3. SUSTAINABLE MANAGEMENT CRITERIA

Pursuant to 23 CCR § 354.22, this section describes the criteria by which the Tule Subbasin (Subbasin), including the Terra Bella Irrigation District (TBID) Groundwater Sustainability Agency (GSA), defines conditions that constitute sustainable groundwater management. The criteria include the Subbasin's sustainability goal and the characterization and definition of undesirable results (URs), minimum thresholds (MTs), measurable objectives (MOs), and interim milestones (IMs) for each applicable sustainability indicator (SI) within the Tule Subbasin.

The sustainable management criteria (SMC) applied in this Groundwater Sustainability Plan (GSP) are based on the subbasin-wide framework established in the *2024 Tule Subbasin Coordination Agreement* (2024 Coordination Agreement) (**Appendix A**). The 2024 Coordination Agreement, including its attachments, defines the Subbasin's sustainability goal and the methodologies used by GSAs to characterize sustainability indicators and establish sustainable management criteria across the Subbasin. Development of the TBID GSP relied on the information and methodologies presented in the 2024 Coordination Agreement and its attachments. Adopted GSPs prepared by other Tule Subbasin GSAs were also reviewed to synthesize Subbasin-wide representative monitoring networks and the SMC values assigned across the Subbasin.

Consistent with the requirements of 23 CCR §§ 354.22–354.30, this GSP establishes the SMC for each applicable sustainability indicator. This section first presents the Subbasin sustainability goal and then describes the URs, MTs, MOs, and IMs used to evaluate groundwater conditions, organized by sustainability indicator. MOs represent the desired groundwater conditions the GSAs seek to achieve, while MTs define the groundwater conditions that must be avoided to prevent URs. IMs describe the incremental progress expected toward achieving the MOs by 2040. Together, these criteria provide the framework used by TBID GSA and the other Tule Subbasin GSAs to track groundwater conditions and guide implementation actions necessary to achieve and maintain sustainable groundwater management in the Subbasin. **Table 3-1** summarizes the SMC for each applicable SI as defined in the 2024 Coordination Agreement. All Tule Subbasin GSAs either adopted or recommended that their respective board adopt the 2024 Coordination Agreement, except the Delano-Earlimart Irrigation District (DEID) GSA. DEID GSA's SMC for each SI, as defined in its 2024 2nd Amended GSP, is also presented in **Table 3-1**.

The process used to establish SMC in the Tule Subbasin is described in detail in the 2024 Coordination Agreement, including its various attachments. This process includes identifying the beneficial uses and users of groundwater, including land uses and infrastructure vulnerable to land subsidence; defining basin-wide groundwater conditions that would be considered significant and unreasonable; quantifying undesirable results for each applicable sustainability indicator; and developing coordinated SMC to avoid those significant and unreasonable conditions. Based on the identified beneficial uses and users and evaluation of groundwater conditions within the Subbasin, five sustainability indicators were determined to have the potential to cause significant and unreasonable effects: chronic lowering of groundwater levels, reduction of groundwater storage, degraded water quality, land subsidence, and depletion of interconnected surface water. The saltwater intrusion sustainability indicator does not apply within the

Tule Subbasin because the Subbasin is in the interior of the Central Valley and is not hydraulically connected to marine or tidal waters.

Significant and unreasonable conditions were first generally identified as groundwater conditions that would cause impacts to beneficial uses and users that would require mitigation. Undesirable results were then defined for each sustainability indicator as combinations of minimum threshold exceedances that represent those significant and unreasonable conditions, and sustainable management criteria were established to avoid those outcomes.

Additional information supporting the development of the SMC described in this GSP was derived from the general process for establishing SMC documented in the 2024 Eastern Tule GSA GSP, within which the TBID Plan Area was previously included. That process included coordination with Subbasin GSAs and technical teams; stakeholder outreach and public engagement conducted through regular Eastern Tule Groundwater Sustainability Agency (ETGSA) Board and Committee meetings where information related to development of SMC was reviewed and discussed; public outreach meetings by the ETGSA and throughout the Tule Subbasin describing the GSP development process and local groundwater conditions; solicitation of stakeholder input through public comment, stakeholder surveys, written correspondence, and formal and informal meetings; and review of hydrologic data compiled in the Tule Subbasin Basin Setting (**Section 2.2**) to inform identification of locally relevant groundwater conditions and thresholds.

The 2024 Coordination Agreement also allows individual GSAs to further refine the SMC within their respective GSPs based on GSA-specific information and local conditions. Any such refinements must remain consistent with the Subbasin framework by incorporating the identified beneficial uses and users and the Subbasin definitions of undesirable results, and by providing supporting explanations for minimum thresholds and other criteria consistent with the Sustainability Groundwater Management Act (SGMA) requirements.

3.1. Sustainability Goal [23 CCR § 354.24]

The Sustainability Goal of the Tule Subbasin is defined as "the absence of undesirable results, accomplished by 2040 and achieved through a collaborative, Subbasin-wide program of sustainable groundwater management by the various Tule Subbasin GSAs" (**Appendix A**, Section 4.2).

Achievement of this goal will occur through coordinated implementation of the individual GSPs by the Tule Subbasin GSAs in collaboration with stakeholders throughout the Subbasin. The Tule Subbasin GSAs intend that this coordinated implementation will achieve sustainability in a manner that supports the highest practicable level of economic, societal, environmental, cultural, and community welfare while allowing beneficial uses and users to manage groundwater resources at the lowest reasonable cost. The GSAs also intend that once sustainability is achieved by 2040, it will be maintained thereafter.

Consistent with this goal, the coordinated GSPs are designed to balance average annual water inflows and outflows by 2040 so that long-term negative changes in storage do not occur after that time. Stabilizing groundwater storage is expected to support stable groundwater elevations, which in turn help prevent water quality degradation and arrest land subsidence, thereby avoiding undesirable results throughout the Subbasin.

It should be noted that, in its 2024 2nd Amended GSP, the DEID GSA has defined a Sustainability Goal that differs from the 2024 Coordination Agreement Sustainability Goal of the other Tule Subbasin GSAs.

3.2. Sustainable Management Criteria for Chronic Lowering of Groundwater Levels

This section describes the Tule Subbasin sustainable management criteria for the chronic lowering of groundwater levels sustainability indicator developed in accordance with 23 CCR § 354. The content within this section is based on work by Thomas Harder & Co for the 2024 Coordination Agreement (**Appendix A**), including Attachment 4 (**Appendix A-4**) and Attachment 6 (**Appendix A-6**).

Chronic lowering of groundwater levels is a SGMA sustainability indicator with the potential to cause significant and unreasonable effects within the Tule Subbasin. The hydrogeologic structure of the Subbasin generally consists of three principal aquifer systems: the Upper Aquifer, the Lower Aquifer, and the Santa Margarita Formation. Because the hydrogeologic characteristics and groundwater uses associated with these aquifers differ, the potential impacts of groundwater level decline and the corresponding SMC also differ among them. Accordingly, the Tule Subbasin evaluates chronic lowering of groundwater levels separately for the Upper Aquifer, Lower Aquifer, and the Santa Margarita Formation.

Impact on domestic groundwater users is the primary concern related to groundwater level decline in the Upper Aquifer. Domestic wells within the Tule Subbasin are typically shallow, making them among the most vulnerable beneficial uses to declining groundwater levels in the Upper Aquifer. Accordingly, the SMC for chronic lowering of groundwater levels in the Upper Aquifer focuses on maintaining groundwater levels sufficient to avoid impacts to domestic wells and other similarly vulnerable beneficial uses and users.

For the Lower Aquifer, the primary concern associated with declining groundwater levels is the potential to induce land subsidence. Compression of deeper aquifer sediments in the Tule Subbasin has been observed to be greater in the Lower Aquifer than in the Upper Aquifer, making wells completed in deeper aquifer zones more susceptible to damage associated with subsidence. Accordingly, the evaluation of undesirable results for Lower Aquifer groundwater levels is directly tied to the land subsidence sustainability indicator. In this framework, undesirable results associated with declining Lower Aquifer groundwater levels occur when groundwater conditions contribute to cumulative land subsidence at a representative monitoring site that exceeds the subsidence SMC and cannot be attributed to elastic aquifer response or measurement error.

The Santa Margarita Formation is evaluated using the same sustainable management criteria applied to the Lower Aquifer, consistent with the approach described in the 2024 Coordination Agreement.

3.2.1. Undesirable Results for the Chronic Lowering of Groundwater Levels

Undesirable results for the chronic lowering of groundwater levels sustainability indicator are based on groundwater conditions that result in significant and unreasonable impacts to beneficial uses and users of groundwater within the Tule Subbasin.

3.2.1.1 Definition of Significant and Unreasonable Effects [23 CCR § 354.26(a)]

3.2.1.1.1 Upper Aquifer

For the Upper Aquifer, the Tule Subbasin defines undesirable results as "[l]owering of groundwater levels from groundwater pumping that results in unmitigated impacts to beneficial uses and users" (**Appendix A-4**, Section 4). Domestic wells within the Tule Subbasin are typically completed in the Upper Aquifer and represent some of the most vulnerable beneficial users to declining groundwater levels. Accordingly, sustainable management criteria for this indicator are designed to avoid impacts to these wells and other similarly vulnerable groundwater users. The DEID GSA, which did not adopt the 2024 Coordination Agreement, similarly establishes sustainable management criteria for this indicator to protect the most vulnerable beneficial users and property interests (INTERA, 2024).

3.2.1.1.2 Lower Aquifer

For the Lower Aquifer, undesirable results associated with chronic groundwater level declines are evaluated in relation to the land subsidence sustainability indicator. Declines in Lower Aquifer groundwater levels primarily raise concern due to their potential to induce land subsidence. Accordingly, undesirable results occur when groundwater conditions contribute to cumulative land subsidence at a representative monitoring site that exceeds the subsidence sustainable management criteria and cannot be attributed to elastic aquifer response or measurement error.

The DEID GSA also evaluates Lower Aquifer undesirable results in relation to land subsidence and beneficial uses and users (INTERA, 2024).

3.2.1.1.3 Santa Margarita Formation

The Santa Margarita Formation is evaluated using the same sustainable management criteria applied to the Lower Aquifer.

3.2.1.2 Causes of Undesirable Results [23 CCR § 354.26(b)(1)]

Groundwater levels in the Tule Subbasin have generally declined since the late 1980s, primarily resulting from groundwater extraction exceeding the combined natural and artificial recharge to the aquifer system over multiple hydrologic cycles that include both wet and dry periods. These conditions are often exacerbated during drought periods, when reduced availability of imported surface water supplies increases reliance on groundwater pumping to meet agricultural, municipal, and domestic demands. Without management actions to address this imbalance, continued declines in groundwater levels would lead to conditions that are inconsistent with sustainable groundwater management and could result in undesirable results.

3.2.1.3 Criteria to Define Undesirable Results [23 CCR § 354.26(b)(2)]

Per 23 CCR § 354.26(b)(2), the description of undesirable results must identify the criteria used to determine when and where groundwater conditions would cause undesirable results, including a quantitative description of the combination of minimum threshold exceedances that represent significant and unreasonable effects within the basin.

3.2.1.3.1 Upper Aquifer

Undesirable results for the chronic lowering of groundwater levels sustainability indicator occur when groundwater conditions throughout the Tule Subbasin result in significant and unreasonable impacts to beneficial uses and users. For this indicator, in the Upper Aquifer, significant and unreasonable effects are associated with groundwater level declines caused by groundwater pumping that lead to unmitigated impacts to groundwater users.

For the Tule Subbasin, the criteria for determining Upper Aquifer groundwater level conditions that represent an undesirable result are the occurrence of either (1) or (2) as follows:

(1) a. Groundwater levels drop below the MT in any three Representative Monitoring Network (RMS) wells in any given year,

AND

b. More than 38 domestic wells require mitigation in any given year. If 38 wells require mitigation for multiple years, no more than 258 wells shall be impacted cumulatively by 2040;

OR

(2) If a GSA is unable to meet mitigation needs.

The criterion of three RMS wells exceeding minimum thresholds was established based on the estimated number of domestic wells that could potentially be impacted and reasonably mitigated in a given year. Within the Tule Subbasin, approximately 258 domestic wells have been identified as potentially vulnerable to groundwater level declines. Based on the spatial distribution of these wells and the locations of the 23[1] Upper Aquifer representative monitoring sites (RMS), an estimated average of approximately 11 potentially impacted domestic wells corresponds to each RMS if groundwater levels decline to the minimum threshold.

The Porterville area contains the highest concentration of potentially impacted domestic wells, with approximately 30 wells located within the PID Plan Area. Considering the estimated number of wells potentially affected per RMS and the Subbasin's annual mitigation capacity, the GSAs determined that approximately 38 domestic wells could reasonably be mitigated in a single year. This value corresponds to groundwater levels falling below the minimum threshold at three Upper Aquifer RMS wells in a given year. Also, 38 domestic wells are the maximum number of well impact claims Self Help Enterprises has received within the Tule Subbasin in any given year as of 2015.

[1] There were 23 Upper Aquifer RMS wells at the time the undesirable result was established. There are currently 30 Upper Aquifer RMS wells, see **Table 3-2**.

If either of the criteria described above is exceeded, or if mitigation needs cannot be met, the resulting groundwater conditions would indicate that groundwater management actions are insufficient to prevent significant and unreasonable impacts and therefore constitute an undesirable result.

3.2.1.3.2 Lower Aquifer

For the Lower Aquifer, undesirable results related to chronic lowering of groundwater levels are defined in relation to land subsidence, as this is the primary mechanism by which significant and unreasonable effects may occur. Specifically, an undesirable result for Lower Aquifer groundwater levels occurs when groundwater conditions contribute to land subsidence that exceeds the established cumulative subsidence minimum thresholds at any RMS, excluding subsidence attributable to elastic conditions or measurement error. This approach reflects the direct relationship between Lower Aquifer groundwater level declines and inelastic land subsidence and aligns the definition of undesirable results for Lower Aquifer groundwater levels with the subsidence sustainability criteria established for the Tule Subbasin.

The criteria used to define undesirable results in the DEID GSA includes a "zero tolerance" approach that, like the 2024 Coordination Agreement, aims to protect beneficial uses and users, property interests, and domestic wells. Within the DEID Plan Area, a single exceedance of an Upper or Lower Aquifer RMS MT is considered an undesirable result (INTERA, 2024, Section 3.5.2.5).

Section 3.2.2.4 describes the potential effects of groundwater levels reaching MOs and MTs, including additional details of the well impact analysis performed for the Tule Subbasin.

3.2.1.4 Potential Effects of Undesirable Results on Beneficial Uses and Users [23 CCR § 354.26(b)(3)]

Beneficial uses and users within the Tule Subbasin have been identified as domestic, agricultural, industrial, municipal, and environmental. The potential effects of undesirable results caused by the decline of Upper Aquifer groundwater levels are largely related to financial impacts associated with increased pumping costs, lowering well pumps, replacing wells, or completing other mitigation efforts. For environmentally beneficial uses and users, large data gaps exist related to interconnected surface water and the presence of potential groundwater-dependent ecosystems, as described in **Chapter 5**. As such, the Subbasin has not yet identified the location of potential interconnected surface waters, if any, nor specific impacts on groundwater-dependent ecosystems by the lowering of groundwater levels. A plan to address this data gap is discussed in **Chapter 5** and will be refined as DWR releases guidelines for monitoring the presence of interconnected surface water.

The potential effects of undesirable results caused by the decline of Lower Aquifer groundwater levels are primarily related to land subsidence impacts, as described in **Section 3.5.1.4**.

While SMC are established to avoid undesirable results, all Tule Subbasin GSAs, except DEID GSA, agreed to adopt and implement the Tule Subbasin Drinking Water Well Mitigation Plan (DWW Mitigation Plan)

(**Appendix H**) to mitigate impacts to beneficial uses and users, including drinking water wells, non-drinking water wells, and critical infrastructure caused by GSA-authorized groundwater management activities. The TBID GSA has adopted and will implement the DWW Mitigation Plan, along with other projects and management actions (PMAs). The DWW Mitigation Plan and other PMAs are described in **Chapter 5**.

3.2.2. Minimum Thresholds for the Chronic Lowering of Groundwater Levels

Tule Subbasin minimum thresholds for the chronic lowering of groundwater levels sustainability indicator were developed consistent with the aquifer-specific considerations described above. Because the potential impacts associated with groundwater level declines differ between the Upper Aquifer and Lower Aquifer, the methodologies used to establish minimum thresholds also differ for these aquifer systems. The Santa Margarita Formation is evaluated using the same criteria applied to the Lower Aquifer. The TBID GSA adopts minimum thresholds as defined in the 2024 Coordination Agreement, which were developed in a coordinated approach for the entire Subbasin (excluding DEID) and in consideration of beneficial uses and users.

3.2.2.1 Criteria Used to Establish Minimum Thresholds [23 CCR § 354.28(b)(1)]

3.2.2.1.1 Upper Aquifer

The coordinated methodology to develop MTs for the Upper Aquifer is described in **Appendix A-4**, in pertinent part, as follows:

- *Historical groundwater level hydrographs were prepared for each of the Upper Aquifer Representative Monitoring Site (RMS) wells in the subbasin.*
- *The groundwater level measured at each RMS well in Fall 2022 was selected as representative of recent low groundwater conditions.*
- *An updated version of the calibrated groundwater flow model of the Tule Subbasin was used to estimate the model-predicted change in groundwater levels forecast at each RMS well between 2022 and 2040. The forecast incorporated each GSA's project and management actions, as outlined in the 2022 GSPs.*
- *The revised coordinated MT at each RMS well was established as the difference between the 2022 measured groundwater elevation at that well and the model-forecasted groundwater elevation in 2040.*
- *The MTs for the RMS wells were contoured via kriging in Geographic Information System (GIS) to develop an MT surface across the subbasin.*
- *The MT contour map was used to estimate the number of wells potentially impacted if groundwater levels were lowered to the MTs.*

> *A notable exception to the methodology was implemented in the Porterville [Management] [A]rea, where groundwater levels are already relatively shallow, and forecasted changes in groundwater level are small. In the two Porterville RMS wells (C-1 and R-11), the MTs were based on the historical low groundwater levels measured at those locations in 2016 and 2015, respectively.*
>
> (**Appendix A-4**, Section 6.1)

The DEID GSA's methodology to develop Upper Aquifer MTs is described in Section 3.5.3.1 of the DEID GSA's 2024 GSP and is similar to that of the 2024 Coordination Agreement. The methodology used by the DEID GSA is included in this GSP to provide a complete overview of management in the Tule Subbasin. DEID GSA's methodology is summarized as follows:

> 1 *Identify beneficial uses and users throughout the DEID GSA.*
>
> 2 *Evaluate representative (i.e., fall 2022) groundwater levels for each RMS location.*
>
> 3 *Deduct the modeled projected change in groundwater elevation during the 20-year plan implementation period (2022-2040) from the representative groundwater levels at each RMS location.*
>
> 4 *Establish the minimum threshold for the chronic lowering of the groundwater elevation sustainability indicator for the entire plan implementation period as a single value at each RMS location. The difference between the minimum threshold and measurable objective is the operational flexibility at each RMS well.*
>
> 5 *Create an interpolated surface of the minimum threshold values established at each RMS well and compare the interpolated surface to protective thresholds for existing well depth and screen interval information of potentially active pumping wells to determine if protective of beneficial uses and users. If necessary, minimum threshold values were adjusted to avoid significant and unreasonable conditions that may lead to undesirable results or provide appropriate mitigation.*
>
> (INTERA, 2024)

Table 3-2 contains the Upper Aquifer groundwater level minimum thresholds, along with other SMC values, at each Upper Aquifer RMS well in the Tule Subbasin, based on information available at this time, including the 2024 Coordination Agreement, other Tule Subbasin GSA GSPs, and the draft Water Year (WY) 2025 Annual Report for the Tule Subbasin. **Figure 3-1** contains the contoured map of the Upper Aquifer MTs throughout the entire Subbasin. The RMS wells contained in **Table 3-2** differ from those shown in **Figure 3-1**, because the data sources differ as previously mentioned. Upper Aquifer MTs were not established nor contoured in the southeastern portion of the Tule Subbasin, including the southern portion of the TBID Plan Area, as no Upper Aquifer RMS wells are available. The lack of RMS wells screened in the Upper Aquifer within the TBID Plan Area is identified as a data gap and is discussed further in **Section 4.8** of this GSP.

3.2.2.1.2 Lower Aquifer

Land Subsidence SMC is used to establish the chronic lowering of groundwater SMC in the Lower Aquifer, given the correlation between the two indicators, where land subsidence is primarily caused by large seasonal fluctuations and long-term groundwater level decline in the Lower Aquifer. Subsidence can also occur if groundwater levels are maintained at levels below the critical head, resulting in residual subsidence.

The coordinated methodology used to develop MTs for the Lower Aquifer is described in Section 9.1 of **Appendix A-6** in pertinent part, as follows:

1 *Identified Lower Aquifer RMS wells with a suitable historical groundwater level record with which to correlate with land subsidence rates from InSAR.*

2 *Historical groundwater levels were plotted on the same charts with InSAR land subsidence data to enable analysis of land subsidence rates and groundwater level changes over time.*

3 *Lower Aquifer groundwater level MTs were selected to correlate to land subsidence rates that would prevent cumulative land subsidence at that location from reaching the cumulative land subsidence MT.*

Figure 27 of **Appendix A-6** presents a comparison of previously established Lower Aquifer groundwater level minimum thresholds, which were developed using the methodology applied in the 2022 Coordination Agreement, and the revised minimum thresholds adopted in the 2024 Coordination Agreement. In cases where MTs were retained at specific RMS wells, the revised minimum thresholds are higher than the previously established values.

Groundwater level recovery observed in 2023, following above-average precipitation and runoff conditions during that year, corresponded with a notable reduction in land subsidence rates across the Tule Subbasin. These observations suggest that groundwater levels observed during 2023 are near the pre-consolidation, or critical head, conditions associated with minimizing aquifer-system compaction. Because these groundwater levels are higher than historical low groundwater levels observed in the Subbasin, they helped inform the selection of the revised minimum thresholds.

Based on available groundwater level and subsidence monitoring data, maintaining Lower Aquifer groundwater levels above the selected MTs provides the greatest likelihood of limiting land subsidence within the Subbasin's cumulative subsidence management objectives and minimizing the potential for continued residual subsidence after 2040.

As additional groundwater level and land subsidence data are collected during the SGMA implementation period, the Lower Aquifer groundwater level MTs and MOs will continue to be evaluated and refined as necessary to ensure they remain protective of the Tule Subbasin's land subsidence management goals.

Table 3-3 contains the Lower Aquifer groundwater level minimum thresholds, along with other SMC values, at each Lower Aquifer RMS well in the Tule Subbasin, based on information available at this time, including the 2024 Coordination Agreement, other Tule Subbasin GSPs, and the draft WY2025 Annual Report. **Figure 3-2** contains the contoured map of the Lower Aquifer MTs throughout the entire Subbasin. The RMS wells contained in **Table 3-3** differ from those shown in **Figure 3-2**, because the data sources differ as described above.

The TBID Plan Area includes one Lower Aquifer RMS well; however, sustainable management criteria have not been established for this site. The absence of Lower Aquifer RMS wells with defined SMC within the TBID Plan Area constitutes a data gap and is discussed further in **Section 4.8**.

Similar to the 2024 Coordination Agreement methodology used by the other Tule Subbasin GSAs, the DEID GSA set Lower Aquifer RMS well MTs to be equal to the most recent low groundwater measurement (2023) to maintain consistency with land subsidence MTs (INTERA, 2024, Section 3.5.3.1).

3.2.2.1.3 Pliocene and Santa Margarita Aquifer

Development of groundwater level sustainable management criteria for the Pliocene aquifer has not been developed for the Subbasin. It has been identified that groundwater extraction does occur in the Pliocene Aquifer, and simulations of subsidence in the Subbasin indicate that groundwater pumping from the Pliocene Aquifer results in land subsidence. The development of sustainable management criteria for groundwater levels in the Pliocene Aquifer will be consistent with the methodology for the Lower Aquifer described in **Section 3.2.2.1.2**. Development of a Subbasin-wide monitoring network in the Pliocene Aquifer is necessary before any correlation between Pliocene Aquifer groundwater levels and subsidence can occur. In addition, understanding the contribution of subsidence from groundwater extraction needs to be correlated to Lower Aquifer conditions in order to develop projects and management actions to manage contributions to subsidence from the Lower and Pliocene Aquifers. The establishment of a subbasin-wide Pliocene Aquifer monitoring network is a data gap.

3.2.2.2 Relationship to Other Sustainability Indicators [23 CCR § 354.28(b)(2)]

The groundwater level MTs relate to the MTs of the land subsidence, reduction in groundwater storage, degraded water quality, and depletion of interconnected surface water sustainability indicators, as described in the 2024 Coordination Agreement.

- *Land subsidence MTs were used to define the Lower Aquifer groundwater level MTs, given the relationship between groundwater levels and subsidence rates. No impact is expected on one indicator by the other.*
- *The chronic lowering of groundwater level MTs is identical to the reduction of groundwater storage MTs, since groundwater levels are used as a proxy for the reduction of groundwater storage SMC.*
- *The degradation of water quality induced by the GSA's management of groundwater, including the potential migration of plumes caused by recharge activities or changes in groundwater levels and flow directions induced by groundwater pumping, must be accounted for. Within the Tule Subbasin, legacy and natural groundwater quality issues are present. The Tule Subbasin GSAs intend to expand the groundwater quality monitoring network, with particular focus on areas near domestic wells, community water supply systems, and groundwater recharge facilities. Additional*

monitoring will help evaluate the relationship between groundwater level MTs and groundwater quality SMC.

- *Evaluation of the interconnected surface water sustainability indicator is currently informed by groundwater level data collected near potentially interconnected streams due to limited surface water flow data throughout the Subbasin. The GSAs are working to address these data gaps, as additional data become available, interconnected surface water conditions will be evaluated using rates of surface water depletion in interconnected channels. Groundwater levels may also be used as a proxy for evaluating potential depletion of interconnected surface water pending guidance from DWR.*

3.2.2.3 Relationship to Adjacent Subbasins [23 CCR § 354.28(b)(3)]

Development of the MTs for groundwater levels and land subsidence was coordinated, and thus, MTs are generally consistent throughout the Tule Subbasin GSAs. MTs were compared against neighboring Subbasins, and results are to be regularly monitored and reviewed during Annual Reports. Interbasin policies will be adopted as needed to avoid impacts to beneficial uses and users of groundwater. The Tule Subbasin Lower Aquifer MTs are expected to be at or above the Lower Aquifer MTs in neighboring GSA Plan Areas, given that the land subsidence SMC is a limiting factor for assigning Lower Aquifer groundwater level SMC.

3.2.2.4 Potential Effects of Minimum Thresholds on Beneficial Uses and Users [23 CCR § 354.28(b)(4)]

To evaluate potential impacts of the chronic lowering of groundwater levels on sustainable management criteria for groundwater users, the Tule Subbasin GSAs conducted a well impact analysis to assess whether groundwater levels declining to the established MTs could affect wells within the Subbasin. A well impact analysis conducted for the 2022 Tule Subbasin GSPs evaluated both the Upper and Lower Aquifers and found that Lower Aquifer MTs would not be expected to impact wells. As part of the 2024 updates to the Coordination Agreement, the analysis was updated for the Upper Aquifer MTs. Because the revised 2024 Lower Aquifer MTs are higher than the 2022 values and there were no well impacts anticipated for the 2022 GSP Lower Aquifer MTs, the Lower Aquifer analysis was not updated.

Although it is not possible to determine the exact number of wells that could be affected if groundwater levels decline to the established MTs, available datasets were used to estimate the number and well types that could potentially be impacted within the Tule Subbasin. The well impact analysis relied on the following data sources:

- California Department of Water Resources (DWR) Online System of Well Completion Reports (OSWCR) database
- United States Geological Survey (USGS) well completion report database
- Upper Aquifer groundwater level data (Spring 2015) compiled from GSAs, the CASGEM database, Deer Creek–Tule River Authority (DCTRA), and other available sources
- Geographic Information System (GIS) datasets, including Subbasin and GSA boundary shapefiles and well location data

- Well-specific capacity data compiled from GSAs and the OSWCR database

The analysis of potentially impacted wells was based on a combination of the DWR OSWCR database and a refined USGS well completion dataset that includes improved well location information and additional well construction data. The USGS dataset was used as the primary source, with approximately 600 wells from the OSWCR database added where those wells were not included in the USGS dataset.

The analytical approach used to estimate the number of wells potentially impacted at MTs is described in Section 6.2 of **Appendix A-4** in pertinent part, as follows:

- *The MTs for each aquifer, as designated at representative monitoring sites, were contoured via kriging in GIS to develop an MT surface across the Subbasin.*
- *There is a total of 8,996 Tule Subbasin wells in the combined OSWCR/USGS well databases. Of the total wells in these databases, 4,476 wells were removed from the analysis because the records did not include total depth information, they were non-pumping wells or wells documented for uses other than agricultural, private domestic, industrial, or municipal (e.g., contaminant remediation, injection, monitoring), or they were destroyed.*
- *42 wells were added to the database based on records from the City of Porterville and KTWD GSA.*
- *Within the City of Porterville Urban Development Boundary, the city has implemented a program to connect homes to the municipal water supply system that previously relied on domestic wells for water supply. As a requirement of connecting to the public water supply, domestic well owners are required to destroy their wells. By correlating homes with water supply connections to well locations in the USGS database, 18 wells were removed from consideration in the analysis of potentially impacted wells, as they have likely been destroyed.*
- *A total of 4,544 wells were used in the analysis. For wells with only township, range, and section information, the well was plotted in the middle of the section.*
- *Per SGMA, GSPs are not required to address wells potentially impacted by groundwater conditions that existed prior to January 1, 2015. Thus, 486 wells that would have been impacted prior to this time were removed from the analysis. The Upper Aquifer groundwater surface used as a basis for removing wells prior to January 1, 2015, was developed based on a manually contoured groundwater elevation contour map using groundwater levels measured in Spring 2015. Only wells constructed within the Upper Aquifer, as defined in the Tule Subbasin groundwater flow model, were used to develop the contour map.*

Wells at which the total depth or bottom of perforations were above the MT or where the total depth/bottom of perforations were below the MT but could not support pumping with a static groundwater level at the MT were considered “potentially impacted” (Figure 9 of **Appendix A-4**). Criteria for determining whether a well could support pumping when the static groundwater level was at the MT were the following:

- *The pumps in all wells were assumed to be installed, or capable of being installed, within 10 feet of the bottom of the wells.*

- *It was assumed that the pumping groundwater level would need to be at least 20 feet above the pump intake to avoid cavitation or entrained air.*
- *In addition to the pumping support assumptions above, allowance was given to support pumping drawdown based on specific capacity data from available wells and pumping rates reported in the USGS updated version of the OSWCR database.*
- *For each GSA, an average specific capacity from wells with available data in that GSA was used. The pumping drawdown allowance for agricultural wells was assigned based on average pumping rates from agricultural wells in each square mile section. The pumping drawdown allowance for domestic wells was assigned based on average pumping rates for domestic wells in each square mile section.*

(**Appendix A-4**, Section 6.2.2)

The analysis of impacted wells at MTs (**Figure 3-3**) and MOs (**Figure 3-4**) was completed in 2024 for the entire Subbasin using the criteria described above. Of the 4,544 wells identified from the OSWCR and USGS datasets, 486 wells were deemed likely to be impacted prior to January 2015, leaving a total of 4,058 wells throughout the Subbasin for the impact analysis (**Appendix A-4**). The analysis concluded that 257 wells would be impacted if lowered to Upper Aquifer MTs, and 136 wells would be potentially impacted if groundwater levels were lowered to Upper Aquifer MOs. While the greatest total number of potentially impacted wells is within the LTRID Plan Area, the largest percentage of total wells potentially impacted is within the PIXID Plan Area, with 11 percent (61/559) at MTs and 9 percent (48/559) of wells impacted at MOs. Both the Alpaugh and KTGSA Plan Areas have the fewest number of impacted wells, with zero wells impacted at MTs and MOs. Based on **Figures 3-3** and **3-4**, none of the potentially impacted wells from this analysis fall within the boundaries of the TBID Plan Area. The well impact analysis results by well type are discussed in the subsections below and summarized in **Table 3-4**. See Section 6.2 of **Appendix A-4** for additional details regarding the data sources and methodology used to conduct the well impact analysis and associated results.

The Subbasin-wide analysis of beneficial uses and users potentially impacted if groundwater levels reach the MTs or MOs in the Lower Aquifer found that there would be no impact when water levels drop to the Lower Aquifer MTs. As such, MTs were set to prevent land subsidence as previously discussed.

3.2.2.4.1 Agricultural

Potential impacts from chronic lowering of groundwater levels to agricultural uses and users include financial impacts to lower pumps, repair or replace wells, and increased pumping costs. A total of 2,264 agricultural wells were included in the Subbasin-wide well impact analysis. **Figures 3-3** and **3-4** contain a map of wells within the Subbasin potentially impacted by the lowering of groundwater levels to MTs and MOs, respectively. Subbasin-wide, 69 of 2,264 agricultural wells could be impacted by the lowering of groundwater levels to the Upper Aquifer MTs, and 38 wells could be impacted by groundwater levels at Upper Aquifer MOs.

3.2.2.4.2 Domestic

Some domestic uses and users within the Subbasin may be impacted during the transition period from January 2020 to December 2040. A total of 1,658 domestic wells were included in the Subbasin-wide well impact analysis. Subbasin-wide, 173 of 1,658 domestic wells could be impacted by the lowering of groundwater levels to Upper Aquifer MTs, and 87 wells could be impacted by groundwater levels at Upper Aquifer MOs.

3.2.2.4.3 Industrial

The 2024 Coordination Agreement identified potential impacts to industrial uses and users and analyzed financial impacts to lower pumps, repair or replace wells, and increased pumping costs. A total of 38 industrial wells were included in the Subbasin-wide well impact analysis. Subbasin-wide, three wells could be impacted by the lowering of groundwater levels to Upper Aquifer MTs, and one well could be impacted by groundwater levels at Upper Aquifer MOs.

3.2.2.4.4 Municipal

Potentially impacted municipal wells were identified exclusively within the City of Porterville in the Subbasin-wide well impact analysis. The City has indicated that potential effects can be mitigated by distributing pumping in a way that avoids the impacts. As such, none of the 35 municipal wells included in the analysis is to be negatively impacted should groundwater levels reach Upper Aquifer MOs or MTs.

3.2.2.4.5 Environmental

Data gaps exist related to interconnected surface water and the presence of potential groundwater-dependent ecosystems, as described in **Chapter 4**. As such, the Subbasin has not yet identified the location of potential interconnected surface waters, if any, nor specific impacts on groundwater-dependent ecosystems by the lowering of groundwater levels. A plan to address this data gap is discussed in **Section 4.8** and will be refined as DWR releases guidelines for monitoring the presence of interconnected surface water.

3.2.2.5 Relationship with Federal, State, and Local Standards [23 CCR § 354.28(b)(5)]

There are no federal, state, or local standards specific to addressing the chronic lowering of groundwater levels within the Tule Subbasin.

3.2.2.6 Measurement Relative to Minimum Thresholds [23 CCR § 354.28(b)(6)]

Groundwater levels relative to RMS well MTs will be reported in Annual Reports and Five-Year Periodic Evaluations. The Tule Subbasin Representative Monitoring Network is described in **Chapter 4** in detail.

3.2.3. Groundwater Level Measurable Objectives and Interim Milestones [23 CCR § 354.30(a-g)]

The MOs for chronic lowering of groundwater levels in the Upper Aquifer were established at each Upper Aquifer RMS well, as well as the midpoint between the 2022 groundwater level and the corresponding MT. These MOs are intended to maintain groundwater levels above the MT to support sustainable groundwater management, while also providing a reasonable margin of operational flexibility under varying seasonal and long-term conditions.

MOs for Lower Aquifer and Santa Margarita Formation RMS wells were developed using a different approach than that applied to the Upper Aquifer. For these deeper aquifer systems, MOs were established as the midpoint between the minimum threshold and the April 2023 high groundwater level. This method accounts for the substantial seasonal variability observed in groundwater levels and is intended to represent an average annual condition. By setting the MO at this level, the GSAs provide operational flexibility while ensuring that seasonal low groundwater levels remain above the MT.

MOs for Upper Aquifer RMS wells within the DEID Plan Area are described in Section 3.5.4.1 of the DEID GSA's 2024 GSP. At each RMS location, the MO is defined as an elevation above the MT equal to 50 percent of the difference between starting conditions (i.e., Fall 2022) and the MT (INTERA, 2024). For the Lower Aquifer, the DEID GSA's GSP set the MOs to be equal to MTs, reflecting that the SMC development was based on the MTs defined for the land subsidence sustainability indicator (INTERA, 2024).

IMs represent incremental groundwater level targets that demonstrate progress toward achieving the MOs over the planning and implementation horizon. Hydrographs were developed for each RMS well using available groundwater level data, and these hydrographs were used to establish quantifiable IMs and MOs. The methodology used to develop IMs for each RMS well is not described in the 2024 Coordination Agreement, but the ETGSA GSP stated that IMs are based on incrementally decreasing groundwater level changes over time to illustrate a reasonable pathway toward achieving the sustainability goal.

IMs established within the DEID Plan Area for Upper Aquifer RMS wells are described in Section 3.5.4.1 of the DEID GSA's GSP and are specified for the Lower and Upper Aquifers. For the Lower Aquifer, IMs in the DEID Plan Area are set to be equal to the MTs, as are the MOs, as the development of the SMC relied on the MTs established for the land subsidence sustainability indicator. For the Upper Aquifer, IMs in the DEID Plan Area are based on the following:

- 2025 IM– equal to the MT.
- 2030 IM – elevation at two-thirds of the elevation difference between the 2025 IM and the MO.
- 2035 IM – elevation at two-thirds of the elevation difference between the 2030 interim milestone and the MO.

Tables 3-2 and **3-3** summarize MOs and IMs for the chronic lowering of groundwater levels sustainability indicator for each RMS well, as discussed above. **Figures 3-5** and **3-6** illustrate the MOs for the Upper

Aquifer and Lower Aquifer RMS wells, respectively. The RMS wells contained in **Tables 3-2** and **3-3** differ from those shown in **Figures 3-5** and **3-6**, because the data sources differ, as described above.

3.3. Sustainable Management Criteria for Reduction of Groundwater Storage

This section describes the Tule Subbasin sustainable management criteria for the reduction of groundwater storage sustainability indicator developed in accordance with 23 CCR § 354. The content within this section is based on work by Thomas Harder & Co for the 2024 Coordination Agreement (**Appendix A**).

Reductions in groundwater storage within the Tule Subbasin are directly correlated with declining groundwater levels. For this reason, groundwater levels are used as a proxy for evaluating the reduction of groundwater storage SI. Although the DEID GSA is not a party to the 2024 Coordination Agreement, it too uses groundwater levels as a proxy for groundwater storage. See **Table 3-1** for a summary of SMC within the Tule Subbasin.

The use of groundwater levels as a proxy for the reduction of the groundwater storage sustainability indicator is consistent with SGMA regulations. Pursuant to 23 CCR § 354.28(d), groundwater levels may be used as a proxy for other SIs when a strong correlation between groundwater levels and the indicator can be demonstrated. Within the Tule Subbasin, groundwater levels are directly correlated with groundwater storage, such that declining groundwater levels reflect reductions in groundwater storage and rising groundwater levels reflect increases in storage. Although groundwater storage can be estimated using model-generated groundwater levels and aquifer parameter assumptions, such estimates involve considerable uncertainty and are not practical. Accordingly, the SMC established for the chronic lowering of groundwater levels, SI is used to evaluate the reduction of groundwater storage SI.

3.3.1. Undesirable Results for the Reduction of Groundwater Storage [23 CCR § 354.26(b)(1)]

3.3.1.1 Definition of Significant and Unreasonable Effects [23 CCR § 354.26(a)]

Significant and unreasonable effects related to the reduction of groundwater storage are defined in relation to groundwater level conditions, as reductions in storage are directly correlated with declining groundwater levels. Accordingly, groundwater levels are used as a proxy for evaluating groundwater storage conditions. Significant and unreasonable effects occur when groundwater levels decline to minimum threshold conditions, consistent with the criteria established for the chronic lowering of groundwater levels sustainability indicator (see **Section 3.2**).

3.3.1.2 Causes of Undesirable Results [23 CCR § 354.26(b)(1)]

Causes of undesirable results related to the reduction in groundwater storage for the Tule Subbasin are defined as:

> *The primary cause of groundwater conditions that have led to the reduction in groundwater in storage observed in the Subbasin since 1987 is groundwater production in excess of natural and artificial recharge over a multi-year period that includes both wetter than average and*

> *drier than average conditions. This condition, if allowed to continue indefinitely into the future, will not allow for the support of the beneficial uses and users of the Subbasin and is considered an undesirable result.*
>
> (**Appendix A**, Section 4.3.2.1)

3.3.1.3 Criteria to Define Undesirable Results [23 CCR § 354.26(b)(2)]

Section 4.3.2.2 of the 2024 Coordination Agreement establishes the criteria to define undesirable results related to the reduction of groundwater storage as follows:

> *The GSA's have determined that continued chronic depletion of groundwater in storage below that which is needed to accommodate continued pumping during the transitional period of temporary overdraft is an undesirable result, as that condition is considered unsustainable. Further, lack of access to water supplies for all beneficial uses and users due to depletion of groundwater in storage is considered significant and unreasonable and, therefore, an undesirable result.*
>
> *The groundwater level conditions established to protect access to groundwater for beneficial users form the basis identifying a significant and unreasonable depletion of groundwater in storage. Thus, the maximum theoretical amount of groundwater that can be removed from storage in the transition period from 2020 to 2040, including implementation of the proposed projects and management actions, is the volume of groundwater that would be removed if upper aquifer groundwater levels were lowered to the minimum thresholds across the Subbasin. To protect against the occurrence of undesirable results, the Subbasin has adopted a Mitigation Plan attached hereto as Attachment 8 [of the 2024 Tule Subbasin Coordination Agreement].*
>
> (**Appendix A**, Section 4.3.2.2)

The TBID GSA will adopt the DWW Mitigation Plan (**Appendix H**) to protect against the occurrence of undesirable results (**Section 3.2.1**).

3.3.1.4 Potential Effects of Undesirable Results on Beneficial Uses and Users [23 CCR § 354.26(b)(3)]

Beneficial uses and users within the Subbasin include agricultural, domestic, industrial, and municipal uses and users. The potential effects of undesirable results caused by the reduction of groundwater storage are related to financial impacts to lower well pumps, replace wells, and increased pumping costs. Forecasting of future groundwater conditions using a calibrated numerical groundwater flow model of the Tule Subbasin, together with the best available data, indicates that the PMAs to be implemented by the GSAs are expected to slow and ultimately halt chronic depletion of groundwater in storage by 2040. Potential effects of a reduction in groundwater storage during the transition period between 2020 and 2040 are the same as those identified for the lowering of groundwater levels, which were discussed in **Section 3.2** above. A well impact analysis was completed to evaluate the potential impacts should groundwater levels reach MTs and MOs, the criteria and methodology for which are described in **Section 3.2.2.4** above. The TBID GSA will adopt the DWW Mitigation Plan to address potential effects on beneficial uses and users.

3.3.2. Groundwater Storage Minimum Thresholds [23 CCR § 354.28]

This section defines the Tule Subbasin minimum thresholds for the reduction of groundwater storage sustainability indicator developed in accordance with 23 CCR § 354.28.

3.3.2.1 Criteria Used to Establish Minimum Thresholds [23 CCR § 354.28(b)(1)]

As stated above, any reduction in groundwater storage in the Tule Subbasin is directly correlated to groundwater level declines. Thus, the groundwater storage MTs for the Tule Subbasin and by extension the TBID GSA are the same as the chronic lowering of groundwater levels MTs, described in **Section 3.2.2** above.

3.3.2.2 Relationship to Other Sustainability Indicators [23 CCR § 354.28(b)(2)]

The Tule Subbasin uses the chronic lowering of groundwater levels SMC as a proxy for the reduction of groundwater storage use SMC. As such, the reduction of the storage sustainability indicator is related to other sustainability indicators in the same way as the chronic lowering of the groundwater levels sustainability indicator, described in **Section 3.2.2.2** above.

3.3.2.3 Relationship to Adjacent Subbasins [23 CCR § 354.28(b)(3)]

The Tule Subbasin uses the chronic lowering of groundwater levels SMC as a proxy for the reduction of groundwater storage SMC. As such, the relationship of the reduction of groundwater storage SMC and the chronic lowering of groundwater levels SMC to adjacent subbasins is the same as described in **Section 3.2.2.3** above.

3.3.2.4 Potential Effects of Minimum Thresholds on Beneficial Uses and Users [23 CCR § 354.28(b)(4)]

Potential effects on beneficial uses and users of groundwater are described in **Section 3.2.2.4** and are the same as those described for the chronic lowering of groundwater levels.

Stabilizing groundwater storage levels above the MT is not expected to produce undesirable results for beneficial uses and users of groundwater.

3.3.2.5 Relationship with Federal, State, and Local Standards [23 CCR § 354.28(b)(5)]

There are no federal, state, or local standards specific to addressing the reduction of groundwater storage within the Tule Subbasin.

3.3.2.6 Measurement Relative to MTs [23 CCR § 354.28(b)(6)]

Groundwater storage relative to MTs will be reported in Annual Reports and Five-Year Periodic Evaluations at each RMS site. The Tule Subbasin Representative Monitoring Network (RMN) is described in **Chapter 4** in detail.

3.3.3. Change in Groundwater Storage Measurable Objectives and Interim Milestones [23 CCR § 354.30(a-g)]

This section defines the Tule Subbasin MOs and IMs for the reduction of groundwater storage sustainability indicator developed in accordance with 23 CCR § 354.30.

Groundwater level SMC is used as a proxy for the reduction of groundwater storage SMC and, as such, has the same MOs and IMs, as described in **Section 3.2.3**.

3.4. Sustainable Management Criteria for Degraded Water Quality

This section describes the Tule Subbasin SMC for the degraded water quality sustainability indicator developed in accordance with 23 CCR § 354. The content within this section is based on work by Thomas Harder & Co for the 2024 Coordination Agreement (**Appendix A**), including Attachment 5 (**Appendix A-5**).

Degradation of water quality is a SGMA SI with the potential to cause significant and unreasonable effects within the Tule Subbasin. The Tule Subbasin GSAs developed SMC for groundwater quality based on the evaluation of beneficial uses and users of groundwater within the Subbasin. Beneficial uses supported by groundwater in the Tule Subbasin include agricultural irrigation, municipal supply, domestic drinking water supply, and industrial uses. Because groundwater in the Upper Aquifer is commonly used for domestic supply, the sustainable management criteria emphasize protection of drinking water users who may be most vulnerable to degraded groundwater quality. Groundwater in the Lower Aquifer supports a broader range of uses, including agricultural irrigation and municipal supply, and the sustainable management criteria reflect protection of these beneficial uses and users. Within this framework, undesirable results for groundwater quality are defined as conditions in which groundwater quality degrades beyond applicable regulatory standards, resulting in significant and unreasonable impacts to beneficial uses and users, and that cannot be mitigated.

3.4.1. Undesirable Results for Degraded Water Quality

This section defines the Tule Subbasin undesirable results for the degraded water quality SI developed in accordance with 23 CCR § 354.26.

3.4.1.1 Definition of Significant and Unreasonable Effects of Degraded Water Quality [23 CCR § 354.26(a)]

Pursuant to 23 CCR § 354.26(a), undesirable results occur when significant and unreasonable effects are caused by groundwater conditions occurring within a basin. The Tule Subbasin GSAs define significant and unreasonable conditions as the occurrence of degraded groundwater quality, due to GSA-authorized groundwater management activities, that do not meet state and federal regulatory standards, resulting in impacts to beneficial uses and users that are not mitigated.

The level at which groundwater quality is considered an impact to a beneficial user is the point at which the quality exceeds the established regulatory threshold for the defined beneficial use. Impacts to beneficial uses and users become significant and unreasonable if mitigation is not provided. As such, the Tule Subbasin GSAs, with the exception of the DEID GSA, plan to adopt a DWW Mitigation Plan (**Appendix H**) to address unavoidable impacts, making them less than significant and unreasonable, including degraded groundwater quality.

Per SGMA regulations (California Water Code [Ca WC] § 10727.2(b)(4)), GSAs are not responsible for addressing significant and unreasonable conditions that were present and have not been corrected prior to January 1, 2015. Additionally, many factors can contribute to degraded groundwater quality conditions that are not attributed to GSA groundwater management activities. Therefore, Tule Subbasin GSAs are not mitigating for pre-2015 legacy groundwater quality that exceeds regulatory thresholds but rather are implementing GSPs in a manner that does not further degrade groundwater conditions where exceedances exist. Furthermore, GSAs are not mitigating impacts that are not attributed to GSA-authorized groundwater management activities.

Compared to the other Tule Subbasin GSAs, the DEID GSA holds a similar approach to defining significant and unreasonable effects, as the DEID GSA's GSP defines undesirable results for degraded water quality as follows:

> *Impacts may be deemed a significant and unreasonable undesirable result if groundwater quality is adversely impacted by GSA activities such as groundwater pumping and recharge projects, and these impacts result in groundwater no longer being generally suitable for agricultural irrigation and/or domestic use and there are not sufficient funds and resources to fulfill mitigation for individual domestic wells affected.*
>
> (INTERA, 2024)

3.4.1.2 Quantification of Undesirable Results for Degraded Water Quality [23 CCR § 354.26(b)(2)]

The undesirable result for degradation of groundwater quality is a quantitative combination of groundwater quality MT exceedances, in accordance with SGMA regulations. The Tule Subbasin GSAs have established that an undesirable result for degraded groundwater quality occurs where any single groundwater quality RMS well experiences a minimum threshold exceedance resulting from a GSA's groundwater management for two consecutive years and cannot be mitigated by a GSA.

A two-consecutive-exceedance criterion was established to confirm that groundwater quality conditions represent a sustained exceedance rather than a one-time anomaly. Because the 2024 Coordination Agreement specifies that groundwater quality samples are collected annually at each RMS well, this criterion corresponds to exceedances observed during two successive annual monitoring events. Using two consecutive exceedances provides confidence that the condition is persistent while avoiding a longer confirmation period that could allow groundwater quality to degrade further before response actions are initiated. If a groundwater quality MT is exceeded at an RMS well, the GSAs will initiate an investigation to evaluate whether the exceedance may be associated with groundwater management activities authorized under the GSP for the purpose of determining whether mitigation responsibility applies.

The ability of the Tule Subbasin GSAs to mitigate groundwater quality impacts is informed by conservatively estimating the potential mitigation costs, which are discussed in the 2024 Coordination Agreement (**Appendix A-5**, Section 6) and in **Chapter 5** of this GSP, which discusses Projects and Management Actions.

3.4.1.3 Causes of Groundwater Conditions that Could Lead to Undesirable Results [23 CCR § 354.26(b)(1)]

Pursuant to 23 CCR § 354.26(b)(1), degradation of groundwater quality can result from a variety of reasons, some of which are not a result of GSP implementation. GSA-authorized groundwater management activities that may cause the degradation of groundwater quality conditions include:

Water trading: Changes in pumping patterns within the Subbasin can potentially result from the buying and selling of groundwater rights. Therefore, such consequences should be considered when evaluating methods of improving water management.

New pumping: Increased extraction from existing wells and drilling new wells can potentially mobilize contaminants in an aquifer that would otherwise be trapped or inactive if left undisturbed.

Infiltration ponds: Surface water stored in designated ponds can seep into the ground, ultimately replenishing the aquifer through the process of surface water recharge. However, changes in geochemical composition can occur if the chemistry of the infiltrating water differs from that of native groundwater, which can impact pH levels and redox chemistry. Such changes in geochemical composition, along with water level changes, will have the most significant impact on shallow groundwater. Furthermore, groundwater can be impacted by run-off containing contaminants from urban and agricultural practices, which can potentially leach through the soil.

Injection wells: Groundwater can be recharged by injecting water directly into the aquifer through drilled injection wells, which can potentially result in altered flow patterns and increased rates of transport between different aquifer zones. Both injection wells and infiltration ponds result in similar geochemical changes to native groundwater; However, injection wells can increase mobilization rates of aquifer materials.

Agricultural Managed Aquifer Recharge (Ag-MAR): Aquifers in agricultural areas are recharged with irrigation water using the Ag-MAR method. Although the aquifer's water composition geochemistry would not be altered by the irrigation water itself, aquifer water quality may potentially be impacted if there are fertilizers or pesticides present in the irrigation water used in the recharge process. However, significant geochemical changes are unlikely to occur as native soils naturally remove contaminants as water infiltrates. Additionally, Ag-MAR is designed to be a cost-effective method for groundwater recharge.

Flood-Managed Aquifer Recharge (Flood-MAR): Rainfall and snow melts are used to recharge aquifers when implementing the Flood-MAR method. However, potential differences in geochemical and hydrological conditions between the flood waters and native groundwater may result in alterations within the aquifer. Additionally, such differences may potentially transport contaminants into the water table.

3.4.1.4 Criteria to Define Undesirable Results [23 CCR § 354.26(b)(2)]

The Tule Subbasin GSAs consider groundwater quality that does not meet state and federal regulatory standards, resulting in impacts to beneficial uses and users that are not mitigated to be significant and unreasonable effects of the degradation of groundwater quality.

MT exceedances are used to quantify undesirable results for degraded groundwater quality, per SGMA. The Tule Subbasin GSAs define undesirable results for degraded groundwater quality based on two consecutive years of MT exceedances at any single groundwater quality RMS well, due to a GSA's groundwater management activities, that cannot be mitigated by a GSA. In contrast, the DEID GSA defines an undesirable result as a single MT exceedance at an RMS well when determined to result from GSA activities (INTERA, 2024).

To identify which constituents of concern (COCs) are present and assess groundwater quality in the Tule Subbasin, GSAs reviewed groundwater quality data from several data sources and monitoring programs. First, statewide groundwater quality data are obtained from the Groundwater Ambient Monitoring and Assessment Program (GAMA), which includes trends in groundwater quality data. Second, the California State Water Resources Control Board (SWRCB) maintains a database referred to as Geotracker, which was used to identify potential sources of contamination by tracking active clean-up sites. Third, the California Integrated Water Quality System (CIWQS) stores groundwater information and water quality data collected by various agencies. The data was used to help identify trends and potential exceedances of water quality standards by basin and specific monitoring sites. Fourth, the DWR provides the SGMA Data Visualization Tool, which provides groundwater data, such as groundwater levels and water quality data, submitted by GSAs.

COCs were selected based on two factors: 1) the efficacy to determine degradation in groundwater quality by chronic lowering of groundwater levels, and 2) existing regional exceedances of COCs determined by existing data sources. COCs have been identified where exceedances of the SWRCB's Division of Drinking Water standards for Maximum Contaminant Level (MCL) may present significant risks to beneficial users and uses of groundwater from existing data sources or from a monitoring parameter to determine changes in groundwater quality over time.

For purposes of the degraded water quality SMC, the COCs for the Tule Subbasin are:

- Arsenic
- Uranium

- Hexavalent Chromium
- Total Dissolved Solids (TDS)
- Dibromo-3-chloropropane (DBCP)
- Nitrate as Nitrogen (Nitrate as N)
- 1,2,3-trichloropropane (1,2,3-TCP)

Additional constituents that the Tule Subbasin GSAs may monitor to assess degraded groundwater quality or the cause of degraded groundwater quality include:

- Tetrachloraethylene (PCE)
- Chloride
- Perchlorate
- Perfluorooctane Sulfate (PFOS)
- Perfluorooctanic Acid (PFOA)

The 2024 Coordination Agreement specifies that the seven official constituents (first list above) must be included to monitor groundwater quality in the Subbasin. However, the additional five constituents (PCE, Chloride, Perchlorate, PFOS, and PFOA) may be monitored as supplemental data for indicating potential impacts to groundwater. However, the DEID GSA follows a separate monitoring plan outlined in its GSP (INTERA, 2024) that includes the following ten COCs within the DEID Plan Area:

- 1,2-DBCP
- 1,2,3-TCP
- Arsenic
- Hexavalent Chromium
- Iron
- Manganese
- Nitrate
- Nitrite
- TDS
- Uranium

As previously discussed in the Groundwater Conditions section (**Section 2.3**), each of these constituents is described in detail as follows:

Arsenic (As): Arsenic is a naturally occurring constituent that is present in rocks and minerals, and it can dissolve into groundwater as rocks weather. Other known sources of arsenic contamination in groundwater include industrial activities and former agricultural use; however, use of arsenic compounds has been phased out in California. Additionally, naturally occurring arsenic in aquifer materials can be drawn as a result of overpumping groundwater. Arsenic has an MCL of 10 parts per billion (ppb), and exceedances have been detected in municipal water systems and private wells within the Tule Subbasin. Arsenic MCL exceedances have been detected just outside of the western boundary of the contiguous TBID Plan Area (see **Figure 2-37**).

Uranium (U): Uranium is a naturally occurring radioactive element that is present in soil and rocks, which can contaminate groundwater. In addition to natural sources from geologic formations, industrial activities and agricultural practices are also known sources of uranium contamination in groundwater. Naturally occurring uranium in aquifer materials can be drawn as a result of overpumping groundwater. Uranium has an MCL of 30 ppb or 20 picocuries per liter (pCi/L). Uranium exceedances have been detected in municipal water systems and private wells within the Tule Subbasin, including within the TBID Plan Area (see **Figure 2-37**).

Hexavalent Chromium (Cr[VI]): Hexavalent chromium is a form of elemental chromium, which is a naturally occurring element present in soil and rocks. Hexavalent chromium contamination in groundwater can result from natural sources, such as weathering and erosion of rocks, as well as from industrial activities that include chromium plating, wood treatment, and chemical manufacturing. Improper disposal of chromium materials in landfills, leaching into groundwater, and the generation of hexavalent chromium as a byproduct during some wastewater treatment processes are additional sources of groundwater contamination. Hexavalent chromium has an MCL of 10 ppb. Hexavalent chromium exceedances have been detected in municipal water systems within the Tule Subbasin (see **Figure 2-37**).

Total Dissolved Solids (TDS): TDS is a measurement of the total amount of inorganic and organic substances in water. Common natural sources of TDS include mineral dissolution from soil and rocks, and cations contribute to high TDS values in groundwater. In addition to natural sources, TDS in groundwater can result from urban runoff and agricultural activities. TDS has a Secondary MCL of 1,000 ppm. High TDS can be an indication of impacted groundwater; however, exceedances of TDS have generally been low in the Tule Subbasin. Based on the groundwater quality data evaluated to date, no exceedances of the MCL for TDS have been identified within the TBID Plan Area.

Dibromo-3-chloropropane (DBCP): DBCP is a halogenated hydrocarbon that has historically been used as a soil fumigant to control nematodes. It was banned in the United States in 1979; however, it is considered a legacy contamination issue that remains in aquifer systems. DBCP detections in the Tule Subbasin predate SGMA and are, therefore, an issue that is considered by the State Regional Water Quality Control Board, rather than identified as a GSA issue. Overpumping groundwater can increase mobility and cause existing DBCP contamination plumes to spread, potentially increasing impacts on groundwater. DBCP has an MCL of 0.2 ppb. DBCP exceedances have been detected in municipal and domestic supply wells within the Tule Subbasin. Based on the groundwater quality data evaluated to date, no exceedances of the MCL for DBCP have been identified within the TBID Plan Area during the timeframe of 2005 to 2025.

Nitrate as N: Nitrate is a form of nitrogen in groundwater. The primary source of nitrate contamination in groundwater is from agricultural fertilizers, while secondary sources include septic systems and animal waste. Overpumping groundwater can draw contaminants from shallow water or soil into the aquifer. Nitrates in groundwater have an MCL of 10 ppm, and exceedances have been detected throughout the Tule Subbasin, including within the TBID Plan Area (see **Figure 2-37**).

1,2,3- Trichloropropane (1,2,3-TCP): 1,2,3-TCP is a synthetic chlorinated hydrocarbon that has been historically used as a soil fumigant in agricultural practices, as well as a solvent and extracting agent in industrial activities. It was banned in soil fumigants and was added to the SWRCB's list of carcinogens in 1992 (Prop 65). However, 1,2,3-TCP is still currently used as a chemical intermediate in the production, synthesis, and cross-linking agent of other chemicals. 1,2,3-TCP contamination can also result from improper disposal of 1,2,3-TCP materials in landfills. Overpumping groundwater can increase the mobilization of 1,2,3-TCP already present in the subsurface, which can expand zones of influence within the aquifer. 1,2,3-TCP has an MCL of 5 parts per trillion (ppt), and exceedances have been detected in municipal and domestic wells within the Tule Subbasin. Based on the groundwater quality data evaluated to date, no exceedances of the MCL for 1,2,3-TCP have been identified within the TBID Plan Area during the timeframe of 2005 to 2025.

Tetrachloroethene (PCE): PCE is a synthetic chlorinated solvent that is used as a degreaser for industrial activities and purposes. Primary sources of contamination include storage tank leaks and improper disposal of PCE waste. Overpumping of groundwater can cause an increase in mobility of PCE already present in the subsurface, which can expand zones of influence within the aquifer. PCE has an MCL of 5 ppb, and exceedances have been detected in municipal water systems within the Tule Subbasin. Based on the groundwater quality data evaluated to date, no exceedances of the MCL for PCE have been identified within the TBID Plan Area.

Chloride (Cl): Chloride is derived from chlorine, and it is a negatively charged ion present in dissolved groundwater. Chloride can occur naturally in groundwater when chloride minerals (i.e., Halite and Sylvite) are dissolved in water. Exceedances of chloride can be caused by municipal and industrial wastewater discharges. Additionally, saline water and certain fertilizers used for agricultural practices can increase chloride levels in groundwater. Overpumping groundwater can increase mobilization and concentrations of chloride in groundwater under certain geologic features. Chloride has a Secondary MCL of 500 ppm, and exceedances have been detected in small concentrations within the Tule Subbasin. Based on the groundwater quality data evaluated to date, no exceedances of the Secondary MCL for Chloride have been identified within the TBID Plan Area.

Perchlorate: Perchlorate is a negatively charged ion; however, it is not used as a measurement of groundwater quality or for determining water balance in the same way as Sulfate, Chloride, Nitrate, and Bicarbonate. It is a manufactured constituent that is used in industrial processes and explosives. Primary sources of contamination from perchlorate in groundwater include improper disposal of perchlorate in landfills and spills during transportation of perchlorate materials. Overpumping groundwater can potentially draw contaminated shallow water into the aquifer, which may potentially contain perchlorate. Perchlorate has an MCL of 6 ppb, and exceedances have been detected in the Tule Subbasin. Based on the groundwater quality data evaluated to date, no exceedances of the MCL for Perchlorate have been identified within the TBID Plan Area.

Per-and polyfluoroalkyl Substances (PFAS): PFAS are a group of synthetic chemicals composed of carbon chains bonded to fluorine atoms, which makes them highly resistant to chemical and biological degradation. Because of these properties, PFAS have been widely used in consumer and industrial products such as non-stick cookware, stain-resistant fabrics, carpets, and firefighting foams. PFAS contamination in groundwater can occur from the use of aqueous film-forming foams (AFFF) during firefighting or training activities, disposal of PFAS-containing materials in landfills, and releases associated with industrial or wastewater treatment processes. In April 2024, the U.S. Environmental Protection Agency established National Primary Drinking Water Regulations for six PFAS compounds with MCLs ranging from 4 to 10 parts per trillion, depending on the compound. As additional monitoring data become available, the Tule Subbasin GSAs will evaluate the occurrence of PFAS in groundwater and assess whether these compounds are affecting groundwater quality within the Subbasin (**Appendix A-5**, Section 3.1.1).

As discussed in **Section 2.3.9**, within the TBID Plan Area, two COCs have been detected that exceed the MCLs for drinking water beneficial uses based on data from 2005 to 2025: nitrate as nitrogen (NO_3^- as N or Nitrate as N) and uranium (SWRCB, 2025a).

3.4.1.5 Potential Effects on Beneficial Uses and Users [23 CCR § 354.26(b)(3)]

Beneficial uses and users within the Tule Subbasin identified for groundwater quality include the following:

Municipal and Domestic Water Supply: Groundwater that is used for the purposes of drinking, cooking, hygiene, and sanitation in homes, businesses, and institutions. Individual domestic private well owners, as well as cities and towns connected to water systems, are considered the beneficial users.

Agricultural Irrigation: Groundwater that is used to irrigate crops within the Tule Subbasin. Beneficial users include farms and landowners with private agricultural wells, as well as entities that manage and distribute water for agricultural use (i.e., irrigation districts).

Industrial Water Supply: Groundwater that is used for industrial processes, where the industrial facilities are considered the beneficial users.

Ca WC § 106.3 states "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." Drinking water is of particular importance as there is the potential for risks to human health associated with the degradation of groundwater quality. Well types categorized as drinking water in DWR's OSWCR database include the following:

- Domestic
- Public
- Water Supply
- Water Supply Domestic
- Water Supply Public

The location and density of wells for the lower and upper aquifers within the Tule Subbasin, according to data provided by the DWR's OSWCR database, are depicted in **Appendix A-5** Figures 1a and 1b for the Upper and Lower Aquifer, respectively. In the Lower Aquifer, agricultural and drinking water wells are considered, whereas in the Upper Aquifer, drinking water wells (public and domestic wells) are prioritized.

Groundwater quality data collected between 2005 and 2023 were evaluated to identify areas within the Subbasin where groundwater conditions have historically been degraded or may be susceptible to future degradation that could adversely affect beneficial uses and users. The results of this evaluation are being used to inform Tule Subbasin GSA decision-making related to groundwater quality management, including the following:

1 Identifying constituents of concern that may potentially affect beneficial uses and users.
2 Developing a representative monitoring network that provides adequate spatial and temporal representation of groundwater quality conditions to protect beneficial uses and users.
3 Establishing sustainable management criteria at Representative Monitoring Site (RMS) wells.
4 Identifying and implementing PMAs to address groundwater quality concerns.

The most vulnerable beneficial users to degraded groundwater quality are domestic well owners. Therefore, the focus of the analysis was to evaluate groundwater quality conditions relative to state and federal drinking water standards. Treatment of such systems would require additional expense to achieve suitable water sources. The Tule Subbasin GSAs, with the exception of the DEID GSA, plan to adopt and implement the DWW Mitigation Plan (**Appendix H**) and further described in **Chapter 5**, which discusses PMAs.

3.4.2. Minimum Thresholds for Degraded Water Quality

This section defines the Tule Subbasin minimum thresholds for the degraded water quality sustainability indicator developed in accordance with 23 CCR § 354.28.

MTs for degraded groundwater quality were established with consideration of applicable State water quality standards, MCLs, and Water Quality Objectives (WQOs) relevant to beneficial uses and users within the Tule Subbasin, and historic conditions. Consistent with SGMA, sustainable management criteria are intended to avoid significant and unreasonable degradation of water quality caused by groundwater management activities. Historical groundwater quality data were therefore considered when establishing minimum thresholds so that the thresholds reflect existing groundwater quality conditions while maintaining protection of those beneficial uses and users.

MTs for degraded groundwater quality described herein reflect the approach adopted under the 2024 Coordination Agreement, which considers both applicable water quality standards and pre-SGMA groundwater quality conditions. In contrast, the DEID GSA established separate sustainable management criteria in its GSP, where MTs at each RMS are based on applicable regulatory limits for identified beneficial uses and users and do not incorporate historical groundwater quality conditions (INTERA, 2024).

3.4.2.1 Criteria Used to Establish Minimum Thresholds [23 CCR § 354.28(b)(1)]

The Tule Subbasin GSAs, except the DEID GSA, set MTs for degraded water quality based on the following methodology:

- For groundwater quality RMS wells that had 2005-2014 COC baseline data, the minimum threshold was set at the greater of:
    1. Drinking water MCL or agricultural Water Quality Objective (WQO), or
    2. Maximum 2005-2014 concentration.

  When a COC has both a drinking water MCL (or secondary MCL) and an agricultural WQO, the more restrictive of the two standards is adopted as the MT when a regulatory standard is used to establish the MT. For example, the agricultural MT for TDS was based on the agricultural WQO (750 mg/L) because this value is lower than its secondary MCL of 1,000 mg/L.

- For wells with insufficient 2005-2014 COC data, 2005-2023 data is used to determine the maximum baseline concentration at the groundwater quality RMS wells.
- For wells with insufficient 2005-2023 COC data, the MT is set at the greater of the following:
    1. The average 2005-2014 baseline concentration in the applicable Public Supply Assessment Grid (PSAG); if insufficient 2005-2014 PSAG data, the average 2005-2013 baseline concentration in the applicable PSAG was used, or
    2. The drinking water standard MCL.

As indicated above, in the case that COC data has not been historically available for RMS wells, the regional baseline groundwater quality characteristics for assigning MTs at RMS wells are determined using the PSAG. The USGS designed the PSAG as part of the Groundwater Ambient Monitoring and Assessment – Priority Basin Project (GAMA PBP Study), which focused on identifying areas where groundwater was not meeting drinking water standards and on monitoring and evaluating changes in groundwater over time. The State of California was subdivided into study units, collectively to form the PSAG grid system, which was designed to help identify quality, trends, and influences of impacted groundwater. Baseline concentrations have been assigned to each PSAG region throughout the Tule Subbasin, which are represented in **Figure 3-7** and **Table 3-5**.

Pursuant to the above, the groundwater quality standards (i.e., drinking water limits) considered when setting degraded groundwater quality MTs are outlined in **Table 3-6**.

The Upper Aquifer and Lower Aquifer groundwater quality MTs, along with other SMC values, at each RMS well in the Tule Subbasin are shown in **Tables 3-7** and **3-8**, respectively. The information contained in these tables is based on information available at this time, including the 2024 Coordination Agreement, other Tule Subbasin GSPs, and the draft WY2025 Annual Report for the Tule Subbasin. Groundwater quality RMS well locations for the Upper Aquifer and Lower Aquifer within the Tule Subbasin are depicted in **Figure 3-8** and **Figure 3-9**, respectively. The RMS wells contained in **Tables 3-7** and **3-8** differ from those shown in **Figures 3-8** and **3-9**, because the data sources differ as described above.

Within the TBID Plan Area, there are currently two water quality RMS wells, which are both composite wells (Well IDs: Tule_E0037_RMS and Tule_E0034_RMS) and are represented in **Table 3-8** and **Figure 3-9**. As both wells are composite, there are no RMS wells that are designated solely as upper and lower aquifers within the TBID Plan Area. Applicable degraded water quality sustainable management criteria based on RMS data for the TBID Plan Area will be consistent with SMCs of Lower Aquifer wells throughout the Subbasin (**Table 3-8**)

3.4.2.2 Relationship to Other Sustainability Indicators [23 CCR § 354.28(b)(2)]

Groundwater quality is directly related to the sustainability indicators for change in groundwater storage and lowering of groundwater levels (see **Sections 3.2** and **3.3** above).

The relationship between groundwater quality MTs and land subsidence MTs has not been identified. Although land subsidence is not anticipated to cause significant and unreasonable degradation of water quality, the Tule Subbasin GSAs are coordinating with other local agencies, non-profit organizations, and landowners to monitor groundwater conditions and evaluate whether subsidence may affect groundwater quality.

Similarly, because the location and extent of interconnected surface water within the Tule Subbasin have not yet been fully identified, a relationship between groundwater quality and the interconnected surface water sustainability indicator has not been established. The Tule Subbasin GSAs are coordinating with other local agencies, non-profit organizations, and landowners to monitor groundwater conditions and evaluate whether changes to interconnected surface water conditions may influence groundwater quality.

3.4.2.3 Relationship to Adjacent Basins [23 CCR § 354.28(b)(3)]

The Tule Subbasin GSAs considered State water quality MCLs and WQOs for the beneficial uses and users within the Central Valley of California in the establishment of degraded water quality SMC. Implementation of the PMAs by the Tule Subbasin GSAs that may impact groundwater quality will be consistent with the State requirements. Therefore, the adjacent basins should not be adversely impacted.

3.4.2.4 Potential Effects of Minimum Thresholds on Beneficial Uses and Users [23 CCR § 354.28(b)(4)]

The groundwater quality MTs in the Tule Subbasin are not anticipated to cause undesirable results for beneficial uses and users. However, in the case that a beneficial use or user's groundwater quality is impacted by groundwater management actions of a GSA, the DWW Mitigation Plan (**Appendix H**) would provide for full mitigation of wells experiencing qualifying impacts.

3.4.2.5 Relationship with Federal, State, and Local Standards [23 CCR § 354.28(b)(5)]

Federal, State, and Local groundwater quality regulatory standards for drinking water (MCLs/SMCLs) and agricultural (WQOs) beneficial uses and users were considered in the establishment of the groundwater quality MTs. Groundwater quality RMS wells have been designated as representative of both drinking water and agricultural beneficial uses based on criteria discussed in **Section 3.4.2.1**.

3.4.2.6 Measurement of Groundwater Quality Relative to Minimum Thresholds [23 CCR § 354.28(b)(6)]

In the Tule Subbasin, groundwater quality conditions are measured at RMS wells. The RMN well selection and sampling protocols are described in **Chapter 4**. Groundwater quality results and status related to the MTs will be reported in Annual Reports and Five-Year Periodic Evaluations.

Based on groundwater quality evaluations to date, two composite groundwater quality RMS wells have been identified within the TBID Plan Area boundaries. The TBID GSA will continue to evaluate groundwater quality data to determine whether the establishment of additional groundwater quality RMS wells specific to the Upper and Lower Aquifers is warranted, rather than composite wells.

3.4.3. Measurable Objectives and Interim Milestones for Degraded Water Quality

This section defines the Tule Subbasin measurable objectives and interim milestones for the degraded water quality sustainability indicator developed in accordance with 23 CCR § 354.30.

The Tule Subbasin GSAs set measurable objectives and interim milestones as the greater of the following:

1. 75 percent of the minimum threshold, or
2. Maximum 2005-2014 concentration.

COC regulatory standards considered in the establishment of SMC for groundwater quality RMS wells in the Upper and Lower Aquifer are outlined in **Table 3-6**.

In contrast, the DEID GSA established the degraded groundwater quality MOs at the same threshold as DEID GSA's MTs, based on the regulatory limits (INTERA, 2024).

For each groundwater quality RMS Upper and Lower Aquifer well, the degraded groundwater quality MOs, IMs, and MTs are provided in **Tables 3-7** and **3-8**.

The Tule Subbasin GSAs have established MOs and IMs at each groundwater quality RMS well for each of the seven official COCs: Nitrate as N, DCBP, Arsenic, 1,2,3-TCP, Hexavalent Chromium, Uranium, and TDS. It is recognized that some of the MTs in **Tables 3-7** and **3-8** list values that are greater than the MCL for a designated COC. In these areas, the MTs are based on historic data, as described above.

3.5. Sustainable Management Criteria for Land Subsidence

This section describes the Tule Subbasin land subsidence SMC developed in accordance with 23 CCR § 354. The content within this section is based on work by Thomas Harder & Co for the 2024 Coordination Agreement (**Appendix A**), including Attachment 6 (**Appendix A-6**).

Land subsidence is a SGMA sustainability indicator with the potential to cause significant and unreasonable effects to land uses and infrastructure within the Tule Subbasin. Potentially affected features include surface water conveyance facilities, pipelines, flood control infrastructure, wells, and other critical infrastructure.

Development of land subsidence SMC in the Tule Subbasin involved a coordinated and iterative process among GSAs, technical consultants, agricultural stakeholders, and non- governmental organizations, with input and feedback from the California State Water Resources Control Board staff. This process included evaluation of historical subsidence conditions, infrastructure vulnerability, and coordination with ongoing subsidence management efforts to establish criteria that are protective of beneficial uses and users while remaining feasible to implement under SGMA.

This section describes the definition of undesirable results, MTs, MOs, and IMs for land subsidence, along with the methods used to evaluate subsidence conditions across the Subbasin.

3.5.1. Undesirable Results for Land Subsidence

3.5.1.1 Definition of Significant and Unreasonable Effects [23 CCR § 354.26(a)]

Pursuant to 23 CCR § 354.26(a), undesirable results occur when significant and unreasonable effects are caused by groundwater conditions occurring within a basin. For the land subsidence SI, the Tule Subbasin GSAs define significant and unreasonable conditions as the occurrence of land subsidence that substantially interferes with surface land uses.

Land subsidence occurring in the Tule Subbasin during the 2020-2040 transition period is considered significant and unreasonable if it results in damage to, or loss of functionality of, a structure or facility such that it cannot reasonably continue to operate without repair or replacement. The determination of whether such damage or loss of functionality has occurred and whether it constitutes a significant and unreasonable effect will be made by the GSA in whose jurisdiction the structure or facility is located, or where a beneficial use is impacted.

Because the effects of land subsidence depend on the type of structure or land use affected, the Tule Subbasin GSAs define undesirable results based on specific land use and infrastructure categories. Undesirable results related to land subsidence occur when these impacts substantially interfere with surface land uses.

The criteria for determining significant and unreasonable effects of land subsidence for each infrastructure category are as follows:

Friant-Kern Canal

*Land subsidence that occurs along the FKC during the transition period from 2020 to 2040 will be considered significant and unreasonable if damage and/or loss of functionality of the FKC, including the Middle Reach Capacity Correction Project [see **Section 3.5.1.4** of this GSP], occurs to the extent that the FKC cannot reasonably operate without either repair or replacement, as determined by the GSA where the FKC is located or where beneficial use is impacted due to the damage and/or loss of functionality of the FKC.*

Local Canals

Loss of delivery capacity or damage to canals that cannot be mitigated by the canal owners. This level of damage is not anticipated at the land subsidence goals for other types of infrastructure in the subbasin and is, therefore, not the limiting factor for setting minimum threshold criteria.

Water Delivery Pipelines

Loss of pipeline delivery capacity or exceedance of pipeline pressure ratings, which cannot be mitigated.

In and around the Delano-Earlimart Irrigation District (DEID) GSA, any additional land subsidence after 2023 is considered significant and unreasonable (see Section 6.3 of the Tule Subbasin Coordination Agreement).

For other areas of the Tule Subbasin, pipeline damage is not anticipated at the land subsidence goals for other types of infrastructure and is, therefore, not the limiting factor for setting minimum threshold criteria.

Flood Control

Loss of land uses or function of a structure or facility from flooding caused by land subsidence occurring after 2015.

Along the Tule River west of Highway 99, slope analysis has shown that limiting the cumulative land subsidence, relative to 2020, to seven (7) feet avoids causing the flattening of the channel slope that can lead to flooding (see Section 6.4.1 of the Tule Subbasin Coordination Agreement). Further, the Lower Tule River Irrigation District (LTRID) GSA has determined that levee improvements needed to accommodate land subsidence exceeding seven (7) feet is significant and unreasonable.

In the western part of the Tule Subbasin, analysis of potential flooding impacts on railroads and roads from seven (7) feet of additional land subsidence (relative to 2020) indicates that flooding is not forecast to be worse than what would have occurred prior to 2015 (see Section 6.4.2 of the Tule Subbasin Coordination Agreement).

Along Deer Creek west of Highway 99, slope analysis has shown that limiting cumulative land subsidence relative to 2020 to five (5) feet avoids a flattening of the channel slope that could *worsen flooding that already occurs in this area (see Section 6.4.3 of the Tule Subbasin Coordination Agreement).*

Wells

The point at which well damage from land subsidence prevents the use of the well and requires repair or replacement that cannot be mitigated. For deeper wells equipped with compression sections, this criterion is 14 feet (see Section 6.5 of the Tule Subbasin Coordination Agreement). For all other wells, damage attributable to land subsidence is addressed through the Tule Subbasin Mitigation Plan.

Other Infrastructure

The point at which damage and/or loss of functionality of a structure or facility occurs to the extent that the structure or facility cannot function or operate without repair or replacement that cannot be mitigated. Damage attributable to land subsidence is addressed through the Tule Subbasin Mitigation Plan.

(**Appendix A**, Section 4.3.4.2)

A summary of land uses and infrastructure vulnerable to land subsidence, as well as criteria for defining significant and unreasonable effects associated with each, is outlined in **Table 3-9**.

The DEID GSA has defined an undesirable result for its GSA as "a single exceedance of a land subsidence MT (rate and cumulative subsidence since 2023) at any RMS site" (INTERA, 2024). Additionally, DEID has adopted the definition of significant and unreasonable impacts in the Tule Subbasin as: "the tipping point at which groundwater conditions across the Tule Subbasin cause impacts to beneficial users, uses, and property interests that cannot be managed or mitigated" (INTERA, 2024).

3.5.1.2 Causes of Undesirable Results [23 CCR § 354.26(b)(1)]

Land subsidence within the Tule Subbasin correlates with declining groundwater levels caused by prolonged pumping, particularly during dry years and seasons of below-normal precipitation and limited surface water supplies. Groundwater pumping patterns and area-specific hydrologic conditions vary across the Tule Subbasin; therefore, rates and extents of land subsidence differ by location. If groundwater levels stabilize, the impacts from residual subsidence from past overdraft may continue to occur for years after groundwater level declines slow or cease.

Since 1987, the chronic lowering of groundwater levels in the Tule Subbasin has contributed to historical land subsidence. If groundwater level decline continues over the transitional period before 2040, land subsidence could potentially impact the following systems and infrastructure in the Tule Subbasin: canals, water delivery pipelines, flood control facilities, wells, roads, buildings, and other types of pipelines.

In the case of TBID, land subsidence has resulted from groundwater pumping from neighboring GSAs, as previously discussed in this GSP. Areas with the lowest groundwater elevation and the greatest amount of subsidence correspond to the areas with the most groundwater pumping. Due to the relatively small areal extent of the TBID Plan Area, as well as its historic pumping that is less than its recharge within the TBID Plan Area, propagation of groundwater pumping-induced subsidence from GSAs west of TBID and north of the non-contiguous portion of the TBID Plan Area can be misinterpreted as subsidence caused by TBID.

3.5.1.3 Criteria to Define Undesirable Results [23 CCR § 354.26(b)(2)]

Per 23 CCR § 354.26(b)(2), the description of undesirable results must identify the criteria used to determine when and where groundwater conditions would result in undesirable results, including a quantitative description of the combination of minimum threshold exceedances that represent significant and unreasonable effects within the basin.

As described above, undesirable results related to land subsidence occur when land subsidence substantially interferes with surface land uses. Because the potential for such interference depends on the type of land use and infrastructure affected, the Tule Subbasin GSAs define significant and unreasonable effects using infrastructure-specific criteria, as summarized in **Table 3-9** above. These criteria describe the conditions under which subsidence would result in damage to, or loss of functionality of, structures and facilities.

Within this framework, cumulative subsidence measured at RMS provides the basis for the quantitative evaluation of undesirable results. To avoid significant and unreasonable impacts to land uses throughout the Tule Subbasin, including within the TBID Plan Area, an undesirable result is defined as follows:

> *Ongoing land subsidence after 2020 that exceeds the cumulative subsidence minimum threshold at any given RMS Site that cannot be attributable to elastic conditions or measurement error is an undesirable result.*
>
> (**Appendix A**, Section 4.3.4.2)

While this definition of undesirable results applies to GSPs following the 2024 Coordination Agreement, DEID abides by a separate definition described in its GSP, which states, "an UR is defined as a single exceedance of a land subsidence MT (rate and cumulative subsidence since 2023) at any RMS site" (INTERA, 2024).

3.5.1.4 Potential Effects of Undesirable Results on Beneficial Uses and Users [23 CCR § 354.26(b)(3)]

Land subsidence within the Tule Subbasin has the potential to affect a range of land uses and infrastructure, including surface water conveyance canals, pipelines, flood control facilities, wells, and other infrastructure. The most commonly observed impacts occur in surface water conveyance canals, where the elevation of a segment declines faster than that of other segments, creating sags that reduce conveyance capacity and limit the canal's ability to deliver water downstream. Historical subsidence in the eastern portion of the Subbasin has resulted in reduced flow capacity in the Friant-Kern Canal, adversely affecting downstream water users and water right holders.

As a result of these impacts, beneficial users of groundwater and surface water may incur financial costs associated with repairing damaged infrastructure, restoring functionality, and implementing alternative measures to maintain water delivery and other services while repairs are completed.

A subsidence management approach focused on avoiding impacts to land uses and infrastructure is described in **Chapter 5**. The Tule Subbasin GSAs, with the exception of the DEID GSA, are establishing a DWW Mitigation Plan (**Appendix A-8**) to address impacts to drinking water wells. The DWW Mitigation Plan will provide a process for affected parties to submit claims and includes technical assistance and mitigation funding for impacts associated with subsidence attributable to GSA activities. The GSAs will conduct outreach with local utilities and infrastructure agencies to support awareness and implementation of the DWW Mitigation Plan.

In addition, the TBID GSA is coordinating with other eastern Tule Subbasin GSAs on implementation of the Eastern Tule GSA Land Subsidence Monitoring Plan (LS Monitoring Plan) and with Tule Subbasin GSAs adjacent to or near the Friant-Kern Canal on development of a complementary Friant-Kern Canal Land Subsidence Management Plan to avoid impacts to the FKC.

The DWW Mitigation Plan, FKC LS Monitoring Plan, and the Friant-Kern Canal Land Subsidence Management Plan, along with other subsidence-related projects and management actions, are described in **Chapter 5**. The TBID GSA, in coordination with other Tule Subbasin GSAs, will implement these efforts to reduce land subsidence rates during the 2020-2040 transition period and to minimize land subsidence thereafter, with the objective of preventing significant and unreasonable impacts to structures and facilities, including critical infrastructure such as the Friant-Kern Canal.

3.5.2. Minimum Thresholds for Land Subsidence

This section defines the Tule Subbasin MTs for the land subsidence SI developed in accordance with 23 CCR § 354.28.

3.5.2.1 Criteria Used to Establish Minimum Thresholds [23 CCR § 354.28(b)(1)]

Cumulative land subsidence MTs have been established across the Tule Subbasin to avoid undesirable results. Because different land uses and infrastructure have varying tolerance for land subsidence, the Tule Subbasin GSAs established cumulative land subsidence MTs based on separate methodologies for each land use or infrastructure type, consistent with the infrastructure-specific criteria for defining undesirable results summarized in **Table 3-9**. In areas with multiple land uses or infrastructure types, the cumulative land subsidence MTs are set to be protective of the most vulnerable land use or infrastructure.

The development of cumulative land subsidence MTs involved an iterative evaluation process in which multiple threshold distributions across the Subbasin were assessed to identify conditions that would avoid significant and unreasonable effects on infrastructure and land uses, including local canals and flood-prone areas. Through this process, MTs were refined until a distribution was identified that both prevented undesirable results and was acceptable to the GSAs and stakeholders. Exceptions to this approach include areas along the Friant-Kern Canal, where MTs are based on separate analyses and established agreements specific to the Friant-Kern Canal Subsidence Management Area, and within the DEID Plan Area, where studies indicate that existing pipeline infrastructure cannot accommodate additional subsidence. **Figure 3-10** illustrates the MT distribution established through this iterative process.

Figure 3-10 depicts the spatial distribution of cumulative land subsidence MTs and associated RMS locations, illustrating the variability of MTs across the Subbasin. In general, MTs increase from southeast to northwest, with MTs in the northwestern portion of the Subbasin ranging from approximately five feet to seven feet, while MTs in the eastern and south-central portions are generally limited to three feet or less.

Within the TBID Plan Area, the western non-contiguous portion of the TBID Plan Area, which incorporates areas surrounding the FKC, has a cumulative land subsidence MT of two feet to three feet. The contiguous portion of the GSA has established MTs of one foot to two feet in the western portion and less than one foot in the greater eastern portion. Similarly, the easternmost non-contiguous portion, adjacent to the Tea Pot Dome GSA, has an MT of less than one foot of land subsidence (**Figure 3-10**).

Sections 3.5.2.1.1 through **3.5.2.1.6** describe the methodology used to establish cumulative land subsidence MTs for each land use and infrastructure category.

The MTs described above apply to GSPs following the 2024 Coordination Agreement. The DEID GSA GSP established MTs at each RMS to reflect zero additional subsidence after 2023, and MTs are set to 0 feet per year post-2024 (INTERA, 2024).

3.5.2.1.1 Friant-Kern Canal Minimum Thresholds Criteria

Groundwater flow model projections indicate that up to approximately three feet of additional land subsidence could occur along portions of the FKC during the 2020-2040 transition period. This projected level of subsidence was used, in coordination with the Friant Water Authority (FWA) staff and its consultants, to inform engineering design modifications intended to restore the canal's conveyance capacity to its original condition while accommodating up to this amount of additional subsidence. Subsidence exceeding three feet along the FKC may constitute an undesirable result because it would surpass what the engineering design could accommodate and what the parties to the FWA/ETGSA/Pixley GSA settlement agreement agreed to mitigate. However, as of August 2024, restoration of the FKC was incomplete, and the extent to which the project will achieve the intended design flow has not yet been fully demonstrated.

3.5.2.1.2 Local Canals Minimum Thresholds Criteria

Changes in land surface gradients or localized variations in elevation can affect the conveyance capacity of local canals. Based on an analysis of potential slope changes under the Tule Subbasin cumulative subsidence MTs and updated data, limiting subsidence to the revised MTs (**Figure 3-10**) is expected to prevent significant and unreasonable impacts to local canals.

A detailed analysis of the criteria for determining the MTs for local canals is in Section 6.2 of **Appendix A-6**.

3.5.2.1.3 Water Delivery Pipelines Minimum Thresholds Criteria

The potential for pipeline damage from land subsidence varies across the Tule Subbasin. Based on input from cities and irrigation districts with pipeline infrastructure in the northeastern and eastern portions of the Subbasin, including the City of Porterville, Porterville Irrigation District, Saucelito Irrigation District, and Terra Bella Irrigation District, no impacts to pipelines or water delivery capacity attributable to subsidence have been observed in these areas. Accordingly, pipeline-related constraints were not a limiting factor in establishing land subsidence MTs for these portions of the Subbasin.

In contrast, the DEID GSA has indicated that additional subsidence beyond conditions observed after 2023 could adversely affect its pipeline system. As a result, cumulative subsidence MTs within the DEID Plan Area are limited to the amount of subsidence that occurred between 2020 and 2024. The GSAs also recognize that groundwater pumping outside the DEID boundary may contribute to subsidence within the DEID Plan Area and have identified a preliminary perimeter buffer zone.

The purpose of this buffer zone is to limit subsidence in areas adjacent to DEID to protect its pipeline infrastructure. The extent of the buffer zone is preliminary and is subject to refinement, as additional data collection and analysis are needed to better define the area of influence and the projects and management actions necessary to protect DEID pipelines. In the interim, the GSAs are coordinating to increase the frequency of subsidence monitoring and to implement a land subsidence management plan to avoid impacts to DEID pipelines until these analyses are completed (see Section 8 of **Appendix A-6**).

3.5.2.1.4 Flood Control Minimum Thresholds Criteria

Localized changes in land surface elevation resulting from subsidence can alter drainage patterns and increase flood risk to infrastructure or other land uses. Portions of the Tule Subbasin near major river and stream systems, including the Tule River, Deer Creek, and White River, as well as areas within the historic Tulare Lakebed, have experienced periodic flooding during above-normal precipitation events.

To evaluate potential future risks, the Tule Subbasin GSAs analyzed the effects of both historical subsidence (since 2015) and projected subsidence that could occur before 2040 on flood-prone areas, including existing flood control infrastructure such as levees. The results of this evaluation were used to inform the development of subsidence MTs intended to avoid undesirable results along the Tule River, Deer Creek, and White River. Additional details regarding the analysis supporting these thresholds are provided in Section 6.4 of **Appendix A-6**.

3.5.2.1.5 Wells Minimum Thresholds Criteria

Deeper wells in the Tule Subbasin are more susceptible to damage from land subsidence than shallower wells. Available information indicates that shallow domestic wells have not required mitigation due to subsidence impacts (Self Help Enterprises, 2024). While well casing damage can occur in deeper wells, the relationship between the magnitude of subsidence and well damage is not well documented.

Many wells constructed in the past 20 years include compression sections in their casing designed to accommodate subsidence. Information from regional well casing suppliers (Roscoe Moss) indicates that each compression section can accommodate up to 14 feet of subsidence, and some wells include multiple compression sections.

Based on this information, potential impacts to wells were not considered a limiting factor in establishing cumulative land subsidence MTs. However, well owners in the Tule Subbasin may submit claims for drinking water impacts, which will be addressed in accordance with the DWW Mitigation Plan (**Appendix H**).

3.5.2.1.6 Other Infrastructure Minimum Thresholds Criteria

To date, no damage to other infrastructure, including state highways, railroads, gas pipelines, roads, bridges, buildings, or electrical systems, has been attributed to land subsidence within the Tule Subbasin (see Section 3.6 of **Appendix A-6**).

The Tule Subbasin GSAs are establishing a DWW Mitigation Plan to address potential impacts to drinking water wells. Under this plan, well owners may submit claims for evaluation. The GSAs will conduct outreach to local utility and infrastructure agencies to increase awareness of the DWW Mitigation Plan, including eligibility, application procedures, and available benefits. The GSAs will also establish communication channels to regularly coordinate with these entities and identify any subsidence-related impacts to infrastructure that may occur during GSP implementation.

Additional information regarding cumulative land subsidence minimum thresholds as it pertains to other infrastructure is discussed in detail in Section 3.6 of **Appendix A-6**.

3.5.2.2 Relationship to Other Sustainability Indicators [23 CCR § 354.28(b)(2)]

Land subsidence is directly correlated to the sustainability indicators for lowered groundwater levels and reductions in groundwater storage. As groundwater levels decline below pre-consolidation conditions, particularly in the Lower Aquifer where compressible silt and clay layers are present, reductions in pore pressure result in compaction of these fine-grained sediments, leading to land subsidence. Seasonal fluctuations and long-term groundwater level declines due to Lower Aquifer pumping are the primary cause of land subsidence. The magnitude and rate of subsidence are therefore directly influenced by declines in Lower Aquifer groundwater levels.

Given this relationship, the management of land subsidence is directly tied to maintaining Lower Aquifer groundwater levels above established minimum thresholds. Undesirable results associated with land subsidence should be minimized by maintaining groundwater levels above the Lower Aquifer MTs, which are provided in **Table 3-3**. The Tule Subbasin GSAs developed Lower Aquifer groundwater level MTs and MOs to correspond to groundwater conditions that limit subsidence rates and prevent cumulative subsidence exceeding the subsidence MTs. Currently, there are no Lower Aquifer RMS wells within the TBID Plan Area boundaries. However, an example of the relationship between land subsidence and Lower Aquifer MTs is shown in **Figure 3-11**, which depicts data associated with RMS wells within the SID Plan Area for reference.

Groundwater levels are used as a proxy for evaluating the reduction of the groundwater storage sustainability indicator. Land subsidence MTs do not impact the chronic lowering of groundwater level MTs; therefore, they will not impact the allowable reduction in groundwater storage.

It is not anticipated that land subsidence will result in significant and unreasonable degradation of water quality, as the Tule Subbasin GSAs have not established a relationship between the land subsidence MT and water quality MTs. However, the Tule Subbasin GSAs are coordinating with other local agencies, non-profit organizations, and landowners to monitor for any potential degradation of water quality as a result of subsidence.

Although land subsidence may change the slope of interconnected surface water sources, the potential impact on the depletion of interconnected surface water is likely marginal.

3.5.2.3 Relationship to Adjacent Subbasins [23 CCR § 354.28(b)(3)]

To support regional consistency, the Tule Subbasin has coordinated its land subsidence MTs with MTs proposed for the Kaweah Subbasin, Tulare Lake Subbasin, and Kern Subbasin, which are neighboring subbasins along its northern, western, and southern boundaries. Within the Tule Subbasin, coordination on the land subsidence MTs has been ongoing amongst GSAs, particularly along the FKC. It should be noted that land subsidence MTs may change as coordination continues and additional data are collected and evaluated.

3.5.2.4 Potential Effects of Minimum Thresholds on Beneficial Uses and Users [23 CCR § 354.28(b)(4)]

Land subsidence may affect land uses and infrastructure that are vulnerable to undesirable results, including canals, pipelines, flood control facilities, wells, and other infrastructure. Among these, the FKC is a key infrastructure of concern due to its regional importance and documented history of subsidence-related impacts.

The FKC is a critical regional water delivery facility that conveys surface water to agricultural and other beneficial uses throughout the eastern portion of the Tule Subbasin. The FKC extends from Millerton Reservoir northeast of Fresno to the Kern River in Bakersfield and runs generally north to south through the eastern Tule Subbasin (**Figure 3-10**). Constructed by the United States Bureau of Reclamation (USBR) in 1951, the canal has an original design capacity of 5,300 cubic feet per second (cfs) and serves 26 contractors.

Historical land subsidence along the FKC has reduced its conveyance capacity, adversely affecting the ability to deliver water to downstream users. In some reaches, cumulative land subsidence has created localized low points that restrict flow and reduce operational efficiency. For example, between 1959 and 2019, subsidence along portions of the canal near the northern Subbasin boundary and the boundary between the former ETGSA (now referred to as Tule East GSA) and DEID ranged from approximately one to two feet. In contrast, land subsidence between the Tule River and White River reached up to approximately nine feet along the FKC, creating a low point near Deer Creek that reduced flow capacity to approximately 1,900 cfs, as of 2019 (**Appendix A-6**).

In addition to the FKC, other land uses and infrastructure within the Tule Subbasin may be vulnerable to land subsidence, including local canals, pipelines, flood control facilities, and wells. The potential effects of subsidence on these features vary depending on their design, location, and tolerance to ground surface deformation, but may include reduced conveyance capacity, increased flood risk, structural damage, or operational limitations. Collectively, these potential impacts underscore the importance of establishing cumulative land subsidence MTs that are protective of the most sensitive land uses and infrastructure. By limiting subsidence to levels that avoid significant and unreasonable effects, the GSAs aim to protect beneficial uses and users throughout the Tule Subbasin.

In addition to these preventive measures, the Tule Subbasin GSAs are establishing a DWW Mitigation Plan to address subsidence-related impacts to domestic and small community water system wells (see **Appendix H**). The DWW Mitigation Plan provides a mechanism for affected parties to submit claims and receive technical assistance and mitigation funding, as appropriate. The GSAs will also continue to coordinate with local agencies and infrastructure operators to raise awareness of the DWW Mitigation Plan and provide information regarding payment and plan benefits. The Tule Subbasin GSAs will also be implementing project and management actions to reduce land subsidence rates during the transition period from 2020 to 2040 and to minimize land subsidence after 2040. The actions will include measures to minimize land subsidence that significantly and unreasonably affect the functionality of a structure or facility, such as the FKC.

3.5.2.5 Relationship with Federal, State, and Local Standards [23 CCR § 354.28(b)(5)]

There are no federal, state, or local standards that specifically address land subsidence within the Tule Subbasin or the TBID Plan Area.

3.5.2.6 Measurement Relative to Minimum Thresholds [23 CCR § 354.28(b)(6)]

Land subsidence conditions in the Tule Subbasin are evaluated using land surface elevation measurements at representative monitoring sites in accordance with the monitoring program described in **Chapter 4**. Measured subsidence is compared to land subsidence MTs to assess conditions relative to the established SMC. Results are reported in Annual Reports and Five-Year Periodic Evaluations.

The subsidence monitoring network consists of survey benchmarks and satellite-based InSAR monitoring locations, both of which serve as RMS for evaluating subsidence conditions across the Tule Subbasin. **Figure 3-12** illustrates the subsidence monitoring network, and **Table 3-10** summarizes each RMS along with MTs, MOs, and IMs used to track progress toward subsidence sustainability goals. MOs and IMs are discussed in **Section 3.5.3**.

Within the TBID Plan Area, subsidence conditions are evaluated using InSAR data, including designated InSAR-based RMS (TB0092_InSAR), with associated MTs, MOs, and IMs presented in **Table 3-10**. Data from nearby RMS locations in adjacent GSAs provide additional context. Benchmark-based RMS locations are not currently present within the TBID Plan Area.

If benchmark-based RMSs are established within the TBID Plan Area in the future, the corresponding MOs, IMs, and MTs would be developed consistent with the methodologies and criteria defined in the 2024 Coordination Agreement. Measurements collected at RMS locations will continue to provide the basis for evaluating compliance with Subbasin-wide subsidence sustainability goals.

3.5.3. Measurable Objectives and Interim Milestones for Land Subsidence [23 CCR § 354.30]

The MO for land subsidence in the Tule Subbasin is to achieve no inelastic (nonrecoverable) land subsidence after 2040, consistent with the GSAs' goal of minimizing and ultimately avoiding land subsidence. MOs and IMs are informed by subsidence rates observed at RMSs, as described in Section 7 of **Appendix A-6**. Subsidence rates measured at each RMS (**Figure 3-12** and **Table 3-10**) provide the basis for evaluating progress toward achieving Subbasin-wide sustainability goals, and are documented on an annual basis using data from RMS benchmarks and InSAR monitoring points.

Within the Tule Subbasin, annual land subsidence rate IMs are established at each RMS to track progress toward achieving subsidence sustainability goals and to trigger PMAs, if exceeded. IMs are defined for the period from 2024 to 2040 and are designed to decrease over time. For the initial period (2024 to 2030), IMs are set at 1.5 times the average annual allowable land subsidence from 2024 to 2040. This higher rate provides flexibility during the early implementation period to allow for PMAs to be implemented and begin reducing subsidence. For the subsequent period, from 2030 to 2035, the IMs are reduced to 0.75 times the average annual allowable subsidence, reflecting the need to progressively decrease subsidence rates to achieve Subbasin goals. The MO for the 2035 and 2040 time period is zero inelastic land subsidence. Reducing subsidence rates to zero prior to 2040 provides flexibility to account for potential residual subsidence.

As previously discussed, land subsidence in the Tule Subbasin is closely linked to declines in Lower Aquifer groundwater levels. Accordingly, the Tule Subbasin GSAs established Lower Aquifer groundwater level MTs and MOs at elevations intended to support achievement of the Subbasin's land subsidence goals. These groundwater level thresholds are set above the historical low elevations to minimize inelastic subsidence and reduce the potential for residual land subsidence after 2040.

In addition to land surface elevation measurements at subsidence RMSs, groundwater level data from Lower Aquifer RMS wells are used to support the evaluation of land subsidence conditions across the Tule Subbasin. The Tule Subbasin GSAs established subsidence IMs at applicable RMS locations for the period from 2024 to 2040 with decreasing rates over time, consistent with the approach described above.

No Lower Aquifer RMS wells are currently located within the TBID Plan Area. However, an InSAR monitoring point with TBID (TB0092_InSAR) serves as an RMS, with associated MTs, MOs, and IMs presented in **Table 3-10**. If Lower Aquifer RMS wells are established within the TBID Plan Area in the future, associated Monitoring Objectives, Interim Milestones, and Minimum Thresholds would be developed consistent with the 2024 Coordination Agreement.

In addition to Subbasin-wide IMs, a tiered management framework has been developed for areas along the FKC to support adaptive management of land subsidence. This framework establishes threshold ranges of cumulative subsidence within defined management areas, where exceedance of a given threshold triggers progressively more intensive management action. While distinct from the Subbasin-wide IMs, this tiered approach provides a complementary mechanism to ensure that localized subsidence conditions, particularly in areas of critical infrastructure, are identified and addressed in a timely manner. Additional details regarding the tiered management framework and associated actions are provided in **Chapter 5**.

The Tule Subbasin GSAs will evaluate progress towards achieving land subsidence MTs, MOs, and IMs using data collected from the Subbasin's subsidence monitoring network, which is discussed in more detail in **Chapter 4**. The monitoring network consists of established benchmarks supplemented by InSAR monitoring locations, each of which serves as a representative monitoring site for tracking subsidence conditions. Land subsidence rates are evaluated and documented on an annual basis to assess progress toward Subbasin subsidence goals.

The MOs and IMs described above apply to GSPs following the 2024 Coordination Agreement. The DEID GSA established separate MOs and IMs in its GSP, which are consistent with DEID's land subsidence MTs. For example, MOs, IMs, and MTs are each targeted to have zero additional land subsidence at each RMS post-2024 (INTERA, 2024).

3.6. Depletion of Interconnected Surface Water Sustainable Management Criteria

This section describes the Tule Subbasin depletion of interconnected surface water sustainable management criteria developed in accordance with 23 CCR § 354. The content within this section is based on work by Thomas Harder & Co for the 2024 Coordination Agreement (**Appendix A**), including Attachment 7 (**Appendix A-7**).

According to 23 CCR § 351(o) Interconnected Surface Water (ISW) "refers to surface water that is hydrologically connected at any point by a continuous saturated zone to the underlying aquifer, and the overlying surface water is not completely depleted."

As discussed in **Chapter 2**, the interaction between surface water and groundwater can be summarized in three ways:

1. Surface water gains water from groundwater (i.e., "gaining stream").
2. Surface water loses water to groundwater (i.e., "losing stream").
3. Both, gaining in some locations and losing in other locations, or gaining at some times and losing at other times.

Additionally, losing streams may be hydrologically disconnected from groundwater by an unsaturated zone or may be connected to groundwater with a saturated zone.

Seasonal precipitation changes and seasonal pumping can alter the relationship between surface water and groundwater. For example, in areas where groundwater naturally discharges at the land surface (a gaining stream), groundwater pumping near a discharge point will lower groundwater levels, ultimately impacting the flow in the stream. Stream flow can also be impacted by water released from upstream reservoirs, managed recharge near the stream channel, and long-term precipitation trends.

The DEID GSA GSP has stated that interconnected surface water does not apply to DEID as the presence of natural surface water is rare, and the depth to the first encountered groundwater is hundreds of feet (INTERA, 2024). Therefore, MOs, MTs, and IMs for interconnected surface water were not established.

3.6.1. Undesirable Results for Depletion of Interconnected Surface Water

3.6.1.1 Definition of Significant and Unreasonable Effects [23 CCR § 354.26(a)]

The Tule Subbasin GSAs consider impacts to ISW significant and unreasonable when:

- *Groundwater Dependent Ecosystem (GDE) health has declined such that the ecosystem's recovery is non-recoverable. These fluctuations in GDE health are deemed significantly and unreasonably impacted due to groundwater pumping when a GDE cannot recover in seasonal high conditions.*
- *Surface water access for surface water rights holders or riparian rights holders of adjacent or downstream users has been reduced due to groundwater pumping extracting underflows.*

(**Appendix A-7**)

3.6.1.2 Causes of Undesirable Results [23 CCR § 354.26(b)(1)]

Undesirable results from depletion of ISW can be caused by several factors, which include the following: 1) groundwater pumping, 2) extended periods of below normal precipitation and runoff, 3) changes in groundwater or surface water management, or 3) a combination of the listed factors. Within the Tule Subbasin, there are currently significant data gaps related to understanding the potential location of ISW conditions and their relationship to depletions caused by groundwater pumping. The Tule Subbasin GSAs intend to address this data gap through the Interconnected Surface Water Data Gap Workplan in **Appendix A-7**.

3.6.1.3 Criteria to Define Undesirable Results [23 CCR § 354.26(b)(2)]

The quantification of undesirable results for ISW requires an understanding of the nature and location of ISW within the Tule Subbasin, as well as the potential effects of groundwater pumping on surface water depletions (see **Appendix A-7**).

To identify areas of potential ISW for further evaluation, the Tule Subbasin GSAs conducted an analysis consistent with the methodology used in The Nature Conservancy's (TNC's) ICON database for the Central Valley (TNC, 2024). This method categorizes the likelihood of groundwater-surface water connectivity based on the minimum depth to groundwater, using the following four categories:

1. **Likely Connected – Gaining**: Groundwater elevation is equal to or greater than the surface water elevation, indicating groundwater is likely flowing into the surface water body.
2. **Likely Connected – Losing**: Groundwater elevation is between 0 and 20 feet below the surface water elevation, indicating groundwater is likely receiving water from the surface water body through a continuous saturated zone.
3. **Uncertain**: Conditions where the groundwater elevation is between 20 and 50 feet below the surface water elevation are labeled as uncertain because the groundwater may or may not be connected to surface water.
4. **Likely Disconnected**: Groundwater elevation is greater than 50 feet below the surface water elevation, indicating groundwater is likely disconnected from the surface water body.

Based on this analysis, and as discussed in **Chapter 2**, the Tule Subbasin GSAs identified three areas within the eastern portion of the Tule Subbasin as potential ISW locations (the Study Areas). Groundwater monitoring data in these potential ISW areas are currently limited; therefore, continued data collection and monitoring are recommended to support a more definitive evaluation of whether ISW conditions are present. The identified Study Areas are shown in **Figure 3-13** and summarized as follows:

Upper Tule River Area: The potential ISW spans from the subbasin eastern boundary near Success Dam to Road 192. Upper Aquifer groundwater levels below Success Reservoir Dam suggest a periodic connection with surface water, primarily during wet hydrologic conditions (e.g., WY2023) when groundwater rose to within 10 to 25 feet of the land surface, near the streambed elevation.

Upper Deer Creek Area: The potential ISW spans from the subbasin eastern boundary to the Friant-Kern Canal. The nearest monitoring well in the Upper Deer Creek Area shows groundwater elevations within 15 feet of the streambed during high groundwater conditions (February 2023).

Upper White River Area: The potential ISW spans from the subbasin boundary down to Highway 65. This area is unlikely to be interconnected with surface water based on limited data from one available well, approximately 4.5 miles west of Hwy 65, outside the potential ISW area, where groundwater levels were approximately 250 feet below ground surface (bgs).

Within the TBID Plan Area, Deer Creek flows through intermittent sections along the northern boundary. The Tule River and the White River are located outside the TBID Plan Area boundary to the north and south, respectively.

Each of the identified Study Areas, along with available groundwater level data, is described in detail in Sections 5 and 6 of **Appendix A-7**.

Given the limited availability of shallow groundwater data, uncertainty remains regarding the presence and extent of ISW within the Subbasin. The Tule Subbasin GSAs will continue to monitor shallow groundwater levels in the vicinity of the Tule River, Deer Creek, and White River to support a more decisive conclusion as to the existence of ISW conditions.

Groundwater pumping in areas where ISW may be present has the potential to alter hydraulic gradients, reduce surface water availability, and impact nearby vegetation and ecosystems. Groundwater level data collected from monitoring wells near these waterways, along with surface water measurements and interim monitoring wells, are used to evaluate potential groundwater-surface water interactions.

At this time, quantitative estimation of depletions is limited by data availability and the absence of finalized DWR guidance on evaluation methodologies. Until additional data and guidance become available, the Tule Subbasin GSAs have established an interim monitoring approach focused on groundwater levels in areas where ISW conditions may exist. Additionally, the Tule Subbasin GSAs developed a work plan to address data gaps related to ISW and GDEs (see **Appendix A-1**).

Groundwater levels will continue to be monitored within the TBID Plan Area, and the Tule Subbasin GSAs will coordinate as additional information becomes available regarding ISW conditions.

3.6.1.4 Potential Effects of Undesirable Results on Beneficial Uses and Users [23 CCR § 354.26(b)(3)]

Beneficial uses and users of groundwater in the Tule Subbasin include the following: domestic supply, municipal supply, agricultural supply, industrial supply, and environmental. As it pertains to ISW, agricultural supply (related to surface water supply) and environmental (e.g., groundwater dependent ecosystems) are the most directly applicable beneficial uses and users to this SI.

Groundwater pumping in areas where ISW may be present has the potential to reduce streamflow or surface water levels, a process commonly referred to as stream depletion. Declines in groundwater levels can affect surface water systems by decreasing groundwater discharge to streams under gaining conditions or by increasing the movement of surface water into the groundwater system under losing conditions.

Streamflow conditions within the Tule Subbasin are also influenced by a range of other factors, including hydrologic variability (e.g., drought conditions), managed surface water releases (such as those from Lake Success), surface water diversions, precipitation, and recharge and return flows. Due to limited data and existing uncertainties regarding groundwater-surface water interactions in the Study Areas, the extent to which groundwater pumping may contribute to stream depletion is not currently well defined.

3.6.2. Minimum Thresholds for Depletion of Interconnected Surface Water

3.6.2.1 Criteria Used to Establish Minimum Thresholds [23 CCR § 354.28(b)(1)]

Sustainable management criteria, including MTs and MOs, will be developed for the depletion of the interconnected surface water sustainability indicator if ISW conditions are identified within the Tule Subbasin. In that case, the SMC will be informed by the undesirable result criteria established as described above.

3.6.2.2 Relationship to Other Sustainability Indicators [23 CCR § 354.28(b)(2)]

Groundwater level data suggests that the Upper Tule River Area and the Upper Deer Creek Area may be hydraulically connected to surface water, as described in **Section 3.6.1.3**. However, the Subbasin GSAs have not confirmed the presence of ISW in these areas, and confirmation remains subject to further monitoring and evaluation. Accordingly, the Tule Subbasin GSAs have not yet established relationships between ISW and other sustainability indicators.

ISW will be evaluated in the future using rates of surface water depletion within interconnected channels. At present, however, surface water flow data is limited, representing a key data gap that the Tule Subbasin GSAs are actively working to address. In the interim, groundwater level data is being collected near potentially interconnected streams in the eastern portion of the Tule Subbasin and is evaluated in conjunction with the Upper Aquifer groundwater level monitoring network.

DWR has not yet finalized its guidance regarding the evaluation of ISW. As such guidance becomes available, the Tule Subbasin GSAs will refine their approach to evaluating ISW, including consideration of groundwater levels as a proxy for establishing SMC for depletions of interconnected surface water.

3.6.2.3 Relationship to Adjacent Subbasins [23 CCR § 354.28(b)(3)]

As described in **Section 3.6.1.3**, groundwater level data suggests that the Upper Tule River Area and the Upper Deer Creek Area may be hydraulically connected to surface water. However, the Subbasin GSAs have not confirmed the presence of ISW in these areas, and confirmation remains subject to further monitoring and evaluation. Accordingly, the Tule Subbasin GSAs have not yet established SMC for the depletion of ISW nor considered the potential relationship of future SMC to adjacent subbasins.

3.6.2.4 Potential Effects of Minimum Thresholds on Beneficial Uses and Users [23 CCR § 354.28(b)(4)]

Potential effects associated with depletion of ISW may include impacts to GDEs, where present, as well as reductions in surface water availability for downstream users. The presence and extent of GDEs within the Tule Subbasin have not yet been fully verified and will be further evaluated as additional data become available and as guidance is provided through DWR's best management practices for evaluation of ISW.

3.6.2.5 Relationship with Federal, State, and Local Standards [23 CCR § 354.28(b)(5)]

There are no federal, state, or local standards specific to addressing ISW in the Tule Subbasin.

3.6.2.6 Measurement Relative to Minimum Thresholds [23 CCR § 354.28(b)(6)]

Groundwater level data suggests that the Upper Tule River Area and the Upper Deer Creek Area may be hydraulically connected to surface water, as described in **Section 3.6.1.3**. Groundwater and surface water conditions along the Tule River, Deer Creek, and White River will be monitored in accordance with the monitoring programs described in **Chapter 4**. Groundwater level data indicative of potential ISW conditions will be evaluated and reported in Annual Reports and Five-Year Periodic Evaluations to support ongoing assessment of groundwater-surface water interactions and potential effects on beneficial uses and users. Monitoring will continue until sufficient data are available to confirm the presence or absence of ISW and to support development of MTs, if warranted.

3.6.3. Measurable Objectives and Interim Milestones for Depletion of Interconnected Surface Water

SMC, including MOs and IMs, will be developed for the depletion of the ISW sustainability indicator if ISW conditions are identified within the Tule Subbasin. In that case, the SMC will be informed by the undesirable result criteria established as described above.

Table 3-1. Summary of Sustainable Management Criteria Rationale

Sustainability Indicator		Measurable Objective (MO)	Interim Milestone (IM)	Minimum Threshold (MT)	Undesirable Results
Chronic Lowering of Groundwater Levels	**Coordination Agreement**	**Upper Aquifer:** Established as the midpoint between the 2022 groundwater level and the MT. **Lower Aquifer:** Established as the midpoint between the April 2023 high groundwater level and the MT.	-	**Upper Aquifer:** Difference between the 2022 measured groundwater elevation at each well and the model-forecasted groundwater elevation in 2040. **Lower Aquifer:** MTs were selected to correlate to land subsidence rates that would prevent cumulative land subsidence at that location from reaching the cumulative land subsidence MT.	**Upper Aquifer:** (1) a. Groundwater levels drop below the MT in any three RMS wells in any given year, AND b. More than 38 domestic wells require mitigation in any given year. If 38 wells require mitigation for multiple years, no more than 258 wells shall be impacted cumulatively by 2040; OR (2) If a GSA is unable to meet mitigation needs. **Lower Aquifer:** When groundwater conditions contribute to land subsidence that exceeds the established cumulative subsidence minimum thresholds at any RMS, excluding subsidence attributable to elastic conditions or measurement error.

Sustainability Indicator		Measurable Objective (MO)	Interim Milestone (IM)	Minimum Threshold (MT)	Undesirable Results
	DEID GSA	**Upper Aquifer:** Established based on the range of observed historical groundwater level fluctuations to ensure operational flexibility. **Lower Aquifer:** Established at groundwater levels consistent with no additional subsidence (land subsidence MTs).	-	**Upper Aquifer:** Established with modeled groundwater levels projected to 2040 for the Tule Subbasin sustainability goal. **Lower Aquifer:** Established at groundwater levels consistent with no additional subsidence (land subsidence MT).	**Upper & Lower Aquifer:** A single MT exceedance at any RMS site.
Reduction of Groundwater Storage	**Coordination Agreement**	Groundwater level SMC used as a proxy.	Groundwater level SMC used as a proxy.	Groundwater level SMC used as a proxy.	Groundwater level SMC used as a proxy.
	DEID GSA	Groundwater level SMC used as a proxy.	Groundwater level SMC used as a proxy.	Groundwater level SMC used as a proxy.	Groundwater level SMC used as a proxy.
Degrading Groundwater Quality	**Coordination Agreement**	For constituents of concern (COCs) that had both drinking water Maximum Contamination Level (MCL) and agricultural Water Quality Objective (WQO), the more restrictive standard was adopted. MOs were set at the greater of:	Interim Milestones (IMs) follow the criteria of MOs, which will be evaluated during the IM years of 2030 and 2035 to track progress toward achieving groundwater quality goals.	For COCs that had both drinking water MCL and agricultural WQO, the more restrictive standard was adopted. For groundwater quality RMS wells that had 2005-2014 baseline data for COCs, the MT was set at the greater of: Drinking water MCL or agricultural WQO, or	Significant and unreasonable effects occur when either of the following conditions is met: Where degraded groundwater quality does not meet state and federal regulatory standards, resulting in impacts to beneficial uses and users that are not mitigated.

Sustainability Indicator		Measurable Objective (MO)	Interim Milestone (IM)	Minimum Threshold (MT)	Undesirable Results
		75 percent of the minimum threshold, or the maximum 2005-2014 concentration.		maximum 2005-2014 concentration. For wells with insufficient 2005-2014 COC data, 2005-2023 is used to determine the maximum baseline concentration at the groundwater quality RMS wells. For wells with insufficient 2005-2023 data, the MT is set at the greater of: 1. The average 2005-2014 baseline concentration in the applicable Public Supply Assessment Grid (PSAG). If the 2005-2014 PSAG data is insufficient, the average 2005-2013 baseline concentration in the applicable PSAG was used. 2. The drinking water standard MCL.	Where any single groundwater quality RMS well experiences an MT exceedance of a COC resulting from a GSA's groundwater management for 2 consecutive years, and cannot be mitigated by a GSA.
	DEID GSA	Established at the same threshold as the MT.	-	Establish MTs at each Groundwater Quality RMS based on the	A single MT exceedance at any RMS determined

Sustainability Indicator		Measurable Objective (MO)	Interim Milestone (IM)	Minimum Threshold (MT)	Undesirable Results
				regulatory limits set as part of the responsible regulatory programs that are applicable to the identified beneficial uses and users of groundwater represented by the RMS.	to be caused by GSA activities.
Land Subsidence	**Coordination Agreement**	No inelastic (nonrecoverable) land subsidence after 2040.	The rate IM established for 2024 to 2030 for each RMS is based on the average annual allowable land subsidence from 2024 to 2040 multiplied by 1.5. The IM for the 2030 and 2035 time period is equal to the average annual subsidence multiplied by 0.75. and minimum residual land subsidence after 2040. InSAR and benchmark measurements are collected and evaluated to determine vertical displacement over time. Additionally, land subsidence is correlated to groundwater levels and pumping; therefore,	The MTs are established along the infrastructure. Each type of land use or infrastructure project is analyzed separately due to varying tolerance for land subsidence. InSAR and benchmark measurements are collected and evaluated to determine vertical displacement over time. Additionally, land subsidence is correlated to groundwater levels and pumping; therefore, the RMS lower aquifer groundwater levels data are evaluated.	Ongoing land subsidence after 2020 that exceeds the cumulative subsidence minimum threshold at any given RMS Site that cannot be attributable to elastic conditions or measurement error is an undesirable result.

Sustainability Indicator		Measurable Objective (MO)	Interim Milestone (IM)	Minimum Threshold (MT)	Undesirable Results
			the RMS lower aquifer groundwater levels data are evaluated.		
	DEID GSA	Established MOs at each RMS to reflect zero additional subsidence since 2023.	-	Established MTs at each RMS to reflect zero additional subsidence since 2023.	A single MT exceedance (rate and cumulative) at any RMS site.
Depletion of Interconnected Surface Water	**Coordination Agreement**	The ICONS database and groundwater level data collected from shallow wells near the Tule River, Deer Creek, and White River have not established a decisive conclusion as to whether interconnected surface water is present within the Tule Subbasin. Therefore, the Sustainability Indicator is not applicable to the Subbasin until a conclusion is confirmed through continued monitoring.			
	DEID GSA	-	-	-	-
Seawater Intrusion	**Coordination Agreement**	Seawater Intrusion is not considered applicable as a Sustainability Indicator because it does not have the potential to advance into any portion of the Tule Subbasin.			

Table 3-2. Summary of Groundwater Level SMC for Upper Aquifer RMS Wells

GSA	CASGEM SWN	Short SWN	Master Well ID	Well Name/ Well Log	IM* (ft amsl)			MO (ft amsl)	MT (ft amsl)	Aquifer	X-Coordinate (ft)	Y-Coordinate (ft)
					2025	2030	2035					
DEID GSA	23S26E29D001M	23S/26E-29D01	Tule_D0045_RMS	E0119660	54	59	60	61	54	U	6504545	1847738
	24S25E35H001M	24S/25E-35H01	Tule_D0047_RMS	1095774	144	151	153	154	144	U	6489468	1811332
	24S26E04P001M	24S/26E-04P01	Tule_D0048_RMS	P-24	58	66	69	70	58	U	6511204	1834634
	N/A	N/A	Tule_D0055_RMS	M-19U	147	154	157	158	147	U	6500623	1828030
	24S26E32G001M	24S/26E-32G01	Tule_D0050_RMS	67	129	138	141	142	129	U	6507272	1810870
	N/A	24S26E11	Tule_D0049_RMS	36201	126	138	142	144	126	U	6521732	1830686
LTRID GSA	21S23E32K001M	21S/23E-32K01	Tule_L0003_RMS	32K1	96	88	82	72	49	U	6412096	1903994
	21S26E32B002M	21S/26E-32B02	Tule_L0007_RMS	E049930	159	151	143	136	114	U	6507613	1906655
	N/A	21S/26E-34	Tule_L0009_RMS	27803	242	248	254	261	233	U	6519268	1903301
	22S23E30J001M	22S/23E-30J01	Tule_L0011_RMS[1]	Angiola #1	-33	TBD	TBD	TBD	-60	U	6408171	1878179
	N/A	N/A	Tule_L0015_RMS	LTRID TSS U	180	171	162	153	127	U	6469280	1930941
	21S24E35A001M	21S/24E-35A01	Tule_L0004_RMS	35A1	109	102	95	88	67	U	6461001	1906318
		21S/25E-03R01[1,2]			190	184	178	173	145	U	6487723	1929458

GSA	CASGEM SWN	Short SWN	Master Well ID	Well Name/ Well Log	IM* (ft amsl)			MO (ft amsl)	MT (ft amsl)	Aquifer	X-Coordinate (ft)	Y-Coordinate (ft)
					2025	2030	2035					
PIXID GSA	22S24E23J001M	22S/24E-23J01	Tule_P0016_RMS[1,2]	22/24-23J1	-38	-43	-48	-52	-64	U	6460931	1883356
	22S25E25N001M	22S/25E-25N01	Tule_P0017_RMS[3]		TBD	TBD	TBD	-10	-23	U	6494108	1875965
	23S24E28J002M	23S/24E-28J02	Tule_P0020_RMS[1]	28J2	84	73	63	52	29	U	6450366	1846351
	N/A	N/A	Tule_P0024_RMS[2]	PIDGSA TSS U	120	116	112	108	99	U	6492780	1857678
		23S/25E-08G01	Tule_P0021_RMS[2]		49	75	41	36	23	U	6471862	1863514
TCWA	22S23E25C001M	22S/23E-25CO1	Tule_T0058_RMS	E20	TBD	TBD	TBD	-36	-54	U	6430891	1880679
	24S23E22E001M	24S/23E-22E01	Tule_T0061_RMS[3]	N/A	TBD	TBD	TBD	TBD	TBD	U	6430891	1880679
	N/A	N/A	Tule_T0064_RMS	TSMW-5U	TBD	TBD	TBD	95	78	U	6413217	1823385
-	N/A	21S/27E-23	Tule_E0027_RMS	C-1	348	349	351	375	333	U	6557877	1908424
Tea Pot Dome GSA		22S/28E-19	Tule_E0147_ILP[4]		348	346	345	344	339	U	6564628	1886755
PID GSA	N/A	21S/27E-30	Tule_E0028_RMS	R-11	341	351	355	330	281	U	6531870	1909109

GSA	CASGEM SWN	Short SWN	Master Well ID	Well Name/ Well Log	IM* (ft amsl)			MO (ft amsl)	MT (ft amsl)	Aquifer	X-Coordinate (ft)	Y-Coordinate (ft)
					2025	2030	2035					
SID GSA	22S26E13R001M	22S/26E-13R01	Tule_E0029_RMS[1]	243293	230	224	224	237	145 [2]	U	6529364	1886159
	N/A	N/A	N/A	TSMW-4S	171	TBD	TBD	180	150	U	6518754	1870002
	22S26E25J001M	22S/26E-25J01	Tule_E0040_RMS	N/A	296	TBD	TBD	200	150	U	6529609	1876738
VWD GSA		22S/27E-01G01	VID #21[4]		433	431	429	428	421	U	6558714	1901316
		22S/28E-06	ETGSA TSS-1U[4]		TBD	TBD	TBD	465	450	U	6563669	1900781
	22S28E18H001M	22S/28E-18H01[4]			397	395	393	392	386	U	6567585	1890395

Source: Thomas Harder & Co, 2026 – The IMs are sourced from the WY 2025 Annual Report

Notes

1 Inconsistency between the Coordination Agreement and Agency GSP

2 Inconsistency between Coordination Agreement Documents

3 Aquifer designation is inconsistent

4 RMS well is only listed in the WY2025 Annual Report

Aquifer: U = Well Perforated in Upper Aquifer

CASGEM = California Statewide Groundwater Elevation Monitoring; SWN = State Well Number; IM = Interim Milestones; ft amsl = feet above mean sea level; MO = Management Objective; MT = Minimum Threshold

Table 3-3. Summary of Groundwater Level SMC for Lower Aquifer RMS Wells

GSA	CASGEM SWN	Short SWN	Master Well ID	Well Name/ Well Log	IM (ft amsl)			MO (ft amsl)	MT (ft amsl)	Aquifer	X-Coordinate (ft)	Y-Coordinate (ft)
					2025	2030	2035					
Alpaugh GSA	23S23E25N001M	23S/23E-25N01	Tule_A0056_RMS	25N01	TBD	TBD	TBD	TBD	TBD	L	6429320	1845090
	N/A	24S/23E-23	Tule_A0057_RMS	Well 55	-109	-103	-98	-110	-150	L	6432067	1849112
DEID GSA	25S26E09C001M	25S/26E-09C01	Tule_D0053_RMS	N/A	62	62	62	62 [1]	60 [1]	L	6509076	1797597
	N/A	24S/26E-17	Tule_D0054_RMS	M19-L	65	65	65	85 [1]	40 [1]	L	6500623	1828030
	N/A	23S/25E-27	Tule_D0043_RMS	N/A	TBD	TBD	TBD	TBD [1]	TBD [1]	C	6487400	1846610
	N/A	24S/27E-31	Tule_D0051_RMS	M1054	99	104	106	107	99	C	6530710	1812190
KTGSA	24S27E32M001 M	24S/27E-32	Tule_KT0039_RMS	N/A	-99	-122	-87	-52	-146	SM	6536530	1808340
	N/A	N/A	Tule_KT042_RMS	TSMW 6SM	-70	-90	-60	-30	-110	SM	6539196	1822172
	N/A	N/A	Tule_KT041_RMS	TSMW-6L	183	178	186	205	195	L	6539196	1822172
LTRID GSA	N/A	20S/26E-32	Tule_L0001_RMS[3]	N/A	115	125	135	145	120	L	6507628	1933560
	N/A	21S/25E-36	Tule_L0006_RMS	N/A	74	82	91	100	40	L	6493618	1905179
	N/A	N/A	Tule_L0013_RMS	LTRID TSS L	TBD	TBD	TBD	40 [1,2]	10 [1,2]	L	6469280	1930941
	N/A	N/A	Tule_L0014_RMS	LTRID TSS M	-29	-6	17	40	TBD	L	6469280	1930941
	N/A	22S/23E-08	Tule_L0010_RMS	E0094101	TBD	TBD	TBD	TBD	TBD	L	6410339	1896242
	22S24E01Q001M	22S/24E-01	Tule_L0012_RMS[1,2]	N/A	8	12	16	20	-40	C [3]	6465170	1896730
	N/A	22S/26E-03	Tule_L0174_RMS[1]	IR1089	TBD	TBD	TBD	TBD	TBD	C	6516600	1899270

GSA	CASGEM SWN	Short SWN	Master Well ID	Well Name/ Well Log	IM (ft amsl)			MO (ft amsl)	MT (ft amsl)	Aquifer	X-Coordinate (ft)	Y-Coordinate (ft)
					2025	2030	2035					
PIXID GSA	N/A	N/A	Tule_P0023_RMS	TSMW-1L	-170	-147	-123	-100	-150	L	6455530	1866658
	N/A	N/A	Tule_P0025_RMS	PIDGSA-01L	65	83	101	120	90	L	6492772	1857660
		22S/25E-30[1]			79	70	61	52	TBD	L	6469124	1878052
TCWA	24S24E03A001M	24S/24E-03A01	Tule_T0046_RMS[2]	N/A	174	179	-187	198	143	L[3]	6455570	1838610
	22S23E27F001M	22S/23E-27F01	Tule_T0059_RMS	G13	-165	-145	-105	-70	-120	L	6420049	1878149
	24S23E15R001M	24S/23E-15R01	Tule_T0060_RMS	N/A	TBD	TBD	TBD	TBD	TBD	L	6423853	1823274
	N/A	N/A	Tule_T0065_RMS	TSMW-5L	TBD	TBD	TBD	TBD	-210	L	6413230	1823472
	24S23E22R002M	24S/23E-22R02	Tule_T0062_RMS	22R02	TBD	TBD	TBD	TBD	TBD	L	6423826	1817704
SID GSA	N/A	22S/26E-24	Tule_E0030_RMS	N/A	27	28	36	80	40	L	6529809	1881991
	N/A	N/A	N/A	TSMW-4M	TBD	TBD	TBD	TBD	TBD	L	6518680	1870002
	N/A	N/A	N/A	TSMW 4D	TBD	TBD	TBD	60	40	L	6518680	1870060
-	N/A	21S/27E-27	Tule_E0035_RMS	C-16	TBD	TBD	TBD	124	TBD	C	6546910	1912290
-	N/A	23S/27E-27	Tule_E0036_RMS	M1038	-10	-15	41	54	-30	SM	6546660	1844920
Tea Pot Dome GSA		22S/27E-07[4]		T-1	345	250	255	260	240	C	6532544	1893832
		22S/27E-15[4]	Tule_E0146_ILP		203	310	315	320	270	C	6549841	1890397
TBID GSA		23S/28E-04K01	Tule_E0037_RMS		TBD	TBD	TBD	TBD	TBD	C	6573260	1865680

GSA	CASGEM SWN	Short SWN	Master Well ID	Well Name/ Well Log	IM (ft amsl)			MO (ft amsl)	MT (ft amsl)	Aquifer	X-Coordinate (ft)	Y-Coordinate (ft)
					2025	2030	2035					
WVD GSA		22S/28E-06	ETGSA TSS-1L (ETGSA-01L)		TBD	TBD	TBD	425	380	L	6563730	1900746
		22S/28E-07M01	22S28E07M001M		345	350	355	360	300	L	6561670	1894035

Source: Thomas Harder & Co, 2026 – The IMs are sourced from the WY 2025 Annual Report

Notes:

1 Inconsistency between the Coordination Agreement and Agency GSP

2 Inconsistency between Coordination Agreement Documents

3 Aquifer designation is inconsistent in one or more documents

4 RMS well is only listed in the WY2025 Annual Report

Aquifer: U = Well Perforated in Upper Aquifer; L = Well Perforated in Lower Aquifer; C = Well Perforated in Composite Aquifer; SM = Well Perforated in Santa Margarita

CASGEM = California Statewide Groundwater Elevation Monitoring; SWN = State Well Number; IM = Interim Milestones; ft amsl = feet above mean sea level; MO = Management Objective; MT = Minimum Threshold

Table 3-4. Potentially Impacted Wells after 2015 at Groundwater Level SMC in the Upper Aquifer

GSA	Agricultural	Domestic	Municipal	Industrial	Unknown	Total Wells Impacted	Total Wells in Analysis	% Impacted by GSA
Groundwater Levels Lowered to Upper Aquifer Maximum Thresholds								
Alpaugh	0	0	0	0	0	0	38	0
DEID	0	7	0	0	1	8	246	3
ETGSA	10	65	0	2	6	83	1750	5
LTRID	46	47	0	0	0	93	1180	8
KTGSA	0	0	0	0	0	0	37	0
Pixley	11	44	0	1	5	61	559	11
TCWA	2	10	0	0	0	12	248	5
Total Impacted	**69**	**173**	**0**	**3**	**12**	**257**	**4058**	**6**
Total Well Type	**2264**	**1658**	**35**	**38**	**63**			
% Impacted by Well Type	**3**	**10**	**0**	**8**	**19**			
Groundwater Levels Lowered to Upper Aquifer Management Objectives								
Alpaugh	0	0	0	0	0	0	38	0
DEID	0	6	0	0	1	7	246	3
ETGSA	3	5	0	0	5	13	1750	1
LTRID	22	34	0	0	0	56	1180	5
KTGSA	0	0	0	0	0	0	37	0
Pixley	11	32	0	1	4	48	559	9
TCWA	2	10	0	0	0	12	248	5
Total Impacted	**38**	**87**	**0**	**1**	**10**	**136**	**4058**	**3**
Total Well Type	**2264**	**1658**	**35**	**38**	**63**			
% Impacted by Well Type	**2**	**5**	**0**	**3**	**16**			

Table 3-5. PSAG Baseline Concentrations for COCs 2005-2014

PSAG	DBCP (µg/L)	Arsenic (µg/L)	1,2,3 - TCP (µg/L)	PCE (µg/L)	Perchlorate (µg/L)	Nitrate as N (mg/L)	Uranium (pCi/L)
SVJ_TULE 1	IS Data	IS Data	IS Data	IS Data	IS Data	IS Data	IS Data
SVJ_TULE 2	IS Data	21.32	IS Data	IS Data	IS Data	IS Data	IS Data
SVJ_TULE 3	IS Data	IS Data	IS Data	IS Data	IS Data	IS Data	IS Data
SVJ_TULE 4	IS Data	67.30[1]	0.75[1]	IS Data	170.00[1]	IS Data	23.87[1]
SVJ_TULE 5	IS Data	IS Data	IS Data	IS Data	IS Data	IS Data	IS Data
SVJ_TULE 6	IS Data	IS Data	0.23[1]	9.00[1]	IS Data	10.62[1]	34.27[1]
SVJ_TULE 7	IS Data	8.96	0.60[1]	IS Data	13.00[1]	10.16[1]	IS Data
SVJ_TULE 8	IS Data	19.78[1]	0.36[1]	IS Data	IS Data	IS Data	IS Data
SVJ_TULE 9	IS Data	17.60[1]	0.15[1]	IS Data	IS Data	11.20[1]	IS Data
SVJ_TULE 10	IS Data	11.68[1]	0.19[1]	IS Data	IS Data	17.43[1]	IS Data
SVJ_TULE 11	0.27[1]	10.61[1]	0.69[1]	IS Data	IS Data	18.72[1]	IS Data
SVJ_TULE 12	IS Data	IS Data	IS Data	IS Data	IS Data	IS Data	IS Data
SVJ_TULE 13	0.21[1]	IS Data	0.39[1]	IS Data	IS Data	11.12[1]	IS Data
SVJ_TULE 14	IS Data	IS Data	0.35[1]	4.30[1]	IS Data	13.60[1]	IS Data
SVJ_TULE 15	IS Data	IS Data	0.16[1]	IS Data	IS Data	10.08[1]	IS Data
SVJ_TULE 16	IS Data	9.17	0.50[1]	4.67[1]	6.37[1]	13.42[1]	IS Data
SVJ_TULE 17	IS Data	IS Data	0.47[1]	IS Data	IS Data	10.95[1]	IS Data
SVJ_TULE 18	IS Data	11.00[1]	0.23[1]	IS Data	IS Data	11.86[1]	49.00[1]
SVJ_TULE 19	IS Data	IS Data	0.20[1]	IS Data	IS Data	11.97[1]	IS Data
SVJ_TULE 20	IS Data	IS Data	IS Data	IS Data	IS Data	IS Data	IS Data
SJV_KERN 78	IS Data	8.40	IS Data	IS Data	IS Data	8.28	IS Data

*Source: Data provided in Attachment 5 of the 2024 Tule Subbasin Coordination Agreement (**Appendix A-5**).*

Notes:

1 Cells with red values indicate an exceedance of the Maximum Contaminant Level (MCL) for drinking water quality.

Baseline concentration values were generated from data accessed from the Groundwater Ambient Monitoring and Assessment from 2005 to 2014. Maximum values were assessed from every available data point within each grid cell to determine pre-SGMA averages for risk assessment. If no exceedances occurred within the grid cell, each COC defers to the MCL.

IS Data = Insufficient data available to determine baseline concentrations; 1,2,3 - TCP = 1,2,3-Trichloropropane; DBCP = Dibromo-3-chloropropane; Nitrate as N = Nitrate as Nitrogen; PCE = Tetrachloroethene; mg/L - milligrams per liter; µg/L = micrograms per liter; pCi/L = picocuries per liter; MO = Measurable Objective; MT = Minimum Threshold

Table 3-6. COC Regulatory Standards Used During Establishment of Degraded Water Quality Minimum Thresholds and Measurable Objectives

Constituent	Units	Minimum Threshold Drinking Water Limits (MCL/SMCL/WQO)	Measurable Objectives 75% Drinking Water Limits (MCL/SMCL/WQO)	Notes
Official Constituents of Concern				
Arsenic	µg/L	10	7.5	
Nitrate as N	mg/L	10	7.5	
Hexavalent Chromium	µg/L	10	7.5	
Dibromo-3-chloropropane (DBCP)	ppb	0.2	0.15	
1,2,3-Trichloropropane (1,2,3-TCP)	µg/L	0.005	0.00375	In the Tule Subbasin Coordination Agreement, Attachment 5, pg 25, Table 8 indicates that the 1,2,3-TCP Measurable Objective is 3.75 µg/L. In the Tule Subbasin 2024/25 Annual Report, pg 26, Table 2-13 indicates that the 1,2,3-TCP Measurable Objective is 0.00375 µg/L.
Total Dissolved Solids (TDS)[1]	mg/L	750[1]	562.5	In the Tule Subbasin 2024/25 Annual Report, pg 26 (Figure 2-13), and in the Tule Subbasin Coordination Agreement, Attachment 5, pg 25 (Table 8), the MCL is stated to be 750 mg/L. On pg 39 of the Tule Subbasin 2024/25 Annual Report, it is stated that the MT for TDS has increased from 750 mg/L to 1,000 mg/L.

Constituent	Units	Minimum Threshold Drinking Water Limits (MCL/SMCL/WQO)	Measurable Objectives 75% Drinking Water Limits (MCL/SMCL/WQO)	Notes
Official Constituents of Concern				
Uranium	pCi/L	20	15	In the Tule Subbasin Coordination Agreement, Attachment 5, pg 25, Table 8 indicates that the Uranium MT is 20 pCi/L, and the MO is 15 pCi/L. In the Tule Subbasin 2024/25 Annual Report, pg 26, Table 2-13 indicates that Uranium MT is 30 pCi/L, and the MO is 22.5 pCi/L.
Additional Constituents of Concern				
Chloride	mg/L	500	375	
Perchlorate	µg/L	6	4.5	
Tetrachloroethene (PCE)	µg/L	5	3.75	

*Source: Tule Subbasin Coordination Agreement, Attachment 5 (**Appendix A-5**); Tule Subbasin 2024/25 Annual Report (Thomas Harder & Co, 2026)*

Notes:

1 Total Dissolved Solids regulatory threshold based on Agricultural Water Quality Objective.

mg/L - milligrams per liter; µg/L = micrograms per liter; pCi/L = picocuries per liter; MO = Measurable Objective; MT = Minimum Threshold

Table 3-7. Groundwater Quality SMCs for RMS Upper Aquifer Wells

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
SID GSA	SVJ_Tule13	Tule_E0184_RMS (SGMA Well ID: TSMW-4S)	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
PID GSA	SVJ_Tule16	Tule_E0026_RMS[2]	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule16	Tule_E0028_RMS[2]	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule16	Tule_E0031_RMS[2]	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule15	Tule_E0081_ILP	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0041	0.0054
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
PID GSA	**SVJ_Tule13**	**Tule_E0082_ILP**	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
TEGSA (Formerly ETGSA)	**SVJ_Tule17**	**Tule_E0094_ILP**	Nitrate as N (mg/L)	15.75	21
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule17	**Tule_E0098_ILP**	Nitrate as N (mg/L)	12	16
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule17	**Tule_E0145_ILP**	Nitrate as N (mg/L)	9	12
			DBCP (µg/L)	0.15	0.2
TEGSA (Formerly ETGSA	**SVJ_Tule17**	**Tule_E0145_ILP**	Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule17	**Tule_E0171_ILP**	Nitrate as N (mg/L)	18	24
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
TEGSA (Formerly ETGSA	**SVJ_Tule16**	**Tule_E0182_RMS (SMGA Well ID: ETGSA-1U)**	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
TPD WD GSA	**SVJ_Tule17**	**Tule_E0147_ILP**	Nitrate as N (mg/L)	11.25	15
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
LTRID GSA	**SVJ_Tule15**	**Tule_L0007_RMS**	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule6	**Tule_L0015_RMS**	Nitrate as N (mg/L)	7.50	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	13.50	18
			Hexavalent Chromium (µg/L)	7.50	10
			1,2,3-TCP (µg/L)	0.00	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15.00	20
	SVJ_Tule17	**Tule_L0071_ILP**	Nitrate as N (mg/L)	11.25	15
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
LTRID GSA	SVJ_Tule15	Tule_L0072_ILP	Nitrate as N (mg/L)	9	12
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule15	Tule_L0073_ILP	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
	SVJ_Tule15	Tule_L0073_ILP	1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule15	Tule_L0074_ILP	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule15	Tule_L0080_ILP	Nitrate as N (mg/L)	8.25	11
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule6	Tule_L0090_ILP	Nitrate as N (mg/L)	23.25	31
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.50	10
			Hexavalent Chromium (µg/L)	7.50	10
			1,2,3-TCP (µg/L)	0.00	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15.00	20

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
LTRID GSA	SVJ_Tule5	Tule_L0093_ILP	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule6	Tule_L0108_ILP	Nitrate as N (mg/L)	7.50	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.50	10
			Hexavalent Chromium (µg/L)	7.50	10
			1,2,3-TCP (µg/L)	0.00	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15.00	20
	SVJ_Tule14	Tule_L0174_RMS	Nitrate as N (mg/L)	11.25	15
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
PIXID GSA	SVJ_Tule2	Tule_P0020_RMS[2]	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule8	Tule_P0021_RMS	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
PIXID GSA	SVJ_Tule12	Tule_P0024_RMS	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
DEID GSA	SVJ_Tule7	Tule_P0117_ILP	Nitrate as N (mg/L)	14.25	19
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule4	Tule_P0133_ILP	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule12	Tule_D0045_RMS[2]	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule10	Tule_D0047_RMS[2]	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
DEID GSA	SVJ_Tule11	Tule_D0050_RMS[2]	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule9	Tule_D0084_ILP	Nitrate as N (mg/L)	9	12
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0059	0.0079
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule11	Tule_D0085_ILP	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SJV_Kern78	Tule_D0173_RMS	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
	SJV_Kern78	Tule_D0173_RMS	Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule4	Tule_T0058_RMS[2]	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
TCWA GSA	SVJ_Tule1	Tule_T0061_RMS[2]	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule1	Tule_T0064_RMS	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	0.15	0.2
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule3	Tule_T0066_ILP	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule1	Tule_T0089_ILP	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule10	Tule_T0179_RMS[2]	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
KTWD GSA	**SVJ_Tule16**	**Tule_K0170_ILP**	Nitrate as N (mg/L)	7.5	10
			DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			Hexavalent Chromium (µg/L)	7.5	10
			1,2,3-TCP (µg/L)	0.0038	0.005
			Total Dissolved Solids (mg/L)[1]	562.5	750
			Uranium (pCi/L)	15	20

*Source: Data provided in Attachment 5 of the 2024 Tule Subbasin Coordination Agreement (**Appendix A-5**).*

Notes:

1 Total Dissolved Solids MTs, MOs, and IMs were not established for each RMS well (Tables 9 and 10, Attachment 5 of the 2024 Tule Subbasin Coordination Agreement); Therefore, it is assumed that the MT is based on the Agricultural Water Quality Objective by default, and the MOs/IMs are 75 percent of the MT, as suggested in Section 8 of Attachment 5 from the Coordination Agreement (**Appendix A-5**).

2 RMS water quality well was not included in the 2024 Tule Subbasin Coordination Agreement (Tables 9 and 10 of Attachment 5) but was listed in the 2025 Tule Subbasin Annual Report Draft (Attachment A-2). The well and the official seven COCs have been added with the assumption that the MT is based on the MCL by default, with the exception of Total Dissolved Solids, which is based on the WQO. The MOs/IMs are 75 percent of the MT, as suggested in Section 8 of Attachment 5 from the Coordination Agreement (**Appendix A-5**).

SGMA Well IDs are provided in this table for groundwater quality RMS wells that are not commonly labeled by their Master Well IDs in the Tule Subbasin Coordination Agreement and Annual Reports.

1,2,3 - TCP = 1,2,3-Trichloropropane
DBCP = Dibromo-3-chloropropane
Nitrate as N = Nitrate as Nitrogen
PCE = Tetrachloroethene
µg/L = micrograms per liter
pCi/L = picocuries per liter
GSA = Groundwater Sustainability Agency
MO = Measurable Objective
IM = Interim Milestone
MT = Minimum Threshold
PSAG = Public Supply Assessment Grid

Table 3-8. Groundwater Quality SMCs for RMS Lower Aquifer Wells

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
TBID GSA	**SVJ_Tule18**	**Tule_E0037_RMS**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule18	**Tule_E0034_RMS[5]**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
SID GSA	**SVJ_Tule13**	**Tule_E0186_RMS (SGMA Well ID: TSMW-4D)[1]**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.2925	0.39
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule13	**Tule_E0140_ILP**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
TE GSA (formerly ETGSA)	**SVJ_Tule19**	**Tule_E0036_RMS[8]**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
TE GSA (formerly ETGSA)	**SVJ_Tule20**	**Tule_E0038_RMS**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule18	**Tule_E0123_ILP**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	9.75	13
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule17	**Tule_E0142_ILP**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
	SVJ_Tule17	**Tule_E0142_ILP**	Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule19	**Tule_E0160_ILP**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule16	**Tule_E0164_ILP**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	4.8	6.4
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
TE GSA (formerly ETGSA)	**SVJ_Tule16**	**Tule_E0165_ILP**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	8.25	11
			1,2,3 - TCP (µg/L)	0.75	1
			PCE (µg/L)[2]	4.8	6.4
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
LTRID GSA	**SVJ_Tule14**	**Tule_L0006_RMS**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule6	**Tule_L0014_RMS**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule8	**Tule_L0083_ILP**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.36	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
PIXID GSA	**SVJ_Tule8**	**Tule_P0018_RMS**	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
PIXID GSA	**SVJ_Tule8**	**Tule_P0018_RMS**	Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule9	**Tule_P0022_RMS[6]**	DBCP (µg/L)	0.15	0.2

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule8	Tule_P0023_RMS[4]	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule12	Tule_P0025_RMS[4]	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule8	Tule_P0121_ILP	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
DEID GSA	SVJ_Tule9	Tule_D0043_RMS	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
DEID GSA	SVJ_Tule11	Tule_D0051_RMS	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule9	Tule_D0166_ILP	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	9	12
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule11	Tule_D0168_ILP	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.9575	10.61
	SVJ_Tule11	Tule_D0168_ILP	1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
TCWA GSA	SVJ_Tule9	Tule_T0046_RMS[7]	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule4	Tule_T0059_RMS[4]	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
TCWA GSA	SVJ_Tule1	Tule_T0060_RMS[4]	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule1	Tule_T0062_RMS[4]	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule1	Tule_T0065_RMS[4]	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule1	Tule_T0127_ILP	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	69.8625	93.15
			1,2,3 - TCP (µg/L)	0.045	0.06
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule4	Tule_T0135_ILP	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
	SVJ_Tule4	Tule_T0135_ILP	Uranium (pCi/L)	15	20
TCWA GSA	SVJ_Tule3	Tule_T0148_ILP	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	10	76.5
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule16	Tule_E0183_RMS (SGMA Well ID: ETGSA-1L)	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	8.25	11
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
Alpaugh GSA	SVJ_Tule2	Tule_A0056_RMS[4]	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.0038	0.005
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule2	Tule_A0159_ILP	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
KTWD GSA	SVJ_Tule11	Tule_KT155_ILP	DBCP (µg/L)	0.2025	0.27
			Arsenic (µg/L)	7.9575	10.61
			1,2,3 - TCP (µg/L)	0.5175	0.69
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
KTWD GSA	SVJ_Tule20	Tule_KT041_RMS	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)	0.00375	0.005
			PCE (µg/L)[2]	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10

GSA	PSAG	Master Well ID	Constituent of Concern	IMs & MO	MT
			Total Dissolved Solids (mg/L)[3]	562.5	750
			Uranium (pCi/L)	15	20
	SVJ_Tule20	Tule_KT042_RMS	DBCP (µg/L)	0.15	0.2
			Arsenic (µg/L)	7.5	10
			1,2,3 - TCP (µg/L)[2]	0.00375	0.005
			PCE (µg/L)	3.75	5
			Hexavalent Chromium (µg/L)	7.5	10
			Nitrate as N (mg/L)	7.5	10
			Total Dissolved Solids (mg/L)[3]	562.5	750
	SVJ_Tule20	Tule_KT042_RMS	Uranium (pCi/L)	15	20

*Source: Data provided in Attachment 5 of the 2024 Tule Subbasin Coordination Agreement (**Appendix A-5**).*

Notes:

1 TSMW-4D is listed as TSMW-4L in Attachment 5, Table 10, of the 2024 Tule Subbasin Coordination Agreement (**Appendix A-5**).

2 Values were found to have inconsistent decimal digits between the 2022 and 2024 Tule Subbasin Coordination Agreement and GSA GSPs. Values have been corrected to appropriate decimal values based on the California State Resources Control Board's MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants (SWRCB, 2025b).

3 Total Dissolved Solids MTs, MOs, and IMs were not established for each RMS well (Tables 9 and 10, Attachment 5 of the 2024 Tule Subbasin Coordination Agreement); Therefore, it is assumed that the MT is based on the Agricultural Water Quality Objective 9 WQO) by default, and the MOs/IMs are 75 percent of the MT, as suggested in Section 8 of Attachment 5 from the Coordination Agreement (**Appendix A-5**).

4 RMS water quality well was not included in the 2024 Tule Subbasin Coordination Agreement (Tables 9 and 10 of Attachment 5) but was listed in the 2025 Tule Subbasin Annual Report Draft (Attachment A-2). The well and the official seven COCs have been added with the assumption that the MT is based on the MCL by default, with the exception of Total Dissolved Solids, which is based on the WQO. The MOs/IMs are 75 percent of the MT, as suggested in Section 8 of Attachment 5 from the Coordination Agreement (**Appendix A-5**).

5 Composite well

6 Unknown Aquifer (DWR, 2026). Total well depth of well Tule_P0022_RMS is 640 feet.

7 Unknown Aquifer (DWR, 2026). Total well depth of well Tule_T0046_RMS is 1602 feet.

8 Pliocene Sedimentary Deposit well

SGMA Well IDs are provided in this table for groundwater quality RMS wells that are not commonly labeled by their Master Well IDs in the Tule Subbasin Coordination Agreement and Annual Reports.

1,2,3 - TCP = 1,2,3-Trichloropropane
DBCP = Dibromo-3-chloropropane
Nitrate as N = Nitrate as Nitrogen
PCE = Tetrachloroethene
mg/L - milligrams per liter
µg/L = micrograms per liter
pCi/L = picocuries per liter
GSA = Groundwater Sustainability Agency
MO = Measurable Objective
IM = Interim Milestone
MT = Minimum Threshold
PSAG = Public Supply Assessment Grid

3-9. Summary of Tule Subbasin Land Uses and Infrastructure Vulnerable to Land Subsidence and Criteria for Defining Significant and Unreasonable Conditions

Land Use/ Infrastructure	Potential Impacts	Criteria for Significant and Unreasonable Impacts	Basis for Significance Criteria
Friant-Kern Canal	Loss of Delivery Capacity Canal Cracking	An unmitigated reduction in flow capacity as defined by the Middle Reach Capacity Correction Project design flow rates for the Friant-Kern Canal, should those flow rates be achieved after construction of the FKC Middle Reach Capacity Correction Project as defined in the Record of Decision (USBR, 2020)	Agreement with FWA re: Canal Restoration Costs
Local Canals	Loss of Delivery Capacity Canal Cracking	Loss of Delivery Capacity or Damage to Canals that Cannot Be Mitigated by the Canal Owners	Correspondence with: GSA Growers, Lower Tule River Irrigation District, Pixley Irrigation District, Tule River Association
Water Delivery Pipelines	Loss of Pipeline Capacity Due to Exceedance of Pipeline Pressure Ratings	Loss of Pipeline Delivery Capacity or Exceedance of Pipeline Pressure Ratings that Cannot be Mitigated	Correspondence with: Delano-Earlimart Irrigation District, Saucelito Irrigation District, Terra Bella Irrigation District, Porterville Irrigation District, City of Porterville
	Damage to Pipelines from Differential Subsidence		
Flood Control	Increased Flood Risk in Areas Adjacent to Stream Channels During Extreme Runoff Events	Loss of Land Uses Due to Flooding Caused by Land Subsidence from Groundwater Pumping Occurring After 2015. Cumulative Land Subsidence Limited to 7 ft Along the Western Tule River and 5 ft Along the Western Deer Creek.	Correspondence with: GSA Growers, Lower Tule River Irrigation District, Tule River Association, Deer Creek Stormwater District, Alpaugh Irrigation District, Tulare County Flood Control District, California High Speed Rail, Burlington Northern/Santa Fe Railroad, California Department of Water Resources (AMEC, 2017; HSR DEIR).
	Increased Flood Risk of Infrastructure Due to Differential Land Subsidence In and Near Tulare Lake	Loss of Function of a Structure or Facility from Flooding Caused by Land Subsidence Occurring After 2015. Cumulative Land Subsidence Limited to 7 ft in the Northwestern Tule Subbasin.	

Land Use/ Infrastructure	Potential Impacts	Criteria for Significant and Unreasonable Impacts	Basis for Significance Criteria
Wells	Well Casing Damage or Collapse	The Point at Which Well Damage from Land Subsidence Prevents the Use of the Well, Requiring Repair or Replacement that Cannot be Mitigated (14 ft).	Correspondence with: GSA Growers with Wells, City of Porterville, City of Tipton (Engineer), Well Casing Supplier, Local Well Drillers, Self Help Enterprises
Other Infrastructure	Uneven Settlement Resulting in Structural Damage	The Point at Which Damage and/or Loss of Functionality of a Structure or Facility Occurs to the Extent that the Structure or Facility Cannot Function or Operate Without Repair or Replacement	Correspondence with: City of Porterville, Tulare County Resources Management Agency, California High Speed Rail, Burlington Northern/Santa Fe Railroad

Table 3-10. Summary of Land Subsidence SMCs by RMS Network

GSA Name	RMS Data Source	RMS ID	Status	Allowable Land Subsidence Between 2024 and 2040 (ft)	Average Annual Allowable Subsidence (ft)	Interim Milestone 2030 (ft)	Interim Milestone 2035 (ft)	Measurable Objective (ft)	Minimum Threshold (ft)
Saucelito ID GSA	Benchmark	S0035_B_RMS	Active	2.1	0.1	1.2	0.5	0	3.6
		S0047_B_RMS	Active	1.4	0.1	0.8	0.3	0	2.8
		S0048_B_RMS	Active	0.9	0.1	0.5	0.2	0	3
		S0049_B_RMS	Active	0.3	0.0	0.2	0.1	0	2
	InSAR	S0047_InSAR	Active	1.2	0.1	0.7	0.3	0	3
Porterville ID GSA	Benchmark	PD0050_B_RMS	Active	1	0.1	0.6	0.2	0	1
Terra Bella ID GSA	InSAR	TB0092_InSAR	Active	0.6	0.0	0.3	0.1	0	1.3
Tea Pot Dome WD GSA	InSAR	TP0050_InSAR	Active	1.1	0.1	0.6	0.3	0	2.4
		TP0051_InSAR	Active	1	0.1	0.6	0.2	0	1
		TP0052_InSAR	Active	1	0.1	0.6	0.2	0	1
		TP0053_InSAR	Active	1	0.1	0.6	0.2	0	1
Alpaugh GSA	Benchmark	A0013_B_RMS	Active	2.5	0.2	1.4	0.6	0	4.5
		A0017_B_RMS	Active	3	0.2	1.7	0.7	0	4
		A0018_B_RMS	Active	3	0.2	1.7	0.7	0	4
		A0019_B_RMS	Active	2.4	0.2	1.4	0.6	0	4
		A0020_B_RMS	Active	4	0.3	2.3	0.9	0	4
	InSAR	A0077_InSAR	Active	3	0.2	1.7	0.7	0	3.8
		A0078_InSAR	Active	2.5	0.2	1.4	0.6	0	4.5
		A0079_InSAR	Active	2.5	0.2	1.4	0.6	0	3.9

GSA Name	RMS Data Source	RMS ID	Status	Allowable Land Subsidence Between 2024 and 2040 (ft)	Average Annual Allowable Subsidence (ft)	Interim Milestone 2030 (ft)	Interim Milestone 2035 (ft)	Measurable Objective (ft)	Minimum Threshold (ft)
Delano-Earlimart ID GSA	Benchmark	D0012_B_RMS	Active	0.2	0.0	0.1	0.0	0	2
		D0030_B_RMS	Active	0	0.0	0.0	0.0	0	1.5
		D0031_B_RMS	Active	-0.1	0.0	-0.1	0.0	0	1
		D0032_B_RMS	Active	0	0.0	0.0	0.0	0	0.5
		D0033_B_RMS	Active	0.4	0.0	0.2	0.1	0	1
		D0034_B_RMS	Active	0.1	0.0	0.1	0.0	0	1.5
		D0089_B_RMS	Active	1.8	0.1	1.0	0.4	0	1.9
	InSAR	D0080_InSAR	Active	0.2	0.0	0.1	0.0	0	1.6
		D0081_InSAR	Active	0.5	0.0	0.3	0.1	0	0.8
		D0082_InSAR	Active	0.3	0.0	0.2	0.1	0	1
		D0083_InSAR	Active	0.3	0.0	0.2	0.1	0	0.8
		D0084_InSAR	Active	0.1	0.0	0.1	0.0	0	1
		D0085_InSAR	Active	0.4	0.0	0.2	0.1	0	0.5
		D0086_InSAR	Active	-0.2	0.0	-0.1	0.0	0	1
		D0087_InSAR	Active	0.1	0.0	0.1	0.0	0	1
		D0088_InSAR	Active	0.7	0.0	0.4	0.2	0	0.7
		D0089_InSAR	Active	1	0.1	0.6	0.2	0	1
Tule East GSA (formerly Eastern Tule GSA)	Benchmark	E0085_B_RMS	Active	0.8	0.1	0.5	0.2	0	1.1
		E0086_B_RMS	Active	0.7	0.0	0.4	0.2	0	1.5
		E0087_B_RMS	Active	0.4	0.0	0.2	0.1	0	0.9
	InSAR	E0043_InSAR	Active	0.1	0.0	0.1	0.0	0	2
		E0044_InSAR	Active	0.6	0.0	0.3	0.1	0	1.7
		E0045_InSAR	Active	0.6	0.0	0.3	0.1	0	1.1
		E0046_InSAR	Active	1	0.1	0.6	0.2	0	1.2

GSA Name	RMS Data Source	RMS ID	Status	Allowable Land Subsidence Between 2024 and 2040 (ft)	Average Annual Allowable Subsidence (ft)	Interim Milestone 2030 (ft)	Interim Milestone 2035 (ft)	Measurable Objective (ft)	Minimum Threshold (ft)
Kern-Tulare WD GSA	**Benchmark**	KT088_B_RMS	Active	1.4	0.1	0.8	0.3	0	1.7
	InSAR	K0090_InSAR	Active	1.4	0.1	0.8	0.3	0	1.4
		K0091_InSAR	Active	1.4	0.1	0.8	0.3	0	1.4
Lower Tule River ID GSA	**Benchmark**	L0001_B_RMS	Destroyed	4.5	0.3	2.5	1.1	0	NA
		L0002_B_RMS[3]	Active	3.8	0.3	1.9	1.0	0	7
		L0003_B_RMS	Active	3.7	0.2	2.1	0.9	0	7
		L0004_B_RMS	Active	3	0.2	1.7	0.7	0	5.2
		L0005_B_RMS	Active	4.4	0.3	2.5	1.0	0	7
		L0006_B_RMS	Destroyed	NA	NA	NA	NA	0	NA
		L0022_B_RMS[3]	Active	4.9	0.3	2.5	1.2	0	7
		L0023_B_RMS	Active	4.6	0.3	2.6	1.1	0	6.8
		L0024_B_RMS	Active	3.6	0.2	2.0	0.8	0	6.1
		L0038_B_RMS	Active	1.4	0.1	0.8	0.3	0	3.4
		L0039_B_RMS	Active	1.9	0.1	1.1	0.4	0	4.2
		L0040_B_RMS	Active	3.6	0.2	2.0	0.8	0	5.5
		L0041_B_RMS	Active	3.4	0.2	1.9	0.8	0	5.6
		L0042_B_RMS	Active	3.6	0.2	2.0	0.8	0	5.9
		L0043_B_RMS	Active	2.8	0.2	1.6	0.7	0	3.2
		L0044_B_RMS	Active	1.2	0.1	0.7	0.3	0	1.6
		L0045_B_RMS[3]	Active	2.3	0.2	1.2	0.6	0	3.7
		L0046_B_RMS	Active	0.7	0.0	0.4	0.2	0	2

GSA Name	RMS Data Source	RMS ID	Status	Allowable Land Subsidence Between 2024 and 2040 (ft)	Average Annual Allowable Subsidence (ft)	Interim Milestone 2030 (ft)	Interim Milestone 2035 (ft)	Measurable Objective (ft)	Minimum Threshold (ft)
Lower Tule River ID GSA	**InSAR**	L0001_InSAR	Active	4.1	0.3	2.3	1.0	0	6.4
		L0002_InSAR[3]	Active	NA	NA	TBD	TBD	0	6.1
		L0003_InSAR	Active	3.8	0.2	2.1	0.9	0	6.7
		L0004_InSAR	Active	1.7	0.1	1.0	0.4	0	4.1
		L0005_InSAR	Active	1.2	0.1	0.7	0.3	0	2.7
		L0006_InSAR	Active	3.3	0.2	1.9	0.8	0	4.5
		L0007_InSAR	Active	4	0.3	2.3	0.9	0	6
		L0008_InSAR	Active	3.8	0.2	2.1	0.9	0	6.2
		L0009_InSAR	Active	3.9	0.2	2.2	0.9	0	5.7
		L0010_InSAR	Active	3.8	0.2	2.1	0.9	0	6.2
		L0011_InSAR	Active	4	0.3	2.3	0.9	0	6.9
		L0012_InSAR	Active	3.7	0.2	2.1	0.9	0	6.3
		L0013_InSAR	Active	3.9	0.2	2.2	0.9	0	6.8
		L0014_InSAR	Active	1.7	0.1	1.0	0.4	0	4.2
		L0015_InSAR	Active	1.7	0.1	1.0	0.4	0	4.5
		L0016_InSAR	Active	4	0.3	2.3	0.9	0	6.8
		L0017_InSAR	Active	3.7	0.2	2.1	0.9	0	6
		L0018_InSAR	Active	3.8	0.2	2.1	0.9	0	6
		L0019_InSAR[3]	Active	NA	NA	TBD	TBD	0	6
		L0020_InSAR	Active	4	0.3	2.3	0.9	0	6.5
		L0021_InSAR[3]	Active	NA	NA	TBD	TBD	0	6.6
		L0022_InSAR	Active	3.7	0.2	2.1	0.9	0	6.4
		L0023_InSAR[3]	Active	NA	NA	TBD	TBD	0	6.5
		L0024_InSAR[3]	Active	NA	NA	TBD	TBD	0	6.4
		L0025_InSAR[3]	Active	NA	NA	TBD	TBD	0	7

GSA Name	RMS Data Source	RMS ID	Status	Allowable Land Subsidence Between 2024 and 2040 (ft)	Average Annual Allowable Subsidence (ft)	Interim Milestone 2030 (ft)	Interim Milestone 2035 (ft)	Measurable Objective (ft)	Minimum Threshold (ft)
Lower Tule River ID GSA	InSAR	L0026_InSAR[3]	Active	NA	NA	TBD	TBD	0	6.9
		L0027_InSAR	Active	3.8	0.2	2.1	0.9	0	6.3
		L0028_InSAR	Active	3.7	0.2	2.1	0.9	0	6.8
		L0029_InSAR[3]	Active	NA	NA	TBD	TBD	0	7
		L0030_InSAR[3]	Active	NA	NA	TBD	TBD	0	6.9
		L0031_InSAR	Active	1.5	0.1	0.8	0.4	0	2.4
		L0032_InSAR	Active	3.2	0.2	1.8	0.8	0	5.1
Pixley ID GSA	Benchmark	P0007_B_RMS[3]	Active	4.5	0.3	2.3	1.1	0	7
		P0008_B_RMS[3]	Active	4	0.3	2.0	1.0	0	6
		P0009_B_RMS	Active	6.4	0.4	3.6	1.5	0	7
		P0010_B_RMS	Active	6.6	0.4	3.7	1.5	0	7
		P0011_B_RMS	Active	4.6	0.3	2.6	1.1	0	5
		P0025_B_RMS	Active	5	0.3	2.8	1.2	0	5.3
		P0026_B_RMS	Active	3.5	0.2	2.0	0.8	0	3.8
		P0027_B_RMS	Active	5	0.3	2.8	1.2	0	5.3
		P0028_B_RMS	Active	3.3	0.2	1.9	0.8	0	3.6
		P0029_B_RMS	Active	1.7	0.1	1.0	0.4	0	2
		P0036_B_RMS[3]	Active	2.1	0.1	1.1	0.5	0	3.5
		P0037_B_RMS[3]	Active	2.1	0.1	1.1	0.5	0	3.5
		P0090_B_RMS	Active	1.7	0.1	1.0	0.4	0	1.9
		P0091_B_RMS	Destroyed	6.4	0.4	3.6	1.5	0	NA
		P0093_B_RMS[3]	Active	NA	NA	TBD	TBD	0	2
		P0094_B_RMS	Active	2.3	0.1	1.3	0.5	0	2.7
		P0096_B_RMS	Active	3	0.2	1.7	0.7	0	3.2

GSA Name	RMS Data Source	RMS ID	Status	Allowable Land Subsidence Between 2024 and 2040 (ft)	Average Annual Allowable Subsidence (ft)	Interim Milestone 2030 (ft)	Interim Milestone 2035 (ft)	Measurable Objective (ft)	Minimum Threshold (ft)
Pixley ID GSA	**InSAR**	P0033_InSAR	Active	6.4	0.4	3.6	1.5	0	6.8
		P0034_InSAR	Active	3.7	0.2	2.1	0.9	0	4
		P0035_InSAR	Active	5.7	0.4	3.2	1.3	0	6
		P0036_InSAR	Active	1.6	0.1	0.9	0.4	0	1.9
		P0037_InSAR	Active	4.8	0.3	2.7	1.1	0	5
		P0038_InSAR	Active	3.7	0.2	2.1	0.9	0	3.9
		P0039_InSAR	Active	5.4	0.3	3.0	1.3	0	5.7
		P0040_InSAR	Active	4.7	0.3	2.6	1.1	0	5.1
		P0041_InSAR	Active	5.5	0.3	3.1	1.3	0	5.7
		P0042_InSAR[3]	Active	NA	NA	TBD	TBD	0	5.9
Tri-County Water Authority GSA	**Benchmark**	T0014_B_RMS	Active	2.4	0.2	1.4	0.6	0	4
		T0015_B_RMS	Active	2.7	0.2	1.5	0.6	0	4
		T0016_B_RMS	Active	2.7	0.2	1.5	0.6	0	3.5
		T0021_B_RMS	Active	7	0.4	3.9	1.6	0	7
		T0092_B_RMS	Active	3.1	0.2	1.7	0.7	0	3.8
	InSAR	T0054_InSAR	Active	4.2	0.3	2.4	1.0	0	6.9
		T0055_InSAR	Active	2.8	0.2	1.6	0.7	0	3.8
		T0056_InSAR	Active	2.5	0.2	1.4	0.6	0	3.7
		T0057_InSAR	Active	2.7	0.2	1.5	0.6	0	3.8
		T0058_InSAR	Active	4.7	0.3	2.6	1.1	0	5.8
		T0059_InSAR	Active	6.9	0.4	3.9	1.6	0	6.9
		T0060_InSAR	Active	3.8	0.2	2.1	0.9	0	5.7
		T0061_InSAR	Active	0.8	0.1	0.5	0.2	0	3.1
		T0062_InSAR	Active	1.1	0.1	0.6	0.3	0	3.3
		T0063_InSAR	Active	1.2	0.1	0.7	0.3	0	3.1

GSA Name	RMS Data Source	RMS ID	Status	Allowable Land Subsidence Between 2024 and 2040 (ft)	Average Annual Allowable Subsidence (ft)	Interim Milestone 2030 (ft)	Interim Milestone 2035 (ft)	Measurable Objective (ft)	Minimum Threshold (ft)
Tri-County Water Authority GSA	InSAR	T0064_InSAR	Active	1.8	0.1	1.0	0.4	0	4.3
		T0065_InSAR	Active	2.5	0.2	1.4	0.6	0	3.9
		T0066_InSAR	Active	2.5	0.2	1.4	0.6	0	3.9
		T0067_InSAR	Active	2.6	0.2	1.5	0.6	0	3.9
		T0068_InSAR	Active	3.1	0.2	1.7	0.7	0	3.9
		T0069_InSAR	Active	1.1	0.1	0.6	0.3	0	3.2
		T0070_InSAR	Active	2.2	0.1	1.2	0.5	0	4.4
		T0071_InSAR	Active	2.4	0.2	1.4	0.6	0	4
		T0072_InSAR	Active	2.7	0.2	1.5	0.6	0	4
		T0073_InSAR	Active	1	0.1	0.6	0.2	0	1
		T0074_InSAR	Active	4.4	0.3	2.5	1.0	0	4.4
		T0075_InSAR	Active	1.6	0.1	0.9	0.4	0	4
		T0076_InSAR	Active	6.7	0.4	3.8	1.6	0	6.7
Vandalia WD GSA	InSAR	V0048_InSAR	Active	1	0.1	0.6	0.2	0	1
		V0049_InSAR	Active	1	0.1	0.6	0.2	0	1

Sources:

Thomas Harder & Co, 2026; Measurable Objective and Minimum Threshold data provided in the Tule Subbasin 2024/2025 Annual Report.

*Thomas Harder & Co, 2025; "Allowable Subsidence Between 2024 and 2040" data provided in the Tule Subbasin 2023/2024 Annual Report, Amended June 2025. "Average Annual Allowable Land Subsidence" and IMs were calculated using these values and the following methods described in **Chapter 4** of this GSP.*

Allowable Land Subsidence between 2025 and 2040 data used and provided in the Tule Subbasin 2024/2025 Annual Report (Thomas Harder & Co, 2026), which were used to calculate the "Average Annual Allowable Land Subsidence" and IMs. Values for 2024-2040 were indicated to be unavailable in Annual Reports. Calculations were adjusted to account for 15 years of monitoring rather than 16.

The 2024 Tule Subbasin Coordination Agreement provides the data for the Allowable Land Subsidence between 2024 and 2040, which is used to calculate the IMs for 2030 and 2035. Review of the 2022 and 2025 Tule Subbasin Coordination Agreements indicated that an IM for 2025 was not established.

ft = feet
NA = Not Applicable
RMS = Representative Monitoring Site
SMC = Sustainability Management Criteria
TBD = To be determined as data becomes available

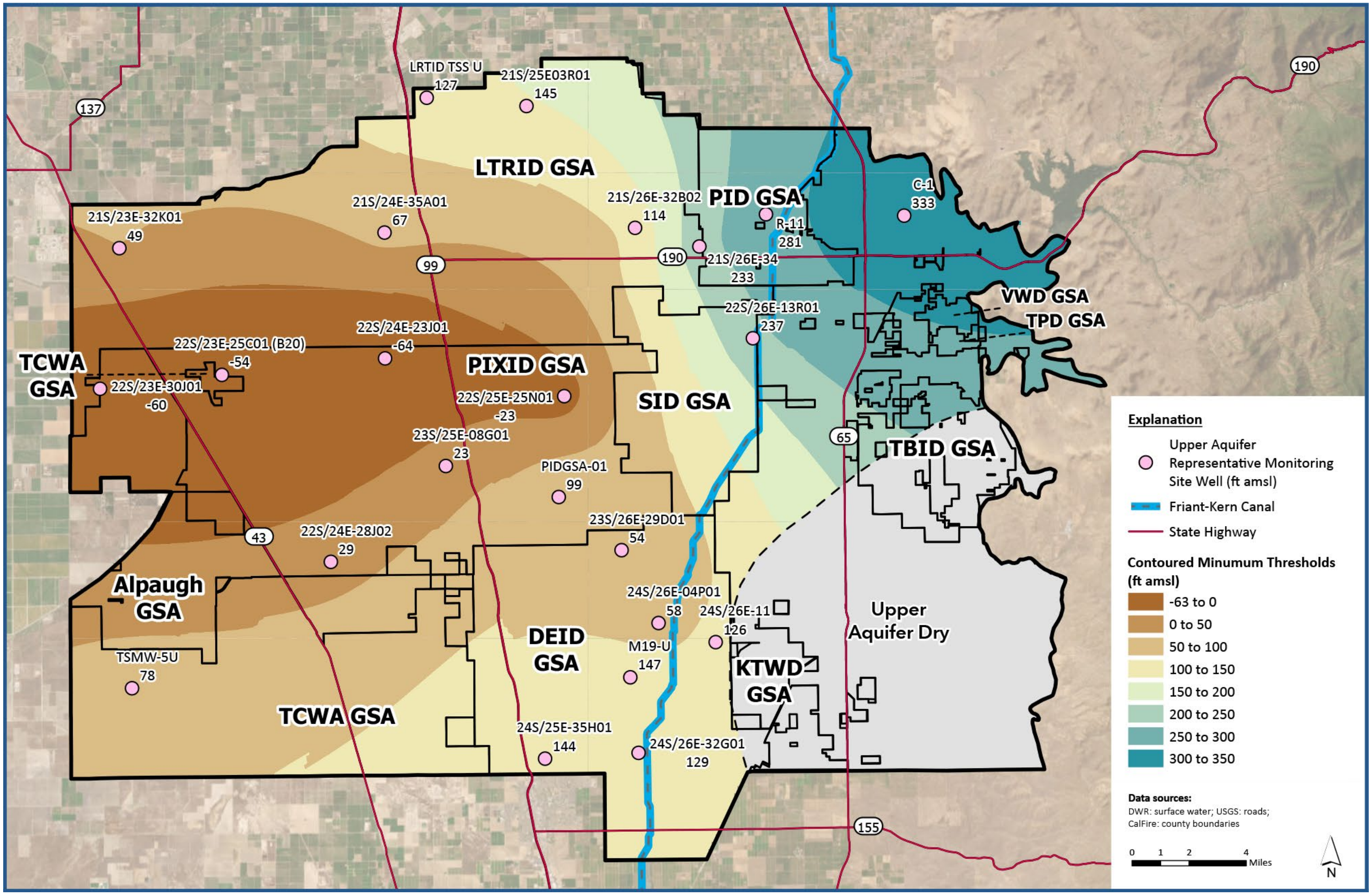


Figure 3-1. Upper Aquifer Groundwater Level Minimum Thresholds

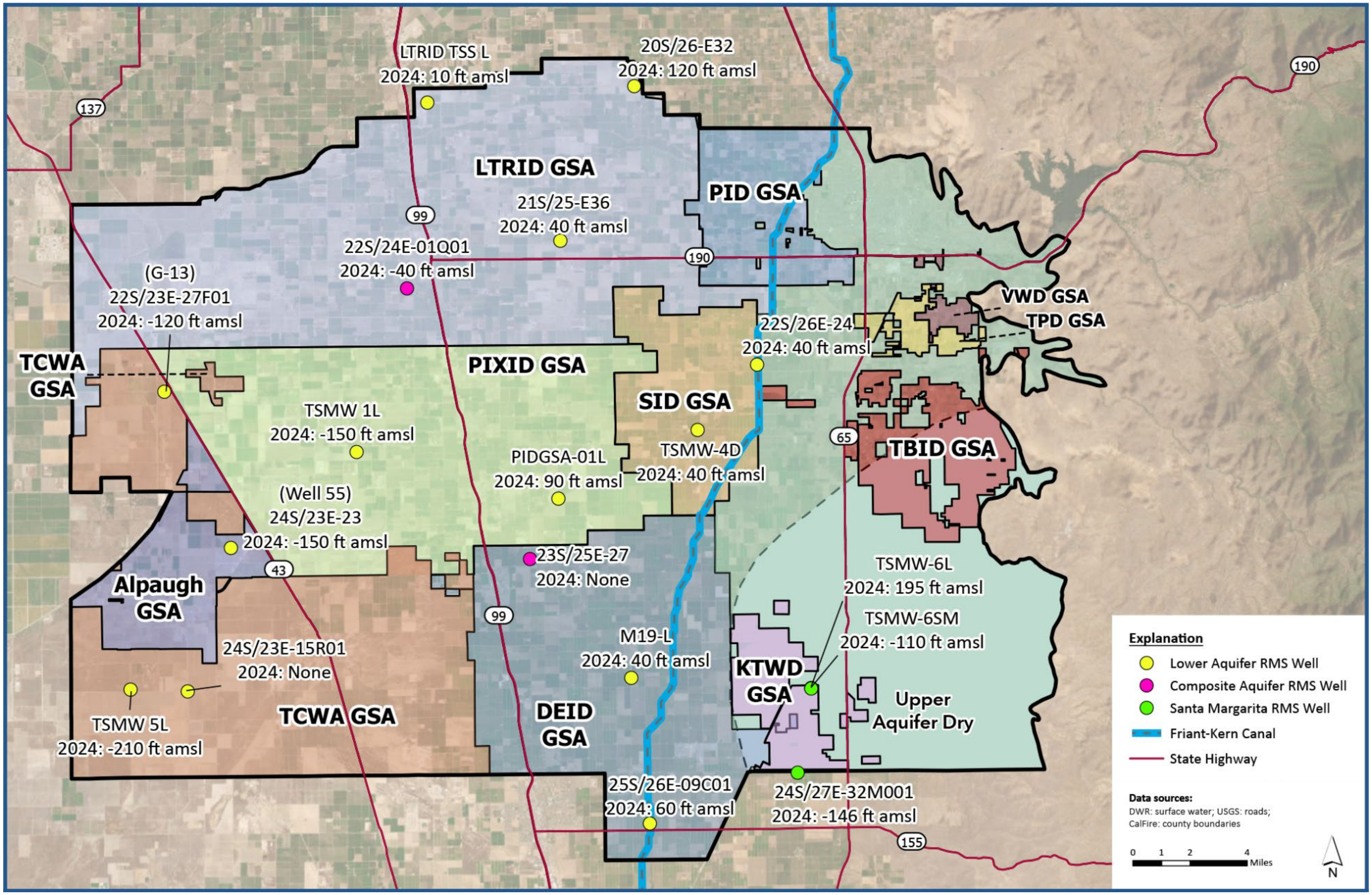


Figure 3-2. Lower Aquifer Groundwater Level Minimum Thresholds

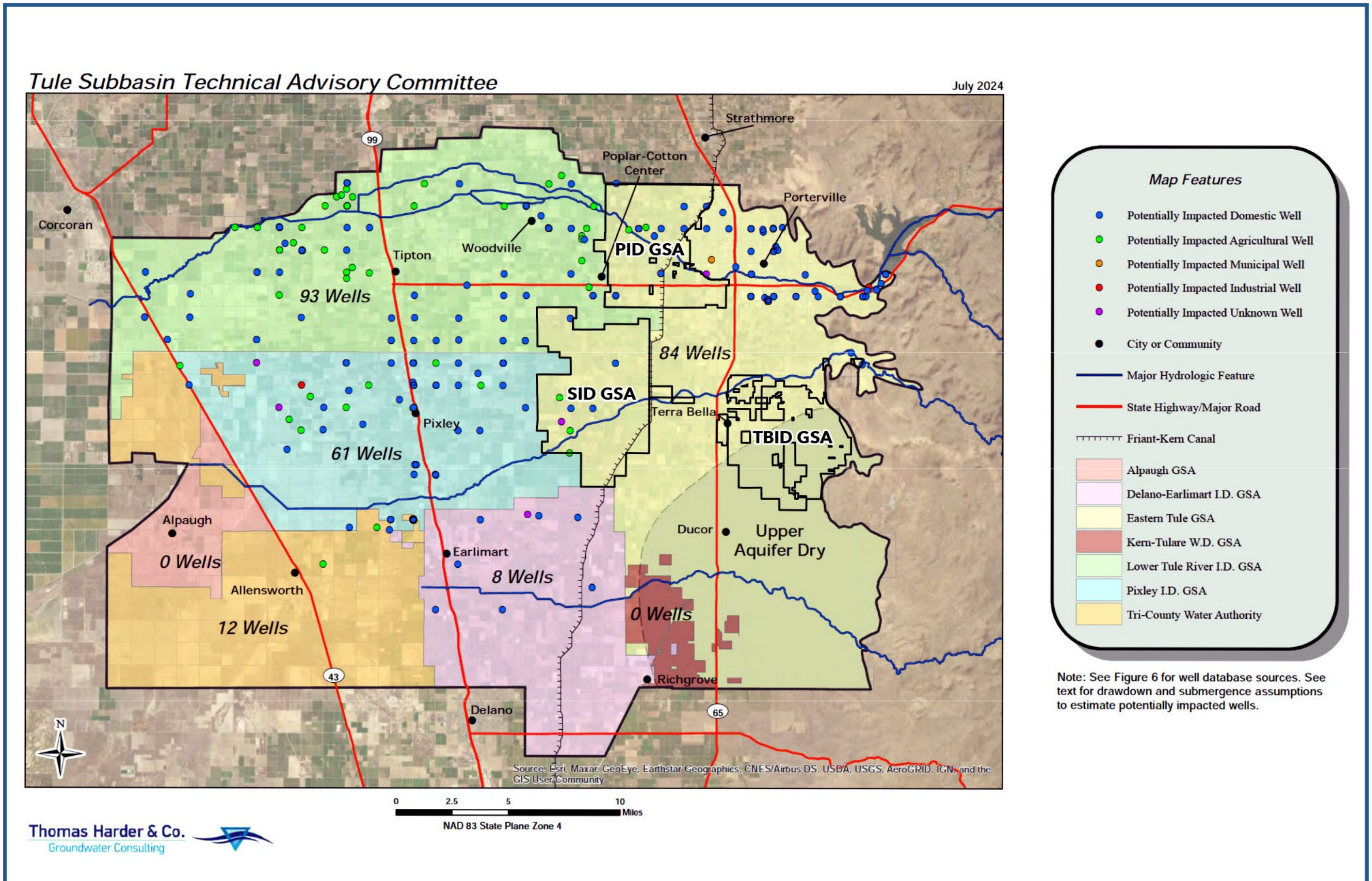


Figure 3-3. Potentially Impacted Wells at Upper Aquifer Groundwater Level Minimum Thresholds

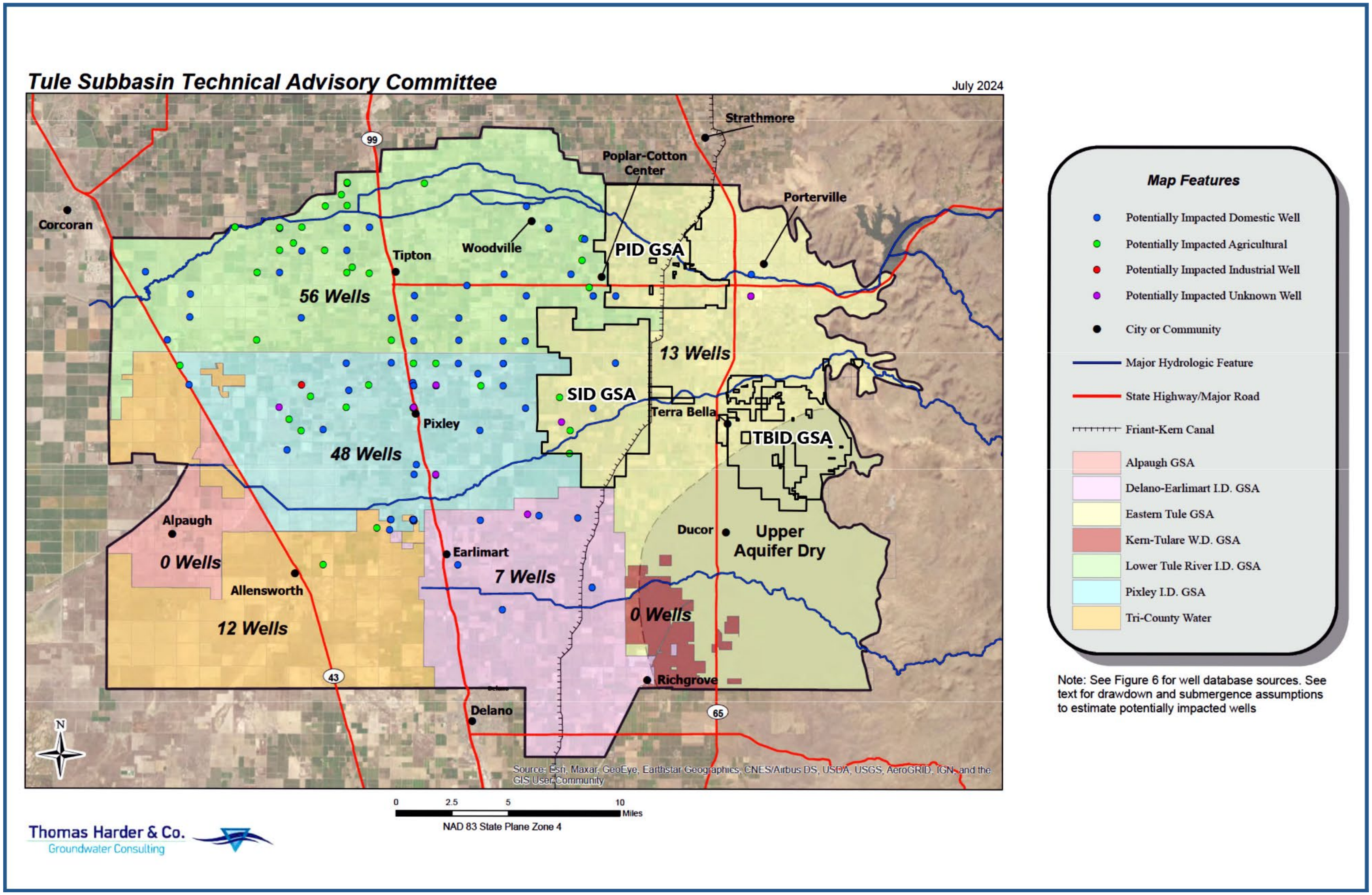


Figure 3-4. Potentially Impacted Wells at Upper Aquifer Groundwater Level Measurable Objectives

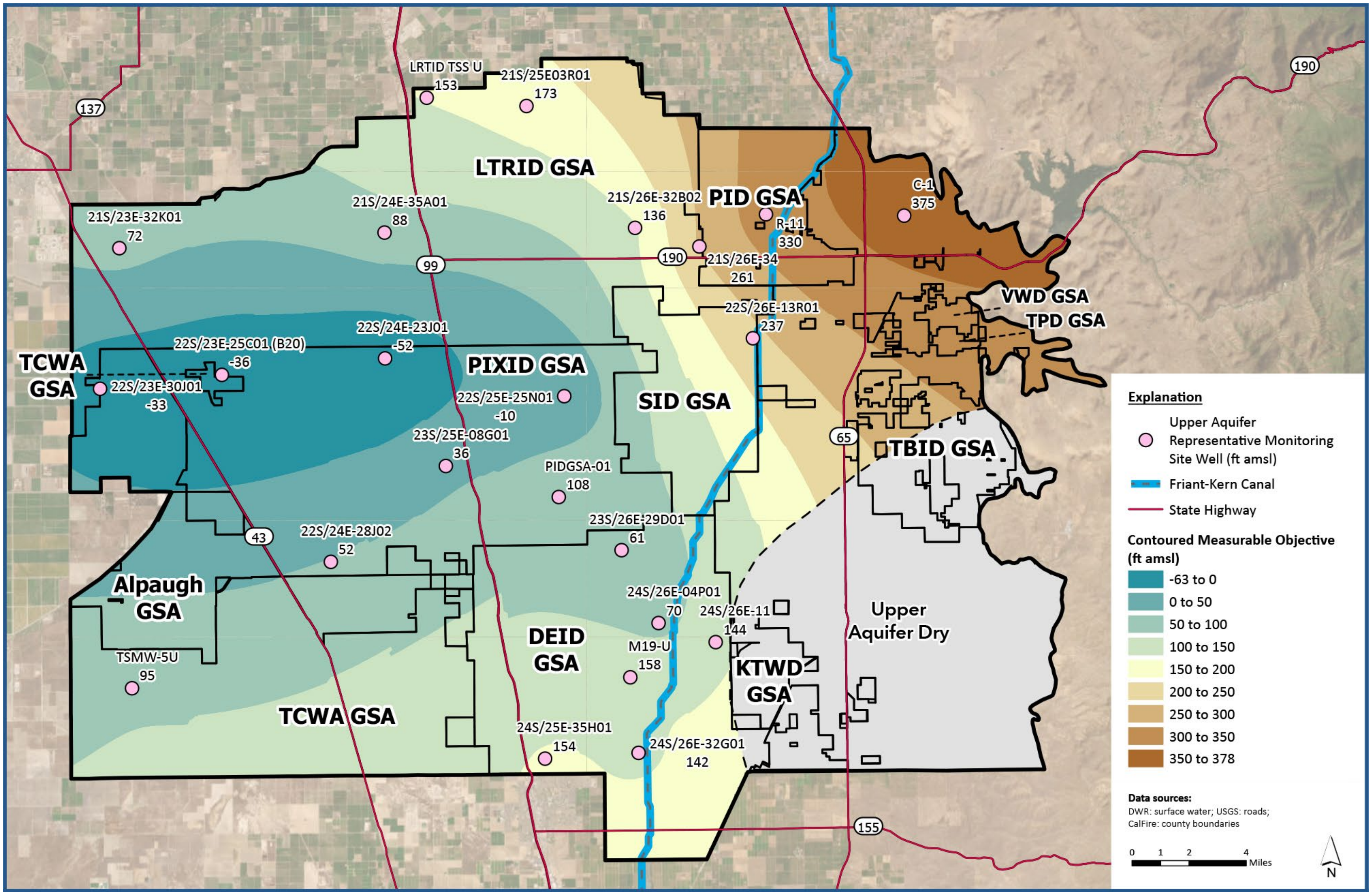


Figure 3-5. Upper Aquifer Groundwater Level Measurable Objectives

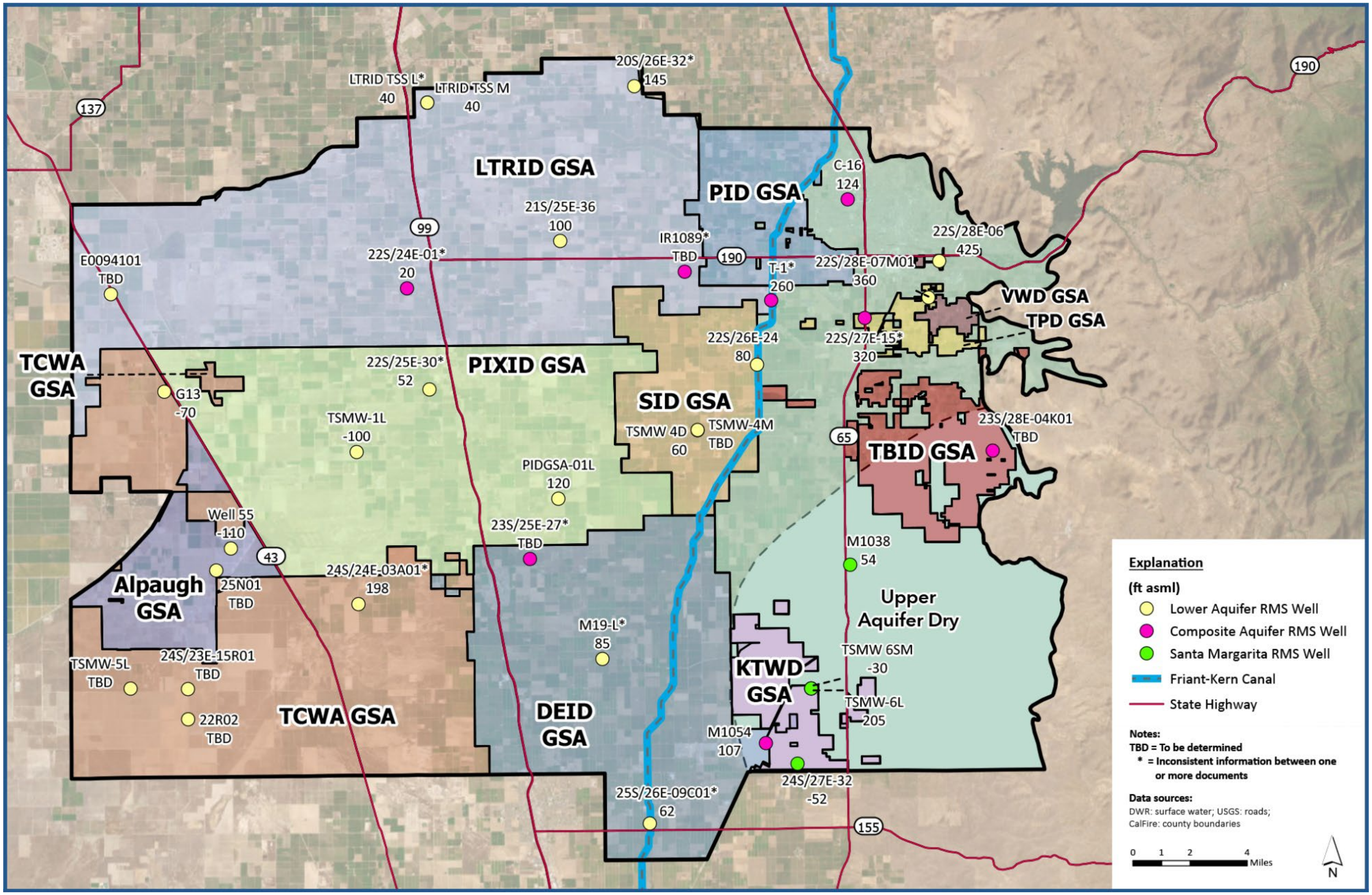


Figure 3-6. Lower Aquifer Groundwater Level Measurable Objectives

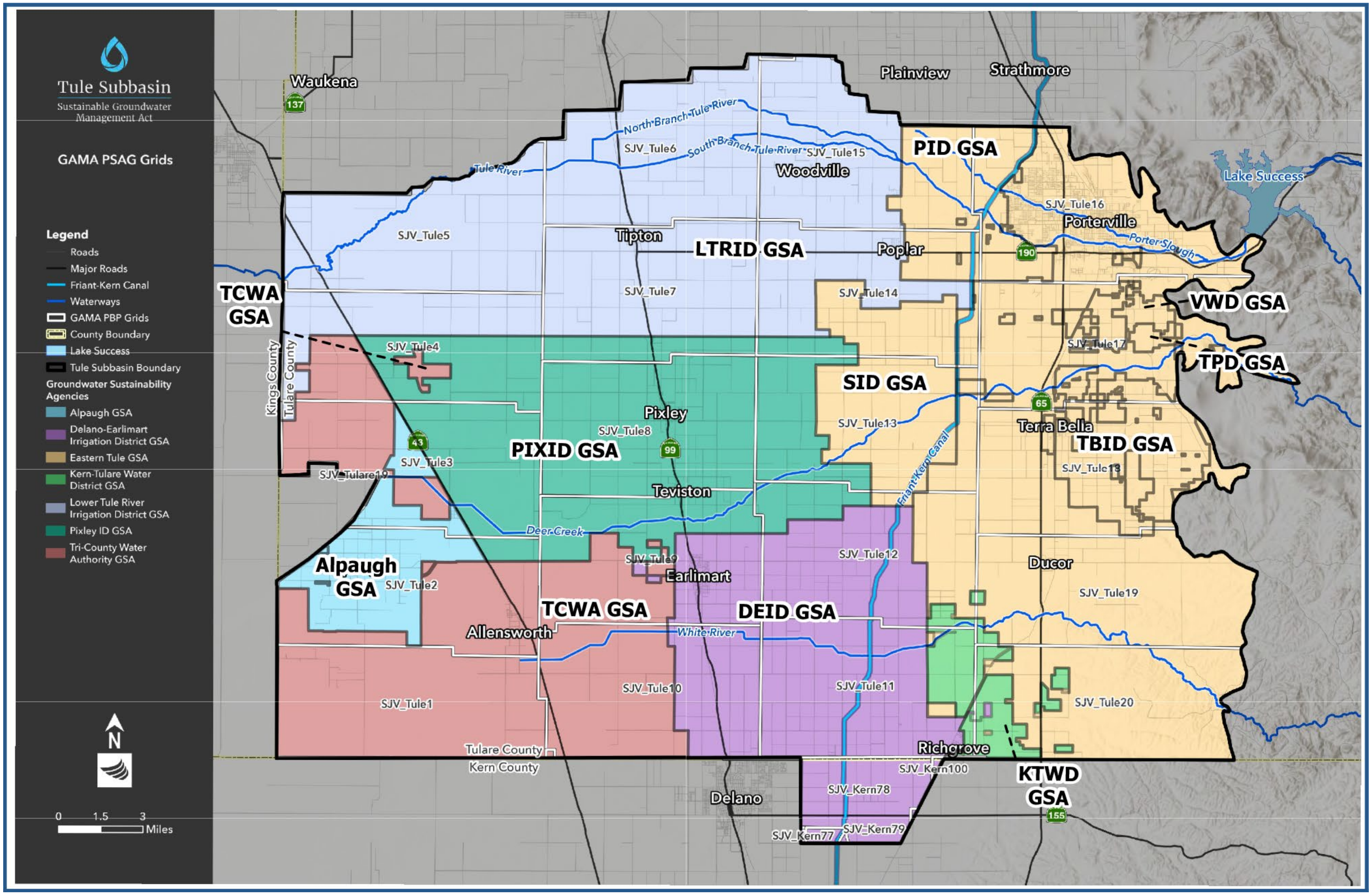


Figure 3-7. GAMA PSAG Grids

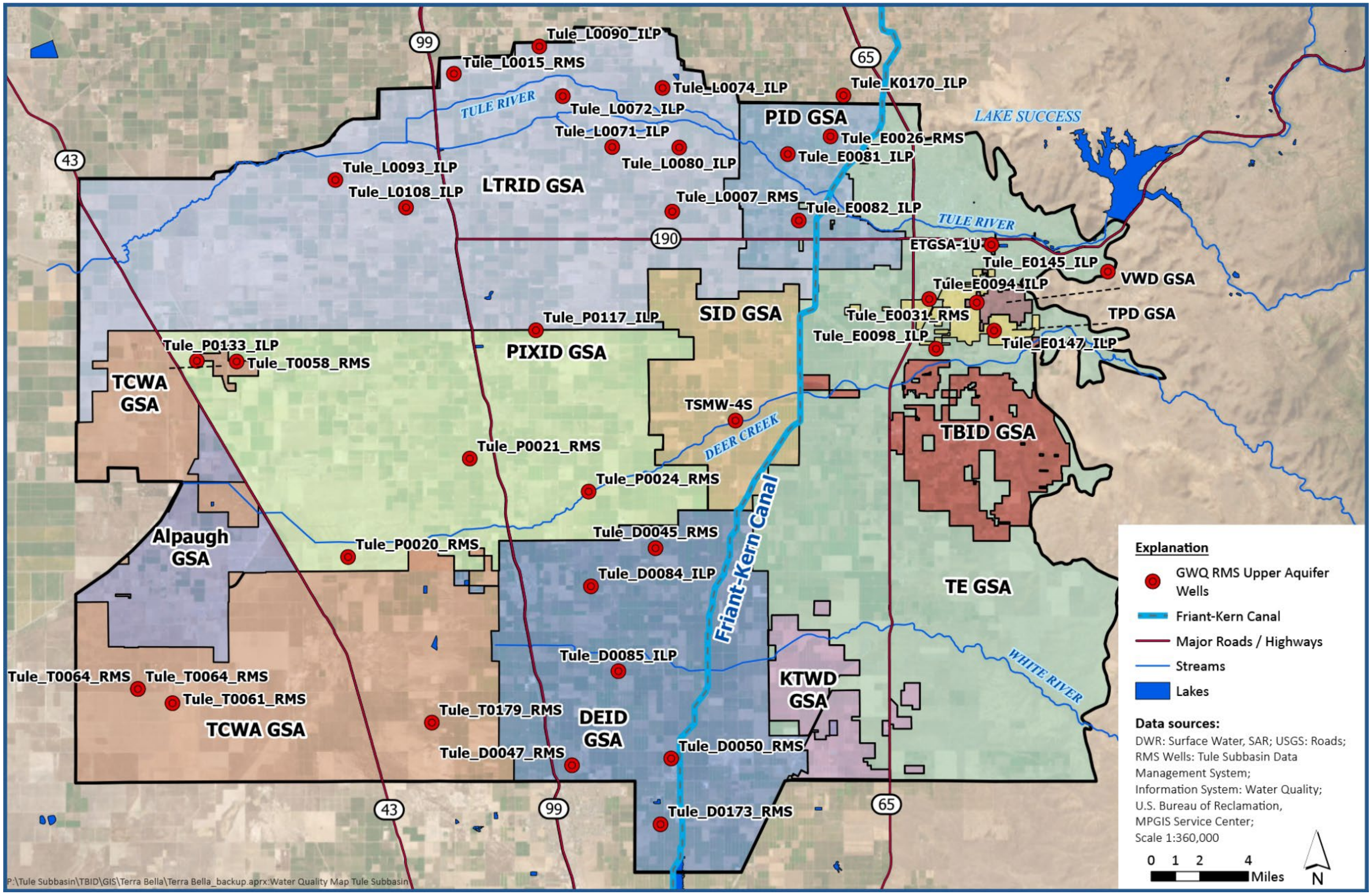


Figure 3-8. Groundwater Quality RMS Upper Aquifer Wells

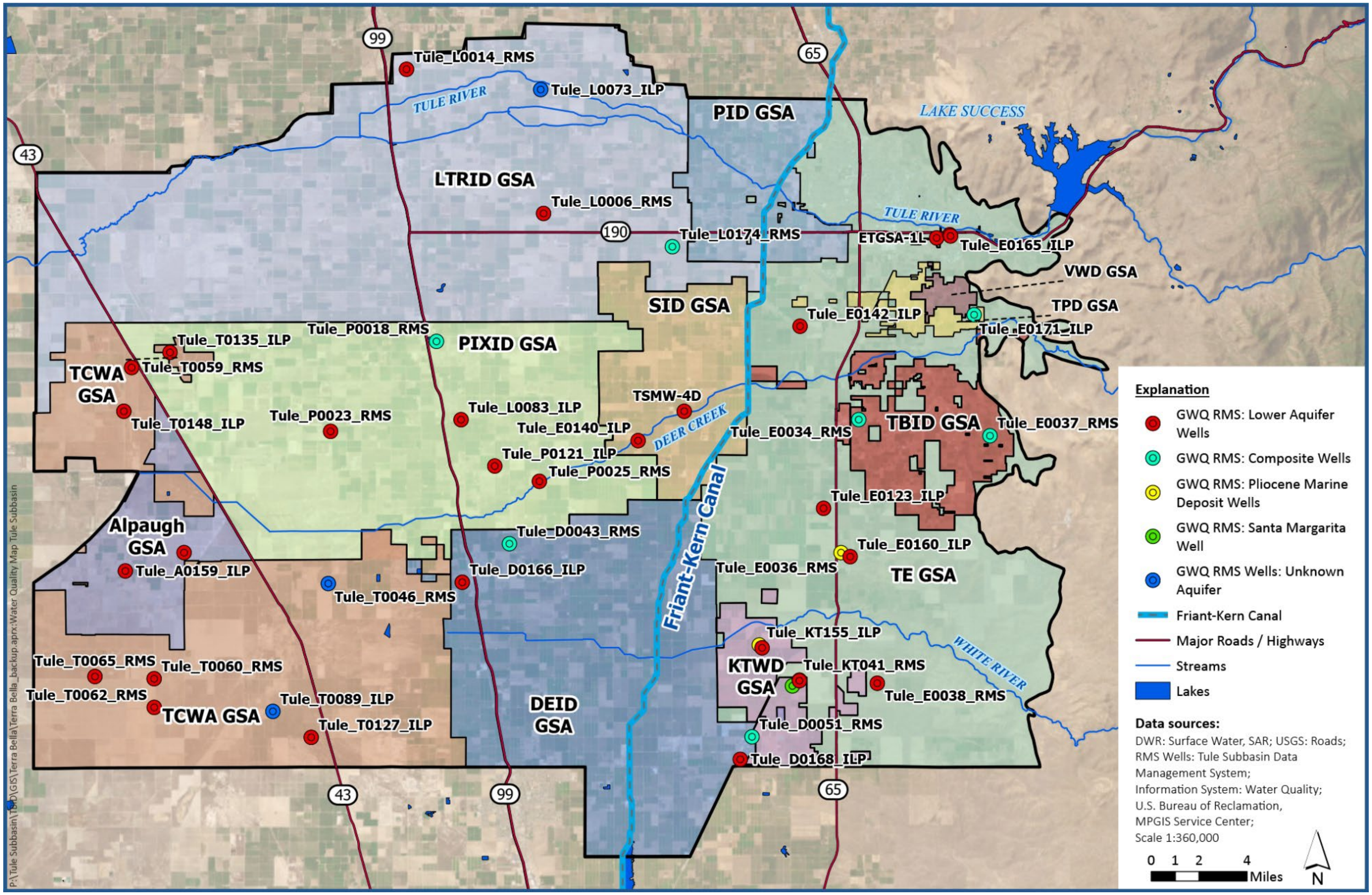


Figure 3-9. Groundwater Quality RMS Lower Aquifer Wells

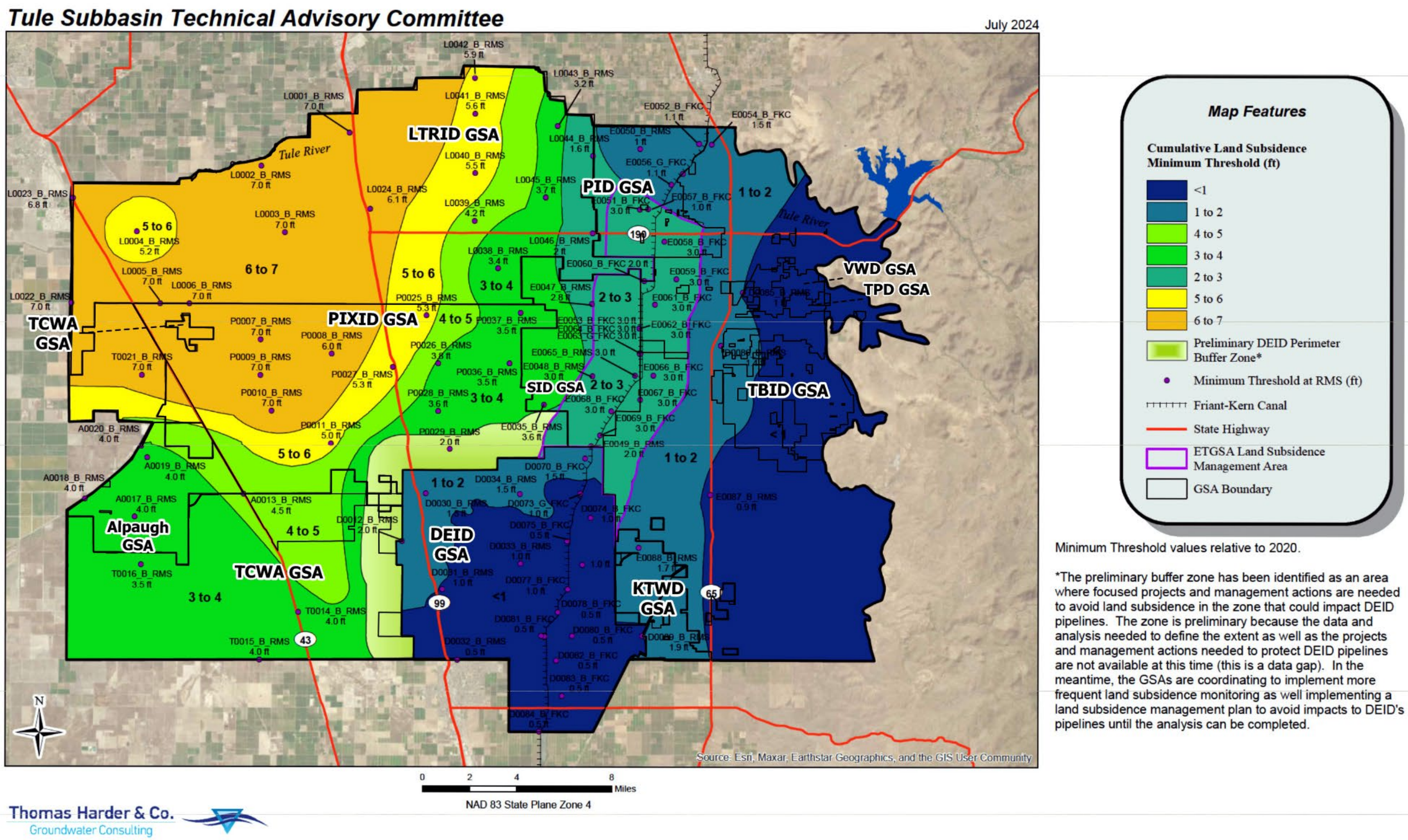
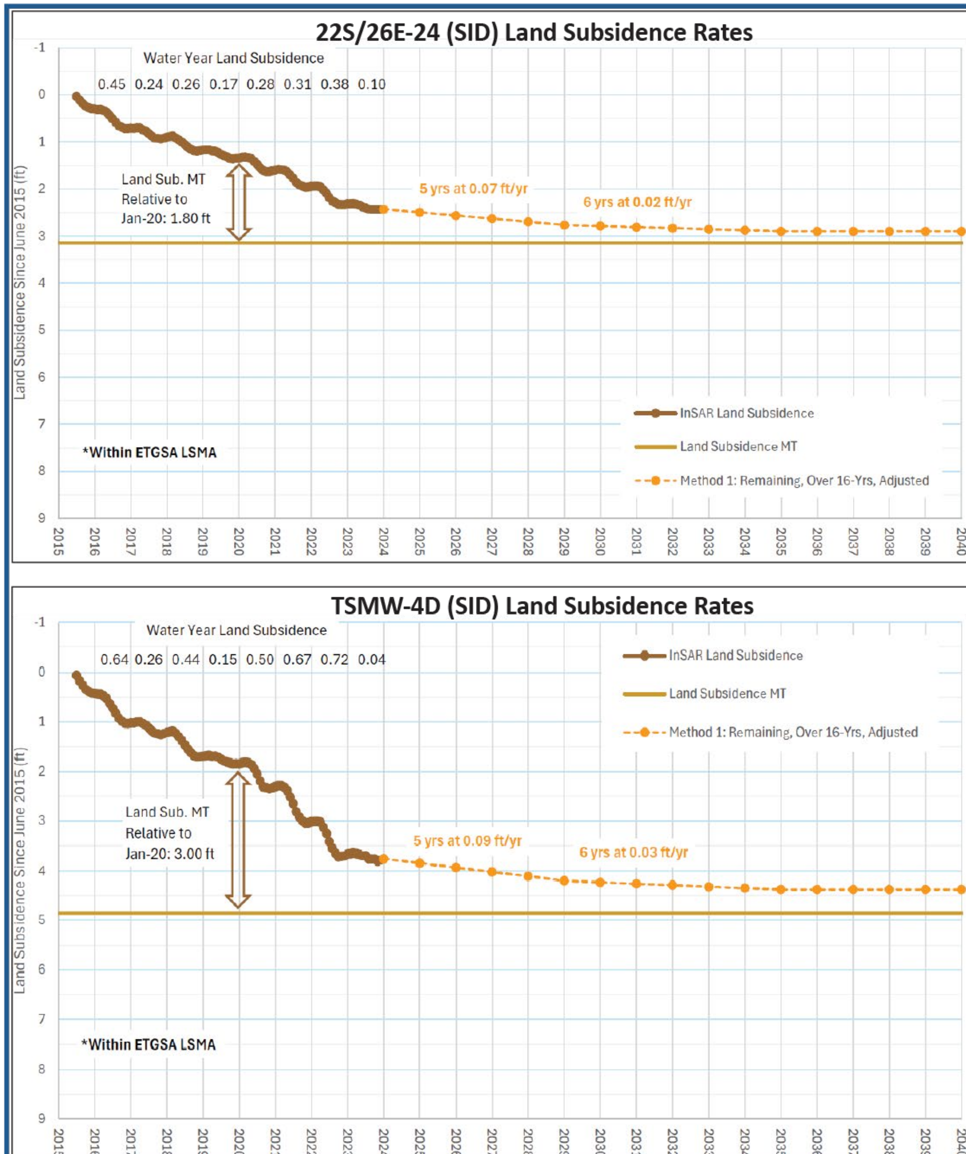
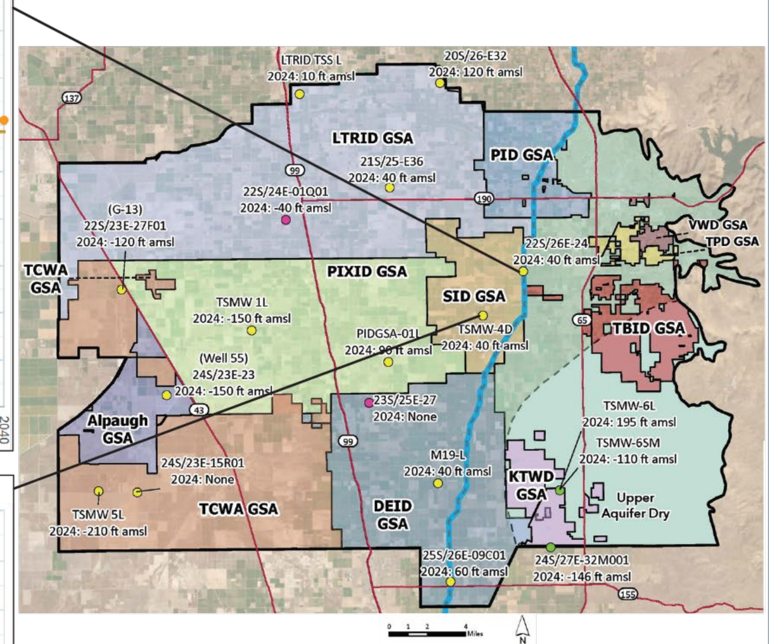
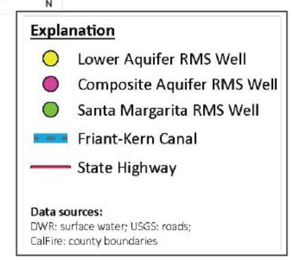


Figure 3-10. Minimum Threshold – Land Subsidence







Notes:

MT = Minimum Threshold
ft amsl = feet above mean sea level
ETGSA LSMA = Eastern Tule Groundwater Sustainability Agency Land Subsidence Management Area

Source:

Data provided and graphs modified from the Tule Subbasin Coordination Agreement (Thomas Harder & Co., 2024a)

Figure 3-11. Land Subsidence Rates and Minimum Thresholds

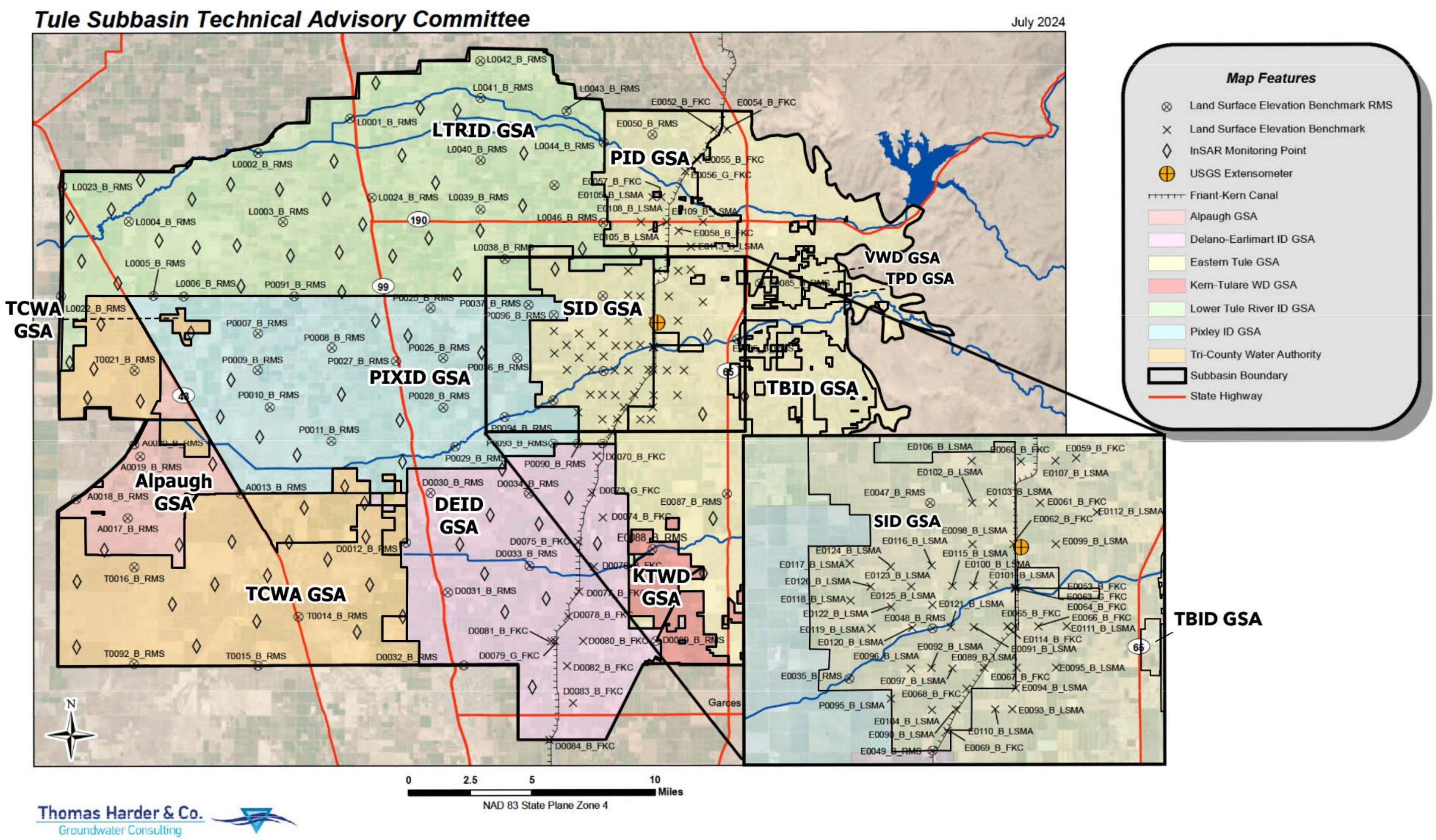


Figure 3-12. Land Subsidence Elevations and Subsidence Monitoring Network

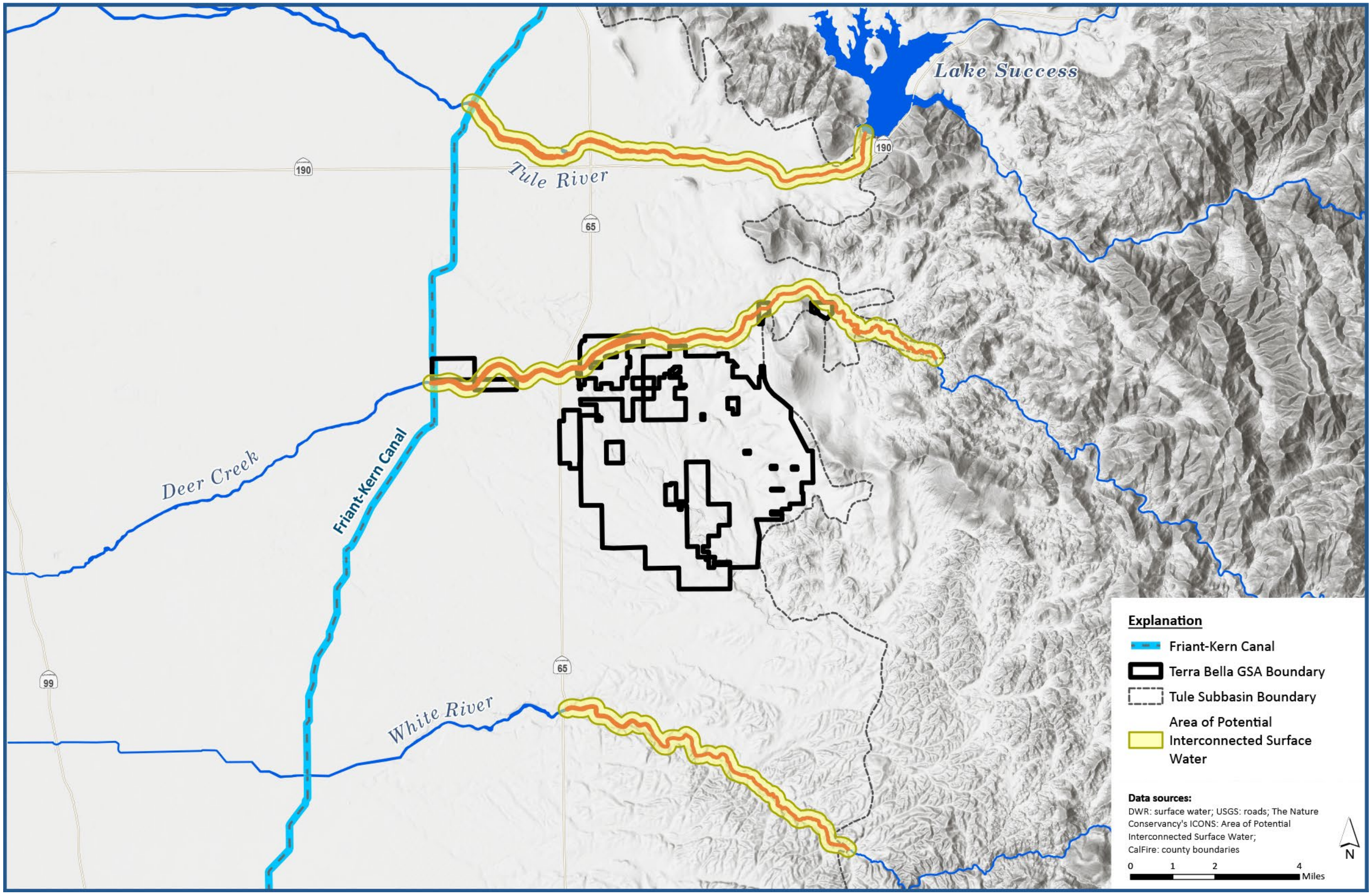


Figure 3-13. Interconnected Surface Water