QUARTERLY IMPLEMENTATION EVALUATION – NORTHERN & CENTRAL DELTA-MENDOTA GSP

Quarter 2: July 2020 Through September 2020

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1. INTRODUCTION

1.1 Background

The Northern & Central Delta-Mendota Region Groundwater Sustainability Plan (GSP or Plan) was developed in a coordinated fashion along with five other GSPs in the Delta-Mendota Subbasin to comply with the Sustainable Groundwater Management Act of 2014 (SGMA). The Northern & Central Delta-Mendota Region GSP was prepared by the following Groundwater Sustainability Agencies (GSAs):

- Central Delta-Mendota GSA
- City of Patterson GSA
- DM-II GSA
- Northwestern Delta-Mendota GSA
- Oro Loma Water District GSA
- Patterson Irrigation District GSA
- West Stanislaus Irrigation District GSA
- Widen Water District GSA

The Northern & Central Delta-Mendota GSP was adopted by all eight GSAs by January 14, 2020 and was submitted to the California Department of Water Resources (DWR) on January 23, 2020 as one of six GSPs within the Subbasin. The six Delta-Mendota Subbasins GSP groups submitted the first consolidated Annual Report to DWR documenting implementation progress for Water Year 2019 on April 1, 2020.

In order to demonstrate progress towards achieving the sustainability goals established for the Delta-Mendota Subbasin, each GSA in the Delta-Mendota Subbasin is responsible for conducting monitoring activities, implementing projects and management actions, and filling data gaps identified in the GSP. The purpose of this report is to track progress in implementing these activities as documented in the Northern & Central Delta-Mendota Region GSP. This report summarizes implementation activities conducted by each of the eight GSAs in the Northern and Central Delta-Mendota Regions for the second quarter of GSP implementation, from July 2020 through September 2020.

1.2 Groundwater Sustainability Plan

The Northern & Central Delta-Mendota Region GSP meets all requirements of SGMA and contains the following chapters, with a brief description of each chapter's contents:

Executive Summary and Introduction – Describes the purpose of the GSP and introduces the Common Chapter developed to document required coordination between the six Delta-Mendota Subbasin GSPs.

Plan Area – Describes the Northern and Central Delta-Mendota Regions including jurisdictional boundaries, water resources monitoring and management programs, relevant land use plans and impacts to sustainable groundwater management, and elements of California Water Code Section 10727.4, including wellhead protection programs, conjunctive use programs/opportunities, water use efficiency practices, and relationships with state and regulatory agencies.

Governance and Administration – Includes description of GSAs participating in the GSP and their governing structure and procedures. Relevant agreements in forming the Northern Delta-Mendota and Central Delta-Mendota regions and their policies are included in addition to their governance structure. Subbasin-wide agreements are also described in this chapter, such as the Delta-Mendota Subbasin Coordination Agreement.

Outreach and Communication – Documents existing beneficial users of groundwater within the GSP area and the process for GSP development, including the decision-making process and comments received regarding the GSP during the public draft review period. Outreach methods such as noticing; opportunities for public engagement; outreach to social, cultural, and economic areas of the population; and methods for disseminating information are also described.

Basin Setting – The Basin Setting chapter includes four subsections: Hydrogeologic Conceptual Model (HCM), Groundwater Conditions, Water Budgets, and Management Areas. The HCM section provides the geologic and hydrogeologic information needed to understand how water moves throughout the Plan area and the Delta-Mendota Subbasin. This section includes information about geological formations, aquifers, structural features, and topography. The Groundwater Conditions section describes historical groundwater conditions in the Plan area, including data from January 1, 2015 to recent conditions. Groundwater trends, groundwater levels, hydrographs, contour maps, estimated change in groundwater storage, groundwater quality issues, land subsidence, and interconnected surface water systems over historical conditions through present day are presented in this section. The Water Budget section describes the data used to develop the required historic water budget, current water budget, and projected water budgets. This section also discusses the methods used in developing estimates for each water budget scenario. Sustainable yield is also described in this section. The Management Area section describes the management areas established to facilitate implementation of the GSP and how setting different sustainable management criteria than the Plan area avoids undesirable results and aids in achieving sustainability in the Subbasin by 2040.

Sustainable Management Criteria – Includes the sustainability goal established for the Delta-Mendota Subbasin that will be achieved by 2040. Describes and identifies undesirable results as well as potential causes and effects of undesirable results for each applicable sustainability indicator. Qualitative and quantitative minimum thresholds, measurable objectives, and interim milestones are established for each representative monitoring point for each applicable sustainability indicator.

Sustainability Implementation – This chapter includes the following subsections: Projects and Management Actions and Monitoring. The Projects and Management Actions section describes projects and management actions that will be implemented within the first five years of GSP implementation (Tier 1), implemented within 5 to 10 years of GSP implementation (Tier 2), and 10 years or more after the state of GSP implementation (Tier 3). The legal authority, costs, public noticing procedures, permitting requirements, and benefits and evaluation or benefits for each project are described. The Monitoring section describes the selected monitoring sites, monitoring protocols and data reporting requirements, frequency and timing of monitoring, spatial density, data gaps, and plans to fill data gaps for all relevant sustainability indicators.

Plan Implementation – Includes the implementation schedule for the GSP as well as projects and management actions, costs for implementation and funding sources, and description of the contents of the required Annual Reports and 5-Year Evaluation Reports.

Technical Studies – A table that summarizes the technical studies used in the development of the GSP.

2. MONITORING STATUS

2.1 Monitoring Networks

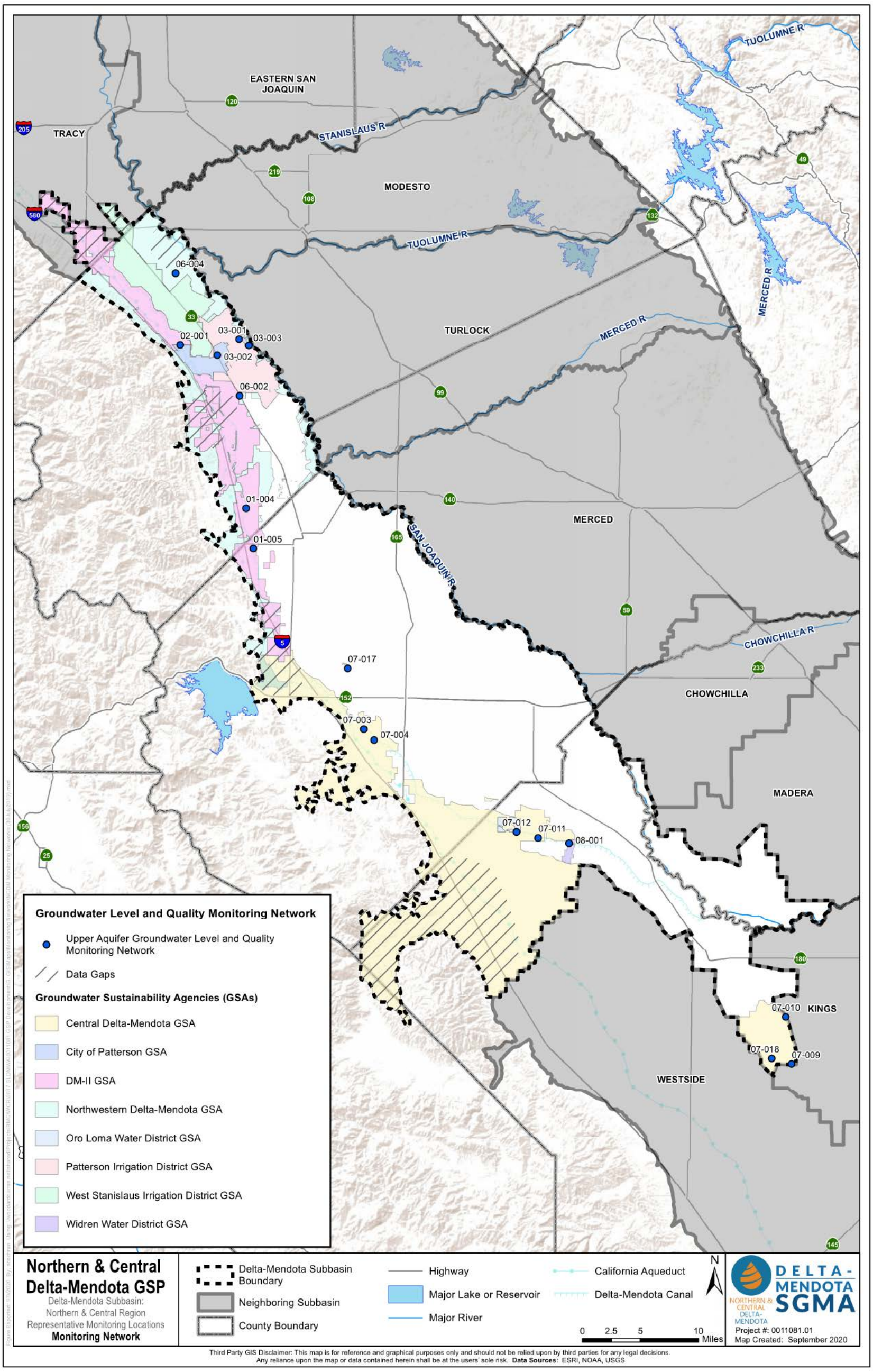
Monitoring networks for representative monitoring locations were established as part of the GSP for the following sustainability indicators:

- Chronic lowering of groundwater levels (also used as proxy for reduction of groundwater storage)
- Degraded water quality
- Land subsidence
- Depletions of interconnected surface waters

All monitoring sites established as part of the GSP are representative monitoring sites. **Note:** DMS ID 08-001 modified from 07-013 to reflect monitoring responsibilities performed by Widren Water District GSA.

Figure 2-1 through **Figure 2-4** show the representative monitoring locations for each applicable sustainability indicator and **Table 1** through **Table 5** summarize key information about each representative monitoring site for each sustainability indicator, including the monitoring entity.

The chronic lowering of groundwater levels monitoring network is used as a proxy to monitor the reduction of groundwater storage sustainability indicator. The chronic lowering of groundwater levels and degraded water quality monitoring networks contain all of the same wells.



Note: DMS ID 08-001 modified from 07-013 to reflect monitoring responsibilities performed by Widren Water District GSA.

Figure 2-1. Groundwater Level and Groundwater Quality Monitoring Network, Upper Aquifer

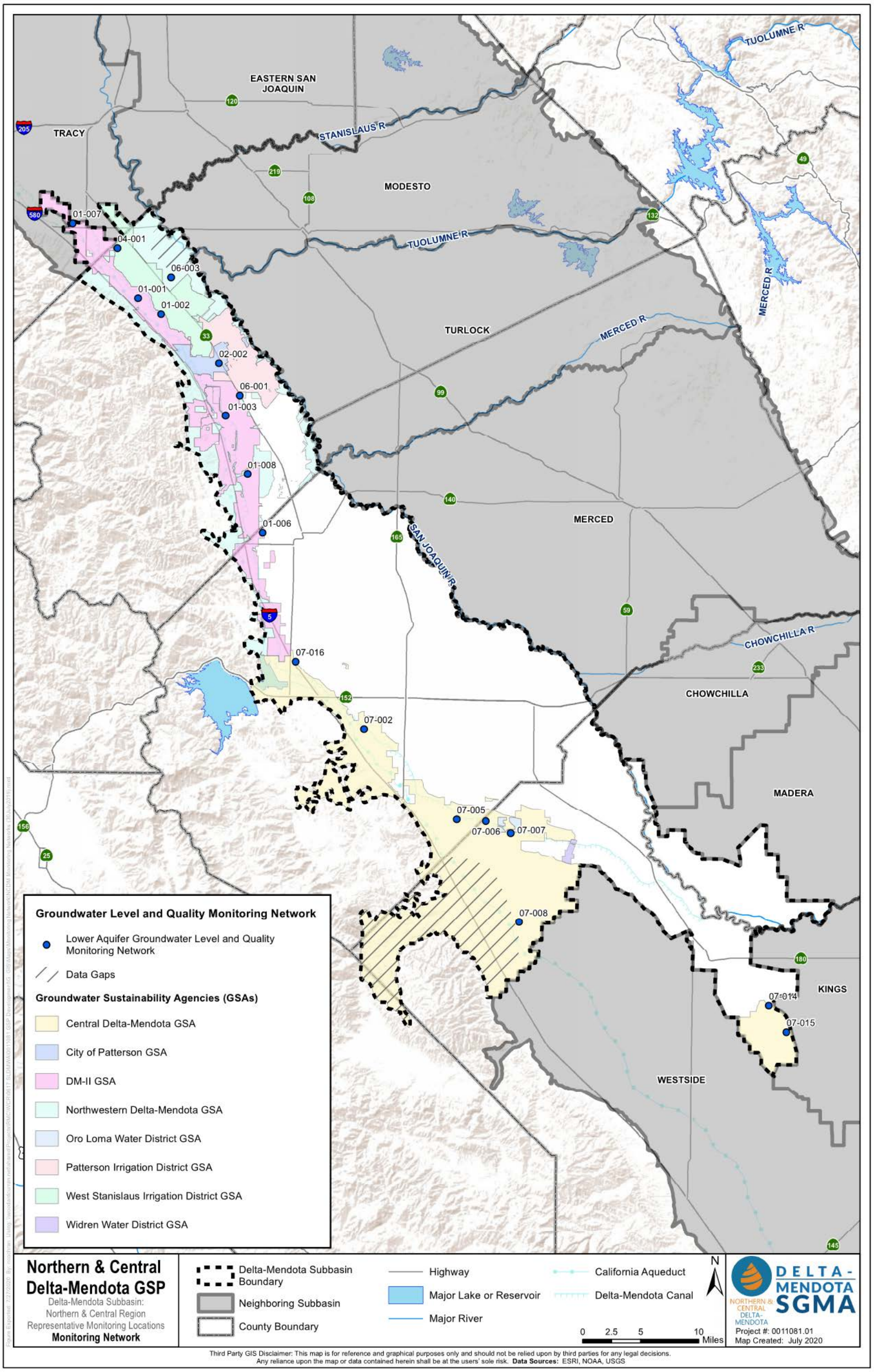


Figure 2-2. Groundwater Level and Groundwater Quality Monitoring Network, Lower Aquifer

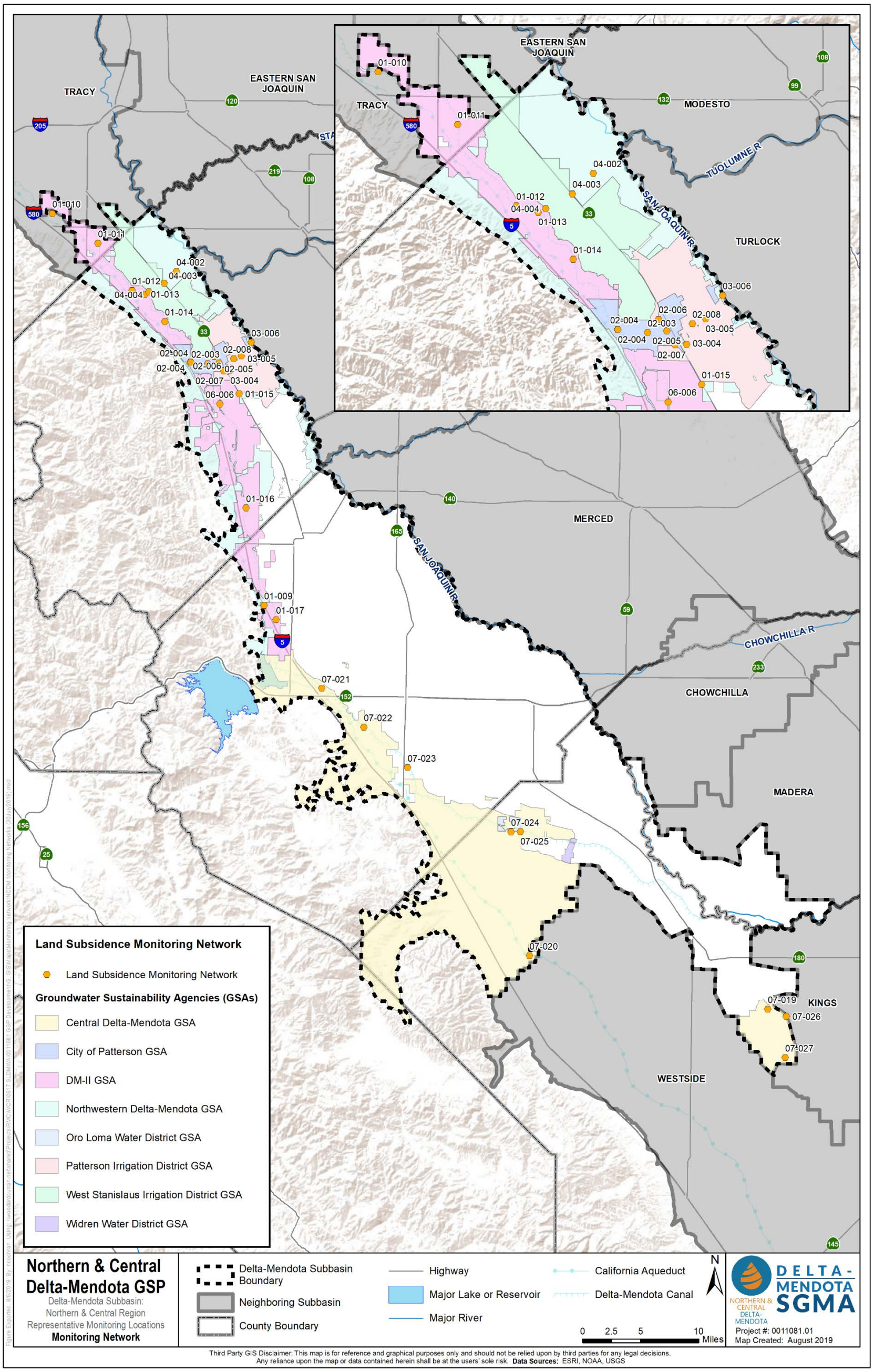


Figure 2-3. Land Subsidence Monitoring Network

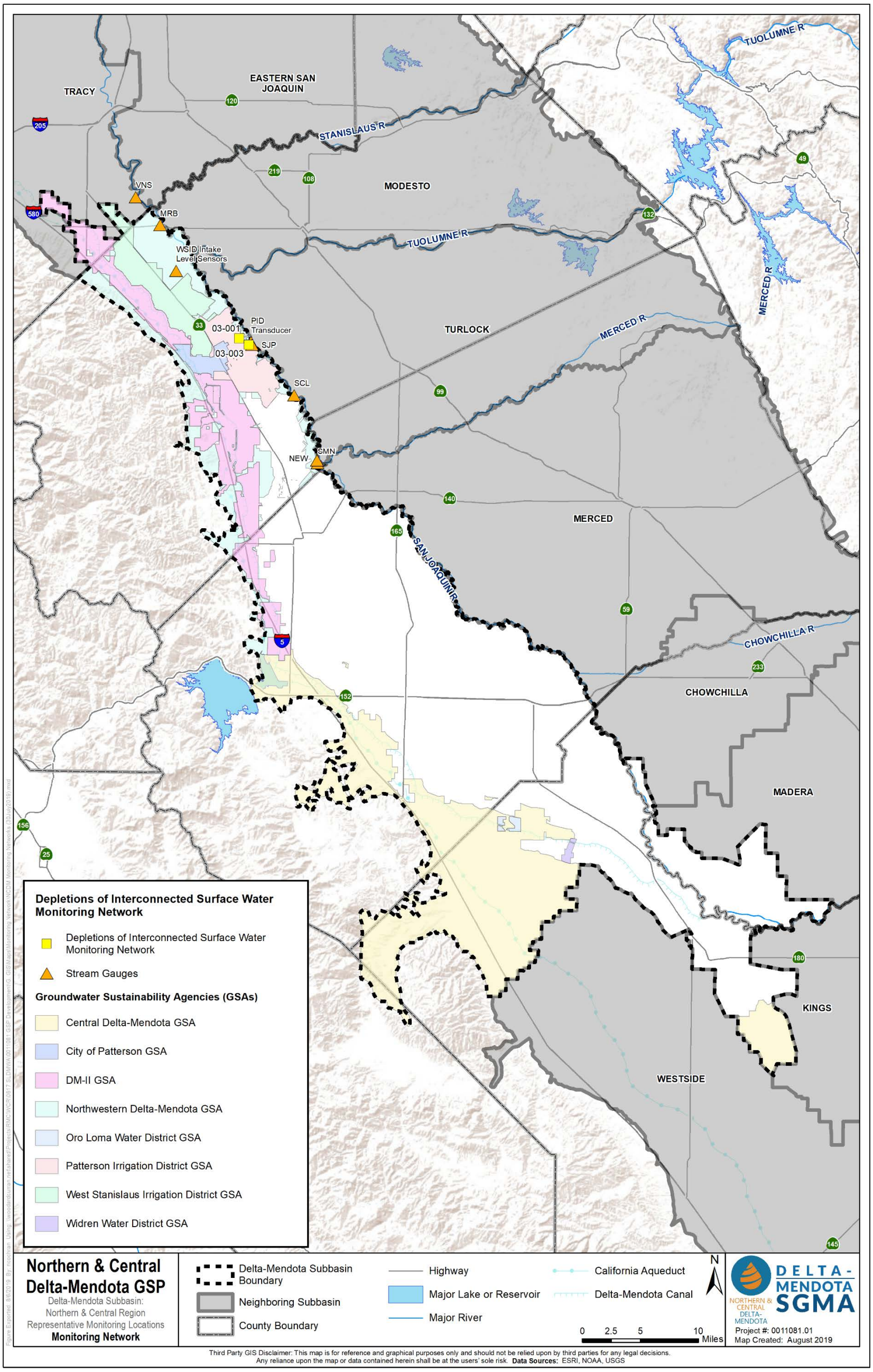


Figure 2-4. Depletions of Interconnected Surface Water Monitoring Network

Table 1. Groundwater Level and Groundwater Quality Monitoring Network, Upper Aquifer

DMS ID	State Well Number	CASGEM ID (if applicable)	Local ID	Status	Well Use	Responsible Monitoring Entity – Groundwater Levels	Responsible Monitoring Entity – Groundwater Quality	Monitoring Program	County	Depth (ft)	Screen Intervals (ft)
02-001	05S07E15N002M	374934N1211934W001	MP037.32L	Active	Irrigation	SLDMWA	City of Patterson	Delta-Mendota Canal Pump-in Program (United States Bureau of Reclamation [USBR]); CASGEM (Mandatory)	Stanislaus	360	150-360
06-004			MP031.31L1-L2Well1	Unknown	Unknown	SLDMWA	Stanislaus County	Delta-Mendota Canal Pump-in Program (USBR)	Stanislaus	Unknown	140-160; 200-240
03-001		375015N1211011W001	MW-2	Active	Monitoring	SLDMWA	Patterson ID	CASGEM (Mandatory)	Stanislaus	250	220 - 250
03-002			MW-3	Unknown	Monitoring	Patterson ID	Patterson ID	Local agency	Stanislaus	260	220 - 250
03-003	05S/08E-16R		WSJ003	Unknown	Irrigation	Patterson ID	Patterson ID	Groundwater Quality Trend Monitoring Program (Irrigated Lands Regulatory Program [ILRP])	Stanislaus	255	130 - 250
06-002	06S08E09E003M	374316N1210994W003	P259-3	Active	Monitoring	SLDMWA	USGS/Stanislaus County	CASGEM (Mandatory)	Stanislaus	115	95 - 115
01-004	07S08E28R002M	372907N1210875W002	MC10-2	Active	Monitoring	SLDMWA	USGS/Del Puerto WD	CASGEM (Mandatory)	Stanislaus	135	115 - 135
01-005	08S08E15G001M	372424N1210754W001	MP058.28L	Active	Irrigation	SLDMWA	Del Puerto WD	Delta-Mendota Canal Pump-in Program (USBR); CASGEM (Mandatory)	Merced	170	120 - 150
07-017			Well 1	Unknown	Public Supply	SLDMWA	Volta CSD	Local agency	Merced	Unknown	170-253
07-003	10S10E32L002M	370173N1208999W002	MC15-2	Active	Monitoring	SLDMWA	USGS/San Luis WD	CASGEM (Mandatory)	Merced	160	150 - 160
07-004	11S10E04L001M		MP081.08R	Unknown	Unknown	SLDMWA	San Luis WD	Delta-Mendota Canal Pump-in Program (USBR)	Merced	Unknown	140-200 (assumed)
07-011		368835N1206270W001	MP099.24L	Inactive	Irrigation	SLDMWA	Mercy Springs WD	Delta-Mendota Canal Pump-in Program (USBR); CASGEM (Voluntary)	Fresno	405	300-390
07-012	12S/12E-16B		GDA003	Unknown	Irrigation	Panoche WD	Panoche WD	Groundwater Quality Trend Monitoring Program (ILRP)	Fresno	410	270 - 390
08-001 [1]			MP102.04R	Active	Irrigation	SLDMWA	Widren WD	Delta-Mendota Canal Pump-in Program (USBR)	Fresno	600	220-240; 280-340
07-010		366500N1202500W001	KRCDTID02	Active	Irrigation	Tranquillity ID	Tranquillity ID	CASGEM (Mandatory)	Fresno	540	295-535
07-009		366000N1202300W001	KRCDTID03	Active	Irrigation	Tranquillity ID	Tranquillity ID	CASGEM (Mandatory)	Fresno	543	434-510
07-018	15S/16E-20		WSJ001	Unknown	Domestic	Tranquillity ID	Tranquillity ID	Groundwater Quality Trend Monitoring Program (ILRP)	Fresno	205	165 - 205

[1] DMS ID modified from 07-013 to reflect monitoring responsibilities performed by Widren Water District GSA

Table 2. Groundwater Level and Groundwater Quality Monitoring Network, Lower Aquifer

DMS ID	State Well Number	CASGEM ID (if applicable)	Local ID	Status	Well Use	Responsible Monitoring Entity – Groundwater Levels	Responsible Monitoring Entity – Groundwater Quality	Program	County	Depth (ft)	Screen Intervals (ft)
01-007			MP021.12L	Unknown	Unknown	SLDMWA	Del Puerto WD	Delta-Mendota Canal Pump-in Program (USBR)	San Joaquin	Unknown	400-570 (assumed)
01-001	04S06E36C001M	375509N1212609W001	MP030.43R	Inactive	Irrigation	SLDMWA	Del Puerto WD	Delta-Mendota Canal Pump-in Program (USBR); CASGEM (Mandatory)	Stanislaus	475	230 - 475
01-002	05S07E05F001M	375313N1212242W001	MP033.71L	Inactive	Irrigation	SLDMWA	Del Puerto WD	Delta-Mendota Canal Pump-in Program (USBR); CASGEM (Mandatory)	Stanislaus	510	235 - 475
06-003		375774N1212096W001	WSID 3	Active	Monitoring	SLDMWA	West Stanislaus WD	CASGEM (Mandatory)	Stanislaus	400	280 - 380
02-002			WELL 02 - NORTH 5TH STREET	Unknown	Public Supply	City of Patterson	City of Patterson	Local agency	Stanislaus	360	170-356
06-001	06S08E09E001M	374316N1210994W001	P259-1	Active	Monitoring	SLDMWA	USGS/Stanislaus County	CASGEM (Mandatory)	Stanislaus	430	390 - 410
01-003	06S08E20D002M	374061N1211212W001	MP045.78R	Inactive	Irrigation	SLDMWA	Del Puerto WD	Delta-Mendota Canal Pump-in Program (USBR); CASGEM (Mandatory)	Stanislaus	721	218 - 242; 290 - 346; 353 - 358; 418 - 480; 490 - 538; 562 - 550; 600 - 595; 658 - 610
04-001		376129N1212942W001	121	Active	Irrigation	SLDMWA	West Stanislaus WD	CASGEM (Mandatory)	Stanislaus	600	400 - 570
01-008			MP051.66L	Unknown	Unknown	SLDMWA	Del Puerto WD	Delta-Mendota Canal Pump-in Program (USBR)	Stanislaus	Unknown	290-470 (assumed)
01-006		372604N1210611W001	91	Active	Irrigation	SLDMWA	Del Puerto WD	CASGEM (Mandatory)	Merced	260	120 - 210
07-016			Well 01	Unknown	Public Supply	Santa Nella County WD	Santa Nella County WD	Local agency	Merced	Unknown	185-225
07-002	10S10E32L001M	370173N1208999W001	MC15-1	Active	Monitoring	SLDMWA	USGS/San Luis WD	CASGEM (Mandatory)	Merced	355	335 - 355
07-005	12S11E03Q001M	369097N1207554W001	MP091.68R	Inactive	Irrigation	SLDMWA	Pacheco WD	Delta-Mendota Canal Pump-in Program (USBR); CASGEM (Mandatory)	Merced	615	425 - 455; 495 - 615
07-006	12S12E07E001M	369044N1207092W001	MP094.26L	Inactive	Irrigation	SLDMWA	Eagle Field WD	Delta-Mendota Canal Pump-in Program (USBR); CASGEM (Mandatory)	Fresno	840	440 - 600; 640 - 720
07-007	12S12E16E003M	368896N1206702W001	MC18-1	Active	Monitoring	SLDMWA	USGS/Panoche WD	CASGEM (Mandatory)	Fresno	550	530 - 550
07-008	13S12E22F001M	367885N1206510W001	PWD 48	Active	Irrigation	SLDMWD	Panoche WD	CASGEM (Mandatory)	Fresno	1,002	542 - 982
07-013 (pending[1])			TBD	Monitoring		SLWD	San Luis WD	TSS-constructed nested monitoring well	Fresno		
07-014			TW-4	Unknown	Monitoring	Tranquillity ID	Tranquillity ID	Local agency	Fresno	690	650-690
07-015			TW-5	Unknown	Nested Monitoring	Tranquillity ID	Tranquillity ID	Local agency	Fresno	630	630-670

[1] The new TSS-constructed nested well, located in San Luis Water District, will be designated as the new 07-013 in the future monitoring network

Table 3. Land Subsidence Monitoring Network

DMS ID	Local ID	Monitoring Agency	Site Type	County	Management Area	Monitoring Frequency	GSA/Agency
02-003	Floragold Well	City of Patterson	Benchmark	Stanislaus	N/A	Every other year during even years	City of Patterson
02-008	Well 11	City of Patterson	Benchmark	Stanislaus	N/A	Every other year during even years	City of Patterson
02-005	Well 2	City of Patterson	Benchmark	Stanislaus	N/A	Every other year during even years	City of Patterson
02-006	Well 4	City of Patterson	Benchmark	Stanislaus	N/A	Every other year during even years	City of Patterson
02-007	Well 6	City of Patterson	Benchmark	Stanislaus	N/A	Every other year during even years	City of Patterson
03-004	Locust Avenue Well	Patterson Irrigation District	Benchmark	Stanislaus	WSID-PID	Baseline survey in 2019; Subsequent surveys in 2020 and 2023	City of Patterson
03-005	Pumping Plant No. 2	Patterson Irrigation District	Benchmark	Stanislaus	WSID-PID	Baseline survey in 2019; Subsequent surveys in 2020 and 2023	Patterson ID
03-006	River Station	Patterson Irrigation District	Benchmark	Stanislaus	WSID-PID	Baseline survey in 2019; Subsequent surveys in 2020 and 2023	Patterson ID
01-010	Subsidence Monitoring Point #1	USBR / SLDMWA	Benchmark	Stanislaus	N/A	Every other year during even years	Outside subbasin, closest to DM-II (DPWD)
01-011	Subsidence Monitoring Point #2	USBR / SLDMWA	Benchmark	Stanislaus	N/A	Every other year during even years	DM-II (DPWD)
01-012	Subsidence Monitoring Point #3	USBR / SLDMWA	Benchmark	Stanislaus	N/A	Every other year during even years	DM-II (DPWD)
01-013	Subsidence Monitoring Point #4	USBR / SLDMWA	Benchmark	Stanislaus	N/A	Every other year during even years	DM-II (DPWD)
01-014	Subsidence Monitoring Point #5	USBR / SLDMWA	Benchmark	Stanislaus	N/A	Every other year during even years	DM-II (DPWD)
02-004	Subsidence Monitoring Point #6	USBR / SLDMWA	Benchmark	Stanislaus	N/A	Every other year during even years	DM-II (DPWD)
04-002	WSID 1	West Stanislaus Irrigation District	Benchmark	Stanislaus	WSID-PID	Baseline survey in 2019; Subsequent surveys in 2020 and 2023	West Stanislaus ID
04-003	WSID 11	West Stanislaus Irrigation District	Benchmark	Stanislaus	WSID-PID	Baseline survey in 2019; Subsequent surveys in 2020 and 2023	West Stanislaus ID
04-004	WSID 21	West Stanislaus Irrigation District	Benchmark	Stanislaus	WSID-PID	Baseline survey in 2019; Subsequent surveys in 2020 and 2023	West Stanislaus ID
01-015	Subsidence Monitoring Point #7	USBR / SLDMWA	Benchmark	Stanislaus	N/A	Every other year during even years	DM-II (DPWD)
06-006	Subsidence Monitoring Point #8	USBR / SLDMWA	Benchmark	Stanislaus	N/A	Every other year during even years	Northwestern Delta-Mendota (Stanislaus Co.)
01-016	Subsidence Monitoring Point #9	USBR / SLDMWA	Benchmark	Stanislaus	N/A	Every other year during even years	DM-II (DPWD)
01-017	Subsidence Monitoring Point #10	USBR / SLDMWA	Benchmark	Merced	N/A	Every other year during even years	DM-II (DPWD)
07-021	Subsidence Monitoring Point #11	USBR / SLDMWA	Benchmark	Merced	N/A	Every other year during even years	Central Delta-Mendota (San Luis WD)
01-009	P252	University NAVSTAR Consortium (UNAVCO)	CGPS	Merced	N/A	Every other year during even years	DM-II (DPWD)
07-022	Subsidence Monitoring Point #12	USBR / SLDMWA	Benchmark	Merced	N/A	Every other year during even years	Central Delta-Mendota (San Luis WD)
07-023	Subsidence Monitoring Point #13	USBR / SLDMWA	Benchmark	Merced	N/A	Every other year during even years	Outside NCDM Region, closest to San Luis WD
07-020	104.20-R	San Luis Water District	Benchmark	Fresno	N/A	Every other year during even years	Central Delta-Mendota (San Luis WD)
07-024	Subsidence Monitoring Point #14	USBR / SLDMWA	Benchmark	Fresno	N/A	Every other year during even years	Central Delta-Mendota (Panoche WD)
07-025	Subsidence Monitoring Point #15	USBR / SLDMWA	Benchmark	Fresno	N/A	Every other year during even years	Central Delta-Mendota (Panoche WD)
07-019	AG-24	Tranquillity Irrigation District	Benchmark	Fresno	TRID	Annual	Central Delta-Mendota (Tranquillity ID)
07-026	TID A	Tranquillity Irrigation District	Benchmark	Fresno	TRID	Annual	Central Delta-Mendota (Tranquillity ID)
07-027	TID B	Tranquillity Irrigation District	Benchmark	Fresno	TRID	Annual	Central Delta-Mendota (Tranquillity ID)

Table 4. Depletions of Interconnected Surface Water Monitoring Network

DMS ID	State Well Number	CASGEM ID (if applicable)	Local ID	Status	Well Use	Responsible Monitoring Entity – Groundwater Levels	Responsible Monitoring Entity – Groundwater Quality	Monitoring Program	County	Depth (ft)	Screen Intervals (ft)
03-001		375015N1211011W001	MW-2	Active	Monitoring	SLDMWA	Patterson ID	CASGEM (Mandatory)	Stanislaus	250	220 - 250
03-003	05S/08E-16R		WSJ003	Unknown	Irrigation	Patterson ID	Patterson ID	Groundwater Quality Trend Monitoring Program (ILRP)	Stanislaus	255	130 - 250

Table 5. Selected Stream Gauges

Stream Gauge ID	Description	Agency	River Discharge			River Stage		
			First Measurement Year	Last Measurement Year	Measurement Frequency	First Measurement Year	Last Measurement Year	Measurement Frequency
SMN	San Joaquin River above Merced River near Newman	United States Geological Survey	2010	present	15-minute intervals (computed)	2010	present	15-minute intervals
NEW	San Joaquin River near Newman	United States Geological Survey	1995	present	15-minute intervals (computed)	1984	present	15-minute intervals
SCL	San Joaquin River near Crows Landing	United States Geological Survey	2004	present	15-minute intervals (computed)	2004	present	15-minute intervals
SJP	San Joaquin River near Patterson	California Data Exchange Center (DWR)	1997	present	15-minute intervals	1997	present	15-minute intervals
MRB	San Joaquin River near Maze Rd Bridge	California Data Exchange Center (DWR)	2006	present	15-minute intervals (computed)	2006	present	15-minute intervals
VNS	San Joaquin River near Vernalis	California Data Exchange Center (DWR) and United States Geological Survey	1984	present	15-minute intervals	1995	present	15-minute intervals
PID Transducer		Patterson Irrigation District	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
WSID Pumping Plant 1 Intake Level Sensors	At end of gravity-fed canal, two miles inland from San Joaquin River.	West Stanislaus Irrigation District	Not measured	Not measured	Not measured	2013	present	15-second intervals

2.2 Monitoring Protocols

The following monitoring and reporting protocols apply to all categories of information required of a GSP under SGMA, unless otherwise indicated:

1. Water volumes shall be reported in acre-feet.
2. Surface water flow shall be reported in cubic feet per second.
3. Groundwater flow shall be reported in acre-feet per year.
4. Field measurements of elevations of groundwater, surface water, and land surface shall be measured and reported in feet to an accuracy of at least 0.1 feet relative to the North American Vertical Datum of 1988 (NAVD88), or another national standard that is convertible to NAVD88, and the method of measurement described.
5. Reference point (RP) elevations shall be measured and reported in feet to an accuracy of 0.1 feet, or the best available information, relative to NAVD88 or another national standard that is convertible to NAVD88, and the method of measurement described.
6. Geographic locations shall be reported in Global Positioning System (GPS) coordinates by latitude and longitude in decimal degree to a minimum accuracy of 30 feet relative to North American Datum of 1983 (NAD83) or another national standard that is convertible to NAD83.

Monitoring Sites

The following protocols will be applied to all monitoring sites included in the Northern & Central Delta-Mendota Region GSP monitoring networks for all sustainability indicators:

1. Long-term access agreements that include year-round site access to allow for increased monitoring frequency.
2. A unique site identification number and narrative description of the site location.
3. A description of the type of monitoring, type of measurement taken, and monitoring frequency shall be documented.
4. Location, elevation of the ground surface, and identification and description of the reference point shall be documented.
5. A description of the standards used to install the monitoring site. Sites that do not conform to Best Management Practices (BMPs) shall be identified and the nature of the divergence from BMPs described in the monitoring site file.
6. A modification log is to be kept in order to track all modifications to the monitoring site.

Wells

The following standards apply to wells:

1. Wells used to monitor groundwater conditions shall be constructed according to applicable construction standards, and the following information shall be provided in both tabular and geodatabase-compatible shapefile form:

    a. California Statewide Groundwater Elevation Monitoring (CASGEM) well identification number, if available. If a CASGEM well identification number has not been issued, appropriate well information shall be entered on forms made available by the California Department of Water Resources (DWR).

    b. Well location, elevation of the ground surface and reference point, including a description of the reference point.

    c. A description of the well use (such as public supply, irrigation, domestic, monitoring, or other type of well), whether the well is active or inactive, and whether the well is a single, clustered, nested, or other type of well.

    d. Casing perforations, borehole depth, and total well depth.

    e. Well completion reports, if available, from which the names of private owners have been redacted.

    f. Geophysical logs, well construction diagrams, or other relevant information, if available.

    g. Identification of principal aquifers monitored.

    h. Other relevant well construction information, such as well capacity, casing diameter, or casing modifications, as available.

2. If an agency relies on wells that lack casing perforations, borehole depth, or total well depth information to monitor groundwater conditions as part of a GSP, the agency shall describe a schedule for acquiring monitoring wells with the necessary information or demonstrate to the DWR that such information is not necessary to understand and manage groundwater in the basin.

Maps

Maps submitted by the Northern and Central Delta-Mendota Regions' GSAs will meet the following requirements:

1. Data layers, shapefiles, geodatabases, and other information provided with each map shall be submitted electronically to the DWR.

2. Maps shall be clearly labeled and contain a level of detail to ensure that the map is informative and useful.

3. The datum shall be clearly identified on the maps or in an associated legend.

Hydrographs

Hydrographs submitted by the Northern and Central Delta-Mendota Regions' GSAs shall meet the following requirements:

1. Hydrographs shall be submitted electronically to the Department in accordance with the procedures described in Article 4, Procedures of the GSP Regulations.
2. Hydrographs shall include a unique site identification number and the ground surface elevation for each site.
3. Hydrographs shall use the same datum and scaling to the greatest extent practical.

Groundwater and Surface Water Models

Groundwater and surface water models used shall meet the following standards:

1. The model shall include publicly available supporting documentation.
2. The model shall be based on field or laboratory measurements, or equivalent methods that justify the selected values, and calibrated against site-specific field data.
3. Groundwater and surface water models developed in support of a GSP after the effective date of the GSP regulations shall consist of public domain open-source software.

Data Management System

Data collected by the Northern and Central Delta-Mendota Regions' GSAs are entered into a Subbasin-wide data management system (DMS) that is capable of storing and reporting information relevant to the development or implementation of the coordinated GSP and monitoring of the Delta-Mendota Subbasin.

2.2.1 Sustainability Indicator-Specific Monitoring Protocols

Monitoring and reporting protocols specific to each sustainability indicator are documented in **Section 7.2.5.1.2** (Groundwater Levels), **Section 7.2.5.4.2** (Groundwater Quality), **Section 7.2.5.5.3** (Land Subsidence), and **Section 7.2.5.6.2** (Depletions of Interconnected Surface Water) of the Northern & Central Delta-Mendota Region GSP. Additional details about monitoring protocols can be found in **Appendix F – Quality Assurance Program Plan** of the GSP.

2.3 Status and Results

Annual groundwater quality sampling and monitoring for Water Year 2020 took place between May and August 2020. The results for TDS, nitrate as N, and boron are shown in **Table 6**. Nineteen of the 35 representative groundwater quality monitoring wells (11 Upper Aquifer wells and eight Lower Aquifer wells) were sampled during the designated monitoring period during Water Year 2020. Access issues, lack of operational pumps or sampling ports, and miscommunication in monitoring responsibilities were cited as the primary reasons for missing groundwater quality monitoring results. Woodard & Curran, San Luis & Delta-Mendota Water Authority, and EKI will conduct individual meetings with the designated groundwater quality monitoring entities throughout the Northern and Central Delta-Mendota Regions during October and November to discuss challenges faced during spring 2020 groundwater level and summer 2020 groundwater quality monitoring and any required modifications to the representative monitoring networks.

Seasonal low groundwater level monitoring began in September 2020 and will conclude in October 2020. Hydrographs showing historic data through the most recent seasonal high groundwater level measurement (between February and April 2020) for all representative wells in the chronic lowering of groundwater levels monitoring network are included in **Appendix B**. Results from the seasonal low groundwater monitoring event will be included in the next Quarterly Implementation Evaluation covering the period from October through December 2020.

Land subsidence monitoring will take place before the end of calendar year 2020 at all representative monitoring sites. Monitoring for depletions of interconnected surface water include two wells in the chronic lowering of groundwater levels monitoring network and stream gauge data at select sites will be collected on a periodic basis.

Aside from monitoring at representative monitoring sites, several GSAs have or plan to perform additional monitoring as follows:

- Patterson Irrigation District GSA will monitor seven wells (three of which are representative monitoring wells) on a monthly basis for groundwater levels.
- DM-II GSA will monitor approximately 20 wells for monthly groundwater levels that are not in the representative monitoring network as part of the Delta-Mendota Canal Groundwater Pump-in Program.
- West Stanislaus Irrigation District GSA will sample five additional wells not in the representative monitoring network for groundwater levels and increase sampling to a monthly basis. Additionally, West Stanislaus Irrigation District GSA received groundwater quality data from Westley Community Services District in May 2020 that will be used to assess regional groundwater quality.
- Operational wells are sampled regularly for groundwater levels by the landowner within Widren Water District GSA with plans to increase sampling frequency to monthly. Operational wells within Widren Water District GSA are also sampled annually for groundwater quality by the landowner.
- City of Patterson GSA collects weekly water level data from nine additional wells outside of the representative monitoring network and groundwater quality samples per Title 22 from six wells outside of the representative monitoring network.
- Little Panoche Creek nested monitoring well was installed using Technical Support Services (TSS) funds from DWR in July 2020 and will be monitored by San Luis Water District.
- Panoche Water District is currently in the process of identifying new land subsidence monitoring sites to tie into the Delta-Mendota Canal survey performed by the US Bureau of Reclamation every other year on the even year.

2.4 Proposed Changes to the Representative Monitoring Network

As noted in **Table 6**, well 07-006 was unable to be monitored for water quality during the summer 2020 monitoring event due to well inactivity and high concentration of boron with nowhere to dispose of purge water. Eagle Field Water District instead conducted water quality sampling at MP093.27L (locally referred to as Well 500) in May 2020. Eagle Field Water District has requested a revision to the representative groundwater level and groundwater quality monitoring network for the lower aquifer, removing 07-006 and replacing it with MP093.27L (depth = 647.5 feet, screened between 438.9 and 600.4 feet). Woodard & Curran will facilitate this requested modification to the representative monitoring network in the Delta-Mendota DMS and DWR's SGMA Portal and recalculate sustainable management criteria, where this modification will be documented in the Water Year 2021 Annual Report. The hydrograph for MP093.27L is shown in **Figure 2-5**.

Table 6. Annual Water Quality Monitoring Results for Water Year 2020

DMS ID	State Well Number	CASGEM ID (if applicable)	Local ID	Status	Well Use	Aquifer	Sample Date	TDS Result (mg/L)	Nitrate as N Result (mg/L)	Boron Result (mg/L)	If not sampled, why?	Comments
02-001	05S07E15N002M	374934N1211934W001	MP037.32L	Active	Irrigation	Upper	-	-	-	-	City didn't have access to well and SLDMWA says well hasn't been operational for 4-7 years	
06-004			MP031.31L1-L2Well1	Unknown	Unknown	Upper	-	-	-	-	Non-operational	
03-001		375015N1211011W001	MW-2	Active	Monitoring	Upper	7/21/2020	1,530	11.1	0.946		
03-002			MW-3	Unknown	Monitoring	Upper	-	-	-	-	Wires got crossed and sampled a different well; Homeless problem near MW-3	
03-003	05S/08E-16R		WSJ003	Unknown	Irrigation	Upper	7/21/2020	1,850	0.28	1.03		
06-002	06S08E09E003M	374316N1210994W003	P259-3	Active	Monitoring	Upper	8/24/2020	660	12	0.4		
01-004	07S08E28R002M	372907N1210875W002	MC10-2	Active	Monitoring	Upper	8/24/2020	400	13	0.13		
01-005	08S08E15G001M	372424N1210754W001	MP058.28L	Active	Irrigation	Upper	8/25/2020	410	5.2	0.36		
07-017			Well 1	Unknown	Public Supply	Upper	8/18/2020	510	2.9	0.668		
07-003	10S10E32L002M	370173N1208999W002	MC15-2	Active	Monitoring	Upper	8/24/2020	440	1.8	0.68		
07-004	11S10E04L001M		MP081.08R	Unknown	Unknown	Upper	-	-	-	-	Miscommunication about monitoring responsibilities	
07-011		368835N1206270W001	MP099.24L	Inactive	Irrigation	Upper	-	-	-	-	Shaft locked (not working)	
07-012	12S/12E-16B		GDA003	Unknown	Irrigation	Upper	-	-	-	-	Doesn't have a pump	
08-001 [1]			MP102.04R	Active	Irrigation	Upper	8/19/2020	3,140	ND	1.6		
07-010		366500N1202500W001	KRCDTID02	Active	Irrigation	Upper	8/30/2020	5,700	ND	1.9		Converted production wells; 2-inch hole on the surface and 16-inch hole underneath; Not sure how to purge 3 volumes of water; Hydrasleeve grab sample; TDS results are questionable
07-009		366000N1202300W001	KRCDTID03	Active	Irrigation	Upper	8/25/2020	3,000	ND	2.2		Converted production wells; 2-inch hole on the surface and 16-inch hole underneath; Not sure how to purge 3 volumes of water; Hydrasleeve grab sample; TDS results are questionable
07-018	15S/16E-20		WSJ001	Unknown	Domestic	Upper	8/21/2020	2,300	ND	2.9		
01-007			MP021.12L	Unknown	Unknown	Lower	-	-	-	-	Well pump not in service and no accessible port for sampling, well owner is in the process of repairing pump	
01-001	04S06E36C001M	375509N1212609W001	MP030.43R	Inactive	Irrigation	Lower	8/25/2020	630	6.7	2.3		
01-002	05S07E05F001M	375313N1212242W001	MP033.71L	Inactive	Irrigation	Lower	-	-	-	-	Well pump not in service and no accessible port for sampling, well owner is in the process of repairing pump	
06-003		375774N1212096W001	WSID 3	Active	Monitoring	Lower	8/18/2020	1,420	16.7	1.85		

DMS ID	State Well Number	CASGEM ID (if applicable)	Local ID	Status	Well Use	Aquifer	Sample Date	TDS Result (mg/L)	Nitrate as N Result (mg/L)	Boron Result (mg/L)	If not sampled, why?	Comments
02-002			WELL 02 - NORTH 5TH STREET	Unknown	Public Supply	Lower	8/25/2020	970	7.5	0.5		
06-001	06S08E09E001M	374316N1210994W001	P259-1	Active	Monitoring	Lower	-	-	-	-	USGS well; SLDMWA looking into USGS/LSCE sampling this well (Fall 2020)	
01-003	06S08E20D002M	374061N1211212W001	MP045.78R	Inactive	Irrigation	Lower	8/25/2020	1,400	9	0.73		
04-001		376129N1212942W001	121	Active	Irrigation	Lower	-	-	-	-	Doesn't pump and must be sent for repairs; Won't be able to monitor until next year	
01-008			MP051.66L	Unknown	Unknown	Lower	8/25/2020	660	7.2	0.32		
01-006		372604N1210611W001	91	Active	Irrigation	Lower	-	-	-	-	Well pump not in service and no accessible port for sampling, well owner is in the process of repairing pump	
07-016			Well 01	Unknown	Public Supply	Lower	7/28/2020	1,300	1.2	3.62		
07-002	10S10E32L001M	370173N1208999W001	MC15-1	Active	Monitoring	Lower	-	-	-	-	USGS well; SLDMWA looking into coordinating USGS/LSCE sampling this well (Fall 2020)	
07-005	12S11E03Q001M	369097N1207554W001	MP091.68R	Inactive	Irrigation	Lower	-	-	-	-	Does not have a pump	
07-006	12S12E07E001M	369044N1207092W001	MP094.26L	Inactive	Irrigation	Lower	-	-	-	-	High concentration of boron and hasn't been used in about 3 years; Nowhere to place the purge water; MP093.27L sampled instead (well video report provided to confirm construction)	
07-007	12S12E16E003M	368896N1206702W001	MC18-1	Active	Monitoring	Lower	-	-	-	-	USGS well; SLDMWA looking into coordinating USGS/LSCE sampling this well (Fall 2020)	
07-008	13S12E22F001M	367885N1206510W001	PWD 48	Active	Irrigation	Lower	-	-	-	-	Shaft locked (not working)	
07-014			TW-4	Unknown	Monitoring	Lower	8/30/2020	790	ND	0.95		
07-015			TW-5	Unknown	Nested Monitoring	Lower	8/30/2020	840	ND	1.1		

[1] DMS ID modified from 07-013 to reflect monitoring responsibilities performed by Widren Water District GSA

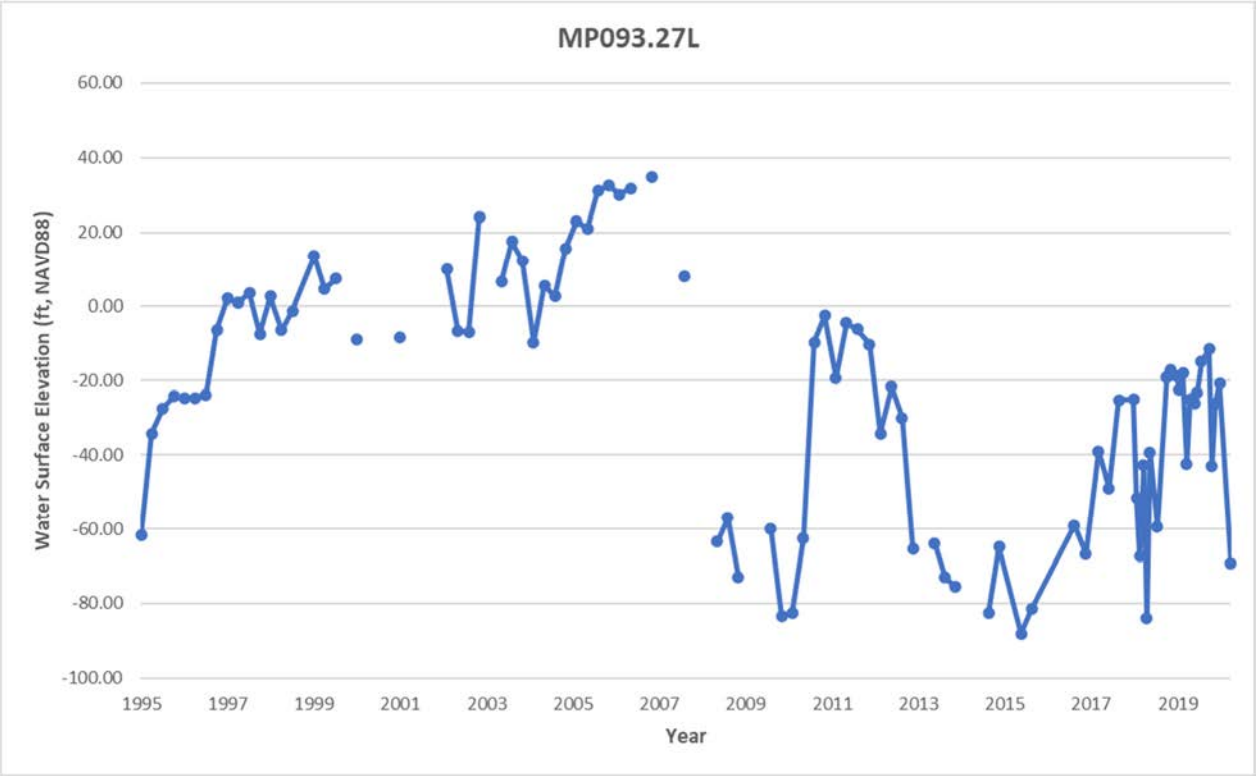


Figure 2-5. Hydrograph for MP093.27L

3. SUSTAINABLE MANAGEMENT CRITERIA

3.1 Sustainable Management Criteria Summary

The following sections summarize the sustainable management criteria for each applicable sustainability indicator, including minimum threshold, measurable objective, and interim milestone for each representative monitoring site.

3.1.1 Chronic Lowering of Groundwater Levels

The minimum thresholds for each representative monitoring site in the Upper Aquifer and Lower Aquifer for the chronic lowering of groundwater levels sustainability indicator are shown in **Table 7** and **Table 8**, respectively. The measurable objectives for each representative monitoring site in the Upper Aquifer and Lower Aquifer for the chronic lowering of groundwater levels sustainability indicator are shown in **Table 9** and **Table 10**. The interim milestones for chronic lowering of groundwater levels are set as follows:

- **Year 5 (2025):** Maintain groundwater elevations comparable to 2012/2017 hydrologic highs and lows
- **Year 10 (2030):** Maintain groundwater elevations comparable to 2012/2017 hydrologic highs and lows
- **Year 15 (2035):** Maintain groundwater elevations comparable to 2012/2017 hydrologic highs and lows

At present, all groundwater elevations at all representative monitoring locations are above their minimum thresholds.

Table 7. Minimum Thresholds for Chronic Lowering of Groundwater Levels, Upper Aquifer

Narrative Description				
The minimum threshold is the hydrologic low over the available hydrograph record.				
Numeric Minimum Thresholds – Chronic Lower of Groundwater Levels in Upper Aquifer				
Data Management System (DMS) ID	**State Well Number**	**CASGEM ID (if applicable)**	**Local ID**	**Minimum Threshold (feet above msl NAVD88)**
02-001	05S07E15N002M	374934N1211934W001	MP037.32L	-49.1
06-004			MP031.31L1-L2Well1	14.8
03-001 [1]		375015N1211011W001	MW-2	28.72
03-002 [1]			MW-3	7.66
03-003 [1]	05S/08E-16R		WSJ003	32.93
06-002	06S08E09E003M	374316N1210994W003	P259-3	28.6
01-004	07S08E28R002M	372907N1210875W002	MC10-2	158.8
01-005 [2]	08S08E15G001M	372424N1210754W001	MP058.28L	86.0
07-017			Well 1	9.4
07-003	10S10E32L002M	370173N1208999W002	MC15-2	62.4
07-004	11S10E04L001M		MP081.08R	58.2
07-011		368835N1206270W001	MP099.24L	-52.63
07-012	12S/12E-16B		GDA003	-41.1
08-001 [3]			MP102.04R	-15.9
07-010		366500N1202500W001	KRCDTID02	72.7
07-009		366000N1202300W001	KRCDTID03	60.3
07-018	15S/16E-20		WSJ001	60.3

[1] Minimum thresholds value revised since submittal of GSP to reflect confusion between depth to water and water surface elevation measurements.
[2] Minimum thresholds value revised since submittal of GSP to reflect removal of proxy data and availability of historic record.
[3] DMS ID modified from 07-013 to reflect monitoring responsibilities performed by Widren Water District GSA

Table 8. Minimum Thresholds for Chronic Lowering of Groundwater Levels, Lower Aquifer

Narrative Description				
The minimum threshold is 95 percent of the hydrologic low for the available hydrograph record.				
Numeric Minimum Thresholds – Chronic Lower of Groundwater Levels in Lower Aquifer				
DMS ID	**State Well Number**	**CASGEM ID (if applicable)**	**Local ID**	**Minimum Threshold (feet above msl NAVD88)**
01-007 [1]			MP021.12L	-16.2
01-001 [1]	04S06E36C001M	375509N1212609W001	MP030.43R	-42.6
01-002	05S07E05F001M	375313N1212242W001	MP033.71L	-34.3
06-003		375774N1212096W001	WSID 3	-8.6
02-002			WELL 02 - NORTH 5TH STREET	-17.4
06-001 [1]	06S08E09E001M	374316N1210994W001	P259-1	-49.6
01-003	06S08E20D002M	374061N1211212W001	MP045.78R	-20.7
04-001		376129N1212942W001	121	-6.1
01-008			MP051.66L	-42.6
01-006		372604N1210611W001	91	72.3
07-016 [1]			Well 01	-2.32
07-002 [1]	10S10E32L001M	370173N1208999W001	MC15-1	1.49
07-005	12S11E03Q001M	369097N1207554W001	MP091.68R	-80.4
07-006	12S12E07E001M	369044N1207092W001	MP094.26L	-77.8
07-007	12S12E16E003M	368896N1206702W001	MC18-1	-50.8
07-008	13S12E22F001M	367885N1206510W001	PWD 48	-87.4
07-014			TW-4	-126.8
07-015			TW-5	-146.8

[1] Minimum thresholds value revised since submittal of GSP to reflect removal of proxy data and availability of historic record.

Table 9. Measurable Objectives for Chronic Lowering of Groundwater Levels, Upper Aquifer

Narrative Description				
The measurable objective is set at the lowest value of three parameters: the average historic seasonal high over the available hydrograph, Spring 2012 seasonal high, or Spring 2017 seasonal high.				
Numeric Measurable Objectives – Chronic Lower of Groundwater Levels in Upper Aquifer				
DMS ID	**State Well Number**	**CASGEM ID (if applicable)**	**Local ID**	**Measurable Objective (feet above msl, NAVD88)**
02-001	05S07E15N002M	374934N1211934W001	MP037.32L	22.0
06-004			MP031.31L1-L2Well1	38.9
03-001 [1]		375015N1211011W001	MW-2	35.22
03-002 [1]			MW-3	34.22
03-003 [1]	05S/08E-16R		WSJ003	37.26
06-002	06S08E09E003M	374316N1210994W003	P259-3	40.3
01-004	07S08E28R002M	372907N1210875W002	MC10-2	160.8
01-005 [2]	08S08E15G001M	372424N1210754W001	MP058.28L	107.5
07-017			Well 1	79.7
07-003	10S10E32L002M	370173N1208999W002	MC15-2	71.6
07-004	11S10E04L001M		MP081.08R	90.1
07-011		368835N1206270W001	MP099.24L	12.1
07-012	12S/12E-16B		GDA003	24.7
08-001 [3]			MP102.04R	34.9
07-010		366500N1202500W001	KRCDTID02	96.3
07-009		366000N1202300W001	KRCDTID03	70.5
07-018	15S/16E-20		WSJ001	70.5

[1] Measurable objective value revised since submittal of GSP to reflect confusion between depth to water and water surface elevation measurements.
[2] Measurable objective value revised since submittal of GSP to reflect removal of proxy data and availability of historic record.
[3] DMS ID modified from 07-013 to reflect monitoring responsibilities performed by Widren Water District GSA

Table 10. Measurable Objectives for Chronic Lowering of Groundwater Levels, Lower Aquifer

Narrative Description				
The measurable objective is set at the lowest value of three parameters: the average historic seasonal high over the available hydrograph, Spring 2012 seasonal high, or Spring 2017 seasonal high.				
Numeric Measurable Objectives – Chronic Lower of Groundwater Levels in Lower Aquifer				
Primary Well ID	**State Well Number**	**CASGEM ID (if applicable)**	**Local ID**	**Measurable Objective (feet above msl, NAVD88)**
01-007 [1]			MP021.12L	12.3
01-001 [1]	04S06E36C001M	375509N1212609W001	MP030.43R	-11.2
01-002	05S07E05F001M	375313N1212242W001	MP033.71L	6.6
06-003		375774N1212096W001	WSID 3	31.3
02-002			WELL 02 - NORTH 5TH STREET	24.7
06-001 [1]	06S08E09E001M	374316N1210994W001	P259-1	11.2
01-003	06S08E20D002M	374061N1211212W001	MP045.78R	63.8
04-001		376129N1212942W001	121	7.8
01-008			MP051.66L	8.5
01-006		372604N1210611W001	91	84.4
07-016 [1]			Well 01	73.9
07-002 [1]	10S10E32L001M	370173N1208999W001	MC15-1	14.35
07-005	12S11E03Q001M	369097N1207554W001	MP091.68R	-34.3
07-006	12S12E07E001M	369044N1207092W001	MP094.26L	-28.8
07-007	12S12E16E003M	368896N1206702W001	MC18-1	-2.0
07-008	13S12E22F001M	367885N1206510W001	PWD 48	-49.0
07-014			TW-4	-28.2
07-015			TW-5	-27.2

[1] Measurable objective value revised since submittal of GSP to reflect removal of proxy data and availability of historic record.

3.1.2 Reduction of Groundwater Storage

Minimum thresholds, measurable objectives, and interim milestones for the reduction of groundwater storage sustainability indicator are consistent with those set for the chronic lowering of groundwater levels sustainability indicator, as groundwater levels are used as a proxy for monitoring this sustainability indicator. Updates to groundwater storage (and changes in groundwater storage) by principal aquifer will be calculated for the Water Year 2020 Annual Report due to DWR by April 1, 2021.

3.1.3 Degraded Water Quality

The minimum thresholds for each representative monitoring site in the Upper Aquifer and Lower Aquifer for the degraded water quality sustainability indicator are shown in **Table 11** and **Table 12**, respectively. The measurable objectives for each representative monitoring site in the Upper Aquifer and Lower Aquifer for the degraded water quality sustainability indicator are shown in **Table 13** and **Table 14**. The interim milestones for degraded water quality are set as follows:

- **Year 5 (2025):** Maintain current groundwater quality
- **Year 10 (2030):** Maintain current groundwater quality
- **Year 15 (2035):** Maintain current groundwater quality

Results of the water quality monitoring event conducted between July and August 2020 are shown in **Table 6**. For the 19 representative groundwater quality monitoring wells that were sampled, 13 wells monitored for TDS, 19 wells monitored for nitrate as N, and 16 wells monitored for boron were at or below their established measurable objectives, indicating sustainable conditions. Two wells monitored for TDS were below their minimum thresholds but above their measurable objectives (DMS ID 07-014 and 07-015) and four wells were above their minimum thresholds (DMS ID 07-009, 07-010, 07-16, and 07-018) indicating increases in TDS concentrations at these locations. Note that TDS results for DMS ID 07-009 and 07-010 are considered questionable due to the inability to purge the well. Three wells monitored for boron were above their minimum thresholds (DMS ID 01-003, 07-016, and 07-018), also indicating increases in boron concentrations at these locations.

Table 11. Minimum Thresholds for Degraded Water Quality, Upper Aquifer

Narrative Description						
The minimum threshold is set as the upper Secondary MCL for TDS, Primary MCL for nitrate as N, and WQO for irrigation for boron or the current groundwater quality where it exceeds the afore-mentioned criteria as of December 2018.						
Numeric Minimum Thresholds – Degraded Water Quality in Upper Aquifer						
DMS ID	**State Well Number**	**CASGEM ID (if applicable)**	**Local ID**	**Minimum Threshold (mg/L)**		
				TDS	**Nitrate as N**	**Boron**
02-001	05S07E15N002M	374934N1211934W001	MP037.32L	4,000	80	3.0
06-004			MP031.31L1-L2Well1	4,000	80	3.0
03-001		375015N1211011W001	MW-2	4,000	80	3.0
03-002			MW-3	4,000	80	3.0
03-003	05S/08E-16R		WSJ003	4,000	80	3.0
06-002	06S08E09E003M	374316N1210994W003	P259-3	2,500	60	1.7
01-004	07S08E28R002M	372907N1210875W002	MC10-2	2,500	60	1.7
01-005	08S08E15G001M	372424N1210754W001	MP058.28L	2,500	60	1.7
07-017			Well 1	1,000	60	0.9
07-003	10S10E32L002M	370173N1208999W002	MC15-2	2,700	90	1.0
07-004	11S10E04L001M		MP081.08R	2,700	90	1.0
07-011		368835N1206270W001	MP099.24L	3,500	13	6.0
07-012	12S/12E-16B		GDA003	3,500	13	6.0
08-001 [1]			MP102.04R	3,500	13	6.0
07-010		366500N1202500W001	KRCDTID02	1,000	10	2.2
07-009		366000N1202300W001	KRCDTID03	1,000	10	2.2
07-018	15S/16E-20		WSJ001	1,000	10	2.2

[1] DMS ID modified from 07-013 to reflect monitoring responsibilities performed by Widren Water District GSA

Table 12. Minimum Thresholds for Degraded Water Quality, Lower Aquifer

Narrative Description
The minimum threshold is set as the upper Secondary MCL for TDS, Primary MCL for nitrate as N, and WQO for irrigation for boron or the current groundwater quality where it exceeds the afore-mentioned criteria as of December 2018.

Numeric Minimum Thresholds – Degraded Water Quality in Lower Aquifer						
DMS ID	State Well Number	CASGEM ID (if applicable)	Local ID	Minimum Threshold (mg/L)		
				TDS	Nitrate as N	Boron
01-007			MP021.12L	2,000	50	3.0
01-001	04S06E36C001M	375509N1212609W001	MP030.43R	2,000	50	3.0
01-002	05S07E05F001M	375313N1212242W001	MP033.71L	2,000	50	3.0
06-003		375774N1212096W001	WSID 3	2,000	50	3.0
02-002			WELL 02 - NORTH 5TH STREET	2,000	50	3.0
06-001	06S08E09E001M	374316N1210994W001	P259-1	4,000	70	0.7
01-003	06S08E20D002M	374061N1211212W001	MP045.78R	4,000	70	0.7
04-001		376129N1212942W001	121	4,000	70	0.7
01-008			MP051.66L	4,000	70	0.7
01-006		372604N1210611W001	91	4,000	70	0.7
07-016			Well 01	1,000	17	0.7
07-002	10S10E32L001M	370173N1208999W001	MC15-1	1,200	18	0.8
07-005	12S11E03Q001M	369097N1207554W001	MP091.68R	2,600	10	6.0
07-006	12S12E07E001M	369044N1207092W001	MP094.26L	2,600	10	6.0
07-007	12S12E16E003M	368896N1206702W001	MC18-1	2,600	10	6.0
07-008	13S12E22F001M	367885N1206510W001	PWD 48	2,600	10	6.0
07-014			TW-4	1,000	10	1.1
07-015			TW-5	1,000	10	1.1

Table 13. Measurable Objectives for Degraded Water Quality, Upper Aquifer

Narrative Description
The measurable objective is set as the current groundwater quality conditions by GSP subregion.

Numeric Measurable Objectives – Degraded Water Quality in Upper Aquifer

DMS ID	State Well Number	CASGEM ID (if applicable)	Local ID	Measurable Objective (mg/L)		
				TDS	Nitrate as N	Boron
02-001	05S07E15N002M	374934N1211934W001	MP037.32L	4,000	80	3.0
06-004			MP031.31L1-L2Well1	4,000	80	3.0
03-001		375015N1211011W001	MW-2	4,000	80	3.0
03-002			MW-3	4,000	80	3.0
03-003	05S/08E-16R		WSJ003	4,000	80	3.0
06-002	06S08E09E003M	374316N1210994W003	P259-3	2,500	60	1.7
01-004	07S08E28R002M	372907N1210875W002	MC10-2	2,500	60	1.7
01-005	08S08E15G001M	372424N1210754W001	MP058.28L	2,500	60	1.7
07-017			Well 1	1,000	60	0.9
07-003	10S10E32L002M	370173N1208999W002	MC15-2	2,700	90	1.0
07-004	11S10E04L001M		MP081.08R	2,700	90	1.0
07-011		368835N1206270W001	MP099.24L	3,500	13	6.0
07-012	12S/12E-16B		GDA003	3,500	13	6.0
08-001 [1]			MP102.04R	3,500	13	6.0
07-010		366500N1202500W001	KRCDTID02	800	1	2.2
07-009		366000N1202300W001	KRCDTID03	800	1	2.2
07-018	15S/16E-20		WSJ001	800	1	2.2

[1] DMS ID modified from 07-013 to reflect monitoring responsibilities performed by Widren Water District GSA

Table 14. Measurable Objectives for Degraded Water Quality, Lower Aquifer

Narrative Description						
The measurable objective is set as the current groundwater quality conditions by GSP subregion.						
Numeric Measurable Objectives – Degraded Water Quality in Lower Aquifer						
DMS ID	**State Well Number**	**CASGEM ID (if applicable)**	**Local ID**	**Measurable Objective (mg/L)**		
				TDS	**Nitrate as N**	**Boron**
01-007			MP021.12L	2,000	50	3.0
01-001	04S06E36C001M	375509N1212609W001	MP030.43R	2,000	50	3.0
01-002	05S07E05F001M	375313N1212242W001	MP033.71L	2,000	50	3.0
06-003		375774N1212096W001	WSID 3	2,000	50	3.0
02-002			WELL 02 - NORTH 5TH STREET	2,000	50	3.0
06-001	06S08E09E001M	374316N1210994W001	P259-1	4,000	70	0.6
01-003	06S08E20D002M	374061N1211212W001	MP045.78R	4,000	70	0.6
04-001		376129N1212942W001	121	4,000	70	0.6
01-008			MP051.66L	4,000	70	0.6
01-006		372604N1210611W001	91	4,000	70	0.6
07-016			Well 01	1,000	17	0.2
07-002	10S10E32L001M	370173N1208999W001	MC15-1	1,200	18	0.8
07-005	12S11E03Q001M	369097N1207554W001	MP091.68R	2,600	10	6.0
07-006	12S12E07E001M	369044N1207092W001	MP094.26L	2,600	10	6.0
07-007	12S12E16E003M	368896N1206702W001	MC18-1	2,600	10	6.0
07-008	13S12E22F001M	367885N1206510W001	PWD 48	2,600	10	6.0
07-014			TW-4	775	1	1.1
07-015			TW-5	775	1	1.1

3.1.4 Land Subsidence

Minimum thresholds, measurable objectives, and interim milestones for the land subsidence sustainability indicator are shown in **Table 15**, **Table 16**, and **Table 17**, respectively. Land surveying for inelastic land subsidence is expected to occur in December of 2020.

Table 15. Minimum Thresholds for Land Subsidence

Narrative Description
WSID-PID Management Area: The minimum threshold is set as the acceptable loss in distribution capacity as a result of subsidence resulting from groundwater pumping as based on future capacity study. **TRID Management Area:** The minimum threshold is set as four (4) feet additional subsidence compared to 2019 benchmark elevation. **Remaining Plan Area:** The minimum threshold is set as target rate/goal by monitoring subregion, based on the average 2014-2016 elevation change from recent DMC surveys.

Numeric Minimum Thresholds – Inelastic Land Subsidence				
DMS ID	**Local ID**	**Management Area**	**Minimum Threshold[1,2]**	**Units[1,2]**
02-003	Floragold Well	N/A	-0.13	ft/year
02-008	Well 11	N/A	-0.13	ft/year
02-005	Well 2	N/A	-0.13	ft/year
02-006	Well 4	N/A	-0.13	ft/year
02-007	Well 6	N/A	-0.13	ft/year
03-004	Locust Avenue Well	WSID-PID	TBD	TBD
03-005	Pumping Plant No. 2	WSID-PID	TBD	TBD
03-006	River Station	WSID-PID	TBD	TBD
01-010	Subsidence Monitoring Point #1	N/A	-0.13	ft/year
01-011	Subsidence Monitoring Point #2	N/A	-0.13	ft/year
01-012	Subsidence Monitoring Point #3	N/A	-0.13	ft/year
01-013	Subsidence Monitoring Point #4	N/A	-0.13	ft/year
01-014	Subsidence Monitoring Point #5	N/A	-0.13	ft/year
02-004	Subsidence Monitoring Point #6	N/A	-0.13	ft/year
04-002	WSID 1	WSID-PID	TBD	TBD
04-003	WSID 11	WSID-PID	TBD	TBD
04-004	WSID 21	WSID-PID	TBD	TBD
01-015	Subsidence Monitoring Point #7	N/A	-0.26	ft/year
06-006	Subsidence Monitoring Point #8	N/A	-0.26	ft/year
01-016	Subsidence Monitoring Point #9	N/A	-0.26	ft/year
01-017	Subsidence Monitoring Point #10	N/A	-0.21	ft/year
07-021	Subsidence Monitoring Point #11	N/A	-0.21	ft/year
01-009	P252	N/A	-0.21	ft/year
07-022	Subsidence Monitoring Point #12	N/A	-0.15	ft/year
07-023	Subsidence Monitoring Point #13	N/A	-0.15	ft/year
07-020	104.20-R	N/A	-0.18	ft/year
07-024	Subsidence Monitoring Point #14	N/A	-0.18	ft/year
07-025	Subsidence Monitoring Point #15	N/A	-0.18	ft/year
07-019	AG-24	TRID	153.77	ft GSE
07-026	TID A	TRID	156.54	ft GSE
07-027	TID B	TRID	165.22	ft GSE

[1] TBD = To be determined
[2] ft GSE = feet ground surface elevation (NAVD88)

Table 16. Measurable Objectives for Land Subsidence

Narrative Description
WSID-PID Management Area: The measurable objective is set as no loss in distribution capacity as a result of subsidence resulting from groundwater pumping. Numerical values for this criterion to be determined based on data collection between 2020 and 2025. **TRID Management Area:** The measurable objective is set as two (2) feet additional subsidence compared to 2019 benchmark elevation. **Remaining Plan Area:** The measurable objective is set as target rate/goal by monitoring subregion, based on the average 2016-2018 elevation change from recent Delta-Mendota Canal survey.

Numeric Measurable Objectives – Inelastic Land Subsidence

DMS ID	Local ID	Management Area	Measurable Objective[1,2]	Units[1,2]
02-003	Floragold Well	N/A	-0.11	ft/year
02-008	Well 11	N/A	-0.11	ft/year
02-005	Well 2	N/A	-0.11	ft/year
02-006	Well 4	N/A	-0.11	ft/year
02-007	Well 6	N/A	-0.11	ft/year
03-004	Locust Avenue Well	WSID-PID	TBD	TBD
03-005	Pumping Plant No. 2	WSID-PID	TBD	TBD
03-006	River Station	WSID-PID	TBD	TBD
01-010	Subsidence Monitoring Point #1	N/A	-0.11	ft/year
01-011	Subsidence Monitoring Point #2	N/A	-0.11	ft/year
01-012	Subsidence Monitoring Point #3	N/A	-0.11	ft/year
01-013	Subsidence Monitoring Point #4	N/A	-0.11	ft/year
01-014	Subsidence Monitoring Point #5	N/A	-0.11	ft/year
02-004	Subsidence Monitoring Point #6	N/A	-0.11	ft/year
04-002	WSID 1	WSID-PID	TBD	TBD
04-003	WSID 11	WSID-PID	TBD	TBD
04-004	WSID 21	WSID-PID	TBD	TBD
01-015	Subsidence Monitoring Point #7	N/A	0.01	ft/year
06-006	Subsidence Monitoring Point #8	N/A	0.01	ft/year
01-016	Subsidence Monitoring Point #9	N/A	0.01	ft/year
01-017	Subsidence Monitoring Point #10	N/A	-0.03	ft/year
07-021	Subsidence Monitoring Point #11	N/A	-0.03	ft/year
01-009	P252	N/A	-0.03	ft/year
07-022	Subsidence Monitoring Point #12	N/A	-0.01	ft/year
07-023	Subsidence Monitoring Point #13	N/A	-0.01	ft/year
07-020	104.20-R	N/A	-0.08	ft/year
07-024	Subsidence Monitoring Point #14	N/A	-0.08	ft/year
07-025	Subsidence Monitoring Point #15	N/A	-0.08	ft/year
07-019	AG-24	TRID	155.77	ft GSE
07-026	TID A	TRID	158.54	ft GSE
07-027	TID B	TRID	167.22	ft GSE

[1] TBD = To be determined

[2] ft GSE = feet ground surface elevation (NAVD88)

Table 17. Interim Milestones for Land Subsidence

Narrative Description

WSID-PID Management Area
- **Year 5 (2025):** Establish minimum threshold and measurable objective for land subsidence sustainability indicator
- **Year 10 (2030):** To be determined in 5-Year GSP update in 2025 based on additional data analysis
- **Year 15 (2035):** To be determined in 5-Year GSP update in 2025 based on additional data analysis

TRID Management Area
- **Year 5 (2025):** Minimal additional subsidence
- **Year 10 (2030):** Minimal additional subsidence
- **Year 15 (2035):** Minimal additional subsidence

Remaining Plan Area
- **Year 5 (2025):** Minimal additional subsidence
- **Year 10 (2030):** Minimal additional subsidence
- **Year 15 (2035):** Minimal additional subsidence

Numeric Interim Milestones – Inelastic Land Subsidence

DMS ID	Local ID	Management Area	Year 5 (2025) [1,2]	Year 10 (2030) [1,2]	Year 15 (2035) [1,2]	Units[1,2]
02-003	Floragold Well	N/A	-0.12	-0.12	-0.11	ft/year
02-008	Well 11	N/A	-0.12	-0.12	-0.11	ft/year
02-005	Well 2	N/A	-0.12	-0.12	-0.11	ft/year
02-006	Well 4	N/A	-0.12	-0.12	-0.11	ft/year
02-007	Well 6	N/A	-0.12	-0.12	-0.11	ft/year
03-004	Locust Avenue Well	WSID-PID	TBD	TBD	TBD	TBD
03-005	Pumping Plant No. 2	WSID-PID	TBD	TBD	TBD	TBD
03-006	River Station	WSID-PID	TBD	TBD	TBD	TBD
01-010	Subsidence Monitoring Point #1	N/A	-0.12	-0.12	-0.11	ft/year
01-011	Subsidence Monitoring Point #2	N/A	-0.12	-0.12	-0.11	ft/year
01-012	Subsidence Monitoring Point #3	N/A	-0.12	-0.12	-0.11	ft/year
01-013	Subsidence Monitoring Point #4	N/A	-0.12	-0.12	-0.11	ft/year
01-014	Subsidence Monitoring Point #5	N/A	-0.12	-0.12	-0.11	ft/year
02-004	Subsidence Monitoring Point #6	N/A	-0.12	-0.12	-0.11	ft/year
04-002	WSID 1	WSID-PID	TBD	TBD	TBD	TBD
04-003	WSID 11	WSID-PID	TBD	TBD	TBD	TBD
04-004	WSID 21	WSID-PID	TBD	TBD	TBD	TBD
01-015	Subsidence Monitoring Point #7	N/A	-0.18	-0.09	-0.01	ft/year
06-006	Subsidence Monitoring Point #8	N/A	-0.18	-0.09	-0.01	ft/year
01-016	Subsidence Monitoring Point #9	N/A	-0.18	-0.09	-0.01	ft/year
01-017	Subsidence Monitoring Point #10	N/A	-0.15	-0.09	-0.03	ft/year
07-021	Subsidence Monitoring Point #11	N/A	-0.15	-0.09	-0.03	ft/year
01-009	P252	N/A	-0.15	-0.09	-0.03	ft/year
07-022	Subsidence Monitoring Point #12	N/A	-0.1	-0.06	-0.01	ft/year
07-023	Subsidence Monitoring Point #13	N/A	-0.1	-0.06	-0.01	ft/year
07-020	104.20-R	N/A	-0.15	-0.11	-0.08	ft/year
07-024	Subsidence Monitoring Point #14	N/A	-0.15	-0.11	-0.08	ft/year
07-025	Subsidence Monitoring Point #15	N/A	-0.15	-0.11	-0.08	ft/year
07-019	AG-24	TRID	< -0.5	< -0.5	< -0.5	ft GSE
07-026	TID A	TRID	< -0.5	< -0.5	< -0.5	ft GSE
07-027	TID B	TRID	< -0.5	< -0.5	< -0.5	ft GSE

[1] TBD = To be determined
[2] ft GSE = feet ground surface elevation (NAVD88)

3.1.5 Depletions of Interconnected Surface Water

Quantitative minimum thresholds, measurable objectives, and interim milestones will be established for the depletions of interconnected surface water sustainability indicator as part of the 5-Year Update to the GSP in 2025.

A qualitative statement of minimum thresholds has been developed in the interim for this sustainability indicator as follows:

> *An X percent increase in surface water depletions along interconnected stretches of surface water as a result of groundwater pumping, where 'X' is the present increase in depletions to be determined from monitoring data collected between 2020 and 2025 and associated analyses of these data.*

A qualitative statement has been developed for the measurable objective for depletions of interconnected surface water as follows:

> *No increased depletions of surface water as a result of groundwater pumping.*

Since the 2025 interim goal is to establish measurable objectives for this sustainability indicator (in addition to subsequent interim goals), numeric measurable objectives and 2030 and 2035 interim goals will be included in the first 5-Year GSP Update based on additional data collected and analyses performed.

3.2 Progress in Meeting Sustainable Management Criteria

During the second quarter of implementation, 19 of the 35 representative monitoring wells were monitored for groundwater quality during Water Year 2020. Access issues, lack of operational pumps or sampling ports, and miscommunication in monitoring responsibilities were cited as the primary reasons for missing groundwater quality monitoring results. Of the 19 representative groundwater quality monitoring wells that were sampled, 13 wells monitored for TDS, 19 wells monitored for nitrate as N, and 16 wells monitored for boron were at or below their established measurable objectives, indicating sustainable conditions. Two wells monitored for TDS were below their minimum thresholds but above their measurable objectives (DMS ID 07-014 and 07-015) and four wells were above their minimum thresholds (DMS ID 07-009, 07-010, 07-16, and 07-018). TDS results for DMS ID 07-009 and 07-010 are considered questionable due to the inability to purge the well. Three wells monitored for boron were above their minimum thresholds (DMS ID 01-003, 07-016, and 07-018). These readings all indicate increases in TDS and boron concentrations at their respective locations.

An undesirable result for the degraded water quality sustainability indicator is triggered when:

- Groundwater quality exceeds Maximum Contaminant Levels (MCLs) or water quality objectives (WQOs) for TDS, nitrate, or boron over three consecutive sampling events in non-drought years, or additional degradation of current groundwater quality where current groundwater quality exceeds the MCLs or WQOs.

- Water quality degradation due to recharge projects that exceeds 20 percent of the aquifer's assimilative capacity for one or more constituents without justification of a greater public benefit achieved.

As of the groundwater quality monitoring event during Water Year 2020, undesirable results relative to MCLs or WQOs over three consecutive sampling events in non-drought years cannot be evaluated as sufficient data are not yet available. Water quality at these locations should continue to be monitored to determine if the recorded concentrations are singular events or part of a trend in increasing concentrations. If the latter, corrective actions should be considered to reduce the increasing trend. There are currently no active recharge projects within the Northern and Central Delta-Mendota Regions.

Seasonal low groundwater level monitoring results for Water Year 2020 relative to the established sustainable management criteria will be evaluated during the next Quarterly Implementation Evaluation for the period between October and December 2020.

4. PROJECTS & MANAGEMENT ACTIONS

4.1 Projects and Management Actions in Groundwater Sustainability Plan

The projects and management actions identified as helping to achieve sustainable conditions within the Northern and Central Delta-Mendota Regions are included in **Table 18**. Projects and management actions have been divided into three tiers based on design and funding status and anticipated timeframe of implementation:

- **Tier 1 –** Near-term projects and management actions that the GSAs are committed to implementing at this time. These projects and management actions are either currently in the process of being implemented or could be implemented in the near future (constructed and operational) within the next five years (by 2025).

- **Tier 2 –** Projects and management actions that have been identified and require further development before implementation can occur. It is anticipated that these projects and management actions could be developed over the next five years and implemented beginning in 2026 or later, pending re-evaluation prior to the 5-Year GSP Update in 2025.

- **Tier 3 –** Longer-term projects and management actions that may be implemented in the future as needed. Many of these projects are outside of the GSAs' control but could have implications on surface water availability and/or are additional projects/management actions that could be implemented under an adaptive management approach.

Prior to the first 5-Year Update to the GSP that will be submitted to DWR in 2025, the Northern and Central Delta-Mendota Regions will focus on implementing the Tier 1 projects and management actions. A status update on Tier 1 and Tier 2 projects and management actions, as applicable, is provided in the next section.

Table 18. Northern & Central Delta-Mendota Region GSP Projects and Management Actions

Tier	Category	Project / Management Action	Project Proponent
Tier 1	Projects	Los Banos Creek Recharge and Recovery Project	San Luis Water District
		Orestimba Creek Recharge and Recovery Project	Del Puerto Water District
		North Valley Regional Recycled Water Program (NVRRWP) – Modesto and Early Turlock Years	Del Puerto Water District
		City of Patterson Percolation Ponds for Stormwater Capture and Recharge	City of Patterson
		Kaljian Drainwater Reuse Project	San Luis Water District
		West Stanislaus Irrigation District Lateral 4-North Recapture and Recirculation Reservoir	West Stanislaus Irrigation District
		Revision to Tranquillity Irrigation District Lower Aquifer Pumping	Tranquillity Irrigation District
	Management Actions	Lower Aquifer Pumping Rules for Minimizing Subsidence	N/A
		Maximize Use of Other Water Supplies	N/A
		Increasing GSA Access to and Input on Well Permits	N/A
		Drought Contingency Planning in Urban Areas	N/A
		Fill Data Gaps	N/A
Tier 2	Projects	Del Puerto Canyon Reservoir Project	Del Puerto Water District
		Little Salado Creek Groundwater Recharge and Flood Control Basin	Stanislaus County
		Patterson Irrigation District Groundwater Bank and/or Flood-Managed Aquifer Recharge (MAR)-type Project	Patterson Irrigation District
		West Stanislaus Irrigation District Lateral 4-South Recapture and Recirculation Reservoir	West Stanislaus Irrigation District
		Ortigalita Creek Groundwater Recharge and Recovery Project	San Luis Water District
	Management Action	Develop Program to Incentivize Use of Surface Water and Reduce Groundwater Demand	N/A
Tier 3	Projects	Pacheco Reservoir Expansion	Santa Clara Valley Water District
		Raising San Luis Reservoir	U.S. Bureau of Reclamation (USBR)
		Sites Reservoir	Sites Project Authority
		Los Vaqueros Expansion Phase 2	Contra Costa Water District
	Management Actions	Groundwater Extraction Fee with Land Use Modifications	N/A
		City of Patterson Reduced Groundwater Use Portfolio	City of Patterson
		Rotational Fallowing of Crop Lands	N/A

N/A – Not applicable; no specific project proponent identified. In most cases, management action will be implemented by a single GSA, all of the GSAs, and/or a proponent/manager for the management action will be identified prior to implementation.

4.2 Progress in Implementing Projects and Management Actions

Table 19 and **Table 20** summarize the progress in implementing the Tier 1 and Tier 2 projects and Tier 1 management actions, respectively. Progress in implementing management actions under Tier 2 will be summarized beginning in 2026, when they are scheduled to be implemented, or when they are deemed necessary, whichever comes first. Tier 3 projects are largely outside of the GSAs' control and progress updates will be provided as relevant to the Northern and Central Delta-Mendota Regions. Tier 3 management actions will be summarized as they are deemed necessary to achieve sustainability and begin to be implemented by the GSAs, if needed.

Table 19. Tier 1 and Tier 2 Projects Status Update

Tier	Project	Project Proponent	Status
1	Los Banos Creek Recharge and Recovery Project	San Luis Water District	Preliminary design complete in 2018; Pending funding for CEQA/permitting, design, and construction
	Orestimba Creek Recharge and Recovery Project	Del Puerto Water District	Preliminary design complete; CEQA/Permitting anticipated to be complete by Fall 2022; Design anticipated to be complete by January 2022; Construction anticipated to be complete by Fall 2023
	North Valley Regional Recycled Water Program (NVRRWP) – Modesto and Early Turlock Years	Del Puerto Water District	Completed in March 2020
	City of Patterson Percolation Ponds for Stormwater Capture and Recharge	City of Patterson	No information provided
	Kaljian Drainwater Reuse Project	San Luis Water District	Preliminary Design and CEQA/Permitting anticipated for Fall 2020; Design planned between 2020 and 2025; Construction planned in phases beginning in 2021
	West Stanislaus Irrigation District Lateral 4-North Recapture and Recirculation Reservoir	West Stanislaus Irrigation District	Feasibility study in progress and anticipated to be complete in 2021
	Revision to Tranquillity Irrigation District Lower Aquifer Pumping	Tranquillity Irrigation District	Well Water Operations Plan established in 2017 and implemented on an annual basis
2	Del Puerto Canyon Reservoir Project	Del Puerto Water District	Preliminary design is anticipated to be complete in 2021; CEQA/Permitting and Design are anticipated to be complete in 2024; Construction is estimated to be complete in 2028
	Little Salado Creek Groundwater Recharge and Flood Control Basin	Stanislaus County	Per Stanislaus County Public Works Department, the project will be constructed as part of the mitigation activities related to the construction and operation of the Crows Landing Industrial Business Park (CLIBP). CLIBP has been certified by the County Board of Supervisors and Phase 1 (first 115 acres) is moving forward. The Little Salado Flood Control Project is scheduled for development in subsequent phases of the overall CLIBP project.

Tier	Project	Project Proponent	Status
	Patterson Irrigation District Groundwater Bank and/or Flood-Managed Aquifer Recharge (MAR)-type Project	Patterson Irrigation District	Feasibility study to be complete in 2021
	West Stanislaus Irrigation District Lateral 4-South Recapture and Recirculation Reservoir	West Stanislaus Irrigation District	No information provided
	Ortigalita Creek Groundwater Recharge and Recovery Project	San Luis Water District	To be determined

Table 20. Tier 1 Management Actions Status Update

Management Action	Status
Lower Aquifer Pumping Rules for Minimizing Subsidence	GSAs have been coordinating on completing lower aquifer pumping rules, as appropriate, and increasing GSA access to and into on well permits. Drought contingency planning in urban areas will be conducted on a city-specific basis as part of the upcoming 2020 Urban Water Management Plans.
Maximize Use of Other Water Supplies	
Increasing GSA Access to and Input on Well Permits	
Drought Contingency Planning in Urban Areas	
Fill Data Gaps	

5. DATA GAPS

5.1 Data Gaps in Groundwater Sustainability Plan

Data gaps, both spatial and temporal, were identified in the GSP for each applicable sustainability indicator in **Chapter 2** *Sustainability Implementation*, **Section 7.2** *Monitoring*.

Note: DMS ID 08-001 modified from 07-013 to reflect monitoring responsibilities performed by Widren Water District GSA.

Figure 2-1 and **Figure 2-2** reflect the spatial data gaps in groundwater level and groundwater quality monitoring networks for the Upper Aquifer and Lower Aquifer, respectively, within the Delta-Mendota Subbasin. Data gap areas were identified using professional judgement and localized knowledge. The location, reason, and local issues and circumstances that limit or prevent monitoring of these identified data gap areas located within the Northern and Central Delta-Mendota Regions are described below:

1. **Portions of the DM-II and West Stanislaus Irrigation District (WSID) GSA neighboring the Tracy Subbasin (Upper Aquifer only)** – There are no known wells located within this area with known and verified construction within the Upper Aquifer, therefore monitoring is currently limited in this area.

2. **Portion of Northwestern Delta-Mendota GSA neighboring the Modesto Subbasin (Upper Aquifer and Lower Aquifer)** - There are no known wells located within this area with known and verified construction within the Upper Aquifer or Lower Aquifer, therefore monitoring is currently limited in this area.

3. **Oak Flat Water District area (DM-II GSA) (Upper Aquifer only)** – Wells thought to be located in this area are limited to private wells where location, construction, and historical record are unknown and access is limited, thus currently limiting monitoring in this area.

4. **Santa Nella County Water District and area surrounding O'Neill Forebay (Upper Aquifer only)** - There are no known wells located within this area with known and verified construction within the Upper Aquifer, therefore monitoring is currently limited in this area.

5. **Southwestern portion of the Central Delta-Mendota Multi-Agency GSA (Upper and Lower Aquifer)** – Local water managers indicate there is *de minimis* or no groundwater use in this area within the Upper and Lower Aquifer and borings for groundwater exploration in the recent drought failed to encounter groundwater at economic quantities and depths, thus monitoring is largely unnecessary.

Temporal data gaps exist at individual well sites and across wells throughout the Delta-Mendota Subbasin. This is due to a multitude of reasons including historical differences in the timing of collected measurement, well construction date, and ability to access the well site.

There are no known spatial data gaps identified for the land subsidence monitoring network within the Northern and Central Delta-Mendota Regions. Professional judgement and local knowledge were used in the development of the land subsidence monitoring network determined that there is adequate spatial distribution of benchmark sites to collect subsidence data relative to management areas and their respective sustainable management criteria going forward. Temporal data gaps exist at individual monitoring sites and across monitoring sites throughout the Delta-Mendota Subbasin. This is due to a multitude of reasons including historical differences in the timing of collected measurement, monitoring site construction date, and ability to access the monitoring site. Future land surveys, coordinated amongst the GSAs and combined with publicly available land survey datasets, will eliminate these temporal data gaps in the future.

Depletions of interconnected surface water data gaps exist in areas where data are limited both spatially and temporally. The entire area along the San Joaquin River within the Northern Delta-Mendota Region is considered to be a data gap for the depletions of interconnected surface water monitoring network. The absence of known well locations within approximately three miles of the San Joaquin River is the primary driver currently limiting monitoring of the depletions of interconnected surface water sustainability indicator, as groundwater levels and potential changes in gradient between wells and the stream stage are used as proxy for monitoring this sustainability indicator. Temporal data gaps exist at individual and across well sites throughout the Northern Delta-Mendota Region. This is due to a multitude of reasons including limited monitoring locations, historical differences in the timing of collected measurements, well or stream gauge construction date, and ability to access the well site or stream gauge.

5.2 Progress in Filling Data Gaps

In order to fill the data gaps identified above, the Northern and Central Delta-Mendota GSAs are working together to implement the Fill Data Gaps Tier 1 management action. The Well Census and Inventory project funded through the Proposition 68 Sustainable Groundwater Management, Round 3 grant program will aid in filling data gaps by analyzing DWR's online well completion report database and existing geophysical logs to identify wells in the Delta-Mendota Subbasin not previously identified during GSP development. Well construction features will be determined through review of well logs to identify wells in each principal aquifer and up to 20 wells may be video surveyed to confirm screened intervals. The results will be summarized in a report that shows the locations of existing wells in the Delta-Mendota Subbasin, basic well construction information, and an analysis of identified wells to define active and inactive wells for use in other analyses. Wells identified under the well inventory will be incorporated into the Delta-Mendota Subbasin DMS. It is anticipated the project will be complete by the end of February 2021.

Individual GSAs have also made progress in filling data gaps. A summary of efforts to dates is as follows:

- DM-II GSA has been working to identify well locations with landowners and county records (with a plan to discuss access with landowners by the end of 2020) and is in the progress of requiring metering on all wells.
- Patterson Irrigation District GSA is in the process of conducting a well inventory within the district and has obtained well logs from DWR and additionally has adopted a policy requiring meters on new and existing wells.
- West Stanislaus Irrigation District GSA is in the process of requesting information from well owners and developing a district database with well information.
- Northwestern Delta-Mendota GSA is considering an interconnected surface water monitoring well as a permit condition for the proposed Pescadero Ranch wells and will also evaluate other existing wells for the purposes of monitoring for interconnected surface water.
- Patterson Irrigation District GSA and West Stanislaus Irrigation District GSA submitted a DWR Technical Support Services (TSS) application in June 2020 for the installation of seven monitoring wells and one nested monitoring well along the San Joaquin River to monitor for interconnected surface water.

6. OUTREACH EFFORTS

The Northern and Central Delta-Mendota GSAs have continued to hold regular board and council meetings according to the Brown Act with agenda topics including GSP implementation updates. Northern and Central Delta-Mendota Management Committee meetings are continually held on the last Thursday of each month and noticed according to the Brown Act. Additionally, the Delta-Mendota Subbasin newsletter is continuing to be prepared and circulated and is currently released on a quarterly schedule. The last newsletter was issued in June 2020.

7. INTRA-BASIN COORDINATION EFFORTS

Northern and Central Delta-Mendota GSAs have continued to coordinate with the other Delta-Mendota Subbasin GSAs through the Delta-Mendota Coordination Committee held on the second Monday of each month and noticed according to the Brown Act. The six Delta-Mendota Subbasin GSP groups developed and submitted a coordinated Annual Report for Water Year 2019 documenting GSP implementation progress that was submitted to DWR on April 1, 2020 and are currently coordinating on implementing the Prop 68 Sustainable Groundwater Management grant agreement work plan.

8. INTER-BASIN COORDINATION EFFORTS

No inter-basin coordination efforts were conducted during this period.

9. UPCOMING WORK AND ACTIONS

9.1 Planned Actions for Next Quarter by GSA

During the next quarter, the Northern and Central Delta-Mendota GSAs will conclude seasonal low groundwater level monitoring by the end of October 2021. These data will be compiled, reviewed, and uploaded to the the Delta-Mendota Subbasin Data Management System (DMS) and DWR's SGMA Portal by January 1, 2021. All representative monitoring sites for the land subsidence sustainability indictor will be monitored by the end of the 2020 calendar year. In addition to monitoring, the Northern and Central Delta-Mendota GSAs will continue to work with county representatives to address the means and methods by which the GSAs may provide input into well construction permitting (one of the Tier 1 management actions), in addition to continued work on identified projects.

The funding agreement for the Proposition 68 Sustainable Groundwater Management, Round 3 grant award was finalized in May 2020. Work on Component 10, the Well Inventory and Census, has begun with preparation of an RFP and solicitation for proposals. The successful consultant will be contracted during the next period and work to begin shortly thereafter. Additionally, the Delta-Mendota Technical Working Group (TWG) will be convened in October to start discussions around the best approach for completion of Component 11, Subsidence Characterization and Project Feasibility Determination, of the grant agreement.

9.2 Potential Revisions to Northern & Central Delta-Mendota Region Groundwater Sustainability Plan

There are currently no revisions planned for the Northern & Central Delta-Mendota Region GSP other than the anticipated changes to the representative monitoring networks. Several numeric minimum thresholds and measurable objectives for the chronic lowering of groundwater levels sustainability indicator have been recalculated since the submittal of the GSP due to replacement of proxy data with historical well records. Wells with revised numeric minimum thresholds and measurable objectives are identified in **Table 7** through **Table 10**. Historic water level records for wells 01-007, 03-001, 03-002, 03-003, 07-012, 07-016, 07-017, and 07-018 were also modified in the SGMA Portal in cooperation with DWR to remove some proxy data that were not representative of the wells. These outliers were identified following input of Spring 2020 groundwater elevation data. Historic water level records were further revised within the Delta-Mendota Subbasin DMS and DWR's SGMA Portal for 03-002 and 03-003 to correct a mix up between depth to water and water surface elevation measurements.

Since adoption and submittal of the GSP to DWR, several revisions to the representative monitoring network have been requested by the designated monitoring entities. Woodard & Curran, San Luis & Delta-Mendota Water Authority, and EKI will conduct individual meetings with the designated groundwater quality monitoring entities throughout the Northern & Central Delta-Mendota Region during October and November to discuss challenges faced during spring 2020 groundwater level and summer 2020 groundwater quality monitoring and the need to modify the representative monitoring network.

Comments received during the public review process for the Northern & Central Delta-Mendota Region GSP will be addressed in the 5-Year Update to the GSP in 2025. However, minor edits to the GSP description for Del Puerto Canyon Reservoir were made to align the description with the recently-released EIR. These revisions were made in the Northern & Central Delta-Mendota Region GSP in redline mode and the revised GSP uploaded to the SGMA Portal in July 2020.

APPENDIX A: SUMMARY OF COMPLETED QUARTERLY TRACKING TOOLS BY GSA

NCDM Q2 GSP Implementation Progress - Monitoring Status

GSA	Water Level Monitoring	Water Quality Monitoring	Subsidence Monitoring	Interconnected SW Monitoring
Central Delta-Mendota	SNCWD - static level data collected from Well 01 weekly TRID collects monthly readings from 5 wells in the representative monitoring network Pan WD/Pac WD/MSWD - all wells monitored for fall WL event in September, except PWD 48 EFWD - Monitored Well 500 (MP093.27L) instead of MP094.26L for WL but no construction info available	SNCWD - Collect monthly water quality samples according to SWRCB-DDW drinking water schedule for both groundwater and surface water (Well 01) and for Volta well TRID - planned for early August; considering assigning different wells for WQ sampling instead of KRCDTID02 and KRCDTID03 since large diameter wells with pumps that need a lot of volume removed for a good sample Pan WD/Pac WD/MSWD - Sampled MP92.20R instead of MP91.68R; Sampled MP93.27L but not in rep monitoring network; MC18-1 sampled by LSCE in August and same with GDA003 but only for nitrate EFWD - Monitored Well 500 (MP093.27L) instead of MP094.26L for WL but no construction info available Varies by well, several wells unable to be sampled for WQ, will need to document in report	TRID - Measured in late July to correlate with SJRRP monitoring All non TRID and SLWD sites (104.20-R) to be monitored by SLDMWA (USBR)	N/A
City of Patterson	MP037.32L (02-001) - 04/01/20 by SLDMWA. City of Patterson to monitor in future. Well 2/N. 5th Street (02-002) - City monitors water levels weekly	MP037.32L (02-001) - City was willing to take on sampling of this well; Mark Walsh (SLDMWA hydrographer) went out to inspect well and hasn't been operational for 4-7 years and no WCR available; Suggested sub out for MP037.10L, Claire has reached out to Adam to see if he has construction info (as of 9/22 waiting to hear back from Adam) Well 2/N. 5th Street (02-002) - SGMA water quality monitoring performed in August 2020	All subsidence monitoring locations to be surveyed between December 2020 and April 2021	N/A
DM-II	Monthly water level data collected by SLDMWA; DPWD responsible for future monitoring Conducting inventory of existing wells that could expand network	MP030.43R, MP045.78R, MC10-2, MP058.28L and MP051.66L sampled on 8/25/2020 Well MP033.71L - well pump not in service and no accessible port for sampling; well owner is in the process of repairing pump Well 91 - pump not in service and no accessible port for sampling; well owner is in the process of repairing pump MP021.12L - well pump not in service and no accessible port for sampling; well owner is in the process of repairing the pump	N/A UNAVCO P252 and benchmark located along DMC (USBR collects subsidence data every other year)	N/A
Northwestern Delta-Mendota	Monthly water level data collected by SLDMWA or WSID	GSA needs to secure access and perform. Need to coordinate with other GSAs; WSID will perform for WSID 3.	DMC benchmark monitored every other year by USBR	Potential condition of permit issuance for Pescadaro Ranch Stanislaus County to conduct search for another existing shallow well
Oro Loma Water District	No information provided	No information provided	No information provided	No information provided
Patterson Irrigation District	Monthly data collected by PID (total of 7 PID wells monitored monthly, 3 of which are in GSP monitoring network) WSJ003/Poplar well - casing caved, production partially restored TSS application submitted to DWR and accepted on 6/1/20 for 7 wells	Performed in July 2020 for MW-2 and WSJ003. Sampled MW-1 instead of MW-3 in July 2020	15 total points, 3 of which are RMS. 2019 data submitted to Seth Harris (SLDMWA). Second event planned for 2020.	Monthly data collected for 2 wells PID Transducer - Existing transducer on fish screen. Rely on CDEC for river stage data. May replace this ISW site in future. Goal is to pair stream gage with shallow monitoring well. TSS application submitted to DWR for additional monitoring wells
West Stanislaus Irrigaton District	SLDMWA collected from former CASGEM well on 4/1/20 WSID measures water levels monthly, data provided to SLDMWA DWR reviewing TSS application for double nested well	121 was inoperable, therefore couldn't pull sample WSID 3 - grab sample was taken in August	Planned: Dec 2020 - Apr 2021. Most recent event in December 2019. Timed to coincide with USBR subsidence monitoring. Total of 22 measuring points. No activity in Q2.	WSID Pumping Plant 1 Intake Level Sensors - collected 4/1/20 Flow and pumping rate are continuously monitored and recorded via SCADA; however, not well correlated with River stage/flow. Topic of ISW is a data gap. Comment from Bobby: "I think we agree that this is not a good sensor/location t ouse due to proximity to the river and WSID pumping rates. As such, I don't think we should provide data from this location as I think it confuse things in the long run."
Widren Water District	SLDMWA monitors water levels monthly for Pump-in Program; WWD to monitor in future	MP102.04R was sampled on 8/19/20 for Boron, TDS, Turbidity, Nitrates. Sampling done by Widren Water District to be performed on an annual basis	N/A	N/A

GSA	Method to Improve Annual GW Extraction Reporting	Method Used to Report Annual Water Use Data
Central Delta-Mendota	SNCWD - Metering Panoche WD - Metering EFWD - Will read meter April 2021 at next irrigation	***Fresno County*** Surface Water - Metered (*Q2 spreadsheet says estimated; need to confirm) Groundwater - Estimated ***SNCWD*** Surface Water - Metered Groundwater - Metered ***EFWD*** Surface Water - Metered Groundwater - Estimated
City of Patterson	Ordinance passed in 2020 requiring meters on all wells by 2021 Wells that are part of the ordinance: any private domestic or ag wells (unknown how many of each or how many are de minimis); Recently annexed landowners (within last 10 years) are not metered and unknown how many	Groundwater extractions for urban/domestic/municipal are metered
DM-II	Metering for both aquifers planned to be required in the future Currently estimated based upon ET minus surface water deliveries	Surface Water - Metered Groundwater - Estimated; plan to require metering in the future
Northwestern Delta-Mendota	Metering for both aquifers Merced County ordinance in 2015 requires meters on new wells Stanislaus County has been conditioning some well permits; can continue this in the future	Surface Water - Estimated Groundwater - Estimated
Oro Loma Water District	No information provided	No information provided
Patterson Irrigation District	Metering planned for both aquifers Ordinance passed in 2020 requiring meters on all wells by 2021. Letters sent out on August 21st for additional infomration but only one response received. May extend completion date. The goal is to have all data by 1/1/2021 with potential extension to July 20201	Surface Water - Metered Groundwater - PID and Twin Oaks wells metered, private wells are not; working towards complete metering Water reuse is metered
West Stanislaus Irrigaton District	Metering for both aquifers Ordinance passed in June 2020 requiring meters on all wells by January 1, 2021. Ordinance was sent out to all landowners and water users within the GSA. Well informationi has been provided by many well owners. WSID will follow up with grower later in 2020 to obtain information on 100% of the wells.	Surface Water - Metered Groundwater - Estimated for now. Metering is planned per Ordinance. Metered for urban/domestic/municipal.
Widren Water District	Metering Both operational wells are currently metered; No pumping from the Lower Aquifer	Surface Water - Metered Groundwater - Metered (*Q2 tracker only indicates GW for ag purposes, need to verify if Widren has other sources) Reused/Recycled - Metered

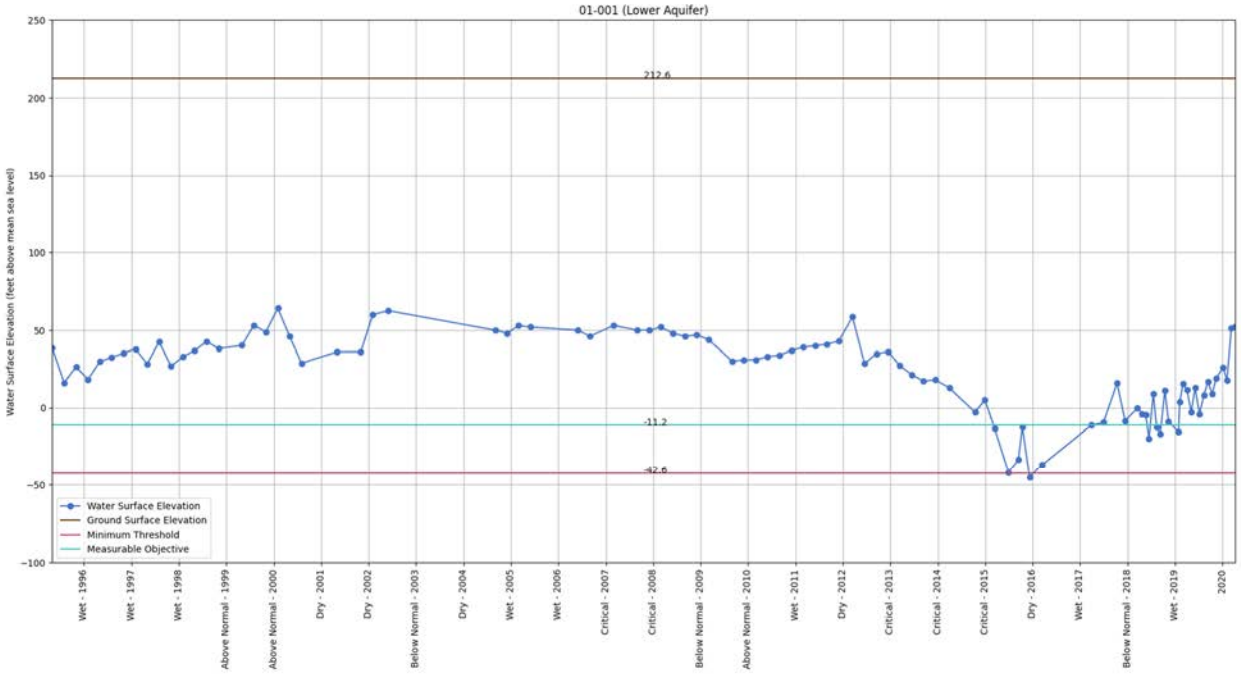
NCDM Q2 GSP Implementation Progress - Projects Management Actions

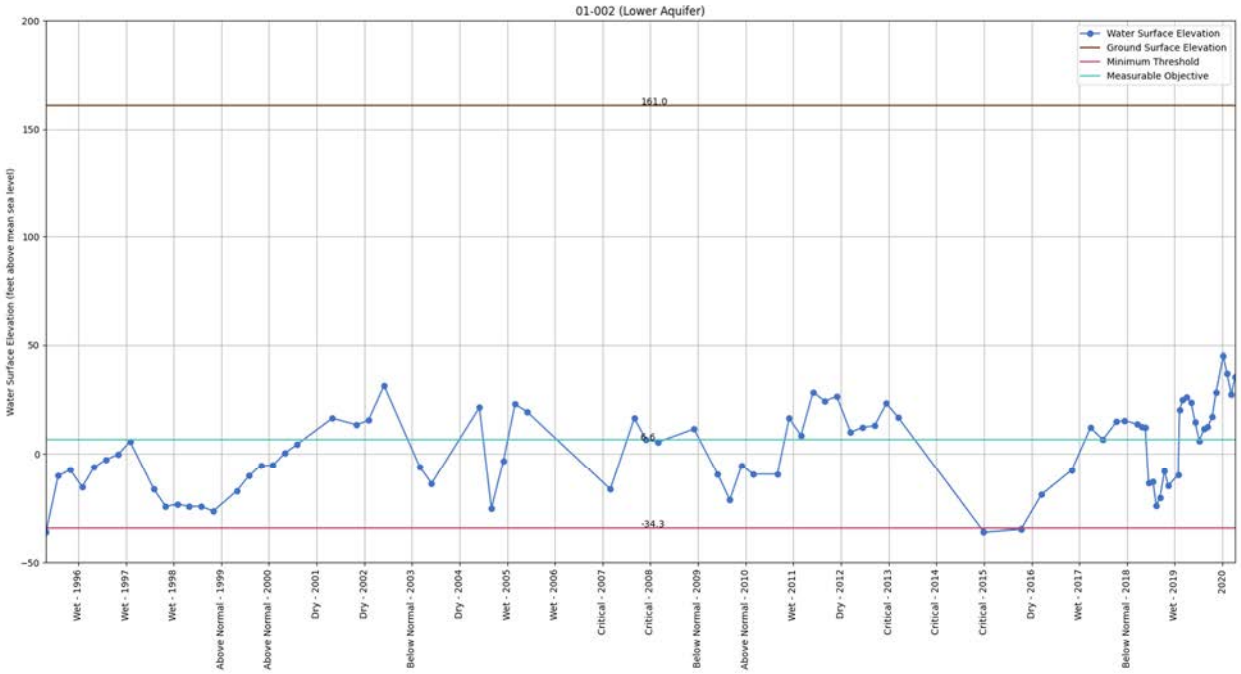
GSA	Projects	Tier 1 Management Actions				
		Lower Aquifer Pumping Rules	Maximize Use of Other Water Supplies	Increasing GSA Access to / Input on Well Permits	Drought Contingency Planning in Urban Areas	Fill Data Gaps
Central Delta-Mendota	***Los Banos Creek Recharge and Recovery Project*** Prelim Design - Completed 2018 CEQA/Permitting; Design; Construction - Pending Funding ***Kaljian Drainwater Reuse Project*** Prelim Design - In Progress, Fall 2020 CEQA/Permitting - In Progress, Fall 2020 Design - 2020-2025 (100% design planned in phases) Construction - 2021-TBD (construction planned in phases) ***Little Panoche Creek SGMA Nested Monitor Well*** Prelim Design and CEQA/Permitting - Completed 2019 Design - Completed 2020 Construction - Completed July 2020 ***Ortigalita Creek Groundwater Recharge and Recovery Project*** TBD	Discussed at coordination meeting in May 2020. Draft anticipated in September 2020. TRID established Well Water Operation Plan in 2017; Program in place (not an official policy of the board but an operating standard of staff) Discussed at coordination meeting in May 2020; Draft anticipated in September 2020 Program in place (not an official policy but an operating standard of staff)		Participating in on-going discussions		
City of Patterson	Percolation ponds for stormwater capture and recharge - no information provided	Discussed at coordination meeting in May 2020	N/A	Participating in N-C Region process	Coordination planned for Fall 2020	TBD
DM-II	***Orestimba Creek Recharge and Recovery Project*** Prelim Design - Complete CEQA/Permitting - Fall 2022 Design - January 2022 Construction - Fall 2023 ***NVRRWP - Modesto and Early Turlock Years*** Completed in March 2020 ***Del Puerto Canyon Reservoir Project*** Prelim Design - Est. 2021 CEQA/Permitting - Est. 2024 Design - Est. 2024 Construction - Est. 2028	Discussed at coordination meeting in May 2020	Continue to work on sustainable surface water alternatives like the NVRRWP	Participation in Ad-Hoc committee for Stan Co well permitting	N/A	Working to identify well locations and begin process of requiring metering of wells
Northwestern Delta-Mendota	***Little Salado Creek Groundwater Rechage and Flood Control Basin*** From Walt (7/30/20): "I checked with Stanislaus County Public Works Department re: Little Salado Flood Control project and was told that the project will be constructed as part of the mitigation activities related to the construction and operation of the Crows Landing Industrial Business Park which has already been certified by the County Board of Supervisors. The CLIBP project is moving forward now with the first 115 acres (Phase 1). The Little Salado Flood Control Project is scheduled for development in subsequent phases of the overall CLIBP project. Once I have a better schedule for this work I will let you know but I believe it is ten year or so down the road (don't quote me on that)."	Discussed at coordination meeting in May 2020	No info provided	Participating in N-C Region process	N/A	Participating in N-C Region Process. Considering ISW well as permit condition for Pescadero Ranch wells. Will evaluate use of another existing well for ISW purposes. Plan to identify and inventory wells in GSA region as part of N-C Region well inventory project.
Oro Loma Water District	No information provided	No information provided	No information provided	No information provided	No information provided	No information provided
Patterson Irrigation District	***Groundwater Bank and/or Flood-MAR Project*** Feasibility Study in 2021	Discussed at coordination meeting in May 2020	No formal policy; however, surface water is better quality than groundwater and is preferred by growers	Actively participating in N-C Region process	N/A	TSS application submitted; Metering policy in progress; PID well inventory in progress
West Stanislaus Irrigaton District	***Lateral 4-North Recapture and Recirculation Reservoir*** Feasibility study in progress - anticipated completion in 2021 ~2 years away from being eligible for funding after flushing out operations and design	I don't expect pumping rules wthin WSID GSA	Have policy in place (requires purchase of 2 AF/ac of surface water; prohibits discharge of GW into facilities unless WSID is short of water); adopted 12/2015	Actively participating in N-C Region process	N/A	Actively participating in N-C Region Well Census / Inventory process; TSS well application submitted
Widren Water District	N/A	Discussed at coordination meeting in May 2020.	No info provided	Participating in N-C Region process	N/A	No information provided

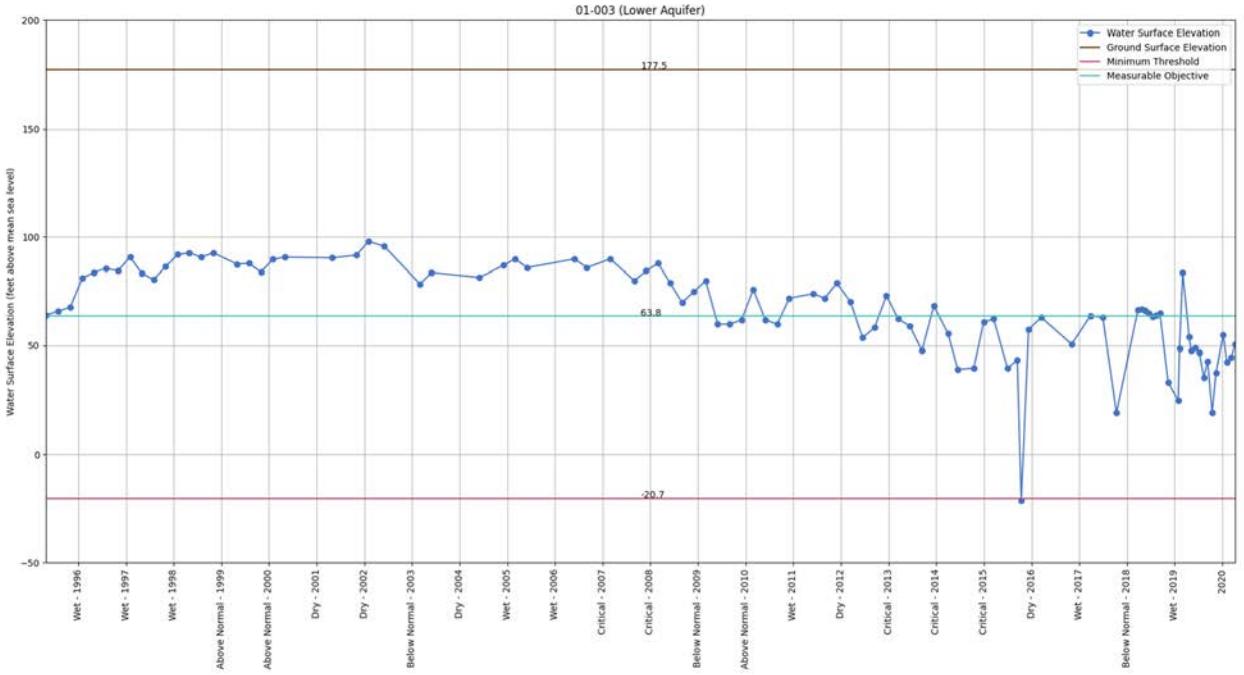
NCDM Q2 GSP Implementation Progress - Additional Actions

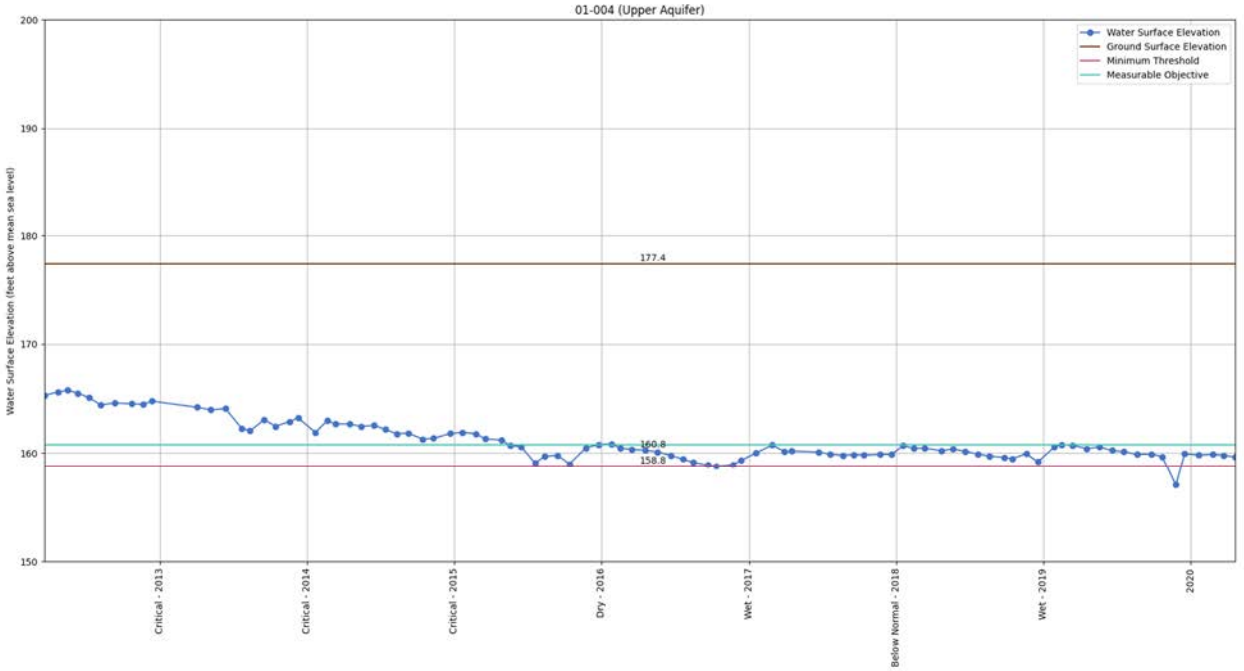
GSA	Additional Projects	GW Level and WQ Monitoring	Fill Data Gaps	Well Census/Inventory	Well Metering
Central Delta-Mendota	TRID collects additional well and subsidence data, which are maintained locally. Subsidence Monitoring Improvements - Panoche identifying new subsidence monitoring sites to tie to DMC survey	Little Panoche Creek SMGA Nested Monitoring Well - Installation completed in July 2020 by SLWD	Fresno County is anticipating filling data gaps in County white areas as part of future GSP updates		
City of Patterson	Coordination with annexed landowners regarding well extraction data - Estimated 50 wells that need to be identified for either ag or private domestic wells.	Well 04 -Ward Ave - Water level data are available on a weekly basis if needed. Title 22 does not apply to this well. Well 05 - Hartley Ave - Water level data are available on a weekly basis if needed. Per Title 22 requirements for drinking water sources, bacteriological samples are taken weekly. Wells 06 (Poppy Ave), 07 (Hartley Ave); 08 (Orange Ave); 09 (Orange Ave) and 11 (Sycamore Ave) - same as above Keystone well - Park Center Dr. - Water level data are available on a weekly basis if needed. Title 22 does not apply to this well Floragold Well (American Eagle Ave) - same as above	No information provided	No information provided	No information provided
DM-II	Continue to pursue funding for additional projects: Orestimba was successful, potentially expand	Plan to take over water quality monitoring in GSA that SLDMWA will be discontinuing Continue monthly water level monitoring of ~20 additional wells in the GSA that are not RMS, but part of Pump-in program	Hope to use existing wells for additional monitoring. Reviewed County records, plan to discuss access with landowners by end of 2020.	Near-term goal is to map all wells in GSA; Participating in N-C Region process	Intend to develop ordinance requiring installation of meters on new wells, and then eventually install meters on existing wells
Northwestern Delta-Mendota	None provided				
Oro Loma Water District	No information provided	No information provided	No information provided	No information provided	No information provided
Patterson Irrigation District		Monthly water level measurements for 7 wells (three in RMS) in PID. Sampled MW-1 and WSJ003 in July for water quality		PID has map of wells; has obtained well logs from DWR; in the process of completing local inventory	Adopted a policy requiring installation of meters on new and existing wells
West Stanislaus Irrigaton District	Request for GSA boundary modification in progress with DWR.	Sampled 5 additional wells for water levels. Increased local water level sampling frequency to monthly. Adding well 04-001 will make total of 6 wells in sampling program. Received and stored water quality data from Westley CSD in May 2020		Requesting information from well owners, plan to field locate and develop database with well information	
Widren Water District	A new upper aquifer production well was drilled in July 2020. This new well is a direct replacement for an existing operational well (M-8) that is going to be abandoned. The new well will be metered and monitored as described for other wells in the GSA.	Operational wells are sampled regularly by landowner for water levels. Planning to increase local sampling frequency to monthly. MP102.04R (DMS ID 07-013) will be sampled in July 2020 for water quality. Other operational wells sampled annually for water quality by landowner.		All wells located in the GSA have been identified and status brought to current. Each of the wells have a Well Completion Report on file. Information has been provided to SLDMWA. Well completion report will be provided when available.	

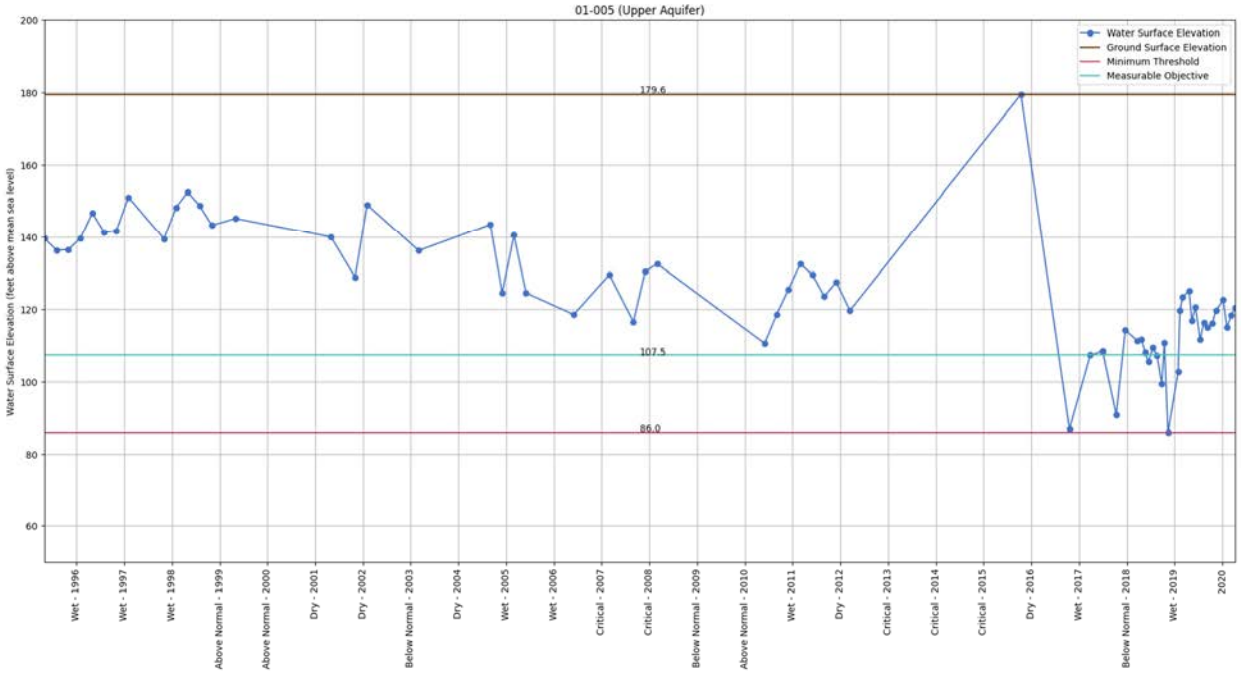
APPENDIX B: REPRESENTATIVE MONITORING LOCATIONS HYDROGRAPHS

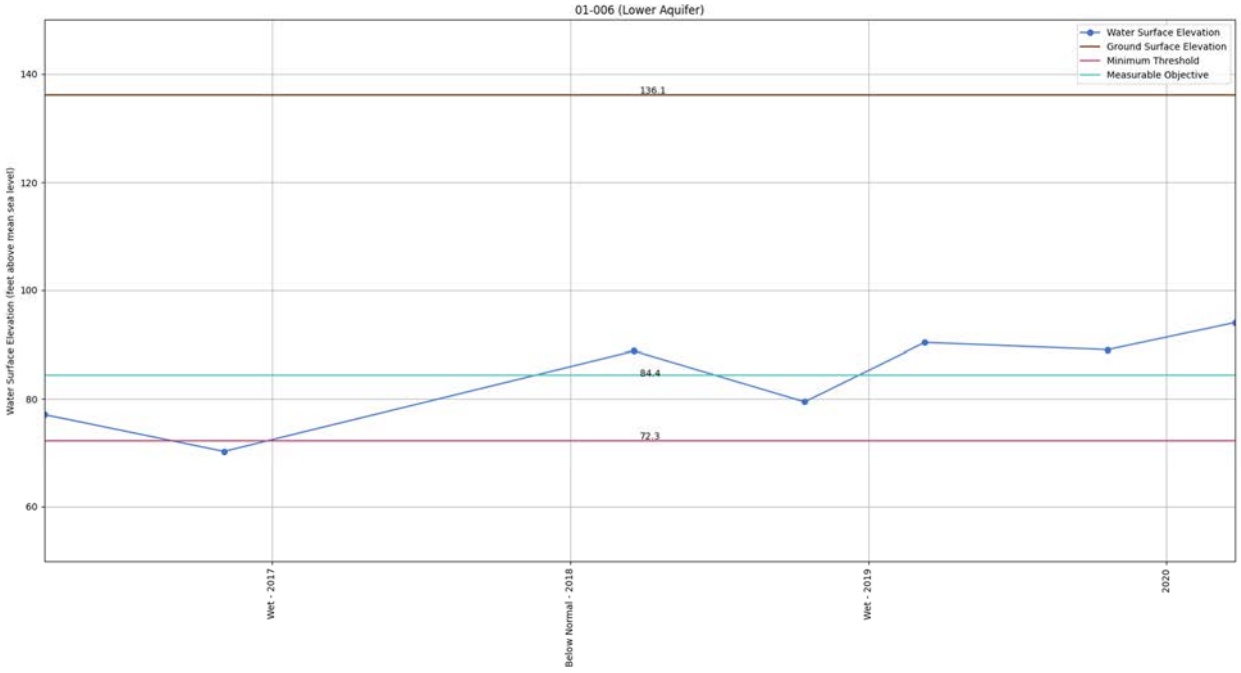

01-001 (Lower Aquifer)
Water Surface Elevation (feet above mean sea level)
212.6
-11.2
-42.6
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Wet - 1996
Wet - 1997
Wet - 1998
Above Normal - 1999
Above Normal - 2000
Dry - 2001
Dry - 2002
Below Normal - 2003
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

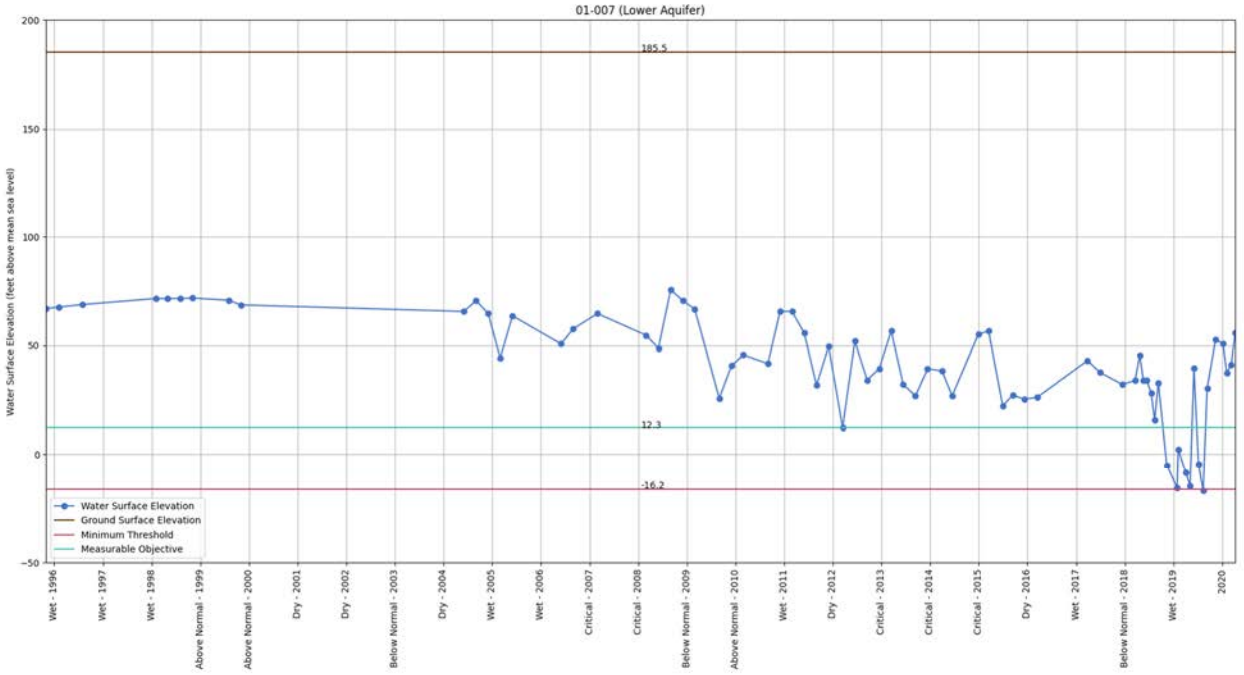

01-002 (Lower Aquifer)
Water Surface Elevation (feet above mean sea level)
161.0
6.6
-34.3
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Wet - 1996
Wet - 1997
Wet - 1998
Above Normal - 1999
Above Normal - 2000
Dry - 2001
Dry - 2002
Below Normal - 2003
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

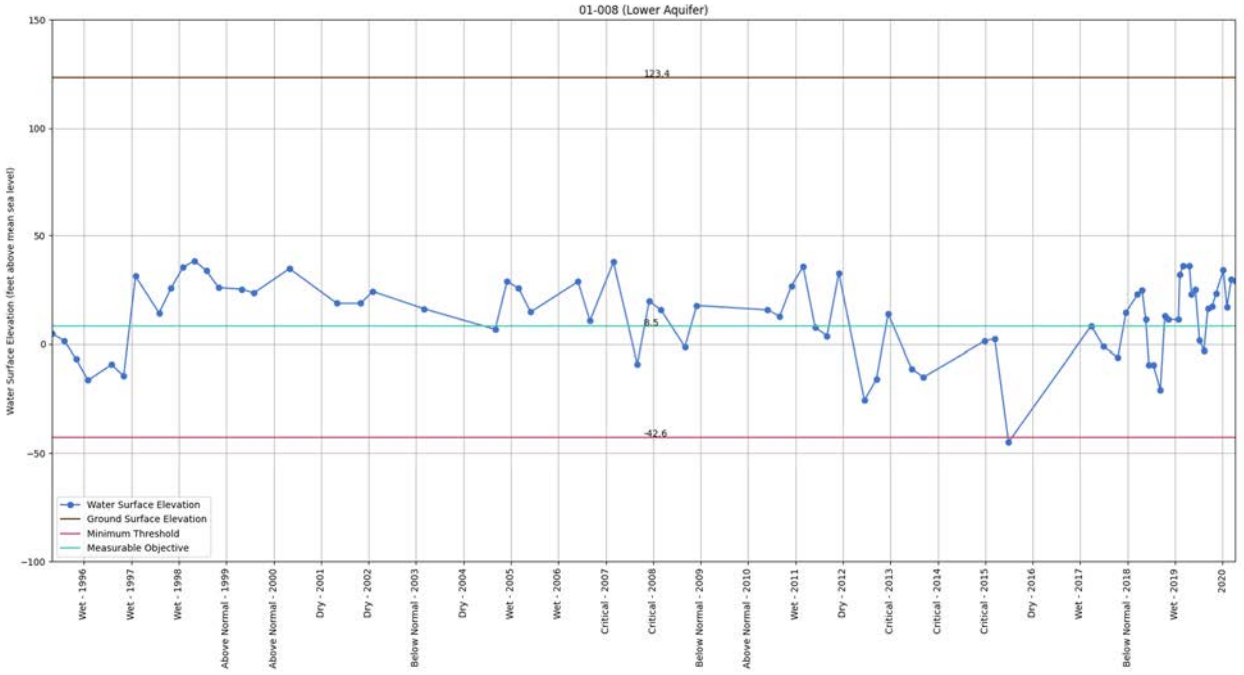

01-003 (Lower Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
177.5
63.8
-20.7
Water Surface Elevation (feet above mean sea level)
200
150
100
50
0
−50
Wet - 1996
Wet - 1997
Wet - 1998
Above Normal - 1999
Above Normal - 2000
Dry - 2001
Dry - 2002
Below Normal - 2003
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

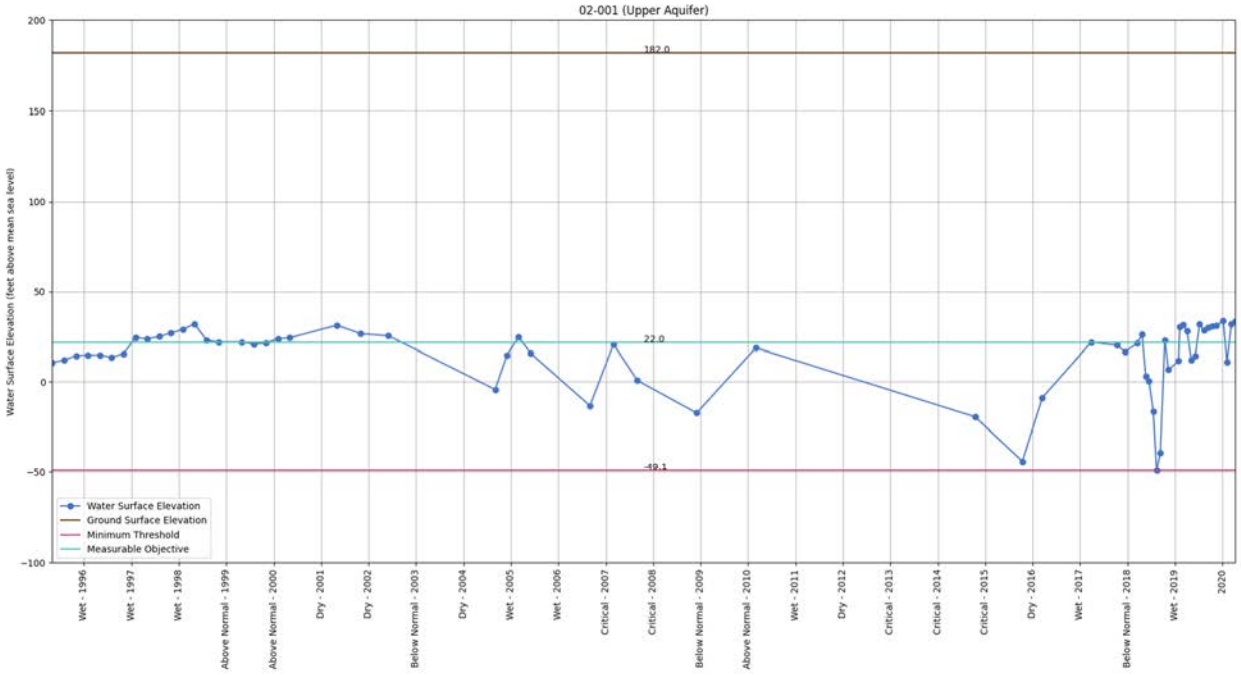

01-004 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
177.4
160.8
158.8
Water Surface Elevation (feet above mean sea level)
200
190
180
170
160
150
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

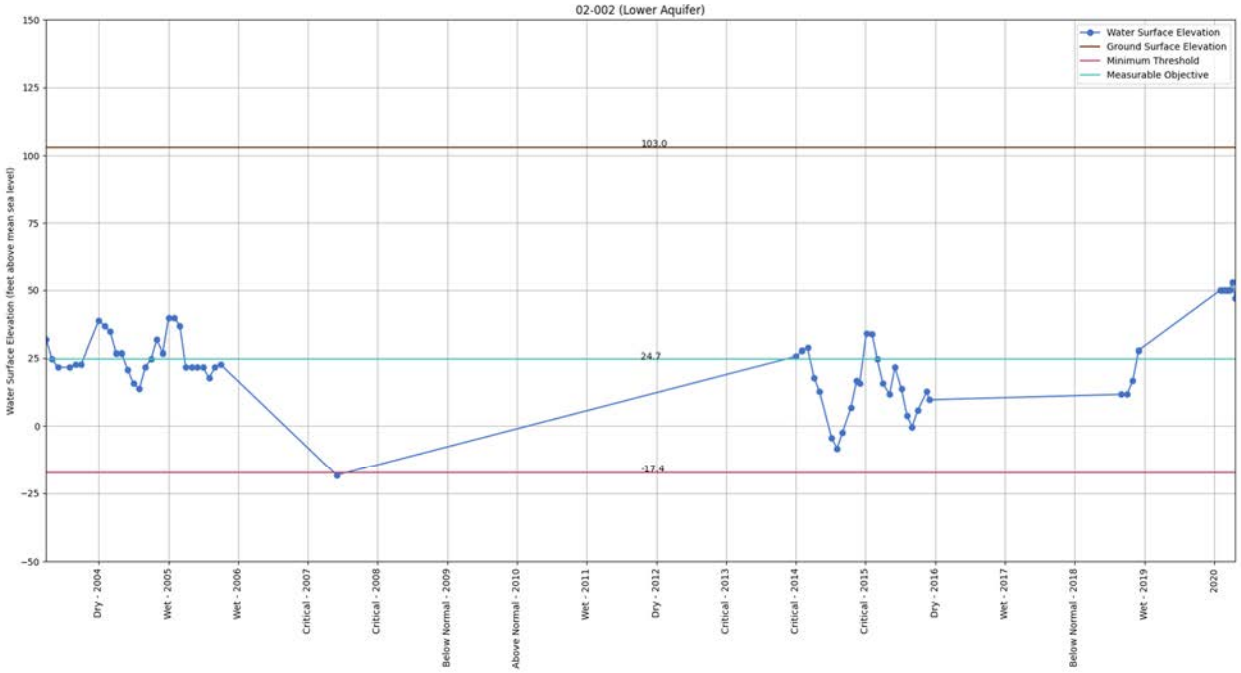

01-005 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
179.6
107.5
86.0
Water Surface Elevation (feet above mean sea level)
200
180
160
140
120
100
80
60
Wet - 1996
Wet - 1997
Wet - 1998
Above Normal - 1999
Above Normal - 2000
Dry - 2001
Dry - 2002
Below Normal - 2003
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

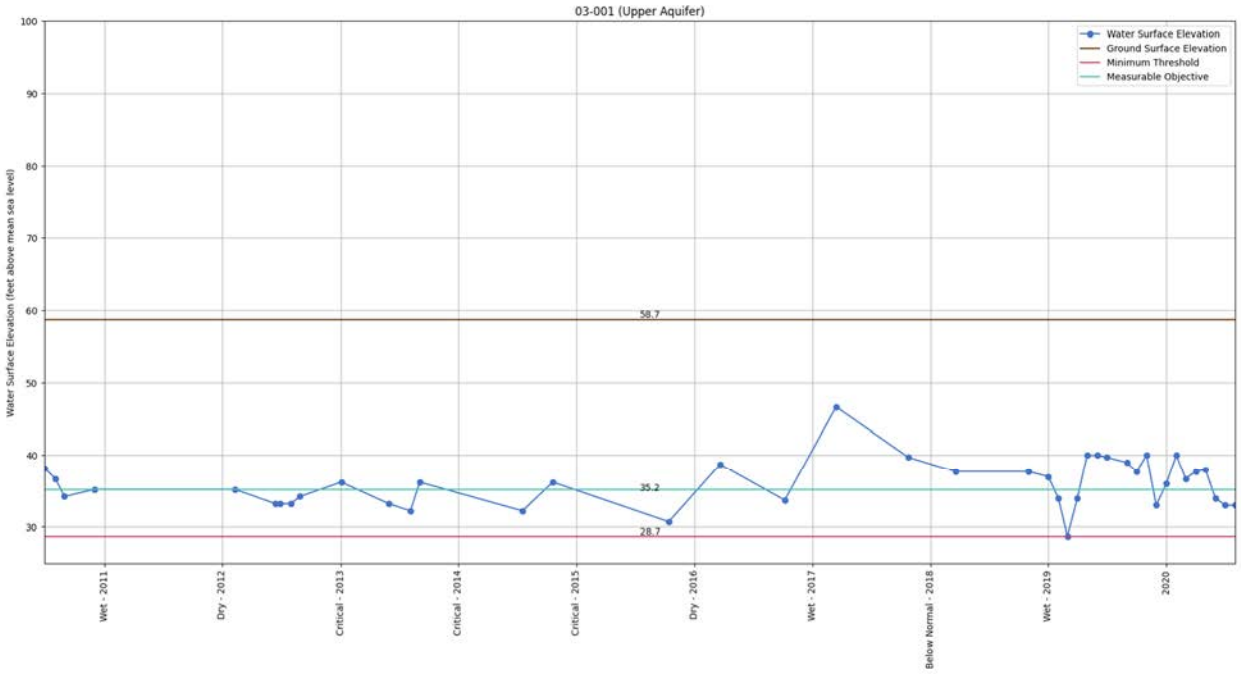

01-006 (Lower Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
136.1
84.4
72.3
Water Surface Elevation (feet above mean sea level)
140
120
100
80
60
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

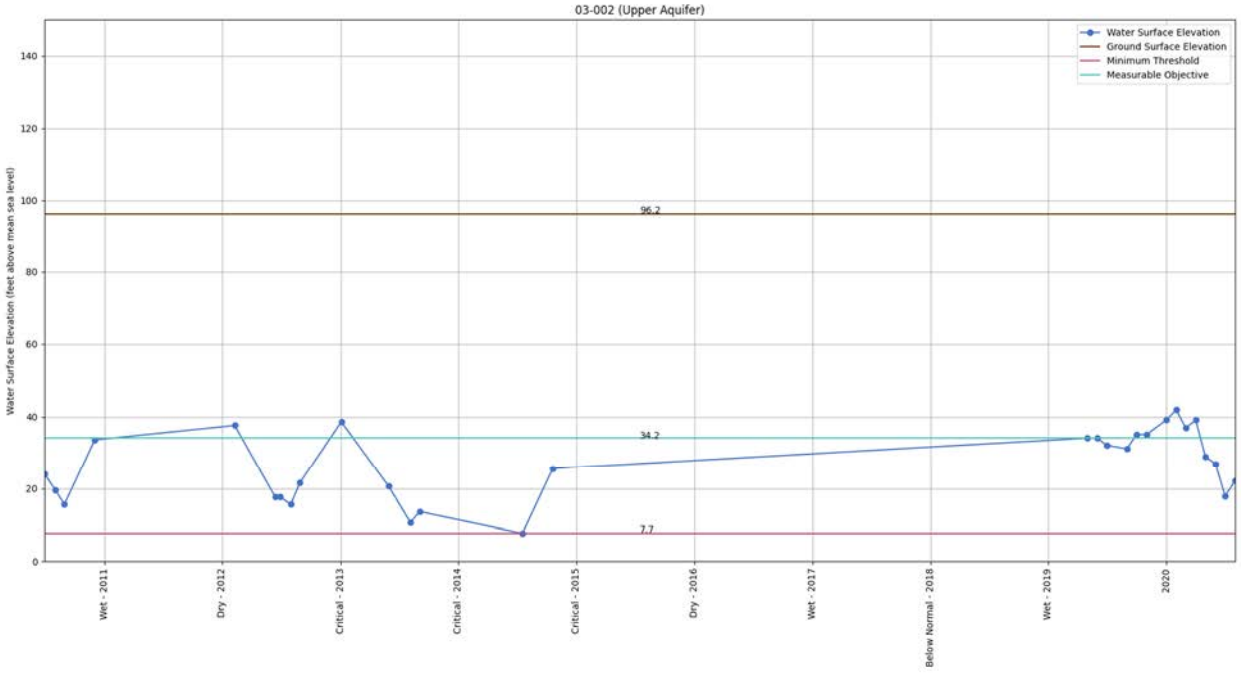

01-007 (Lower Aquifer)
Water Surface Elevation (feet above mean sea level)
185.5
12.3
-16.2
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Wet - 1996
Wet - 1997
Wet - 1998
Above Normal - 1999
Above Normal - 2000
Dry - 2001
Dry - 2002
Below Normal - 2003
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

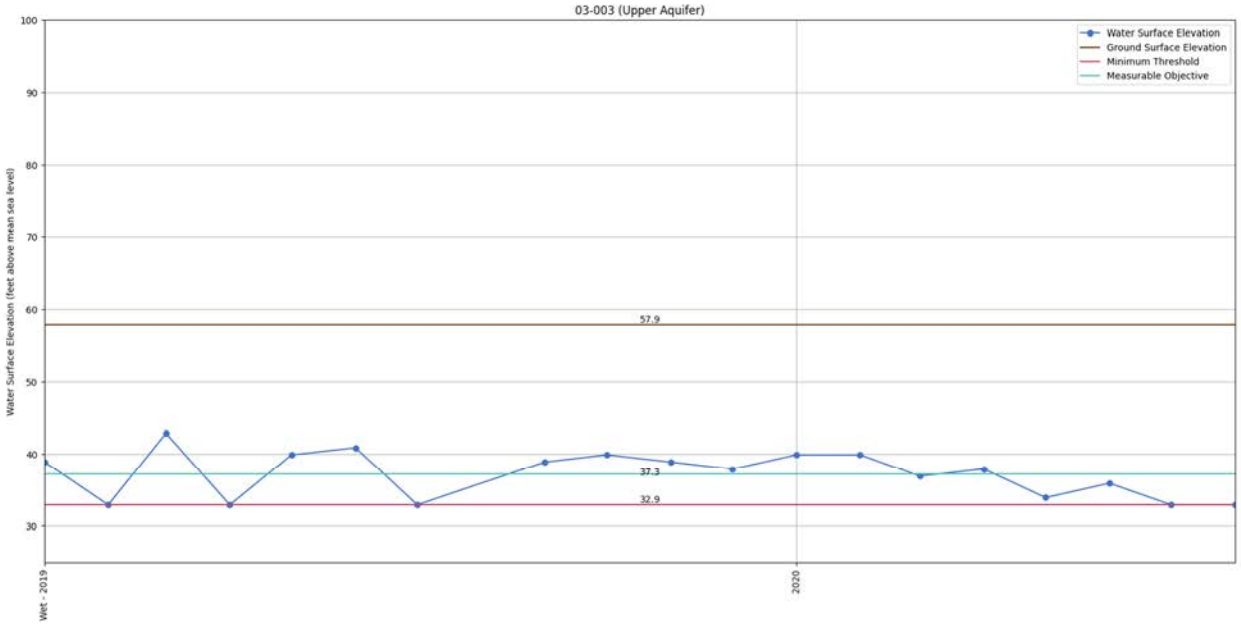

01-008 (Lower Aquifer)
Water Surface Elevation (feet above mean sea level)
123.4
8.5
-42.6
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Wet - 1996
Wet - 1997
Wet - 1998
Above Normal - 1999
Above Normal - 2000
Dry - 2001
Dry - 2002
Below Normal - 2003
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

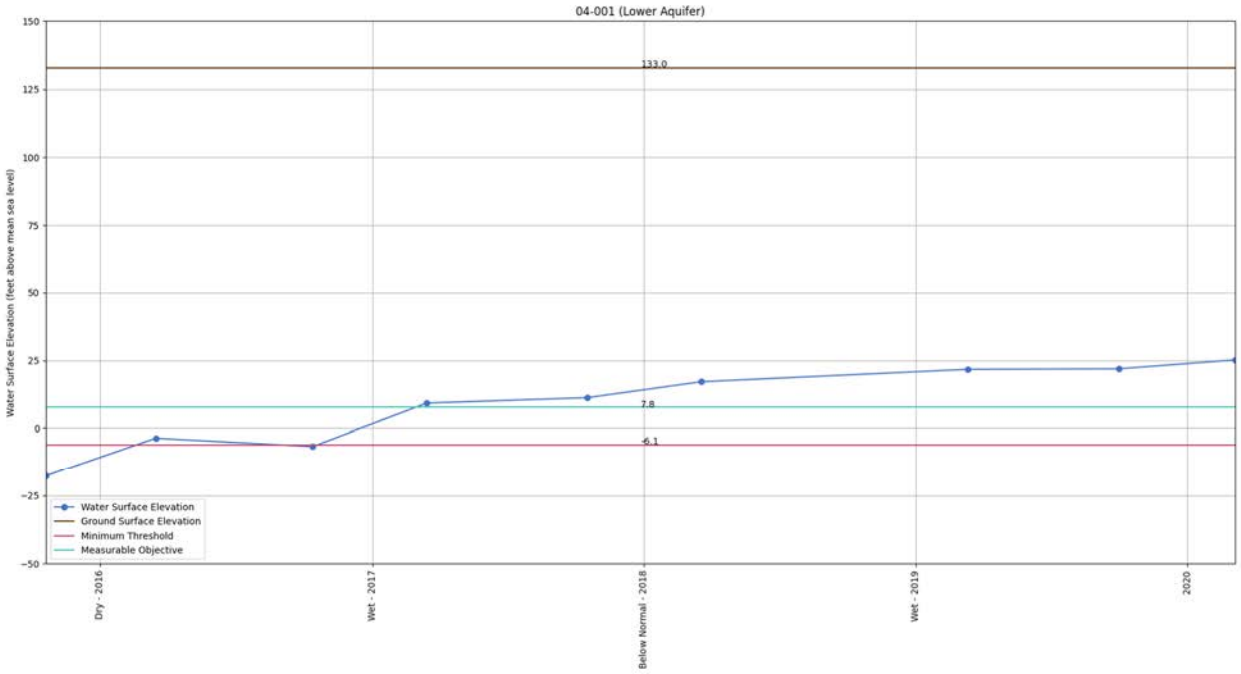

02-001 (Upper Aquifer)
Water Surface Elevation (feet above mean sea level)
182.0
22.0
-49.1
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Wet - 1996
Wet - 1997
Wet - 1998
Above Normal - 1999
Above Normal - 2000
Dry - 2001
Dry - 2002
Below Normal - 2003
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

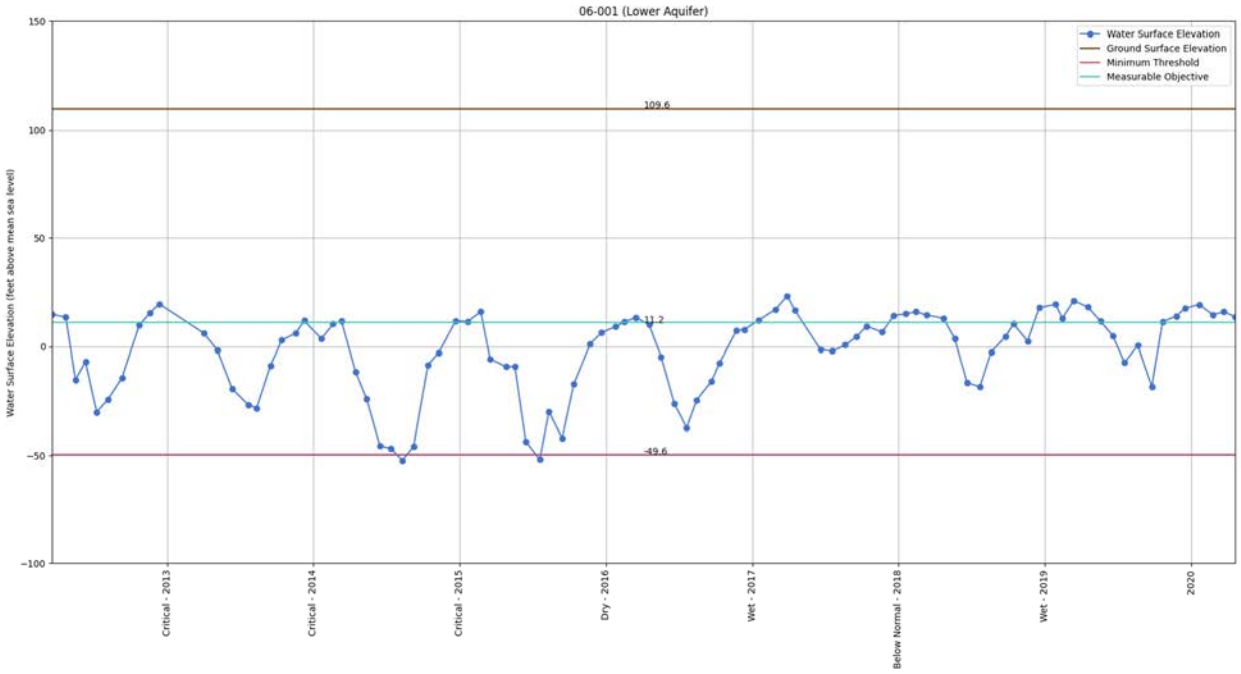

02-002 (Lower Aquifer)
Water Surface Elevation (feet above mean sea level)
103.0
24.7
-17.4
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

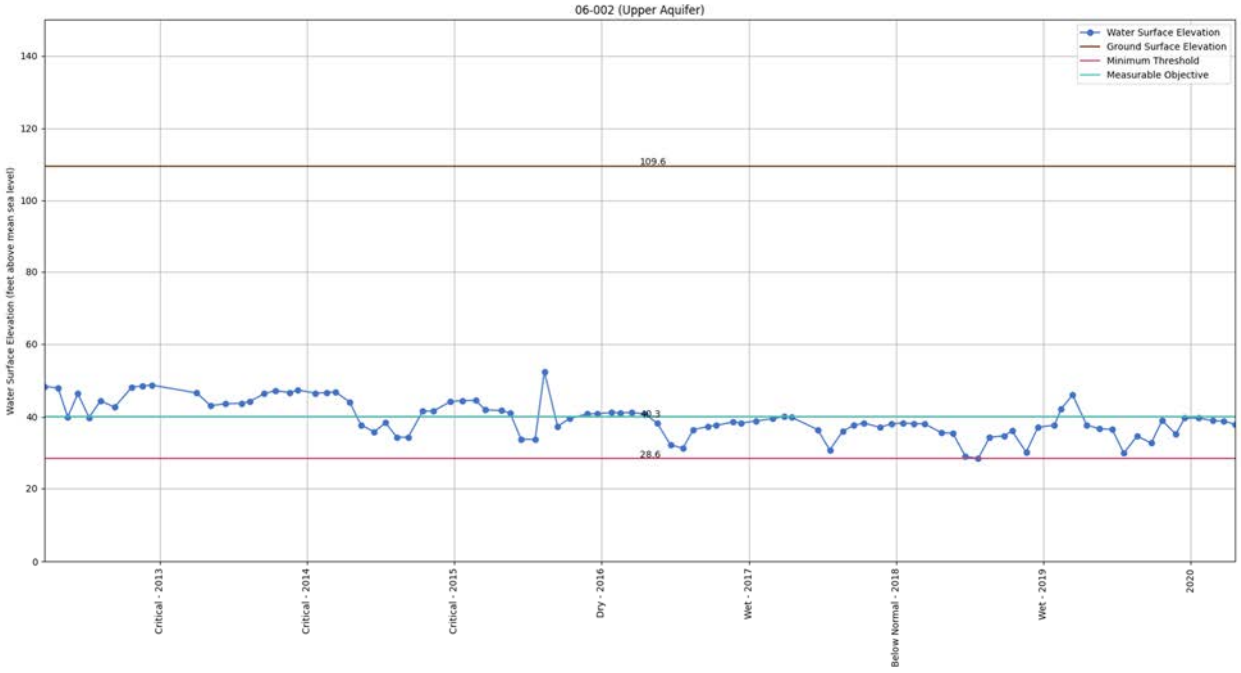

03-001 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
58.7
35.2
28.7
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

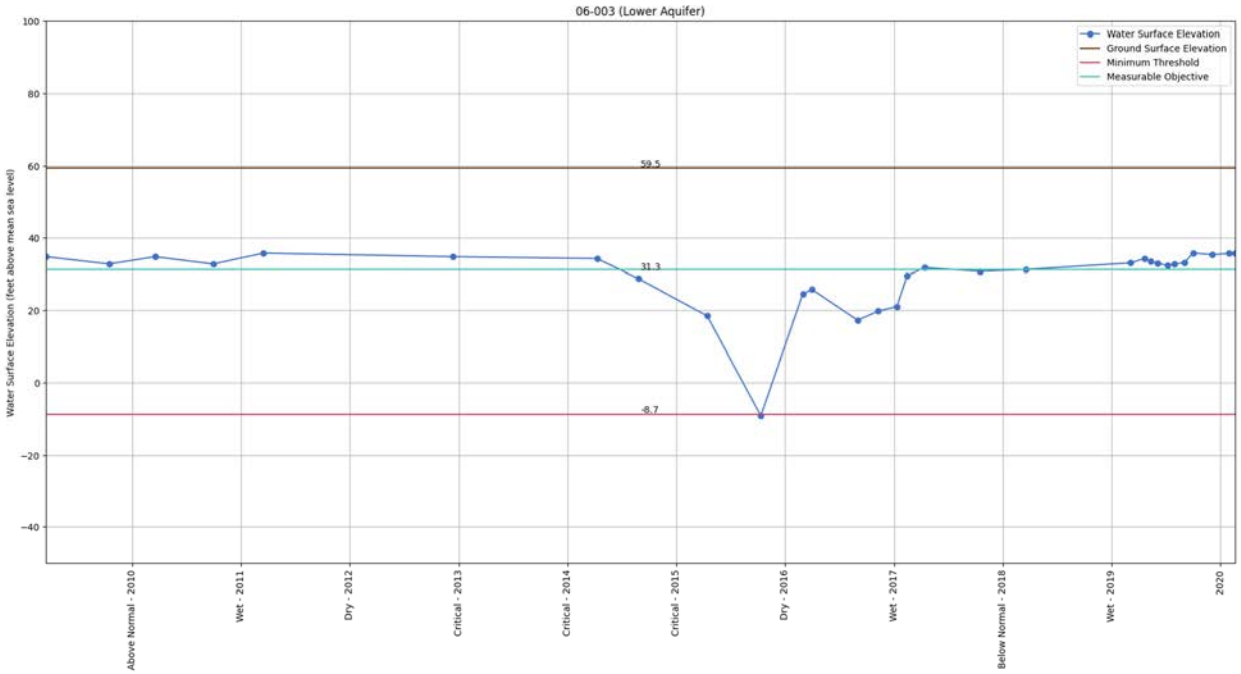

03-002 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
96.2
34.2
7.7
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

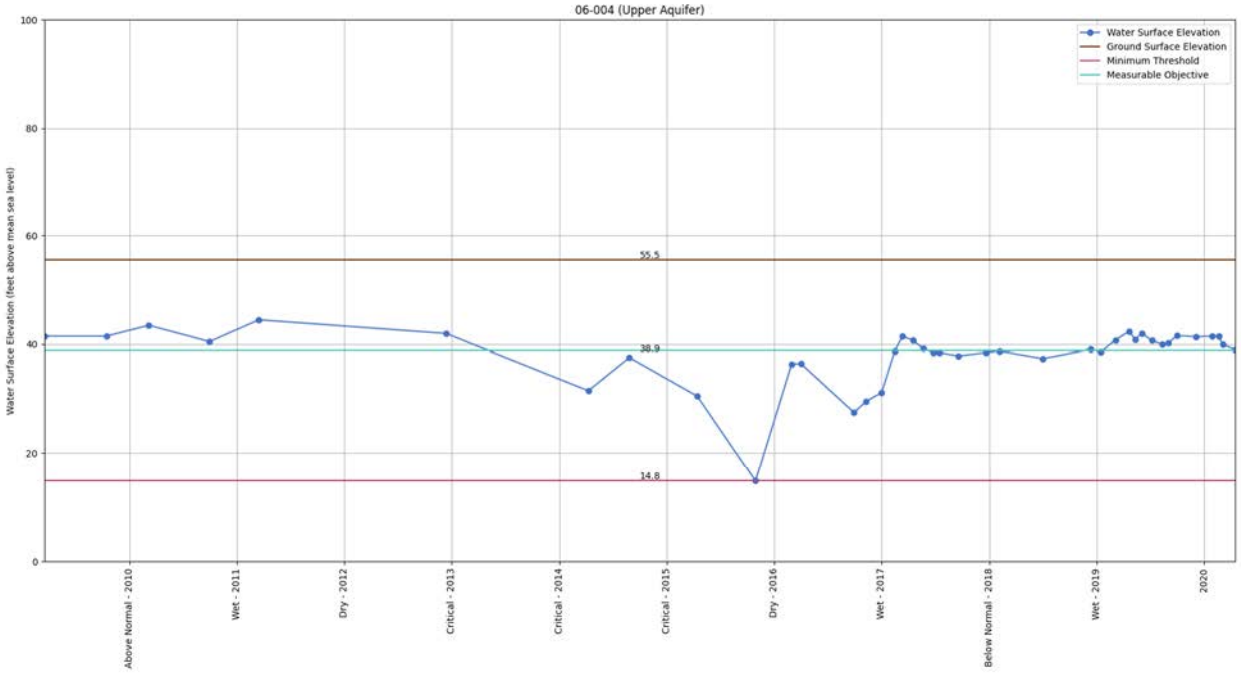

03-003 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
100
90
80
70
60
50
40
30
57.9
37.3
32.9
Wet - 2019
2020

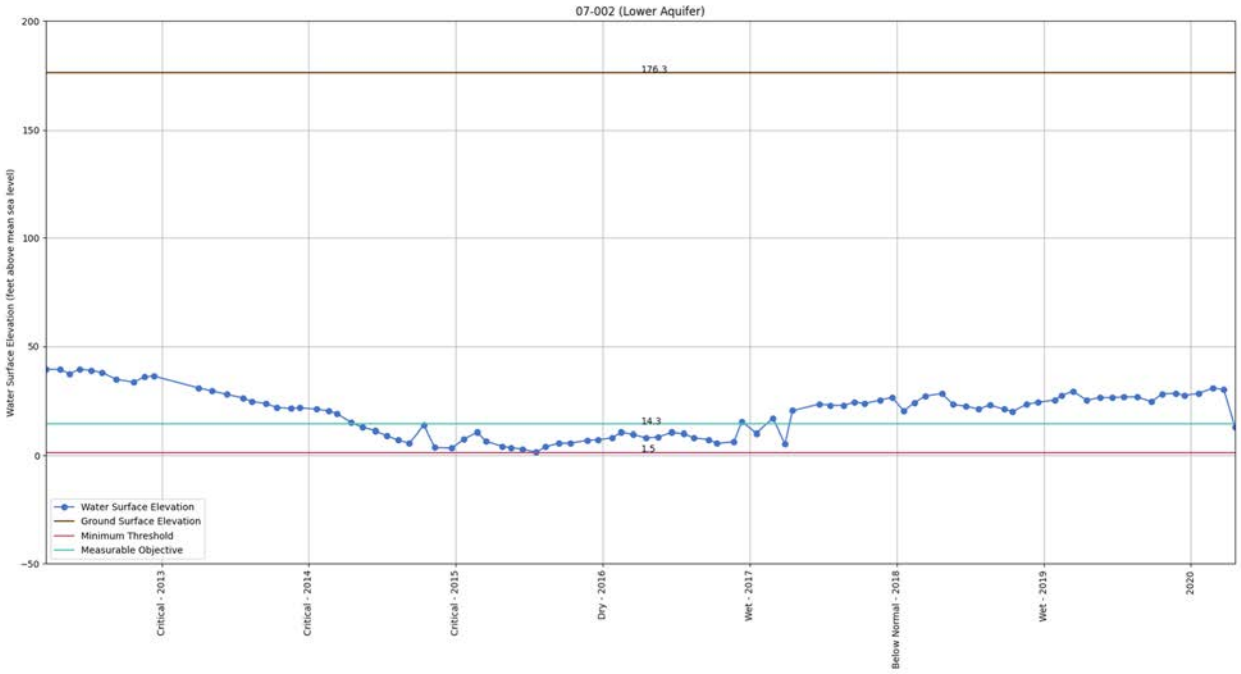

04-001 (Lower Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
150
125
100
75
50
25
0
−25
−50
133.0
7.8
-6.1
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

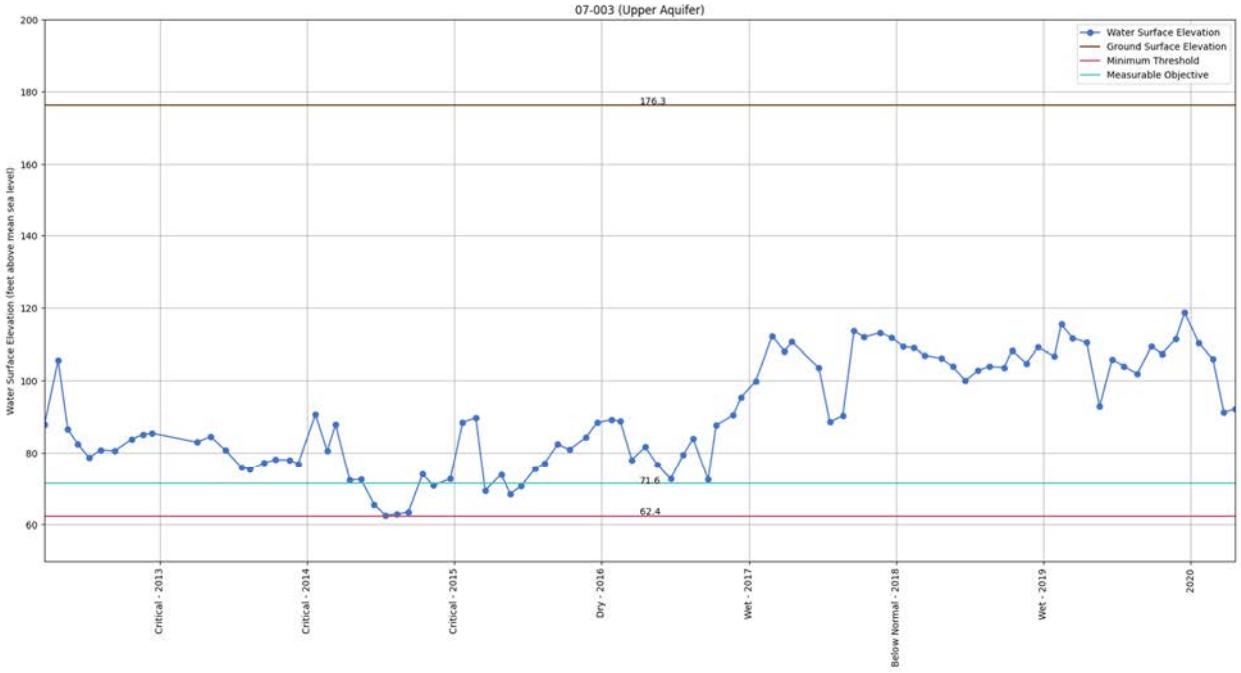

06-001 (Lower Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
109.6
11.2
-49.6
Water Surface Elevation (feet above mean sea level)
150
100
50
0
−50
−100
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

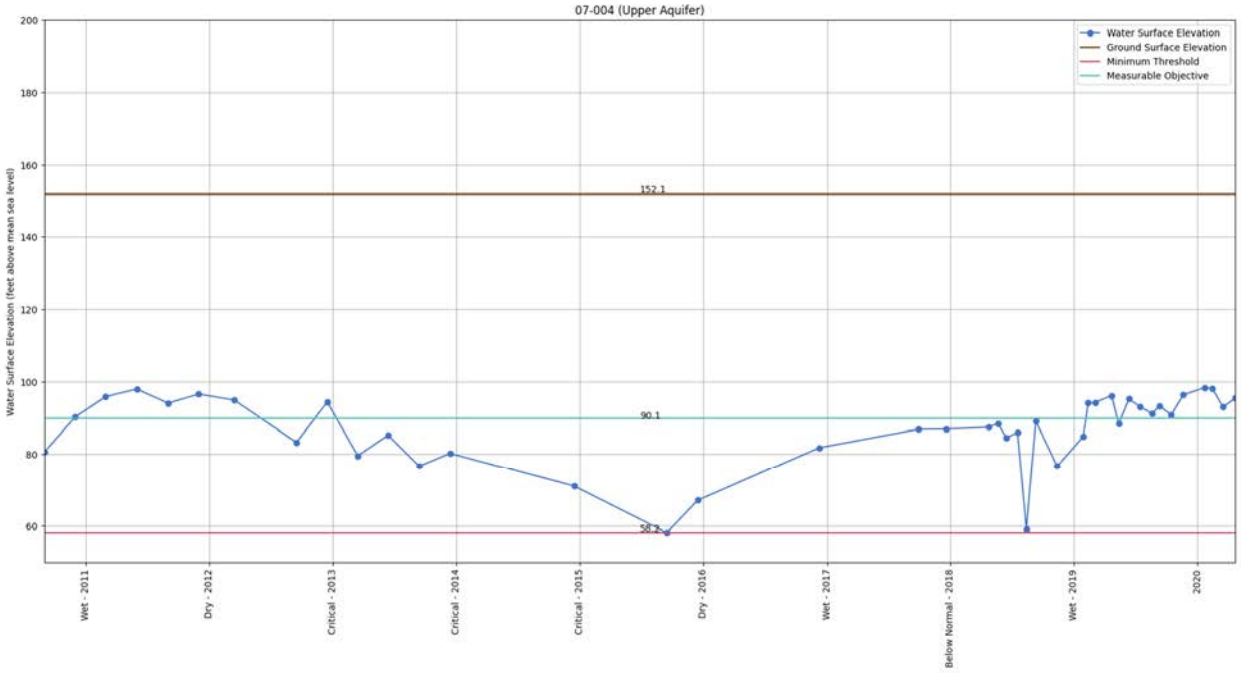

06-002 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
109.6
40.3
28.6
Water Surface Elevation (feet above mean sea level)
140
120
100
80
60
40
20
0
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

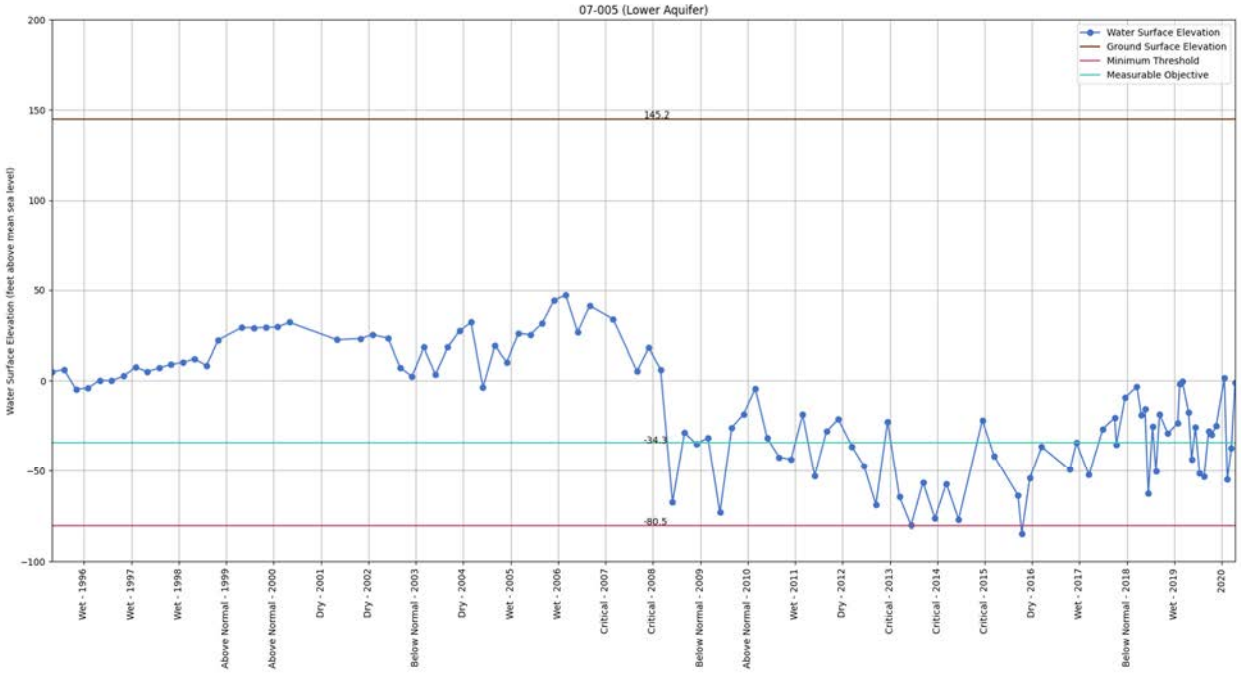

06-003 (Lower Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
59.5
31.3
-8.7
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

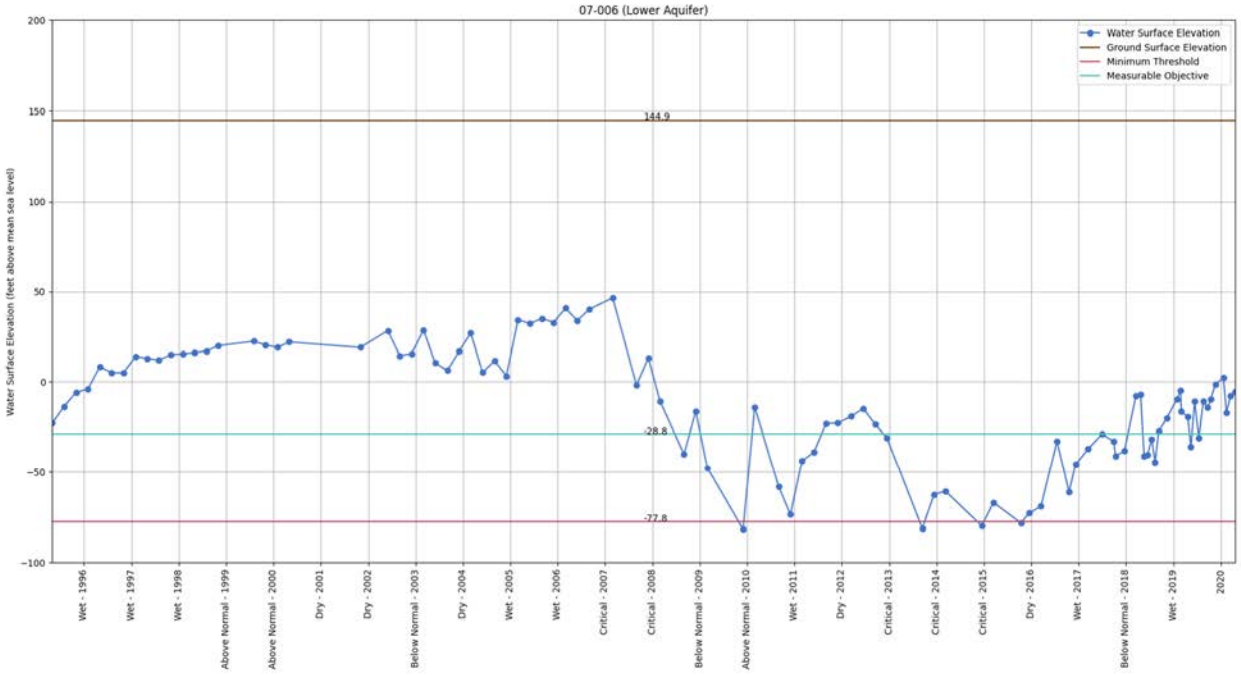

06-004 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
55.5
38.9
14.8
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

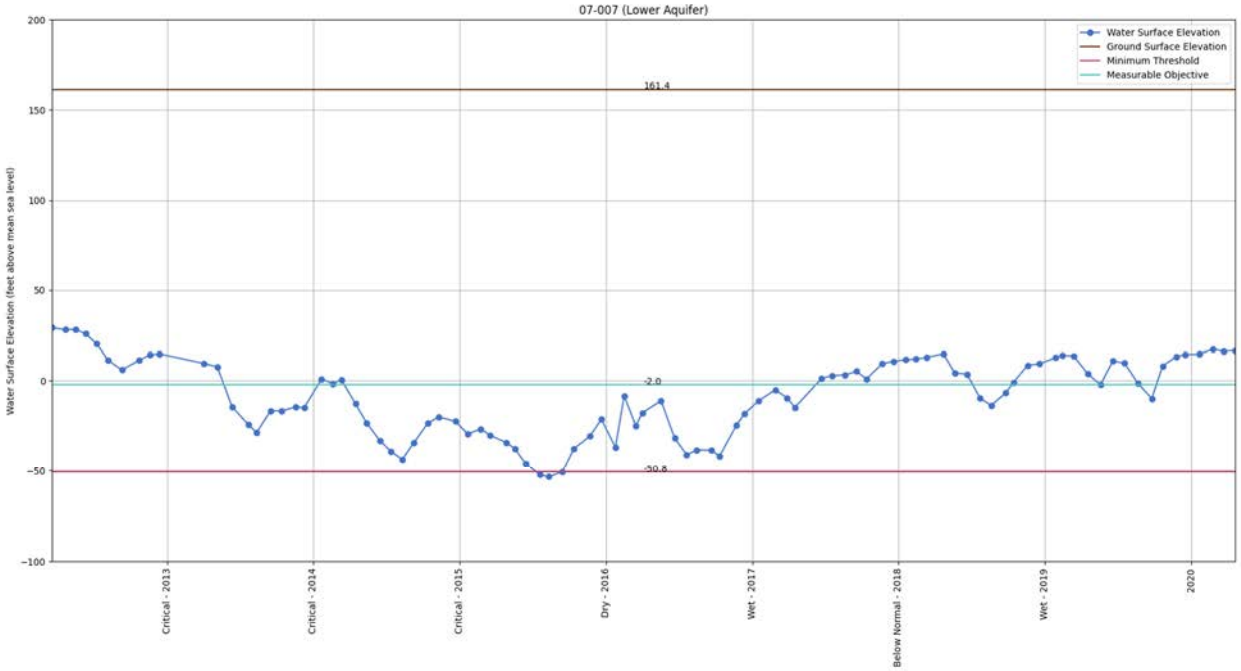

07-002 (Lower Aquifer)
Water Surface Elevation (feet above mean sea level)
176.3
14.3
1.5
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

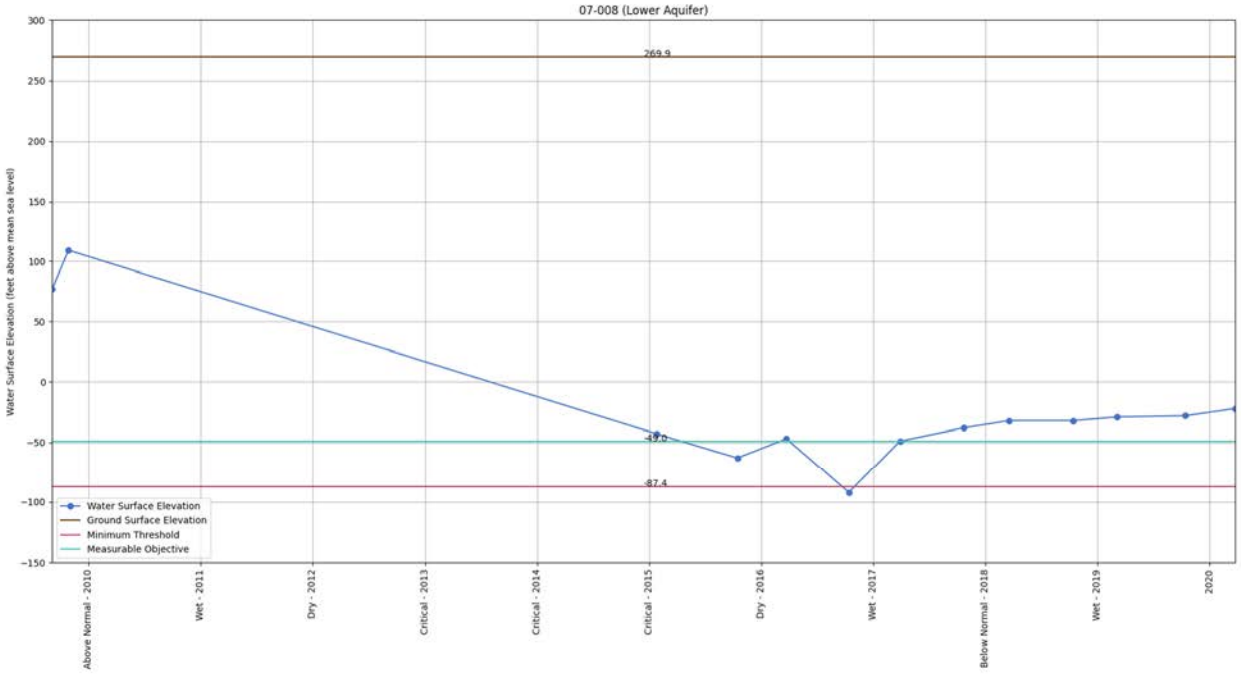

07-003 (Upper Aquifer)
Water Surface Elevation (feet above mean sea level)
176.3
71.6
62.4
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

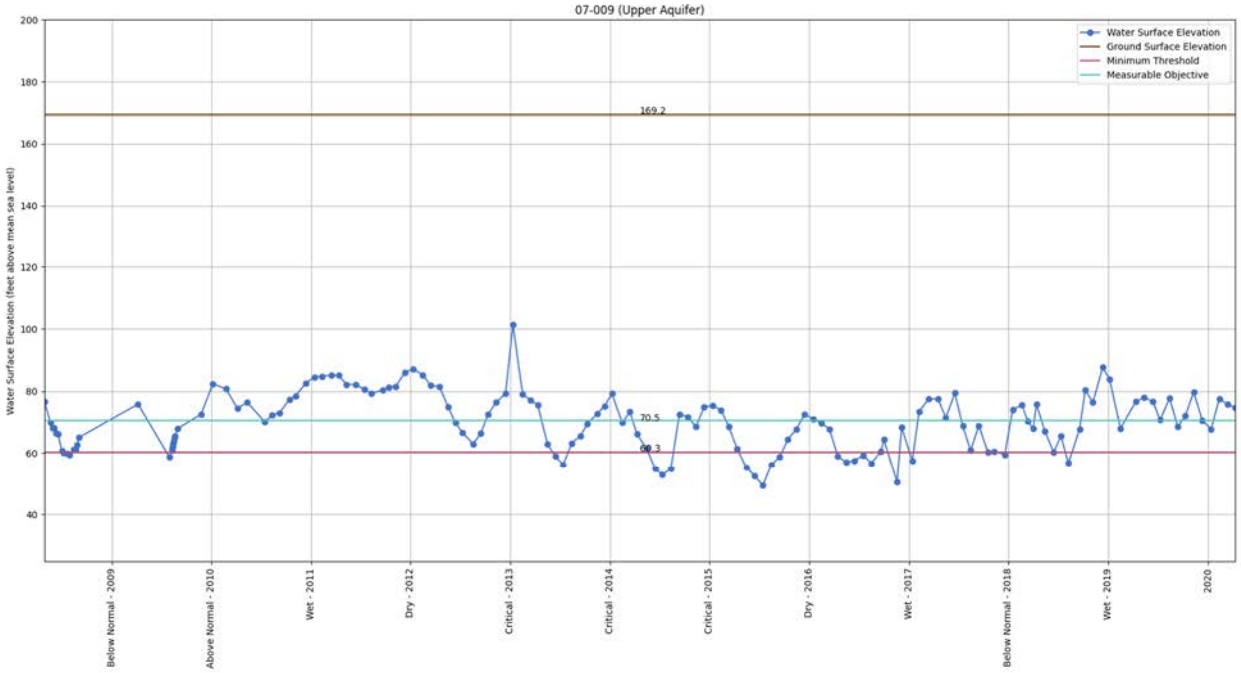

07-004 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
152.1
90.1
58.2
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

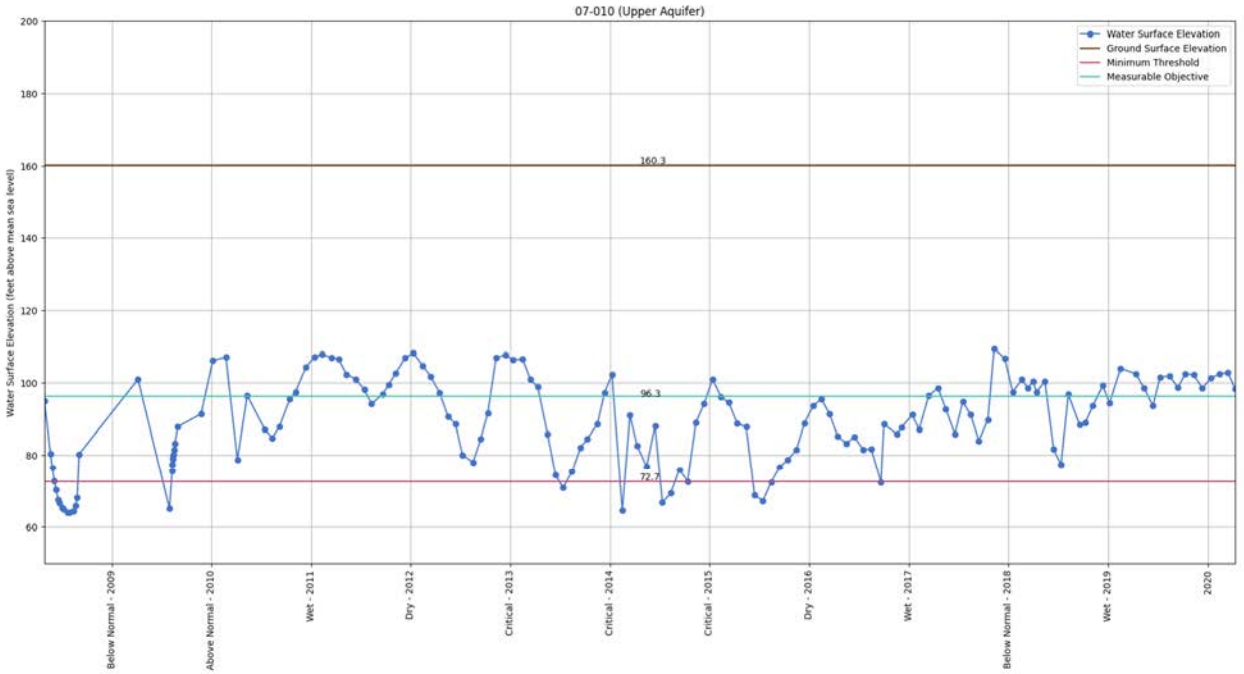

07-005 (Lower Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
145.2
-34.3
-80.5
Wet - 1996
Wet - 1997
Wet - 1998
Above Normal - 1999
Above Normal - 2000
Dry - 2001
Dry - 2002
Below Normal - 2003
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

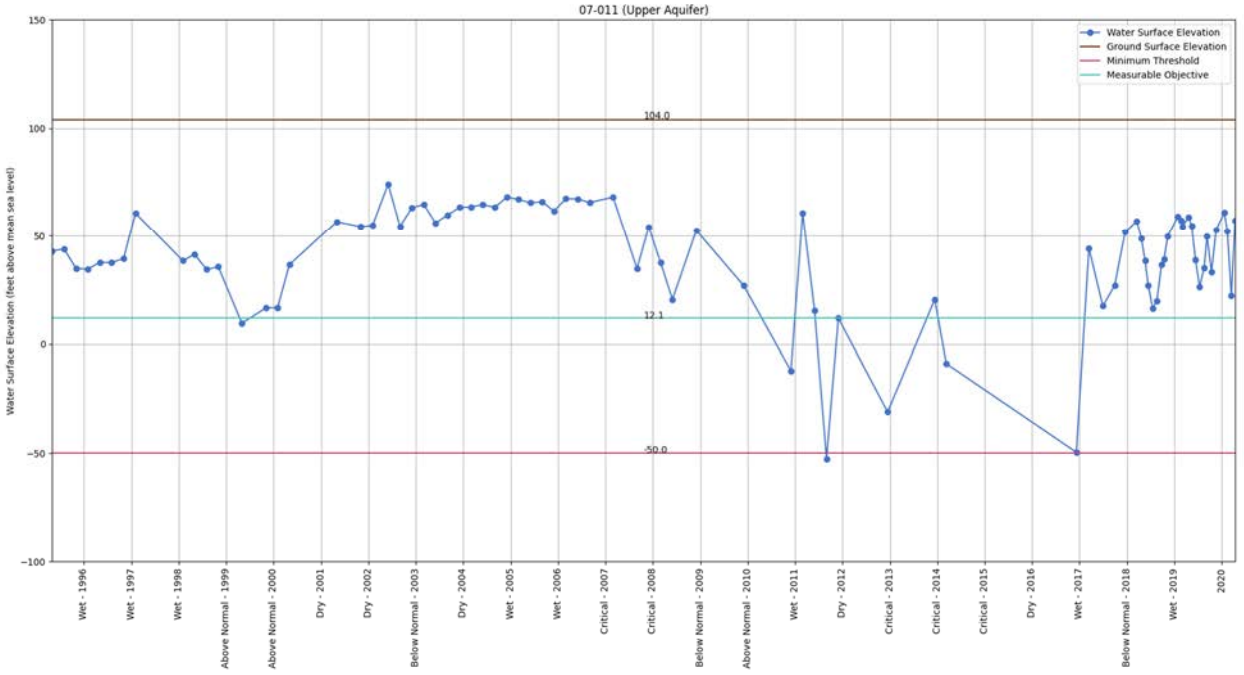

07-006 (Lower Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
144.9
-28.8
-77.8
Water Surface Elevation (feet above mean sea level)
200
150
100
50
0
−50
−100
Wet - 1996
Wet - 1997
Wet - 1998
Above Normal - 1999
Above Normal - 2000
Dry - 2001
Dry - 2002
Below Normal - 2003
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

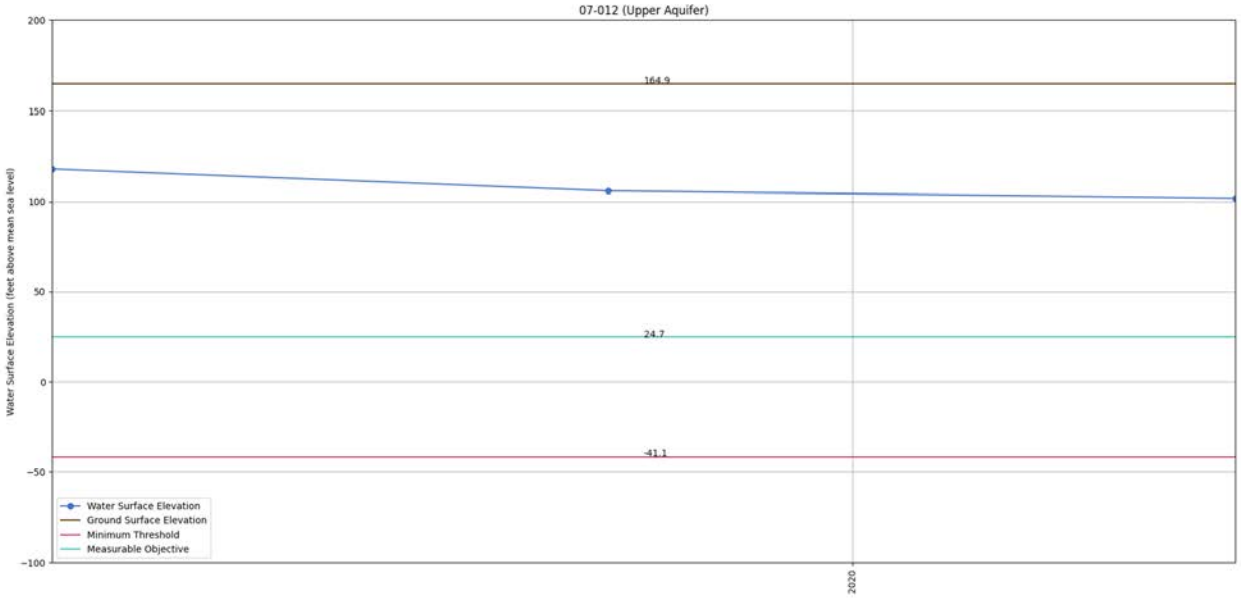

07-007 (Lower Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
161.4
-2.0
-50.8
Water Surface Elevation (feet above mean sea level)
200
150
100
50
0
−50
−100
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

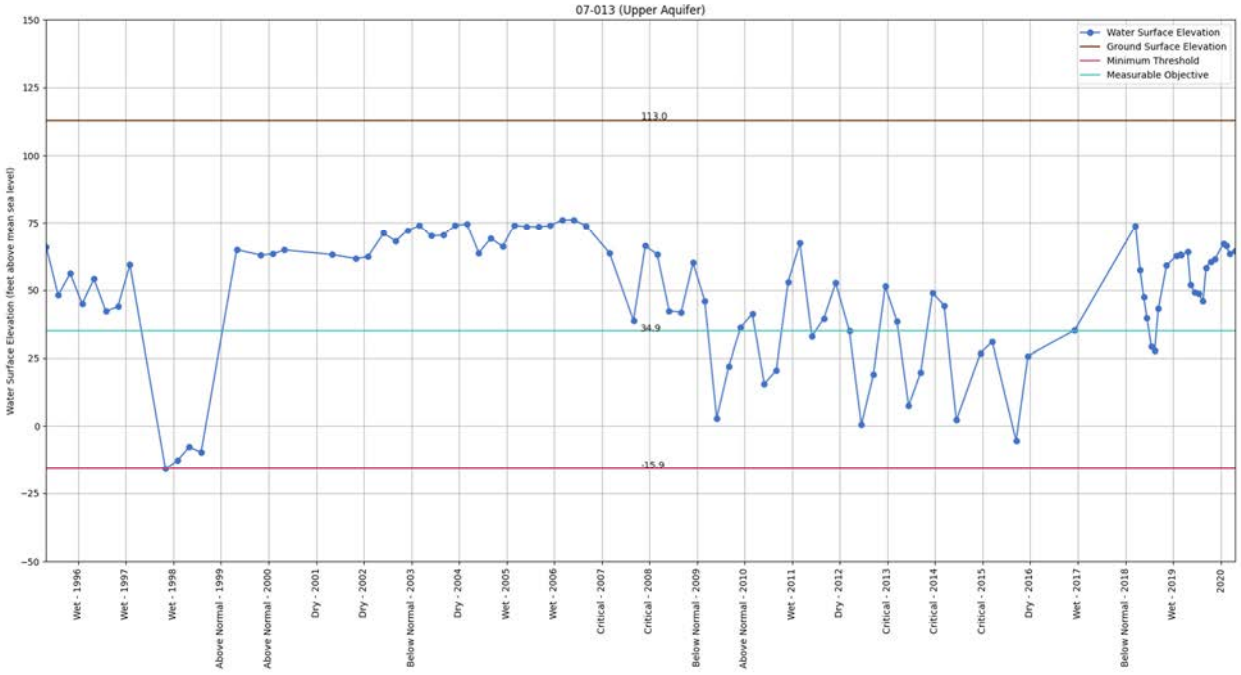

07-008 (Lower Aquifer)
Water Surface Elevation (feet above mean sea level)
269.9
-87.4
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

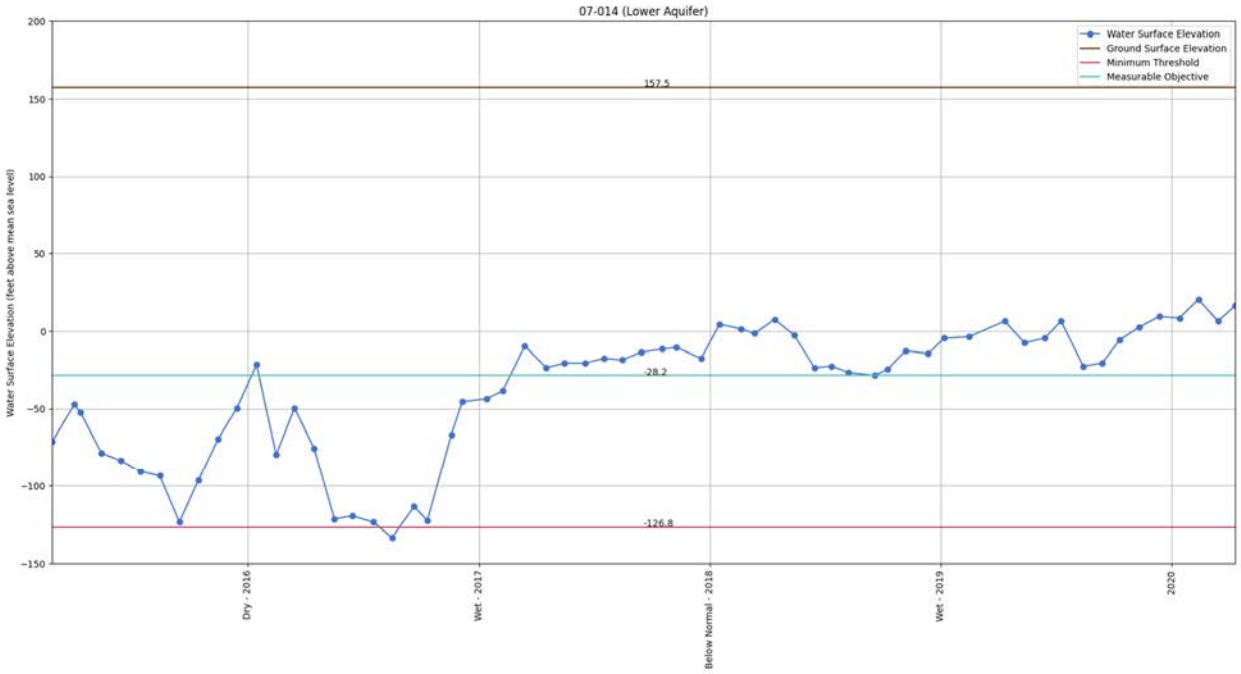

07-009 (Upper Aquifer)
Water Surface Elevation (feet above mean sea level)
169.2
70.5
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

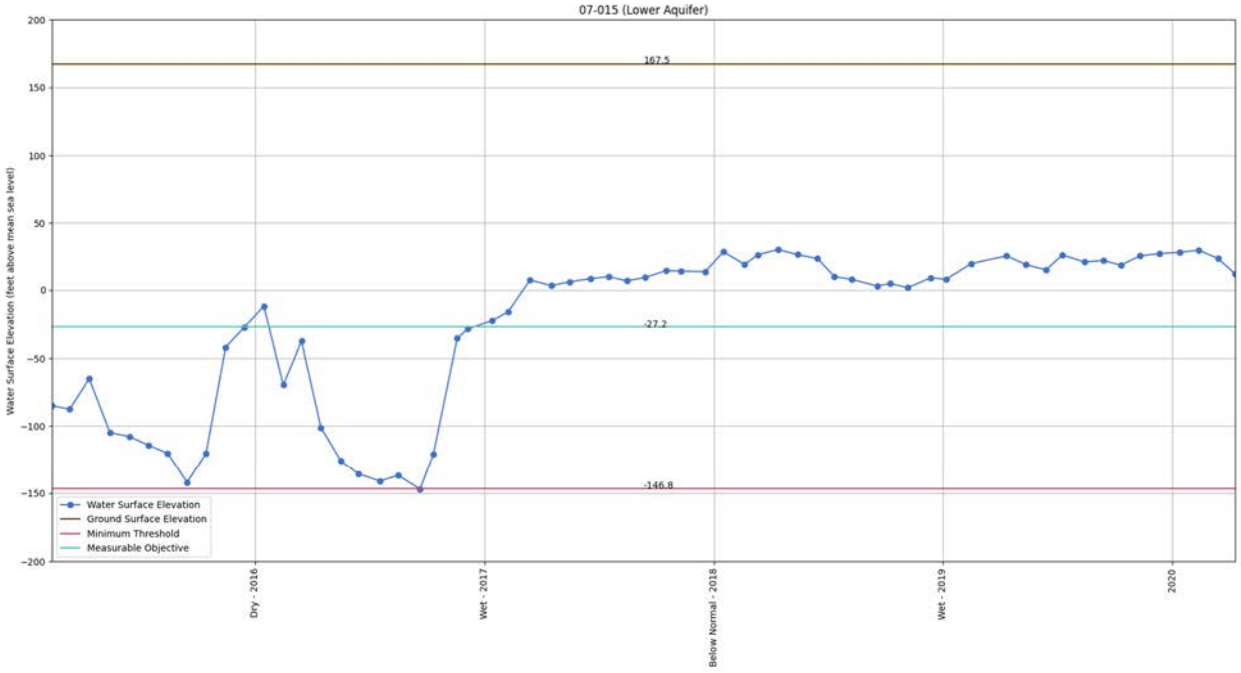

07-010 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
160.3
96.3
72.7
Water Surface Elevation (feet above mean sea level)
200
180
160
140
120
100
80
60
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

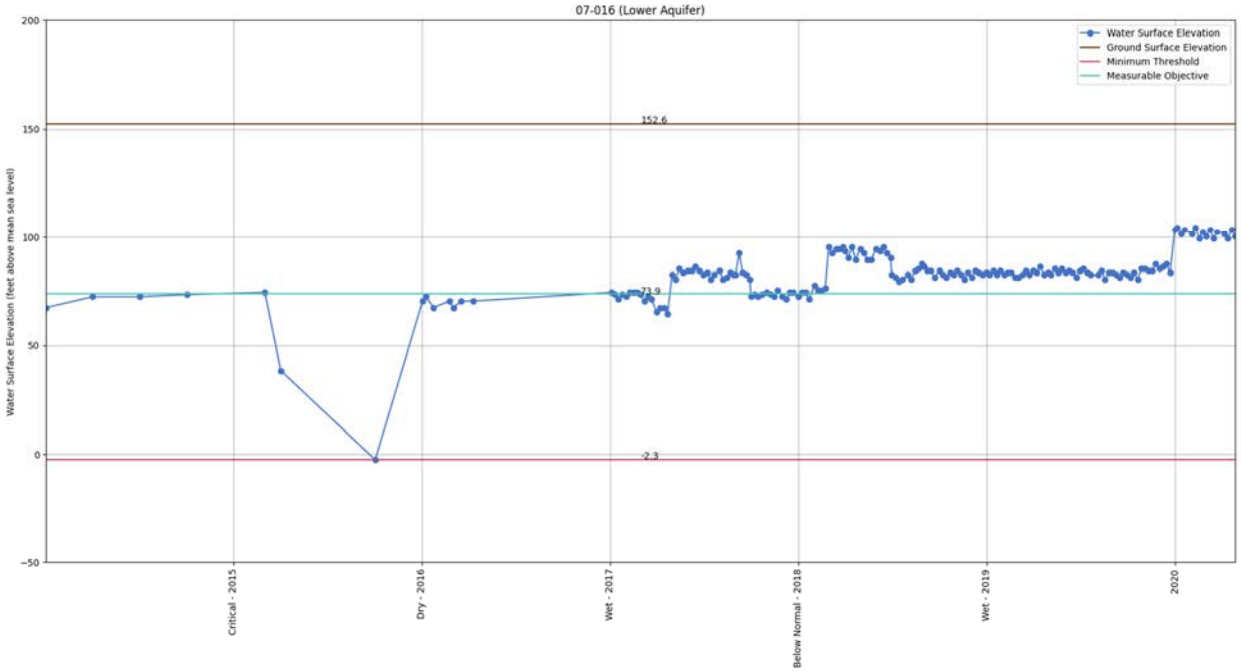

07-011 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
104.0
12.1
-50.0
Water Surface Elevation (feet above mean sea level)
150
100
50
0
−50
−100
Wet - 1996
Wet - 1997
Wet - 1998
Above Normal - 1999
Above Normal - 2000
Dry - 2001
Dry - 2002
Below Normal - 2003
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020

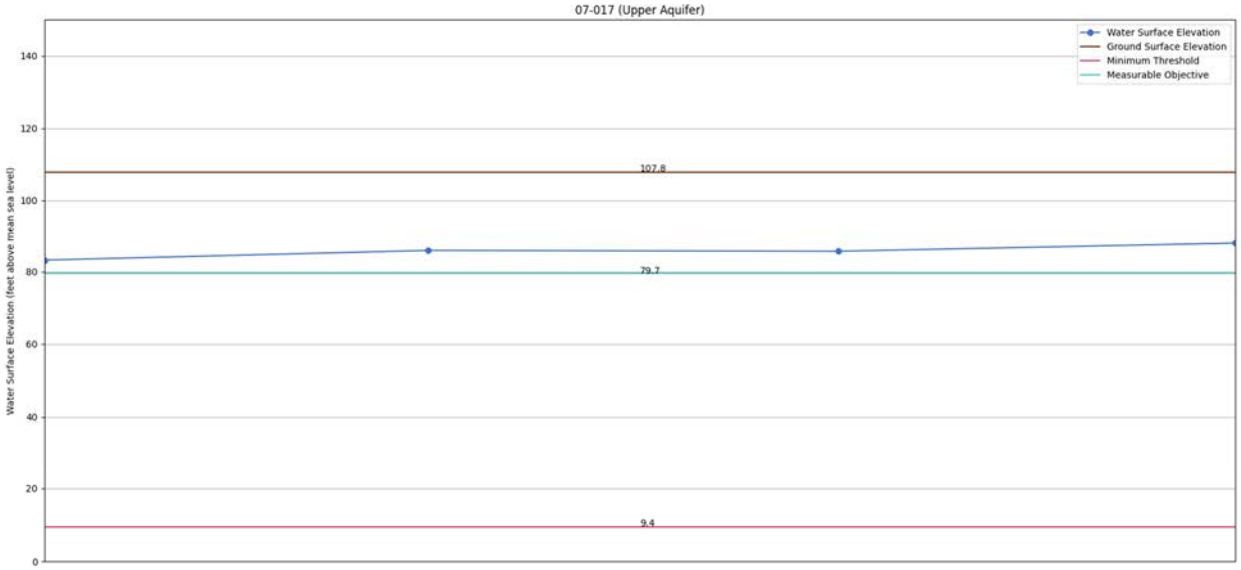

07-012 (Upper Aquifer)
Water Surface Elevation (feet above mean sea level)
164.9
24.7
-41.1
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
2020

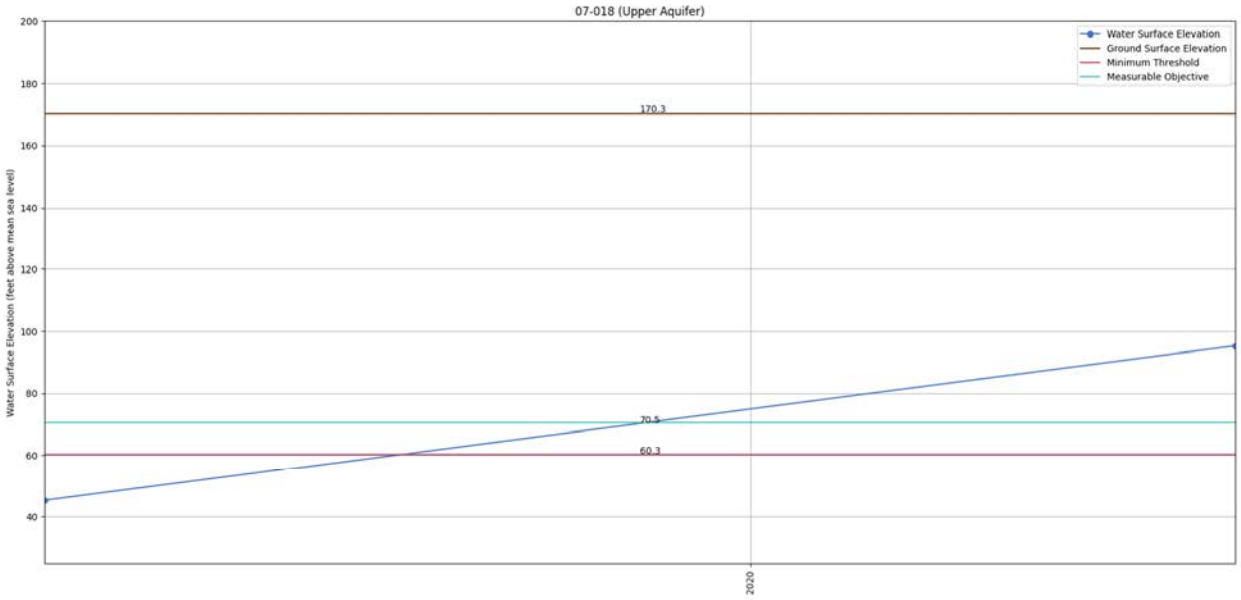

07-013 (Upper Aquifer)
Water Surface Elevation (feet above mean sea level)
113.0
34.9
-15.9
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Wet - 1996
Wet - 1997
Wet - 1998
Above Normal - 1999
Above Normal - 2000
Dry - 2001
Dry - 2002
Below Normal - 2003
Dry - 2004
Wet - 2005
Wet - 2006
Critical - 2007
Critical - 2008
Below Normal - 2009
Above Normal - 2010
Wet - 2011
Dry - 2012
Critical - 2013
Critical - 2014
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020


07-014 (Lower Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
157.5
-28.2
-126.8
Water Surface Elevation (feet above mean sea level)
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020


07-015 (Lower Aquifer)
167.5
-27.2
-146.8
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020


07-016 (Lower Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
152.6
73.9
-2.3
Critical - 2015
Dry - 2016
Wet - 2017
Below Normal - 2018
Wet - 2019
2020


07-017 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
107.8
79.7
9.4


07-018 (Upper Aquifer)
Water Surface Elevation
Ground Surface Elevation
Minimum Threshold
Measurable Objective
Water Surface Elevation (feet above mean sea level)
200
180
160
140
120
100
80
60
40
170.3
70.5
60.3
2020

APPENDIX C: WATER QUALITY MONITORING ANALYSIS

Table C-1. TDS Results and Sustainable Management Criteria, Summer 2020

DMS ID	Local ID	Aquifer	Responsible Monitoring Entity	Sampled during Summer 2020?	Sample Date	Sample Time	TDS Result (mg/L)	Minimum Threshold (mg/L)	Measurable Objective (mg/L)	Relation to Minimum Threshold	Relation to Measurable Objective	Notes
01-001	MP030.43R	Lower	Del Puerto WD	Yes	8/25/2020	13:45	630	2,000	2,000	Below	Below	
01-002	MP033.71L	Lower	Del Puerto WD	No	-	-	-	2,000	2,000	-	-	
01-003	MP045.78R	Lower	Del Puerto WD	Yes	8/25/2020	10:30	1,400	4,000	4,000	Below	Below	
01-004	MC10-2	Upper	Del Puerto WD	Yes	8/24/2020	11:00	400	2,500	2,500	Below	Below	
01-005	MP058.28L	Upper	Del Puerto WD	Yes	8/25/2020	9:15	410	2,500	2,500	Below	Below	
01-006	91	Lower	Del Puerto WD	No	-	-	-	4,000	4,000	-	-	
01-007	MP021.12L	Lower	Del Puerto WD	No	-	-	-	2,000	2,000	-	-	
01-008	MP051.66L	Lower	Del Puerto WD	Yes	8/25/2020	10:00	660	4,000	4,000	Below	Below	
02-001	MP037.32L	Upper	City of Patterson	No	-	-	-	4,000	4,000	-	-	
02-002	WELL 02 - NORTH 5TH ST	Lower	City of Patterson	Yes	8/25/2020	11:48	970	2,000	2,000	Below	Below	
03-001	MW-2	Upper	Patterson ID	Yes	7/21/2020	12:20	1,530	4,000	4,000	Below	Below	
03-002	MW-3	Upper	Patterson ID	No	-	-	-	4,000	4,000	-	-	
03-003	WSJ003	Upper	Patterson ID	Yes	7/21/2020	11:15	1,850	4,000	4,000	Below	Below	
04-001	121	Lower	West Stan ID	No	-	-	-	4,000	4,000	-	-	
06-001	P259-1	Lower	Stanislaus County	Pending	-	-	-	4,000	4,000	-	-	
06-002	P259-3	Upper	Stanislaus County	Yes	8/24/2020	2:20	660	2,500	2,500	Below	Below	
06-003	WSID 3	Lower	West Stan ID	Yes	8/18/2020	8:00	1,420	2,000	2,000	Below	Below	Field Duplicate = 1390 mg/L; Trip Blank = 7.56 mg/L; Field Blank = ND
06-004	MP031.31L1-L2Well1	Upper	Stanislaus County	No	-	-	-	4,000	4,000	-	-	
07-002	MC15-1	Lower	San Luis WD	Pending	-	-	-	1,200	1,200	-	-	
07-003	MC15-2	Upper	San Luis WD	Yes	8/24/2020	18:00	440	2,700	2,700	Below	Below	
07-004	MP081.08R	Upper	San Luis WD	No	-	-	-	2,700	2,700	-	-	
07-005	MP091.68R	Lower	Pacheco WD	No	-	-	-	2,600	2,600	-	-	
07-006	MP094.26L	Lower	Eagle Field WD	No	-	-	-	2,600	2,600	-	-	
07-007	MC18-1	Lower	Pacheco WD	Pending	-	-	-	2,600	2,600	-	-	
07-008	PWD 48	Lower	Panoche WD	No	-	-	-	2,600	2,600	-	-	
07-009	KRCDTID03	Upper	Tranquillity ID	Yes	8/25/2020	15:10	3,000	1,000	800	Above	Above	Questionable measurement, unable to purge well; No purge grab sample; Installed 8-25-20 at 9:34; Pulled 8-25-20 at 15:05; Partial filled container/limited volume due to sample constraints. Hydrasleeve grab sampler; Deployed at 455 ft
07-010	KRCDTID02	Upper	Tranquillity ID	Yes	8/30/2020	11:40	5,700	1,000	800	Above	Above	Questionable measurement, unable to purge well; Deployed at 7:21; Used hydrasleeve grab sampler; Deployed at 390 ft
07-011	MP099.24L	Upper	Mercy Springs WD	No	-	-	-	3,500	3,500	-	-	
07-012	GDA003	Upper	Panoche WD	No	-	-	-	3,500	3,500	-	-	

DMS ID	Local ID	Aquifer	Responsible Monitoring Entity	Sampled during Summer 2020?	Sample Date	Sample Time	TDS Result (mg/L)	Minimum Threshold (mg/L)	Measurable Objective (mg/L)	Relation to Minimum Threshold	Relation to Measurable Objective	Notes
07-014	TW-4	Lower	Tranquillity ID	Yes	8/30/2020	12:10	790	1,000	775	Below	Above	Deployed at 11:22; Used HydraSleeve grab sampler; Deployed at 670 ft
07-015	TW-5	Lower	Tranquillity ID	Yes	8/30/2020	9:35	840	1,000	775	Below	Above	Deployed at 8:54; Used HydraSleeve; Deployed at 650 ft
07-016	Well 01	Lower	Santa Nella Co WD	Yes	7/28/2020	11:00	1,300	1,000	1,000	Above	Above	
07-017	Well 1	Upper	Volta CSD	Yes	8/18/2020	12:50	510	1,000	1,000	Below	Below	
07-018	WSJ001	Upper	Tranquillity ID	Yes	8/21/2020	13:00	2,300	1,000	800	Above	Above	Purged by LSCE; Mobile purge pump
08-001	MP102.04R	Upper	Widren WD	Yes	8/19/2020	12:15	3,140	3,500	3,500	Below	Below	

Table C-2. Nitrate as N Results and Sustainable Management Criteria, Summer 2020

DMS ID	Local ID	Aquifer	Responsible Monitoring Entity	Sampled during Summer 2020?	Sample Date	Sample Time	Nitrate as N Result (mg/L)	Minimum Threshold (mg/L)	Measurable Objective (mg/L)	Relation to Minimum Threshold	Relation to Measurable Objective	Notes
01-001	MP030.43R	Lower	Del Puerto WD	Yes	8/25/2020	13:45	6.70	50	50	Below	Below	
01-002	MP033.71L	Lower	Del Puerto WD	No	-	-	-	50	50	-	-	
01-003	MP045.78R	Lower	Del Puerto WD	Yes	8/25/2020	10:30	9.00	70	70	Below	Below	
01-004	MC10-2	Upper	Del Puerto WD	Yes	8/24/2020	11:00	13.00	60	60	Below	Below	
01-005	MP058.28L	Upper	Del Puerto WD	Yes	8/25/2020	9:15	5.20	60	60	Below	Below	
01-006	91	Lower	Del Puerto WD	No	-	-	-	70	70	-	-	
01-007	MP021.12L	Lower	Del Puerto WD	No	-	-	-	50	50	-	-	
01-008	MP051.66L	Lower	Del Puerto WD	Yes	8/25/2020	10:00	7.20	70	70	Below	Below	
02-001	MP037.32L	Upper	City of Patterson	No	-	-	-	80	80	-	-	
02-002	WELL 02 - NORTH 5TH ST	Lower	City of Patterson	Yes	8/25/2020	11:48	7.50	50	50	Below	Below	
03-001	MW-2	Upper	Patterson ID	Yes	7/21/2020	12:20	11.10	80	80	Below	Below	
03-002	MW-3	Upper	Patterson ID	No	-	-	-	80	80	-	-	
03-003	WSJ003	Upper	Patterson ID	Yes	7/21/2020	11:15	0.28	80	80	Below	Below	
04-001	121	Lower	West Stan ID	No	-	-	-	70	70	-	-	
06-001	P259-1	Lower	Stanislaus County	Pending	-	-	-	70	70	-	-	
06-002	P259-3	Upper	Stanislaus County	Yes	8/24/2020	2:20	12.00	60	60	Below	Below	
06-003	WSID 3	Lower	West Stan ID	Yes	8/18/2020	8:00	16.70	50	50	Below	Below	Field Duplicate = 16.8 mg/L; Trip Blank = ND; Field Blank = 0.1 mg/L
06-004	MP031.31L1-L2Well1	Upper	Stanislaus County	No	-	-	-	80	80	-	-	
07-002	MC15-1	Lower	San Luis WD	Pending	-	-	-	18	18	-	-	
07-003	MC15-2	Upper	San Luis WD	Yes	8/24/2020	18:00	1.80	90	90	Below	Below	
07-004	MP081.08R	Upper	San Luis WD	No	-	-	-	90	90	-	-	
07-005	MP091.68R	Lower	Pacheco WD	No	-	-	-	10	10	-	-	
07-006	MP094.26L	Lower	Eagle Field WD	No	-	-	-	10	10	-	-	
07-007	MC18-1	Lower	Pacheco WD	Pending	-	-	-	10	10	-	-	
07-008	PWD 48	Lower	Panoche WD	No	-	-	-	10	10	-	-	

DMS ID	Local ID	Aquifer	Responsible Monitoring Entity	Sampled during Summer 2020?	Sample Date	Sample Time	Nitrate as N Result (mg/L)	Minimum Threshold (mg/L)	Measurable Objective (mg/L)	Relation to Minimum Threshold	Relation to Measurable Objective	Notes
07-009	KRCDTID03	Upper	Tranquillity ID	Yes	8/25/2020	15:10	ND	10	1	Below	Below	No purge grab sample; Installed 8-25-20 at 9:34; Pulled 8-25-20 at 15:05; Partial filled container/limited volume due to sample constraints. Hydrasleeve grab sampler; Deployed at 455 ft
07-010	KRCDTID02	Upper	Tranquillity ID	Yes	8/30/2020	11:40	ND	10	1	Below	Below	Deployed at 7:21; Used hydrasleeve grab sampler; Deployed at 390 ft
07-011	MP099.24L	Upper	Mercy Springs WD	No	-	-	-	13	13	-	-	
07-012	GDA003	Upper	Panoche WD	No	-	-	-	13	13	-	-	
07-014	TW-4	Lower	Tranquillity ID	Yes	8/30/2020	12:10	ND	10	1	Below	Below	Deployed at 11:22; Used HydraSleeve grab sampler; Deployed at 670 ft
07-015	TW-5	Lower	Tranquillity ID	Yes	8/30/2020	9:35	ND	10	1	Below	Below	Deployed at 8:54; Used HydraSleeve; Deployed at 650 ft
07-016	Well 01	Lower	Santa Nella Co WD	Yes	7/28/2020	11:00	1.20	17	17	Below	Below	
07-017	Well 1	Upper	Volta CSD	Yes	8/18/2020	12:50	2.90	60	60	Below	Below	
07-018	WSJ001	Upper	Tranquillity ID	Yes	8/21/2020	13:00	ND	10	1	Below	Below	Purged by LSCE; Mobile purge pump
08-001	MP102.04R	Upper	Widren WD	Yes	8/19/2020	12:15	ND	13	13	Below	Below	

Table C-3. Boron Results and Sustainable Management Criteria, Summer 2020

DMS ID	Local ID	Aquifer	Responsible Monitoring Entity	Sampled during Summer 2020?	Sample Date	Sample Time	Boron Result (mg/L)	Minimum Threshold (mg/L)	Measurable Objective (mg/L)	Relation to Minimum Threshold	Relation to Measurable Objective	Notes
01-001	MP030.43R	Lower	Del Puerto WD	Yes	8/25/2020	13:45	2.3	3	3	Below	Below	
01-002	MP033.71L	Lower	Del Puerto WD	No	-	-	-	3	3	-	-	
01-003	MP045.78R	Lower	Del Puerto WD	Yes	8/25/2020	10:30	0.73	0.7	0.6	Above	Above	
01-004	MC10-2	Upper	Del Puerto WD	Yes	8/24/2020	11:00	0.13	1.7	1.7	Below	Below	
01-005	MP058.28L	Upper	Del Puerto WD	Yes	8/25/2020	9:15	0.36	1.7	1.7	Below	Below	
01-006	91	Lower	Del Puerto WD	No	-	-	-	0.7	0.6	-	-	
01-007	MP021.12L	Lower	Del Puerto WD	No	-	-	-	3	3	-	-	
01-008	MP051.66L	Lower	Del Puerto WD	Yes	8/25/2020	10:00	0.32	0.7	0.6	Below	Below	
02-001	MP037.32L	Upper	City of Patterson	No	-	-	-	3	3	-	-	
02-002	WELL 02 - NORTH 5TH ST	Lower	City of Patterson	Yes	8/25/2020	11:48	0.5	3	3	Below	Below	
03-001	MW-2	Upper	Patterson ID	Yes	7/21/2020	12:20	0.946	3	3	Below	Below	
03-002	MW-3	Upper	Patterson ID	No	-	-	-	3	3	-	-	
03-003	WSJ003	Upper	Patterson ID	Yes	7/21/2020	11:15	1.03	3	3	Below	Below	
04-001	121	Lower	West Stan ID	No	-	-	-	0.7	0.6	-	-	
06-001	P259-1	Lower	Stanislaus County	Pending	-	-	-	0.7	0.6	-	-	
06-002	P259-3	Upper	Stanislaus County	Yes	8/24/2020	2:20	0.4	1.7	1.7	Below	Below	
06-003	WSID 3	Lower	West Stan ID	Yes	8/18/2020	8:00	1.85	3	3	Below	Below	Field Duplicate = 1.82 mg/L; Trip Blank = 0.00311 mg/L; Field Blank = 0.00110 mg/L

DMS ID	Local ID	Aquifer	Responsible Monitoring Entity	Sampled during Summer 2020?	Sample Date	Sample Time	Boron Result (mg/L)	Minimum Threshold (mg/L)	Measurable Objective (mg/L)	Relation to Minimum Threshold	Relation to Measurable Objective	Notes
06-004	MP031.31L1-L2Well1	Upper	Stanislaus County	No	-	-	-	3	3	-	-	
07-002	MC15-1	Lower	San Luis WD	Pending	-	-	-	0.8	0.8	-	-	
07-003	MC15-2	Upper	San Luis WD	Yes	8/24/2020	18:00	0.68	1	1	Below	Below	
07-004	MP081.08R	Upper	San Luis WD	No	-	-	-	1	1	-	-	
07-005	MP091.68R	Lower	Pacheco WD	No	-	-	-	6	6	-	-	
07-006	MP094.26L	Lower	Eagle Field WD	No	-	-	-	6	6	-	-	
07-007	MC18-1	Lower	Pacheco WD	Pending	-	-	-	6	6	-	-	
07-008	PWD 48	Lower	Panoche WD	No	-	-	-	6	6	-	-	
07-009	KRCDTID03	Upper	Tranquillity ID	Yes	8/25/2020	15:10	2.2	2.2	2.2	Equal to	Equal to	No purge grab sample; Installed 8-25-20 at 9:34; Pulled 8-25-20 at 15:05; Partial filled container/limited volume due to sample constraints. Hydrasleeve grab sampler; Deployed at 455 ft
07-010	KRCDTID02	Upper	Tranquillity ID	Yes	8/30/2020	11:40	1.9	2.2	2.2	Below	Below	Deployed at 7:21; Used hydrasleeve grab sampler; Deployed at 390 ft
07-011	MP099.24L	Upper	Mercy Springs WD	No	-	-	-	6	6	-	-	
07-012	GDA003	Upper	Panoche WD	No	-	-	-	6	6	-	-	
07-014	TW-4	Lower	Tranquillity ID	Yes	8/30/2020	12:10	0.95	1.1	1.1	Below	Below	Deployed at 11:22; Used HydraSleeve grab sampler; Deployed at 670 ft
07-015	TW-5	Lower	Tranquillity ID	Yes	8/30/2020	9:35	1.1	1.1	1.1	Equal to	Equal to	Deployed at 8:54; Used HydraSleeve; Deployed at 650 ft
07-016	Well 01	Lower	Santa Nella Co WD	Yes	7/28/2020	11:00	3.62	0.7	0.2	Above	Above	
07-017	Well 1	Upper	Volta CSD	Yes	8/18/2020	12:50	0.668	0.9	0.9	Below	Below	
07-018	WSJ001	Upper	Tranquillity ID	Yes	8/21/2020	13:00	2.9	2.2	2.2	Above	Above	Purged by LSCE; Mobile purge pump
08-001	MP102.04R	Upper	Widren WD	Yes	8/19/2020	12:15	1.6	6	6	Below	Below	

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COMMITMENT & INTEGRITY DRIVE RESULTS