposits	Water Levels, Water Quality	manual 2/month	Ventura Water
GW-8	34.23783600000	-119.24105500000	Top of Casing	27.34400590550	Shallow Alluvial Deposits	Water Levels	TBD	TBD
GW-9	34.23660500000	-119.25614900000	Top of Casing	25.11578740160	Shallow Alluvial Deposits	Water Levels, Water Quality	manual 2/month	Ventura Water
GW-10	34.23729500000	-119.25156000000	Top of Casing	17.66382217850	Shallow Alluvial Deposits	Water Levels, Water Quality	manual 2/month	Ventura Water
GW-11	34.24203700000	-119.25528400000	Top of Casing	21.54430774280	Shallow Alluvial Deposits	Water Levels	TBD	TBD
GW-14	34.23694500000	-119.26091100000	Top of Casing	22.49499671920	Shallow Alluvial Deposits	Water Levels, Water Quality	transducer monthly downloads	Ventura Water

Notes:
"TBD" = To be determined.

Table

Section7

Table 7.1-01 Costs Associated with GSP Implementation Activities.

Fiscal Year	Agency Administration	Legal Counsel	GW Mgmt., Coord., & Outreach	Groundwater Level and Quality Monitoring	Annual Reports	Projects and Mgmt. Actions	Model Simulations	GSP Evaluation	GSP Update	Respond to DWR Comments and Requests	Contingency Non-Capital	Monitoring Well Construction	Contingency Capital Projects	Totals	Extraction Fee ($/AF)	Ending Cash
2022	$57,538	$7,500	$45,000	$4,500	$53,000	$-	$-	$-	$-	$-	$16,754	$30,000	$3,000	$217,292	$59.00	$443,817
2023	$39,638	$7,725	$20,600	$5,150	$35,000	$10,000	$-	$-	$-	$-	$11,811	$10,000	$1,000	$140,924	$59.00	$680,493
2024	$54,148	$7,957	$21,218	$6,365	$36,050	$25,000	$-	$-	$-	$50,000	$20,074	$30,000	$3,000	$253,812	$59.00	$804,280
2025	$41,986	$8,195	$21,855	$6,556	$37,132	$25,000	$-	$-	$-	$-	$14,072	$60,000	$6,000	$220,796	$59.00	$961,085
2026	$57,851	$8,441	$22,510	$8,310	$38,245	$25,000	$15,000	$25,000	$50,000	$-	$25,036	$754,000	$75,400	$1,104,794	$59.00	$233,891
2027	$44,546	$8,695	$23,185	$4,620	$39,393	$-	$10,000	$25,000	$65,000	$-	$22,044	$-	$-	$242,483	$59.00	$369,008
2028	$61,380	$8,955	$23,881	$4,759	$40,575	$-	$-	$-	$-	$28,138	$16,769	$35,700	$3,570	$223,726	$59.00	$522,882
2029	$47,263	$9,224	$24,597	$4,902	$41,792	$-	$-	$-	$-	$-	$12,778	$11,900	$1,190	$153,646	$59.00	$746,836
2030	$65,124	$9,501	$25,335	$5,049	$43,046	$-	$-	$-	$-	$-	$14,805	$35,700	$3,570	$202,130	$59.00	$922,306
2031	$50,146	$9,786	$26,095	$5,200	$44,337	$-	$17,389	$28,982	$57,964	$-	$23,990	$71,400	$7,140	$342,429	$59.00	$957,477
2032	$69,097	$10,079	$26,878	$5,356	$45,667	$-	$11,593	$28,982	$75,353	$-	$27,301	$897,260	$89,726	$1,287,292	$59.00	$47,785
2033	$53,205	$10,382	$27,685	$5,517	$47,037	$-	$-	$-	$-	$32,640	$17,646	$-	$-	$194,111	$41.00	$116,074
2034	$73,312	$10,693	$28,515	$5,682	$48,448	$-	$-	$-	$-	$-	$16,665	$-	$-	$183,316	$41.00	$195,158
2035	$56,450	$11,014	$29,371	$5,853	$49,902	$-	$-	$-	$-	$-	$15,259	$-	$-	$167,848	$41.00	$289,710
2036	$77,784	$11,344	$30,252	$6,028	$51,399	$-	$20,159	$33,598	$67,196	$-	$29,776	$-	$-	$327,535	$41.00	$224,574
2037	$59,894	$11,685	$31,159	$6,209	$52,941	$-	$13,439	$33,598	$87,355	$-	$29,628	$-	$-	$325,907	$41.00	$161,067
2038	$82,529	$12,035	$32,094	$6,395	$54,529	$-	$-	$-	$-	$37,862	$22,544	$-	$-	$247,989	$41.00	$175,478
2039	$63,547	$12,396	$33,057	$6,587	$56,165	$-	$-	$-	$-	$-	$17,175	$-	$-	$188,928	$40.00	$242,550
2040	$87,563	$12,768	$34,049	$6,785	$57,850	$-	$-	$-	$-	$-	$19,901	$-	$-	$218,916	$40.00	$279,634
2041	$67,424	$13,151	$35,070	$6,988	$59,585	$-	$23,370	$38,949	$77,898	$-	$32,244	$-	$-	$354,680	$40.00	$180,955
2042	$92,904	$13,546	$36,122	$7,198	$61,373	$-	$15,580	$38,949	$101,268	$-	$36,694	$-	$-	$403,634	$40.00	$33,321
Yrs.1-5	$251,161	$39,819	$131,183	$30,882	$199,427	$85,000	$15,000	$25,000	$50,000	$50,000	$87,747	$884,000	$88,400	$1,937,618		
Yrs.6-20	$1,052,167	$175,255	$467,347	$93,129	$794,036	$-	$111,529	$228,058	$532,033	$98,640	$355,219	$1,051,960	$105,196	$5,064,570		
Total	$1,303,328	$215,074	$598,530	$124,011	$993,463	$85,000	$126,529	$253,058	$582,033	$148,640	$442,967	$1,935,960	$193,596	$7,002,188		

Notes:
Section 7.1 activities wholly funded by Member Agencies are not listed in the table.
Costs escalated for inflation at an assume rate of 3% per year.

Appendix A

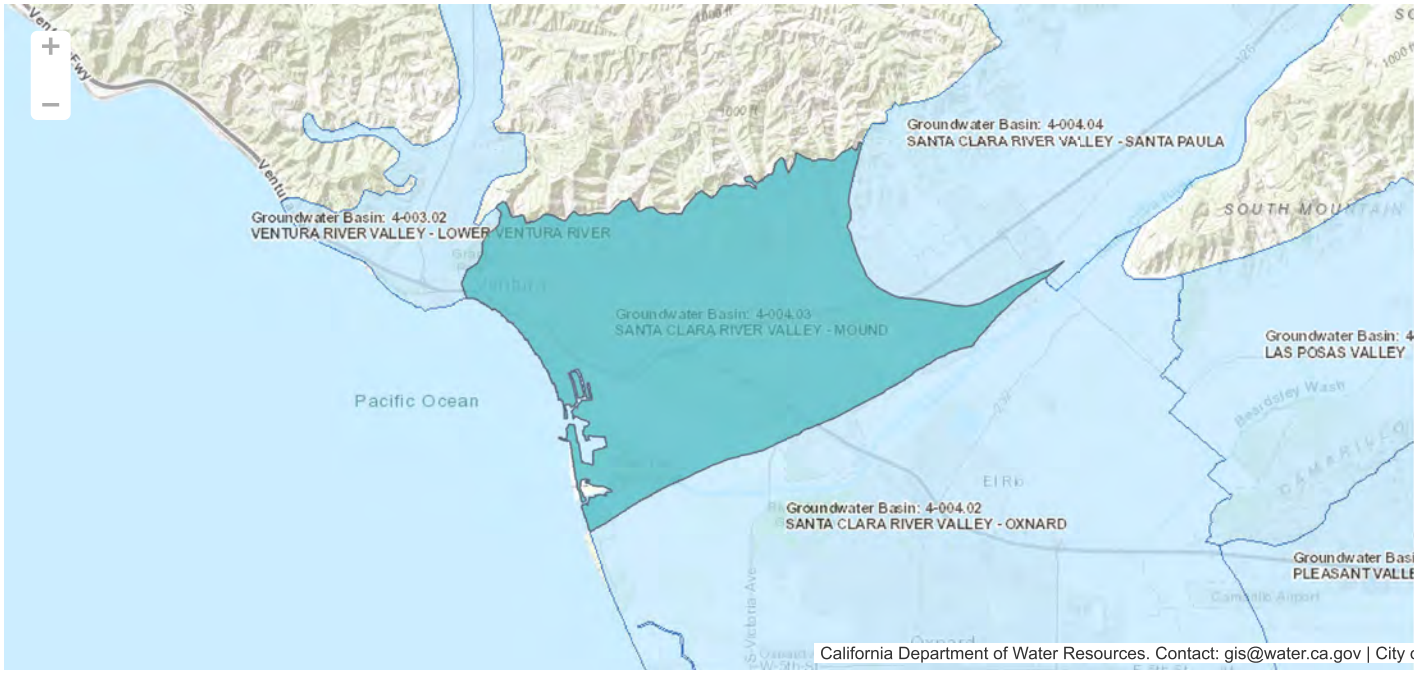
GSP Initial Notification

GSP Initial Notification

4-004.03 SANTA CLARA RIVER VALLEY

Mound Basin GSA

Date Submitted: ***09/17/2018*** *Last M*



1. How many GSPs are planned for the basin?

   Single GSP for the entire basin

2. Select GSA(s) that will develop the GSP(s)

   Mound Basin GSA (Exclusive)

   a. (Optional) If one or more GSAs have identified a representative to submit an initial notification on their behalf, the designated representative shou evidence of that identified.

3. Select or add the point of contact for your GSP area or Plan Manager if identified.

   Bryan Bondy
   (Mound Basin GSA)
   P.O. Box 3544, Ventura, CA93006-3544
   805-212-0484
   bryan@bondygroundwater.com

4. Please provide general information about the Agency's process for developing the GSP, including the manner in which interested parties may conta Agency and participate in the development and implementation of the GSP as required by Water Codes §10723.4 and §10727.8
   (Fill in the text box AND/OR attach a file).

   Interested parties may contact the Mound Basin GSA through its website (https://moundbasingsa.org) or by email (Bryan@BondyGroundwater.co phone (805) 212-0484
   2018-09-17 MBGSA DWR Notice of Intent to Prepare GSP - submitted.pdf (518.7kB) Uploaded on 09/17/2018 at 07:11PM

5. Please provide link(s) to the Agency's website where relevant information regarding the GSP is posted or will be posted.

   http://moundbasingsa.org/gsp/

MoundBasin
GROUNDWATER SUSTAINABILITY AGENCY

Post Office Box 3544
Ventura, CA 93006-3544
(805) 525-4431
https://moundbasingsa.org

September 17, 2018

Mr. Trevor Joseph
Sustainable Groundwater Management Section Chief
Department of Water Resources
9001 P Street, Room 213
P.O. Box 942836
Sacramento, CA 94236

Subject: Initial Notification of Groundwater Sustainability Plan Development for the Mound Subbasin (4-004.03)

Dear Mr. Joseph:

This letter is to provide initial notification that the Mound Basin Groundwater Sustainability Agency (Agency) intends to develop a Groundwater Sustainability Plan (GSP) for the subject basin pursuant to Water Code Section 10727.8 and GSP Regulations Section 353.6. The Agency filed notice of intent to serve as the Groundwater Sustainability Agency (GSA) for the subject basin in June 2017.

The Mound subbasin (4-004.03) has a wide variety of stakeholders, as evidenced by the composition of the Agency Board of Directors. The five-member Board of Directors consists of one member from United Water Conservation District (a wholesale water agency and water conservation district), the County of Ventura (land use entity), the City of Ventura (a land use entity and municipal water purveyor), a stakeholder director from the Mound Basin Agricultural Water Group (MBAWG), and a stakeholder director from Environmental Interest Groups (to represent interests of environmental organizations performing work in the basins).

The Agency is currently in the process of developing a GSP, assisted by its Executive Director (Bryan Bondy of Bondy Groundwater Consulting, Inc.) and United Water Conservation District. A plan for stakeholder engagement will be developed to interface with the public on activities needed to develop the GSPs. The stakeholder engagement strategy will address outreach challenges, including: building trust among water agencies, agricultural interests, and environmental interests; and determining the need for—and potential composition of—an advisory committee or facilitation support. The stakeholder engagement plan will address noticing, time and place of meetings, roles and responsibilities of any committees, how stakeholder input will be documented and addressed, as well as target audiences and key messaging.

As part of the stakeholder engagement plan, the Agency will implement a public outreach plan. This will involve developing materials for public outreach and then holding forums on the GSPs at critical junctures. Materials will be developed to provide consistent messaging. Informational materials will be developed that can be used to inform the stakeholders and the community about basin status, GSP goals, objectives, process, and outcomes. These materials will be suitable for both printed distribution and via the internet.

The Agency has established a website (https://moundbasingsa.org/) and a Facebook page (https://www.facebook.com/moundbasingsa/) for stakeholders and interested parties to stay abreast of GSA activities, GSP development progress, and meeting announcement notification.

Draft GSP chapters and other relevant Sustainable Groundwater Management Act (SGMA) information will be posted to the Agency's website. Additionally, updates on GSP development will be provided at publicly noticed Agency Board meetings. Stakeholders should send an email to info@moundbasingsa.org with questions regarding GSP development or to request to be placed on the Agency's interested parties list.

Please feel free to contact me, via email at Bryan@BondyGroundwater.com or by phone at 805-212-0484, if you should have any questions about this initial notification of GSP development.

Sincerely,

Bryan Bondy
Executive Director

Cc: Ventura County Board of Supervisors
City of San Buenaventura City Council
United Water Conservation District
Interested Parties List

Appendix B

Elements of the Plan Table

Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
§ 354.			**Introduction to Plan Contents**					
			This Article describes the required contents of Plans submitted to the Department for evaluation, including administrative information, a description of the basin setting, sustainable management criteria, description of the monitoring network, and projects and management actions.					
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Section 10733.2, Water Code.					
SubArticle 1.			**Administrative Information**					
§ 354.2.			**Introduction to Administrative Information**					
			This Subarticle describes information in the Plan relating to administrative and other general information about the Agency that has adopted the Plan and the area covered by the Plan.					
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Section 10733.2, Water Code.					
§ 354.4.			**General Information**					
			Each Plan shall include the following general information:					
(a)			An executive summary written in plain language that provides an overview of the Plan and description of groundwater conditions in the basin.	3:16	ES			
(b)			A list of references and technical studies relied upon by the Agency in developing the Plan. Each Agency shall provide to the Department electronic copies of reports and other documents and materials cited as references that are not generally available to the public.	240:248	8.0			
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10733.2 and 10733.4, Water Code.					
§ 354.6.			**Agency Information**					
			When submitting an adopted Plan to the Department, the Agency shall include a copy of the information provided pursuant to Water Code Section 10723.8, with any updates, if necessary, along with the following information:					
(a)			The name and mailing address of the Agency.	40	2.1.1			
(b)			The organization and management structure of the Agency, identifying persons with management authority for implementation of the Plan.	41	2.1.2			
(c)			The name and contact information, including the phone number, mailing address and electronic mail address, of the plan manager.	41	2.1.3			
(d)			The legal authority of the Agency, with specific reference to citations setting forth the duties, powers, and responsibilities of the Agency, demonstrating that the Agency has the legal authority to implement the Plan.	41:43	2.1.4			
(e)			An estimate of the cost of implementing the Plan and a general description of how the Agency plans to meet those costs.	233:239	7.1:7.4		7.1-01	
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10723.8, 10727.2, and 10733.2, Water Code.					
§ 354.8.			**Description of Plan Area**					
			Each Plan shall include a description of the geographic areas covered, including the following information:					
(a)			One or more maps of the basin that depict the following, as applicable:					
	(1)		The area covered by the Plan, delineating areas managed by the Agency as an exclusive Agency and any areas for which the Agency is not an exclusive Agency, and the name and location of any adjacent basins.	43:45	2.2.1	2.1-01, 2.1-02		
	(2)		Adjudicated areas, other Agencies within the basin, and areas covered by an Alternative.	43:45	2.2.1			

Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
	(3)		Jurisdictional boundaries of federal or state land (including the identity of the agency with jurisdiction over that land), tribal land, cities, counties, agencies with water management responsibilities, and areas covered by relevant general plans.	43:45	2.2.1	2.1-01		
	(4)		Existing land use designations and the identification of water use sector and water source type.	43:45	2.2.1	2.1-03		
	(5)		The density of wells per square mile, by dasymetric or similar mapping techniques, showing the general distribution of agricultural, industrial, and domestic water supply wells in the basin, including de minimis extractors, and the location and extent of communities dependent upon groundwater, utilizing data provided by the Department, as specified in Section 353.2, or the best available information.	43:45	2.2.1	2.2-01		
(b)			A written description of the Plan area, including a summary of the jurisdictional areas and other features depicted on the map.	43:45	2.2.1	2.1-01		
(c)			Identification of existing water resource monitoring and management programs, and description of any such programs the Agency plans to incorporate in its monitoring network or in development of its Plan. The Agency may coordinate with existing water resource monitoring and management programs to incorporate and adopt that program as part of the Plan.	45:48	2.2.2, 2.2.2.1, 2.2.2.2		2.1-01, 2.1-02	
(d)			A description of how existing water resource monitoring or management programs may limit operational flexibility in the basin, and how the Plan has been developed to adapt to those limits.	46:48	2.2.2			
(e)			A description of conjunctive use programs in the basin.	48:49	2.2.2.3			
(f)			A plain language description of the land use elements or topic categories of applicable general plans that includes the following:					
	(1)		A summary of general plans and other land use plans governing the basin.	49:57	2.2.3.1	2.1-03		
	(2)		A general description of how implementation of existing land use plans may change water demands within the basin or affect the ability of the Agency to achieve sustainable groundwater management over the planning and implementation horizon, and how the Plan addresses those potential effects	49:57	2.2.3.1	2.1-03		
	(3)		A general description of how implementation of the Plan may affect the water supply assumptions of relevant land use plans over the planning and implementation horizon.	49:57	2.2.3.1			
	(4)		A summary of the process for permitting new or replacement wells in the basin, including adopted standards in local well ordinances, zoning codes, and policies contained in adopted land use plans.	57:58	2.2.3.2	2.1-03		
	(5)		To the extent known, the Agency may include information regarding the implementation of land use plans outside the basin that could affect the ability of the Agency to achieve sustainable groundwater management.	57	2.2.3.1.3	2.1-03		
(g)			A description of any of the additional Plan elements included in Water Code Section 10727.4 that the Agency determines to be appropriate.	58:59	2.2.4			
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10720.3, 10727.2, 10727.4, 10733, and 10733.2, Water Code.					
§ 354.10.			**Notice and Communication**					
			Each Plan shall include a summary of information relating to notification and communication by the Agency with other agencies and interested parties including the following:					

Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
(a)			A description of the beneficial uses and users of groundwater in the basin, including the land uses and property interests potentially affected by the use of groundwater in the basin, the types of parties representing those interests, and the nature of consultation with those parties.	60:62	2.3.1	2.1-03		
(b)			A list of public meetings at which the Plan was discussed or considered by the Agency.	62	2.3.2			Appendix E List of Public Meetings
(c)			Comments regarding the Plan received by the Agency and a summary of any responses by the Agency.	63	2.3.3			Appendix F GSP Comments and Responses
(d)			A communication section of the Plan that includes the following:					
	(1)		An explanation of the Agency's decision-making process.	63:64	2.3.4.1			
	(2)		Identification of opportunities for public engagement and a discussion of how public input and response will be used.	64:66	2.3.4.2			Appendix D Stakeholder Engagement Plan
	(3)		A description of how the Agency encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin.	64:66	2.3.4.2			Appendix D Stakeholder Engagement Plan
	(4)		The method the Agency shall follow to inform the public about progress implementing the Plan, including the status of projects and actions.	66	2.3.4.3			Appendix D Stakeholder Engagement Plan
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10723.2, 10727.8, 10728.4, and 10733.2, Water Code					
SubArticle 2.			**Basin Setting**					
§ 354.12.			**Introduction to Basin Setting**					
			This Subarticle describes the information about the physical setting and characteristics of the basin and current conditions of the basin that shall be part of each Plan, including the identification of data gaps and levels of uncertainty, which comprise the basin setting that serves as the basis for defining and assessing reasonable sustainable management criteria and projects and management actions. Information provided pursuant to this Subarticle shall be prepared by or under the direction of a professional geologist or professional engineer.					
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Section 10733.2, Water Code.					
§ 354.14.			**Hydrogeologic Conceptual Model**					
(a)			Each Plan shall include a descriptive hydrogeologic conceptual model of the basin based on technical studies and qualified maps that characterizes the physical components and interaction of the surface water and groundwater systems in the basin.	67:91	3.1			
(b)			The hydrogeologic conceptual model shall be summarized in a written description that includes the following:					
	(1)		The regional geologic and structural setting of the basin including the immediate surrounding area, as necessary for geologic consistency.	69:71	3.1.2	3.1-02:3.1-08		
	(2)		Lateral basin boundaries, including major geologic features that significantly affect groundwater flow.	73:74	3.1.4.1.1	3.1-02:3.1-08		
	(3)		The definable bottom of the basin.	73:74	3.1.4.1.1	3.1-04:3.1-08		
	(4)		Principal aquifers and aquitards, including the following information:					
		(A)	Formation names, if defined.	72	3.1.4	3.1-02, 3.1-04		
		(B)	Physical properties of aquifers and aquitards, including the vertical and lateral extent, hydraulic conductivity, and storativity, which may be based on existing technical studies or other best available information.	76:80	3.1.4.1.3	3.1-02:3.1-08, 3.1-10	3.1-01 3.1-02	Appendix G Shallow Alluvial Deposits and ISW

Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
		(C)	Structural properties of the basin that restrict groundwater flow within the principal aquifers, including information regarding stratigraphic changes, truncation of units, or other features.	74:76	3.1.4.1.2	3.1-02:3.1-08, 3.1-10		
		(D)	General water quality of the principal aquifers, which may be based on information derived from existing technical studies or regulatory programs.	76:80	3.1.4.3	3.1-12:3.1-25	3.1-03	
		(E)	Identification of the primary use or uses of each aquifer, such as domestic, irrigation, or municipal water supply.	87:88	3.1.4.4	3.1-26	3.1-02	Appendix G Shallow Alluvial Deposits and ISW
	(5)		Identification of data gaps and uncertainty within the hydrogeologic conceptual model	88:91	3.1.5			
(c)			The hydrogeologic conceptual model shall be represented graphically by at least two scaled cross-sections that display the information required by this section and are sufficient to depict major stratigraphic and structural features in the basin.	73:74	3.1.4.1.1	3.1-05:3.1-08		
(d)			Physical characteristics of the basin shall be represented on one or more maps that depict the following:					
	(1)		Topographic information derived from the U.S. Geological Survey or another reliable source.	68	3.1.1.1	3.1-01		
	(2)		Surficial geology derived from a qualified map including the locations of cross-sections required by this Section.	69:71	3.1.2	3.1-02:3.1-08		
	(3)		Soil characteristics as described by the appropriate Natural Resources Conservation Service soil survey or other applicable studies.	71:72	3.1.3	3.1-09		
	(4)		Delineation of existing recharge areas that substantially contribute to the replenishment of the basin, potential recharge areas, and discharge areas, including significant active springs, seeps, and wetlands within or adjacent to the basin.	81:82	3.1.4.2	3.1-11		
	(5)		Surface water bodies that are significant to the management of the basin.	68	3.1.1.2	3.1-01		
	(6)		The source and point of delivery for imported water supplies.	68:69	3.1.1.3	3.1-01		
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10727.2, 10733, and 10733.2, Water Code.					
§ 354.16.			**Groundwater Conditions**					
			Each Plan shall provide a description of current and historical groundwater conditions in the basin, including data from January 1, 2015, to current conditions, based on the best available information that includes the following:					
(a)			Groundwater elevation data demonstrating flow directions, lateral and vertical gradients, and regional pumping patterns, including:					
	(1)		Groundwater elevation contour maps depicting the groundwater table or potentiometric surface associated with the current seasonal high and seasonal low for each principal aquifer within the basin.	91:93	3.2.1.1	3.2-01:3.2-08		
	(2)		Hydrographs depicting long-term groundwater elevations, historical highs and lows, and hydraulic gradients between principal aquifers.	93:96	3.2.1.2	3.2-10:3.2-16	3.2-01	
(b)			A graph depicting estimates of the change in groundwater in storage, based on data, demonstrating the annual and cumulative change in the volume of groundwater in storage between seasonal high groundwater conditions, including the annual groundwater use and water year type.	96:98	3.2.2	3.2-17		
(c)			Seawater intrusion conditions in the basin, including maps and cross-sections of the seawater intrusion front for each principal aquifer.	98:99	3.2.3	3.1-10		

Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
(d)			Groundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and map of the location of known groundwater contamination sites and plumes.	99:102	3.2.4	3.1-15:3.1-19, 3.1-21, 3.1-22, 3.2-18		
(e)			The extent, cumulative total, and annual rate of land subsidence, including maps depicting total subsidence, utilizing data available from the Department, as specified in Section 353.2, or the best available information.	102:103	3.2.5	3.2-19		
(f)			Identification of interconnected surface water systems within the basin and an estimate of the quantity and timing of depletions of those systems, utilizing data available from the Department, as specified in Section 353.2, or the best available information.	103:105	3.2.6	3.1-01, 3.1-10, 3.1-11, 3.2-20		Appendix G Shallow Alluvial Deposits and ISW
(g)			Identification of groundwater dependent ecosystems within the basin, utilizing data available from the Department, as specified in Section 353.2, or the best available information.	105:106	3.2.7	3.1-11		Appendix H GDEs
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10723.2, 10727.2, 10727.4, and 10733.2, Water Code.					
§ 354.18.			**Water Budget**					
(a)			Each Plan shall include a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions, and the change in the volume of water stored. Water budget information shall be reported in tabular and graphical form.	107:135	3.3		3.3-01	
(b)			The water budget shall quantify the following, either through direct measurements or estimates based on data:					
	(1)		Total surface water entering and leaving a basin by water source type.	107:124, 131:134	3.3, 3.3.1, 3.3.2, 3.3.3.2	3.1-01, 3.3-01, 3.3-07	3.3-02, 3.3-06	
	(2)		Inflow to the groundwater system by water source type, including subsurface groundwater inflow and infiltration of precipitation, applied water, and surface water systems, such as lakes, streams, rivers, canals, springs and conveyance systems.	107:124, 131:134	3.3, 3.3.1, 3.3.2, 3.3.3.2	3.1-11, 3.3-02, 3.3-08	3.3-03, 3.3-04, 3.3-07, 3.3-08	
	(3)		Outflows from the groundwater system by water use sector, including evapotranspiration, groundwater extraction, groundwater discharge to surface water sources, and subsurface groundwater outflow.	107:124, 131:134	3.3, 3.3.1, 3.3.2, 3.3.3.2	3.3-01, 3.3-02, 3.3-08	3.3-03, 3.3-04, 3.3-07, 3.3-08	
	(4)		The change in the annual volume of groundwater in storage between seasonal high conditions.	107:124, 131:134	3.3, 3.3.1, 3.3.2, 3.3.3.2	3.2-17		
	(5)		If overdraft conditions occur, as defined in Bulletin 118, the water budget shall include a quantification of overdraft over a period of years during which water year and water supply conditions approximate average conditions.	134:135	3.3.4			
	(6)		The water year type associated with the annual supply, demand, and change in groundwater stored.	107:124, 131:134	3.3, 3.3.1, 3.3.2, 3.3.3.2	3.2-17		
	(7)		An estimate of sustainable yield for the basin.	134:135	3.3.4, 3.3.4.1, 3.3.4.2		3.3-03	
(c)			Each Plan shall quantify the current, historical, and projected water budget for the basin as follows:					

Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
	(1)		Current water budget information shall quantify current inflows and outflows for the basin using the most recent hydrology, water supply, water demand, and land use information.	122:124	3.3.2	3.3-01, 3.3-02	3.3-01:3.3-04	
	(2)		Historical water budget information shall be used to evaluate availability or reliability of past surface water supply deliveries and aquifer response to water supply and demand trends relative to water year type. The historical water budget shall include the following:					
		(A)	A quantitative evaluation of the availability or reliability of historical surface water supply deliveries as a function of the historical planned versus actual annual surface water deliveries, by surface water source and water year type, and based on the most recent ten years of surface water supply information.	120:121	3.3.1.1	2.2-01, 3.3-04, 3.3-06	3.3-05	
		(B)	A quantitative assessment of the historical water budget, starting with the most recently available information and extending back a minimum of 10 years, or as is sufficient to calibrate and reduce the uncertainty of the tools and methods used to estimate and project future water budget information and future aquifer response to proposed sustainable groundwater management practices over the planning and implementation horizon.	116:121	3.3.1	3.3-01, 3.3-02, 3.3-03	3.3-02:3.3-04	
		(C)	A description of how historical conditions concerning hydrology, water demand, and surface water supply availability or reliability have impacted the ability of the Agency to operate the basin within sustainable yield. Basin hydrology may be characterized and evaluated using water year type.	121	3.3.1.2			
	(3)		Projected water budgets shall be used to estimate future baseline conditions of supply, demand, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components. The projected water budget shall utilize the following methodologies and assumptions to estimate future baseline conditions concerning hydrology, water demand and surface water supply availability or reliability over the planning and implementation horizon:					
		(A)	Projected hydrology shall utilize 50 years of historical precipitation, evapotranspiration, and streamflow information as the baseline condition for estimating future hydrology. The projected hydrology information shall also be applied as the baseline condition used to evaluate future scenarios of hydrologic uncertainty associated with projections of climate change and sea level rise.	125:128	3.3.3.1.1	3.3-05		
		(B)	Projected water demand shall utilize the most recent land use, evapotranspiration, and crop coefficient information as the baseline condition for estimating future water demand. The projected water demand information shall also be applied as the baseline condition used to evaluate future scenarios of water demand uncertainty associated with projected changes in local land use planning, population growth, and climate.	128:130	3.3.3.1.2			
		(C)	Projected surface water supply shall utilize the most recent water supply information as the baseline condition for estimating future surface water supply. The projected surface water supply shall also be applied as the baseline condition used to evaluate future scenarios of surface water supply availability and reliability as a function of the historical surface water supply identified in Section 354.18(c)(2)(A), and the projected changes in local land use planning, population growth, and climate.	130	3.3.3.1.3	3.3-07	3.3-05:3.3-08	
(d)			The Agency shall utilize the following information provided, as available, by the Department pursuant to Section 353.2, or other data of comparable quality, to develop the water budget:					

Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
	(1)		Historical water budget information for mean annual temperature, mean annual precipitation, water year type, and land use.	116:120	3.3.1			
	(2)		Current water budget information for temperature, water year type, evapotranspiration, and land use.	122:124	3.3.2			
	(3)		Projected water budget information for population, population growth, climate change, and sea level rise.	131:134	3.3.3.2			
(e)			Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow. If a numerical groundwater and surface water model is not used to quantify and evaluate the projected water budget conditions and the potential impacts to beneficial uses and users of groundwater, the Plan shall identify and describe an equally effective method, tool, or analytical model to evaluate projected water budget conditions.	125	3.3.3.1	3.3-07:3.3-15	3.3-06:3.3-14	
(f)			The Department shall provide the California Central Valley Groundwater-Surface Water Simulation Model (C2VSIM) and the Integrated Water Flow Model (IWFM) for use by Agencies in developing the water budget. Each Agency may choose to use a different groundwater and surface water model, pursuant to Section 352.4.	125	3.3.3.1			
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10721, 10723.2, 10727.2, 10727.6, 10729, and 10733.2, Water Code.					
§ 354.20.			**Management Areas**					
(a)			Each Agency may define one or more management areas within a basin if the Agency has determined that creation of management areas will facilitate implementation of the Plan. Management areas may define different minimum thresholds and be operated to different measurable objectives than the basin at large, provided that undesirable results are defined consistently throughout the basin.	135	3.4			
(b)			A basin that includes one or more management areas shall describe the following in the Plan:					
	(1)		The reason for the creation of each management area.	N/A				No management areas
	(2)		The minimum thresholds and measurable objectives established for each management area, and an explanation of the rationale for selecting those values, if different from the basin at large.	N/A				No management areas
	(3)		The level of monitoring and analysis appropriate for each management area.	N/A				No management areas
	(4)		An explanation of how the management area can operate under different minimum thresholds and measurable objectives without causing undesirable results outside the management area, if applicable.	N/A				No management areas
(c)			If a Plan includes one or more management areas, the Plan shall include descriptions, maps, and other information required by this Subarticle sufficient to describe conditions in those areas.	N/A				No management areas
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10733.2 and 10733.4, Water Code.					
SubArticle 3.			**Sustainable Management Criteria**					
§ 354.22.			**Introduction to Sustainable Management Criteria**					

Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
			This Subarticle describes criteria by which an Agency defines conditions in its Plan that constitute sustainable groundwater management for the basin, including the process by which the Agency shall characterize undesirable results, and establish minimum thresholds and measurable objectives for each applicable sustainability indicator.					
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Section 10733.2, Water Code.					
§ 354.24.			**Sustainability Goal**					
			Each Agency shall establish in its Plan a sustainability goal for the basin that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline. The Plan shall include a description of the sustainability goal, including information from the basin setting used to establish the sustainability goal, a discussion of the measures that will be implemented to ensure that the basin will be operated within its sustainable yield, and an explanation of how the sustainability goal is likely to be achieved within 20 years of Plan implementation and is likely to be maintained through the planning and implementation horizon.	138:139	4.2			
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10721, 10727, 10727.2, 10733.2, and 10733.8, Water Code.					
§ 354.26.			**Undesirable Results**					
(a)			Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.	139:141, 150:152, 158:160, 167:168	4.3, 4.4.1, 4.5.1, 4.6.1, 4.7.1, 4.8.1			
(b)			The description of undesirable results shall include the following:					
	(1)		The cause of groundwater conditions occurring throughout the basin that would lead to or has led to undesirable results based on information described in the basin setting, and other data or models as appropriate.	150:152, 158:160, 167:168	4.4.1, 4.5.1, 4.6.1, 4.7.1, 4.8.1			Appendix I GW Levels with MTs and MOs, Apendix J GW Quality With MTs and MOs
	(2)		The criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.	150:152, 158:160, 167:168	4.4.1, 4.5.1, 4.6.1, 4.7.1, 4.8.1			
	(3)		Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results.	150:152, 158:160, 167:168	4.4.1, 4.5.1, 4.6.1, 4.7.1, 4.8.1			
(c)			The Agency may need to evaluate multiple minimum thresholds to determine whether an undesirable result is occurring in the basin. The determination that undesirable results are occurring may depend upon measurements from multiple monitoring sites, rather than a single monitoring site.	144, 153, 162, 170, 174:177	4.4.2.1.1, 4.5.2.1.1, 4.6.2.1.1, 4.7.2.1.1, 4.8.1			
(d)			An Agency that is able to demonstrate that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in a basin shall not be required to establish criteria for undesirable results related to those sustainability indicators.	185	4.9			

Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10721, 10723.2, 10727.2, 10733.2, and 10733.8, Water Code.					
§ 354.28.			**Minimum Thresholds**					
(a)			Each Agency in its Plan shall establish minimum thresholds that quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site established pursuant to Section 354.36. The numeric value used to define minimum thresholds shall represent a point in the basin that, if exceeded, may cause undesirable results as described in Section 354.26.	143:144, 153, 161:162, 169:170, 177:180	4.4.2.1, 4.5.2.1, 4.6.2.1, 4.7.2.1, 4.8.2.1	4.6-04, 4.6-05, 4.8-02	4.1-01:4.1-03	Appendix I GW Levels with MTs and Mos, Appendix J GW Quality MTs and MOs
(b)			The description of minimum thresholds shall include the following:					
	(1)		The information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator. The justification for the minimum threshold shall be supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting.	143:144, 153, 161:162, 169:170, 177:180	4.4.2.1, 4.5.2.1, 4.6.2.1, 4.7.2.1, 4.8.2.1	4.6-01:4.6-05, 4.8-01a, 4.8-01b, 4.8-02	4.1-01:4.1-03,4.8-01	Appendix I GW Levels with MTs and Mos, Appendix J GW Quality MTs and MOs
	(2)		The relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.	145, 154:155, 163, 171,180:181	4.4.2.2, 4.5.2.2, 4.6.2.2, 4.7.2.2, 4.8.2.2			Appendix K GW Storage Estimation
	(3)		How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.	145:146, 155, 163, 172, 181	4.4.2.3, 4.5.2.3, 4.6.2.3, 4.7.2.3, 4.8.2.3			
	(4)		How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.	146, 155, 164, 172, 181:182	4.4.2.4, 4.5.2.4, 4.6.2.4, 4.7.2.4, 4.8.2.4			
	(5)		How state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the Agency shall explain the nature of and basis for the difference.	148, 155, 164, 173, 182	4.4.2.6, 4.5.2.5, 4.6.2.5, 4.7.2.5, 4.8.2.5			
	(6)		How each minimum threshold will be quantitatively measured, consistent with the monitoring network requirements described in Subarticle 4.	148, 156, 165, 173, 182	4.4.2.7, 4.5.2.6, 4.6.2.6, 4.7.2.6, 4.8.2.6			
(c)			Minimum thresholds for each sustainability indicator shall be defined as follows:					
	(1)		Chronic Lowering of Groundwater Levels. The minimum threshold for chronic lowering of groundwater levels shall be the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results. Minimum thresholds for chronic lowering of groundwater levels shall be supported by the following:					
		(A)	The rate of groundwater elevation decline based on historical trends, water year type, and projected water use in the basin.	143:144	4.4.2.1			Appendix I GW Levels with MTs and MOs

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				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
		(B)	Potential effects on other sustainability indicators.	143:144, 146:147	4.4.2.1, 4.4.2.5			
	(2)		Reduction of Groundwater Storage. The minimum threshold for reduction of groundwater storage shall be a total volume of groundwater that can be withdrawn from the basin without causing conditions that may lead to undesirable results. Minimum thresholds for reduction of groundwater storage shall be supported by the sustainable yield of the basin, calculated based on historical trends, water year type, and projected water use in the basin.	153	4.5.2.1			Appendix I GW Levels with MTs and MOs
	(3)		Seawater Intrusion. The minimum threshold for seawater intrusion shall be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results. Minimum thresholds for seawater intrusion shall be supported by the following:					
		(A)	Maps and cross-sections of the chloride concentration isocontour that defines the minimum threshold and measurable objective for each principal aquifer.	161:162	4.6.2.1	4.6-04, 4.6-05		
		(B)	A description of how the seawater intrusion minimum threshold considers the effects of current and projected sea levels.	161:162	4.6.2.1	4.6-02, 4.6-03		
	(4)		Degraded Water Quality. The minimum threshold for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be based on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin.	169:170	4.7.2.1	4.6-04, 4.6-05	4.1-03	Appendix J GW Quality with MTs and MOs
	(5)		Land Subsidence. The minimum threshold for land subsidence shall be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results. Minimum thresholds for land subsidence shall be supported by the following:					
		(A)	Identification of land uses and property interests that have been affected or are likely to be affected by land subsidence in the basin, including an explanation of how the Agency has determined and considered those uses and interests, and the Agency's rationale for establishing minimum thresholds in light of those effects.	177:180	4.8.2.1	4.8-01a, 4.8-01b		
		(B)	Maps and graphs showing the extent and rate of land subsidence in the basin that defines the minimum threshold and measurable objectives.	177:180	4.8.2.1	3.2-19		
	(6)		Depletions of Interconnected Surface Water. The minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results. The minimum threshold established for depletions of interconnected surface water shall be supported by the following:					
		(A)	The location, quantity, and timing of depletions of interconnected surface water.	N/A				Does not apply to this GSP
		(B)	A description of the groundwater and surface water model used to quantify surface water depletion. If a numerical groundwater and surface water model is not used to quantify surface water depletion, the Plan shall identify and describe an equally effective method, tool, or analytical model to accomplish the requirements of this Paragraph.	N/A				Does not apply to this GSP

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				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
(d)			An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.	145, 154, 162, 171, 180	4.4.2.1.2, 4.5.2.1.2, 4.6.2.1.2, 4.7.2.1.2, 4.8.2.1.1		4.1-01	Appendix I GW Levels with MTs and MOs
(e)			An Agency that has demonstrated that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in a basin, as described in Section 354.26, shall not be required to establish minimum thresholds related to those sustainability indicators.	143:144, 153, 161:162, 169:170, 177:180	4.4.2.1, 4.5.2.1, 4.6.2.1, 4.7.2.1, 4.8.2.1			
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10723.2, 10727.2, 10733, 10733.2, and 10733.8, Water Code.					
§ 354.30.			**Measurable Objectives**					
(a)			Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin within 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.	148:150, 156:157, 165, 173:174, 183:185	4.4.3, 4.5.3, 4.6.3, 4.7.3, 4.8.3	4.6-04, 4.6-05	4.1-01:4.1-03	Appendix I GW Levels with MTs and MOs, Appendix J GW Quality with MTs and MOs
(b)			Measurable objectives shall be established for each sustainability indicator, based on quantitative values using the same metrics and monitoring sites as are used to define the minimum thresholds.	148:150, 156:157, 165, 173:174, 183:185	4.4.3, 4.5.3, 4.6.3, 4.7.3, 4.8.3	4.6-04, 4.6-05	4.1-01:4.1-03	Appendix I GW Levels with MTs and MOs, Appendix J GW Quality with MTs and MOs
(c)			Measurable objectives shall provide a reasonable margin of operational flexibility under adverse conditions which shall take into consideration components such as historical water budgets, seasonal and long-term trends, and periods of drought, and be commensurate with levels of uncertainty.	148:150, 156:157, 165, 173:174, 183:185	4.4.3, 4.5.3, 4.6.3, 4.7.3, 4.8.3	4.6-04, 4.6-05	4.1-01:4.1-03	Appendix I GW Levels with MTs and MOs, Appendix J GW Quality with MTs and MOs
(d)			An Agency may establish a representative measurable objective for groundwater elevation to serve as the value for multiple sustainability indicators where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual measurable objectives as supported by adequate evidence.	148:150, 156:157, 165, 173:174, 183:185	4.4.3, 4.5.3, 4.6.3, 4.7.3, 4.8.3	4.8-02	4.1-01, 4.1-03	Appendix I GW Levels with MTs and MOs
(e)			Each Plan shall describe a reasonable path to achieve the sustainability goal for the basin within 20 years of Plan implementation, including a description of interim milestones for each relevant sustainability indicator, using the same metric as the measurable objective, in increments of five years. The description shall explain how the Plan is likely to maintain sustainable groundwater management over the planning and implementation horizon.	148:150, 156:157, 165, 173:174, 183:185	4.4.3, 4.5.3, 4.6.3, 4.7.3, 4.8.3		4.1-01	Appendix I GW Levels with MTs and MOs
(f)			Each Plan may include measurable objectives and interim milestones for additional Plan elements described in Water Code Section 10727.4 where the Agency determines such measures are appropriate for sustainable groundwater management in the basin.	185	4.10			
(g)			An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for a finding of inadequacy of the Plan.	148:150, 156:157, 165, 173:174, 183:185	4.4.3, 4.5.3, 4.6.3, 4.7.3, 4.8.3		4.1-01, 4.1-02	Appendix I GW Levels with MTs and Mos, Appendix J GW Quality with MTs and MOs
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10727.2, 10727.4, and 10733.2, Water Code.					

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				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
SubArticle 4.			**Monitoring Networks**					
§ 354.32.			**Introduction to Monitoring Networks**					
			This Subarticle describes the monitoring network that shall be developed for each basin, including monitoring objectives, monitoring protocols, and data reporting requirements. The monitoring network shall promote the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions that occur through implementation of the Plan.					
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Section 10733.2, Water Code.					
§ 354.34.			**Monitoring Network**					
(a)			Each Agency shall develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation.	187:193	5.2			
(b)			Each Plan shall include a description of the monitoring network objectives for the basin, including an explanation of how the network will be developed and implemented to monitor groundwater and related surface conditions, and the interconnection of surface water and groundwater, with sufficient temporal frequency and spatial density to evaluate the affects and effectiveness of Plan implementation. The monitoring network objectives shall be implemented to accomplish the following:					
	(1)		Demonstrate progress toward achieving measurable objectives described in the Plan.	187:193	5.2			
	(2)		Monitor impacts to the beneficial uses or users of groundwater.	187:193	5.2			
	(3)		Monitor changes in groundwater conditions relative to measurable objectives and minimum thresholds.	187:193	5.2			
	(4)		Quantify annual changes in water budget components.	187:193	5.2			
(c)			Each monitoring network shall be designed to accomplish the following for each sustainability indicator:					
	(1)		Chronic Lowering of Groundwater Levels. Demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features by the following methods:					
		(A)	A sufficient density of monitoring wells to collect representative measurements through depth-discrete perforated intervals to characterize the groundwater table or potentiometric surface for each principal aquifer.	194:196	5.3.1	5.3-01:5.3-03	5.3-01	
		(B)	Static groundwater elevation measurements shall be collected at least two times per year, to represent seasonal low and seasonal high groundwater conditions.	194:196	5.3.1		5.3-01	
	(2)		Reduction of Groundwater Storage. Provide an estimate of the change in annual groundwater in storage.	200:201	5.4.1			Appendix K GW Storage Estimation
	(3)		Seawater Intrusion. Monitor seawater intrusion using chloride concentrations, or other measurements convertible to chloride concentrations, so that the current and projected rate and extent of seawater intrusion for each applicable principal aquifer may be calculated.	203:204	5.5.1	5.3-04, 5.3-05	5.6-01	
	(4)		Degraded Water Quality. Collect sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators, as determined by the Agency, to address known water quality issues.	207:208	5.6.1	5.3-04, 5.3-05	5.6-01	

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				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
	(5)		Land Subsidence. Identify the rate and extent of land subsidence, which may be measured by extensometers, surveying, remote sensing technology, or other appropriate method.	212	5.7.1	3.2-19		
	(6)		Depletions of Interconnected Surface Water. Monitor surface water and groundwater, where interconnected surface water conditions exist, to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions. The monitoring network shall be able to characterize the following:					
		(A)	Flow conditions including surface water discharge, surface water head, and baseflow contribution.	N/A				Does not apply to this GSP
		(B)	Identifying the approximate date and location where ephemeral or intermittent flowing streams and rivers cease to flow, if applicable.	N/A				Does not apply to this GSP
		(C)	Temporal change in conditions due to variations in stream discharge and regional groundwater extraction.	N/A				Does not apply to this GSP
		(D)	Other factors that may be necessary to identify adverse impacts on beneficial uses of the surface water.	N/A				Does not apply to this GSP
(d)			The monitoring network shall be designed to ensure adequate coverage of sustainability indicators. If management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the basin setting and sustainable management criteria specific to that area.	187:193	5.2			
(e)			A Plan may utilize site information and monitoring data from existing sources as part of the monitoring network.	193:214	5.3, 5.4, 5.5, 5.6, 5.7, 5.8			
(f)			The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:					
	(1)		Amount of current and projected groundwater use.	187:193	5.2			
	(2)		Aquifer characteristics, including confined or unconfined aquifer conditions, or other physical characteristics that affect groundwater flow.	187:193	5.2			
	(3)		Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.	187:193	5.2			
	(4)		Whether the Agency has adequate long-term existing monitoring results or other technical information to demonstrate an understanding of aquifer response.	187:193	5.2			
(g)			Each Plan shall describe the following information about the monitoring network:					
	(1)		Scientific rationale for the monitoring site selection process.	194:196, 200:201, 203:204, 207:208	5.3.1, 5.4.1, 5.5.1, 5.6.1, 5.7.1			
	(2)		Consistency with data and reporting standards described in Section 352.4. If a site is not consistent with those standards, the Plan shall explain the necessity of the site to the monitoring network, and how any variation from the standards will not affect the usefulness of the results obtained.	196, 201, 204, 208:209, 212	5.3.2, 5.4.2, 5.5.2, 5.6.2, 5.7.2	3.2-19, 5.3-01:5.3-05	5.3-01, 5.6-01	

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				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
	(3)		For each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative monitoring sites established pursuant to Section 354.36.	139:140, 193:194, 200, 203, 206, 211, 214	4.3, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8		4.1-01:4.1-03	
(h)			The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used.	193:194, 200, 203, 206, 211, 214	5.3, 5.4, 5.5, 5.6, 5.7, 5.8	3.2-19, 5.3-01:5.3-05		
(i)			The monitoring protocols developed by each Agency shall include a description of technical standards, data collection methods, and other procedures or protocols pursuant to Water Code Section 10727.2(f) for monitoring sites or other data collection facilities to ensure that the monitoring network utilizes comparable data and methodologies.	197, 201, 204, 209, 213	5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3			
(j)			An Agency that has demonstrated that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in a basin, as described in Section 354.26, shall not be required to establish a monitoring network related to those sustainability indicators.	193:194, 200, 203, 206, 211, 214	5.3, 5.4, 5.5, 5.6, 5.7, 5.8			
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10723.2, 10727.2, 10727.4, 10728, 10733, 10733.2, and 10733.8, Water Code					
§ 354.36.			**Representative Monitoring**					
			Each Agency may designate a subset of monitoring sites as representative of conditions in the basin or an area of the basin, as follows:					
(a)			Representative monitoring sites may be designated by the Agency as the point at which sustainability indicators are monitored, and for which quantitative values for minimum thresholds, measurable objectives, and interim milestones are defined.	214	5.9	5.3-01, 5.3-02, 5.3-04, 5.3-05	5.3-02, 5.6-01	
(b)			(b) Groundwater elevations may be used as a proxy for monitoring other sustainability indicators if the Agency demonstrates the following:					
	(1)		Significant correlation exists between groundwater elevations and the sustainability indicators for which groundwater elevation measurements serve as a proxy.	214	5.9			
	(2)		Measurable objectives established for groundwater elevation shall include a reasonable margin of operational flexibility taking into consideration the basin setting to avoid undesirable results for the sustainability indicators for which groundwater elevation measurements serve as a proxy.	214	5.9			
(c)			The designation of a representative monitoring site shall be supported by adequate evidence demonstrating that the site reflects general conditions in the area.	214	5.9			
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10727.2 and 10733.2, Water Code					
§ 354.38.			**Assessment and Improvement of Monitoring Network**					
(a)			Each Agency shall review the monitoring network and include an evaluation in the Plan and each five-year assessment, including a determination of uncertainty and whether there are data gaps that could affect the ability of the Plan to achieve the sustainability goal for the basin.	198:199, 202, 205, 210:211, 213:214	5.3.4, 5.4.4, 5.5.4, 5.6.4, 5.7.4			

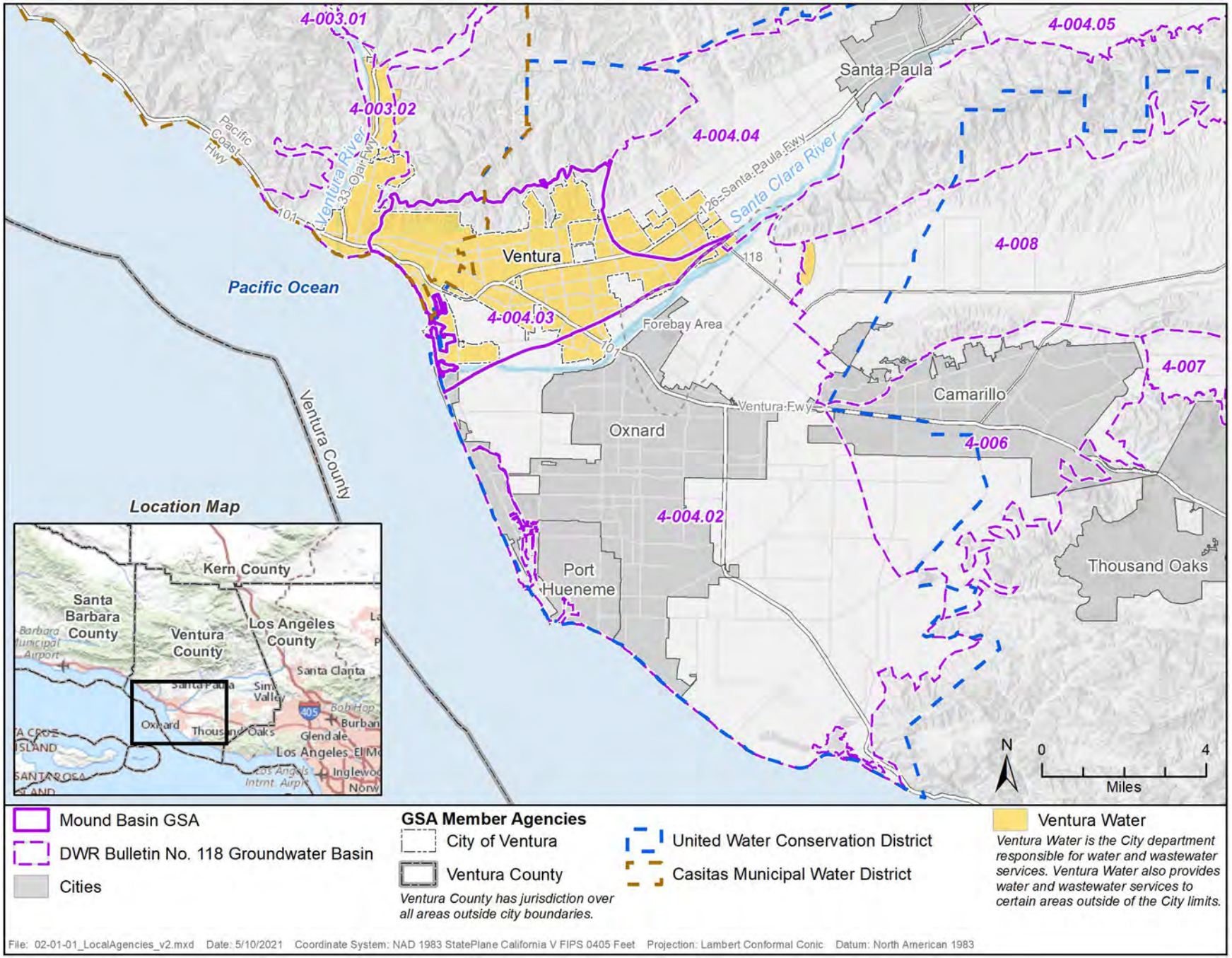
Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
(b)			Each Agency shall identify data gaps wherever the basin does not contain a sufficient number of monitoring sites, does not monitor sites at a sufficient frequency, or utilizes monitoring sites that are unreliable, including those that do not satisfy minimum standards of the monitoring network adopted by the Agency.	198:199, 202, 205, 210:211, 213:214	5.3.4, 5.4.4, 5.5.4, 5.6.4, 5.7.4	5.3-01, 5.3-02, 5.3-04, 5.3-05	5.3-02, 5.6-01	
(c)			If the monitoring network contains data gaps, the Plan shall include a description of the following:					
	(1)		The location and reason for data gaps in the monitoring network.	198:199, 202, 205, 210:211, 213:214	5.3.4, 5.4.4, 5.5.4, 5.6.4, 5.7.4	5.3-01, 5.3-02, 5.3-04, 5.3-05	5.3-02, 5.6-01	
	(2)		Local issues and circumstances that limit or prevent monitoring.	198:199, 202, 205, 210:211, 213:214	5.3.4, 5.4.4, 5.5.4, 5.6.4, 5.7.4			
(d)			Each Agency shall describe steps that will be taken to fill data gaps before the next five-year assessment, including the location and purpose of newly added or installed monitoring sites.	198:199, 202, 205, 210:211, 213:214	5.3.4, 5.4.4, 5.5.4, 5.6.4, 5.7.4			
(e)			Each Agency shall adjust the monitoring frequency and density of monitoring sites to provide an adequate level of detail about site-specific surface water and groundwater conditions and to assess the effectiveness of management actions under circumstances that include the following:					
	(1)		Minimum threshold exceedances.	198:199, 202, 205, 210:211, 213:214	5.3.4, 5.4.4, 5.5.4, 5.6.4, 5.7.4			
	(2)		Highly variable spatial or temporal conditions.	198:199, 202, 205, 210:211, 213:214	5.3.4, 5.4.4, 5.5.4, 5.6.4, 5.7.4			
	(3)		Adverse impacts to beneficial uses and users of groundwater.	198:199, 202, 205, 210:211, 213:214	5.3.4, 5.4.4, 5.5.4, 5.6.4, 5.7.4			
	(4)		The potential to adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of sustainability goals in an adjacent basin.	198:199, 202, 205, 210:211, 213:214	5.3.4, 5.4.4, 5.5.4, 5.6.4, 5.7.4			
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10723.2, 10727.2, 10728.2, 10733, 10733.2, and 10733.8, Water Code					
§ 354.40.			**Reporting Monitoring Data to the Department**					

Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
			Monitoring data shall be stored in the data management system developed pursuant to Section 352.6. A copy of the monitoring data shall be included in the Annual Report and submitted electronically on forms provided by the Department.					
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10728, 10728.2, 10733.2, and 10733.8, Water Code.					
SubArticle 5.			**Projects and Management Actions**					
§ 354.42.			**Introduction to Projects and Management Actions**					
			This Subarticle describes the criteria for projects and management actions to be included in a Plan to meet the sustainability goal for the basin in a manner that can be maintained over the planning and implementation horizon.					
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Section 10733.2, Water Code.					
§ 354.44.			**Projects and Management Actions**					
(a)			Each Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.	216	6.1			
(b)			Each Plan shall include a description of the projects and management actions that include the following:					
	(1)		A list of projects and management actions proposed in the Plan with a description of the measurable objective that is expected to benefit from the project or management action. The list shall include projects and management actions that may be utilized to meet interim milestones, the exceedance of minimum thresholds, or where undesirable results have occurred or are imminent. The Plan shall include the following:					
		(A)	A description of the circumstances under which projects or management actions shall be implemented, the criteria that would trigger implementation and termination of projects or management actions, and the process by which the Agency shall determine that conditions requiring the implementation of particular projects or management actions have occurred.	218, 221, 224, 227, 230	6.2.2, 6.3.2, 6.4.2, 6.5.2, 6.6.2			
		(B)	The process by which the Agency shall provide notice to the public and other agencies that the implementation of projects or management actions is being considered or has been implemented, including a description of the actions to be taken.	218, 221, 224:225, 227, 230	6.2.3, 6.3.3, 6.4.3, 6.5.3, 6.6.3			
	(2)		If overdraft conditions are identified through the analysis required by Section 354.18, the Plan shall describe projects or management actions, including a quantification of demand reduction or other methods, for the mitigation of overdraft.	216	6.1			
	(3)		A summary of the permitting and regulatory process required for each project and management action.	218, 221, 225, 227, 231	6.2.4, 6.3.4, 6.4.4, 6.5.4, 6.6.4			
	(4)		The status of each project and management action, including a time-table for expected initiation and completion, and the accrual of expected benefits.	218:219, 222, 225, 227:228, 231	6.2.5, 6.3.5, 6.4.5, 6.5.5, 6.6.5			

Article 5.			Plan Contents for Mound Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
	(5)		An explanation of the benefits that are expected to be realized from the project or management action, and how those benefits will be evaluated.	2189, 222, 225, 228, 231	6.2.6, 6.3.6, 6.4.6, 6.5.6, 6.6.6			
	(6)		An explanation of how the project or management action will be accomplished. If the projects or management actions rely on water from outside the jurisdiction of the Agency, an explanation of the source and reliability of that water shall be included.	219, 222, 225, 228, 231	6.2.7, 6.3.7, 6.4.7, 6.5.7, 6.6.7			
	(7)		A description of the legal authority required for each project and management action, and the basis for that authority within the Agency.	219, 223, 226, 228, 232	6.2.8, 6.3.8, 6.4.8, 6.5.8, 6.6.8			
	(8)		A description of the estimated cost for each project and management action and a description of how the Agency plans to meet those costs.	219:220, 223, 226, 228, 232	6.2.9, 6.3.9, 6.4.9, 6.5.9, 6.6.9			
	(9)		A description of the management of groundwater extractions and recharge to ensure that chronic lowering of groundwater levels or depletion of supply during periods of drought is offset by increases in groundwater levels or storage during other periods.	216	6.1			
(c)			Projects and management actions shall be supported by best available information and best available science.	216	6.1			
(d)			An Agency shall take into account the level of uncertainty associated with the basin setting when developing projects or management actions.	216, 217, 220, 223:224, 226, 229:230	6.1, 6.2, 6.3, 6.4, 6.5, 6.6			
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10727.2, 10727.4, and 10733.2, Water Code.					

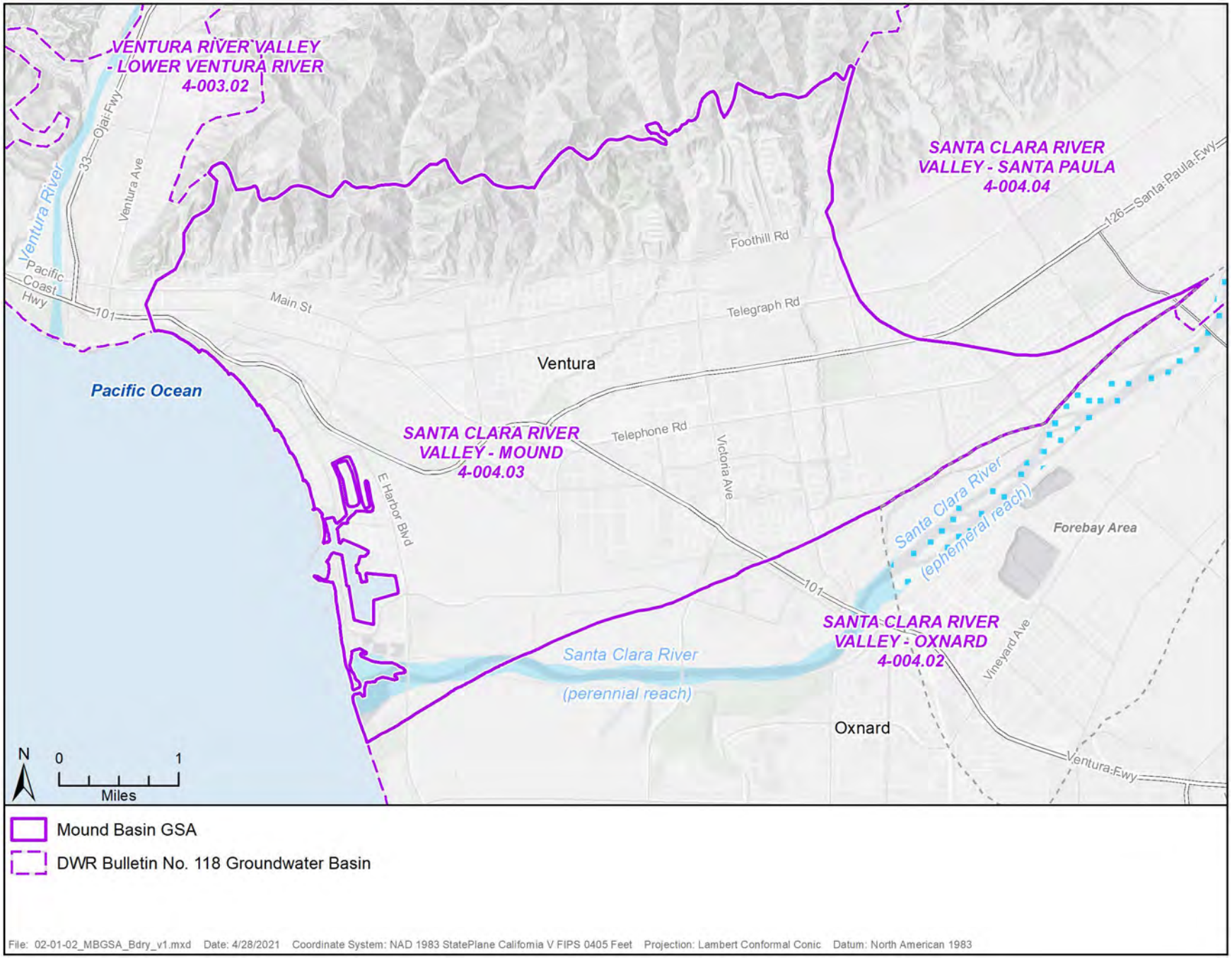
Appendix C

GSA Formation, MBGSA JPA and MBGSA Bylaws



Local Agency Boundary Map

MoundBasin



Mound Basin Groundwater Sustainability Agency Boundary Map

BOARD OF DIRECTORS

MOUND BASIN GROUNDWATER SUSTAINABILITY AGENCY

RESOLUTION NO. 2017-01

A RESOLUTION OF THE MOUND BASIN GROUNDWATER SUSTAINABILITY AGENCY TO BE ELECTED AS THE GROUNDWATER SUSTAINABILITY AGENCY FOR THE MOUND BASIN PURSUANT TO THE SUSTAINABLE GROUNDWATER MANAGEMENT ACT

WHEREAS, the California Legislature has adopted, and the Governor has signed into law, the Sustainable Groundwater Management Act of 2014 ("Act"), which authorizes local agencies to manage groundwater in a sustainable fashion; and

WHEREAS, the legislative intent of the Act is to provide for sustainable management of groundwater basins, to enhance local management of groundwater, to establish minimum standards for sustainable groundwater management, and to provide local agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater; and

WHEREAS, in order to exercise the authority granted in the Act, a local agency or combination of local agencies must elect to become a groundwater sustainability agency ("GSA"); and

WHEREAS, the Mound Groundwater Sustainability Agency ("Agency") is a local agency, as the Act defines that term; and

WHEREAS, the Agency exercises jurisdiction upon land overlying the entire Mound Basin (designated basin number 4-4.03 Department of Water Resources' ("DWR") CASGEM groundwater basin system) ("Basin"); and

WHEREAS, the Agency is committed to sustainable management of the Basin's groundwater resources; and

WHEREAS, the Act requires that a GSA be formed for all basins designated by DWR as a medium- or high-priority basins by June 30, 2017; and

WHEREAS, the Basin is designated as a medium-priority sub-basin of the Santa Clara River Valley Basin pursuant to the DWR's initial prioritization; and

WHEREAS, it is the intent of the Agency to work cooperatively with other local GSAs and stakeholders, as may be appropriate, to sustainably manage the Basin and ensure that the Act's goals are satisfied; and

WHEREAS, notice of a hearing on the Agency's election to become a GSA for the Basin ("Notice") has been published in the Ventura County Star as provided by law; and

WHEREAS, on this day, the Agency held a public hearing to consider whether it should elect to become a GSA for the Basin; and

WHEREAS, it would be in the best interest of the Basin for the Agency to become a GSA for the Basin, and to begin the process of preparing a groundwater sustainability plan ("Sustainability Plan"); and

WHEREAS, the Agency's process to develop the Sustainability Plan for the Basin will include stakeholder outreach and will provide multiple opportunities for public involvement; and

WHEREAS, adoption of this resolution does not constitute a "project" under California Environmental Quality Act Guidelines Section 15378(b)(5), including organization and administrative activities of government, because there would be no direct or indirect physical change in the environment.

THEREFORE, BE IT RESOLVED by the Board of Directors of the Mound Basin Groundwater Sustainability Agency, as follows:

1. All the recitals in this resolution are true and correct and the Agency so finds, determines and represents.

2. The Agency hereby elects to become the GSA for the Basin.

3. Within thirty days of the date of this resolution, but no later than June 30, 2017, the Agency's interim Executive Director is directed to provide notice to DWR of the Agency's election to be the GSA for the Basin ("Notice of GSA Election") in the manner required by law.

4. One of the elements of the Notice of GSA Election is the boundaries the Agency intends to manage as the GSA for the Basin. Until further action of the Agency, the boundaries of the GSA shall be the external boundaries of the Basin, the entirety of which currently falls within the Agency's jurisdiction.

5. Upon submission of the Notice of GSA Election, the Agency's Board of Director's shall begin discussions with interested stakeholders and beneficial users within the Basin in order to begin the process of developing a Sustainability Plan for the Basin.

6. The Agency's Executive Director is directed to report back to the Agency's Board of Directors at least quarterly on the progress toward developing the Sustainability Plan.

7. This resolution shall take effect immediately upon passage and adoption.

WE, THE UNDERSIGNED, do hereby certify that the above and foregoing Resolution No. 2017- 01 was duly adopted and passed by the Board of Directors of the Mound Basin Groundwater Sustainability Agency at a meeting held on the 22nd day of June, 2017, by the following vote:

AYES: DIRECTORS MOBLEY, SHEPHARD, AND MCDERMOTT
NOES: NONE.
ABSENT: NONE.

Interim Board Chair
Mound Basin Groundwater Sustainability Agency

ATTEST:

Interim Executive Director
Mound Basin Groundwater Sustainability Agency

AYES:
NOES:
ABSENT:

Interim Board Chair
Mound Basin Groundwater Sustainability Agency

ATTEST:

Interim Executive Director
Mound Basin Groundwater Sustainability Agency

Certificate of Publication

Ad #1637550

In Matter of Publication of:

Public Notice

State of California)
))§
County of Ventura)

I, **Maria Rodriguez**, hereby certify that the **Ventura County Star Newspaper** has been adjudged a newspaper of general circulation by the Superior Court of California, County of Ventura within the provisions of the Government Code of the State of California, printed in the City of Camarillo, for circulation in the County of Ventura, State of California; that I am a clerk of the printer of said paper; that the annexed clipping is a true printed copy and publishing in said newspaper on the following dates to wit:

June 07, 14, 2017

I, Maria Rodriguez certify under penalty of perjury, that the foregoing is true and correct.

Dated this June 14, 2017; in Camarillo, California, County of Ventura.

Maria Rodriguez
(Signature)

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that a Public Hearing of the Mound Basin Groundwater Sustainability Agency Board of Directors will be held:

--June 22, 2017 at 10:00 am--
MOUND BASIN GROUNDWATER SUSTAINABILITY AGENCY
City of Ventura City Hall, Community Meeting Room
501 Poli Street, Ventura, California 93001

The purpose of this Public Hearing is to accept public comment regarding the Mound Basin Groundwater Sustainability Agency's ("Agency") election to become the designated Groundwater Sustainability Agency ("GSA") pursuant to the Sustainable Groundwater Management Act ("SGMA") for the Mound Groundwater Basin ("Basin"). It is expected the County of Ventura, United Water Conservation District, and the City of San Buenaventura will execute a Joint Exercise of Powers Agreement to form the Agency. Under SGMA, a local agency is required to elect to become a GSA for the Basin by June 30, 2017. Failure to comply with this deadline subjects the Basin to state intervention under SGMA. Once a GSA is formed for the Basin, the GSA will begin holding public meetings to discuss development of a Groundwater Sustainability Plan. Additional information can be found at www.water.ca.gov/groundwater/sgm or by contacting:

Jeff Pratt, Public Works Agency Director, County of Ventura
Jeff.Pratt@ventura.org, 805-654-2073

Tony Morgan, Deputy General Manager for Groundwater & Water Resources, United Water Conservation District
tonym@unitedwater.org, 805-525-4431

Joe McDermott, Ventura Water Acting General Manager, City of San Buenaventura
jmcdermott@cityofventura.ca.gov, 805-654-7828

Publish: June 7, 2017 and June 14, 2017 Ad No.1637550

JOINT EXERCISE OF POWERS AGREEMENT

by and among

THE CITY OF SAN BUENAVENTURA

THE COUNTY OF VENTURA

and

UNITED WATER CONSERVATION DISTRICT

creating

THE MOUND BASIN GROUNDWATER SUSTAINABILITY AGENCY

JUNE 2017

Table of Contents

JOINT EXERCISE OF POWERS AGREEMENT
THE MOUND BASIN GROUNDWATER SUSTAINABILITY AGENCY

This **Joint Exercise of Powers Agreement ("Agreement")** is made and effective on the last date executed ("**Effective Date**"), by and among the City of San Buenaventura, the County of Ventura, and United Water Conservation District, sometimes referred to herein individually as a "**Member**" and collectively as the "**Members**" for purposes of forming the Mound Basin Groundwater Sustainability Agency ("**Authority**") and setting forth the terms pursuant to which the Authority shall operate. Capitalized defined terms used herein shall have the meanings given to them in Article 1 of this Agreement.

RECITALS

A. Each of the Members is a local agency, as defined by the Sustainable Groundwater Management Act of 2014 ("**SGMA**"), duly organized and existing under and by virtue of the laws of the State of California, and each Member can exercise powers related to groundwater management.

B. For groundwater basins designated by the Department of Water Resources ("**DWR**") as medium- and high-priority but that have not been designated by DWR as subject to critical conditions of overdraft, SGMA requires establishment of a groundwater sustainability agency ("**GSA**") by June 30, 2017 and adoption of a groundwater sustainability plan ("**GSP**") by January 31, 2022.

C. The Mound Basin (designated basin number 4-4.03 in the DWR's Bulletin No. 118) ("**Basin**") is designated as a medium-priority sub-basin of the Santa Clara River Valley Basin. DWR has not identified the Basin as being in a condition of critical overdraft.

D. Under SGMA, a combination of local agencies may form a GSA through a joint powers agreement.

E. The Members have determined that the sustainable management of the Basin pursuant to SGMA may best be achieved through the cooperation of the Members operating through a joint powers agreement.

F. The Joint Exercise of Powers Act of 2000 ("Act") authorizes the Members to create a joint powers authority, and to jointly exercise any power common to the Members and to exercise additional powers granted under the Act.

G. The Act, including the Marks-Roos Local Bond Pooling Act of 1985 (Government Code sections 6584, *et seq.*), authorizes an entity created pursuant to the Act to issue bonds, and under certain circumstances, to purchase bonds issued by, or to make loans to, the Members for financing public capital improvements, working capital, liability and other insurance needs or projects whenever doing so would result in significant public benefits, as determined by the Members. The Act further authorizes and empowers a joint powers authority to sell bonds so issued or purchased to public or private purchasers at public or negotiated sales.

H. Based on the foregoing legal authority, the Members desire to create a joint powers authority for the purpose of taking all actions deemed necessary by the joint powers authority to ensure sustainable management of the Basin as required by SGMA.

I. The governing body of each Member has determined it to be in the Member's best interest and in the public interest that this Agreement be executed.

TERMS OF AGREEMENT

In consideration of the mutual promises and covenants herein contained, the Members agree as follows:

ARTICLE 1
DEFINITIONS

The following terms have the following meanings for purposes of this Agreement:

1.1 "Act" means the Joint Exercise of Powers Act, set forth in Chapter 5 of Division 7 of Title 1 of the Government Code, sections 6500, *et seq.*, including all laws supplemental thereto.

1.2 "Agreement" has the meaning assigned thereto in the Preamble.

1.3 "Auditor" means the auditor of the financial affairs of the Authority appointed by the Board of Directors pursuant to Section 13.3 of this Agreement.

1.4 "Authority" has the meaning assigned thereto in the Preamble.

1.5 "Basin" has the meaning assigned thereto in Recital C.

1.6 "Board of Directors" or "Board" means the governing body of the Authority as established by Article 6 of this Agreement.

1.7 "Bylaws" means the bylaws, if any, adopted by the Board of Directors pursuant to Article 11 of this Agreement to govern the day-to-day operations of the Authority.

1.8 "Director" shall mean a Member or Stakeholder Director appointed pursuant to Article 6 of this Agreement.

1.9 "DWR" has the meaning assigned thereto in Recital B.

1.10 "Effective Date" has the meaning assigned thereto in the Preamble.

1.11 "Executive Director" means the chief administrative officer of the Authority to be appointed by the Board of Directors pursuant to Article 10 of this Agreement.

1.12 "Farm Bureau" means the Farm Bureau of Ventura County.

1.13 "GSA" has the meaning assigned thereto in Recital B.

1.14 "GSP" has the meaning assigned thereto in Recital B.

1.15 "Hazardous Materials Law" means any and all federal, state, or local laws, ordinances, rules, decrees, orders, regulations, or court decisions relating to hazardous substances, hazardous materials, hazardous waste, toxic substances, environmental conditions on, under or about any real property owned, leased, or controlled by the Authority, or soil and groundwater conditions, including, but not limited to, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), as amended, 42 U.S.C. § 9601, *et seq.*, the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6901, *et seq.*, the Hazardous Materials Transportation Act, 49 U.S.C. § 1801, *et seq.*, the California Hazardous Waste Control Act, Cal. Health and Safety Code § 25100, *et seq.*, the Carpenter-Presley-Tanner Hazardous Substances Account Act, Cal. Health and Safety Code § 25300, *et seq.*, the Safe Drinking Water and Toxic Enforcement Act, Cal. Health and Safety Code § 25249.5, *et seq.*, the Porter-Cologne Water Quality Control Act, Cal. Water Code § 13000, *et seq.*, any amendments to the foregoing, and any similar federal, state, or local laws, ordinances, rules, decrees, orders, or regulations.

1.16 "Hazardous Materials" means any chemical, compound, material, substance or other matter that: (a) is defined as a hazardous substance, hazardous material, hazardous waste or toxic substance under any Hazardous Materials Law; (b) is controlled or governed by any Hazardous Materials Law or gives rise to any reporting, notice or publication requirements hereunder, or gives rise to any liability, responsibility or duty on the part of the Authority, with respect to any third person hereunder; or (c) is flammable or explosive material, oil, asbestos, urea formaldehyde, radioactive material, nuclear medicine material, drug, vaccine, bacteria, virus, hazardous waste, toxic substance, or related injurious or potentially injurious material (by itself or in combination with other materials).

1.17 "MBAWG" means the Mound Basin Ag Water Group, a registered corporation in the State of California.

1.18 "Member" has the meaning assigned thereto in the Preamble and further means each party to this Agreement that satisfies the requirements of Section 5.1 of this Agreement, including any new members as may be authorized by the Board, pursuant to Section 5.2 of this Agreement.

1.19 "Member Director" means a Director appointed pursuant to Section 6.3 of this Agreement that represents a Member.

1.20 "Officer(s)" means the chair and vice chair/secretary to be appointed by the Board

of Directors pursuant to Article 7 of this Agreement.

1.21 "SGMA" has the meaning assigned thereto in Recital A.

1.22 "Stakeholder Director" means a Director appointed pursuant to Section 6.3 that represents stakeholder interests.

1.23 "State" means the State of California.

1.24 "Representative" means an employee of the County of Ventura authorized to act on behalf of the Board of Supervisors or an employee of the City of San Buenaventura authorized to act on behalf of the City Council or an employee of United Water Conservation District authorized to act on behalf of the United Water Conservation District Board of Directors.

ARTICLE 2
CREATION OF THE AUTHORITY

2.1 Creation of Authority. There is hereby created pursuant to the Act a joint powers authority, which will be a public entity separate from the Members to this Agreement and shall be known as the Mound Basin Groundwater Sustainability Agency ("**Authority**"). Within thirty (30) days after the Effective Date of this Agreement and after any amendment, the Authority shall cause a notice of this Agreement or amendment to be prepared and filed with the office of the California Secretary of State containing the information required by Government Code section 6503.5. Within seventy (70) days after the Effective Date of this Agreement, the Authority shall cause a statement of the information concerning the Authority, required by Government Code section 53051, to be filed with the office of the California Secretary of State and with the County Clerk for the County of Ventura, setting forth the facts required to be stated pursuant to Government Code section 53051(a).

2.2 Purpose of the Authority. Each Member to this Agreement has in common the power to study, plan, develop, finance, acquire, construct, maintain, repair, manage, operate, control, and govern water supply projects and exercise groundwater management authority within the Basin either alone or in cooperation with other public or private non-member entities, and each is a local agency eligible to serve as the GSA in the Basin, either alone or jointly through a joint powers agreement as provided for by SGMA. This Agreement is being entered into in order to jointly exercise some or all of the foregoing common powers, as appropriate, and for the exercise of such additional powers as may be authorized by law in the manner herein set forth, in order to effectuate the purposes of this Agreement. The purpose of the Authority is to serve as the GSA for the Basin and to develop, adopt, and implement the GSP for the Basin pursuant to SGMA and other applicable provisions of law.

ARTICLE 3
TERM

This Agreement shall become effective upon execution by each of the Members and shall remain in effect until terminated pursuant to the provisions of Article 16 of this Agreement.

ARTICLE 4
POWERS

The Authority shall possess the power in its own name to exercise any and all common powers of its Members reasonably related to the purposes of the Authority, including but not limited to the powers set forth below, together with such other powers as are expressly set forth in the Act or in SGMA or as it may be amended in the future. For purposes of Government Code section 6509, and unless the Authority has adopted applicable rules, regulations, policies, bylaws and procedures, the powers of the Authority shall be exercised subject to the restrictions upon the manner of exercising such powers as are imposed on the County of Ventura, and in the event of the withdrawal of the County of Ventura as a Member under this Agreement, then the powers of the Authority shall be exercised subject to the restrictions upon the manner of exercising such powers as are imposed on the City of San Buenaventura.

4.1 To exercise all powers afforded to the Authority under SGMA or any amendment thereto, including without limitation:

4.1.1 To adopt rules, regulations, policies, bylaws and procedures governing the operation of the Authority.

4.1.2 To develop, adopt and implement a GSP for the Basin, and to exercise jointly the common powers of the Members in doing so.

4.1.3 To obtain rights, permits and other authorizations for, or pertaining to, implementation of a GSP for the Basin.

4.1.4 To collect and monitor data on the extraction of groundwater from, and the quality of groundwater in, the Basin.

4.1.5 To acquire property and other assets by grant, lease, purchase, bequest, devise, gift, or eminent domain, and to hold, enjoy, lease or sell, or otherwise dispose of, property, including real property, water rights, and personal property, necessary for the full exercise of the Authority's powers.

4.1.6 To establish and administer a conjunctive use program for the purposes of maintaining sustainable yields in the Basin consistent with the requirements of SGMA or any amendment thereto.

4.1.7 To exchange and distribute water.

4.1.8 To regulate groundwater extractions as permitted by SGMA.

4.1.9 To spread, sink and inject water into the Basin.

4.1.10 To store, transport, recapture, recycle, purify, treat or otherwise manage and control water for beneficial use.

4.1.11 To develop and facilitate market-based solutions for the use and

management of water rights.

4.1.12 To impose assessments, groundwater extraction fees or other charges, and to undertake other means of financing the Authority as authorized by Chapter 8 of SGMA, commencing at section 10730 of the Water Code.

4.1.13 To perform other ancillary tasks relating to the operation of the Authority pursuant to SGMA, including without limitation, environmental review, engineering, and design.

4.2 To apply for, accept and receive licenses, permits, water rights, approvals, agreements, grants, loans, contributions, donations or other aid from any agency of the United States, the State of California or other public agencies or private persons or entities necessary for the Authority's purposes

4.3 To develop, collect, provide, and disseminate information that furthers the purposes of the Authority.

4.4 To make and enter contracts necessary to the full exercise of the Authority's power.

4.5 To employ, designate, or otherwise contract for the services of, agents, officers, employees, attorneys, engineers, planners, financial consultants, technical specialists, advisors, and independent contractors.

4.6 To incur debts, liabilities or obligations, to issue bonds, notes, certificates of participation, guarantees, equipment leases, reimbursement obligations and other indebtedness, as authorized by the Act.

4.7 To cooperate, act in conjunction and contract with the United States, the State of California, or any agency thereof, counties, municipalities, public and private corporations of any kind (including without limitation, investor-owned utilities), and individuals, or any of them, for any and all purposes necessary or convenient for the full exercise of the powers of the Authority.

4.8 To sue and be sued in the Authority's own name.

4.9 To provide for the prosecution of, defense of, or other participation in, actions or proceedings at law or in public hearings in which the Members, pursuant to this Agreement, have an interest and employ counsel and other expert assistance for these purposes.

4.10 To accumulate operating and reserve funds for the purposes herein stated.

4.11 To invest money that is not required for the immediate necessities of the Authority, as the Authority determines is advisable, in the same manner and upon the same conditions as Members, pursuant to Government Code section 53601, as that section now exists or may hereafter be amended.

4.12 To undertake any investigations, studies, and matters of general administration.

4.13 To perform all other acts necessary or proper to carry out fully the purposes of this Agreement.

ARTICLE 5
MEMBERSHIP

5.1 Members. The Members of the Authority shall be the City of San Buenaventura, the County of Ventura, and United Water Conservation District, as long as they have not, pursuant to the provisions hereof, withdrawn from this Agreement.

5.2 New Members. Any local agency (as defined by SGMA) that is not a Member on the Effective Date of this Agreement may become a Member upon appropriate amendment of this Agreement pursuant to Section 17.3.

ARTICLE 6
BOARD OF DIRECTORS

6.1 Formation of the Board of Directors. The Authority shall be governed by a Board of Directors ("**Board of Directors**" or "**Board**"). The Board shall consist of five (5) Directors comprised of representatives who shall be appointed in the manner set forth in Section 6.3.

6.1.1 Three (3) Member Directors appointed by the governing body of each Member.

6.1.2 One (1) Agricultural Stakeholder Director representative of agricultural interests within the Basin. The Agricultural Stakeholder Director need not be a member of the MBAWG or the Farm Bureau. The Agricultural Stakeholder Director shall meet either or both of the following qualifications:

a) Own, as an individual or shareholder, trustee, limited liability company member or manager, or as a member of any other owner entity, land overlying the Basin (at least partially) that is utilized for a commercial agricultural business that produces groundwater from the Basin for its agricultural operation; or

b) Operate a commercial agricultural business that itself produces groundwater from the Basin for its agricultural operations on land overlying the Basin and be an approved stakeholder representative by that property's owner.

6.1.3 One (1) Environmental Stakeholder Director representative of environmental interests within the Basin. The Environmental Stakeholder Director shall be an active member of a nonprofit, 501(c)(3) organization which has an adopted budget and, at the sole discretion of the Member Directors, meets the following requirements: (i) is currently active within lands overlying the Mound Basin; and (ii) has a mission that advances, or is furthered by, groundwater sustainability.

6.2 Duties of the Board of Directors. The business and affairs of the Authority, and all of the powers of the Authority, including without limitation all powers set forth in Article 4 (Powers), are reserved to and shall be exercised by and through the Board of Directors, except as may be expressly delegated to the Executive Director or others pursuant to this Agreement, Bylaws, or by specific action of the Board of Directors.

6.3 Appointment of Directors. The Directors shall be appointed as follows:

6.3.1 One (1) Member Director for the City of San Buenaventura shall be appointed by the City of San Buenaventura City Council. The Member Director will be a City Councilmember or Representative.

6.3.2 One (1) Member Director for the County of Ventura shall be appointed by the County of Ventura Board of Supervisors. The Member Director will be a County Supervisor or Representative.

6.3.3 One (1) Member Director for the United Water Conservation District shall be appointed by the United Water Conservation District Board of Directors. The Member Director will be a member of the United Water Conservation District Board of Directors or a Representative.

6.3.4 One (1) Agricultural Stakeholder Director unanimously selected by the Member Directors from a list of one or more qualified nominees submitted by the MBAWG, or the Farm Bureau if the MBAWG is unwilling or unable to nominate potential directors. The MBAWG, or the Farm Bureau, shall submit its nominee(s) to the Member Directors pursuant to a process specified in the Bylaws, unless directed otherwise by the Member Directors until such time as the Bylaws have been adopted. The Member Directors shall consider the nominee(s) at a regular meeting and at that meeting shall approve and appoint the Agricultural Stakeholder Director. In the absence of a unanimous vote of approval and appointment by the Member Directors, the Member Directors can request different nominations.

6.3.5 One (1) Environmental Stakeholder Director unanimously selected by the Member Directors from a nominee nominated by the following environmental organizations collectively:

1. Friends of the Santa Clara River
2. California Trout
3. National Audubon Society
4. Sierra Club
5. Santa Clara River Watershed Conservancy
6. Los Padres ForestWatch
7. Central Coast Alliance United for a Sustainable Economy
8. The Nature Conservancy
9. Wishtoyo Foundation
10. Keep Sespe Wild
11. Surfrider Foundation

12. CFROG (Citizens for Responsible Oil & Gas)

or, The Nature Conservancy if, and only if, the aforementioned list of organizations is unwilling or unable to nominate a potential Environmental Stakeholder Director. If the Member Directors do not accept a potential Environmental Stakeholder Director nominated by the aforementioned list of organizations or The Nature Conservancy, as applicable, the Member Directors shall request an additional nomination, as necessary. The aforementioned list of organizations shall submit its nominee to the Member Directors pursuant to a process specified in the Bylaws, unless directed otherwise by the Member Directors. The Member Directors shall consider the nominee(s) at a regular meeting and at that meeting shall approve and appoint the Environmental Stakeholder Director.

6.4 Director Terms and Removal. Each Member Director shall be appointed by resolution of that Member's governing body to serve for a term of two (2) years. To stagger the terms of the Directors, the initial terms of the Member Directors from the City of San Buenaventura and the United Water Conservation District shall be three (3) years. Subsequent terms for those Directors will be two (2) years. A Member's Director may be removed during his or her term or reappointed for multiple terms at the pleasure of the Member that appointed him or her. Stakeholder Directors shall serve for a term of one (1) year and may serve for more than one term.

6.5 Vacancies. A vacancy on the Board of Directors shall occur when a Director resigns or at the end of the Director's term as set forth in Section 6.4. For Member Directors, a vacancy shall also occur when he or she is (a) removed by his or her appointing Member; or (b) ceases to be a member of the Member's governing body; or (c) ceases to be an employee of the Member. Upon the vacancy of a Director, the seat shall remain vacant until a replacement Director is appointed as set forth in Section 6.3. Members shall submit any changes in Director positions to the Executive Director by written notice signed by an authorized representative of the Member. The written notice shall include a resolution of the governing body of the Member directing such change in the Director position.

6.6 Conflicts of Interest. Notwithstanding Section 8.5, no Director shall be allowed to participate in any matter before the Board in which he or she has a conflict of interest. A Member Director is deemed to have a conflict of interest and disqualified from participating in related matters before the Board if that Member Director (i) is personally, or (ii) was appointed by a Member that is, named as an adverse party in any litigation in which the Authority is a party. A Stakeholder Director is deemed to have a conflict of interest and disqualified from participating in related matters before the Board if that Stakeholder Director (i) is personally, (ii) is employed by, or (iii) acts as a manager or executive director to, or sits on the board of, an entity that is named as, an adverse party in litigation in which the Authority is a party, except that the Authority's intervention or participation in an "adjudication action," as defined by Water Code section 10721, shall not give rise to a conflict of interest under this section. In such an event, the Director shall be deemed disqualified in all matters related to the issue being litigated, shall not be eligible to receive confidential information relating to the litigation from the Authority or its legal counsel, and shall not be eligible to attend any closed session where the litigation is discussed. In the event a Director deemed to have a conflict of interest refuses to withdraw from matters related to the conflict, the other Directors shall jointly seek a court order

preventing the conflicted Director from participating in those related matters.

ARTICLE 7
OFFICERS

7.1 Officers. Officers of the Authority shall be a chair and vice chair/secretary. An additional Officer of the Authority shall be a treasurer appointed consistent with the provisions of Section 13.3. The vice chair/secretary shall exercise all powers of the chair in the chair's absence or inability to act.

7.2 Appointment of Officers. Officers shall be elected annually by, and serve at the pleasure of, the Board of Directors. Officers shall be elected at the first Board meeting, and thereafter at the first Board meeting following January 1st of each year. An Officer may serve for multiple consecutive terms, with no term limit. Any Officer may resign at any time upon written notice to the Board, and may be removed and replaced by a simple majority vote of the full Board.

7.3 Principal Office. The principal office of the Authority shall be established by the Board of Directors, and may thereafter be changed by a simple majority vote of the full Board. The principal office of the Authority shall be located within the jurisdictional boundaries of one or more of the Members.

ARTICLE 8
DIRECTOR MEETINGS

8.1 Initial Meeting. The initial meeting of the Board of Directors shall be held in the County of Ventura, California within thirty (30) days of the Effective Date of this Agreement.

8.2 Time and Place. The Board of Directors shall meet at least quarterly, at a date, time and place set by the Board within the jurisdictional boundaries of one or more of the Members, and at such times as may be determined by the Board.

8.3 Special Meetings. Special meetings of the Board of Directors may be called in accordance with the Ralph M. Brown Act (Government Code sections 54950, *et seq.*).

8.4 Conduct. All meetings of the Board of Directors, including special meetings, shall be noticed, held, and conducted in accordance with the Ralph M. Brown Act (Government Code sections 54950, *et seq*.). The Board may use teleconferencing in connection with any meeting in conformance with and to the extent authorized by applicable law.

8.5 Local Conflict of Interest Code. The Board of Directors shall adopt a local conflict of interest code pursuant to the provisions of the Political Reform Act of 1974 (Government Code sections 81000, *et seq*.).

ARTICLE 9
VOTING

9.1 Quorum. A quorum of any meeting of the Board of Directors shall consist of a

majority of the Directors. In the absence of a quorum, any meeting of the Directors may be adjourned by a vote of a simple majority of Directors present, but no other business may be transacted. For purposes of this Article, a Director shall be deemed present if the Director appears at the meeting in person or participates telephonically, provided the telephone appearance is consistent with the requirements of the Ralph M. Brown Act.

9.2 Director Votes. Voting by the Board of Directors shall be made on the basis of one vote for each Director. A Director may vote on all matters of Authority business unless disqualified because of a conflict of interest pursuant to California law or the local conflict of interest code adopted by the Board of Directors.

9.3 Affirmative Decisions of the Board of Directors. Except as otherwise specified in this Agreement, all decisions of the Board of Directors shall require the affirmative vote of a minimum of three (3) Directors, except for the following matters which require special voting procedures from the Board to pass: (i) the Authority's annual budget and amendments thereto; (ii) the GSP for the Basin or any amendments thereto; (iii) the Authority's adoption of groundwater extraction fees or charges; (iv) the Authority's adoption of any taxes, fees, or assessments subject to Proposition 218; or (v) any stipulation to resolve litigation concerning groundwater rights within, or groundwater management for, the Basin. For these matters requiring special voting procedures, the matter may be approved on the first reading of the matter pursuant to a unanimous vote of all Directors; if unanimity is not obtained on the first reading of a matter, the Board shall continue a final vote on the matter for a second reading at the next regular meeting of the Board, unless the Board votes to continue the second reading of the matter to another regular or special meeting of the Board; the matter may be approved on the second reading of the matter by the affirmative vote of a minimum of three (3) Directors, if, and only if, at least one (1) of the affirmative votes is by the City of San Buenaventura's Director or the Agricultural Stakeholder Director.

ARTICLE 10
EXECUTIVE DIRECTOR AND STAFF

10.1 Appointment. The Board of Directors shall appoint an Executive Director, who may be, though need not be, an officer, employee, or representative of one of the Members. The Executive Director's compensation, if any, shall be determined by the Board of Directors.

10.2 Duties. If appointed, the Executive Director shall be the chief administrative officer of the Authority, shall serve at the pleasure of the Board of Directors, and shall be responsible to the Board for the proper and efficient administration of the Authority. The Executive Director shall have the powers designated by the Board, or otherwise as set forth in the Bylaws.

10.3 Term and Termination. The Executive Director shall serve until he/she resigns or the Board of Directors terminates his/her appointment.

10.4 Staff and Services. The Executive Director may employ such additional full-time and/or part-time employees, assistants and independent contractors who may be necessary from time to time to accomplish the purposes of the Authority, subject to the approval of the Board of

Directors. The Authority may contract with a Member or other public agency or private entity for various services, including without limitation, those related to the Authority's finance, purchasing, risk management, information technology and human resources. A written agreement shall be entered between the Authority and the Member or other public agency or private entity contracting to provide such service, and that agreement shall specify the terms on which such services shall be provided, including without limitation, the compensation, if any, that shall be made for the provision of such services.

ARTICLE 11
BYLAWS

The Board of Directors shall cause to be drafted and approve Bylaws of the Authority to govern the day-to-day operations of the Authority. The Bylaws shall be adopted at or before the first anniversary of the Board's first meeting and may be amended from time to time.

ARTICLE 12
COMMITTEES

The Board of Directors may from time to time appoint one or more advisory committees or establish standing or ad hoc committees to assist in carrying out the purposes and objectives of the Authority. The Board shall determine the purpose and need for such committees and the necessary qualifications for individuals appointed to them. Each standing or ad hoc committee shall include a Director as the chair thereof. However, no committee or participant on such committee shall have any authority to act on behalf of the Authority.

ARTICLE 13
ACCOUNTING PRACTICES

13.1 General. The Board of Directors shall establish and maintain such funds and accounts as may be required by generally accepted public agency accounting practices. The Authority shall maintain strict accountability of all funds and report of all receipts and disbursements of the Authority.

13.2 Fiscal Year. Unless the Board of Directors decides otherwise, the fiscal year for the Authority shall run from July 1 to June 30.

13.3 Appointment of Treasurer and Auditor; Duties. The treasurer and Auditor shall be appointed in the manner, and shall perform such duties and responsibilities, specified in sections 6505, 6505.5 and 6505.6 of the Act. The treasurer shall be bonded in accordance with the provisions of section 6505.1 of the Act.

ARTICLE 14
BUDGET AND EXPENSES

14.1 Budget. Within one hundred and twenty (120) days after the first meeting of the Board of Directors, and thereafter prior to the commencement of each fiscal year, the Board shall adopt a budget for the Authority for the ensuing fiscal year. In the event that a budget is not so approved, the prior year's budget shall be deemed approved for the ensuing fiscal year, and any

groundwater extraction fee or assessment(s) of contributions by Members, or both, approved by the Board during the prior fiscal year shall again be assessed in the same amount and terms for the ensuing fiscal year.

14.2 Authority Funding and Contributions. For the purpose of funding the expenses and ongoing operations of the Authority, the Board of Directors shall maintain a funding account in connection with the annual budget process. The Board of Directors may fund the Authority and the GSP as provided in Chapter 8 of SGMA (commencing with section 10730 of the Water Code), through voluntary contributions from Members. The Members agree that the Authority, and not the Members, have the sole responsibility to develop and implement a funding program to fiscally and fully implement the Authority's SGMA compliance efforts and ongoing operations.

14.3 Return of Contributions. In accordance with Government Code section 6512.1, the Authority may reimburse Members for all or any part of any contributions made by Members, and any revenues by the Authority may be distributed by the Board of Directors at such time and upon such terms as the Board of Directors may decide; provided that (1) any distributions shall be made in proportion to the contributions paid by each Member to the Authority, and (2) any capital contribution paid by a Member voluntarily, and without obligation to make such capital contribution pursuant to Section 14.2, shall be returned to the contributing Member, together with accrued interests at the annual rate published as the yield of the Local Agency Investment Fund administered by the California State Treasurer, before any other return of contributions to the Members is made. The Authority shall hold title to all funds and property acquired by the Authority during the term of this Agreement.

14.4 Issuance of Indebtedness. The Authority may issue bonds, notes or other forms of indebtedness, as permitted under Section 4.6, provided such issuance is approved at a meeting of the Board.

ARTICLE 15
LIABILITIES

15.1 Liability. In accordance with Government Code section 6507, the debt, liabilities and obligations of the Authority shall be the debts, liabilities and obligations of the Authority alone, and not the individual Members.

15.2 Indemnity. Funds of the Authority may be used to defend, indemnify, and hold harmless the Authority, each Member, each Director, and any officers, agents and employees of the Authority for their actions taken within the course and scope of their duties while acting on behalf of the Authority. To the fullest extent permitted by law, the Authority agrees to save, indemnify, defend and hold harmless each Member from any liability, claims, suits, actions, arbitration proceedings, administrative proceedings, regulatory proceedings, losses, expenses or costs of any kind, whether actual, alleged or threatened, including attorney's fees and costs, court costs, interest, defense costs, and expert witness fees, where the same arise out of, or are in any way attributable in whole or in part to, acts or omissions of the Authority or its employees, officers or agents or negligent acts or omissions (not including gross negligence or wrongful conduct) of the employees, officers or agents of any Member, while acting within the course and scope of a Member relationship with the Authority.

15.3 Privileges and Immunities. All of the privileges and immunities from liability, exemption from laws, ordinances and rules, all pension, relief, disability, workers compensation, and other benefits which apply to the activity of officers, agents, or employees of any of the Members when performing their respective functions shall apply to them to the same degree and extent while engaged in the performance of any of the functions and other duties under this Agreement. None of the officers, agents, or employees appointed by the Board of Directors shall be deemed, by reason of their employment by the Board of Directors, to be employed by any of the Members or, by reason of their employment by the Board of Directors to be subject to any of the requirements of such Members.

15.4 Hazardous Materials. The Authority shall indemnify, protect, defend, and hold harmless the Members (and their respective officers, directors, employees and agents) from and against any and all liabilities, claims, suits, judgments, actions, investigations, proceedings, costs and expenses (including reasonable attorneys' fees and court costs) to the extent arising out of or in connection with any breach of any provisions of this Section directly or indirectly arising out of the use, generation, storage, release, disposal or transportation of Hazardous Materials by the Authority, or any successor of the Authority, or their respective agents, contractors, employees, licensees, or invitees, including, but not limited to, all foreseeable and unforeseeable consequential damages and the cost of any Remedial Work. The foregoing indemnity shall be in addition to and not a limitation of the indemnification provisions of Section 15.2 hereof. The foregoing indemnity extends beyond the term of this Agreement and is intended to operate as an agreement pursuant to Section 107(e) of the Comprehensive Environmental Response, Compensation, and Liability Act, 'CERCLA,' 42 U.S.C. Section 9607(e), and California Health and Safety Code Section 25364, and their successor statutes, to insure, protect, defend, hold harmless, and indemnify the Members from liability.

15.5 Liability Insurance. The Board of Directors shall obtain, and maintain in effect, appropriate liability insurance to cover the activities of the Authority's Directors and staff in the ordinary course of their duties.

ARTICLE 16
WITHDRAWAL OF MEMBERS

16.1 Unilateral Withdrawal. Subject to the Dispute Resolution provisions set forth in Section 17.9, a Member may unilaterally withdraw from this Agreement without causing or requiring termination of this Agreement, effective upon sixty (60) days written notice to the Executive Director.

16.2 Rescission or Termination of Authority. This Agreement may be rescinded and the Authority terminated by unanimous written consent of all Members, except during the outstanding term of any Authority indebtedness.

16.3 Effect of Withdrawal or Termination. Upon termination of this Agreement or unilateral withdrawal, a Member shall remain obligated to pay its share of all debts, liabilities and obligations of the Authority required of the Member pursuant to terms of this Agreement, and that were incurred or accrued prior to the effective date of such termination or withdrawal,

including, without limitation, those debts, liabilities and obligations pursuant to Sections 4.6 and 14.4. Any Member who withdraws from the Authority shall have no right to participate in the business and affairs of the Authority or to exercise any rights of a Member under this Agreement or the Act, but shall continue to share in distributions from the Authority on the same basis as if such Member had not withdrawn, provided that a Member that has withdrawn from the Authority shall not receive distributions in excess of the contributions made to the Authority while a Member. The right to share in distributions granted under this Section 16.3 shall be in lieu of any right the withdrawn Member may have to receive a distribution or payment of the fair value of the Member's interest in the Authority.

16.4 Return of Contribution. Upon termination of this Agreement, any surplus money on-hand shall be returned to the Members in proportion to their contributions made. The Board of Directors shall first offer any property, works, rights and interests of the Authority for sale to the Members on terms and conditions determined by the Board of Directors. If no such sale to Members is consummated, the Board of Directors shall offer the property, works, rights, and interest of the Authority for sale to any non-member for good and adequate consideration. The net proceeds from any sale shall be distributed among the Members in proportion to their contributions made.

ARTICLE 17
MISCELLANEOUS PROVISIONS

17.1 No Predetermination or Irretrievable Commitment of Resources. Nothing herein shall constitute a determination by the Authority or any of its Members that any action shall be undertaken or that any unconditional or irretrievable commitment of resources shall be made, until such time as the required compliance with all local, state, or federal laws, including without limitation the California Environmental Quality Act, National Environmental Policy Act, or permit requirements, as applicable, has been completed.

17.2 Notices. Notices to a Director or Member hereunder shall be sufficient if delivered to the Board Clerk, City Clerk or Board Secretary of the respective Director or Member and addressed to the Director or Member. Delivery may be accomplished by U.S. Postal Service, private mail service or electronic mail.

17.3 Amendments to Agreement. This Agreement may be amended or modified at any time only by subsequent written agreement approved and executed by all of the Members.

17.4 Agreement Complete. The foregoing constitutes the full and complete Agreement of the Members. This Agreement supersedes all prior agreements and understandings, whether in writing or oral, related to the subject matter of this Agreement that are not set forth in writing herein.

17.5 Severability. Should any part, term or provision of this Agreement be decided by a court of competent jurisdiction to be illegal or in conflict with any applicable Federal law or any law of the State of California, or otherwise be rendered unenforceable or ineffectual, the validity of the remaining parts, terms, or provisions hereof shall not be affected thereby, provided, however, that if the remaining parts, terms, or provisions do not comply with the Act,

this Agreement shall terminate.

17.6 Withdrawal by Operation of Law. Should the participation of any Member to this Agreement be decided by the courts to be illegal or in excess of that Member's authority or in conflict with any law, the validity of the Agreement as to the remaining Members shall not be affected thereby.

17.7 Assignment. The rights and duties of the Members may not be assigned or delegated without the written consent of all other Members. Any attempt to assign or delegate such rights or duties in contravention of this Agreement shall be null and void.

17.8 Binding on Successors. This Agreement shall inure to the benefit of, and be binding upon, the successors and assigns of the Members.

17.9 Dispute Resolution. In the event that any dispute arises among the Members relating to (i) this Agreement, (ii) the rights and obligations arising from this Agreement, (iii) a Member proposing to withdraw from membership in the Authority, or (iv) a Member proposing to initiate litigation in relation to legal rights to groundwater within the Basin or the management of the Basin, the aggrieved Member or Members proposing to withdraw from membership shall provide written notice to the other Members of the controversy or proposal to withdraw from membership. Within forty-five (45) days after such written notice, the Members shall attempt in good faith to resolve the controversy through informal means. If the Members cannot agree upon a resolution of the controversy within forty-five (45) days from the providing of written notice specified above, the dispute shall be submitted to mediation prior to commencement of any legal action or prior to withdrawal of a Member proposing to withdraw from membership. The mediation shall be no less than a full day (unless agreed otherwise among the Members) and the cost of mediation shall be paid in equal proportion among the Members. The mediator shall be either voluntarily agreed to or appointed by the Superior Court upon a suit and motion for appointment of a neutral mediator. Upon completion of mediation, if the controversy has not been resolved, any Member may exercise all rights to bring a legal action relating to the controversy or withdraw from membership as otherwise authorized pursuant to this Agreement. The Authority may, at its discretion, participate in mediation upon request by a Stakeholder Director concerning a dispute alleged by the Stakeholder Director concerning the management of the Basin or rights to extract groundwater from the Basin, with the terms of such mediation to be determined in the sole discretion of the Member Directors.

17.10 Counterparts. This Agreement may be executed in counterparts. No counterpart shall be deemed to be an original or presumed delivered unless and until the counterpart executed by the other Members to this Agreement is in the physical possession of the Member seeking enforcement thereof.

17.11 Singular Includes Plural. Whenever used in this Agreement, the singular form of any term includes the plural form and the plural form includes the singular form.

17.12 No Third-Party Rights. Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under, or by reason of, this Agreement on any person other than the Members and their respective successors and assigns, nor is anything in this

Agreement intended to relieve or discharge the obligations or liability of any third person to any Member, nor shall any provision give any third person any right of subrogation or action over or against any Member.

17.13 Member Authorization. The governing bodies of the Members have each authorized execution of this Agreement, as evidenced by the signatures below.

IN WITNESS WHEREOF, the Members hereto have executed this Agreement by authorized officials thereof on the dates indicated below, which Agreement may be executed in counterparts.

[Signatures on Following Page]

CITY OF SAN BUENAVENTURA

DATED: June 12, 2017

APPROVED AS TO FORM:

By: E. Jasmenshi

Title: Mayor

By: Mike Hayes

Title: Assistant City Attorney II

COUNTY OF VENTURA

DATED: _____

APPROVED AS TO FORM:

By: _____

Title: _____

By: _____

Title: _____

UNITED WATER CONSERVATION DISTRICT

DATED: _____

APPROVED AS TO FORM:

By: _____

Title: _____

By: _____

Title: _____

CITY OF SAN BUENAVENTURA

DATED: _____

APPROVED AS TO FORM:

By: _____ By: _____

Title: _____ Title: _____

COUNTY OF VENTURA

DATED: 6/6/17

APPROVED AS TO FORM:

By: John C. Zaragoza By: _____

Title: Chair, Board of Supervisors Title: _____

UNITED WATER CONSERVATION DISTRICT

DATED: June 14, 2017

APPROVED AS TO FORM:

By: Bruce E. Dandy By: _____

Title: UWCD Board President Title: UWCD Legal Counsel

BYLAWS

of the

Mound Basin Groundwater Sustainability Agency

August 16, 2018

Contents

PREAMBLE

These Bylaws are adopted and effective as of **[DATE]**, pursuant to the Joint Exercise of Powers Agreement of the Mound Basin Groundwater Sustainability Agency of June 2017 (the "Agreement" or "JPA") by and among the City of San Buenaventura, County of Ventura, and United Water Conservation District ("Members").

ARTICLE 1. THE AUTHORITY

1.1 NAME OF AUTHORITY. The name of the Authority created by the Agreement shall be the MOUND BASIN GROUNDWATER SUSTAINABILITY AGENCY ("Authority"). JPA, Preamble.

1.2 OFFICE OF AUTHORITY. The principal office of the Authority shall be [**ADDRESS]**, or at such other location as the Board may designate by resolution. JPA, 7.3.

1.3 POWERS. The powers of the Authority are vested in the governing board who reserve unto themselves the right to delegate by resolution such powers as are appropriate and permissible by law. JPA, Art. 4. The governing board ("Board" or "Board of Directors") consists of: one (1) Member Director appointed by the City Council of the City of San Buenaventura who is a member of the City Council of San Buenaventura or a representative; one (1) Member Director appointed by the County of Ventura Board of Supervisors, who is a Supervisor or representative; one (1) Member Director appointed by the Board of Directors for United Water Conservation District, who is a member of United Water Conservation District's Board of Directors or a representative; one (1) Agricultural Stakeholder Director; and one (1) Environmental Stakeholder Director, to be nominated by the environmental organizations outlined in the Article 6.3.5 of the Agreement and unanimously selected by the Member Directors. JPA, 6.3.1-3.5.

ARTICLE 2. BOARD OF DIRECTORS

2.1 BOARD. The Authority shall be governed by a Board of Directors ("Board of Directors" or "Board"). The Board shall consist of five (5) Directors comprised of representatives who shall be appointed in the manner set forth in Article 6 of the Agreement. JPA, 6.1, 6.3.

2.2 POWERS. The business and affairs of the Authority, and all of the powers of the Authority, including without limitation all powers set forth in Article 4 of the Agreement, are reserved to, and shall be exercised by and through the Board of Directors, except as may be expressly delegated to the Executive Director pursuant to the Bylaws, or by specific action of the Board of Directors.

2.3 MEMBER DIRECTORS.

2.3.1 Terms, Removal and Vacancies. Member Directors will be appointed to serve for a term of two (2) years, except as set forth in Section 6.4 of the Joint Exercise of Powers Agreement. A Member Director may be removed during his or her term or reappointed for multiple terms at the pleasure of the Member's governing agency. The Member Director shall cease to be a Director when he or she is no longer a member of their governing Agency's board or ceases to be an employee of the Member. JPA, 6.5. No individual Member Director may be removed in any other manner, including by affirmative vote of the other Directors. A Member Director vacancy shall occur when a Director resigns, at the end of the Director's term, or when he or she is removed by his or her appointing governing body. Upon the vacancy of a Member Director, the seat shall remain open and vacant until a replacement Director is appointed as set forth in Section 6.3 of the Joint Exercise of Powers Agreement. Members shall submit any changes in Director positions to the Executive Director by written notice signed by an authorized representative of the Member. The written notice shall include a resolution of the governing body of the Member directing such change in the Director position. JPA, 6.5.

2.4 AGRICULTURAL STAKEHOLDER DIRECTOR

2.4.1 Terms, Removal and Vacancies. The term for the Agricultural Stakeholder Director shall be one (1) year. A vacancy of an Agricultural Stakeholder Director's seat shall occur upon a Director's resignation or at the end of the Director's term. JPA, 6.5. Upon the vacancy of the Agricultural Stakeholder Director, the seat shall remain vacant until a replacement Director is appointed as set forth in Section 6.3 of the Joint Exercise of Powers Agreement. JPA, 6.5.

2.5 ENVIRONMENTAL STAKEHOLDER DIRECTORS

2.5.1 Terms, Removal and Vacancies. The term for the Environmental Stakeholder Director shall be one (1) year. JPA, 6.4. A vacancy of an Environmental Stakeholder Director's seat shall occur upon a Director's resignation or at the end of the Director's term. JPA, 6.5. Upon the vacancy of the Environmental Director, the seat shall remain vacant until a replacement Director is appointed as set forth in Section 6.3 of the Joint Exercise of Powers Agreement. JPA, 6.5.

ARTICLE 3. MEETINGS

3.1 REGULAR MEETINGS. The regular meetings of the Authority shall be held at least quarterly on a date and time which the Authority may designate as determined by the Board. The Board will set the time and place of meetings in accordance with Government Code Section 54954. JPA, 8.2.

3.2 QUORUM. A majority of the Directors of the Board shall constitute a quorum for the purpose of conducting Authority business, exercising Authority powers, and for all other purposes. However, a smaller number may adjourn from time-to-time until the quorum is obtained. JPA, 9.1.

3.3 AGENDA. Authority staff shall prepare the agenda. At least seventy-two hours before a regular meeting, or at least twenty-four hours prior to a special meeting, the Board Secretary shall post an agenda containing a brief, general description of each item of business to be transacted or discussed at the meeting, including the items to be discussed in closed session. The posting shall be freely accessible to the public. The agenda shall include the opportunity for the public to address the Board prior to taking action on any matter. The agenda for regular and adjourned regular meetings shall include the opportunity for the public to address the Board on matters within the jurisdiction of the Authority but not on the agenda. During public comment, a Director may request a matter be included on the agenda for a future meeting. Authority staff shall arrange for the matter to be placed on a future agenda as promptly as feasible. No action shall be taken on matters not shown on the posted agenda, except that Directors may briefly respond to statements made or questions posed during public comment; respond to a request for clarification; provide a reference to staff or other resources for factual information; request staff to report back to the Board at a subsequent meeting or direct staff to place a matter of business on a future agenda. The Board may add matters to the agenda upon a majority finding that an emergency exists or upon at least a two-thirds vote finding there is a need to take immediate action and the need for action came to the attention of the Authority subsequent to the posting of the agenda.

3.4 VOTING. Voting by the Board of Directors shall be made on the basis of one vote for each Director. All decisions of the Board shall require the affirmative vote of a minimum of three (3) Directors, except for the matters specified in Article 9.3 of the JPA which require special voting. JPA, 9.3.

3.5 RULES OF ORDER. All rules of order not otherwise provided for in the Bylaws shall be determined, to the extent practicable, in accordance with "Rosenberg's Rules of Order", provided, however, that no action shall be invalidated, or its legality otherwise affected by the failure or omission to observe or follow "Rosenberg's Rules of Order."

ARTICLE 4. OFFICERS

4.1 OFFICERS. The officers of the Authority shall consist of a Chair, a Vice Chair/Secretary, and a Treasurer. JPA, 7.1. Officers shall be elected annually by, and serve at the pleasure of, the Board of Directors. Officers shall be elected at the first Board meeting, and thereafter at the first Board meeting following January 1st of each year. JPA, 7.2.4.2 CHAIR. The Chair shall preside at meetings of the Authority. The Chair shall sign contracts, deeds, and other instruments made by the Authority.

4.3 VICE CHAIR. The Vice Chair shall perform the duties of the Chair in the absence or incapacity of the Chair. JPA, 7.1. The Vice Chair shall also act as Secretary and shall keep the administrative records of the Authority, act as secretary at meetings of the Authority, record all votes, and keep a record of the proceedings of the Authority to be kept for such purpose, and perform all duties incident to the Secretary's office. The Secretary shall maintain a record of all official proceedings of the board.

4.4 TREASURER AND AUDITOR. The Treasurer and Auditor shall be appointed in the manner, and shall perform those functions required by Government Code Sections 6505, 6505.5, and all other applicable laws and regulations, including any subsequent amendments thereto. The Treasurer shall be bonded in accordance with the provisions of section 6505.1. JPA, 13.3.

4.5 GENERAL COUNSEL. The General Counsel shall be the chief legal officer of the Authority. The General Counsel shall give advice or opinions in writing to the Chairman or other Authority officers and shall prepare proposed resolutions, laws, rules, contracts, and other legal documents for the Authority when requested to do so by the Authority. The General Counsel shall attend to all lawsuits and other matters to which the Authority is a part or in which the Authority may be legally interested and do such other things pertaining to the General Counsel's office as the Authority may request.

4.6 OFFICER COMPENSATION. The officers of the Authority shall receive such compensation as the Authority prescribes and in addition, shall receive their actual and necessary expenses, including traveling expenses incurred in the discharge of their duties.

4.7 EXPENSES. If previously approved by the Board, a Director shall receive actual, reasonable, and necessary reimbursement for travel, meals, lodging, registration, and similar expenses incurred on Authority business. The reimbursement rates for lodging shall not exceed the posted rates for a trade conference, but if a lodging at the posted rates is not available, the reimbursement rate shall be comparable to the posted rates. For travel of 250 miles or less, Directors shall be reimbursed at the IRS rate. For travel over 250 miles, Directors shall be reimbursed at the lowest available rate for public air transportation, as determined by the Administrator, or actual cost, whichever is less. As used herein, "transportation" includes travel to and from terminals. Automobile rental expenses shall be approved in advance. Reimbursement for meals, other than alcoholic beverages, shall be at the rate established by the IRS or actual reasonable cost not to exceed $60 per day. Directors may declare the amount of the meal under penalty of perjury in lieu of receipts if the amount is less than the IRS rate. Claims for expense reimbursement shall be submitted to the Administrator of the Board on forms provided by the Authority within 30-days after the expense has been incurred. The Administrator shall determine whether the claim satisfies the requirements of this section and if the claim is denied, the claimant may appeal to the Board.

ARTICLE 5. COMMITTEES

5.1 Pursuant to Article 12 of the Agreement, the Board of Directors may from time to time appoint one or more advisory committees or establish standing or ad hoc committees to assist in carrying out the purposes and objectives of the Authority. The Board shall determine the purpose and need for such committees and the necessary qualifications for individuals appointed to them. Each standing or ad hoc committee shall include a Director as the chair thereof. Other members of each committee may be composed of those individuals approved by the Board of Directors for participation on the committee. However, no committee or participant on such committee shall have any authority to act on behalf of the Authority. Permanent Committees will be given a specific

role and, regardless of the number of Directors appointed, shall be subject to compliance with the Brown Act. All Committees will provide regular updates to the full Board about their activities and the progress of their work.

ARTICLE 6. EXECUTIVE DIRECTOR AND STAFF

6.1 EXECUTIVE DIRECTOR. The Board of Directors may appoint an Executive Director, who may be, though need not be an officer, employee, or representative of one of the Members. The Executive Director shall have general supervision over the administration of Authority business and affairs, subject to the direction of the Authority. The Executive Director shall have the powers designated by the Board, and may execute contracts, deeds, and other documents and instruments as authorized by the Authority. The Executive Director's compensation, if any, shall be determined by the Board of Directors. JPA, 10.1-10.2.

6.2 STAFF. The Executive Director may employ such additional full-time and/or part-time employees, assistants, and independent contractors who may be necessary from time to time to accomplish the purposes of the Authority, subject to the approval of the Board of Directors. JPA, 10.4.

ARTICLE 7. FINANCES

7.1 DEPOSIT AND DISBURSEMENT OF FUNDS. All funds of the Authority shall be deposited in one or more depository accounts as may be designated by the Board. Such accounts shall be independent of any account owned by or exclusively controlled by any of the Members. No disbursements of such funds shall be made unless the same shall have been approved in the annual operating budget, or otherwise specifically approved by the Board. Monthly, or at a time established by the Board, all disbursements shall be listed on a report by check number, vendor and amount, and approved by the Board prior to the issuance of a payment. All check disbursements shall require dual signature that will include the Treasurer and Board Chair or Vice Chair.

7.2 BUDGET. The Authority shall operate pursuant to an operating budget to be adopted prior to the beginning of each new fiscal year. JPA, 14.1. The Agency shall endeavor to operate each year pursuant to an annually balanced budget so that projected annual expenses do not exceed projected annual revenues. Budget adjustments to the annual budget shall be reviewed and acted upon by the Board at a regularly scheduled Board meeting occurring after January 1 of each calendar year. The Board may take action to amend the budget at other times if circumstances require more immediate action.

ARTICLE 8. DEBTS AND LIABILITIES

8.1 The debts, liabilities, and obligations of the Authority are not and will not be the debts, liabilities, or obligations of any or all of the Members. JPA, 15.1. However, nothing in this Article or in the Agreement prevents, or impairs the ability of, a Member or Members, from agreeing, in a separate agreement, to be jointly and/or severally liable, in whole or in part, for any debt, obligation, or liability of the Authority, including but not limited to, any bond or other debt instrument issued by the Authority.

ARTICLE 9. REGISTRATION OF FACILITIES

9.1 The Authority may require registration of all groundwater extraction facilities within its management area pursuant to Wat. Code, § 10725.6. The Authority shall keep a register of wells drilled within its management area. It shall be the policy of the Authority to have a standing request with the County of Ventura to be notified of any application or plan for a well or groundwater extraction facility within the Authority's jurisdiction.

ARTICLE 10. FEE ENFORCEMENT

10.1 Fee Enforcement is based on Wat. Code, § 10730.6:

(a) Groundwater fees will be due and payable to the Authority semi-annually by the Owner or Operator. If the Owner or Operator fails to pay a groundwater fee within thirty (30) days of it becoming due, the Owner or Operator shall be liable to the Authority for interest at the rate of one (1) percent per month on the delinquent amount of the groundwater fee and a ten (10) percent penalty.

(b) In the event of an overpayment of groundwater fees and charges by the Owner or Operator, unless the payor requests a refund, the Agency shall apply the overpaid amount to the Owner or Operator's next billing statement or payment cycle.

(c) Should the Authority decide not to bring suit, the Authority may collect any delinquent groundwater charge and any civil penalties and interest on the delinquent groundwater charge pursuant to the laws applicable to United Water Conservation District, County of Ventura, and City of Buenaventura. Collection shall be in the same manner as it would be applicable to the collection of delinquent assessments, water charges, or tolls.

(d) Additionally, the Authority may, after a public hearing, order an Owner or Operator to cease extraction of groundwater until all delinquent fees are paid. The Authority shall give notice to the Owner or Operator by certified mail at least fifteen (15) days in advance of the public hearing.

(e) All remedies specified in this section for collecting and enforcing fees are cumulative and may be pursued alternatively or may be used consecutively as determined by the Authority's Board of Directors.

(f) By an affirmative vote of three (3) Directors, the Authority may, in its sole discretion, waive any interest payments, penalties, or overdue fees.

ARTICLE 11. RECORDS RETENTION

11.1 MAINTENANCE OF THE AUTHORITY RECORDS. The Authority will keep:

(a) All public records, as defined in Cal. Gov. Code Section 6252.

(b) All such records will be kept at the Authority's principal office.

11.2 RECORDS RETENTION POLICY AND SCHEDULE. By December 31, 2018, the Board will review and adopt a Records Retention Policy and Schedule that specifies the retention period of different categories of materials. Implementation of this Policy will be the responsibility of Authority staff.

11.3 INSPECTION RIGHTS.

(a) Any member may inspect the accounting books and records and minutes of the proceedings of the Board and committees of the Board, at any reasonable time, for a purpose reasonably related to such person's interest.

(b) Any inspection and copying under this Section may be made in person or by an agent or attorney or the entity entitled thereto and the right of inspection includes the right to copy.

11.4 MAINTENANCE AND INSPECTION OF AGREEMENT AND BYLAWS. The Authority will keep at its principal executive office the original or copy of the Agreement and these Bylaws as amended to date, which will be open to inspection by the Authority or any Member at all reasonable times during office hours.11.5 INSPECTION BY DIRECTORS. Every Director has the absolute right at any reasonable time to inspect all non-confidential books, records, and documents of every kind and the physical properties of the Authority. This inspection by a Director may be made in person or by an agent or attorney, and the right of inspection includes the right to copy and make extracts of documents.

ARTICLE 12. CODE OF ETHICS AND CONFLICTS OF INTEREST

12.1 DECLARATION OF POLICY. The proper operation of democratic government requires that public officials and employees be independent, impartial and responsible to the people; that government decisions and policy be made in the proper channels of the governmental structure; that public office not be used for personal gain; and the public have confidence in the integrity of

its government. In recognition of these goals, there is hereby established a Code of Ethics for all officers and employees, whether elected or appointed, paid or unpaid. This Article establishes ethical standards of conduct for Authority officers and employees by setting forth those acts or actions that are incompatible with the best interests of the Authority and by directing the officers' disclosure of private financial or other interests in matters affecting the Authority.

12.2 CONFLICT OF INTEREST CODE. The Political Reform Act (Government Code Section 81000, et seq.) requires state and local government agencies to adopt and promulgate conflict of interest codes. Pursuant to this, the Authority adopted and promulgated a Resolution which constitutes the Conflict of Interest Code for the Authority, and sets forth designations of officials and employees, and establishes economic disclosure categories. The Authority will review its Conflict of Interest Code every other year as required by the Political Reform Act.

12.3 RESPONSIBILITIES OF PUBLIC OFFICE. Public officials and employees are agents of public purpose and hold office for the benefit of the public. They are bound to uphold the United States and State Constitution and to carry out impartially the laws of the nation, State, and the Authority, thus to foster respect for all governments. They are bound to observe, in their official acts, the highest standards of performance and to discharge faithfully the duties of their office, regardless of personal considerations. Recognizing that the public interests must be their primary concern, their conduct in both their official and private affairs should be above reproach.

12.4 DEDICATED SERVICE. Officers and employees owe a duty of loyalty to the political objectives expressed by the electorate and the programs developed by the Board to attain those objectives. Appointive officers and employees should adhere to the rules of work and performance established as the standards for their positions by the appropriate Authority. Officers and employees should not exceed their Authority or breach the law, or ask others to do so, and owe a duty to cooperate fully with other public officers and employees unless prohibited from so doing by law or by the officially recognized confidentiality of their work.

12.5 FAIR AND EQUAL TREATMENT. Officers and employees shall not request or permit the use of Authority-owned vehicles, equipment, materials, or property for personal convenience or profit, except when such services are available to the public generally or are provided for the use of such officer or employee in the conduct of official business. Officers and employees shall not grant special consideration, treatment or advantage to a member of the public beyond what is available to every other member of the public.

12.6 POLITICAL ACTIVITIES. Officers and employees shall not solicit or participate in soliciting assessment; subscription of contribution to a political party during working hours on property owned by the Authority and shall conform to Government Code Sections 3202 and 3203. Officers and employees shall not promise appointment to a position with the Authority.

12.7 EX PARTE COMMUNICATIONS. Any written communication received by an officer or employee relating to a matter to be discussed by the Authority Board shall be made part of the record of decision. A communication concerning only the status of a pending matter shall not be regarded as an ex parte communication.

12.8 AVOIDANCE OF IMPRESSIONS OF CORRUPTIBILITY. Officers and employees shall conduct their official and private affairs so as not to give a reasonable basis for the impression that they can be improperly influenced in performance of public duties. Officers and employees should maintain public confidence in their performance of the public trust in the Authority. They should not be a source of embarrassment to the Authority and should avoid even the appearance of conflict between their public duties and private interests.

12.9 NO DISCRIMINATION IN APPOINTMENTS. No person shall be appointed to, removed from, or in any way favored or discriminated against with respect to any appointive administrative office because of such person's race, color, age, religion, gender identification, national origin, political opinions, affiliations, or functional limitation as defined by applicable State or federal laws, if otherwise qualified for the position or office. This provision shall not be construed to impair administrative discretion in determining the requirements of a position or in a job assignment of a person holding such a position, subject to review by the Board.

12.10 AUTHORITY ALLEGIANCE AND PROPER CONDUCT. Officers and employees shall not engage in or accept any private employment, or render services for private interest, when such employment or service is incompatible with proper discharge of official duties or would tend to impair independence or judgment or action in the performance of those duties. Officers and employees shall not disclose confidential information concerning the property, government, or affairs of the Authority and shall not use confidential information for personal financial gain. Officers and employees shall not accept a gift in excess of limits established by state law. Officers and employees shall not accept any gift contingent upon a specific action by the Board. Officers and employees shall not appear on behalf of business or private interests of another before the Board where such appearance would create a potential of having to abstain from officers participating on that matter or be incompatible with official duties. Officers and employees shall not represent a private interest of another person or entity in any action or proceeding against the interest of the Authority in any litigation to which the Authority is a party. A Director may appear before the Authority on behalf of constituents in the course of duties as a representative of the electorate or in the performance of public or civic obligations.

12.11 PENALTIES. In addition to any other penalties or remedies provided by law, violation of this Article shall constitute a cause for suspension, removal from office or employment or other disciplinary action after notice and hearing conducted by the appropriate appointing Member or, in the case of the Board, an affirmative vote of four (4) Directors, or three (3) Directors in the event a Director is absent, conflicted or prohibited from voting pursuant to 9.3 of the JPA agreement.

ARTICLE 13. AMENDMENT

13.1 These Bylaws may be amended from time to time by resolution of the Board duly adopted upon majority of the Board at a regular or special meeting of the Board, provided, however, that no such amendment shall be adopted unless at least thirty (30) days written notice thereof has

previously been given to all members of the Board. Such notice shall identify the Article to be amended, the proposed amendment, and the reason for the proposed amendment. JPA, 11. The Board may, upon unanimous consent, waive the thirty (30) day written notice period.

ARTICLE 14. PURCHASING POLICY

14.1 POLICY. The Authority will procure Goods and Services in support of its administrative, operational and capital improvement requirements. It is the intent of the Authority to engage in procurements that ensure it will receive Goods and Services of the appropriate quantity, of a satisfactory level of quality, delivered in a timely manner, and at a price that represents the best value to the Authority, its Members, and other affected parties. Furthermore, it will employ procurement processes that are fair and equitable and will allow providers of Goods and Services the greatest opportunity to participate and compete for the Authority's procurement engagements.

14.2 DEFINITIONS.

The following definitions shall apply to this Article:

(a) Contract. A written document establishing terms and conditions between buyer and seller for the provision of Goods or Services, and includes Professional Service Agreements, General Service Agreements, and Purchase Orders.

(b) Critical Repairs. Services performed on Agency facilities that are unplanned, unexpected and which are essential to the continued operation of the facilities, but do not rise to the level of "Emergency."

(c) Formal Competitive Solicitation. The issuance of a written Request for Bids, proposals or quotations.

(d) Goods. Refers to all types of tangible personal property including materials, supplies, and equipment.

(e) Material Change. A change to essential terms in a contract including, not limited to, consideration, scope of Services, insurance and indemnity obligations, and assignment.

(f) Informal Competitive Solicitation. A written request for a bid, proposal, or quotation in accordance with written terms and conditions included in the request.

(g) Public Works Construction Agreement. Agreement for the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind and awarded in compliance with competitive bidding statutes.

(h) Requisition. A document generated by staff to identify and establish a requirement for, and request authorization of, the procurement of Goods and Services.

(i) Service(s). The labor, intellectual property or other work product provided by a Contractor or Consultant that is not tangible personal property.

14.3 PROCUREMENT OF GOODS AND SERVICES.

(a) Procurement Authority. Procurement authority shall be exercised and performed by the Board of Directors through the approval of warrants presented to the Board. This authority includes both the authority to approve procurements and the authority to commit the Agency to procurements. The Board of Directors may delegate certain authorities to the Agency's management and staff. These delegated authorities shall be exercised and performed in accordance with applicable federal, state, and local laws and the polices contained herein.

(b) Procurement of Goods, Professional Services and Non-Professional Services. The Agency may procure Goods and Services as authorized below:

(1) Procurements of Goods, Professional Services and Non-Professional Services Less than $500:

(i) The Executive Director may expend up to $500 to purchase necessary supplies and equipment without secondary approval.

(2) Procurement of Goods, Professional Services and Non-Professional Services over $500:

(i) Requires Board approval of a Purchase Order.

(ii) Signed by both the Board Chair and Treasurer.

(3) Amendments/ Change Orders / Revisions: Material Changes to a contract document require authorization. Approval and execution is subject to the thresholds established above and based on the final value of the Contract document after the change is incorporated.

(c) Leasing of Goods. Leasing of Goods is subject to the same requirements established for the procurement of Goods, as defined in section (b).

(d) Public Works. The procurement of Goods and Services for the construction of public works by the Agency shall be governed by California Public Contract Code sections 20640 et seq.

(e) Amendments/ Change Orders/ Revisions: Material Changes to a Contract document require authorization. Approval and execution is subject to the thresholds established above and based on the final value of the Contract document after the change is incorporated. Change Orders within preapproved funding amounts require execution by the Board of Directors.

14.4 EMERGENCY PURCHASES AND SERVICES. In the event of an emergency, the Executive Director may make immediate purchases of Goods and Services pursuant to California Public Contract Code section 20640 *et seq*. Emergency purchases include any purchase required to prevent imminent danger or to prevent or mitigate the loss or impairment of life, health, property, or essential public services. Every effort shall be made to obtain advance approvals or to obtain approvals as soon as possible following the purchase.

14.5 PROCUREMENT OF CRITICAL GOODS AND SERVICES. When expenditures are made for the procurement of Critical Goods and Services, staff will use its best efforts to conform to the Informal Solicitation process, and shall not exceed $1,000 per each critical repair or critical acquisition. Any expenditure for these types of repairs will be brought to the Board of Directors at the next regularly scheduled Board meeting for ratification.

ARTICLE 15. DEFINITIONS AND CONSTRUCTION

15.1 Unless specifically defined in these Bylaws, all defined terms shall have the same meaning ascribed to them in the Agreement. If any term of these Bylaws conflicts with any term of the Agreement, the Agreement's terms shall prevail, and these Bylaws shall be amended to eliminate such conflict of terms. Unless the context or reference to the Agreement requires otherwise, the general provisions, rules of construction, and definitions in the California Civil Code will govern the construction of these Bylaws.

EFFECT. These bylaws shall take effect immediately upon adoption.

PASSED, APPROVED AND ADOPTED on August 16, 2018, by the following votes:

AYES: Four (Brown, Chambers, Mobley, Shephard)

NOES: None

ABSTAIN: None

ABSENT: one (Everts)

Chair

ATTEST:

Secretary

[Seal]

LIST OF ALL BENEFICIAL USES AND USERS OF GROUNDWATER

Pursuant to Water Code Sections 10723.8(a)(4) and 10723.2, the Agency will consider the interests of all beneficial uses and users of groundwater, as well as those responsible for implementing a Groundwater Sustainability Plan ("Plan").

The Mound Basin Groundwater Sustainability Agency ("Agency") has engaged stakeholders in the development of the Agency to serve as the groundwater sustainability agency ("GSA"). For example, during development of the joint powers authority agreement ("JPA Agreement") forming the Agency, the signatory members held public meetings to educate stakeholders within the Mound Basin ("Basin") about the requirements of the Sustainable Groundwater Management Act ("SGMA"), the JPA Agreement, and the Agency's intention to form a GSA for the Basin. In addition to the Agency's public outreach efforts, it also designated two seats on its five-seat Board of Directors for Stakeholder Directors: one seat is reserved for an Agricultural Stakeholder Director and one seat is reserved for an Environmental Stakeholder Director.

The Agency plans to continue its practice of seeking broad stakeholder engagement in management of the Basin's groundwater resources as it undertakes the process to develop and implement the Plan for the Basin over the next several years. The Agency will solicit and welcome participation from the following stakeholder groups:

Holders of Overlying Groundwater Rights, including:

- **Agricultural Users.** There are agricultural users of groundwater operating on land overlying the Basin. To account for these users' interests, the Agency designated a seat on its five-member governing board to be filled by an Agricultural Stakeholder Director. The Agricultural Stakeholder Director will be appointed from nominations received by the Mound Basin Ag Water Group (MBAWG) or the Ventura County Farm Bureau. The Agricultural Stakeholder Director is responsible for engaging the Basin's agricultural users of groundwater and representing their interests before the Agency.
- **Domestic Well Owners.** There are domestic wells overlying the Basin. It is believed that the majority of these domestic well owners are de minimus users, as defined by SGMA. The Agency anticipates that the Plan will address the collective interests of domestic users of groundwater wells and plans to engage in outreach to domestic well owners throughout the development of the Plan through inviting their participation in the Agency's public meetings.

Municipal Well Operators. The Agency is a joint powers authority created by three local public agencies. Two of the Agency's signatory members—the City of San Buenaventura and the County of Ventura (irrigation)—operate wells within the Basin and are represented on the Agency's Board of Directors.

Public Water Systems. The following public water systems are located within the Agency's boundaries:

- Ventura Water (City of San Buenaventura)

The City of San Buenaventura is a signatory member to the JPA Agreement forming the Agency and is represented on the Agency's Board of Directors.

Local Land Use Planning Agencies. Both the County of Ventura ("County") and the City of San Buenaventura have land use planning authority on land overlying the Basin. Both are signatory members to the JPA Agreement forming the Agency and are represented on the Agency's Board of Directors.

Environmental Users of Groundwater. There are several environmental organizations dedicated to preserving and maintaining environmental values operating within the boundaries of the Basin. To account for these users' interests, the Agency designated a seat on its five-member governing board to be filled by an Environmental Stakeholder Director. The Environmental Stakeholder Director will be appointed from nominations received from local environmental nonprofit organizations supportive of the Basin's groundwater sustainability. The Environmental Stakeholder Director is responsible for engaging stakeholders within the Basin and representing environmental interests before the Agency.

Surface Water Users, if there is a hydrologic connection between surface and groundwater bodies. N/A.

Federal Government, including, but not limited to, the military and managers of federal lands. N/A. No land overlying the Basin is managed by the Federal Government.

California Native American Tribes. The Agency will ensure that a representative of overlying California Native American tribes is on the Agency's interested parties list, in order to receive notices of all Agency meetings and other stakeholder involvement opportunities.

Disadvantaged Communities, including, but not limited to those served by private domestic wells or small community water systems. N/A.

Entities Listed in Section 10927 that are Monitoring and Reporting Groundwater Elevations in all or a part of the Groundwater Basin Managed by the GSA. The County is the designated California Statewide Groundwater Elevation Monitoring ("CASGEM") entity for the Basin. The County is a signatory member to the JPA Agreement forming the Agency and represented on the Agency's Board of Directors.

The Agency's and other stakeholders' roles and responsibilities will be further developed and defined in the Sustainability Plan. The Agency's staff welcomes feedback during this process from the State, any of the agencies or organizations listed herein, and any other interested stakeholders.

If the Department of Water Resources ("DWR") requires anything further prior to the acceptance of this notification of the Agency's election to serve as the GSA for the Basin, please address your inquiry to:

Jennifer Tribo, Interim Executive Director
Mound Basin GSA
501 Poli Street
Ventura, California 93001

Appendix D

MBGSA Stakeholder Engagement Plan

STAKEHOLDER ENGAGEMENT PLAN

MOUND BASIN

(4-004.03) VENTURA COUNTY, CALIFORNIA

SUSTAINABLE GROUNDWATER MANAGEMENT ACT (SGMA) PROGRAM

PREPARED BY THE MOUND BASIN GROUNDWATER SUSTAINABILITY AGENCY

UPDATED AND ADOPTED OCTOBER 21, 2021

Table of Contents

1 INTRODUCTION

This Stakeholder Engagement Plan (Engagement Plan) summarizes the strategies to educate and involve stakeholders (those individuals and representatives of organizations who have a direct stake in the outcome of the planning process) and other interested parties in the preparation and implementation of a Groundwater Sustainability Plan (GSP) for the Mound Basin – Department of Water Resources (DWR) Basin No. 4-004.03 (Figure 1). This GSP will be prepared in accordance with the Sustainable Groundwater Management Act (SGMA), which was signed by Governor Brown in September 2014 and became effective January 1, 2015.

SGMA provides a framework to regulate groundwater for the first time in California's history. SGMA's intent is to strengthen local management of specified groundwater basins that are most critical to the state's water needs by regulating groundwater and land use management activities. SGMA also aims to preserve the jurisdictional authorities of cities, counties and water agencies within groundwater basins while protecting existing surface water and groundwater rights.

The Mound Basin Groundwater Sustainability Agency (MBGSA or Agency), a Groundwater Sustainability Agency (GSA), was formed by three local agencies: County of Ventura (County), City of San Buenaventura (City), and United Water Conservation District (UWCD). There was extensive stakeholder engagement during that process. The governing board consists of one representative from each of those agencies plus two stakeholder directors representing environmental and agricultural interests. The GSA is responsible for developing a GSP for the Mound Basin to achieve long-term groundwater sustainability. Additionally, SGMA requires and directs GSAs to encourage active involvement of stakeholders and interested parties in the process to sustainability manage the basin.

2 PURPOSE

The purpose of the outreach activities described in this Engagement Plan is to encourage the active involvement of individual stakeholders and stakeholder organizations, and other interested parties in the development and implementation of the GSP for the Mound Basin. This GSP is required under SGMA to be completed no later than January 31, 2022. The projects and management actions necessary to implement the GSP could affect individuals and groups who have a stake in ensuring the basin is sustainably managed as required by SGMA.

In an effort to understand and involve stakeholders and their interests in the decision- making and activities, the MBGSA has prepared this Engagement Plan to encourage broad, enduring and productive involvement during the GSP development and implementation phases. This Engagement Plan will assist the MBGSA in providing timely information to stakeholders and receive input from interested parties during GSP development. This Engagement Plan will identify stakeholders who have an interest in groundwater in the Mound Basin, and recommend outreach, education, and communication strategies for engaging those stakeholders during the development and implementation of the GSP. The plan also includes an approach for evaluating the overall success of stakeholder engagement and education of both stakeholders and the public. In consideration of the interests of all beneficial uses and users of groundwater in the basin, this Engagement Plan has been developed pursuant to California Water Code Section 10723.2. Additionally, this Engagement Plan has been developed to encourage the active involvement of diverse social, cultural, and economic elements of the population within the Mound Basin, in accordance with GSP Regulations Section 354.10.

3 GENERAL INFORMATION

The following personnel will serve as contacts for the public during GSA formation and GSP preparation.

3.1 Clerk of the Board

For general information about MBGSA and the GSP status, contact:

Jackie Lozano, Clerk of the Board, (805) 525-4431, email jackiel@unitedwater.org.

3.2 Executive Director

MBGSA's Executive Director will be available for stakeholders and the public seeking specific detailed information about the GSP, contact:

Bryan Bondy, Executive Director, (805) 212-0484, email bryan@bondygroundwater.com.

4 OUTREACH ACTIVITIES

MBGSA will implement the following outreach activities to maximize stakeholder involvement during the development of the GSP and throughout SGMA implementation.

4.1 Public Notices

To ensure that the general public is apprised of local activities and allow stakeholders to access information, SGMA specifies several public notice requirements for GSAs. Refer to Table 1 in Appendix A for a summary of statutory requirements. Three sections of the California Water Code require public notice before establishing a GSA, adopting (or amending) a GSP, or imposing or increasing fees:

- Section 10723(b). "Before electing to be a groundwater sustainability agency, and after publication of notice pursuant to Section 6066 of the Government Code, the local agency or agencies shall hold a public hearing in the county or counties overlying the basin." In accordance with California Water Code Section 10723(b), the following was noticed to the public: On June 22, 2017, the MBGSA held a public hearing to consider becoming a GSA for the Mound Basin. The public hearing was noticed in the *Ventura County Star* in accordance with Government Code Section 6066.
- Section 10728.4. "A groundwater sustainability agency may adopt or amend a groundwater sustainability plan after a public hearing, held at least 90 days after providing notice to a city or county within the area of the proposed plan or amendment. …"
- Section 10730(b)(1). "Prior to imposing or increasing a fee, a groundwater sustainability agency shall hold at least one public meeting, at which oral or written presentations may be made as part of the meeting....(3) At least 10 days prior to the meeting, the groundwater sustainability agency shall make available to the public data upon which the proposed fee is based." In accordance with California Water Code Section 10730(b)(1), the following was noticed to the public: On August 23, 2018, the MBGSA held a public hearing to consider establishing a groundwater extraction fee. The public hearing was noticed in the *Ventura County Star* in accordance with Government Code Section 6066 and data upon which the fee is based was posted to the MBGSA website and mailed to all entities on the interested parties list prior to the meeting.
- Future noticing will occur as required by SGMA.

4.2 Stakeholder Identification

Pursuant to Water Code Sections 10723.8(a)(4) and 10723.2, the Agency will consider the interests of all beneficial uses and users of groundwater, as well as those responsible for implementing a GSP.

MBGSA has engaged stakeholders in the development of the Agency to serve as the GSA. For example, during development of the joint powers authority agreement ("JPA Agreement") forming the Agency, the signatory members held numerous public meetings to discuss important terms to be included in the JPA Agreement. The signatory members also held multiple stakeholder outreach meetings to engage and educate stakeholders within the Mound Basin about the SGMA requirements the JPA Agreement, and the Agency's intention to form a GSA for the Mound Basin. In addition to the Agency's public outreach efforts, it also designated two seats on its five-seat Board of Directors for Stakeholder Directors: one seat is reserved for an Agricultural Stakeholder Director and one seat is reserved for an Environmental Stakeholder Director.

The Agency plans to continue its practice of seeking broad stakeholder engagement in management of the Mound Basin's groundwater resources as it undertakes the process to develop and implement the Plan for the Mound Basin over the next several years.

SGMA mandates that a GSA establish and maintain a list of persons interested in receiving notices regarding plan preparation, meeting announcements, and availability of draft plans, maps, and other relevant documents. The MBGSA compiled a list of interested persons for this purpose that will be maintained throughout the GSA formation and GSP development phases. An initial list of stakeholders and interested parties include, but are not limited to, the following:

a) Holders of overlying groundwater rights, including:
    1) Agricultural well owners - There are agricultural users of groundwater operating on land overlying the Basin. To account for these users' interests, the Agency designated a seat on its five-member governing board to be filled by an Agricultural Stakeholder Director. The Agricultural Stakeholder Director will be appointed from nominations received by the Mound Basin Ag Water Group (MBAWG) or the Ventura County Farm Bureau. The Agricultural Stakeholder Director is responsible for engaging the Basin's agricultural users of groundwater and representing their interests before the Agency.
    2) Domestic well owners - There are no domestic wells overlying the Basin.
    3) Industrial well owners - Two industrial wells have been identified in the basin: Saticoy Lemon Association (lemon packing facility cooperative) and Ivy Lawn Cemetery Association. Given Saticoy Lemon Association's ties to agriculture, the Agricultural Stakeholder Director will be responsible for engaging this stakeholder. The Executive Director will be responsible for engaging Ivy Lawn Memorial.
    4) Other - The County of Ventura operates a well for landscape irrigation at the County Government Center. The County is represented on the Agency's Board of Directors.
b) Municipal Well Operators - The Agency is a joint powers authority created by three local public agencies. One of the Agency's signatory members—the City of San Buenaventura operates municipal wells within the Basin and is represented on the Agency's Board of Directors.

c) Public water systems

1) Ventura Water (City of San Buenaventura)

The City of San Buenaventura is a signatory member to the JPA Agreement forming the Agency and is represented on the Agency's Board of Directors.

d) Local land use planning agencies - Both the County of Ventura ("County") and the City of San Buenaventura have land use planning authority on land overlying the Basin. Both are signatory members to the JPA Agreement forming the Agency and are represented on the Agency's Board of Directors.

e) Environmental - There are several environmental organizations dedicated to preserving and maintaining environmental values operating within the boundaries of the Basin. To account for these users' interests, the Agency designated a seat on its five-member governing board to be filled by an Environmental Stakeholder Director. The Environmental Stakeholder Director will be appointed from nominations received from local environmental nonprofit organizations supportive of the Basin's groundwater sustainability. The Environmental Stakeholder Director is responsible for engaging stakeholders within the Basin and representing environmental interests before the Agency.

f) Surface Water Users There are no permitted or licenses surface water diversions within the Basin.

g) The federal government - No land overlying the Mound Basin is managed by the Federal Government.

h) California Native American Tribes – There are no tribal trust lands located within the Basin. However, the Mound Basin lies within the traditional tribal territory of the Chumash. The Agency will ensure that a Chumash representative is on the Agency's interested parties list, in order to receive notices of all Agency meetings and other stakeholder involvement opportunities.

i) Disadvantaged communities - There are no disadvantaged communities served by private domestic wells or small community water systems located within the Basin. The City of San Buenaventura (City) serves the areas indicated by DWR as Disadvantaged Communities (DACs) and Severely Disadvantaged Communities (SDACs). Outreach to DAC's shall be accomplished via bill stuffers or other means through the City's water department (Ventura Water), including materials provided in Spanish.

j) Entities listed in Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater basin managed by the groundwater sustainability agency. The County is the designated California Statewide Groundwater Elevation Monitoring ("CASGEM") entity for the Basin. The County is a signatory member to the JPA Agreement forming the Agency and represented on the Agency's Board of Directors.

k) Casitas Municipal Water District (CMWD) - CMWD is a wholesale water agency that provides a portion of the potable water supplied by Ventura Water within the Basin. CMWD does not operate any facilities in the Basin. CMWD's service area overlaps with a western portion of the Basin.

MBGSA intends to work cooperatively with partner agencies, stakeholders, and interested parties to develop and implement the GSP for the Mound Basin and will maintain a list of stakeholders and interested parties to be included in the formation of the GSP.

A person can be added to the interested parties list by submitting an inquiry via the MBGSA website: http://moundbasingsa.org/contact-us/ or by contacting the Clerk of the Board.

4.3 Integrated Regional Water Management

The Watershed Coalition of Ventura County (WCVC) prepared an Integrated Regional Water Management Plan in 2006 and has been updated multiple times since. The Santa Clara River Watershed Committee, a sub organization of WCVC, is actively involved in the community on a wide range of issues affecting the watershed, including the Mound Basin. Since this group provides a forum for the discussion of issues that are important to the community, it is important for this group to be well informed throughout GSP development. Representatives from the MBGSA attend Council meetings and provide up-to-date information and hear feedback from Council members.

4.4 Public Hearings/Meetings

4.4.1 Planning Commission

Periodic updates on SGMA implementation will be provided to the City of Ventura Planning Commission and the Ventura County Planning Commission and the public will be invited to listen.

4.4.2 Public Meetings

Comprehensive stakeholder involvement will include regularly scheduled public meetings to aid in developing and implementing the GSP. Logical subdivisions of the GSP will be the subject of public meetings to receive comments prior to approval. In addition to signing up to receive information about GSP development at the MBGSA webpage, interested parties may participate in the development and implementation of the GSP by attending and participating in public meetings (Water Code Section 10727.8(a)). Public meetings are generally been held at Ventura City Hall, 501 Poli Street, Ventura, California 93001. Future public meetings will generally be held at this location, although some meetings may be moved to other locations depending on meeting room availability. Each meeting will have a scheduled time for public comments. While the California Governor's Executive Stay at Home Order and the County of Ventura Health Officer Declared Local Health Emergency and Be Well at Home Order remain in effect, meetings will be held on-line. When appropriate, on-line meetings will include polling features to facilitate stakeholder input. Information about upcoming meetings can be found on the MBGSA website: http://moundbasingsa.org.

4.4.3 Local Agency Meetings

To ensure their constituency is kept informed of the progress of GSP development and implementation, the Directors representing MBGSA member agencies, which consist of County of Ventura, City of San Buenaventura, and United Water Conservation District have committed to providing periodic updates during their regularly scheduled board meetings. These meetings offer a chance for the public to receive information and provide comment. Information about upcoming meetings is provided on the following agency websites, or by the means each agency currently meets its legal noticing requirements, whichever is appropriate:

http://cityofventura.ca.gov

http://ventura.org (Board of Supervisors)

https://www.unitedwater.org/

4.5 Direct Mailings/Email

Public meetings and project information will be disseminated through email, from the Agency office, or direct mail under special circumstances if requested. This communication will provide information for the community, public agencies, and other interested persons/organizations about milestones, meetings, and the progress of GSP development. Property owners with groundwater wells within the basin are notified via email and/or direct mailings about the establishment of an interested persons list and given the opportunity to receive future notices.

4.6 Newsletters/Columns

Periodic GSP newsletters will be developed and sent to the interested parties and posted on the website. Periodic updates may be provided to the *Ventura County Star* newspapers to advise, educate, and inform the public on SGMA implementation.

4.7 MBGSA Website

Regular updates on the GSP development and implementation will be provided on the MBGSA website. This information will include maps, timelines, frequently asked questions, groundwater information, and schedules/agenda of upcoming meetings and milestones. This information will be accessible on the MBGSA website: http://moundbasingsa.org. MBGSA staff will update the website regularly and invite users to request information or be added to the interested persons list. In addition, general information about SGMA and groundwater conditions will be available on UWCD's website.

4.8 Database

To distribute information about GSP development, an email list has been compiled into a database of interested persons and stakeholders. The database will be updated regularly to add names of attendees at public meetings along with those requesting information via email or the through the MBGSA website.

4.9 Tribal Engagement

There are no tribal trust lands located within the Basin. However, the Mound Basin lies within the traditional tribal territory of the Chumash. MBGSA will inform the Tribal Elder, Julie Tumamait, and Tribal representative Walter Viar throughout the GSP development process and GSP implementation.

4.10 Additional Opportunities

Additional opportunities for stakeholder participation (e.g., an advisory committee) will be considered as GSP development progresses and as stakeholder interests evolve.

5 EVALUATION

To determine the level of success of the Engagement Plan, the MBGSA will implement the following measures:

5.1 Attendance/Participation

A record of those attending public meetings will be maintained throughout the GSP development process. MBGSA will utilize sign-in sheets and request feedback from attendees to determine adequacy of public education and productive engagement in the GSP development and implementation process. Meeting minutes will also be prepared and will be provided on the MBGSA website once approved.

5.2 Polling

Polls will be used to determine how stakeholders are receiving notices about GSP status and meetings and if any stakeholder categories require additional outreach. Polls will also be used to determine topics of most interest and the level of information that is desired for specific topics. Outreach methods will be tailored based on polling response.

5.3 Adherence to Schedule

Public participation in developing sustainable management criteria and projects and management actions for inclusion in the GSP is instrumental to the success of the GSP. Keeping these tasks on schedule will be an important indicator of stakeholder involvement. GSP development updates will be provided at each Regular Board of Directors meeting. A GSP development schedule will be developed and updated monthly.

5.4 Plan Update

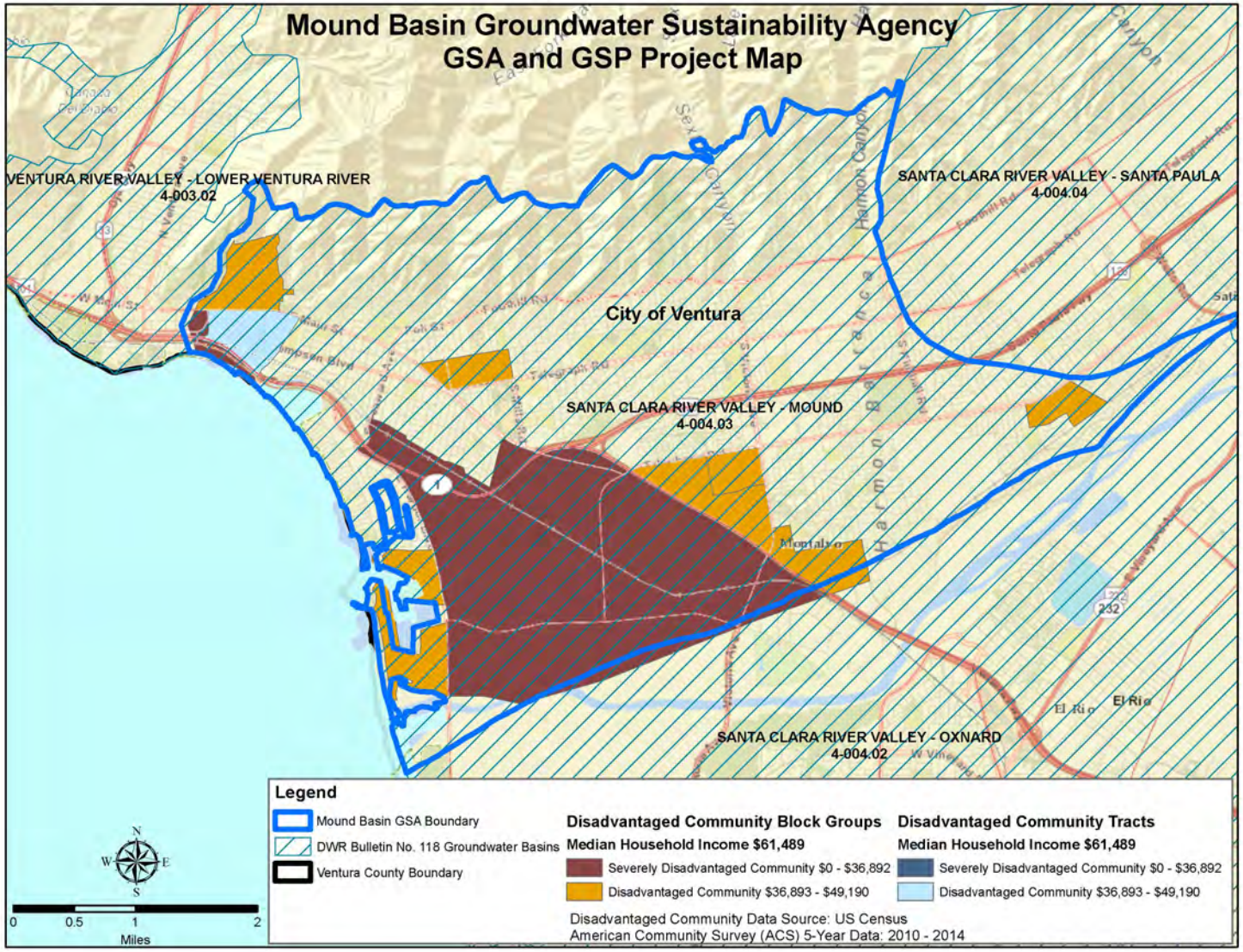
This Plan will be updated at least annually.

APPENDIX A

TABLE 1

During GSA Formation:	
"Before electing to be a groundwater sustainability agency... the local agency or agencies shall hold a public hearing."	Water Code Sec. 10723 (b)
"A list of interested parties [shall be] developed [along with] an explanation of how their interests will be considered."	Water Code Sec. 10723.8.(a)(4)
During GSP Development and Implementation:	
"A groundwater sustainability agency may adopt or amend a groundwater sustainability plan after a public hearing."	Water Code Sec. 10728.4
"Prior to imposing or increasing a fee, a groundwater sustainability agency shall hold at least one public meeting."	Water Code Sec. 10730(b)(1)
"The groundwater sustainability agency shall establish and maintain a list of persons interested in receiving notices regarding plan preparation, meeting announcements, and availability of draft plans, maps, and other relevant documents."	Water Code Sec. 10723.4
"Any federally recognized Indian Tribe... may voluntarily agree to participate in the preparation or administration of a groundwater sustainability plan or groundwater management plan... A participating Tribe shall be eligible to participate fully in planning, financing, and management under this part."	Water Code Sec. 10720.3(c)
"The groundwater sustainability agency shall make available to the public and the department a written statement describing the manner in which interested parties may participate in the development and implementation of the groundwater sustainability plan."	Water Code Sec. 10727.8(a)
Throughout SGMA Implementation:	
"The groundwater sustainability agency shall consider the interests of all beneficial uses and users of groundwater."	Water Code Sec. 10723.2
"The groundwater sustainability agency shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the groundwater basin."	Water Code Sec. 10727.8(a)

FIGURE 1


Mound Basin Groundwater Sustainability Agency
GSA and GSP Project Map
VENTURA RIVER VALLEY - LOWER VENTURA RIVER
4-003.02
SANTA CLARA RIVER VALLEY - SANTA PAULA
4-004.04
City of Ventura
SANTA CLARA RIVER VALLEY - MOUND
4-004.03
SANTA CLARA RIVER VALLEY - OXNARD
4-004.02
Legend
Mound Basin GSA Boundary
DWR Bulletin No. 118 Groundwater Basins
Ventura County Boundary
Disadvantaged Community Block Groups
Median Household Income $61,489
Severely Disadvantaged Community $0 - $36,892
Disadvantaged Community $36,893 - $49,190
Disadvantaged Community Tracts
Median Household Income $61,489
Severely Disadvantaged Community $0 - $36,892
Disadvantaged Community $36,893 - $49,190
Disadvantaged Community Data Source: US Census
American Community Survey (ACS) 5-Year Data: 2010 - 2014
N
W
E
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0
0.5
1
2
Miles

Appendix E

List of Public Meetings (Reg. §354.10)

MoundBasin
GROUNDWATER SUSTAINABILITY AGENCY

Post Office Box 3544
Ventura, CA 93006-3544
(805) 525-4431
www.moundbasingsa.org

Groundwater Sustainability Plan (GSP)

Historical Information on Public Meetings Related to the GSP Development

(Time Period: 2018-October through 2021-November)

MEETING DATE	MEETING TYPE (Regular, Special, Workshop)	ITEM TYPE (Informational or Motion)	TOPIC (Agenda Item Title)	RECOMMENDED ACTION (Agenda Item Description)	ACTION TAKEN (Approved, No Motion, Deferred, Continued)
2018-10-18	Regular	Motion	Approval of Stakeholder Engagement Plan	The Board will consider approving the proposed Stakeholder Engagement Plan.	Approved
2018-10-18	Regular	Informational	GSP Development Options	Executive Director Bryan Bondy will lead the Directors in a discussion of the various options relating to the development of the Agency's Groundwater Sustainability Plan.	No motion
2019-01-17	Regular	Motion	GSP Development Options (Grant Category (c): Planning Activities; Task 2: Organizational Activities)	The Executive Director will provide an update on discussions with United Water Conservation District (UWCD) concerning technical support services for the GSP, discuss options for servicing various GSP elements, and provide direction to staff.	Approved
2019-01-17	Regular	Motion	Isotope Study (Grant Category (b): Models and Studies)	The Board will consider approving professional services by S.S. Papadopulos and Associates to assist the Agency with completing the isotope study described in the GSP Grant application.	Approved
2019-02-21	Regular	Motion	Agreement with United Water Conservation District for GSP Technical Services	The Board will consider conditionally authorizing the Chair to execute an agreement with United Water Conservation District for groundwater modeling and other technical services related to GSP development.	Approved
2019-03-21	Regular	Motion	GSP As-Needed Support Services (Grant Category (c): Planning Activities; Task 2: Organizational Activities)	Board will consider authorizing the Chair to execute a professional services agreement with Intera, Inc., subject to negotiation of agreement terms to the satisfaction of the Chair, Agency Counsel, and Executive Director.	Approved

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2019-05-16	Regular	Motion	Approval of Intera Work Order No. 1	The Board will consider approving Work Order No. 1 for Intera, for the review of background information, creation of a GSP document template, and other preparatory activities outlined in work order.	Approved
2019-10-17	Regular and Public Hearing	Motion	GSP Development Update	The Board will receive an update from the Executive Director concerning GSP development and consider providing feedback to staff.	Approved
2019-10-17	Regular and Public Hearing	Motion	Approval of Intera, Inc. Work Order Nos. 2 and 3	The Board will consider approving two work orders for Inter, Inc. Work Order No. 2 will address development of options for a MBGSA data management system, a required element of the GSP. Work Order No. 3 will provide budget for Intera, Inc. to review the hydrogeologic conceptual model (HCM) developed by UWCD, support the Executive Director with preliminary review of sustainability management criteria, and assit with a public workshop concerning the aforementioned topics.	Approved
2019-12-19	Regular	Motion	Approval of Intera, Inc. Work Order No. 4	The Board will consider approving Intera Work Order No. 4 for an amount not-to-exceed $15,640 to develop the MBGSA Data Management System and populate it with data for GSP development and up to $5,000 in contingency, to be authorized at the discretion of the Executive Director.	Approved

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2020-02-20	Regular	Informational	Executive Director Update	Executive Director will provide an informational update on Agency activities since the previous Board meeting, including a recurring GSP Development update.	No motion required.
2020-02-20	Regular	Informational	GSP Monthly Update (Grant Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and may provide feedback or direction to staff.	No motion required.
2020-02-20	Regular	Motion	Data Management System Update (Grant Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's data management system and may provide feedback or direction to staff.	No motion required.
2020-02-20	Regular	Motion	Isotope Study Report (Grant Category (b))	The Board will consider receiving and filing the Isotope study report.	Approved
2020-04-16	Regular	Motion	GSP Monthly Update (Grant Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2020-05-21	Regular	Motion	GSP Monthly Update (Grant Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2020-05-21	Regular	Motion	Intera Work Order No. 5 for GSP Development (Grant Category (d), Task 4)	The Board will consider approving Work Order No. 5 for Intera for an amount not to exceed $256,760 for GSP development.	Approved

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2020-06-18	Regular and Public Hearing	Informational	Executive Director Update	Executive Director will provide an informational update on Agency activities since the previous Board meeting, including a recurring GSP Development update.	No motion required.
2020-06-18	Regular and Public Hearing	Motion	GSP Monthly Update (Grant Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2020-06-18	Regular and Public Hearing	Motion	Sustainable Management Criteria Overview and Sustainability Goal Discussion (Grant Category (d), Task 4)	The Board will receive background information concerning development of sustainable management criteria and consider approving a process for developing the sustainability goal description.	Approved
2020-07-16	Regular	Informational	Executive Director Update	Executive Director will provide an informational update on Agency activities since the previous Board meeting, including a recurring GSP Development update.	No motion required.
2020-07-16	Regular	Motion	GSP Monthly Update (Grant Category (c), Task 3 and Category (d), Task 4) *Note: Draft Newsletter, July 2020, Volume 1, Issue 2 included with GSP Monthly Update*	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2020-07-16	Regular	Motion	Sustainability Goal Public Draft Release (Grant Category (d), Task 4)	The Board will consider approving the draft sustainability goal description for public comment release.	Approved

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(Time Period: 2018-October through 2021-November)

MEETING DATE	MEETING TYPE (Regular, Special, Workshop)	ITEM TYPE (Informational or Motion)	TOPIC (Agenda Item Title)	RECOMMENDED ACTION (Agenda Item Description)	ACTION TAKEN (Approved, No Motion, Deferred, Continued)
2020-07-16	Regular	Motion	Set Date and Time for GSP Stakeholder Workshop - Webinar (Grant Category (c), Task 3)	The Board will consider setting the date and time for Stakeholder Workshop No. 1.	Approved
2020-08-20	Regular	Informational	Groundwater Model Presentation	The Board will receive a presentation from United Water Conservation District staff concerning groundwater model development.	No motion required.
2020-08-20	Regular	Motion	GSP Monthly Update (Grant Category (c), Task 3 and Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2020-08-20	Regular	Motion	Sustainability Goal (Grant Category (d), Task 4)	The Board will consider approving the sustainability goal for the Agency's Groundwater Sustainability Plan.	Continued
2020-08-20	Regular	Motion	Sustainable Management Criteria Screening (Grant Category (d), Task 4)	The Board will review sustainable management criteria screening results and consider providing feedback to staff.	Approved
2020-08-20	Regular	Motion	GSP Stakeholder Workshop Webinar Agenda (Grant Category (c), Task 3)	The Board will discuss the draft agenda for Stakeholder Workshop No. 1 and consider providing feedback to staff.	No motion required.
2020-09-30	Workshop	Informational	Mound Basin Groundwater Sustainability Plan (GSP) Online Public Workshop No. 1	Presented to public/stakeholders: • Introduction to SGMA and GSPs • Overview of Basin Setting • Groundwater Model Summary • Next Steps for GSP Development • Stakeholder Questions and Feedback • Director Comments • Q&A built in throughout	No motion required.
2020-09-17	Regular	Informational	GSP Stakeholder Workshop No. 1 Recap (Grant Category (c), Task 3)	The Executive Director will summarize insights gained from GSP Workshop No. 1.	No motion required.

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2020-09-17	Regular	Motion	GSP Monthly Update (Grant Category (c), Task 3 and Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2020-09-17	Regular	Motion	Sustainability Goal (Grant Category (d), Task 4)	The Board will consider approving the sustainability goal for the Agency's Groundwater Sustainability Plan.	Approved
2020-10-15	Regular	Motion	GSP Monthly Update (Grant Category (c), Task 3 and Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2020-11-19	Regular	Motion	GSP Monthly Update (Grant Category (c), Task 3 and Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2020-12-17	Regular	Motion	GSP Monthly Update (Grant Category (c), Task 3 and Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2020-12-17	Regular	Motion	Degraded Water Quality Sustainable Management Criteria	The Board will discuss proposed sustainable management criteria for the water quality sustainability indicator and consider providing feedback to staff.	Approved

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2021-01-21	Regular	Motion	GSP Monthly Update (Grant Category (c), Task 3 and Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2021-01-21	Regular	Motion	GSP Workshop No. 2 (Grant Category (c); Task 3: Stakeholder Outreach and Engagement)	The Board will consider scheduling the second GSP public workshop.	Approved
2021-01-21	Regular	Motion	GSP Newsletter Volume 2, Issue 1 (Grant Category (c); Task 3: Stakeholder Outreach and Engagement)	The Board will consider approving GSP Newsletter Volume 2, Issue 1 for public release.	Approved
2021-02-18	Regular	Motion	Review of Future Groundwater Conditions Modeling Results and Implications for Sustainable Management (Grant Category (c), Task 3 and Category (d), Task 4)	The Board will receive a presentation from the GSP Development Team concerning modeling results and implications for sustainable management. The Board will consider providing feedback or direction to staff concerning sustainable management criteria.	Approved
2021-02-18	Regular	Motion	GSP Monthly Update (Grant Category (c), Task 3 and Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved

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2021-03-04	Workshop	Informational	Mound Basin Groundwater Sustainability Plan (GSP) Online Public Workshop No. 2	Presented to public/stakeholders: • Introduction to Sustainable Management Criteria • Groundwater Modeling and Water Budgets • Proposed Sustainable Management Criteria • Stakeholder Questions and Feedback • Director Comments • Q&A built in throughout	No motion required.
2021-03-18	Regular	Motion	GSP Monthly Update (Grant Category (c), Task 3 and Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2021-03-18	Regular	Motion	Sustainable Management Criteria (Category (d), Task 4)	The Board will consider directing staff to prepare the draft groundwater sustainability plan using the proposed sustainable management criteria or provide other direction.	Approved
2021-04-15	Regular	Motion	GSP Monthly Update (Grant Category (c), Task 3 and Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2021-05-20	Regular	Motion	GSP Monthly Update (Grant Category (c), Task 3 and Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved

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Groundwater Sustainability Plan (GSP)

Historical Information on Public Meetings Related to the GSP Development

(Time Period: 2018-October through 2021-November)

MEETING DATE	MEETING TYPE (Regular, Special, Workshop)	ITEM TYPE (Informational or Motion)	TOPIC (Agenda Item Title)	RECOMMENDED ACTION (Agenda Item Description)	ACTION TAKEN (Approved, No Motion, Deferred, Continued)
2021-05-20	Regular	Motion	GSP 20-Year Implementation Budget Projection, Fiscal Year 2021/2022 Budget, and Multi-Year Budget Projection	The Board will review a 20-year GSP implementation budget projection, consider approving the Fiscal Year 2021/2022 budget and the multi-year budget projection, and consider scheduling a public hearing to consider adoption of groundwater extraction fees for Fiscal Year 2021/2022.	Approved
2021-05-20	Regular	Motion	Monitoring Well Access Agreement	The Board will review a draft access agreement for the planned monitoring well at the Ventura Water Reclamation Facility and consider authorizing the Executive Director or Board Officer to execute a final access agreement, subject to terms agreeable to Agency Counsel.	Approved
2021-06-17	Regular	Motion	GSP Monthly Update (Grant Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan and grant status. The Board may provide feedback or direction to staff.	Approved
2021-06-17	Regular	Motion	Review of Preliminary Draft GSP, Schedule Draft GSP Public Comment Period, and Schedule GSP Workshop (Grant Category (d), Task 4)	The Board will discuss the preliminary draft GSP and consider scheduling a 60-day public comment period for the draft GSP and a public workshop.	Approved

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(Time Period: 2018-October through 2021-November)

MEETING DATE	MEETING TYPE (Regular, Special, Workshop)	ITEM TYPE (Informational or Motion)	TOPIC (Agenda Item Title)	RECOMMENDED ACTION (Agenda Item Description)	ACTION TAKEN (Approved, No Motion, Deferred, Continued)
2021-06-17	Regular	Resolution	PUBLIC HEARING	Resolution 2021-01: A Resolution of the Board of Directors of the Mound Basin Groundwater Sustainability Agency Determining and Establishing Groundwater Extraction Fees Against All Persons Operating Groundwater Extraction Facilities Within the Mound Basin for the 8th and 9th Semiannual Billing Periods (JulyDecember 2021 and January-June 2022).	Approved
2021-06-17	Regular	Motion	PUBLIC HEARING	The Board will open a PUBLIC HEARING to discuss potential extraction fees, based on the Fiscal Year 2020-21 Budget and the updated 5-year financial projection posted on the Agency's website. The Board welcomes public comment and testimony regarding the proposed groundwater extraction fees. After receiving public comment and testimony, the Board will close the PUBLIC HEARING and consider adopting Resolution 2021-01 establishing the proposed groundwater extraction fees within the Mound Basin for the 8th and 9th Semiannual Billing Periods (July-December 2021 and January-June 2022).	Approved

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Historical Information on Public Meetings Related to the GSP Development

(Time Period: 2018-October through 2021-November)

MEETING DATE	MEETING TYPE (Regular, Special, Workshop)	ITEM TYPE (Informational or Motion)	TOPIC (Agenda Item Title)	RECOMMENDED ACTION (Agenda Item Description)	ACTION TAKEN (Approved, No Motion, Deferred, Continued)
2021-07-15	Regular and Public GSP Workshop	Motion	Technical Support Services Agreement	The Board will consider authorizing the Executive Director to finalize and execute an agreement with the State of California Department of Water Resources for the Technical Support Services Monitoring Well.	Approved
2021-07-15	Regular and Public GSP Workshop	Motion	Site Use Agreement for the Technical Support Services Monitoring Well	The Board will consider authorizing the Executive Director to finalize and execute a site use agreement for the Technical Support Services Monitoring Well.	Approved
2021-07-15	Regular and Public GSP Workshop	Motion	GSP Monthly Update (Grant Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan (GSP) and grant status. The Board may provide feedback or direction to staff.	Approved
2021-07-15	Regular and Public GSP Workshop	Informational	Mound Basin Groundwater Sustainability Plan (GSP) Online Public Workshop No. 3	The GSP Public Workshop No. 3 will provide an overview of the draft GSP contents. The workshop is an opportunity for the public and Board members to ask questions and give verbal feedback on the draft GSP. Presented to public/stakeholders: • Introduction to SGMA and GSPs • Summary of Draft GSP Comments • Questions and Stakeholder Feedback	No motion required.
2021-08-19	Regular	Motion	GSP Monthly Update (Grant Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan (GSP) and grant status. The Board may provide feedback or direction to staff.	Approved

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Groundwater Sustainability Plan (GSP)

Historical Information on Public Meetings Related to the GSP Development

(Time Period: 2018-October through 2021-November)

MEETING DATE	MEETING TYPE (Regular, Special, Workshop)	ITEM TYPE (Informational or Motion)	TOPIC (Agenda Item Title)	RECOMMENDED ACTION (Agenda Item Description)	ACTION TAKEN (Approved, No Motion, Deferred, Continued)
2021-09-02	Special	Motion	Rincon Consultants, Inc. Master Services Agreement and Work Order No. 1 for GSP Development Support (Grant Category (d), Task 4)	The Board will consider authorizing the Executive Director and Agency Counsel to negotiate and execute a master services agreement with Rincon Consultants, Inc., and issue Work Order No. 1 for GSP development support for an amount not-to exceed $25,000.	Approved
2021-09-16	Regular	Motion	GSP Monthly Update (Grant Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan (GSP) and grant status. The Board may provide feedback or direction to staff.	Approved
2021-10-21	Regular	Motion	GSP Monthly Update (Grant Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan (GSP) and grant status. The Board may provide feedback or direction to staff.	Approved
2021-10-21	Regular	Motion	Schedule Public Hearing for GSP Adoption (Grant Category (c), Task 3 and d), Task 4)	The Board will consider setting a date and time for a public hearing concerning adoption of the GSP.	Approved
2021-11-18	Regular	Motion	GSP Monthly Update (Grant Category (d), Task 4)	The Board will receive an update from the Executive Director concerning development of the Agency's Groundwater Sustainability Plan (GSP) and grant status. The Board may provide feedback or direction to staff.	Approved
2021-11-18	Regular	Resolution	PUBLIC HEARING	Resolution 2021- 03: A Resolution of the Board of Directors of the Mound Basin Groundwater Sustainability Agency Adopting a Groundwater Sustainability Plan (GSP) for the Mound Basin.	Approved

Appendix F

GSP Comments and Responses (Reg. §354.10)

Appendix F

GSP Comments and Responses

This appendix documents comments received on the draft Groundwater Sustainability Plan (GSP) and a summary of responses by Mound Basin Groundwater Sustainability Agency (MBGSA), as required pursuant to GSP Emergency Regulations Section 354.10(c). Included below is a summary of responses to major comment themes shared between the California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and a consortium of non-governmental organizations (NGOs). In addition, a comment matrix is attached to this appendix (Attachment F-1), which includes detailed responses to comments from all reviewers; however, the comments which share the major themes from the three aforementioned parties are not included in the comment matrix due to their volume and repetition and are otherwise introduced in the discussion below and addressed in a new appendix to the draft GSP (Appendix G). In order to distinguish the comments from CDFW, NGOs, and NMFS, which do not follow the major themes discussed below, they have been identified and labeled with numbers and boxes in each of their respective comment letter (see Attachment F-2) and correspond with the numbers in the comment matrix table (see Attachment F-1 comments #6-9 [CDFW], #10-16 [NGOs], and #31-48 [NMFS]).

Major Comment Themes and Summary Response

Major Comment Theme No. 1:
In general, the comments from CDFW, NMFS, and NGOs express shared concerns about the draft GSP's treatment of shallow groundwater occurring within the Shallow Alluvial Deposits and interconnected surface water of the Santa Clara River and its estuary, including related potential groundwater dependent ecosystems (GDEs) as beneficial uses and users of groundwater and surface water. In summary, the comments expressed concerns about the absence of sustainable management criteria (SMC) and limited monitoring of the Shallow Alluvial Deposits to address concerns about GDEs, both riparian and aquatic, including the "depletions of interconnected surface water" sustainability indicator.

Summary Response No. 1:
The Draft GSP explained that the riparian GDEs may, in some cases, utilize groundwater from the Shallow Alluvial Deposits (particularly within the floodplain of the Santa Clara River). Similarly, the Draft GSP stated that the Shallow Alluvial Deposits discharge minor amounts of groundwater to Santa Clara River and its estuary. However, the Draft GSP also explained that there is no current or planned groundwater extraction from wells screened in the Shallow Alluvial Deposits and that groundwater extractions from the deep, confined aquifers of the Basin do not materially affect groundwater levels in the Shallow Alluvial Deposits or surface flows in the Santa Clara River. For this reason, there are no impacts to the riparian and aquatic GDE beneficial uses that needed to be considered during SMC formulation. Similarly, owing to the lack of impacts, the need for detailed monitoring of Shallow Alluvial Deposits and Santa Clara River flows is limited.

In review of the comments, it was clear that the Draft GSP could be improved by providing more information about groundwater conditions in the Shallow Alluvial Deposits and further information to support the conclusion that shallow groundwater levels and Santa Clara River flows are not materially

affected by groundwater pumping in the Mound Basin. To address this need, MBGSA developed and added Appendix G to the final GSP to provide further information and clarification around these issues. Appendix G provided additional documentation of the technical data that support the conclusions that the Shallow Alluvial Deposits hydrostratigraphic unit (HSU) is not a principal aquifer and that shallow groundwater levels and Santa Clara River flows are not materially affected by groundwater pumping in the Mound Basin. Specifically, Appendix G provides the following information:

1. The characteristics of the Shallow Alluvial Deposits HSU and explanation of why it is not considered a principal aquifer in Mound Basin.

2. Additional evidence supporting the conclusion that there is a lack of material hydraulic connection between the shallow groundwater with the much deeper principal aquifers used for water supply in Mound Basin (the Mugu and Hueneme aquifers).

3. Additional evidence supporting the conclusion that there is a lack of material hydraulic connection between the Santa Clara River (and its estuary) and the principal aquifers used for water supply in Mound Basin (the Mugu and Hueneme aquifers).

In addition, an interim study consisting of shallow groundwater data collection via City of Ventura shallow monitoring wells has been added to the GSP to help confirm the conclusions presented in Appendix G (See updated GSP Sections 5.3.1 and 6.6).

Major Comment Theme No. 2:
Several commenters (CDFW, NGOs, California Trout, and NMFS) expressed concerns about the determination that potential GDEs in Area Nos. 1 through 10 are not actual GDEs.

Summary Response No. 2:
MBGSA reviewed the screening results in light of the comments and hired Rincon Consultants, Inc., to further investigate the potential GDEs, including site visits to each publicly accessible area. The field visits and historical air photo reviews provide additional evidence that the vegetation in Area Nos. 1 through 10 are not likely groundwater dependent. This information was added to the updated GSP and Appendix H (formerly Appendix G in prior draft versions).

Attachment F-1

Comment Matrix

Attachment F-1

Groundwater Sustainability Plan
Public Comment Period: June 23 through August 23, 2021
Updated October 14, 2021

Note: comments which share the major themes from the Appendix F introduction are not included in the comment matrix below due to their volume and repetition and are addressed in a new appendix to the GSP (Appendix G). In order to distinguish the comments from CDFW, NGOs, and NMFS, which do not follow the major themes discussed below, they have been identified and labeled with numbers and boxes in each of their respective comment letters (provided following this table) and correspond with the numbers in the comment matrix table below (see comments #6-9 [CDFW], #10-16 [NGOs], and #31-48 [NMFS]).

MoundBasin
GROUNDWATER SUSTAINABILITY AGENCY

Comment Number	Entry Date	First Name	Last Name	Email Address	Phone Number	Mailing Address	GSP Referenced	Comment/Question	Response
1	26-Jul-21	Burt	Handy	burthandy@gmail.com			Section 3.1 Hydrogeologic Conceptual Model	On Figures 3.1-03 and 3.1-04 the Ventura-Santa Clara River Syncline are shown on different locations on these Figures; The Ventura-Santa Clara River Syncline and the Montalvo-South Mtn -Oak Ridge Fault Anticline are not shown on figures (Ventura Syncline) B-3.1-06, C 3.1-07, D 3.1-08 (Montalvo Anticline) b-3.1-06, 3.1-07	Synclines/anticlines labeled.
2	16-Aug-21	Michael Kelley	Flood Dyer	mflood@casitaswater.com kdyer@casitaswater.com	805-649-2251 ext. 111	Casitas Municipal Water District 1055 Ventura Ave. Oak View, CA 93022	ES 2.2.1 Summary of Jurisdictional Areas and Other Features	Page ES-iii second paragraph, the City of Ventura's Ventura River surface diversions should also be mentioned here (Note: this relationship is correctly mentioned in paragraph six on page 32 and the last paragraph on page 73). Page ES-vi, fourth paragraph the City of Ventura's Ventura River surface diversions should also be mentioned here. Page 7, fourth paragraph, the City of Ventura's Ventura River surface diversions should also be mentioned here.	The City of Ventura operates wells, including a subsurface intake, in the Ventura River floodplain, which is already noted in this paragraph. Page 32, "surface" deleted. Page 73, edits to clarify Foster Park facilities are groundwater extraction facilities.
3	16-Aug-21	Michael Kelley	Flood Dyer	mflood@casitaswater.com kdyer@casitaswater.com	805-649-2251 ext. 111	Casitas Municipal Water District 1055 Ventura Ave. Oak View, CA 93022	Section 2.2.2 Existing Water Resource Management Programs	Page 10, second section (Casitas MWD Urban Water Management and Agricultural Water Management Plan), Casitas recently adopted its 2020 Urban Water Management Plan (UWMP), elements of which should be included in this section (link: https://www.casitaswater.org/your-water/urban-water-management-plans).	The 2020 WSCP and UWMP for City of Ventura (Kennedy/Jenks, 2021a&b) and the 2020 UWMP for CMWD (CMWD, 2021) have been included in the GSP and the text has been updated to reflect the differences/updates.
4	16-Aug-21	Michael Kelley	Flood Dyer	mflood@casitaswater.com kdyer@casitaswater.com	805-649-2251 ext. 111	Casitas Municipal Water District 1055 Ventura Ave. Oak View, CA 93022	Section 2.3.1 Beneficial Uses and Users	Page 24, first paragraph states: "As a wholesale water provider to Ventura Water, Casitas MWD's interests were represented via the City's participation on the MGBSA Board of Directors". No proof of this statement has been located by Casitas Staff and thus it should be removed. Further, as a separate Special District of the State of California, Casitas MWD has a responsibility to its stakeholders that is separate to that of the City of Ventura and it should not be seen as Casitas MWD surrendering this authority without an action of the Casitas Board of Directors. Although Casitas does not have facilities within the Mound Basin currently nor sit on the MB GSA Board of Directors, it should still be viewed as an active stakeholder in the basin.	Sentence in question was deleted.
5	16-Aug-21	Michael Kelley	Flood Dyer	mflood@casitaswater.com kdyer@casitaswater.com	805-649-2251 ext. 111	Casitas Municipal Water District 1055 Ventura Ave. Oak View, CA 93022	Section 3.3.1.2 Reliability of Historical Surface Water Supplies	Page 83, fourth paragraph notes 'exceptional drought' from 2012 to 2016. This is an accurate statewide metric but not for the local drought conditions that have caused a relatively steady decline in Lake Casitas' storage levels from 2011 through the present day. Mandated conservation goals along with the associated penalties should also be mentioned as reasons for lowering of demands.	Sentence added: "The lower than anticipated surface water deliveries were related to a combination of factors, including mandated conservation goals along with the associated penalties."
6	17-Aug-21	Erinn Steven	Wilson-Olgin Slack	steven.slack@wildlife.ca.gov	805-467-4201	CA Dept. of Fish and Wildlife 2493 Portola Rd # B, Ventura, CA 93003	n/a	**COMMENT OVERVIEW** CDFW supports ecosystem preservation and enhancement in compliance with SGMA and its implementing regulations based on CDFW expertise and best available information and science. CDFW understands the Mound basin (Basin) and is adjacent to the Santa Paula basin and the Oxnard basin. These three basins sit within the larger Oxnard Plain area. CDFW offers the following comments and recommendations below to assist MB-GSA in identifying and evaluating impacts on biological resources including GDEs within the adjacent groundwater basins. Additional suggestions are included for MB-GSA's consideration during revisions of the Draft GSP.	Comment noted. The Mound and Santa Paula Basins are not part of "the larger Oxnard Plain area". No such area is recognized by DWR or others to MGGSA's knowledge.

Attachment F-1

Comment Number	Entry Date	First Name	Last Name	Email Address	Phone Number	Mailing Address	GSP Referenced	Comment/Question	Response
7	17-Aug-21	Erinn Steven	Wilson-Olgin Slack	steven.slack@wildlife.ca.gov	805-467-4201	CA Dept. of Fish and Wildlife 2493 Portola Rd # B, Ventura, CA 93003	Section 3.3 Water Budget	**Comment #3:** Impacts of United Water Conservation District's Diversion Operations at the Vern Freeman Diversion on the SCRE (Water Budget Section 3.3 Starting on Page 70) **Issue:** The SCRE is located at the western portion of the Basin and is the terminus of the SCR. The protection and preservation of the SCRE for many species is a high priority for CDFW. United Water Conservation District's (UWCD) Vern Freeman Diversion (VFD), which is located in the Santa Paula Subbasin, plays a major role in limiting the amount of surface water that ultimately reaches the SCRE in the Mound Subbasin. As previously mentioned in Comment #2, GDEs do exist in the Basin and the VFD and recharge operations negatively impact these ecosystems. The VFD diverts surface water that would have continued to flow into the Mound Subbasin, but the water is instead diverted to the Oxnard Subbasin for groundwater storage. The water budget does not consider or analyze the VFD amounts in the Draft GSP. **Concern:** The SCRE provides open water, sand dune, nearshore, riparian, mudflat, and other habitats that support a number of sensitive species throughout their life cycles, including the tidewater goby (Eucclogobius newberryi), steelhead, California least tern (Sterna antillarum browni), and western snowy plover (Charadrius nivosus) (CDFW 2019). SCRE is a core resource area strategically located along the coast that provides food, shelter, stopover, and safety for wildlife. The Ventura Wastewater Reclamation Facility (VWRF) currently discharges recycled water into the SCRE but will be reducing the amount of effluent discharge (from 4.7 MGD to 1.9 MGD) into the SCRE in the near future. Discharge reduction has the potential to significantly improve water quality conditions in the SCRE at the expense of a reduction in open water habitat. The surface water diverted from the VFD reduces flows needed to sustain the open water habitat for the SCRE. The VFD and spreading basin has altered the natural surface flow and groundwater recharge patterns in the SCR watershed (NMFS 2020, p.3). **Comment #3 Recommendation:** CDFW recommends the amounts and timing of streamflow depletions at the Vern Freeman Diversion should be included in the Draft GSP to complete the water budget. Additionally, CDFW recommends the MB-GSA identify the estimated quantity and timing of streamflow depletions in the subbasin. If this information is not available, CDFW recommends the MB-GSA identify a proposed plan to estimate these values. The final GSP should address the UWCD VFD diversion and recharge operations and their effects on surface flows and groundwater elevations along the SCR and SCRE.	GSP Emergency Regulations only require MBGSA to quantify the "total surface water entering and leaving a basin by water source type." (GSP Emerg. Regs. 354.18(b)(1)). MBGSA is not required to quantify diversions upstream or outside of the Basin in the GSP; however, the VFD is inherently included because it is a component of the regional numerical groundwater model used to quantify the water budget. Text was added to Section 3.3 to make clear that the water budget accounts for Vern Freeman Diversion operations. It is noted that the commenter incorrectly refers to surface water diversions as depletions. In the SGMA context, "depletions" are caused by groundwater use (GSP Emerg. Regs. 354.28(c)(6)).
8	17-Aug-21	Erinn Steven	Wilson-Olgin Slack	steven.slack@wildlife.ca.gov	805-467-4201	CA Dept. of Fish and Wildlife 2493 Portola Rd # B, Ventura, CA 93003	Section 6.0 Projects and Management Actions	CDFW recommends that the MB-GSA commit to Arundo (Arundo donax) removal in the SCRE and along the SCR within the Basin to improve groundwater supply and enhance habitat quality for nesting birds. Arundo removal is one example of a project and management action to minimize groundwater overdraft. If groundwater depletion results in reduced streamflow due to interconnected surface waters, the nesting and foraging success of the SSC yellow warbler (Dendroica petechia), the SSC yellow breasted chat (Icteria virens), least Bell's vireo, southwestern willow flycatcher and other bird species may be diminished due to the reduced nesting habitat and food availability.	The GSP concludes that the Basin is not in overdraft (Section 3.3.4.1) and groundwater extraction does not have a material influence on shallow groundwater levels or Santa Clara River flows (see new Appendix G for expanded information on this topic). Further, MBGSA is not responsible for habitat improvement. Therefore, it is unclear why MBGSA would pursue this costly project.

Attachment F-1

Comment Number	Entry Date	First Name	Last Name	Email Address	Phone Number	Mailing Address	GSP Referenced	Comment/Question	Response
9	17-Aug-21	Erinn Steven	Wilson-Olgin Slack	steven.slack@wildlife.ca.gov	805-467-4201	CA Dept. of Fish and Wildlife 2493 Portola Rd # B, Ventura, CA 93003	n/a	**CONCLUSION** In conclusion, the Draft GSP does not comply with all aspects of SGMA statute and regulations, and CDFW deems the Draft GSP inadequate to protect fish and wildlife beneficial users of groundwater for the following reasons: 1. The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are not reasonable and/or not supported by the best available information and best available science. [CCR § 355.4(b)(1)] (See Comments # 1, 2, and 3); 2. The Draft GSP does not identify reasonable measures and schedules to eliminate data gaps. [CCR § 355.4(b)(2)] (See Comments # 1, 2, and 3); 3. The sustainable management criteria and projects and management actions are not commensurate with the level of understanding of the basin setting, based on the level of uncertainty, as reflected in the Draft GSP. [CCR § 355.4(b)(3)] (See Comments # 1, 2, and 3); and, 4. The interests of the beneficial uses that are potentially affected by the use of groundwater in the basin, have not been considered. [CCR § 355.4(b)(4)] (See Comments # 1, 2, 3 and see Additional Comments).	While MBGSA, understands CDFW's concerns about habitat and species, MGGSA disagrees with the conclusion that the Draft GSP does not comply with SGMA. The GSP was developed consistent with SGMA regulations and requirements with specific regulatory text highlighted in each section. MBGSA has added an appendix (Appendix G) providing further technical data to more clearly demonstrate the lack of a material effect of groundwater extraction on shallow groundwater levels and Santa Clara River flows. Given the lack of a material relationship between groundwater pumping and shallow groundwater levels and Santa Clara River flows, it is not necessary to include criteria or data gaps for GDEs or interconnected surface water in the GSP.
10	18-Aug-21	Ngodoo Water Policy Analyst	Atume	ngos.sgma@gmail.com		NGO Consortium	n/a	Based on our review, we have significant concerns regarding the treatment of key beneficial users in the Draft GSP and consider the GSP to be **insufficient** under SGMA. We highlight the following findings: 1. Beneficial uses and users **are not sufficiently** considered in GSP development. a. Human Right to Water considerations **are not sufficiently** incorporated. b. Public trust resources **are not sufficiently** considered. c. Impacts of Minimum Thresholds, Measurable Objectives and Undesirable Results on beneficial uses and users **are not sufficiently** analyzed. 2. Climate change **is not sufficiently** considered. 3. Data gaps **are not sufficiently** identified and the GSP does not have a plan to eliminate them. 4. Projects and Management Actions **do not sufficiently** consider potential impacts or benefits to beneficial uses and users.	1. Beneficial uses and users have been incorporated in the Draft GSP according to each SGMA requirement (CCR §354.10, §354.16, §354.18, §354.26, §354.28, §354.34, §354.38). a. Assembly bill 685 applies to DWR. §350.4(g) states, "The Department shall consider the state policy regarding the human right to water when implementing these regulations". MBGSA is not responsible for water supply and no active domestic wells are located in the Basin. However, the established MTs and MOs were designed to protect the beneficial use of groundwater. b. The GSP demonstrates that surface water and the Shallow Alluvial Deposits that riparian habitats rely on are not materially affected by groundwater extraction or proposed GSP projects (see new Appendix G); therefore, there are no public trust issues to consider in the Mound Basin. c. SGMA regulations §354.28(b)(4) [how Minimum Thresholds affect beneficial uses/users] and §354.26(b)(3) [Undesirable Results potential effects on beneficial uses/users] are addressed in Chapter 4. 2. Climate change was addressed in accordance with §354.18 in section 3.3. 3. Data gaps are identified in sections 5.3, 5.4, 5.5, 5.6, and 5.7, and cover the requirements of §354.38. 4. MBGSA provided all the information for each project and management action in the Basin based on the requirements under §354.44 in Section 6.0.

Attachment F-1

Comment Number	Entry Date	First Name	Last Name	Email Address	Phone Number	Mailing Address	GSP Referenced	Comment/Question	Response
11	18-Aug-21	Ngodoo Water Policy Analyst	Atume			NGO Consortium	Section 2.0 Administrative Information	**Disadvantaged Communities, Drinking Water Users, and Tribes** The identification of Disadvantaged Communities (DACs), drinking water users, and tribes is **insufficient**. We note the following deficiencies with the identification of these key beneficial users. ● The GSP provides a map of DAC block groups and DAC tracts within the basin (Figure 1 in Appendix D) but does not include any other identifying information for DACs. ● The adopted Stakeholder Engagement Plan (Appendix D) states that there are domestic wells overlying the basin; however, the main body of the GSP states that there are no domestic wells within the basin due to availability of potable water from Ventura Water. The GSP does not provide the location and depth of the domestic wells within the basin, nor does it provide a well density map of domestic wells in the basin. Additionally, the GSP fails to identify the population dependent on groundwater as their source of drinking water in the basin. ● The GSP states that portions of the Barbareno-Ventureno Band of Chumash are located within the Mound Basin, but does not include a map of tribal areas within the basin. These missing elements are required for the GSA to fully understand the specific interests and water demands of these beneficial users, to support the development of water budgets using the best available information, and to support the development of sustainable management criteria and projects and management actions (PMAs) that are protective of these users. **RECOMMENDATIONS** ● Provide clarification on the status of domestic wells within the basin. DWR Well Completion Report Map 1 shows that there are some domestic wells within the basin. Include a map showing the domestic wells in the basin by location and depth. even if they are not currently in use. Wells previously in use may have been impacted by poor water quality or declining groundwater elevations. ● Provide an estimate of the population dependent on groundwater within the Mound Basin. The GSP states that "The City of Ventura (Ventura Water) serves the areas indicated by DWR as Disadvantaged Communities (DACs) and Severely Disadvantaged Communities (SDACs)." The GSP does not, however, currently provide clear information on how and to what extent DAC members rely on groundwater. ● Include a map of tribal lands within the basin.	DACs are shown on Figure 1 in the SEP (Appendix D). Drinking water in the Basin is provided by the City of Ventura, as shown on Figures 2.1-01, 2.1-03, and 2.2-01. The City of Ventura has a diverse water supply portfolio (Section 3.1.1), meaning that no potable water users are exclusively dependent on Mound Basin groundwater. There are no domestic wells currently being used in the Basin (see Section 2.3.1). MBGSA has verified this with Ventura County Watershed Protection District (8/24/2021 email communication with James Maxwell and Kim Loeb of VCWPD). There are no tribal trust lands within the Basin (see Section 2.2.1).
12	18-Aug-21	Ngodoo Water Policy Analyst	Atume	ngos.sgma@gmail.com		NGO Consortium	Section 3.3 Water Budget	**Native Vegetation** Native vegetation is a water use sector that is required 2 , 3 to be included into the water budget. The integration of this ecosystem into the water budget is **insufficient**. The water budget did not include the current, historical, and projected demands of native vegetation. The omission of explicit water demands for native vegetation is problematic because key environmental uses of groundwater are not being accounted for as water supply decisions are made using this budget, nor will they likely be considered in project and management actions. **RECOMMENDATIONS** Quantify and present all water use sector demands in the historical, current, and projected water budgets with individual line items for each water use sector, including native vegetation.	Native vegetation is included in the evapotranspiration term of the water budget.

Attachment F-1

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13	18-Aug-21	Ngodoo Water Policy Analyst	Atume	ngos.sgma@gmail.com		NGO Consortium	Appendix D - MBGSA Stakeholder Engagement Plan	**Stakeholder Engagement during GSP Development** Stakeholder engagement during GSP development is **insufficient**. SGMA's requirement for public notice and engagement of stakeholders is not fully met by the description in the Stakeholder Engagement Plan included in the GSP (Appendix D). We acknowledge and commend the clear description of the inclusion of an environmental stakeholder on the governing board of the GSA. The Environmental Stakeholder Director is responsible for engaging environmental stakeholders within the Basin and representing environmental interests before the GSA, including during GSP implementation. However, the engagement plan describes only a minimum amount of outreach to DACs. Stakeholder engagement has primarily occurred via Ventura Water bill stuffers and newsletters, including materials provided in Spanish. Noted deficiencies in the stakeholder engagement process include: • As the water supplier for DACs in the Basin, the City represented DAC interests through its participation on the MBGSA Board of Directors. However, it does not give more information about how their interests were represented. ● The opportunities for public involvement and engagement are limited to MBGSA regular board meetings, review of the MBGSA's website, and providing comments via the website. ● The GSP states that the GSA "has held several public workshops to provide in-depth discussion of the GSP and obtain stakeholder feedback. The workshops include polls to help facilitate public input on key issues and identify which outreach methods are most effective." The GSP gives no further information about how the workshops were advertised or if DACs were engaged to attend. ● The GSP states that portions of the Barbareno-Ventureno Band of Chumash are located within the Mound Basin and the MBGSA will inform the Tribal Elder, Julie Tumamait, throughout the GSP development process and GSP implementation. However, there are no further details on the engagement with the tribe. ● Domestic well owners are specifically mentioned in the Stakeholder Engagement Plan as holders of overlying groundwater rights, however no information is provided other than stating that their participation is invited in the Agency's public meetings.● The Stakeholder Engagement Plan does not include a plan for continual opportunities for engagement through the implementation phase of the GSP for DACs. **RECOMMENDATIONS** • Include a more detailed and robust Stakeholder Engagement Plan that details how the GSA will actively target and engage DAC community members during the remainder of the GSP development process and throughout the GSP implementation phase. Include plans to directly engage the DAC population for inclusion on the Board of Directors instead of having DACs represented by the City of Ventura. Refer to Attachment B for specific recommendations on Stakeholder Communication and Engagement. ● Conduct outreach at frequented locations such as farmers markets and schools across the plan area, providing translation services and technical assistance where needed.Refer to Attachment B for specific recommendations on how to actively engage community stakeholders. ● Consult and engage with the Barbareno-Ventureno Band of Chumash Tribe. Refer to "DWR guidance for engagement with tribal governments" for specific guidance.	MBGSA has met or exceeded the SGMA requirements for stakeholder outreach and engagement. MBGSA will consider the recommended enhancements offered in the comment going forward during GSP implementation. There are no active or recently active domestic wells in the Basin (see Section 2.3.1). There are no tribal trust lands within the Basin (see Section 2.2.1).

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14	18-Aug-21	Ngodoo Water Policy Analyst	Atume	ngos.sgma@gmail.com		NGO Consortium	Section 4.0 Sustainable Management Criteria	**Considering Beneficial Uses and Users When Establishing Sustainable Management Criteria and Analyzing Impacts on Beneficial Uses and Users** The consideration of beneficial uses and users when establishing sustainable management criteria (SMC) is **insufficient**. The consideration of potential impacts on all beneficial users of groundwater in the basin are required when defining undesirable results6 and establishing minimum thresholds7 , 8 **Disadvantaged Communities and Drinking Water Users** The GSP states that the City of Ventura (Ventura Water) serves DAC communities in the basin. It also states that there are domestic wells in the basin, but that the majority of these domestic well owners are de minimus users. It does not provide the location of the domestic wells, the screened interval, or the most recent reported date of well usage. Because the location of domestic wells is not provided in the GSP, the impacts to the domestic well user population are unknown. Because the GSP has not established SMC for the shallow principal aquifer, the GSP neither describes nor analyzes direct or indirect impacts on DACs or domestic drinking wells when defining undesirable results for chronic lowering of groundwater levels or water quality. Therefore, the SMC provided in the GSP are not protective of domestic drinking water well users. **RECOMMENDATIONS** **Chronic Lowering of Groundwater Levels** ● Establish chronic lowering of groundwater level SMC for the shallow principal aquifer that are protective of DACs and domestic well users. Even though the shallow principal aquifer is not currently pumped or treated for domestic drinking water, it could be in the future. ● Consider and evaluate the impacts of selected minimum thresholds and measurable objectives on drinking water users within the basin. **Degraded Water Quality** ● Establish water quality SMC for the shallow principal aquifer that are protective of drinking water users. Even though the shallow principal aquifer is not currently pumped or treated for domestic drinking water, it could be in the future. ● Establish minimum thresholds at the representative monitoring wells that avoid the specific undesirable result of impacting water quality for potable use. For each of the two deep principal aquifers, the GSP states that undesirable results occur when all representative monitoring wells in a principal aquifer exceed the minimum threshold concentration for a constituent for two consecutive years. Because the minimum thresholds are set to the MCL, or in some cases higher than the Secondary MCL (see Table 4.1-02), this does not appear to satisfy the stated minimum threshold goal of protecting water quality for potable uses. ● Evaluate the cumulative or indirect impacts of proposed minimum thresholds on drinking water users, including domestic wells and municipal water suppliers. The GSP states that potential effects on municipal beneficial uses would be increased costs for treatment or blending to meet drinking water standards, however this is the only impact discussed.	There are no active or recently active domestic wells in the Basin and all DACs in the Basin are served water by the City of Ventura, which has a diverse water supply portfolio of several sources in addition to Mound Basin wells (see Section 3.1.1.3). Therefore, there are no impacts to DACs and drinking water uses for the GSP to consider at this time. SMC for the shallow aquifer are not required because it is not a principal aquifer (see Appendix G). There are no wells that extract groundwater from the shallow aquifer in the Basin. SMC can be added during GSP updates, as needed, if significant pumping from the shallow aquifer is initiated in the future. Minimum thresholds that are equal to or in excess of water quality standards in the principal aquifers are not an issue because there are no direct potable uses of groundwater and the City of Ventura manages water quality through blending within its system.

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15	18-Aug-21	Ngodoo Water Policy Analyst	Atume	ngos.sgma@gmail.com		NGO Consortium	Section 3.3 Water Budget	**Climate Change** The SGMA statute identifies climate change as a significant threat to groundwater resources and one that must be examined and incorporated in the GSPs. The GSP Regulations13 require integration of climate change into the projected water budget to ensure that projects and management actions sufficiently account for the range of potential climate futures.The integration of climate change into the projected water budget is **insufficient.** The GSP does incorporate climate change into the projected water budget using DWR change factors for 2030 and 2070. However, the GSP did not consider the 2070 extremely wet and extremely dry climate scenarios in the projected water budget. The GSP should clearly and transparently incorporate the extremely wet and dry scenarios provided by DWR into projected water budgets or select more appropriate extreme scenarios for their basins. While these extreme scenarios may have a lower likelihood of occurring, their consequences could be significant, therefore they should be included in groundwater planning.We acknowledge and commend the inclusion of climate change into key inputs (precipitation, evaporation, surface water flow, and sea level inputs) of the projected water budget. Additionally, the sustainable yield is calculated based on the projected pumping for all three future projections (baseline, 2030, and 2070). However, if the water budgets are incomplete, including the omission of extremely wet and dry scenarios, then there is increased uncertainty in virtually every subsequent calculation used to plan for projects, derive measurable objectives, and set minimum thresholds. Plans that do not adequately include climate change projections may underestimate future impacts on vulnerable beneficial users of groundwater such as ecosystems and domestic well owners. **RECOMMENDATIONS** • Integrate extreme wet and dry scenarios into the projected water budget to form the basis for development of sustainable management criteria and projects andmanagement actions. ● Climate change was addressed when describing the minimum threshold for seawater intrusion. We recommend incorporating climate change considerations into other projects and management actions.	SGMA regulations §354.18(c)(3)(A),(d)(3),(e) are covered in the Water Budget section 3.3 which provides climate change impacts for historical, current, and projected quantities. The extremely dry/wet climate change scenarios are "recommended", but not "required" per SGMA regulations and BMP (Climate Change Guidance) and the Draft GSP included the DWR-provided scenarios (see Section 3.3). Furthermore, the relative insensitivity of the calculated water budget components to the climate change scenarios (e.g., the 2070 scenario) included in the Draft GSP indicates that a similar insensitivity would be observed under the extremely dry/wet scenarios and would therefore not be informative. MBGSA will assess the need for additional uncertainty analysis for climate change impacts every 5 years.

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16	18-Aug-21	Ngodoo Water Policy Analyst	Atume	ngos.sgma@gmail.com		NGO Consortium	Section 6.0 Projects and Management Actions	**Addressing Beneficial Users in Projects and Management Actions** The consideration of beneficial users when developing projects and management actions is **insufficient.**The GSP states there is no need for project and management actions to address gaps between current and projected sustainable yield. However, groundwater sustainability under SGMA is defined not just by sustainable yield, but by the avoidance of undesirable results for all beneficial users. These beneficial users such as GDEs, aquatic habitats, surface water users, DACs, and drinking water users were not sufficiently identified in the GSP. Therefore, potential project and management actions have not been designed or proposed to protect these vulnerable users of the shallow principal aquifer. **RECOMMENDATIONS** Because GDEs, aquatic habitats, surface water users, DACs, and shallow domestic well water users were not sufficiently identified in the GSP, please consider including the following related to potential project and management actions in the GSP: ● For GDEs and ISWs, recharge ponds, reservoirs and facilities for managed stormwater recharge can be designed as multi-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. For guidance on how to integrate multi-benefit recharge projects into your GSP refer to the "Multi-Benefit Recharge Project Methodology Guidance Document"15. ● For DACs, monitor the impacts of projects and management actions on communities and drinking water users. For example, provide locations of the improperly constructed or abandoned wells, as discussed in Section 6.5, that create conduits for migration of poor-quality water from shallow water-bearing units into the principal aquifers. Discuss how sealing these wells will benefit DACs and domestic wells users. ● For DACs and domestic well owners, take a full accounting of the locations and screened intervals of domestic wells in the basin, even those with de minimus use. Implement a drinking water well mitigation program to protect drinking water users. ● Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.	GDEs that rely on shallow groundwater and surface water (located at or adjacent to the Santa Clara River) are not materially impacted by pumping in the Basin (see Appendix G); therefore, no projects or management actions are needed to prevent significant and unreasonable effects to those beneficial uses. DACs are supplied water by the City of Ventura, which has multiple sources of water in addition Mound Basin groundwater. There are no known active or recently active domestic wells in the Basin (see Section 2.3.1).
17	19-Aug-21	John	Lindquist	johnl@unitedwater.org	805-525-4431	United Water Conservation District 1701 N. Lombard St. Suite 200 Oxnard, CA 93030	Section 1.0	The Mound Basin GSP is well organized and written—United staff found the text boxes describing required plan elements at the beginning of each GSP section to be especially helpful for understanding the context of the text, tables, and figures that follow.	Thank you for your comments. MBGSA agrees that it is important to be clear about what SGMA requirements are addressed in each section.
18	19-Aug-21	John	Lindquist	johnl@unitedwater.org	805-525-4431	United Water Conservation District 1701 N. Lombard St. Suite 200 Oxnard, CA 93030	Section 3.0	United staff appreciated the opportunity to contribute to the data summary and analysis provided in Section 3. As new data become available in the future, we look forward to collaborating with the Mound Basin GSA to continually improve our understanding of groundwater conditions and refine the hydrogeologic conceptual model for the basin, as appropriate.	Thank you for the collaboration to make the Draft GSP a local community effort.

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19	19-Aug-21	John	Lindquist	johnl@unitedwater.org	805-525-4431	United Water Conservation District 1701 N. Lombard St.Suite 200Oxnard, CA 93030	Section 4.0	United staff believe the sustainable management criteria described in the GSP, including measurable objectives and minimum thresholds, are well-defined and reasonable. Although the current understanding of present-day and future groundwater uses in Mound Basin does not suggest that significant and unreasonable impacts should be expected for the six SGMA sustainability indicators, we were impressed to see measurable objectives and minimum thresholds for relevant indicators included in the GSP, in case conditions change in the future. We agree that “depletion of inter-connected surface water” is not an applicable sustainable management criterion in Mound Basin as described in Section 3 of the GSP, for several reasons, including:1) Historical records indicate that no pumping from the shallow alluvial aquifer (the sole aquifer that is potentially in hydraulic connection with perennial or intermittent surface water bodies or GDEs in Mound Basin) has occurred since 1983 and we are not aware of any plans to resume pumping from that aquifer in the future;2) A low-permeability aquitard (the fine-grained Pleistocene deposits) that is 100 to 400 feet thick in most areas of Mound Basin separates the shallow alluvial aquifer from the underlying principal aquifers (primarily Mugu and Hueneme Aquifers) that are pumped for water supply;3) Data from City of Ventura monitoring wells screened in the shallow alluvial aquifer near the Santa Clara River estuary (wells GW-1, GW-2, and GW-3 [data are presented in the Stillwater Sciences report referenced in the GSP]) indicate that groundwater level changes in the shallow alluvial aquifer did not discernibly change in response to significant declines in groundwater levels in the underlying principal aquifers during the 2012-16 drought (this may be worth further discussion in the GSP); and4) Modeling results shown in the GSP (Figure 3.3-02) indicate no discernible relationship between groundwater extractions from the principal aquifers within Mound Basin and interaction of surface water in the Santa Clara River with the shallow alluvial aquifer. This lack of a discernible relationship is consistent with the observation that groundwater elevations in the principal aquifers do not appear to have significant impacts on groundwater elevations (which could theoretically impact surface water flows) in the shallow alluvial aquifer. Furthermore, groundwater withdrawals in Mound Basin have diminished during the past 20 years and there are no plans to significantly increase pumping from the basin in the future. Stable or reduced extractions relative to past pumping rates seem like they could only have a net positive impact on groundwater and surface-water conditions in the basin.	Thank you for your comments. An appendix has been added to further document the technical data that demonstrate, 1) the characteristics of the Shallow Alluvial Deposits, which do not fit the definition of a "principal aquifer", and 2) the lack of material influence by pumping in the principal aquifers (Mugu and Hueneme Aquifers) on shallow groundwater levels and flows in the Santa Clara River or the Santa Clara River Estuary.
20	19-Aug-21	John	Lindquist	johnl@unitedwater.org	805-525-4431	United Water Conservation District 1701 N. Lombard St. Suite 200 Oxnard, CA 93030	Section 5.0	United staff agree with the proposed locations, frequency, and potential expansion of the monitoring network for the five sustainable management criteria for which sustainable management criteria have been developed, and look forward to supporting efforts to collect additional data in the future.	Thank you for your comments. The monitoring network expansion is intended to provide additional data to ensure the sustainability of the groundwater resources for the Basin.
21	19-Aug-21	John	Lindquist	johnl@unitedwater.org	805-525-4431	United Water Conservation District 1701 N. Lombard St. Suite 200 Oxnard, CA 93030	Section 6.0	United staff agree with the GSP’s proposed “Projects and Management Actions.” Specifically, we agree that it is prudent to develop contingency plans for seawater intrusion and land subsidence, and to coordinate with Ventura County’s Watershed Protection District to identify and address improperly constructed or abandoned wells that potentially create conduits for vertical migration of poor-quality groundwater within Mound Basin.	Thank you for your comments.
22	23-Aug-21	Kimball GW Mgr.	Loeb	kim.loeb@ventura.org	805-650-4083	Fox Canyon GMA 800 S. Victoria Ave. Ventura, CA 93009	ES	**Executive Summary**: **Page ES-v:** There is a typo “The principal aquifers are believed to be ~~projected~~ protected from seawater….” **Page ES-vii:** Discussion of “increasing the sustainable yield of the Mound Basin” includes additional production that could impact the sustainable management of the adjacent basin, so that increased pumping is “not included in the sustainable yield estimate at this time.” Does this mean additional pumping may be considered in the future? If so, that pumping must be assessed to determine impacts to adjacent basins, consistent with CCR Title 23 §354.28. **Page ES-xviii:** There is a typo “Fox Canyon Groundwater Management ~~Area~~ Agency.”	Typo corrections made. Any increase in pumping relative to the projections included in the GSP will be evaluated during the required GSP assessments.

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23	23-Aug-21	KimballGW Mgr.	Loeb	kim.loeb@ventura.org	805-650-4083	Fox Canyon GMA 800 S. Victoria Ave.Ventura, CA 93009	Section 3.3 Water Budget	**Section 3.3 – Water BudgetsSection 3.1.1.3 Imported Water:** Discussion is missing of groundwater imported from the Oxnard Subbasin into the Mound Basin by Jam Mutual Water Company, Coastal Berry Farms and operators of the farmland owned by The Nature Conservancy which straddles the boundary separating the basins.Jam Mutual Water Company (JMWC) has been in existence since at least 1975 and is currently associated with a 318- acre service area which is split approximately 50/50 between the Mound and Oxnard subbasins. JMWC operates two wells in the Oxnard subbasin to provide water for irrigation within its service area. Since 1985 the average annual groundwater extractions from the Oxnard Subbasin are 555.371 acre-feet per year (AFY).Coastal Berry Farms is a FCGMA recognized exporter of groundwater extracted from the Oxnard Subbasin and used to irrigate approximately 29 acres in the Mound Subbasin. Coastal Berry Farms has been exporting water to the Mound Subbasin since before the establishment of the FCGMA. The land owned by The Nature Conservancy and operated by Ocean Breeze Ag Management LLC irrigate approximately 93 acres, split approximately 50/50 between the subbasins, utilizing groundwater extracted from the Oxnard and Mound subbasins.	Text added: "Jam Mutual Water Company (agricultural) and several ranches straddle the basin boundary shared with the Oxnard Basin. It is assumed that small quantities of groundwater move across the basin boundary within these entities/parcels. The details of water movement across the basin boundary within these entities/parcels is not known."
24	23-Aug-21	Kimball GW Mgr.	Loeb	kim.loeb@ventura.org	805-650-4083	Fox Canyon GMA 800 S. Victoria Ave. Ventura, CA 93009	Section 3.3 Water Budget	**Page 37:** There is a typo in the first paragraph of the bullet at the top of the page "Fox Canyon Groundwater Management ~~Area~~ Agency." **Page 73 Imported Water:** The first sentence mentions that groundwater is imported from adjacent basins, but the remainder of the paragraph discusses surface water imported by water purveyors. There is no direct discussion of water imported from the Oxnard Subbasin. Groundwater pumped in the Oxnard Subbasin and imported to the Mound Basin is not specifically called out in any of the water budget tables. **Table 3.3-03:** Average flow between the Mound Basin and the Oxnard Subbasin in the Upper Aquifer System (UAS) matches reasonably well between the models used for each GSP. The Oxnard Subbasin GSP indicates average flow from 1986-2015 is 207 AFY from Oxnard to Mound. The Mound Basin GSP indicates average flow from 1986-2015 is 983 AFY from Mound to Oxnard. The two GSPs are off by about 1,200 AFY on average. The discrepancy appears to occur during drought years when the Mound Basin GSP shows higher outflows to the Oxnard Subbasin than the Oxnard GSP reports as inflows. Overall, the Mound Basin inflows/outflows are more varied in the Mound GSP than in the Oxnard GSP. [SEE GRAPH, PG 2 of LETTER] **Table 3.3-08**: In the Mound GSP, the average UAS flow between the Mound Basin and the Oxnard Subbasin in the future baseline scenario is anticipated to be 3,252 AFY from the Oxnard Subbasin to the Mound Basin in the first through 20th year of implementation, and 3,842 AFY from the Oxnard Subbasin to the Mound Basin in the 30-year sustaining period. However, in the Oxnard GSP scenarios the range of UAS outflows projected from the Oxnard Subbasin is ~1,000 AFY (in the baseline scenarios) to ~1,500 AFY (in the projects and reduction scenarios). This leaves ~1,500 AFY to 2,000 AFY of water that both basins appear to be relying on in the UAS. The projected flows in the Lower Aquifer System (LAS) appears to be closer, but the Mound Basin doesn't include the Fox Canyon Aquifer as a primary aquifer for the GSP. **Table 3.3-12**: The average UAS flow in the 2030 climate change and sea level rise scenario is 3,180 AFY in year one through 20, and 3,841 AFY in the following 30-year sustaining period. These are similar to the flows without the climate change factors. The 2070 flows are also similar (Table 3.3-14).	Typo corrections made. The discrepancy between the water budget estimates is due to several factors. First, different model versions being used for the Oxnard and Mound GSPs (i.e., the groundwater model used for quantification has been updated for Mound Basin). In addition, the time periods for the projected water budgets are not equivalent. There is a different sequence of historical hydrology for Mound Basin. For these reasons the baseline quantities are not comparable.

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25	23-Aug-21	KimballGW Mgr.	Loeb	kim.loeb@ventura.org	805-650-4083	Fox Canyon GMA 800 S. Victoria Ave.Ventura, CA 93009	4.4.2.3 Minimum Thresholds in Relation to Adjacent Basins	**Section 4.4.2.3 Minimum Thresholds in Relation to Adjacent Basins**: The draft Mound GSP states "deeper groundwater levels could potentially increase underflow into the Mound Basin from the Oxnard and/or Santa Paula Basins (or decrease underflow to the Oxnard Basin), which could potentially contribute to undesirable results in those Basins." First, the average anticipated flow in the future in the draft Mound GSP is from the Oxnard Subbasin to the Mound Basin, so decreasing underflow from the Mound Basin to the Oxnard Subbasin is less of a concern than continuing to increase the flows from the Oxnard Subbasin to the Mound Basin in the GSP scenarios. Second, the minimum thresholds for the Mound Basin adjacent to the Oxnard Subbasin are 15 to 90 feet lower than the minimum thresholds in the Oxnard Subbasin Forebay in the Oxnard GSP. [SEE TABLE, PG 3 of LETTER] Note – The difference between minimum thresholds is calculated between one Mound Basin well in the Mugu Aquifer and two Mugu Aquifer wells in the Oxnard Subbasin; and between three Mound Basin wells in the Hueneme Aquifer and one Oxnard Subbasin well in the Hueneme Aquifer. The Oxnard Subbasin well in the Hueneme Aquifer is the lowest of the three screened in the Forebay, with the highest Hueneme Aquifer well in the Forebay having a minimum threshold of 17 ft MSL. Additionally, the minimum thresholds set for the Mound Basin wells listed in the table are (with the exception of 02N22W16K01) for land subsidence. The Mound GSP has lower minimum thresholds for chronic declines in groundwater levels. Presumably, if the water levels reach the thresholds for subsidence and subsidence is not observed the Mound Basin would argue that it could have water levels decline even lower. The difference of 15 feet between the minimum thresholds in the Hueneme Aquifer is not much of a concern, but the difference of greater than 80 feet in the Mugu Aquifer and greater than 90 feet for one well adjacent to the Forebay is of concern to the Agency. There is a significant chance the proposed minimum thresholds in the Mound GSP could negatively impact the ability of the Agency achieving its sustainability goal in the Oxnard Subbasin.	Minimum thresholds for the chronic lowering of groundwater levels have been updated to be equal to the historical low groundwater levels, which are much shallower than the previous values. The combination of minimum threshold exceedances, which lead to undesirable results is >50% of monitoring wells in either aquifer. This will prevent groundwater levels from lowering to elevations that could significantly impact the Oxnard Subbasin.
26	23-Aug-21	Russell Senior Project Manager	Marlow	rmarlow@caltrout.org		California Trout, Inc. 360 Pine St., Floor 4 San Francisco, CA 94104	Appendix G - Review of Areas Mapped as Containing iGDEs	The Santa Clara River Estuary (Estuary) and immediate upstream portion of the Santa Clara River (River) are clearly identified as falling within the basin boundary of the Mound Basin Groundwater Sustainability Agency (MBGSA) management area. However, not once does the MBGSA Groundwater Sustainability Plan (MBGSP) even acknowledge the presence of federally listed Southern California Steelhead in these vital ecosystems. This plan also fails to indicate that both of these groundwater dependent ecosystems (GDEs) are protected critical habitat for southern steelhead and essential habitat for other native species. Both the Estuary and River serve as important public resources with multiple beneficial uses and users and must be accounted for and protected from adverse impacts associated with groundwater pumping.	The draft GSP concluded that surface water beneficial uses, such as steelhead, are not impacted because there is no pumping of shallow groundwater and deeper aquifer pumping does not significantly impact surface water flows (see Appendix G); therefore, detailed discussion of the beneficial uses of surface water was not warranted. Nonetheless, the GDE Appendix (now Appendix H) has been updated to include additional details on species within the habitat of the River and Estuary.

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27	23-Aug-21	Russell Senior Project Manager	Marlow	rmarlow@caltrout.org		California Trout, Inc. 360 Pine St., Floor 4 San Francisco, CA 94104	Section 3.2.6 Interconnected Surface Water Systems	The MBGSP must meet the requirements of the California Sustainability Groundwater Management Act (SGMA), at this time CalTrout does not find this plan to meet the state specified standards. SMGA clearly specifics the requirement to identify and consider impacts to GDEs that have significant and unreasonable adverse impacts for all recognized beneficial uses and users of groundwater including aquatic ecosystems and species dependent on interconnected waters. If hydrologic connectivity exists between a terrestrial aquatic ecosystem and groundwater, then this habitat is a potential GDE and must be identified in a GSP. That this GSP does not identify a single GDE within its boundaries is illogical and not supported by data. The MBGSP clearly acknowledges that they are not able to characterize the interconnection of the surface water and groundwater that fall within their basin boundary due to lack of data. This acknowledgement by the MBGSP establishes that the MBGSA does not have the information needed to make any determination on what is or isn't a GDE in their basin boundary. Without be able to fully characterize the nature and condition of these hydrologically connected systems, this MBGSP cannot ensure that significant and unreasonable adverse impacts from groundwater depletion are avoided.	The commentor erroneously concludes that no GDEs are identified within the GSP. Area 11 (riparian and aquatic habitat associated with the Santa Clara River) is clearly identified as a GDE in the GSP. The GSP identifies that shallow groundwater and the surface water of the Santa Clara River, and its estuary are interconnected. The shallow groundwater system (Shallow Alluvial Deposits) are comprised of several distinct geologic formations. Statements about the uncertainty concerning which specific young formation is interconnected with surface water are being taken out of context here to claim that the GSP cannot conclude whether there are GDEs. This is not the case, as the GSP clearly identifies Area 11 as a GDE and that shallow groundwater is interconnected with surface water of the Santa Clara River. The GSP does not focus on the Area 11 GDE and interconnected surface water because groundwater pumping does not materially impact it either. An appendix (Appendix G) has been added to further document the technical data that demonstrate the lack of material influence by pumping in the principal aquifers (Mugu and Hueneme Aquifers) on shallow groundwater levels and flows in the Santa Clara River or the Santa Clara River Estuary. Furthermore, there are no wells in the Basin that extract from the Shallow Alluvial Deposits. Given the lack of material influence of pumping on GDEs associated with the Santa Clara River, there is no potential for significant and unreasonable impacts on the GDEs at present. Given the lack of a material relationship and hydrological connection between groundwater pumping and shallow groundwater and Santa Clara River flows, it is not necessary to focus criteria or data gaps for GDEs or interconnected surface water in the GSP. Simply stated, it is not a priority of the MBGSA to study aspects of the Basin that do not active require management. Having said this, the GSP has been updated to include interim shallow groundwater data collection in GDE Area No. 11 to provide data to further demonstrate the points made above (see Section 6.6).

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28	23-Aug-21	Russell Senior Project Manager	Marlow	rmarlow@caltrout.org		California Trout, Inc. 360 Pine St., Floor 4 San Francisco, CA 94104	Section 3.3 Water Budget	The surface water diversion operations by United Water Conservation District (UWCD) at Vern Freeman Diversion (VFD) have drastically altered the natural stream flow conditions and groundwater recharge patterns in the lower Santa Clara River watershed. The diversion operations at VFD have adverse impacts on the aquatic environment and water-dependent species. These effects are longitudinally connected to the sections of the River and Estuary that fall within the MBGSA. This plan also does not address that UWCD has been federally mandated to provide for effective and efficient passage at VFD and the changes in regional groundwater management that will be a part of this project. The Federal Courts has repeatedly reiterated that the restoration plan at VFD that most fully meets National Marine Fisheries Service and California Department of Fish and Game recommendations for passage restoration is the harden ramp option. This option will significantly change UWCD operations within the Fox Canyon Groundwater Agency boundary. The MBGSP does not acknowledge this federally mandated change will need to be prepared for and actively managed by the MBGSA. The change at VFD will alter the MBGSA's proposed water budget and will have a profound effect on GDEs within their basin. The installation of a harden ramp at VFD will partially restore the natural flow regime of the lower River corridor to the benefit of the lower River reaches, Estuary, and community.	The Vern Freeman Diversion is included in the regional numerical model used for the GSP, so diversions are reflected in the water budget for the Basin (section 3.3). Text was added to Section 3.3 to make clear that the water budget accounts for Vern Freeman Diversion operations. Potential changes in Freeman Diversion operations and the resulting impact on the Mound Basin water budget will be evaluated during each required GSP assessment.
29	23-Aug-21	Russell Senior Project Manager	Marlow	rmarlow@caltrout.org		California Trout, Inc.360 Pine St., Floor 4San Francisco, CA 94104	Section 3.2.6 Interconnected Surface Water Systems Section 3.2.7 Groundwater Dependent Ecosystems Appendix G - Review of Areas Mapped as Containing iGDEs	The MBGSA decision that the shallow surface aquifer is a groundwater resource that falls within their discretion are not connected to their "principal" aquifer is a failure to meet the requirements of SGMA. This decision again is not supported by the data they don't have and seems counter intuitive to the water budget they have presented. The MBGSA identifies significant inputs in their water budget from both areal recharge and stream channel recharge, both of which will pass through the shallow surface aquifer first before entering their "principal" aquifer. This signifies that groundwater level in the "principal" aquifer is partial dependent on the condition and management of the shallow water aquifer. Additionally, management of a groundwater source is not contingent upon the current use, but potential for use in the time horizon established under SGMA. Sustainability as SGMA outlines it captures the need to address increasing impacts from climate crisis and the requirement to build in resiliency of groundwater processes to mitigate for adverse impacts for all beneficial uses and users. That the GSA does not want to account for the shallow water aquifer in the MBGSP would seem to be an expedient choice to dismiss the presence of GDEs and the potential for adverse impacts to these habitats. This choice is a serious harm to the public by failing to protect aquatic habitats, native species, and the long-term groundwater integrity. CalTrout is focused on advancing process-based watershed restoration to support the recovery of southern steelhead through collaborated decision making. We find this plan fails to meet the requirement for ensuring groundwater sustainability or protecting groundwater dependent ecosystems. We look forward to the next draft of the plan where the MBGSA outlines how they will collect the data needed to clearly understand inter-connected waters in their basin and what management actions they will take to protect vital GDEs in this basin.	As mentioned in the above response, the new appendix (Appendix G) presents additional information pertaining to the Shallow Alluvial Deposits. The appendix provides further discussion of the technical data that demonstrate, 1) the characteristics of the Shallow Alluvial Deposits, which do not fit the definition of a "principal aquifer", and 2) the lack of material influence by pumping in the principal aquifers (Mugu and Hueneme Aquifers) on shallow groundwater levels and flows in the Santa Clara River or the Santa Clara River Estuary. Pumping effects on shallow groundwater and surface water will be evaluated during each required GSP assessment. The GSP can be updated, as needed, if significant pumping from the shallow aquifer is initiated in the future. Given the lack of material influence of pumping on GDEs associated with the Santa Clara River, there is no potential for significant and unreasonable impacts on the GDEs at present. Given the lack of a material relationship and hydrological connection between groundwater pumping and shallow groundwater and Santa Clara River flows, it is not necessary to focus criteria or data gaps for GDEs or interconnected surface water in the GSP. Simply stated, it is not a priority of the MBGSA to study aspects of the Basin that do not active require management. Having said this, the GSP has been updated to include interim shallow groundwater data collection in GDE Area No. 11 to provide data to further demonstrate the points made above (see Section 6.6).

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30	23-Aug-21	Merrill CFROG Board Chair	Berge	merrillberge@gmail.com	805-208-6058	Climate First: Replacing Oil and Gas PO Box 114 Ojai, CA 93024	Section 3.2.4 Groundwater Quality Impacts Section 3.2.3 Seawater Intrusion	With oil well infrastructure in Ventura County existing in close proximity to our groundwater supplies and oftentimes intersecting with aquifers directly, we are submitting the attached map and information to include in the MBGSP for a comprehensive consideration of the Mound Basin setting. [SEE Map, attachment to LETTER] This map illustrates the proximity of Mound Basin water wells to abandoned oil well sites in the Mound Basin area specifically. The sources for the data is: **1.** Department of Conservation, Geologic Energy Management Decision (CalGEM). "Oil and Gas Wells GIS, California." Gis.conservation.ca.gov, 14 Aug. 2021, gis.conservation.ca.gov/portal/home/item.html?id=335e036c6a4f4cc39148ca2a9e0389c7 **2.** Department of Conservation, Geologic Energy Management Division (CalGEM). WellFinder (WellSTAR), maps.conservation.ca.gov/doggr/wellfinder **Of note:** **1.** 30 abandoned well sites located in the vicinity of the Mound Basin water wells have been designated as poorly abandoned due to age. **2.** 8 of those wells have documented problems as reported in the CalGEM WellSTAR (Well Statewide Tracking and Reporting System). These older abandoned oil wells were not capped to today's standards. As they continue to age, they are at greater risk of cracks and leaks due to cement degradation; possibly providing for migratory pathways through the layers of caprock. As noted in the United States Geological Survey (USGS) "Supplemental Information to the Groundwater Quality of Aquifers Overlying the Oxnard Oil Field, Ventura County, CA" to the "Groundwater quality results from the Regional Monitoring Program study of the Oxnard oil field" published in 2019: Additional pathways of poor water quality from the semi-perched zone to the Oxnard aquifer include movement through abandoned or improperly constructed wells (Izbicki,1996), and lateral seawater intrusion along the coast resulting from landward pressure gradients (United Water Conservation District, 2016). With seawater intrusion, earthquake faults, contamination sites and plumes referenced and/or reviewed in the MBGSP, in order to reflect the Mound Basin setting in its entirety, it is critically important that oil well infrastructure information also be included in the MBGSP.	Contamination plumes have not been identified in the Mound Basin principal aquifers (see Section 3.2.4). GSP assessments will reflect any new contamination issues that may arise in the future. Mound Basin does not show evidence of seawater intrusion (see Section 3.2.3).
31	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	ES-1 Plan Area, Land Use, and Water Sources (pp. ES-ii-iii)	**Specific Comments** "The beneficial uses of groundwater extracted from the principal aquifers of Mound Basin include municipal, industrial, and agricultural water supply corresponding to the land use categories above." The listed beneficial uses within the boundaries of the Mound Groundwater Basin include only out-of-stream beneficial uses, and largely ignores the instream beneficial uses, including those linked to with GDE, including, but not limited to Area 11 (i.e., the lower Santa Clara River and Santa Clara River Estuary). The Draft GSP should be revised to explicitly acknowledge the instream beneficial uses supported by the groundwater basin, including the GDE associated with the lower Santa Clara River and Santa Clara River Estuary. The recognized instream beneficial uses for the portion of the lower Santa Clara River within the Mound Basin include: warm freshwater habitat, cold freshwater habitat, wildlife habitat, habitat for rare, threatened and endangered species, fish migration, and wetland habitat. Santa Clara River Estuary instream beneficial uses include: estuarine habitat, marine habitat, wildlife habitat, habitat for rare, threatened and endangered species, fish migration, spawning habitat, and wetland habitat.	The beneficial uses in question were not detailed in the GSP because there is no pumping from the shallow groundwater system and principal aquifer pumping does not have a material effect on shallow groundwater (GDEs) or interconnected surface water (Santa Clara River) flows. The GSP has been updated to note the beneficial uses described in the comment exist relative to the Shallow Alluvial Deposits (See ES-1, ES-2 and Section 2.3.1). However, it is noted that the Shallow Alluvial Deposits are not a principal aquifer, are not pumped, and groundwater pumping form the principal aquifers in the Basin do not materially affect the GDEs or deplete interconnected surface water. Please see new appendix (Appendix G) for further information.

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32	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	ES-2 Basin Setting and Groundwater Conditions (pp. ES-iii-iv)	"Despite the interconnection with shallow groundwater, there is no depletion of interconnected surface water in the Basin because there are no groundwater extractions from the shallow groundwater units and groundwater in the principal aquifers is physically separated from the surface water bodies by several hundred feet of fine-grained materials. No groundwater dependent ecosystems (GDEs) have been identified in the Basin that appear to be relying on groundwater from a principal aquifer." The regulations governing SGMA do not stipulate that the provisions of SGMA cover only "principal aquifers" as the Draft GSP appears to presume. The regulations define interconnected surface water as "surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water . . ." (23 CCR Section 351(0). Significantly, "continuous" refers specifically to hydrologic connection, not a continuous temporal connection. The Draft GSP does not adequately recognize the potential role of groundwater in the lower reaches of the Santa Clara River or the Santa Clara River Estuary, or the role of groundwater elevations in ensuring surface flows water surface elevations and supporting the life-cycle of steelhead, including their migratory, spawning and rearing phases (See additional comments on Appendix A to the Draft Mound Basin GSP below.). Both the Santa Clara River estuary and the portion of the Santa Clara River upstream of Harbor Boulevard within the boundaries of the Oxnard Subbasin should be fully addressed in the revised Draft GSP. Further, because groundwater-management activities within the Santa Clara River watershed involve the United Water Conservation District's (UWCD) diversion operations at the Vern Freeman Diversion, the relationship between these diversion activities and groundwater elevations along the affected portion of the Santa Clara River (and estuary) should be addressed in the revised Draft GSP.	The draft GSP recognizes the Santa Clara River and Estuary as interconnected with the Shallow Alluvial Deposits (see Section 3.1.4.2); however, there is no pumping of shallow groundwater in the Basin and neither the surface water nor the shallow groundwater is materially affected by principal aquifer pumping. The new appendix (Appendix G) provides further details concerning these topics. Given the lack of material influence of pumping on GDEs associated with the Santa Clara River, there is no potential for significant and unreasonable impacts on the GDEs at present. Given the lack of a material relationship and hydrological connection between groundwater pumping and shallow groundwater and Santa Clara River flows, it is not necessary to focus criteria or data gaps for GDEs or interconnected surface water in the GSP. Simply stated, it is not a priority of the MBGSA to study aspects of the Basin that do not active require management. Having said this, the GSP has been updated to include interim shallow groundwater data collection in GDE Area No. 11 to provide data to further demonstrate the points made above (see Section 6.6). The Vern Freeman diversion is located outside of the Mound Basin, so an evaluation of its impacts to the streamflow are not required; however, the diversions are included in the numerical model, so flows are accounted for in the water budget (Draft GSP Section 3.3). Text was added to Section 3.3 to make clear that the water budget accounts for Vern Freeman Diversion operations.
33	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	ES-3 Water Budget (pp. ES-vi-vii)	"The primary sources of recharge to the Mound Basin groundwater system are underflow from the Santa Paula Basin, areal recharge (the sum of infiltration of precipitation, M&I return flows, and agricultural irrigation return flows), and mountain-front recharge. Stream channel recharge is a minor component." The revised Draft GSP should acknowledge that both the direct surface flow and the underflow from the Santa Paula Basin are influenced by the upstream diversion of surface flows in the Santa Clara River watershed and the artificial recharge of ground water as a result of the Vern Freeman Diversion located approximately 10 miles upstream of the Mound Basin.	Please see responses regarding the Vern Freeman diversion for other comments.

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34	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	ES-4 Sustainable Management Criteria (pp. ES-vii-x)	The sustainable criteria are expressed explicitly and exclusively in terms of groundwater levels, water chemistry, and land subsidence, and do not explicitly recognize the important relationship between groundwater levels and the surface flows (particularly base flows) or water quality parameters (such as temperature, dissolved oxygen, etc.) that contribute to the maintenance of GDE within the Mound Basin (including, but not limited to, the lower Santa Clara River and the Santa Clara River Estuary). There is no specific criterion in the Draft Criteria that deals with the GDE associated with the federally listed species (or the designated critical habitat) which utilize the Mount Basin3. In fact, the word “steelhead”, “trout”, or even “fish” do not appear in the Draft GSP. This is an important omission that should be corrected in the revised Draft GSP because GDE for the Mound Basin includes the use of surface flow by the federally listed endangered southern California steelhead for migration, spawning and rearing. Specifically, the revised Draft GSP should include a description of the extent of designated critical habitat for endangered steelhead (as well as other listed or recognized sensitive species) that occur within the boundaries of the Mound Basin (See Figures 1 and 3).	The GSP and GDE appendix (now Appendix H) have been revised to provide additional details around the iGDE habitats. Following the TNC guidance, each of the iGDEs within Area 11 was analyzed and slightly revised to reflect the vegetation communities and critical habitats more accurately. The GSP does not focus on the Area 11 GDE and interconnected surface water in the sustainable management criteria formulation because groundwater pumping does not materially impact either. There is no shallow groundwater pumping in the Basin. An appendix (Appendix G) has been added to further document the technical data that demonstrate the lack of material influence by pumping in the principal aquifers (Mugu and Hueneme Aquifers) on shallow groundwater levels and flows in the Santa Clara River or the Santa Clara River Estuary. Given the lack of material influence of pumping on GDEs (riparian or aquatic) associated with the Santa Clara River, there is no potential for significant and unreasonable impacts on the GDEs at present. A map showing critical habit has been added to the GDE appendix (Appendix G).
35	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	2.2.2.2 Existing Water Resource Management Programs [§354.8(c) and (d)] Pages 9-11.	One of the largest and most significant water-resource-management program within the Santa Clara River watershed, the UWCD’s groundwater recharge program, consisting of the combined facilities of the Santa Felicia Dam, Piru Diversion, Vern Freeman Diversion and a series of groundwater settling basins. This program and its related facilities should be included in this section because it affects not only the artificial recharge to the Fox Canyon aquifer, but the natural recharge to the other groundwater basins on the Oxnard Plain, including the Mound and Santa Paula Basins; see NMFS comments on the Fox Canyon GSP (2020)	The facilities mentioned in the comment are not located within the Basin and do not operate within the Basin, which is why they are not mentioned here.
36	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	2.2.2.3 Conjunctive Use Programs [§354.8(e)] Page 11	The City of Ventura’s water supply includes groundwater extractions (as well as surface diversions) that are subject to a separate GSP, and this fact should be noted in the revised Draft Mound GSP.	MBGSA recognizes the City of Ventura’s water supply sources but is not required (per SGMA regulations) to mention other basin’s GSPs. Nonetheless, the City of Ventura’s other water supply sources are noted in the GSP (see Section 3.1.1.3). Any changes to those supplies and the associated impact, if any, on its Mound Basin groundwater pumping demands will be addressed during the required periodic GSP assessments.
37	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	2.3 Notice and Communication [§354.10] Page 22-24	The Draft GSP is focused out-of-stream users of the Mound Basin and does not adequately recognize the public trust natural resources that may be affected by the extractions of groundwater from the Mound Basin, and therefore be of interest to state and federal natural resource regulatory agencies such as NMFS, U.,S. Fish and Wildlife Service, and the California Department of Fish and Wildlife, and the California Department of Parks and Recreation (which owns a portion of the Santa Clara River Estuary wetlands).	The GSP demonstrates that surface water and Shallow Alluvial Deposits groundwater that riparian habitats may rely on are not materially affected by pumping or proposed GSP projects (see new Appendix G), so there are no public trust issues to consider in the Mound Basin.

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38	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	2.3.1 Beneficial Uses and Users [§354.10(a)] Pages 23-24	We would note that the listed beneficial uses within the boundaries of the Mound Basin identify only out-of-stream beneficial uses, and largely ignore instream beneficial uses. The revised Draft GSP should be revised to explicitly acknowledge the instream beneficial uses supported by the groundwater basin, including, but not limited to, the GDE associated with the lower Santa Clara River and Santa Clara River Estuary. See comment above.	The beneficial uses in question were not detailed in the GSP because there is no pumping from the shallow groundwater system and principal aquifer pumping does not have a material effect on shallow groundwater (GDEs) or interconnected surface water (Santa Clara River) flows. The GSP has been updated to note the beneficial uses described in the comment exist relative to the Shallow Alluvial Deposits (See ES-1, ES-2 and Section 2.3.1). However, it is noted that the Shallow Alluvial Deposits are not a principal aquifer, are not pumped, and groundwater pumping form the principal aquifers in the Basin do not materially affect the GDEs or deplete interconnected surface water. Please see new appendix (Appendix G) for further information.
39	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	3.1.4.1 Physical Properties of Aquifers and Aquitards Pages 36-45	"At the time of writing of this GSP, no aquifer test results for hydraulic conductivity or storativity were found in available references. However, well information collected over the past several decades by United . . . is considered the best available information concerning aquifer and aquitard properties. . . However, it is recognized that on a local scale, hydraulic conductivity can vary by orders of magnitude over short distances, and there may be areas in Mound Basin where hydraulic conductivity is higher or lower than the values shown on Table 3.1-01." The lack of specific information regarding hydraulic conductivity or storativity in the Mound Basin and the overlying shallow alluvial aquifer does not allow the categorical conclusions relied upon in the Draft GSP to eliminate consideration of GDE within the Mound Basin. The information and model used by United was focused on water conductivity and storativity that is more relevant to out-of-stream water supply and beneficial uses than the smaller values that may be relevant to support GDE. Without . . . field-based measurements it is impossible to conduct credible aquifer simulations such as the one found in the Draft GSP dealing with groundwater levels driven by climate-change scenarios through 2070 (See, e.g., Figure 4.6-03 of the Draft GSP.)	The GSP does not focus on the Area 11 GDE and interconnected surface water in the sustainable management criteria formulation because groundwater pumping does not materially impact either. There is no shallow groundwater pumping in the Basin. An appendix (Appendix G) has been added to further document the technical data that demonstrate the lack of material influence by pumping in the principal aquifers (Mugu and Hueneme Aquifers) on shallow groundwater levels and flows in the Santa Clara River or the Santa Clara River Estuary. Given the lack of material influence of pumping on GDEs (riparian or aquatic) associated with the Santa Clara River, there is no potential for significant and unreasonable impacts on the GDEs at present.

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40	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	3.1.4.2 Groundwater Recharge and Discharge Areas [§354.14(d)(4)] Page 45	"The Santa Clara River is the only major stream in Mound Basin, and the reach of the Santa Clara River in [the] Mound Basin is considered to usually be the site of groundwater discharge, rather than recharge (Stillwater Sciences, 2011[b]; United, 2018). However, the lower Santa Clara River in the area of its estuary is reported to fluctuate from gaining to losing cycles as water levels rise and fall in response to breaching of the barrier sand at the mouth of the river (Stillwater Sciences, 2011[b[). When the elevation of surface water in the estuary rises (following closure of the barrier bar), some of the rising water infiltrates (recharges) the shallow deposits adjacent to the river. Then, typically in the following winter or spring, a large storm will produce sufficient flows in the river that it will breach the barrier bar and cause rapid decline of surface water levels in the estuary, causing groundwater in the adjacent shallow deposits to discharge back into the river over a sustained period." First, the distinction between discharge and recharge is misleading; the surface flows in the lower reaches of the Santa Clara River are in direct contact with the alluvial aquifer (which is described elsewhere in the draft GSP as being up to a 100 feet thick). Second, river discharge (particularly base flows influence by underlying groundwater levels in the Mound Basin) support the GDE in this portion of the Mound Basin. Third, recharge is not limited to periods when the water surface elevations in the estuary rises following the closure of the sand bar at the mouth of the Santa Clara River Estuary. Lastly, the draft GSP does not accurately characterize the groundwater contribution to the Santa Clara River Estuary or the lower reaches of the Santa Clara River. According to a water balance assessment conducted by Stillwater Sciences (2011a, 2011b) for the fall/winter period of 2010, "groundwater was estimated to contribute approximately 15% of the inflow volume . . .". For the summer/spring 2010 period, "the groundwater contribution was estimated at 10 percent . . ." The Stillwater study also indicates that in the "Santa Clara River reach upstream of the estuary, groundwater provides the dry summer baseflow, if it exists, and is a quarter of the winter flow, based on the 2010 water year assessment." (TNC 2017, pp. 3-4).	MBGSA respectfully disagrees and believes the quoted text appropriately describes the dynamics of the Santa Clara River within the Mound Basin.
41	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	3.2 Groundwater Conditions [§354.16] p. 54	"Groundwater elevation data are available for nearly 60 wells located within Mound Basin. However, not all of these wells are being monitored at present. The distribution of wells is heavily skewed towards the southern half of the Basin, with relatively few wells existing in the northern half of the Basin (north of Highway 126)." The Draft GSP does not provide details regarding the well construction showing the intervals of the well through which groundwater enters the wells. Also, it is unclear if there are "sanitary plugs" installed in the wells that retard or prevent flow through shallow and deep aquifers. See comment above regarding the assertion that "No data gaps or significant uncertainties were identified."	The monitoring network well construction information is provided in the Draft GSP Table 5.3-01, water levels are presented in Appendix I (formerly Appendix H), and cross-sectional views of the aquifers are presented in the Draft GSP Section 3.1.2 – together these provide all the available information for the wells in relation to the groundwater and hydrostratigraphic units.
42	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	3.2.1 Groundwater Elevations [§354.16(a)] p. 54	"The contouring of groundwater levels in Mound Basin is complicated by the sparse data, particularly in the northern portion of the Basin." See comment above regarding the assertion that "No data gaps or significant uncertainties were identified."	There is no groundwater production in these portions of the basins, so this is not considered to be a significant data limitation for the GSP and sustainable management of the Basin.

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43	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	3.2.2 Change in Storage [§354.16(b)] p. 60	"Similar to contouring of groundwater levels in Mound Basin (as described above), estimation of historical changes in groundwater stored in the Basin is complicated by sparse groundwater elevation data, particularly in the northern portion of the Basin and in HSUs with few monitoring points. Due to these limitations, annual and cumulative changes in groundwater in storage were estimated using United's (2018 and 2021a, 2021b) groundwater flow model, which is generally well calibrated on a regional scale to groundwater elevation measurements." Groundwater models that are aimed at a "regional scale" are not likely to adequately describe changes in groundwater and surface water elevations (particularly base flows) that support localized GDE such as those associated with the lower Santa Clara River and the Santa Clara River Estuary, as well as other GDE within the Mound Basin identified by the California Department of Fish and Wildlife (2021). See comment above regarding the assertion that "No data gaps or significant uncertainties were identified."	Detailed consideration of the groundwater – surface water interaction is not warranted for this GSP because groundwater pumping does not materially impact shallow groundwater or interconnected surface water flows. There is no shallow groundwater pumping in the Basin. An appendix (Appendix G) has been added to further document the technical data that demonstrate the lack of material influence by pumping in the principal aquifers (Mugu and Hueneme Aquifers) on shallow groundwater levels and flows in the Santa Clara River or the Santa Clara River Estuary.
44	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	3.3.1 Historical Water Budget [§354.18(c)(2)(B)] p. 79 p. 83-84 3.3.2 Current Water Budget [§354.18(c)(1)] p. 84-86 3.3.3 Projected Water Budget p. 86-94 4.3 Pages 104-105 4.4.2.3 Page 108	"The SGMA Regulations require that the historical surface water and groundwater budget be based on a minimum of 10 years of historical data." The GSP does not refer to or account for the effects of the operation of the UWCD Vern Freeman Diversion on the lower Santa Clara River, which diverts, on average, over 62,000 acre-feet per year (AFY) from the main stem of the Santa Clara River (NMFS 2018). This diversion operation affects recharge to all of the lower Santa Clara River groundwater basins, not just the Fox Canyon Basin, including the shallow alluvial aquifer and the other deeper aquifers in within the Mound Basin. These operations have the potential to impact endangered adult and juvenile steelhead in the lower Santa Clara River and Santa Clara River Estuary (NMFS 2008a, 2018). The Draft GSP should therefore include as part of its water-budget analysis the operations of the Vern Freeman Diversion. Specifically, the relationship of groundwater management activities (including both recharge and groundwater extraction activities) and the effects of the related Vern Freeman Diversion on surface flows below the diversion and the maintenance of surface flows supported by groundwater should be explicitly addressed and disclosed in the revised GSP.	The Vern Freeman diversion is located outside of the Mound Basin, so an evaluation of its impacts to the streamflow are not required; however, the diversions are included in the numerical model, so flows are accounted for in the water budget (see Draft GSP section 3.3). Text was added to Section 3.3 to make clear that the water budget accounts for Vern Freeman Diversion operations.
45	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	3.3.4.1 Overdraft Assessment p. 96	"Review of the historical, current and projected groundwater budgets indicate small amounts of declining groundwater storage over time (469 and 147 for the historical and current periods, respectively), as shown in Table 3.3-03. These results suggest a minor amount of overdraft may have occurred during the historical and current period of 6.3% and 2.3%, respectively, of the groundwater pumping during that timeframe." While the Draft GSP does not identify any significant impacts to out-of-stream water supply beneficial uses of the Mound Basin (and in fact projects a slight increase of 68 to 84 AF/yr) between 2022 and 2096, under the assumed future-precipitation rates modeled), the implications from this slight overdraft or increase in storage for any of the GDE associated with the Mount Basin, including the lower Santa Clara River and Santa Clara River Estuary, are unclear	Groundwater pumping does not materially impact shallow groundwater or interconnected surface water flows. There is no shallow groundwater pumping in the Basin. An appendix (Appendix G) has been added to further document the technical data that demonstrate the lack of material influence by pumping in the principal aquifers (Mugu and Hueneme Aquifers) on shallow groundwater levels and flows in the Santa Clara River or the Santa Clara River Estuary.
46	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	4.2 Sustainability Goal [§354.24] p. 100	"The goal of this Groundwater Sustainability Plan (GSP) is to sustainably manage the groundwater resources of the Mound Basin for the benefit of current and anticipated future beneficial users of groundwater and the welfare of the general public who rely directly or indirectly on groundwater. Sustainable groundwater management will ensure the long-term reliability of the Mound Basin groundwater resources by avoiding undesirable results pursuant to the Sustainable Groundwater Management Act (SGMA) no later than 20 years from GSP adoption through implementation of a data-driven and performance-based adaptive management framework." Nothing in the language of the goals specifically refers to the protection of instream beneficial uses associated with GDE of the Mount Basin, such as the lower Santa Clara River or the Santa Clara River Estuary. This appears to be the result, in part, of not recognizing any interconnected surface waters or GDE within the boundaries of the Mound Basin. However, as noted above, the Mound Basin contains interconnected surface water and GDE. See comments above regarding the physical properties of the Mound Basin.	Component 4c of the sustainability goal addresses GDEs, which included those listed in the comment.

Attachment F-1

Comment Number	Entry Date	First Name	Last Name	Email Address	Phone Number	Mailing Address	GSP Referenced	Comment/Question	Response
47	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	4.4.3.1 Description of Measurable Objectives Western Half of Basin Page 112	"The chronic lowering of groundwater levels minimum thresholds in the western half of the Basin are superseded by the land subsidence proxy minimum thresholds. Therefore, the land subsidence proxy measurable objectives and interim milestones are adopted for the chronic lowering of groundwater levels measurable objectives in the western half of the Basin." It is not clear how, or if, the land subsidence proxy for minimum thresholds is appropriate for instream beneficial uses associated by GDE supported by interconnected waters. See also, general comment above regarding Minimum Thresholds.	This comment is not applicable due to the lack of material influence by pumping in the principal aquifers (Mugu and Hueneme Aquifers) on shallow groundwater levels and flows in the Santa Clara River or the Santa Clara River Estuary.
48	23-Aug-21	Anthony VIA: Mark Andres	Spina Capelli Ticlavilca	mark.capelli@noaa.gov andres.ticlavilca@noaa.gov	805-963-6478	U.S. Dept. of Commerce - NOAA - National Marine Fisheries Service West Coast Region 501 West Ocean Blvd, Suite 4200 Long Beach, CA 90802-4213	4.5.2.2 Relationships Between Minimum Thresholds and Sustainability Indicators [§354.28(b)(2)] p. 118 4.6 & 4.7	"The minimum thresholds for the reduction of groundwater storage sustainability indicator allow groundwater levels to decline below historical low levels in the eastern half of the Basin. Deeper groundwater levels could potentially increase underflow into the Mound Basin from the Oxnard and/or Santa Paula Basins (or decrease underflow to the Oxnard Basin), which could potentially contribute to undesirable results in those Basins. However, as noted above and in Section 4.4.2.1, the length of time that groundwater levels could remain below historical lows would be limited in order to prevent undesirable results for land subsidence in the western half of the Mound Basin; therefore, the potential effect on the adjacent basins is considered small." This approach and analysis may be appropriate when considering groundwater supplies for out-of-stream beneficial uses for which there may be alternatives. However, it does not take into account the adverse effects of periodic reduction of groundwater on GDE, including the use by migrating, spawning or rearing steelhead. The effects of periodic groundwater reductions on out-of-stream beneficial uses (e.g., domestic or agricultural water supplies) may be addressed with alternative water sources. However, instream uses such as GDE are more vulnerable to periodic groundwater reductions, because there is generally no alternative water source to sustain the GDE, and even a short-term depletion or limitation of stream flow or water surface elevation can be lethal to aquatic species.	This comment is not applicable due to the lack of material influence by pumping in the principal aquifers (Mugu and Hueneme Aquifers) on shallow groundwater levels and flows in the Santa Clara River or the Santa Clara River Estuary.
49	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 2.2.1	**Section 2.2.1** discusses water usages throughout the Mound Subbasin but does not reference individual, domestic/private well usage. The Draft states that "There are no known de minimus extractors in the Mound Basin." County records show that there is one known, active domestic-designated water well and several potentially abandoned domestic wells. Also reference Section 5.2.	It has been agreed upon that this comment is an error and that there are currently no active domestic wells in the Basin (MBGSA email communication with James Maxwell and Kim Loeb of VCWPD, 8/24/2021). VCWPD updated their records to accurately reflect that.
50	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 2.2.2.1	**Section 2.2.2.1** references the Ventura County Public Works Agency, Watershed Protection (VCPWA-WP) Groundwater Resources monitoring program. The number of wells monitored by groundwater resources varies but is usually between two and four groundwater wells within the Subbasin.	Text revised: "VCWPD variably monitors ~~three~~ two to four wells. . . "
51	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 2.2.2.2	**Section 2.2.2.2** references the previous versions of the Urban Water Management Plans (UWMPs) and Water Shortage Contingency Plans (WSCPs) for the City of Ventura (2016) and Casitas Municipal Water District (2016). It should be reflected in the Draft that 2020 UWMP updates have been released and/or adopted. Figures, data, and other relevant information should be updated in the Draft from the most recent UWMPs. There is no discussion of United Water Conservation District's (UWCD's) 2015 and 2020 UWMPs and 2020 WSCP.	The 2020 WSCP and UWMP for City of Ventura (Kennedy/Jenks, 2021a&b) and the 2020 UWMP for CMWD (CMWD, 2021) have been included in the Draft GSP and it has been updated to reflect the differences. There are no figure/table updates necessary.
52	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 2.2.3.2	**Section 2.2.3.2** discusses water well permitting through the VCPWA-WP. It should be noted that the County oversees compliance with the County Water Well Ordinance No. 4468 which is inclusive of the California Water Well Standards Bulletins 74-9,74-81 and 74-90 with future revisions currently under discussion.	Comment noted. Text updated: "The Ventura County Groundwater Section ~~enforces~~ oversees compliance with County Water Well Ordinance No. 4468 which is inclusive of California's Water Well Standards Bulletins 74-9, 74-81, and 74-90."

Attachment F-1

Comment Number	Entry Date	First Name	Last Name	Email Address	Phone Number	Mailing Address	GSP Referenced	Comment/Question	Response
53	23-Aug-21	James	Maxwell			Ventura County Public WorksWater Resources Division	Section 4.7	There is no discussion of potential impacts to groundwater from septic systems or wastewater treatment systems and abandoned wells that potentially serve as conduits for contaminant migration to the underlying aquifers (**Section 4.7**).	Seepage from septic systems are discharged to the Shallow Alluvial Deposits, which is not a principal aquifer. Treated wastewater is discharged to surface water (the Santa Clara River estuary, which is underlain by the Shallow Alluvial Deposits, which is not a principal aquifer. Unused or abandoned domestic wells are addressed in the groundwater quality protection measures under the projects and management actions (see Section 6.5). In addition, water quality is monitored across the basin to detect any elevated contaminant levels.
54	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 3.0 Basin Setting	There is minimal or no discussion of the Mound Subbasin and the Oxnard Subbasin boundary and any long-term operational interactions between the Fox Canyon Groundwater Management Agency (FCGMA) and MBGSA.	Faults along the basin boundary are characterized in the Regional Geology Section 3.1.2. Additionally, the Groundwater Flow Barriers Section 3.1.4.1.2 and the Water Budget Section 3.3 (historical, current, and projected) provides the estimated groundwater exchange across the boundary.
55	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 3.1.4.1.2	Faulting is discussed in **Section 3.1.4.1.2** and identifies the absence of monitoring wells on opposing sides of known faults. Known and monitored groundwater wells could provide information regarding potential impedance to groundwater movement across these faults.	Effects of faults were evaluated during model calibration and will be revisited during each GSP update. We agree that additional monitoring is helpful, but is not necessary at this stage.
56	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 3.1.4.1	The Figures shown in the Executive Summary on pages ES-iv and -v should be placed in and would better illustrate the subsections of **Section 3.1.4.1.**	The appropriate figures are referenced in the text and are only embedded in the Executive Summary for consistency.
57	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 3.1.4.2	**In Section 3.1.4.2**, it would be beneficial to include estimated and separate quantities of M&I and agricultural return flows within the Subbasin.	Quantities are presented in the Water Budget section (Section 3.3.1, Section 3.3.2, and Table 3.3-02). Section 3.1.4.2 presents the types of recharge and discharge for the Basin.
58	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 3.1.4.3	**In Section 3.1.4.3**, the Draft mentions using groundwater quality data from VCPWA-WP. The most recently used data was from 2017. The County has more recent water quality data through 2020.	Data updates will be included in the first annual GSP update.
59	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 3.1.4.4	**Section 3.1.4.4** could include a brief section discussing domestic groundwater wells and the limited use of these types of wells in the Subbasin. Ventura County records indicate that there is one active domestic well.	MBGSA has verified with Ventura County Watershed Protection District (8/24/2021 email communication with James Maxwell and Kim Loeb of VCWPD) that there are no domestic wells currently being used in the Basin. VCWPD updated their records to accurately reflect that.
60	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 3.2.1.1	**Section 3.2.1.1** includes groundwater level information up to 2019. There is current water level elevation data from Ventura County through 2020.	Data updates will be included in the first annual GSP update.
61	23-Aug-21	James	Maxwell			Ventura County Public WorksWater Resources Division	Section 3.2.4	**Section 3.2.4** discusses groundwater quality impacts to several agricultural water wells screened in the Mugu and Hueneme aquifers. The Draft suggests that elevated concentrations of nitrates in these wells would implicate the migration of contaminants to these aquifers from compromised well seals or casings. The section should include a discussion of the use of wastewater treatment systems in the vicinity of these wells.	There are no wastewater treatment facilities located near the wells in question.
62	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Sections 4.4.2.2.5 and 8	**Sections 4.4.2.5 and 4.8** discusses land subsidence in the western and eastern halves of the Subbasin. There is sufficient InSAR data for monitoring subsidence in the eastern half but not the western. Daniel B. Stephens & Associates, Inc. (a Geo-Logic Company) developed the *Fillmore and Piru Basins Land Subsidence Evaluation Technical Memorandum* for the Fillmore and Piru Basins Groundwater Sustainability Agency dated February 4,2021. The memo addresses land subsidence within the Fillmore and Piru Subbasins. Consider development of a similar technical evaluation for the Mound Subbasin to assess conditions in the western half of the Subbasin and any correlations to existing data for the eastern half.	Groundwater levels are used as a proxy for the land subsidence minimum thresholds, which is more protective.

Attachment F-1

Comment Number	Entry Date	First Name	Last Name	Email Address	Phone Number	Mailing Address	GSP Referenced	Comment/Question	Response
63	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Sections 5.2.3 and 5.3.3	**Sections 5.2.3 and 5.3.3** discuss the design of a monitoring network and collection of data and mentions that monitoring will be affected by implementation of the Oxnard Groundwater Sustainability Plan. Consider noting that future monitoring information from the FCGMA could be used to supplement the MBGSA reporting data.	Comment noted.
64	23-Aug-21	James	Maxwell			Ventura County Public Works Water Resources Division	Section 6.5	**Section 6.5** states the MBGSA will coordinate with the County to identify and address improperly constructed and abandoned wells. It should be noted that this is also to maintain compliance with the Ventura County Well Ordinance No. 4468.	Comment noted.
65	1-Sep-21	Neal	Maguire	nmaguire@fcoplaw.com	805-659-6800	1050 S. Kimball Rd. Ventura, CA 93004	Section 3.3.4.1	First, the draft GSP provides, in section 3.3.4.1, an overdraft assessment required by section 354.18(b)(5) of the GSP Emergency Regulations. The draft GSP utilizes the characterization of overdraft from the Department of Water Resources' Bulleting 118, which provides in part: "Overdraft can be characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years." Section 3.3.4.1 of the draft GSP further notes, "Review of the historical, current and projected groundwater budgets indicate small amounts of declining groundwater storage over time (469 and 147 for the historical and current periods, respectively), as shown in Table 3.3-03." In light of this discussion, we would appreciate clarification regarding the following: 1. Are the values provided in Table 3.3-03 within the error range for the various referenced water budgets? 2. Have the above estimates regarding groundwater storage been accompanied by any reports or accounts of any undesirable results in the Basin?	1. Yes 2. No Text will be updated based on these questions.
66	1-Sep-21	Neal	Maguire	nmaguire@fcoplaw.com	805-659-6800	1050 S. Kimball Rd. Ventura, CA 93004	Section 3.3.4.1	Second and lastly, the draft GSP discusses, in several areas, the lack of a relationship between the Mound Basin's shallow aquifer, which is not utilized for groundwater production, and other aquifers that are being utilized by the Basin's landowners and the City of Ventura. For example, page 68 of the draft GSP notes, with regard to surface water connectivity issues, that the shallow aquifer does not have "any known groundwater extractions within Mound Basin." MBAWG is similarly unaware of any groundwater production from the shallow aquifer. MBAWG also agrees that the shallow aquifer does not seem to interact with the aquifers that are beneficially used, in part because we do not see any associated diminished water quality in the deeper aquifers. With that said, it might be helpful for the GSP to provide further confirmation regarding the connectivity, or lack thereof, between the Basin's aquifers.	An appendix (Appendix G) has been added to further document the technical data that demonstrate the lack of material influence by pumping in the principal aquifers (Mugu and Hueneme Aquifers) on shallow groundwater levels and flows in the Santa Clara River or the Santa Clara River Estuary.
67	21-Oct-21	City of Ventura					Global	Please update references to City's most recent UWMP, CWRR, and WSECP.	References updated.

Attachment F-1

Comment Number	Entry Date	First Name	Last Name	Email Address	Phone Number	Mailing Address	GSP Referenced	Comment/Question	Response
68	21-Oct-21	City of Ventura					**ES-1, page ES-iii**	"Other sources of water supply for the Basin include groundwater pumped from City of Ventura wells located in the adjacent Santa Paula and Oxnard Basins and from the Upper Ventura River Basin (not an immediately adjacent basin), and surface water imported from the Ventura River Watershed, which is purchased from Casitas MWD. Although Mound Basin groundwater is an important source of water supply for the communities located within the Basin, the communities are not considered to be "dependent" on Mound Basin groundwater because it is only one component of the City's water supply portfolio. In contrast, agricultural beneficial users are heavily dependent on groundwater pumped from the Mound Basin as they currently do not have an alternative water supply." For the first sentence above, the City's Ventura River water should be characterized as subsurface water extracted from shallow groundwater wells in the Upper Ventura River Basin. For the second sentence above, the City *is* dependent on the Mound Basin groundwater. The sentence should be revised to state that, "The communities located within the Basin rely on Mound Basin groundwater, even though the City does have other sources of water supply in its water supply portfolio." For the third sentence, the phrase "in contrast," should be deleted.	Text updated: "Other sources of water supply for the Basin include groundwater pumped from City of Ventura wells located in the adjacent Santa Paula and Oxnard Basins and from the Upper Ventura River Basin (not an immediately adjacent basin), and surface water imported from the Ventura River Watershed, which is purchased from Casitas MWD. Although Mound Basin groundwater is an important source of water supply for the communities located within the Basin, the communities are not considered to be ***exclusively dependent*** on Mound Basin groundwater because it is only one component of the City's water supply portfolio. In contrast, agricultural beneficial users are heavily dependent on groundwater pumped from the Mound Basin as they currently do not have an alternative water supply."
69	21-Oct-21	City of Ventura					**Table ES-1, page ES-vii**	The term "Change in Storage" should be clarified to mean change in storage available, as opposed to a change in the amount of groundwater in storage. Upon first use, please add a footnote clarifying the meaning for the non-technical reader, and please note that this applies to the use of that term throughout the GSP.	Footnote added to table to clarify Storage definition.
70	21-Oct-21	City of Ventura					**Acronyms and Abbreviations, page xx**	Please change the definition of "Ventura Water" to "the City of Ventura's water and wastewater department"	Text updated.
71	11-Nov-21	City of Ventura					**2.1.4 Legal Authority, page 5**	**Comment during MBGSA public hearing:** Please delete the last sentence of the existing paragraph and replace with the following text: "Additionally, the City is currently in the planning and design phases for the proposed VenturaWaterPure Program, which includes diversion of tertiary treated effluent to a new Advanced Water Purification Facility for potable reuse. Construction of these Projects is expected to begin in 2023."	Paragraph replaced
72	21-Oct-21	City of Ventura					**2.2.1, page 7**	Please change this sentence: "Sources of water for the M&I sector in Mound Basin include local groundwater pumped from City of Ventura wells in the Basin, groundwater pumped by the City of Ventura from the adjacent Santa Paula and Oxnard Basins and from the Upper Ventura River Basin (not an immediately adjacent basin), and surface water imported from the Ventura River Watershed, which is purchased from Casitas MWD." To the following: "Sources of water for the M&I sector in Mound Basin include local groundwater pumped from City of Ventura wells in the Basin, groundwater pumped by the City of Ventura from the adjacent Santa Paula and Oxnard Basins, subsurface water pumped by the City from the Ventura River / the Upper Ventura River Basin (not an immediately adjacent basin), and surface water purchased from Casitas MWD."	Text updated.

Attachment F-1

Comment Number	Entry Date	First Name	Last Name	Email Address	Phone Number	Mailing Address	GSP Referenced	Comment/Question	Response
73	21-Oct-21	City of Ventura					**2.2.1, page 8**	"Although Mound Basin groundwater is an important source of water supply for the communities located within the Basin, the communities are not considered to be "dependent" on Mound Basin groundwater because it is only one component of the City's water-supply portfolio." The City is dependent on Mound Basin groundwater. Please modify accordingly.	Text updated: "Although Mound Basin groundwater is an important source of water supply for the communities located within the Basin, the communities are not considered to be **exclusively dependent** on Mound Basin groundwater because it is only one component of the City's water-supply portfolio."
74	21-Oct-21	City of Ventura					**2.2.2.2, page 9**	Update reference to City's Urban Water Management Plan and Water Shortage Event Contingency Plan to 2020.	Reference updated.
75	11-Nov-21	City of Ventura					**2.2.3.1, page 9**	**Comment during MBGSA public hearing:** Replace reference to "Oxnard" Subbasin in the last full paragraph on Page 9 with "Mound" Subbasin.	Text updated.
76	11-Nov-21	City of Ventura					**2.2.3.2, page 18**	**Comment during MBGSA public hearing:** Please add the following sentence: "Additionally, groundwater production wells within the City limits of the City of Ventura require a water well agreement with the City of Ventura pursuant to Chapter 8.150 of the San Buenaventura Municipal Code."	Sentence added to Section 2.2.3.2.
77	11-Nov-21	City of Ventura					**2.2.3.2, page 21**	**Comment during MBGSA public hearing:** Typo in City of San Ventura – should be City of San Buenaventura.	Text updated.
78	21-Oct-21	City of Ventura					**Section 3.1.4.4**	We discussed potential issues with the City well depictions. Please review the text and update as you see appropriate.	Footnote added to Table 5.3-01.

Attachment F-2

Labeled Comment Letters

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
South Coast Region
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San Diego, CA 92123
(858) 467-4201
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GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

Note: comments which share the major themes from the Appendix F introduction are not included in the comment matrix (Attachement 1) due to their volume and repetition and are addressed in a new appendix to the draft GSP (Appendix G). In order to distinguish the comments from CDFW, NGOs, and NMFS, which do not follow the major themes discussed below, they have been identified and labeled with numbers and boxes below and correspond with the numbers in the comment matrix table (see Attachment 1, comments #6-9).

August 17, 2021

Via Electronic Mail and Online Submission

Mr. Bryan Bondy, P.G.
Executive Director
Mound Basin Groundwater Sustainability Agency
P.O. Box 3544
Ventura, CA 93006-3544
bryan@bondygroundwater.com

Subject: Comments on the Mound Basin Draft Groundwater Sustainability Plan

Dear Mr. Bondy:

The California Department of Fish and Wildlife (CDFW) is providing comments on the Mound Basin Groundwater Sustainability Agency's (MB-GSA) Draft Groundwater Sustainability Plan (Draft GSP). The Draft GSP was prepared pursuant to the Sustainable Groundwater Management Act (SGMA). As trustee agency for the State's fish and wildlife resources, CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of such species (Fish & Game Code §§ 711.7 and 1802).

Development and implementation of groundwater sustainability plans (GSPs) under SGMA represents a new era of California groundwater management. CDFW has an interest in the sustainable management of groundwater, as many sensitive ecosystems and species depend on groundwater and interconnected surface waters, including ecosystems on CDFW-owned and managed lands within SGMA-regulated basins. SGMA and its implementing regulations afford ecosystems and species-specific statutory and regulatory consideration, including the following as pertinent to GSPs:

- GSPs must **identify and consider impacts to groundwater dependent ecosystems (GDEs)** [23 CCR § 354.16(g) and Water Code § 10727.4(l)];
- Groundwater Sustainability Agencies must **consider all beneficial uses and users of groundwater**, including environmental users of groundwater [Water Code §10723.2 (e)];
- GSPs must **identify and consider potential effects on all beneficial uses and users of groundwater** [23 CCR §§ 354.10(a), 354.26(b)(3), 354.28(b)(4), 354.34(b)(2), and 354.34(f)(3)];
- GSPs must **establish sustainable management criteria that avoid undesirable results** within 20 years of the applicable statutory deadline, including **depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water** [23 CCR § 354.22 *et seq*. and Water Code §§ 10721(x)(6) and 10727.2(b)], and **describe monitoring networks** that can identify adverse impacts to beneficial uses of interconnected surface waters [23 CCR § 354.34(c)(6)(D)]; and,

- GSPs must **account for groundwater extraction for all water use sectors** including managed wetlands, managed recharge, and native vegetation [23 CCR §§ 351(al) and 354.18(b)(3)].

Furthermore, the Public Trust Doctrine imposes a related but distinct obligation to consider how groundwater management affects public trust resources, including navigable surface waters and fisheries. Groundwater hydrologically connected to surface waters are also subject to the Public Trust Doctrine to the extent that groundwater extractions or diversions affect or may affect public trust uses (*Environmental Law Foundation v. State Water Resources Control Board* (2018), 26 Cal. App. 5th 844; *National Audubon Society v. Superior Court* (1983), 33 Cal. 3d 419). Accordingly, groundwater plans should consider potential impacts to and appropriate protections for interconnected surface waters and their tributaries, and interconnected surface waters that support fisheries, including the level of groundwater contribution to those waters.

In the context of SGMA statutes and regulations, and Public Trust Doctrine considerations, groundwater planning should carefully consider and protect environmental beneficial uses and users of groundwater, including fish and wildlife and their habitats, groundwater dependent ecosystems, and interconnected surface waters.

6

COMMENT OVERVIEW

CDFW supports ecosystem preservation and enhancement in compliance with SGMA and its implementing regulations based on CDFW expertise and best available information and science. CDFW understands the Mound basin (Basin) and is adjacent to the Santa Paula basin and the Oxnard basin. These three basins sit within the larger Oxnard Plain area. CDFW offers the following comments and recommendations below to assist MB-GSA in identifying and evaluating impacts on biological resources including GDEs within the adjacent groundwater basins. Additional suggestions are included for MB-GSA's consideration during revisions of the Draft GSP.

COMMENTS AND RECOMMENDATIONS

Comment #1: Data Gaps for Interconnected Surface Water (Section 3.2.6 of Mound Basin Draft GSP, Starting on Page 67)

Issue: Page 67 of the Draft GSP states, *"Data are not available to characterize the interconnection of Santa Clara River surface water and groundwater. Although the frequent perennial baseflow conditions imply that surface and groundwater is interconnected, it is not known specifically which groundwater in which units are connected and where. Of importance for this GSP, it is unknown whether the water table of the shallow alluvial aquifer in Mound Basin extends beneath the stream terrace deposits and intersects surface water in the Santa Clara River channel within the limits of Mound Basin."*

Concern: There are many unknowns as to the interaction of surface water in the Santa Clara River (SCR), Santa Clara River Estuary (SCRE) and the shallow alluvial aquifer of the Basin, and the adjacent Oxnard and Santa Paula basins. Studies have indicated that although the SCRE is within the Mound Basin, it may potentially be hydrologically connected to the upper aquifers of the Oxnard Plain area. This connection may be through semi-perched or shallow groundwater aquifers. The MB-GSA has not provided enough data to conclude that there isn't hydrologic connectivity between these various shallow aquifers.

While most of the water flowing into the SCRE comes from the Ventura Wastewater Treatment Plant (VWWTP) and SCR discharge there is still a fair amount of groundwater inflow from the semi-perched aquifer. According to a water balance assessment conducted by Stillwater Sciences in their Santa Clara River Estuary Subwatershed Study for the fall/winter water year 2009- 2010, "The combined measured groundwater flow from the southern floodplain area and the unmeasured groundwater flow, which is presumed to be dominated by groundwater flow from upstream of the Harbor Blvd. bridge, had a combined contribution of approximately 15% of the total inflow volume" (Stillwater Sciences 2011b, p.78).

For the summer/spring 2010 period "The remaining 10% of the inflow volume came from an equal contribution of unmeasured groundwater flow from upstream of the Harbor Blvd. bridge and Santa Clara River flow" (Stillwater Sciences 2011b, p.78).

The Department of Water Resources regulations define interconnected surface water as "surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted [23 CCR § 351(o).]." The regulations do not state that the aquifer needs to be a "principal" aquifer as suggested by the Draft GSP.

GDEs can rely on groundwater for some or all of its requirements, relying on multiple water sources simultaneously and at different temporal or spatial scales (e.g., precipitation, river water, reservoir water, soil moisture in the vadose zone, groundwater, applied water, treated wastewater effluent, urban stormwater, irrigated return flow).

Recommendation: There are data gaps regarding the shallow aquifer and its hydraulic connectivity to the surface waters of the SCR and the SCRE. CDFW recommends the installation of shallow groundwater monitoring wells near potential GDEs and interconnected surface waters, potentially pairing multiple-completion wells with additional streamflow gages. This will facilitate an improved understanding of surface water-groundwater interconnectivity and subsurface recharge channels. A streamflow gage at the SCRE would provide valuable data on the amount of surface water feeding the estuary. CDFW agrees with the recommendation that the MB-GSA collect and analyze the data obtained from the future monitoring well planned for construction at the proposed VWWTP (as stated in the Draft GSP) to address the data gaps. Additional monitoring wells may be needed in other areas of the Basin before making the assertion that there is no interconnectivity between the shallow aquifer and the SCR. There is not enough information provided in the Draft GSP about the interconnectivity between the shallow aquifer and the principal aquifer. Additional clarification is needed in the final GSP.

Comment #2: Groundwater Dependent Ecosystems Do Not Exist in Mound Basin under SGMA (Section 3.2.7 of Mound Basin Draft GSP, Starting on Page 68 and Appendix G)

Issue: Page 69 of the Draft GSP states, *"As presented in Appendix G, iGDE areas 1 through 10 have been screened out and are not considered GDEs...Given the lack of potential for significant impacts to GDEs by principal aquifer pumping, Area 11 will not be considered further in the development of sustainable management criteria for the principal aquifers."*

Concern: CDFW is concerned with the Draft GSP's disregard for GDEs in the Basin. Essentially, there are zero GDEs identified for SGMA protection. Eleven areas within the Basin

were mapped as containing indicators of potential GDEs. GDEs that were selected by the MB-GSA are as follows:

Area 1 – Harmon Canyon coast live oak trees;
Area 2 – Sexton Canyon coast live oak trees, wetland habitat, and riverine features;
Area 3 – Barlow Canyon (Arroyo Verde Park) riparian mixed hardwood;
Area 4 – Sanjon Barranca coast live oak trees;
Area 5 – Kennebec Linear Park mixed riparian forest and North Bank of Santa Clara River near Saticoy mixed willow forest;
Area 6 – Harmon Barranca and Park mixed riparian hardwood;
Area 7 – Arundell Barranca (northern) riverine features;
Area 8 – Arundell Barranca (central) wetland and riverine features;
Area 9 – Prince Barranca wetland and marsh features;
Area 10 – Alessandro Lagoon willow shrub; and,
Area 11 – Lower Santa Clara River and Estuary estuarine habitat and wetland features.

The MS-GSA determined these 11 areas are not reliant on water from a principal aquifer in the Basin. The MB-GSA is arguing that the primary sources of water for these habitats come from the shallow alluvial aquifer, perched zones, irrigation return flows and tile drain discharges. CDFW believes the shallow aquifer and perched zones rely on surplus water from other external sources to keep them recharged. There is concern that these external sources could diminish or dry up which would adversely affect these GDEs. These are important contributions to sustaining these habitats and should be reinstated in the Draft GSP as GDEs.

The SCR along the Basin is designated critical habitat for the federal Endangered Species Act (FESA) listed southern California steelhead (*Oncorhynchus mykiss* or steelhead). Steelhead and the FESA-listed and California Endangered Species Act (CESA) listed least Bell's vireo (*Vireo bellii pusillus*), the FESA-listed and CESA-listed southwestern willow flycatcher (*Empidonax traillii extimus*) utilize the various habitats identified in the draft GSP as estuarine, wetland, and riverine features, that the MB-GSA has excluded as GDEs.

Water Code § 10721 (x)(6) requires GSPs avoid significant and unreasonable adverse impacts to beneficial uses of surface water including aquatic ecosystems reliant on interconnected surface water. If hydrologic connectivity exists between a terrestrial or aquatic ecosystem and groundwater, then that ecosystem is a potential GDE and must be identified in a GSP. [23 CCR§354.16 (g).] Hydrologic connectivity between surface water and groundwater, as well as groundwater accessibility to terrestrial vegetation, must, therefore, be evaluated carefully, and conclusions should be well-supported. Hydrologic connectivity considerations include connected surface waters, disconnected surface waters and transition surface waters.

Recommendation: CDFW believes the shallow alluvial "aquifer" although rarely used for a water supply is extremely important to the ecological communities or species that depend on groundwater emerging from all aquifers or from groundwater occurring near the surface within the Basin. The 11 areas within the Basin that were mapped as containing potential GDEs should be included in the Draft GSP as they do rely on the shallow alluvial "aquifer" within the Basin, and the MB-GSA has not provided enough data to disregard interconnected surface waters. This shallow alluvial "aquifer" needs to be protected under SGMA. If these GDEs are adversely impacted, groundwater plans should be in place to facilitate appropriate and timely monitoring and management response actions.

Mapping GDEs and other beneficial uses is an essential component in the consideration, development and implementation of GSPs (Water Code §10723.2) and in assessing the potential effects on groundwater beneficial uses. GSAs must also include sustainable management criteria and monitoring to detect adverse impacts on all groundwater beneficial users. CDFW believes it was premature to eliminate a large portion of the GDEs-related data. We recommend that the best scientific data on depth to groundwater be included in the analysis of interconnected surface waters before any data is excluded. Other scientific data to include (but not be limited to): USGS mapped springs/seep and comparing recent groundwater level contours to vegetation root zones. CDFW does not recommend relying solely on soils information. For example, the presence of sandy, dry, and friable soils, does not mean that existing plant species do not rely on groundwater for some portion of their life cycle. Capillary fringe associated with root networks from native plants could be accessing groundwater from deeper depths.

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Comment #3: Impacts of United Water Conservation District's Diversion Operations at the Vern Freeman Diversion on the SCRE (Water Budget Section 3.3 Starting on Page 70)

Issue: The SCRE is located at the western portion of the Basin and is the terminus of the SCR. The protection and preservation of the SCRE for many species is a high priority for CDFW. United Water Conservation District's (UWCD) Vern Freeman Diversion (VFD), which is located in the Santa Paula Subbasin, plays a major role in limiting the amount of surface water that ultimately reaches the SCRE in the Mound Subbasin. As previously mentioned in Comment #2, GDEs do exist in the Basin and the VFD and recharge operations negatively impact these ecosystems. The VFD diverts surface water that would have continued to flow into the Mound Subbasin, but the water is instead diverted to the Oxnard Subbasin for groundwater storage. The water budget does not consider or analyze the VFD amounts in the Draft GSP.

Concern: The SCRE provides open water, sand dune, nearshore, riparian, mudflat, and other habitats that support a number of sensitive species throughout their life cycles, including the tidewater goby (*Eucclogobius newberryi),* steelhead, California least tern (*Sterna antillarum browni*), and western snowy plover (*Charadrius nivosus)* (CDFW 2019). SCRE is a core resource area strategically located along the coast that provides food, shelter, stopover, and safety for wildlife. The Ventura Wastewater Reclamation Facility (VWRF) currently discharges recycled water into the SCRE but will be reducing the amount of effluent discharge (from 4.7 MGD to 1.9 MGD) into the SCRE in the near future. Discharge reduction has the potential to significantly improve water quality conditions in the SCRE at the expense of a reduction in open water habitat. The surface water diverted from the VFD reduces flows needed to sustain the open water habitat for the SCRE. The VFD and spreading basin has altered the natural surface flow and groundwater recharge patterns in the SCR watershed (NMFS 2020, p.3).

Recommendation: CDFW recommends the amounts and timing of streamflow depletions at the Vern Freeman Diversion should be included in the Draft GSP to complete the water budget. Additionally, CDFW recommends the MB-GSA identify the estimated quantity and timing of streamflow depletions in the subbasin. If this information is not available, CDFW recommends the MB-GSA identify a proposed plan to estimate these values. The final GSP should address the UWCD VFD diversion and recharge operations and their effects on surface flows and groundwater elevations along the SCR and SCRE.

ADDITIONAL COMMENTS

Sensitive Species and Habitats: The SCRE contains important steelhead spawning and rearing habitat in Southern California. Threats to steelhead, such as excessively high-water temperatures in the spring, summer, and early fall, reduce available juvenile rearing habitat. Low flows in the fall and winter can delay adult passage to critical spawning areas.

Steelhead trout depend on the SCRE for vital life-history and ecological function and should be at the forefront of MB GSA's protection plan. This species utilizes all areas of the SCRE including the open water habitat. The SCRE has long been recognized as important steelhead rearing habitat for fingerling and smolt until they reach maturity as adults to survive the tough conditions of the Pacific Ocean.

The SCRE receives groundwater inflow upstream in the SCR. Water quality conditions in the SCRE have the potential to affect juvenile steelhead. The SCRE currently has approximately 108 acres of open water which provides a combination of fairly shallow open water and water that is generally deep enough to provide some protection from terrestrial and larger avian predators.

Southwestern pond turtle (*Actinemys pallida*) was designated as a California Species of Special Concern (SSC) in 1994. Southwestern pond turtle's preferred habitat is permanent ponds, lakes, streams, or permanent pools along intermittent streams associated with standing and slow-moving water. A potentially important limiting factor for western pond turtle is the relationship between water level and flow in off-channel water bodies, which can both be affected by groundwater pumping.

8 CDFW recommends that the MB-GSA commit to Arundo *(Arundo donax)* removal in the SCRE and along the SCR within the Basin to improve groundwater supply and enhance habitat quality for nesting birds. Arundo removal is one example of a project and management action to minimize groundwater overdraft. If groundwater depletion results in reduced streamflow due to interconnected surface waters, the nesting and foraging success of the SSC yellow warbler (*Dendroica petechia*), the SSC yellow breasted chat (*Icteria virens*), least Bell's vireo, southwestern willow flycatcher and other bird species may be diminished due to the reduced nesting habitat and food availability.

Proper management of both shallow and deep groundwater pumping combined with reduced surface water pumping and diverting such as that from the would ensure that the SCRE and lower SCR are not negatively impacted. Unsustainable use of groundwater can impact the shallow aquifers and interconnected surface waters on which these species and GDEs reply on for survival. This may lead to adverse impacts on fish and wildlife and the habitat they need to survive. Determining the effects groundwater levels have on surface water flows in the Mound Basin will inform how the groundwater levels may be associated with the health and abundance of riparian vegetation. Poorly managed groundwater pumping, and surface water flows have the potential to reduce the abundance and quality of riparian vegetation, reducing the amount of shade provided by the vegetation, and ultimately leading to increased water temperatures in the SCR and SCRE. CDFW highly recommends the MB-GSA map out locations where there are interconnected surface waters and document aquatic habitats and other GDEs as required under SGMA.

The biological resources within the SCRE were completely eliminated from this Draft GSP and the MB-GSA should provide appropriate consideration to the SCRE. Fish and wildlife resources within the Basin should also be considered in the water budget. Additionally, shallow groundwater levels near interconnected surface waters should be monitored to ensure that groundwater use is not depleting surface water and adversely affecting fish and wildlife resources in the Basin.

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CONCLUSION

In conclusion, the Draft GSP does not comply with all aspects of SGMA statute and regulations, and CDFW deems the Draft GSP inadequate to protect fish and wildlife beneficial users of groundwater for the following reasons:

1. The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are not reasonable and/or not supported by the best available information and best available science. [CCR § 355.4(b)(1)] (See Comments # 1, 2, and 3);

2. The Draft GSP does not identify reasonable measures and schedules to eliminate data gaps. [CCR § 355.4(b)(2)] (See Comments # 1, 2, and 3);

3. The sustainable management criteria and projects and management actions are not commensurate with the level of understanding of the basin setting, based on the level of uncertainty, as reflected in the Draft GSP. [CCR § 355.4(b)(3)] (See Comments # 1, 2, and 3); and,

4. The interests of the beneficial uses that are potentially affected by the use of groundwater in the basin, have not been considered. [CCR § 355.4(b)(4)] (See Comments # 1, 2, 3 and see Additional Comments).

CDFW appreciates the opportunity to provide comments. Additionally, we appreciate MB-GSA's continued coordination with CDFW while MB-GSA develops a final GSP. If you have any questions or comments regarding this letter, please contact Steve Slack, Environmental Scientist, at Steven.Slack@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Erinn Wilson-Olgin
B6E58CFE24724F5...

Erinn Wilson-Olgin
Environmental Program Manager I
South Coast Region

Enclosures (Literature Cited)

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Literature Cited

CDFW. 2019. California Natural Diversity Data Base (CNDDB). (https://www.wildlife.ca.gov/data/cnddb)

National Marine Fisheries Service. 2020. Comment Letter for the Proposed Groundwater Sustainability Plan for the Oxnard Basin dated May 15, 2020. National Marine Fisheries Service, West Coast Region, Long Beach, California

Stillwater Sciences. 2011b. Estuary Sub Watershed Study Assessment of the Physical and Biological Condition of the Santa Clara River Estuary, Ventura County, California. Amended Final Report. September 2011.Prepared for the City of Ventura.

The Nature Conservancy. 2017.Technical Memorandum–Draft Assessment of Groundwater Dependent Ecosystems for the Oxnard Subbasin Groundwater Sustainability Plan.

The Nature Conservancy | Audubon California | Local Government Commission — Leaders for Livable Communities

Union of Concerned Scientists — Science for a healthy planet and safer world

Clean Water Action | Clean Water Fund

Note: comments which share the major themes from the Appendix F introduction are not included in the comment matrix (Attachement 1) due to their volume and repetition and are addressed in a new appendix to the draft GSP (Appendix G). In order to distinguish the comments from CDFW, NGOs, and NMFS, which do not follow the major themes discussed below, they have been identified and labeled with numbers and boxes below and correspond with the numbers in the comment matrix table (see Attachment 1, comments #10-16).

August 23, 2021

Mound Basin GSA
P.O. Box 3544
Ventura, CA 93006-3544
Submitted via email: jackiel@unitedwater.org.

Re: Public Comment Letter for the Mound Groundwater Basin Draft GSP

Dear Bryan Bondy,

On behalf of the above-listed organizations, we appreciate the opportunity to comment on the Draft Groundwater Sustainability Plan (GSP) for the Mound Groundwater Basin being prepared under the Sustainable Groundwater Management Act (SGMA). Our organizations are deeply engaged in and committed to the successful implementation of SGMA because we understand that groundwater is critical for the resilience of California's water portfolio, particularly in light of changing climate. Under the requirements of SGMA, Groundwater Sustainability Agencies (GSAs) must consider the interests of all beneficial uses and users of groundwater, such as domestic well owners, environmental users, surface water users, federal government, California Native American tribes and disadvantaged communities (Water Code 10723.2).

As stakeholder representatives for beneficial users of groundwater, our GSP review focuses on how well disadvantaged communities, tribes, climate change, and the environment were addressed in the GSP. While we appreciate that some basins have consulted us directly via focus groups, workshops, and working groups, we are providing public comment letters to all GSAs as a means to engage in the development of 2022 GSPs across the state. Recognizing that GSPs are complicated and resource intensive to develop, the intention of this letter is to provide constructive stakeholder feedback that can improve the GSP prior to submission to the State.

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Based on our review, we have significant concerns regarding the treatment of key beneficial users in the Draft GSP and consider the GSP to be **insufficient** under SGMA. We highlight the following findings:

1. Beneficial uses and users **are not sufficiently** considered in GSP development.
    a. Human Right to Water considerations **are not sufficiently** incorporated.
    b. Public trust resources **are not sufficiently** considered.
    c. Impacts of Minimum Thresholds, Measurable Objectives and Undesirable Results on beneficial uses and users **are not sufficiently** analyzed.
2. Climate change **is not sufficiently** considered.
3. Data gaps **are not sufficiently** identified and the GSP **does not have a plan** to eliminate them.

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4. Projects and Management Actions **do not sufficiently consider** potential impacts or benefits to beneficial uses and users.

Our specific comments related to the deficiencies of the Mound Groundwater Basin Draft GSP along with recommendations on how to reconcile them, are provided in detail in **Attachment A.**

Please refer to the enclosed list of attachments for additional technical recommendations:

Attachment A	GSP Specific Comments
Attachment B	SGMA Tools to address DAC, drinking water, and environmental beneficial uses and users
Attachment C	Freshwater species located in the basin
Attachment D	The Nature Conservancy's "Identifying GDEs under SGMA: Best Practices for using the NC Dataset"

Thank you for fully considering our comments as you finalize your GSP.

Best Regards,

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Water Policy Analyst
Clean Water Action/Clean Water Fund

J. Pablo Ortiz-Partida, Ph.D.
Western States Climate and Water Scientist
Union of Concerned Scientists

Samantha Arthur
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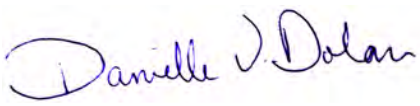

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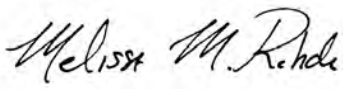

Melissa M. Rohde
Groundwater Scientist
The Nature Conservancy

Attachment A

Specific Comments on the Mound Groundwater Basin Draft Groundwater Sustainability Plan

1. Consideration of Beneficial Uses and Users in GSP development

Consideration of beneficial uses and users in GSP development is contingent upon adequate identification and engagement of the appropriate stakeholders. The (A) identification, (B) engagement, and (C) consideration of disadvantaged communities, drinking water users, tribes, groundwater dependent ecosystems, streams, wetlands, and freshwater species are essential for ensuring the GSP integrates existing state policies on the Human Right to Water and the Public Trust Doctrine.

A. Identification of Key Beneficial Uses and Users

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Disadvantaged Communities, Drinking Water Users, and Tribes

The identification of Disadvantaged Communities (DACs), drinking water users, and tribes is **insufficient**. We note the following deficiencies with the identification of these key beneficial users.

- The GSP provides a map of DAC block groups and DAC tracts within the basin (Figure 1 in Appendix D) but does not include any other identifying information for DACs.
- The adopted Stakeholder Engagement Plan (Appendix D) states that there are domestic wells overlying the basin; however, the main body of the GSP states that there are no domestic wells within the basin due to availability of potable water from Ventura Water. The GSP does not provide the location and depth of the domestic wells within the basin, nor does it provide a well density map of domestic wells in the basin. Additionally, the GSP fails to identify the population dependent on groundwater as their source of drinking water in the basin.
- The GSP states that portions of the Barbareno-Ventureno Band of Chumash are located within the Mound Basin, but does not include a map of tribal areas within the basin.

These missing elements are required for the GSA to fully understand the specific interests and water demands of these beneficial users, to support the development of water budgets using the best available information, and to support the development of sustainable management criteria and projects and management actions (PMAs) that are protective of these users.

RECOMMENDATIONS

- Provide clarification on the status of domestic wells within the basin. DWR Well Completion Report Map[1] shows that there are some domestic wells within the basin. Include a map showing the domestic wells in the basin by location and depth. even if they are not currently in use. Wells previously in use may have been impacted by poor water quality or declining groundwater elevations.
- Provide an estimate of the population dependent on groundwater within the Mound Basin. The GSP states that “The City of Ventura (Ventura Water) serves the areas indicated by DWR as Disadvantaged Communities (DACs) and Severely Disadvantaged

[1] DWR Well Completion Report Map
https://dwr.maps.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37

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Communities (SDACs)." The GSP does not, however, currently provide clear information on how and to what extent DAC members rely on groundwater.

- Include a map of tribal lands within the basin.

Interconnected Surface Waters

The identification of Interconnected Surface Waters (ISWs) is **insufficient**. ISWs were inadequately dismissed based on the incorrect assertion that the shallow aquifer is not a principal aquifer, despite the recognition in the Basin Setting section of the GSP that there is a likely connection between shallow groundwater and surface water. Groundwater in the shallow aquifer is likely providing baseflow to the Santa Clara River in this basin. The GSP states on p. 51: "In addition to groundwater production from the principal aquifers, discharge of small quantities of groundwater from the shallow alluvial aquifer to the lower reach of the Santa Clara River and possibly one other area in Mound Basin may contribute to groundwater-dependent ecosystems (GDEs)." SGMA defines principal aquifers as "aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems" [23 CCR § 351 (aa)].

The GSP states that it is unknown whether there is a connection between the shallow and underlying principle aquifers in the basin. Even if pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers that can support springs, surface water, and groundwater dependent ecosystems. This is because the goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits, and while groundwater pumping may not be currently occurring in a shallow aquifer, it could be in the future.

The GSP states on p. 67: "Data are not available to characterize the interconnection of Santa Clara River surface water and groundwater. Although the frequent perennial baseflow conditions imply that surface and groundwater is interconnected, it is not known specifically which groundwater in which units are connected and where." However, the GSP should not ignore ISWs just because there is a lack of data to support their characterization. The absence of evidence is not the evidence of absence. Therefore, potential ISWs are not being identified, described, nor managed in the GSP. Until a disconnection can be proven, include all potential ISWs in the GSP. This is necessary to assess whether surface water depletions caused by groundwater use are having an adverse impact on environmental beneficial users of surface water.

RECOMMENDATIONS

- Include the shallow groundwater system as a principal aquifer in this GSP to ensure adequate monitoring and management of this critical groundwater resource for current and future beneficial users.
- Provide depth-to-groundwater contour maps using the best practices presented in Attachment D, to aid in the determination of ISWs. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a DEM to estimate depth-to-groundwater contours across the

landscape. This will provide accurate contours of depth to groundwater along streams and other land surface depressions where GDEs are commonly found.

- Use seasonal data over multiple water year types to capture the variability in environmental conditions inherent in California's climate, when mapping ISWs.

- Reconcile ISW data gaps with specific measures (shallow monitoring wells (especially in the shallow aquifer), stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP.

Groundwater Dependent Ecosystems

The identification of Groundwater Dependent Ecosystems (GDEs) is **insufficient**. The GSP took initial steps to identify and map GDEs using the Natural Communities Commonly Associated with Groundwater dataset (NC dataset) and other sources. However, we found that mapped features in the NC dataset were improperly disregarded, as described below.

- The GSP uses the same incorrect rationale used in the ISW section to state that GDEs are not present in the Basin because they do not rely on groundwater from a principal aquifer. As noted above, GSP Regulations define principal aquifers as "aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems" [23 CCR §351(aa)] regardless of pumping rates. Shallow aquifers that have the potential to support well development, support ecosystems, or provide baseflow to streams are principal aquifers, even if the majority of the basin's pumping is occurring in deeper principal aquifers. If there are no data to characterize groundwater conditions in the shallow principal aquifer, then the GDE should be retained as a potential GDE and data gaps reconciled in the Monitoring Network section of the GSP.
- GDEs were incorrectly removed in areas adjacent to irrigated fields due to the presence of surface water. However, GDEs can rely on multiple water sources – including shallow groundwater receiving inputs from irrigation return flow from nearby irrigated fields - simultaneously and at different temporal/spatial scales. NC dataset polygons adjacent to irrigated land can still potentially be reliant on shallow groundwater aquifers, and therefore should not be removed solely based on their proximity to irrigated fields.

RECOMMENDATIONS

- Provide depth-to-groundwater contour maps, noting the best practices presented in Attachment D. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a DEM to estimate depth-to-groundwater contours across the landscape.

- If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons as "Potential GDEs" in the GSP until data gaps are reconciled in the monitoring network.

- In addition to providing maps of the vegetation and wetland communities from the NC dataset in the GSP area (as provided in Appendix G of the GSP), please also provide an inventory, map, or description of fauna (e.g., birds, fish, amphibian) species in the basin and note any threatened or endangered species. See Attachment C of this letter for a list of freshwater species located in the Mound Basin.

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Native Vegetation

Native vegetation is a water use sector that is required[2,3] to be included into the water budget. The integration of this ecosystem into the water budget is **insufficient**. The water budget did not include the current, historical, and projected demands of native vegetation. The omission of explicit water demands for native vegetation is problematic because key environmental uses of groundwater are not being accounted for as water supply decisions are made using this budget, nor will they likely be considered in project and management actions.

RECOMMENDATION
• Quantify and present all water use sector demands in the historical, current, and projected water budgets with individual line items for each water use sector, including native vegetation.

B. Engaging Stakeholders

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Stakeholder Engagement during GSP development

Stakeholder engagement during GSP development is **insufficient**. SGMA's requirement for public notice and engagement of stakeholders[4] is not fully met by the description in the Stakeholder Engagement Plan included in the GSP (Appendix D).

We acknowledge and commend the clear description of the inclusion of an environmental stakeholder on the governing board of the GSA. The Environmental Stakeholder Director is responsible for engaging environmental stakeholders within the Basin and representing environmental interests before the GSA, including during GSP implementation. However, the engagement plan describes only a minimum amount of outreach to DACs. Stakeholder engagement has primarily occurred via Ventura Water bill stuffers and newsletters, including materials provided in Spanish. Noted deficiencies in the stakeholder engagement process include:

- As the water supplier for DACs in the Basin, the City represented DAC interests through its participation on the MBGSA Board of Directors. However, it does not give more information about how their interests were represented.
- The opportunities for public involvement and engagement are limited to MBGSA regular board meetings, review of the MBGSA's website, and providing comments via the website.
- The GSP states that the GSA "has held several public workshops to provide in-depth discussion of the GSP and obtain stakeholder feedback. The workshops include polls to help facilitate public input on key issues and identify which outreach methods are most

[2] "'Water use sector' refers to categories of water demand based on the general land uses to which the water is applied, including urban, industrial, agricultural, managed wetlands, managed recharge, and native vegetation." [23 CCR §351(al)]

[3] "The water budget shall quantify the following, either through direct measurements or estimates based on data: (3) Outflows from the groundwater system by water use sector, including evapotranspiration, groundwater extraction, groundwater discharge to surface water sources, and subsurface groundwater outflow." [23 CCR §354.18]

[4] "A communication section of the Plan shall include a requirement that the GSP identify how it encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin." [23 CCR §354.10(d)(3)]

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effective." The GSP gives no further information about how the workshops were advertised or if DACs were engaged to attend.

- The GSP states that portions of the Barbareno-Ventureno Band of Chumash are located within the Mound Basin and the MBGSA will inform the Tribal Elder, Julie Tumamait, throughout the GSP development process and GSP implementation.However, there are no further details on the engagement with the tribe.
- Domestic well owners are specifically mentioned in the Stakeholder Engagement Plan as holders of overlying groundwater rights, however no information is provided other than stating that their participation is invited in the Agency's public meetings.
- The Stakeholder Engagement Plan does not include a plan for continual opportunities for engagement through the implementation phase of the GSP for DACs.

RECOMMENDATIONS

- Include a more detailed and robust Stakeholder Engagement Plan that details how the GSA will actively target and engage DAC community members during the remainder of the GSP development process and throughout the GSP implementation phase. Include plans to directly engage the DAC population for inclusion on the Board of Directors instead of having DACs represented by the City of Ventura. Refer to Attachment B for specific recommendations on Stakeholder Communication and Engagement.
- Conduct outreach at frequented locations such as farmers markets and schools across the plan area, providing translation services and technical assistance where needed. Refer to Attachment B for specific recommendations on how to actively engage community stakeholders.
- Consult and engage with the Barbareno-Ventureno Band of Chumash Tribe. Refer to "DWR guidance for engagement with tribal governments" for specific guidance.[5]

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C. Considering Beneficial Uses and Users When Establishing Sustainable Management Criteria and Analyzing Impacts on Beneficial Uses and Users

The consideration of beneficial uses and users when establishing sustainable management criteria (SMC) is **insufficient**. The consideration of potential impacts on all beneficial users of groundwater in the basin are required when defining undesirable results[6] and establishing minimum thresholds[7,8]

[5] DWR guidance on Engagement with Tribal Governments https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Guidance-Doc-for-SGM-Engagement-with-Tribal-Govt_ay_19.pdf

[6] "The description of undesirable results shall include [...] potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results." [23 CCR §354.26(b)(3)]

[7] "The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]

[8] "The description of minimum thresholds shall include [...] how state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the agency shall explain the nature of and the basis for the difference." [23 CCR §354.28(b)(5)]

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Disadvantaged Communities and Drinking Water Users

The GSP states that the City of Ventura (Ventura Water) serves DAC communities in the basin. It also states that there are domestic wells in the basin, but that the majority of these domestic well owners are *de minimus* users. It does not provide the location of the domestic wells, the screened interval, or the most recent reported date of well usage. Because the location of domestic wells is not provided in the GSP, the impacts to the domestic well user population are unknown. Because the GSP has not established SMC for the shallow principal aquifer, the GSP neither describes nor analyzes direct or indirect impacts on DACs or domestic drinking wells when defining undesirable results for chronic lowering of groundwater levels or water quality. Therefore, the SMC provided in the GSP are not protective of domestic drinking water well users.

RECOMMENDATIONS

Chronic Lowering of Groundwater Levels

- Establish chronic lowering of groundwater level SMC for the shallow principal aquifer that are protective of DACs and domestic well users. Even though the shallow principal aquifer is not currently pumped or treated for domestic drinking water, it could be in the future.
- Consider and evaluate the impacts of selected minimum thresholds and measurable objectives on drinking water users within the basin.

Degraded Water Quality

- Establish water quality SMC for the shallow principal aquifer that are protective of drinking water users. Even though the shallow principal aquifer is not currently pumped or treated for domestic drinking water, it could be in the future.
- Establish minimum thresholds at the representative monitoring wells that avoid the specific undesirable result of impacting water quality for potable use. For each of the two deep principal aquifers, the GSP states that undesirable results occur when all representative monitoring wells in a principal aquifer exceed the minimum threshold concentration for a constituent for two consecutive years. Because the minimum thresholds are set to the MCL, or in some cases higher than the Secondary MCL (see Table 4.1-02), this does not appear to satisfy the stated minimum threshold goal of protecting water quality for potable uses.
- Evaluate the cumulative or indirect impacts of proposed minimum thresholds on drinking water users, including domestic wells and municipal water suppliers. The GSP states that potential effects on municipal beneficial uses would be increased costs for treatment or blending to meet drinking water standards, however this is the only impact discussed.

Groundwater Dependent Ecosystems and Interconnected Surface Waters

Because the shallow aquifer is disregarded as a principal aquifer in the GSP, sustainable management criteria provided in the GSP do not consider potential impacts to environmental beneficial users. The GSP neither describes nor analyzes direct or indirect impacts on environmental users of groundwater or surface water when defining undesirable results. This is problematic because without identifying potential impacts to GDEs and beneficial users of interconnected surface waters, minimum thresholds may compromise, or even irreparably destroy, environmental beneficial users. Since potential GDEs are present in the basin, they must be considered when developing SMC for the basin. The comments above provide recommendations for re-evaluating the extent of GDEs and ISW in the basin by first considering the shallow aquifer as a principal aquifer.

RECOMMENDATIONS

- Establish SMC for the shallow principal aquifer that are protective of environmental uses and users. When defining undesirable results for chronic lowering of groundwater levels, water quality, and depletions of interconnected surface waters, please provide specifics on what biological responses (e.g., extent of habitat, growth, recruitment rates) would best characterize a significant and unreasonable impact to GDEs. Undesirable results to environmental users occur when 'significant and unreasonable' effects on beneficial users are caused by one of the sustainability indicators (i.e., chronic lowering of groundwater levels, degraded water quality, or depletion of interconnected surface water). Thus, potential impacts on environmental beneficial uses and users need to be considered when defining undesirable results[9] in the basin. Defining undesirable results is the crucial first step before the minimum thresholds[10] can be determined.

- For the interconnected surface water SMC, the undesirable results should include a description of potential impacts on instream habitats within ISWs when defining minimum thresholds in the basin[11]. The GSP should confirm that minimum thresholds for ISWs avoid adverse impacts to environmental beneficial users of interconnected surface waters as these environmental users could be left unprotected by the GSP (See Attachment C for a list of freshwater species in your basin). These recommendations apply especially to environmental beneficial users that are already protected under pre-existing state or federal law[6,12].

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2. Climate Change

The SGMA statute identifies climate change as a significant threat to groundwater resources and one that must be examined and incorporated in the GSPs. The GSP Regulations[13] require integration of climate change into the projected water budget to ensure that projects and management actions sufficiently account for the range of potential climate futures.

The integration of climate change into the projected water budget is **insufficient**. The GSP does incorporate climate change into the projected water budget using DWR change factors for 2030 and 2070. However, the GSP did not consider the 2070 extremely wet and extremely dry climate scenarios in the projected water budget. The GSP should clearly and transparently incorporate the extremely wet and

[9] "The description of undesirable results shall include [...] potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results". [23 CCR §354.26(b)(3)]

[10] The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]

[11] "The minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results." [23 CCR §354.28(c)(6)]

[12] Rohde MM, Seapy B, Rogers R, Castañeda X, editors. 2019. Critical Species LookBook: A compendium of California's threatened and endangered species for sustainable groundwater management. The Nature Conservancy, San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/Critical_Species_LookBook_91819.pdf

[13] "Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow." [23 CCR §354.18(e)]

15 dry scenarios provided by DWR into projected water budgets or select more appropriate extreme scenarios for their basins. While these extreme scenarios may have a lower likelihood of occurring, their consequences could be significant, therefore they should be included in groundwater planning.

We acknowledge and commend the inclusion of climate change into key inputs (precipitation, evaporation, surface water flow, and sea level inputs) of the projected water budget. Additionally, the sustainable yield is calculated based on the projected pumping for all three future projections (baseline, 2030, and 2070). However, if the water budgets are incomplete, including the omission of extremely wet and dry scenarios, then there is increased uncertainty in virtually every subsequent calculation used to plan for projects, derive measurable objectives, and set minimum thresholds. Plans that do not adequately include climate change projections may underestimate future impacts on vulnerable beneficial users of groundwater such as ecosystems and domestic well owners.

RECOMMENDATIONS

- Integrate extreme wet and dry scenarios into the projected water budget to form the basis for development of sustainable management criteria and projects and management actions.
- Climate change was addressed when describing the minimum threshold for seawater intrusion. We recommend incorporating climate change considerations into other projects and management actions.

3. Data Gaps

The consideration of beneficial users when establishing monitoring networks is **insufficient**. Our comments above note that the principal shallow aquifer was disregarded in the GSP. The lack of monitoring wells in the shallow aquifer and/or the lack of plans for future monitoring threatens GDEs, aquatic habitats, surface water users and shallow domestic well water. Potential GDEs are located in areas of the subbasin where no shallow groundwater monitoring currently exists or is proposed, leaving data gaps unfilled. Potential ISWs have been dismissed in the GSP, without proposed recommendations to improve ISW identification, mapping, and estimates of depletions. Appropriate monitoring is necessary so that groundwater conditions within GDEs and ISWs are characterized and surface-shallow groundwater interactions are fully integrated into the GSP.

Without adequate monitoring and identification of data gaps in the shallow aquifer, GDEs, ISWs, DACs, and domestic well users will remain unprotected by the GSP. The Plan therefore fails to meet SGMA's requirements for the monitoring network[14].

[14] "The monitoring network objectives shall be implemented to accomplish the following: [...] (2) Monitor impacts to the beneficial uses or users of groundwater." [23 CCR §354.34(b)(2)]

RECOMMENDATIONS

- Include representative monitoring sites (RMSs) in the shallow principal aquifer across the basin for all groundwater condition indicators. The GSP states that water quality in the shallow principal aquifer is poor, but provides no monitoring data. Prioritize proximity to GDEs and domestic wells when identifying new RMPs.
- Provide maps that overlay monitoring well locations with the locations of DACs, domestic wells, and GDEs to clearly identify potentially impacted areas.
- Evaluate how the gathered data will be used to identify and map GDEs and ISWs, and to identify DACs and shallow domestic well users that are vulnerable to undesirable results.
- Determine what ecological monitoring can be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the subbasin.

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4. Addressing Beneficial Users in Projects and Management Actions

The consideration of beneficial users when developing projects and management actions is **insufficient**. The GSP states there is no need for project and management actions to address gaps between current and projected sustainable yield. However, groundwater sustainability under SGMA is defined not just by sustainable yield, but by the avoidance of undesirable results for all beneficial users. These beneficial users such as GDEs, aquatic habitats, surface water users, DACs, and drinking water users were not sufficiently identified in the GSP. Therefore, potential project and management actions have not been designed or proposed to protect these vulnerable users of the shallow principal aquifer.

RECOMMENDATIONS

Because GDEs, aquatic habitats, surface water users, DACs, and shallow domestic well water users were not sufficiently identified in the GSP, please consider including the following related to potential project and management actions in the GSP:

- For GDEs and ISWs, recharge ponds, reservoirs and facilities for managed stormwater recharge can be designed as multiple-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. For guidance on how to integrate multi-benefit recharge projects into your GSP refer to the "Multi-Benefit Recharge Project Methodology Guidance Document"[15].

[15] The Nature Conservancy. 2021. Multi-Benefit Recharge Project Methodology for Inclusion in Groundwater Sustainability Plans. Sacramento. Available at: https://groundwaterresourcehub.org/sgma-tools/multi-benefit-recharge-project-methodology-guidance/