Technical Memorandum

To: Tule Subbasin Technical Advisory Committee

From: Thomas Harder, P.G., C.HG.
Thomas Harder & Co.

Date: 13-Jul-22

Re: Technical Support for Addressing Department of Water Resources Comments Regarding Groundwater Levels in the Tule Subbasin

1 Introduction

This technical memorandum (TM) summarizes an analysis of currently established minimum thresholds and measurable objectives as they relate to potential impacts to beneficial uses and users of groundwater in the Tule Subbasin in Tulare County, California (see Figure 1). This TM was prepared to address comments from the California Department of Water Resources (CDWR) on groundwater sustainability plans (GSPs) prepared by each of the six Groundwater Sustainability Agencies (GSAs) within the Tule Subbasin. Specifically, this TM addresses comments related to groundwater levels.

1.1 Background

The Tule Subbasin Coordination Agreement formerly identified the criteria for undesirable results related to groundwater levels as the following: "…*the criteria for an undesirable result for the chronic lowering of groundwater levels is defined as the unreasonable lowering of the groundwater elevation below the minimum threshold for two consecutive years at greater than 50% of GSA Management Area RMS Sites, which results in significant impacts to groundwater supply.*"

The previous version of the Coordination Agreement further stated that "…*the avoidance of an undesirable result for the chronic lowering of groundwater levels is to protect unreasonable lowering of groundwater levels may effect groundwater users by causing well failures, additional operational costs for groundwater extraction from deeper pumping levels, and additional costs to lower pumps, deepen wells, or drill new wells.*"

In their review of the Tule Subbasin GSPs, each of which refer to the Coordination Agreement, the CDWR made the following general comments:

The GSPs do not define undesirable results or set minimum thresholds and measurable objectives for groundwater levels in a manner consistent with the GSP Regulations.

1. *The GSPs do not describe, with information specific to the Subbasin, the groundwater level conditions that are considered significant and unreasonable and would result in undesirable results. The GSPs do not explain or justify how the quantitative definition of undesirable results is consistent with avoiding effects the GSAs have identified as undesirable results.*

2. *The GSPs do not explain how minimum thresholds at the representative monitoring sites are consistent with the requirement to be based on a groundwater elevation indicating a depletion of supply at a given location. The GSPs do not demonstrate that the established sustainable management criteria are based on a commensurate level of understanding of the basin setting or whether the interests of beneficial uses and users have been considered.*

Based on the CDWR comments, the Tule Subbasin Coordination Agreement has been modified to reflect the analysis of potentially significant and unreasonable groundwater level conditions presented herein.

1.2 Purpose and Scope

The purpose of this TM is to provide the basis for determining significant and unreasonable groundwater level conditions in each of the six GSAs of the Tule Subbasin and to provide a basis for modifications to the Tule Subbasin Coordination Agreement and GSPs to address CDWR comments to the GSPs. Potentially significant and unreasonable groundwater level conditions was evaluated through an analysis of the number of wells that could be impacted if groundwater levels were drawn down to the minimum thresholds (MTs) identified by each GSA. The analysis of potentially impacted wells is based on readily available well data for the Tule Subbasin, as published in the CDWR driller's log database. As this database does not contain information on well failures, operational costs for pumping groundwater, or pump settings for wells, the analysis to correlate MTs to significant and unreasonable conditions focuses on the total depth of wells and the number of those wells that would be rendered inoperable if groundwater levels are drawn down to the MTs.

1.3 Sources of Data

The sources of data used for this analysis include the following:

- CDWR's Online System for Well Completion Reports[1]
- Geographic Information System (GIS) shapefiles of the subbasin and GSA boundaries and wells,
- Minimum threshold groundwater level elevations for representative monitoring sites specific to both the Upper and Lower Aquifers in the Tule Subbasin,[2]
- Groundwater levels for January 2015 from the calibrated groundwater flow model of the Tule Subbasin,[3]
- Specific capacity data for wells in the Tule Subbasin.[4]

1.4 Beneficial Uses of Groundwater Addressed

As per Regional Water Quality Control Board – Central Valley Region Water Quality Control Plan for the Tulare Lake Basin,[5] the beneficial uses of water in the basin include:

- Agricultural Supply
- Domestic Supply
- Industrial Supply and
- Municipal Supply

[1] CDWR, 2022. https://data.ca.gov/dataset/well-completion-reports
[2] TH&Co, 2022. Tule Subbasin 2020/21 Annual Report. Prepared for the Tule Subbasin Technical Advisory Committee. Dated March 2022.
[3] TH&Co, 2021. Update to the Groundwater Flow Model of the Tule Subbasin. Technical Memorandum dated 7/30/21.
[4] TH&Co, 2020. Groundwater Flow Model of the Tule Subbasin. Report prepared for the Tule Subbasin MOU Group. Dated January 2020.
[5] RWQCB, 2018. Water Quality Control Plan for the Tulare Lake Basin, Section 2.

2 Analysis of Wells Potentially Impacted at the Minimum Thresholds in the Tule Subbasin GSPs

The premise behind the analysis presented herein is that wells rendered inoperable due to lowering of groundwater levels is a significant and unreasonable condition. While it is not possible to specifically identify, with accuracy, exactly how many wells in the Tule Subbasin would be impacted by lowering groundwater levels below the MTs, it is possible, using the CDWR database, to obtain an estimate of the number of wells that would be potentially impacted. Further, the database has been used, to the extent possible, to assess the beneficial uses served by the impacted wells, whether agricultural irrigation, domestic supply, industrial supply, or municipal supply.

The methodology to estimate the number of wells potentially impacted by lowering groundwater levels to the MTs included wells constructed in the Upper Aquifer, the Lower Aquifer, or both. While the reference MTs are different for each aquifer, the methodology to estimate potentially impacted wells was the same and included the following steps and assumptions:

- The MTs for each aquifer, as designated at representative monitoring sites, were contoured via kriging in Geographic Information System (GIS) to develop a MT surface across the subbasin (see Figures 2 and 3).
- Wells in the CDWR well database were sorted to include only those with total depth information.
- Non-pumping wells or wells documented for uses other than agricultural, private domestic, industrial, or municipal, (e.g. contaminant remediation, injection, monitoring) were also removed from the wells to be used in the analysis.
- The remaining wells were plotted on a map according to the location information in the CDWR database (see Figure 4). For wells with only township, range and section information, the well was plotted in the middle of the section. A total of 4,190 wells are shown on Figure 4.
- As per the Sustainable Groundwater Management Act (SGMA)[6] GSPs are not required to address undesirable results to wells associated with groundwater conditions prior to January 1, 2015. Thus, wells that would have been impacted prior to this time were removed from the analysis. To do this, a map was generated of the groundwater surface in January 2015 based on the calibrated groundwater flow model of the subbasin (see Figure 5).[7] The difference in groundwater level between January 2015 and the Upper Aquifer MTs across the Tule Subbasin is shown on Figure 6.

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

[6] California Water Code Part 2.74, Ch. 6, Section 10727.2 (b) (4)
[7] TH&Co, 2021. Update to the Groundwater Flow Model of the Tule Subbasin. Technical Memorandum prepare for the Tule Subbasin Technical Advisory Committee. Dated July 29, 2021.

groundwater level at the MT were considered "potentially impacted." 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.
- Potential pumping drawdown was estimated based on specific capacity data from available wells and pumping rates reported on CDWR driller's logs.
- For each GSA, TH&Co used an average specific capacity from wells with specific capacity data in that GSA. Pumping rates were applied as an average rate for wells in each mile square section.
- The wells potentially impacted by lowering the groundwater level below the minimum thresholds, considering total well depth, adequate pump submergence, and drawdown, are summarized in Section 3.

3 Findings

Within the Tule Subbasin as a whole, 4,190 wells were identified from the CDWR database as having total depth information (see Figure 4). Of those wells, 1,692 were constructed completely within the Upper Aquifer and 2,498 wells were constructed either within the Lower Aquifer or as a composite well with perforations in both the Upper and Lower Aquifers.

Of the 4,190 wells, 568 wells would have already been impacted by January 2015 groundwater levels and were removed from consideration (see Figure 7). The remaining 3,622 wells were included in the analysis.

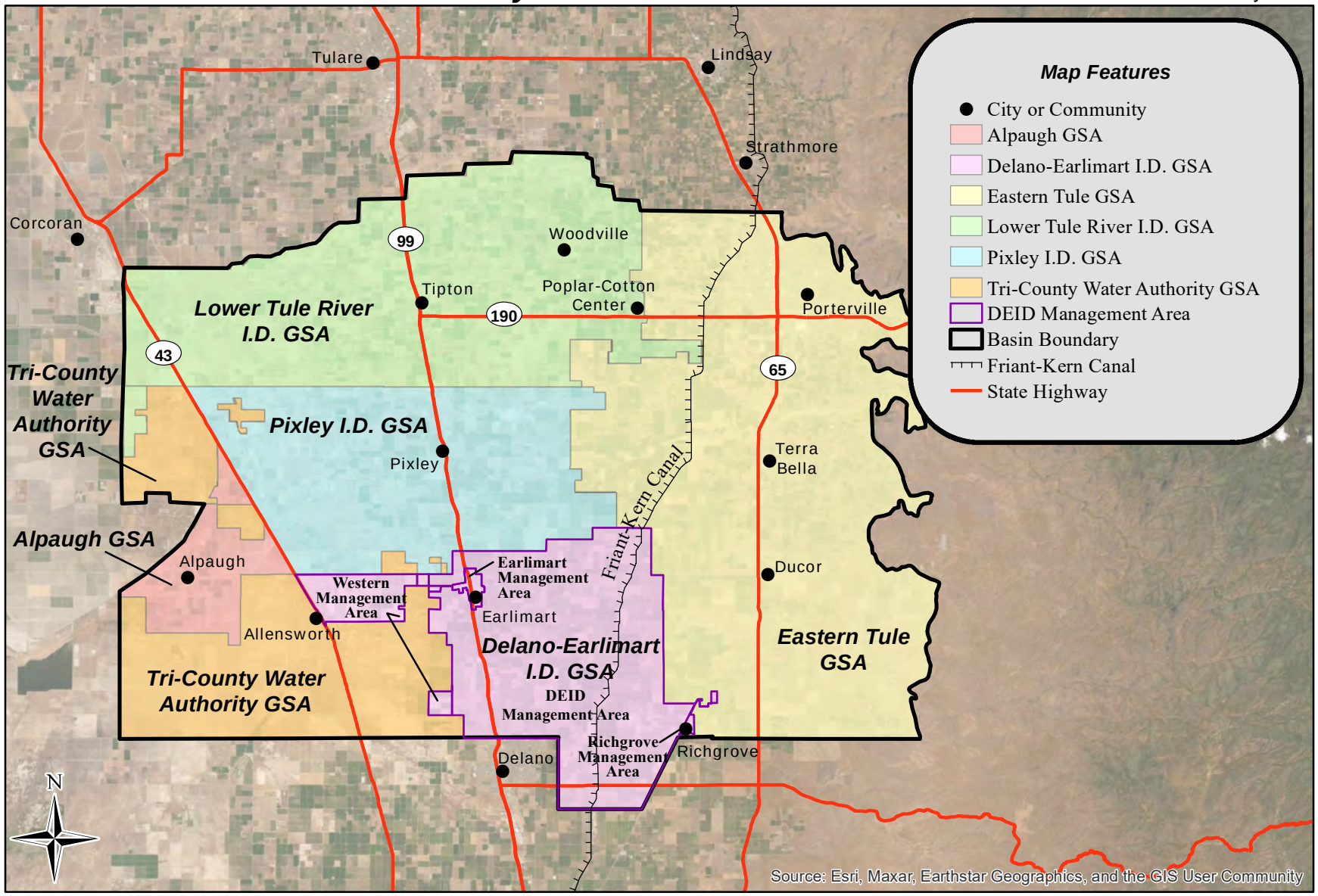
Of the 3,622 wells in the analysis, 776 wells would be impacted if groundwater levels were lowered to the MTs using the evaluation criteria described in Section 2 herein (see Figure 8). Some of these wells would be impacted before the MT groundwater levels were reached. Wells included in the analysis were completed in either the Upper Aquifer, the Lower Aquifer or both. The number of wells in each GSA predicted to be impacted if groundwater levels are lowered to the MTs, by beneficial use category, are as follows:

GSA	Number of Agricultural Irrigation Wells Potentially Impacted	Number of Domestic Wells Potentially Impacted	Number of Industrial Wells Potentially Impacted	Number of Municipal Wells Potentially Impacted	Number of Unknown Use Wells Potentially Impacted	Total Wells Potentially Impacted
Alpaugh ID GSA	1	0	0	0	0	1
DEID	1	6	0	0	1	8
ETGSA	91	428	15	8	19	561
LTRID GSA	49	92	5	0	4	150
Pixley ID GSA	6	38	1	0	6	51
Tri-County GSA	1	4	0	0	0	5
Total	149	568	21	8	30	776

DWR Comments - Groundwater Levels in the Tule Subbasin

July 2022

Tule Subbasin Technical Advisory Committee



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0 2.5 5 10 Miles

NAD 83 State Plane Zone 4

GSA Boundaries

Figure 1

DWR Comments - Groundwater Levels in the Tule Subbasin
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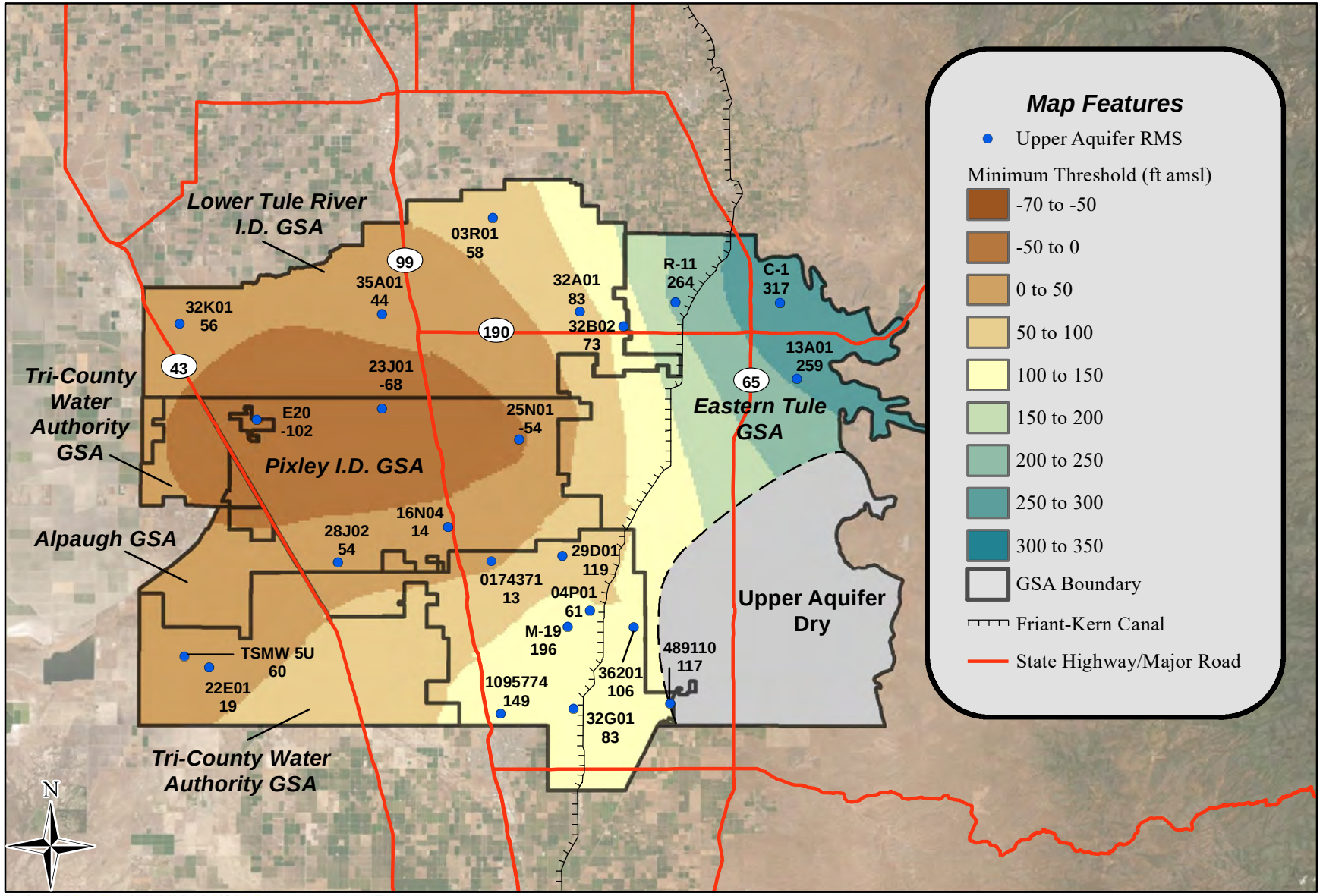

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0 2 4 8
Miles
NAD 83 State Plane Zone 4

Notes: ft amsl = feet above mean sea level
RMS = Representative Monitoring Site

Minimum Thresholds - Upper Aquifer

Figure 2

DWR Comments - Groundwater Levels in the Tule Subbasin

July 2022

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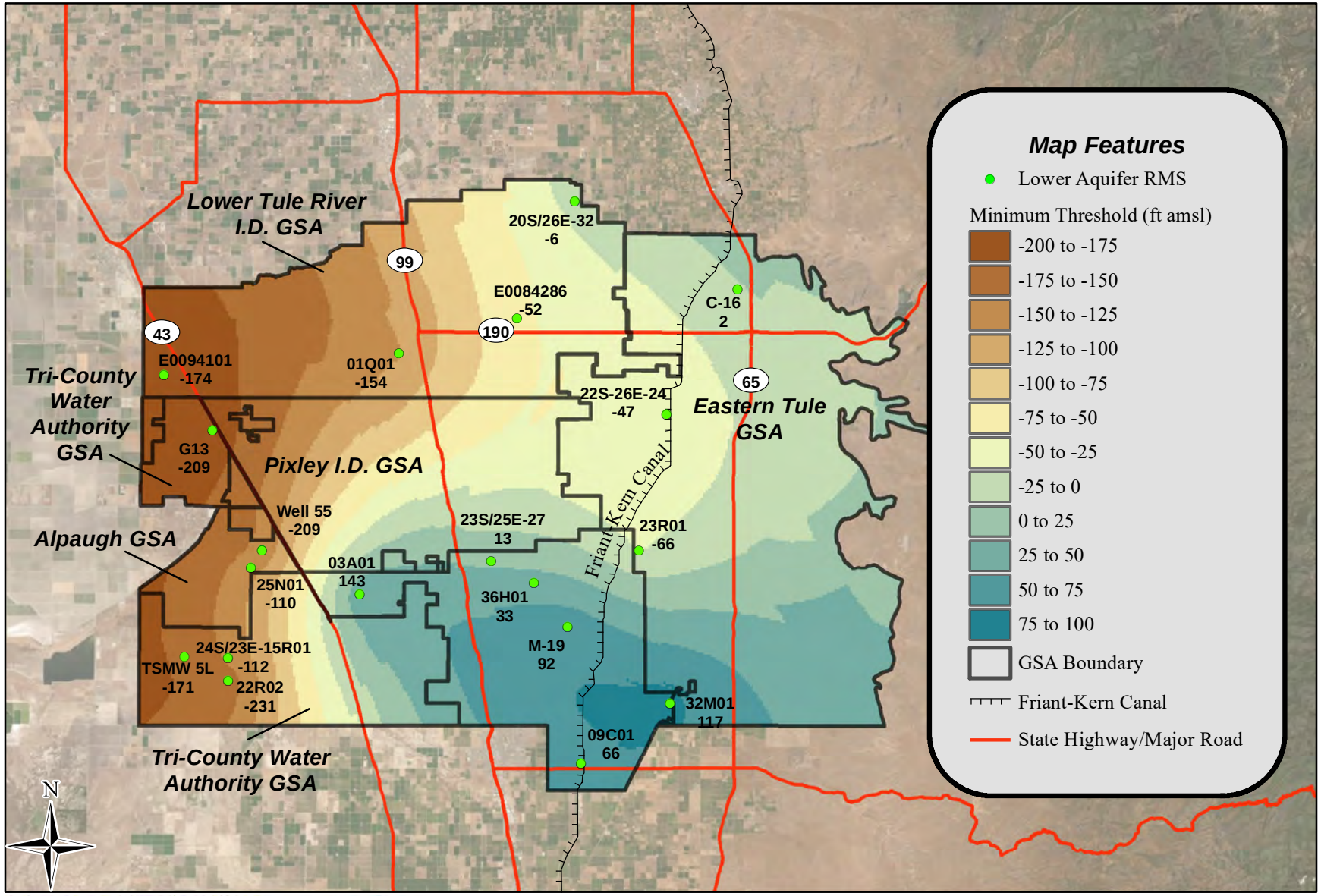

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0 2 4 8
Miles
NAD 83 State Plane Zone 4

Notes: ft amsl = feet above mean sea level
RMS = Representative Monitoring Site

Minimum Thresholds - Lower Aquifer

Figure 3

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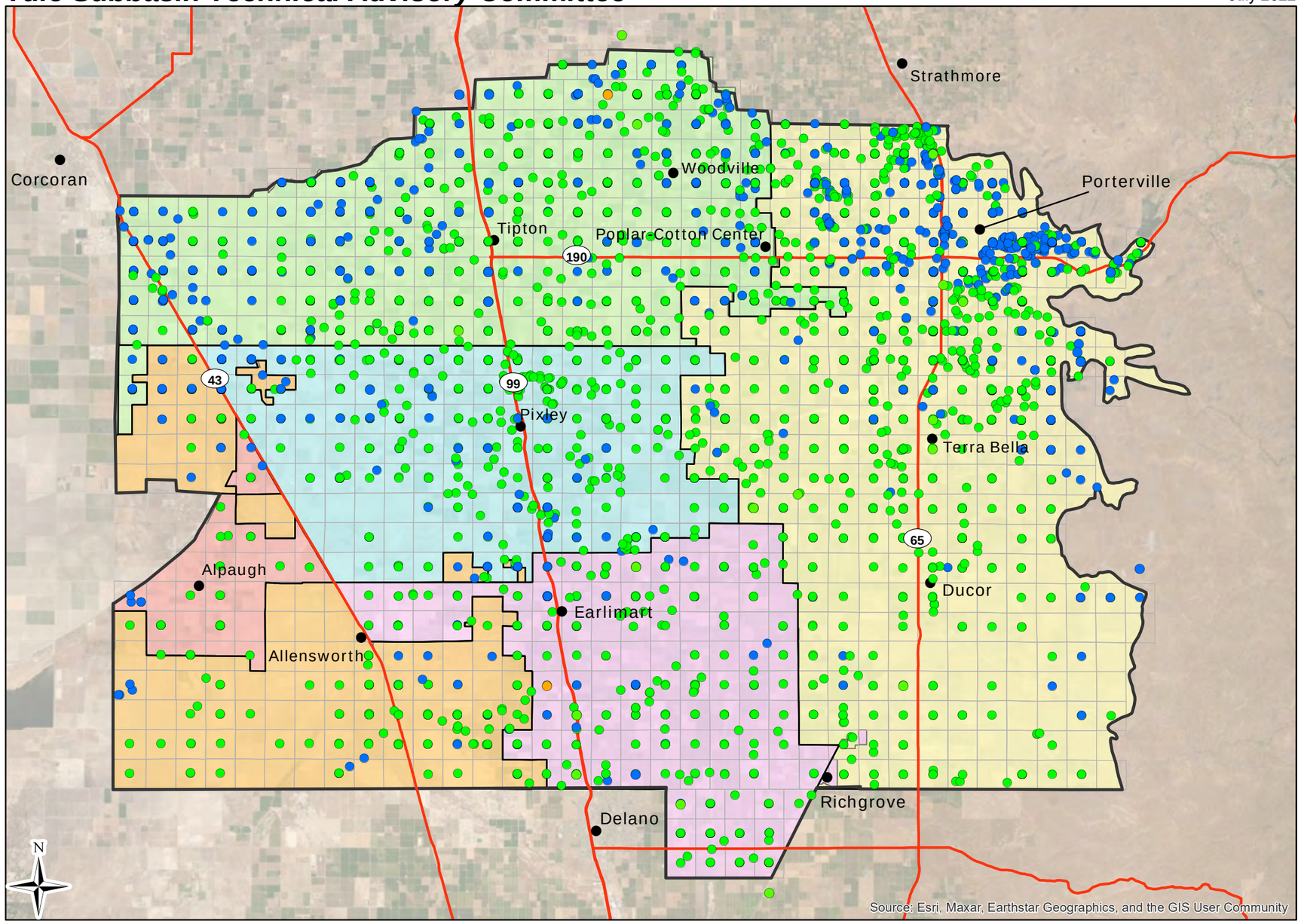
DWR Comments - Groundwater Levels in the Tule Subbasin



0 2.5 5 10 Miles

NAD 83 State Plane Zone 4

Map Features

- DWR Well
  - Upper Aquifer Well
  - Lower Aquifer Well
  - Composite Well
- City or Community
- Mile-Square Section
- Alpaugh GSA
- Delano-Earlimart I.D. GSA
- Eastern Tule GSA
- Lower Tule River I.D. GSA
- Pixley I.D. GSA
- Tri-County Water Authority GSA
- Basin Boundary
- State Highway/Major Road

GSA	No. of Upper Aquifer Wells	No. of Lower Aquifer Wells
Alpaugh ID GSA	9	23
DEID	53	239
ETGSA	880	1,056
LTRID GSA	546	636
Pixley ID GSA	139	402
Tri-County GSA	65	142
Total	1,692	2,498

DWR Driller's Log Wells with Known Depth

Figure 4

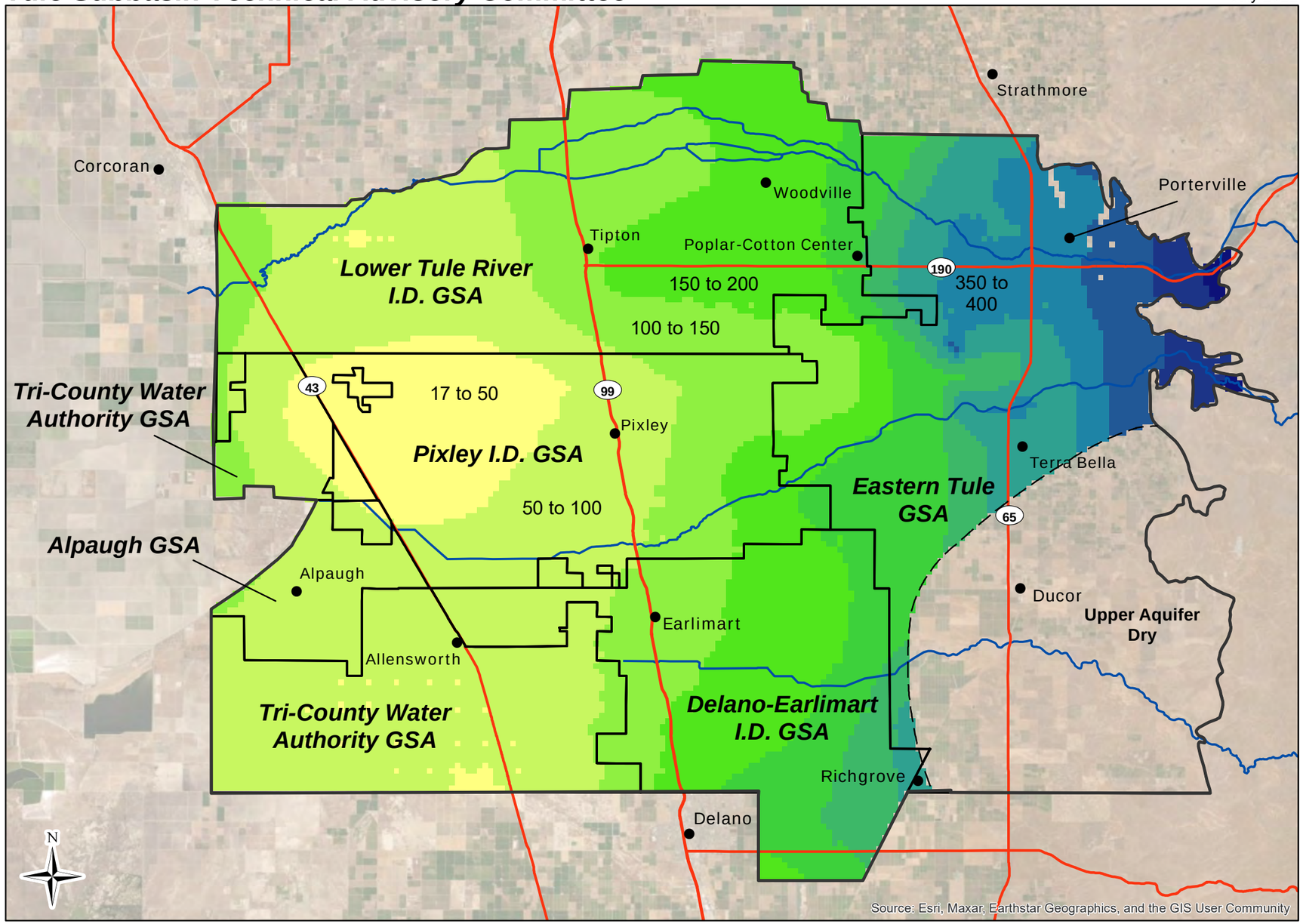
Thomas Harder & Co. Groundwater Consulting

Note: The wells are plotted using coordinates provided by DWR. Many coordinates provided plot the well in the center of the section. Sections displaying only one well may actually have multiple wells plotted on top of one another.

Note: Wells include domestic, agricultural, industrial and public supply wells.

Tule Subbasin Technical Advisory Committee

July 2022



0 2.5 5 10 Miles

NAD 83 State Plane Zone 4

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DWR Comments - Groundwater Levels in the Tule Subbasin

Map Features

Model Generated Groundwater Elevation (ft amsl)

- 17 to 50
- 50 to 100
- 100 to 150
- 150 to 200
- 200 to 250
- 250 to 300
- 300 to 350
- 350 to 400
- 400 to 450
- 450 to 500
- 500 to 550
- GSA Boundary
- Basin Boundary
- State Highway/Major Road
- Major Hydrologic Feature
- City or Community

Model-Generated Upper Aquifer Groundwater Elevation - January 2015

Figure 5

Tule Subbasin Technical Advisory Committee

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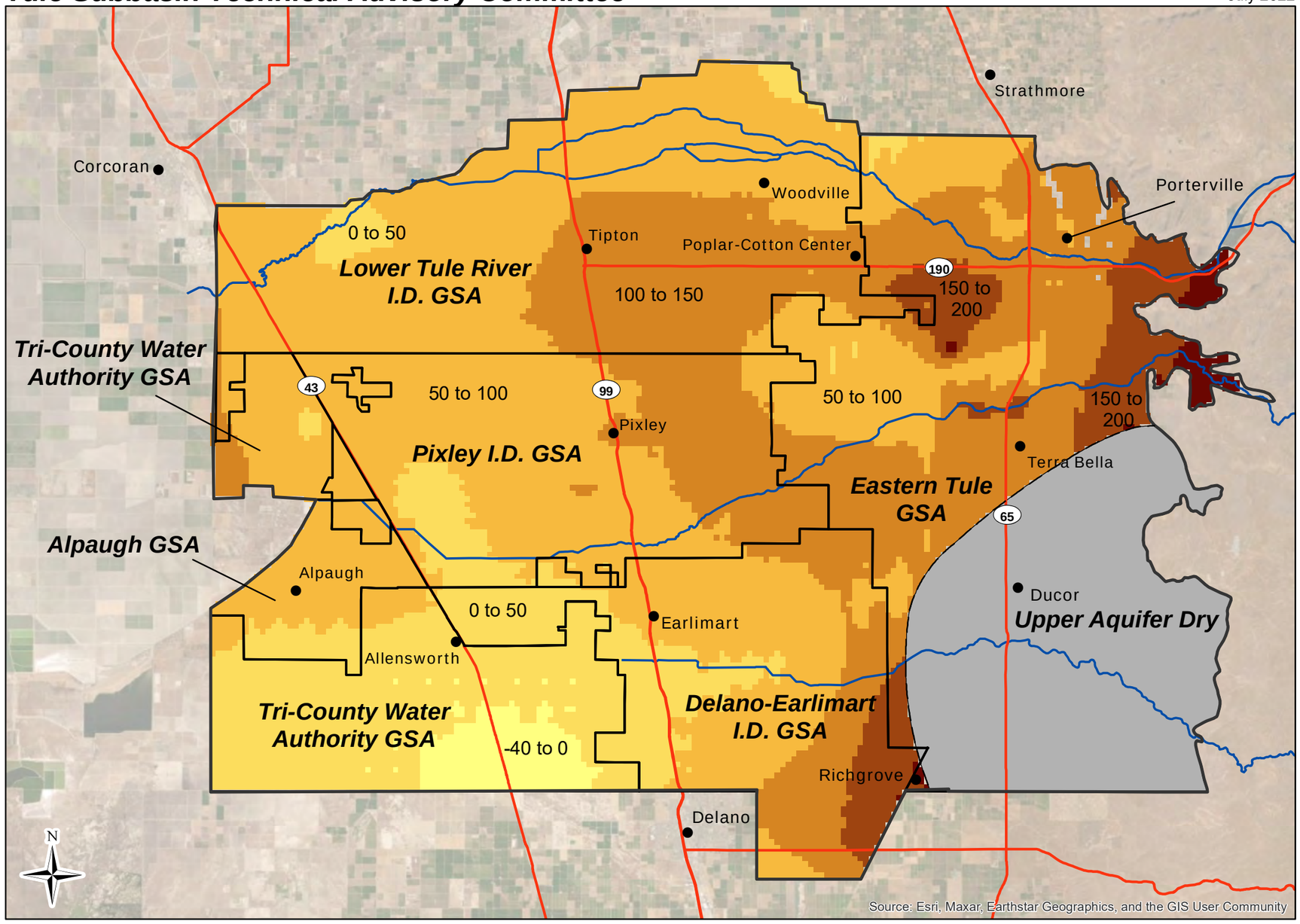

0 2.5 5 10 Miles

NAD 83 State Plane Zone 4

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DWR Comments - Groundwater Levels in the Tule Subbasin

Map Features

Groundwater Elevation Difference (ft)

- -40 to 0
- 0 to 50
- 50 to 100
- 100 to 150
- 150 to 200
- 200 to 260

Tule Subbasin GSA

Basin Boundary

State Highway/Major Road

Major Hydrologic Feature

City or Community

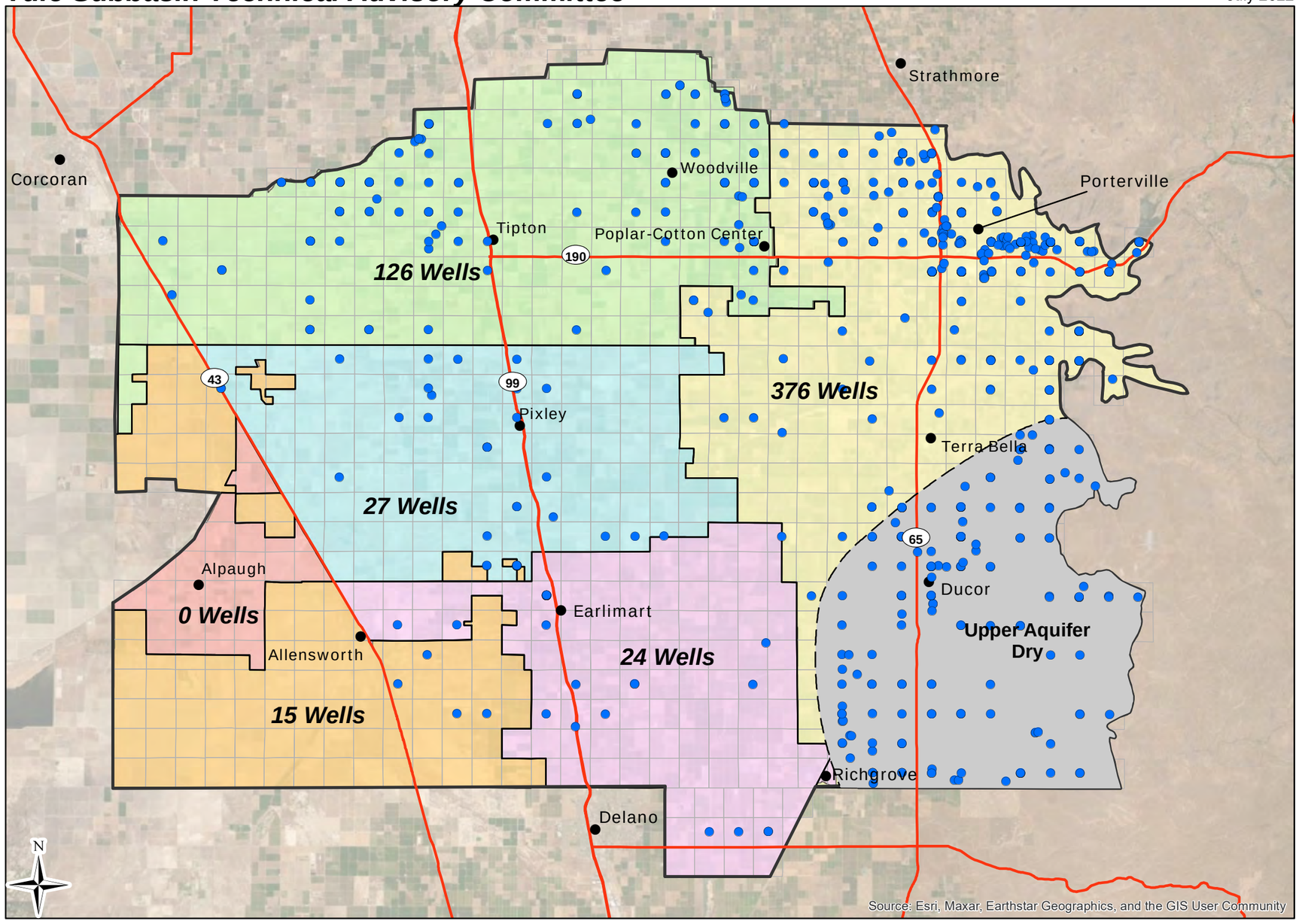
January 2015 to Minimum Thresholds Upper Aquifer Groundwater Elevation Difference

Figure 6

Tule Subbasin Technical Advisory Committee

July 2022

DWR Comments - Groundwater Levels in the Tule Subbasin



Map Features

- Upper Aquifer Well
- City or Community
- Mile-Square Section
- Alpaugh GSA
- Delano-Earlimart I.D. GSA
- Eastern Tule GSA
- Lower Tule River I.D. GSA
- Pixley I.D. GSA
- Tri-County Water Authority GSA
- Basin Boundary
- State Highway/Major Road

GSA	No. Dry Wells
Alpaugh ID GSA	0
DEID	24
ETGSA	376
LTRID GSA	126
Pixley ID GSA	27
Tri-County GSA	15
Total	568

Wells Shallower than January 2015 Groundwater Levels*

Figure 7

Thomas Harder & Co.
Groundwater Consulting

Note: The wells are plotted using coordinates provided by DWR. Many coordinates provided plot the well in the center of the section. Sections displaying only one well may actually have multiple wells plotted on top of one another.

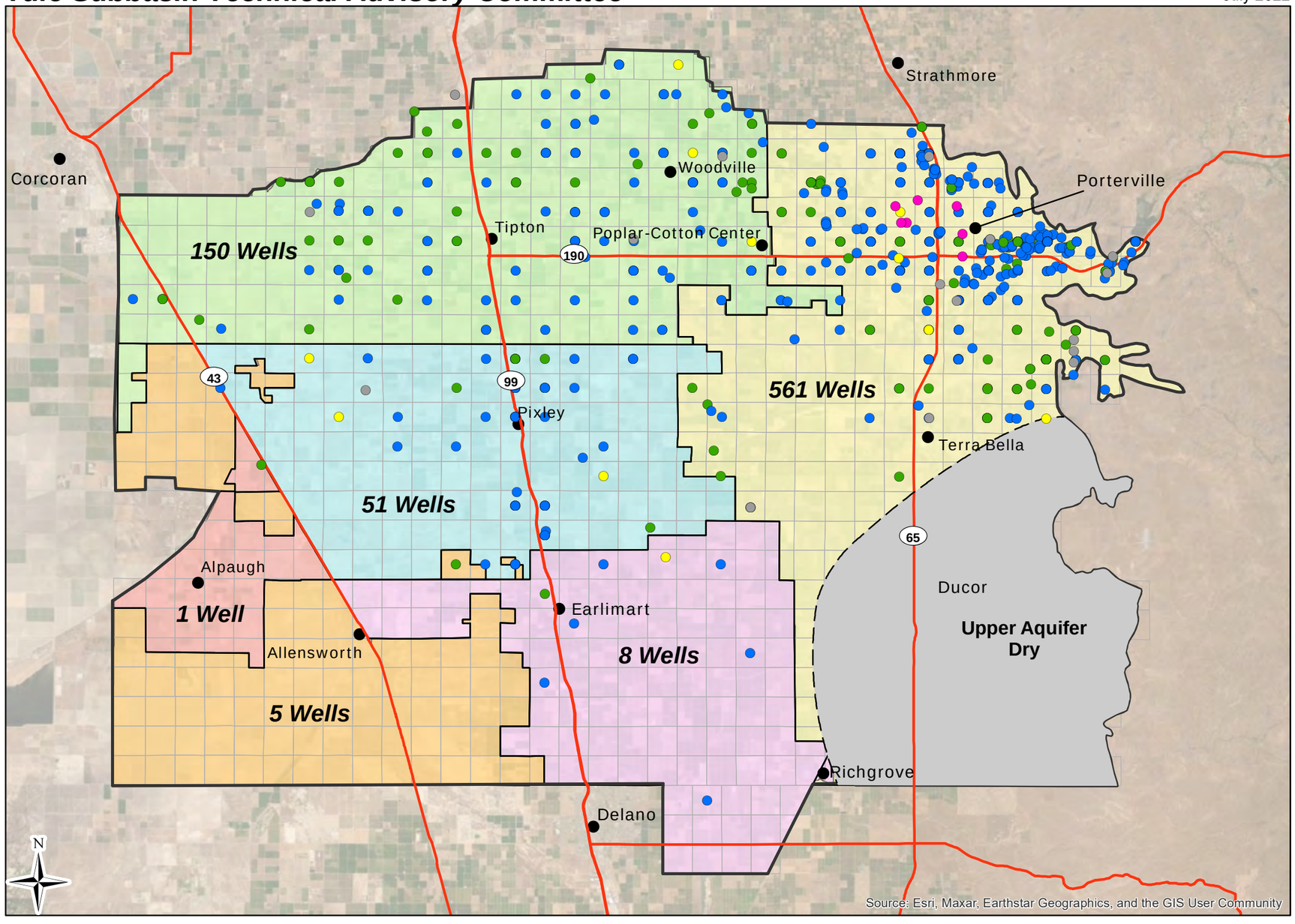
Note: Wells includes domestic, agricultural, industrial, and public supply wells.

*Includes drawdown and submegence assumptions.

DWR Comments - Groundwater Levels in the Tule Subbasin

Tule Subbasin Technical Advisory Committee

July 2022



0 2.5 5 10 Miles

NAD 83 State Plane Zone 4

Map Features

Affected Well
- Unknown
- Domestic
- Agricultural
- Municipal
- Industrial
- City or Community
- Mile-Square Section
- Alpaugh GSA
- Delano-Earlimart I.D. GSA
- Eastern Tule GSA
- Lower Tule River I.D. GSA
- Pixley I.D. GSA
- Tri-County Water Authority GSA
- Basin Boundary
- State Highway/Major Road

GSA	No. of Affected Wells
Alpaugh ID GSA	1
DEID	8
ETGSA	561
LTRID GSA	150
Pixley ID GSA	51
Tri-County GSA	5
Total	776

Affected Wells* if Groundwater Levels Reach Minimum Thresholds

Figure 8

Thomas Harder & Co. Groundwater Consulting

Note: The wells, with the exception of municipal wells, are plotted using coordinates provided by DWR. Many coordinates provided plot the well in the center of the section. Sections displaying only one well may actually have multiple wells plotted on top of one another.

*Includes drawdown and submegence assumptions.

Appendix A Tule Subbasin Coordination Agreement

A5: Technical Support for Degraded Groundwater Quality

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TECHNICAL MEMORANDUM

To: Tule Subbasin SGMA Managers

From: Don Tucker – 4Creeks, Inc.

Date: June 29, 2022

Re: Technical Support for Addressing DWRs Comments Regarding Groundwater Quality Sustainable Management Criteria in the Tule Subbasin

1 Introduction

This technical memorandum (TM) was prepared to address the groundwater quality comments from the California Department of Water Resources (CDWR) on groundwater sustainability plans (GSPs) prepared by each of the six Groundwater Sustainability Agencies (GSAs) within the Tule Subbasin.

1.1 Background

The originally submitted Tule Subbasin Coordination Agreement addressed undesirable results related to groundwater quality as stated: "*…the criteria for an undesirable result for the degradation of groundwater quality is defined as the unreasonable long-term changes of groundwater quality above the minimum thresholds at greater than 50% of GSA Management Area RMS wells caused by groundwater pumping and/or groundwater recharge.*"

The original Coordination Agreement further stated that "*…the avoidance of an undesirable result for degraded groundwater quality is to protect the those using the groundwater, which varies depending on the use of the groundwater. The effects of degraded water quality caused by recharge or lowering of groundwater levels may impact crop growth or impact drinking water systems, both of which would cause additional expense of treatment to obtain suitable water.*"

Each of the Tule Subbasin GSA originally submitted GSPs further described the process/methodology used for setting Sustainable Management Criteria: "*The following four (4) steps detail the process for setting interim milestones and the measurable objective at individual RMS related to Groundwater Quality:*

Step 1: *Locate the RMS defined in the Tule Subbasin Monitoring Plan, identify which portion of the aquifer it represents, and the associated Constituents of Concern (COC) at the RMS based on groundwater suitability (Agriculture use, Domestic Use, Municipal Use).*

Step 2*: Prepare a table summarizing available historical groundwater quality data for each COC at the RMS well.*

Step 3*: Establish interim milestones and the measurable objective at each RMS well with calculating a change above the baseline groundwater quality to not exceed 10% of long term 10 year running average.*

Step 4: *Each year, during the Plan Implementation Period, re-calculate the long term 10 year running average. Evaluate changes to groundwater quality based on reduction of groundwater elevation or from recharge efforts."*

Similar to the process described for interim milestones and measurable objectives, minimum thresholds at each RMS well were established to not exceed 15% change in the long-term 10-year running average.

Lastly, each of the Tule Subbasin GSA GSPs described the Constituent of Concerns (COC) that will be monitored at each RMS wells as follows: "*The COC vary depending on the suitability of the groundwater. Each of the COC to be monitored by the GSA at the RMS wells to serve as indicators for changes in groundwater quality are identified in the table below.*"

Municipal / Domestic	*Agricultural*
Arsenic	*pH*
Chromium (Total)	*Conductivity*
Nitrogen as N	*Nitrogen as N*
(any specific Title 22 MCL exceedance at baseline sampling event in Spring 2020)	

1.2 DWR Response

The CDWR made the following comments relating to addressing groundwater quality in the Coordination Agreement and individual GSPs within the Tule Subbasin:

"The GSPs do not provide sufficient information to justify the proposed sustainable management criteria for degraded water quality.

1. *The GSPs do not specify what groundwater conditions are considered suitable for agricultural irrigation and domestic use. The GSPs do not explain the choice of constituents (pH, conductivity, and nitrate) as a means of evaluating impacts to beneficial uses and users, especially agricultural irrigation.*

2. *The GSPs do not explain how the use of a 10-year running average to establish the sustainable management criteria will avoid undesirable results due to degraded groundwater quality and related potential effects of the undesirable results to existing regulatory standards. The GSPs do not explain how the criteria defining when undesirable results occur in the Subbasin was established, the rationale behind the approach, and why it is consistent with avoiding significant and unreasonable effects associated with groundwater pumping and other aspects of the GSAs' implementation of their GSPs.*

3. *The GSPs do not explain how the sustainable management criteria for degraded water quality relate to existing groundwater regulatory requirements in the Subbasin and how the GSAs will coordinate with existing agencies and programs to assess whether or not implementation of the GSPs is contributing to the degradation of water quality throughout the Subbasin."*

1.3 Purpose and Scope

The purpose of this TM is to provide the revised approach for re-establishing the sustainability management criteria (SMC) for groundwater quality as is relates to selection constituents of concerns for determining impacts to beneficial uses and users, the rationale used to quantify undesirable results as they relate to existing regulatory standards, and how impacts will be assessed to determine if GSA implementation efforts are a contributing factor to groundwater quality.

In general, the following items were prepared relating to DWRs comments for degradation of groundwater quality:

1. A detailed description of how the overlying beneficial uses and users were defined for determining constituent of concerns to monitor at each RMS groundwater quality well.
2. Redefined rationale for setting groundwater quality SMCs to align with existing regulatory requirements.
3. A detailed description of how ongoing coordination with existing groundwater regulatory agencies and programs will take place to evaluate if GSP implementation is contributing to degradation to groundwater quality.

1.4 Proposed Approach

1.4.1 Defining Beneficial Uses and Users at each RMS Well

Each groundwater quality RMS well will be designated as representative of agricultural or drinking water or both based on the beneficial use and users of groundwater within a representative area surrounding the well based on the following evaluation:

Drinking Water: The RMS well is within an urban MA or 1-mile of a public water system**.**

Agricultural: Greater than 50% of the pumping within the representative area is determined to be agricultural and there are no public water systems within a 1-mile radius.

An RMS well may be designated as representative of both agricultural and drinking water if it possesses a representative area with greater than 50% agricultural pumping and a public water system was within 1-mile.

The analysis used to determine the beneficial uses at each RMS well consisted of querying DWR well completion reports, public water systems, and schools using ArcGIS. The detailed breakdown of the steps to conduct analysis is described below.

1. Create a layer in ArcGIS by combining data from the following:
   - Well locations and well types from DWRs Well Completion Report Mapping Application
   - Boundaries of SWDIS Public Water Systems
   - Boundaries of Community/Urban areas from LAFCO
2. Overlay groundwater quality locations of RMS wells and create 1 mile buffer for analyzing.
3. Summarize the data identified in step 1 relative to each groundwater quality RMS well 1-mile buffer.
4. Define the groundwater quality RMS well as representative of drinking water and/or agricultural beneficial pumping beneficial use.

Wells types are categorized as drinking water, agricultural, or not applicable based on breakdown in **Table 1**.

Table 1: Categories of Well Types

Drinking Water	Agricultural	Not Applicable
Domestic	Irrigation - Agricultural	Cathodic Protection
Public	Other Irrigation	Destruction Monitoring
Water Supply	Water Supply Irrigation - Agricultural	Destruction Unknown Soil Boring
Water Supply Domestic	Water Supply Irrigation - Agriculture	Monitoring
Water Supply Public	Water Supply Stock or Animal Watering	Other Destruction
		Test Well
		Test Well Unknown
		Unknown
		Vapor Extraction
		Vapor Extraction n/a
		Water Supply Industrial
		Blanks

Results of this analysis are provided as part of the Monitoring Network Section of each GSP.

1.4.2 Rationale for Establishing Sustainable Management Criteria

Agricultural and drinking water constituents of concerns (COC) will be evaluated based on the established Maximum Contaminate Level (MCL) or Water Quality Objectives (WQO) by the responsible regulatory agency. In the case of drinking water, the following Title 22 constituents will be monitored and for agricultural the following Basin Plan Water Quality Objective (WQO) constituents of concern will be monitored:

Drinking Water Constituents of Concern

- Arsenic
- Nitrate as N
- Chromium-VI
- Dibromochloropropane (DBCP)
- 1,2,3- Trichloropropane (TCP)
- Tetrachloroethene (PCE)
- Chloride
- Total Dissolved Solids
- Perchlorate

Agricultural Constituents of Concern

- Chloride
- Sodium
- Total Dissolved Solids

Measurable objectives are proposed to be 75% of the regulatory limits for the COCs and the minimum thresholds are proposed to be the regulatory limits as identified in **Table 2**. For RMS wells that have historical exceedances of the MCLs or WQOs which were not caused by implementation of a GSP, minimum thresholds will not be set at the MCLs or WQOs, but rather the pre-SGMA implementation concentration. These RMS wells closely monitored to evaluate if further degradation is occurring at the RMS site as a result of GSP implementation into the future.

Table 2: Measurable Objectives and Minimum Thresholds for Groundwater Quality

Constituent	Units	Minimum Threshold		Measurable Objective	
		Drinking Water Limits (MCL/SMCL)	Agricultural Water Quality Objective	Drinking Water Limits (MCL/SMCL)	Agricultural Water Quality Objective
Arsenic	ppb	10	N/A	7.5	N/A
Nitrate as N	ppm	10	N/A	7.5	N/A
Hexavalent Chromium	ppb	10	N/A	7.5	N/A
Dibromochloropropane (DBCP)	ppb	0.2	N/A	0.15	N/A
1,2,3-Trichloropropane (TCP)	ppt	5	N/A	3.75	N/A
Tetrachloroethene (PCE)	ppb	5	N/A	3.75	N/A
Chloride	ppm	500	106	375	79.5
Sodium	ppm	N/A	69	N/A	51.75
Total Dissolved Solids	ppm	1,000	450	750	337.5
Perchlorate	ppb	6	N/A	4.5	N/A

Utilizing the criteria described above, the Tule Subbasin GSAs have revised the definition of undesirable results for degradation of groundwater quality in *Section 4.3.3.2 - Criteria to Define Undesirable Results (§354.26(b)(2))* in the Tule Subbasin Coordination Agreement as:

> *"..the exceedance of a minimum threshold at a groundwater quality RMS in any given GSA resulting from the implementation of a GSP. This condition would indicate that more aggressive management actions were needed to mitigate the overdraft."*

Additionally, the Tule Subbasin has developed a Mitigation Program Framework included as Attachment 7 of the Tule Subbasin Coordination Agreement, which describes the framework the Tule Subbasin GSAs would utilize to address impacts that occur from implementation of a GSP relative to degradation of groundwater quality due to GSA actions.

1.4.3 Coordination with Existing Groundwater Quality Regulatory Agencies and Programs

The monitoring and characterization of groundwater quality conditions has historically been conducted and reported by other public agencies and/or non-profits to meet requirements of other regulatory programs, which focus on the prevention of degradation of groundwater quality. The existing groundwater monitoring programs that the Tule Subbasin GSAs coordinate with are described in **Table 3**.

To prevent duplication of efforts and competing datasets for the ILRP, CV-Salts Nitrate Control Program, and SGMA GSAs, the Tule Subbasin utilizes a single group to manage the monitoring efforts within the Subbasin for collectively meeting the various requirements of these programs being implemented at the local level. This level of coordination between these agencies and groups ensures that the efforts performed under each program help provide a cohesive response to providing short term and long-term solutions to groundwater management.

The evaluation as to whether the implementation of a GSP may be contributing to the degradation of water quality will be completed as outlined in Attachment 7 of the Tule Subbasin Coordination Agreement. The types of mitigation for degradation of groundwater quality will vary by GSA and will be coordinated with the agencies listed in Table 2.

Other forms of mitigation may consist of joint ventures to secure grant funding to address GSA related impacts.

Table 3: Existing Groundwater Quality Monitoring Programs

Programs or Data Portals	Tule Subbasin Agency Coordinating with GSAs	Parameters	Monitoring Frequency	Program Objectives
AB-3030 and SB-1938 Groundwater Management Plans	Tule Subbasin GSAs, requirements incorporated into GSP Annual Reports	• Water levels are typically monitored annually. • Ag Suitability analysis (limited suite of general minerals) monitoring frequency between annual to once every 3 years.	Semiannual to Annual	
California SDWIS	Varies Public Water Systems	Database for all public water system wells and historical sample results. Data available includes all Title 22 regulated constituents.	• Title 22 General Minerals and Metals every 3 years. • Nitrate as N annually, if ≥ 5 ppm, sampled quarterly • VOCs and SOCs sampled every 3 years. • Uranium sampling depends on historical results but varies between 1 sample every 3 (when ≥ 10 pCi/L), 6 (when < 10 pCi/L) or 9 (when no historical detection) years.	Demonstrate compliance with Drinking Water Standards through monitoring and reporting water quality data.
CV-SALTS	Tule Basin Management Zone, Tule Basin Water Foundation	Sampling parameters required through Waste Discharge Requirements (WDR): typically include monthly sodium, chloride, electrical conductivity, nitrogen species (N, NO2, NO3, NH3), pH and other constituents of concern identified in the Report of Waste Discharge. A limited suite of general minerals is required quarterly from the source and annually from the wastewater.	Most constituents sampled monthly, quarterly general minerals from source water and annual general minerals from waste discharge.	To monitor degradation potential from wastewaters discharged to land application areas and provide interim replacement water when MCL for nitrate as N is exceeded while developing long term solutions for safe drinking water.
Department of Pesticide Regulation	County of Tulare	Pesticides	Annual	DPR samples groundwater to determine: (1) whether pesticides with the potential to pollute groundwater are present, (2) the extent and source of pesticide contamination, and (3) the effectiveness of regulatory mitigation measures.
GAMA (Collaboration with SWQCB, RWQCB, DWR, DPR, NWIS, LLNL)		• Constituents sampled vary by the Program Objectives. • Typically, USGS is the technical lead in conducting the studies and reporting data.	Varies	• Improve statewide comprehensive e groundwater monitoring. • Increase the availability of groundwater quality and contamination information to the public.
Geotracker and Envirostor Databases		Many contaminants of concern, organic and inorganic.	Depends on program. Monthly, Semiannually, Annually, etc.	Records database for cleanup program sites, permitted waste dischargers
ILRP	Tule Basin Water Quality Coalition	• Annually: static water level, temperature, pH, electrical conductivity, nitrate as nitrogen, and dissolved oxygen. • Once every five years: general minerals collection	Annual and Every 5 years	Monitor impacts of agricultural and fertilizer applications on first encountered groundwater
USGS California Water Science Center		Conducted multiple groundwater quality studies of the Tule Subbasin.	Reports, factsheet, and data publications range from 1994through 2017.	Special studies related to groundwater quality that provide comprehensive studies to characterize the basin.

Appendix A Tule Subbasin Coordination Agreement

A6 Technical Support for Land Subsidence

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Technical Memorandum

To: Tule Subbasin Technical Advisory Committee

From: Thomas Harder, P.G., C.HG.
Thomas Harder & Co.

Date: 13-Jul-22

Re: Technical Support for Addressing Department of Water Resources Comments Regarding Land Subsidence in the Tule Subbasin

1 Introduction

This technical memorandum (TM) summarizes an analysis of currently established minimum thresholds and measurable objectives for land subsidence as they relate to potential impacts to land use, property interests, and critical infrastructure in the Tule Subbasin in Tulare County, California (see Figure 1). This TM was prepared to address comments from the California Department of Water Resources (CDWR) on groundwater sustainability plans (GSPs) prepared by each of the six Groundwater Sustainability Agencies (GSAs) within the Tule Subbasin.

1.1 Background

The Tule Subbasin Coordination Agreement formerly addressed undesirable results related to groundwater levels as the following: *"…the criteria for an undesirable result for land subsidence is defined as the unreasonable subsidence below minimum thresholds at greater than 50% of GSA Management Area RMS resulting in significant impacts to critical infrastructure."*

The previous version of the Coordination Agreement further stated that *"…the avoidance of an undesirable result of land subsidence is to protect critical infrastructure for the beneficial uses within the Tule Subbasin, including out of the ordinary costs to fix, repair, or otherwise retrofit such infrastructure beyond those which are expected or normal and may also result in an interim loss of benefits to the users of such infrastructure. An exceedance of minimum thresholds to the extent that the undesirable result for the Tule Subbasin is experienced could likely induce financial hardship on land and property interests, such as the redesign of previously planned construction projects and the fixing and retrofitting of existing infrastructure."*

In their review of the Tule Subbasin GSPs, each of which refer to the Coordination Agreement, the CDWR outlined the following Corrective Actions:[1]

1. *For areas defined as adjacent to the Canal in the Eastern Tule GSP, Delano-Earlimart Irrigation District GSP, and Lower Tule River Irrigation District GSP areas, the GSAs should identify, through analysis, the total amount of subsidence that can be tolerated by the Canal during implementation of the GSPs to maintain the ability to reasonably operate to meet contracted water supply deliveries. Eastern Tule GSA, Delano-Earlimart Irrigation District GSA, and Lower Tule River Irrigation District GSA should explain how implementation of the projects and management actions is consistent both with achieving the long-term avoidance or minimization of subsidence and with not exceeding the tolerable amount of cumulative subsidence adjacent to the Canal.*
    a. *GSPs adjacent to the Canal should provide an updated description of the Land Subsidence Management and Monitoring Plan and the associated subsidence management in the vicinity of the Canal. The GSPs should include details of any projects, management actions, or mitigation programs associated with the management of land subsidence in the Subbasin.*
2. *For areas not adjacent to the Canal, the GSAs should identify facilities and/or structures, land uses and property interests that may be susceptible to impacts from land subsidence and should quantify the amount of land subsidence that would result in undesirable results. The GSAs should describe the rationale and any analysis performed to inform the quantification of undesirable results in these areas.*
3. *Tule Subbasin GSAs should define the criteria for when undesirable results occur in the Subbasin based on the results of analyses completed in response to Corrective Actions 1 and 2, the rationale behind the approach, and why it is consistent with avoiding the significant and unreasonable effects identified by the GSAs.*
4. *The GSAs should revise their minimum thresholds and measurable objectives for land subsidence to be consistent with the intent of SGMA that subsidence be avoided or minimized once sustainability is achieved. In doing that, the GSAs should identify a cumulative amount of tolerable subsidence that, if exceeded, would substantially interfere with groundwater and land surface beneficial uses and users in the Subbasin. The GSPs should explain how the extent of any future subsidence permitted by the GSPs would not substantially interfere with surface land uses. The GSAs should explain how implementation of the projects and management actions is consistent both with achieving the long-term avoidance or minimization of subsidence and with not exceeding the tolerable amount of cumulative subsidence.*

[1] CDWR, 2022. Statement of Findings Regarding the Determination of Incomplete Status of the San Joaquin Valley – Tule Subbasin Groundwater Sustainability Plans; Letter Dated January 28, 2022. Section 3.2.

The updated Coordination Agreement has been modified to reflect the analysis of land subsidence in the Tule Subbasin, as presented herein.

1.2 Purpose and Scope

In general, the purpose of this TM is to provide a technical basis for addressing the four general CDWR comments on the sustainable management criteria for land subsidence in the Tule Subbasin, as quoted in Section 1.1. The technical analysis described herein provides the basis for defining significant and unreasonable land subsidence conditions in the Tule Subbasin.

1.3 Sources of Data

The analysis presented herein is based on the best available data and background reports at the time of preparation. Sources of data used for this analysis include the following:

- Geographic Information System (GIS) shapefiles of hydrologic and water infrastructure from local agencies (e.g. Lower Tule River Irrigation District, Saucelito Irrigation District, etc.)
- GIS shapefile of railroads from the California Department of Transportation (CalTrans).
- GIS shapefile of bridges from the United States Department of Transportation, National Bridge Inventory
- AMEC Foster Wheeler, 2017. Ground Subsidence Study Report, Corcoran Subsidence Bowl, San Joaquin Valley, California. Prepared for California High Speed Rail Authority
- GIS shapefiles of Flood Insurance Rate Maps (FIRMs) from the Federal Emergency Management Agency (FEMA), National Flood Insurance Program (NFIP).
- Pipeline locations from the National Pipeline Mapping System (NPMS)
- United States Geological Survey (USGS) Digital Elevation Model (DEM)
- Geographic Information System (GIS) shapefiles of the subbasin and GSA boundaries and wells
- Tule Subbasin survey benchmark data[2]
- Minimum threshold groundwater level elevations for representative monitoring sites in the Tule Subbasin[3]

[2] Thomas Harder & Co, 2022. Tule Subbasin 2020/21 Annual Report. Prepared for the Tule Subbasin Technical Advisory Committee.
[3] Thomas Harder & Co, 2022. Tule Subbasin 2020/21 Annual Report. Prepared for the Tule Subbasin Technical Advisory Committee.

2 Land Subsidence Conditions

2.1 Mechanisms of Land Subsidence

Land surface subsidence from groundwater withdrawal occurs in areas where the subsurface aquifer system includes relatively thick aquitards and the groundwater level is lowered from groundwater pumping. Aquitards are low permeability layers with relatively high silt and clay content. As the aquitards are compressible, the release of pore pressure caused by the lowering of groundwater levels results in compression of the low permeability layers. Within a limited range of groundwater level fluctuation, the compressed aquitards can accept water back into their structure when groundwater levels rise resulting in elastic rebound. However, if groundwater levels are maintained at these lower levels for long enough periods of time as a result of groundwater pumping, the compression of aquitards becomes permanent. This permanent compression of subsurface layers results in land surface subsidence.

2.2 Rate and Extent of Land Subsidence in the Tule Subbasin

As described in the Tule Subbasin Setting (Attachment 2 to the Coordination Agreement), the rate of land subsidence in the Tule Subbasin varies both spatially, according to the geology of the subsurface sediments, and temporally with changes in groundwater levels. In general, land subsidence rates are highest in the northwestern part of the subbasin (see Figure 2). The average rate of change in land surface elevation between 1987 and 2018 for the area of maximum subsidence in the western part of the subbasin was estimated to be approximately 12 feet over the 32-year period for a rate of 0.4 ft/yr. At the Porterville GPS station, the annual rate of subsidence between 2006 and 2013 was approximately 0.09 ft/yr but increased to approximately 0.29 ft/yr between 2013 and 2019.

Groundwater flow model analysis forecasts that land subsidence will continue during the transitional pumping period from 2020 to 2040 as groundwater levels continue to drop in parts of the Subbasin.[4] In general, the greatest amounts of land subsidence (up to eight feet) is forecasted to occur in the northwestern part of the subbasin during this time period, which represents an average rate of 0.4 ft/yr (see Figure 3). Land subsidence rates as high as 0.2 ft/yr are forecasted to occur in the vicinity of the Friant-Kern Canal between Deer Creek and White River.

[4] Thomas Harder & Co., 2020. Groundwater Flow Model of the Tule Subbasin. Prepared for the Tule Subbasin MOU Group. Dated January 2020.

2.3 Regional vs Differential Subsidence

Land subsidence can manifest itself as a regional phenomenon or at a local scale. Regional land subsidence results in a large area (e.g. 10's to 100's of square miles) subsiding at similar rates such that the effect of the lowered land elevation cannot be discerned except through periodic surveying of bench marks or information from satellites. Impacts to land uses, property interests, and critical infrastructure from this type of land subsidence are most likely to occur in the form of reduced surface carrying capacity of gravity-driven water conveyance, well damage, and flood control. Differential land subsidence results in localized adjoining areas subsiding at different rates relative to each other. This can result in land fissuring and often occurs along a fault or geologic boundary. Differential land subsidence has the most potential to cause damage to surface infrastructure such as roads, bridges, and buildings.

The best available information to date indicates that land subsidence in the Tule Subbasin has been regional in nature with little evidence of differential land subsidence and no reports of damage to infrastructure associated with differential land subsidence.

3 Land Subsidence Along the Friant-Kern Canal

Differential land subsidence rates along the portion of the Friant-Kern Canal that extends through the ETGSA has had a significant impact on the ability of the FWA to deliver surface water downstream of the impacted areas. Where the FKC crosses the northern and southern ETGSA boundaries, land subsidence rates have been relatively low and cumulative land subsidence in those areas have been on the order of 1 to 2 feet between 1959 and 2019. Land subsidence between the Tule River and White River, however, have resulted in up to approximately 9 feet of cumulative land subsidence at the FKC. This differential land subsidence has resulted in a low spot along the canal in the vicinity of Deer Creek that restricts flow in the canal. The original design flow capacity of the FKC was approximately 4,000 cubic feet per second (cfs). As of 2019, the flow capacity at the canal at Deer Creek had been reduced to approximately 1,900 cfs (United States Bureau of Reclamation, 2019). The FWA is currently pursuing repairs to the FKC to restore the original flow capacity. The long-term effectiveness of the repairs at maintaining flow capacity in the canal relies on limiting additional land subsidence during the SGMA transition period from 2020 to 2040 within the design of the repairs and minimizing land subsidence after 2040.

Groundwater flow model analysis forecasts as much as three feet of additional land subsidence at some locations of the FKC during the transition period from 2020 to 2040 (Figure 4). Through coordination with the Friant Water Authority staff and consultants, this value became the basis for engineering design modifications to restore canal flow capacity to its original condition. Land subsidence along the canal exceeding three feet was determined to be an undesirable result because it would be beyond what the engineering design could accommodate to restore the flow capacity to its original condition and what the parties to the FWA/ETGSA/Pixley GSA settlement agreement agreed to mitigate.

To address land subsidence along the FKC, the ETGSA developed a Land Subsidence Monitoring Plan[5] and Management Plan[6]. These plans are separate from, and in addition to, the monitoring plan established for the Tule Subbasin. The goal of the Land Subsidence Monitoring and Management Plans is to implement groundwater management measures necessary to minimize future non-recoverable land subsidence along the FKC in the SGMA transition period from 2020 – 2040 and to arrest nonrecoverable land subsidence along the FKC after 2040. The area encompassed by the plan is shown on Figure 5, along with Management Zones that have been identified where management actions may be implemented.

The ETGSA Land Subsidence Monitoring Plan includes:

- An enhanced benchmark and groundwater level monitoring network,

[5] TH&Co, 2021. Eastern Tule Groundwater Sustainability Agency Land Subsidence Monitoring Plan. Dated September 2021.
[6] ETGSA, 2022. Eastern Tule Groundwater Sustainability Agency Land Subsidence Management Plan. Dated February 2022.

- Establishment of a Land Subsidence Monitoring and Management Committee, and
- Annual Reporting

The Land Subsidence Management Plan establishes management action criteria for implementing enhanced management actions should land subsidence in any given Management Area reach certain thresholds. Four land subsidence thresholds, or "Tiers" have been established:

- Tier 1 – 0 to 1.49 ft of land subsidence
- Tier 2 – 1.5 to 1.99 ft of land subsidence
- Tier 3 – 2.0 to 2.49 ft of land subsidence
- Tier 4 – 2.5 to 2.99 ft of land subsidence.

Progressively aggressive management actions have been identified for each tier. Land subsidence in any given Management Area that exceeds the criteria, as measured semi-annually using InSAR data, triggers the management actions in the next higher tier.

4 Other Land Uses, Property Interests, and Critical Infrastructure Vulnerable to Land Subsidence in the Tule Subbasin

4.1 Gravity-Driven Water Conveyance Infrastructure

Gravity-driven water conveyance infrastructure includes canals, turnouts, recharge basins, stream channels used to convey water, pipelines, and field irrigation (see Figure 6). This infrastructure utilizes the land surface slope to maintain hydraulic head and velocity (and therefore flow capacity). Land subsidence results in changes in the slope of the land surface. Positive changes in slope (i.e. steepening of slope) may result in increased water velocities, increased pressure in pipelines, and lower hydraulic head (e.g. at turnouts). Negative changes in slope (i.e. flattening of slope) may result in decreased water velocities, lower pressure in pipelines, and higher hydraulic head (e.g. at turnouts and under bridges).

For completeness, below is a list of gravity-driven water conveyance infrastructure in the Tule Subbasin that may be vulnerable to changes in land surface slope due to subsidence:

- Regional canals including the following:
  - Friant-Kern Canal
  - Homeland Canal
- Local canals owned and operated by the following:
  - Lower Tule River Irrigation District
  - Pixley Irrigation District
  - Porterville Irrigation District
  - Various Tule River Association members (e.g. Porter Slough, Campbell-Moreland Ditch, etc.)
  - Angiola Water District
  - Alpaugh Irrigation District
- Turnouts to landowners
- Turnouts to recharge basins
- Tule River, Deer Creek, and White River channels used to convey native and imported water
- Pipelines owned and operated by the following
  - Porterville Irrigation District
  - Saucelito Irrigation District
  - Delano-Earlimart Irrigation District
  - Terra Bella Irrigation District
  - Kern-Tulare Irrigation District
  - Tea Pot Dome Irrigation District
- Field irrigation (e.g. field furrows, field flooding, etc.)

4.1.1 Analysis of Potential Impacts to Gravity Driven Water Conveyance from Land Subsidence

Changes in land surface slope or localized changes in land surface elevation have the potential to impact the flow capacity of gravity driven conveyance facilities. Groundwater flow modeling has shown that land subsidence is likely to continue through the 2020 to 2040 transition period (see Figure 3).[7] Minimum Thresholds (MTs) for land subsidence were developed based, in part, on land subsidence forecasts by the groundwater flow model for the 2020 to 2040 transition period. To assess the potential for undesirable results on gravity driven water conveyance in the Tule Subbasin if the land subsidence exceeds the minimum thresholds, TH&Co conducted the following analysis:

- The difference between the 2020 land surface elevations surveyed at the Representative Monitoring Sites (RMS; Benchmark Network) and the forecast maximum land subsidence (MTs) at the RMS was contoured in a Geographic Information System (GIS) using a kriging algorithm to produce a distribution of potential future land subsidence between 2020 and 2040 (see Figure 7).
- The 2020 land surface elevation and land surface elevation at maximum subsidence were discretized with square cells 1,650 ft on each side.
- Using the GIS slope tool, TH&Co calculated the land surface slopes for both the 2020 and MT land surface elevation conditions (see Figures 8 and 9).
- The forecast change in slope was estimated as the difference between the 2020 and MT slopes (see Figure 10).

Results of the analysis showed a projected flattening of the land surface slope along Deer Creek and west of the Friant-Kern Canal, along the Tule River west of State Highway 99, and north of Deer Creek along State Highway 43 (see Figure 10). However, changes in slope are not projected to change surface flow directions except for the area north of Deer Creek and State Highway 43, where the land surface is already relatively flat. Flattening of the surface slope at the west end of Deer Creek could change surface flow directions and flooding patterns in this area.

4.1.2 Potential for Undesirable Results on Gravity Driven Water Conveyance from Land Subsidence

The greatest potential for undesirable results related to changes in land surface slope from forecast land subsidence during the 2020 to 2040 transition period are water delivery capacity in the Homeland Canal, the ability to divert water from the western end of Deer Creek, and potential changes in the cost and ability to deliver water in conveyance pipelines. Except for the Friant-Kern Canal, no undesirable results on gravity driven conveyance have been documented from

[7] Thomas Harder & Co., 2020. Groundwater Flow Model of the Tule Subbasin. Prepared for the Tule Subbasin MOU Group. Dated January 2020.

historical land subsidence in the Tule Subbasin. Further, impacts associated from potential future changes in land surface slope are not anticipated.

4.2 Domestic, Agricultural, and Other Wells

Wells are susceptible to damage from land subsidence. Subsidence is the result of cumulative aquifer system (i.e. aquifers and aquitards) compaction at depth. As the aquifer system compacts, it causes vertical compression on the well casing, which may result in collapsing, bending, ripping, rupturing, or otherwise breaking. This can lead to a damaged and/or unusable well. Protrusion of the well casing at the land surface may also occur.

Casing compression is proportional to the thickness of compressing sediment, which varies in the Tule Subbasin spatially and with depth. In the Tule Subbasin, compression of the Lower Aquifer is greater than that of the Shallow Aquifer. Therefore, wells constructed in the Lower Aquifer are more susceptible to damage from land subsidence than wells constructed only in the Upper Aquifer.

While well casing damage from land subsidence is known to occur in wells constructed in the Tule Subbasin, details regarding the number of impacted wells and the amount of land subsidence that leads to casing damage/failure is not documented. Further, many new wells constructed in the last approximately 20 years have been designed with compression sections in their casing to accommodate the effects of land subsidence. For wells not equipped with compression sections, studies in other areas of the Central Valley of California suggest that casing damage is not common where land subsidence is less than approximately one foot.[8] Given that land subsidence has exceeded one foot throughout most of the Tule Subbasin since at least 2015 (see Figure 2), well damage from historical land subsidence is likely in wells not equipped with compression sections. Further, forecasted land subsidence for 2020 to 2040 is also estimated to exceed one foot throughout much of the subbasin, which may cause to wells not equipped to accommodate it. Potential undesirable results include the need to repair or replace damaged wells and difficulty or inability to remove pumps.

4.3 Flood Control

The historical tendency of any given area to flood during a precipitation event or prolonged period of above-normal precipitation is dependent on the land elevation of the area relative to other areas. Flooding occurs in low-lying areas. Changes in the land surface elevation and slope can impact the direction of surface water runoff and areas subject to flooding. Infrastructure built in areas protected from historical flooding or dependent on historical land/channel slopes to deliver surface water may be impacted if the slope of the land changes. The Federal Emergency Management

[8] Borchers, J.W., Gerber, M., Wiley, J., and Mitten, H., 1998. Using Down-Well Television Surveys to Evaluate Land Subsidence Damage to Water Wells in the Sacramento Valley, California.

Agency (FEMA) has published maps showing areas susceptible to flooding (see Figure 11). While these maps were updated in 2009, it is our understanding that they were based on topographic data that was outdated. As land subsidence continues to occur in the Tule Subbasin, it will be necessary to update the FEMA flood maps after land subsidence rates are minimized.

Potentially impacted flood control infrastructure includes berms/levees around the Tule River, Deer Creek, White River, smaller channels, and the Tulare Lakebed. The location and design capacity of this infrastructure are presently unknown. As described in Section 4.1.2 herein, changes in land elevation may affect some stakeholder's ability to divert water from the western end of Deer Creek. AMEC Foster Wheeler (2017) noted that potential flooding of the Tulare Lakebed is the primary concern for subsidence impacts to the California High Speed Rail (CSHR), more so than potential physical impacts to the track structure.[9]

4.4 State Highways, Railroads, Pipelines, and Bridges

State Highways, railroads, pipelines, and bridges may be susceptible to differential subsidence, should it occur. State highways in the Tule Subbasin include Highways 99, 43, 65, 190, and 155 (see Figure 12). In addition, there are 156 bridges from the National Bridge Inventory within the Tule Subbasin. Railroads in the Tule Subbasin include the Burlington-Northern Santa Fe (BNSF), Union Pacific, San Joaquin Valley Railroad, West Isle Line, and the planned California High Speed Rail (CHSR). Pipelines identified from the National Pipeline Mapping System (NPMS) include gas transmission pipelines and liquid petroleum pipelines.

Historically, there has been no reported impacts to state highways, railroads, pipelines and bridges in the Tule Subbasin attributed to land subsidence. Further, there has been no evidence of differential land subsidence that has impacted infrastructure in the subbasin.

The CHSR, which is currently under construction, is located on the western side of the Tule Subbasin (see Figure 12). AMEC (2017) conducted a detailed evaluation of potential subsidence-related impacts to the CHSR. The report identified the following potential concerns:

> Rapid and large-magnitude subsidence poses several potential concerns to the HSR, including (1) changes in slopes, vertical curvature, horizontal curvature, and twist; (2) development of fissures or compaction faults; and (3) changes in floodplains and site drainage.

AMEC Foster Wheeler (2017) noted that potential flooding of the Tulare Lakebed, which is associated with regional land subsidence, is the primary concern for subsidence impacts to the CSHR, more so than potential physical impacts to the track structure associated.

[9] AMEC Foster Wheeler, 2017. Ground Subsidence Study Report – Corcoran Subsidence Bowl, San Joaquin Valley, California. Prepared for the High Speed Rail Authority. Dated December 2017.

4.5 Wastewater Collection

Wastewater collection (i.e. sewer systems) relies on networks of gravity-driven sewers that may be susceptible to impacts from land subsidence (see Section 4.4). For completeness, cities and communities that operate wastewater collection include the following (see Figure 13):

- City of Porterville
- Terra Bella Sewer Maintenance District (SMD)
- Woodville Public Utilities District (PUD)
- Tipton Community Services District (CSD)
- Pixley PUD
- Earlimart PUD
- Richgrove CSD

Historically, there has been no reported impacts to wastewater collection systems in the Tule Subbasin attributed to land subsidence. Further, there has been no evidence or studies documenting differential land subsidence that has impacted wastewater infrastructure in the subbasin.

4.6 Other Potential Land Uses, Property Interests, and Critical Infrastructure

Other potential land uses, property interests, and critical infrastructure that could be impacted by differential land subsidence include buildings, utilities, and other facilities. Historically, there has been no reported impacts to infrastructure in the Tule Subbasin attributed to land subsidence. Further, there has been no evidence or studies documenting differential land subsidence that has impacted buildings, utilities, and other facilities in the subbasin.

5 Prioritization of Land Uses Vulnerable to Land Subsidence

The land uses, property interests, and critical infrastructure vulnerable to land subsidence were prioritized based on input from Tule Subbasin GSAs, a review of documented subsidence impacts in the Tule Subbasin, and historical and projected subsidence rates.

High priority land uses are those that are potentially impacted by regional land subsidence regardless of if there is differential land subsidence. High priority land uses include:

- Gravity-Driven Water Conveyance
  - Canals
  - Turnouts
  - Stream Channels
  - Water Delivery Pipelines
  - Basins
- Wells
- Flood Control Infrastructure

Low priority land uses are not typically impacted by regional land subsidence but are susceptible to differential land subsidence if it occurs. Based on the best available information, these land uses have not been impacted by the regional land subsidence that has historically occurred in the Tule Subbasin. The low priority land uses include:

- Highways and Bridges
- Railroads
- Other Pipelines
- Wastewater Collection
- Utilities
- Buildings

In the context of the discussion of infrastructure and land uses vulnerable to land subsidence (Sections 3 and 4 herein), undesirable results associated with the cumulative amount of land subsidence accommodated by the Minimum Thresholds, as published in each GSA's GSP (see Figure 7), are not anticipated for most of the land uses in the Tule Subbasin. In those cases where an impact is reported, it is recommended that the Tule Subbasin GSAs establish a mitigation program to address such impacts.

6 Potential for Land Subsidence After 2040

Even with achievement of sustainable groundwater conditions by 2040, it is possible that ongoing land subsidence could occur in the Tule Subbasin after 2040. This additional land subsidence would take the form of:

- Elastic aquifer compaction and rebound whereby seasonal changes in groundwater levels result in lowering and raising of the land surface as the aquifer releases or takes in water. Changes in land elevation from elastic compaction (also known as "recoverable compaction") are typically on the order of tenths of feet or less.
- Residual compaction of clays after 2040 from the lowering of groundwater levels that occurred prior to 2040. Land subsidence associated with residual compaction is inelastic (i.e. permanent) and typically results in greater amounts of subsidence relative to recoverable compaction.

The greatest potential for undesirable results from land subsidence after 2040 is residual compaction associated with a groundwater condition that was established prior to 2040. Residual compaction rates and extents are hard to predict as they depend largely on the characteristics of the subsurface sediments at any given location. Recent studies by Smith and Knight (2019)[10] and Lees et al. (2022)[11] suggest that the duration and magnitude of residual land subsidence at any given location, assuming a stable groundwater level condition, is proportional to the thickness of subsurface clay at that location. Based on studies and modeling in the Kaweah Subbasin north of Tule Subbasin, residual subsidence rates could be on the order of 0.4 to 2 in/yr (1 to 5 cm/yr) (Lees et al., 2022) and last many years after groundwater levels have stabilized.

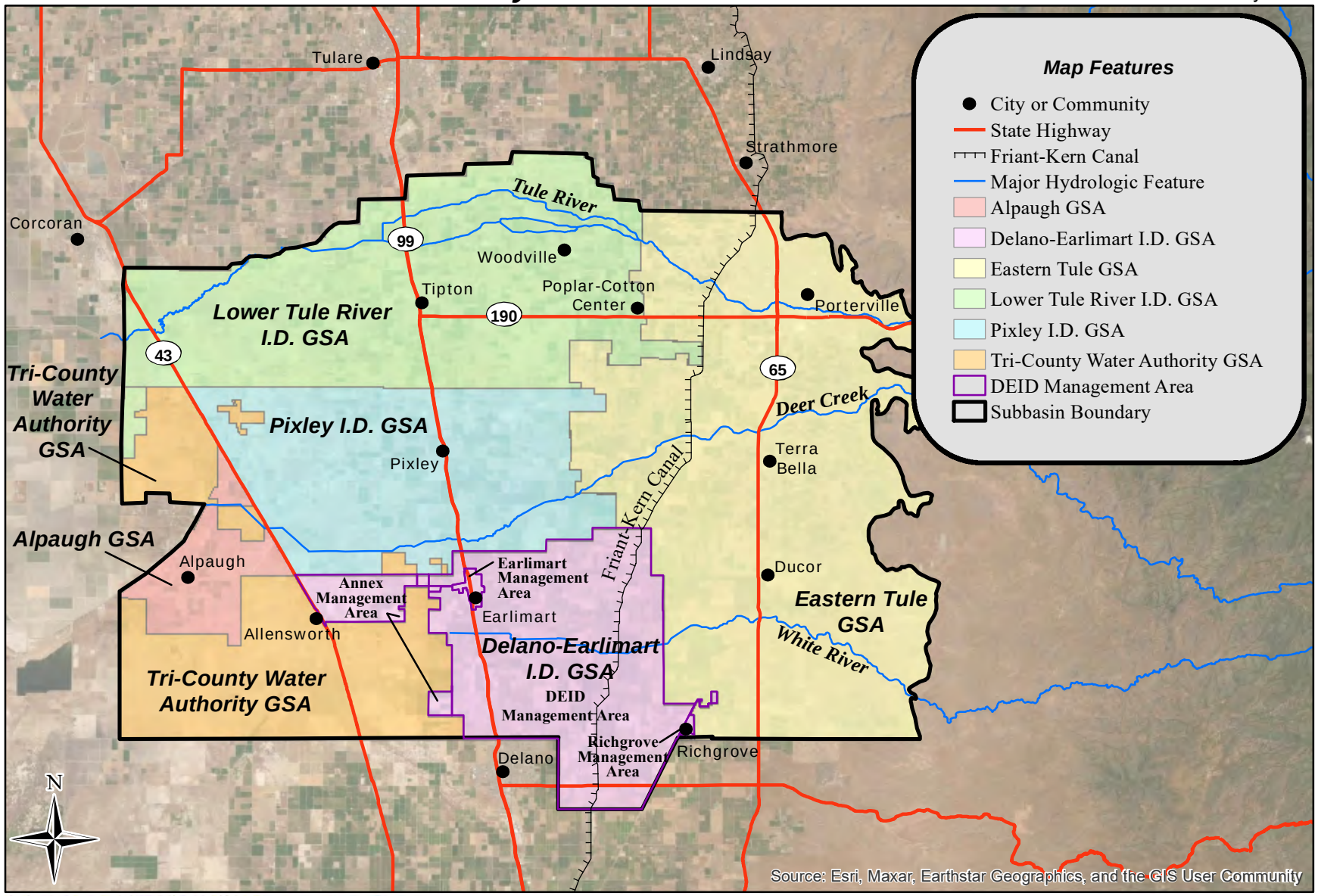
Given the uncertainty of residual compaction rates that could be expected at any given location in the Tule Subbasin after 2040, it is recommended to collect additional groundwater levels and land surface elevation data over time to establish more clearly the relationship between groundwater level changes and land subsidence in those areas of the Tule Subbasin where infrastructure and land uses are vulnerable to undesirable results. Further, construction of one or more extensometers in the areas of highest land subsidence rate is recommended to help establish the groundwater level at which land subsidence would be acceptably mitigated.

[10] Smith, R., and Knight, R., 2019. Modeling Land Subsidence Using InSAR and Airborne Electromagnetic Data. Water Resources Research, 55, 2801-2819.
[11] Lees, M., Knight, R., and Smith, R., 2022. Development and Application of a 1D Compaction Model to Understand 65 Years of Subsidence in the San Joaquin Valley. Water Resources Research, 58, e2021WR031390.

DWR Comments - Subsidence in the Tule Subbasin

July 2022

Tule Subbasin Technical Advisory Committee



Thomas Harder & Co.
Groundwater Consulting

0 2.5 5 10 Miles

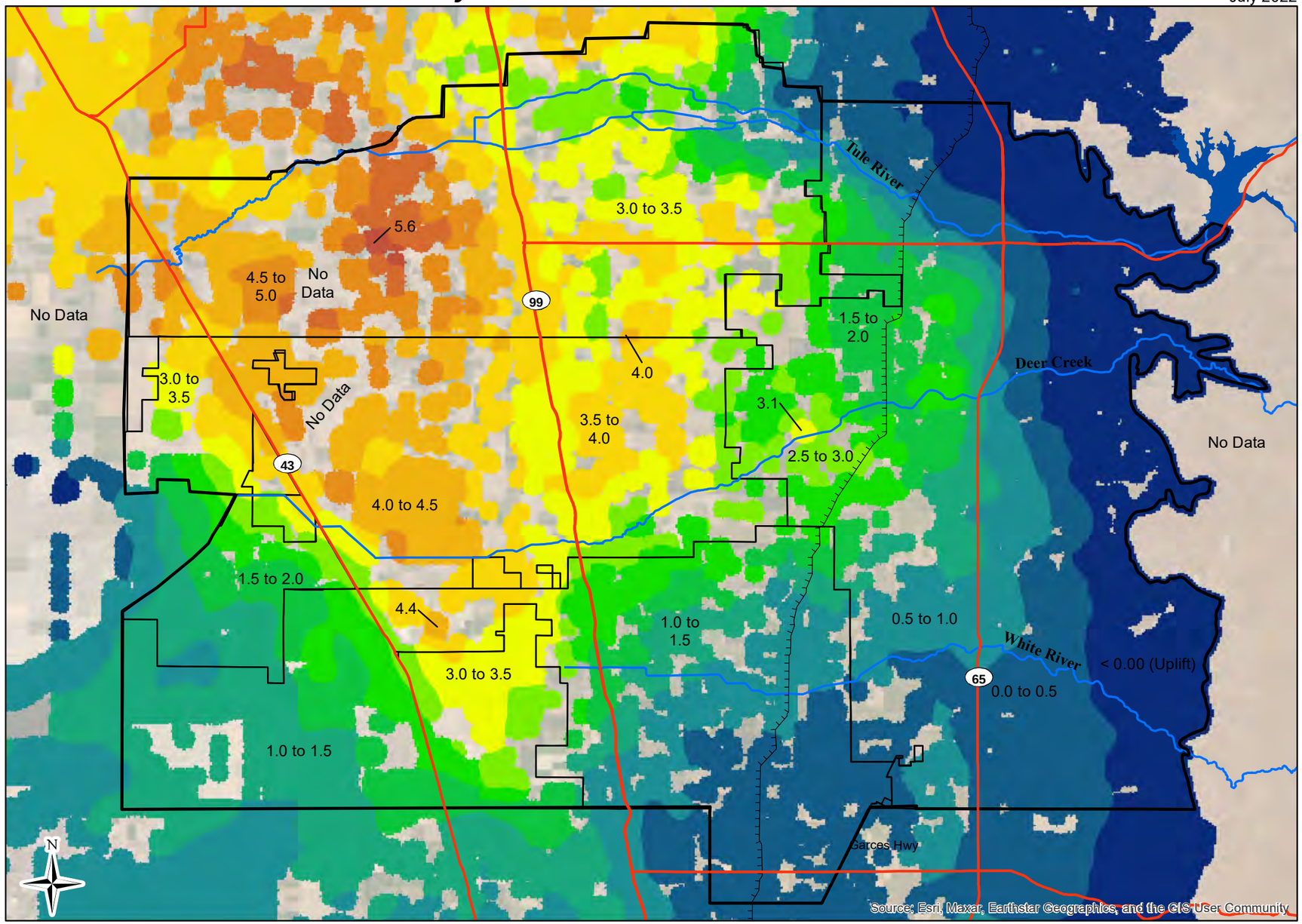
NAD 83 State Plane Zone 4

GSA Boundaries

Figure 1

Tule Subbasin Technical Advisory Committee

July 2022



Map Features

Subsidence (ft)

- 5.5 to 6.0
- 5.0 to 5.5
- 4.5 to 5.0
- 4.0 to 4.5
- 3.5 to 4.0
- 3.0 to 3.5
- 2.5 to 3.0
- 2.0 to 2.5
- 1.5 to 2.0
- 1.0 to 1.5
- 0.5 to 1.0
- 0.0 to 0.5
- < 0.0 (Uplift)
- State Highway
- Friant-Kern Canal
- Major Hydrologic Feature
- GSA Boundary
- Subbasin Boundary

Thomas Harder & Co.
Groundwater Consulting

0 2 4 8 Miles

NAD 83 State Plane Zone 4

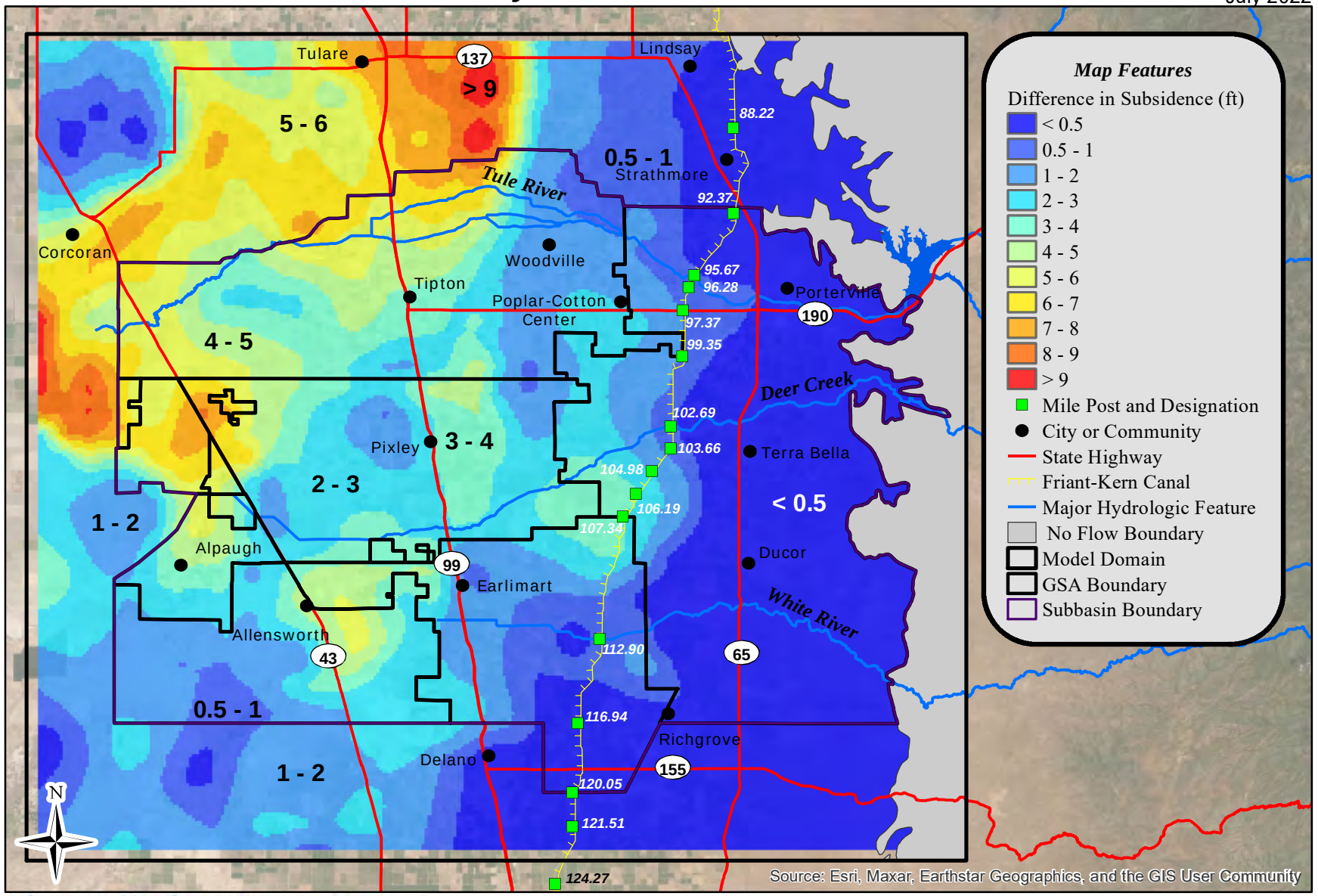
InSAR data from:
https://gis.water.ca.gov/arcgisimg/rest/services/SAR/Vertical_Displacement_TRE_ALTAMIRA_Total_Since_20150613_20211001/ImageServer

Land Subsidence June 2015 to September 2021

Figure 2

DWR Comments - Subsidence in the Tule Subbasin

Tule Subbasin Technical Advisory Committee



Thomas Harder & Co.
Groundwater Consulting

0 2.5 5 10
Miles

NAD 83 State Plane Zone 4

Note: This map shows the difference in subsidence from September 30, 2019 to September 30, 2039.

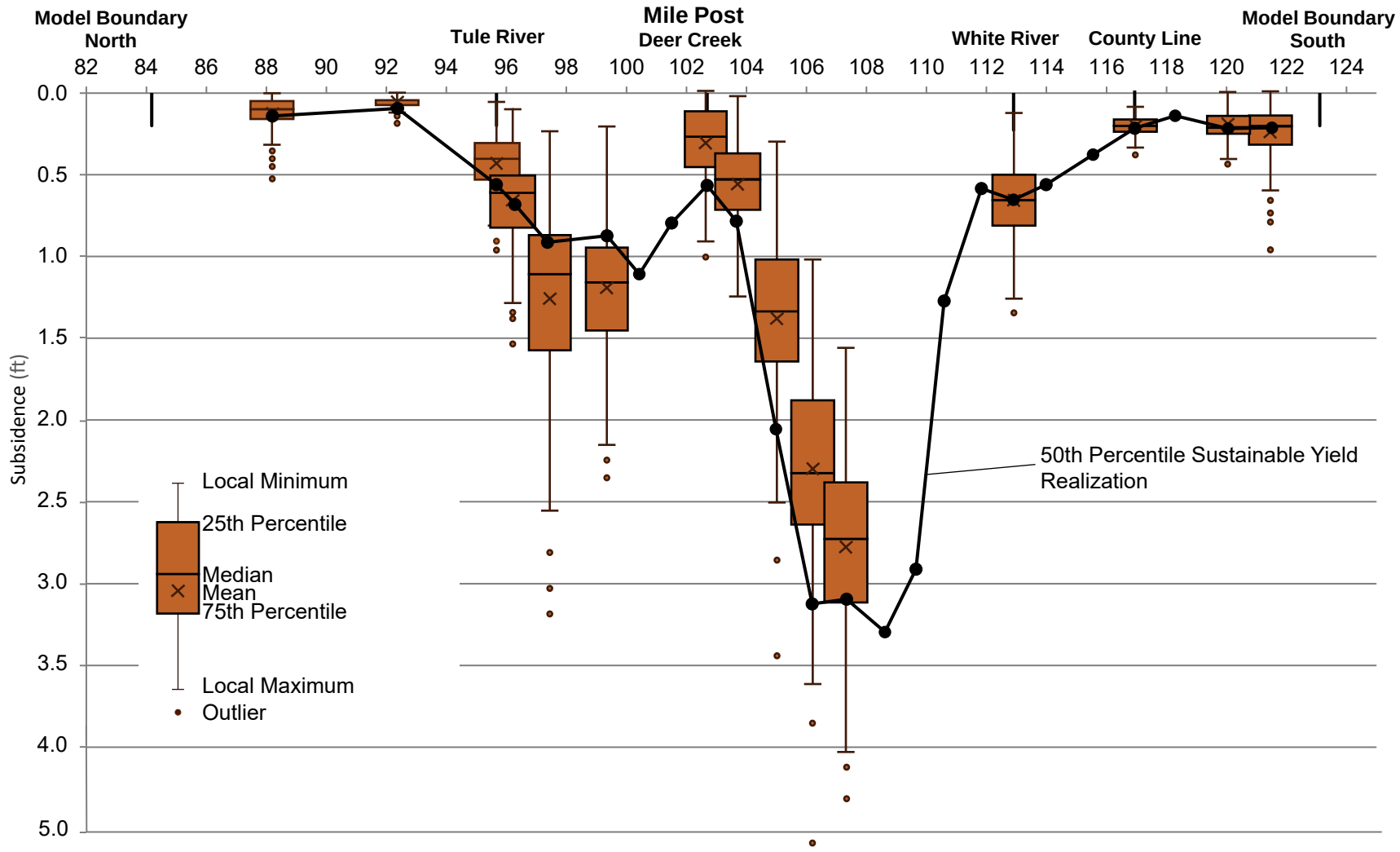
Cumulative Land Subsidence in the Tule Subbasin from 2020 to 2040

Figure 3

From Thomas Harder & Co., 2020. Groundwater Flow Model of the Tule Subbasin. Prepared for the Tule Subbasin MOU Group.

Figure 4

Model-Predicted Cumulative Land Subsidence Along Friant-Kern Canal From 2020 through 2040

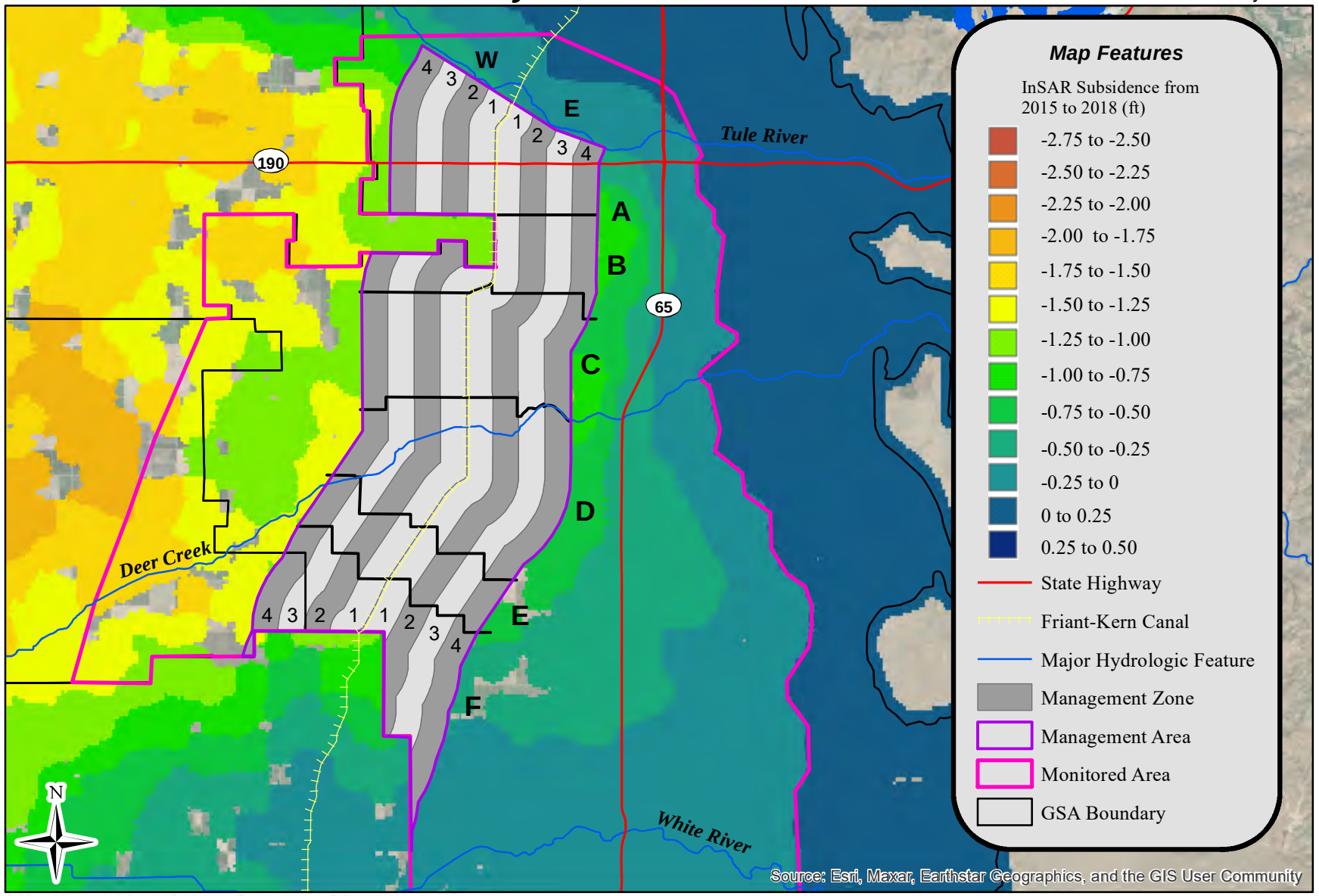


Thomas Harder & Co.
Groundwater Consulting

Note: From Thomas Harder & Co., 2020. Groundwater Flow Model of the Tule Subbasin. Prepared for the Tule Subbasin MOU Group.

DWR Comments - Subsidence in the Tule Subbasin
July 2022

Tule Subbasin Technical Advisory Committee



Thomas Harder & Co.
Groundwater Consulting

0 0.5 1 2 3 4 Miles

NAD 83 State Plane Zone 4

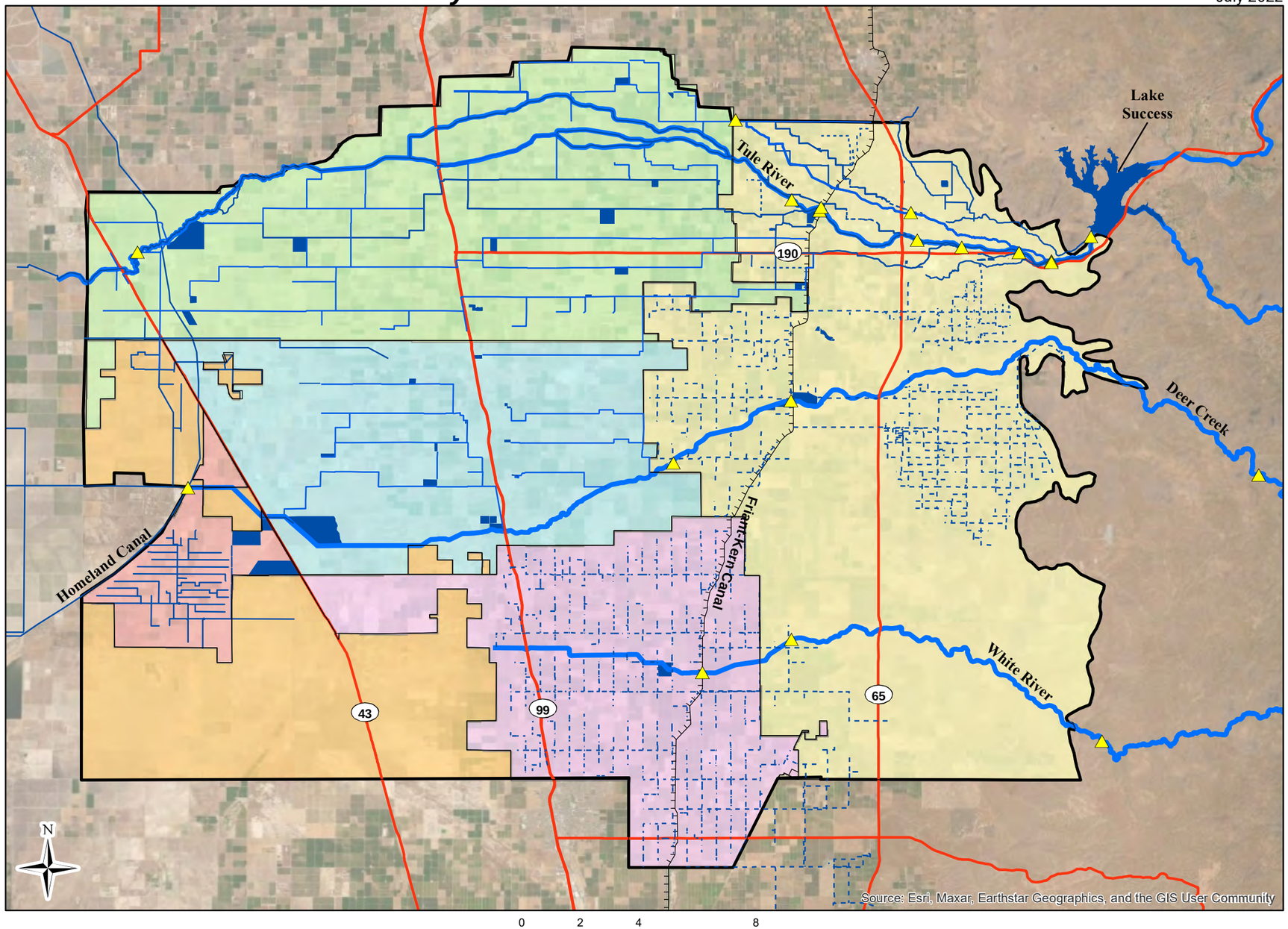
ETGSA Land Subsidence Managed Area with Management Subzones

Figure 5

Tule Subbasin Technical Advisory Committee

July 2022

DWR Comments - Subsidence in the Tule Subbasin



0 2 4 8 Miles

NAD 83 State Plane Zone 4

Map Features

- Gaging Location/Surface Water Diversion
- Canal
- Pipe
- State Highway
- Friant-Kern Canal
- Major Hydrologic Feature
- Artificial Recharge Basin
- Alpaugh GSA
- Delano-Earlimart I.D. GSA
- Eastern Tule GSA
- Lower Tule River I.D. GSA
- Pixley I.D. GSA
- Tri-County Water Authority GSA
- Subbasin Boundary

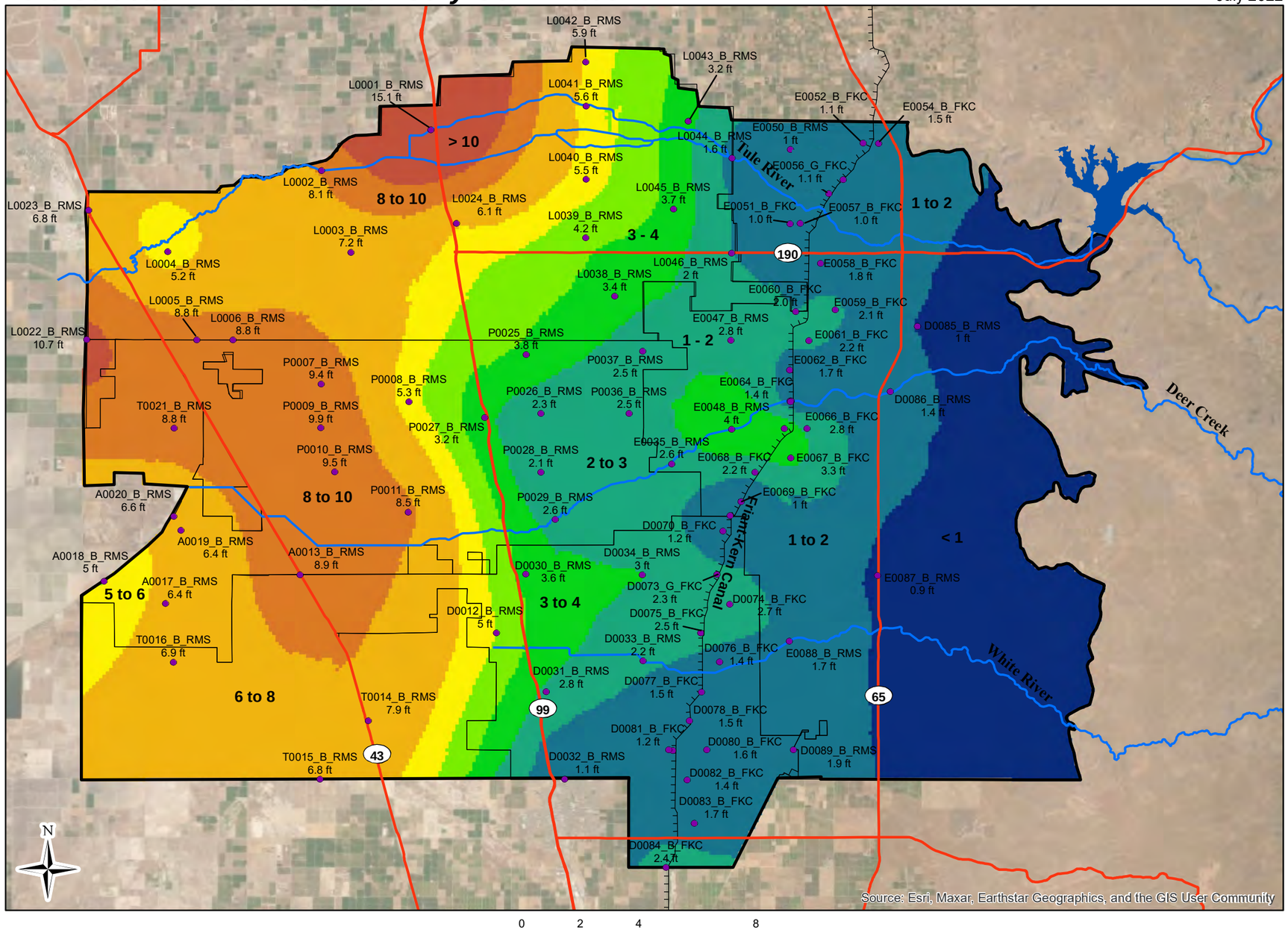
Thomas Harder & Co.
Groundwater Consulting

Gravity-Driven Water Conveyance Infrastructure

Figure 6

Tule Subbasin Technical Advisory Committee

July 2022



0 2 4 8 Miles

NAD 83 State Plane Zone 4

Thomas Harder & Co.
Groundwater Consulting

DWR Comments - Subsidence in the Tule Subbasin

Map Features

Minimum Threshold (ft)

- < 1
- 1 to 2
- 2 to 3
- 3 to 4
- 4 to 5
- 5 to 6
- 6 to 8
- 8 to 10
- > 10

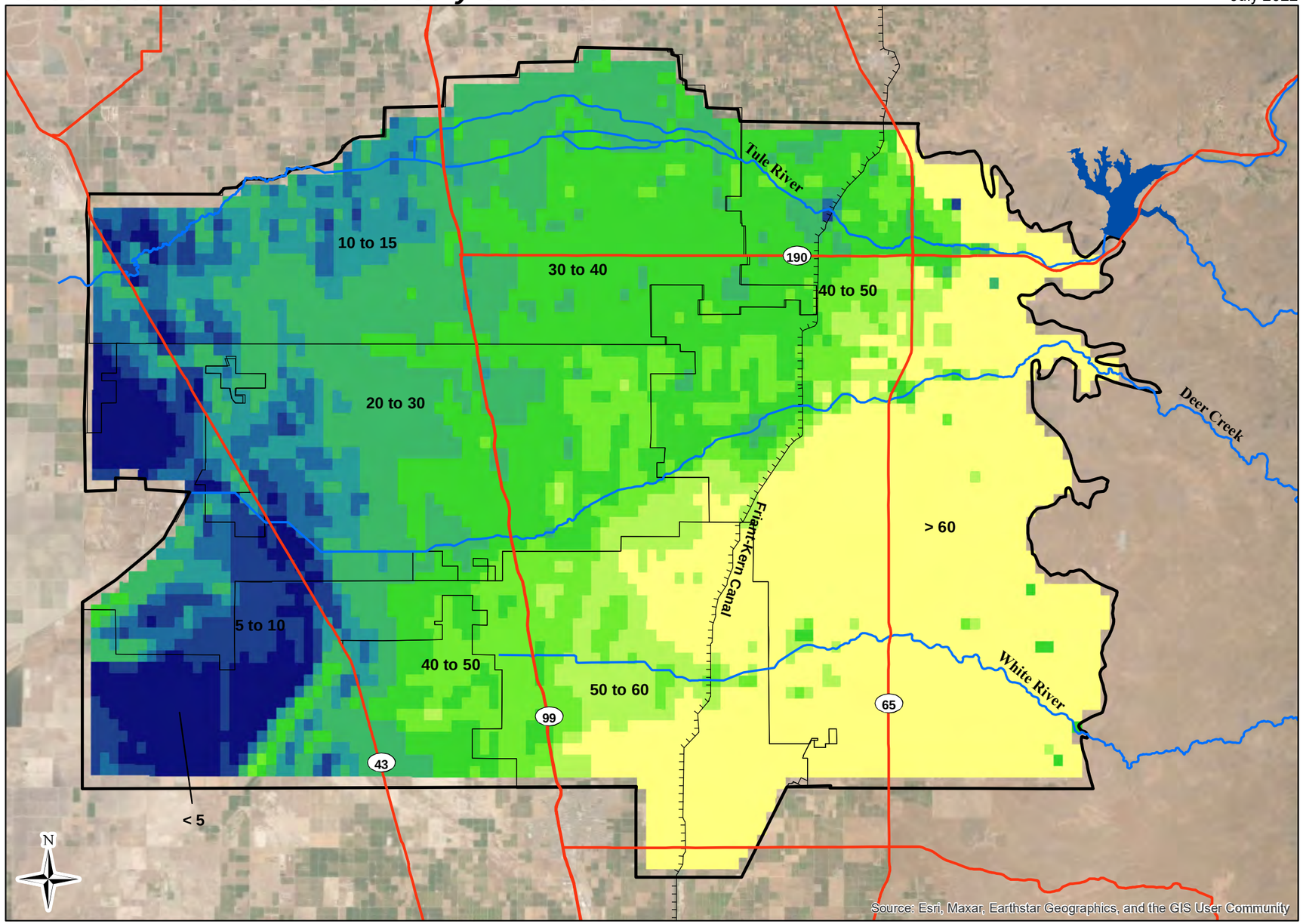
- Minimum Threshold at RMS (ft)
- State Highway
- Friant-Kern Canal
- Major Hydrologic Feature
- GSA Boundary
- Subbasin Boundary

Minimum Threshold - Subsidence

Figure 7

Tule Subbasin Technical Advisory Committee

July 2022



0 2 4 8 Miles

NAD 83 State Plane Zone 4

Map Features

Slope (ft per mile)

- < 5
- 5 to 10
- 10 to 15
- 15 to 20
- 20 to 30
- 30 to 40
- 40 to 50
- 50 to 60
- > 60
- State Highway
- Friant-Kern Canal
- Major Hydrologic Feature
- GSA Boundary
- Subbasin Boundary

Note: This map shows estimated land surface slope in 2020 based on the USGS DEM and 2020 benchmark elevations.

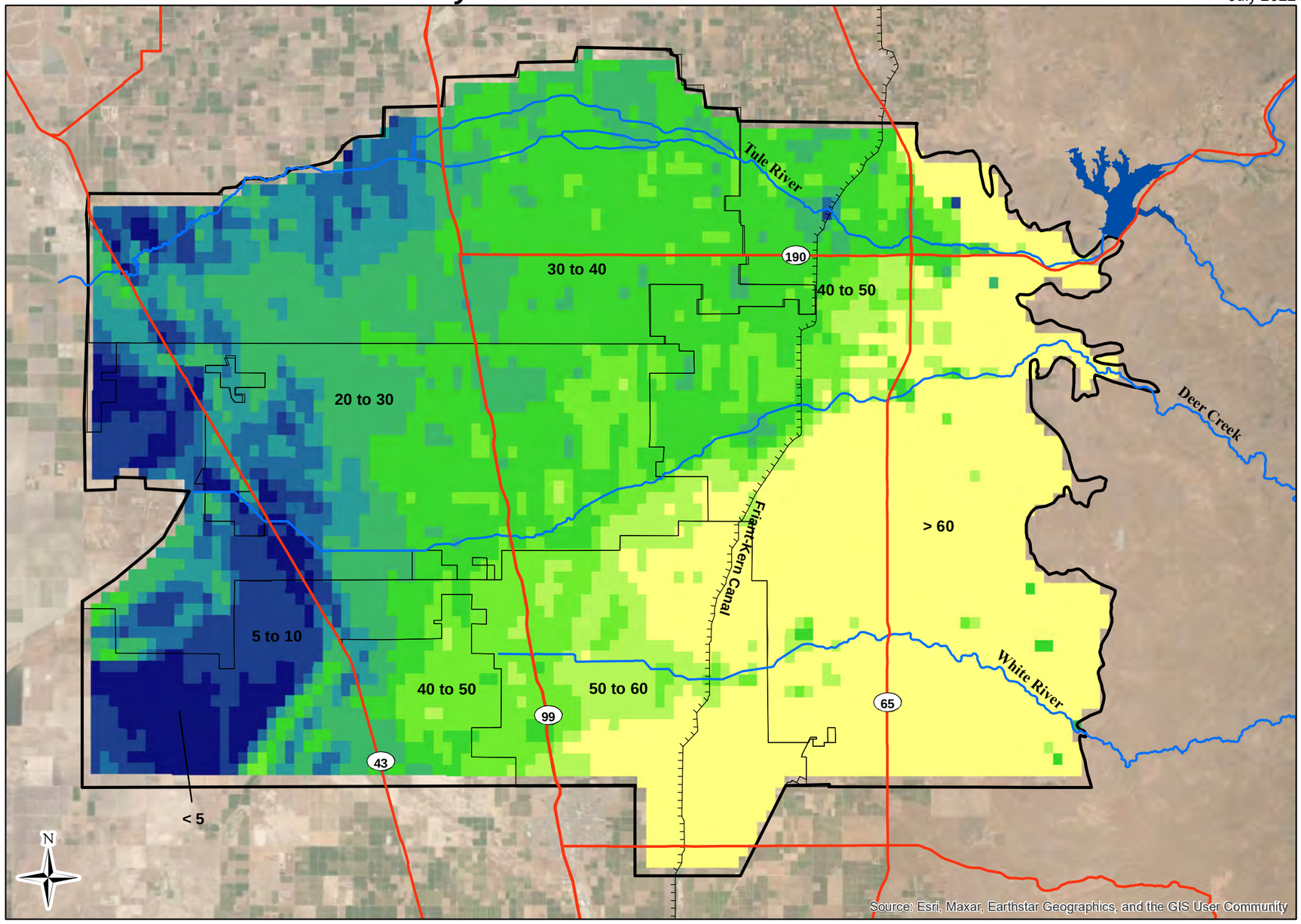
Thomas Harder & Co.
Groundwater Consulting

Estimated 2020 Land Surface Slope

Figure 8

Tule Subbasin Technical Advisory Committee

July 2022



0 2 4 8 Miles

NAD 83 State Plane Zone 4

Thomas Harder & Co.
Groundwater Consulting

DWR Comments - Subsidence in the Tule Subbasin

Map Features

Slope (ft per mile)

- < 5
- 5 to 10
- 10 to 15
- 15 to 20
- 20 to 30
- 30 to 40
- 40 to 50
- 50 to 60
- > 60
- State Highway
- Friant-Kern Canal
- Major Hydrologic Feature
- GSA Boundary
- Subbasin Boundary

Note: This map shows predicted land surface slope if subsidence reaches minimum thresholds.

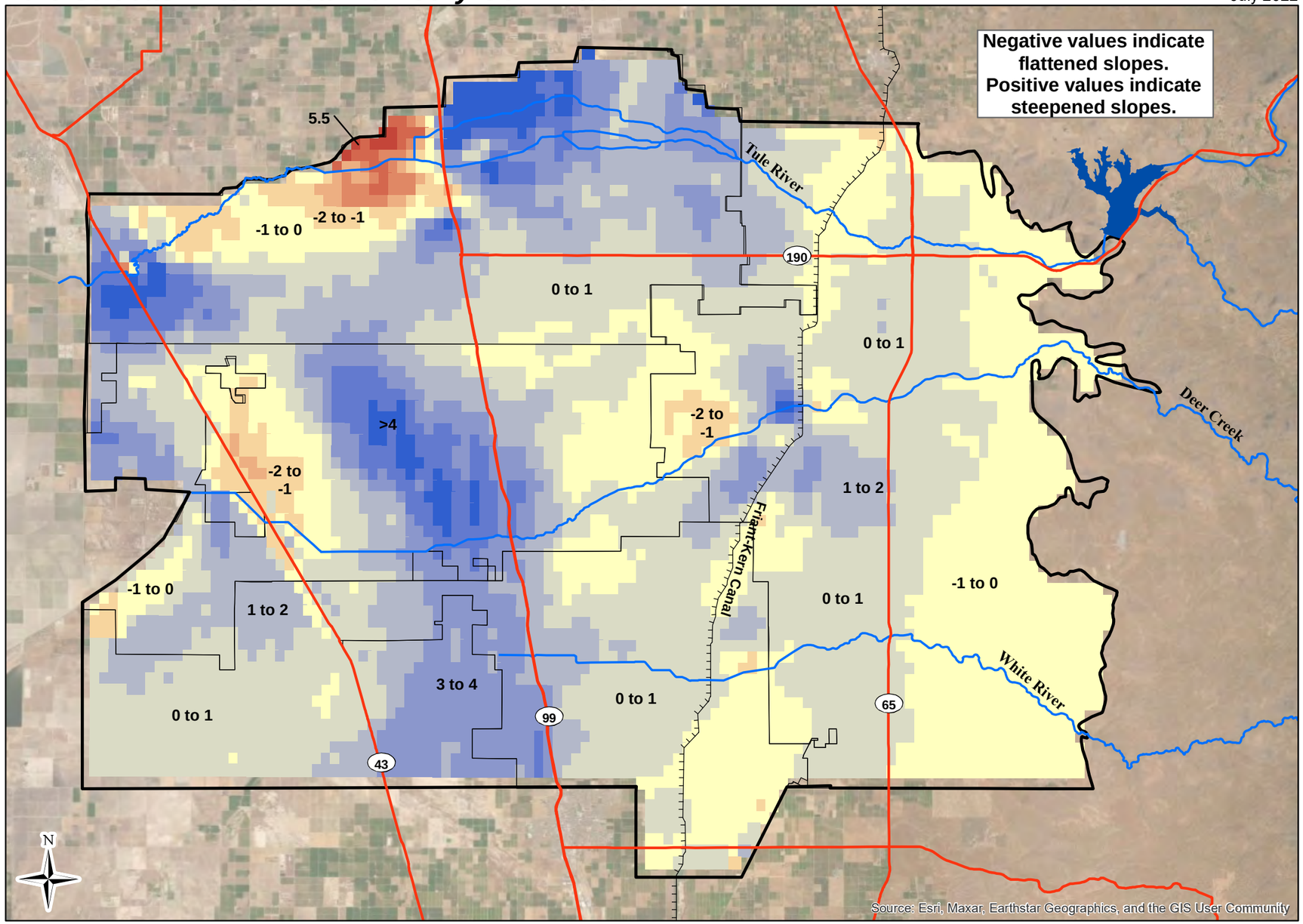
Estimated Land Surface Slope at Subsidence Minimum Thresholds

Figure 9

DWR Comments - Subsidence in the Tule Subbasin

Tule Subbasin Technical Advisory Committee

July 2022



Map Features

Change in Slope (ft per mile)

- < -5
- -5 to -4
- -4 to -3
- -3 to 2
- -2 to -1
- -1 to 0
- 0 to 1
- 1 to 2
- 2 to 3
- 3 to 4
- > 4
- State Highway
- Friant-Kern Canal
- Major Hydrologic Feature
- GSA Boundary
- Subbasin Boundary

Note: This map shows estimated change in land surface slope at the subsidence minimum thresholds relative to 2020 conditions.

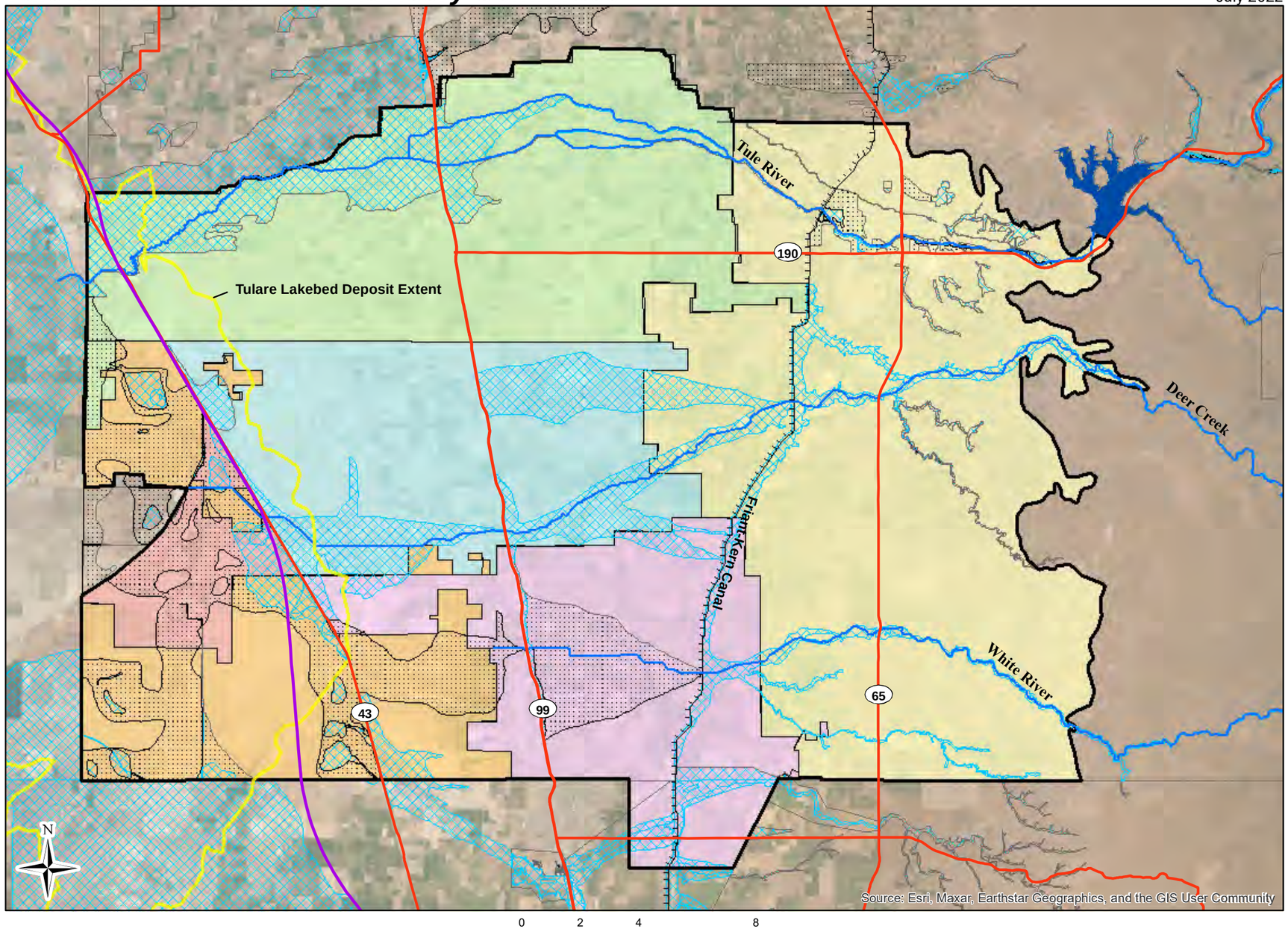
Thomas Harder & Co.
Groundwater Consulting

Estimated Change in Land Surface Slope

Figure 10

Tule Subbasin Technical Advisory Committee

July 2022



0 2 4 8 Miles

NAD 83 State Plane Zone 4

Thomas Harder & Co.
Groundwater Consulting

DWR Comments - Subsidence in the Tule Subbasin

Map Features

Simplified FEMA Flood Hazard Area*
- 1% Annual Chance Flood Area
- 0.2% Annual Chance Flood Area
- Outside 0.2% Chance Flood Area

Tulare Lakebed Deposit Extent

California High Speed Rail

State Highway

Friant-Kern Canal

Major Hydrologic Feature

- Alpaugh GSA
- Delano-Earlimart I.D. GSA
- Eastern Tule GSA
- Lower Tule River I.D. GSA
- Pixley I.D. GSA
- Tri-County Water Authority GSA

Subbasin Boundary

*Simplified data shown for illustrative purposes only. Not official National Flood Insurance Program (NFIP) reference.

Data modified from County Federal Emergency Management Agency (FEMA) maps.
https://www.fema.gov/flood-maps/national-flood-hazard-layer

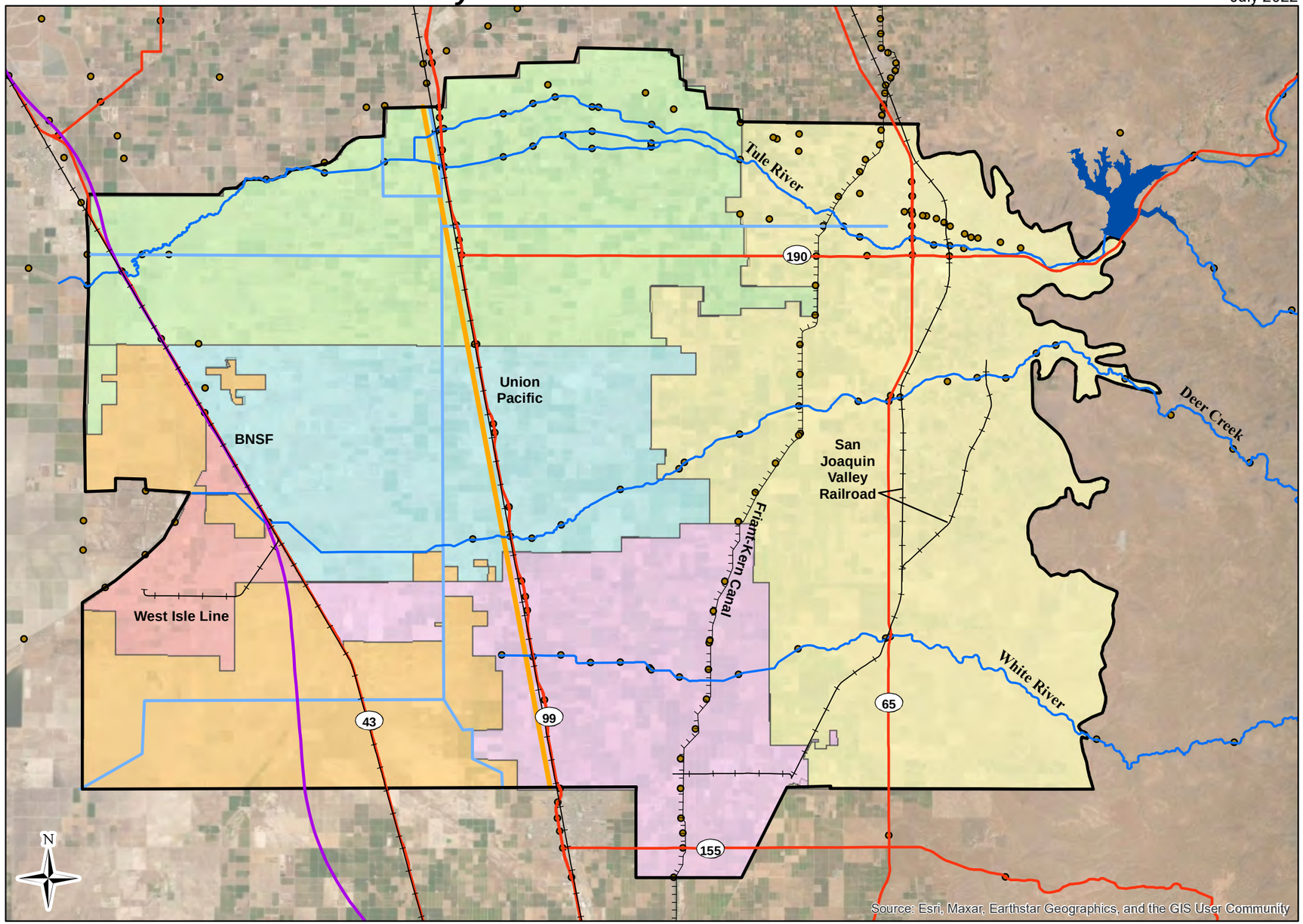
Lake Deposits from California Geological Survey
Geologic Atlas of California Map No. 002
1:250,000 scale, Compiled by A.R. Smith, 1964
and Geologic Atlas of California Map No. 005,
1:250,000 scale, Compiled by: R.A. Matthews and J.L. Burnett

Simplified FEMA Flood Hazard Areas

Figure 11

Tule Subbasin Technical Advisory Committee

July 2022



NAD 83 State Plane Zone 4

Thomas Harder & Co.
Groundwater Consulting

DWR Comments - Subsidence in the Tule Subbasin

Map Features

- Local Bridge
- Railroad
- California High Speed Rail
- Gas Transmission Pipeline
- Hazardous Liquid Pipeline
- State Highway
- Friant-Kern Canal
- Major Hydrologic Feature
- Alpaugh GSA
- Delano-Earlimart I.D. GSA
- Eastern Tule GSA
- Lower Tule River I.D. GSA
- Pixley I.D. GSA
- Tri-County Water Authority GSA
- Subbasin Boundary

Railroads from Caltrans.

Bridges from the US Department of Transportation, National Bridge Inventory.

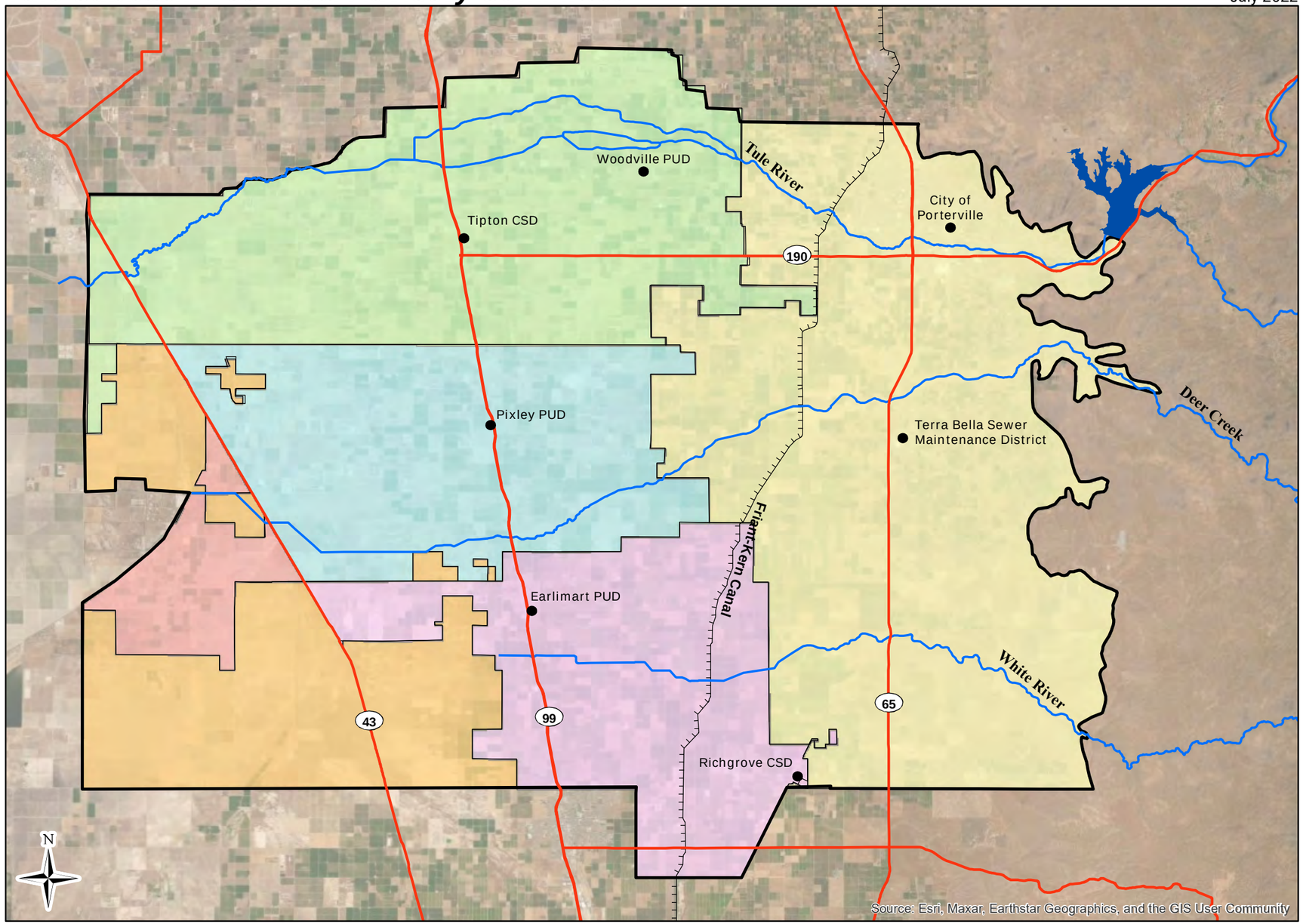
Pipelines from the National Pipeline Mapping System (NPMS). Data shown for illustrative purposes only. https://pvnpms.phmsa.dot.gov/PublicViewer/

State Highways, Railroads, Pipelines, and Bridges

Figure 12

Tule Subbasin Technical Advisory Committee

July 2022



DWR Comments - Subsidence in the Tule Subbasin

Map Features

- City or Community with Wastewater Collection
- State Highway
- Friant-Kern Canal
- Major Hydrologic Feature
- Alpaugh GSA
- Delano-Earlimart I.D. GSA
- Eastern Tule GSA
- Lower Tule River I.D. GSA
- Pixley I.D. GSA
- Tri-County Water Authority GSA
- Subbasin Boundary

Wastewater Collection

Thomas Harder & Co.
Groundwater Consulting

Figure 13

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Appendix A Tule Subbasin Coordination Agreement

A7 Mitigation Program Framework

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MITIGATION PROGRAM FRAMEWORK
COORDINATION AGREEMENT ATTACHMENT 7
Framework for GSA Mitigation Programs to Address
Groundwater Levels, Land Subsidence and Groundwater Quality Impacts

Introduction

Sustainable management criteria identified in each of the Tule Subbasin Groundwater Sustainability Agencies' (GSAs) Groundwater Sustainability Plans (GSPs) have been developed to address significant and unreasonable impacts to agricultural, municipal, and industrial beneficial uses of groundwater. However, analysis based on available data suggests that numerous shallow domestic wells and potentially other wells may be impacted during the Sustainable Groundwater Management Act (SGMA) GSP implementation period between 2020 and 2040 as a result of continued lowering of groundwater levels during this period. Wells, land use, property, and infrastructure may also be impacted from land subsidence and changes in groundwater quality during this period.

The Tule Subbasin GSAs agree to each individually implement a Mitigation Program (Program) as needed to offset impacts associated with GSP-allowed activities, subject to the following framework and subject to the schedule provided herein. The goal of this framework is to establish a standard for mitigation programs to be implemented by each GSA for the purpose of mitigating anticipated impacts to beneficial uses to a level that avoids the occurrence of an Undesirable Result.

Each Mitigation Program may be extended or revised based on groundwater conditions in the future.

Mitigation Program Framework

The Subbasin has been in overdraft for many years, resulting in a significant lowering of regional and local groundwater levels. The GSPs are designed for the Subbasin to reach sustainability by 2040 and beyond. However, until sustainability is reached, some level of continued groundwater level decline and land subsidence is expected in areas of the Subbasin while the GSAs are in the process of implementing projects and management actions to achieve sustainability by 2040. The purpose of the GSAs' Mitigation Programs is to mitigate those wells, critical infrastructure, and land uses that are adversely affected by declining groundwater levels, land subsidence, and changes to groundwater quality while the GSAs reach sustainability.

Each GSA shall include a Program as a project or management action identified in that GSA's GSP, describing the following elements:

a) Identification of Impacts to be Addressed by Mitigation Program

Each Tule Subbasin GSA will adopt and implement a Mitigation Program to identify the specific needs for mitigation caused by pumping within the GSA's boundaries. Each GSA Mitigation

Program will separately identify the impacts to beneficial uses that the Program is intended to address. Each GSA Mitigation Program must provide a claim process to address impacts to (i) domestic and municipal wells, (ii) agricultural wells, and (iii) critical infrastructure. Decisions to include or exclude impacted users from participation in a GSA's Mitigation Program shall be supported by appropriate written technical data and analysis.

b) Process

For claims of impact to wells related to groundwater level declines, the process to be adopted by each GSA's Mitigation Program may include:

1) an application process by the well owner;
2) data collection by the GSA to verify the claim;
3) identification of suitable mitigation; and/or
4) response to said affected user.

For claims of impact to land uses from land subsidence, the process may include:

1) an application process by the affected party;
2) data collection by the GSA to verify the claim;
3) identification of suitable mitigation; and/or
4) coordination, as necessary, with said affected parties to implement the mitigation.

For claims of impact to groundwater quality that is attributable to pumping allowed by a GSA/GSP, the process may include:

1) an application process by the affected party;
2) data collection by the GSA to verify the claim;
3) identification of suitable mitigation; and/or
4) coordination, as necessary, with said affected parties to implement the mitigation.

SGMA requires GSAs and GSPs to measure sustainability from 2015 forward. As a result, GSAs do not necessarily need to provide mitigation for impacts that occurred prior to January 1, 2015.

For those claims that are shown not to be related to GSP-/GSA-approved or authorized activities, the GSA will, to the extent possible, provide assistance to the affected party to identify programs for addressing their issue.

c) *Investigation*

Once a claim of adverse impact has been made to a GSA, whether it be for well, specific land use, critical infrastructure or groundwater quality issue(s), the GSA will investigate the claim.

d) *Qualifications for Mitigation*

GSAs may determine whether to provide full or partial mitigation based on a user's compliance with the GSA's GSP, Rules & Regulations, and other laws or regulations. For example, a user whose own pumping has caused or contributed to overdraft or damage to their own well may not qualify for mitigation under the Program. Further, mitigation will be applied only to those claims that are shown to be attributable to GSP-/GSA-approved or authorized activities. Each GSA's Program will also address how claims that a GSA determines are caused by pumping outside the GSA's boundaries will be addressed.

e) *Mitigation*

Once a claim of impact has been confirmed to be due to GSP-/GSA-approved or authorized activities, the GSA will identify suitable mitigation to alleviate the impact.

For groundwater level impacts, this could be any of the following:

1) Deepening the well;
2) Constructing a new well;
3) Modifying pump equipment;
4) Providing temporary or permanent replacement water;
5) Coordinating consolidation of the domestic well owner with existing water systems; or
6) With the consent of the affected user, providing other acceptable means of mitigation.

For land use impacts, this could be any of the following:

1) Repair to canals, turnouts, stream channels, water delivery pipelines, and basins;
2) Repair to damaged wells;
3) Addressing flood control;
4) Addressing other damaged infrastructure; or
5) With the consent of the affected user, providing other acceptable means of mitigation.

For groundwater quality impacts (due to groundwater management/actions), this could be any of the following:

1) Adjusting groundwater pumping locations, rates, or schedules;
2) Modifying project operations;
3) Providing temporary or permanent replacement water;
4) Coordinating consolidation with existing water systems; or
5) With the consent of the affected user, providing other acceptable means of mitigation.

Various factors may reflect the proper mitigation methods for the specific issue. For example, age, location, financial impact to the beneficial user as a result of mitigation, and the beneficial user may reflect which mitigation measures are chosen by a particular GSA.

f) *Outreach*

Public outreach and education will be separately performed during development of the Mitigation Program and prior to implementation by each GSA.

Prior to implementation, extensive outreach will be needed to notify landowners of each GSA's Program requirements and how they can apply for assistance. Outreach may need to be performed in multiple languages as appropriate for each particular GSA. Outreach methods could include workshops, mailings, flyers, website postings, Board meeting announcements, etc.

g) Program Adoption Schedule

Each GSA will formulate and implement a mitigation claims process for domestic and municipal use impacts by December 31, 2022 and complete all other aspects of the Mitigation Program by June 30, 2023. During Program development, the GSAs will conduct community outreach and refer landowners and others to available local programs as well as other resources and funding programs from the County, State, or non-profit organizations, including the Tule Basin Water Foundation.

h) Mitigation Program Funding Source

Each GSA will develop a funding mechanism for the Program, which is dependent on the specific GSA needs for specific expected impacted wells, critical infrastructure, and land uses within each GSA. Funding is anticipated to be available for each GSA's Mitigation Program through implementation of assessments, fees, charges, and penalties. In addition, the GSAs will explore grant funding. The State has many existing grant programs for community water systems and well construction funding. County, state, and federal assistance will be needed to successfully implement the respective Mitigation Programs. Each GSA may, separately or in coordination with other GSAs, also work with local NGOs that may be able to provide assistance or seek grant monies to help fund the Program. GSAs may act individually or collectively to address and fund mitigation measures.

Appendix B Notice of the Delano-Earlimart Irrigation District to serve as a Groundwater Sustainability Agency for a portion of the Tule Subbasin

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DELANO – EARLIMART IRRIGATION DISTRICT

September 6, 2016

Mark Nordberg, GSA Project Manager
Senior Engineering Geologist
California Department of Water Resources
901 P Street, Room 213-B
P.O. Box 942836
Sacramento, CA 94236
Mark.Nordberg@water.ca.gov

Delivered via email and U.S. mail

RE: Notice of the Delano-Earlimart Irrigation District's election to serve as a Groundwater Sustainability Agency for a portion of the Tule Subbasin

Dear Mr. Nordberg:

Please accept this letter as notice by the Delano-Earlimart Irrigation District (DEID) that it has elected to become a Groundwater Sustainability Agency (GSA) for a portion of the Tule Subbasin and Kern County Subbasin, pursuant to the Sustainable Groundwater Management Act (SGMA). Please note that this notice of election has been filed within 30 days of the date that DEID's board of directors approved its resolution electing to become a GSA.

All information required under Section 10723.8(a) of the Water Code has been included in this notice, to wit:

- Maps depicting the proposed Delano-Earlimart Irrigation District GSA boundary. A description of the included maps are as follows:
    - Exhibit A identifies the overall proposed boundary of the DEID GSA. The map includes an aerial overlay, locations of waterways, location of communities, and main roads/highways. In addition, a subset is included identifying where the proposed DEID GSA is located within the greater Tule Subbasin and greater Kern County Subbasin.
    - Exhibit B identifies the location and boundary of each of the public agencies within the DEID GSA, which includes the Earlimart Public Utility District and Delano Earlimart Irrigation District.
    - Exhibit C identifies the Township, Range, and Section for the area of the proposed DEID GSA.

  Please note that the proposed boundaries of the DEID GSA include lands that are part of a basin boundary modification that has been requested by DEID

and is awaiting final state action. The boundary modification is categorized as 'jurisdictional internal" that would place all of the lands within the current boundaries of DEID into the Tule Subbasin and thus provide consistency in the implementation of SGMA for all DEID landowners. DWR has recommended approval of the request.

- An executed Memorandum of Understanding (MOU) between DEID and EPUD providing for the inclusion of EPUD lands in the DEID GSA.
- Proof of publication for the legal notices that were required in advance of the August 25, 2016 public hearing (Water Code Section 10723(b).
- A resolution dated August 25, 2016 that was adopted by the DEID board of directors to become a GSA following the public hearing.

The DEID GSA will continue to cooperatively work with other GSAs within the Tule Subbasin and Kern County Subbasin to coordinate all activities and efforts relative to implementation of SGMA.

Pursuant to Water Code Section 10723.2 the following is a list of all beneficial uses and users of groundwater, as well as those responsible for implementing Groundwater Sustainability Plans (GSP), that have been considered:

(a) Holders of overlying groundwater rights, including:

(1) Agricultural Users-With the exception of the lands served by the EPUD, almost all of the lands are composed of agricultural users and are DEID customers. DEID has preexisting relationships with these water users.

(2) Domestic well owners- There are farmsteads located throughout the DEID GSA that are served by small domestic wells. In most cases they are also agricultural users and will be considered by the DEID GSA through our preexisting relationships.

(b) Municipal well operators- There are no incorporated cities within the GSA boundary.

(c) Public water systems- There is one public water systems within the proposed DEID GSA: the Earlimart Public Utility District. EPUD has formally agreed to become a part of the DEID GSA through execution of a Memorandum of Understanding with DEID. EPUD operates wells within the GSA and have been fully considered as a cooperating entity.

(d) Local land use planning agencies- The DEID GSA includes lands within both the County of Tulare and the County of Kern. The DEID GSA will work with both county governments on land use planning issues and concerns.

(e) Environmental users of groundwater- None known.

(f) Surface water users, if there is a hydrologic connection between surface and groundwater bodies- None known.

(g) The federal government, including, but not limited to, those served by private domestic wells or small community water systems- DEID holds a water contract for surface waters from the Central Valley Project with the U.S. Bureau of Reclamation. The District interacts routinely with Reclamation personnel and will continue to consider Reclamation as applicable.

(h) California Native American Tribes- None known.

(i) Disadvantaged communities, including, but not limited to, those served by private domestic wells or small community water systems- the unincorporated community of Earlimart is within the DEID GSA (see discussion above).

(j) Entities listed in Water Code Section 10927 that are monitoring and reporting groundwater elevations in all or a part of a groundwater basin managed by a groundwater sustainability agency- DEID has monitored groundwater elevations since the 1950s as part of its water service contracts with the U.S. Bureau of Reclamation. Additionally, DEID participates in regional reporting of groundwater elevations as a part of CASGEM.

DEID will continue to work with interested stakeholders to develop and implement a GSP in a cooperative manner with other GSAs in the Tule Subbasin and Kern County Subbasin. Interested parties will have opportunities, both formally and informally, to provide input into the DEID GSA throughout the process of developing, operating, and implementing the GSA and GSP. Such opportunities may include, but are not limited to, public hearings required by SGMA, public comment periods during DEID regular and special board meetings, and other times to be determined and notices pursuant to Water Code Section 10727.8(a).

Please contact the undersigned should you have any questions.

Sincerely,

Dale Brogan, Special Projects Manager
Delano-Earlimart Irrigation District

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Appendix C MOU Between DEID GSA and Earlimart Public Utility District

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Revised Memorandum of Understanding Regarding Groundwater Sustainability Agency Participation

This Revised Memorandum of Understanding, referred to herein as "Revised Agreement" is entered into on 6/13, 2019 between the Delano-Earlimart Irrigation District, an irrigation district organized under the laws of the State of California, referred to herein as "DEID," and the Earlimart Public Utilities District, a public utilities district organized under the laws of the State of California, referred to herein as "EPUD".

This Agreement is made in reference to the following facts:

WHEREAS, in September 2014, three bills (SB 1168, SB 1319, and AB 1739) were signed into law creating the Sustainable Groundwater Management Act of 2014 (the Act); and

WHEREAS, the Act requires the formation of a Groundwater Sustainability Agency ("GSA") that will be responsible for implementing provisions of the Act as to each groundwater basin and groundwater subbasin falling within the provisions of the Act, multiple GSAs are allowed within basin or subbasin although the Act requires a coordination agreement between the GSAs within a basin or subbasin; and

WHEREAS, the Act calls for ensuring the sustainability of each groundwater basin and subbasin by each GSA or GSAs covering the basin drafting a Groundwater Sustainability Plan ("GSP") meeting the requirements of the Act to cover the territory of the GSA; and

WHEREAS, DEID and EPUD are both within the San Joaquin Valley Groundwater Basin, Tule Subbasin, a groundwater basin recognized in California Department of Water Resources Bulletin 118 as Groundwater Basin Number: 5-22.13; and

WHEREAS, under the Act, the Tule Subbasin is required to show complete GSA coverage, either through the formation of a single GSA or multiple GSAs by July 1, 2017, and

WHEREAS DEID, and EPUD are each authorized by the Act to exercise powers related to groundwater management within their jurisdictional boundaries; and

WHEREAS, on May 23, 2016, DEID and EPUD jointly formed the Delano-Earlimart Irrigation District GSA ("DEID GSA") that encompassed their respective territories; and

WHEREAS, on March 27, 2019, the Richgrove Community Services District (RCSD) entered into a Memorandum of Understanding with DEID ("RCSD Agreement") to join the DEID GSA, which was acknowledged by the EPUD board of directors on March 18, 2019; and

WHEREAS, because of the inclusion of the RCSD into the DEID GSA and other recommended updates to the original MOU, this Revised Agreement has been written by the parties to state the revised and updated terms and conditions of GSA coverage, subject to later revision as necessary to meet state regulatory requirements.

ACCORDINGLY, THE PARTIES AGREE AS FOLLOWS:

1. Incorporation of Recitals: The recitals stated above are incorporated herein by reference.

2. No Intent to Create a JPA: The parties to this Agreement specifically acknowledge they do not intend to create a joint powers agreement under the California Government Code or to form a joint powers agency as a result of this Agreement.

3. Inclusion Within GSA Boundaries: EPUD has previously agreed that the area subject to its jurisdiction will be within the jurisdictional boundaries of the DEID GSA and acknowledges that DEID has previously provided statutory notice under the Act of its GSA boundaries. The Parties hereby agree the DEID GSA boundaries will be modified to include the area or territory that is within the jurisdictional boundaries of the EPUD and of the RCSD as specified in the RCSD Agreement. By executing this Revised Agreement, EPUD confirms its previous agreement to be part of, and governed by, the DEID GSA.

4. Acknowledgment Regarding ID Boundaries: Parties agree this MOU is for the purpose of compliance with the Act. EPUD is not being included within the jurisdictional boundaries of DEID for any other purpose and will not incur liability for any DEID assessments charged to DEID landowners or have the right to receive any surface water from DEID, provided however that DEID and EPUD may mutually agree to develop and operate a water importation program for the purpose of EPUD being in water balance under the terms of the DEID GSP.

5. Individual Costs: It is acknowledged that the individual parties will incur costs in complying with the Act, including but not limited to the development and implementation of this MOU.

6. Cost Recovery:

   6.1 GSA Formation Cost: EPUD acknowledges that DEID has and is incurring costs to comply with the Act, which included the formation of the DEID GSA, GSA administration costs, costs in preparation of a coordination agreement between the various GSAs within the Tule Subbasin and GSP preparation/approval process costs. The Parties acknowledge that EPUD has paid $10,000 (ten thousand dollars) to reimburse DEID for its past and future share of the costs listed above with said payment being the full sum required from EPUD, provided that this sum may be adjusted in the future should litigation and/or adjudication costs associated with the GSA or GSP occur prior to submittal of the final GSP to DWR.

   6.2 GSA Administration Cost: Following submittal of the GSP to DWR, EPUD agrees to pay to DEID a proportional share of ongoing GSA administration cost based on a per acre charge. Said per acre charge shall be determined by dividing the ongoing GSA administrative expenses by the total number of acres within the GSA, and then multiplying the cost per acre by the number of acres in the EPUD service area. Said expenses shall be billed to EPUD not less than quarterly and shall be paid within 30 days of receipt.

   6.3 Coordination Agreement Cost: Following submittal of the GSP to DWR, further development and revision of the Coordination Agreement will be required to meet the requirements under the Act and subsequent regulations for reporting to the state. Additionally, specific costs will be incurred through the Coordination Agreement to meet the requirement that all GSPs within the Tule Subbasin utilize the same data and methodologies including, but not limited to, the following items: (a) groundwater elevation data; (b) groundwater extraction data; (c) surface water supply; (d) total water use; (e) change in groundwater storage; (f) water budget; and (g) sustainable yield. EPUD agrees to pay to DEID a proportional share of the above described costs associated with the Coordination

Agreement on a per acre charge, said proportional share to be determined and billed to EPUD as described in 6.2 of this MOU.

6.4 Annual GSP Implementation Cost: Following submittal of the GSP to DWR, the DEID GSA will begin implementation of the provisions of the GSP within the lands of the GSA. EPUD agrees to pay to DEID a proportional share of GSP implementation expenses, said proportional share to be determined and billed to EPUD as described in 6.2 of this MOU.

6.5 Additional Fee for Importing Water: DEID anticipates that as part of its required coordination with other GSAs and associated GSPs, a maximum baseline level of groundwater pumping will be established for the Tule Subbasin (herein referred to as the "sustainable yield"). EPUD agrees to enter into separate agreement(s) with DEID for the purchase of additional surface water that can be imported into the DEID GSA if EPUD is determined to be a net user of water in excess of its total sustainable yield. DEID, and EPUD agree to develop mutually agreeable methods for determining the sustainable yield, baseline pumping levels and methods for accounting the balances and will include that methodology in the GSP.

Parties acknowledge reimbursement of costs under this section does not include costs or fees established by DEID to bring water into the Tule Subbasin for purposes of increasing the applicable groundwater pumping safe yield for DEID's service area. DEID agrees that it will not charge such fees to EPUD unless either or both agrees to do so in exchange for the increases to the applicable safe yield amounts for the area included in the EPUD service area.

DEID agrees that EPUD may develop and operate its own water importation program(s) for the purpose of being in water balance under the terms of the DEID GSP.

EPUD agrees that it shall participate in joint programs with DEID in securing funds that may be available to it as a designated disadvantaged community for the purpose of being in water balance under the terms of the DEID GSP.

6.6 Accounting: DEID agrees it will provide on an annual basis a summary stating all costs it has incurred in meeting the requirements of the Act to EPUD beginning in any year where reimbursement of expenses is billed to EPUD.

7. Consideration as a Separate Management Area: Parties acknowledge that the applicable state regulations establishing acceptable GSP requirements and elements include that a GSA may define one or more management areas where conditions are different from other areas of a GSA and a separate management area would facilitate implementation of the GSP.

   The Parties agree that the area within EPUD will be a separate management area within the final DEID GSP.

8. Data Collection and Review: EPUD agrees to provide DEID with all required data necessary for the development and implementation of the GSP and SGMA reporting requirements at its expense. Required data shall include but is not limited to: (a) pumping data; (b) groundwater elevation data; and (c) wastewater discharges that are returned to the groundwater basin.

DEID shall provide to EPUD any reports and findings made by DEID that are based on the data provided for review and comment in a timely manner and as part of the development, adoption, and implementation of the DEID GSP.

9. No Guarantee of Water Quantity or Water Quality: This MOU is being entered into by the parties for the purposes of compliance with the Act. DEID is not agreeing that any specific quantity of water or water of any specified quality will be available to EPUD.

10. GSA Governance and Meetings: DEID anticipates the governance of the DEID GSA and GSP will be accomplished in the following manner:

    10.1 Stakeholder and interested parties (Stakeholders): DEID has established a series of meetings that are open to all DEID stakeholders and other interested parties for the purposes of advising the DEID Board of Directors on matters dealing with GSA and GSP development, GSP implementation, and other GSA/GSP matters. EPUD shall endeavor to have a representative at all Stakeholder meetings and further agrees to host Stakeholder meetings specific to the EPUD Management Area. Hosting shall include providing a place for said meetings, required supplies, and Spanish translation services. EPUD acknowledges that additional participation from other interested parties in the development and implementation of the GSA and GSP per Water Code section 10727.8 will be pursued for all Stakeholder meetings. All Stakeholder meetings will be noticed and open to the public.

    EPUD agrees it shall share equally with RCSD in costs associated with Spanish translation services for printed materials produced as part of the GSA's public outreach program.

    10.2 DEID Board of Directors (BOD): The DEID BOD shall be responsible for all final decisions relative to the development of the GSA, GSP adoption, implementation of the GSP, and other related matters, fully considering the recommendations of the EPUD. Both DEID and EPUD acknowledge decisions made with respect to the development of the GSA, GSP adoption, implementation of the GSP and other related matters may be in whole or part challenged legally. It is the intent of both parties to fully cooperate in defending any legal challenges, with each party being responsible for the costs to defend said challenges that are exclusive to its respective management area.

    10.3 Subbasin Coordination Committee Meetings: DEID anticipates continued Subbasin Coordination Committee meetings among subbasin GSAs and other stakeholders.

    If requested by EPUD, DEID shall provide notice in advance to EPUD of all Subbasin Coordination Committee meetings, and any BOD meeting where GSA/GSP matters will be discussed and/or decided upon.

11. Dispute Resolution: Parties agree that should any controversy arise between the two parties, then each district shall appoint from its board of directors one director to serve on a dispute resolution committee for the purpose of meeting informally and attempting to resolve the dispute.

    Should such informal dispute resolution fail then disputes may be settled by a civil action to resolve disputes over or to enforce this agreement. In any civil action the prevailing party may be awarded attorney's fees and costs.

12. Termination by EPUD: This MOU shall stay in effect until terminated by the parties, which either Party may do upon 90 days written notice, provided however, that no party may terminate this Agreement unless provision has been made for EPUD's service area to be included into another GSA upon termination, either by EPUD taking steps necessary under the Act to serve as its own GSA, entering into a joint powers agreement or similar type of agreement with another entity to serve as a GSA for EPUD's service area, or agreeing to be within the boundaries of a separate GSA. All costs owed to DEID must be paid prior to termination.

13. Entire Agreement: This MOU represents the entire agreement among the parties as to its subject matter and no prior oral or written understanding shall be of any force or effect. No part of this MOU may be modified without the written consent of each party.

14. Headings: Section headings are provided for organizational purposes only and do not in any manner impact the scope, meaning, or intent of the provisions under the headings.

15. Notices: Except as may be otherwise required by law, any notice to be given shall be written and shall be either personally delivered, sent by first class mail, postage prepaid and addressed as stated below. Notices delivered personally are deemed to be received upon receipt. Notices sent by first class mail shall be deemed received on the fourth day after the date of mailing. Either party can change the address listed below by giving written notice pursuant to this Section.

DEID	EPUD
Attn: General Manager	Attn: General Manager
14181 Avenue 24	Box 10148
Delano, Ca 93215	Earlimart, CA 93219-0148

16. Construction: This MOU reflects the contributions of all parties and accordingly the provisions of Civil Code Section 1654 shall not apply to address and interpret any uncertainty.

17. No Third Party Beneficiaries Intended: Unless specifically set forth, the parties to this MOU do not intend to provide any other party with any benefit or enforceable legal or equitable right or remedy.

18. Waivers: The failure of any party to insist on strict compliance with any provision of this MOU shall not be considered a waiver of any right to do so, whether for that breach or any subsequent breach.

19. Conflict with Laws or Regulations/Severability: This MOU is subject to all applicable laws and regulations. If any provision of this MOU is found by any court or other legal authority, or is agreed by the parties, to be in conflict with any code or regulation governing its subject, the conflicting provision shall be considered null and void. If the effect of nullifying any conflicting provision is such that a material benefit of the MOU to any party is lost, the MOU may be terminated at the option of the affected party. In all other cases the remainder of the MOU shall continue in full force and effect.

20. Further Assurances: Each party agrees to execute any additional documents and to perform any further acts that may be reasonably required to affect the purposes of this MOU.

21. Counterparts: This MOU may be signed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

Parties, having read and considered the above provisions, indicate their agreement by their authorized signatures.

Delano-Earlimart Irrigation District

President, Board of Directors

Earlimart Public Utility District

President, Board of Directors

Appendix D MOU Between DEID GSA and Richgrove Community Service District

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Memorandum of Understanding Regarding
Groundwater Sustainability Agency Participation

This Memorandum of Understanding, referred to herein as "Agreement" is entered into on 3/14/2019 2019 between the Delano-Earlimart Irrigation District, an irrigation district organized under the laws of the State of California, referred to herein as "DEID," and the Richgrove Community Services District, a public utilities district organized under the laws of the State of California, referred to herein as "RCSD".

This Agreement is made in reference to the following facts:

WHEREAS, in September 2014, three bills (SB 1168, SB 1319, and AB 1739) were signed into law creating the Sustainable Groundwater Management Act of 2014 (the Act); and

WHEREAS, the Act requires the formation of a Groundwater Sustainability Agency ("GSA") that will be responsible for implementing provisions of the Act as to each groundwater basin and groundwater subbasin falling within the provisions of the Act, multiple GSAs are allowed within basin or subbasin although the Act requires a coordination agreement between the GSAs within a basin or subbasin; and

WHEREAS, the Act calls for ensuring the sustainability of each groundwater basin and subbasin by each GSA or GSAs covering the basin drafting a Groundwater Sustainability Plan ("GSP") meeting the requirements of the Act to cover the territory of the GSA.

WHEREAS, DEID, and RCSD are both within the San Joaquin Valley Groundwater Basin, Tule Subbasin, a groundwater basin recognized in California Department of Water Resources Bulletin 118 as Groundwater Basin Number: 5-22.13; and

WHEREAS, under the Act, the Tule Subbasin was required to show complete GSA coverage, either through the formation of a single GSA or multiple GSAs by July 1, 2017, and

WHEREAS, DEID, and RCSD are each authorized by the Act to exercise powers related to groundwater management within their jurisdictional boundaries; and

WHEREAS, at this time DEID has jointly formed a GSA with the Earlimart Public Utility District (EPUD) to encompass their respective territories, known as the Delano-Earlimart Irrigation District GSA (DEID GSA), which is adjacent to the territory of RCSD; and

WHEREAS, RCSD is currently a part of the Eastern Tule GSA and now wishes to be included within the boundaries of the DEID GSA; and

WHEREAS, by this MOU the parties intend to state the terms and conditions of such GSA coverage, subject to later revision as necessary to meet state regulatory requirements.

ACCORDINGLY, THE PARTIES AGREE AS FOLLOWS:

1. Incorporation of Recitals: The recitals stated above are incorporated herein by reference.

2. No Intent to Create a JPA: The parties to this Agreement specifically acknowledge they do not intend to create a joint powers agreement under the California Government Code or to form a joint powers agency as a result of this Agreement.

3. Inclusion Within GSA Boundaries: RCSD agrees that the area subject to its jurisdiction will be within the jurisdictional boundaries of the DEID GSA, with the exception of Tulare County parcel 340-060-081. DEID GSA has previously provided statutory notice under the Act of its GSA boundaries. The Parties hereby agree the DEID GSA shall take such actions as are necessary to modify its jurisdictional boundaries so as to encompass the area or territory that is within the jurisdictional boundaries of RCSD, with the exception of Tulare County parcel 340-060-081. The Parties acknowledge that it may also be necessary to secure the agreement of the Eastern Tule GSA, the Kern-Tulare Water District, and/or the County of Tulare to take actions to facilitate or effectuate the modification of the DEID GSA boundaries. By executing this Agreement, RCSD is agreeing it will be part of, and governed by, the DEID GSA. RCSD further agrees to reimburse DEID for any costs associated with modifying the DEID GSA boundaries to encompass RCSD, including but not limited to the cost of any requirements that may be imposed by DWR. These costs are in addition to any costs recovery obligations of RCSD established under Section 6 of this Agreement.

4. Acknowledgment Regarding ID Boundaries: Parties agree this MOU is for the purpose of compliance with the Act. RCSD is not being included within the jurisdictional boundaries of DEID for any other purpose and will not incur liability for any DEID assessments charged to DEID landowners or have the right to receive any surface water from DEID, provided however that DEID and RCSD may mutually agree to develop and operate a water importation program for the purpose of RCSD being in water balance under the terms of the DEID GSP.

5. Individual Costs: It is acknowledged that the individual parties will incur costs in complying with the Act, including but not limited to the development and implementation of this MOU.

6. Cost Recovery:

   6.1 Formation Costs: RCSD acknowledges that DEID has and is incurring costs to comply with the Act, which included the formation of the DEID GSA, GSA administration costs, costs in preparation of a coordination agreement between the various GSAs within the Tule Subbasin, and GSP preparation/approval process costs. RCSD acknowledges it has a responsibility to reimburse its respective share of these costs. RCSD agrees that it will pay $10,000 (ten thousand dollars) to reimburse DEID for its past and future share of the costs listed above, with said payment being the full sum required from RCSD, provided that this sum may be adjusted in the future should litigation and/or adjudication costs associated with the GSA or GSP occur prior to submittal of the final GSP to DWR. RCSD agrees to pay said $10,000 to DEID upon execution of this MOU

   6.2 GSA Administration Cost: Following submittal of the GSP to DWR, RCSD agrees to pay to DEID a proportional share of ongoing GSA administration cost based on a per acre charge. Said per acre charge shall be determined by dividing the ongoing GSA administrative expenses by the total number of acres within the GSA, and then multiplying the cost per acre by the number of acres in the RCSD boundaries also within the DEID GSA. Said expenses shall be billed to RCSD not less than quarterly and shall be paid within 30 days of receipt.

   6.3 Coordination Agreement Cost: Following submittal of the GSP to DWR, further development and revision of the Coordination Agreement will be required to meet the requirements under the Act and subsequent regulations for reporting to the state.

Additionally, specific costs will be incurred through the Coordination Agreement to meet the requirement that all GSPs within the Tule Subbasin utilize the same data and methodologies including, but not limited to, the following items: (a) groundwater elevation data; (b) groundwater extraction data; (c) surface water supply; (d) total water use; (e) change in groundwater storage; (f) water budget; and (g) sustainable yield. RCSD agrees to pay to DEID a proportional share of the above described costs associated with the Coordination Agreement on a per acre charge, said proportional share to be determined and billed to RCSD as described in 6.2 of this MOU.

6.4 Annual GSP Implementation Cost: Following submittal of the GSP to DWR, the DEID GSA will begin implementation of the provisions of the GSP within the lands of the GSA. RCSD agrees to pay to DEID a proportional share of GSP implementation expenses, said proportional share to be determined and billed to RCSD as described in 6.2 of this MOU.

6.5 Additional Fee for Importing Water: DEID anticipates that as part of its required coordination with other GSAs and associated GSPs, a maximum baseline level of groundwater pumping will be established for the Tule Subbasin (herein referred to as the "sustainable yield"). RCSD agrees to enter into separate agreement(s) with DEID for the purchase of additional surface water that can be imported into the DEID GSA if RCSD is determined to be a net user of water in excess of its total sustainable yield. DEID, and RCSD agree to develop mutually agreeable methods for determining the sustainable yield, baseline pumping levels and methods for accounting the balances and will include that methodology in the GSP.

Parties acknowledge reimbursement of costs under this section does not include costs or fees established by DEID to bring water into the Tule Subbasin for purposes of increasing the applicable groundwater pumping safe yield for DEID's service area. DEID agrees that it will not charge such fees to RCSD unless either or both agrees to do so in exchange for the increases to the applicable safe yield amounts for the area included in the RCSD boundaries.

DEID agrees that RCSD may develop and operate its own water importation program(s) for the purpose of being in water balance under the terms of the DEID GSP.

RCSD agrees that it shall participate in joint programs with DEID in securing funds that may be available to it as a designated disadvantaged community for the purpose of being in water balance under the terms of the DEID GSP.

6.6 Accounting: DEID agrees it will provide on an annual basis a summary stating all costs it has incurred in meeting the requirements of the Act to RCSD beginning in any year where reimbursement of expenses is billed to RCSD.

7. Consideration as a Separate Management Area: Parties acknowledge that the applicable state regulations establishing acceptable GSP requirements and elements include that a GSA may define one or more management areas where conditions are different from other areas of a GSA and a separate management area would facilitate implementation of the GSP.

   The parties agree that the area within RCSD will be a separate management area within the final DEID GSP.

8. Data Collection and Review: RCSD agrees to provide DEID with all required data necessary for the development and implementation of the GSP and SGMA reporting requirements at its expense. Required data shall include but is not limited to: (a) pumping data; (b) groundwater elevation data; and (c) wastewater discharges that are returned to the groundwater basin.

   DEID shall provide to RCSD any reports and findings made by DEID that are based on the data provided for review and comment in a timely manner and as part of the development, adoption, and implementation of the DEID GSP.

9. No Guarantee of Water Quantity or Water Quality: This MOU is being entered into by the parties for the purposes of compliance with the Act. DEID is not agreeing that any specific quantity of water or water of any specified quality will be available to RCSD.

10. GSA Governance and Meetings: DEID anticipates the governance of the DEID GSA and GSP will be accomplished in the following manner:

    10.1 Stakeholder and interested parties (Stakeholders): DEID has established a series of meetings that are open to all DEID GSA stakeholders and other interested parties for the purposes of advising the DEID Board of Directors on matters dealing with GSA and GSP development, GSP implementation, and other GSA/GSP matters. RCSD shall endeavor to have a representative at all Stakeholder meetings and further agrees to host stakeholder meetings specific to the RCSD Management Area. Hosting shall include providing a place for said meetings, required supplies, and Spanish translation services. RCSD acknowledges that additional participation from other interested parties in the development and implementation of the GSA and GSP per Water Code section 10727.8 will be pursued for all stakeholder meetings in all management areas. All Stakeholder meetings will be noticed and open to the public.

    RCSD agrees it shall share equally with EPUD in costs associated with Spanish translation services for printed materials produced as part of the GSA's public outreach program.

    10.2 DEID Board of Directors (BOD): The DEID BOD shall be responsible for all final decisions relative to the development of the GSA, GSP adoption, implementation of the GSP, and other related matters, fully considering the recommendations of the RCSD.

    Both DEID and RCSD acknowledge decisions made with respect to the development of the GSA, GSP adoption, implementation of the GSP and other related matters may be in whole or part challenged legally. It is the intent of both parties to fully cooperate in defending any legal challenges, with each party being responsible for the costs to defend said challenges that are exclusive to its respective management area.

    10.3 Subbasin Coordination Committee Meetings: DEID anticipates continued Subbasin Coordination Committee meetings among subbasin GSAs and other stakeholders.

    If requested by RCSD, DEID shall provide notice in advance to RCSD of all Subbasin Coordination Committee meetings and any BOD meeting where GSA/GSP matters will be discussed and/or decided upon.

11. Dispute Resolution: Parties agree that should any controversy arise between the two parties, then each district shall appoint from its board of directors one director to serve on a

dispute resolution committee for the purpose of meeting informally and attempting to resolve the dispute.

Should such informal dispute resolution fail then disputes may be settled by a civil action to resolve disputes over or to enforce this agreement. In any civil action the prevailing party may be awarded attorney's fees and costs.

12. Termination by RCSD: This MOU shall stay in effect until terminated by the parties, which either Party may do upon 90 days written notice, provided however, that no party may terminate this Agreement unless provision has been made for RCSD's area within the DEID GSA to be included into another GSA upon termination, either by RCSD taking steps necessary under the Act to serve as its own GSA, entering into a joint powers agreement or similar type of agreement with another entity to serve as a GSA for RCSD's area within the DEID GSA, or agreeing to be within the boundaries of a separate GSA. All costs owed to DEID must be paid prior to termination.

13. Entire Agreement: This MOU represents the entire agreement among the parties as to its subject matter and no prior oral or written understanding shall be of any force or effect. No part of this MOU may be modified without the written consent of each party.

14. Headings: Section headings are provided for organizational purposes only and do not in any manner impact the scope, meaning, or intent of the provisions under the headings.

15. Notices: Except as may be otherwise required by law, any notice to be given shall be written and shall be either personally delivered, sent by first class mail, postage prepaid and addressed as stated below. Notices delivered personally are deemed to be received upon receipt. Notices sent by first class mail shall be deemed received on the fourth day after the date of mailing. Either party can change the address listed below by giving written notice pursuant to this Section.

DEID	RCSD
Attn: General Manager	Attn: General Manager
14181 Avenue 24	20986 Grove Drive
Delano, Ca 93215	Richgrove, CA 93261

16. Construction: This MOU reflects the contributions of all parties and accordingly the provisions of Civil Code Section 1654 shall not apply to address and interpret any uncertainty.

17. No Third Party Beneficiaries Intended: Unless specifically set forth, the parties to this MOU do not intend to provide any other party with any benefit or enforceable legal or equitable right or remedy.

18. Waivers: The failure of any party to insist on strict compliance with any provision of this MOU shall not be considered a waiver of any right to do so, whether for that breach or any subsequent breach.

19. Conflict with Laws or Regulations/Severability: This MOU is subject to all applicable laws and regulations. If any provision of this MOU is found by any court or other legal authority, or is agreed by the parties, to be in conflict with any code or regulation governing its subject, the conflicting provision shall be considered null and void. If the effect of nullifying any

conflicting provision is such that a material benefit of the MOU to any party is lost, the MOU may be terminated at the option of the affected party. In all other cases the remainder of the MOU shall continue in full force and effect.

20. Further Assurances: Each party agrees to execute any additional documents and to perform any further acts that may be reasonably required to affect the purposes of this MOU.

21. Counterparts: This MOU may be signed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

Parties, having read and considered the above provisions, indicate their agreement by their authorized signatures.

Delano-Earlimart Irrigation District

President, Board of Directors

Richgrove Community Services District

President, Board of Directors

Acknowledged and Agreed to:

Earlimart Public Utilities District

President, Board of Directors

Appendix E MOU Between DEID GSA and Tulare County

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MEMORANDUM OF
UNDERSTANDING BETWEEN
DELANO-EARLIMART IRRIGATION DISTRICT GROUNDWATER SUSTAINABILITY AGENCY AND THE COUNTY OF TULARE
WITH RESPECT TO IMPLEMENTATION OF
THE SUSTAINABLE GROUNDWATER MANAGEMENT ACT

THIS MEMORANDUM OF UNDERSTANDING (this "MOU") is entered into this 10th day of September 2019 (the "Effective Date"), by and between DELANO-EARLIMART IRRIGATION DISTRICT GROUNDWATER SUSTAINABILITY AGENCY ("DEID GSA") and the COUNTY OF TULARE, (the "County"). DEID GSA and the County may be referred to herein collectively as the "Parties," or individually as a "Party," or by their respective names.

RECITALS

A. WHEREAS, on September 16, 2014, the Governor of the State of California signed into law Senate Bills 1168 and 1319, and Assembly Bill 1739 collectively, the Sustainable Groundwater Management Act ("SGMA"), which is codified at Water Code Sections 10720 *et seq.;* and

B. WHEREAS, SGMA requires that California groundwater basins and subbasins be managed by a Groundwater Sustainability Agency ("GSA") or multiple GSAs, and that such management be implemented pursuant to an approved Groundwater Sustainability Plan ("GSP") or multiple coordinated GSPs; and

C. WHEREAS, Delano-Earlimart Irrigation District ("DEID") has elected to serve as a GSA for its service area in the Tule Subbasin of the San Joaquin Valley Groundwater Basin and, through separate agreements, provides GSP coverage for the unincorporated communities of Earlimart and Richgrove, as separate management areas within the DEID GSA that are not within the boundary of DEID; and

D. WHEREAS, there is an area within the County's boundaries, hereafter referred to as the "Management Area," which is adjacent to but outside of DEID's service area, and which is identified in Exhibit "A", attached hereto and incorporated herein by this, for which the County is the de facto GSA; and

E. WHEREAS, pursuant to California Water Code Section 10724, the County is presumed to be the GSA for any area that is not within the management area of a groundwater sustainability agency; and

F. WHEREAS, the County and DEID GSA want to ensure SGMA compliance for the Management Area and as such, the County desires to manage the Management Area in coordination with DEID GSA and to include the Management Area within DEID GSA's proposed GSP; and

TULARE COUNTY AGREEMENT NO. 29374

NOW, THEREFORE, in consideration of the mutual promises, covenants and conditions herein and these Recitals, which are hereby incorporated herein by this reference, it is agreed by and among the Parties hereto as follows:

1. **Objectives.** The objectives of DEID GSA and the County in entering into this MOU are as follows:

(a) To achieve sustainable groundwater management pursuant to SGMA in those portions of the Tule Subbasin that are in the Management Area, over which the County currently serves as the GSA, and which the Parties intend to manage pursuant to and in compliance with DEID GSA's GSP.

(b) To work cooperatively with other GSAs within the Tule Subbasin to achieve sustainable groundwater management in the Tule Subbasin.

(c) To work together to establish a GSP that covers the Management Area while acknowledging the County's land use planning authority and the powers and authority of the DEID GSA. The County acknowledges that the DEID GSA will be responsible for drafting the GSP and that under the terms of this MOU, the DEID GSA's GSP shall apply to and cover the Management Area for the purposes of SGMA.

(d) To establish a process to ensure there are no conflicts between DEID GSA's GSP and the County's exercise of its land use planning authority and police powers.

2. **Precedence of County's Land Use Planning Authority.** DEID GSA agrees that its operations as a GSA, and any GSP adopted by DEID GSA, will not abrogate the County's General Plan or conflict with the County's exercise of its land use planning authority; provided, that the County's General Plan and the County's exercise of its land use planning authority comply with all applicable laws, statutes, and regulations. The County agrees that it will assist, as necessary and as allowed by law, the DEID GSA in the required enforcement of the GSP and SGMA requirements over the Management Area. The County acknowledges Water Code section 10726.4 and the ability of the GSP to require regulation of groundwater extractions in the Management Area if there is insufficient sustainable yield in the subbasin.

3. **Coordination Framework.** The Parties agree that they shall cooperate in the implementation of SGMA requirements over the Management Area. The Management Area shall be required to comply with the rules and regulations of DEID GSA, including any legally approved assessments. DEID GSA agrees, in developing and implementing its GSP, to consider the interests of the County, specifically including the County's General Plan.

In order to prevent conflicts between the GSP and the County's General Plan and

between DEID GSA's operations as a GSA and the County's exercise of its land use planning authority, the County shall have opportunities to provide, and DEID GSA shall consider, advisory input in the development and implementation of DEID GSA's GSP. The County shall designate a contact person ("Designated Contact Person") to whom DEID GSA shall provide written notices of opportunities to participate in SGMA implementation.

No fewer than 90 days before adopting or modifying the GSP or policies or procedures for the exercise of GSA powers, DEID GSA shall provide written notice to the Designated Contact Person. Within 30 days of receiving such notice, the Designated Contact Person may request consultation with DEID GSA's representative. Prior to the adoption or modification of the GSP or policies or procedures for the exercise of GSA powers, DEID GSA shall consider any comments or recommendations provided by the Designated Contact Person for the County, to achieve the goals of this MOU.

No fewer than 90 days prior to issuing, adopting, modifying, or approving any ordinance, policy, plan, or permit, or taking any other action related to groundwater resources within the Tule Subbasin, the County shall provide written notice to DEID GSA. Within 30 days of receiving such notice, DEID GSA may request a mandatory consultation with the County. Prior to taking any groundwater-related action, the County shall consider any comments or recommendations provided by DEID GSA.

4. **Finances.** Each of the Parties to this MOU shall bear its own costs of implementing SGMA, except as follows:

(a) The County shall provide assistance and support in applying for grant funding related to SGMA implementation when so requested by DEID GSA.

(b) To the extent that DEID GSA incurs costs in either the development or implementation of a GSP applicable to, or in implementing SGMA within, the Management Area, the County shall provide proportional financial reimbursement to DEID GSA until such time as fees are studied, adopted and implemented to cover the Management Area. DEID GSA and the County agree to cooperate in the preparation and voting process to implement and enforce any required fees.

(c) If DEID GSA is required to file a boundary adjustment with any government agency, including but not limited to the California Department of Water Resources, to include the Management Area, then County agrees to be responsible for the costs to complete the boundary adjustment.

5. **No Annexation**. County acknowledges that this Agreement does not represent any annexation by DEID, an entity separate from the DEID GSA, of the

Management Area or an annexation of this area by the DEID GSA. The Management Area is not subject to DEID irrigation rules, requirements, benefits, or assessments, and will not be entitled to receive any water acquired by DEID for landowners within DEID. The Management Area will be included within the DEID GSA under the collective authority of the County and DEID GSA under the terms of this Agreement and not be annexed into the DEID GSA.

6. **Notices.** All notices required or permitted by this MOU or applicable law shall be in writing and may be delivered in person (by hand or by courier) or may be sent by regular, certified, or registered mail or U.S. Postal Service Express Mail, with postage prepaid, or by facsimile transmission, or by electronic transmission (email) and shall be deemed sufficiently given if served in a manner specified in this Section 5. The addresses and addressees noted below are that Party's designated address and addressee for delivery or mailing of notices.

To DEID GSA:

Delano-Earlimart Irrigation District
14181 Avenue 24
Delano, CA 93215
Telephone: (559) 725-2526

To County of Tulare:

County of Tulare
c/o Denise England
County Administration Building
2800 W. Burrel Avenue
Visalia, California 93291
Telephone: 559-636-5005

Either Party may, by written notice to the other, specify a different address for notice. Any notice sent by registered or certified mail, return receipt requested, shall be deemed given on the date of delivery shown on the receipt card, or if no delivery date is shown, three (3) days after the postmark date. If sent by regular mail, the notice shall be deemed given forty- eight (48) hours after it is addressed as required in this section and mailed with postage prepaid. Notices delivered by United States Express Mail or overnight courier that guarantee next day delivery shall be deemed given twenty-four (24) hours after delivery to the Postal Service or courier. Notices transmitted by facsimile transmission or similar means (including email) shall be deemed delivered upon telephone or similar confirmation of delivery (conformation report from fax machine is sufficient), provided a copy is also delivered via personal delivery or mail. If notice is received after 4:00 p.m. or on a Saturday, Sunday or legal holiday, it shall be deemed received on the next business day.

7. **Compliance with Laws.** In any action taken pursuant to this MOU, DEID GSA and the County shall comply with all applicable statutes, laws, and regulations, specifically including, but not limited to, SGMA and its implementing regulations, as they now exist or as they may be amended or promulgated from time to time.

To the extent that this MOU conflicts with or does not accurately reflect any applicable statutes, laws, or regulations now existing or as amended or promulgated from time to time, the laws, statutes, and regulations shall govern.

To the extent that any applicable statutes, laws, or regulations are amended or newly promulgated in such a manner that causes this MOU to conflict with or no longer accurately reflect such statutes, laws, or regulations, this MOU shall be modified, in writing, by all Parties, in order to comport with the newly amended or promulgated statutes, laws, or regulations.

8. **Termination.** The Parties agree that this MOU may be terminated by either Parties upon 30 days written notice to the other Party, but such termination shall not be effective until applicable GSA boundaries are modified to maintain SGMA compliance.

9. **Entire Agreement.** This MOU and items incorporated herein contain all of the agreements of the Parties with respect to the matters contained herein, and no prior agreement or understanding pertaining to any such matter shall be effective for any purpose.

10. **Amendments.** No provisions of this MOU may be amended or modified in any manner whatsoever except by an agreement in writing duly authorized by representatives of all Parties.

11. **No Assignment.** The rights and obligations of the Parties to this MOU may not be assigned or delegated, and any attempt to assign or delegate such rights or duties in contravention of this section shall be null and void.

12. **Binding Effect.** This MOU shall apply to and bind successors, assignees, contractors, subcontractors, transferees, agents, employees, and representatives of the respective Parties hereto.

13. **Governing Law.** This MOU and all documents provided for herein and the rights and obligations of the Parties hereto shall be governed in all respects, including validity, interpretation and effect, by the laws of the State of California (without giving effect to any choice of law principles).

14. **Waiver.** The failure of any Party to insist on strict compliance with any provision of this MOU shall not be considered a waiver of any right to do so, whether for that breach or any subsequent breach. The acceptance by any Party of either performance or payment shall not be considered to be a waiver of any preceding breach of the MOU by any other Party.

15. **Severability.** If any term or provision of this MOU is, to any extent, held invalid or unenforceable, the remainder of this MOU shall not be affected.

16. **Headings.** The subject headings of the sections of this MOU are included for purposes of convenience only and shall not affect the construction or interpretation of any of the provisions herein.

17. **Counterparts.** This MOU may be executed in any number of counterparts, each of which shall be an original, but all of which shall constitute one and the same instrument.

18. **Joint Powers Agency Not Required**. It is understood and agreed by the Parties that the development and implementation of a GSP does not require the formation of a joint powers agency between their respective organizations.

IN WITNESS WHEREOF, the Parties have executed this MOU as of the day and year first above written.

DELANO-EARLIMART
IRRIGATION DISTRICT
GROUNDWATER
SUSTAINABILITY AGENCY

By: _____

Name: KELLEY T. HAMPTON

Title: PRESIDENT

COUNTY OF TULARE

By: _____

Name: KUYLER CROCKER

Title: CHAIRMAN, BOARD OF SUPERVISOR

APPROVE AS TO FORM:
COUNTY COUNSEL
BY _____
DEPUTY

20191512

Appendix F County of Tulare Well Permit Application

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TULARE COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION
5957 SOUTH MOONEY BLVD. VISALIA, CA 93277
(559)624-7400

WELL PERMIT APPLICATION

Application #: WWA-_____ **Permit #: WELL_____**

PROPERTY OWNER INFORMATION

Applicant Name _____ **Telephone** _____

Contact Name _____ **Telephone** _____

Mailing Address _____

Street **City/State** **Zip Code**

LICENSED CONTRACTOR DECLARATION

Licensed under the provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, as a well drilling contractor and such license is in full force and effect.

Business Name _____

E-Mail Address _____

Mailing Address _____

License # _____ **Office Telephone** _____ **Cell** _____

WELL INFORMATION

Well Location _____ _____

Address/Cross Streets **City**

APN _____ - _____ - _____ _____ _____ _____

Township **Range** **Section**

Parcel Size _____ **Acre(s)** **Project Start Date** _____ ☐ **Valley** ☐ **Foothills/Mountains**

Groundwater Basin: ☐ **Kaweah** ☐ **Kings** ☐ **Tulare Lake** ☐ **Tule**

GPS Data (Use Decimal Degrees Where Applicable) _____ _____ _____

Latitude **Longitude** **Elevation (ft.)**

TYPE OF WORK

☐ **Drilling** ☐ **Deepen** ☐ **Destruction** ☐ **Recondition**

Is this a Replacement Well? ☐ **Yes** ☐ **No** **If Yes, then a Well Destruction Permit Application is Required.**

DRILLING METHOD (Construction Only)

☐ **Cable Tool** ☐ **Rotary** ☐ **Reverse Rotary** ☐ **Air Rotary** ☐ **Other** _____

WELL TYPE (All Permits)

☐ **Domestic (1 – 4 Connections)** ☐ **Dairy Supply** ☐ **Test Well**

☐ **Community (5+ Connections)** ☐ **Industrial** ☐ **Cathodic Protection**

☐ **Agricultural** ☐ **Soil Boring(s)** ☐ **Monitoring Well**

☐ **Other** _____

WELL CONSTRUCTION

Casing Material: ☐ **PVC** ☐ **Steel** **Diameter** _____ **in.** **Proposed Depth** _____ **ft.**

Slot Size _____ **in.** **Gauge** _____ **Perforation Depths** _____ **to** _____ **ft.**

Conductor Casing ☐ **Yes** ☐ **No** **Diameter** _____ **in.** **Depth** _____ **ft.**

Seal Depth _____ **ft.** **(Minimum of 50 ft. Tremie pipe required for all well seals.)**

Seal Material: ☐ **Neat Cement** ☐ **Sand Slurry** ☐ **Bentonite** ☐ **Other** _____

WELL DESTRUCTION

Casing Material: ☐ **PVC** ☐ **Steel** **Casing Diameter** _____ **in.** **Well Depth** _____ **ft.**

Depth to Water _____ **ft.** **Excavation Depth** _____ **ft.** **Seal Depth** _____ **ft.**

Seal Material: ☐ **Neat Cement** ☐ **Sand Slurry** ☐ **Bentonite** ☐ **Other** _____

WELL SETBACKS (Construction Only)

Setbacks from surrounding properties must be taken into consideration when selecting a well site location. Setback requirements may be increased by Tulare County if dangers of pollution, contamination or other adverse conditions are known to be present.

If the well site is within a one mile radius of a landfill, there may be additional requirements.

Measuring in feet, list distances from proposed well drilling location. Minimum requirements in parentheses.

Front Property Line (25 ft.)	_____	Storm Drain (50 ft.)	_____
Side Property Lines (5 ft.)	_____	Seepage Pit (150 ft.)	_____
Septic Tank & Leach Field (100 ft.)	_____	Animal/Fowl Enclosure (100 ft.)	_____
Sewer Laterals (50 ft.)	_____	Existing Active Well(s) (50 ft.)	_____
Surface Water (25 ft.)	_____	Underground Storage Tank (150 ft.)	_____
Transmission Lines	_____		

_____ I certify that I have read this application and declare under penalty of perjury that the information contained herein is true, correct and complete. I hereby agree to comply with all State and Tulare County regulations pertaining to well construction, deepening and destruction. **Within 30 days of work completed**, I will furnish Tulare County Environmental Health Services Division a completed well completion report for well drilling, deepening and destruction.

CONTRACTOR		APPLICANT	
Print Name	_____	**Print Name**	_____
Signature	_____	**Signature**	_____
Date	_____	**Date**	_____

ENVIRONMENTAL HEALTH SERVICES DIVISION USE ONLY

Date Received _____ **Fee Amount** _____ **Receipt #** _____ **Invoice #** _____

Payment Type: ☐ **Cash** **Check #** _____ **CC Approval #** _____ **Received by:** _____

☐ **Flood Zone** ☐ **Landfill** ☐ **Other** _____

☐ **GIS Review** ☐ **PALMS** ☐ **CSLB Check** **C-57 Expiration Date:** _____

SITE MAP

The space below can be used to include a map. <u>All</u> maps must include:

- Major cross-streets associated with the parcel
- Setbacks documented above
- Structures on the parcel
- A directional arrow pointing North

For new wells, that are <u>not replacement wells</u>, include the following on the map:

- Surface water (ponds, lakes and streams) within 300 ft.
- Canals, ditches, pipelines, utility corridors and roads within 2 mi. (Only for wells drilled below Corcoran Clay)

TULARE COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION
5957 SOUTH MOONEY BLVD. VISALIA, CA 93277
(559)624-7400

TO BE COMPLETED BY APPLICANT

(For Construction of Domestic, Community, Agricultural, Dairy or Industrial Wells)

Property Owner/Contact Person Name _____ **Telephone** _____

1. What type of well is being drilled?
   - ☐ **Domestic** Serves 1 to 4 Service Connections/Homes.
   - ☐ **Community** Serves 5 or more Service Connections/Homes
   - ☐ **Agricultural** Exclusively used to supply water for irrigation or other agricultural purposes.
   - ☐ **Dairy** Exclusively used by a Dairy Farm for the milk production process.
   - ☐ **Industrial** Exclusively used by a Business for the processes related to producing goods or services.
2. How many homes will the new well serve? _____
3. How many employees will be served by this well? _____
4. How many wells are currently on this parcel?
   Domestic _____ **Community** _____ **Agricultural** _____ **Dairy** _____ **Industrial** _____
5. Are there any **inactive** or **abandoned** wells on this parcel? ☐ **Yes** ☐ **No**
   (An **inactive** well is not routinely used but capable of being made operational with minimal effort. An **abandoned** well is a well that has not been used for at least one (1) year, or is in such disrepair that it can no longer produce water.)
6. What is/are the depth(s) of the existing well(s)? _____ **ft.**
7. Are there any animal or fowl enclosures on this, or any adjacent, parcel? ☐ **Yes** ☐ **No**
   If Yes, how far is the enclosure from the proposed well site? _____ **ft.** **(May require site visit to verify.)**
8. What is the reason for drilling a new well?
   - ☐ **Current well went dry.** **How long has the well been dry?** _____
   - ☐ **Current well about to go dry.**
   - ☐ **Additional well due to lack of production from existing source(s).**
   - ☐ **First well on parcel.**
   - ☐ **Other** _____
9. What is/are the plan(s) for the existing well(s) once the new well(s) is/are drilled?
   - ☐ **Keep the existing well(s) active. (Keep the pump(s) installed and connected to power.)**
   - ☐ **Destroy the existing well(s) using a licensed C-57 well contractor.**
   - ☐ **File an Inactivation Permit. (Requires an annual permit fee.)**
   - ☐ **I don't know. (Please call Environmental Health at (559)624-7400 for more details.)**
10. Has the recent drought influenced your decision to drill a new well? ☐ **Yes** ☐ **No**

I certify that I have read this application and declare under penalty of perjury that the information contained herein is true, correct and complete.

_____ _____

Signature **Date**

Revised January 2018

TULARE COUNTY ENVIRONMENTAL HEALTH SERVICES DIVISION
5957 SOUTH MOONEY BLVD. VISALIA, CA 93277
(559)624-7400

TO BE COMPLETED BY APPLICANT OR APPLICANT'S AGENT

(For construction of new Agricultural, Dairy or Industrial wells subject to Senate Bill 252)

Is this a replacement well? ☐ **Yes** ☐ **No** **If Yes, this questionnaire is <u>not required</u>. However, a well destruction permit application <u>must be</u> submitted. The well being replaced must be destroyed prior to, or concurrently with, construction of the new well.**

Pursuant to Section 13808 of the California Water Code, Tulare County Environmental Health is required to request the following information, <u>to the extent that it can be reasonably known</u>, from an applicant, or the applicant's agent, as part of an application for a well permit.

Proposed Capacity: _____ **Acre-Feet** Estimated Pumping Rate: _____ **gpm**

Anticipated Pumping Schedule: _____

_____

Estimated Annual Extraction Volume: _____ **Acre-Feet per Year** Size of Service Area: _____ **Acres**

Seasonal Fluctuations: _____

Water Table Depth: _____ **ft.** Recharge Area: _____ Recharge Rate: _____ **gpm**

Location to Flood Plain: _____

Use the grid below to input information about existing wells on the parcel that will remain active, <u>and</u> attach any information of capacity or pumping tests completed for the existing wells.

	Well 1	Well 2	Well 3	Well 4	Well 5	Well 6
Well Use						
Depth (ft.)						
Diameter (in.)						
Screen Intervals						
Pump Rate (gpm)						

Estimated cumulative extraction volume of new well before January 1, 2020: _____ **Acre Feet**

DELANO-EARLIMART IRRIGATION DISTRICT
GROUNDWATER SUSTAINABILITY AGENCY ("GSA")

DELANO-EARLIMART IRRIGATION DISTRICT MANAGEMENT AREA

COMPLIANCE WITH EXECUTIVE ORDER N-7-22

Pursuant to Tulare County Ordinance section 4-13-1007(b), the following must be completed, signed, and submitted for each well permit application for a new or altered well that is subject to the Governor's Executive Order N-7-22. New or altered well permits cannot be approved by the County of Tulare ("County") without this form. The County cannot enforce or negotiate any restrictions or requirements of a GSA.

WWA#:	Date Submitted:	GSA Phone or Email
Groundwater Sustainability Agency (GSA) Name	GSA Representative Name/Title	
Site Location:	APN:	
Property Owner Name:	Driller Business Name:	

Property Owner acknowledgment (Please verify each statement and initial each box upon acknowledgment and agreement with each statement):

☐ I acknowledge that the Sustainable Groundwater Management Act requires that a groundwater sustainability agency (GSA) manage groundwater in the Tule Subbasin and the GSA has groundwater management authority over the land on which WELL Number _____is proposed.

☐ I acknowledge that the GSA has the authority to limit extractions within its jurisdiction including extractions from any well permitted pursuant to WELL Number _____.

☐ I acknowledge that the GSA cannot guarantee the maintenance of any defined water level or level of water quality in the Tule Subbasin.

☐ I acknowledge that a well permit issued by Tulare County does not guarantee the extraction of any specific amount of water now or in the future.

☐ I acknowledge that the GSA includes specific groundwater requirements through minimum thresholds and measurable objectives and agree that my groundwater use will comply with these requirements.

☐ I agree to limit the application of water extracted from the proposed well to currently irrigated land within the District's jurisdictional boundaries.

☐ I acknowledge the GSA is not responsible for or otherwise liable for any costs, investments or payments related to any groundwater well permitted pursuant to WELL Number _____, including pumping fees, extraction limits, costs related to well failure, well deepening, increased maintenance, replacement, or operational costs.

☐ I understand that the GSA may request further technical information in support of the application and that, to the extent determined by the GSA, the GSA may require reimbursement of its technical review costs associated with reviewing this application. If reimbursement is requested, I agree to provide reimbursement subject to the term provided in the GSP.

☐ I agree to hold the GSA harmless and indemnify the GSA for any liability, including attorney fees, costs, and penalties stemming from or related to Tulare County issuing a well permit in response to WELL Number _____.

☐ I understand that I may not operate and shall not operate the well in a manner that is likely to interfere with the production and functioning of existing nearby wells and may not operate and shall not operate the well in a manner that is likely to cause subsidence that would adversely impact or damage nearby infrastructure, and that the County will be issuing this permit in reliance upon my acknowledgement herein.

☐ I understand that, upon receipt of a complaint from a nearby well owner, or upon request of the County or GSA, I may be required to produce a hydrological report prepared by a licensed professional verifying that pumping from Well Number _____ does not interfere with the production and functioning of existing nearby wells and does not operate and shall not operate in a manner that is likely to cause subsidence that would adversely impact or damage nearby infrastructure

☐ I understand that extraction from WELL Number _____ may be subject to extraction fees, fines, penalties, and mitigation payments to compensate adjacent landowners, Districts, owners of critical infrastructure, or other beneficial users and uses due to impacts caused by the extraction of water from WELL Number _____.

By signing below, the Property Owner certifies the acknowledgements initialed above are understood and accepted.

Printed Name: _____

Signature: _____ Date: _____

Groundwater Sustainability Agency Determinations (check all that apply):

☐ The above well permit application is not inconsistent with the sustainable groundwater management program established in the GSA's adopted Groundwater Sustainability Plan ("GSP"), designed to achieve the sustainability goals of SGMA, and the owner of the proposed well must comply with all GSA rules, regulations, and ordinances.

☐ The GSA does NOT find the drilling of the well identified in the above well permit application to be consistent with the sustainable groundwater management programs that the GSA has adopted in the GSP for the following reasons:

[Excess Text to be attached as **Attachment A** to this Form]

☐ Based upon the acknowledgment above and any further technical or other documentation that may lawfully be required by the County or the GSA, the Property Owner has attested the proposed well is not likely to interfere with the production and functioning of existing nearby wells, and not likely to cause subsidence that would adversely impact or damage nearby infrastructure. With the issuance of a well permit by Tulare County, Tulare County has acknowledged compliance with Executive order N-7-22.

The information contained herein is based on the information contained in the well permit application. The preceding statements are made upon information known at the time of this statement only. The GSA is currently amending its GSP, which may necessitate or cause changes to previously made statements. As of the date of this form, the State's Department of Water Resources has found the relevant GSP to be incomplete and the GSA is in the process of amending the GSP.

Comments:

[NAME AND TITLE OF GROUNDWATER SUSTAINABILITY AGENCY REPRESENTATIVE NAME COMPLETING AND SIGNING THIS FORM:]

Printed Name: _____

Title/Position/Its: _____

GSA: _____

Signature: _____ Date: _____

Kern County Well Permit Form

DELANO-EARLIMART IRRIGATION DISTRICT
GROUNDWATER SUSTAINABILITY AGENCY ("GSA")

DELANO-EARLIMART IRRIGATION DISTRICT MANAGEMENT AREA

COMPLIANCE WITH EXECUTIVE ORDER N-7-22

Owner Information

Name:	
Address:	
City:	
Zip:	
Phone:	
Email:	

Well Information

A.P.N:	
Latitude:	
Longitude:	
Township	
Range	
Section	

Type of Well: ☐ Irrigation ☐ Industrial

Groundwater Sustainability Agency:

- ☐ The proposed well is not inconsistent with the Groundwater Sustainability Agency's adopted, or in progress, Groundwater Sustainability Plan; and,

- ☐ The proposed well does not interfere with the Groundwater Sustainability Agency's SGMA authorities, including the Agency's addressing of undesirable results and the likelihood of achieving the sustainability goal.

I hereby certify that the GSA has reviewed the above conditions for the subject property for compliance with Executive Order N-7-22 and have marked each box for compliance as applicable.

_____ _____

Groundwater Sustainability Agency Signature Date

_____ _____

Printed Name Title

DELANO-EARLIMART IRRIGATION DISTRICT
GROUNDWATER SUSTAINABILITY AGENCY ("GSA")

WESTERN MANAGEMENT AREA

COMPLIANCE WITH EXECUTIVE ORDER N-7-22

Pursuant to Tulare County Ordinance section 4-13-1007(b), the following must be completed, signed, and submitted for each well permit application for a new or altered well that is subject to the Governor's Executive Order N-7-22. New or altered well permits cannot be approved by the County of Tulare ("County") without this form. The County cannot enforce or negotiate any restrictions or requirements of a GSA.

WWA#:	Date Submitted:	GSA Phone or Email
Groundwater Sustainability Agency (GSA) Name	GSA Representative Name/Title	
Site Location:	APN:	
Property Owner Name:	Driller Business Name:	

Property Owner acknowledgment (Please verify each statement and initial each box upon acknowledgment and agreement with each statement):

☐ I acknowledge that the Sustainable Groundwater Management Act requires that a groundwater sustainability agency (GSA) manage groundwater in the Tule Subbasin and the GSA has groundwater management authority over the land on which WELL Number _____is proposed.

☐ I acknowledge that the GSA has the authority to limit extractions within its jurisdiction including extractions from any well permitted pursuant to WELL Number _____.

☐ I acknowledge that the GSA cannot guarantee the maintenance of any defined water level or level of water quality in the Tule Subbasin.

☐ I acknowledge that a well permit issued by Tulare County does not guarantee the extraction of any specific amount of water now or in the future.

☐ I acknowledge that the GSA includes specific groundwater requirements through minimum thresholds and measurable objectives and agree that my groundwater use will comply with these requirements.

☐ I agree to limit the extraction of water to the sustainable yield available to the APN on which proposed WELL Number _____ is located and to limit application of water extracted from the proposed well to currently irrigated land within the Western Management Area.

☐ I agree to limit the extraction of water to the transitional pumping water available to the APN on which proposed WELL Number _____ is located and to limit application of water extracted from the proposed well to currently irrigated land within the Western Management Area.

☐ I acknowledge the GSA is not responsible for or otherwise liable for any costs, investments or payments related to any groundwater well permitted pursuant to WELL Number _____, including pumping fees, extraction limits, costs related to well failure, well deepening, increased maintenance, replacement, or operational costs.

☐ I understand that the GSA may request further technical information in support of the application and that, to the extent determined by the GSA, the GSA may require reimbursement of its technical review costs associated with reviewing this application. If reimbursement is requested, I agree to provide reimbursement subject to the term provided in the GSP.

☐ I agree to hold the GSA harmless and indemnify the GSA for any liability, including attorney fees, costs, and penalties stemming from or related to Tulare County issuing a well permit in response to WELL Number _____.

☐ I understand that I may not operate and shall not operate the well in a manner that is likely to interfere with the production and functioning of existing nearby wells and may not operate and shall not operate the well in a manner that is likely to cause subsidence that would adversely impact or damage nearby infrastructure, and that the County will be issuing this permit in reliance upon my acknowledgement herein.

☐ I understand that, upon receipt of a complaint from a nearby well owner, or upon request of the County or GSA, I may be required to produce a hydrological report prepared by a licensed professional verifying that pumping from Well Number _____ does not interfere with the production and functioning of existing nearby wells and does not operate and shall not operate in a manner that is likely to cause subsidence that would adversely impact or damage nearby infrastructure

☐ I understand that extraction from WELL Number _____ may be subject to extraction fees, fines, penalties, and mitigation payments to compensate adjacent landowners, Districts, owners of critical infrastructure, or other beneficial users and uses due to impacts caused by the extraction of water from WELL Number _____.

By signing below, the Property Owner certifies the acknowledgements initialed above are understood and accepted.

Printed Name: _____

Signature: _____ Date: _____

Groundwater Sustainability Agency Determinations (check all that apply):

☐ The above well permit application is not inconsistent with the sustainable groundwater management program established in the GSA's adopted Groundwater Sustainability Plan ("GSP"), designed to achieve the sustainability goals of SGMA, and the owner of the proposed well must comply with all GSA rules, regulations, and ordinances.

☐ The GSA does NOT find the drilling of the well identified in the above well permit application to be consistent with the sustainable groundwater management programs that the GSA has adopted in the GSP for the following reasons:

[Excess Text to be attached as **Attachment A** to this Form]

☐ Based upon the acknowledgment above and any further technical or other documentation that may lawfully be required by the County or the GSA, the Property Owner has attested the proposed well is not likely to interfere with the production and functioning of existing nearby wells, and not likely to cause subsidence that would adversely impact or damage nearby infrastructure. With the issuance of a well permit by Tulare County, Tulare County has acknowledged compliance with Executive order N-7-22.

The information contained herein is based on the information contained in the well permit application. The preceding statements are made upon information known at the time of this statement only. The GSA is currently amending its GSP, which may necessitate or cause changes to previously made statements. As of the date of this form, the State's Department of Water Resources has found the relevant GSP to be incomplete and the GSA is in the process of amending the GSP.

Comments:

[NAME AND TITLE OF GROUNDWATER SUSTAINABILITY AGENCY REPRESENTATIVE NAME COMPLETING AND SIGNING THIS FORM:]

Printed Name: _____

Title/Position/Its: _____

GSA: _____

Signature: _____ Date: _____

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Appendix G DEID GSA's Communication and Engagement Plan

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Delano-Earlimart Irrigation District
Groundwater Sustainability Agency

Communication & Engagement Plan

Tulare County, California
July 2018

Prepared for:

Delano-Earlimart Irrigation District Groundwater Sustainability Agency
14181 Avenue 24, Delano, California 93215

Prepared by:
Provost & Pritchard Consulting Group
130 N. Garden Street, Visalia, California 93291

Report Prepared for:

Delano-Earlimart Irrigation District Groundwater Sustainability Agency

14181 Avenue 24

Delano, California 93215

Contact:

Dale Brogan, Special Projects Manager

Telephone: (661) 725-2526

Email: dbrogan@deid.org

Website: www.deid.org

Report Prepared by:

Provost & Pritchard Consulting Group

Trilby Barton, Public Outreach Coordinator

Contact:

Telephone: (559) 636-1166

Email: tbarton@ppeng.com

Note: This Communication & Engagement Plan is a living document and will be updated as necessary throughout the GSP development, public review, and implementation phases.

Table of Contents

List of Figures

List of Tables

Abbreviations

AB.....Assembly Bill
CASGEM.....California Statewide Groundwater Elevation Monitoring
CVP.....Central Valley Project
DAC.....Disadvantaged Community
DDW.....Division of Drinking Water
DEID.....Delano-Earlimart Irrigation District
DWR.....Department of Water Resources
EPUD.....Earlimart Public Utility District
FKC.....Friant-Kern Canal
GSA.....Groundwater Sustainability Agency
GSP.....Groundwater Sustainability Plan
ILRP.....Irrigated Lands Regulatory Program
MCL.....Maximum contaminant levels
MOU.....Memorandum of Understanding
PSA.....Public service announcement
SB.....Senate Bill
SDAC.....Severely Disadvantaged Community
SGMA.....Sustainable Groundwater Management Act
SWRCB.....State Water Resources Control Board
USBR.....United States Bureau of Reclamation

Introduction

SGMA Overview

The Sustainable Groundwater Management Act (**SGMA**) is a combination of three bills signed by California Governor Jerry Brown in 2014: Assembly Bill (**AB**) 1739, Senate Bill (**SB**) 1168, and SB 1319. SGMA provides local agencies with the framework to manage groundwater basins in a sustainable manner. The legislation recognizes that groundwater is most effectively managed at the local level, and local agencies will need to achieve groundwater sustainability by 2040.

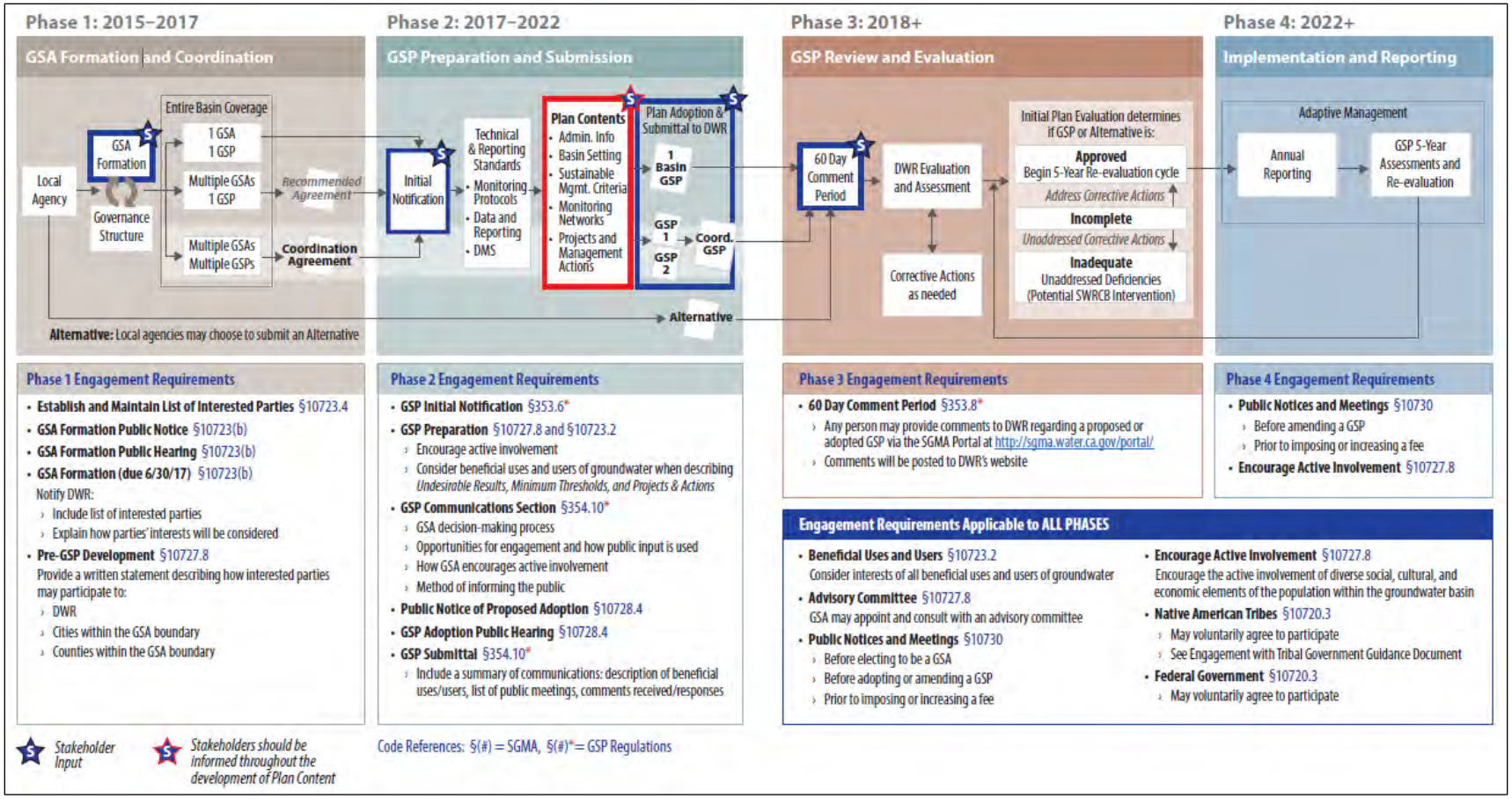
In SGMA, sustainable groundwater management is defined as management of groundwater supplies in a manner that can be maintained in planning and implementation phases without causing undesirable results. Undesirable results include significant and unreasonable chronic lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence, and interconnected surface waters.

Implementation of SGMA and outreach requirements are broken down into four phases (**Figure 0-1**):

- **Phase 1: GSA Formation and Coordination –** Phase 1 ranged from 2015 to 2017, and during this phase, local agencies created groundwater sustainability agencies (**GSA**). The responsibility of a GSA is to develop and implement a groundwater sustainability plan (**GSP**) that will consider all beneficial uses and groundwater users within the basin. GSAs were required to be formed by June 30, 2017.
- **Phase 2: GSP Preparation and Submission –** The second phase of SGMA implementation ranges from 2017 to 2020. During this phase, GSAs must develop GSPs with measurable objectives and milestones that ensure basin sustainability. A basin may be managed by a single GSP or multiple-coordinated GSPs. The California Department of Water Resources (**DWR**) developed regulations for evaluating GSPs and alternatives to GSPs by June 1, 2016.
- **Phase 3: GSP Review and Evaluation –** Phase 3 will be held in 2019, and consists of the public review period, which will be held 90 days prior to the adoption of the GSP. Once the GSP has been submitted to the DWR by January 31, 2020, DWR will hold another 60-day review and comment period for stakeholders.
- **Phase 4: Implementation and Reporting –** Following the submission of the GSP, GSAs will immediately begin the implementation of efforts described in the GSP to reach sustainability within the basin. This will be an ongoing phase, as the required goal of SGMA is to reach sustainability by 2040.

Communication & Engagement Plan

As required by SGMA, GSAs must consider the interests of all beneficial uses and users of groundwater and include them in the GSP development process. The Delano-Earlimart Irrigation District Groundwater Sustainability Agency's (**DEID GSA**) Communication & Engagement Plan addresses how stakeholders within the GSA's boundary are engaged through stakeholder education and opportunities for input and public review during the development and implementation of the GSP and will be updated throughout the phases. This plan provides an overview of the DEID GSA, its stakeholders, and decision-making process; identifies opportunities for public engagement and discussion of how public input and responses will be used; describes how the DEID GSA encourages the active involvement of diverse, social, cultural, and economic elements of the population within the GSA boundary; and the methods the GSA will use to inform the public stakeholders about the progress of GSP development, public review and implementation.



Source: GSP Stakeholder Communication and Engagement Guidance Document, California Department of Water Resources, June 2017

Figure 0-1. Stakeholder Engagement Requirements by Phase

I. Goals and Desired Outcomes

This section of the Communication & Engagement Plan provides a description of the DEID GSA, defines the goals of how to address the challenges, regulatory requirements and opportunities, and how to reach the desired outcomes of communication efforts.

A. Description and Background of the DEID GSA

I.A.1 GSA Description & Boundary

SGMA required all high- and medium-priority groundwater basins, as designated by the DWR Bulletin 118, to be managed by a GSA or multiple GSAs. Part of the San Joaquin Valley Basin, the Tule Subbasin is a high-priority basin that is in critical groundwater overdraft and is split into seven GSAs (**Table I-1**), including the DEID GSA.

Table I-1. Tule Subbasin GSAs and GSA Member Entities

GSA	GSA Member Entities	
Delano-Earlimart Irrigation District GSA	Delano-Earlimart Irrigation District	Earlimart Public Utilities District
Alpaugh GSA	Alpaugh Irrigation District Atwell Island Water District	Alpaugh Community Services District
Eastern Tule GSA	County of Tulare City of Porterville Saucelito Irrigation District Tea Pot Dome Water District	Vandalia Water District Terra Bella Irrigation District Kern-Tulare Water District Porterville Irrigation District
Lower Tule River Irrigation District GSA	Lower Tule River Irrigation District	Poplar Community Services District
Pixley Irrigation District GSA	Pixley Irrigation District	Pixley Public Utility District
Tri-County Water Authority	Angiola Water District	Deer Creek Storm Water District
Tulare County GSA	Unmanaged white areas within the Tule subbasin	

Under SGMA, DEID GSA is responsible for submitting a GSP to the DWR by January 31, 2020. On August 25, 2016, a resolution was adopted by the DEID board of directors to become an official GSA for the portion of the Tule Subbasin designated in **Figure I-1**. Member entities listed in **Table I-2** encompass the DEID GSA.

On May 23, 2016, a Memorandum of Understanding (**MOU**) was put into place between DEID and Earlimart Public Utility District (**EPUD**) regarding GSA participation and GSP development and implementation. In addition, 7,000 acres of white area adjacent to DEID was annexed into the irrigation district solely for SGMA assistance and compliance.

DEID GSA submitted a basin boundary modification to DWR on January 29, 2016 with the purpose of including the Kern County portion of DEID into the Tule Subbasin. The modification was approved by DWR in July 2016.

The boundaries of the DEID and EPUD agencies overlap and overlie a portion of the Tule Subbasin (Basin Number 5.022.13, DWR Bulletin 118) of the San Joaquin Valley Basin, which create the boundary of the DEID GSA. The GSA boundary stretches along the southern Tulare County boundary and the very northern part of Kern County (**Figure I-1**), and primarily includes agricultural lands with some urban areas.

Table I-2. DEID GSA Member Entities

DEID GSA Member Entities	
Delano-Earlimart Irrigation District	Earlimart Public Utility District

Throughout the SGMA phases, the DEID GSA's Board of Directors and technical team will be responsible for collecting and organizing data, engaging and retaining experts and consultants, and soliciting feedback from beneficial users of groundwater and interested parties within the GSA boundary. The specific role of the Board of Directors is described in **Section II.A**.

A Subbasin Coordination Committee has been established, consisting of representatives from each of the Tule Subbasin GSAs to thoroughly collaborate efforts throughout the GSP development phase to meet the sustainability requirements for the entire Tule Subbasin.

I.A.2 Industries, DACs, Municipalities

I.A.2.1 Industries

I.A.2.1.1 Agriculture

The primary industry within the DEID GSA is agriculture, as Tulare and Kern counties are two of the top largest agricultural-producing counties in the United States. Primary crops grown within the GSA include grapes, almonds, citrus, and stone fruit. Grape production accounts for approximately 50 percent of the crops grown within the GSA, while almonds account for around 20 percent of crop production. As the primary industry, agriculture is the largest private employer both counties, with farm employment accounting for a quarter of all jobs, including production, processing, and manufacturing. According to the Tulare County Farm Bureau, six of the top 15 employers in Tulare County alone are fruit packing houses and dairy processing plants, and one in every five jobs in the San Joaquin Valley is directly related to agriculture.

With a substantial amount of the DEID GSA acreage in agriculture production, it is important agriculture industry stakeholders are involved and informed during the development and public review phases of the GSP, as implementation will have a significant direct impact on the industry, and ultimately the local, state and national economies.

I.A.2.2 DACs

Communication and educational outreach efforts with disadvantaged communities (**DAC**) and severely disadvantaged communities (**SDAC**) are essential for the development and implementation of GSPs within the San Joaquin Valley Basin, and residents are generally dedicated to bettering their communities, particularly when it comes to their water supplies. Important information that will be essential to communicate and engage DACs will include an explanation of SGMA, education on water conservation, and soliciting feedback from community members on water quantity challenges their communities may face. A composite listing of the DACs and SDACs and their populations within the GSA boundary are listed in **Table I-3** and laid out in **Figure I-2**. Specific issues and infrastructure projects are described in greater detail in **Section II.B**.

By including DACs and SDACs in communication efforts during the development, public review and implementation phases of the GSA, residents will be more likely to participate and provide feedback that

could be crucial to long-term solutions for groundwater sustainability within their communities. Any feedback received from DAC residents will be reviewed by the GSA's technical team, Stakeholder Committee, and Board of Directors to be taken into consideration during the GSP development phase.

Table I-3. Disadvantaged Communities within DEID GSA

Community	Population	Connections	No. of Wells	DAC/SDAC
Earlimart	8,300	1,568	6	SDAC
Rodriguez Labor Camp	110	35	1	SDAC

I.A.2.3 Public Agencies and Districts

The public agencies and districts within the DEID GSA are rural and district-related (**Figure I-3**). These agencies and districts will be engaged in outreach efforts throughout the GSP development, public review and implementation phases, as described in **Section II.C**. School districts will be an integral part of outreach efforts, particularly within DACs, and are outlined in **Figure I-4**.

I.A.2.3.1 Delano-Earlimart Irrigation District

Irrigation in the Delano and Earlimart regions began in the late 1800s with artesian wells, but by the 1930s diminished groundwater supplies threatened the area's continued economic viability. By 1947 the mean depth to groundwater was dangerously low. The Delano-Earlimart Irrigation District was formed in 1938 and signed its original water service contract for water delivery from the Friant Unit of the Central Valley Project with the U.S. Bureau of Reclamation (USBR) in 1951, after the average depth of groundwater had fallen every year since 1905. Since its inception, DEID has provided consistent and reliable surface water to its constituents, resulting in dramatic improvements to groundwater conditions.

Today, DEID encompasses approximately 63,500 acres which includes providing surface water to over 400 landowners on the original DEID service area of 56,500 acres of land, plus 7,000 acres of white area in southern Tulare and northern Kern counties annexed in 2016 strictly for SGMA compliance. Water is distributed through a completely piped system, allowing for virtually no losses and providing an efficient water delivery project that is the foundation for the DEID's overall water conservation and management program.

I.A.2.3.2 Earlimart Public Utility District

Earlimart is a rural unincorporated community in southern Tulare County, and is considered a SDAC. EPUD services 722 acres with a community of 8,300 residents with 1,568 connections and six active wells. Earlimart is predominately rural and the main industry is agriculture, with a number of vineyards, packing houses and cold storage facilities.

I.A.3 DEID GSA's Decision-Making Process

The DEID GSA's decision-making process is broken down by the roles of the Board of Directors, Stakeholder Committee, and through a Subbasin Coordination Committee. The roles of these DEID GSA entities and their responsibilities are outlined below and described in more detail in **Section II.A**.

- **Board of Directors –** Responsible for all final decisions relative to the development of the GSA, GSP adoption, implementation of the GSP, and other related matters
- **Stakeholder Committee –** Advises the Board of Directors on matters dealing with GSA and GSP development, GSP implementation, and other GSA/GSP matters; open to all interested stakeholders who wish to participate. Committee meetings are generally split by the three management areas: DEID, EPUD, and DEID White Area Annex

B. Goals/Desired Outcomes of GSP Development

The overall, main goal of the DEID GSA is to reach groundwater sustainability as required by SGMA, while protecting, enhancing and managing the water resources and related assets to benefit the growers, communities and other beneficial users within the boundary.

C. Communication Objectives to Support the GSP

The communication objectives during GSA formation/coordination, GSP development, public review, and implementation phases of the SGMA compliance is to encourage active involvement of diverse, social, cultural, and economic elements of the population within the GSA boundary. The DEID GSA will give beneficial users and users of groundwater opportunities to engage in the GSP process by providing educational outreach opportunities for stakeholders while reaching out through specific communication avenues (**Section V**). As active stakeholders, members of the Board of Directors and the Stakeholder Committee are direct representatives of their communities and industries, and it is important for them to continually gather feedback/input, and concerns/needs of their constituents and report back to their respective meetings. Any stakeholder input received will be reviewed and taken into consideration during GSP development and public review phases.

I.C.1 Phase 1: GSA Formation and Coordination

Phase 1: GSA Formation and Coordination has been completed. This phase stretched from 2015 through 2018, and consisted of forming the DEID GSA, establishing and maintaining the List of Interested Parties (**Section II.D**), establishing the Stakeholder Committee, and creating the Communication & Engagement Plan to outline communication efforts for the GSP development, public review and implementation phases. Stakeholder input was utilized during the GSA formation phase, as beneficial users and stakeholders with interests in groundwater usage within the DEID GSA's boundary were notified via public meeting notices as soon as the process began.

I.C.2 Phase 2: GSP Preparation and Submission

Phase 2: GSP Preparation and Submission will span from 2018 through 2020. With the goal of having the draft GSP by the first quarter of 2019, 2018 will primarily be the technical development of the plan, while working with stakeholders (**Section II.A**) for feedback and input. During 2018, direct interaction with stakeholder groups (**Section II.B**) and other community organizations and entities (**Section II.C**) will be held with the purpose of educating and informing stakeholders about SGMA and the GSP process, while also soliciting feedback and input from these groups (**Section III.A**) to mitigate the negative impacts to beneficial users of groundwater as much as possible.

I.C.3 Phase 3: GSP Review and Evaluation

During 2019, Phase 3: GSP Review and Evaluation, will be the primary focus of communication and engagement efforts. Once the draft of the GSP is completed in the second quarter of 2019, the public review process will begin. A 90-day comment period will be held, with the GSP draft posted on the DEID GSA's website for stakeholders to conveniently download and review. Outreach meetings will be held during this phase at locations throughout the GSA boundary (potential venues are listed in **Table V-1**). These meetings will focus on an overview of the GSP content, while giving stakeholders a public forum to provide their feedback and comments.

Once the public review period is completed, public comments will be taken into consideration and incorporated into the final version of the DEID GSA's GSP before submitting to the DWR by January 31, 2020. Following submittal, stakeholders will be given a second 60-day comment period through the DWR's SGMA portal at http://sgma.water.ca.gov/portal/. Comments will be posted to the DWR's website prior to the state agency's evaluation, assessment and approval.

I.C.4 Phase 4: Implementation and Reporting

Phase 4: Implementation and Reporting will begin once the plan is submitted in January 2020. Even while the DWR is reviewing the GSP, implementation at the GSA-level must begin. During the implementation phase, communication and engagement efforts will be shifted to educational and informational awareness of the requirements and processes of reaching groundwater sustainability. Active involvement of all stakeholders is encouraged during this phase, and public notices are required prior to imposing, and later increasing, any fees.

D. Overriding Concerns, Major Concerns or Challenges

Through preliminary discussions with stakeholders within the DEID GSA Boundary, overriding concerns, major concerns or challenges are centralized around economic impacts to the agricultural industry, which will also have a direct impact on DACs. Economic impacts could include loss of jobs and loss of tax revenue due to the decreased land values of fallowed ground. Many residents within DACs are employed by the agricultural industry, and many infrastructure improvement projects within these communities are facilitated by the counties of Kern and Tulare and funded through state and federal funding secured with the assistance of technical providers. The agricultural industry and DACs will be the main target audiences for direct outreach methods, including public meetings, because of the significant impact SGMA implementation will have on these two beneficial users of groundwater.

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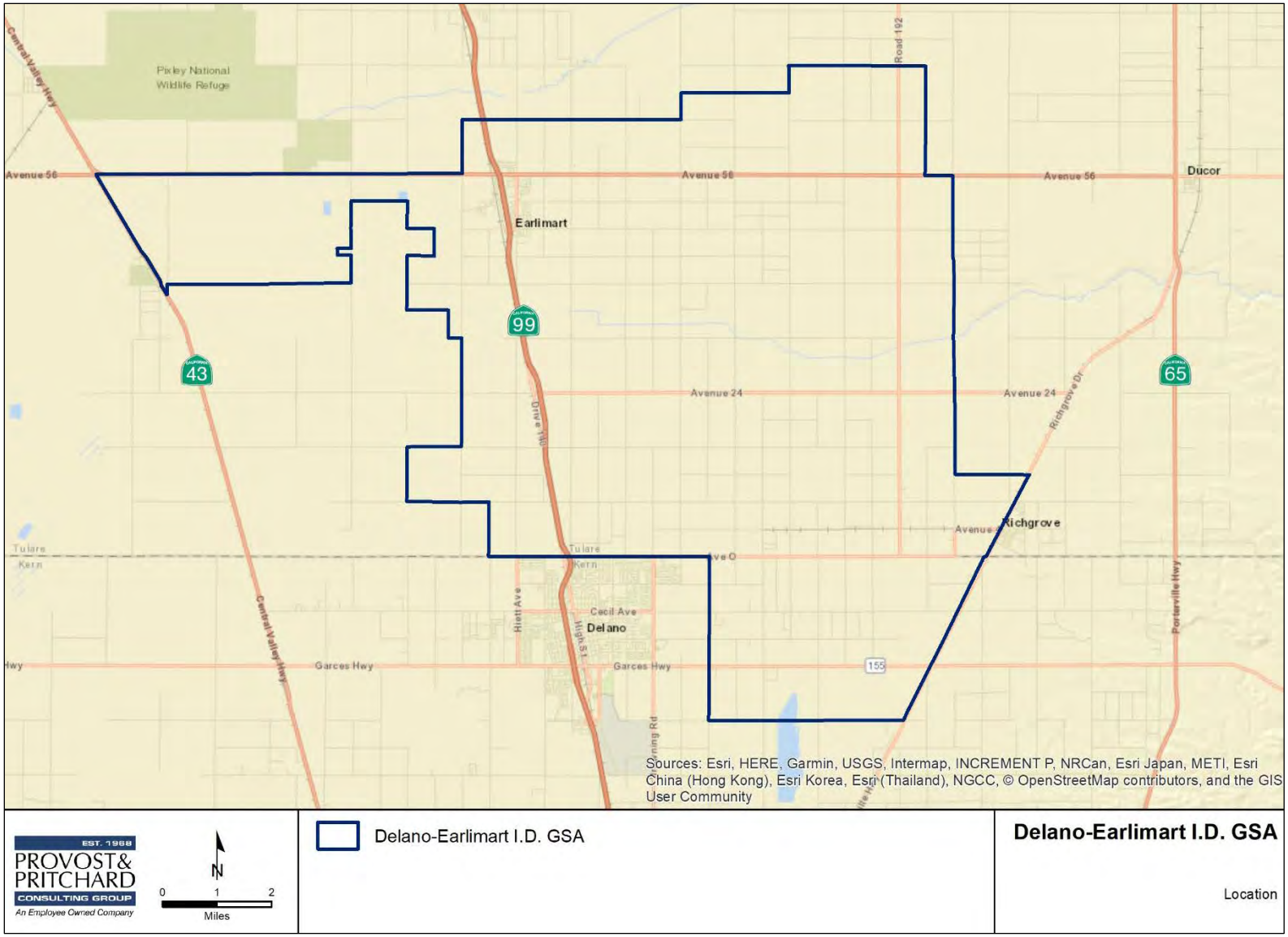

Figure I-1. Delano-Earlimart Irrigation District GSA Boundary

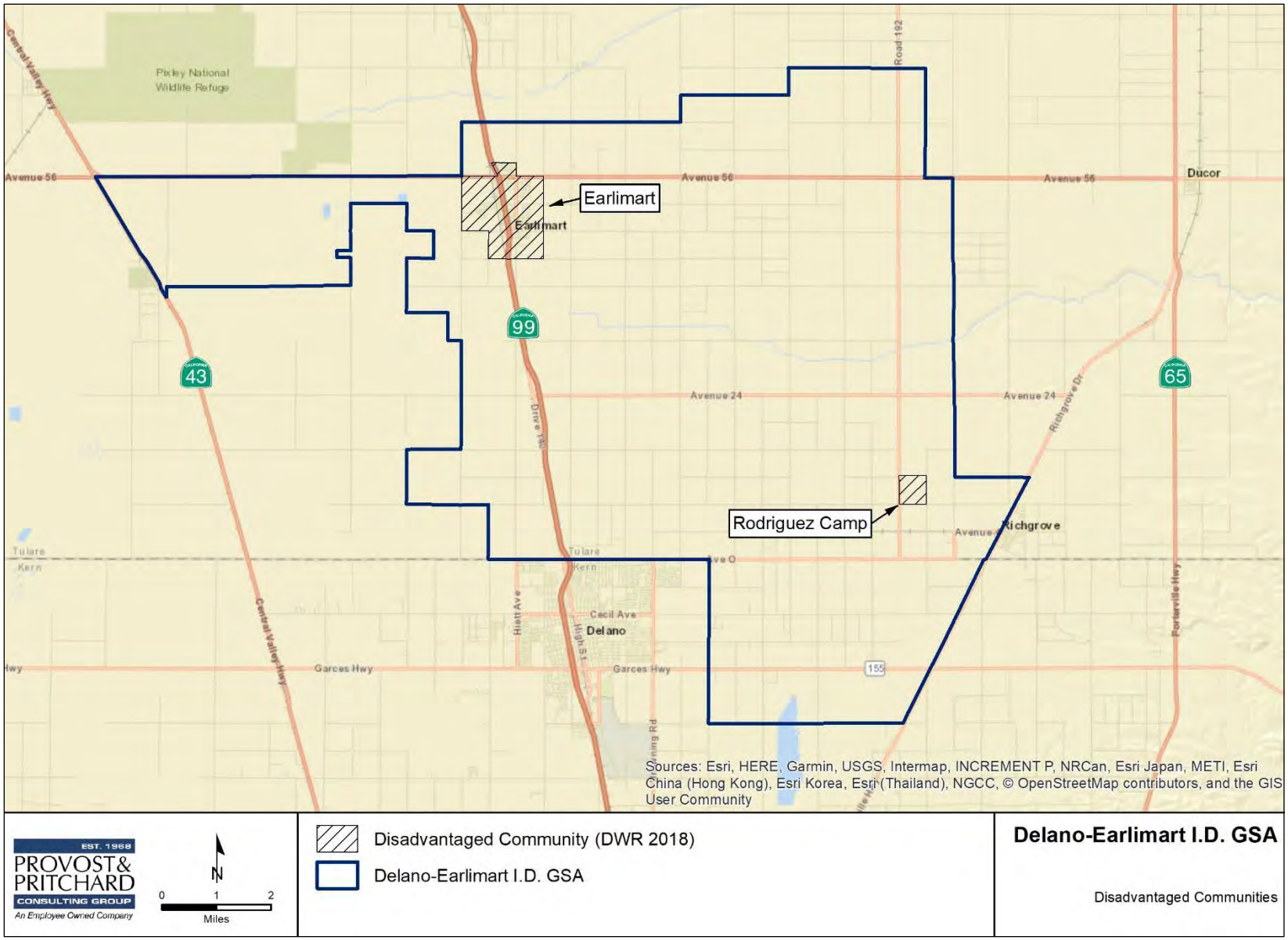

Figure I-2. Disadvantaged Communities within Delano-Earlimart Irrigation District GSA

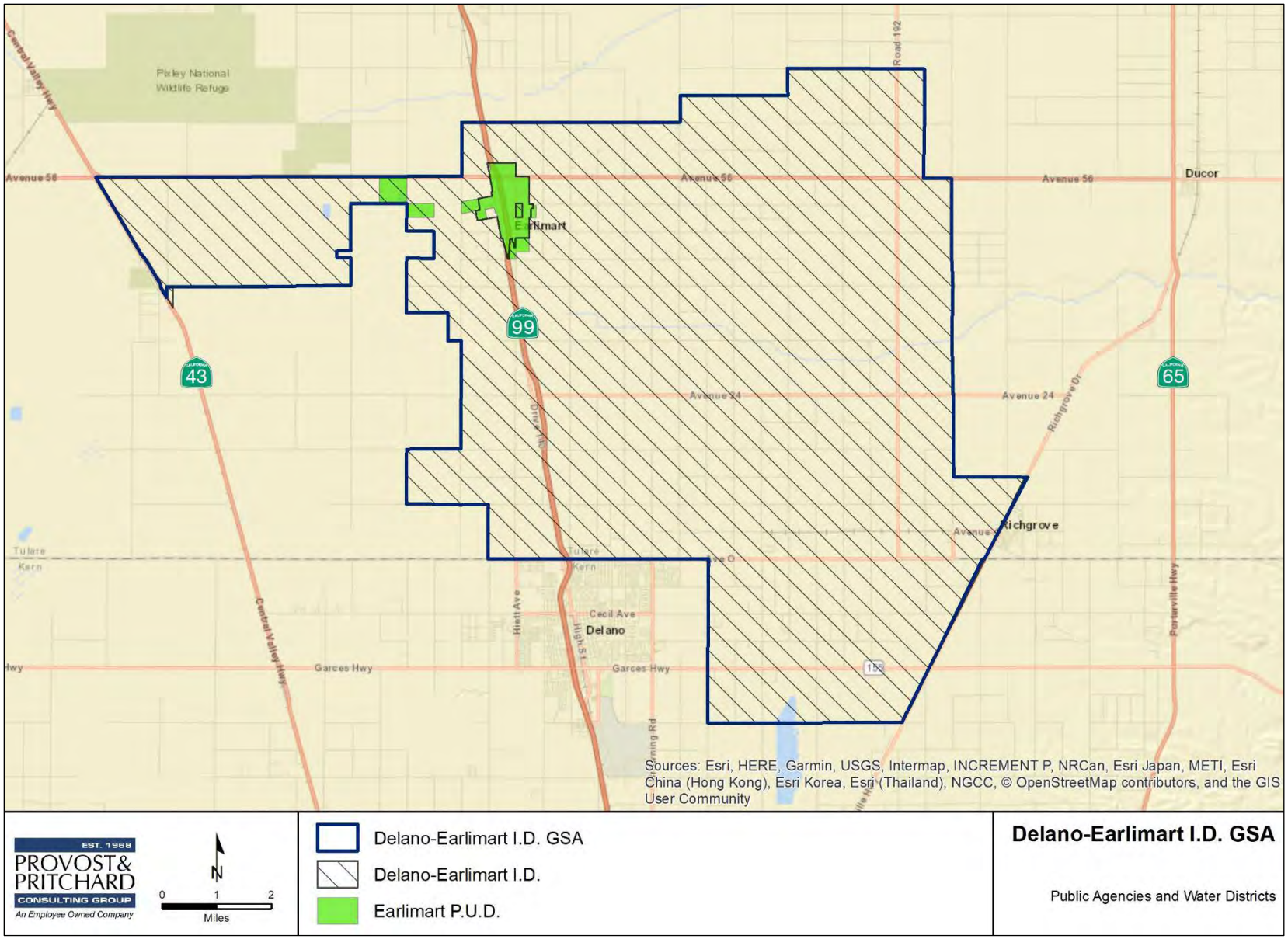

Figure I-3. Delano-Earlimart Irrigation District GSA Public Agencies and Water/Irrigation Districts

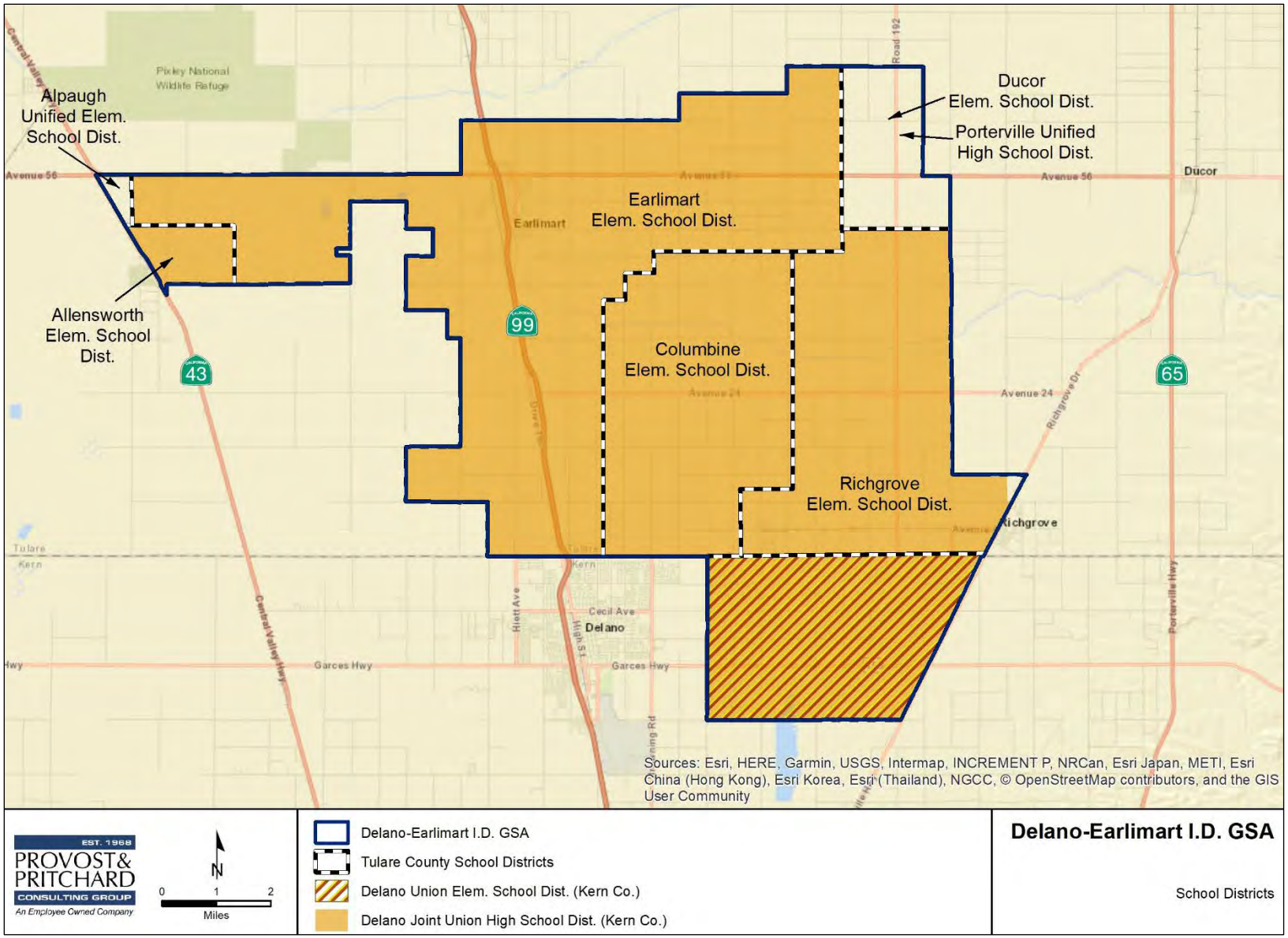

Figure I-4. School Districts within Delano-Earlimart Irrigation District GSA

II. Audience Identification

A. Active Stakeholder Groups

The active stakeholder groups of the DEID GSA are members of the Board of Directors and Stakeholder Committee. Their specific roles in the communication and engagement process are discussed in this section.

II.A.1 Role of Board of Directors

The DEID GSA Board of Directors is responsible for all final decisions related to the DEID GSA, development and adoption of the GSP, and implementation of the GSP, and other related matters, fully considering recommendations of the Stakeholder Committee and input from GSA stakeholders.

The DEID GSA Board of Directors meetings are held periodically as necessary, usually preceding the DEID Board of Directors meeting held at 4 p.m. on the second Thursday of every month at the DEID office, located at 14181 Avenue 24 in Delano, California. These meetings are open to public.

II.A.2 Role of Stakeholder Committee

In Section 10727.8 "Public Notification and Participation; Advisory Committee" of the Sustainable Groundwater Management Act, GSAs may appoint and consult with an advisory committee for the purpose of developing and implementing a GSP. Through this advisory committee, the GSA is able to encourage the active involvement of diverse social, cultural, and economic elements of the population within the groundwater basin prior to and during the development and implementation of the GSP.

A Stakeholder Committee has been established by DEID for advising the DEID GSA Board of Directors on matters dealing with the DEID GSA and GSP development and implementation, and other GSA/GSP matters. EPUD is responsible for communicating and coordinating stakeholder input for its management area. Additional participation has been sought from other interested parties and beneficial users of groundwater within the GSA boundary. Committee participants have direct interests in groundwater within the GSA, and are stakeholders as detailed in **Section I.B**.

The DEID GSA's Stakeholder Committee meetings are open to all stakeholders, interested parties and the public, and are held periodically at the DEID office, located at 14181 Avenue 24 in Delano, California.

B. GSA Stakeholders

Stakeholder groups have been identified by the DEID GSA, based on those listed in SGMA, Section 10723.2 "Consideration of All Interests of All Beneficial Uses and Users of Groundwater" (**Table II-1**).

Table II-1. Consideration of All Interests of All Beneficial Uses and Users of Groundwater

SGMA, Section 10723.2. Consideration of All Interests of All Beneficial Uses and Users of Groundwater		
Agricultural Users	Domestic Well Owners	Municipal Well Operators
Public Water Systems	Local Land Use Planning Agencies	Environmental Users of Groundwater
Surface Water Users	Federal Government	California Native American Tribes
Disadvantaged Communities	Entities monitoring and reporting groundwater elevations in all or part of a groundwater basin	

Beneficial users of groundwater to be targeted for communication and engagement during the GSP development, public review and implementation phases have been narrowed to those with financial, political, business or personal stakes in the management and sustainability of groundwater within the jurisdiction of the DEID GSA. These stakeholders are listed in **Table II-2** as beneficial users of groundwater within the GSA.

Table II-2. All Beneficial Uses and Users of Groundwater with Interests in the DEID GSA

All Beneficial Uses and Users of Groundwater with Interests in the DEID GSA		
Agricultural Users	Domestic Well Owners	Public Water Systems
Local Land Use Planning Agencies	Federal Government	Disadvantaged Communities
Entities monitoring and reporting groundwater elevations in all or part of a groundwater basin		

- **Agricultural Users –** With the exception of the lands served by the EPUD, almost all lands are composed of agricultural users and are DEID customers. DEID has pre-existing relationships with these users.
- **Domestic Well Owners –** These are farmsteads located throughout the DEID GSA that are served by small domestic wells. In most cases they are also agricultural users and are considered by the DEID GSA through pre-existing relationships.
- **Public Water Systems –** There is one public water system within the DEID GSA, which is EPUD. EPUD became part of the DEID GSA through an executed MOU with DEID. EPUD operates wells within the GSA and has been fully considered as a cooperating entity.
- **Local Land Use Planning Agencies –** The DEID GSA includes lands within both the County of Tulare and County of Kern. The DEID GSA will work with both county governments on land use planning issues and concerns.
- **Federal Government –** DEID holds a water contract for surface waters from the Central Valley Project (**CVP**) with the U.S. Bureau of Reclamation (**USBR**). DEID interacts routinely with USBR personnel, and will continue to do so, as needed, through the development and implementation of the GSP.
- **Entities Monitoring and Reporting Groundwater Elevations –** DEID has monitored groundwater elevations since the 1950s as part of its water service contracts with the USBR. Additionally, DEID participates in regional reporting of groundwater elevations as a part of the California Statewide Groundwater Elevation Monitoring (**CASGEM**) program.

Stakeholder groups will be engaged through direct communication, district correspondence, email blasts with newsletters and other pertinent GSA/GSP information, and one-on-one and public outreach meetings held during Phase 2: GSP Preparation and Submission, Phase 3: GSP Review and Evaluation, and Phase 4: Implementation and Reporting.

C. Community Organizations, Public Agencies and Other Entities

There are many community organizations, public agencies and other entities throughout the DEID GSA boundary that will be utilized to reach out to stakeholders. These resources identified as avenues for outreach opportunities are listed in **Table II-3**. Additional community organizations, public agencies and entities may be added to the list as GSP development and implementation phases move forward, and additional connections are made between the DEID GSA and the communities within its boundary.

DEID GSA will communicate with these resources and request opportunities to give presentations at their respective meetings or distribute informational materials such as public meeting notices and newsletters to their membership/contact lists. If a Board of Director or Stakeholder Committee member is currently involved with, or has contacts within a community organization, public agency or other entity, they may want to present on behalf of the DEID GSA to streamline outreach efforts. Presentations and/or one-on-one discussions may include an overview on SGMA and why it is important to stakeholders, explanation and updates of the GSP development process including an awareness of the public review period, and education of GSP requirements during the implementation phase.

Table II-3. Community Organizations and Public Agencies

Community Organizations & Public Agencies	Stakeholder Group(s)	Website
Agriculture/Industry Organizations		
Almond Board of California	Agricultural Users, Domestic Well Owners	1150 Ninth Street, Suite 1500, Modesto, CA 95354 Telephone: (209) 549-8262 Email: staff@almondboard.com Website: http://www.almonds.com/
California Citrus Mutual	Agricultural Users, Domestic Well Owners	512 N. Kaweah Avenue, Exeter, CA 93221 Telephone: (559) 592-3790 Email: alyssa@cacitrusmutual.com; casey@cacitrusmutual.com Website: https://www.cacitrusmutual.com/
California Fresh Fruit Association *(formerly California Grape & Tree Fruit League)*	Agricultural Users, Domestic Well Owners	7647 N. Fresno Street, Suite 103, Fresno, CA 93720 Telephone: (559) 226-6330 Email: gradanovich@cafreshfruit.com; ilemay@cafreshfruit.com Website: https://www.cafreshfruit.org/
Kern County Farm Bureau	Agricultural Users, Domestic Well Owners	801 S. Mount Vernon Avenue, Bakersfield, CA 93307 Telephone: (661) 397-9635 Email: kcfb@kerncfb.com Website: https://kerncfb.com
California Pistachio Research Board	Agricultural Users, Domestic Well Owners	4938 E. Yale Avenue, Suite 102, Fresno, CA 93727 Telephone: (559) 255-6480 Email: admin@acpistachios.org; bobk@acpistachios.org Website: https://calpistachioresearch.org/

Community Organizations & Public Agencies	Stakeholder Group(s)	Website
Tulare County Farm Bureau	Agricultural Users, Domestic Well Owners	Post Office 748, Visalia, CA 93279 Telephone: (559) 732-8301 Email: tcfb@tulcofb.org Website: http://www.tulcofb.org/
University of California Cooperative Extension	Agricultural Users, Domestic Well Owners	4437-B S. Laspina Street, Tulare, CA 93274 Telephone: (559) 684-3311 Email: krday@ucanr.edu Website: http://cetulare.ucanr.edu/
Note: Other agriculture and industry groundwater users within the GSA boundary are currently customers of DEID and are already included in any communications between the GSA and stakeholders.		
Environmental Justice Organizations		
Self-Help Enterprises	DACs	Post Office Box 6520, Visalia, CA 93290 Telephone: (559) 802-1676 Email: mariah@selfhelpenterprises.org Website: https://www.selfhelpenterprises.org/
Irrigation Districts/Water Districts/Water Agencies & Commissions		
Delano-Earlimart Irrigation District	Agricultural Users, Domestic Well Owners, Entities monitoring/reporting groundwater elevations	14181 Avenue 24, Delano, CA 93215 Telephone: (661) 725-2526 Website: www.deid.org
Earlimart Public Utility District	Agricultural Users, Public Water Systems, DACs	396 N. Church Road #6, Earlimart, CA 93219 Telephone: (661) 849-2663
Tulare County Water Commission	Agricultural Users, Domestic Well Owners, Public Water Systems, DACs	2500 W. Burrel Avenue, Visalia, CA 93291 Telephone: (559) 636-5005 Email: dengland@co.tulare.ca.us Website: http://tularecounty.ca.gov/cao/index.cfm/water-commission/
Municipal Agencies		
County of Tulare – Board of Supervisors and County Management	Domestic Well Owners, DACs, Public Water Systems, Local Land Use Agencies	2800 W. Burrel Avenue, Visalia, CA 93291 Telephone: (559) 636-5000 Email: pvanderpoel@co.tulare.ca.us Website: http://tularecounty.ca.gov/county/
County of Kern – Board of Supervisors and County Management	Domestic Well Owners, DACs, Public Water Systems, Local Land Use Agencies	1115 Truxtun Avenue 5th Floor, Bakersfield, CA 93301 Telephone: (661) 868-3601 Email: board@kerncounty.com Website: https://www.kerncounty.com/bos/
Earlimart Town Council	Domestic Well Owners, DACs, Public Water Systems	Contact information not immediately available. Town Council meetings are held the first Thursday of each month.

Community Organizations & Public Agencies	Stakeholder Group(s)	Website
Tulare County Economic Development (Earlimart)	Agricultural Users, Domestic Well Owners, Public Water Systems, DACs	5961 S. Mooney Blvd., Visalia, CA 93277 Telephone: (559) 624-7000 Email: Economicdevelopment@co.tulare.ca.us; Website: http://tularecountyeconomicdevelopment.org/economicdevelopment/
School Districts		
Columbine School District	Agricultural Users, Domestic Well Owners, Public Water Systems, DACs	2240 Road 160, Delano, CA 93215 Telephone: (661) 725-8501 Email: tcolschool@aol.com Website: http://www.tcoe.org/Districts/Columbine.shtm
Earlimart School District	Agricultural Users, Domestic Well Owners, Public Water Systems, DACs	785 E. Center Avenue, Earlimart, CA 93219 Telephone: (661) 849-3386 Website: https://www.earlimart.org/
Service Clubs		
Earlimart Rotary Club	Agricultural Users, Domestic Well Owners, Public Water Systems, DACs	Email: earlimartrotaryclub@yahoo.com Website: http://www.rye5230.com/EarlimartRotary

D. Interested Persons List

SGMA Section 10723.4 "Maintenance of Interested Persons List" states: *"The groundwater sustainability agency shall establish and maintain a list of persons interested in receiving notices regarding plan preparation, meeting announcements, and availability of draft plans, maps, and other relevant documents. Any person may request, in writing, to be placed on the list of interested persons."* In compliance with the SGMA requirement, DEID GSA maintains a list of interested persons, and routinely distributes meeting notices and relevant information to the stakeholders who have requested to be included. As of June 2018, over 500 interested parties are included, and DEID GSA will continue to grow this contact list through the process discussed in **Section V.A.4**.

III. Audience Survey and Mapping

Through ongoing communications and public education and outreach efforts described in **Section V**, stakeholders will have the opportunity to have a voice in the GSP development process. This section discusses in detail the preliminary discussion with stakeholders, and the process for surveying stakeholders, which will be a valuable source in collecting feedback from the beneficial users who have vested interests in how the implementation of the GSP will affect their interests. Because the DEID GSA is a smaller GSA with efficient avenues of direct communication with stakeholders, a traditional stakeholder survey will not be conducted. Feedback and concerns will be solicited through direct correspondence and facilitated meeting discussions with stakeholders.

A. Stakeholder Survey

III.A.1 Identification of Stakeholder Issues, Interests and Challenges

Stakeholder issues, interests and anticipated challenges are routinely discussed in Board of Directors and Stakeholder Committee meetings, and through direct discussions with stakeholders within the GSA. Board of Directors and Stakeholder Committee members represent the interests of the stakeholders identified for the DEID GSA (**Table II-2**). The focus of these discussions has consisted of identifying the common groundwater uses within the GSA boundary, top concerning issues affecting groundwater, top concerning effects of SGMA on stakeholder interests within the GSA, current practices that could be curtailed to accomplish SGMA goals, and possible mitigation solutions. Results from these discussions will be taken into consideration during the development of the GSP and will be utilized as a basis for any printed communications and public meeting presentations held for DACs and other stakeholder groups.

Table III-1. Stakeholder Issues, Interests & Challenges

Stakeholder Issues, Interests & Challenges	
Top Concerning Issues of Groundwater Usage and SGMA:	• Subsidence caused from continued groundwater overdraft within the subbasin and its impact on the Friant-Kern Canal capacity • Potential local impacts of transferring groundwater credits across the subbasin • Economic impacts (loss of jobs, loss of tax revenue due to decrease in land values of fallowed ground) • New government regulations (i.e. SGMA and ILRP) and the impacts on investments and livelihoods • Water quantity (overdraft, recharge, overpumping) • Legal rights to groundwater • Water usage (surface water vs. groundwater) • Growing population and resulting increase demand for water (future water infrastructure improvements) • Decreased quality of food for California and the United States as a whole • Concerns that the agriculture industry will have to pay for SGMA implementation for all of the beneficial users of groundwater

B. "Lay of the Land" Overview

The purpose of a "Lay of the Land" overview is to map stakeholders' known issues, interests, challenges, strategies, and roles for engagement. Since DEID GSA is using a direct approach with engaging stakeholders, questions, input and feedback from the identified beneficial users will be used as a basis for the development of educational materials and key messages and talking points (**Section IV**). For specific groundwater-related topics where stakeholder feedback is needed, received input will be summarized in written format and presented to the technical team and Board of Directors as a "stakeholder consensus." This process has been utilized early in the GSP development phase for discussions regarding transitional pumping and groundwater credits and will continue to be followed for the duration of the development and public review phases.

III.B.1 Types of Stakeholders

Types of stakeholders with the greatest interests in the DEID GSA's GSP development and resulting implementation efforts to reach groundwater sustainability include agricultural users, domestic well owners, public water systems, local land use planning agencies, federal government, disadvantaged communities, and entities monitoring and reporting groundwater elevations in all or part of the groundwater basin (**Table II-2**). One-on-one conversations and collaborative discussions, and other outreach efforts will be scheduled with these stakeholder groups for comprehensive input through the GSP development and public review phases.

III.B.2 Stakeholder Key Interests Related to Groundwater

The key interests of stakeholders related to groundwater within the DEID GSA boundary include:

- Subsidence
- Localized impacts associated with transfer of groundwater credits
- Drinking water
- Domestic, everyday usage
- Agriculture – Farming
- Industrial – Packing houses, cold storage facilities

III.B.3 Key Documented Issues

Several key documented water resources issues have affected, or have the potential to affect, the key interests of stakeholders within the DEID GSA boundary. As key documented issues arise throughout GSP development, public review and implementation phases, they will be added to this section.

- **Well Depth to Groundwater Concerns within the Region –** During the recent drought, well depth to groundwater concerns became a forefront issue for agricultural users and domestic well owners and users, and users of public water systems in rural areas (including disadvantaged communities). Many agricultural users, domestic well owners, and small water systems serving low-income residents either developed new wells or had existing wells drilled to deeper depths.
- **Friant-Kern Canal Subsidence Issues –** In areas of Tulare and Kern counties, land subsidence along the Friant-Kern Canal (FKC) has increased within the past five years. The Visalia Times Delta published an article on August 18, 2017, "Sinking Friant-Kern Canal has $500M problem." According to the article, the canal has sunk two to three feet, mostly along a 25-mile stretch, and has already reduced the capacity of the key irrigation artery by 50 to 60 percent in some locations.

IV. Messages and Talking Points

Key messages and talking points will be broken down by phases and stakeholder groups, as different factors and issues will affect different groundwater interests. These messages and talking points are also prone to evolve as the GSP is developed, leaving this section open to being amended and finetuned as communication and engagement efforts move forward.

Monthly newsletters and fact sheets reflecting key messages will be developed and tailored for the specific GSP development, public review and implementation phases, and made available for public education efforts described in **Section V.A.3.2**.

IV.A.1 Key Messages & Talking Points

IV.A.1.1 Universal Key Messages

Universal key messages will be a consistent part of fact sheets and talking points throughout all phases of GSP development, public review and implementation.

- What is SGMA
- Common Uses of Groundwater
- What is the Role of a GSA
- DEID GSA's Goal – "To develop and implement a GSP that protects the ability to deliver surface water as needed and scheduled and continues the historic practice of implementing a comprehensive approach to maintain groundwater sustainability within the different management areas of the DEID GSA."

IV.A.1.2 Phase 1: GSA Formation and Coordination

The Phase 1: GSA Formation and Coordination has been completed. During this phase, key messages centered around official formation of the GSA and soliciting input from individuals who represent the interests of all beneficial usages and users of groundwater within the DEID GSA boundary.

IV.A.1.3 Phase 2: GSP Preparation and Submission

The key messages for the GSP development and submission phase will include:

- Universal key messages
- Timeline of the GSP process
- Upcoming public outreach opportunities
- Summaries of discussion topics held with stakeholders (i.e. Transitional Pumping)
- "What's Next"
- Direction on providing input/voicing concerns (outreach meetings, stakeholder input process)

IV.A.1.4 Phase 3: GSP Review and Evaluation

Once the draft of the DEID GSA's GSP is completed, key messages will be updated to focus on:

- Universal key messages

- Timeline of the GSP process
- Main points/overview of the GSP
- Process for public review of GSP draft and providing comments to the GSA
- "What's Next"
- Additional key messages may be added for this phase.

IV.A.1.5 Phase 4: Implementation and Reporting

Once the DEID GSA's GSP has been submitted to the DWR, the implementation phase will begin, and key messages will be developed to focus on implementation efforts that will affect the stakeholder groups, which will likely result in more than one fact sheet. As with the previous phases, universal key messages will be included.

IV.A.2 Likely Questions or Issues and Responses

The "Likely Questions or Issues" list in **Table IV-1** will evolve through the GSP development, public review and implementation phases. This table will be updated with additional questions, and responses will be updated as the DEID GSA's GSP is developed and answers are more clearly defined.

Table IV-1. Likely Questions or Issues

Likely Question or Issue	Response	Phase
"How will subsidence be addressed in the subbasin?"	This is expected to be discussed at the subbasin level to develop a coordinated response.	Phase 1, 2 & 3
"How will the impacts of transitional pumping on the FKC capacity be addressed?"	This is expected to be discussed at the subbasin level to develop a coordinated response.	Phase 1, 2 & 3
"Will the transfer of groundwater credits across the subbasin be allowed if it exacerbates current local groundwater conditions?"	This is expected to be discussed at the subbasin level to develop a coordinated response.	Phase 1, 2 & 3
"Will DEID GSA receive any credit for prior years' direct and in-lieu groundwater recharge contributions?"	That information has not been determined yet, as we are in the preliminary stages of GSP development.	Phase 1, 2 & 3
"Will I have to fallow any of my land?"	That information has not been determined yet, as we are in the preliminary stages of GSP development.	Phase 1, 2 & 3
"How can I voice my concerns about how SGMA is going to affect me?"	The public is invited to attend Stakeholder Committee and Board of Director meetings to be informed about the progress of GSA and GSP development. Public outreach meetings will be held in 2018 and 2019 for SGMA educational purposes and public review periods. Stakeholders may also contact the GSA directly to provide input and voice concerns regarding the development of the GSP.	Phase 2 & 3
"How much water are we going to be able to pump?"	That information has not been determined yet, as we are in the preliminary stages of GSP development.	Phase 1, 2 & 3

Likely Question or Issue	Response	Phase
"Are our ag pumps going to be metered? If so, who is going to pay for it?"	That information has not been determined yet, as we are in the preliminary stages of GSP development.	Phase 1, 2 & 3
"What types of management actions and/or projects can help improve groundwater conditions?"	That information has not been determined yet, as we are in the preliminary stages of GSP development.	Phase 1, 2 & 3
"Can groundwater management activities improve water challenges in DACs?"	That information has not been determined yet, as we are in the preliminary stages of GSP development.	Phase 1, 2 & 3

V. Venues for Engaging

There are a variety of opportunities, venues and methods for the DEID GSA to connect with and engage stakeholders throughout GSA formation, GSP development, GSP review, and GSP implementation phases. Stakeholders identified in **Section II** will be engaged in communication efforts as detailed below.

A. Direct Stakeholder Outreach

V.A.1 Collaboration Meetings with Active Stakeholders

As detailed in **Section II.A**, regular meetings with active stakeholder groups will be held during their regularly scheduled times. Members of the public and partners from other local agencies are encouraged to attend Board of Directors and Stakeholder Committee meetings to voice their thoughts and concerns throughout the GSP development, public review and implementation phases. Meeting notices and agendas are routinely distributed to the Interested Parties List and, once established on the DEID GSA's website.

Active stakeholder meetings are held:

- **Board of Directors Meetings –** Held periodically, as necessary, usually preceding the DEID Board of Directors meeting at 4 p.m. on the second Thursday of every month at the DEID office, located at 14181 Avenue 24 in Delano, California
- **Stakeholder Committee Meetings –** Held periodically at the DEID office, located at 14181 Avenue 24 in Delano, California; open to all stakeholders, interested parties and the public
- **Subbasin Coordination Committee Meetings –** Public meeting notices are distributed to the Interested Parties List when scheduled

V.A.2 Educational/Outreach Public Meetings

V.A.2.1 General Stakeholders

Educational/outreach public meetings will be scheduled for Phase 2: GSP Preparation and Submission, Phase 3: GSP Review and Evaluation, and Phase 4: Implementation and Reporting (see **Section VI** for the previous and proposed meeting schedule). These meetings will be important as the GSP will affect all groundwater users within the DEID GSA jurisdiction, and the impact of the SGMA implementation is significant. Stakeholders are already inquiring about the impacts of implementation, while many stakeholders are unaware of the SGMA. Spanish translation services will be available at educational/outreach public meetings.

- **Phase 2: GSP Preparation and Submission –** Public outreach meetings held during Phase 2 will give stakeholders and opportunity to be involved in the GSP development and share their thoughts and concerns. Presentations and discussions will be geared towards an overview of SGMA, overview of the process of GSP development, public review and implementation (what stakeholders can expect), and question/answer sessions. Potential venues within the DEID GSA are listed in **Table V-1**.
- **Phase 3: GSP Review and Evaluation –** During Phase 3, the draft of the DEID GSA GSP will be distributed for public review. During the public review period, public meetings will be held at the same venues as during Phase 2 (**Table V-1**). The presentations and discussions will include an

overview of the GSP and will give stakeholders the opportunity to comment on the draft in a public forum.

- **Phase 4: Implementation & Reporting –** Public meetings will be crucial during Phase 4 and will likely be ongoing to educate stakeholders on implementation requirements and guide them through the steps to compliance and groundwater sustainability.

V.A.2.2 Community Organizations & Others

Community organizations, public agencies and other entities are listed in **Table II-3**, and will be contacted to schedule opportunities to present or facilitate discussions with their members throughout the GSP development phase. Presentations and discussions will include an overview on SGMA and why it is important to them, an explanation of the GSP development process, including an awareness of the public review period. In addition, the DEID GSA will work with these organizations and agencies to distribute newsletters, public outreach meeting notices, and other educational information via email distribution, social media posts, and printed materials.

V.A.2.3 Meeting Notification Process

Stakeholders will be invited to public meetings through direct mail and email blasts by obtaining mailing and email addresses of property owners within the DEID GSA boundary through the DEID and EPUD customer lists. For direct mailings, postcards are most cost effective for mailing and can later be used to expedite meeting check-in and track attendance, if required during the implementation phases. Local community organizations, such as the Tulare County Farm Bureau and Kern County Farm Bureau, will be asked to distribute meeting notices via email blasts to their membership/contact lists.

V.A.2.4 Ideal Venues

Venue locations will need to have a capacity to hold large audiences. The location list in **Table V-1** will be updated with additional information and other venue possibilities as meetings are scheduled, and venue availability and rental price is confirmed. DEID GSA will work with disadvantaged communities and potentially community organizations to hold outreach meetings at convenient times and locations within the DACs.

Table V-1. Potential Public Meeting Venues & Locations

Venue	Location	Contact Information
Alila School Cafeteria	Earlimart	850 W. Washington Avenue, Earlimart, CA 93291 Telephone: (661) 849-4202 Website: http://www.earlimart.org/o/alila-school
Columbine School Cafeteria	Earlimart	2240 Road 160, Delano, CA 93215 Telephone: (661) 725-8501 Website: http://www.tcoe.org/Districts/Columbine.shtm
Earlimart Elementary Cafeteria	Earlimart	192 S. Church Road, Earlimart, CA 93219 Telephone: (661) 849-2651 Website: http://www.earlimart.org/o/elementary-school
Earlimart Memorial Building	Earlimart	712 E. Washington, Earlimart, CA 93219
Earlimart Middle School Gym or Cafeteria	Earlimart	599 E. Sutter Avenue, Earlimart, CA 93219 Telephone: (661) 849-2611 Website: http://www.earlimart.org/o/middle-school

V.A.3 Printed Communication

V.A.3.1 Branding

Branding is defined as the process of creating distinctive and durable perceptions in the minds of a target audience. A brand is a specific look – a persistent, consistent, unique identity for an organization, making it easy for an audience to identify an organization through its consistent and frequent use of branding. The DEID GSA will incorporate a DEID GSA brand on all forms of communication and engagement with the public, which includes consistent usage of the official logo, fonts and colors.

V.A.3.2 Printed Materials

Printed materials will incorporate the visual imagery established through branding efforts and will be tailored for specific means of communication throughout the phases of GSP development, public review and implementation. All printed materials will be translated into Spanish.

- **Newsletter –** Monthly or bi-monthly newsletters will be created during the GSP development, public review, and implementations phase to inform stakeholders of compliance requirements and groundwater sustainability updates, opportunities and programs within the DEID GSA and Tule Subbasin. The newsletter will be distributed to those on the Interested Parties List and made available in public locations such as the school sites within the Columbine and Earlimart school districts and EPUD and DEID offices.
- **Fact Sheets, Fliers, Post Cards –** Fact sheets, fliers or post cards will be developed, as needed. Information may include meeting notices to mail and post within the Delano and Earlimart communities, or general SGMA information updated with the key messages for each of the GSP phases. These materials will be available for download on the DEID GSA's website, distributed at public meetings and community organizations/entities meetings, distributed door-to-door if necessary, and emailed to the Interested Parties List and other organizations' email distribution lists.
- **Letter Correspondence –** When letter correspondence is necessary, particularly during the public review and implementation phases, letters will be distributed via email or direct mail. Letters will include pertinent facts and explanations that need to be communicated to stakeholders.
- **Presentation Materials –** Power Point presentations will be utilized at educational/outreach public meetings. If a Power Point isn't possible to display for a meeting, display boards printed at 24-inch x 36-inch or larger in size will be used and set up on easels. Handouts of presentations and smaller versions of display boards can be distributed to stakeholders in attendance and can also be emailed to the Interested Parties list and posted on DEID GSA's website for access by stakeholders as a recap of the meeting.
- **Other Printed Materials –** Other printed materials may be needed to be developed during the GSP development, public review and implementation phases.

V.A.4 Digital Communication

Digital communication outlets will be a significant mode of communication through the GSP development, public review and implementation phases.

- **Website –** Public meeting notices and agendas of the Board of Directors meetings are posted on the DEID GSA's website. This website will serve as an integral resource for stakeholders within the DEID GSA boundary. Electronic files of newsletters, presentations, fact sheets/fliers/postcards, and other educational resources will be accessible via the website in both English and Spanish translations. This will serve as a way for stakeholders to easily educate themselves on the GSP process and phases.

- **Email Distribution –** As required by SGMA 10723.4 "Maintenance of Interested Persons List," DEID GSA maintains a contact list and regularly distribute emails to those who have expressed interest in the GSA's progress. These email blasts consist of meeting notices and other documents that are pertinent to the DEID GSA and stakeholder communication efforts. This process will continue.

  Email blasts with newsletter links, meeting notices, public review notices, and other crucial information will be coordinated with community organizations and stakeholder groups by utilizing their distribution lists. Examples of these organizations are DEID, EPUD, and school districts within the DEID GSA boundary. A complete working list of organizations that will be contacted are listed in **Table II-3**.

V.A.5 Media Coverage

There is a lack of specific news sources representing the communities and stakeholders within the DEID GSA boundary, but the GSA will be responsive to any requests received from media outlets regarding GSP development and SGMA implementation.

VI. Implementation Timeline

The timeline for implementing the DEID GSA's Communication & Engagement Plan will be broken down by phase:

- Phase 1: GSA Formation and Coordination – 2015 through 2017 (**Figure VI-1**)
- Phase 2: GSP Preparation and Submission – 2017 through 2019 (**Figure VI-2**)
- Phase 3: GSP Review and Evaluation – 2019 through 2020 (**Figure VI-2**)
- Phase 4: Implementation and Reporting – 2020 and ongoing

The timeline is tentative and subject to change with the progression of the GSP development, public review and implementation phases. The public review phase will be in accordance with SGMA's public review standards and the implementation timeline will reflect that timeframe once a definitive timeline has been established with the completion of the GSP draft.

September 2014: Sustainable Groundwater Management Act (SGMA) signed into law.

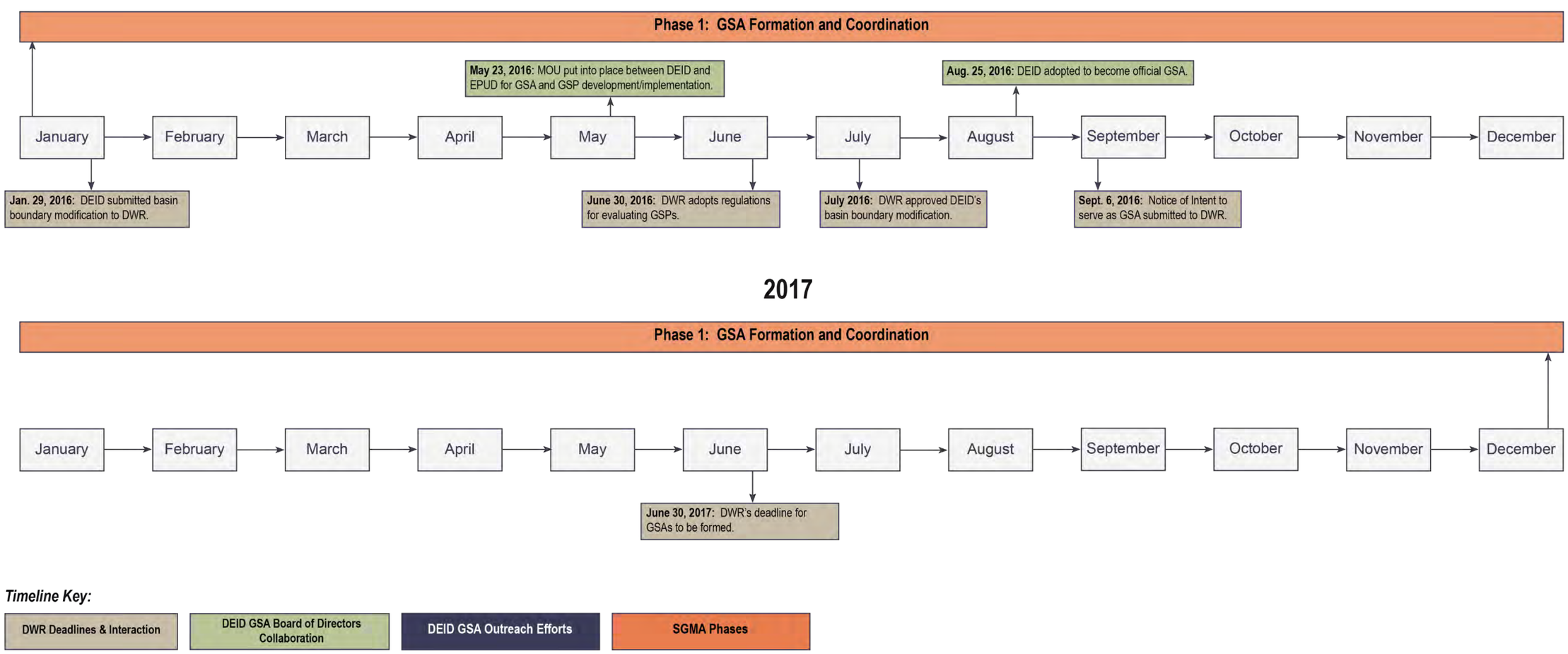

Figure VI-1. DEID GSA Communication & Engagement Timeline – Phase 1: GSA Formation and Coordination

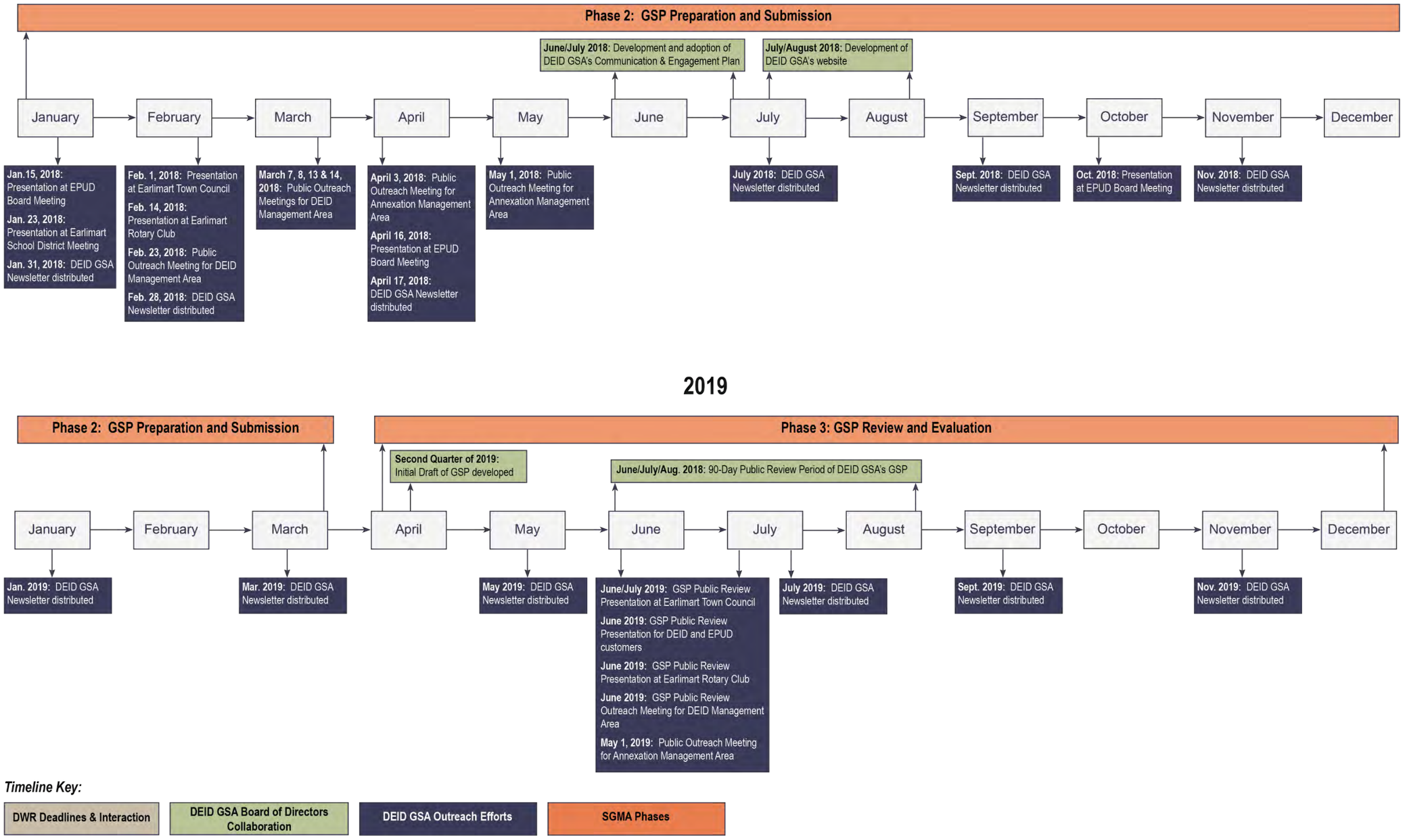

Figure VI-2. DEID Communication & Engagement Timeline – Phase 2: GSP Preparation and Submission, and Phase 3: GSP Review and Evaluation

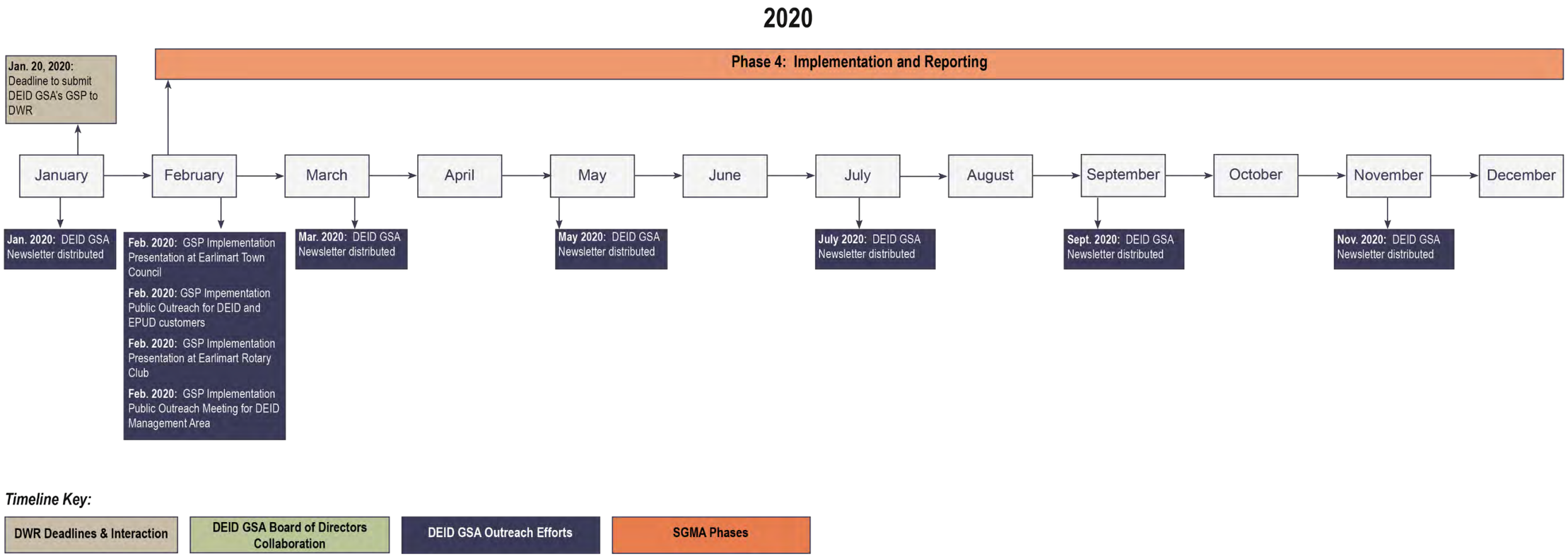

Figure VI-3. DEID Communication & Engagement Timeline – Phase 4: Implementation and Reporting

VII. Evaluation and Assessment

A. Evaluation and Assessment Process

Having an established "checks and balances" process is essential in keeping public outreach goals on target. SGMA and the resulting GSP will affect everyone within the subbasin, and outreach efforts must be all-encompassing. To evaluate and assess how outreach efforts are performing as compared to the goals and objectives detailed in the Communication & Engagement Plan, the DEID GSA has established a process:

VII.A.1 Outreach Reports

GSA management will provide periodic updates to the Board of Directors. These updates will include, but will not be limited to:

- Status of upcoming outreach events, and recaps of past outreach events
- Milestone updates/revisions
- Review/input and approval of printed materials (fliers, fact sheets, talking points, etc.)
- Results and status updates of stakeholder discussions

VII.A.2 Milestone Review

Once per quarter or as determined, the GSA management will facilitate a more in-depth discussion with the Board of Directors for feedback regarding communication and engagement efforts for the stakeholder groups they specifically represent. These discussions will cover:

- What has worked well?
- What hasn't worked as planned or could be finetuned for more effective results?
- Lessons learned
- Outreach needs that should be added to the implementation timeline
- Next steps

VIII. DEID GSA Completed Outreach Tracking

The spreadsheet on the following pages provides a detailed list of public outreach efforts completed by the DEID GSA. The spreadsheet includes:

- Stakeholder Meetings – Date, number in attendance, and target audience
- Public Presentations – Date, number in attendance, and organization
- Monthly Newsletter Distribution

2015-2016

	January		February		March		April		May		June	
	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending
notices/newslette												
email version											6/21/2016	
print version-englis											distributed[4]	

	July		August		September		October		November		December	
	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending
Stakeholder meetings												
DEID GSA	7/21/2016	61										
notices/newslette												
all stakeholders-email	7/18/2016				9/20/2016				1/20/2015			
all stakeholders-print-englis	distributed[4]				distributed[3]				distributed[3]			

*distribution points: Earlimart school sites; Columbine school site; EPUD office; DEID office.

DEID GSA PUBLIC OUTREACH PROGRAM - 2017

	January		February		March		April		May		June	
	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending
Stakeholder meetings												
DEID GSA					3/15/2017	6	4/18/2017	12	5/25/2017	18		
newsletter												
email version					3/8/2017		4/7/2017		5/12/17-5/23/17		6/28/2017	
print version-english					distributed*		distributed*		distributed*		distributed*	
print version-spanis					distributed'		distributed'		distributed'		distributed'	

	July		August		September		October		November		December	
	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending
Stakeholder meetings												
DEID GSA	7/21/2017	not recorded	8/24/2017	35	9/22/2017	23			11/13/2017	29		
newsletter												
all stakeholders-email	7/17/2017		8/16/2017		9/14/2017		10/27/2017				12/21/17-12/28/17	
all stakeholders-print-english	distributed*		distributed*		distributed*		distributed*				distributed*	
all stakeholders-print-spanis	distributed'		distributed'		distributed'		distributed'					

*distribution points: Earlimart school sites; Columbine school site; EPUD office; DEID office.

DEID GSA PUBLIC OUTREACH PROGRAM - 2018

	January		February		March		April		May		June	
	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending
Stakeholder meetings												
DEID Management Area			2/23/2018	33	3/7/2018	1						
					3/8/2018	3						
					3/13/2018	17						
					3/14/2018	15						
Annexation Mgmt Area							4/3/2018	9	5/1/2018	4*		
Public presentation										* wth annex area reps		
EPUD	1/15/2018	10					4/16/2018	6				
Earlimart Town Council			2/1/2018	15					5/10/2018	6		
Earlimart School District	1/23/2018	50+										
Columbine School District											6/13/2018	3
Earlimart Rotary Clut			2/14/2018	9								
newsletter												
email version	1/31/2018		2/28/2018				4/17/2018				6/25/2018	
print version-english	distributed*		distributed*				distributed*				distributed*	
print version-spanis	distributed'		distributed'				distributed'				distributed'	

	July		August		September		October		November		December	
	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending
Stakeholder meetings												
DEID Management Area			8/29/2018	28					11/14/2018	6		
			8/31/2018	4					11/13/2018	26		
									11/20/2018	20		
Annexation Mgmt Area	7/30/2018	5									12/4/2018	11
											12/11/2018	10
											12/21/2018	7
Public presentation												
newsletter												
all stakeholders-email			8/22/2018						11/17/2018		12/21/2018	
all stakeholders-print-english			distributed*						distributed*		distributed*	
all stakeholders-print-spanish			distributed*						distributed*		distributed*	
annexed area-email	7/30/2018								11/20/2018			

*distribution points: Earlimart school sites; Columbine school site; EPUD office; DEID office.

DEID GSA PUBLIC OUTREACH PROGRAM - 2019

	January		February		March		April		May		June	
Stakeholder meetings	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending
DEID Management Area					3/1/2019	6	4/17/2019	13	5/16/2019	17	6/10/2019	4
											6/19/2019	8
Western Management Area					3/11/2019	8	4/23/2019	11				
EPUD Management Area												
RCSD Management Area	1/30/2019	7	2/14/2019	5			4/9/2019	5				
newsletter												
email version					3/8/2019				5/8/2019			
print version-english					distributed*				distributed*			
print version-spanis					distributed*				distributed*			

	July		August		September		October		November		December	
Stakeholder meetings	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending
DEID Management Area									11/8/2019			
Western Management Area			8/29/2019	7	9/5/2019	4			11/1/2019	9		
EPUD Management Area			8/19/2019	13					11/7/2019	1		
RCSD Management Area									11/7/2019	3		
newsletter												
email version	7/12/2019						10/1/2019		11/1/2019			
print version-english	distributed*						distributed*					
print version-spanis	upon request						upon request					

*distribution points: Earlimart school sites; Columbine school site; EPUD office; DEID office.

DEID GSA PUBLIC OUTREACH PROGRAM - 2020

	January		February		March		April		May		June	
Stakeholder meetings	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending
DEID Management Area												
Western Management Area												
EPUD Management Area												
RCSD Management Area												
All stakeholders	1/7/2020	14										
	1/27/2020	15										
newsletter												
email version	1/21/2020											
print version-english	DEID lobby											
print version-spanish	upon request											

	July		August		September		October		November		December	
Stakeholder meetings	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending	date	# attending
DEID Management Area												
Western Management Area												
EPUD Management Area												
RCSD Management Area												
All stakeholders												
newsletter												
email version												
print version-english												
print version-spanish												

*distribution points: Earlimart school sites; Columbine school site; EPUD office; DEID office.

**DEID lobby only

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Appendix H Cross-Section C-C’

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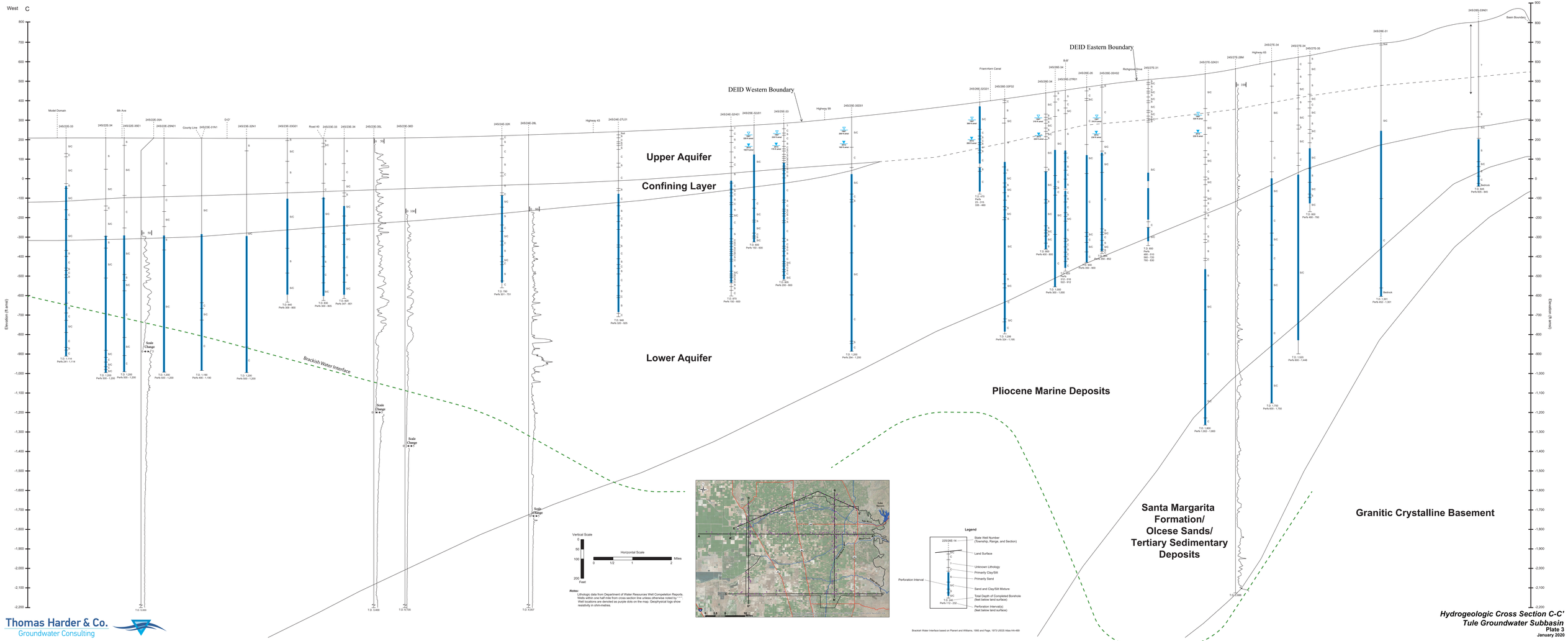

Thomas Harder & Co.
Groundwater Consulting

Hydrogeologic Cross Section C-C′
Tule Groundwater Subbasin
Plate 3
January 2020

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Appendix I Letter from Friant Water Authority Dated May 28, 2019

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Friant
WATER AUTHORITY

854 N. Harvard Ave.
Lindsay, CA 93247

1121 L St., Ste. 610
Sacramento, CA 95814

(559) 562-6305

friantwater.org

May 28, 2019

Mr. Eric Quinley
Delano-Earlimart GSA
14181 Avenue 24
Delano, CA 93215

RE: Notice of Requirement that Groundwater Sustainability Plan Identify the Effects of Subsidence on the Friant-Kern Canal Due to Groundwater Pumping as an "Undesirable Result" and to Implement Measures to Avoid and Address such Undesirable Result

Dear Mr.Quinley:

I write at the direction of the Board of Directors of the Friant Water Authority regarding your agency's efforts to develop a groundwater sustainability plan (GSP) for your basin as mandated by California's landmark law – the Sustainable Groundwater Management Act (SGMA). As the operator of the Friant-Kern Canal on behalf of the United States Bureau of Reclamation, which facility conveys surface water to municipal and/or agricultural users in your basin and provides opportunities for groundwater recharge, SGMA requires that your agency consider the interests of FWA in formulating your GSP. (Water Code § 10723.2.)

As a preliminary matter, to the extent that your agency has not already done so, I request that FWA be added to your list of "interested persons" and that we receive notice of your board meetings, the release of the draft GSP for public comment, and any public hearings prior to the adoption of the GSP. Our contact information for such notice is at the end of this letter.

FWA, many of whose member agencies are also members of groundwater sustainability agencies (GSAs), acknowledges the challenges that SGMA presents in terms of developing a GSP that halts overdraft and brings your basin into a balanced level of pumping and recharge. Nevertheless, as plans move forward in our region, the preliminary studies and data being developed by GSAs confirm that overdraft in basins through which the Friant-Kern Canal crosses has been the primary source of land subsidence, which in turn has caused the Canal to subside more than 12 feet in certain areas – including several feet in just the past few years alone. As a result, the Canal, because of its "gravity" design, has had its conveyance capacity reduced to 40% of its original capacity (from 4,000 to 1,650 cubic-feet per second). The constriction in the Canal caused by subsidence now precludes the delivery of up to several hundred thousand acre-feet of water to Friant Division Contractors below the constrictions in wetter years, which in turn, among other things, threatens the

continued viability of tens of thousands of acres of Central Valley farmland served by our contractors.

Under SGMA, your agency's GSP must include a description of "undesirable results" applicable to the basin, which must include the following:

> *(1) The cause of groundwater conditions occurring throughout the basin that would lead to or has led to undesirable results based on information described in the basin setting, and other data or models as appropriate.*
>
> *(2) The criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.*
>
> *(3) Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results.* (23 California Code of Regulations (CCR) § 354.26.)

FWA understands that defining the conditions that are considered significant and unreasonable undesirable results is a difficult task, and that stakeholder input is critical in this process. As such, we respectfully request the opportunity to meet with your staff and other technical advisors and consultants to discuss what subsidence conditions FWA might consider to be significant and unreasonable, and to collaboratively discuss opportunities that might satisfactorily mitigate future anticipated subsidence.

As your agency may be aware, the FWA Board recently gave preliminary direction to study, develop plans, and pursue permitting for a portion of an overall project referred to as the Friant-Kern Canal Capacity Correction Project that is intended to restore the capacity of Canal that has been lost due to subsidence by developing new parallel canal segments in the areas of the Canal most impacted. FWA's engineering consultant, Stantec, currently estimates the costs of the Project are in the range of $195 million to $429 million. This estimate does not, at present, include detailed design or construction work to address potential future subsidence of the Canal.

While SGMA may permit for a period of up to 20 years to bring a basin into balance, we firmly believe that the continuation of subsidence at the rates historically experienced, particularly if unmitigated, is unacceptable and look forward to identifying feasible solutions that allow your agency to meet its sustainability goal while avoiding or mitigating undesirable subsidence impacts on the Friant-Kern Canal.

On behalf of FWA, I appreciate your agency's consideration of these initial comments and we look forward to continued dialogue and participation as a stakeholder as the GSP is developed.

Sincerely

Jason Philips,
Chief Executive Officer

Contact information for GSA Notices:

Friant Water Authority
854 N. Harvard Ave.
Lindsay, CA 93247
Attention: Douglas DeFlitch, Chief Operating Officer
gsa@friantwater.org

Email distribution:

ddeflitch@friantwater.org
jpayne@friantwater.org
jamaral@fraintwater.org
ddavis@bwslaw.com
gsa@friantwater.org

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Appendix J Technical Report from Thomas Harder and Associates: Analysis of the Relative Cause of Future Subsidence Along the Friant-Kern Canal within the Tule Subbasin

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Technical Memorandum

To:	Tule Subbasin Technical Advisory Committee c/o Mr. R.L. Schafer, Coordinator
From:	Thomas Harder, P.G., C.HG. Thomas Harder & Co.
Date:	3-Jan-20
Re:	Analysis of the Relative Cause of Future Predicted Land Subsidence along the Friant-Kern Canal within the Tule Subbasin

1 Introduction

This technical memorandum (TM) summarizes an analysis of the relative cause of future predicted land subsidence along a section of the Friant-Kern Canal (FKC) that lies within the eastern portion of the Tule Subbasin in Tulare County, California (see Figure 1). Historical land subsidence along a section of the FKC in the Tule Subbasin has resulted in a depression in the canal, which restricts the volume of water the Friant Water Authority (FWA) can deliver downstream of the affected area. The FWA is in the process of preparing design plans to repair the damage to the canal from historical land subsidence. However, additional land subsidence is predicted to occur in the future as groundwater pumping rates in the Tule Subbasin are transitioned from overdraft conditions to sustainable conditions.

The Tule Subbasin Technical Advisory Committee (TAC) desires to coordinate future groundwater management plans within the subbasin with on-going efforts by the FWA to repair the canal and restore its original flow capacity. A primary planned management action for Groundwater Sustainability Agencies (GSAs) within the Tule Subbasin whose water supply portfolio is not sustainable is the gradual reduction in groundwater pumping after 2020 to achieve a balance of recharge and discharge (i.e. sustainability) by 2040, in accordance with the Sustainable Groundwater Management Act (SGMA). As the subbasin is currently in overdraft resulting in declining groundwater levels which contribute to land subsidence, any delay in implementing the pumping reduction management action risks additional land subsidence beneath the canal, which will need to be accounted for by the FWA and their engineering design team in implementing the canal repair. The cost of the repair is related to the amount of land subsidence they need to address.

1.1 Purpose and Scope

Of the Tule Subbasin GSAs that need to reduce groundwater production in order to be sustainable, all are planning to reduce pumping gradually into the future (i.e. transitional pumping) to allow growers to plan and adjust to the new pumping requirements. Accordingly, the delay in reaching sustainable pumping levels is anticipated to result in continued declining groundwater levels and land subsidence beneath the FKC during the transitional pumping period between 2020 and 2040. The purpose of the analysis presented herein is to predict the relative contribution to land subsidence beneath the FKC between the various agencies and growers in the Tule Subbasin for the transitional pumping period between 2020 and 2040.

Agencies and white areas are represented in the groundwater flow model with distinct Water Budget Areas (WBAs). Each WBA has a unique water budget, including consumptive use volumes and surface water deliveries. WBAs in different GSAs also have different transitional pumping schedules. The scope of work to address the objective included using the existing Tule Subbasin Groundwater Flow Model to run various predictive scenarios to isolate the relative contribution of each WBA on land subsidence at the FKC.

The analysis separately accounts for potential land subsidence between 2020 and 2040 that can be attributed to "legacy" effects resulting from the ongoing equilibration of historical groundwater depressions in the western subbasin area with higher groundwater levels in the southeastern portion of the subbasin, as described in TH&Co (2019a)[1].

2 Analysis Methodology – Groundwater Flow model

2.1 Groundwater Flow Model

Predicted future land subsidence in the Tule Subbasin was analyzed using a calibrated numerical groundwater flow model (GFM). The GFM used for the analysis was previously developed to evaluate the sustainable yield, groundwater level conditions, and land subsidence for the Tule Subbasin in support of compliance with SGMA, as described in TH&Co (2019b)[2]. The GFM was developed using MODFLOW, a block-centered, finite difference groundwater flow modeling code developed by the United States Geological Survey (USGS) for simulating groundwater flow. The GFM also includes the subsidence package to estimate land subsidence based on groundwater levels and aquifer properties (e.g. elastic and inelastic storage). The GFM is calibrated to within industry standards to historical groundwater levels and land subsidence measurements.

[1] TH&Co, 2019a. Draft Detailed Analysis of Land Subsidence Along the Friant-Kern Canal in the Tule Subbasin. Prepared for the Tule Subbasin Technical Advisory Committee. Dated May 24, 2019.
[2] TH&Co, 2019b. Groundwater Flow Model of the Tule Subbasin. Prepared for the Tule Subbasin Technical Advisory Committee.

2.2 Water Budget Areas

The GFM utilizes the Farm Process Package (FMP) of MODFLOW to account for the application, consumptive use, and movement of water at the land surface in irrigated agricultural areas. The surface water budget is coupled with the groundwater flow system in the sense that the applied water demand of any given agricultural area that is not met by surface water supplies (i.e., imported water, diverted streamflow, or precipitation) is assumed to be supplied by pumped groundwater. In the Farm Process Package, agricultural areas can be subdivided to account for differences in crop type, e.g., irrigation efficiency, and available surface water supply, among others. To account for these unique water budget areas, the FMP for the Tule Subbasin model was divided into agricultural water budget areas (WBAs).

The following WBAs were analyzed (see Figure 1):

- WBA 2 – City of Porterville area
- WBA 3 – Porterville Irrigation District area
- WBA 4 – Vandalia and Tea Pot Dome Water Districts area
- WBA 5 – Eastern Tule White Area North
- WBA 6 – Saucelito Irrigation District area
- WBA 7 – Terra Bella Irrigation District area
- WBA 8 – Eastern Tule White Area South
- WBA 9 – Kern-Tulare Water District area
- WBA 10 – Lower Tule River Irrigation District area
- WBA 11 – Western Pixley Irrigation District area (within the mapped extent of the Corcoran Clay)
- WBA 12 – Delano-Earlimart Irrigation District area
- WBA 13 - Delano-Earlimart Irrigation District GSA White Lands area
- WBA 14 – Angiola Water District area
- WBA 15 – Tri-County GSA White Lands east
- WBA 16 – Tri-County GSA White Lands west
- WBA 17 – Tri-County GSA White Lands north
- WBA 18 – Alpaugh Irrigation District GSA area
- WBA 20 – Lower Tule River Irrigation District GSA White Lands area
- WBA 34 – Eastern Pixley Irrigation District area (outside the mapped extent of the Corcoran Clay)

It is noted that the areal domain of the GFM extends outside the Tule Subbasin. WBAs outside the Tule Subbasin but within the model domain were not included in the analysis, which is why not all WBAs are represented in the above list.

2.3 Transitional Pumping

A planned reduction in crop consumptive use is necessary to achieve sustainability by 2040. The reduction in crop consumptive use is directly correlated to a reduction in irrigated water demand and groundwater pumping. Each GSA provided a schedule to reduce consumptive use, starting in 2020, in order to achieve sustainable groundwater pumping by 2040. As the availability of surface water supplies from imported water and diverted streamflow is different between the GSAs, each GSA established a different consumptive use reduction, or "transitional pumping," schedule (see TH&Co, 2019c) [3]. This transitional pumping was the subject of our analysis.

3 Analysis Methodology – Relative Cause

Using the WBAs listed above, the analytical process was as follows:

1. Using the existing transitional pumping schedules for the period from 2020 to 2040 as presented in TH&Co (2019c), TH&Co analyzed cumulative model-predicted land subsidence along the canal from 2020 through 2040, as shown on Figure 2. This analysis is considered the "All Transitional Pumping" run.

2. As a separate "bookend" analysis, TH&Co assigned 2040 sustainable water budget conditions (i.e., sustainable groundwater pumping under projected recharge and available surface water deliveries) to all WBAs starting in 2020 with no transitional pumping. This analysis is considered the "No Transitional Pumping" run. Model-predicted land subsidence along the canal as a result of this simulation is shown on Figure 3.

3. In the first set of predictive model analysis scenarios, the water budget for one WBA was set at sustainable (i.e. 2040) conditions in 2020 while the water budgets for all other WBAs reflected their transitional pumping schedules from 2020 to 2040. This was repeated for each of the 19 WBAs analyzed. This set of runs is referred to herein as the "All Transitional Pumping Except One" scenarios.

4. The second set of model runs was established as the inverse of the first set, whereby the water budget for one WBA was set to reflect its transitional pumping schedule from 2020 to 2040 while the water budgets for all other WBAs reflected sustainable conditions from 2020 to 2040. This was repeated for each of the 19 WBAs analyzed. This set of scenarios is referred to herein as the "No Transitional Pumping Except One" scenarios.

5. To assess the relative contribution of land subsidence along the FKC for each scenario, TH&Co calculated the cross-sectional area (i.e. length times height) of projected land

[3] TH&Co, 2019c. Draft Tule Subbasin Setting. Prepared for the Tule Subbasin Technical Advisory Committee.

subsidence along the segment of the canal that is within the Tule Subbasin. This was conducted for each of the following conditions:

a. The All Transitional Pumping run (see Figure 4).

b. The No Transitional Pumping run (see Figure 5).

c. The difference in cross-sectional area along the FKC between the All Transitional Pumping run and the individual WBA with no transitional pumping. This difference provided one estimate of the land subsidence associated with transitional pumping within that WBA (see Figure 6 for an example).

d. The difference in cross-sectional area along the FKC between the No Transitional Pumping run and the individual WBA with transitional pumping. This difference provided a second estimate of the land subsidence associated with transitional pumping within that WBA

e. The relative percent contribution to land subsidence at the FKC from each WBA was assessed by dividing the individual contributions, as described above, by the sum of the individual contributions to land subsidence.

It is noted that WBA 12, which corresponds to the Delano-Earlimart Irrigation District (DEID) area, is not projected to require transitional pumping and therefore is excluded from the analysis.

4 Findings

Results of the All Transitional Pumping Except One model analysis scenarios show that WBAs 5, 6, 8, 11, and 34 have the greatest impact on land subsidence along the canal (see Figure 7). Results of the No Transitional Pumping Except One analysis scenarios show that WBAs 5, 8, and 11 have the greatest impact subsidence along the canal (see Figure 8). These WBAs generally correspond to agencies or agricultural areas that are close to the canal and have limited access to surface water supplies.

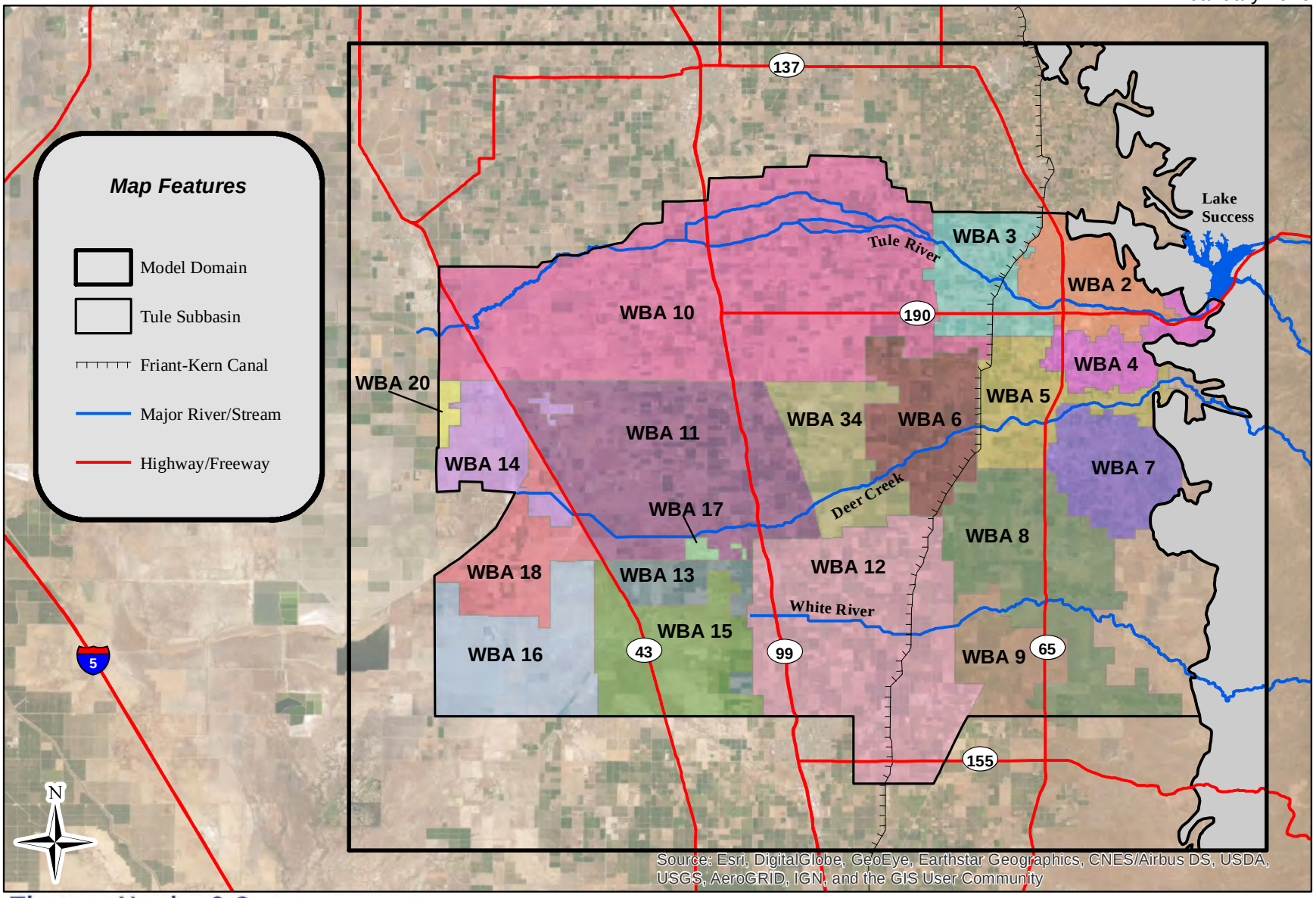
The relative contribution to land subsidence along the Friant-Kern Canal for each set of model scenarios is also represented in the pie chart on Figure 9. The average of the two sets of scenarios is shown in the large pie. The four WBAs that have the greatest impact on land subsidence are as follows:

1. WBA 8 (Eastern Tule White Area South); 56 percent
2. WBA 5 (Eastern Tule White Area North); 20 percent
3. WBA 34 (Eastern Pixley Irrigation District); 6 percent
4. WBA 11 (Western Pixley Irrigation District); 6 percent

5. WBA 6 (Saucelito Irrigation District); 5 percent

Relative contribution to land subsidence at the Friant-Kern Canal from the remaining WBAs accounts for the remaining 6 percent.

Tule Subbasin TAC



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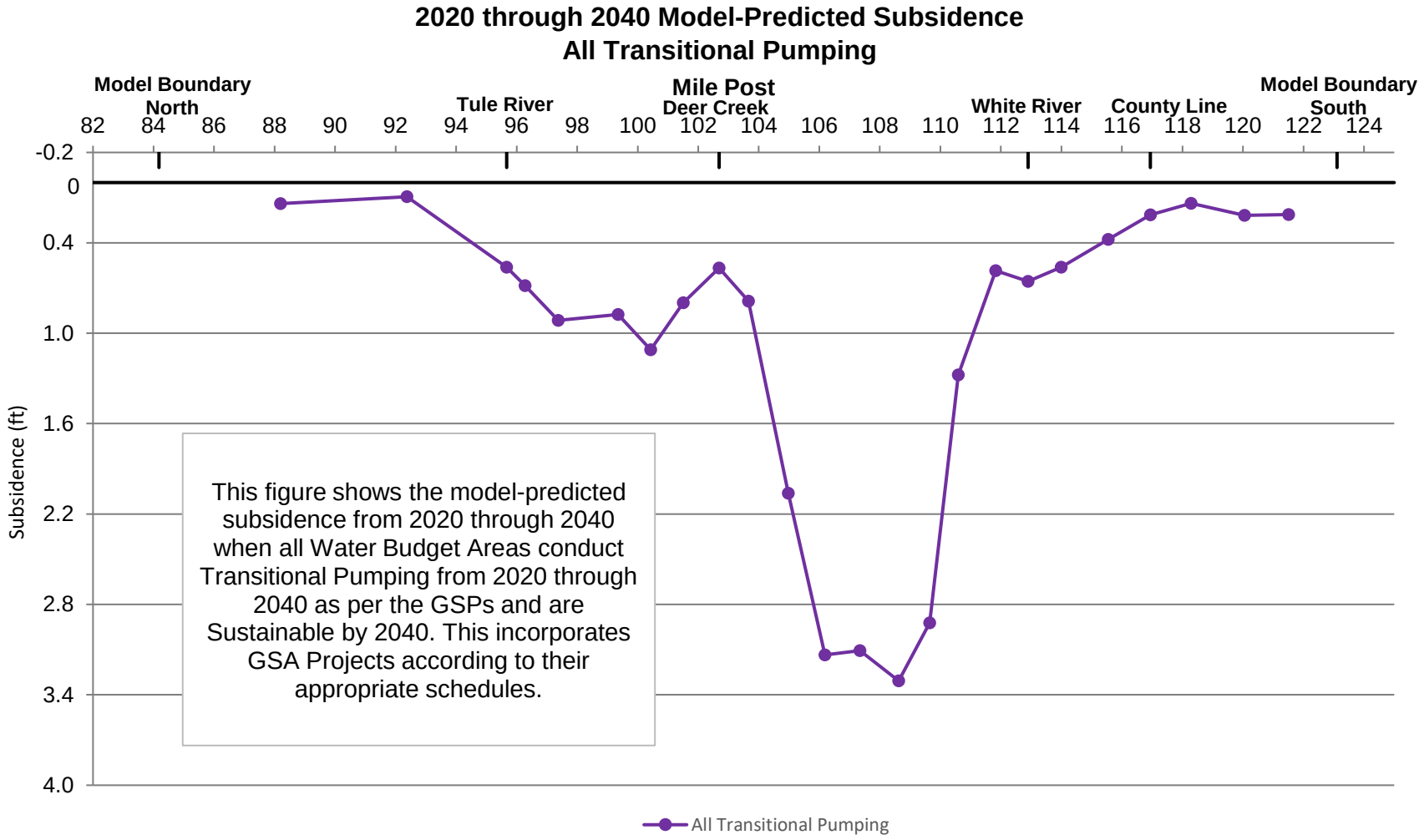
Groundwater Consulting

Water Budget Areas

Figure 1

Tule Subbasin TAC
Analysis of the Relative Cause of Future Predicted Land Subsidence along the Friant-Kern Canal

Figure 2



Note: Subsidence from October 1, 2019 through September 30, 2040.

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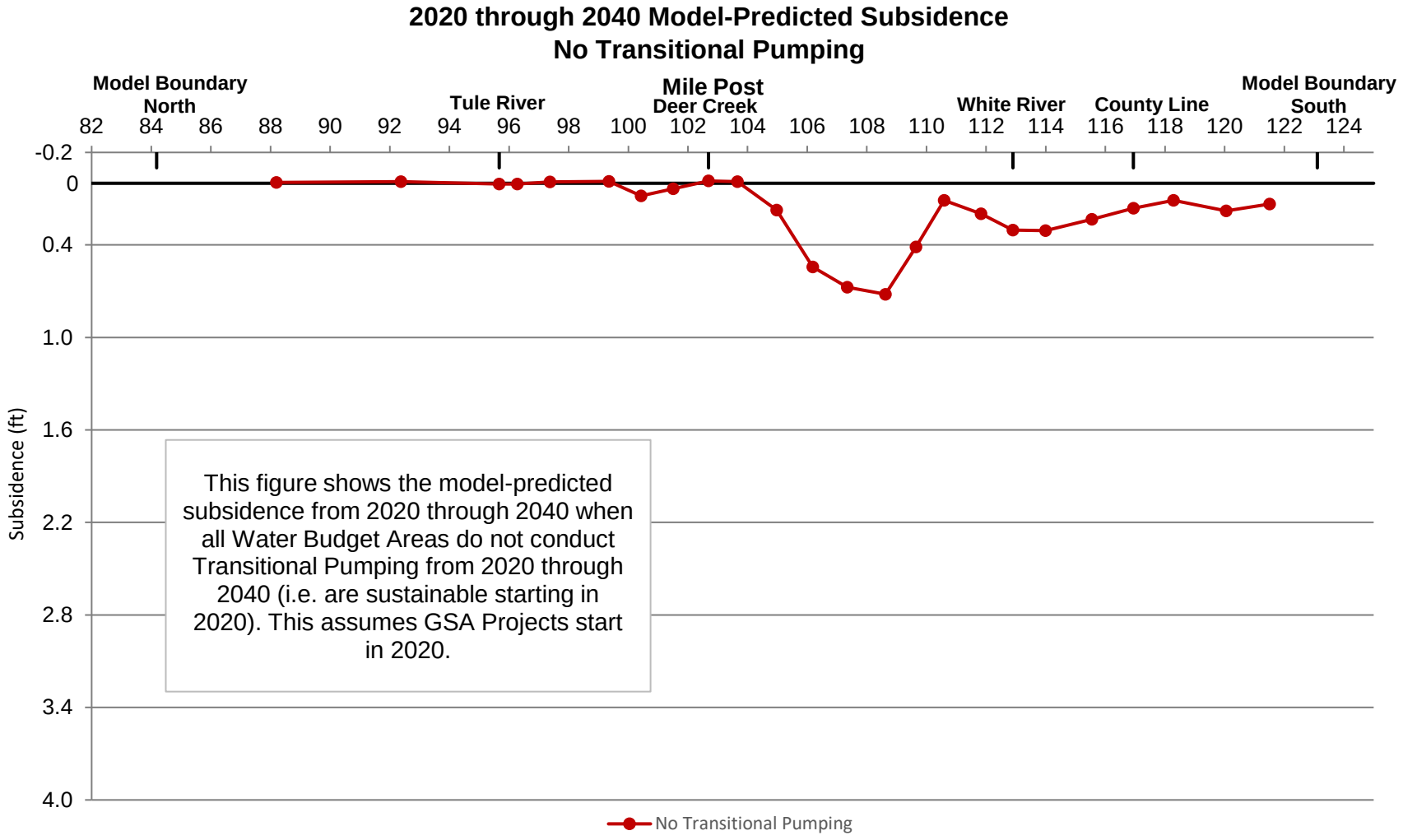
Tule Subbasin TAC
Analysis of the Relative Cause of Future Predicted Land Subsidence along the Friant-Kern Canal

Figure 3



Note: Subsidence from October 1, 2019 through September 30, 2040.

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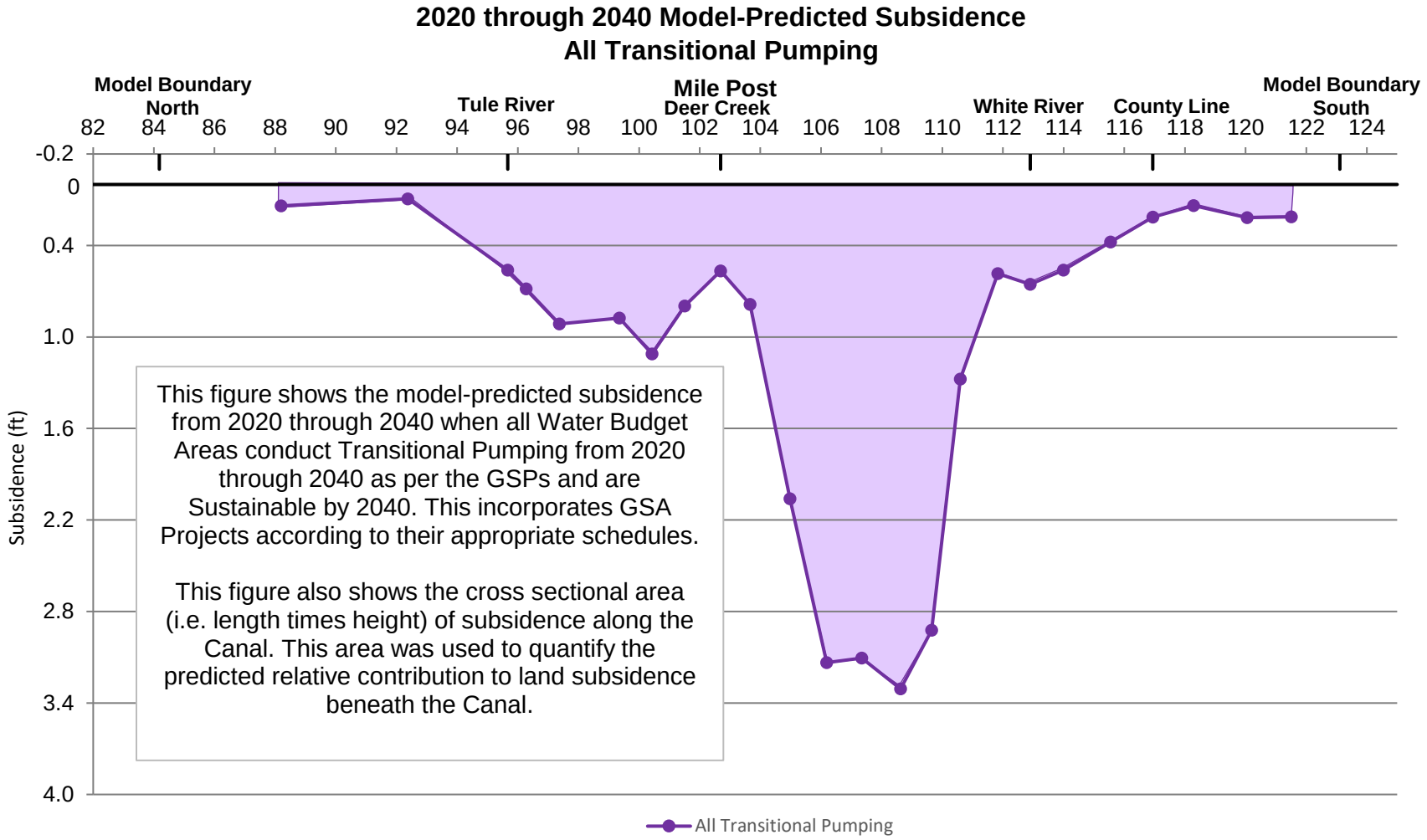
Tule Subbasin TAC
Analysis of the Relative Cause of Future Predicted Land Subsidence along the Friant-Kern Canal

Figure 4



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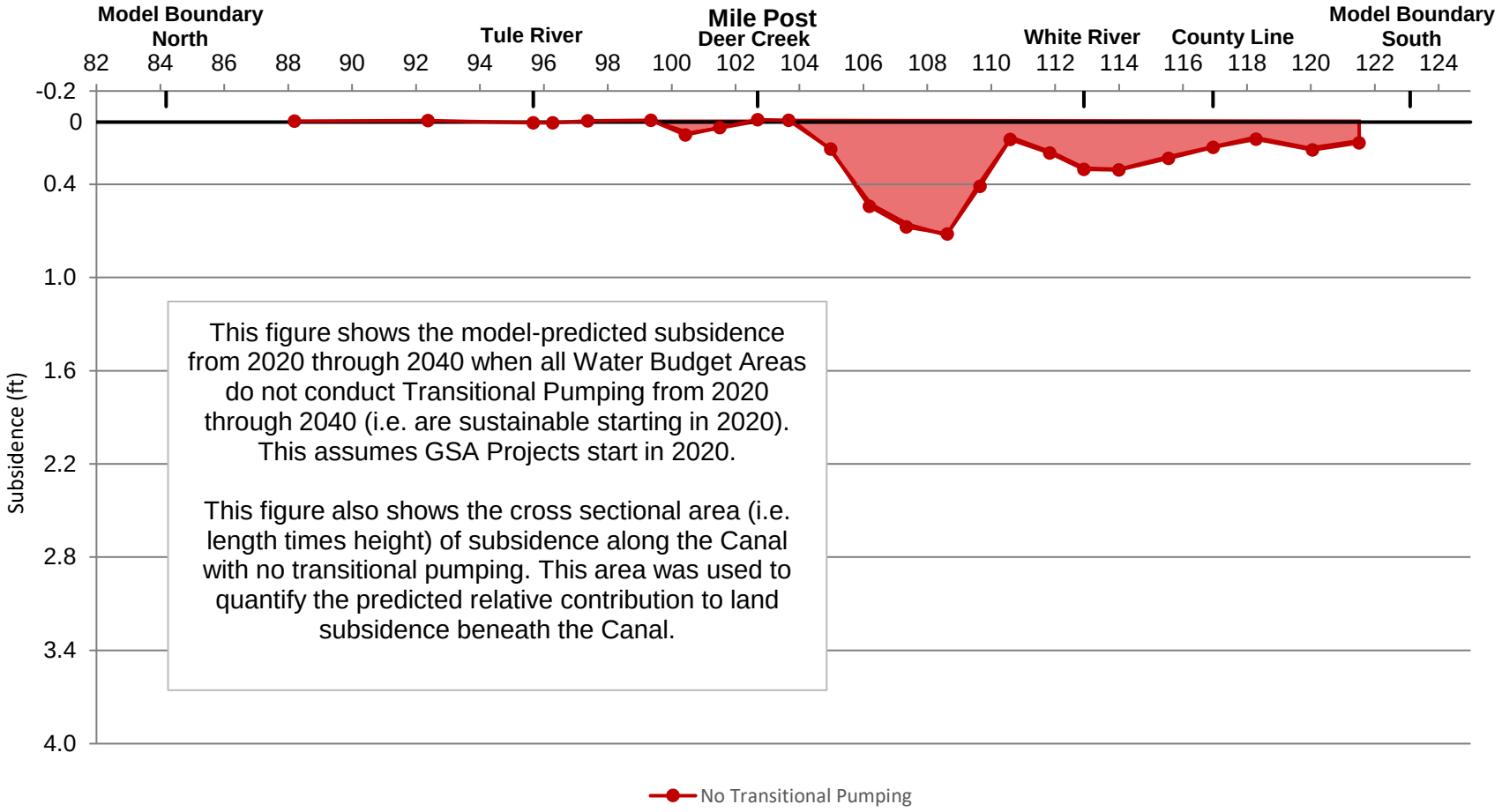
Tule Subbasin TAC
Analysis of the Relative Cause of Future Predicted Land Subsidence along the Friant-Kern Canal

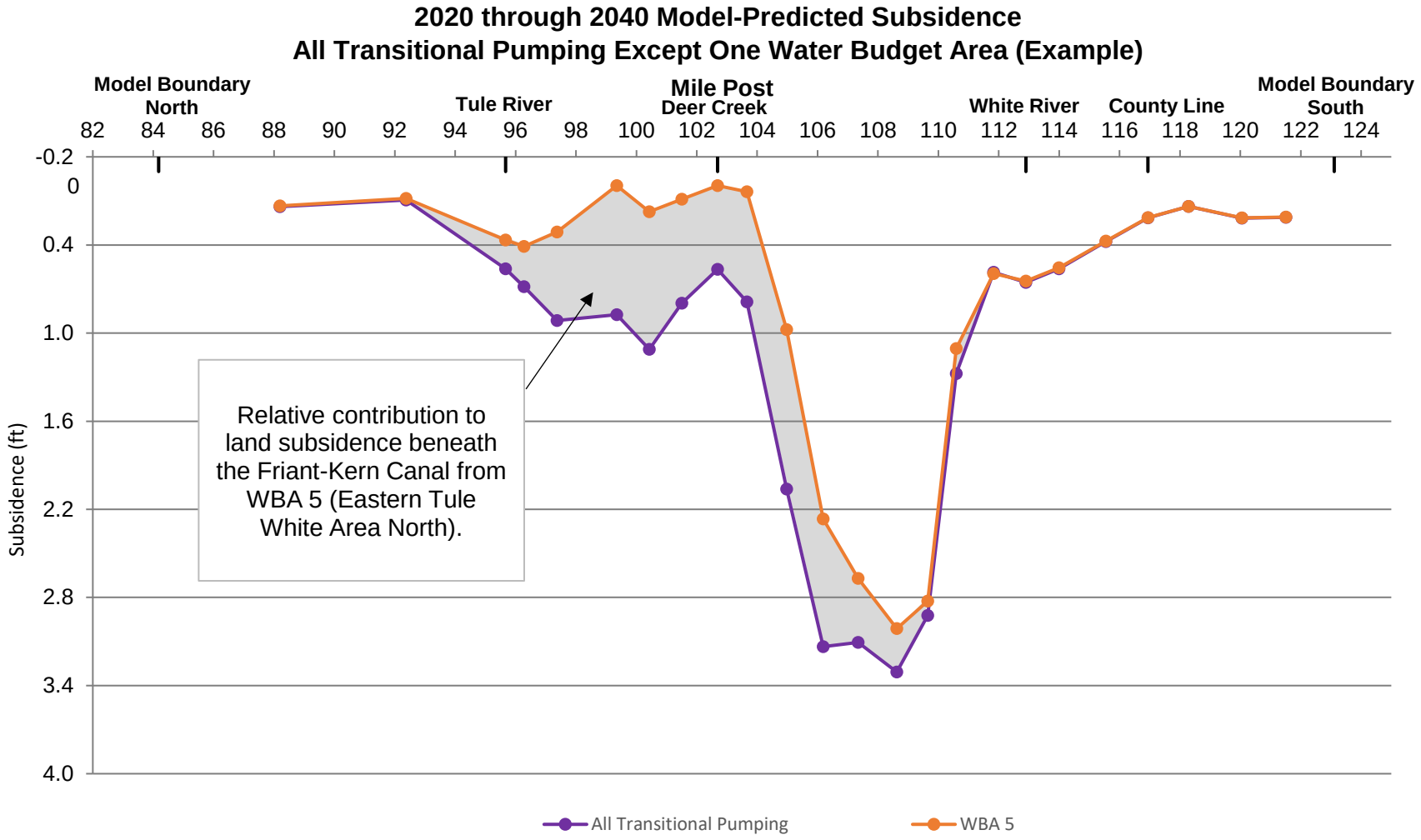
Figure 5

2020 through 2040 Model-Predicted Subsidence
No Transitional Pumping



Tule Subbasin TAC
Analysis of the Relative Cause of Future Predicted Land Subsidence along the Friant-Kern Canal

Figure 6



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Tule Subbasin TAC
Analysis of the Relative Cause of Future Predicted Land Subsidence along the Friant-Kern Canal

Figure 7

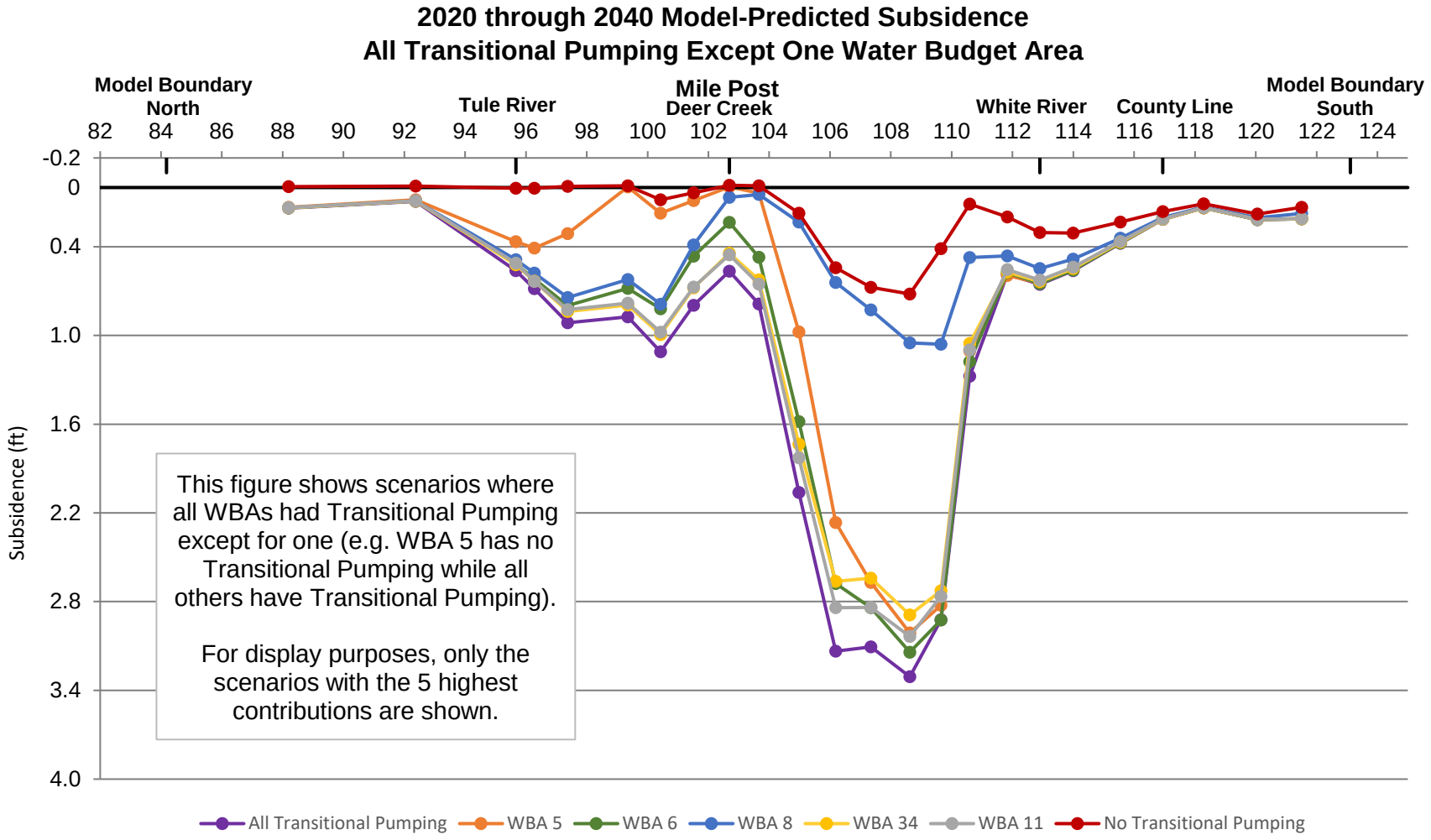

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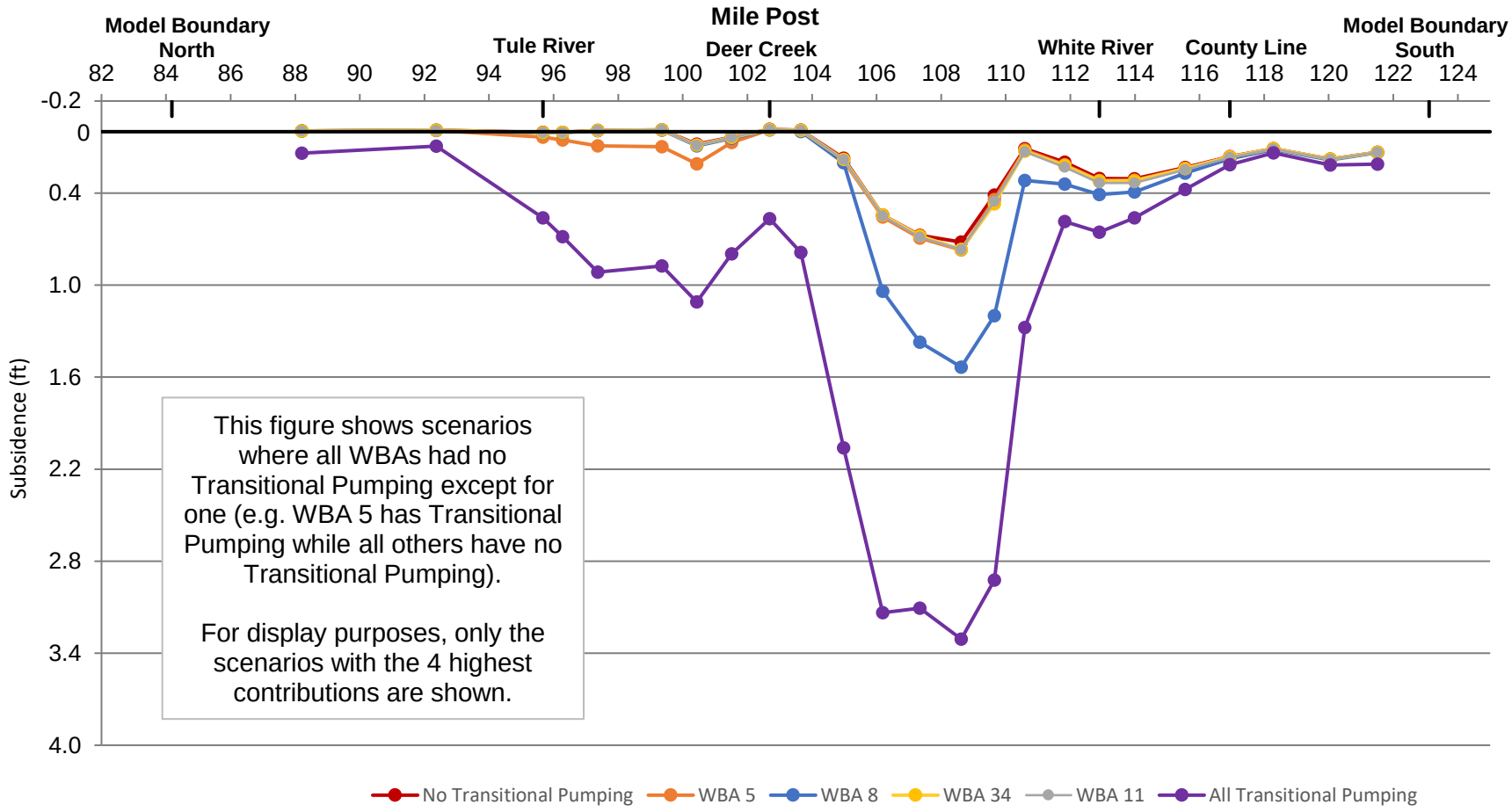
Figure 8

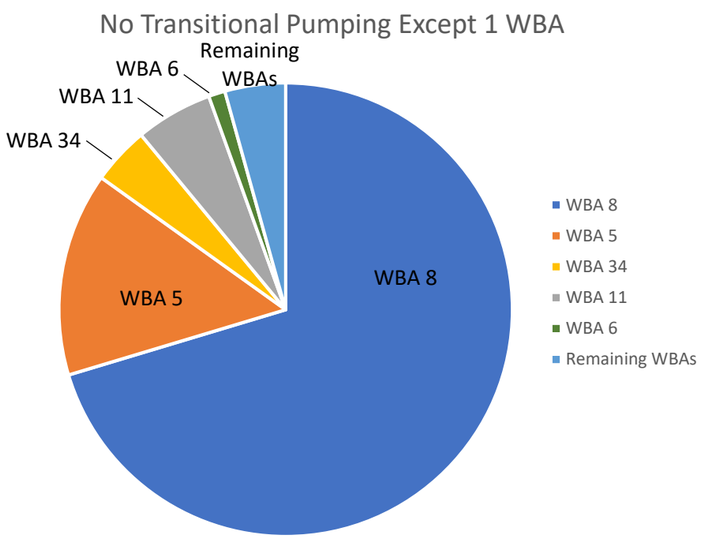
2020 through 2040 Model-Predicted Subsidence
No Transitional Pumping Except One Water Budget Area

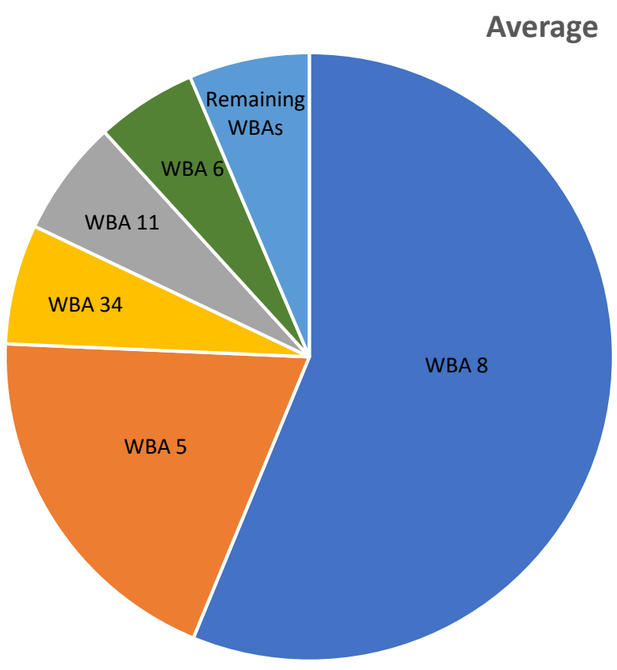


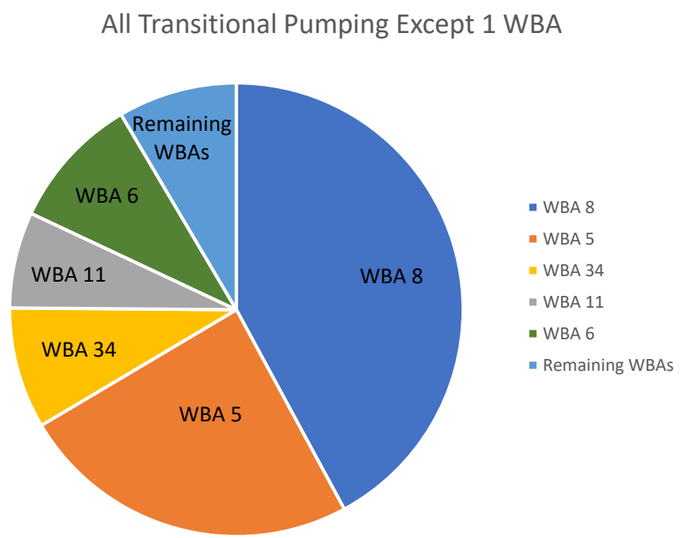
Tule Subbasin TAC
Analysis of the Relative Cause of Future Predicted Land Subsidence along the Friant-Kern Canal

Figure 9

Focused Subsidence Analysis
Predicted Relative Contribution to Land Subsidence Beneath the Friant-Kern Canal 2020 - 2040







This figure shows the relative contribution of each WBA's transitional pumping on subsidence beneath the Friant-Kern Canal. The figure shows the results of each method (i.e. No Transitional Pumping Except 1 WBA and All Transitional Pumping Except 1 WBA) and the average of the two methods.

For example, the Transitional Pumping from WBA 5 is predicted to contribute approximately 20% of the land subsidence beneath the Friant-Kern Canal from 2020 through 2040.

- WBA 8, Eastern Tule White Area South: 56%
- WBA 5, Eastern Tule White Area North: 20%
- WBA 34, Eastern Pixley Irrigation District area: 6%
- WBA 11, Western Pixley Irrigation District area: 6%
- WBA 6, Saucelito Irrigation District area: 5%
- Remaining WBAs: 6%

*Remaining WBAs include the 14 other WBAs analyzed (see Figure 1)

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Appendix K Contract No. I75r-3327D

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Irrigation and M&I
Contract No. I75r-3327D

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

CONTRACT BETWEEN THE UNITED STATES AND DELANO-EARLIMART IRRIGATION DISTRICT PROVIDING FOR PROJECT WATER SERVICE FROM FRIANT DIVISION AND FOR FACILITIES REPAYMENT

Table of Contents

UNITED STATES
DEPARTMENT OF THE INTERIOR
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Central Valley Project, California

CONTRACT BETWEEN THE UNITED STATES
AND
DELANO-EARLIMART IRRIGATION DISTRICT
PROVIDING FOR PROJECT WATER SERVICE
FROM FRIANT DIVISION AND
FACILITIES REPAYMENT

THIS CONTRACT, made this 17th day of November, 2010, is entered into pursuant to the Act of June 17, 1902, (32 Stat. 388), and acts amendatory or supplementary thereto, including but not limited to: the Act of August 26, 1937 (50 Stat. 844), as amended and supplemented, August 4, 1939 (53 Stat. 1187), as amended and supplemented, July 2, 1956 (70 Stat. 483), June 21, 1963 (77 Stat. 68), October 12, 1982 (96 Stat. 1262), October 27, 1986 (100 Stat. 3050), as amended, Title XXXIV of the Act of October 30, 1992 (106 Stat. 4706), and Title X, Subtitle A, of the Act of March 30, 2009 (123 Stat. 1349), also referred to as the San Joaquin River Restoration Settlement Act hereinafter referred to as SJRRSA, all collectively hereinafter referred to as Federal Reclamation law, between THE UNITED STATES OF AMERICA, hereinafter referred to as the United States and DELANO-EARLIMART IRRIGATION DISTRICT, hereinafter referred to as the Contractor, a public agency of the State of California, duly organized, existing, and acting pursuant to the laws thereof, with its principal place of business in California;

WITNESSETH, That

EXPLANATORY RECITALS

[1st] WHEREAS, the United States has constructed and is operating the Central Valley Project, California, for diversion, storage, carriage, distribution and beneficial use, for flood control, irrigation, municipal, domestic, industrial, fish and wildlife mitigation, protection and restoration, generation and distribution of electric energy, salinity control, navigation and other beneficial uses, of waters of the Sacramento River, the American River, the Trinity River, and the San Joaquin River and their tributaries; and

[2nd] WHEREAS, the United States constructed Friant Dam (thereby creating Millerton Lake) and the Friant-Kern and Madera Canals, hereinafter collectively referred to as the Friant Division Facilities, which will be used in part for the furnishing of water to the Contractor pursuant to the terms of this Contract; and

[3rd] WHEREAS, the United States and the Contractor entered into Contract Number I75r-3327, as amended, which established terms for the delivery to the Contractor of Project Water from the Friant Division from August 11, 1951 through February 29, 1992; and

[4th] WHEREAS, the Contractor and the United States have entered into a renewal contract and, pursuant to subsection 3404(c)(1) of the Central Valley Project Improvement Act (CVPIA), subsequently entered into an interim renewal contract(s), identified as Contract Number (s) I75r-3327R and I75r-3327-IR1, which provided for the continued water service to Contractor from March 1, 1992 through February 28, 2001, and subsequently entered into a long-term renewal contract identified as Contract Number I75r-3327-LTR1, which provided for

continued water service to Contractor through February 28, 2026, which was amended January 18, 2007, and is herein referred to as the "Existing Contract"; and

[5th] WHEREAS, pursuant to Section 8 of the Act of June 17, 1902 (32 Stat. 388), the United States has acquired water rights and other rights to the flows of the San Joaquin River, including without limitation the permits issued as the result of Decision 935 by the California State Water Resource Control Board and the contracts described in subdivision (n) of Article 3 of this Contract, pursuant to which the Contracting Officer develops, diverts, stores and delivers Project Water stored or flowing through Millerton Lake in accordance with State and Federal law for the benefit of Project Contractors in the Friant Division and for other specified Project purposes; and

[6th] WHEREAS, the water supplied to the Contractor pursuant to this Contract is Project Water developed through the exercise of the rights described in the fifth (5th) Explanatory Recital of this Contract; and

[7th] WHEREAS, as a result of litigation entitled "Natural Resources Defense Council, et al. v Kirk Rogers, et al." No. CIV-S-88-1658LLK/GGH, certain contractors from the Friant Division entered into a Stipulation of Settlement dated September 13, 2006, (the "Settlement"), which settlement prescribes a Restoration Goal and a Water Management Goal and which Settlement was subsequently confirmed and implemented through the SJRRSA; and

[8th] WHEREAS, the SJRRSA authorizes and directs the Secretary to convert the Existing Contract to a repayment contract under subsection (d) of Section 9 of the Act of August 4, 1939, no later than December 31, 2010, and further directs that such contract shall require the

accelerated repayment of the Contractor's allocated share of construction costs, either as a lump sum payment by January 31, 2011 or in annual installments by January 31, 2014, which funds will in turn be made available for implementation of the Settlement and SJRRSA, and which costs otherwise would have been payable through annual water rates, with full repayment by 2030; and

[9th] WHEREAS, such repayment of costs will assist the United States with implementation of actions required under the Settlement and the SJRRSA and provide the Contractor the benefits provided in Section 10010 of the SJRRSA; and

[10th] WHEREAS, subsection (4) of Section 1 of the Act of July 2, 1956 (1956 Act) directs the Secretary to provide that the other party to any contract entered into pursuant to subsection (d) of Section 9 of the Act of August 4, 1939 (repayment contract) or pursuant to subsection (e) of Section 9 of the Act of August 4, 1939 (water service contract) shall "have the first right (to which the rights of the holders of any other type of irrigation water contract shall be subordinate)to a stated share or quantity of the project's available water supply for beneficial use on the irrigable lands within the boundaries of, or owned by, the party and a permanent right to such share or quantity upon completion of payment of the amount assigned for ultimate return" by the contractor subject to fulfillment of all obligations under the contract; and

[11th] WHEREAS, among other things, this Contract includes provisions granting the Contractor the permanent right described in the tenth (10th) Explanatory Recital; and

[12th] WHEREAS, the Contractor has demonstrated to the satisfaction of the Contracting Officer that the Contractor has utilized the Project Water supplies available to it for

reasonable and beneficial use and/or has demonstrated projected future demand for water use such that the Contractor has the capability and expects to utilize fully for reasonable and beneficial use the quantity of Project Water to be made available to it pursuant to this Contract; and

[13th] WHEREAS, water obtained from the Central Valley Project has been relied upon by urban and agricultural areas within California for more than fifty (50) years and is considered by the Contractor as an essential portion of its water supply; and

[14th] WHEREAS, the economies of regions within the Central Valley Project, including the Contractor's, depend upon the continued availability of water, including water service from the Central Valley Project; and

[15th] WHEREAS, the Secretary intends through coordination, cooperation, and partnerships to pursue measures to improve water supply, water quality, and reliability of the Project for all Project purposes; and

[16th] WHEREAS, the mutual goals of the United States and the Contractor include: to provide for reliable Project Water supplies; to control costs of those supplies; to achieve repayment of the Central Valley Project as required by law; to guard reasonably against Project Water shortages; to achieve a reasonable balance among competing demands for use of Project Water; and to comply with all applicable environmental statutes, all consistent with the legal obligations of the United States relative to the Central Valley Project; and

[17th] WHEREAS, any time during the Year the Contracting Officer determines that a need exists to evacuate water from Millerton Lake in order to prevent or minimize spill or to

meet flood control criteria (currently referred to as "uncontrolled season"), taking into consideration, among other things, anticipated upstream reservoir operations and the most probable forecast of snowmelt and runoff projections for the upper San Joaquin River, Friant Division Project Contractors utilize a portion of their undependable Class 2 Water in their service areas to, among other things, assist in the management and alleviation of groundwater overdraft in the Friant Division service area, provide opportunities for restoration of the San Joaquin River below Friant Dam, minimize flooding along the San Joaquin River, encourage optimal water management, and maximize the reasonable and beneficial use of the water; and

[18th] WHEREAS, the parties desire and intend that this Contract not provide a disincentive to the Friant Division Project Contractors continuing to carry out the beneficial activities set out in the Explanatory Recital immediately above; and

[19th] WHEREAS, the United States has determined that the Contractor has fulfilled all of its obligations under the Existing Contract.

NOW, THEREFORE, in consideration of the mutual and dependent covenants herein contained, it is hereby mutually agreed by the parties hereto as follows:

DEFINITIONS

1. When used herein, unless otherwise distinctly expressed or manifestly incompatible with the intent of the parties as expressed in this Contract, the term:

(a) "Additional Capital Obligation" shall mean any additional construction costs or other capitalized costs incurred after the effective date of this Contract or not reflected in the Existing Capital Obligation as provided in Section 10010(a)(3)(B) of the SJRRSA and any

amounts payable by Contractor as determined through the final adjustment described and required by Section 10010(b) of the SJRRSA;

(b) "Calendar Year" shall mean the period January 1 through December 31, both dates inclusive;

(c) "Charges" shall mean the payments required by Federal Reclamation law in addition to the Rates and Tiered Pricing Components specified in this Contract as determined annually by the Contracting Officer pursuant to this Contract and consistent with the SJRRSA;

(d) "Class 1 Water" shall mean that supply of water stored in or flowing through Millerton Lake which, subject to the contingencies hereinafter described in Articles 3, 12, and 13 of this Contract, will be available for delivery from Millerton Lake and the Friant-Kern and Madera Canals as a dependable water supply during each Year;

(e) "Class 2 Water" shall mean that supply of water which can be made available subject to the contingencies hereinafter described in Articles 3, 12, and 13 of this Contract for delivery from Millerton Lake and the Friant-Kern and Madera Canals in addition to the supply of Class 1 Water. Because of its uncertainty as to availability and time of occurrence, such water will be undependable in character and will be furnished only if, as, and when it can be made available as determined by the Contracting Officer;

(f) "Condition of Shortage" shall mean a condition respecting the Project during any Year such that the Contracting Officer is unable to deliver sufficient water to meet the Contract Total;

(g) "Contracting Officer" shall mean the Secretary of the Interior's duly authorized representative acting pursuant to this Contract or applicable Federal Reclamation law or regulation;

(h) "Contract Total" shall mean the maximum amount of Class 1 Water plus the maximum amount of Class 2 Water specified in subdivision (a) of Article 3 of this Contract and is the stated share or quantity of the Project's available water supply to which the Contractor will have a permanent right in accordance with the 1956 Act and the terms of this Contract, upon the Contractor's complete payment of the Repayment Obligation, notwithstanding any Additional Capital Obligation that may later be established, which right shall not be disturbed so long as the Contractor fulfills all of its obligations under this Contract;

(i) "Contractor's Service Area" shall mean the area to which the Contractor is permitted to provide Project Water under this Contract as described in Exhibit "A" attached hereto, which may be modified from time to time in accordance with Article 36 of this Contract without amendment of this Contract;

(j) "CVPIA" shall mean the Central Valley Project Improvement Act, Title XXXIV of the Act of October 30, 1992 (106 Stat. 4706);

(k) "Eligible Lands" shall mean all lands to which Irrigation Water may be delivered in accordance with Section 204 of the Reclamation Reform Act of October 12, 1982 (96 Stat. 1263), as amended, hereinafter referred to as RRA;

(l) "Excess Lands" shall mean all lands in excess of the limitations contained in Section 204 of the RRA, other than those lands exempt from acreage limitation under Federal Reclamation law;

(m) "Existing Capital Obligation" shall mean the remaining amount of construction costs of the Contractor identified in the Central Valley Project Irrigation Water Rates and/or Municipal and Industrial Water Rates, respectively, dated January 25, 2007, as adjusted to reflect payments not reflected in such schedule, pursuant to Section 10010(a)(3)(A) of the SJRRSA. The Contracting Officer has computed the Existing Capital Obligation in a manner consistent with the SJRRSA and such amount is set forth in Exhibits "C-1" and "C-2", incorporated herein by reference;

(n) "Financing Costs", for purposes of computing the reduction of certain charges as specified in subdivision (c) of Article 7 of this Contract, shall mean the difference between the net present value of the Existing Capital Obligation discounted using the full Treasury rate and the Existing Capital Obligation discounted using one-half the Treasury rate, as set forth in Section 10010(d)(3) of the SJRRA;

(o) "Full Cost Rate" shall mean that water rate described in Sections 205(a)(3) or 202(3) of the RRA, whichever is applicable;

(p) "Ineligible Lands" shall mean all lands to which Irrigation Water may not be delivered in accordance with Section 204 of the RRA;

(q) "Irrigation Full Cost Water Rate" shall have the same meaning as "full cost" as that term is used in Paragraph (3) of Section 202 of the RRA;

(r) "Irrigation Water" shall mean water made available from the Project that is used primarily in the production of agricultural crops or livestock, including domestic use incidental thereto, and watering of livestock;

(s) "Landholder" shall mean a party that directly or indirectly owns or leases nonexempt land, as provided in 43 CFR 426.2;

(t) "Long Term Historic Average" shall mean the average of the final forecast of Water Made Available to the Contractor pursuant to this Contract and the contracts referenced in the third (3rd) and fourth (4th) Explanatory Recitals of this Contract;

(u) "Municipal and Industrial (M&I) Water" shall mean water made available from the Project other than Irrigation Water made available to the Contractor. M&I Water shall include water used for human use and purposes such as the watering of landscaping or pasture for animals (e.g., horses) which are kept for personal enjoyment or water delivered to land holdings operated in units of less than five (5) acres unless the Contractor establishes to the satisfaction of the Contracting Officer that the use of water delivered to any such landholding is a use described in subdivision (r) of this Article of this Contract;

(v) "M&I Full Cost Water Rate" shall mean the annual rate, which, as determined by the Contracting Officer, shall amortize the expenditures for construction allocable to Project M&I facilities in service, including, O&M deficits funded, less payments, over such periods as may be required under Federal Reclamation law with interest accruing from the dates such costs were first incurred plus the applicable rate for the O&M of such Project facilities.

Interest rates used in the calculation of the M&I Full Cost Rate shall comply with the Interest Rate methodology contained in Section 202(3) (B) and (C) of the RRA;

(w) "Operation and Maintenance" or "O&M" shall mean normal and reasonable care, control, operation, repair, replacement (other than Capital replacement), and maintenance of Project facilities;

(x) "Operating Non-Federal Entity" shall mean the Friant Water Authority, or its successor, a Non-Federal entity, which has the obligation to operate and maintain all or a portion of the Friant Division Facilities pursuant to an agreement with the United States and which may have funding obligations with respect thereto;

(y) Omitted;

(z) "Project" shall mean the Central Valley Project owned by the United States and managed by the Department of the Interior, Bureau of Reclamation;

(aa) "Project Contractors" shall mean all parties who have a long-term water service contract or repayment contract for Project Water from the Project with the United States pursuant to Federal Reclamation law;

(bb) "Project Water" shall mean all water that is developed, diverted, stored, or delivered by the Secretary in accordance with the statutes authorizing the Project and in accordance with the terms and conditions of water rights acquired pursuant to California law;

(cc) "Rates" shall mean the payments for O&M costs as determined annually by the Contracting Officer in accordance with the then-existing applicable water ratesetting

policies for the Project, as described in subdivision (a) of Article 7 of this Contract and illustrated in Exhibit "B", attached hereto;

(dd) "Recovered Water Account" shall mean the program, as defined in the Settlement, to make water available to all of the Friant Division Project Contractors who provide water to meet interim flows or restoration flows for the purpose of reducing or avoiding the impact of the interim flows and restoration flows on such contractors;

(ee) "Repayment Obligation", as provided in subdivision (a)(2)(A) of Article 7 of this Contract, shall be the Existing Capital Obligation, as defined herein, discounted by one-half of the Treasury rate and computed consistent with the provisions of Section 10010(a)(3)(A) of the SJRRSA to be paid as either a lump sum payment by January 31, 2011 or in approximately equal annual installments by January 31, 2014;

(ff) "Secretary" shall mean the Secretary of the Interior, a duly appointed successor, or an authorized representative acting pursuant to any authority of the Secretary and through any agency of the Department of the Interior;

(gg) "Settlement" shall mean the Stipulation of Settlement dated September 13, 2006, the Order Approving Stipulation of Settlement, and the Judgment and further orders issued by the Court pursuant to the terms and conditions of the Settlement in Natural Resources Defense Council, et al. v. Rodgers, et al., No. CIV-S-88-1658 LLJ/GGH;

(hh) "Tiered Pricing Component" shall be the incremental amount to be paid for each acre-foot of Water Delivered as described in subdivision (l)(1) of Article 7 of this Contract;

(ii) "Water Delivered" or "Delivered Water" shall mean Project Water diverted for use by the Contractor at the point(s) of delivery approved by the Contracting Officer;

(jj) "Water Made Available" shall mean the estimated amount of Project Water that can be delivered to the Contractor for the upcoming Year as declared by the Contracting Officer, pursuant to subdivision (a) of Article 4 of this Contract;

(kk) "Water Management Goal" shall mean the goal of the Settlement to reduce or avoid adverse water supply impacts to all the Friant Division Project Contractors that may result from the interim flows and restoration flows provided for in the Settlement;

(ll) "Water Scheduled" shall mean Project Water made available to the Contractor for which times and quantities for delivery have been established by the Contractor and Contracting Officer, pursuant to subdivision (b) of Article 4 of this Contract; and

(mm) "Year" shall mean the period from and including March 1 of each Calendar Year through the last day of February of the following Calendar Year.

EFFECTIVE DATE OF CONTRACT

2. (a) This Contract shall become effective on the date first hereinabove written and shall continue so long as the Contractor is making the annual payments required herein and paying any other amounts owing under this Contract and applicable law, unless it is terminated by the Contracting Officer by reason of a material uncured breach by the Contractor; Provided, That the Contracting Officer shall not seek to terminate this Contract by reason of an asserted material uncured breach by the Contractor unless it has first provided at least sixty (60) days

written notice of the asserted breach to the Contractor and the Contractor has failed to cure such breach (or to diligently commence curative actions satisfactory to the Contracting Officer for a breach that cannot be fully cured within sixty (60) days) within the sixty (60)-day notice period; Provided further, That this Contract may be terminated at any time by mutual consent of the parties hereto.

(b) Upon complete payment of the Repayment Obligation by the Contractor, and notwithstanding any Additional Capital Obligation that may later be established, the Tiered Pricing Component as that term is utilized in this Contract, the acreage limitations, reporting, and Full Cost pricing provisions of Federal Reclamation law, and subdivisions (k), (l), (o) through (q), (s), and (v) of Article 1, subdivisions (a)(2)(A), (l)(1), (l)(2), and (l)(3) of Article 7, Article 14, subdivision (a) of Article 18, and Article 25, all of this Contract, shall no longer be applicable to the Contractor. Upon complete payment of the Repayment Obligation by the Contractor, and notwithstanding any Additional Capital Obligation that may later be established, the terms of this Contract shall be as provided in the restated contract attached hereto as Exhibit "E", which has been prepared solely as a matter of administrative convenience. Exhibit "E" makes no substantive revisions other than those required by this subdivision of this Article of this Contract. Accordingly, upon complete payment of the Repayment Obligation by the Contractor, and notwithstanding any Additional Capital Obligation that may later be established, the parties shall refer to Exhibit "E" as their entire agreement under this Contract.

(c) This Contract supersedes in its entirety and is intended to replace in full the Existing Contract; Provided, That if this Contract is terminated or determined to be invalid or

unenforceable for any reason other than a material uncured breach of this Contract by the Contractor, the Existing Contract shall not be superseded and shall be in full force and effect.

WATER TO BE MADE AVAILABLE AND DELIVERED TO THE CONTRACTOR

3. (a) During each Year, consistent with all applicable State water rights, permits, and licenses, Federal law, the Settlement including the SJRRSA, and subject to the provisions set forth in Articles 12 and 13 of this Contract, the Contracting Officer shall make available for delivery to the Contractor from the Project 108,800 acre-feet of Class 1 Water and 74,500 acre-feet of Class 2 Water for irrigation and M&I purposes. The quantity of Water Delivered to the Contractor in accordance with this subdivision shall be scheduled and paid for pursuant to the provisions of Articles 4 and 7 of this Contract.

(b) Upon complete payment of the Repayment Obligation by the Contractor, and notwithstanding any Additional Capital Obligation that may later be established, the Contractor shall have a permanent right to the Contract Total in accordance with the 1956 Act and the terms of this Contract. This right shall not be disturbed so long as the Contractor fulfills all of its obligations hereunder. The quantity of water made available for delivery in any given Year shall remain subject to the terms and conditions of subdivision (a) of this Article of this Contract.

(c) The Contractor shall utilize the Project Water in accordance with all applicable legal requirements.

(d) The Contractor shall make reasonable and beneficial use of all Project Water or other water furnished pursuant to this Contract. Groundwater recharge programs,

groundwater banking programs, surface water storage programs, and other similar programs utilizing Project Water or other water furnished pursuant to this Contract conducted within the Contractor's Service Area which are consistent with applicable State law and result in use consistent with applicable Federal Reclamation law will be allowed; Provided, That any direct recharge program(s) is (are) described in the Contractor's Water Conservation Plan submitted pursuant to Article 27 of this Contract; Provided further, That such Water Conservation Plan demonstrates sufficient lawful uses exist in the Contractor's Service Area so that using a long-term average, the quantity of Delivered Water is demonstrated to be reasonable for such uses and in compliance with Federal Reclamation law. Groundwater recharge programs, groundwater banking programs, surface water storage programs, and other similar programs utilizing Project Water or other water furnished pursuant to this Contract conducted outside the Contractor's Service Area may be permitted upon written approval of the Contracting Officer, which approval will be based upon environmental documentation, Project Water rights, and Project operational concerns. The Contracting Officer will address such concerns in regulations, policies, or guidelines.

(e) The Contractor, through this Contract, shall comply with requirements applicable to the Contractor in biological opinion(s) prepared as a result of the consultation regarding the execution of the Existing Contract undertaken pursuant to Section 7 of the Endangered Species Act of 1973, as amended, as well as the requirements of any other biological opinions applicable to Project Water delivery under this Contract, that are within the Contractor's legal authority to implement. The Contractor shall comply with the limitations or

requirements imposed by environmental documentation applicable to the Contractor and within its legal authority to implement regarding specific activities, including conversion of Irrigation Water to M&I Water. Nothing herein shall be construed to prevent the Contractor from challenging or seeking judicial relief in a court of competent jurisdiction with respect to any biological opinion or other environmental documentation referred to in this Article of this Contract.

(f) Subject to subdivisions (l) and (n) of this Article of this Contract, following the declaration of Water Made Available under Article 4 of this Contract, the Contracting Officer will make a determination whether Project Water, or other water available to the Project, can be made available to the Contractor in addition to the Contract Total in this Article of this Contract during the Year without adversely impacting the Project or other Project Contractors and consistent with the Secretary's legal obligations. At the request of the Contractor, the Contracting Officer will consult with the Contractor prior to making such a determination. Subject to subdivisions (l) and (n) of this Article of this Contract, if the Contracting Officer determines that Project Water, or other water available to the Project, can be made available to the Contractor, the Contracting Officer will announce the availability of such water and shall so notify the Contractor as soon as practical. The Contracting Officer will thereafter meet with the Contractor and other Project Contractors capable of taking such water to determine the most equitable and efficient allocation of such water. If the Contractor requests the delivery of any quantity of such water, the Contracting Officer shall make such water

available to the Contractor in accordance with applicable statutes, regulations, guidelines, and policies.

(g) The Contractor may request permission to reschedule for use during the subsequent Year some or all of the Water Made Available to the Contractor during the current Year referred to as "carryover." The Contractor may request permission to use during the current Year a quantity of Project Water which may be made available by the United States to the Contractor during the subsequent Year referred to as "pre-use." The Contracting Officer's written approval may permit such uses in accordance with applicable statutes, regulations, guidelines, and policies.

(h) The Contractor's right pursuant to Federal Reclamation law and applicable State law to the reasonable and beneficial use of the Water Delivered pursuant to this Contract shall not be disturbed so long as the Contractor shall fulfill all of its obligations under this Contract. Nothing in the preceding sentence shall affect the Contracting Officer's ability to impose shortages under Article 12 or subdivision (b) of Article 13 of this Contract.

(i) Project Water furnished to the Contractor pursuant to this Contract may be delivered for purposes other than those described in subdivisions (r) and (u) of Article 1 of this Contract upon written approval by the Contracting Officer in accordance with the terms and conditions of such approval.

(j) The Contracting Officer shall make reasonable efforts to protect the water rights and other rights described in the fifth (5th) Explanatory Recital of this Contract and to provide the water available under this Contract. The Contracting Officer shall not object to

participation by the Contractor, in the capacity and to the extent permitted by law, in administrative proceedings related to the water rights and other rights described in the fifth (5th) Explanatory Recital of this Contract; Provided however, That the Contracting Officer retains the right to object to the substance of the Contractor's position in such a proceeding. Provided further, that in such proceedings the Contracting Officer shall recognize the Contractor has a legal right under the terms of this Contract to use Project Water.

(k) Project Water furnished to the Contractor during any month designated in a schedule or revised schedule submitted by the Contractor and approved by the Contracting Officer shall be deemed to have been accepted by the Contractor as Class 1 Water to the extent that Class 1 Water is called for in such schedule for such month and shall be deemed to have been accepted as Class 2 Water to the extent Class 2 Water is called for in such schedule for such month. If in any month the Contractor diverts a quantity of water in addition to the total amount of Class 1 Water and Class 2 Water set forth in the Contractor's approved schedule or revised schedule for such month, such additional diversions shall be charged first against the Contractor's remaining Class 2 Water supply available in the current Year. To the extent the Contractor's remaining Class 2 Water supply available in the current Year is not sufficient to account for such additional diversions, such additional diversions shall be charged against the Contractor's remaining Class 1 Water supply available in the current Year. To the extent the Contractor's remaining Class 1 Water and Class 2 Water supplies available in the current Year are not sufficient to account for such additional diversions, such additional diversions shall be charged first against the Contractor's available Class 2 Water supply and then against the