

Owens Valley and Fish Slough Subbasins GSP Annual Report Water Year 2023

Submitted to



California Department of
Water Resources

Submitted by



OWENS VALLEY GROUNDWATER AUTHORITY

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Certification

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Acronyms and Abbreviations

AF	acre-feet
AFY	acre-feet per year
amsl	above mean sea level
Basins	Owens Valley and Fish Slough Subbasins
BLM	Bureau of Land Management
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CIMIS	California Irrigation Management Information System
cfs	cubic feet per second
DMS	Database Management System
DWR	[CA] Department of Water Resources
eWRIMS	Electronic Water Rights Information Management System
ET	Evapotranspiration
ft	feet
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
LADWP	Los Angeles Department of Water and Power
LTWA	Inyo - Los Angeles Long Term Water Agreement
MO	Measurable Objective
MT	Minimum Threshold
OLGDP	Owens Lake Groundwater Development Project
OVGA	Owens Valley Groundwater Authority
RMP	Representative Monitoring Point
SGMA	Sustainable Groundwater Management Act
SMC	Sustainable Management Criteria
SWRCB	State Water Resources Control Board
TVGMD	Tri-Valley Groundwater Management District
WLE	water level elevation
WY	water year

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Executive Summary

The Owens Valley Groundwater Authority has prepared this annual report for water year 2023 (October 1 through September 30) for the Owens Valley and Fish Slough groundwater subbasins. It includes analysis of data, by management area, that have been collected since the GSP was submitted to DWR in January 2022 and the WY 2022 annual report submitted in July 2024.

Total water use in the Owens Valley and Fish Slough groundwater subbasins (the Basins) during WY 2023 was estimated to be 560,697 acre-feet (AF). Reported groundwater extractions for the Basins totaled 72,760 AF. Total surface water use in the Basins was estimated to be 487,937 AF. Total change in groundwater in storage for both subbasins over WY 2023 was estimated to be +303,550 AF. The estimated change in storage over WY 2023 was +144 AF for the Fish Slough subbasin and +7,552 AF for Tri-Valley. LADWP reported a change in groundwater in storage of +295,854 AF for their lands within Owens Valley. Since nearly all groundwater pumping and monitoring in the Inyo County portion of the Owens Valley subbasin occurs on LADWP lands, this is the best estimate available for the Owens Valley and Owens Lake management areas.

The OVGA is working towards its sustainability goals through management actions outlined in the GSP. A well registration and groundwater extraction program has been developed and implemented. OVGA staff has also been working with Inyo County Department of Environmental Health in reviewing well permits since fall 2022. The OVGA continues to gather data from its monitoring network that are imported periodically into its public-facing data management system. These easily accessible data and this annual report serve to keep the interested parties informed throughout GSP implementation.

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1. Introduction

The Owens Valley and Fish Slough groundwater subbasins (the Basins) are designated “Low” and “Very Low” priority status, respectively, by the California Department of Water Resources (DWR) and therefore are not required to be managed by a Groundwater Sustainability Agency (GSA). Groundwater management in the context of the Sustainable Groundwater Management Act (SGMA) is performed voluntarily by the Owens Valley Groundwater Authority ([OVGA](#)) for portions of the Basins within Inyo County, and by a combination of the Tri-Valley Groundwater Management District ([TVGMD](#)) and [Mono County](#) for portions of the Basins within Mono County. The OVGA submitted a Groundwater Sustainability Plan (GSP) for the Basins on January 26, 2022. After the GSP was submitted, the TVGMD and Mono County withdrew from the OVGA and petitioned DWR to become the GSAs for the portions of the Basins within Mono County. While the OVGA is not required to submit GSP annual reports to DWR since it is a low-priority basin, this GSP annual report was voluntarily prepared to document groundwater conditions in the Basins for water year (WY) 2023.

This annual report provides a summary of hydrologic conditions and water use in the Basins (Figure 1) using observed data from monitoring networks and/or estimates using best available methods. It includes a summary of water use and changes in groundwater storage during the period from October 1, 2022, to September 30, 2023 (i.e., WY 2023), and provides context for conditions relative to the sustainable management criteria (SMC) developed for the Basins. Conditions are reported for each of the three management areas defined in the GSP: Tri-Valley & Fish Slough, Owens Valley, and Owens Lake (Figure 1). Analysis of Mono County portions of the basin (Tri-Valley & Fish Slough management area) and lands owned by the Los Angeles Department of Water and Power ([LADWP](#)) managed under the Long Term Water Agreement ([LTWA](#)) are included for completeness, but the OVGA has no management authority over these areas. This report has been prepared in accordance with the requirements for GSP annual reports as identified in the Sustainable Groundwater Management Act (SGMA, 23 CCR 356.2).

Owens Valley is the ninth largest groundwater subbasin in California in terms of total area and spans approximately 125 miles from north to south, the longest distance of any California subbasin. Ground surface elevations in the Basins range from a low of 3,529 ft above mean sea

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level (amsl) at Owens Lake¹ to a high of 11,219 ft amsl near Mt. Perkins, a span of 7,690 ft. This results in practical challenges displaying information on figures such as water level contours or labels. Symbology and font sizes would need to be impractically small or figures could only present data for a portion of a given management area. To reduce the number of figures and potential confusion from a lack of geographic context, the most detailed information that could be displayed without making a figure illegible is presented.

Approximately 35% of the land area and the majority of water rights in the Basins are owned by LADWP. Because of the importance of surface water and groundwater supplied from Owens Valley to Los Angeles, LADWP has developed extensive facilities and monitoring for land management, water storage and export, groundwater production, groundwater recharge, surface water and groundwater monitoring, and dust control. Land and water use in the Tri-Valley portion of the Owens Valley Subbasin is primarily conducted by private landowners and is less well studied and monitored. Land management in undeveloped areas is primarily conducted by the Bureau of Land Management (BLM).

The main agencies or programs conducting groundwater monitoring and management in the Basins include: the City of Los Angeles (subject to the LTWA), TVGMD, the California Statewide Groundwater Elevation Monitoring Program ([CASEGM](#)), the Groundwater Ambient Monitoring and Assessment Program ([GAMA](#)), local water providers (privately-owned public water systems, mutual water companies, community service districts, and the City of Bishop), and the Owens Lake Groundwater Development Program ([OLGDP](#)). These agencies or programs monitor groundwater levels, water quality, and/or extraction in areas throughout the Basins. In addition, LADWP is required to continue water deliveries for irrigation, enhancement and mitigation projects, and dust control, and conducts recharge operations in the Basin. Monitoring associated with these activities is routinely reported by LADWP.

For additional clarification or more detailed information on the basin plan area, monitoring network, or conditions, please refer to the [Owens Valley Groundwater Basin GSP](#), the [OVGA Database Management System](#), or the numerous documents and reports prepared by or in cooperation with the [Inyo County Water Department](#). As acknowledged by the Department of Water Resources, it is important to note that there are still many data gaps and missing

¹The term "Owens Lake" is used in this report for consistency with the OVGA GSP but the term is intended to be synonymous with "Owens lakebed".

information as the OVGA continues to gather information for better analysis and informed decision making.

2. Groundwater Elevations

Groundwater elevations and changes from the beginning to the end of the water year for each management area (Figure 1) are provided below. Contour maps of each principal aquifer within each management area are also provided. These maps depict the seasonal high (spring) and low (fall) water level elevations for each principal aquifer within the respective management area. Note that due to infiltration of snowmelt runoff from the Eastern Sierras and LADWP operations (e.g., ditch conveyance, surface water spreading, lease agreements, etc.) during the summer months, the typical spring high and fall low trend is often reversed for the portion of Owens Valley Management Area between Big Pine and Independence. In this area, observed seasonal highs in average and wet years can occur during the summer and early fall. Spring and fall water level elevations are defined as observations within a 180-day period centered on April 1 or October 1. If a well has multiple observations within this period, then the value collected nearest to April 1 or October 1 is used. Hydrographs for representative monitoring points (RMPs) in the Basin are shown in **Appendix A**. The Rio Tinto well is not included despite it being listed as a potential RMP in the GSP as there are no historical data and a field inspection revealed water level measurements could not be collected without significant modifications to the well. It will be removed from the RMP list in the first GSP periodic evaluation; these evaluations are due to DWR at least every five years.

2.1 Fish Slough and Tri-Valley

Observed spring groundwater elevations for the Fish Slough and Tri-Valley management area ranged from 3,624.13 to 5,312.40 ft amsl, with an average elevation of 4,419.06 ft amsl (Figure 2). Fall groundwater elevations (Figure 3) ranged from 3,626.06 to 5,305.35 ft amsl, with an average elevation of 4,384.67 ft amsl. Observed groundwater elevation changes from fall 2022 to fall 2023 ranged from +0.00 to +5.40 ft, with an average change of +0.90 ft.

Groundwater flow in both subbasins is generally from north to south. Recharge along the margins of the basin and drawdown near high-capacity irrigation wells likely influence flows locally during certain times of the year in Tri-Valley. Groundwater levels near Chalfant Valley indicate some flow from the Tri-Valley is directed westward towards the Fish Slough subbasin. This is consistent with results from a geochemical study performed by Zdon and others (2019) that showed Northeast

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Spring in Fish Slough is partially sourced by water from Tri-Valley. Additionally, declines in flow from Northeast Spring began around the same time as groundwater level declines in Tri-Valley. This indicates a strong hydrologic connection between Tri-Valley and Fish Slough, likely via enhanced permeability through the Bishop Tuff along the Fish Slough fault zone. Increasing the number of groundwater monitoring wells in the Hammil and Chalfant Valley areas would increase understanding of the hydraulic system and may provide further evidence of connection between Tri-Valley and Fish Slough. A joint project with California Department of Fish and Wildlife (CDFW), BLM, United States Geological Survey (USGS), and DWR is in progress to drill two multi-completion monitoring facilities in southern Hammil Valley and one in northern Fish Slough subbasin in 2024 (see Section 7.3).

2.2 Owens Valley

The Owens Valley management area contains two principal aquifers: a shallow unconfined aquifer approximately 100 ft in thickness and a deep semi-confined to confined aquifer that extends to approximately 1,000 ft below ground surface. The shallow and deep aquifers are separated by confining units that are laterally discontinuous and primarily composed of volcanic flows and clays deposited in ancient lakes. Most groundwater pumping in the Owens Valley subbasin occurs within the Owens Valley management area, and therefore monitoring wells in this area experience the greatest magnitude of observed water level fluctuations.

Observed spring groundwater elevations for the Owens Valley management area shallow aquifer (Figure 4) ranged from 3,689.75 to 4,381.39 ft amsl, with an average elevation of 3,919.31 ft amsl. Spring water levels in the deep aquifer ranged from 3,654.31 to 4,973.25 ft amsl, with an average elevation of 3,925.79 ft amsl (Figure 5). In the fall, shallow aquifer groundwater elevations ranged from 3,691.62 to 4,388.49 ft amsl (Figure 6) with an average elevation of 3,916.75, and from 3,654.29 to 4,975.97 ft amsl with an average elevation of 3,916.75 ft amsl in the deep aquifer (Figure 7). Average change in groundwater elevation in the shallow and deep aquifers from Fall 2022 to Fall 2023 was +5.07 ft and +9.40 ft, respectively.

While groundwater flow patterns between the shallow and deep aquifers are generally similar, flow direction varies widely across the Owens Valley management area. Groundwater flow near Bishop is generally to the east and changes direction to the south towards the eastern margin of the basin near Laws, and some groundwater flow enters from the north from Tri-Valley. South of Bishop, the majority of recharge enters the basin from the west along Sierra creeks and their associated coarse-grained alluvial fans. Groundwater elevations and flow reflect this, with west to

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east flow towards the center of the basin. Along the comparatively flat valley floor in the vicinity of the Owens River, groundwater flow is from the north to the south. Localized variations from these prevailing patterns exist, notably near LADWP wellfields and/or areas with significant surface water recharge (either natural or managed). Interpolating groundwater elevation contours in the Owens Valley management area is especially challenging due to the complex basin geometry and most monitoring wells being located on the valley floor. In addition, many of the monitoring wells are located in a linear orientation parallel to the valley axis.

2.3 Owens Lake

The Owens Lake management area contains five principal aquifers named from shallowest to deepest as Aquifers 1-5 (MWH, 2011). Aquifers 1-4 generally transition from coarse sands and gravels along the margins of the management area into fine silts and clays near Owens Lake, resulting in laterally discontinuous aquifers. Aquifer 5 is more laterally continuous and is composed of silty sand with interbedded sands and occasional clays, interpreted to have formed from a flood plain or braided stream system that existed prior to the formation of Owens Lake. The Owens Lake aquifer system extends more than 1,500 ft below ground surface (bgs). Due to the closed nature of the Owens Valley in terms of both surface water and groundwater (i.e., no natural outflows except for evapotranspiration) and limited pumping in the Owens Lake management area, water levels are generally stable and most monitoring wells show less than 10 ft of natural long-term variations in water levels. Groundwater conditions for Aquifers 2 and 4 are not included in this report because meaningful water level contour maps could not be created due to a lack of sufficient data. However, conditions for both the overlying and underlying aquifers are reported. Since groundwater extractions are relatively small in the Owens Lake management area, conditions in Aquifers 1, 3, and 5 are believed to be representative of those in Aquifers 2 and 4.

Observed spring groundwater elevations in Aquifer 1 (Figure 8) ranged from 3,577.61 to 3,643.30 ft above mean sea level (amsl), with an average elevation of 3,614.29 ft amsl. Aquifer 3 spring groundwater elevations (Figure 9) ranged from 3,585.37 to 3,653.78 ft amsl, with an average elevation of 3,625.76 ft amsl. Groundwater elevations in the spring for Aquifer 5 (Figure 10) ranged from 3,612.84 to 3,653.80 ft amsl, with an average elevation of 3,627.19 ft amsl. Fall conditions in the Owens Lake management area are generally similar to those observed in the spring. Aquifer 1 water levels in the fall (Figure 11) ranged from 3,577.67 to 3,643.56 ft amsl, with an average elevation of 3,615.45 ft amsl. Aquifer 3 spring groundwater elevations (Figure 12) ranged from 3,590.67 to 3,653.58 ft amsl, with an average elevation of 3,626.74 ft amsl. Groundwater elevations

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in the spring for Aquifer 5 (Figure 13) ranged from 3,613.46 to 3,653.87 ft amsl, with an average elevation of 3,627.77 ft amsl. The average change in groundwater elevations over WY 2023 for Aquifers 1, 3, and 5 was +1.61 ft, +1.84 ft, and +1.13 ft, respectively.

2.4 Groundwater SMC Status

The reporting metric “SMC Status” was developed to better compare groundwater elevations observed at RMPs in the context of their unique SMC. This metric describes groundwater elevations relative to the “sustainability range” of the well and allows for normalized reporting of groundwater elevations at RMPs. The sustainability range is defined as the elevation range between the measurable objective (MO), or interim milestone (IM) for Fish Slough and Tri-Valley monitoring points, and the minimum threshold (MT) established for each RMP. SMC Status was classified into the following categories:

- Near or Above MO: Water levels equal to or greater than 75% of the sustainability range
- Between MO and MT: Water levels within 25% to 75% of the sustainability range
- Near MT: Water levels less than 25% of the sustainability range but above the MT
- At or Below MT: Water levels at or below the MT

Figure 14 shows an example of this metric applied to the hydrograph of well T001. Table 1 provides a summary of all of the water level elevation RMPs and their status in Fall 2023. The SMC status of some RMPs could not be determined for a variety of reasons (monitoring point was destroyed, collecting entity was unresponsive to data requests, etc.), but of the 47 wells that had sufficient data, 41 (87%) were above or near the MO and 4 (9%) had water level elevations in the middle of the sustainability range. A total of 2 (4%) wells were near, at, or below their established minimum threshold.

2.5 Reported Dry Wells

No wells were reported to the DWR Dry Well Reporting System during WY2023. One well that went dry in June 2018 was reported in December 2023 (WY 2024), but has been resolved. Reported dry wells are shown in Table 2.

3. Groundwater Extractions

The subsections below discuss estimated or measured groundwater extractions for each management area. High-capacity extraction wells are not metered in Tri-Valley but are in the

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Owens Lake and Owens Valley management areas. While the majority of metered pumping comes from LADWP wells that are reported to the OVGA, additional pumping occurs from public or private entities (e.g., City of Bishop, public water systems, Crystal Geysers Roxane). The OVGA has initiated a well registration program that requires all groundwater pumpers in the portions of the Basins over which the OVGA has authority (excluding de minimis users, who are encouraged to voluntarily register their wells) to report their groundwater use (see Section 8). The deadline for submitting well registration and reporting forms is April 1, 2024, and therefore this report does not quantify all known groundwater extractions in the Owens Valley and Owens Lake management areas. The currently unreported volumes in the Owens Valley and Owens Lake management areas are likely small relative to the reported volumes. Reported groundwater extractions for the Basins in WY 2023 totaled 72,760 AF (Table 3).

3.1 Fish Slough and Tri-Valley

Groundwater extractions in the Fish Slough and Tri-Valley management area were estimated using [OpenET](#) since pumping is not metered. OpenET is an online platform for mapping evapotranspiration (ET) at the scale of individual fields. Several different ET estimation methodologies are available, and the Satellite Irrigation Management Support (SIMS) model was used. It must be noted that underestimation of ET for small agricultural operations in very arid areas is currently a known limitation of OpenET due to the limited number of cropland in-situ flux stations located in these types of environments. Further complicating matters, surface water is applied to some fields in Tri-Valley. This means that groundwater extraction estimates in this report are likely overestimated, but the degree to which is currently unknown. All groundwater pumping occurs in the Tri-Valley portion of the management area with the exception of one known active domestic well located near the boundary between the Owens Valley and Fish Slough subbasins.

Estimated groundwater extractions in Tri-Valley for WY 2023 are shown in Table 3. Total groundwater use was estimated to be 13,103 AF, with irrigated agriculture accounting for 100% of total quantified extractions. Not included in Table 3 are extractions from Chalfant Valley West Mutual Water Company (CVWMWC), which services a population of approximately 45 people (15 connections). Pumping data from CVWMWC were unavailable at the time this report was prepared. It was assumed the remainder of the Tri-Valley population consists of de minimis users served by domestic wells and therefore exempt from SGMA regulations.

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The spatial distribution of estimated groundwater pumping aggregated within each public land survey (PLSS) section (1 mi²) in the Fish Slough and Tri-Valley management area is shown in Figure 15. Pumping was assumed to occur within the same section an irrigated agricultural field was located. If a field overlay more than one section, then pumping was assigned to the section with the largest overlap. Most groundwater pumping in the Fish Slough and Tri-Valley management area appears to be located near the center of Tri-Valley in Hammil Valley.

3.2 Owens Valley

Extraction volumes for each water use sector were provided to the OVGGA by LADWP since contributions to each sector from specific wells are not tracked. In other words, LADWP quantifies how much groundwater is applied to each water use sector as part of their operations, but generally does not track which wells the water is sourced from. In some instances, wells are dedicated to a specific purpose so their contributions to a specific water use sector can be tracked. For example, wells W357 and W384 are used as the municipal Independence town water system supply so groundwater extractions from them were assigned to the municipal water use sector. Although the volumes reported for each water use sector in Table 3 for the Owens Valley management area could not be independently verified, total groundwater extraction volume reported by LADWP² was consistent with the total calculated using pumping data provided to the OVGGA. The volume of groundwater used for each sector was calculated by multiplying the total water use for the sector by the ratio of total groundwater extractions to total water use reported by LADWP. For WY 2023 about 9% of total water use reported by LADWP was sourced from groundwater.

Total groundwater extractions in the Owens Valley management area, including those on LADWP lands that are exempt from being covered under a SGMA GSP (see Footnote 2), summed 57,981 AF (Table 3). Agricultural irrigation accounted for approximately 10% of total extractions. Managed wetlands and native vegetation were about 6% of total extractions, while domestic and municipal uses made up about 20%. The remaining 39% of groundwater extractions were for Tribal uses or unspecified LADWP operations. Due to the commingling of pumped groundwater with surface water in ditches and canals that reach the Los Angeles Aqueduct, the amount of groundwater that was exported was not quantified. The spatial distribution of Owens Valley

²LADWP owned lands in Owens Valley are considered adjudicated under SGMA and are required to submit annual reports: [LADWP WY 2023 Report](#).

management area groundwater extractions in shown in Figure 16. The majority of groundwater is pumped by LADWP on lands that are not subject to SGMA.

3.3 Owens Lake

A reported total of 1,676 AF of groundwater was extracted from the Owens Lake management area (Table 3). This is a relatively small volume of water compared to the other two management areas. Pumping occurs along the margins of the playa (Figure 17) where water quality is generally better. The OVGA Well Registration and Reporting Program (see Section 7.1) has been successful in filling data gaps (e.g., Crystal Geysers Roxane) related to groundwater extractions in the Owens Lake Management Area.

4. Surface Water Supply

The subsections below describe surface water used in the Basins. Total surface water use in the Basins was estimated to be 487,937 AF.

4.1 Fish Slough and Tri-Valley

Surface water use in the Fish Slough and Tri-Valley management area was estimated using data reported to the State Water Resources Control Board (SWRCB) Electronic Water Rights Information Management System ([eWRIMS](#)). Approximately 11,106 AF of surface water was used in the Fish Slough and Tri-Valley management area (Table 4), with approximately 9,042 AF (81%) used for agriculture and about 2,064 AF (19%) used for various other purposes (e.g., domestic, power generation, in-stream dedications).

4.2 Owens Valley and Owens Lake

Nearly all surface water rights in the Owens Valley and Owens Lake management areas are owned by the City of Los Angeles. Smaller holders of water rights exist but the sum of private water rights as a portion of the runoff into the management areas is negligible compared to LADWP water rights. LADWP does not currently differentiate between surface water used in different areas of the basin in their reporting to DWR, but instead provides total water use for each sector. This precluded reporting surface water volumes used within each management area so instead they are presented jointly here.

The volume of surface water used for each sector was calculated by multiplying the total water use for the sector by the ratio of total surface water use to total water use reported by LADWP.

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For WY 2023, about 476,831 AF was sourced from surface water in the Owens Valley and Owens Lake management areas (Table 4).

4.3 Surface Water SMC Status

SW3208 measures discharge from the Fish Slough Northeast Spring and is the only surface-water RMP in the Basins. The SMC Status (see Section 2.4 for explanation) for SW3208 in fall 2023 was at the minimum threshold of 0.1 cfs (Table 5).

5. Total Water Use

Total water use in the Basin grouped by management area, water use sector, and measurement method is shown in Table 6. Total water volume used in the Basin during WY 2023 was estimated to be 560,697 AF.

6. Change of Groundwater in Storage

The subsections below discuss the estimated change of groundwater in storage for the Basins. Total groundwater in storage change for both subbasins over WY 2023 was estimated to be +303,550 AF (Figure 18). Cumulative change in groundwater in storage for both subbasins relative to Fall 2014, the time when change in storage values began to be reported by LADWP, is estimated to be +495,611 AF (see Section 6.2 below).

6.1 Fish Slough and Tri-Valley

Change in groundwater in storage for both the Fish Slough subbasin and the Tri-Valley portion of Owens Valley subbasin was estimated using the equation:

$$\Delta S = \Delta b_{avg} * A * \phi \quad (6.1)$$

where ΔS = change in storage (AF)

Δb_{avg} = mean change in observed water levels (feet)

A = subbasin area (acres)

ϕ = mean effective aquifer porosity (-)

Mean change in water levels from Fall 2022 to Fall 2023 was 0.49 ft in the Fish Slough subbasin and 1.05 ft in Tri-Valley. The Fish Slough subbasin covers 2,944 acres, and the Tri-Valley portion of the Owens Valley subbasin covers 72,100 acres. Assuming a 10% effective aquifer porosity for

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both areas, estimated change in storage over WY 2023 was +144 AF for the Fish Slough subbasin and +7,552 AF for Tri-Valley. Total combined change in groundwater in storage for the Fish Slough and Tri-Valley management area was +7,696 AF. Although this is the best method currently available for estimating change in groundwater in storage, these values have a very high degree of uncertainty associated with them due to limited data availability and spatial coverage. TVGMD is currently developing a numerical groundwater flow model for the Fish Slough and Tri-Valley portions of the Owens Valley groundwater basin in Mono County which will be available in the future for estimating change in storage (see Section 7.4).

6.2 Owens Valley and Owens Lake

As part of their SGMA reporting requirements for adjudicated areas ([CA Water Code Section 10720.8](#))³, LADWP reports water use and estimated change in storage values for each water year to DWR (see Footnote 2). Figure 18 shows both estimated annual and cumulative change in storage for the Basins. The first water year LADWP began SGMA reporting was 2015. The LADWP reported value is calculated according to a relatively complex set of equations outlined in Section IV Subsection C of the [Green Book](#), the technical appendix to the Inyo/Los Angeles Long Term Water Agreement.

LADWP reported a change in groundwater in storage of +295,854 AF for WY 2023. Since nearly all groundwater pumping and monitoring in the Inyo County portion of the Owens Valley subbasin occurs on LADWP lands, this is the best estimate available for the Owens Valley and Owens Lake management areas. It is assumed that most of this change in storage occurred in the Owens Valley management area since water levels in the Owens Lake management area are generally stable due to relatively limited extractions.

7. Progress Towards GSP Implementation

The Owens Valley Groundwater Basin GSP identified four Projects or Management Actions that the OVGA Board of Directors would implement or consider implementing to facilitate the maintenance of sustainable conditions in the basin (see Section 4 of the GSP). Below is a description of activities related to each project that occurred during WY 2023. The OVGA has focused its attention on Projects #1 and #2 since the GSP was submitted to DWR, while the

³ The California SGMA legislation was enacted January 1, 2015.

TVGMD and Mono County have made progress on Projects #3 and #4. Updates on projects in the groundwater basin the OVGA is involved with but not leading are also included.

7.1 Project and Management Action #1 - Well Registration and Reporting Ordinance

In August 2022, the OVGA passed [Ordinance No. 2022-01](#) which requires owners and users of groundwater extraction facilities located within the revised OVGA boundary⁴ to register their wells with the OVGA and report groundwater extractions annually. This [Well Registration Program](#) is voluntary, but encouraged, for de minimus users which is defined as “a person who extracts, for domestic purposes, two acre-feet or less (of groundwater) per year.” The initial registration deadline was set for April 1, 2023, and later extended to April 1, 2024, to provide stakeholders with additional time to submit.

7.2 Project and Management Action #2 - Well Permit Review Ordinance

The Inyo County Department of Environmental Health is the permitting entity that issues well permits within the Inyo County portion of the Basins. Staff to the OVGA is working with the County to review applications for well permits within the Basins.

7.3 Project and Management Action #3 - Increase Groundwater Level Monitoring Network

The TVGMD is currently exploring options for expanding the groundwater monitoring network in Tri-Valley, including partnering with DWR in establishing continuous monitoring sites in existing Hammil Valley wells, but no final decisions have been made. Inyo County Water Department installed pressure transducers and dataloggers in three monitoring wells located in the Fish Slough subbasin on May 11, 2023, in cooperation with the BLM Bishop Field Office.

The CDFW, BLM, USGS and DWR propose to install two multi-completion groundwater monitoring facilities (i.e., well) in southern Hammil Valley in the Fish Slough and Tri-Valley management Area. A third multi-completion groundwater monitoring facility is planned to be

⁴After the GSP was submitted to DWR on January 26, 2022, the TVGMD and Mono County withdrew from the OVGA and petitioned DWR to become the GSAs for the portions of the Basins within Mono County. The [TVGMD](#) and [Mono County](#) were approved to be the GSAs for Mono County portions of the Owens Valley and Fish Slough groundwater subbasins on August 2, 2022.

installed on LADWP owned land in the Fish Slough subbasin. The monitoring well construction is scheduled to begin in 2024. The proposed project includes provision to equip the monitoring facilities with pressure transducers and dataloggers. The proposed project is a continued effort to assess groundwater conditions and movement in the Tri-Valley and Fish Slough management area.

7.4 Project and Management Action #4 - Tri-Valley Groundwater Model Development

In June 2022 a project proposal for developing a groundwater model of the Fish Slough and Tri-Valley portions of the Owens Valley groundwater basin was approved by the Inyo-Mono Integrated Regional Water Management Program (IRWMP) to be put forward for funding by DWR. A description of the proposed scope of work can be found in the July 13, 2022 TVGMD board meeting [minutes](#). Mono County has contracted with Inyo County Water Department for project management services including development of a request for proposal (RFP) to award the project contract to a qualified modeling consultant. The model development activities are anticipated to begin when a consultant is awarded the contract in 2024.

7.5 Additional OVGA Activities

The OVGA continues to update and refine its [Database Management System](#). Water-level and streamflow data for the GSP Representative Monitoring Point Sites (RMPs) have also been uploaded to the [SGMA Portal](#) through September 2023 to align with the WY 2023 reporting period of this annual report.

7.6 GSP Amendments

No amendments to the GSP were necessary for the WY reporting period of this annual report.

8. References

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Table 1. Groundwater representative monitoring points status.

Representative Monitoring Point	Management Area	Water Level Elevation (ft amsl)	Date	MT (ft amsl)	MO (ft amsl)	SMC Status Fall 2023
BT-MW1	Fish Slough and Tri-Valley	5,303.55	2023-11-13	5,301	5,303	Near or Above MO
CH-MW2	Fish Slough and Tri-Valley	4,208.95	2023-11-13	4,204	4,207	Near or Above MO
FS-2	Fish Slough and Tri-Valley	4,215.63	2023-09-27	4,214	4,215	Near or Above MO
FS-3D ^a	Fish Slough and Tri-Valley	4,180.98	2023-10-01	4,179		Undetermined
Hammil 2 ^a	Fish Slough and Tri-Valley	4,419.40	2023-10-24	4,401		Undetermined
T397	Fish Slough and Tri-Valley	4,200.65	2023-10-01	4,199	4,199	Near or Above MO
ICWCSD 4 ^b	Owens Valley			4,249	4,254	Undetermined
T001	Owens Valley	3,879.71	2023-07-30	3,867	3,880	Near or Above MO
T362 ^b	Owens Valley			4,047	4,072	Undetermined
T364	Owens Valley	3,900.09	2023-10-31	3,898	3,903	Middle of MO and MT
T384	Owens Valley	4,176.65	2023-10-23	4,165	4,168	Near or Above MO
T389	Owens Valley	4,231.99	2023-10-02	4,216	4,224	Near or Above MO
T391	Owens Valley	4,305.38	2023-10-10	4,296	4,303	Near or Above MO
T480	Owens Valley	3,996.83	2023-10-23	3,994	3,995	Near or Above MO
T513	Owens Valley	4,120.42	2023-10-24	4,113	4,117	Near or Above MO
T574	Owens Valley	4,083.02	2023-09-21	4,067	4,071	Near or Above MO
T750	Owens Valley	4,362.80	2023-09-27	4,357	4,360	Near or Above MO
T751	Owens Valley	4,388.49	2023-09-27	4,373	4,379	Near or Above MO
T808	Owens Valley	3,848.48	2023-09-25	3,834	3,846	Near or Above MO
T809	Owens Valley	3,831.76	2023-10-01	3,823	3,829	Near or Above MO

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Representative Monitoring Point	Management Area	Water Level Elevation (ft amsl)	Date	MT (ft amsl)	MO (ft amsl)	SMC Status Fall 2023
T869	Owens Valley	3,987.95	2023-10-17	3,983	3,985	Near or Above MO
T871	Owens Valley	3,858.51	2023-10-31	3,850	3,852	Near or Above MO
T872	Owens Valley	3,950.72	2023-10-08	3,946	3,955	Middle of MO and MT
T873	Owens Valley	4,975.97	2023-10-08	4,954	4,963	Near or Above MO
V016GB	Owens Valley	3,885.04	2023-10-16	3,880	3,882	Near or Above MO
V151	Owens Valley	3,844.96	2023-10-25	3,827	3,834	Near or Above MO
V299	Owens Valley	3,937.82	2023-10-26	3,909	3,914	Near or Above MO
WCCSD 2 ^b	Owens Valley			6,020	6,023	Undetermined
WCCSD 4 ^b	Owens Valley			6,263	6,274	Undetermined
DELTA W(3)_10 ^c	Owens Lake			3,562	3,563	Undetermined
DVF North MW	Owens Lake	3,646.61	2023-10-01	3,643	3,645	Near or Above MO
DVF South Lower	Owens Lake	3,643.85	2023-10-01	3,640	3,643	Near or Above MO
DVF South Middle	Owens Lake	3,643.93	2023-10-01	3,639	3,643	Near or Above MO
DVF South Upper	Owens Lake	3,641.76	2023-10-01	3,636	3,641	Near or Above MO
Fault Test T3	Owens Lake	3,622.18	2023-10-01	3,620	3,623	Middle of MO and MT
Fault Test T5	Owens Lake	3,623.66	2023-10-13	3,617	3,623	Near or Above MO
I10(7)_4	Owens Lake	3,571.07	2023-12-06	3,568	3,570	Near or Above MO
KCSD Well 1	Owens Lake	3,612.30	2023-10-01	3,612	3,613	Middle of MO and MT
Keeler-Swansea Lower	Owens Lake	3,617.04	2023-10-01	3,618	3,618	At or Below MT
O6(5)_4 ^c	Owens Lake			3,567	3,569	Undetermined
OL92-2	Owens Lake	3,608.22	2023-10-01	3,605	3,607	Near or Above MO
River Production Lower ^d	Owens Lake	3,633.58	2023-10-01			Undetermined
River Site Lower	Owens Lake	3,634.25	2023-10-01	3,594	3,633	Near or Above MO

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Representative Monitoring Point	Management Area	Water Level Elevation (ft amsl)	Date	MT (ft amsl)	MO (ft amsl)	SMC Status Fall 2023
SFIP MW ^e	Owens Lake	3,616.35	2023-10-01		3,613	Near or Above MO
T348	Owens Lake	3,633.72	2023-10-01	3,630	3,633	Near or Above MO
T588	Owens Lake	3,699.45	2023-09-13	3,685	3,693	Near or Above MO
T858	Owens Lake	3,677.41	2023-10-31	3,666	3,670	Near or Above MO
T860	Owens Lake	3,716.49	2023-09-12	3,708	3,711	Near or Above MO
T899	Owens Lake	3,622.15	2023-10-01	3,617	3,618	Near or Above MO
T901	Owens Lake	3,611.02	2023-10-01	3,607	3,610	Near or Above MO
T902	Owens Lake	3,630.48	2023-10-01	3,631	3,632	At or Below MT
T904	Owens Lake	3,630.02	2023-10-01	3,626	3,629	Near or Above MO
T908	Owens Lake	3,629.81	2023-10-01	3,625	3,627	Near or Above MO
T910	Owens Lake	3,611.78	2023-10-01	3,607	3,608	Near or Above MO
T916 ^f	Owens Lake	3,653.87	2023-09-13	3,704	3,704	Undetermined
T917 ^f	Owens Lake	3,653.58	2023-09-13	3,704	3,705	Undetermined
T920	Owens Lake	3,602.52	2023-07-31	3,600	3,601	Near or Above MO
T922 ^d	Owens Lake	3,585.03	2023-10-01			Undetermined
T924	Owens Lake	3,596.13	2023-09-26	3,590	3,592	Near or Above MO
T925 ^d	Owens Lake	3,618.48	2023-10-01			Undetermined
T929 ^d	Owens Lake	3,624.00	2023-10-01			Undetermined

^aNewly established representative monitoring point. Measurable Objective (MO) will be established in 5-year GSP update.

^bFall 2023 data unavailable.

^cReported destroyed by LADWP. To be removed during GSP 5-year update.

^dNewly established representative monitoring point. Sustainable Management Criteria (SMCs) will be established in 5-year GSP update.

^eMT reported in GSP contains a typographical error and is not shown. MT will be corrected during next 5-year update.

^fCurrent SMCs in GSP are based on incorrect elevation data. SMCs will be revised during next 5-year update.

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Table 2. Reported dry wells.

Report Date	Approximate Issue Start Date	Management Area	Local Area Name	Was Issue Resolved?	Water Issues	Well Depth (ft)
12/13/2023	06/01/2018	Fish Slough and Tri-Valley	Hammil Valley	Yes, drilled replacement well	Well is dry (no longer producing water)	64
05/09/2022	05/09/2022	Owens Valley	Round Valley	No, on drilling wait list	Well is pumping sand, muddy water.	~60

Source: <https://data.cnra.ca.gov/dataset/dry-well-reporting-system-data>

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Table 3. Groundwater extractions.

Management Area	Sector	Method	GW Extraction Volume (AF)	Accuracy	Range (AF)
Fish Slough and Tri-Valley	Agricultural	OpenET	13,103	± 20 %	10,482 - 15,724
Fish Slough and Tri-Valley	Municipal and Industrial	Totalizer	0	± 5 %	0 - 0
Subtotal			13,103		10,482 - 15,724
Owens Valley	Agricultural	Totalizer	5,995	± 5 %	5,695 - 6,295
Owens Valley	Domestic	Totalizer	73	± 5 %	69 - 77
Owens Valley	Managed Recharge	Totalizer	14,104	± 5 %	13,399 - 14,809
Owens Valley	Managed Wetlands	Totalizer	2,459	± 5 %	2,336 - 2,582
Owens Valley	Municipal and Industrial	Totalizer	11,570	± 5 %	10,992 - 12,148
Owens Valley	Native Vegetation	Totalizer	1,047	± 5 %	995 - 1,099
Owens Valley	Other	Totalizer	22,110	± 5 %	21,004 - 23,216
Owens Valley	Tribes	Totalizer	623	± 5 %	592 - 654
Subtotal			57,981		55,082 - 60,880
Owens Lake	Agricultural	Totalizer	0	± 5 %	0 - 0
Owens Lake	Municipal and Industrial	Totalizer	1,676	± 5 %	1,592 - 1,760
Subtotal			1,676		1,592 - 1,760
Total			72,760		67,156 - 78,364

Notes:

1. Municipal and Industrial and Tribes water use sectors are not included in LADWP SGMA reporting.

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Table 4. Surface water use.

Management Area	Surface Water Source	Sector	Method	Annual Volume Used (AF)	Accuracy	Range (AF)
Fish Slough and Tri-Valley	Local Supplies	Agricultural	Totalizer	4,053	± 5 %	3,850 - 4,256
Fish Slough and Tri-Valley	Local Supplies	Agricultural	Unknown	1,362	± 33 %	913 - 1,811
Fish Slough and Tri-Valley	Local Supplies	Agricultural	Weir	3,627	± 5 %	3,446 - 3,808
Fish Slough and Tri-Valley	Local Supplies	Other	Unknown	1,347	± 33 %	902 - 1,792
Fish Slough and Tri-Valley	Local Supplies	Other	Weir	717	± 5 %	681 - 753
Subtotal				11,106		9,792 - 12,420
Owens Valley and Owens Lake	Local Supplies	Agricultural	Weirs and Flumes	61,200	± 5 %	58,140 - 64,260
Owens Valley and Owens Lake	Local Supplies	Domestic	Weirs and Flumes	747	± 5 %	710 - 784
Owens Valley and Owens Lake	Local Supplies	Managed Recharge	Weirs and Flumes	143,985	± 5 %	136,786 - 151,184
Owens Valley and Owens Lake	Local Supplies	Managed Wetlands	Weirs and Flumes	25,104	± 5 %	23,849 - 26,359
Owens Valley and Owens Lake	Local Supplies	Native Vegetation	Weirs and Flumes	10,691	± 5 %	10,156 - 11,226
Owens Valley and Owens Lake	Local Supplies	Other	Weirs and Flumes	228,742	± 5 %	217,305 - 240,179
Owens Valley and Owens Lake	Local Supplies	Tribes	Weirs and Flumes	6,362	± 5 %	6,044 - 6,680
Subtotal				476,831		452,990 - 500,672
Total				487,937		462,782 - 513,092

Notes:

1. LADWP only reports total combined surface water use for Owens Valley and Owens Lake Management Areas.

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Table 5. Surface water representative monitoring point status.

Representative Monitoring Point	Management Area	Average Daily Flow Rate (cfs) ¹	Month	MT (cfs)	MO (cfs)	SMC Status
SW3208	Fish Slough and Tri-Valley	0.1	September 2023	0.1	0.5	At or Below MT

¹LADWP reports total flow volume in AF for the month, which is multiplied by a factor of 0.01656 to convert to average daily flow rate in cfs.

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Table 6. Total Water Use.

Management Area	Sector	Method	Accuracy	Total Annual Volume (AF)	Range (AF)
Fish Slough and Tri-Valley	Agricultural	OpenET	± 20 %	13,103	10,482 - 15,724
Fish Slough and Tri-Valley	Agricultural	Totalizer	± 5 %	4,053	3,850 - 4,256
Fish Slough and Tri-Valley	Agricultural	Unknown	± 33 %	1,362	913 - 1,811
Fish Slough and Tri-Valley	Agricultural	Weir	± 5 %	3,627	3,446 - 3,808
Fish Slough and Tri-Valley	Municipal and Industrial	Totalizer	± 5 %	0	0 - 0
Fish Slough and Tri-Valley	Other	Unknown	± 33 %	1,347	902 - 1,792
Fish Slough and Tri-Valley	Other	Weir	± 5 %	717	681 - 753
Subtotal				24,209	20,274 - 28,144
Owens Valley	Agricultural	Totalizer	± 5 %	5,995	5,695 - 6,295
Owens Valley	Domestic	Totalizer	± 5 %	73	69 - 77
Owens Valley	Managed Recharge	Totalizer	± 5 %	14,104	13,399 - 14,809
Owens Valley	Managed Wetlands	Totalizer	± 5 %	2,459	2,336 - 2,582
Owens Valley	Municipal and Industrial	Totalizer	± 5 %	11,570	10,992 - 12,148
Owens Valley	Native Vegetation	Totalizer	± 5 %	1,047	995 - 1,099
Owens Valley	Other	Totalizer	± 5 %	22,110	21,004 - 23,216
Owens Valley	Tribes	Totalizer	± 5 %	623	592 - 654
Subtotal				57,981	55,082 - 60,880
Owens Lake	Agricultural	Totalizer	± 5 %	0	0 - 0
Owens Lake	Municipal and Industrial	Totalizer	± 5 %	1,676	1,592 - 1,760
Subtotal				1,676	1,592 - 1,760
Owens Valley and Owens Lake	Agricultural	Weirs and Flumes	± 5 %	61,200	58,140 - 64,260
Owens Valley and Owens Lake	Domestic	Weirs and Flumes	± 5 %	747	710 - 784
Owens Valley and Owens Lake	Managed Recharge	Weirs and Flumes	± 5 %	143,985	136,786 - 151,184
Owens Valley and Owens Lake	Managed Wetlands	Weirs and Flumes	± 5 %	25,104	23,849 - 26,359
Owens Valley and Owens Lake	Native Vegetation	Weirs and Flumes	± 5 %	10,691	10,156 - 11,226
Owens Valley and Owens Lake	Other	Weirs and Flumes	± 5 %	228,742	217,305 - 240,179
Owens Valley and Owens Lake	Tribes	Weirs and Flumes	± 5 %	6,362	6,044 - 6,680
Subtotal				476,831	452,990 - 500,672
Total				560,697	529,938 - 591,456

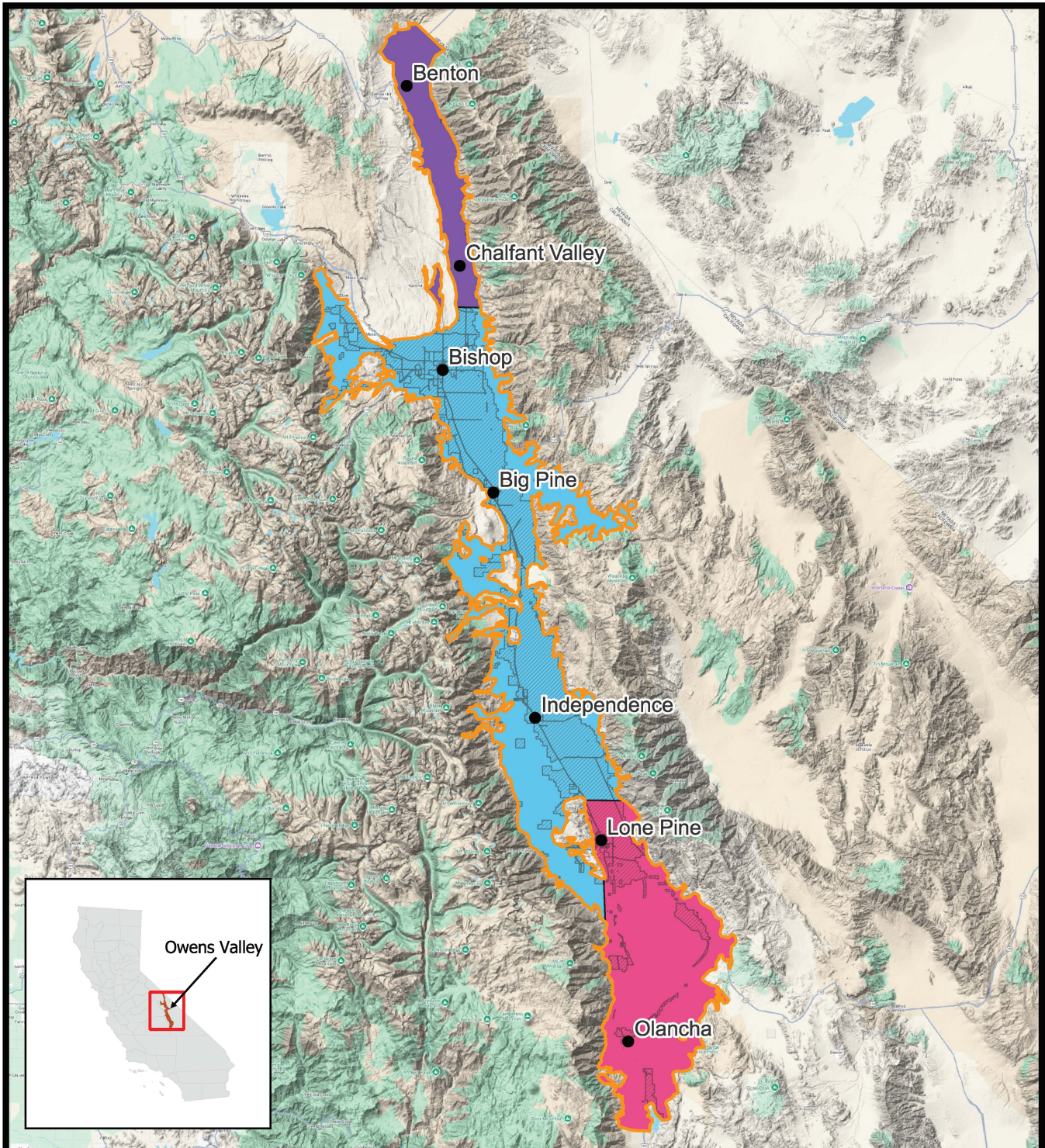
Notes:

1. Municipal and Industrial and Tribes water use sectors are not included in LADWP SGMA reporting.
2. LADWP only reports total combined surface water use for Owens Valley and Owens Lake Management Areas.

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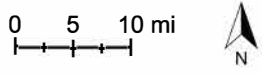
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Source: <https://gis.water.ca.gov/>

Explanation

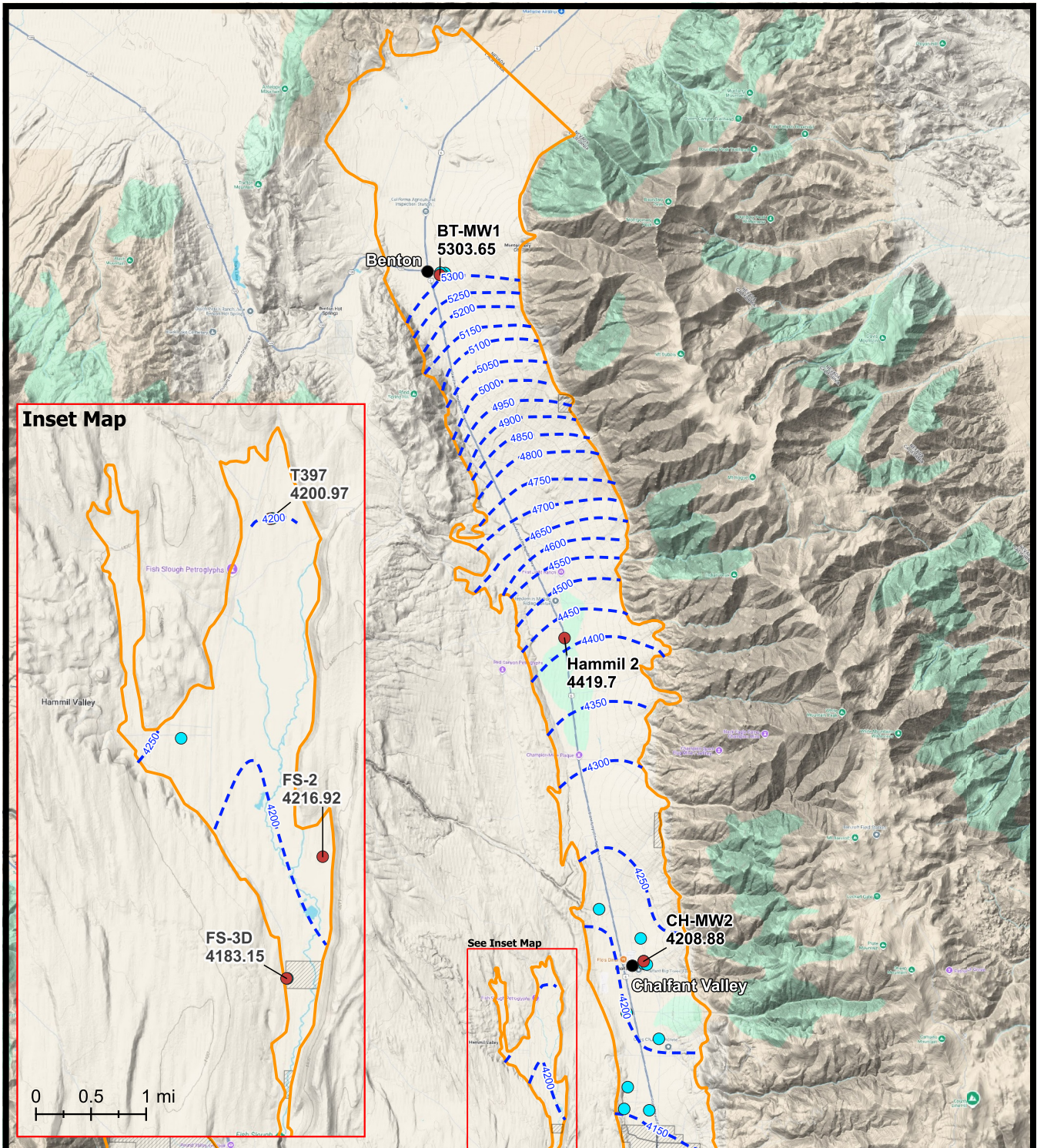
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|--|--|
|  Fish Slough and Tri-Valley |  SGMA Exempt Lands |
|  Owens Valley |  Groundwater Basin Boundary |
|  Owens Lake |  City or Town |



01/24/2025

OWENS VALLEY GSP ANNUAL REPORT WY 2023 Location Map and Groundwater Basin Boundary

Figure 1

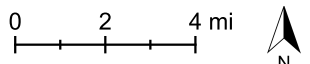


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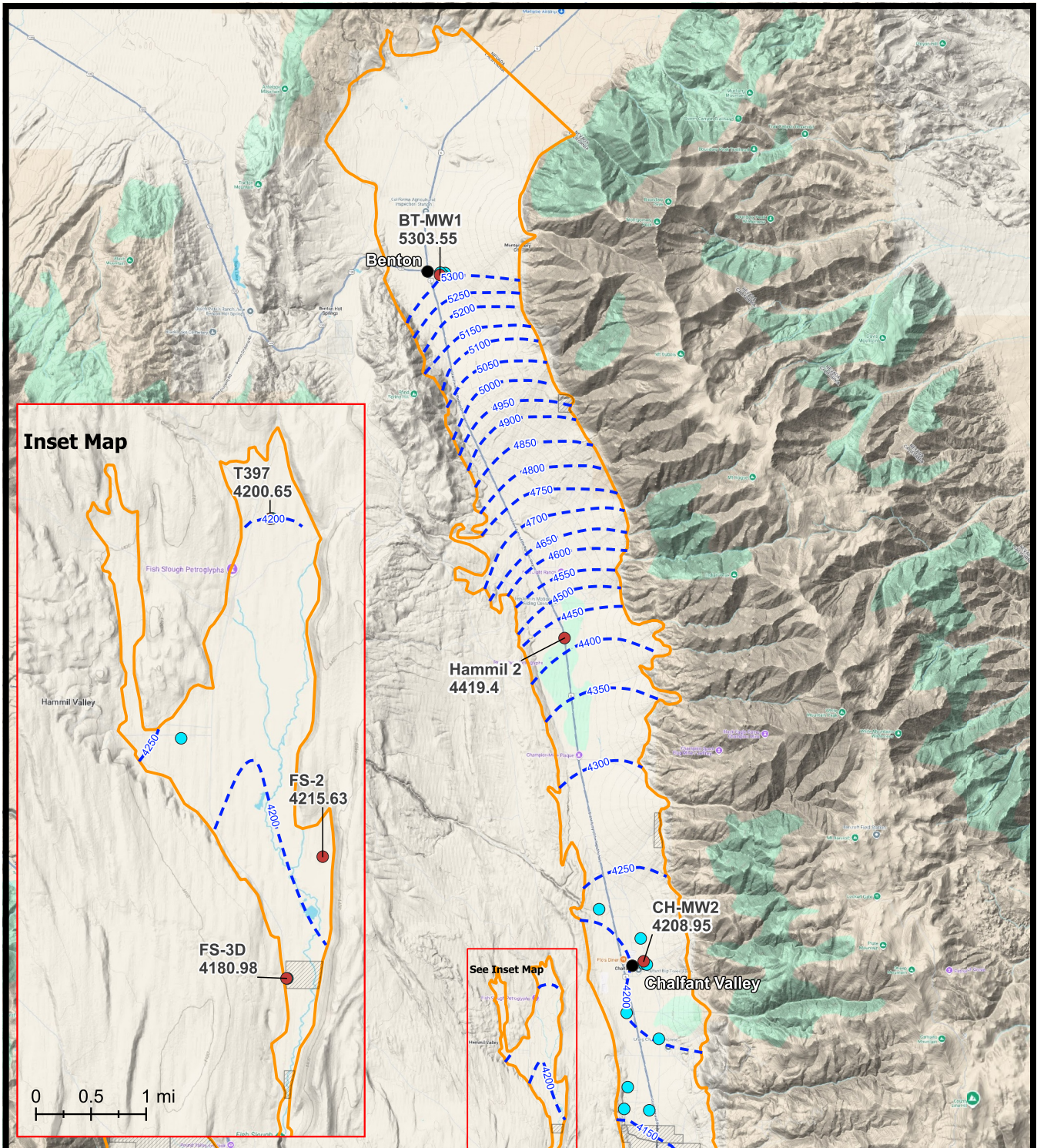
Explanation

- RMP Name
- Groundwater Monitoring Well
- City or Town
- Groundwater Elevation Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

- Notes:**
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



**OWENS VALLEY GSP ANNUAL REPORT WY 2023
Spring Groundwater Elevations
Fish Slough and Tri-Valley Management Area**

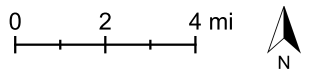


Source: <https://owens.gladata.com>

Explanation

- RMP Name
- Groundwater Monitoring Well
- City or Town
- Groundwater Elevation Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

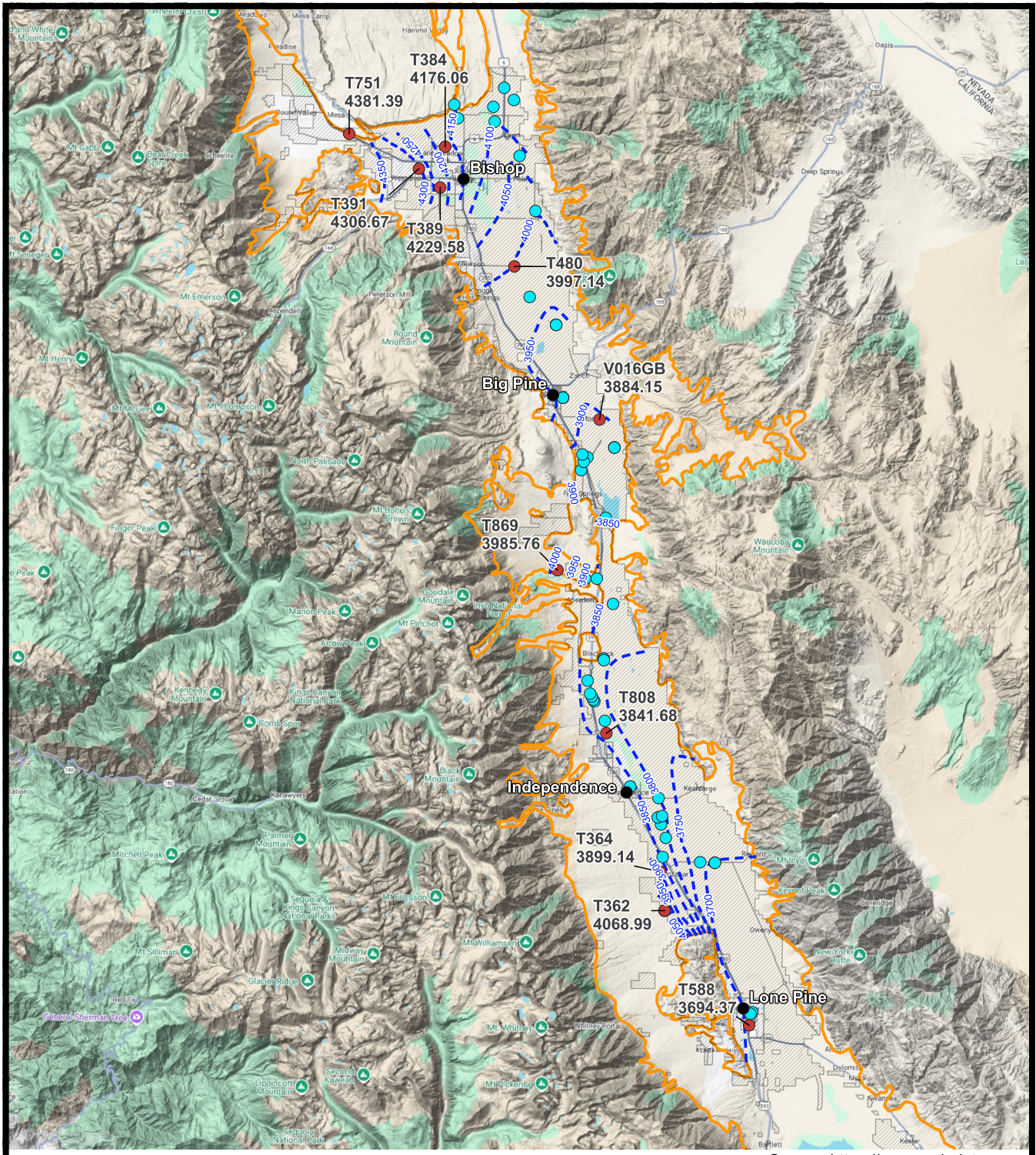
- Notes:**
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



**OWENS VALLEY GSP ANNUAL REPORT WY 2023
Fall Groundwater Elevations
Fish Slough and Tri-Valley Management Area**

01/24/2025

Figure 3

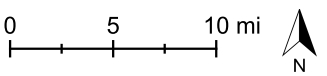


Source: <https://owens.gladata.com>

Explanation

- RMP Name
Groundwater Elevation (ft amsl)
- Groundwater Monitoring Well
- City or Town
- - - Water Elevation Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

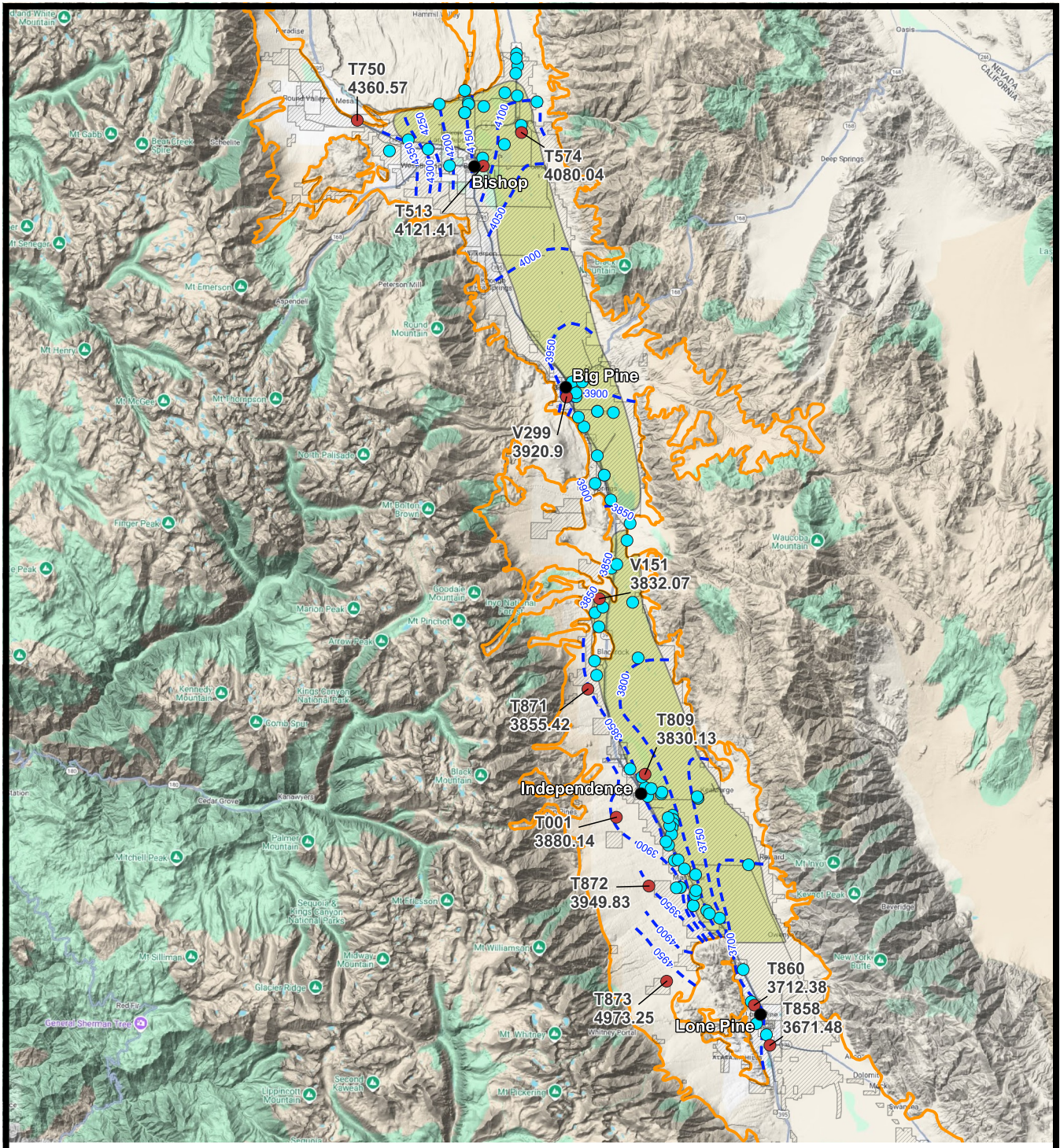
- Notes:
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



OWENS VALLEY GSP ANNUAL REPORT WY 2023
Spring Groundwater Elevations - Shallow Aquifer
Owens Valley Management Area

01/24/2025

Figure 4

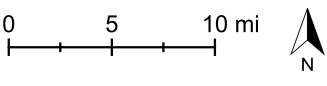


Sources: Danskin (1998); <https://owens.gladata.com>

Explanation

- RMP Name
- Groundwater Elevation (ft amsl)
- Groundwater Monitoring Well
- City or Town
- Water Level Contour (ft amsl)
- ▨ SGMA Exempt Lands
- Approximate Area of Confinement
- Groundwater Basin Boundary

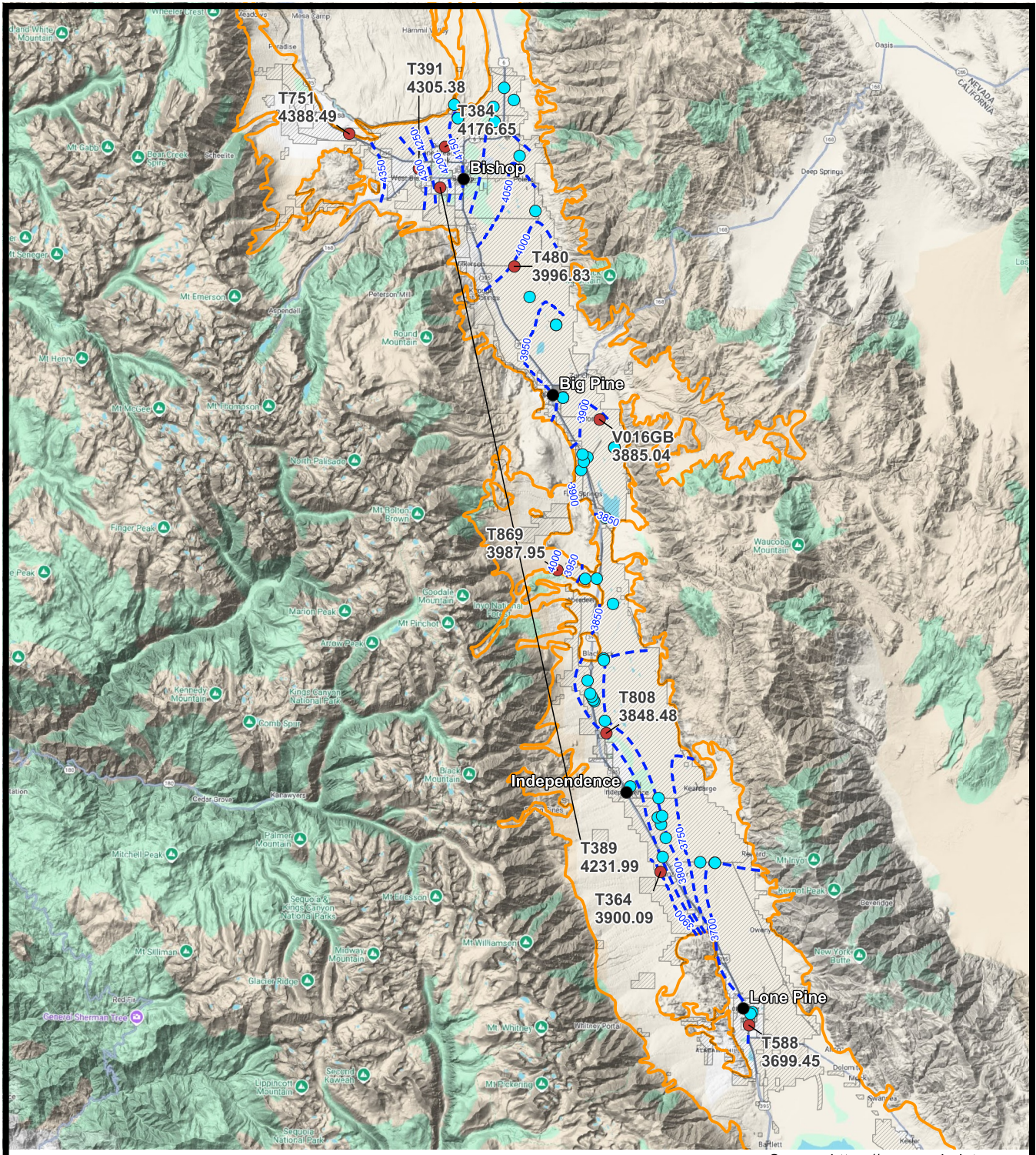
- Notes:
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



OWENS VALLEY GSP ANNUAL REPORT WY 2023
Spring Groundwater Elevations - Deep Aquifer
Owens Valley Management Area

01/24/2025

Figure 5

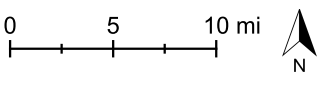


Source: <https://owens.gladata.com>

Explanation

- RMP Name
Groundwater Elevation (ft amsl)
- Groundwater Monitoring Well
- City or Town
- Water Elevation Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

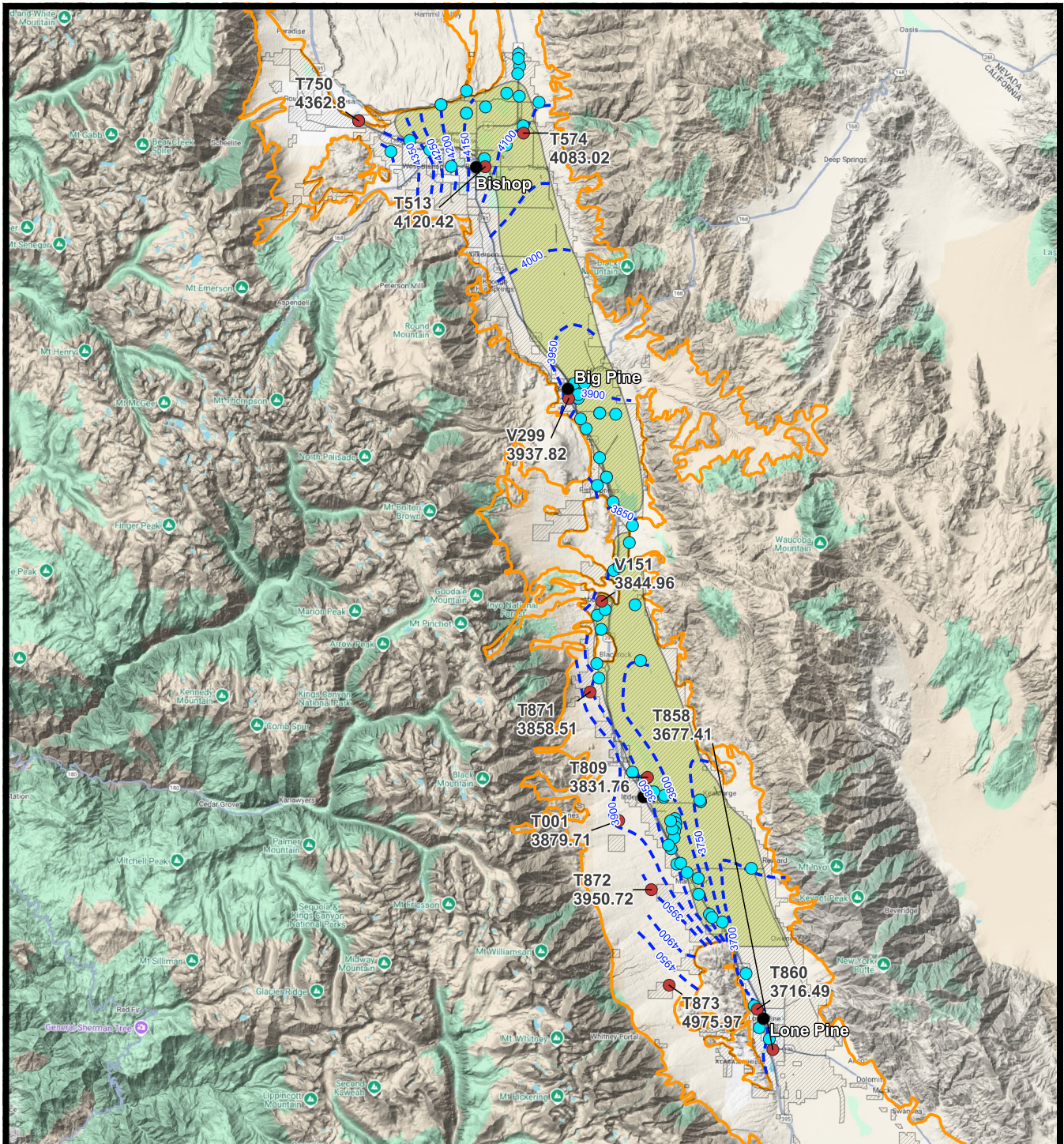
- Notes:
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



**OWENS VALLEY GSP ANNUAL REPORT WY 2023
Fall Groundwater Elevations - Shallow Aquifer
Owens Valley Management Area**

01/24/2025

Figure 6

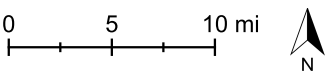


Sources: Danskin (1998); <https://owens.gladata.com>

Explanation

- RMP Name
- Groundwater Monitoring Well
- City or Town
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Approximate Area of Confinement
- Groundwater Basin Boundary

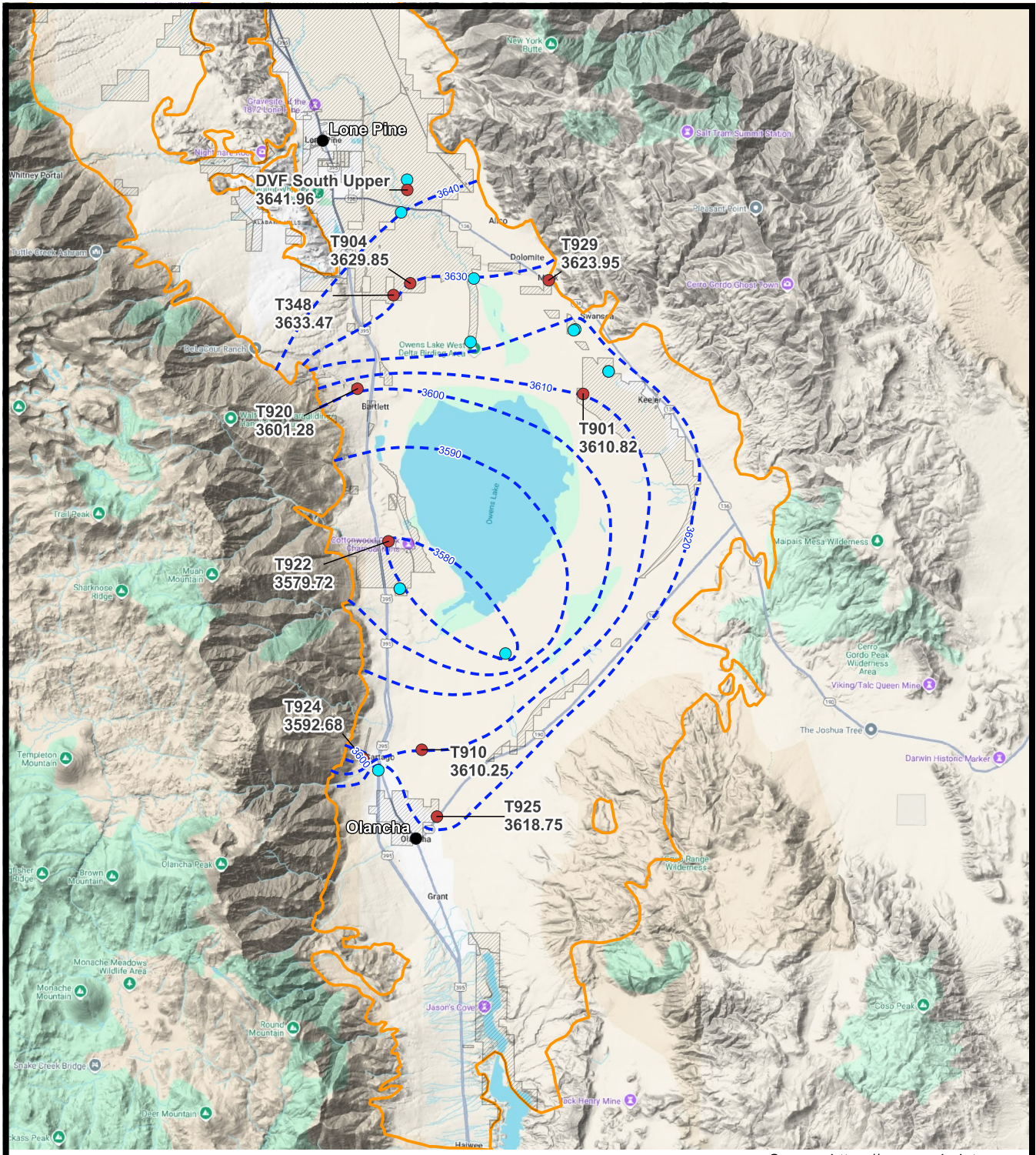
- Notes:
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



OWENS VALLEY GSP ANNUAL REPORT WY 2023
Fall Groundwater Elevations - Deep Aquifer
Owens Valley Management Area

01/24/2025

Figure 7

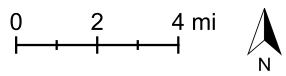


Source: <https://owens.gladata.com>

Explanation

- RMP Name
- Groundwater Elevation (ft amsl)
- Groundwater Monitoring Well
- City or Town
- - - Groundwater Elevation Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

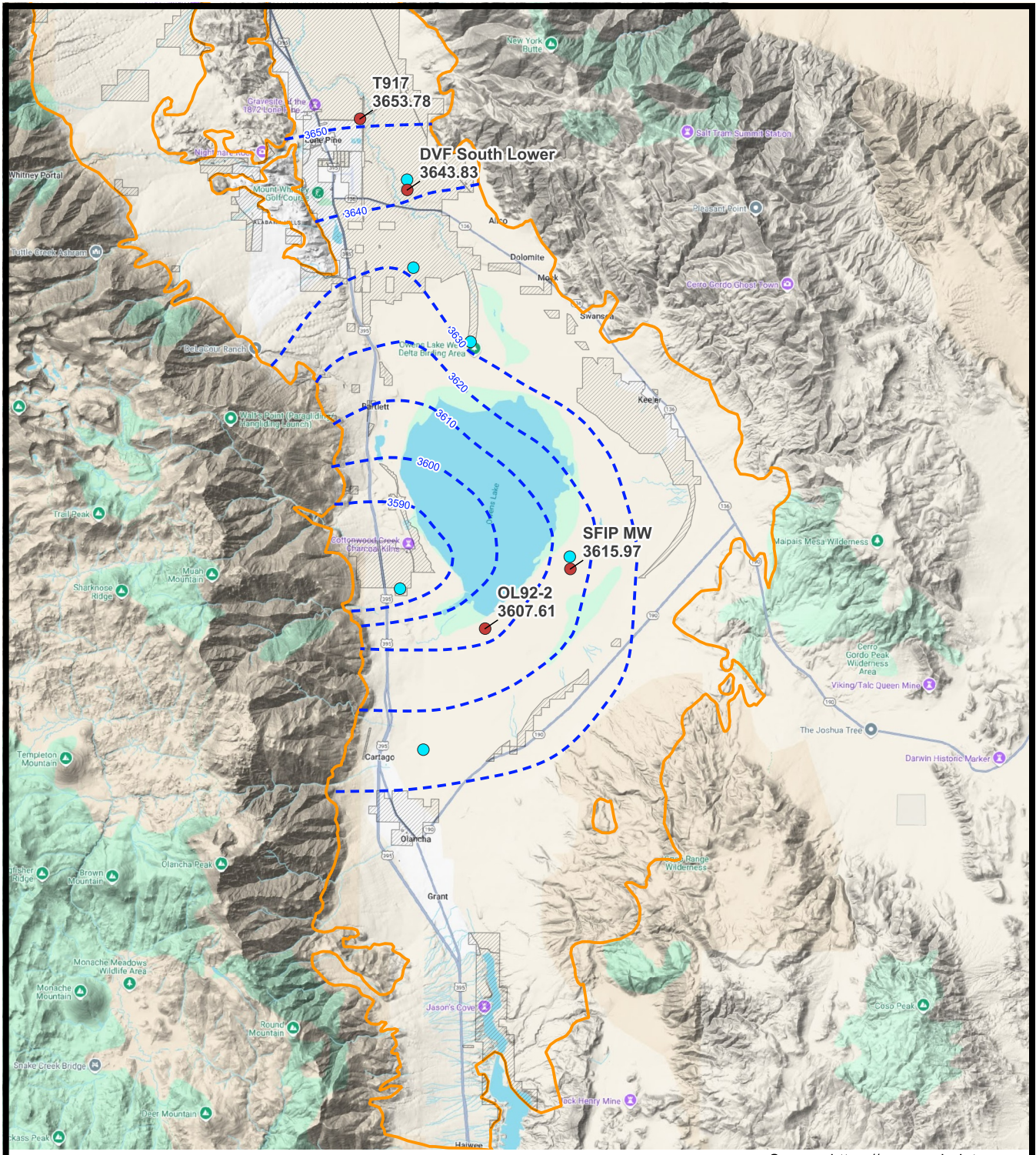
- Notes:**
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



OWENS VALLEY GSP ANNUAL REPORT WY 2023
Spring Groundwater Elevations - Aquifer 1
Owens Lake Management Area

01/24/2025

Figure 8

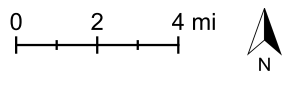


Source: <https://owens.gladata.com>

Explanation

- RMP Name
- Groundwater Elevation (ft amsl)
- Groundwater Monitoring Well
- City or Town
- Groundwater Elevation Contour (ft amsl)
- ▨ SGMA Exempt Lands
- ▭ Groundwater Basin Boundary

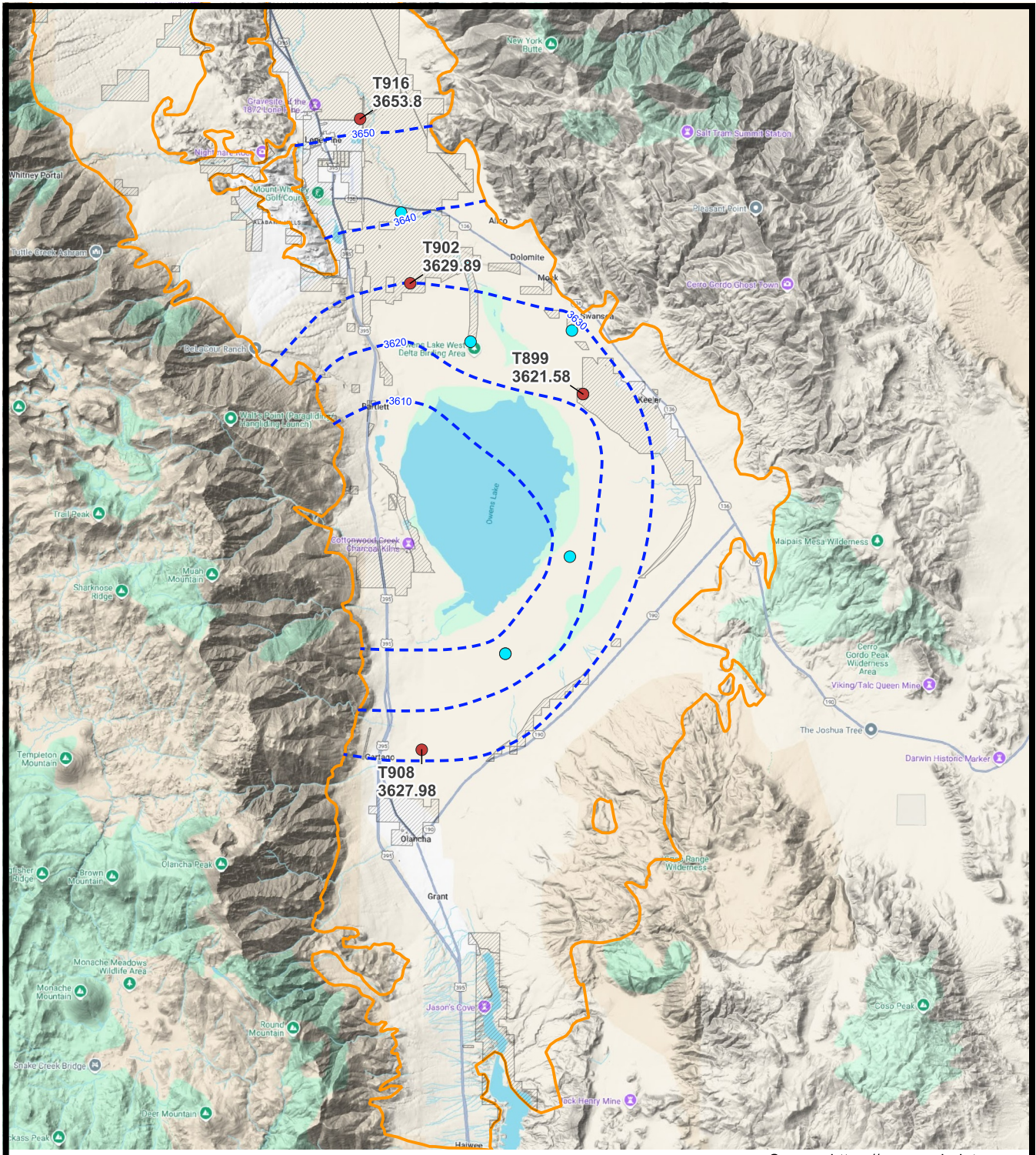
- Notes:**
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



OWENS VALLEY GSP ANNUAL REPORT WY 2023
Spring Groundwater Elevations - Aquifer 3
Owens Lake Management Area

01/24/2025

Figure 9

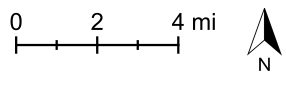


Source: <https://owens.gladata.com>

Explanation

- RMP Name
- Groundwater Elevation (ft amsl)
- Groundwater Monitoring Well
- City or Town
- Groundwater Elevation Contour (ft amsl)
- ▨ SGMA Exempt Lands
- Groundwater Basin Boundary

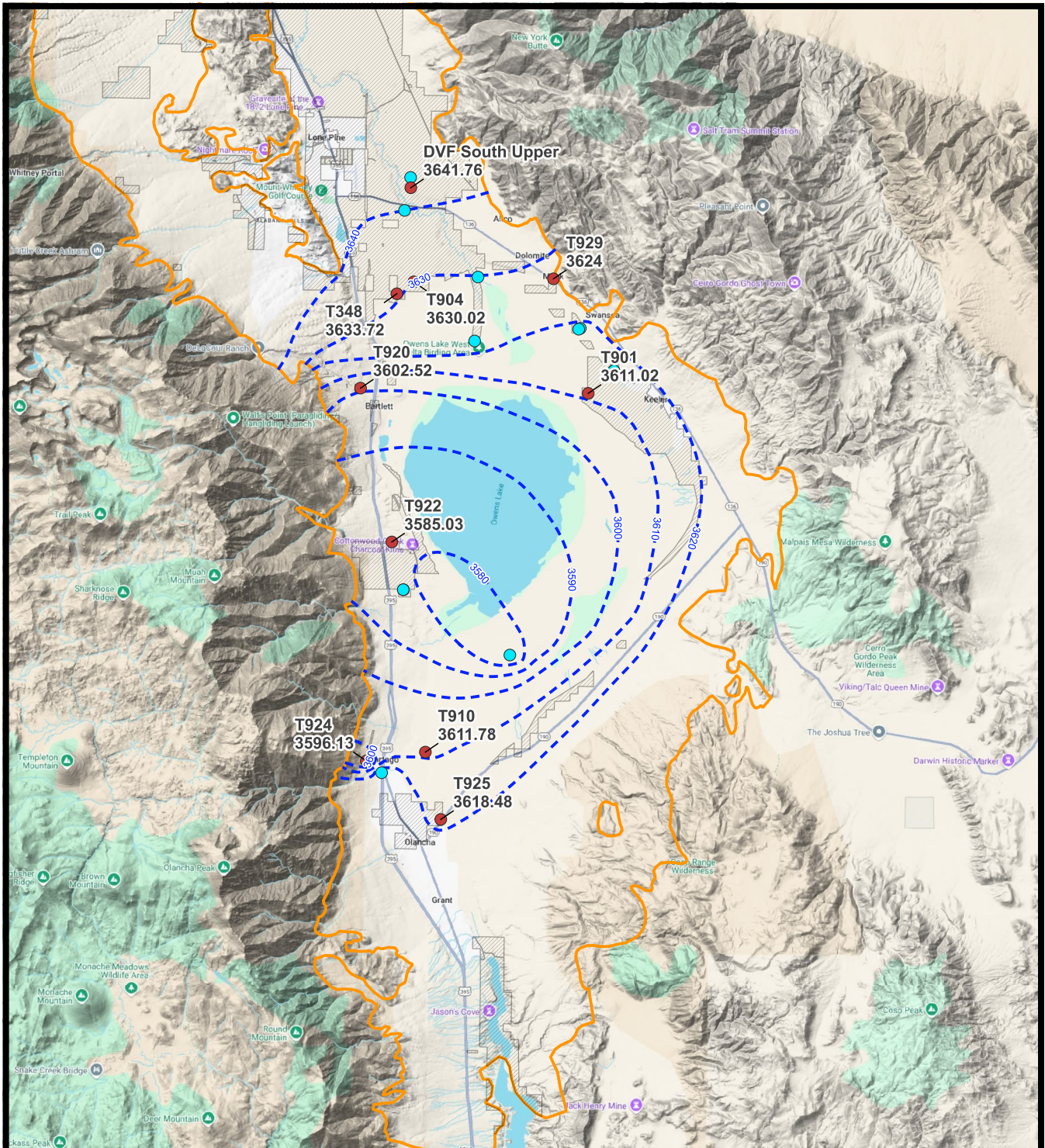
- Notes:**
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



OWENS VALLEY GSP ANNUAL REPORT WY 2023
Spring Groundwater Elevations - Aquifer 5
Owens Lake Management Area

01/24/2025

Figure 10

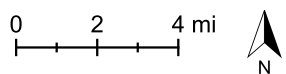


Source: <https://owens.gladata.com>

Explanation

- RMP Name
- Groundwater Monitoring Well
- City or Town
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

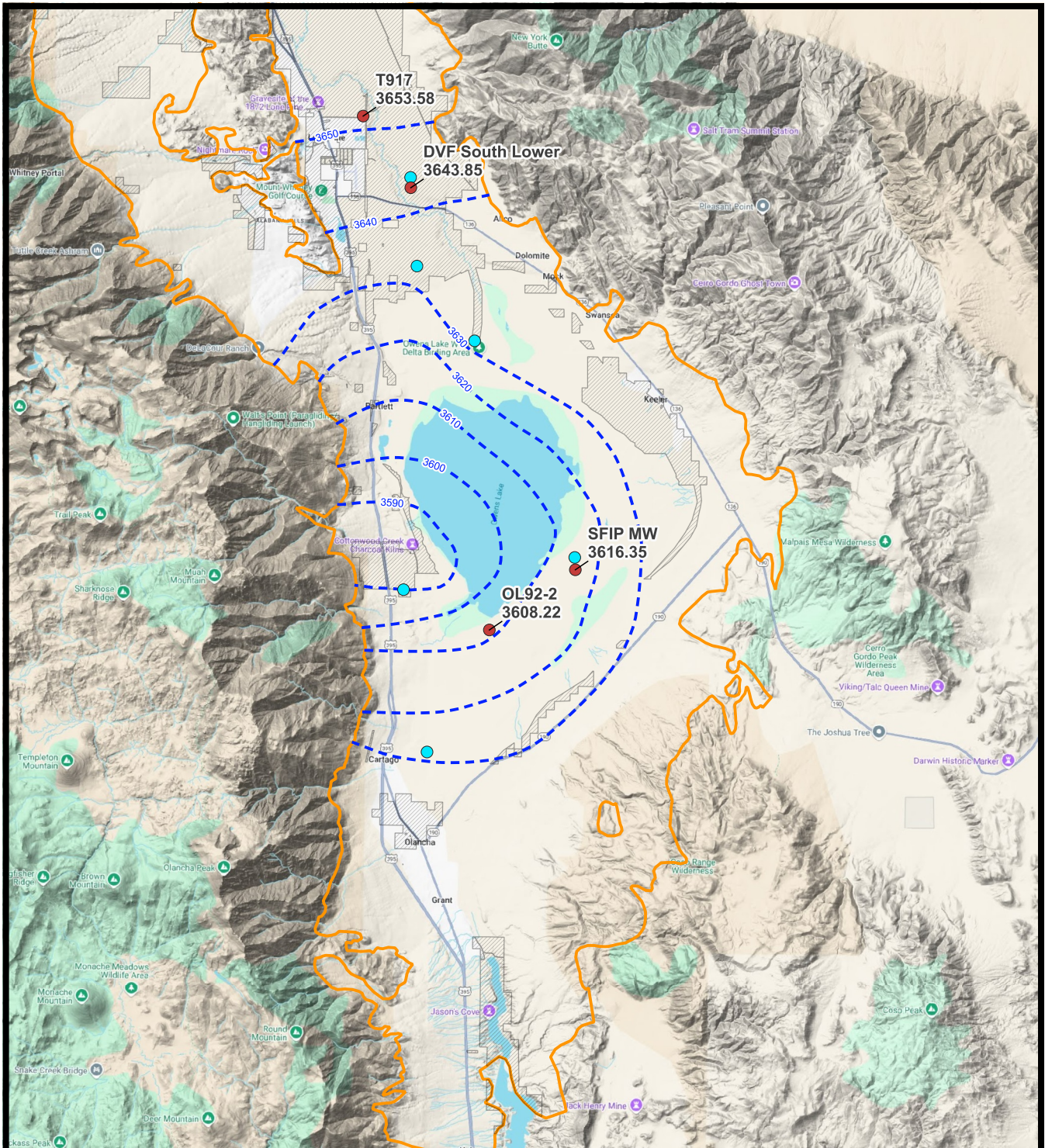
- Notes:**
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



OWENS VALLEY GSP ANNUAL REPORT WY 2023
Fall Groundwater Elevations
Owens Lake Management Area - Aquifer 1

01/24/2025

Figure 11

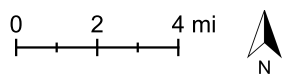


Source: <https://owens.gladata.com>

Explanation

- RMP Name
- Groundwater Elevation (ft amsl)
- Groundwater Monitoring Well
- City or Town
- Water Level Contour (ft amsl)
- ▨ SGMA Exempt Lands
- Groundwater Basin Boundary

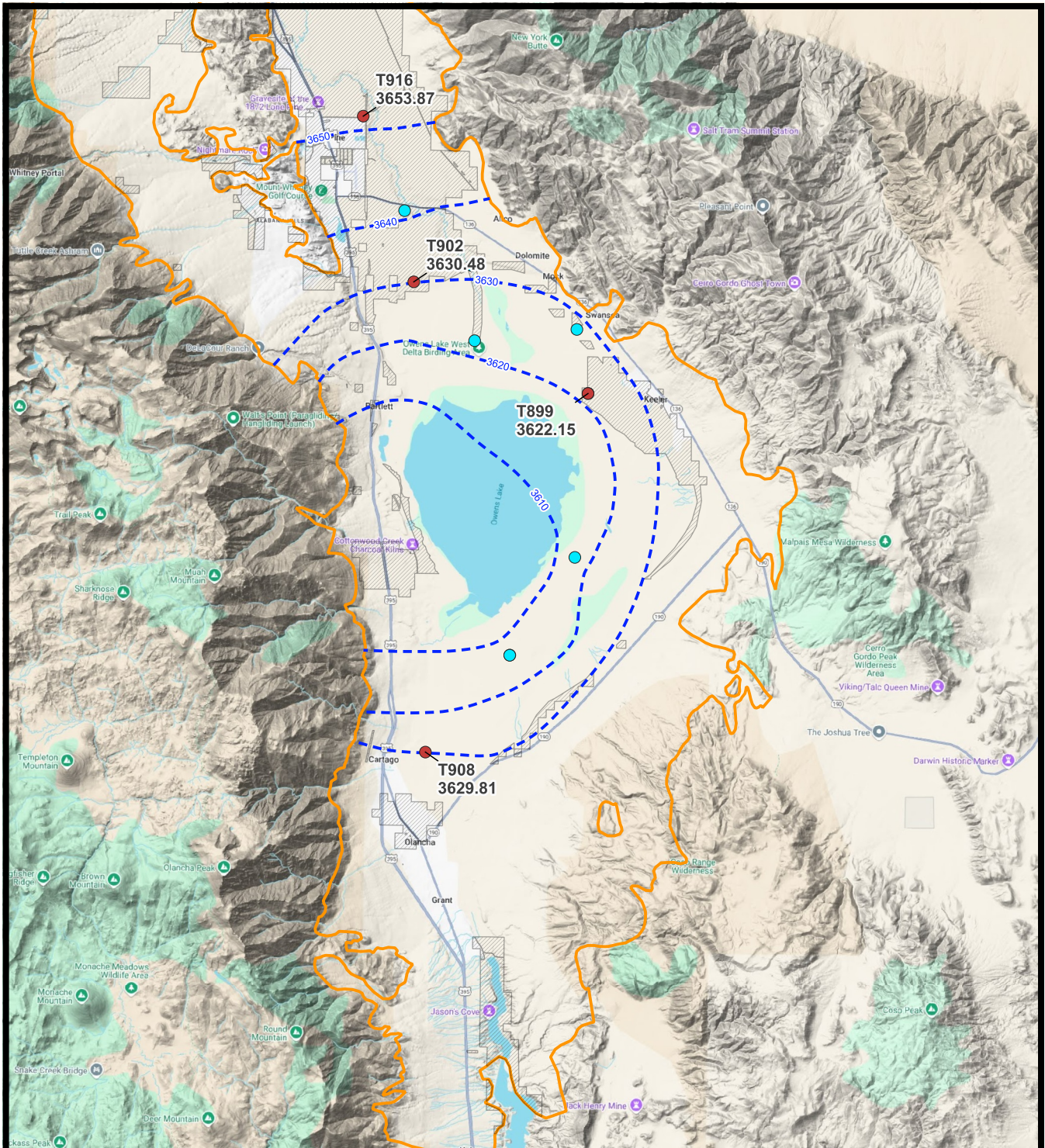
- Notes:**
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



OWENS VALLEY GSP ANNUAL REPORT WY 2023
Fall Groundwater Elevations
Owens Lake Management Area - Aquifer 3

01/24/2025

Figure 12

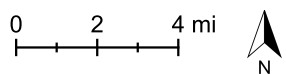


Source: <https://owens.gladata.com>

Explanation

- RMP Name
- Groundwater Elevation (ft amsl)
- Groundwater Monitoring Well
- City or Town
- Water Level Contour (ft amsl)
- ▨ SGMA Exempt Lands
- Groundwater Basin Boundary

- Notes:**
1. RMP = Representative Monitoring Point.
 2. Only RMPs labeled.



OWENS VALLEY GSP ANNUAL REPORT WY 2023
Fall Groundwater Elevations
Owens Lake Management Area - Aquifer 5

01/24/2025

Figure 13

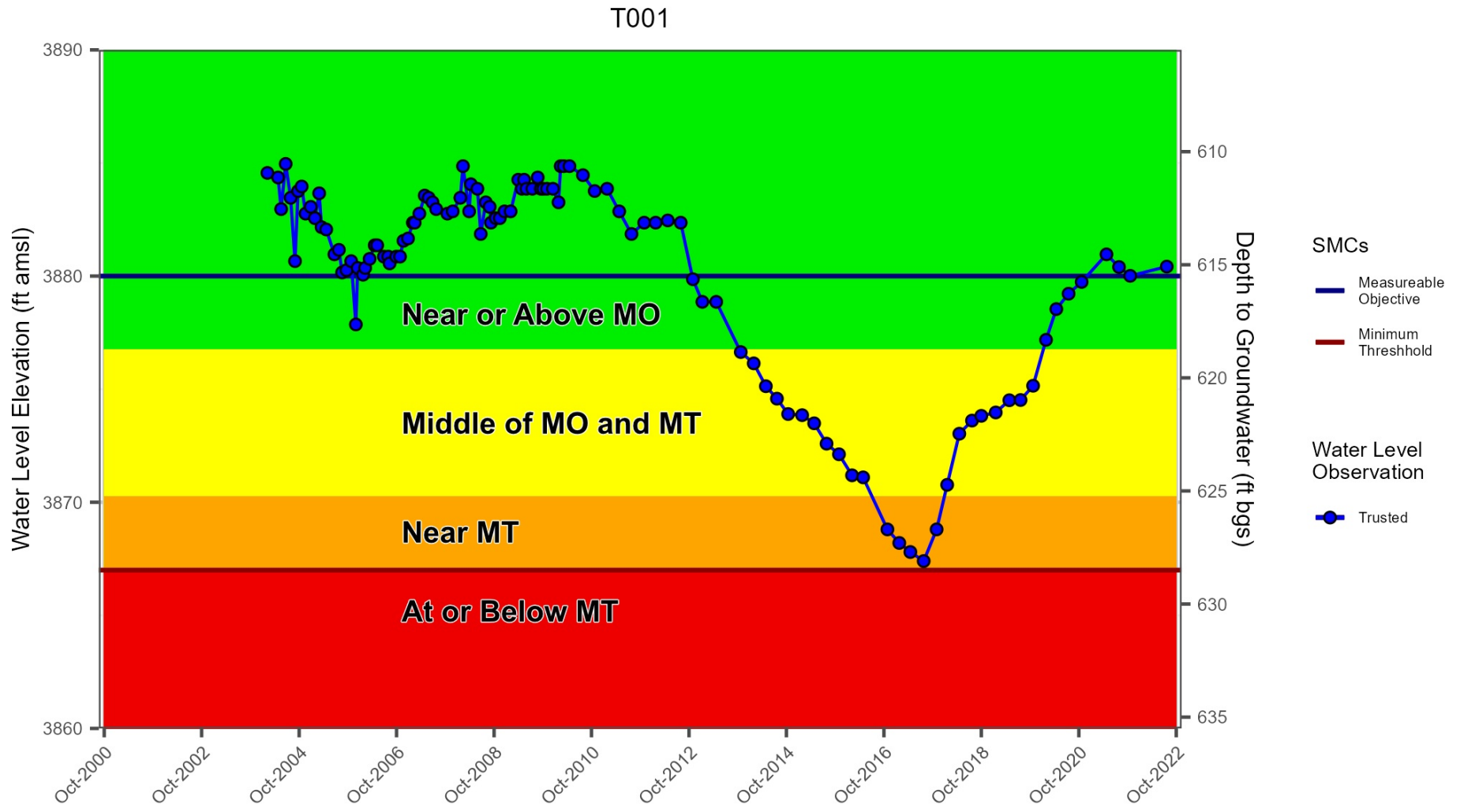
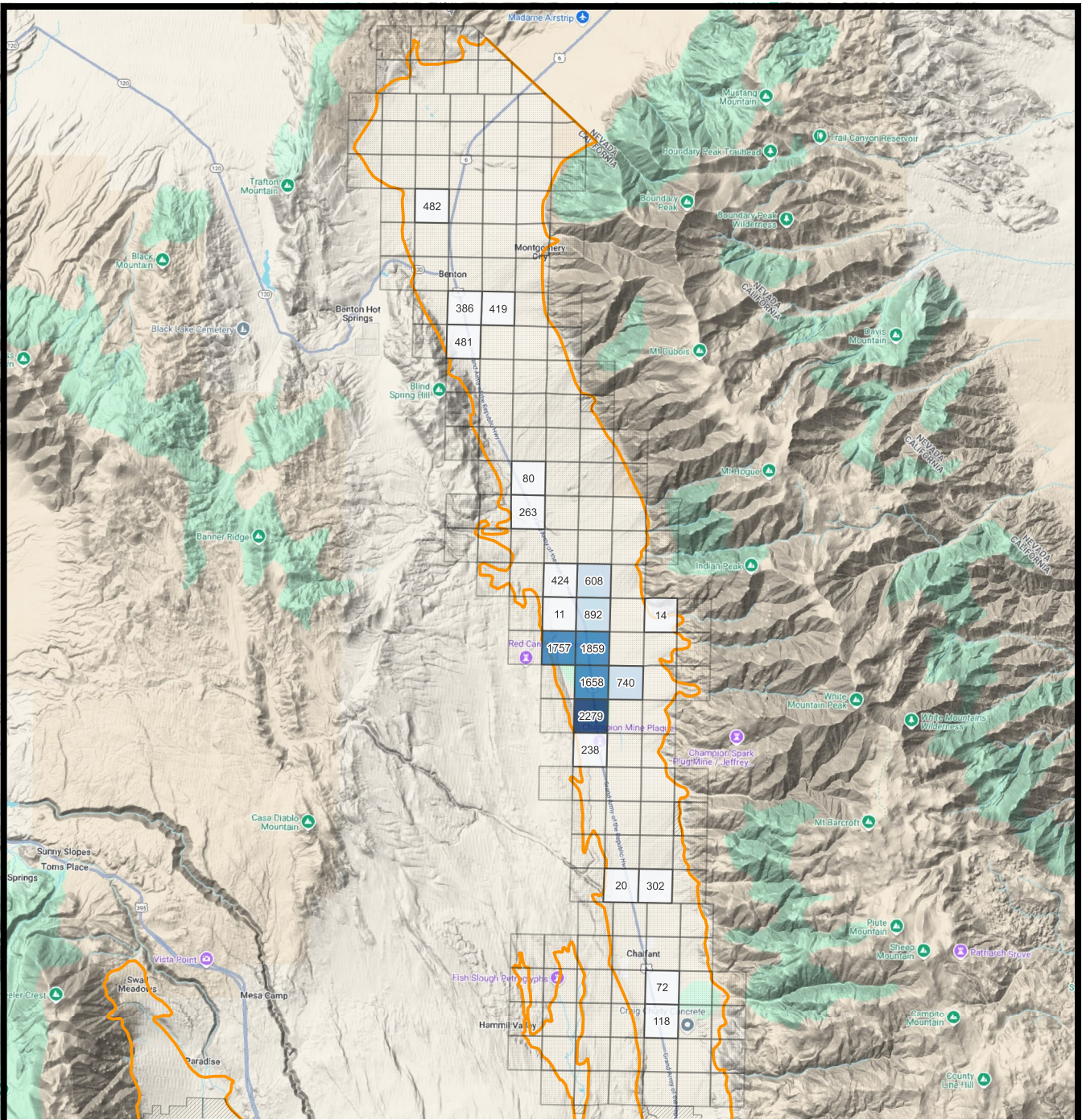


Figure 14





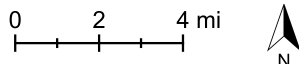
Sources: <https://openetdata.org>; <https://owens.gladata.com>

Explanation

	1,500 - 2,000
	2,000 - 2,500
	No Extractions
	0 - 500
	500 - 1,000
	1,000 - 1,500
	SGMA Exempt Lands
	Groundwater Basin Boundary

Notes:

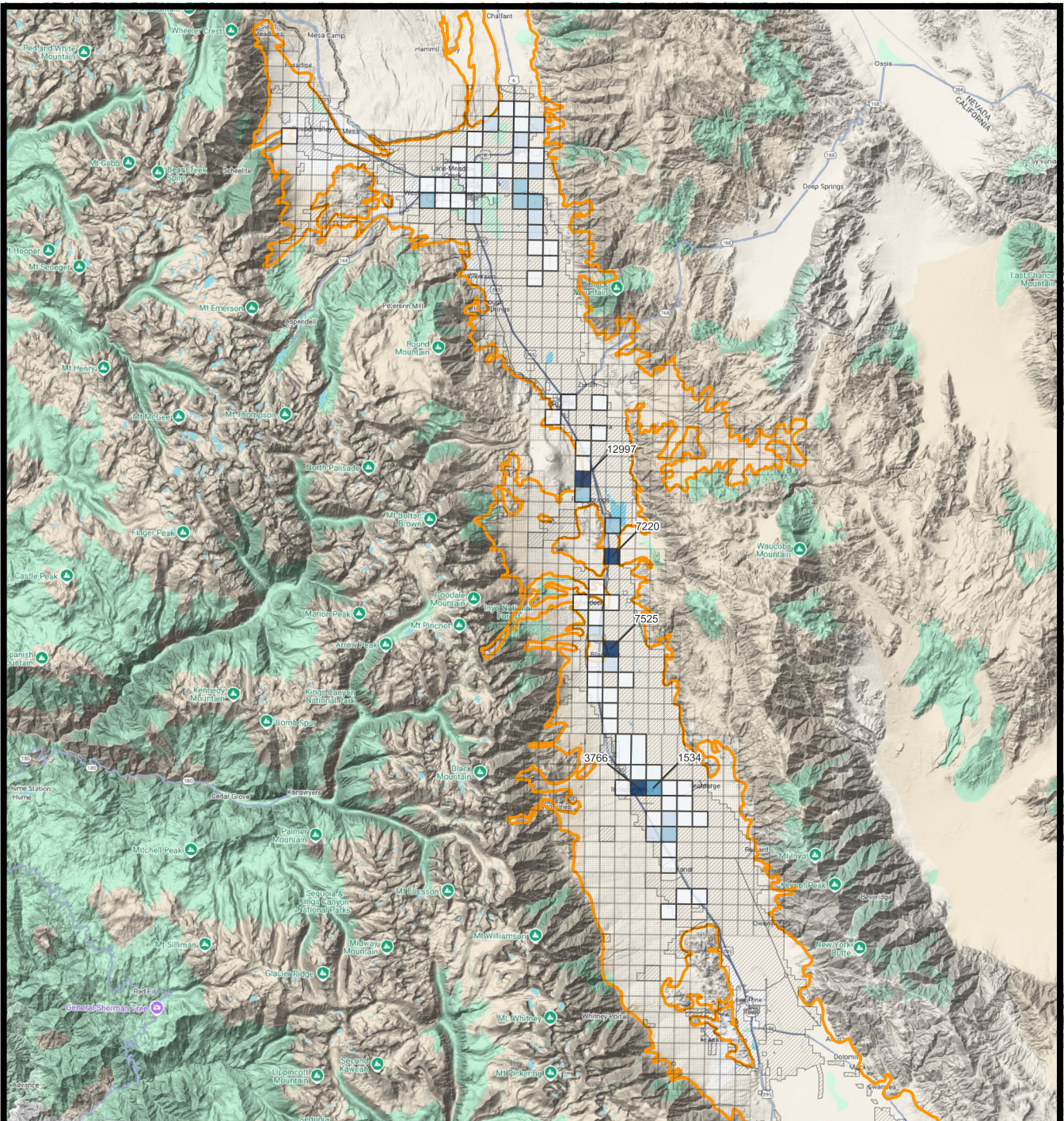
1. No extraction data available. Volumes and locations estimated from Open ET and are assumed to represent agricultural uses.
2. Reported groundwater extractions likely overestimated due to unknown application volume of surface water on some fields.
3. Pumping from Chalfant Valley West MWC not included.
4. Estimated extraction volumes aggregated by public land survey system (PLSS) section.
5. Labels indicate estimated extraction volume in acre-ft (AF).



01/24/2025

OWENS VALLEY GSP ANNUAL REPORT WY 2023 Estimated Groundwater Extractions Fish Slough and Tri-Valley Management Area

Figure 15



Sources: <https://gis.conservation.ca.gov/>; <https://owens.gladata.com>

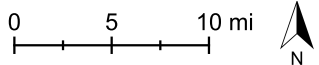
Explanation

	No Extractions		1,500 - 2,000
< 500 AF symbol"/>	< 500		2,000 - 2,500
	500 - 1,000	> 2,500 AF symbol"/>	> 2,500
	1,000 - 1,500		SGMA Exempt Lands

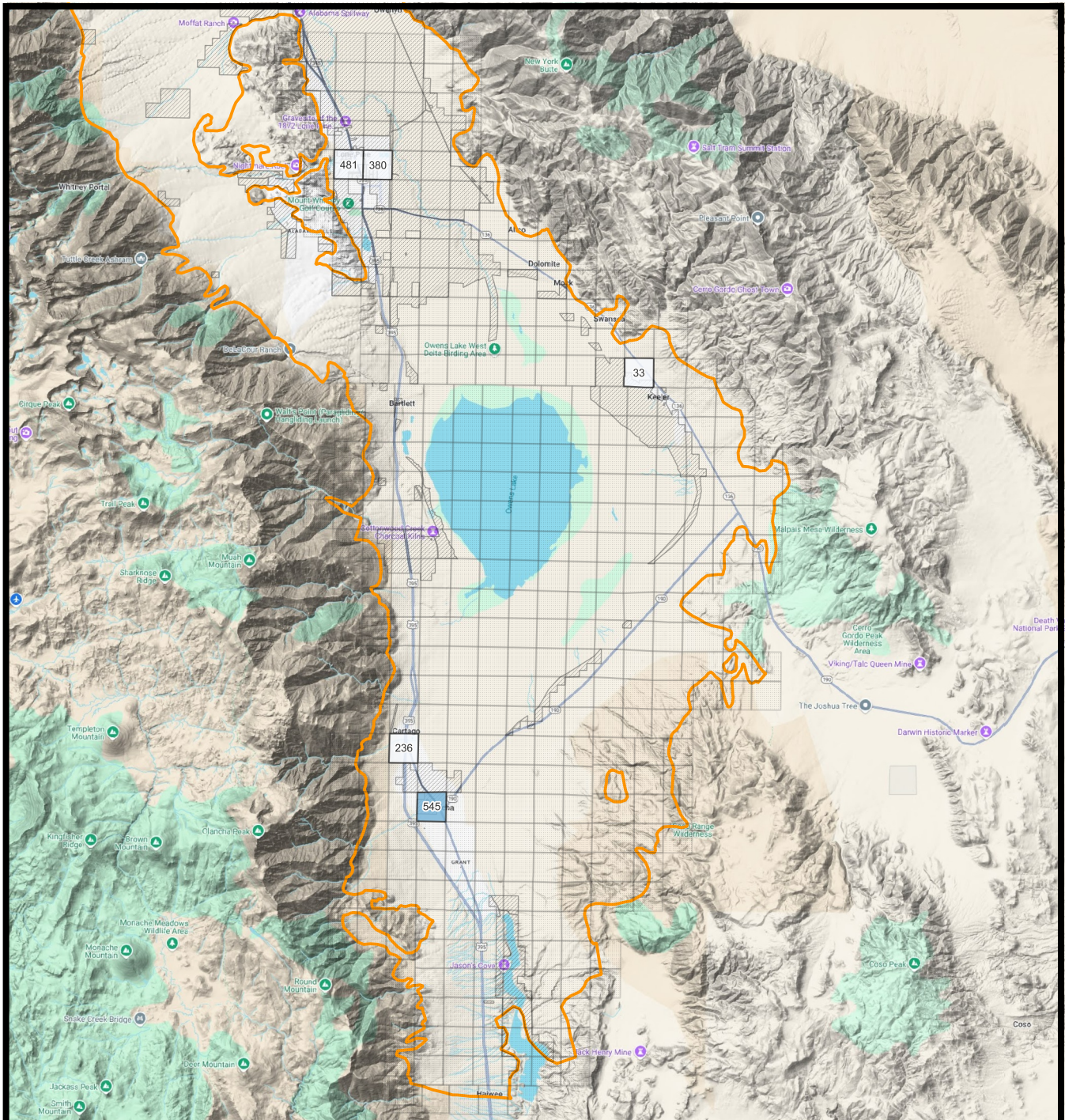
Groundwater Basin Boundary

Notes:

1. LADWP extracts the majority of groundwater in the Owens Valley under the Long-Term Water Agreement. Well-specific contributions to each water-use sector reported in Table 1 are not measured by LADWP.
2. Estimated extraction volumes aggregated by public land survey system (PLSS) section.
3. Labels indicate estimated extraction volume in acre-ft (AF). Only labels for sections with more than 1,500 AF of extraction shown for readability.



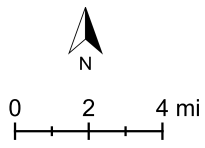
**OWENS VALLEY GSP ANNUAL REPORT WY 2023
Measured Groundwater Extractions
Owens Valley Management Area**



Sources: <https://gis.conservation.ca.gov/>; <https://owens.gladata.com>

Explanation

- | | | | |
|--|----------------|--|----------------------------|
| | No Extractions | | SGMA Exempt Lands |
| | 0 - 500 | | Groundwater Basin Boundary |
| | 500 - 1,000 | | |
| | 1,000 - 1,500 | | |

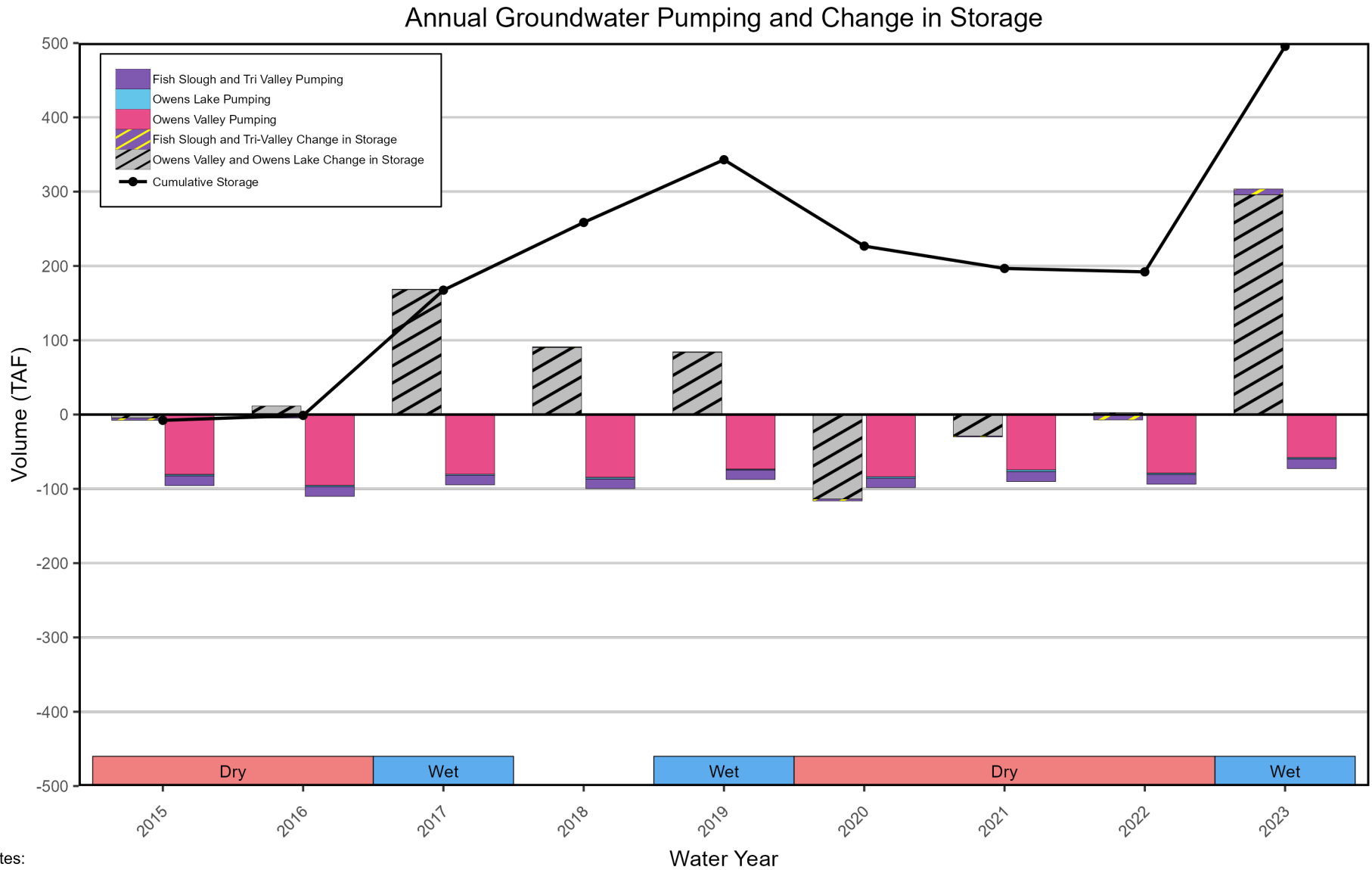


Notes:

- LADWP extracts the majority of groundwater in the Owens Lake management area under the Long-Term Water Agreement. Well-specific contributions to each water-use sector reported in Table 1 are not measured by LADWP.
- Estimated extraction volumes aggregated by public land survey system (PLSS) section.

**OWENS VALLEY GSP ANNUAL REPORT WY 2023
Measured Groundwater Extractions
Owens Lake Management Area**





- Notes:
1. TAF = thousand acre-ft.
 2. Negative values indicate groundwater pumping and decrease in aquifer storage volume and groundwater levels.
 3. Positive values indicate increase in aquifer storage volume and groundwater levels.
 4. Cumulative change in storage values presented are relative to conditions at the start of WY 2015.

OWENS VALLEY GSP ANNUAL REPORT WY 2023
Groundwater Pumping and Change in Storage
WY 2015-2023



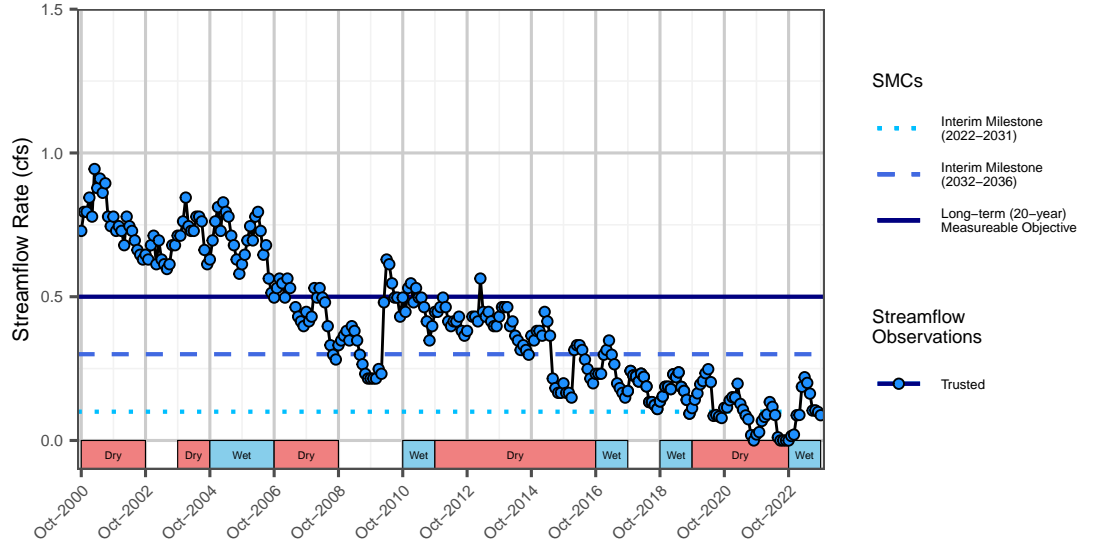
Appendix A

Representative Monitoring Point Hydrographs

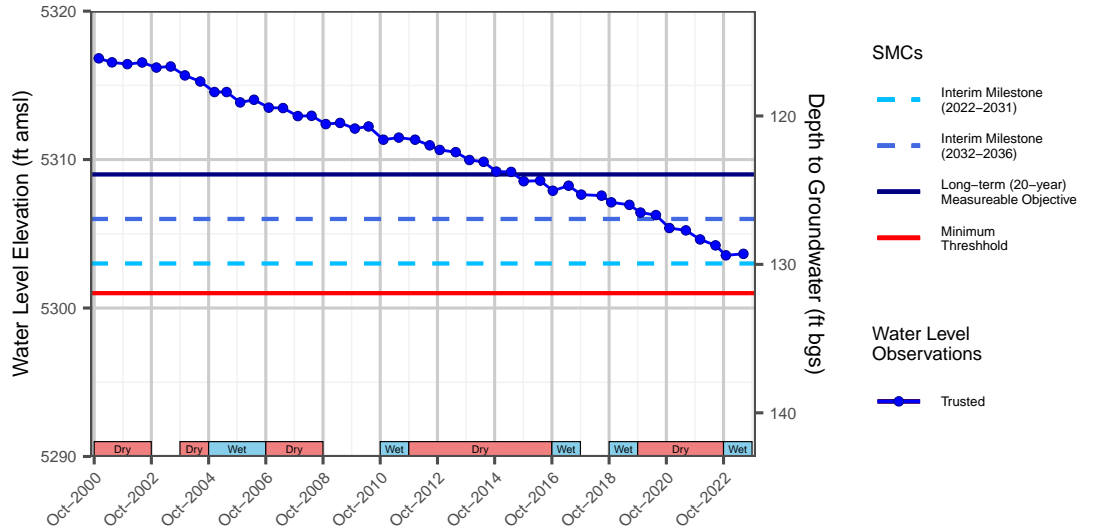
DRAFT

Fish Slough and Tri-Valley Management Area

SW3208

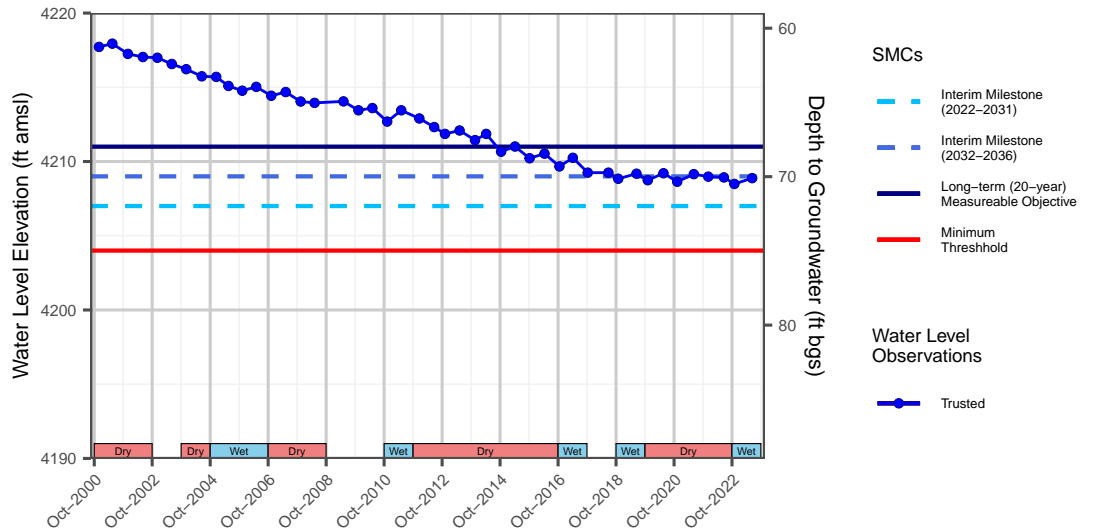


BT-MW1



Notes: 5-Year IM: 5303; 10-Year IM: 5303; 15-Year IM: 5306; 20 Year MO: 5309

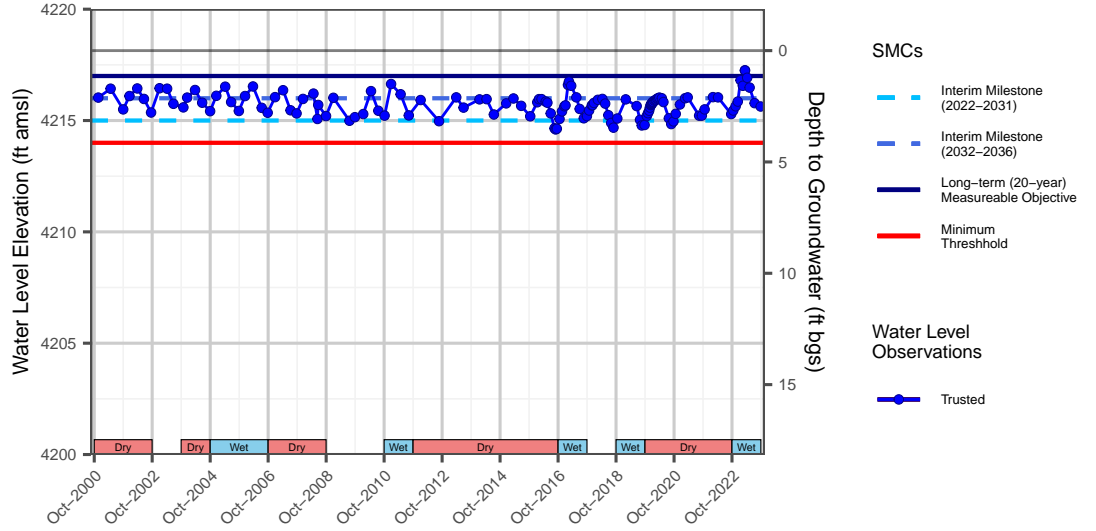
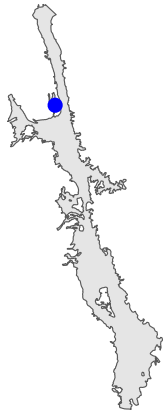
CH-MW2



Notes: 5-Year IM: 4207; 10-Year IM: 4207; 15-Year IM: 4209; 20 Year MO: 4211

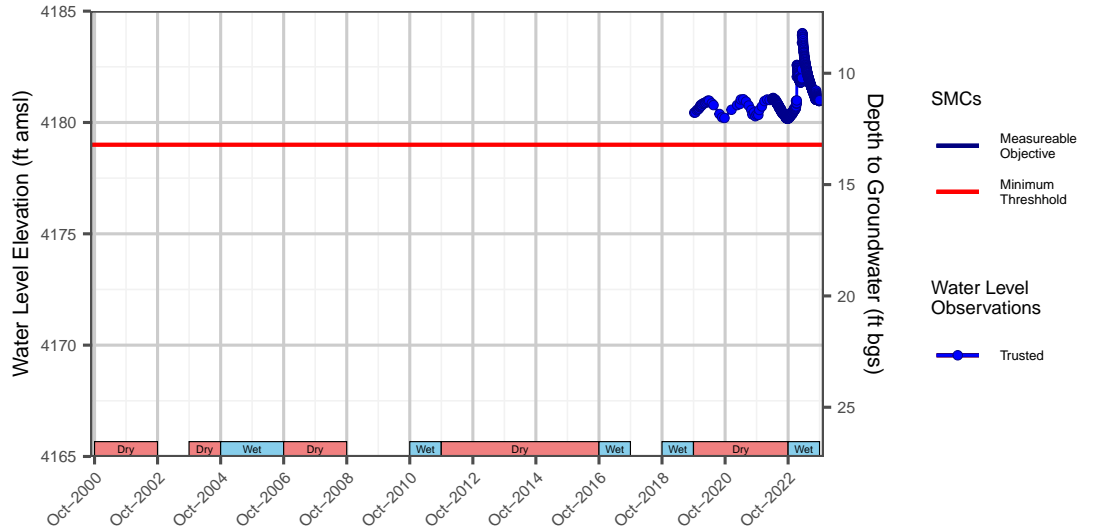
Fish Slough and Tri-Valley Management Area

FS-2



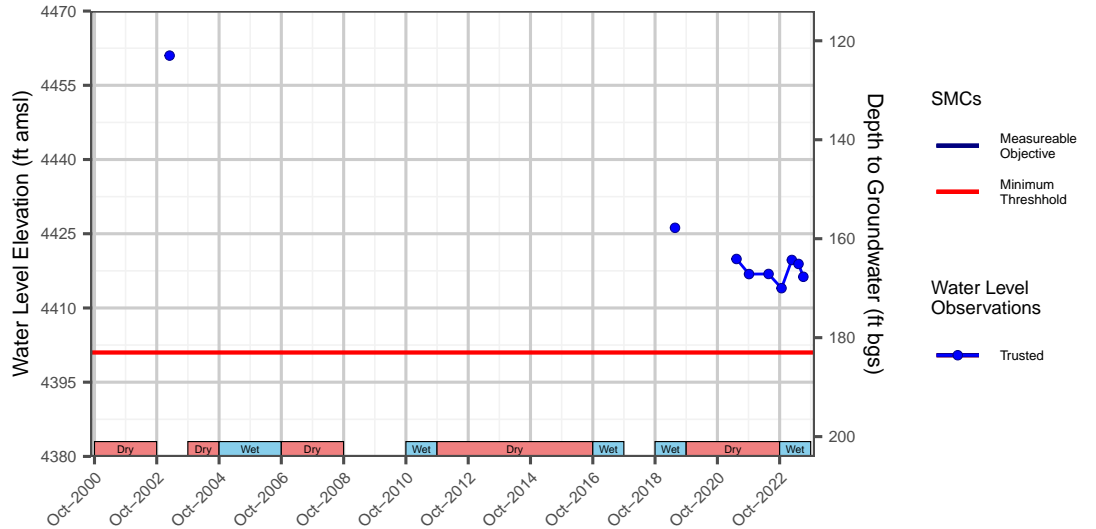
Notes: 5-Year IM: 4215; 10-Year IM: 4215; 15-Year IM: 4216; 20 Year MO: 4217

FS-3D



Notes: Newly established representative monitoring point. Measurable Objective (MO) will be established in 5-year GSP update.

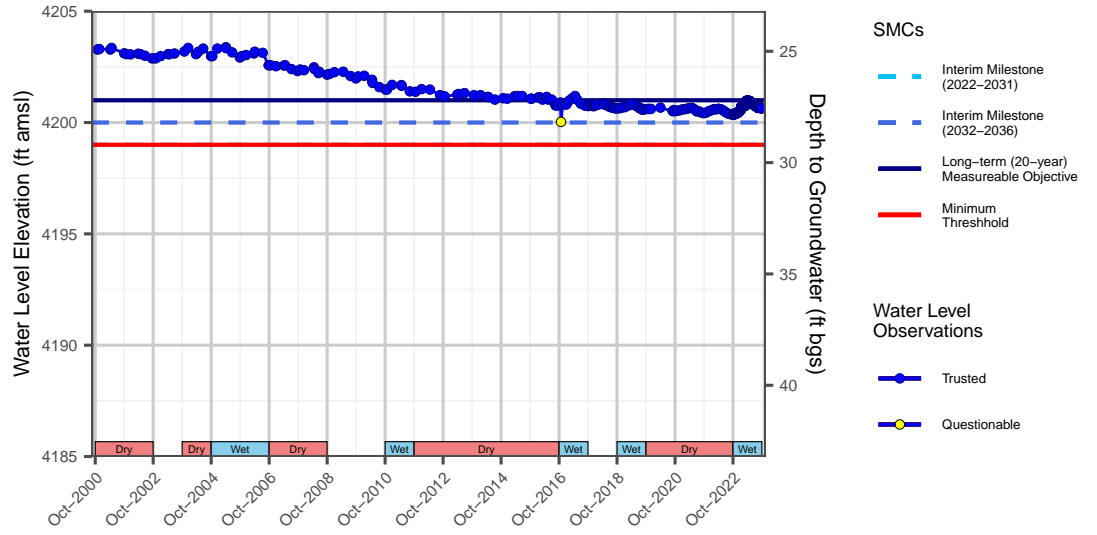
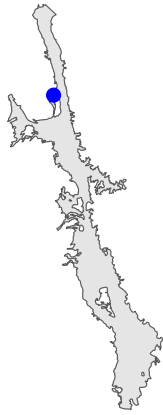
Hammil 2



Notes: Newly established representative monitoring point. Measurable Objective (MO) will be established in 5-year GSP update.

Fish Slough and Tri-Valley Management Area

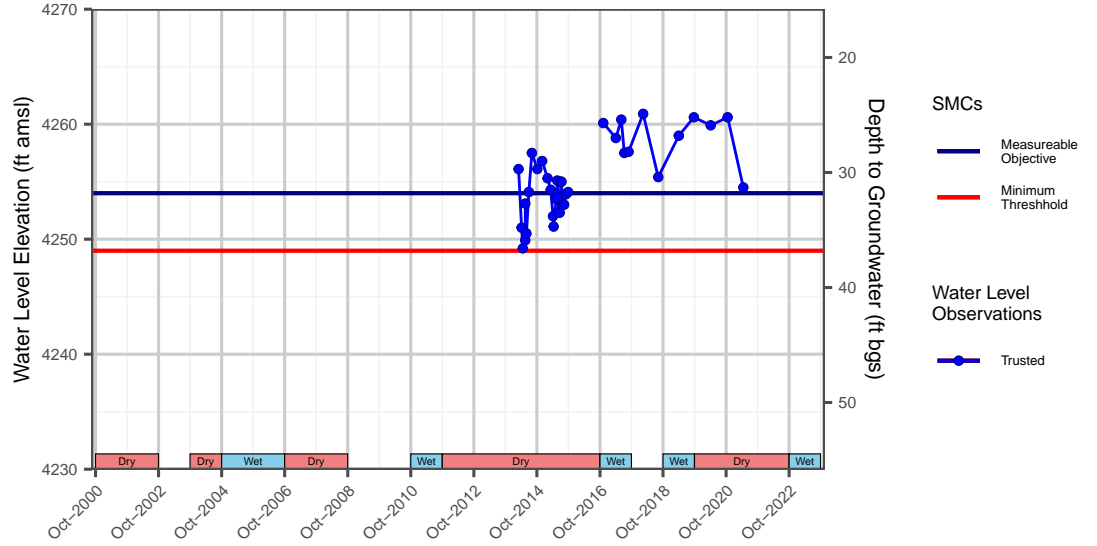
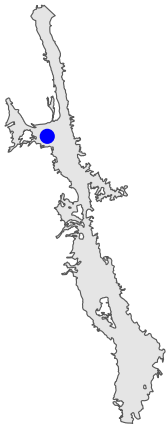
T397



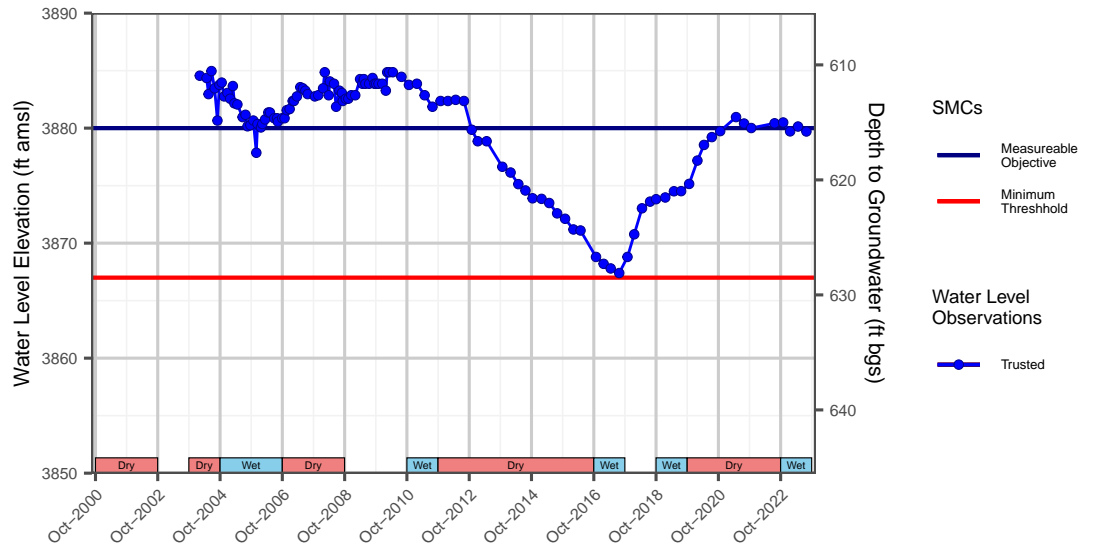
Notes: 5-Year IM: 4199; 10-Year IM: 4199; 15-Year IM: 4200; 20 Year MO: 4201

Owens Valley Management Area

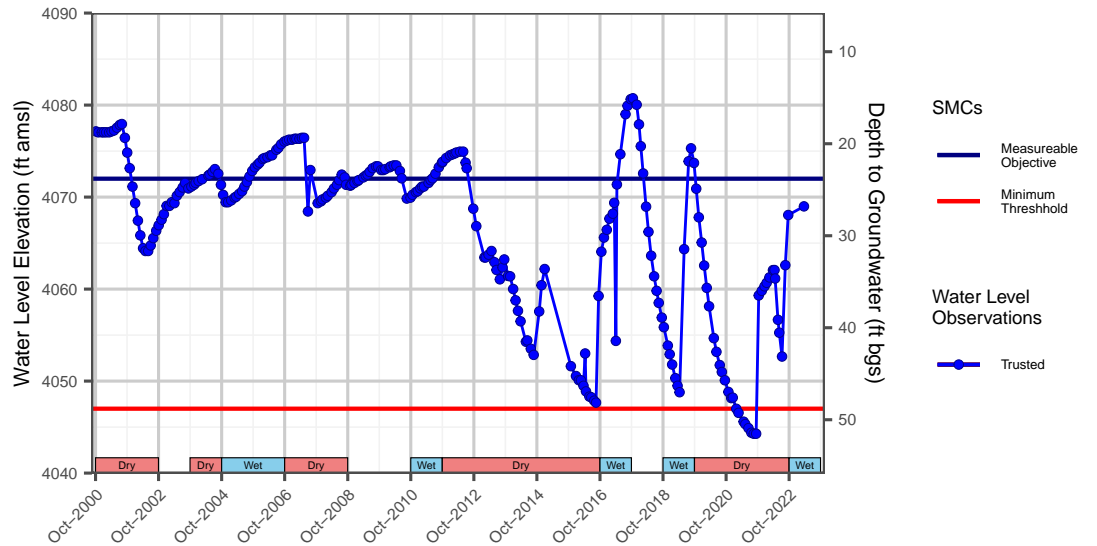
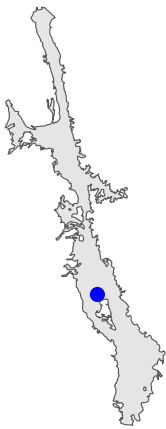
ICWCSD 4



T001

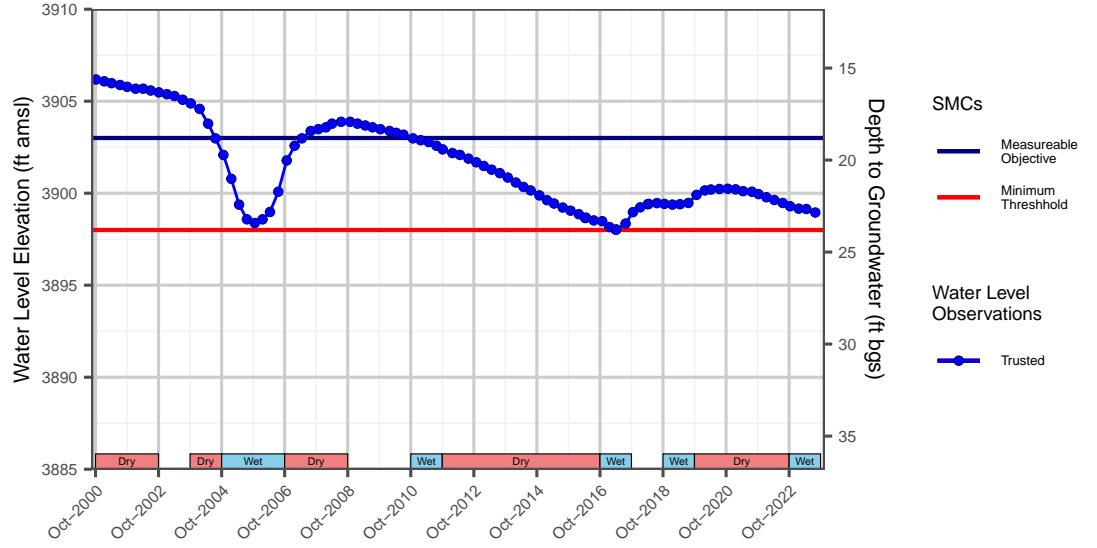
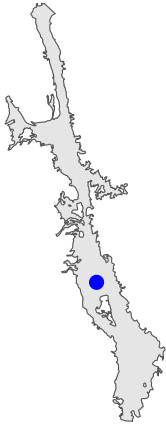


T362

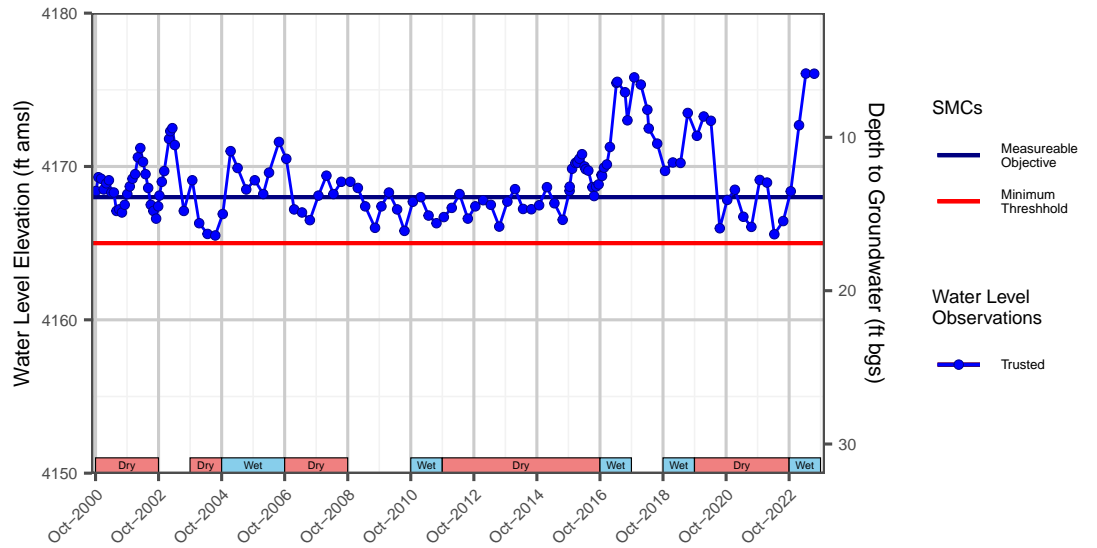
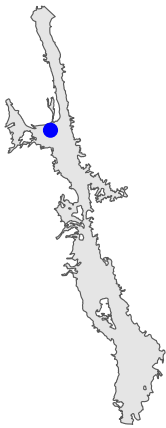


Owens Valley Management Area

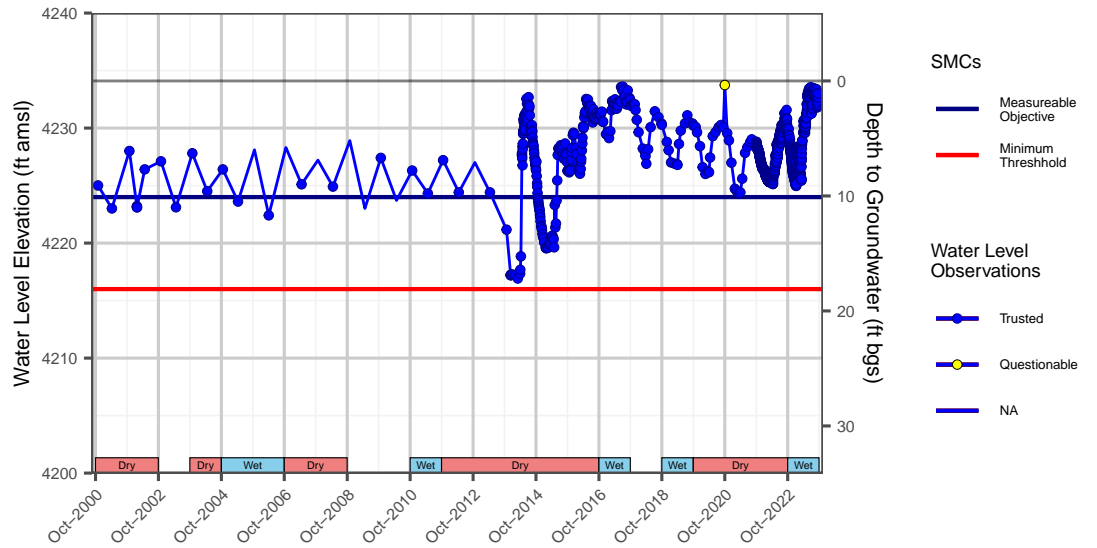
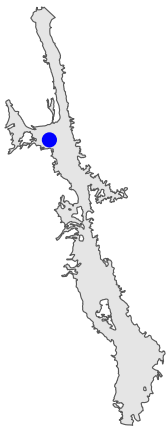
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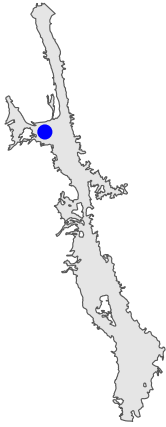
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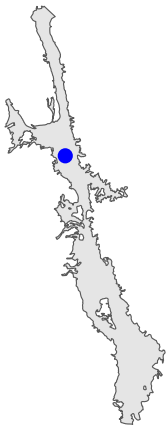
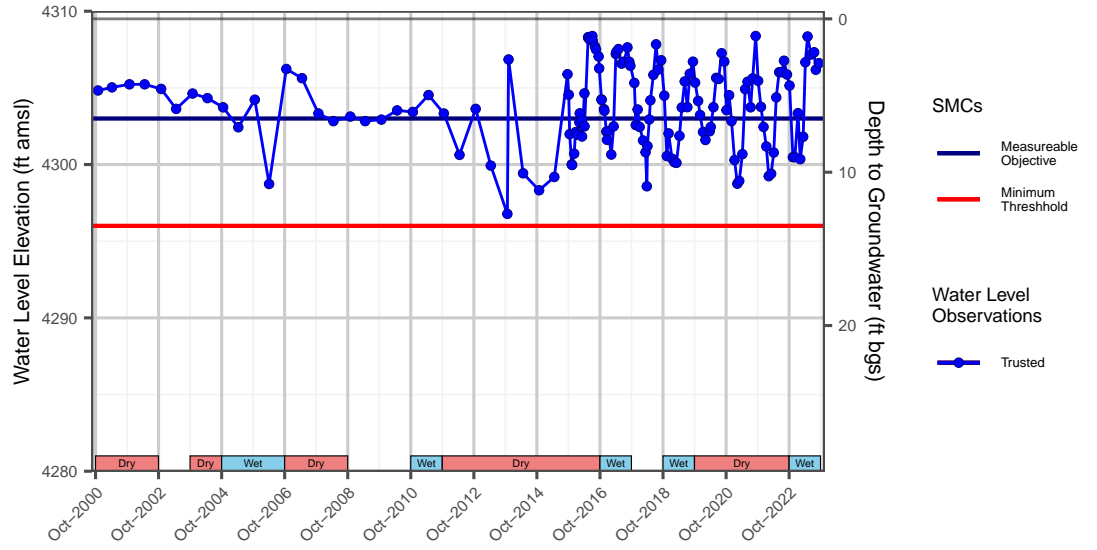
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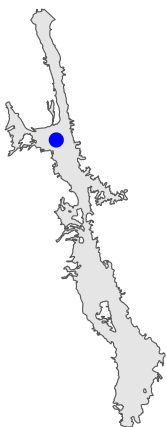
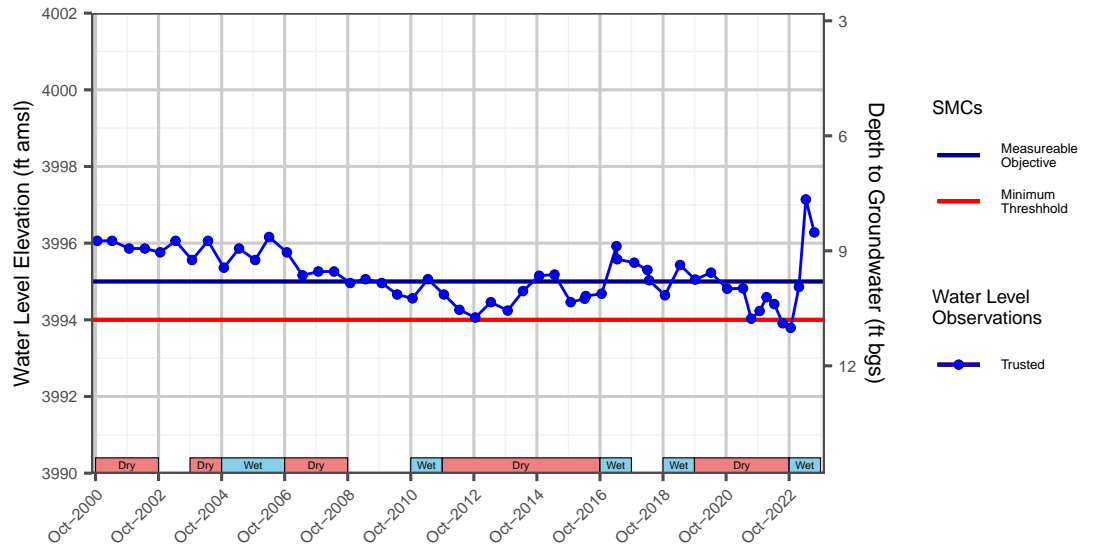
Owens Valley Management Area



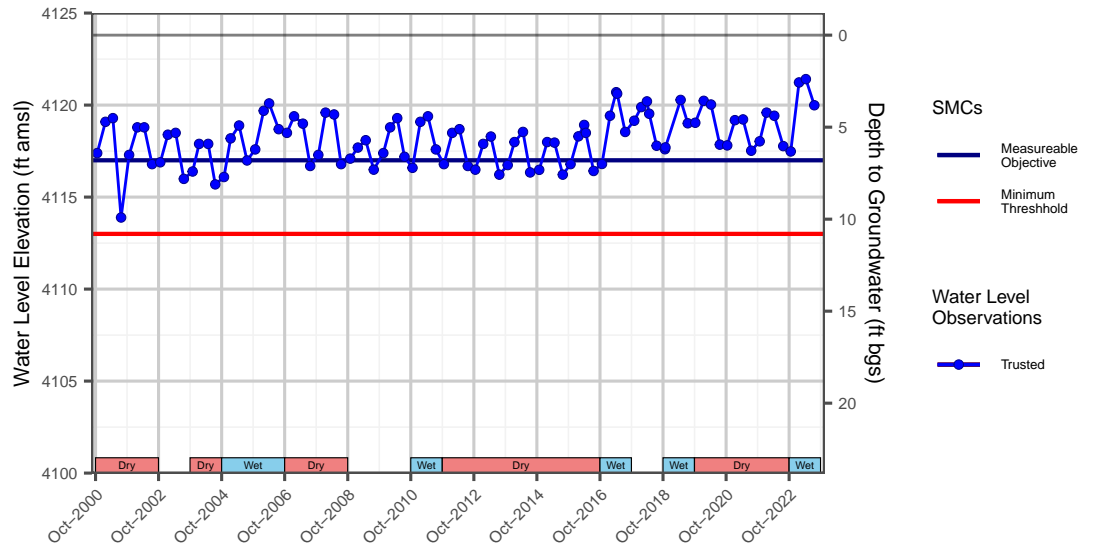
T391



T480

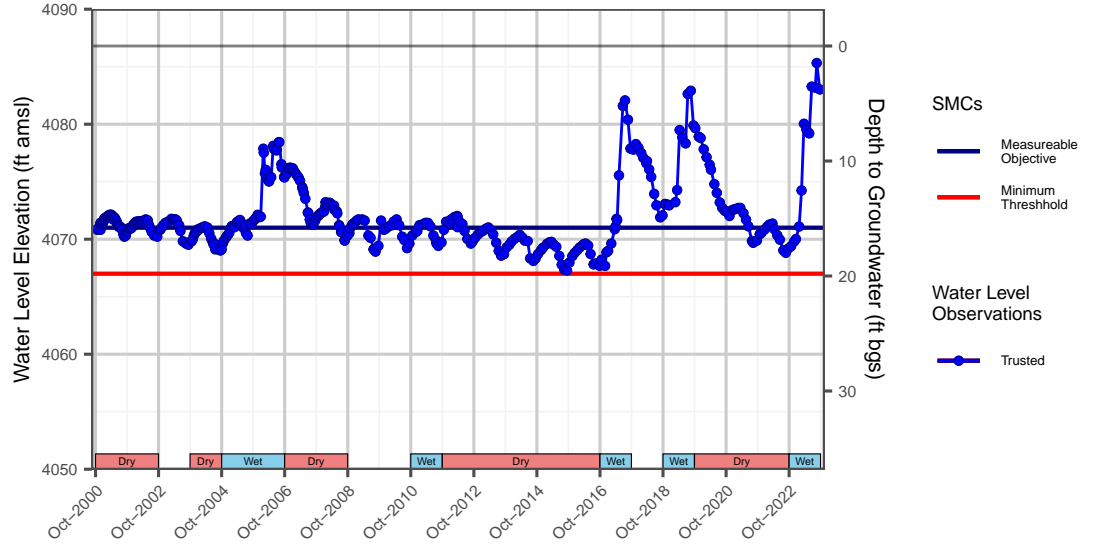
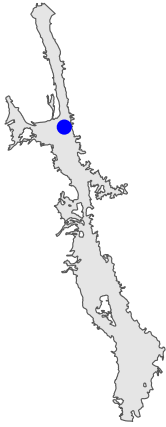


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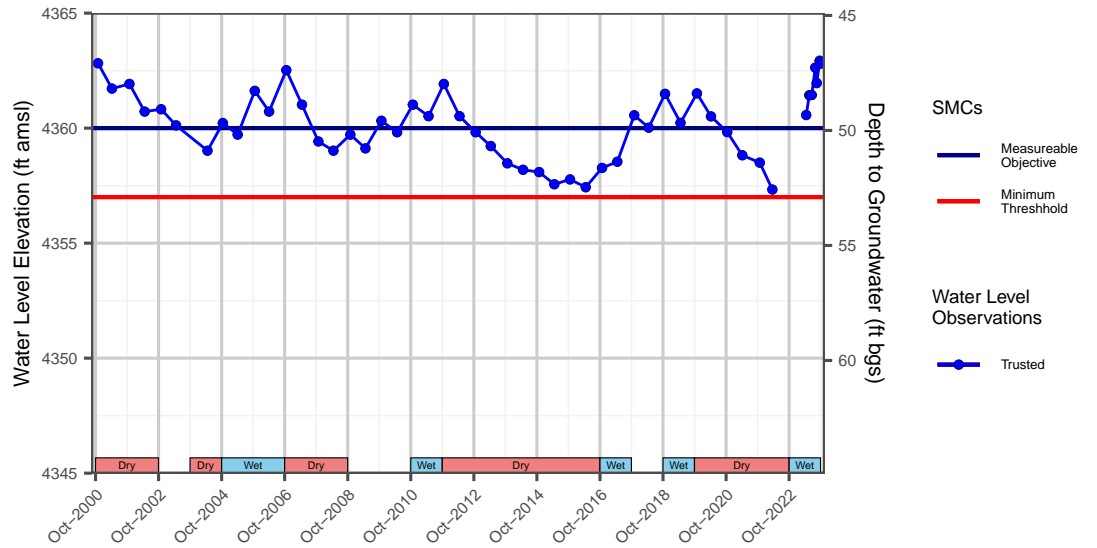
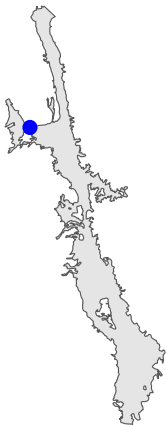


Owens Valley Management Area

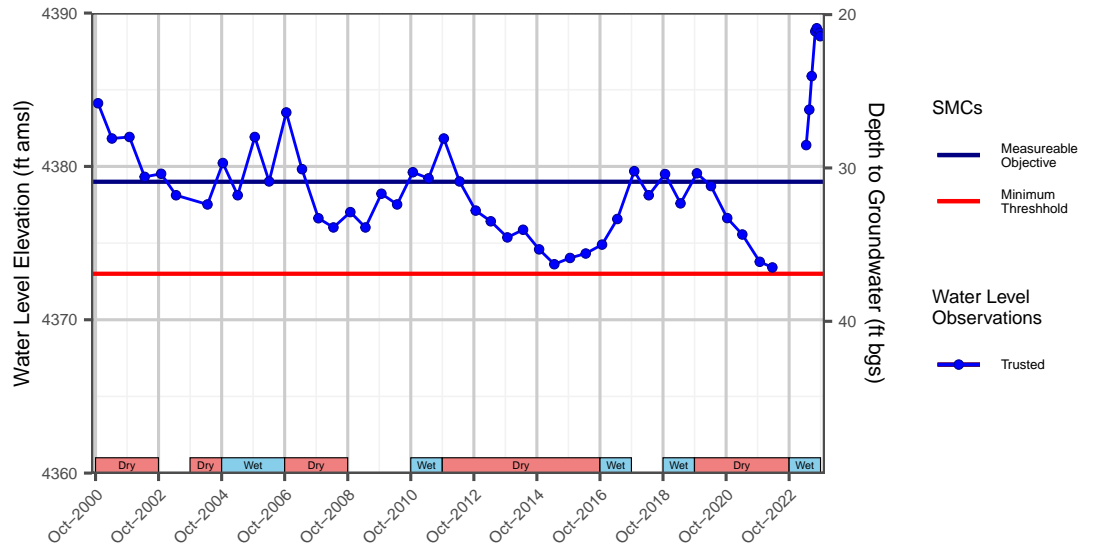
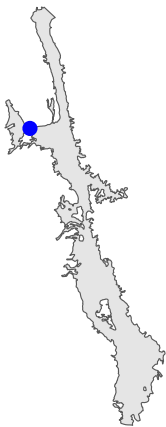
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T750

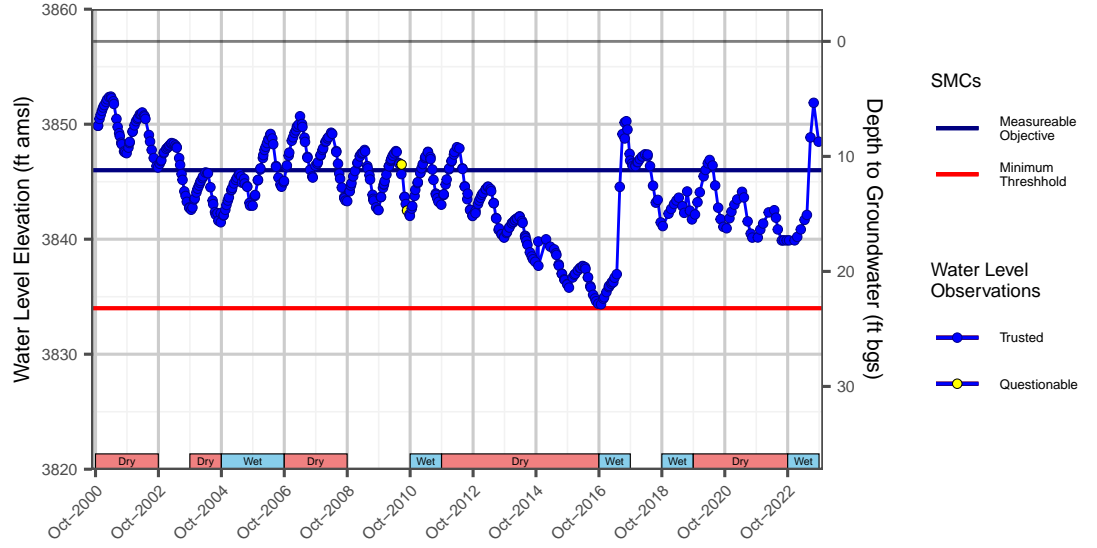


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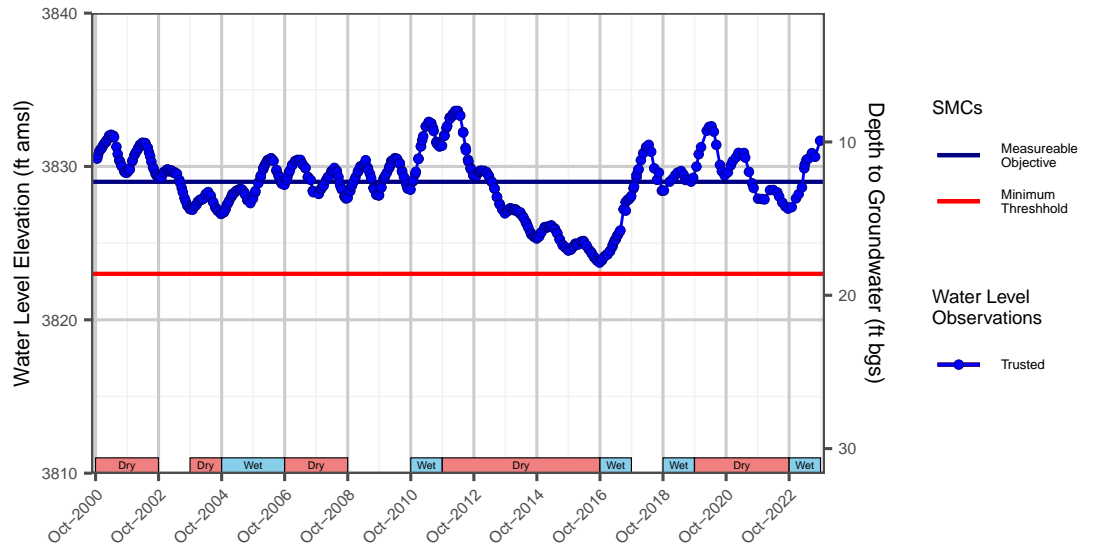
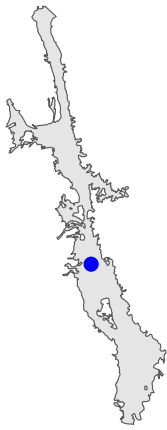


Owens Valley Management Area

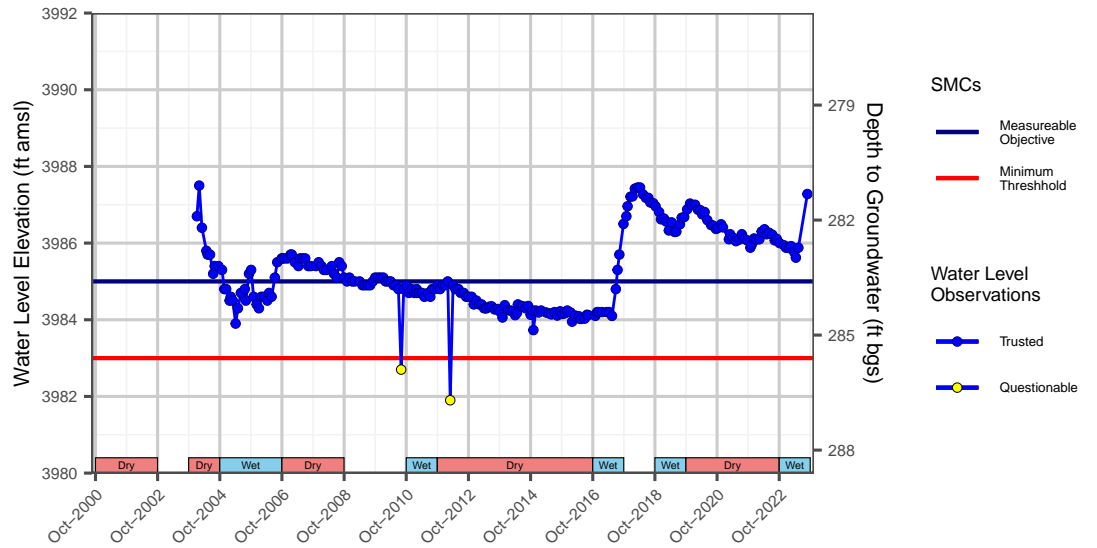
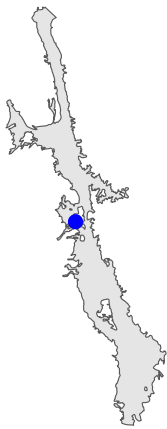
T808



T809

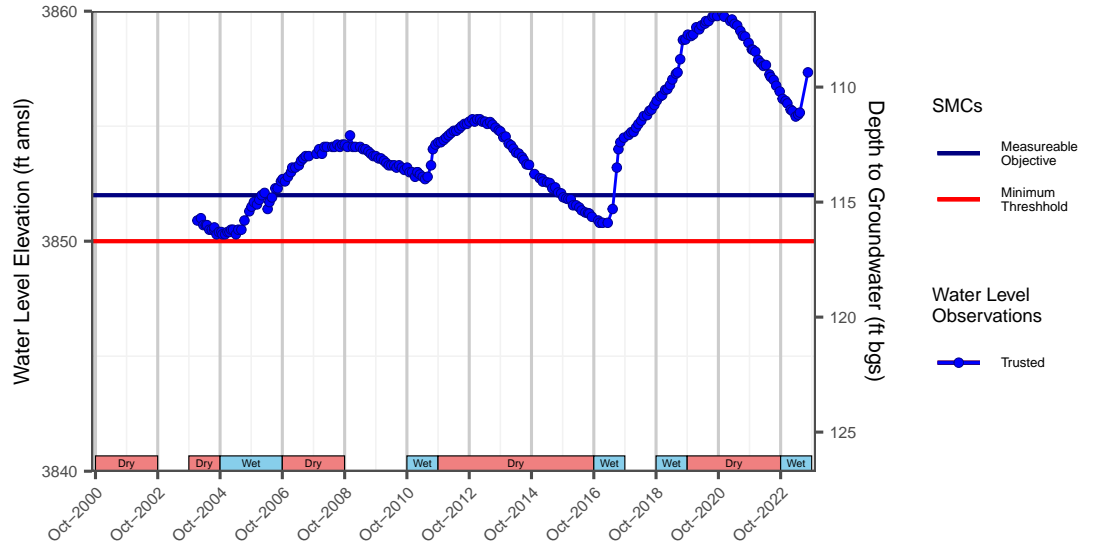
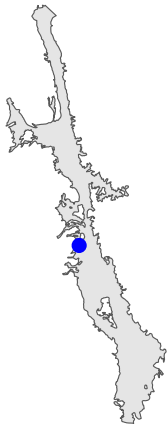


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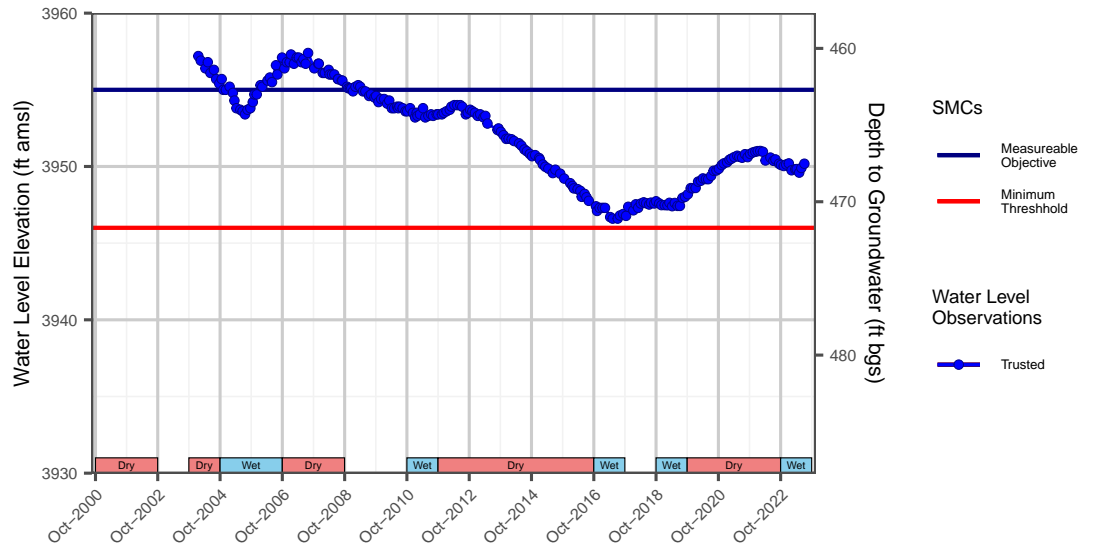
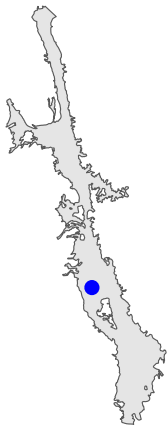


Owens Valley Management Area

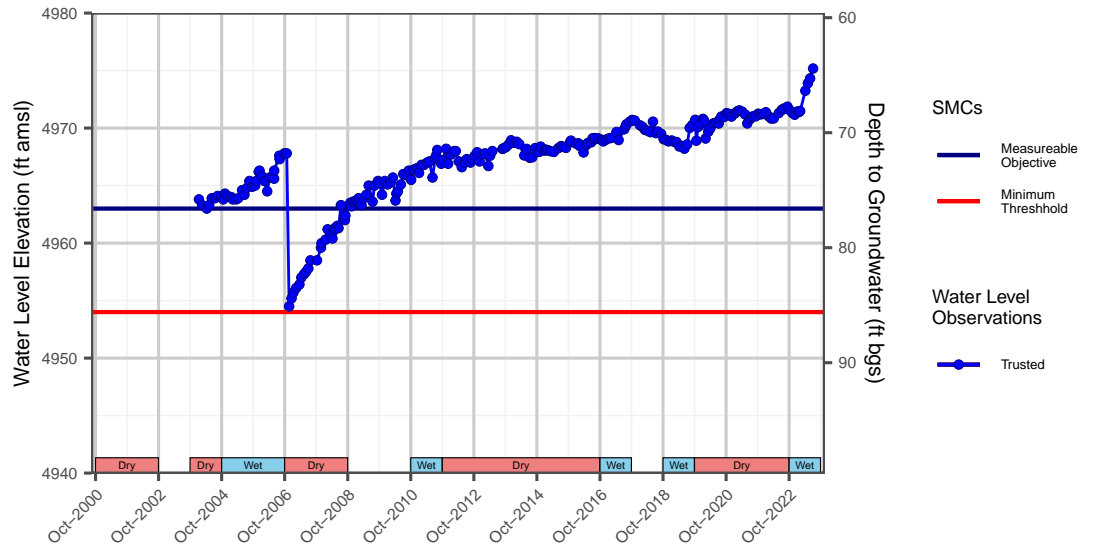
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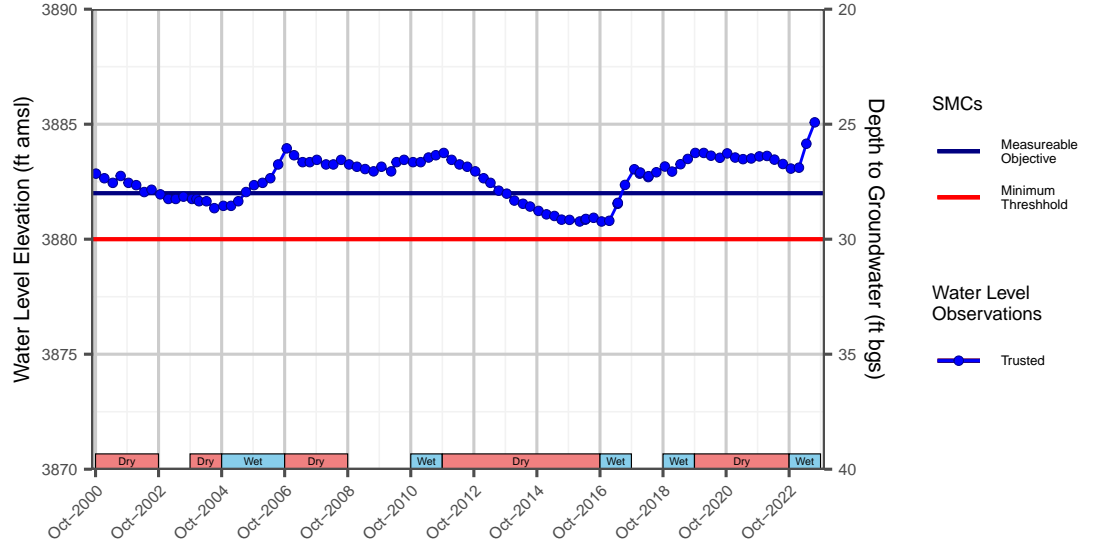


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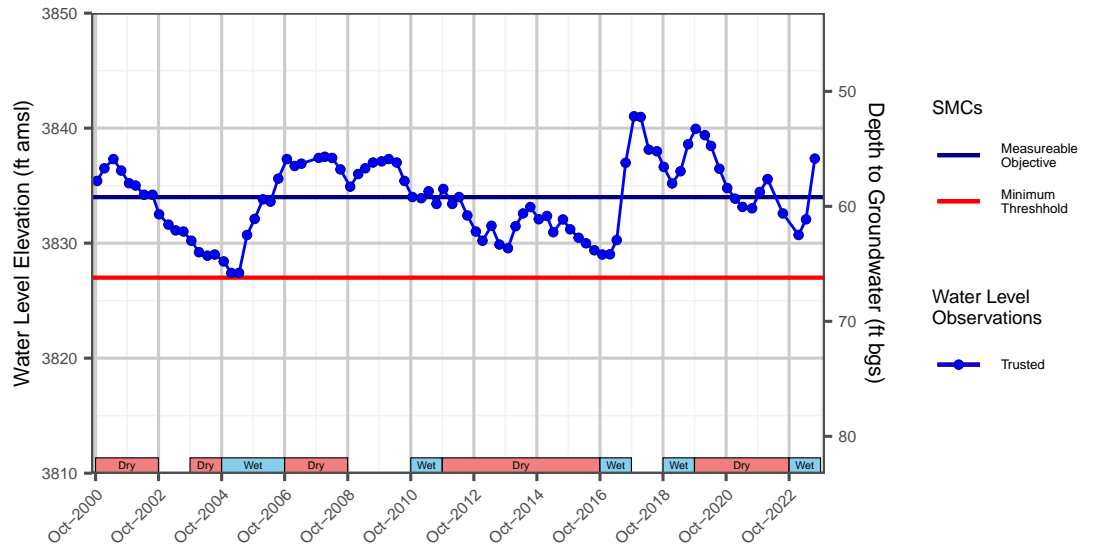
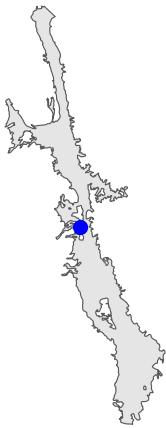


Owens Valley Management Area

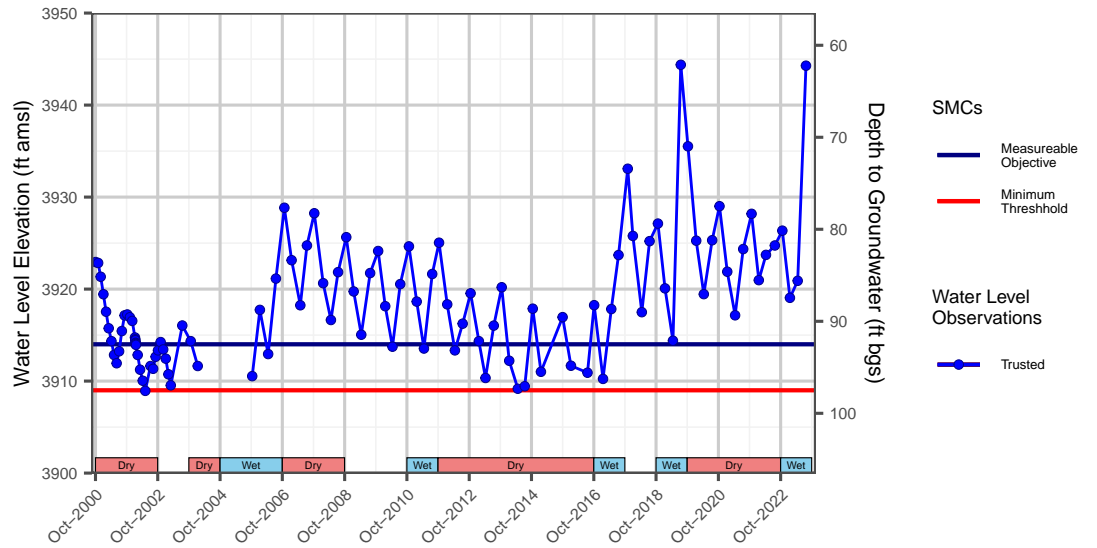
V016GB



V151

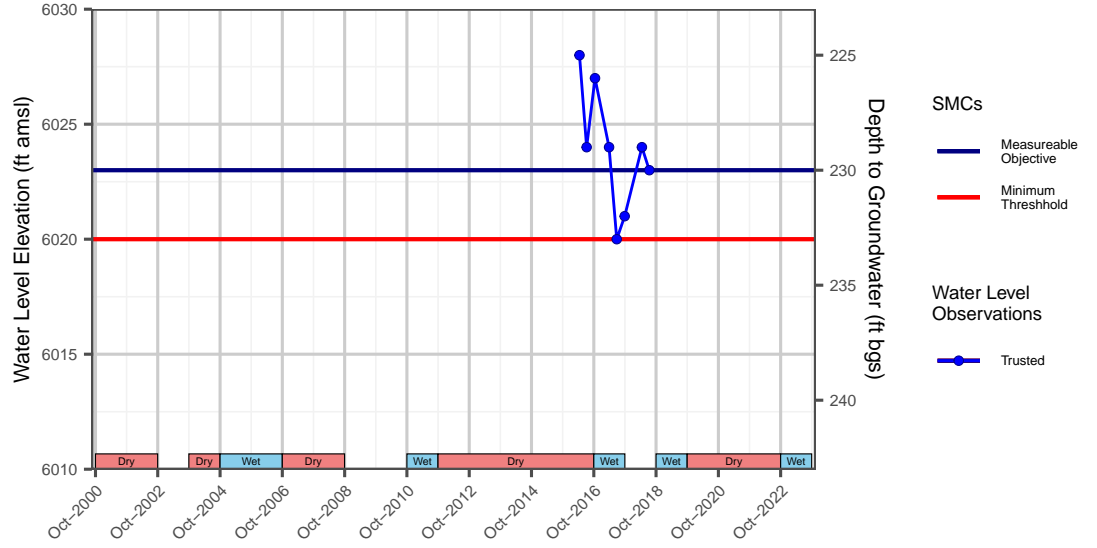


V299

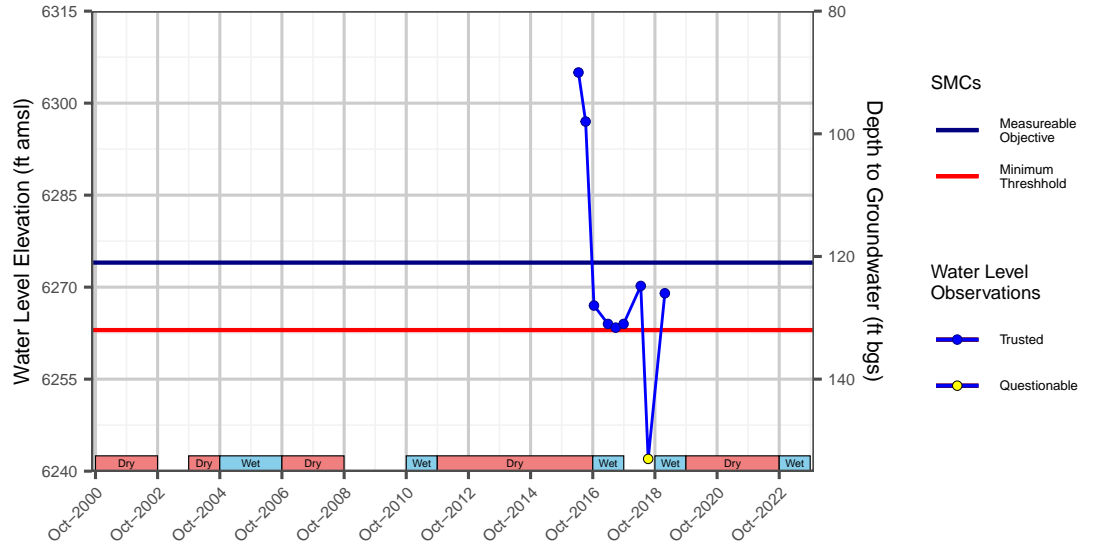
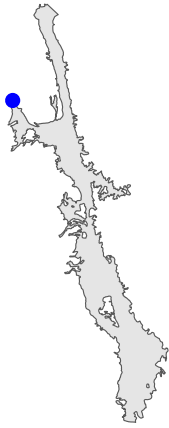


Owens Valley Management Area

WCCSD 2

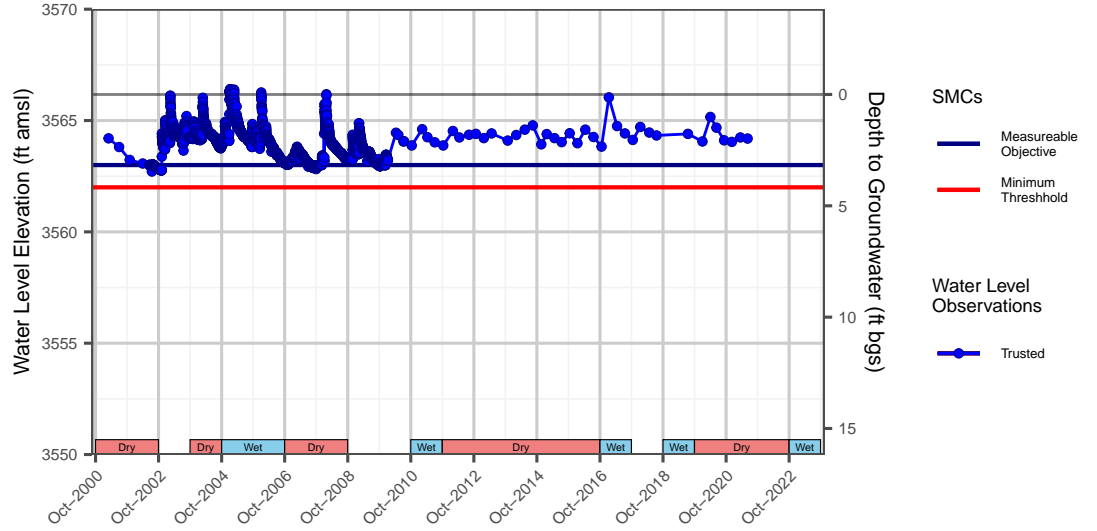
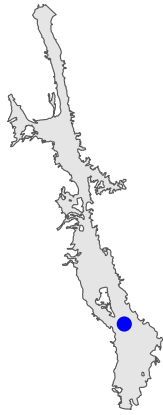


WCCSD 4



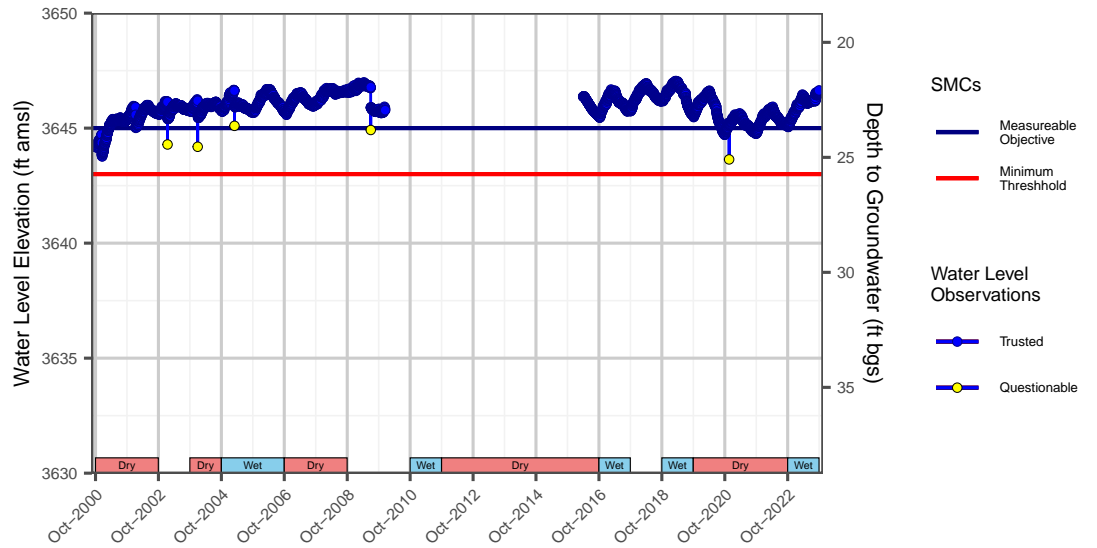
Owens Lake Management Area

DELTA W(3)_10

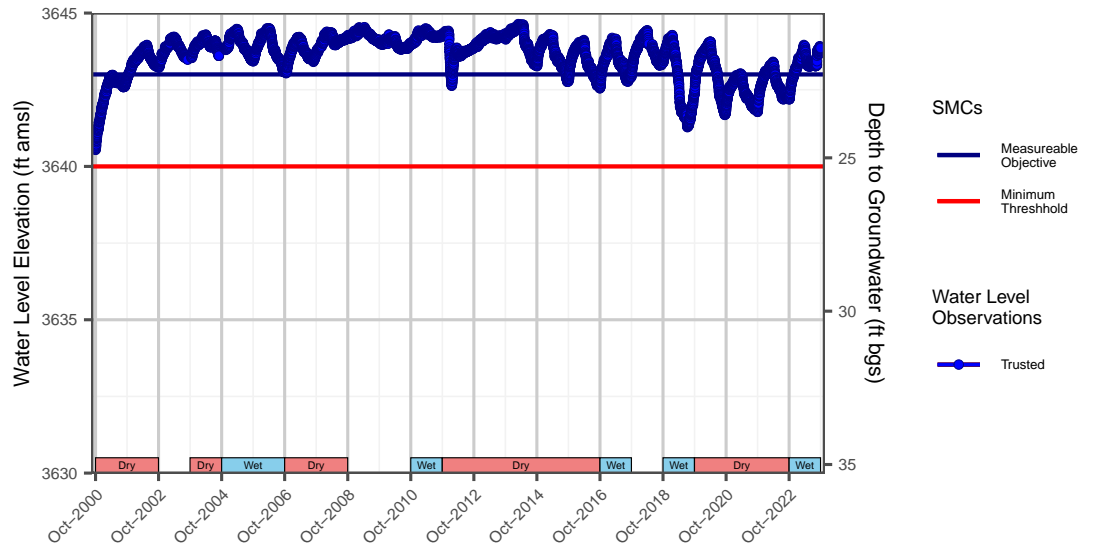


Notes: Reported destroyed by LADWP. To be removed during GSP 5-year update.

DVF North MW

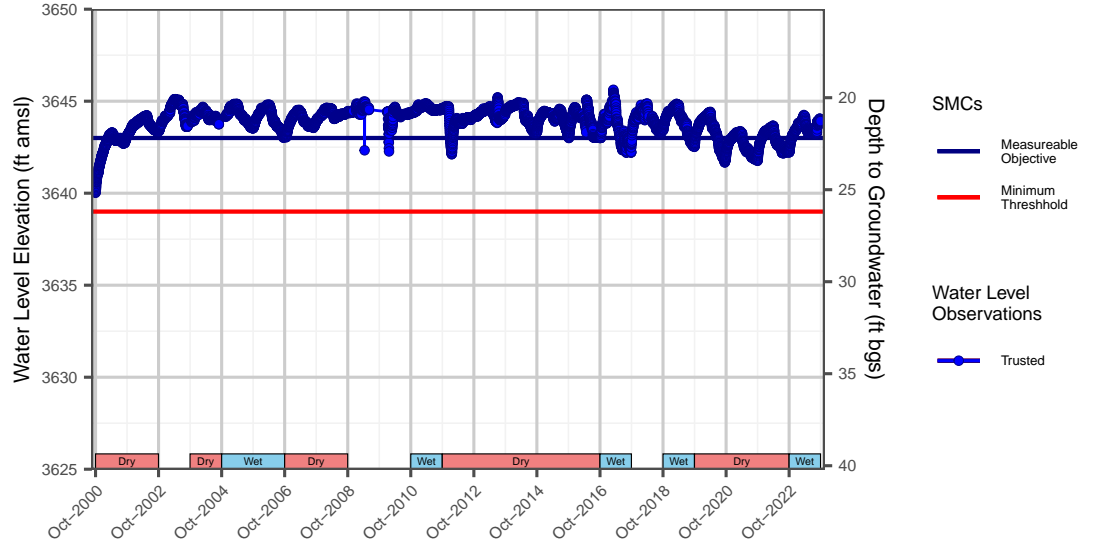


DVF South Lower

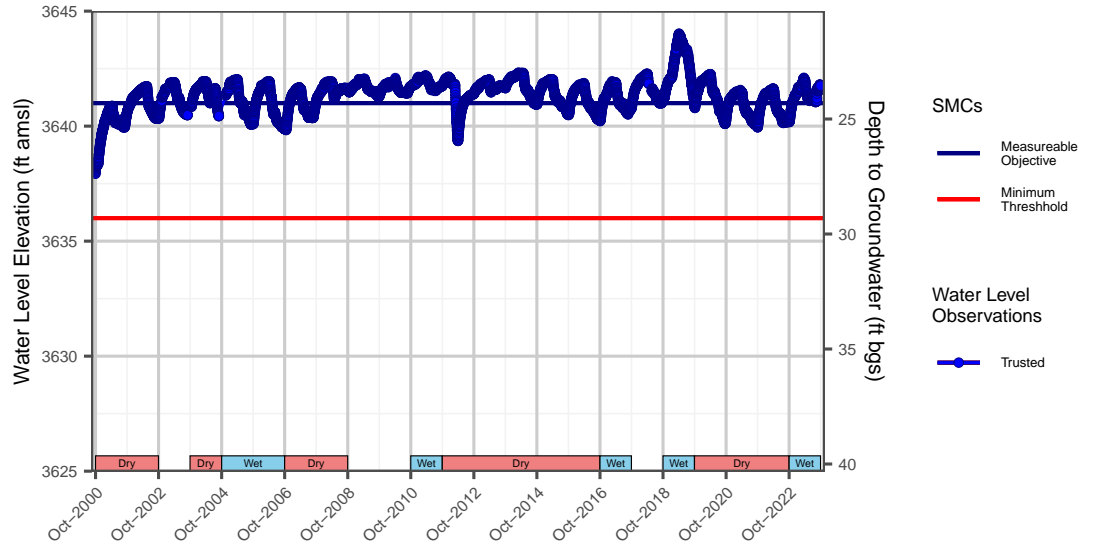


Owens Lake Management Area

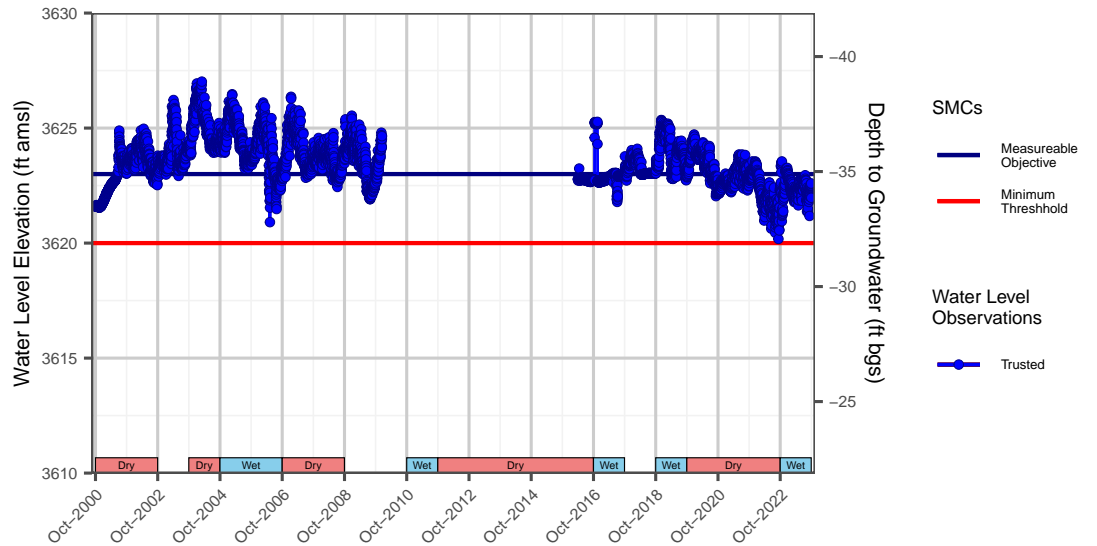
DVF South Middle



DVF South Upper

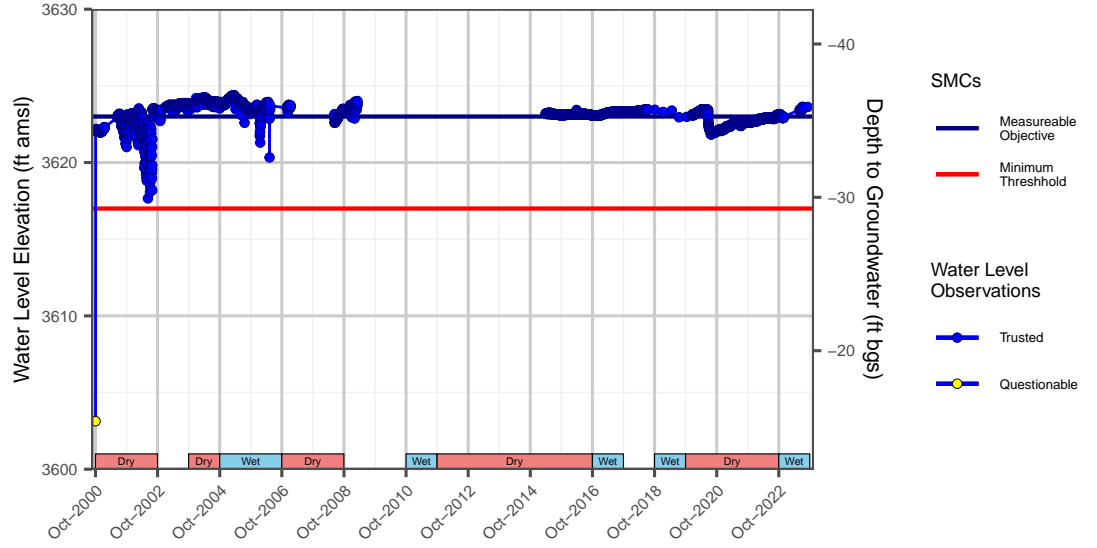


Fault Test T3

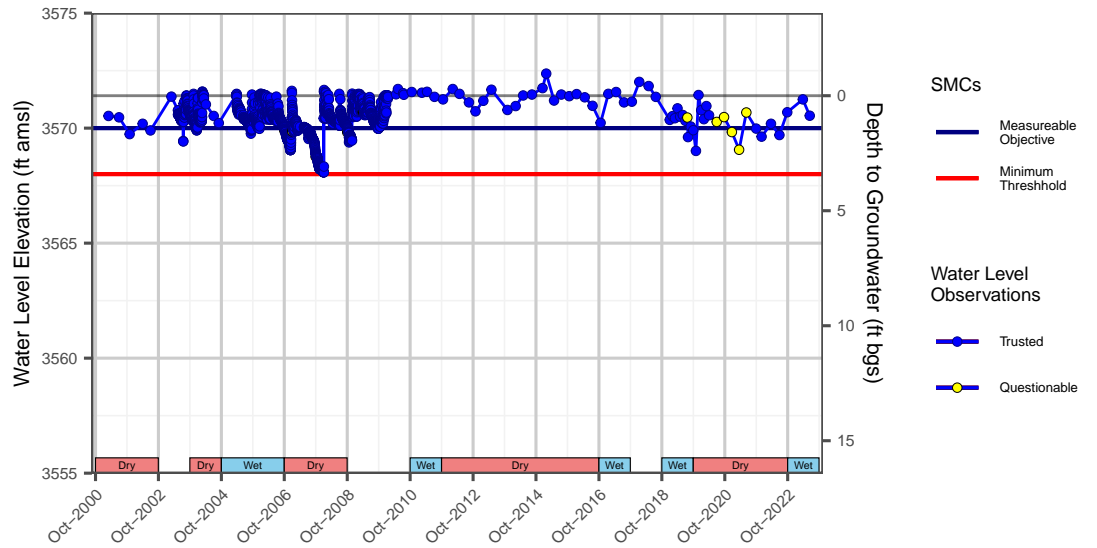


Owens Lake Management Area

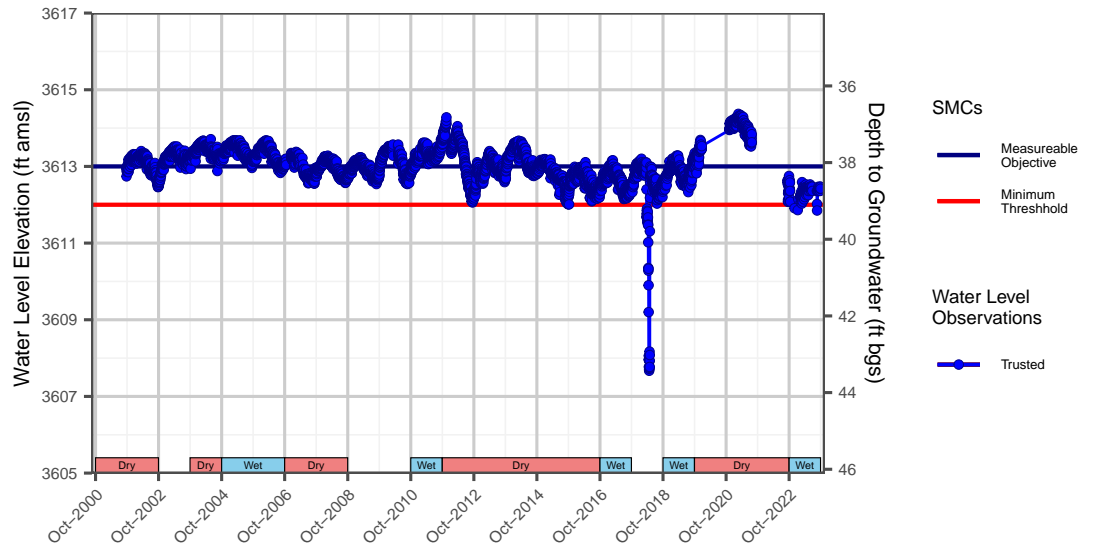
Fault Test T5



I10(7)_4

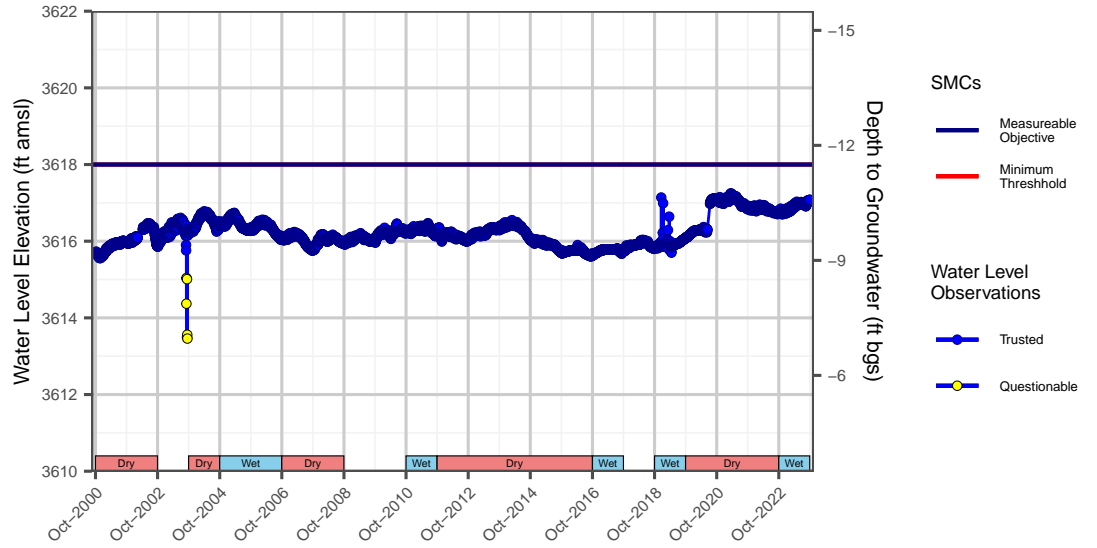


KCSD Well 1

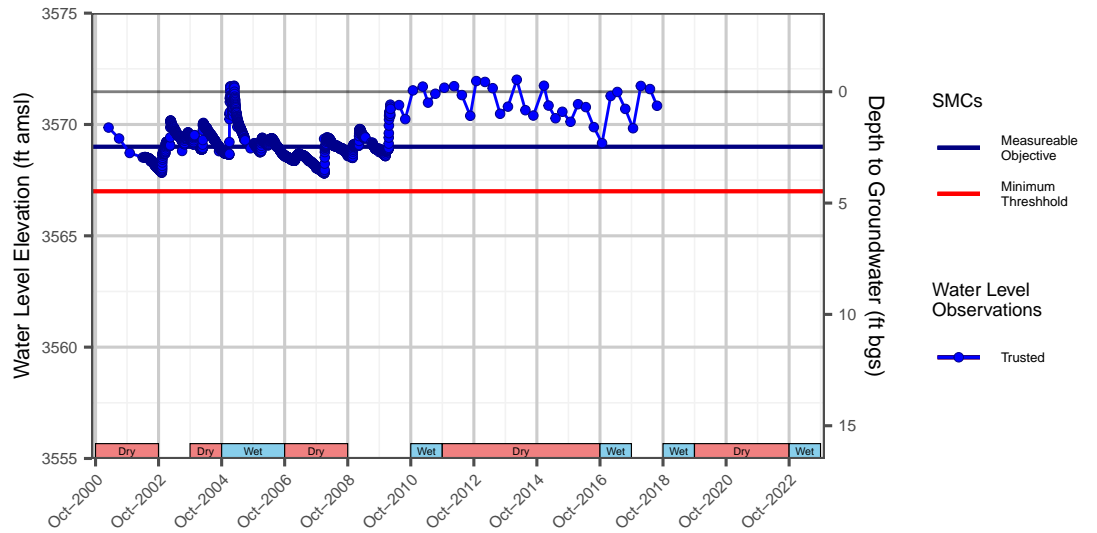


Owens Lake Management Area

Keeler-Swansea Lower

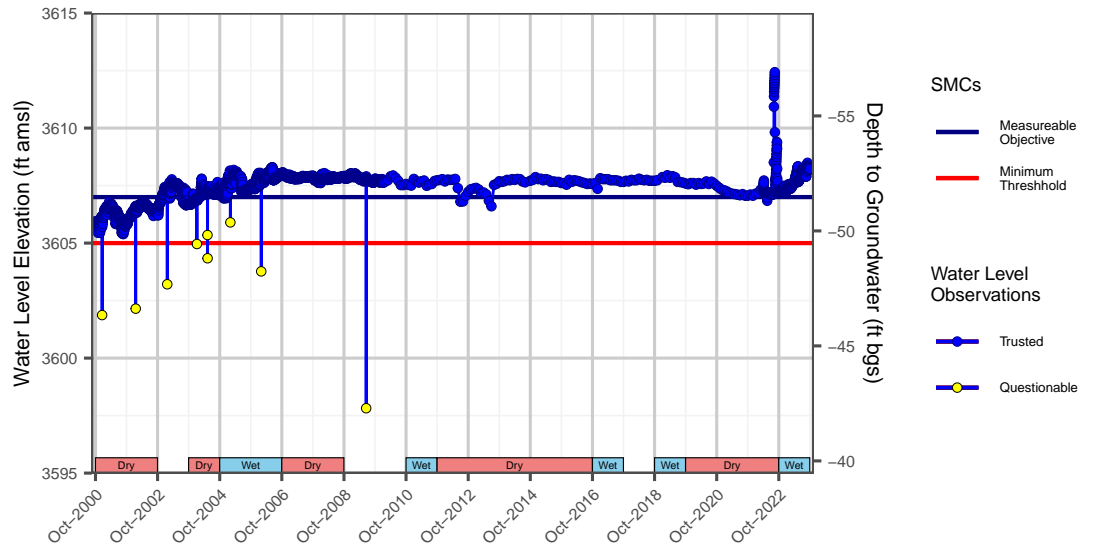


O6(5)_4



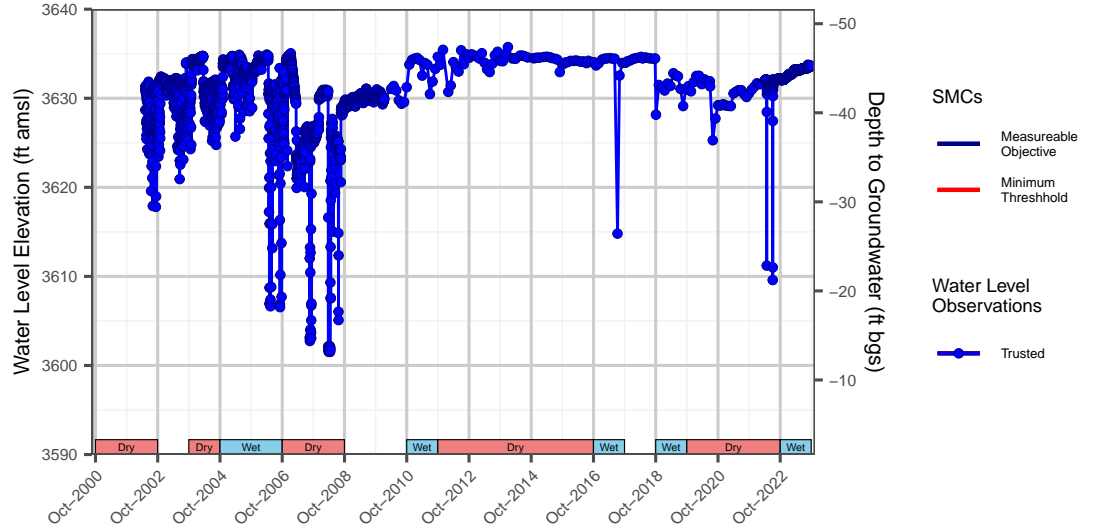
Notes: Reported destroyed by LADWP. To be removed during GSP 5-year update.

OL92-2



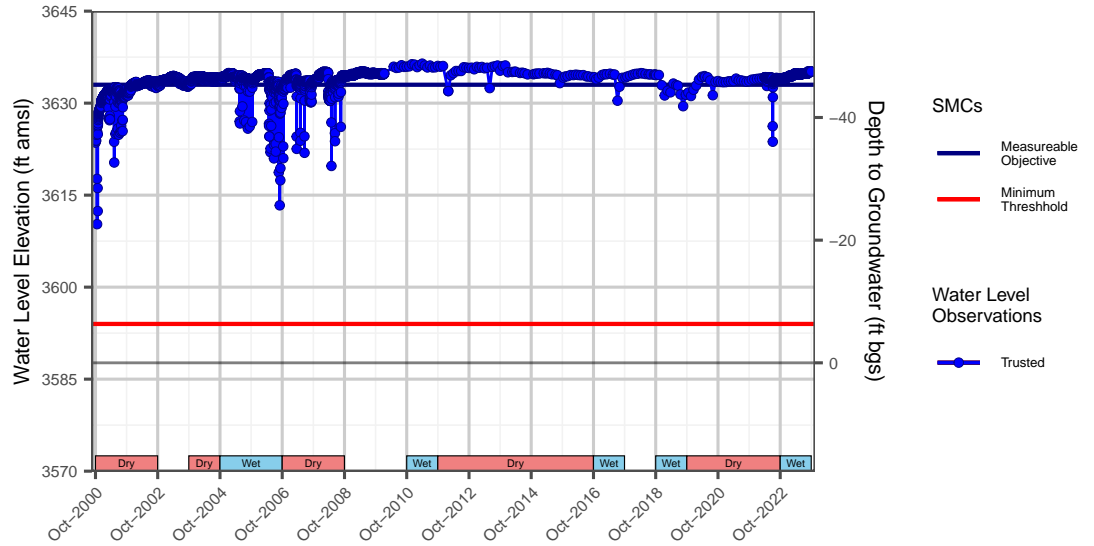
Owens Lake Management Area

River Production Lower

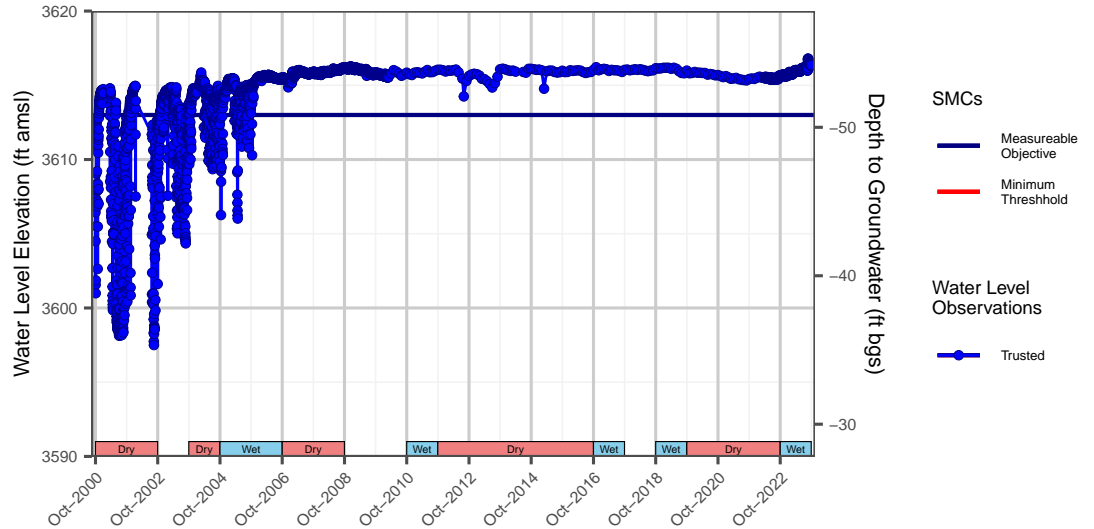


Notes: Newly established representative monitoring point. Sustainable Management Criteria (SMCs) will be established in 5-year GSP update.

River Site Lower



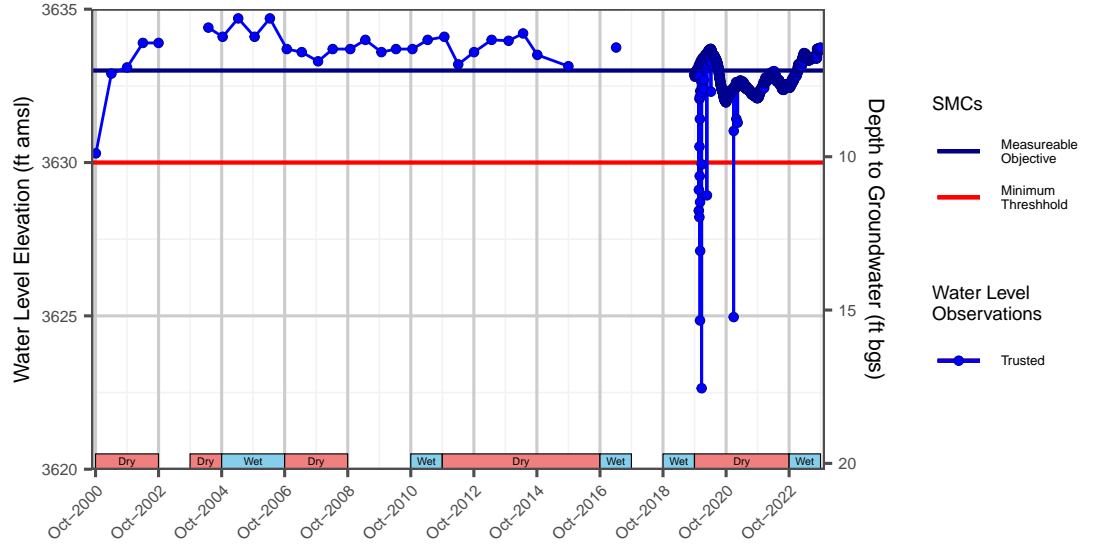
SFIP MW



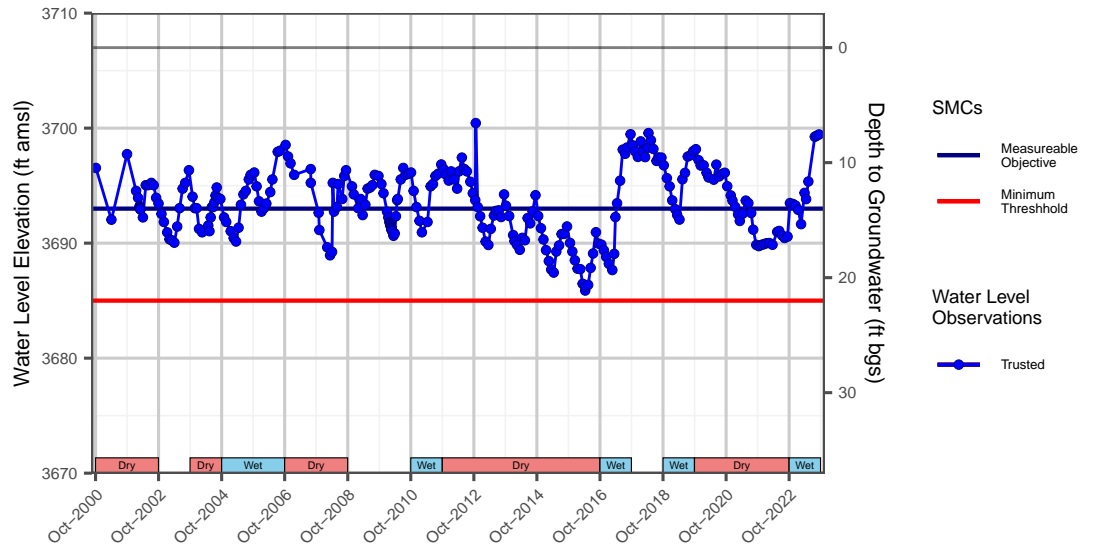
Notes: MT reported in GSP contains a typographical error and is not shown. MT will be corrected during next 5-year update.

Owens Lake Management Area

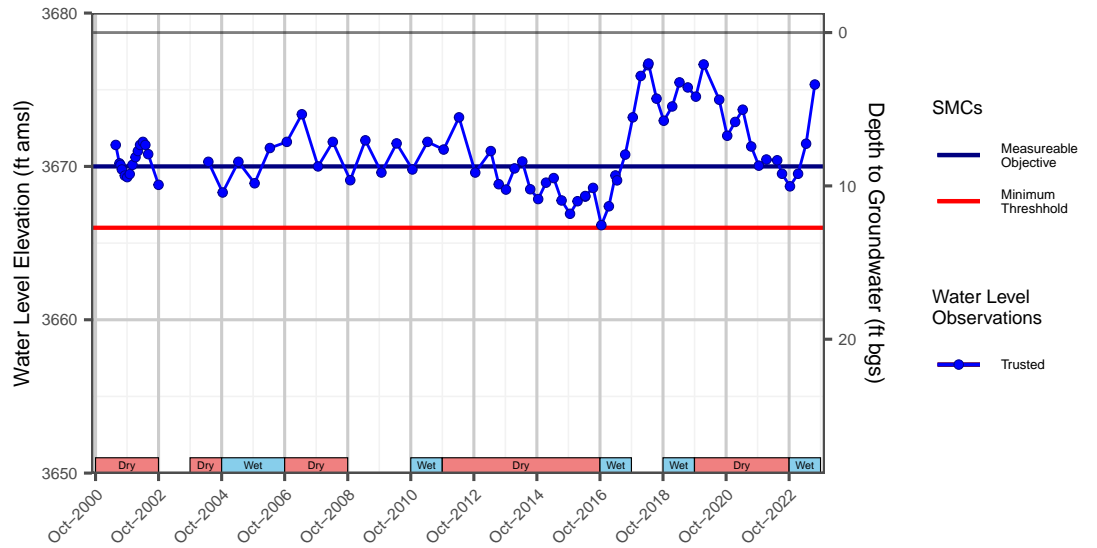
T348



T588

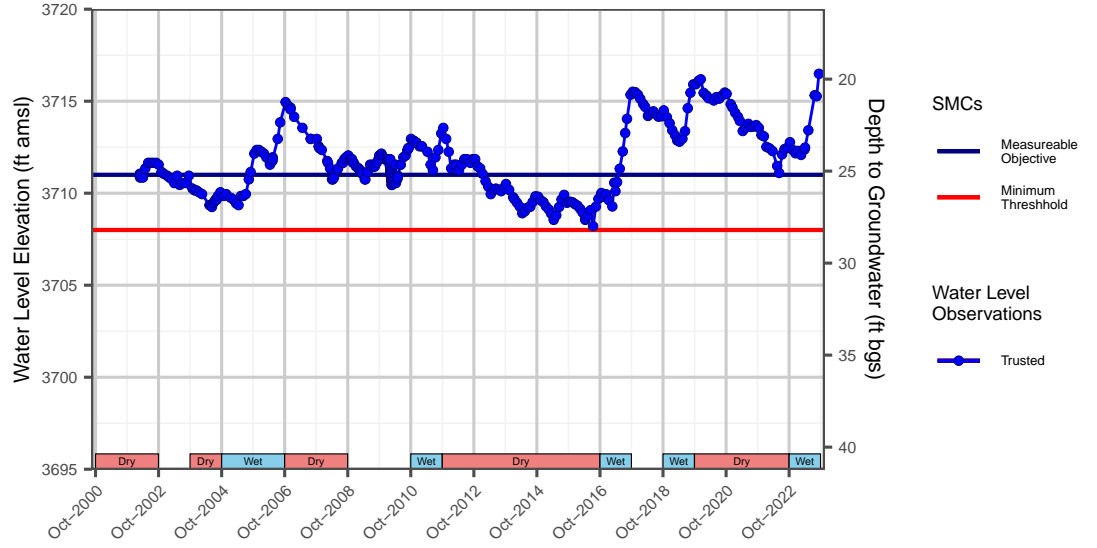


T858

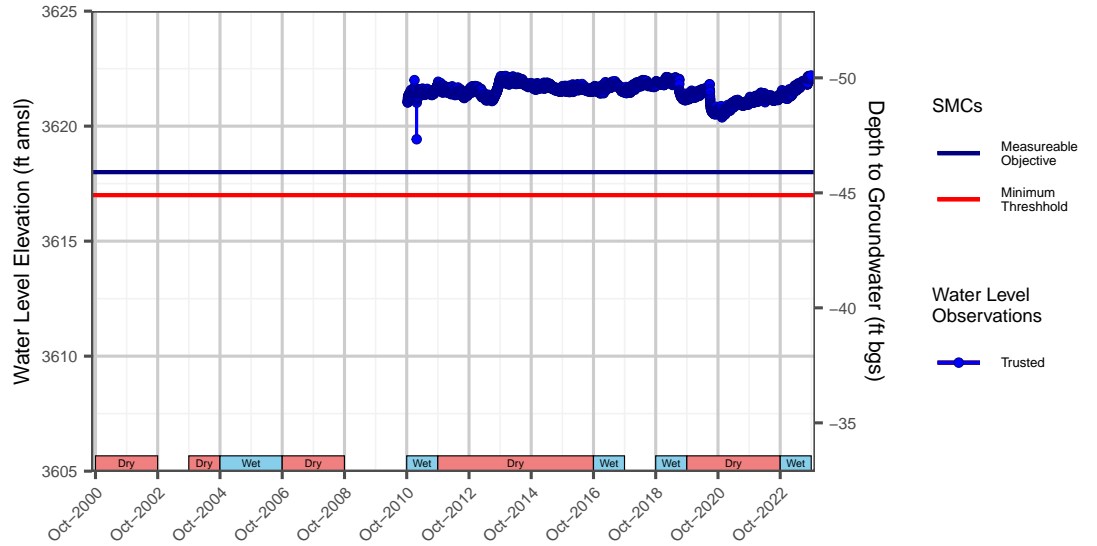


Owens Lake Management Area

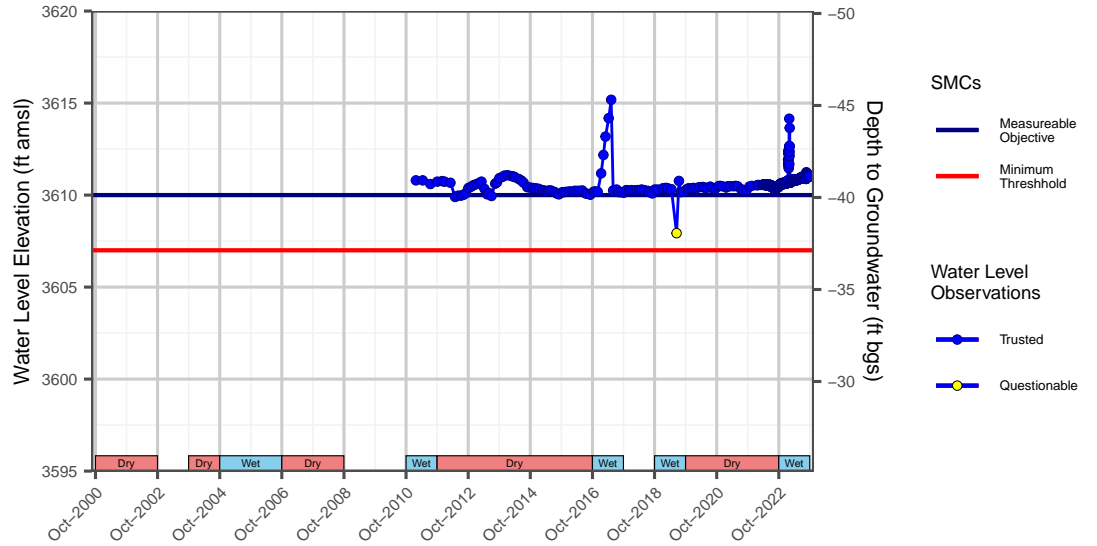
T860



T899

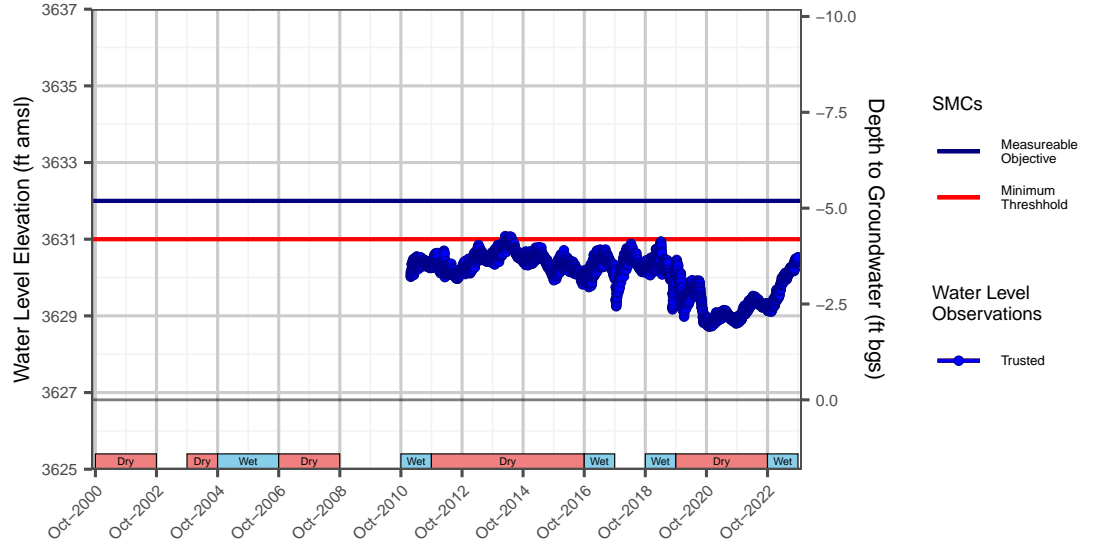


T901

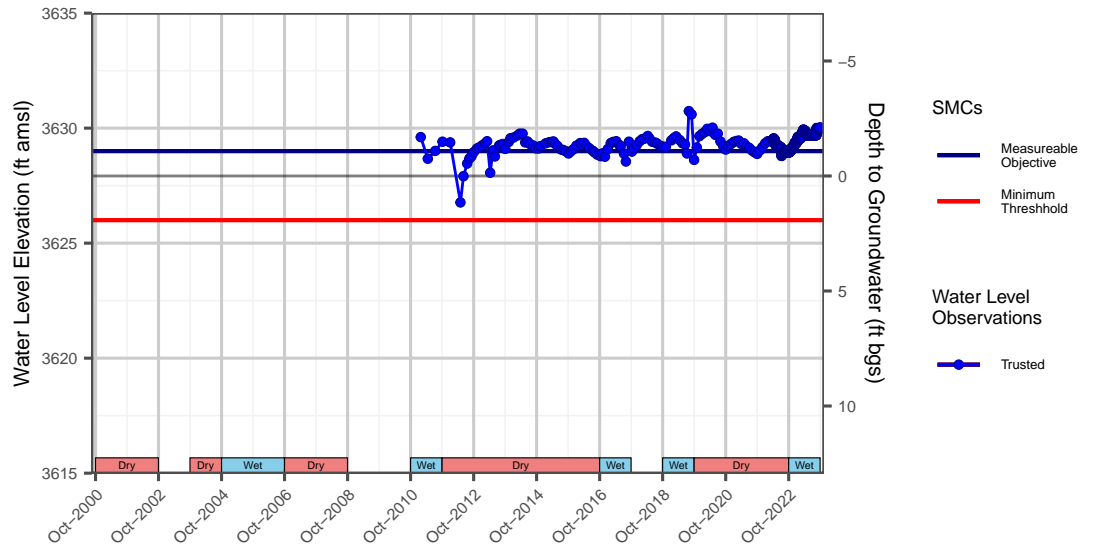


Owens Lake Management Area

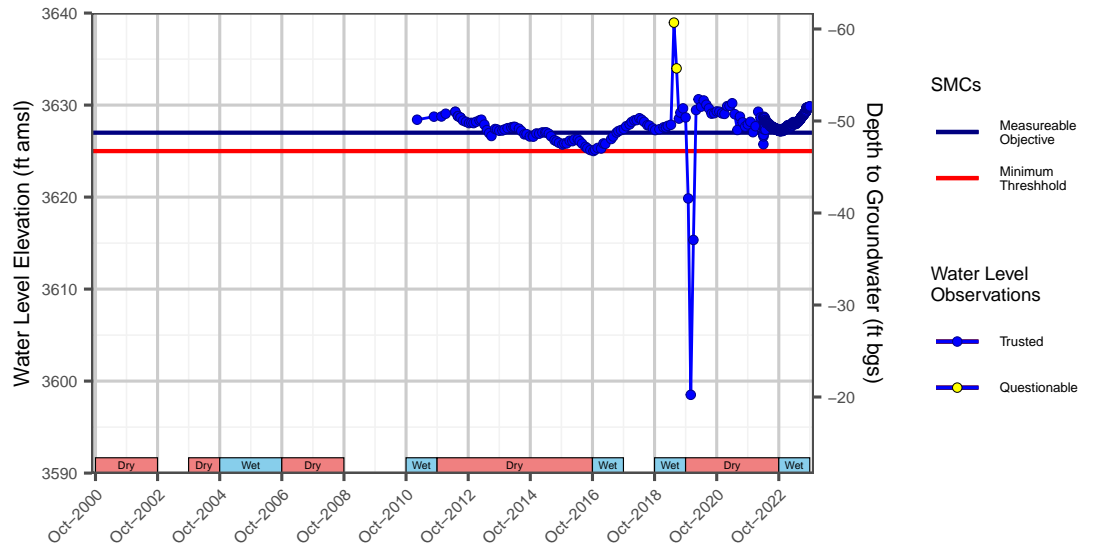
T902



T904

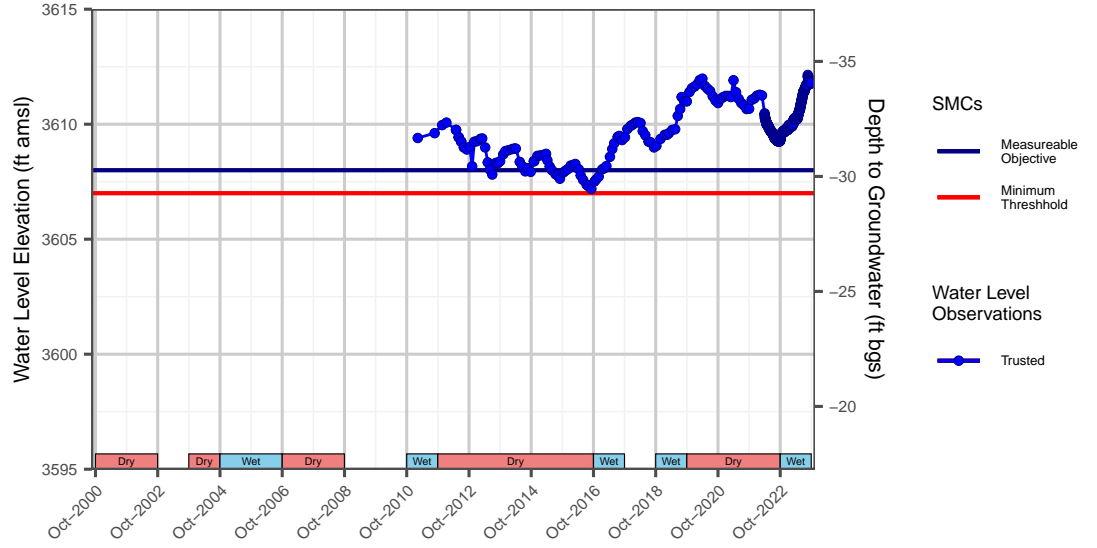


T908

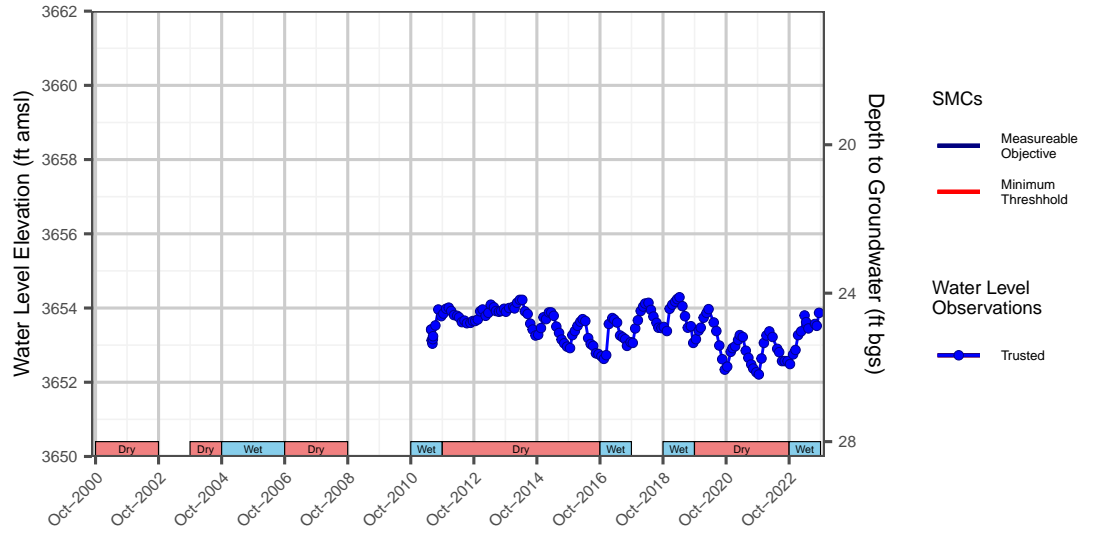
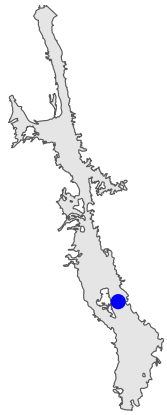


Owens Lake Management Area

T910

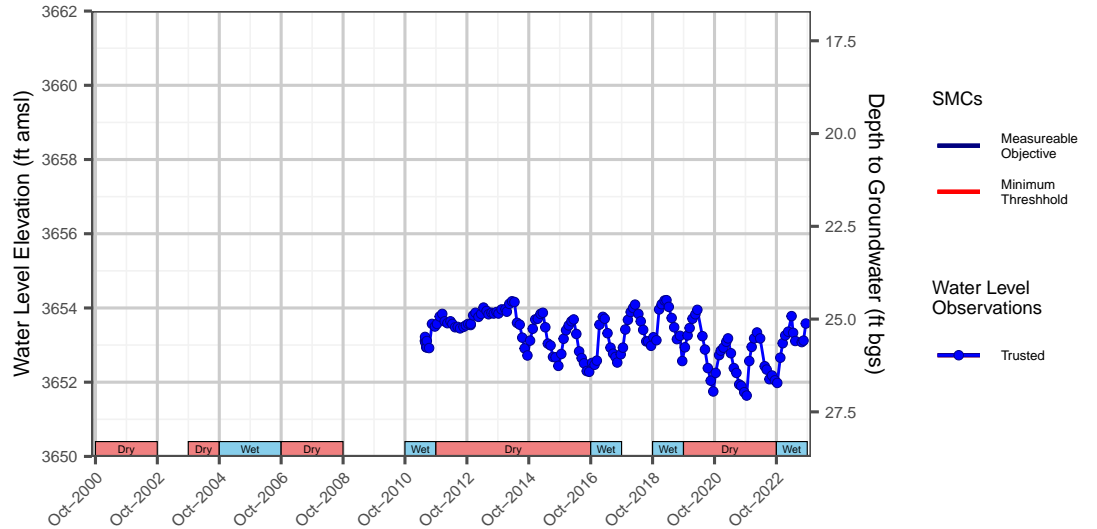


T916



Notes: Current SMCs in GSP are based on incorrect elevation data. SMCs will be revised during next 5-year update.

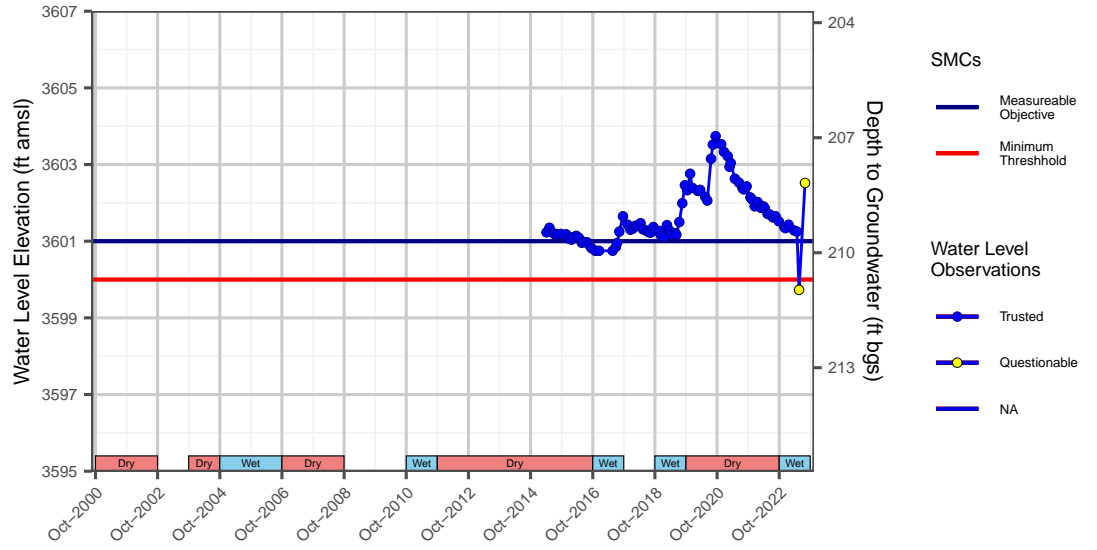
T917



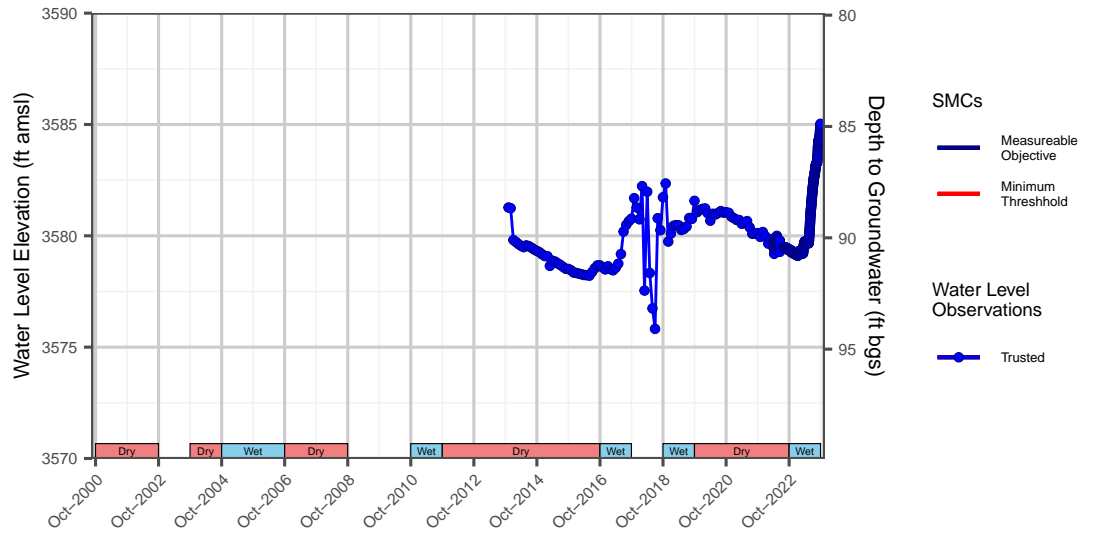
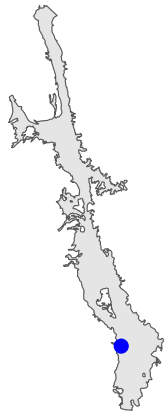
Notes: Current SMCs in GSP are based on incorrect elevation data. SMCs will be revised during next 5-year update.

Owens Lake Management Area

T920

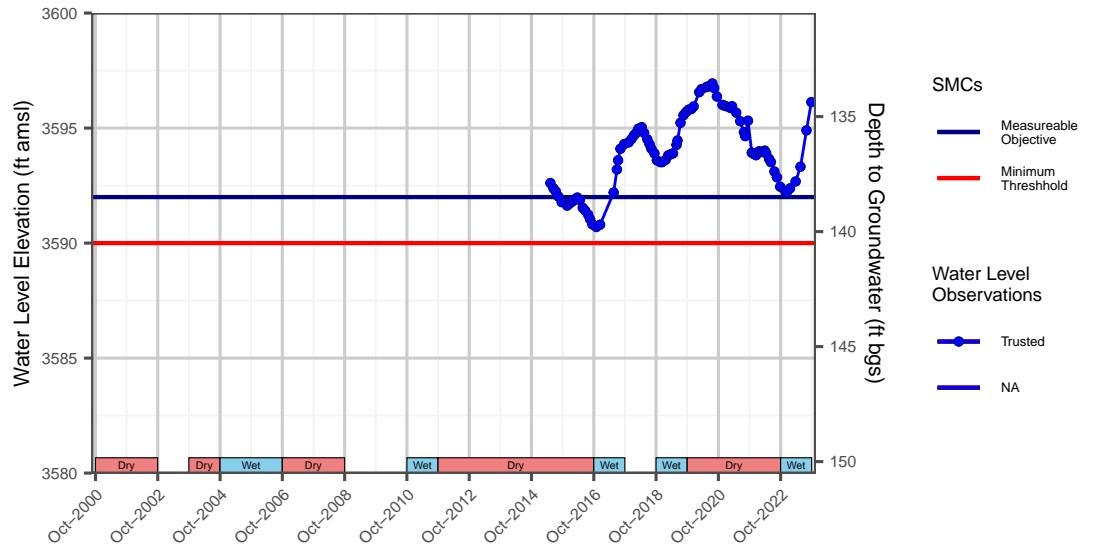


T922



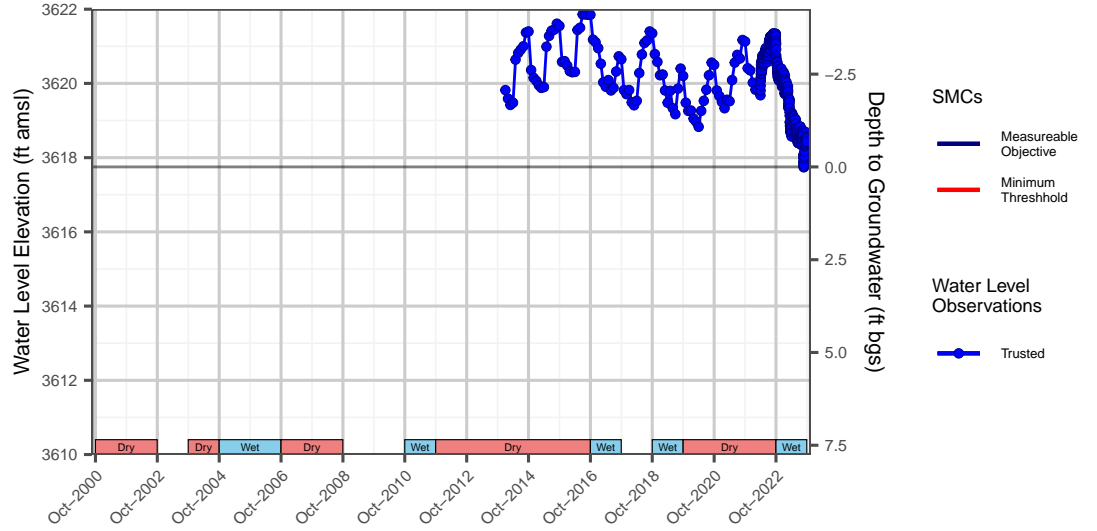
Notes: Newly established representative monitoring point. Sustainable Management Criteria (SMCs) will be established in 5-year GSP update.

T924



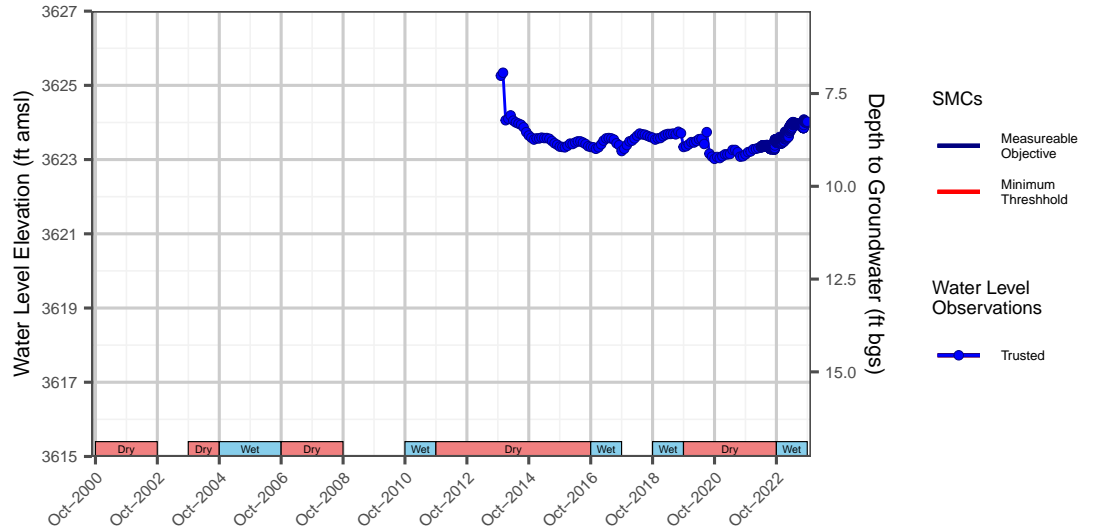
Owens Lake Management Area

T925



Notes: Newly established representative monitoring point. Sustainable Management Criteria (SMCs) will be established in 5-year GSP update.

T929



Notes: Newly established representative monitoring point. Sustainable Management Criteria (SMCs) will be established in 5-year GSP update.

Appendix B

Owens Valley Groundwater Authority Response to Public Comments

DRAFT