

# BOOK 4: NEW SOURCE DEVELOPMENT PILOT STUDY

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## DISADVANTAGED COMMUNITY WATER STUDY FOR THE TULARE LAKE BASIN

GRANT AGREEMENT NUMBER: 4600009132  
SAFE DRINKING WATER, WATER QUALITY AND SUPPLY, FLOOD CONTROL,  
RIVER AND COASTAL PROTECTION BOND ACT OF 2006 (PROPOSITION 84)  
November 2010 through November 2014

**REVIEW DRAFT**

JUNE 2014

**Prepared for:**  
County of Tulare

**Final Submittal to:**  
Department of Water Resources  
Division of Integrated Regional Water Management  
South Central Region Office  
3374 East Shields Avenue  
Fresno, CA 93726

**Prepared by:**





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**ABBREVIATIONS**

ACS.....	American Community Survey
AF.....	Acre-Feet
APWA.....	American Public Works Association
AWWA.....	American Water Works Association
BOD .....	Biochemical Oxygen Demand
CDBG.....	Community Development Block Grant
CDPH.....	California Department of Public Health
CEQA .....	California Environmental Quality Act
CFCC .....	California Financing Coordinating Committee
CFS.....	Cubic Feet per Second
CPUC.....	California Public Utilities Commission
CRWA .....	California Rural Water Association
CSA.....	County Service Area
CSD.....	Community Services District
CVP .....	Central Valley Project
CWD.....	County Water District
CWS.....	Community Water System
CWSRF.....	State Revolving Fund (Clean Water)
DAC.....	Disadvantaged Community
DBCP .....	Dibromochloropropane
DBP(s).....	Disinfection By-Product(s)
DWR.....	Department of Water Resources
DWSAP .....	Drinking Water Source Assessment & Protection
EDA.....	United States Economic Development Administration
EPA.....	United States Environmental Protection Agency
FEMA .....	Federal Emergency Management Agency
FRF .....	Fresno Regional Foundation
GIS.....	Geographic Information Systems
HUD .....	Department of Housing and Urban Development

**NEW SOURCE DEVELOPMENT**

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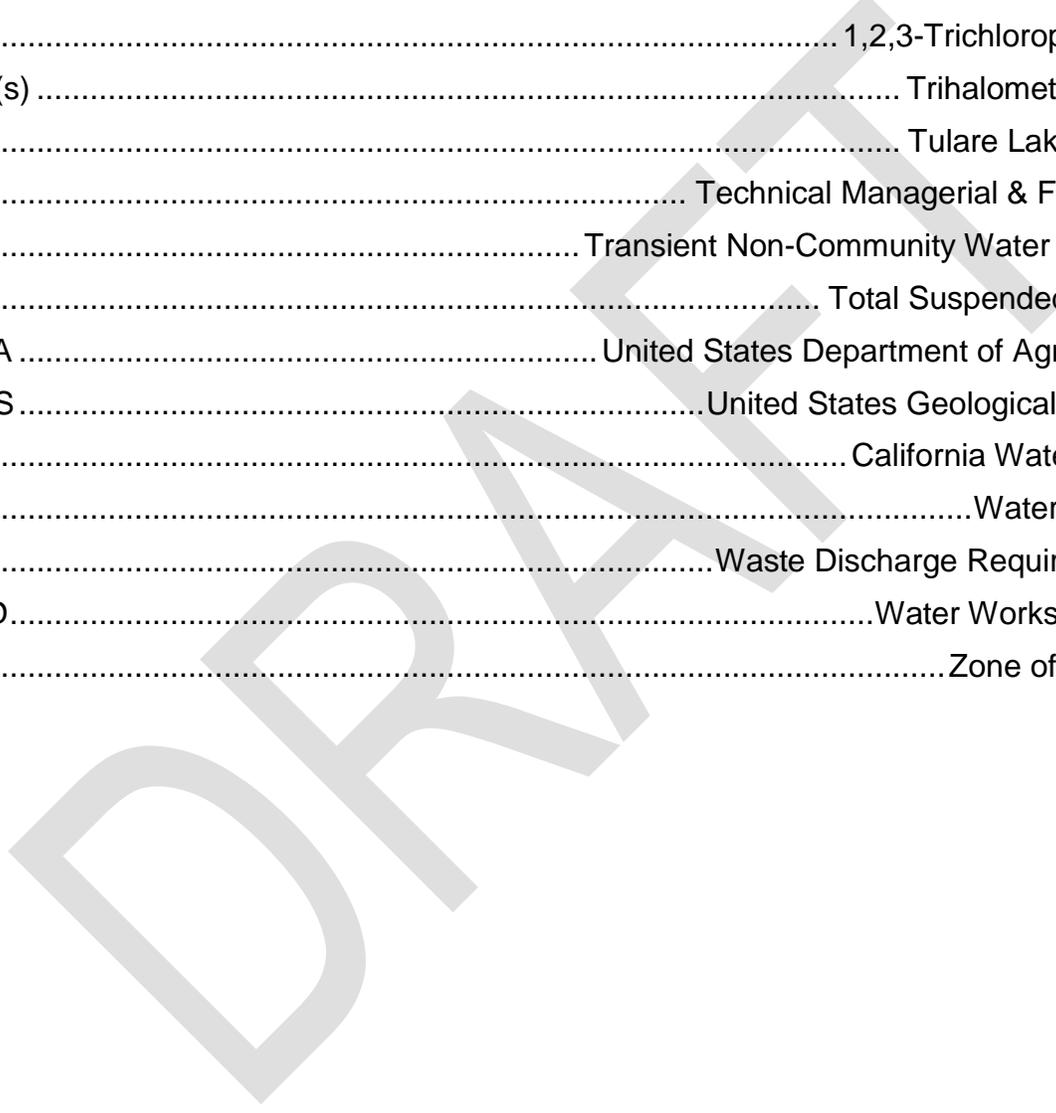
IRWM .....	Integrated Regional Water Management
IRWMA.....	Integrated Regional Water Management Authority
JPA.....	Joint Powers Authority
KBWA.....	Kings Basin Water Authority
LAFCo .....	Local Agency Formation Commission
LPA .....	Local Primacy Agency
MCL.....	Maximum Contaminant Level
MHI.....	Median Household Income
MHP .....	Mobile Home Park
MOU.....	Memorandum of Understanding
MSR .....	Municipal Service Review
MWC .....	Mutual Water Company
NCWS .....	Non-Community Water System
NTNC .....	Non-Transient Non-Community Water System
O&M.....	Operation and Maintenance
PCB.....	Polychlorinated Biphenyls
PPB .....	Parts per Billion
PPM .....	Parts per Million
PPSAG or PSAG.....	Pilot Project Stakeholder Advisory Group
PUC.....	Public Utilities Commission
PUD.....	Public Utility District
PWS .....	Public Water System
RCAC .....	Rural Community Assistance Corporation
RMA .....	Resource Management Agency
RUS.....	Rural Utilities Service
RWQCB .....	Regional Water Quality Control Board
SB .....	Senate Bill
SDAC .....	Severely Disadvantaged Community
SDWA .....	Safe Drinking Water Act
SMD .....	Sewer Maintenance District
SOAC .....	Stakeholder Oversight Advisory Committee
SRF or SDWSRF .....	State Revolving Fund (Safe Drinking Water)

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SSWS.....	State Small Water System
SWP .....	State Water Project
SWRCB.....	State Water Resources Control Board
SWS .....	Small Water System
TCP .....	1,2,3-Trichloropropane
THM(s) .....	Trihalomethane(s)
TLB.....	Tulare Lake Basin
TMF .....	Technical Managerial & Financial
TNC.....	Transient Non-Community Water System
TSS .....	Total Suspended Solids
USDA .....	United States Department of Agriculture
USGS .....	United States Geological Survey
WC .....	California Water Code
WD .....	Water District
WDR.....	Waste Discharge Requirements
WWD.....	Water Works District
ZOB.....	Zone of Benefit

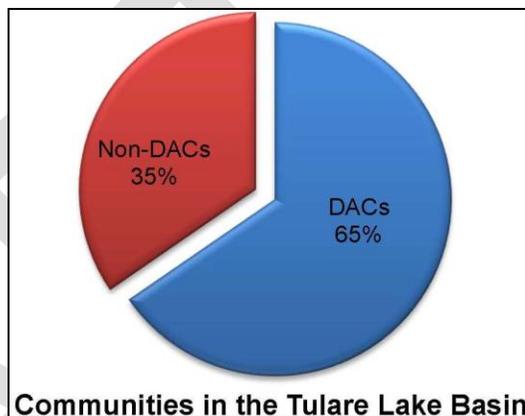




## EXECUTIVE SUMMARY

### Introduction

The Tulare Lake Basin Study Area encompasses most of the four-county area, including Fresno, Kern, Kings, and Tulare Counties. The Tulare Lake Basin Study Area boundary is shown in **Figure 1-1**. Approximately 354 of the 530 communities identified within the Tulare Lake Basin are disadvantaged or severely disadvantaged. These communities often suffer from a variety of problems related to the provision of water and sewer to their residents. Source water issues include insufficient supply and poor water quality. Wastewater challenges include reliance on septic systems that may be failing or potentially contaminating the groundwater, failing or insufficient sewer collection systems, or wastewater treatment and disposal facilities that are not capable of meeting their waste discharge requirements.



Some communities lack the technical, managerial and financial (TMF) abilities to properly operate and maintain their utility systems. Disadvantaged communities may often have limiting characteristics beyond income level, such as inability to achieve economy of scale for infrastructure, small or non-existent reserve funds, limited pool of persons in community leadership roles, lack of equipment, and a limited ability to hire paid staff or consultants.

Four (4) pilot studies have been developed as part of the Tulare Lake Basin Disadvantaged Community Water Study, to present various alternatives to address these issues. This New Source Development pilot study identifies various alternatives that can be considered to address poor water quality or lack of sufficient water supply.

The other three pilot studies include Management and Non-Infrastructure, Technical Solutions, and Individual Households. The four pilot studies are not mutually exclusive. Communities pursuing improvement in a specific pilot study topic will likely utilize information prepared in one or more of the other pilot studies.

### Background

There are 354 disadvantaged communities (DACs) identified within the Tulare Lake Basin Study Area, of which 201 are severely disadvantaged communities (SDACs). Collectively, disadvantaged and severely disadvantaged communities are referred to as DACs. Many water and wastewater systems serving these DACs face challenges meeting drinking water and wastewater regulations.

Approximately 89 of the 354 DACs in the Study Area reported at least one exceedance of a drinking water maximum contaminant level (MCL) between 2008 and 2010. While not all of these systems were in violation of a drinking water regulation, an exceedance

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indicates there may be a potential issue. Many communities also rely on a single source of water supply, typically a single well. This puts the system at risk if that well were to fail. Communities with the various water quality and supply issues are presented in **Figure 2-1** through **Figure 2-4**.

**Goal**

The main goals of the Study were: (1) to provide useful information and tools that can function as a roadmap or guidelines for multiple audiences, and (2) to provide recommendations for legislation, funding opportunities, and other support that Federal, State, and local agencies can provide to address the water and wastewater issues in the Study Area.

The information presented in this study includes descriptions of actual community efforts toward solving water supply, water quality, wastewater treatment and disposal, and/or system efficiency challenges. The information may also include recommendations for other communities to consider regarding:

- a) Steps toward addressing remaining existing water supply and wastewater collection or treatment challenges,
- b) Identifying obstacles interfering with addressing remaining existing water supply and wastewater collection or treatment challenges, and
- c) Steps toward minimizing or mitigating future water supply and wastewater collection or treatment issues.

**Priority Issues**

An initial task for the study was to organize a Stakeholder Oversight Advisory Committee (SOAC). The details of the SOAC, the purpose of the committee, and actions performed are described in the main body of the Final Report. The SOAC identified four pilot study topics for the consultant team as a culmination of meetings that took place from October, 2011 to July, 2012.

Several priority issues were developed during the Stakeholder Oversight Advisory Committee (SOAC) process. The specific priority issues that the New Source Development pilot study aims to address include the following:

- Poor Water Quality - Existing contamination of drinking water source (acute and chronic contaminants), increasing groundwater pollution, new and emerging contaminants, problems with secondary contaminants (i.e. taste, color, smell, etc.), and health impacts.
- Inadequate or Unaffordable Funding or Funding Constraints to Make Improvements - Lack of affordable or accessible funding for system improvements; Inadequate funding to make successful grant applications to get infrastructure improvements (i.e. lack of funding for grant writers, preliminary engineering, etc.); funding isn't always getting to the communities that need it most.

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- Lack of Informed, Empowered, or Engaged Residents--Residents lack good information, or do not feel that they have the power or ability to change their situation, or are not engaged in decision-making processes that impact local water or wastewater service, including inadequate or confusing information about water quality and what is safe drinking water, lack of information to residents on grant opportunities available to the community, knowledge about health impacts

**Potential Alternatives**

Potential alternatives for water supply solutions may include:

- Physical consolidation – water or wastewater facilities
- Exchanges or contracting for surface water, or another source
- Regional Facility (Drinking Water or Wastewater)
- New well(s)
- Treatment of existing sources
- Recharge of a local area
- Water Conservation
- Restrict potable water deliveries from agricultural or large turf irrigation
- Mitigate a source of contamination such as on-site systems

This pilot study includes the following:

- A description of the existing regulatory setting and summary of database findings;
- A description of the goals of the pilot and perspectives that were considered;
- A description of the priority issues this pilot aims to address;
- A description of the potential alternatives considered through this pilot;
- A description of the process to implement the potential alternatives considered;
- A discussion of example projects or case studies showing the results of these types of solutions;
- A discussion of the outreach process and communities that were evaluated;
- Funding opportunities that are available to implement solutions;
- A discussion of steps that may be taken to ensure long-term sustainability;
- Identification of any obstacles or barriers to implementation of the alternatives considered and recommendations for how to mitigate those obstacles or barriers; and
- A summary of conclusions and recommendations for future action.

**Physical Consolidation**

Physical consolidation of a water system to a neighboring water system may be a viable alternative to address water supply or water quality concerns. Physical consolidation involves connection of distribution pipelines or water service pipelines between the two

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systems. Typically, the system with water supply or water quality problems benefits from connection to the system that has sufficient capacity or water quality that satisfies regulatory requirements. Physical consolidation of a private system to a publicly owned community system (such as the consolidation of Lacey Courts Mobile Home Park with the City of Hanford) may be accomplished with the extension of a water service to the property. The private well would be required to be destroyed and the property would typically be required to annex to the publicly owned community or city system.

Physical consolidation of a small community water system to a larger community or city water system may require the complete reconstruction of the smaller system distribution system to satisfy current distribution system standards. Physical consolidation typically results in the dissolution of the ownership or management of the smaller system. The requirements associated with operation and maintenance of the water system is are retained by the larger community system.

The contracting for supply from a larger water system may involve the construction of new sources and distribution system facilities to connect the small community water system to that of an adjacent system. While similar to the concept of consolidation, this type of alternative is a form of contracting for additional water supply.

#### Exchanges or Contracting for Surface Water, or another Source

There may be opportunities for a community to contract for the delivery of a surface water supply from another entity. The surface supply will require water treatment and may have limitations regarding the reliability of the supply. **Table 5-1** identifies existing DACs that receive a surface water supply. It is noted that the Westlands Water District provides water to many DACs, as shown in **Figure 5-1**.

Contracting for groundwater sources of supply from another entity is another example of this alternative.

#### Regional Facility

There may be opportunities for communities to combine resources and create a regional system for water supply. This alternative is similar to consolidation, however, it is likely that a new political entity would be created to own, operate, and maintain the regional facility.

An example of a regional system is the Selma Kingsburg Fowler County Sanitation District. This system is directed toward sanitary sewer collection, treatment, and disposal.

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### New Well

There may be opportunities for communities to construct a new water supply well that could provide the quantity and quality required. A new water supply well could however require treatment. It is noted that **Figure 4-5** through **Figure 4-8** identify raw water quality from water supply wells where water quality objectives for constituents such as arsenic, nitrate, and uranium are exceeded.

### Treatment of Existing Sources

There may be opportunities for communities to construct a new water treatment facility to treat the water from an existing well. Treatment may also be performed by blending water from two different sources prior to distribution so that the final water meets regulatory requirements. It is noted that **Figure 4-5** through **Figure 4-8** identify raw water quality from water supply wells where water quality objectives for constituents such as arsenic, nitrate, and uranium are exceeded.

### Recharge of a Local Area

There may be opportunities for a community to contract for the delivery of a surface water supply from another entity for the purposes of recharging the groundwater of an area in need of supplemental water to mitigate declining groundwater levels.

As described previously, the entire Tulare Lake Basin Study Area is subject to declining groundwater levels. It is noted that there may be recharge sites that are not shown in the exhibits as there is not a comprehensive list of every site in the basin. However, the fact is that there exist recharge sites throughout the basin area. Further, the rivers, canals, and streams that exist in the Tulare Lake Basin serve as recharge facilities when they convey water. **Figure 5-2** through **Figure 5-5** provide the location of many recharge sites.

### Water Conservation

There may be opportunities for communities to implement water conservation measures including the installation of water meters and implementation of an associated metered water rate schedule for all connections. Other water conservation measures could include performing leak detection studies and implementing the necessary corrective actions, requiring low flow appliances within residences, or providing rebates for the installation of low flow appliances. Water conservation, as encouraged through water meters, rate schedule, and other water conservation measures may result in water savings for a community. Each community is unique, however, a water savings of up to 20 percent is not unreasonable.

### Restrict Potable Water Deliveries to Agricultural or Large Turf Irrigation

There may be opportunities for communities to encourage or require the restriction of potable water supply and delivery to non-potable uses. Examples may be turf irrigation of schools or parks, or agricultural irrigation. If potable water use is to be separated from non-potable water use in a property, there must be a means to measure the relative use of each water source on that property.

Communities such as Armona CSD, Pixley PUD, and Ivanhoe PUD have schools within their boundaries that have installed shallow groundwater wells for the purpose of landscape irrigation. The heavy summer demands of large landscape areas may be significant for communities within the Study Area.

### Mitigate a Source of Contamination

There may be opportunities for communities to encourage or require the mitigation of sanitary sewer treatment and disposal systems that may have an adverse impact on source water quality. For example, **Table 5-2** includes several Case Studies that have the circumstance of elevated nitrate concentration in the water supply where the sanitary sewer methods utilized consist of on-site septic tanks and leach fields. The on-site systems may be contributing to the elevated nitrate concentrations.

### Implementation Process

As is common to most rural water systems, distressed rural economies preclude straight-forward capital-intensive solutions without outside sources of funding. Creative solutions for sharing common functions (billings, operations, etc.) could help free up resources for capital investment.

One of the key tasks associated with evaluating water supply and quality issues is to develop a knowledge base of the existing condition. When a community has knowledge regarding its water and wastewater infrastructure and the local conditions that may impact the operation of the facilities, the community has the opportunity to proactively address challenges. Local leadership associated with water and wastewater issues is critical to sustainable solutions that may be available. Many disadvantaged communities will require technical assistance to present solutions and funding assistance for capital improvements, however, long term operation and maintenance of the facilities remains the responsibility of the local community.

The implementation of long term solutions may also incorporate recommendations contained in the Management and Non-Infrastructure Pilot Study and the Technical Solutions Pilot Study.

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Decision Trees are discussed in Section 6.4 of this pilot study and are intended to be a tool for community leaders to use to assist them to develop appropriate solutions to water and wastewater challenges. A list of questions precedes the decision tree to help gather valuable information to make the process of working through the decision trees easier.

**Case Studies**

Many disadvantaged communities with water supply or water quality issues have applied for and received funding for improvements to mitigate their water supply and/or water quality problems. Many disadvantaged communities with wastewater issues have also applied for and received funding for sewer or wastewater treatment facility improvements.

The Pilot Study includes descriptions of several of these case studies to provide some examples of the challenges that some communities have faced, the alternatives considered, the time frame required, and the fiscal impact of not only the evaluation, but also of the final resulting solution.

**Stakeholder Outreach Processes**

For each pilot study, a Pilot Project Stakeholder Advisory Group (PSAG) was formed to provide review of the pilot study, and provide guidance on potential communities to conduct outreach efforts through a community review process. The community review process involved conducting community review meetings to ground truth findings, to learn about what the residents in the community review focus area need and want, and to assess their perspective on the alternatives presented within the draft pilot study.

**Sultana**

Currently, Sultana Community Services District's water system serves one-hundred and sixty (160) water connections providing water to two-hundred forty-two (242) residences; one (1) post office; nine (9) commercial establishments; two (2) gas station/grocery stores; one (1) church; one (1) packing house; and the Monson-Sultana School.

The water system is currently supplied by one primary active well (Well No.3) which was drilled in 1996 to a depth of 430 feet; has an annular seal to a depth of 250 feet with a 14-inch casing installed to a depth of 430 feet perforated between 260 and 420 feet. The well is equipped with a 60 hp oil lubricated turbine pump and 5,500 gallon hydropneumatic tank. A natural gas generator is located at the well site to provide power when electrical service is interrupted. The District's backup well (Well No.2) was drilled to a depth of 358 feet; has an annular seal to a depth of 60 feet with a 14-inch casing installed to a depth of 332 feet. This well is equipped with a 75 hp oil lubricated turbine pump and also a 5,500 gallon hydropneumatic tank.

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Water pumped from the District's primary well (Well No.3) meets all Title 22 standards. However, the system's backup well (Well No.2) has produced water exceeding the DBCP Maximum Contaminant Level set by EPA and CDPH.

The challenges faced by the Sultana Community Services District include:

- Disadvantaged Community
- A single water supply well that meets potable water quality regulations but is not sufficient for peak or fire demands
- A second water supply well that exceeds water quality regulations for nitrate and DBCP
- Unknown water demands
- Unknown water losses
- Undersized water distribution mains
- No water storage
- Local groundwater that has high nitrates and DBCP
- Minimal cash reserves
- 2014 drought

**Goals of the Sultana Community Pilot Project**

The goals of the Sultana Community Pilot Project included:

- Provide information to the community participants about the goals and objectives of the Tulare Lake Basin DAC Study and the New Sources Pilot Study.
- Develop an understanding of the local water and wastewater challenges faced by the community.
- Provide preliminary alternative solutions identified in the New Sources pilot study.
- Obtain feedback on the preliminary alternative solutions identified.
- Provide recommendations to the community for future actions to consider.
- Develop Decision Trees that represent past and potential actions for Sultana CSD to consider.

**Pilot Project Activities Summary**

1. Obtain and review records
2. Field review – well, community
3. Meet with District and operations staff

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4. Discussions with CDPH – regulatory and funding
5. Discussions with City of Dinuba
6. Review of Monson water quality and funding applications
7. Review of East Orosi surface water plant alternative
8. Review sewer discharge agreement
9. Review past studies
10. Review past funding applications
11. Prepare draft Decision Trees
12. Conduct a Community Review Meeting
13. Summarize activities
14. Provide recommendations for District consideration

**Recommended Future Actions and Schedule**

1. Monitor and record the water use of Well No. 3 and Well No. 2 daily.
2. Determine the standing water level in Well No. 3 and Well No. 2.
3. Update the Funding Application for a new water supply well with the additional consideration that the District does not have a sufficient water supply.
4. Identify potential water supply well and water storage sites.
5. Perform a hydrogeological study of the area to determine if potable water supply is available. Construct a test well to confirm the availability of sustainable potable water.
6. Proceed with funding and construction of a water supply well.
7. Consider adjustment of water rates. The District is in dire need of additional reserves and operating funds.
8. Consider applying for funding and installation of water meters.

The District should consider including the installation of new water meters that can be read remotely in any larger project. A new billing rate structure would need to be determined that would include a base rate to cover basic O&M costs that would be billed regardless of how much water is used and then a per gallon rate for water used. This would encourage water conservation within the District.

9. Consider prohibiting any new connections.
10. Consider establishing connection fees once a sustainable water supply is obtained.
11. Consider contracting for water service from the City of Dinuba.

The District should consider including consolidation with the City of Dinuba when pursuing grant funding. Projects that include consolidation are strongly preferred by CDPH and tying consolidation into any water system improvements may result in a higher ranking for the project. The same may be true for Monson, which could connect to the Sultana CSD water system.

12. Coordinate with Monson and Tulare County with any local hydrogeological investigations.
13. Maintain interest in the Northern Tulare County Regional Safe Drinking Water Project for future water supply alternatives.

Financial analysis of any proposed projects would need to evaluate affordability, revenue sources, estimated capital costs, estimated operation and maintenance costs, estimated debt service and proposed rate adjustments, if needed, and their impact on the community.

During the feasibility study and alternatives analysis it is important to provide information to the public through public meetings and presentations. It is important for the community to understand and be involved with any changes to their water and wastewater systems. Due to the large Spanish speaking population in the community, it is important to have materials translated into Spanish and have interpreters available at any public meetings. An informed community may be more likely to become involved in the process and have a constructive voice in determination of any recommended improvements.

### Ivanhoe

The challenges faced by the Ivanhoe Public Utility District include:

- Disadvantaged Community
- Increasing Nitrate concentrations in wells: presence of DBCP, TCP
- Undersized water distribution mains in a portion of the District
- Some water distribution valves do not close completely
- No water storage

**EXECUTIVE SUMMARY****PILOT STUDY**

- Although information available from the Department of Water Resources indicates that the standing water elevation of agricultural wells in the vicinity of Ivanhoe have declined by approximately 50 feet since the mid 1980's, the District indicated that standing water levels of the municipal wells have not been significantly impacted. It is recommended that in light of the current drought, the District monitor the water levels of the water supply wells on a regular basis.

Goals of the Ivanhoe Community Pilot Project

The goals of the Ivanhoe Community Pilot Project included:

- Provide information to the community participants about the goals and objectives of the Tulare Lake Basin DAC Study and the New Sources pilot study.
- Develop an understanding of the local water and wastewater challenges faced by the community.
- Provide preliminary alternative solutions identified in the New Sources pilot study.
- Obtain feedback on the preliminary alternative solutions identified.
- Provide recommendations to the community for future actions to consider.
- Develop Decision Trees that represent past and potential actions for Ivanhoe PUD to consider.

Pilot Project Activities Summary

1. Obtain and review records
2. Meet with District and operations staff
3. Discussions with CDPH – regulatory and funding
4. Review potential of physical consolidation with Cal Water (City of Visalia)
5. Review past funding application
6. Prepare draft Decision Trees
7. Conduct a Community Review Meeting
8. Summarize activities
9. Provide recommendations for District consideration

Recommended Future Actions and Schedule

1. Place Wells No. 2 and No. 7 as standby in the Water Supply Permit.
2. Update the Funding Application for a new water supply well with the additional consideration that the District does not have a sufficient water supply.

**EXECUTIVE SUMMARY****PILOT STUDY**

3. When funding becomes available, perform a hydrogeological study of the area to determine if potable water supply is available. Construct a test well to confirm the availability of sustainable potable water. Utilize the hydrogeological study to immediately explore the location for future well sites.
4. Proceed with funding and construction of a water supply well.
5. Consider the review of blending new water supply wells with either of the standby water supply wells for the purposes of achieving acceptable Nitrate levels. This review would include the review of potential water storage tank sites.
6. It is recommended that the District maintain interest in the Kaweah River Basin IRWMP as it may be available as a vehicle to utilize to apply for funding assistance for future water supply improvements.

Financial analysis of any proposed projects would need to evaluate affordability, revenue sources, estimated capital costs, estimated operation and maintenance costs, estimated debt service and proposed rate adjustments, if needed, and their impact on the community.

During the feasibility study and alternatives analysis it is important to provide information to the public through public meetings and presentations. It is important for the community to understand and be involved with any changes to their water and wastewater systems. Due to the large Spanish speaking population in the community, it is important to have materials translated into Spanish and have interpreters available at any public meetings. An informed community may be more likely to become involved in the process and have a constructive voice in determination of any recommended improvements.

### Stratford

#### Challenges Faced by Stratford Public Utility District

The challenges faced by the Stratford Public Utility District include:

- Disadvantaged Community
- Insufficient water supply to meet maximum day demands with the largest well out of service
- Aged and undersized water distribution mains
- Perched water and corrosive soils
- Minimal water storage
- No cash reserves

**EXECUTIVE SUMMARY****PILOT STUDY**

- Not included within the geographic boundary of any IRWM, and therefore unable to join

Goals of the Stratford Community Pilot Project

The goals of the Stratford Community Pilot Project included:

- Provide information to the community participants about the goals and objectives of the Tulare Lake Basin DAC Study and the New Sources pilot study.
- Develop an understanding of the local water and wastewater challenges faced by the community.
- Provide preliminary alternative solutions identified in the New Sources pilot study.
- Obtain feedback on the preliminary alternative solutions identified.
- Provide recommendations to the community for future actions to consider.
- Develop Decision Trees that represent past and potential actions for Stratford PUD to consider.

Pilot Project Activities Summary

1. Obtain and review records
2. Meet with District and operations staff
3. Discussions with CDPH – regulatory and funding
4. Review past funding applications
5. Prepare draft Decision Trees
6. Conduct a Community Review Meeting
7. Summarize activities
8. Provide recommendations for District consideration

Recommended Future Actions and Schedule

1. Place Well No. 6 as standby in the Water Supply Permit.
2. Update the Funding Application for a new water supply well with the reinforced consideration that the District does not have a sufficient water supply.
3. Upon receipt of funding assistance, proceed with construction of a water supply well and water storage tank.
4. It is recommended that the District maintain interest in the Kings Basin IRWMP as it may be available as a vehicle to utilize to apply for funding assistance for

**EXECUTIVE SUMMARY****PILOT STUDY**

future water supply improvements. IRWMP's may be a viable mechanism to utilize to receive funding assistance.

5. Investigate the potential of working with the school to construct a new water supply well for the purpose of irrigation of school landscaping.

Financial analysis of any proposed projects would need to evaluate affordability, revenue sources, estimated capital costs, estimated operation and maintenance costs, estimated debt service and proposed rate adjustments, if needed, and their impact on the community.

During the feasibility study and alternatives analysis it is important to provide information to the public through public meetings and presentations. It is important for the community to understand and be involved with any changes to their water and wastewater systems. Due to the large Spanish speaking population in the community, it is important to have materials translated into Spanish and have interpreters available at any public meetings. An informed community may be more likely to become involved in the process and have a constructive voice in determination of any recommended improvements.

**Funding Opportunities**

State regulators and funders can begin encouraging solutions by providing educational material as well as funding opportunities. Existing funding opportunities and new drinking water legislation are presented in this study. Traditional drinking water funding programs include the Safe Drinking Water State Revolving Fund (SDWSRF), Proposition 50, Proposition 84, Department of Water Resources (DWR) Integrated Regional Water Management Program (IRWM), Community Development Block Grant Program (CDBG), and United States Department of Agriculture (USDA) Rural Development. Some wastewater funding opportunities include the Clean Water State Revolving Fund (CWSRF), the Small Community Wastewater Grant program (SCWG), Community Development Block Grant Program (CDBG), and United States Department of Agriculture (USDA) Rural Development.

**Sustainability of Program**

A sustainable water system is one that can meet fiscal and customer performance goals over the long-term. Sustainable systems have the following characteristics:

- A commitment to meet service expectations.
- Access to water supplies of sufficient quality and quantity to satisfy future demand.

**EXECUTIVE SUMMARY****PILOT STUDY**

- A distribution and treatment system that meets customer expectations and regulatory requirements.
- The technical, institutional, and financial capacity to satisfy public health and safety requirements on a long-term basis.

Small systems face severe challenges, including increasing regulatory requirements, declining water quality and quantity, legal liability for failing to meet the Safe Drinking Water Act, financial distress, and customer resistance to necessary rate structure modifications. A system's ability to deal with these challenges depends, to a great degree, on its managerial, technical, and financial capabilities.

Small water systems must find ways to make the capital improvements or operational changes necessary to ensure long-term sustainability. Maintaining this long-term focus in the face of pressing immediate needs is one of the greatest challenges small water systems face.

As is often the case, financial capacity lies at the heart of this challenge. Small systems in particular are hampered by limited access to capital often due to an insufficient rate and/or tax base, either because the number of customers is small or because the population served has a low MHI.

**Obstacles and Barriers**

There are numerous obstacles that a community must overcome in order to implement a new source solution. Some of these obstacles include:

**Proper selection of new source** – This pilot study provides a guide of possible new source solutions. However, a more detailed evaluation of the new source alternatives would need to be done to select an alternative that will sustainably solve the problem(s) unique to each community.

**Solution** – Select an engineering firm with experience in dealing with water supply or quality issues similar to the community's issues. Experience with consolidations is also recommended. The engineering firm should also be familiar with helping the community obtain funding for any possible improvements. Experience with the pooling of funding sources is also beneficial.

**Community acceptance** – In order for the new source solution to be feasible it would need to be accepted by the community. Community acceptance would help with the passing of any rate increases and the payment of future utility bills. The community understanding the reason for and benefits associated with any new source solution would be beneficial.

**Solution** – It is critical to get the community involved early on in the process of any new source solution. The community should be given the opportunity to be informed of new source solutions being considered and

## EXECUTIVE SUMMARY

## PILOT STUDY

how the changes may affect their water/wastewater and the additional costs. Levels of community acceptance will rise with increased community understanding of the necessity and benefits associated with any solution.

**Capital costs** – There will be capital costs associated with any new source solution. The ability to secure the necessary funding could be a major obstacle.

**Solution** – Engineering firms or some community groups (like Self Help Enterprises) are experienced in helping small communities obtain funding. These firms or groups are familiar with the available funding and the process needed to secure the funding.

**Operation and maintenance costs** - The community may be able to obtain grants or low interest loans to pay for the associated capital costs for a new source solution. There is currently no funding mechanism in place to assist with operation and maintenance costs. These costs will have to be borne by the citizens in the community. Depending on the median household income in the community, the utility rate increase may adversely impact the citizens.

**Solution** – Selecting the best new source solution that meets the water quality standards, allows for fiscal sustainability of the facilities, and is most cost effective for the rate payers. It is likely any new source solution will involve some rate increase to cover increased O&M, provide funds for reserves, or payback any loans for the capital costs. Community acceptance of the new source solution may help ease the acceptance of any rate increases.

**Water meters** – Using water meters and billing based on usage are ways to encourage water conservation. Some DACs have water meters; however sometimes the meters are not used in billing due to the fact that staff is not available to read the meters. For these DACs, water billings are done at a flat rate.

**Solutions** – Current funding through CDPH does not allow for replacement of water meters. DACs would benefit from State funding for water meter replacement. The replacement meters should be capable of being read remotely. Additionally, the DAC would need to modify their billing system to bill customers based on the volume of water used.

**Licensed operators** – The new source solutions may require a higher level certified operator than is currently employed or contracted to the community. The operator at the higher level would likely command a higher salary due to the scarcity of higher level operators.

**Solutions** – Explore the possibility of an existing operator for the community upgrading their certification to be able to operate and maintain the new source solution. If an operator cannot be found from existing staff, the community may need to explore the possibility of hiring a

contract operator. Another option is to share operators with neighboring communities. This option is discussed in more detail in the Management and Non-Infrastructure pilot study.

### **Conclusions and Recommendations**

For communities that are interested in pursuing one of the New Source Development alternatives presented in this pilot study, additional action is recommended. To implement one of these alternatives, it is recommended that communities consider the following tasks:

- Prepare a Self Assessment of the existing infrastructure, capacity, demands, and items that may impact any of the items.
- Seek funding to conduct a feasibility study to evaluate alternatives
- Prepare a Technical, Managerial, and Financial Assessment
- Consider the impact to consumers (cost per connection)
- Consider the impact to water system (revenues versus expenses)
- Confirm that the solution will satisfy regulatory requirements
- Confirm the solution is fiscally sustainable

Recommendations for various funding agencies as well as the Legislature were also developed as part of this pilot study, and for the overall Tulare Lake Basin DAC Study. Some recommendations or considerations include:

- County planning departments may consider specific limitations when proposals for new small systems are received
- Regulatory changes (water and wastewater) should be evaluated with the perspective of and impact to the service providers and consumers in mind.
- Providing technical and/or financial support for DACs to prepare funding applications.
- Promote grant application workshops or training.

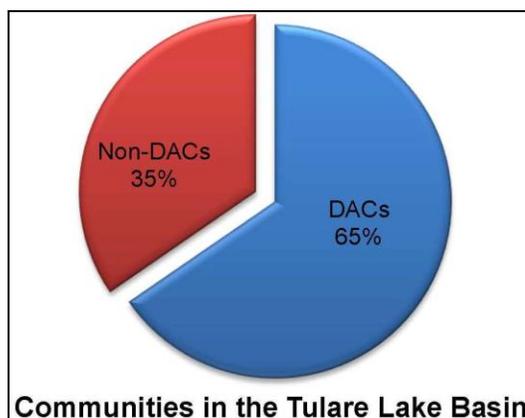


## 1 INTRODUCTION

### 1.1 Project Information

The County of Tulare received a California Department of Water Resources (DWR) grant executed in May 2011, which was appropriated through Senate Bill SBx2 1 (Perata, 2008) (Refer to **Appendix A** and **B**). This appropriation was the result of disadvantaged community leaders in the region raising the visibility of local water and wastewater challenges, and advocating for funding to develop more sustainable and affordable approaches to solving disadvantaged community water and wastewater issues in the Tulare Lake Basin. The goal of the Tulare Lake Basin Disadvantaged Community Water Study (TLB Study) was to develop an overall plan to address water needs including recommendations for planning, infrastructure, and other water management actions, as well as specific recommendations for regional drinking water treatment facilities, regional wastewater treatment facilities, conjunctive use sites and groundwater recharge, groundwater for surface water exchanges, related infrastructure, project sustainability, and cost-sharing mechanisms. The plan was intended to identify projects and programs that will create long-term reliability and regulatory compliance, while optimizing the on-going operation and maintenance (O&M) and management costs for small water and wastewater systems. As the culmination of the TLB Study, recommendations are provided for legislation, funding opportunities, and other support that Federal, State, and local agencies can provide to help facilitate this plan.

The County of Tulare contracted with Provost & Pritchard Consulting Group to prepare the plan. Provost & Pritchard led a team of consultants, including Keller Wegley Consulting Engineers, Self-Help Enterprises, Community Water Center, and McCormick, Kabot, Jenner & Lew (project team or consultant team). The TLB Study focuses on unincorporated communities within the Tulare Lake Basin (Study Area) that are classified as disadvantaged communities. A disadvantaged community is defined as a community whose median household income is 80 percent or less of the statewide median household income. The Study Area encompasses most of the four-county area, including Fresno, Kern, Kings, and Tulare Counties, and is generally rural in nature with much of the population widely dispersed throughout the region. The Tulare Lake Basin Study Area Boundary is shown in **Figure 1-1**. Approximately 354 of 530 identified communities within the Tulare Lake Basin are disadvantaged or severely disadvantaged. The estimated population within these 354 communities is approximately 280,000<sup>1</sup>. **Figure 1-2** through



<sup>1</sup> Database information that was collected and analyzed for the TLB Study originated from multiple sources. Refer to Section 13 - References.

**SECTION ONE**

**Figure 1-5** show the disadvantaged communities within the Study Area. **Table 1-1** through **Table 1-4** list the disadvantaged communities within each county.

DRAFT

**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

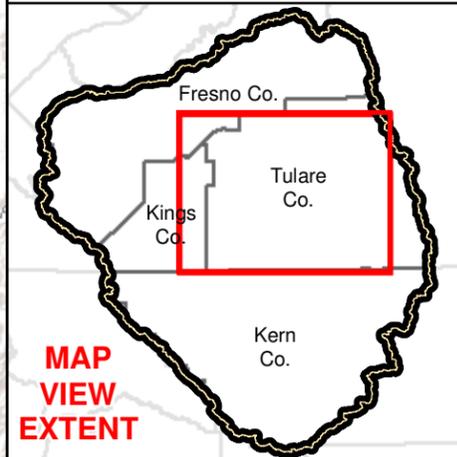
TULARE COUNTY  
Communities

DAC and SDAC Communities

**Legend**

-  Tulare Lake Basin
-  County
-  DAC or SDAC Community
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

**DRAFT**

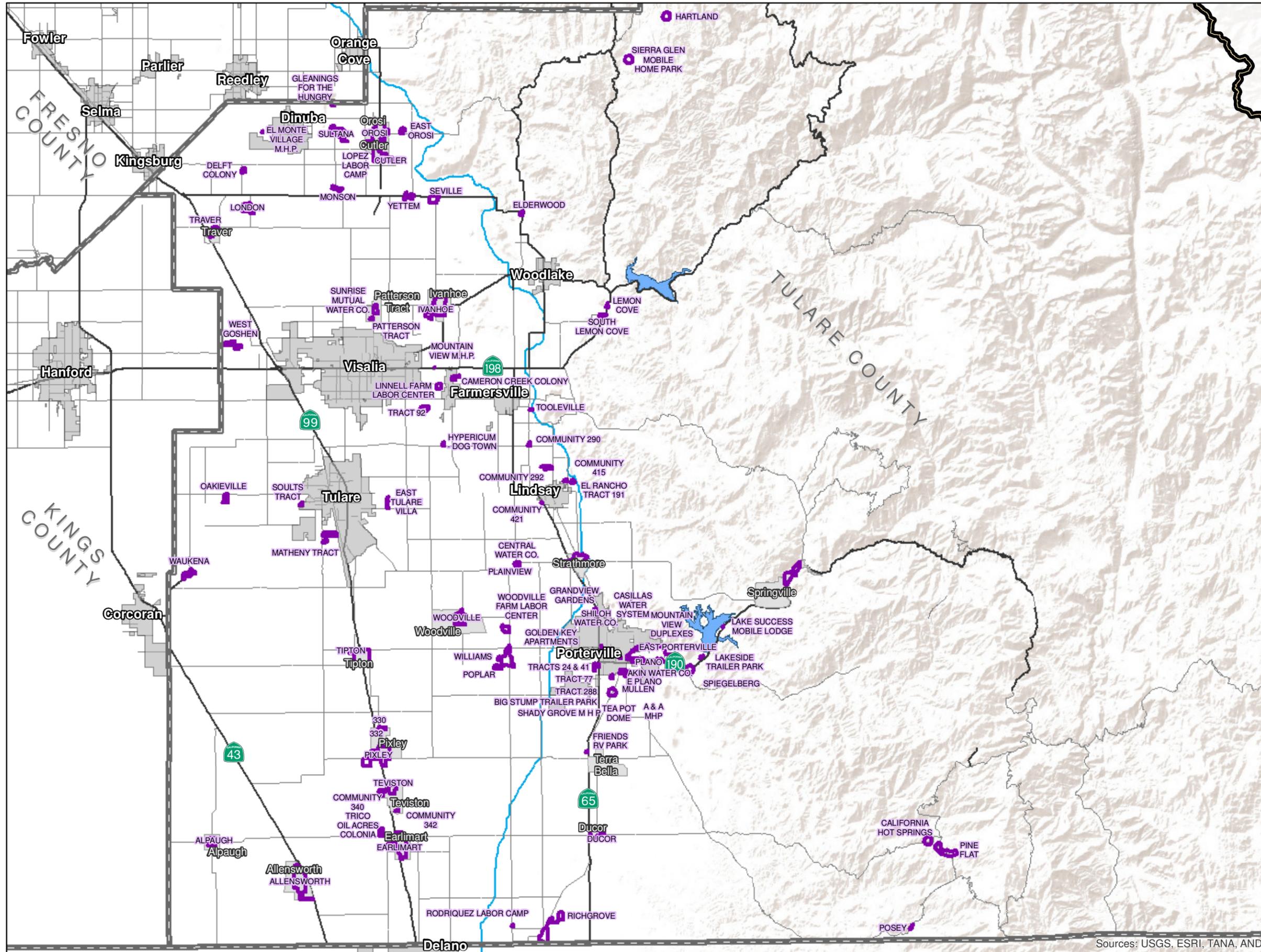


**MAP  
VIEW  
EXTENT**



EST. 1968  
**PROVOST & PRITCHARD**  
CONSULTING GROUP  
*An Employee Owned Company*

286 W. Cromwell Ave.  
Fresno, CA 93711-6162  
(559) 449-2700



Sources: USGS, ESRI, TANA, AND



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

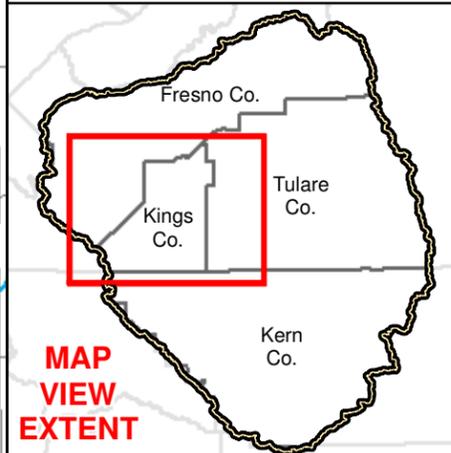
KINGS COUNTY  
Communities

DAC and SDAC Communities

**Legend**

-  Tulare Lake Basin
-  County
-  DAC or SDAC Community
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

Exhibit 2  
**DRAFT**

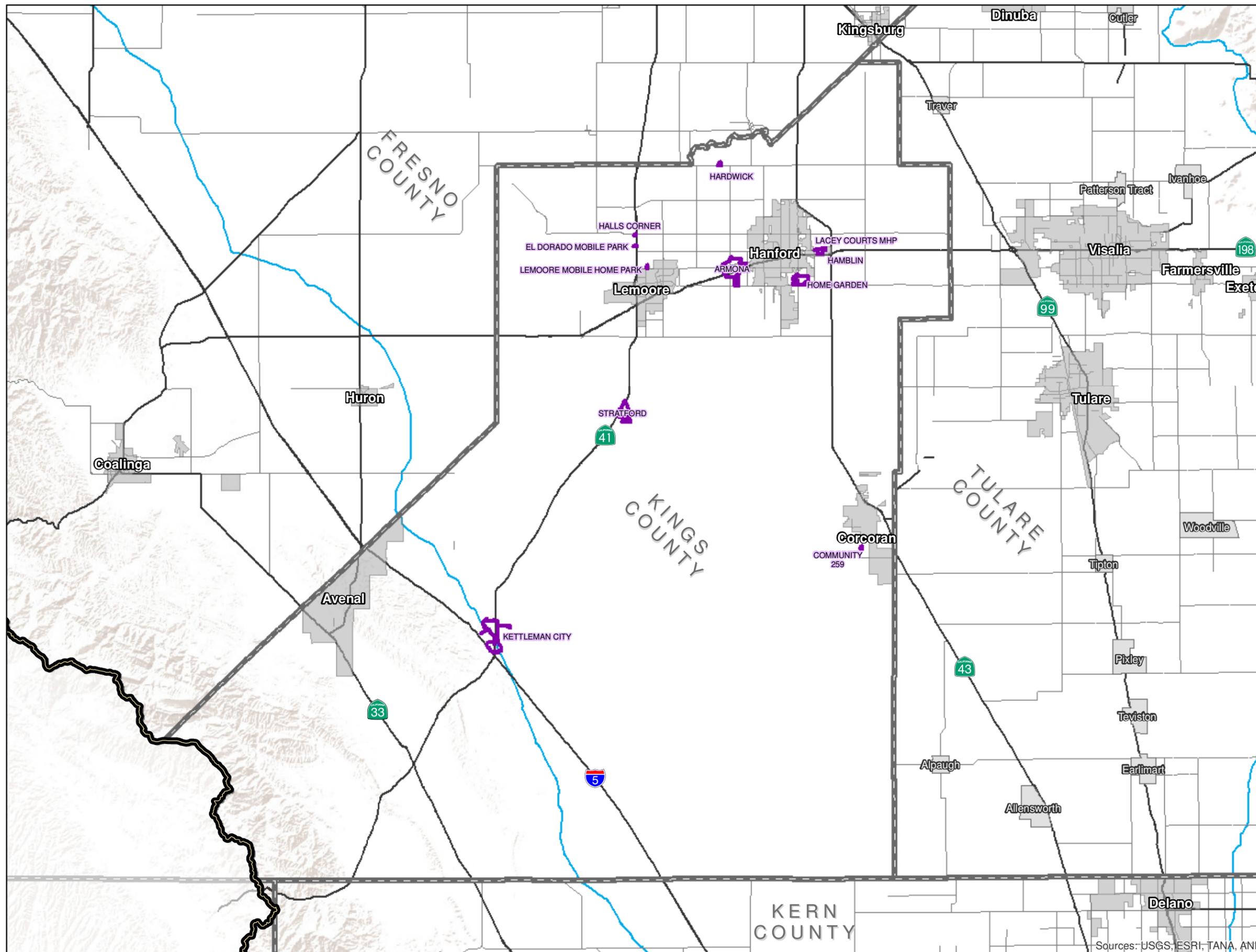


**MAP  
VIEW  
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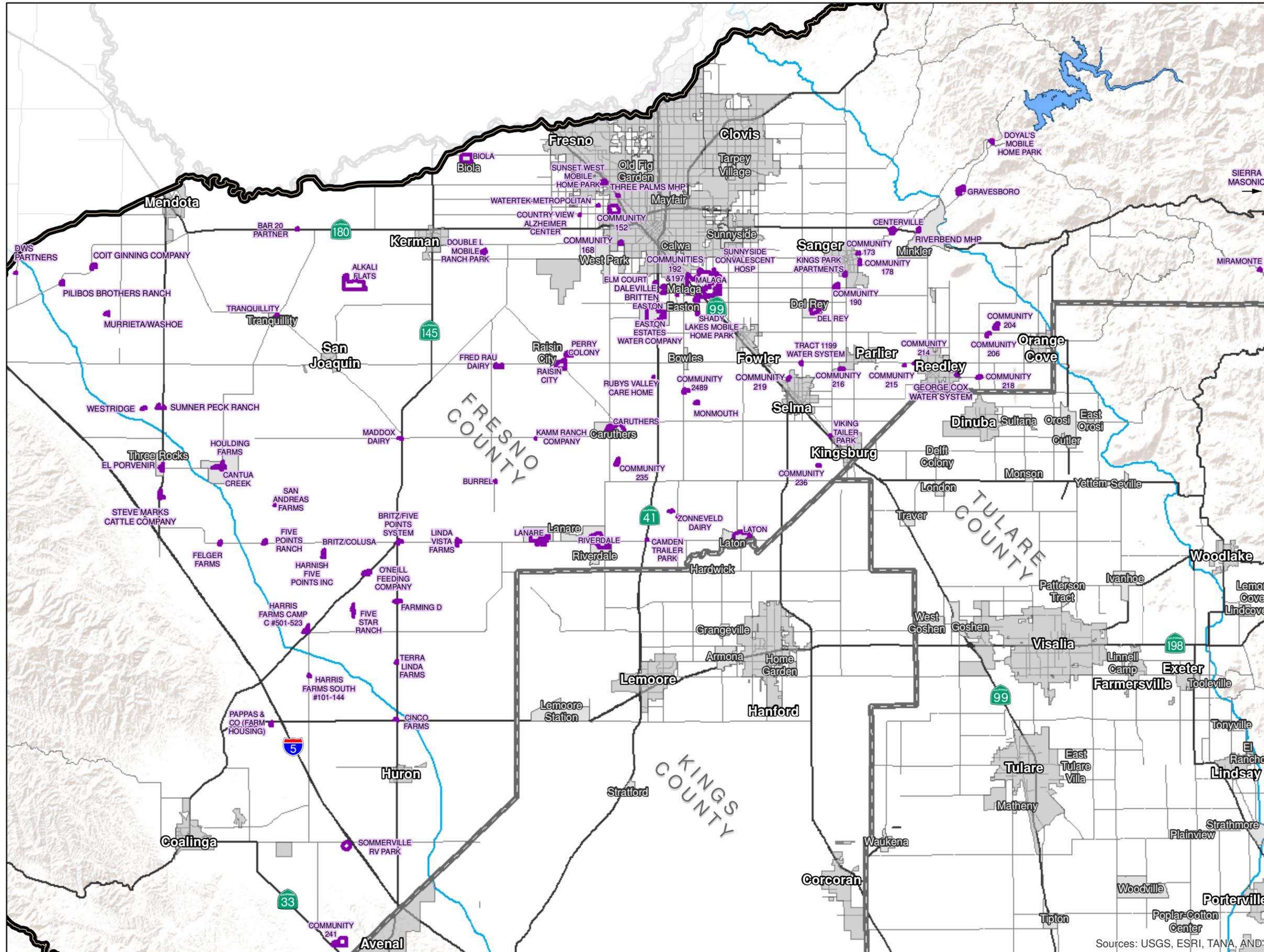
Sources: USGS, ESRI, TANA, AND



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

FRESNO COUNTY  
Communities

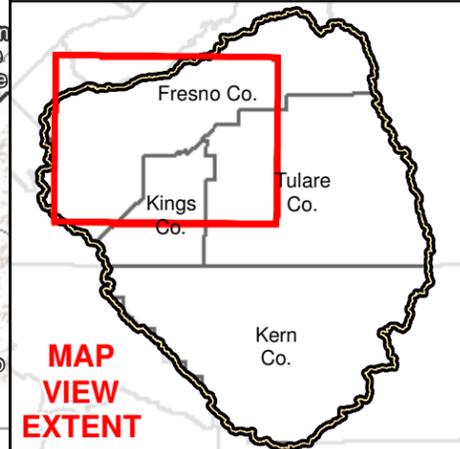
DAC and SDAC Communities



**Legend**

- Tulare Lake Basin
- County
- DAC or SDAC Community
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

**DRAFT**



**MAP  
VIEW  
EXTENT**

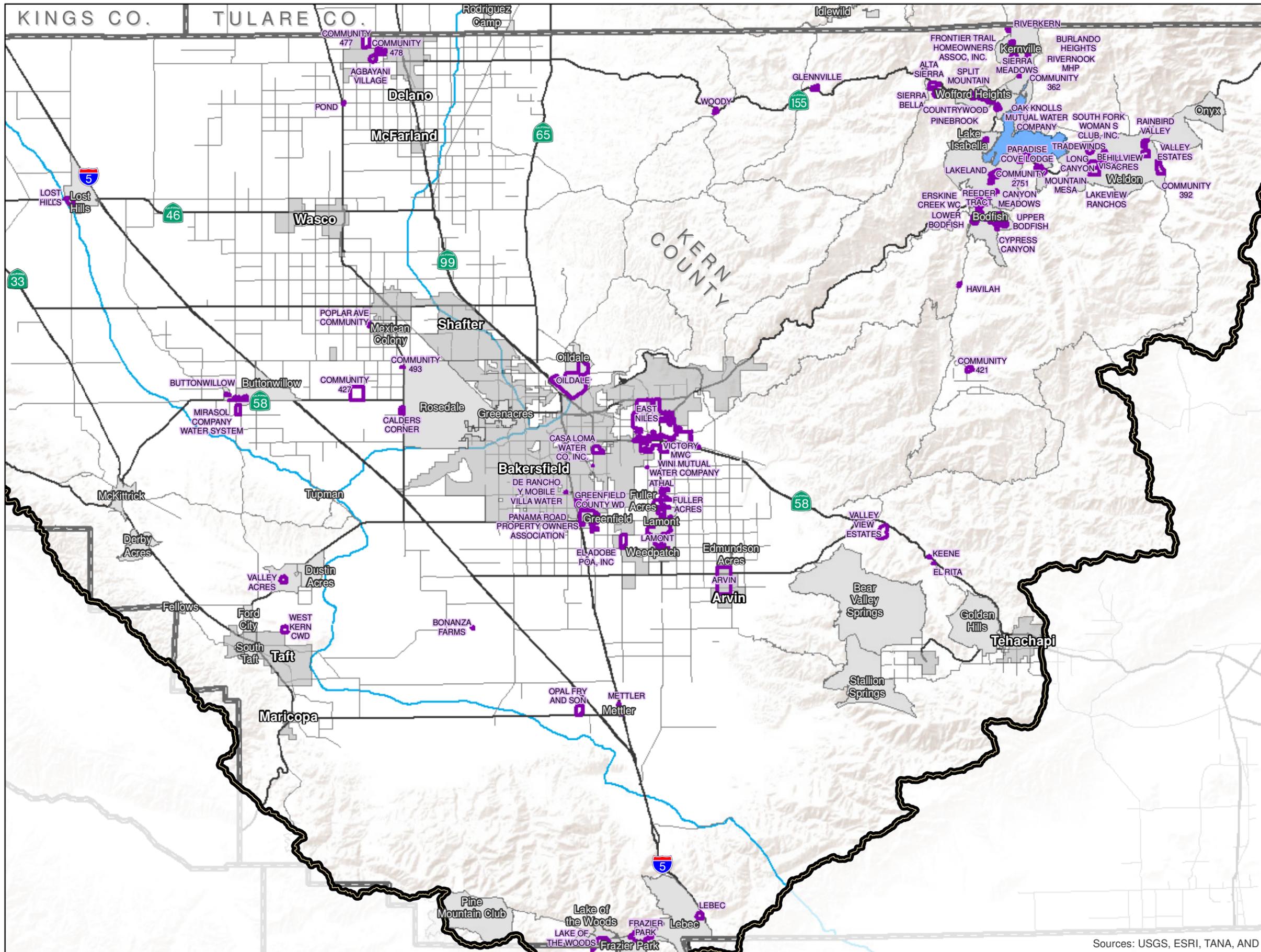


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Sources: USGS, ESRI, TANA, AND...





**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

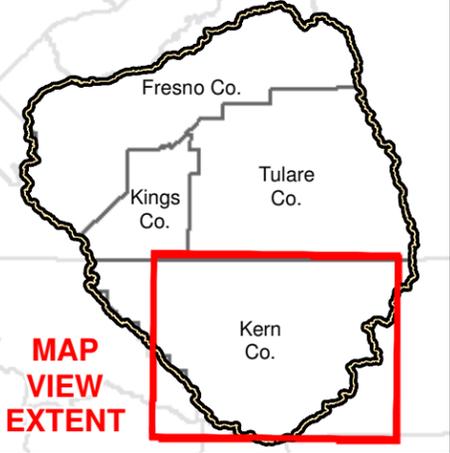
**KERN COUNTY  
Communities**

DAC and SDAC Communities

**Legend**

- Tulare Lake Basin
- County
- DAC or SDAC Community
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

**Exhibit 4  
DRAFT**



0 2 4 6 Miles

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CONSULTING GROUP  
*An Employee Owned Company*

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Fresno, CA 93711-6162  
(559) 449-2700

Sources: USGS, ESRI, TANA, AND



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

STUDY AREA

IRWM Planning Groups

**Legend**

Tulare Lake Basin

County

**IRWM Planning Groups**

- (24) Poso Creek
- (38) Upper Kings Basin Water Forum
- (14) Kaweah River Basin\*
- (15) Kern County
- (33) Southern Sierra
- (35) Tule\*
- (44) Westside - San Joaquin

Exhibit 5

**DRAFT**

0 5 10 15 Miles



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CONSULTING GROUP  
An Employee Owned Company

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Fresno, CA 93711-6162  
(559) 449-2700

Sources: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand)



**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY  
TABLE 1-1  
LIST OF DISADVANTAGED COMMUNITIES IN TULARE COUNTY**

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Ownership
OROSI	5410008	7318	1678	SDAC	Public (state, federal, local)
CUTLER	5410001	6300	1197	SDAC	Public (state, federal, local)
IVANHOE	5410019	4474	1174	DAC	Public (state, federal, local)
PIXLEY	5410009	3500	700	SDAC	Public (state, federal, local)
RICHGROVE	5410024	2700	600	SDAC	Public (state, federal, local)
STRATHMORE	5410012	2352	690	SDAC	Public (state, federal, local)
POPLAR	5410026	2200	555	SDAC	Public (state, federal, local)
TIPTON	5410014	1792	587	SDAC	Public (state, federal, local)
LONDON	5410017	1638	450	DAC	Public (state, federal, local)
WOODVILLE	5410025	1542	421	SDAC	Public (state, federal, local)
SPRINGVILLE	5410011	1300	639	SDAC	Public (state, federal, local)
ALPAUGH	5410050	1000	340	SDAC	Public (state, federal, local)
SULTANA	5400824	650	224	DAC	Public (state, federal, local)
EAST OROSI	5401003	426	102	SDAC	Public (state, federal, local)
DELFT COLONY	5403023	400	103	SDAC	Public (state, federal, local)
TEVISTON	5400641	300	70	SDAC	Public (state, federal, local)
ALLENSWORTH	5400544	300	96	SDAC	Public (state, federal, local)
PONDEROSA CSD	5400934	232	116	DAC	Public (state, federal, local)
LEMON COVE	5400616	150	50	DAC	Public (state, federal, local)
EL RANCHO - TRACT 191	5410052	124	24	SDAC	Public (state, federal, local)
EARLIMART	5410021	5531	1483	SDAC	Private
MATHENY TRACT	5410033	1980	325	SDAC	Private
CAMP NELSON	5410022	1125	341	SDAC	Private
LINNELL FARM LABOR CENTER	5400631	896	190	SDAC	Private
PLAINVIEW	5410039	800	200	SDAC	Private
WOODVILLE FARM LABOR CENTER	5400792	725	181	SDAC	Private
EAST TULARE VILLA	5410041	565	108	DAC	Private
PATTERSON TRACT	5402038	550	114	DAC	Private
TRAVER	5400553	500	180	DAC	Private
TRACT 92	5400903	500	91	SDAC	Private
DUCOR	5400542	411	102	SDAC	Private
SEVILLE	5400550	400	89	SDAC	Private
TOOLEVILLE	5400567	350	77	SDAC	Private
GRANDVIEW GARDENS	5400666	350	102	SDAC	Private
WEST GOSHEN	5400957	200	69	DAC	Private
A & A MHP	5400504	200	60	DAC	Private
GRIER MUTUAL WATER CO.	5400728	190	89	DAC	Private
WILLIAMS	5400718	180	50	DAC	Private
CENTRAL WATER CO.	5400682	170	42	SDAC	Private
PIERPOINT SPRINGS WATER CO.	5400732	165	78	DAC	Private
RODRIGUEZ LABOR CAMP	5400735	150	34	SDAC	Private
SUNRISE MUTUAL WATER CO.	5400881	140	39	DAC	Private
SHADY GROVE M H P	5400529	137	40	SDAC	Private
CENTRAL MUTUAL	5400655	115	23	DAC	Private
TRACT 77	5400655	115	23	SDAC	Private
PINE FLAT	5410034	110	223	DAC	Private
TRACT 288	5400935	110	44	SDAC	Private
MOUNTAIN VIEW DUPLEXES	5400604	108	27	SDAC	Private
EL MONTE VILLAGE M.H.P.	5400523	100	49	DAC	Private
SOULTS TRACT	5400805	100	36	DAC	Private
SHILOH WATER CO.	5400527	75	20	SDAC	Private
SEQUOIA CREST WATER CO	5400701	70	93	SDAC	Private
AKIN WATER CO.	5401038	50	22	SDAC	Private
GOLDEN KEY APARTMENTS	5400600	48	16	DAC	Private
MOUNTAIN VIEW M.H.P.	5400819	44	24	DAC	Private
E PLANO	5400767	40	20	SDAC	Private
GLEANINGS FOR THE HUNGRY	5402047	31	10	DAC	Private
LAKE SUCCESS MOBILE LODGE	5400660	20	18	SDAC	Private

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Ownership
EAST PORTERVILLE	Private Wells	5528	1675	SDAC	
LAKESIDE TRAILER PARK	5400518	500	91	SDAC	
TRACTS 24 - 41	Private Wells	393	119	DAC	
YETTEM	5403043	350	64	DAC	
CAMERON CREEK COLONY		350	100	SDAC	
DOYLE SPRINGS ASSN.	5401093	300	51	DAC	
SOUTH LEMON COVE	Unknown Source	243	105	DAC	
PLANO	Private Wells	241	73	SDAC	
OAKIEVILLE	Private Wells	231	70	DAC	
BIG STUMP TRAILER PARK	5400582	175	51	SDAC	
COMMUNITY 292	Unknown Source	158	48	SDAC	
HYPERICUM - DOG TOWN	Private Wells	132	40	SDAC	
COMMUNITY 340	Unknown Source	116	35	SDAC	
PANORAMA HEIGHTS PROP OWNERS	5400509	100	109	SDAC	
WAUKENA	Unknown Source	99	30	SDAC	
ALPINE VILLAGE	5400708	90	45	DAC	
PANORAMA PARK FIRE PRO. CO.	5400724	90	58	SDAC	
TRICO OIL ACRES COLONIA	Unknown Source	89	27	DAC	
PORTERVILLE TRAILER PARK	5400611	80	25	SDAC	
POSEY	Unknown Source	79	24	SDAC	
CALIFORNIA HOT SPRINGS	5400513	75	30	DAC	
COMMUNITY 290	Unknown Source	69	21	SDAC	
COMMUNITY 330	Unknown Source	63	19	SDAC	
SUGARLOAF VILLAGE	5400543	60	30	SDAC	
ELDERWOOD	Unknown Source	59	18	DAC	
COMMUNITY 332	Unknown Source	59	18	SDAC	
POSO PARK ASSN.	5400511	52	52	SDAC	
SPEAR CREEK CABIN OWNERS ASSOC	5400581	52	26	SDAC	
COMMUNITY 415	Unknown Source	50	15	DAC	
LOPEZ LABOR CAMP	5400546	50	25	DAC	
MONSON	Private Wells	40	40	SDAC	
SUGARLOAF	5400722	38	30	SDAC	
COMMUNITY 342	Unknown Source	36	11	SDAC	
HARTLAND	5403135	36	20	SDAC	
COMMUNITY 421	Unknown Source	33	10	SDAC	
CASILLAS WATER SYSTEM	5403047	30	6	SDAC	
ROGERS CAMP HOMEOWNERS ASSN.	5403072	25	9	DAC	
SPIEGELBERG	5403115	25	1	DAC	
TEA POT DOME	5403039	25	4	SDAC	
CEDAR SLOPE	5400921	25	59	DAC	
FRIENDS RV PARK	5403051	24	44	SDAC	
SIERRA GLEN MOBILE HOME PARK	5400551	22	14	DAC	

**TOTAL POPULATION**

66341

**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
 NEW SOURCE DEVELOPMENT PILOT STUDY  
 TABLE 1-2  
 LIST OF DISADVANTAGED COMMUNITIES IN KINGS COUNTY**

<b>NAME</b>	<b>CDPH System ID</b>	<b>Population Estimate</b>	<b>Connections Estimate</b>	<b>Type</b>	<b>Ownership</b>
ARMONA	1610001	3239	1179	DAC	Public (state, federal, local)
HOME GARDEN	1610007	1750	450	SDAC	Public (state, federal, local)
KETTLEMAN CITY	1610009	1500	321	SDAC	Public (state, federal, local)
STRATFORD	1610006	1215	240	DAC	Public (state, federal, local)
EL DORADO MOBILE PARK	1600002	297	90	SDAC	Private
LEMOORE MOBILE HOME PARK	1600031	125	38	DAC	Private
LACEY COURTS MHP	1600010	50	21	DAC	Private
HARDWICK	1600507	40	40	SDAC	Private
HAMBLIN		240	75	DAC	
COMMUNITY 259	Unknown Source	66	20	DAC	
HALLS CORNER	Unknown Source	66	20	DAC	

<b>TOTAL</b>		8588			
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**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY  
TABLE 1-3  
LIST OF DISADVANTAGED COMMUNITIES IN FRESNO COUNTY**

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Ownership
RIVERDALE	1010028	3000	930	DAC	Public (state, federal, local)
CARUTHERS	1010039	2103	672	DAC	Public (state, federal, local)
LATON	1010020	1236	331	DAC	Public (state, federal, local)
BIOLA	1010049	1200	206	SDAC	Public (state, federal, local)
DEL REY	1010035	950	240	DAC	Public (state, federal, local)
TRANQUILLITY	1010030	820	326	DAC	Public (state, federal, local)
FCSA #49	1000546	450	46	DAC	Public (state, federal, local)
MALAGA	1010042	448	448	DAC	Public (state, federal, local)
RAISIN CITY	1000551	288	64	SDAC	Public (state, federal, local)
EL PORVENIR	1000019	230	51	SDAC	Public (state, federal, local)
EASTON ESTATES WATER COMPANY	1000018	371	106	DAC	Private
CANTUA CREEK	1000359	342	78	SDAC	Private
LANARE	1000053	300	120	DAC	Private
GREEN ACRES MOBILE HOME ESTATE	1000229	300	112	DAC	Private
HARRIS FARMS CAMP C #501-523	1009027	300	77	SDAC	Private
WOODWARD BLUFFS MHP	1000298	300	167	DAC	Private
SUNSET WEST MOBILE HOME PARK	1000378	239	162	DAC	Private
THREE PALMS MOBILEHOME PARK	1000299	202	101	DAC	Private
RIVERBEND MOBILE HOME & RV PARK	1000426	200	46	DAC	Private
HARRIS FARMS SOUTH #101-144	1009028	160	41	DAC	Private
RUBYS VALLEY CARE HOME	1000200	158	1	DAC	Private
BRITZ/FIVE POINTS SYSTEM	1009179	150	33	SDAC	Private
ZONNEVELD DAIRY	1000369	141	34	SDAC	Private
SHADY LAKES MOBILE HOME PARK	1000244	130	56	DAC	Private
FIVE POINTS RANCH	1009020	130	37	SDAC	Private
FIVE STAR RANCH	1000175	120	22	SDAC	Private
KINGS PARK APARTMENTS	1000295	120	40	SDAC	Private
SUNNYSIDE CONVALESCENT HOSP	1000366	116	3	SDAC	Private
BRITZ/COLUSA	1009023	106	29	SDAC	Private
COUNTRY VIEW ALZHEIMER CENTER	1000430	100	2	DAC	Private
FARMING D	1009147	100	38	DAC	Private
CAMDEN TRAILER PARK	1000238	100	25	SDAC	Private
SUMNER PECK RANCH	1009232	92	28	SDAC	Private
COIT GINNING COMPANY	1009131	90	31	SDAC	Private
DOUBLE L MOBILE RANCH PARK	1000248	80	37	SDAC	Private
FRED RAU DAIRY	1009120	80	24	SDAC	Private
BAR 20 PARTNER	1000079	60	15	SDAC	Private
WATERTEK-METROPOLITAN	1000057	60	29	SDAC	Private
SAN ANDREAS FARMS	1009258	53	16	SDAC	Private
MADDOX DAIRY	1009177	50	15	SDAC	Private
HOULDING FARMS	1009051	50	15	SDAC	Private
PAPPAS & CO (FARM HOUSING)	1009006	50	13	SDAC	Private
LINDA VISTA FARMS	1000445	40	26	SDAC	Private
FELGER FARMS	1009215	40	12	SDAC	Private
ELM COURT	1000277	40	14	SDAC	Private
GEORGE COX WATER SYSTEM	1000407	40	20	DAC	Private
TERRA LINDA FARMS	1009222	40	3	DAC	Private
TRACT 1199 WATER SYSTEM	1000075	39	13	DAC	Private
PILIBOS BROTHERS RANCH	1009035	35	15	SDAC	Private
CINCO FARMS	1009206	30	9	DAC	Private
WESTRIDGE	1009034	30	9	SDAC	Private
HARNISH FIVE POINTS INC	1009077	26	8	DAC	Private
MURRIETA/WASHOE	1009013	25	10	SDAC	Private
STEVE MARKS CATTLE COMPANY	1009214	25	24	SDAC	Private
DOYAL'S MOBILE HOME PARK	1000405	22	15	SDAC	Private
KAMM RANCH COMPANY	1009143	20	3	SDAC	Private
DWS PARTNERS	1009176	16	5	SDAC	Private
EASTON	Private Wells	1966	623	DAC	

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Ownership
COMMUNITY 152	Private Wells	877	266	SDAC	
SOMMERVILLE RV PARK	1000439	500	1	SDAC	
COMMUNITY 190	Private Wells	178	54	DAC	
COMMUNITY 241	Unknown Source	165	50	SDAC	
COMMUNITY 178	Private Wells	148	45	SDAC	
DALEVILLE	Private Wells	138	42	SDAC	
MONMOUTH	Unknown Source	120	37	DAC	
ALKALI FLATS	Unknown Source	100	100	SDAC	
BRITTEN	Private Wells	89	27	SDAC	
VIKING TAILER PARK	1000454	80	48	DAC	
COMMUNITY 235	Unknown Source	72	22	DAC	
DOUBLE L NEIGHBORHOOD	Private Wells	70	35	SDAC	
COMMUNITY 168	Private Wells	69	21	SDAC	
MIRAMONTE	Private Wells	66	20	DAC	
COMMUNITY 204	Private Wells	66	20	SDAC	
COMMUNITY 216	Private Wells	63	19	SDAC	
COMMUNITY 218	Private Wells	60	18	DAC	
COMMUNITY 2489	Unknown Source	59	18	DAC	
COMMUNITY 180	Private Wells	59	18	DAC	
COMMUNITY 186	Private Wells	59	18	SDAC	
COMMUNITY 206	Private Wells	56	17	SDAC	
COMMUNITY 215	Private Wells	53	16	DAC	
PERRY COLONY	Unknown Source	50	50	DAC	
COMMUNITY 173	Private Wells	49	13	SDAC	
COMMUNITY 197	Private Wells	49	15	DAC	
COMMUNITY 219	Private Wells	49	15	DAC	
GRAVESBORO	Unknown Source	45	30	SDAC	
SIERRA MASONIC	5400916	45	24	DAC	
COMMUNITY 214	Private Wells	42	13	DAC	
COMMUNITY 236	Unknown Source	35	10	DAC	
COMMUNITY 192	Private Wells	33	10	DAC	
BURREL	Unknown Source	16	16	DAC	
CENTERVILLE	Private Wells	14	14	DAC	

**TOTAL**

21583

**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY  
TABLE 1-4  
LIST OF DISADVANTAGED COMMUNITIES IN KERN COUNTY**

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Ownership
EAST NILES	1510006	24900	7338	DAC	Public (state, federal, local)
WEST KERN CWD	1510022	16800	7589	DAC	Public (state, federal, local)
ARVIN	1510001	14713	3536	SDAC	Public (state, federal, local)
LAMONT	1510012	13858	3381	SDAC	Public (state, federal, local)
GREENFIELD COUNTY WD	1510024	8400	2411	DAC	Public (state, federal, local)
FRAZIER PARK	1510007	2834	1296	DAC	Public (state, federal, local)
LEBEC	1510051	1285	243	DAC	Public (state, federal, local)
BUTTONWILLOW	1510011	1266	472	SDAC	Public (state, federal, local)
VALLEY ACRES	1510022	336	140	DAC	Public (state, federal, local)
METTLER	1500401	157	42	SDAC	Public (state, federal, local)
OILDALE	1510015	26000	7820	DAC	Private
ERSKINE CREEK WC	1510009	2500	1031	SDAC	Private
LOWER BODFISH	1510056	2037	558	SDAC	Private
LOST HILLS	1510046	1991	434	DAC	Private
MOUNTAIN MESA	1510042	1015	359	SDAC	Private
LAKE OF THE WOODS	1500459	953	397	DAC	Private
VICTORY MWC	1500231	740	172	DAC	Private
CASA LOMA WATER CO, INC.	1510004	600	215	SDAC	Private
UPPER BODFISH	1510026	591	201	SDAC	Private
FULLER ACRES	1500296	571	200	SDAC	Private
REEDER TRACT	1510009	500	300	DAC	Private
LAKELAND	1510049	473	215	DAC	Private
TRADEWINDS	1500406	450	214	SDAC	Private
RIVERKERN	1500251	336	102	SDAC	Private
SPLIT MOUNTAIN	1500407	333	237	SDAC	Private
EL ADOBE POA, INC	1500493	330	100	SDAC	Private
CANYON MEADOWS	1500443	325	142	SDAC	Private
VALLEY ESTATES	1500478	275	115	SDAC	Private
CALDERS CORNER	1500544	261	79	DAC	Private
COUNTRYWOOD	1500408	238	68	SDAC	Private
DE RANCHO Y MOBILE VILLA WATER	1500380	200	90	DAC	Private
GLENNVILLE	1502162	198	60	DAC	Private
LONG CANYON	1500578	197	65	SDAC	Private
RAINBIRD VALLEY	1500393	188	83	SDAC	Private
SIERRA BELLA	1500341	160	125	SDAC	Private
ATHAL	1500289	150	62	SDAC	Private
KERN VALLEY MUTUAL WATER	1500252	100	42	SDAC	Private
PINEBROOK	1500404	100	42	SDAC	Private
ALTA SIERRA	1500209	100	215	SDAC	Private
OAK KNOLLS MUTUAL WATER COMPANY	1500465	100	52	SDAC	Private
BURLANDO HEIGHTS	1500336	85	42	DAC	Private
VALLEY VIEW ESTATES	1500569	81	39	SDAC	Private
BONANZA FARMS	1502482	80	17	SDAC	Private
BELLA VISTA	1502653	72	34	SDAC	Private
SIERRA MEADOWS	1502564	60	42	DAC	Private
LAKEVIEW RANCHOS	1500525	59	49	DAC	Private
KERNVALE	1500364	52	20	SDAC	Private
OPAL FRY AND SON	1500216	50	13	DAC	Private
PANAMA ROAD PROPERTY OWNERS ASSOCIATION	1502465	50	16	SDAC	Private
CYPRESS CANYON	1502449	50	34	SDAC	Private
POND	1502620	48	16	DAC	Private
FRONTIER TRAIL HOMEOWNERS ASSOC, INC.	1500398	40	36	DAC	Private
HILLVIEW ACRES	1500448	35	47	SDAC	Private
MIRASOL COMPANY WATER SYSTEM	1500152	30	13	SDAC	Private
POPLAR AVE COMMUNITY	1502549	30	9	DAC	Private
V.R. S TRAILER PARK	1500511	30	27	SDAC	Private
HUNGRY GULCH	1500436	30	20	DAC	Private
CLARK STREET COMMUNITY WELL	1502056	25	16	SDAC	Private

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Ownership
COMMUNITY 427		2475	750	DAC	
COMMUNITY 478		792	240	SDAC	
COMMUNITY 392		594	180	DAC	
RIVERNOOK MHP	1500481	220	152	DAC	
COMMUNITY 2751		165	50	SDAC	
PARADISE COVE LODGE	1502213	150	3	DAC	
BLACKWELLS CORNER		148	45	SDAC	
COMMUNITY 421		132	40	SDAC	
COMMUNITY 477		132	40	SDAC	
WOODY		116	35	DAC	
AGBAYANI VILLAGE	1500518	100	6	DAC	
HAVILAH		79	24	SDAC	
SOUTH FORK WOMAN S CLUB, INC.	1503373	60	1	DAC	
KEENE		50	20	DAC	
EL RITA		43	13	DAC	
COMMUNITY 362		36	11	DAC	
COMMUNITY 493		33	10	DAC	
WINI MUTUAL WATER COMPANY	1503526	7	2	DAC	

**TOTAL**

132800

## SECTION ONE

These communities may face a variety of source water issues, including (1) poor water quality, (2) insufficient water supply, and (3) unreliable water system infrastructure. A source water quality issue, as defined in this study, is considered to be a single primary maximum contaminant level (MCL) exceedance within the three year period from 2008 through 2010. This does not necessarily constitute a formal violation, but is an indication that the system may be in jeopardy of having violations in the future and should be evaluated further. Evaluation of MCL exceedances was used to get a better understanding of where identified issues were present based on geography, community size, and other factors. Exceedance of maximum contaminant levels for arsenic, nitrates, and uranium are common in the Tulare Lake Basin Study Area.

Insufficient water supply, as described in this study, is considered to be a characteristic of a water system with only one (1) active water supply well (e.g., no backup source). Communities with surface water as their single source of supply can also be vulnerable depending on the reliability of the surface water source and of backup systems integrated into the surface water treatment plant.

Additionally, the general depth to groundwater in the Tulare Lake Basin continues to decline, a condition known as overdraft. In 2009, the United States Geological Survey (USGS) performed a comprehensive evaluation of groundwater supplies in the Central Valley (USGS, 2009). The Central Valley was divided into four regions: Sacramento Valley, Delta and Eastside Streams, San Joaquin Basin, and Tulare Basin. The USGS found that the Tulare Basin had the highest rate of groundwater overdraft of any region, and that fifty seven percent of groundwater pumping in the Central Valley occurs in the Tulare Basin. Groundwater storage in the Tulare Basin had declined at a steady rate between 1962 and 2004. The total loss in storage due to un-replenished water stores was estimated to be 68 million acre-feet, which equates to an overdraft of about 1.6 million acre-feet/year.



The impacts of utilizing deeper groundwater, as necessitated by overdraft conditions, may include higher pumping costs and different constituents to be evaluated for treatment prior to distribution as a potable water source.

Unreliable water system infrastructure is also a challenge for disadvantaged communities in the Study Area. Many systems have old and failing equipment and pipelines, lack of funds to proactively maintain their system, and lack of redundancy of system components. Systems with such limited reliability are more susceptible to

system failures that may lead to emergency situations, where immediate repairs or replacement are necessary in order to deliver safe drinking water to customers.

In addition to the water supply issues faced by DACs in the Study Area, communities may also face issues with their wastewater. Wastewater challenges include reliance on septic systems that may be failing or are potentially contaminating the groundwater, failing or insufficient sewer collection systems, or wastewater treatment systems that are not capable of meeting the limitations set forth in the facility's Waste Discharge Requirements (WDRs).

Many disadvantaged communities with water supply or water quality issues have applied for and received funding for improvements to mitigate these problems. Report to the Legislature, Senate Bill X2 1 (2011), attached in **Appendix D**, provides a list of some recently funded projects in the region. Systems that have received funding for water system capital improvements are usually on their way to resolving their water supply issues. While there are cases where the funded improvements resolve some, but not all of the system's water supply issues, a system with a funded project should be on the path toward the goal of delivering safe, sufficient, and sustainable potable water.

## 1.2 Overview of TLB Study

In order to meet the objectives of the Tulare Lake Basin Disadvantaged Community Water Study, five tasks were performed in accordance with the grant agreement. The tasks performed included:

1. Baseline Data Gathering, Mapping, and Database Creation of Disadvantaged Communities in the Tulare Lake Basin
2. Stakeholder Consultation and Community Outreach
3. Selection of Pilot Projects and Studies to Develop Representative Solutions to Priority Issues
4. Implementation of Pilot Project Stakeholder Process to Develop Studies and Representative Solutions to Priority Issues
5. Preparation of Final Report for submittal to DWR

### 1.2.1 Database

The County of Tulare and project team developed a database of disadvantaged communities in the Tulare Lake Basin. The project team coordinated with other local, state, and federal agencies as well as appropriate organizations to collect existing data and create the database. The project team utilized Geographic Information Systems (GIS) to map the location of disadvantaged communities in the Tulare Lake Basin and other available and relevant data in order to identify regional challenges and opportunities.

More information about the data gathering and database creation process, as well as ongoing database maintenance, is included in the Tulare Lake Basin Disadvantaged Community Water Study Final Report (Final Report).

**SECTION ONE****1.2.2 Stakeholder Consultation and Community Outreach**

An initial task for the TLB Study was to organize a Stakeholder Oversight Advisory Committee (SOAC or Committee). The County of Tulare established a basin-wide Committee comprised of community representatives, as well as regulatory and funding agency representatives and other organizations that work on and are familiar with disadvantaged community water and wastewater needs. The SOAC worked with the project team to identify priority issues, potential pilot projects, and review project recommendations. The details of the SOAC and their purpose, responsibilities, and actions performed are described in the Final Report.

The project team also conducted outreach to community representatives, including residents and local water board members that were the subject of individual pilot studies. These community representatives assisted the project team in confirming the viability of the proposed alternatives presented, and helped inform the development of a roadmap, referred to as “decision trees”, for each of the pilot studies. The decision trees are sets of flow charts that are intended to help guide a community toward an appropriate solution, depending on its unique set of challenges and circumstances.

In order to ensure that each pilot study was developed with input from stakeholders, a separate Pilot Project Stakeholder Advisory Group (PPSAG or PSAG) was convened for each of the four pilot studies. Each group was comprised of members of impacted communities, regulatory and funding agencies, local water or wastewater providers, and other agencies and organizations as appropriate, in order to provide input and recommendations to the project team.

**1.2.3 Selection of Pilot Studies**

In consultation with the SOAC, the project team utilized the database to identify common problems associated with providing safe, reliable water and wastewater services to disadvantaged communities. Using this list of common problems, the project team worked with the SOAC to identify priority issues facing disadvantaged communities in the Tulare Lake Basin. Five (5) priority issues were identified through the SOAC, including:

1. Lack of funding to offset increasingly expensive operations and maintenance costs in large part due to lack of economy of scale;
2. Lack of technical, managerial, and financial (TMF) capacity by water and wastewater providers;
3. Poor water quality;
4. Inadequate or unaffordable funding or funding constraints to make improvements; and
5. Lack of informed, empowered, or engaged residents.

The SOAC approved a final roster of four (4) representative pilot studies to address the identified priority issues, as the culmination of several SOAC meetings that took place

**SECTION ONE****PILOT STUDY**

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from October 2011 through July 2012. The four pilot studies developed through the SOAC to be further evaluated included:

1. Management and Non-Infrastructure Solutions to Reduce Costs and Improve Efficiency;
2. Technical Solutions to Improve Efficiency and Reduce Operation & Maintenance;
3. New Source Development; and
4. Individual Household Solutions.

#### 1.2.4 Implementation of Pilot Studies

The project team further developed and evaluated the potential solutions recommended under each of the four (4) pilot studies identified. Recommendations and roadmaps for each pilot study were developed in consultation with the Pilot Project Stakeholder Advisory Groups as well as pilot specific Community Review groups.

The Final Report and each of the pilot studies reflect comments and information received as a result of outreach to various federal, state, and local agencies as well as community stakeholders, including representatives of disadvantaged communities. The four pilot studies are not mutually exclusive. Communities pursuing improvement in a specific pilot study topic will likely utilize information prepared in one or more of the other pilot studies. Each of the four pilot studies is included as an attachment to the Final Report. The pilot study that is the focus of this report is the New Sources Development pilot.

#### 1.2.5 Pilot Stakeholder Advisory Group (PSAG) Meetings

The project team held two meetings with the respective PSAG groups to discuss the initial and final findings and recommendations of the Pilot Study. The first meeting was held on August 22, 2013. The second PSAG meeting was held on May 21, 2014. The meetings provided members of the PSAG an opportunity to discuss the draft report and provide comments to the project team for consideration.

#### 1.2.6 Final Report

The Tulare Lake Basin Disadvantaged Community Water Study Final Report provides a complete discussion of all the tasks performed as a part of the TLB Study. The four pilot studies are appended to the Final Report and summarized within the Final Report. Based on the findings of the TLB Study and each of the pilot studies, the Final Report also provides several conclusions and recommendations to the State Legislature.

### **1.3 Scope of Pilot**

The specific priority issue that the New Source Development pilot study aims to address is summarized as follows:

**SECTION ONE****PILOT STUDY**

Poor Water Quality - Existing contamination of drinking water source (acute and chronic contaminants), increasing groundwater pollution, new and emerging contaminants, problems with secondary contaminants (i.e. taste, color, smell, etc.), and health impacts.

Potential alternatives for water supply solutions may include:

- Physical consolidation – water or wastewater facilities
- Exchanges or contracting for surface water, or another source
- Regional Facility (Drinking Water or Wastewater)
- New well(s)
- Treatment of existing sources
- Recharge of a local area
- Metering (water conservation)
- Restrict potable water deliveries from agricultural or large turf irrigation
- Mitigate a source of contamination such as on-site systems

This pilot study includes the following:

- A description of the existing regulatory setting and summary of database findings;
- A description of the goals of the pilot and perspectives that were considered;
- A description of the priority issues this pilot aims to address;
- A description of the potential alternatives considered through this pilot;
- A description of the process to implement the potential alternatives considered;
- A discussion of example projects or case studies showing the results of these types of solutions;
- A discussion of the outreach process and communities that were evaluated;
- Funding opportunities that are available to implement solutions;
- A discussion of steps that may be taken to ensure long-term sustainability;
- Identification of any obstacles or barriers to implementation of the alternatives considered and recommendations for how to mitigate those obstacles or barriers; and
- A summary of conclusions and recommendations for future action.

## 2 BACKGROUND

### 2.1 Regulatory Setting

#### 2.1.1 Drinking Water Regulations

The Safe Drinking Water Act was originally passed by Congress in 1974 and amended in 1986 and 1996, to protect public health by regulating the nation's public drinking water supply. The Safe Drinking Water Act affects every public water system (PWS) in the United States. It is noted that any supplier delivering water for human consumption to less than 15 service connections or less than 25 regularly served persons is not considered to be a PWS, as defined by the Safe Drinking Water Act. The key provisions of the Safe Drinking Water Act are the National Primary Drinking Water Regulations, which are national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. Early on, the Safe Drinking Water Act primarily focused on treatment as a means of protecting drinking water, but in 1996 the Act was amended to include source water protection, operator training, funding for water system improvements, and public information as important components of protection.

Compliance with the Safe Drinking Water Act at the federal and state levels requires public water systems, regardless of size, to have (1) adequate and reliable sources of water that either are or can be made safe for human consumption; and (2) the financial resources and technical ability to provide services effectively, reliably, and safely for workers, customers, and the environment. Small public water systems must meet the same requirements as larger utilities, but with fewer financial resources available to them due to their smaller customer base. The ability of users to cover system costs is further reduced in disadvantaged communities where household incomes are less, resulting in increased challenges to meet their financial responsibility. Federal and state programs do provide these small public water systems with extra assistance, such as training and technical assistance, but operational subsidies are almost nonexistent and many small and disadvantaged community water systems continue to struggle to remain in compliance.

A public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 year long residents is considered by CDPH as a Community Water System (CWS), and is regulated either by CDPH or the Local Primacy Agency (LPA). The EPA has designated CDPH as the Primacy Agency responsible for the administration and enforcement of the Safe Drinking Water Act (SDWA) requirements in California. CDPH has adopted statutes and regulations to implement the requirements of the SDWA. CDPH has regulatory responsibility over water systems including tasks such as issuance of operating permits, conducting inspections, monitoring for compliance with regulations and taking enforcement action to compel compliance when violations are identified.

**SECTION TWO**

CDPH has delegated the drinking water program regulatory authority for small public water systems serving less than 200 service connections to 31 counties in California. The delegated counties (Local Primacy Agencies or LPAs) are responsible for regulating approximately 5,500 small public water systems statewide. CDPH retains the regulatory authority over water systems serving 200 or more service connections and any small water systems not delegated to an LPA.

Kings County is the Local Primacy Agency under the California Department of Public Health in monitoring compliance for and in enforcing EPA's Safe Drinking Water Act in that county. Communities in Kings County with less than 200 connections are therefore monitored by the Kings County Department of Public Health, Environmental Health Services.

Tulare County has been the LPA responsible for regulating small public water systems in that county. However, as of July 1, 2014 Tulare County relinquished Local Primacy to CDPH, and will no longer serve as the LPA for that county.

In Fresno and Kern Counties, CDPH maintains responsibility for regulating small public water systems.

### 2.1.2 Wastewater Regulations

The State Water Resources Control Board (SWRCB) was created by the Legislature in 1967, with the goal of ensuring the highest reasonable quality of waters of the State. The SWRCB allocates water rights, adjudicates water rights disputes, develops statewide water protection plans, establishes water quality standards, and guides the Regional Water Quality Control Boards (RWQCB or Regional Boards) located in the major watersheds of the State. There are nine (9) RWQCBs under the SWRCB. The RWQCBs develop and enforce water quality objectives and implementation plans to protect the beneficial uses of the State's waters, recognizing local differences in climate, topography, geology, and hydrology. The Regional Boards develop "Basin Plans" for their hydrologic areas, issue waste discharge permits for wastewater treatment facilities, take enforcement action against violators, and monitor water quality.

Together with the Regional Boards, the SWRCB is authorized to implement the Federal Water Pollution Control Act (Clean Water Act) in California. The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. The Clean Water Act gives the EPA the authority to set effluent limits to ensure protection of the receiving water. Pollutants regulated under the Clean Water Act include priority pollutants, conventional pollutants such as biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform, oil and grease, and pH, and non-conventional pollutants including any pollutants not identified as either conventional or priority.

**SECTION TWO****2.1.3 Changes to the Regulatory Setting**

As of July 1, 2014, the drinking water division of CDPH is operated under the SWRCB.

The California Environmental Protection Agency and the California Health and Human Services Agency held a public meeting on January 15, 2014 to obtain input on the proposed transfer of the Drinking Water Program from the California Department of Public Health to the State Water Resources Control Board.

The Drinking Water Reorganization Transition Plan was developed in March 2014, to describe the proposed transfer that is effective as of July 1, 2014. [http://www.swrcb.ca.gov/drinkingwater/docs/transition\\_plan\\_fullversion.pdf](http://www.swrcb.ca.gov/drinkingwater/docs/transition_plan_fullversion.pdf)

According to the Transition Plan, The Administration's goal in transferring the Drinking Water Program is to align the state's water quality programs in an organizational structure that:

- 1) Consolidates all water quality regulation throughout the hydrologic cycle to protect public health and promote comprehensive water quality protection for drinking water, irrigation, industrial, and other beneficial uses;
- 2) Maximizes the efficiency and effectiveness of drinking water, groundwater, and water quality programs by organizing them in a single agency whose primary mission is to protect water quality for beneficial uses including the protection and preservation of public and environmental health;
- 3) Continues focused attention on providing technical and financial assistance to small, disadvantaged communities to address their drinking water needs;
- 4) Consolidates financial assistance programs into a single state agency that is focused on protecting and restoring California water quality, protecting public health, and supporting communities in meeting their water infrastructure needs;
- 5) Establishes a one-stop agency for financing water quality and supply infrastructure projects;
- 6) Enhances water recycling, a state goal, through integrated water quality management; and
- 7) Promotes a comprehensive approach to communities' strategies for drinking water, wastewater, water recycling, pollution prevention, desalination, and storm water.

The Drinking Water Program is responsible for enforcing the federal and state Safe Drinking Water Acts. The main responsibilities are to: (1) issue permits to drinking water systems, (2) inspect water systems, (3) monitor drinking water quality, (4) set and enforce drinking water standards and requirements, and (5) award infrastructure loans and grants.

SECTION TWO

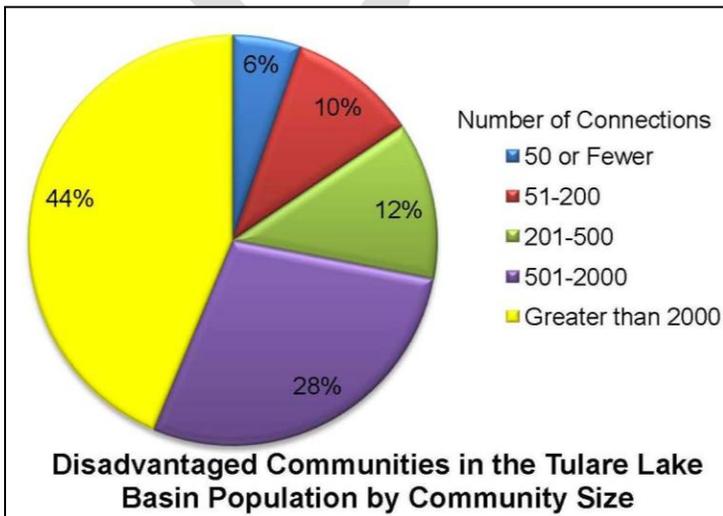
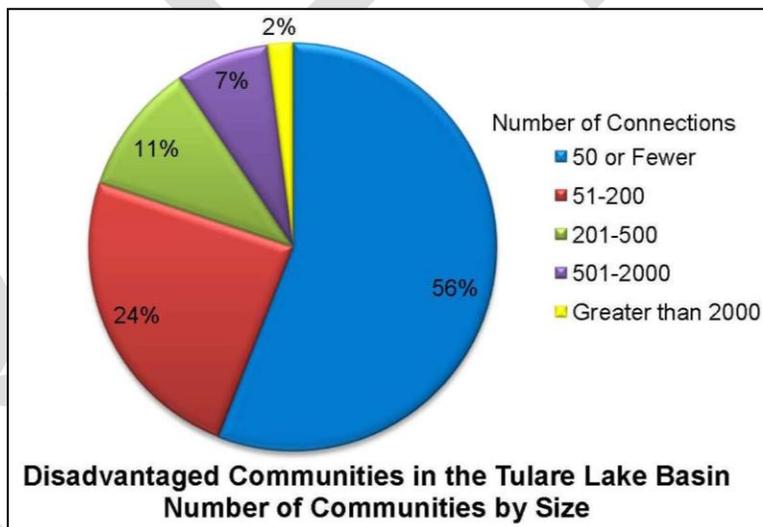
PILOT STUDY

Under the proposed transfer, Drinking Water Program regulatory staff would be organized under a new **Division of Drinking Water** within the State Water Board. Headquarters staff for the Division would be relocated to the CalEPA building with other State Water Board staff. The remainder of the staff would continue to be locally-based in district offices and would continue their close working relationships with water system personnel and other interested community groups.

Federal law requires a single agency at the state level to carry out the federal Public Water System Supervision Program implementing the Safe Drinking Water Act. The Department of Public Health currently has been granted primacy for implementing the federal program. The Administration will work with U.S. EPA to ensure that the transfer of primacy from the Department of Public Health to the State Water Board occurs simultaneously with the transfer of the Drinking Water Division.

**2.2 Summary of Database Findings**

There are approximately 354 disadvantaged communities (DACs) within the Tulare Lake Basin Study Area. Of these 354 DACs, approximately 201 are severely disadvantaged communities (SDACs). The water and sewer systems in these unincorporated communities throughout the Tulare Lake Basin vary in size, from those with individual water wells and onsite septic systems, to community systems serving more than 2,000 connections. The majority (80%) of the communities range in size from less than 15 connections to 200 connections, although a large percentage (84%) of the overall population lives in communities with greater than 200 connections. The number of connections as discussed in this pilot study is generally based on water system connections.



Many water systems serving these DACs face challenges related to the quality of their water and/or the number of supply sources available. The water quality primary constituent MCL exceedances reported in these communities include coliform bacteria, arsenic, nitrate, uranium, fluoride, dibromochloropropane

**SECTION TWO**

(DBCP), perchlorate, polychlorinated biphenyls (PCB), and disinfection by-products such as trihalomethanes. Based on the database information collected and analyzed, arsenic, nitrate, and uranium are the contaminants of greatest concern in the region since those constituents had the greatest number of exceedances reported. Coliform exceedances are also common, but coliform is readily treatable as discussed and documented in the Technical Solutions pilot study.

There are approximately 216 DACs with water systems in the Study Area. Approximately 89 out of the 216 DACs with water systems in the Study Area reported at least two water quality exceedances between 2008 and 2010. An exceedance of an MCL does not always constitute a violation, but does indicate a potential issue. A breakdown of the water quality exceedances by contaminant is presented in the Technical Solutions pilot study.

Limited reliable water supply is also a concern within the region, since many communities only have a single source of water supply, usually from groundwater. Based on the database information available, approximately 96 out of the 354 DACs in the Study Area have a single supply source. Communities that rely on a single water source are especially vulnerable to drought and other water supply challenges, as well as changes in water quality. An entire community can go from having safe drinking water to not having access to safe water or not having water at all with the failure of a single source.

The communities with the various water supply and quality issues are illustrated on the maps shown as **Figure 2-1** through **Figure 2-4**. As noted, these systems are not all in violation of water quality standards. A list of compliance orders for the Fresno, Visalia and Tehachapi Districts of CDPH are presented in **Appendix E**

The database is a collection of information from PolicyLink, CDPH, Self-Help Enterprises, County of Fresno, and County of Tulare, as well as other sources. The database has been reviewed to evaluate the water quality and supply source issues as well as wastewater treatment and disposal issues within the Study Area. More specifics of the database and how it was developed are found in the Tulare Lake Basin Disadvantaged Community Water Study Final Report. The database will continue to be maintained and updated by the County of Tulare after completion of this Study.

The database includes the best available data, but it is not a complete and comprehensive database of all water supply systems in the Study Area, and as such should be considered a work in progress for future updating. It is likely that there are communities and/or systems with water quality problems that have not been specifically identified because water quality data was limited or not available. Very small water systems (15 connections and less) are likely to have the most limited data available, and data for households with individual wells was not available. Their problem types, however, will likely fall within the family of problems identified to exist for other communities in the database. Very small water systems and individual household systems are discussed in the Individual Households pilot study.

**SECTION TWO****PILOT STUDY**

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There are also some emerging contaminants of concern that are discussed in the Technical Solutions pilot study. The emerging contaminants of most imminent concern are Hexavalent Chromium (Chrome-6) and 1,2,3-Trichloropropane (TCP). CDPH published a draft regulation for Chrome-6 in August 2013. The proposed maximum contaminant level (MCL) is 10 parts per billion (ppb). CDPH has also developed a public health goal for TCP and is in the process of developing an MCL. It is anticipated that many of the DACs within the Tulare Lake Basin will be impacted by implementation of MCLs for Chrome-6 and TCP, and they could be expensive contaminants to mitigate.

The Tulare Lake Basin has been the subject of several other studies in recent years that are referenced in the TLB Study. The “Kings Basin Water Authority Disadvantaged Community Pilot Project Study” (KBWA Study) was commissioned to study the Kings Basin area, which overlaps much of the Tulare Lake Basin Study Area. The KBWA Study area included most of Fresno County, and portions of Kings and Tulare Counties. The Kings Basin Water Authority contracted with Provost & Pritchard to conduct the KBWA Study. The State Water Resources Control Board commissioned the preparation of the report entitled “Addressing Nitrate in California’s Drinking Water”. The University of California was contracted to prepare the report with a focus on nitrates in the groundwater of the Tulare Lake Basin and a portion of Salinas Valley. The State Water Resources Control Board also administer a report entitled “Communities that Rely on Contaminated Groundwater”, in response to Assembly Bill 2222.

**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

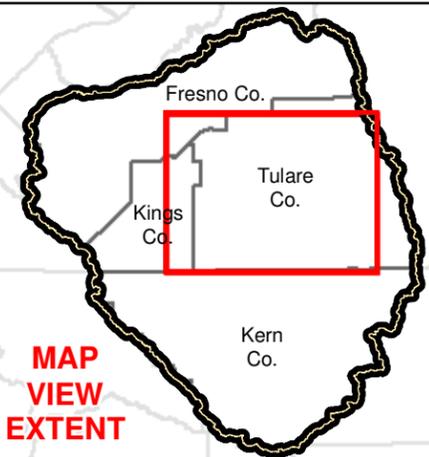
**TULARE COUNTY  
Communities**

DAC and SDAC Communities  
With Unknown Water Source

**Legend**

-  Tulare Lake Basin
-  Other DAC or SDAC
-  County
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

**Exhibit 6  
DRAFT**

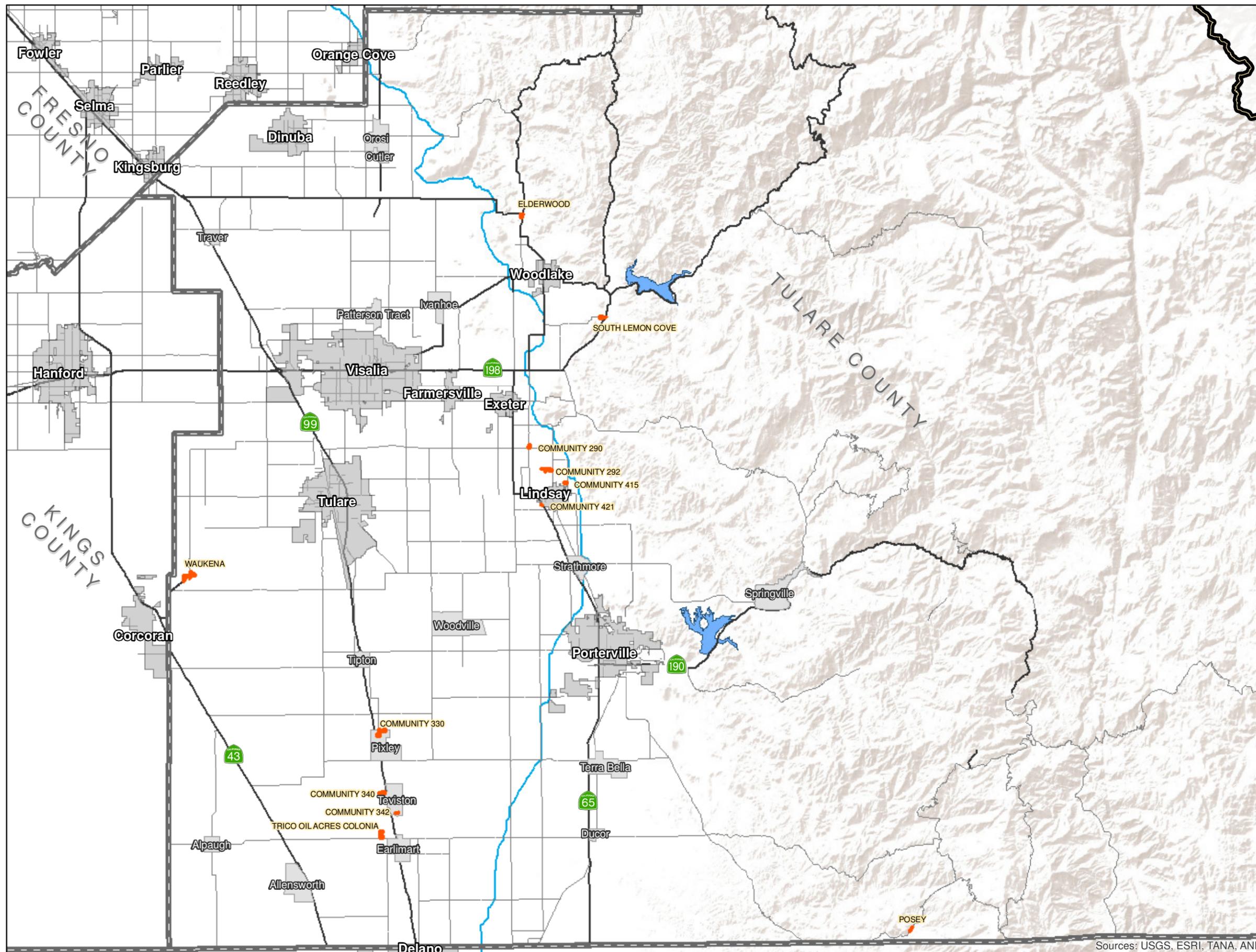


**MAP  
VIEW  
EXTENT**



EST. 1968  
**PROVOST &  
PRITCHARD**  
CONSULTING GROUP  
*An Employee Owned Company*

286 W. Cromwell Ave.  
Fresno, CA 93711-6162  
(559) 449-2700



Sources: USGS, ESRI, TANA, AND



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

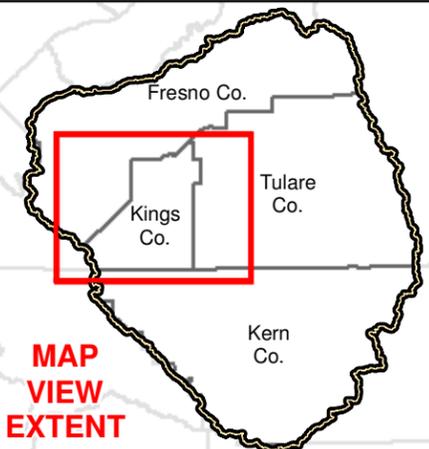
**KINGS COUNTY  
Communities**

DAC and SDAC Communities  
With Unknown Water Source

**Legend**

-  Tulare Lake Basin
-  Unknown Water Source
-  County
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

**Exhibit 7  
DRAFT**

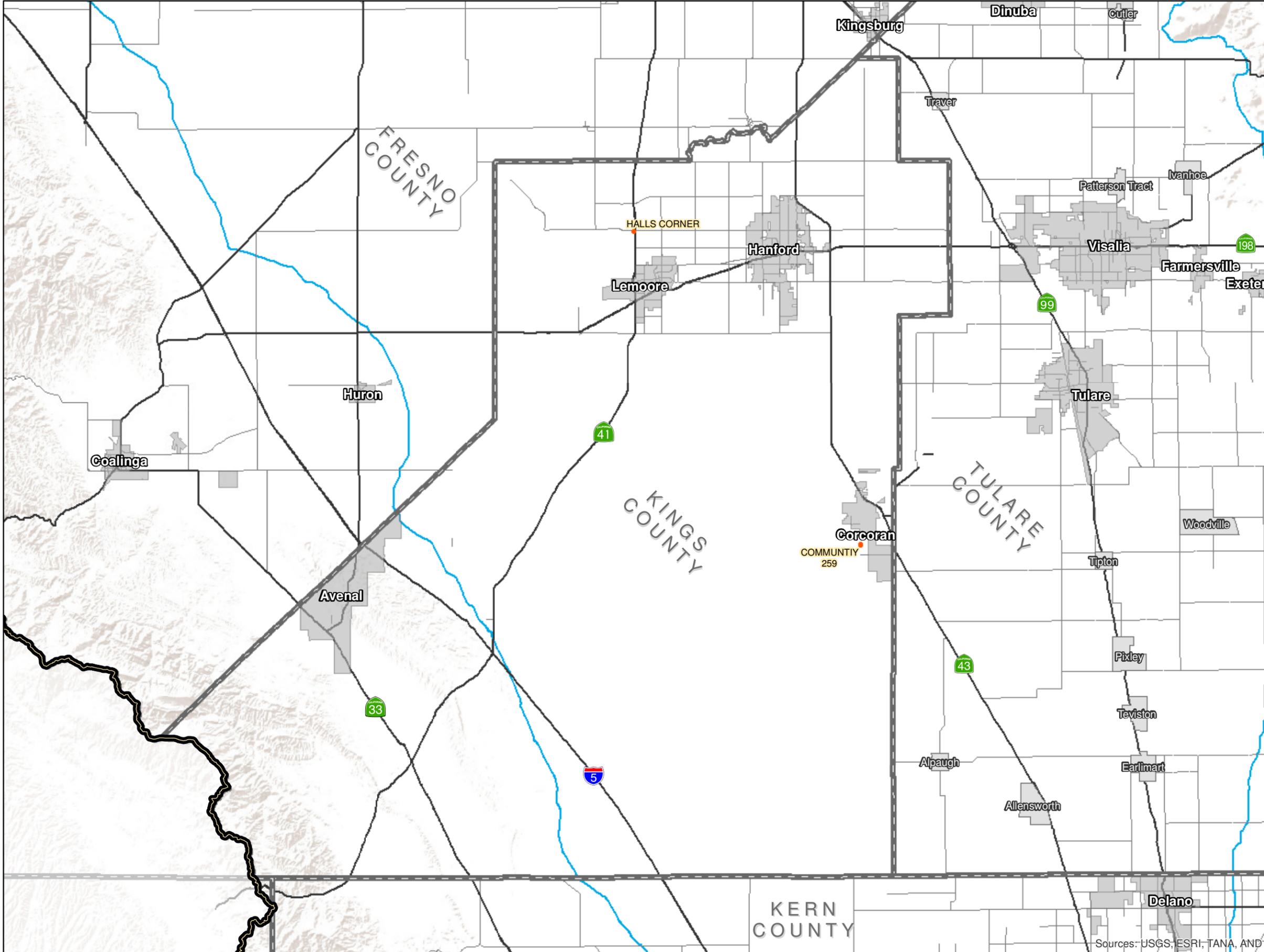


**MAP  
VIEW  
EXTENT**



EST. 1968  
**PROVOST & PRITCHARD**  
CONSULTING GROUP  
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Fresno, CA 93711-6162  
(559) 449-2700



Sources: USGS, ESRI, TANA, AND



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

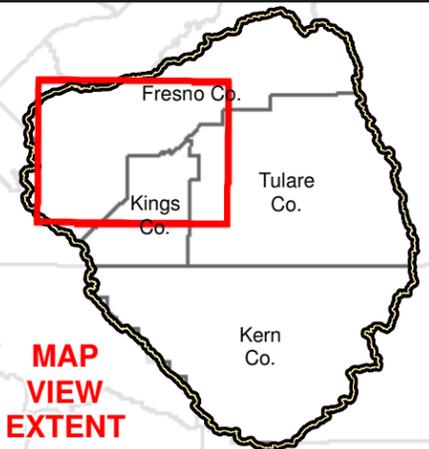
**FRESNO COUNTY  
Communities**

DAC and SDAC Communities  
With Unknown Water Source

**Legend**

-  Tulare Lake Basin
-  Unknown Water Source
-  County
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

**Exhibit 8  
DRAFT**

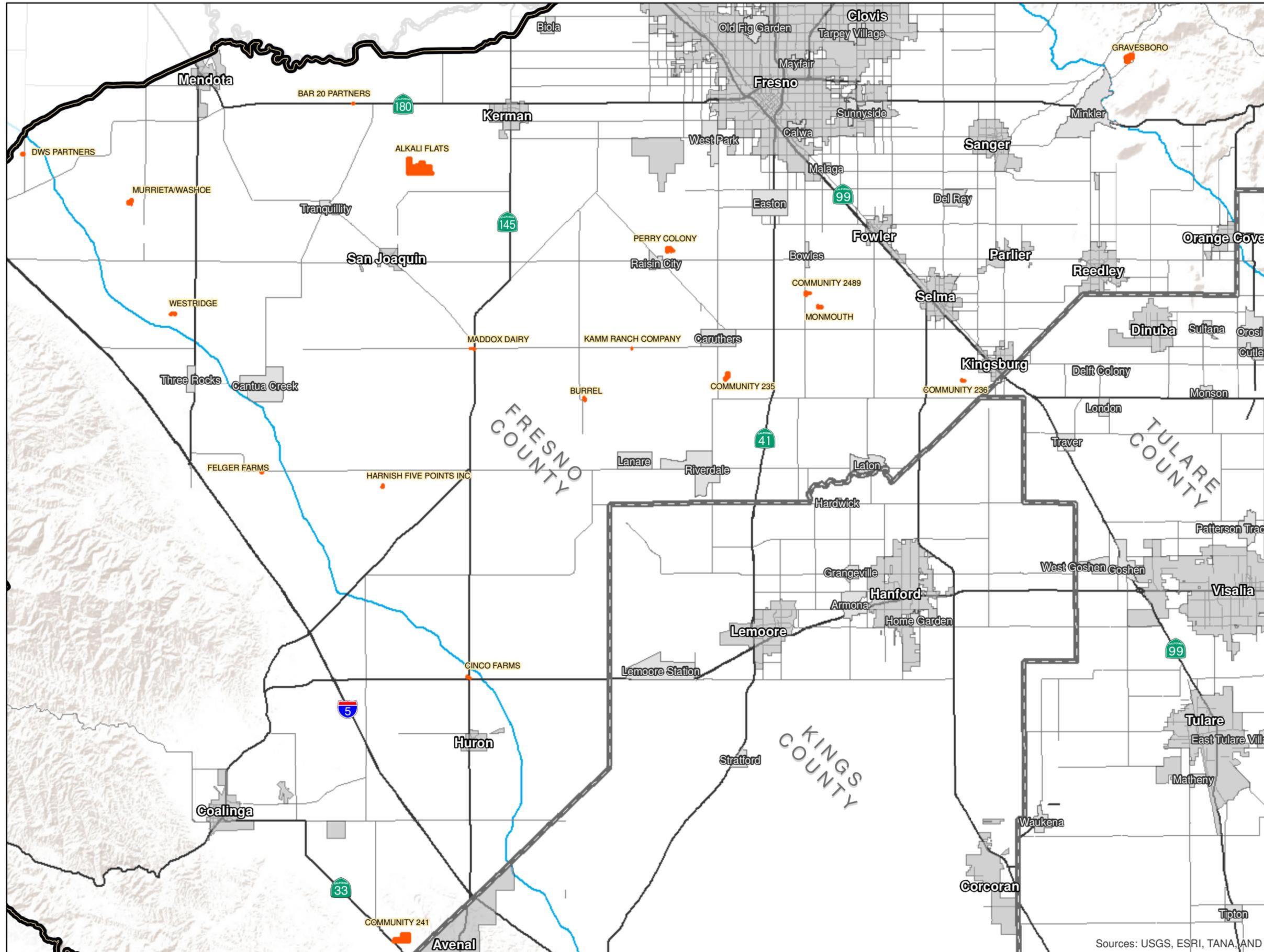


**MAP  
VIEW  
EXTENT**



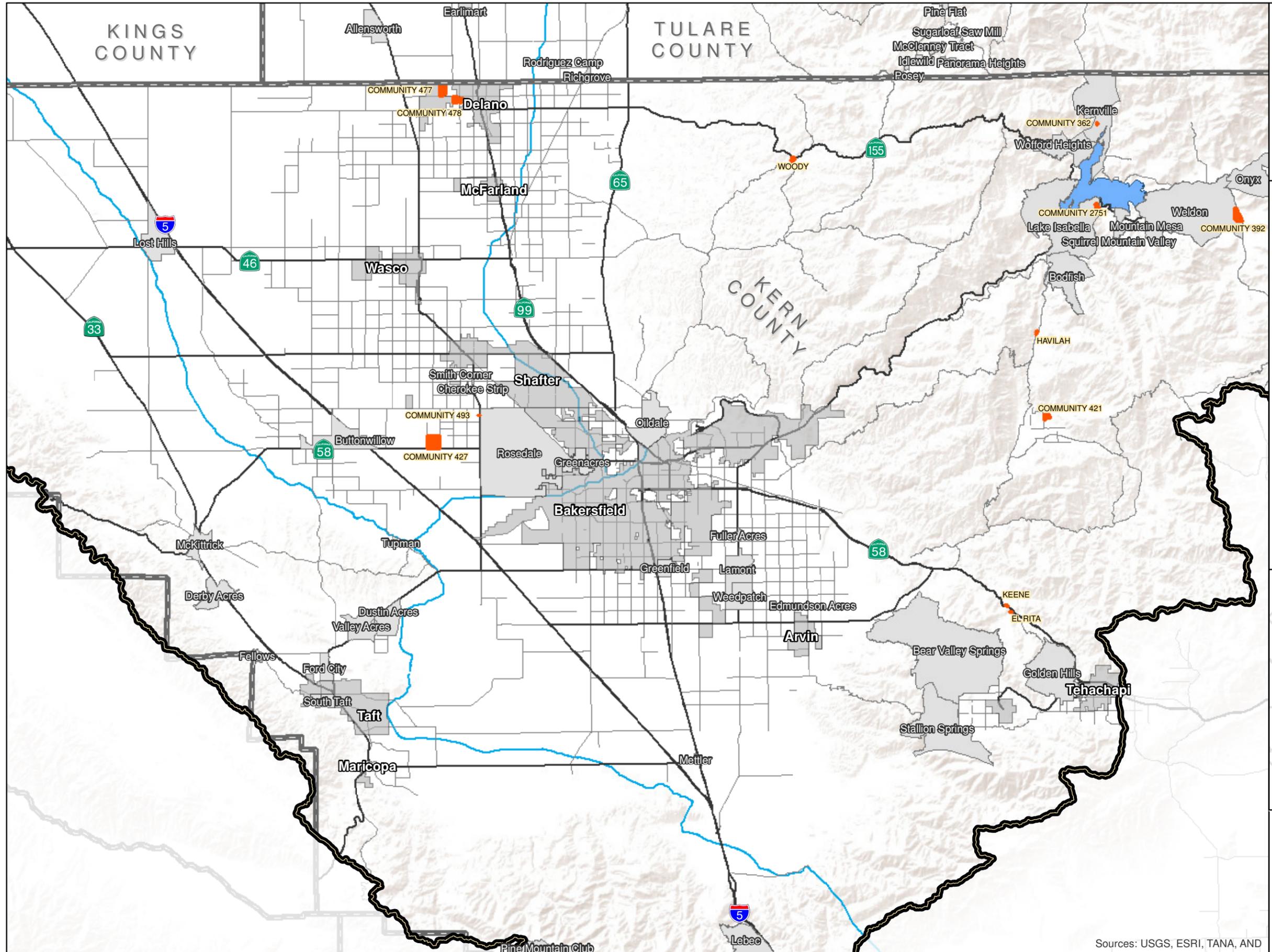
**EST. 1968**  
**PROVOST & PRITCHARD**  
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286 W. Cromwell Ave.  
Fresno, CA 93711-6162  
(559) 449-2700



Sources: USGS, ESRI, TANA, AND





**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

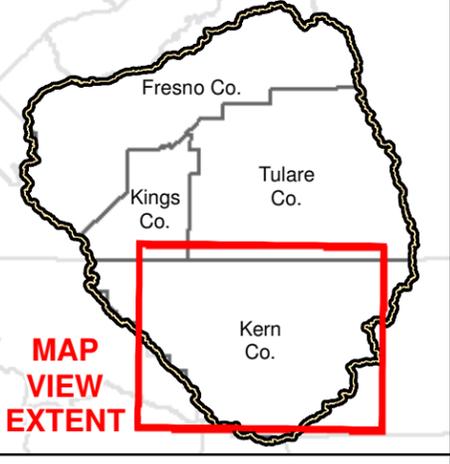
**KERN COUNTY  
Communities**

DAC and SDAC Communities  
With Unknown Water Source

**Legend**

- Tulare Lake Basin
- Unknown Water Source
- County
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

**Exhibit 9  
DRAFT**



0 2 4 6 Miles

**EST. 1968**  
**PROVOST & PRITCHARD**  
CONSULTING GROUP  
*An Employee Owned Company*

286 W. Cromwell Ave.  
Fresno, CA 93711-6162  
(559) 449-2700

Sources: USGS, ESRI, TANA, AND



## SECTION TWO

## 2.3 Definitions

### 2.3.1 Definition of Water Systems

The following are definitions from Title 22 California Code of Regulations, related to various categories of water systems. The emphasis of this study is on small water systems, state small water systems, and community water systems. Non-community water systems, non-transient non-community water systems, and transient non-community water systems do exist within the Study Area, but are not a focus of this pilot study. A decision tree, published by the California Department of Public Health, illustrating the classification of water systems as defined below, is presented as **Figure 2-5**. The decision tree provides a visual depiction of the terms defined herein.

Constructed Conveyances: Any manmade conduit such as ditches, culverts, waterways, flumes, mine drains or canals.

Community Water System (CWS): A public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 year long residents of the area served by the system.

Non-Community Water System (NCWS): A public water system that is not a community water system. A NCWS can serve either a transient or a non-transient population (see *Non-Transient Non-Community Water System* and *Transient Non-Community Water System*)

Non-Transient Non-Community Water System (NTNC): A public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 months per year. This may include local schools or hospitals with their own water system.

Public Water System (PWS): A system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.

Small Water System (SWS): A community water system, except those serving 200 or more service connections, or any non-community or non-transient non-community water system.

\*It is noted that the U.S. Environmental Protection Agency (EPA) uses a different definition for small public water systems as follows: Public water systems with fewer than 1,000 service connections and a population served of less than 3,300.

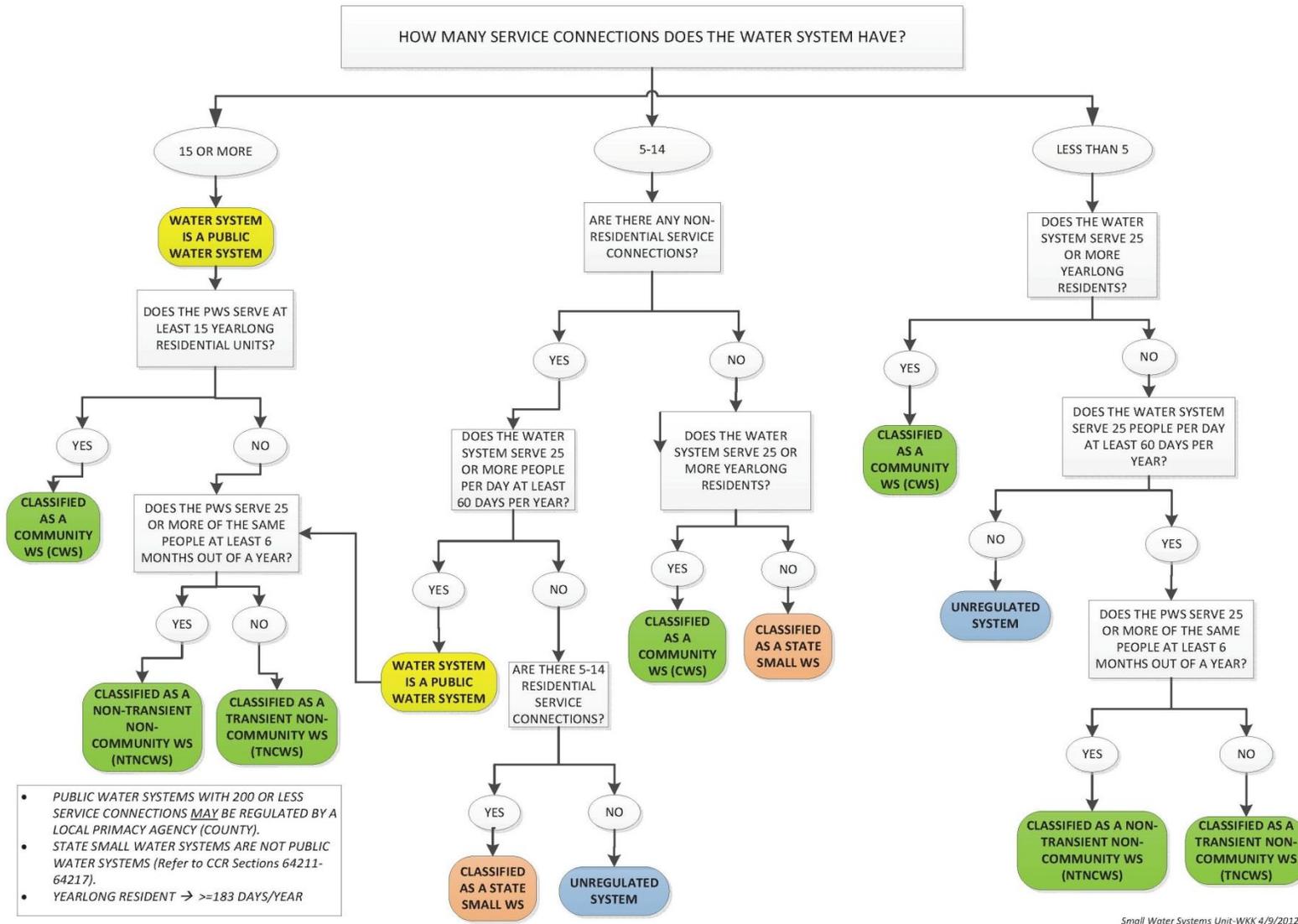
State Small Water System (SSWS): A system for the provision of piped water to the public for human consumption that serves at least five, but not more than 14, service connections and does not regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of the year.

Transient Non-Community Water System (TNC): A non-community water system that does not regularly serve at least 25 of the same persons over six months per year.

SECTION TWO

Figure 2-5. Decision Tree for Classification of Water Systems (CDPH)

**DECISION TREE FOR CLASSIFICATION OF WATER SYSTEMS**



- PUBLIC WATER SYSTEMS WITH 200 OR LESS SERVICE CONNECTIONS *MAY* BE REGULATED BY A LOCAL PRIMACY AGENCY (COUNTY).
- STATE SMALL WATER SYSTEMS ARE NOT PUBLIC WATER SYSTEMS (Refer to CCR Sections 64211-64217).
- YEARLONG RESIDENT → >=183 DAYS/YEAR

Small Water Systems Unit-WKK 4/9/2012

**SECTION TWO****2.3.2 Types of Organizations**

**Community Services District (CSD):** A community services district is an entity formed by residents of an unincorporated community, which is authorized to provide a wide variety of services, including water, garbage collection, wastewater management, security, fire protection, public recreation, street lighting, ambulance services, and graffiti abatement. A CSD may span unincorporated areas of multiple cities and/or counties. A CSD may issue bonds, or form an improvement district for the purpose of issuing bonds, as any City or County might do. Any bond issuance or other long-term debt will require a 2/3rds majority approval of registered voters residing within the CSD.

**County Service Area (CSA):** The County Service Area Law created in the 1950's allows residents or county supervisors to initiate the formation of a County Service Area. A CSA is authorized to provide a wide variety of services, including extended police protection, fire protection, park and recreation facilities, libraries, low power television and translation facilities and services. CSAs also may provide other basic services such as water and wastewater service and garbage collection if they are not already performed on a countywide basis. A CSA may span all unincorporated areas of a county or only selected portions.

**County Water District (CWD):** This type of district establishes rules and regulations for the sale, distribution, and use of water. The district also stores and conserves water for present or future beneficial use, and is authorized to run recreational facilities, sanitation facilities, and fire protection.

**Joint Powers Agency/Authority (JPA):** The Joint Exercise of Powers Act allows public agencies, ranging from federal government to the smallest special district, to enter into an agreement with each other to jointly exercise a common power.

**Mutual Water Company (MWC):** A mutual water company is a privately owned, public utility, regulated by the California Public Utilities Commission (CPUC). MWCs are most commonly formed as general corporations or as nonprofit mutual benefit corporations, although other structures are sometimes used for tax or other reasons.

**Principal Act:** The principal act of a special district is the law that enables a district of that type to form and gives it authority to operate. Each special district type (for example, flood control, public utilities, or community services districts) has its own principal act. (See *Special Act definition*)

**Public Utility District (PUD):** This district type maintains the infrastructure for public service and provides public utility service such as electricity, natural gas, sewer, waste collection, wholesale telecommunications, water, etc., to the residents of that district.

**Special Act:** Special acts are laws that the Legislature passes to address the specific needs of a community and establishes a district to address those needs. These specific districts (rather than district types) are uniquely created by the Legislature. (See *Principal Act definition*)

**SECTION TWO**

Special District: Special districts are a form of local government created by a local community to meet a specific need (for example water or sewer service). When residents or landowners want new services or higher levels of existing services, they can form a district to pay for and administer those services.

Water District (WD): A water district is a district that performs at least one of three specific duties: water delivery, waste disposal (sanitation), and flood control and water conservation. A water special district can be created either by forming under a general water district act or through a special act of the Legislature.

### 2.3.3 Other Definitions

Affordability Level: CDPH considers 1.5% of the Median Household Income (MHI) as the affordability level for water service for disadvantaged communities. With an annual MHI of \$30,000, this would equate to \$450 per year, or \$37.50 per month.

Affordability thresholds set by other organizations and used in other studies range from 1.5% to 3% of the MHI. For the purposes of this study, a threshold of 1.5% of the MHI is used.

Disadvantaged Community (DAC): A community whose median household income is 80 percent or less of the statewide median household income. For the purposes of this study, the American Community Survey (ACS) for 2006-2010 was used. The annual California Median Household Income (MHI) for 2006-2010 was \$60,883. A DAC is therefore a community whose annual MHI for the 2006-2010 ACS dataset is \$48,706 or less.

Economy of Scale: The increased efficiencies inherent in providing services or delivering products by increasing the number of units over which the fixed costs are spread. Often operational efficiency is improved with increasing scale, leading to lower variable and overall costs.

Local Agency Formation Commission (LAFCo): A local agency formation commission (LAFCo) is an independent commission working within the boundaries of each county to help control the borders of cities and special districts, to discourage sprawl and encourage orderly government. As part of this effort, LAFCo's conduct sphere of influence assessments and municipal service reviews. The Knox-Nisbet Act of 1963 established LAFCo's in law.

Memorandum of Understanding (MOU): A memorandum of understanding (MOU) is a written agreement between two or more parties. This document is not as binding as a contract, but it outlines a commitment between the parties to work together toward a common goal. MOUs do not generally discuss the exchange of money. Instead, MOUs are helpful for organizations that want to formulate partnerships and exchange supportive services.

Non-Profit or Not-for-Profit: An entity that provides services at cost or operation on a not-for-profit basis, which is typically exempt from taxes under United States Internal Revenue Code Section 501(c), 26 U.S.C. 501(c).

**SECTION TWO****PILOT STUDY**

Primary Drinking Water Regulations: National primary drinking water regulations (primary standards) are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water.

Proposition 218: Proposition 218, officially titled the “Right to Vote on Taxes Act”, was approved by California voters in 1996. It established additional substantive and procedural requirements and limitations on new and increased taxes, assessments, and property related fees and charges. When referred to in this Study, Proposition 218 refers to the requirements associated with changes to fees and charges imposed by an agency for water or sewer service (water/sewer rates). Prior to adopting or increasing a property-related fee or charge subject to Proposition 218 (such as a water or sewer rate increase), the agency must conduct a public hearing at which property owners can protest the rate change. The hearing must be held at least 45 days after the mailing of the notice of the proposed fee or change to record property owners. At the hearing, the agency must consider all protests against the proposed fee or charge; however, when evaluating whether the number of protests defeats the imposition or increase of the fee or charge, only written protests are counted. “If written protests against the proposed fee or charge are presented by a majority of owners of the identified parcels, the agency shall not impose the fee or charge.” (California Constitution, Article XIID, § 6, Subdivision (a), Part (2).) If a majority (50% plus one) of owners or renters (utility rate payers) do not submit a written protest, the fee or charge proposed can be imposed.

Receivership: Whenever the [State Department of Public Health] determines that any public water system is unable or unwilling to adequately serve its users, has been actually or effectively abandoned by its owners, or is unresponsive to the rules or order of the department, the department may petition the superior court of the county within which the system has its principal office or place of business for the appointment of a receiver to assume possession of its property and to operate its system upon such terms and conditions as the court shall prescribe. The court may require, as a condition to the appointment of the receiver, that a sufficient bond be given by the receiver and be conditioned upon compliance with the orders of the court and the department, and the protection of all property rights involved. The court may provide, as a condition of its order, that the receiver appointed pursuant to the order shall not be held personally liable for any good faith, reasonable effort to assume possession of, and to operate, the system in compliance with the order (California Statutes Related to Drinking Water, Health & Safety Code, Division 104, Part 12, Chapter 4, Article 9, §116665).

Secondary Drinking Water Regulations: National secondary drinking water regulations (secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply.

Severely Disadvantaged Community (SDAC): A community whose median household income is 60 percent or less of the statewide median household income. For the purposes of this study, the American Community Survey for 2006-2010 was used. The

**SECTION TWO**

annual California Median Household Income (MHI) for 2006-2010 was \$60,883. A SDAC is therefore a community whose annual MHI is \$36,530 or less, per the 2006-2010 ACS dataset.

Operator Certification Levels: (Distribution System Operators: D1-D5; Treatment Plant Operators: T1-T5)

Operator certification helps protect human health and the environment by establishing minimum professional standards for the operation and maintenance of public water systems. In 1999, EPA issued operator certification program guidelines specifying minimum standards for certification and recertification of the operators of community and non-transient non-community public water systems. These guidelines are implemented through State operator certification programs.

The California Regulations Related to Drinking Water, Title 22 Code of Regulations, Chapter 15 Domestic Water Quality and Monitoring Regulations, Article 2 General Requirements describes the classification of water treatment facilities and distribution systems.

Water treatment facilities are classified pursuant to Table 64412.1-A of the California Code of Regulations.

**Table 2-1. California Code of Regulations Table 64413.1-A - Water Treatment Facility Class Designations**

<i>Total Points</i>	<i>Class</i>
Less than 20	T1
20 through 39	T2
40 through 59	T3
60 through 79	T4
80 or more	T5

The calculation of total points for a water treatment facility is described in the California Code of Regulations, and depends on the water source, water quality, and treatment method.

Distribution systems are classified pursuant to Table 64413.3-A of the California Code of Regulations.

## SECTION TWO

**Table 2-2. California Code of Regulations Table 64413.3-A - Distribution System Classifications**

<i>Population Served</i>	<i>Class</i>
1,000 or less	D1
1,001 through 10,000	D2
10,001 through 50,000	D3
50,001 through 5 million	D4
Greater than 5 million	D5



### 3 GOAL

The main goals of the TLB Study were: (1) to provide useful information and tools that can function as a roadmap or guidelines for multiple audiences, and (2) to provide recommendations for legislation, funding opportunities, and other support that Federal, State, and local agencies can provide to address the water and wastewater issues in the Study Area. Discussion items and recommendations were considered from the perspectives of the customer, the water or wastewater service provider, agencies, and the legislature. This section discusses each of the considered perspectives.

The information presented in this study includes descriptions of actual community efforts toward solving water supply and quality challenges. The information may also include recommendations for other communities to consider regarding:

- a) Steps toward solving remaining existing water supply and wastewater collection or treatment challenges,
- b) Identifying obstacles interfering with solving remaining existing water supply and wastewater collection or treatment challenges, and
- c) Steps toward preventing or mitigating future water supply and wastewater collection or treatment challenges.

#### 3.1 Consumer Perspective

When alternatives to address water supply and wastewater challenges are evaluated, the impacts to the consumer should be considered. Impacts that the consumer may be concerned about include:

- The cost of receiving service. The costs may be in the form of initial capital costs or connection fees and/or monthly service charges
- Restrictions regarding the use of water
- A change in water service provider that may result from a consolidation
- A change in how bills can be paid (e.g. is there still a local office that consumers can go to in order to pay their bills?)
- The quality of water delivered

#### 3.2 Service Provider Perspective

The service provider will be interested in evaluating the impacts of a potential solution from a different perspective. The service provider should consider various questions regarding these solutions, including the following:

- What are the pros and cons of the proposed solution(s)?

**SECTION THREE****PILOT STUDY**

- Can the solution proceed while allowing each entity involved to maintain a level of quality that is acceptable to the customers?
- Will all entities involved have the same rate structure, or will it differ by community (for consolidation)?
- Will there be more staff needs / less staff needs?
- In what condition are the finances of the new partners? Will the surviving entity be responsible for the debt of a consolidating entity?
- What information or resources are available to help evaluate/implement these types of alternatives?
- What will implementation look like, and how long will it take to fully implement the solution(s)?
- Is funding available to implement solutions?
- Are annual revenues sufficient to offset expenses?
- What are the leadership and governance implications?
  - Is there a manager?
  - How are formal decisions made?
  - How are emergency decisions made?
  - Will changes/consolidations reduce/increase the number of board members/managers/employees?
  - How will community engagement/buy-in be developed?

### **3.3 Regulatory Agency Perspective**

Considerations from the various agency perspectives focus on whether regulations are being met, including water quality standards, water demand objectives, and waste discharge requirements. At the agency level, various policy considerations could also benefit the ability to provide safe, reliable drinking water and wastewater services.

#### **3.3.1 County Government**

Items that Counties should consider related to water supply and wastewater challenges include:

- Existing development policies – Land use control/zoning/building permit
- Individual well and on-site sanitary sewer facilities (e.g., minimum lot size requirements)

**SECTION THREE**

- Sustainability – require means to sustain the facilities prior to allowing construction

**3.3.2 Regulatory Agencies**

The perspectives of regulatory agencies to be considered include California Department of Public Health (CDPH), California Department of Water Resources (DWR), Regional Water Quality Control Board (RWQCB), State Water Resources Control Board (SWRCB), and United States Environmental Protection Agency (EPA).

- Permitting requirements for new systems
- Guidelines/directives to correct violations
- Sharing knowledge (e.g., training programs and other education opportunities and/or requirements)

**3.3.3 Funding Agencies**

Funding agencies may include any of the regulatory agencies listed above. Funding agencies may also include the Department of Housing and Urban Development (HUD) Community Development Block Grant program (CDBG), United States Economic Development Administration (EDA), United States Department of Agriculture (USDA) Rural Utilities, and State Bonds. Integrated Regional Water Management (IRWM) planning groups can apply for and administer funds for local entities and may be able to assist entities in understanding the funding agency perspective. Considerations from the perspective of the funding agencies may include the following:

- Does a proposed project and applying entity meet the requirements to receive funding?
- Sustainability – require means to sustain the facilities prior to approving funding for construction

**3.4 Legislative Perspective**

This Study will help identify potential new policies or legislation to aid communities in providing safe and affordable drinking water and wastewater services. Some considerations from the legislative perspective may include the following:

- Identification of new legislation to facilitate funding assistance opportunities
  - Develop funding incentives through legislature
- Routine identification of impacts to DACs when new legislation is proposed or implemented

## 4 PRIORITY ISSUES

The Stakeholder Oversight Advisory Committee was created by the Tulare County Board of Supervisors on August 16, 2011. The SOAC bylaws, created with input from the project team, and adopted by the Tulare County Board of Supervisors, defined the role of the Committee and established the Committee's composition. The SOAC was created to be a dynamic group of stakeholders that represent the interests of the Study Area. The Tulare County Board of Supervisors made appointments to the Committee on October 11, 2011.

The responsibilities of the SOAC included recommending to the Tulare County Board of Supervisors which pilot projects and/or studies would be completed for the Tulare Lake Basin Disadvantaged Community Water Study. The SOAC worked with the project team to identify plan priorities for the Tulare Lake Basin pilot studies, and review and provide input on draft and final recommendations.

The SOAC developed a list of water and wastewater issues common to communities within the Study Area. The SOAC then divided into work groups and ultimately voted on the highest priority issues and approved a final prioritized list of issues to be addressed by the pilot studies. The pilot studies were identified in order to address those five priority issues approved by the SOAC. Each of the pilot studies had specific priority issues it aimed to address. The SOAC defined priority issues that this pilot is to address are discussed in this section.

### 4.1 SOAC Defined Issues

Several priority issues were developed during the Stakeholder Oversight Advisory Committee (SOAC) process, which was convened as an initial task of this Study. The details of the SOAC, including the purpose of the committee and actions performed, are described in the main body of the Final Report. The specific priority issues that the New Sources Development pilot study aims to address include the following:

- Poor Water Quality - Existing contamination of drinking water source (acute and chronic contaminants), increasing groundwater pollution, new and emerging contaminants, problems with secondary contaminants (i.e. taste, color, smell, etc.), and health impacts.
- Inadequate or Unaffordable Funding or Funding Constraints to Make Improvements - Lack of affordable or accessible funding for system improvements; Inadequate funding to make successful grant applications to get infrastructure improvements (i.e. lack of funding for grant writers, preliminary engineering, etc.); funding isn't always getting to the communities that need it most
- Lack of Informed, Empowered, or Engaged Residents - Residents lack good information, or do not feel that they have the power or ability to change their situation, or are not engaged in decision-making processes that impact local

water or wastewater service, including inadequate or confusing information about water quality and what is safe drinking water, lack of information to residents on grant opportunities available to the community, knowledge about health impacts

## 4.2 Description of Issues

### Definition of Challenges Associated with Water Supply

According to data derived from databases of the California Department of Public Health (CDPH) approximately 117 out of the 370 DACs in the region reported at least one water quality exceedance between 2008 and 2010. A breakdown of the water quality exceedances by contaminant is presented in this New Source Development Pilot Study Report. Limited reliable water supply is also a concern within the study area, since many communities only have a single source of water supply. The communities with the various water supply and quality issues are illustrated in Figure 4-1 through Figure 4-4

Information that was prepared or provided by others was relied upon to develop and analyze the types of problems that exist, as well as to develop potential solutions. A database has been compiled to collect data from PolicyLink, CDPH, Self-Help Enterprises, County of Fresno, County of Tulare, County of Kings, and Regional Water Quality Control Board (RWQCB) and has been reviewed to evaluate the pollutant water quality and supply source issues in the Study Area. The information is acknowledged to not be complete and the specifics of each community and system are in a continuous state of change. However, the database may be updated as changes or corrections are identified. Specifically, and most importantly, the study identified data that may be necessary to identify where solutions recommended from the pilot could be replicated. The data collection and analysis provided a means to define the water supply challenges faced by many disadvantaged communities within the Tulare Lake Basin. Several common themes applied to many of the disadvantaged communities.

### Unknown Water Supply Source Identified

Based on information available for this study, the water source for many communities was not identified. It is recommended that the water supply source is defined for each disadvantaged community so that if there are water sources that may not provide water in sufficient quality or of appropriate quality for use by the community, an opportunity to develop a plan for corrective actions may be made available. It is noted that an unknown source of water supply does not necessarily correlate to a problem with the water supply source. The communities that have an unknown source of water are listed in Table 4-1, which is broken down by County and includes population and connection estimates. The information is presented by population within each County (highest to lowest). It is noted that several disadvantaged communities are not applicable to

## SECTION FOUR

the New Source Pilot Study (ie. Mayfair, Calwa, others) because these communities are already served by a viable community water system. The geographical location of the communities with an unknown water supply source is shown in Figure 4-1 through Figure 4-4.

*Recommended task* – investigate all of the “Unknown Sources” to clean up the loose ends.

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**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY  
TABLE 4-1  
LIST OF DISADVANTAGED COMMUNITIES WITH UNKNOWN WATER SOURCE**

NAME	COUNTY	ElevRegion	PopEst	ConnectEst	Consolidat	TYPE_Stdy	NearSys_mi
ALKALI FLATS	FRESNO	Valley Floor	100	100	Unknown Source	SDAC	4.64
BAR 20 PARTNER	FRESNO	Valley Floor	60	15	Unknown Source	SDAC	6
BURREL	FRESNO	Valley Floor	16	16	Unknown Source	DAC	4.54
CINCO FARMS	FRESNO	Valley Floor	30	9	Unknown Source	DAC	0
COMMUNITY 235	FRESNO	Valley Floor	72	22	Unknown Source	DAC	1.6
COMMUNITY 236	FRESNO	Valley Floor	35	10	Unknown Source	DAC	0.9
COMMUNITY 241	FRESNO	Foothills	165	50	Unknown Source	SDAC	2.81
COMMUNITY 2489	FRESNO	Valley Floor	59	18	Unknown Source	DAC	4.7
DWS PARTNERS	FRESNO	Valley Floor	16	5	Unknown Source	SDAC	0
FELGER FARMS	FRESNO	Valley Floor	40	12	Unknown Source	SDAC	0
GRAVESBORO	FRESNO	Valley Floor	45	30	Unknown Source	SDAC	2.67
HARNISH FIVE POINTS INC	FRESNO	Valley Floor	26	8	Unknown Source	DAC	0
KAMM RANCH COMPANY	FRESNO	Valley Floor	20	3	Unknown Source	SDAC	4.85
MADDOX DAIRY	FRESNO	Valley Floor	50	15	Unknown Source	SDAC	6.58
MONMOUTH	FRESNO	Valley Floor	120	37	Unknown Source	DAC	5.15
MURRIETA/WASHOE	FRESNO	Valley Floor	25	10	Unknown Source	SDAC	0
PERRY COLONY	FRESNO	Valley Floor	50	50	Unknown Source	DAC	0.53
WESTRIDGE	FRESNO	Valley Floor	30	9	Unknown Source	SDAC	0
COMMUNITY 2751	KERN	Mountains	165	50	Unknown Source	SDAC	0.27
COMMUNITY 362	KERN	Mountains	36	11	Unknown Source	DAC	0.9
COMMUNITY 392	KERN	Mountains	594	180	Unknown Source	DAC	0.56
COMMUNITY 421	KERN	Mountains	132	40	Unknown Source	SDAC	10.69
COMMUNITY 427	KERN	Valley Floor	2475	750	Unknown Source	DAC	2.75
COMMUNITY 477	KERN	Valley Floor	132	40	Unknown Source	SDAC	0.1
COMMUNITY 478	KERN	Valley Floor	792	240	Unknown Source	SDAC	0.1
COMMUNITY 493	KERN	Valley Floor	33	10	Unknown Source	DAC	0.5
EL RITA	KERN	Mountains	43	13	Unknown Source	DAC	3.71
HAVILAH	KERN	Mountains	79	24	Unknown Source	SDAC	4.77
KEENE	KERN	Mountains	50	20	Unknown Source	DAC	3.14
WOODY	KERN	Foothills	116	35	Unknown Source	DAC	7.1
COMMUNITY 259	KINGS	Valley Floor	66	20	Unknown Source	DAC	0.38
HALLS CORNER	KINGS	Valley Floor	66	20	Unknown Source	DAC	1.7
COMMUNITY 290	TULARE	Valley Floor	69	21	Unknown Source	SDAC	2.15
COMMUNITY 292	TULARE	Valley Floor	158	48	Unknown Source	SDAC	0.7
COMMUNITY 330	TULARE	Valley Floor	63	19	Unknown Source	SDAC	0.79
COMMUNITY 332	TULARE	Valley Floor	59	18	Unknown Source	SDAC	0.49
COMMUNITY 340	TULARE	Valley Floor	116	35	Unknown Source	SDAC	0.19
COMMUNITY 342	TULARE	Valley Floor	36	11	Unknown Source	SDAC	1.06
COMMUNITY 415	TULARE	Valley Floor	50	15	Unknown Source	DAC	0.16
COMMUNITY 421	TULARE	Valley Floor	33	10	Unknown Source	SDAC	0.1
ELDERWOOD	TULARE	Valley Floor	59	18	Unknown Source	DAC	2.88
POSEY	TULARE	Mountains	79	24	Unknown Source	SDAC	2
SOUTH LEMON COVE	TULARE	Valley Floor	243	105	Unknown Source	DAC	0.38
TRICO OIL ACRES COLONIA	TULARE	Valley Floor	89	27	Unknown Source	DAC	0.76
WAUKENA	TULARE	Valley Floor	99	30	Unknown Source	SDAC	2.59



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

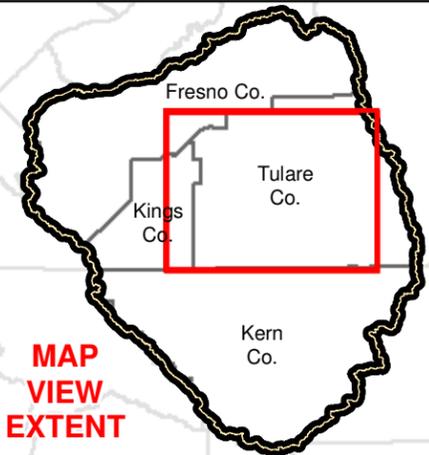
**TULARE COUNTY  
Communities**

DAC and SDAC Communities  
With Unknown Water Source

**Legend**

-  Tulare Lake Basin
-  Other DAC or SDAC
-  County
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

**Exhibit 6  
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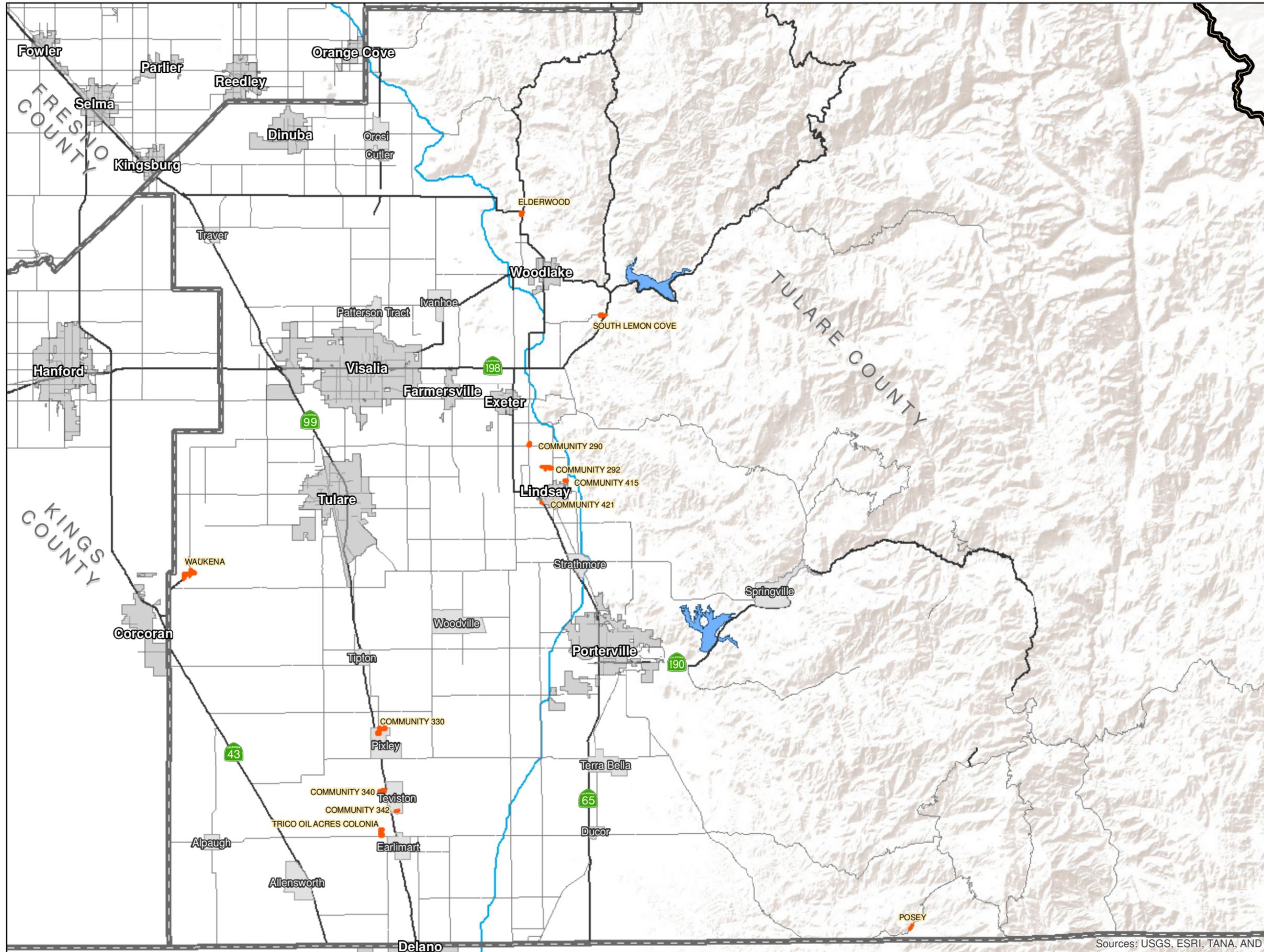


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Sources: USGS, ESRI, TANA, AND



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

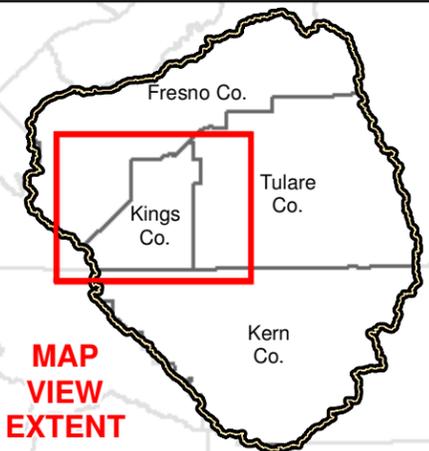
**KINGS COUNTY  
Communities**

DAC and SDAC Communities  
With Unknown Water Source

**Legend**

-  Tulare Lake Basin
-  Unknown Water Source
-  County
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

**Exhibit 7  
DRAFT**

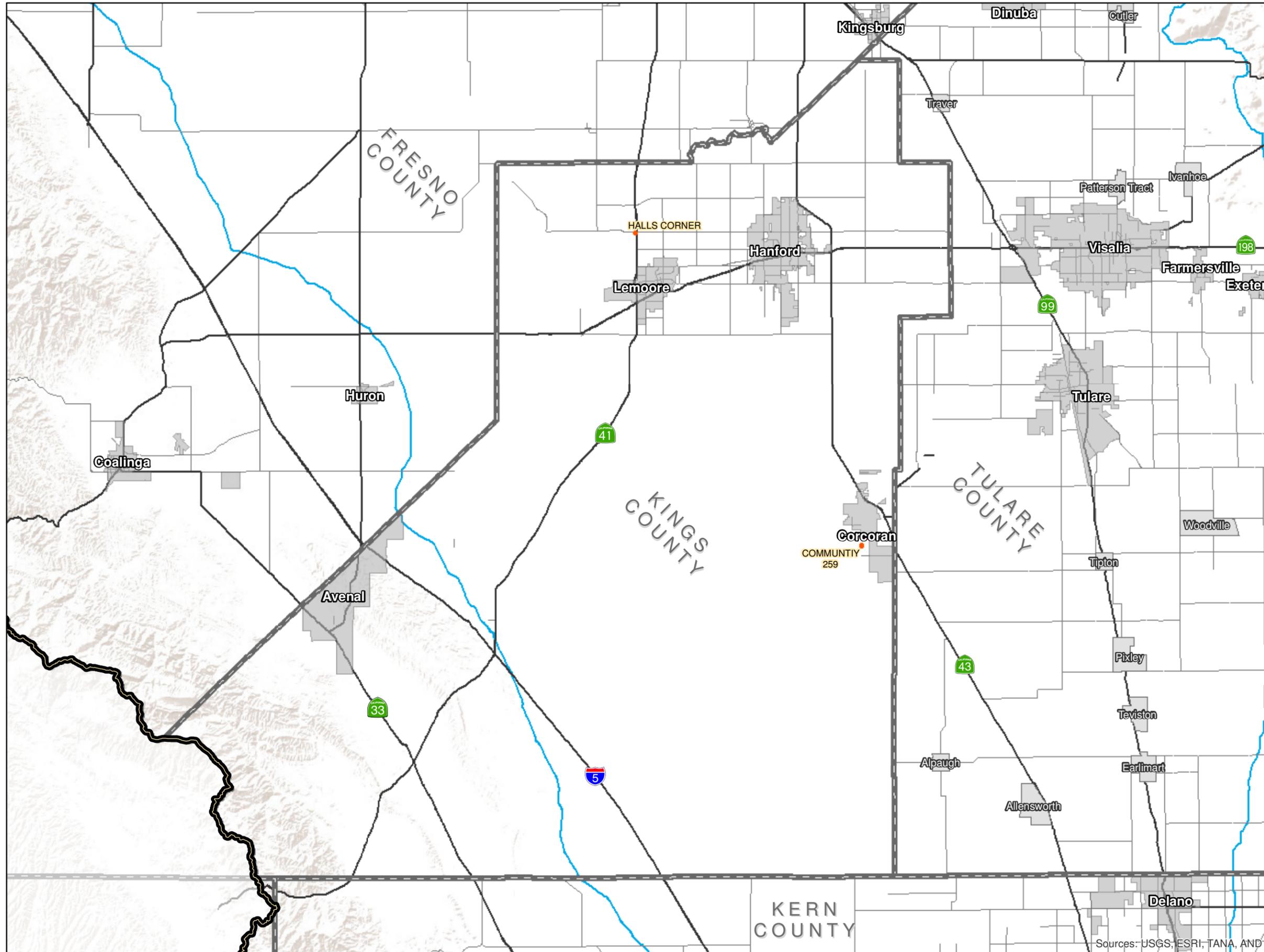


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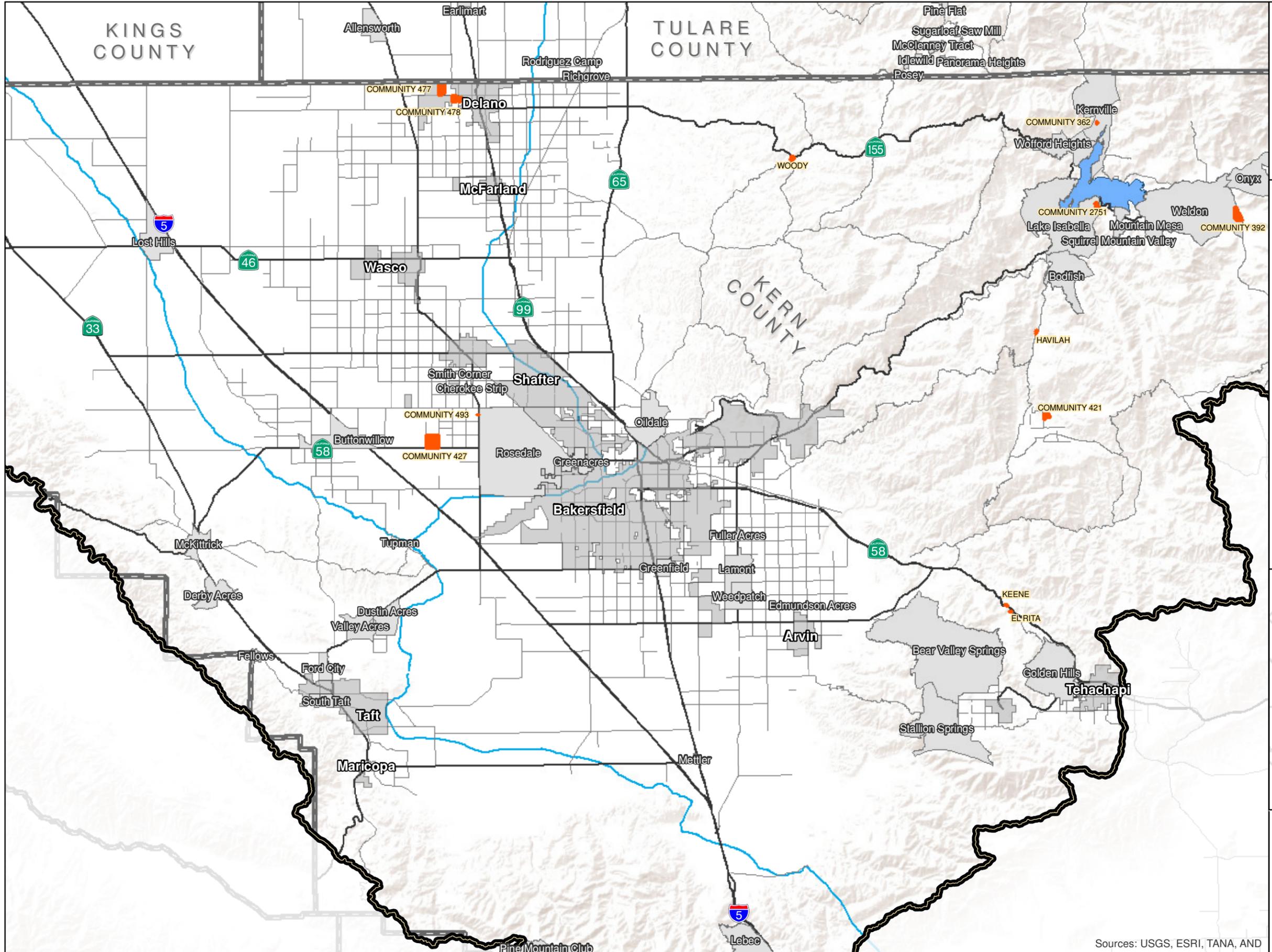


Sources: USGS, ESRI, TANA, AND









**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**KERN COUNTY  
Communities**

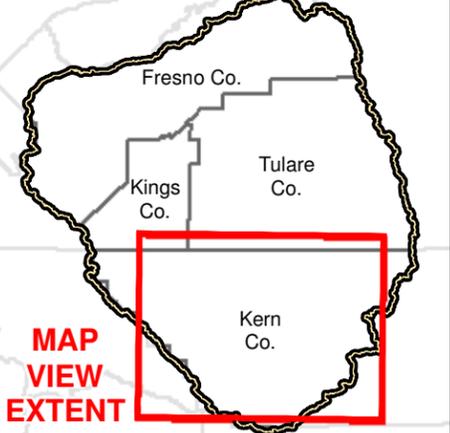
DAC and SDAC Communities  
With Unknown Water Source

**Legend**

- Tulare Lake Basin
- Unknown Water Source
- County
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

**Exhibit 9**

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## SECTION FOUR

## PILOT STUDY

Review of the information gathered for the Study Area indicates that insufficient water supply is a challenge faced by many disadvantaged communities. Insufficient water supply may be represented in several scenarios.

### Scenario 1

Many communities in the Tulare Lake Basin Study Area may face the challenge of insufficient water supply. The communities may have an insufficient number of wells or sources, an insufficient capacity of the sources to meet maximum day and fire flow demands, unchecked water use, or declining groundwater levels. The existing well(s) may be aging and in imminent need of replacement.

Pursuant to Title 22 Chapter 14 Article 3 Section 64215 (Appendix C), small water systems must demonstrate to the local health officer that sufficient water is available from the water system's sources and distribution storage facilities to supply a minimum of three gallons per minute for at least 24 hours for each service connection served by the system.

Pursuant to Title 22, Chapter 16, Article 2, Section 64554 (Appendix C), Community water systems using only groundwater shall have a minimum of two approved sources before being granted an initial permit. The system shall be capable of meeting maximum daily demand with the highest-capacity source off line.

### Single Water Supply Source

Based on information available, there are 92 communities with only one source of water supply (listed in **Table 4-2**), thereby rendering them in jeopardy of insufficient supply. The capacity of the source is not known in many instances. **Table 4-2** is broken down by County and includes population and connection estimates percommunity. The information is presented by population within each County (highest to lowest). It is noted that communities that utilize surface water may have a single source of supply (ie. communities served by Westlands WD M&I connections such as Fresno County Service Area No. 49 near the community of Five Points). These cases may not necessarily describe a circumstance of insufficient water supply sources. Depending on the reliability of the surface water supply, the community may have groundwater sources or backup surface water reservoirs as either backup or primary sources during defined periods when the surface water is not available.

For example, the Friant-Kern Canal is taken out of service every three years from November through January for maintenance purposes. Those communities that rely on the Friant-Kern Canal for water supply must also have alternative backup sources of water supply. In addition, the surface water supply may only satisfy a

## SECTION FOUR

portion of the water demand of a community. Alternative water supply sources would be required in such an instance.

The geographical location of the communities with a single source of water supply is shown in Figure 4-5 through Figure 4-8. The Exhibits are separated by County.

The total population of DACs in the study area with a single source of water is summarized below.

Tulare Lake Basin Study Area  
Summary of DACs with a Single Source of Water Supply

County	Number of DAC Systems		Connections		Population	
	Publicly Owned	Privately Owned	Publicly Owned	Privately Owned	Publicly Owned	Privately Owned
Tulare	4	32	368	1,426	1,224	4,685
Kings	0	3	0	99	0	215
Fresno	2	33	110	1,063	738	3,821
Kern	0	18	0	937	0	2,855
Total	6	86	478	3,525	1,962	11,576

*Recommended task* – It is recommended that the database continue to be updated as continuing investigations of the water supply sources of disadvantaged communities proceed. Action plans may be identified for those communities with a “Single Water Supply Source”, as appropriate.

Based on information available, the adequacy of the existing sources may also be of concern. However, little information has been available relative to the capacity of the water supply sources and the relative demands of the communities.

*Recommended task* – Continue to supplement the database to include community demands and the relative capacity of water supply sources to identify communities with insufficient water supply sources.

**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY**

**TABLE 4-2**

**LIST OF DISADVANTAGED COMMUNITIES IN TULARE COUNTY  
WITH A SINGLE SOURCE OF SUPPLY**

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Active Sources	Raw WQ Issues	Delivered WQ Issues	Ownership
SULTANA	5400824	650	224	DAC	1			Public (state, federal, local)
TEVISTON	5400641	300	70	SDAC	1			Public (state, federal, local)
LEMON COVE	5400616	150	50	DAC	1	Y	Y	Public (state, federal, local)
EL RANCHO - TRACT 191	5410052	124	24	SDAC	1			Public (state, federal, local)
CAMP NELSON	5410022	1125	341	SDAC	1			Private
SEVILLE	5400550	400	89	SDAC	1	Y	Y	Private
GRANDVIEW GARDENS	5400666	350	102	SDAC	1			Private
A & A MHP	5400504	200	60	DAC	1			Private
GRIER MUTUAL WATER CO.	5400728	190	89	DAC	1			Private
WILLIAMS	5400718	180	50	DAC	1			Private
CENTRAL WATER CO.	5400682	170	42	SDAC	1	Y	Y	Private
RODRIGUEZ LABOR CAMP	5400735	150	34	SDAC	1	Y	Y	Private
SHADY GROVE M H P	5400529	137	40	SDAC	1			Private
CENTRAL MUTUAL	5400655	115	23	DAC	1			Private
TRACT 77	5400655	115	23	SDAC	1			Private
TRACT 288	5400935	110	44	SDAC	1			Private
MOUNTAIN VIEW DUPLEXES	5400604	108	27	SDAC	1			Private
EL MONTE VILLAGE M.H.P.	5400523	100	49	DAC	1	Y	Y	Private
SOULTS TRACT	5400805	100	36	DAC	1	Y		Private
SHILOH WATER CO.	5400527	75	20	SDAC	1			Private
GOLDEN KEY APARTMENTS	5400600	48	16	DAC	1			Private
MOUNTAIN VIEW M.H.P.	5400819	44	24	DAC	1			Private
E PLANO	5400767	40	20	SDAC	1			Private
GLEANINGS FOR THE HUNGRY	5402047	31	10	DAC	1	Y		Private
LAKE SUCCESS MOBILE LODGE	5400660	20	18	SDAC	1	Y	Y	Private
LAKESIDE TRAILER PARK	5400518	500	91	SDAC	1	Y	Y	
PORTERVILLE TRAILER PARK	5400611	80	25	SDAC	1			
SUGARLOAF VILLAGE	5400543	60	30	SDAC	1			
LOPEZ LABOR CAMP	5400546	50	25	DAC	1			
HARTLAND	5403135	36	20	SDAC	1			
CASILLAS WATER SYSTEM	5403047	30	6	SDAC	1			
ROGERS CAMP HOMEOWNERS ASSN.	5403072	25	9	DAC	1			
SPIEGELBERG	5403115	25	1	DAC	1			
TEA POT DOME	5403039	25	4	SDAC	1			
FRIENDS RV PARK	5403051	24	44	SDAC	1			
SIERRA GLEN MOBILE HOME PARK	5400551	22	14	DAC	1			

DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
 NEW SOURCE DEVELOPMENT PILOT STUDY  
 TABLE 4-2  
 LIST OF DISADVANTAGED COMMUNITIES IN KINGS COUNTY  
 WITH A SINGLE SOURCE OF SUPPLY

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Active Sources	Ownership
LEMOORE MOBILE HOME PARK	1600031	125	38	DAC	1	Private
LACEY COURTS MHP	1600010	50	21	DAC	1	Private
HARDWICK	1600507	40	40	SDAC	1	Private

**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY  
TABLE 4-2  
LIST OF DISADVANTAGED COMMUNITIES IN FRESNO COUNTY  
WITH A SINGLE SOURCE OF SUPPLY**

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Active Sources	Ownership
FCSA #49	1000546	450	46	DAC	1	Public (state, federal, local)
RAISIN CITY	1000551	288	64	SDAC	1	Public (state, federal, local)
GREEN ACRES MOBILE HOME ESTATE	1000229	300	112	DAC	1	Private
HARRIS FARMS CAMP C #501-523	1009027	300	77	SDAC	1	Private
WOODWARD BLUFFS MHP	1000298	300	167	DAC	1	Private
RIVERBEND MOBILE HOME & RV PARK	1000426	200	46	DAC	1	Private
HARRIS FARMS SOUTH #101-144	1009028	160	41	DAC	1	Private
RUBYS VALLEY CARE HOME	1000200	158	1	DAC	1	Private
BRITZ/FIVE POINTS SYSTEM	1009179	150	33	SDAC	1	Private
SHADY LAKES MOBILE HOME PARK	1000244	130	56	DAC	1	Private
FIVE STAR RANCH	1000175	120	22	SDAC	1	Private
KINGS PARK APARTMENTS	1000295	120	40	SDAC	1	Private
SUNNYSIDE CONVALESCENT HOSP	1000366	116	3	SDAC	1	Private
BRITZ/COLUSA	1009023	106	29	SDAC	1	Private
COUNTRY VIEW ALZHEIMER CENTER	1000430	100	2	DAC	1	Private
FARMING D	1009147	100	38	DAC	1	Private
SUMNER PECK RANCH	1009232	92	28	SDAC	1	Private
COIT GINNING COMPANY	1009131	90	31	SDAC	1	Private
DOUBLE L MOBILE RANCH PARK	1000248	80	37	SDAC	1	Private
FRED RAU DAIRY	1009120	80	24	SDAC	1	Private
WATERTEK-METROPOLITAN	1000057	60	29	SDAC	1	Private
SAN ANDREAS FARMS	1009258	53	16	SDAC	1	Private
HOULDING FARMS	1009051	50	15	SDAC	1	Private
PAPPAS & CO (FARM HOUSING)	1009006	50	13	SDAC	1	Private
LINDA VISTA FARMS	1000445	40	26	SDAC	1	Private
ELM COURT	1000277	40	14	SDAC	1	Private
GEORGE COX WATER SYSTEM	1000407	40	20	DAC	1	Private
TERRA LINDA FARMS	1009222	40	3	DAC	1	Private
TRACT 1199 WATER SYSTEM	1000075	39	13	DAC	1	Private
PILIBOS BROTHERS RANCH	1009035	35	15	SDAC	1	Private
STEVE MARKS CATTLE COMPANY	1009214	25	24	SDAC	1	Private
DOYAL'S MOBILE HOME PARK	1000405	22	15	SDAC	1	Private
SOMMERVILLE RV PARK	1000439	500	1	SDAC	1	
VIKING TAILER PARK	1000454	80	48	DAC	1	
SIERRA MASONIC	5400916	45	24	DAC	1	

DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
 NEW SOURCE DEVELOPMENT PILOT STUDY  
 TABLE 4-2  
 LIST OF DISADVANTAGED COMMUNITIES IN KERN COUNTY  
 WITH A SINGLE SOURCE OF SUPPLY

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Active Sources	Raw WQ Issues	Delivered WQ Issues	Ownership
LAKE OF THE WOODS	1500459	953	397	DAC	1			Private
VICTORY MWC	1500231	740	172	DAC	1	Y		Private
DE RANCHO Y MOBILE VILLA WATER	1500380	200	90	DAC	1			Private
GLENNVILLE	1502162	198	60	DAC	1			Private
BELLA VISTA	1502653	72	34	SDAC	1			Private
SIERRA MEADOWS	1502564	60	42	DAC	1			Private
KERVALE	1500364	52	20	SDAC	1	Y	Y	Private
OPAL FRY AND SON	1500216	50	13	DAC	1			Private
PANAMA ROAD PROPERTY OWNERS ASSOCIATION	1502465	50	16	SDAC	1			Private
POND	1502620	48	16	DAC	1			Private
MIRASOL COMPANY WATER SYSTEM	1500152	30	13	SDAC	1			Private
POPLAR AVE COMMUNITY	1502549	30	9	DAC	1			Private
V.R. S TRAILER PARK	1500511	30	27	SDAC	1			Private
CLARK STREET COMMUNITY WELL	1502056	25	16	SDAC	1			Private
PARADISE COVE LODGE	1502213	150	3	DAC	1			
AGBAYANI VILLAGE	1500518	100	6	DAC	1			
SOUTH FORK WOMAN S CLUB, INC.	1503373	60	1	DAC	1			
WINI MUTUAL WATER COMPANY	1503526	7	2	DAC	1			

# Tulare Lake Basin Disadvantaged Community Water Study

## TULARE COUNTY Communities

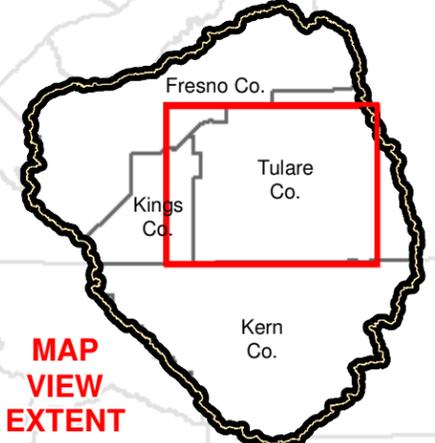
DAC and SDAC Communities  
\*Raw Water Quality Issues

### Legend

-  Tulare Lake Basin
-  County
-  DAC or SDAC Not Identified With WQ Issue
-  Uranium (Source Max Value >=20 pCi/l)
-  Arsenic (Source Max Value >=10 ug/l)
-  Nitrate as NO3 (Source Max Value >= 45 mg/l)
-  Nitrate as NO3 (Source Max Value >= 22.5 < 45 mg/l)
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

Exhibit 10

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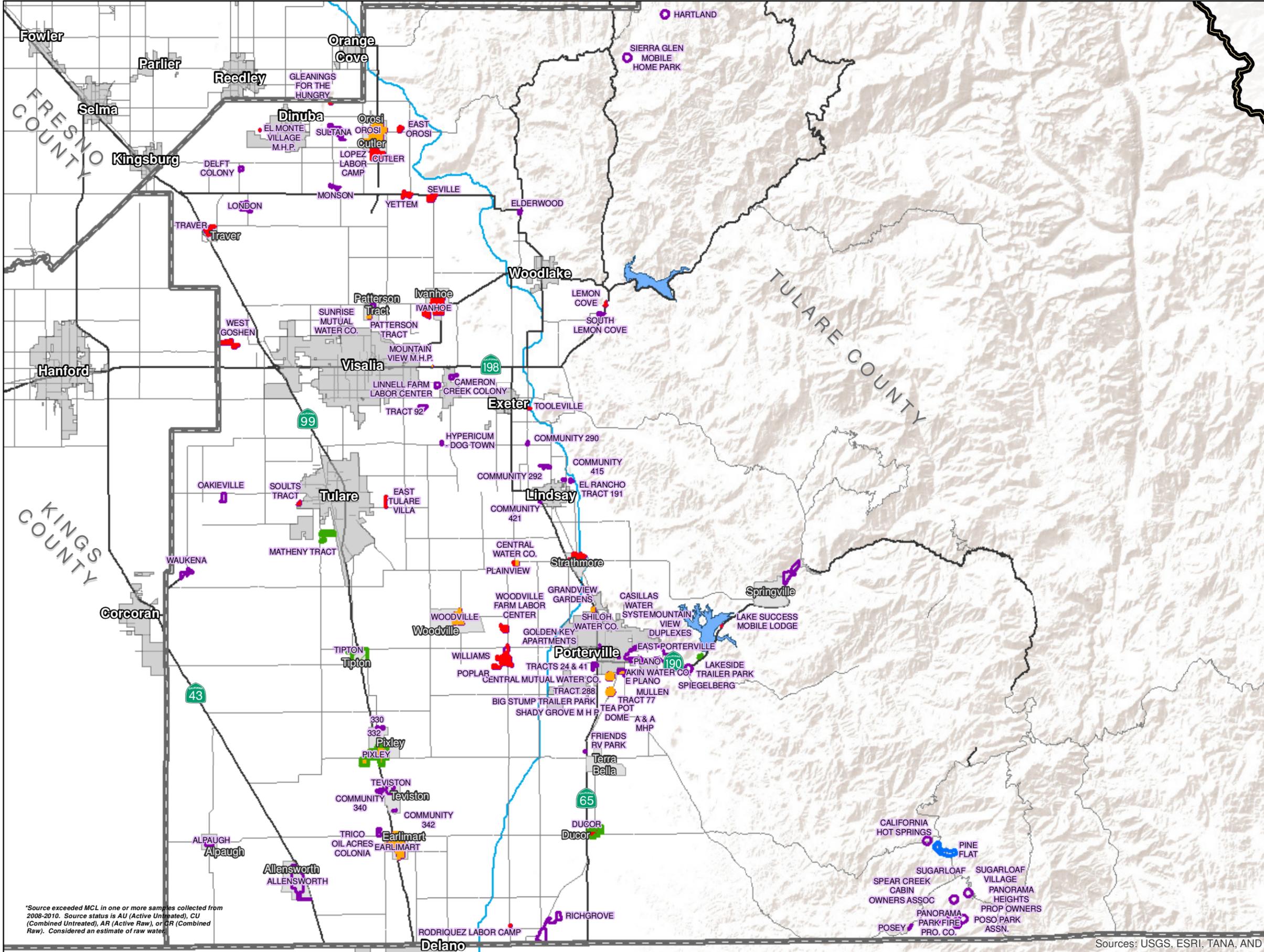


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\*Source exceeded MCL in one or more samples collected from 2008-2010. Source status is AU (Active Untreated), CU (Combined Untreated), AR (Active Raw), or CR (Combined Raw). Considered an estimate of raw water.

Sources: USGS, ESRI, TANA, AND



# Tulare Lake Basin Disadvantaged Community Water Study

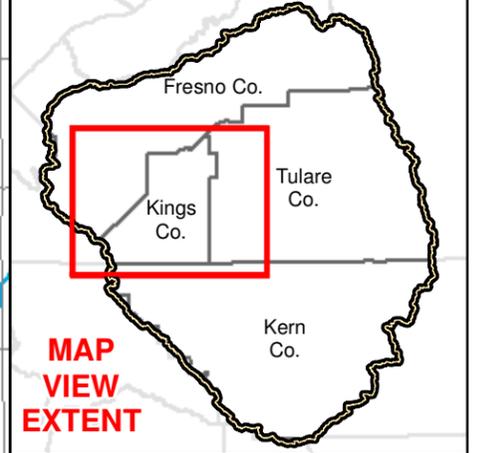
## KINGS COUNTY Communities

DAC and SDAC Communities  
\*Raw Water Quality Issues

### Legend

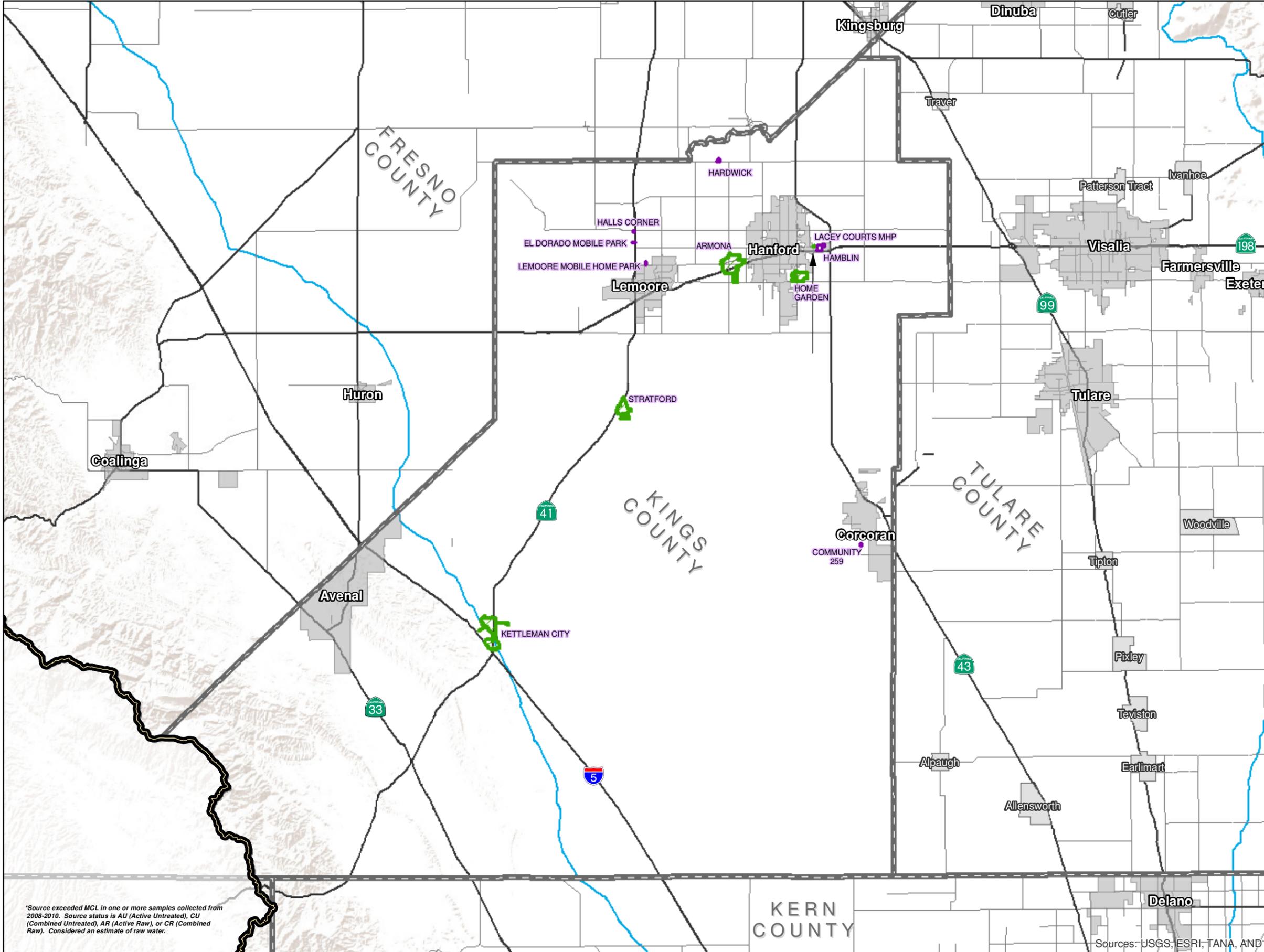
-  Tulare Lake Basin
-  County
-  DAC or SDAC Not Identified With WQ Issue
-  Arsenic (Source Max Value  $\geq 10$  ug/l)
-  Uranium (Source Max Value  $\geq 20$  pC/l)
-  Nitrate as NO3 (Source Max Value  $\geq 45$  mg/l)
-  Nitrate as NO3 (Source Max Value  $\geq 22.5 < 45$  mg/l)
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

**Exhibit 11**  
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\*Source exceeded MCL in one or more samples collected from 2008-2010. Source status is AU (Active Untreated), CU (Combined Untreated), AR (Active Raw), or CR (Combined Raw). Considered an estimate of raw water.

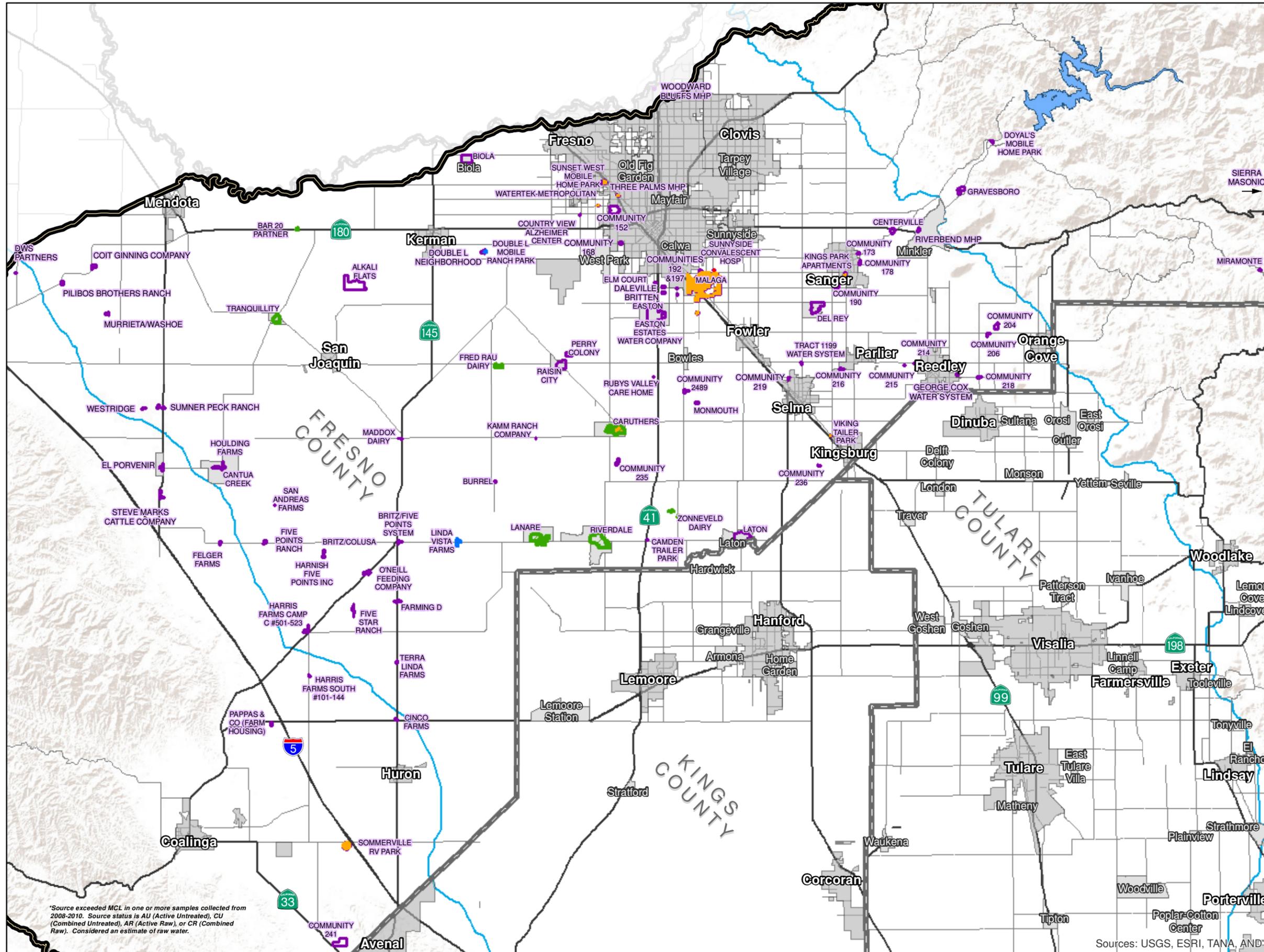
Sources: USGS, ESRI, TANA, AND



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**FRESNO COUNTY  
Communities**

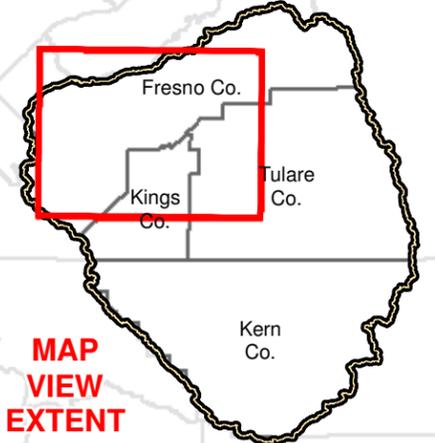
DAC and SDAC Communities  
\*Raw Water Quality Issues



**Legend**

- Tulare Lake Basin
- County
- DAC or SDAC Not Identified With WQ Issue
- Uranium (Source Max Value >=20 pCi/l)
- Arsenic (Source Max Value >=10 ug/l)
- Nitrate as NO3 (Source Max Value >= 45 mg/l)
- Nitrate as NO3 (Source Max Value >= 22.5 < 45 mg/l)
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

**Exhibit 12  
DRAFT**



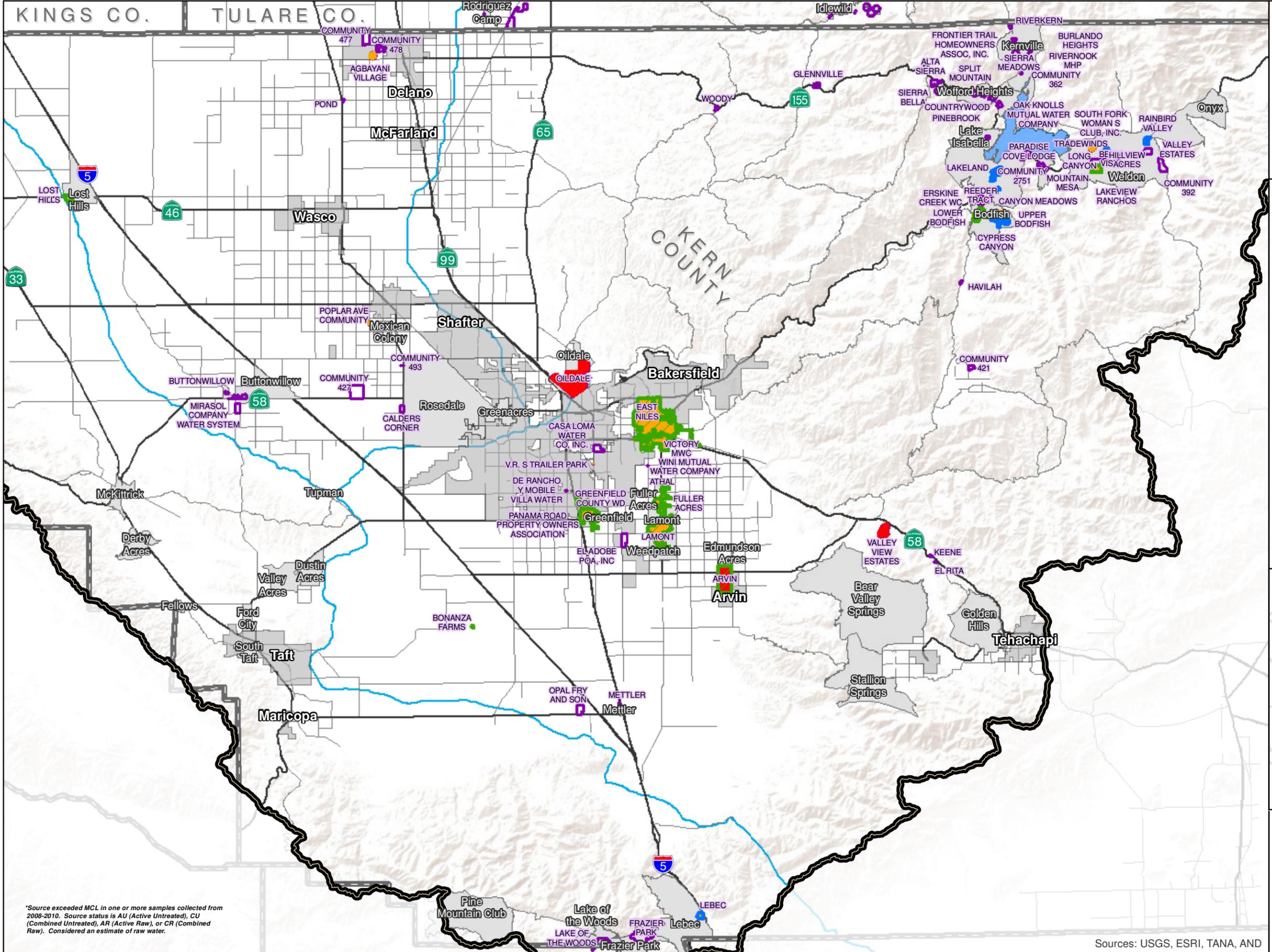
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\*Source exceeded MCL in one or more samples collected from 2008-2010. Source status is AU (Active Untreated), CU (Combined Untreated), AR (Active Raw), or CR (Combined Raw). Considered an estimate of raw water.

Sources: USGS, ESRI, TANA, AND...





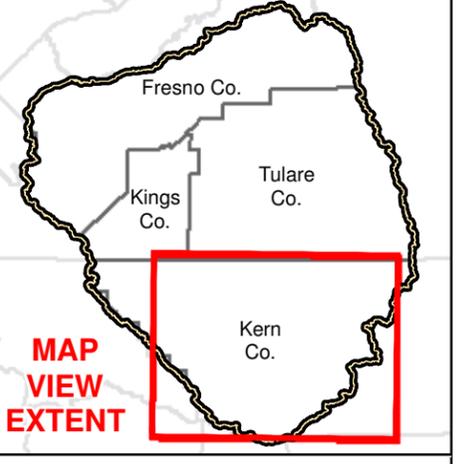
**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**KERN COUNTY  
Communities**

DAC and SDAC Communities  
\*Raw Water Quality Issues

**Legend**

- Tulare Lake Basin
- County
- DAC or SDAC Not Identified With WQ Issue
- Uranium (Source Max Value >=20 pC/l)
- Arsenic (Source Max Value >=10 ug/l)
- Nitrate as NO3 (Source Max Value >= 45 mg/l)
- Nitrate as NO3 (Source Max Value >= 22.5 < 45 mg/l)
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal



0 2 4 6 Miles

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Sources: USGS, ESRI, TANA, AND



Scenario 2

Many communities in the Tulare Lake Basin Study Area may face the challenge of unsuitable water quality. The communities may have wells that are too shallow and susceptible to contaminants, may have multiple contaminants in the water supply, or may not have the resources to construct or maintain treatment facilities.

It is noted that maximum contaminant levels (MCLs) for constituents periodically become more stringent (ie. the MCL for arsenic was reduced from 50 ppb to 10 ppb). In addition, there are emerging constituents for which MCLs may be identified in the future (ie. 1,2, 3-TCP). Therefore, a community water system may be in compliance today and then may exceed regulatory limits in the future even if the delivered water quality remains constant.

Title 22, Chapter 15 identifies the water quality sampling requirements and maximum contaminant levels to be achieved by public water systems. In addition, Title 22, Chapter 15 defines economic feasibility criteria for centralized water treatment. Further, Title 22, Chapter 15 defines parameters for Point of Use Treatment.

Water quality is a limiting factor on the adequacy of supply for several communities. Based on the information available, the regulated community water systems identified in Figure 4-5 through Figure 4-8 have raw water supply characteristics that have exceeded the primary drinking water standards for either arsenic, nitrate, coliform, or uranium between 2008 and 2010. Some of these communities have treatment facilities that mitigate the constituents. The communities identified in Figure 4-9 through Figure 4-12 have delivered water supply characteristics that have exceeded the primary drinking water standards for arsenic, nitrate, coliform, or uranium between 2008 and 2010.

**Table 4-3** includes the disadvantaged communities that have exceeded primary drinking water standards. The table is broken down by County and includes population and connection estimates per County. The information is presented by population within each County (highest to lowest). In addition, the table identifies publicly owned systems and privately owned systems.



**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY**

**TABLE 4-3**

**LIST OF DISADVANTAGED COMMUNITIES IN TULARE COUNTY  
WITH A LEVEL OF CONCERN FOR DELIVERED WATER QUALITY**

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Raw WQ Issues	Delivered WQ Issues	Ownership
IVANHOE	5410019	4474	1174	DAC	Y	Y	Public (state, federal, local)
PIXLEY	5410009	3500	700	SDAC	Y	Y	Public (state, federal, local)
TIPTON	5410014	1792	587	SDAC	Y	Y	Public (state, federal, local)
EAST OROSI	5401003	426	102	SDAC	Y	Y	Public (state, federal, local)
LEMON COVE	5400616	150	50	DAC	Y	Y	Public (state, federal, local)
MATHENY TRACT	5410033	1980	325	SDAC	Y	Y	Private
WOODVILLE FARM LABOR CENTER	5400792	725	181	SDAC	Y	Y	Private
TRAVER	5400553	500	180	DAC	Y	Y	Private
SEVILLE	5400550	400	89	SDAC	Y	Y	Private
TOOLEVILLE	5400567	350	77	SDAC	Y	Y	Private
WEST GOSHEN	5400957	200	69	DAC	Y	Y	Private
CENTRAL WATER CO.	5400682	170	42	SDAC	Y	Y	Private
RODRIQUEZ LABOR CAMP	5400735	150	34	SDAC	Y	Y	Private
PINE FLAT	5410034	110	223	DAC	Y	Y	Private
EL MONTE VILLAGE M.H.P.	5400523	100	49	DAC	Y	Y	Private
LAKE SUCCESS MOBILE LODGE	5400660	20	18	SDAC	Y	Y	Private
LAKESIDE TRAILER PARK	5400518	500	91	SDAC	Y	Y	
YETTEM	5403043	350	64	DAC	Y	Y	

**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY**

**TABLE 4-3**

**LIST OF DISADVANTAGED COMMUNITIES IN KINGS COUNTY  
WITH A LEVEL OF CONCERN FOR DELIVERED WATER QUALITY**

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Raw WQ Issues	Delivered WQ Issues	Ownership
ARMONA	1610001	3239	1179	DAC	Y	Y	Public (state, federal, local)
HOME GARDEN	1610007	1750	450	SDAC	Y	Y	Public (state, federal, local)
LACEY COURTS MHP	1600010	50	21	DAC	Y	Y	Private

**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY**

**TABLE 4-3**

**LIST OF DISADVANTAGED COMMUNITIES IN FRESNO COUNTY  
WITH A LEVEL OF CONCERN FOR DELIVERED WATER QUALITY**

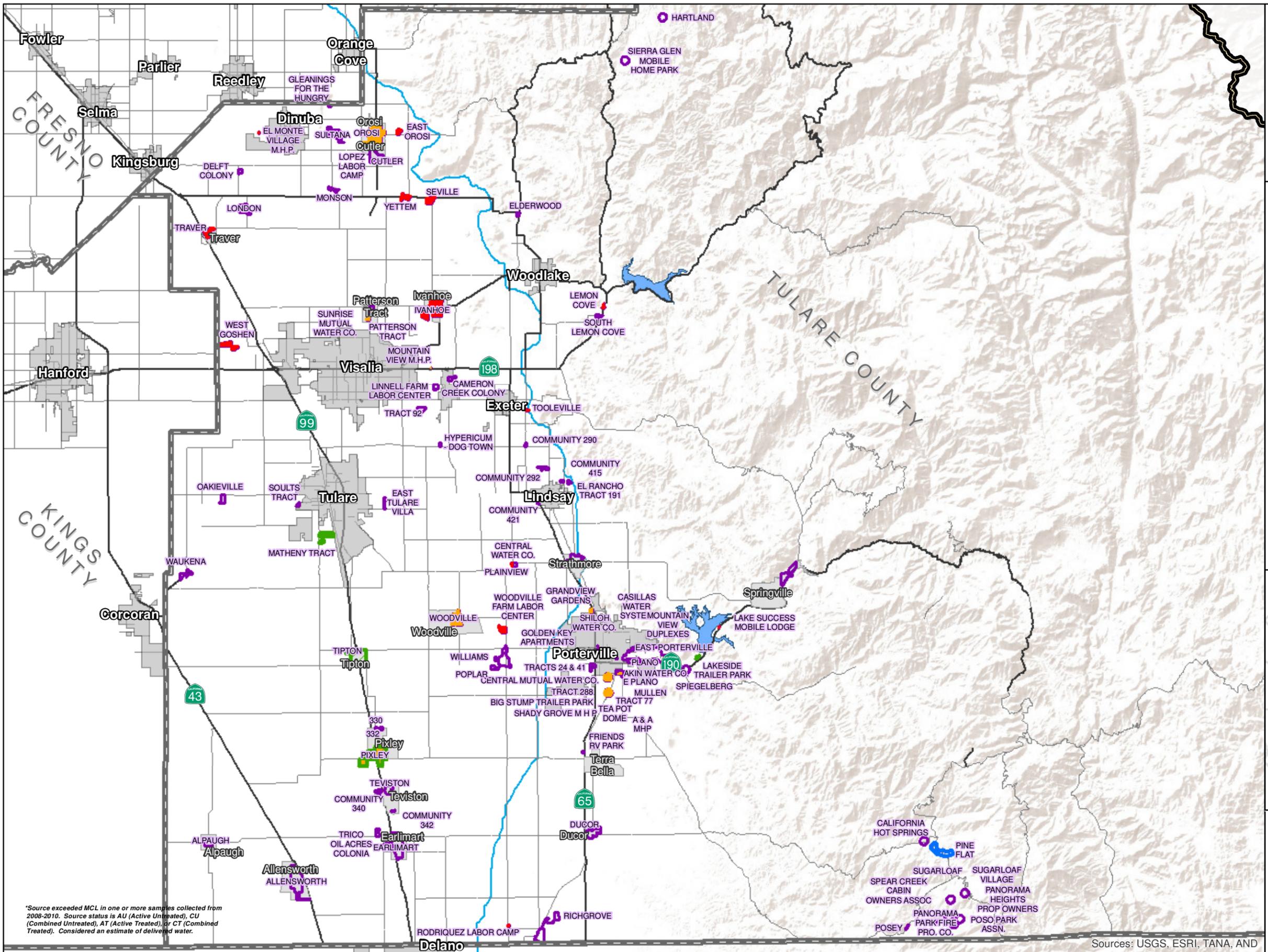
NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Raw WQ Issues	Delivered WQ Issues	Ownership
RIVERDALE	1010028	3000	930	DAC	Y	Y	Public (state, federal, local)
CARUTHERS	1010039	2103	672	DAC	Y	Y	Public (state, federal, local)
LANARE	1000053	300	120	DAC	Y	Y	Private
ZONNEVELD DAIRY	1000369	141	34	SDAC	Y	Y	Private
SUNNYSIDE CONVALESCENT HOSP	1000366	116	3	SDAC	Y	Y	Private
DOUBLE L MOBILE RANCH PARK	1000248	80	37	SDAC	Y	Y	Private
FRED RAU DAIRY	1009120	80	24	SDAC	Y	Y	Private
BAR 20 PARTNER	1000079	60	15	SDAC	Y	Y	Private
LINDA VISTA FARMS	1000445	40	26	SDAC	Y	Y	Private

**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY**

**TABLE 4-3**

**LIST OF DISADVANTAGED COMMUNITIES IN KERN COUNTY  
WITH A LEVEL OF CONCERN FOR DELIVERED WATER QUALITY**

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Raw WQ Issues	Delivered WQ Issues	Ownership
EAST NILES	1510006	24900	7338	DAC	Y	Y	Public (state, federal, local)
ARVIN	1510001	14713	3536	SDAC	Y	Y	Public (state, federal, local)
LEBEC	1510051	1285	243	DAC	Y	Y	Public (state, federal, local)
OILDALE	1510015	26000	7820	DAC	Y	Y	Private
LOST HILLS	1510046	1991	434	DAC	Y	Y	Private
VALLEY VIEW ESTATES	1500569	81	39	SDAC	Y	Y	Private
LAKEVIEW RANCHOS	1500525	59	49	DAC	Y	Y	Private
KERNSVALE	1500364	52	20	SDAC	Y	Y	Private



# Tulare Lake Basin Disadvantaged Community Water Study

## TULARE COUNTY Communities

DAC and SDAC Communities  
\*Delivered Water Quality Issues

**Legend**

- Tulare Lake Basin
- County
- DAC or SDAC Not Identified With WQ Issue
- Uranium (Source Max Value >=20 pC/l)
- Arsenic (Source Max Value >=10 ug/l)
- Nitrate as NO3 (Source Max Value >= 45 mg/l)
- Nitrate as NO3 (Source Max Value >= 22.5 < 45 mg/l)
- City
- Community (Non-Incorporated)
- Major Road
- Highway / Interstate
- Major Canal

**Exhibit 14  
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**MAP VIEW EXTENT**

0 2 4 6 Miles

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Sources: USGS, ESRI, TANA, AND



# Tulare Lake Basin Disadvantaged Community Water Study

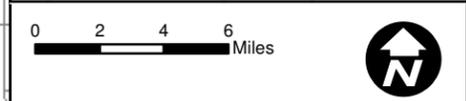
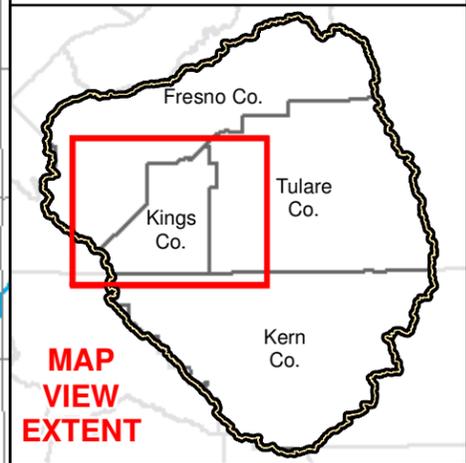
## KINGS COUNTY Communities

DAC and SDAC Communities  
\*Delivered Water Quality Issues

### Legend

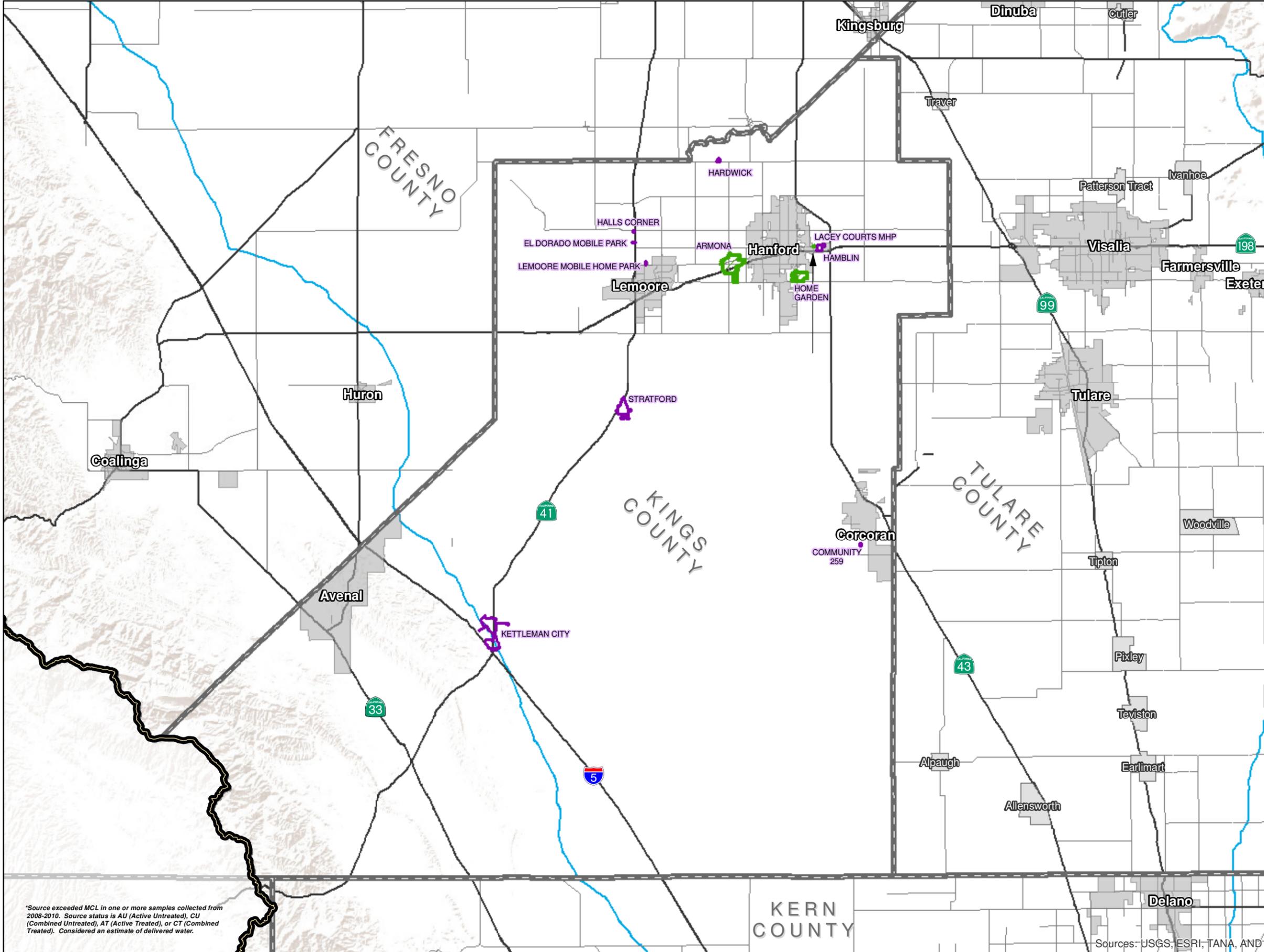
-  Tulare Lake Basin
-  County
-  DAC or SDAC Not Identified With WQ Issue
-  Uranium (Source Max Value  $\geq 20$  pCi/l)
-  Arsenic (Source Max Value  $\geq 10$  ug/l)
-  Nitrate as NO3 (Source Max Value  $\geq 45$  mg/l)
-  Nitrate as NO3 (Source Max Value  $\geq 22.5 < 45$  mg/l)
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

**Exhibit 15**  
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\*Source exceeded MCL in one or more samples collected from 2008-2010. Source status is AU (Active Untreated), CU (Combined Untreated), AT (Active Treated), or CT (Combined Treated). Considered an estimate of delivered water.

Sources: USGS, ESRI, TANA, AND



# Tulare Lake Basin Disadvantaged Community Water Study

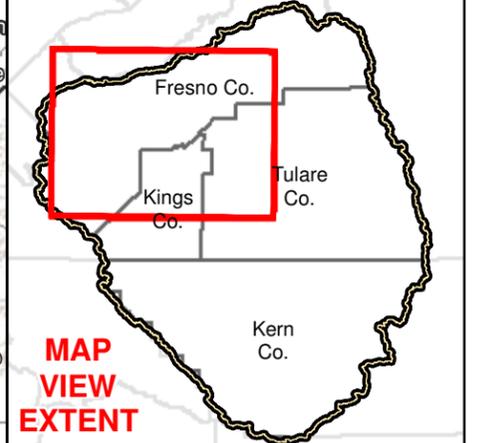
## FRESNO COUNTY Communities

DAC and SDAC Communities  
\*Delivered Water Quality Issues

### Legend

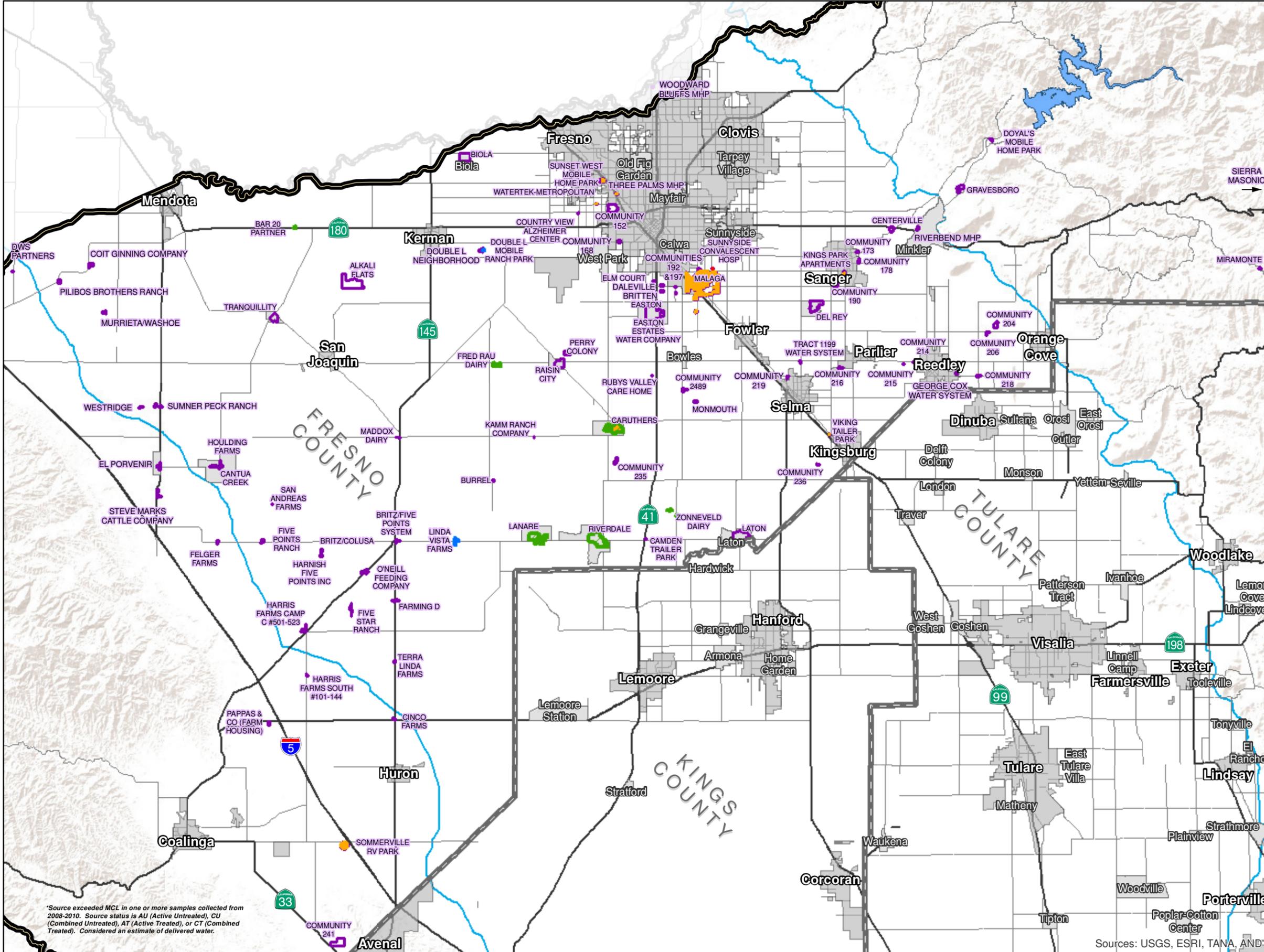
-  Tulare Lake Basin
-  County
-  DAC or SDAC Not Identified With WQ Issue
-  Uranium (Source Max Value >=20 pCi/l)
-  Arsenic (Source Max Value >=10 ug/l)
-  Nitrate as NO3 (Source Max Value >= 45 mg/l)
-  Nitrate as NO3 (Source Max Value >= 22.5 < 45 mg/l)
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

**Exhibit 16**  
**DRAFT**



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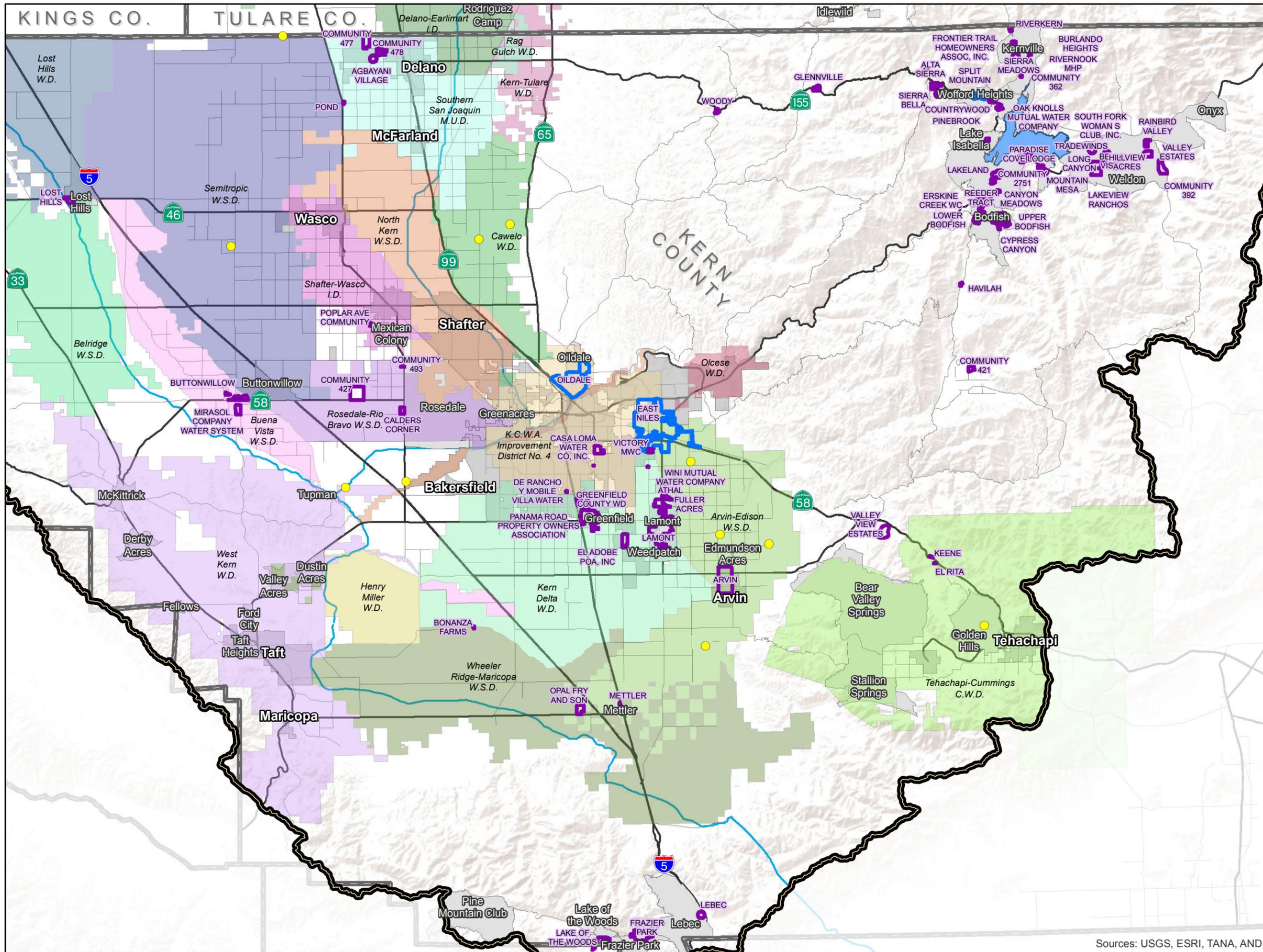
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(559) 449-2700



\*Source exceeded MCL in one or more samples collected from 2008-2010. Source status is AU (Active Untreated), CU (Combined Untreated), AT (Active Treated), or CT (Combined Treated). Considered an estimate of delivered water.

Sources: USGS, ESRI, TANA, AND...





**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**KERN COUNTY  
Communities**

DAC and SDAC Communities  
Water Districts and Recharge Projects

**Legend**

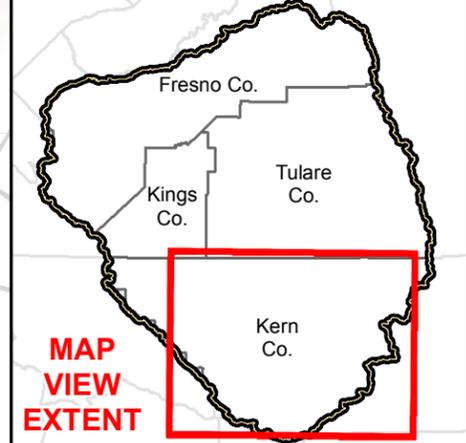
- Recharge Site
- Tulare Lake Basin
- County
- City
- Community (Non-Incorporated)

**DAC or SDAC Community**

- Groundwater (or Unknown) Source
- Groundwater and Surface Water Source
- Major Road
- Highway / Interstate
- Major Canal

**Exhibit 17**

**DRAFT**



0 2 4 6 Miles

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Sources: USGS, ESRI, TANA, AND



## SECTION FOUR

## PILOT STUDY

Tulare Lake Basin Study Area  
Summary of Regulated DACs with a Delivered Water Quality Concern  
(2008 through 2010)

County	Number of DAC Systems		Connections		Population	
	Publicly Owned	Privately Owned	Publicly Owned	Privately Owned	Publicly Owned	Privately Owned
Tulare	5	13	2,613	1,442	10,342	5,555
Kings	2	1	1,629	21	4,989	50
Fresno	2	7	1,602	259	5,103	817
Kern	3	5	11,117	8,362	40,898	28,183
Total	12	26	16,961	10,084	61,332	34,605

Note: East Niles CSD (Kern County) addressed the water quality concerns in 2009. There may be other communities that have since addressed the issue and therefore we would need to footnote the Table.

Water Supply and Water Quality

Several communities face the challenge of insufficient water supply and inadequate water quality. Those disadvantaged communities facing a severe water supply or water quality concern are identified in Figures 2-1, 2-2, 2-3, and 2-4. These same communities are listed in Table 4-4. It is acknowledged that other communities also suffer with water quantity or quality concerns, as identified previously.

Tulare Lake Basin Study Area  
Summary of Regulated DACs with a Severe Water Supply or Water Quality Concern

County	Number of DAC Systems		Connections		Population	
	Publicly Owned	Privately Owned	Publicly Owned	Privately Owned	Publicly Owned	Privately Owned
Tulare	6	12	3,271	1,172	13,102	4,322
Kings	4	1	2,190	2	7,704	50
Fresno	3	4	1,928	87	5,923	377
Kern	4	6	13,146	1,183	47,190	4,408
Total	17	23	20,535	2,463	73,919	9,157

Note: East Niles CSD (Kern County) addressed the water quality concerns in 2009. There may be other communities that have since addressed the issue and therefore we would need to footnote the Table.

**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY  
TABLE 4-4  
LIST OF DISADVANTAGED COMMUNITIES  
WITH AN IDENTIFIED RED LEVEL OF CONCERN FOR SUPPLY OR QUALITY**

COMMUNITY NAME	CDPH Water System ID	Water System Name	Estimated Population Served	Estimated Connections	Ownership	Demonstration Project	*WQ Issue Coding	County
CARUTHERS	1010039	Caruthers Comm Serv Dist	2103	672	Public (state, federal, local)	New Sources Example Project		FRESNO
FRED RAU DAIRY	1009120	FRED RAU DAIRY	80	24	Private			FRESNO
LINDA VISTA FARMS	1000445	LINDA VISTA FARMS	40	26	Private			FRESNO
RIVERDALE	1010028	Riverdale Public Utility District	3000	930	Public (state, federal, local)	New Sources Example Project		FRESNO
SUNNYSIDE CONVALESCENT HOSP	1000366	SUNNYSIDE CONVALESCENT HOSP	116	3	Private			FRESNO
TRANQUILLITY	1010030	TRANQUILLITY	820	326	Public (state, federal, local)	New Sources Example Project		FRESNO
ZONNEVELD DAIRY	1000369	ZONNEVELD DAIRY	141	34	Private	New Sources Example Project		FRESNO
ARVIN	1510001	CSD OF ARVIN	32	16	Public (state, federal, local)	New Sources Example Project		KERN
EAST NILES	1510006	EAST NILES CSD	24900	7338	Public (state, federal, local)	New Sources Example Project		KERN
GREENFIELD COUNTY WD	1510024	GREENFIELD COUNTY WD	8400	2411	Public (state, federal, local)			KERN
KERNVALE	1500364	KRVWC - KERNVALE MUTUAL WATER CO	52	20	Private			KERN
LAKEVIEW RANCHOS	1500525	LAKEVIEW RANCHOS	59	49	Private			KERN
LAMONT	1510012	LAMONT PUBLIC UTILITY DIST	13858	3381	Public (state, federal, local)	New Sources Example Project		KERN
LOST HILLS	1510046	LOST HILLS	1991	434	Private			KERN
LOWER BODFISH	1510056	CWS - LOWER BODFISH WATER SYSTEM	2037	558	Private			KERN
RAINBIRD VALLEY	1500393	RAINBIRD VALLEY	188	83	Private			KERN
VALLEY VIEW ESTATES	1500569	VALLEY VIEW ESTATES MWC	81	39	Private			KERN
ARMONA	1610001	ARMONA COMMUNITY SERVICES DIST	3239	1179	Public (state, federal, local)	New Sources Example Project		KINGS
HOME GARDEN	1610007	HOME GARDEN CSD	1750	450	Public (state, federal, local)			KINGS
KETTLEMAN CITY	1610009	KETTLEMAN CITY CSD	1500	321	Public (state, federal, local)			KINGS
LACEY COURTS MHP	1600010	LACEY COURTS MHP	50	21	Private	New Sources Example Project		KINGS
STRATFORD	1610006	STRATFORD PUD	1215	240	Public (state, federal, local)			KINGS
CENTRAL WATER CO.	5400682	CENTRAL WATER CO.	170	42	Private			TULARE
DUCOR	5400542	DUCOR CSD	411	102	Private			TULARE
EAST OROSI	5401003	EAST OROSI C.S.D.	426	102	Public (state, federal, local)			TULARE
EL MONTE VILLAGE M.H.P.	5400523	EL MONTE VILLAGE M.H.P.	100	49	Private			TULARE
GLEANINGS FOR THE HUNGRY	5402047	GLEANINGS FOR THE HUNGRY	31	10	Private			TULARE
IVANHOE	5410019	Ivanhoe Public Utility Dist	4474	1174	Public (state, federal, local)			TULARE
LAKE SUCCESS MOBILE LODGE	5400660	LAKE SUCCESS MOBILE LODGE	20	18	Private			TULARE
LEMON COVE	5400616	LEMON COVE WATER CO.	150	50	Public (state, federal, local)			TULARE
MATHENY TRACT	5410033	Pratt Mutual Water Co	1980	325	Private	New Sources Example Project		TULARE
PINE FLAT	5410034	Pine Flat Water Company	110	223	Private			TULARE
PIXLEY	5410009	Pixley Public Util Dist	3500	700	Public (state, federal, local)	New Sources Example Project		TULARE
POPLAR	5410026	Poplar Comm Service Dist	2200	555	Public (state, federal, local)			TULARE
RODRIQUEZ LABOR CAMP	5400735	RODRIQUEZ LABOR CAMP	150	34	Private	New Sources Example Project		TULARE
SEVILLE	5400550	SEVILLE WATER CO.	400	89	Private	New Sources Example Project		TULARE
SOULTS TRACT	5400805	SOULTS MUTUAL WATER CO.	100	36	Private	New Sources Example Project		TULARE
STRATHMORE	5410012	Strathmore Public Util Dist	2352	690	Public (state, federal, local)			TULARE
TRAVER	5400553	TRAVER WATER LLC	500	180	Private			TULARE
YETTEM	5403043	YETTEM	350	64	Unknown	New Sources Example Project		TULARE

\*2008-2010 data. System source exceeded MCL for a constituent (Nitrate as NO3, Uranium, or Arsenic ) twice during the review period, or had a TCR or THM violation.

### Additional Challenges

In addition to the basic challenge of insufficient potable water supply (quality and quantity), several of the communities have characteristics that may increase the challenges they face. One of the complicating factors faced by communities in the Tulare Lake Basin is that of geographic isolation.

Communities may face wastewater treatment and disposal challenges. A brief listing of communities with wastewater challenges is included as **Table 4-5**

Communities may also face challenges that could include management of the system, cost of the system, the specific operation and management of treatment, or other topics. Many of the subjects listed in the Technical, Managerial, and Financial report (**Appendix M**) required by the California Department of Public Health in applications for financial assistance may be referenced to gain an understanding of the ability of a community to address water supply challenges. The other pilot studies that are being prepared in parallel to the topic of water supply may also address some of these challenges. There are opportunities for combining resources with the other projects to address issues more comprehensively.

As stated previously, there also are pollutants within the drinking water for which regulatory limits have not yet been established. 1,2,3 TCP is an example of a pollutant that is expected to be associated with a regulatory limit in the future. The impact to DACs within the Tulare Basin Study Area is yet to be determined.



**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY**

**TABLE 4-5**

**LIST OF DISADVANTAGED COMMUNITIES  
WWTP PROBLEM SITES**

	Collection System	Treatment Plant	Disposal Area	Comments From
<b>Kings County</b>				
Stratford		2		Daniel Benas
Kettleman City		2	1	Daniel Benas
Home Garden		N/A	N/A	MGT
Armona	1	2	1	MGT
Hardwick	N/A	N/A	N/A	MGT
<b>Tulare County</b>				
Cutler-Orosi		2		Daniel Benas
Delft		2		Daniel Benas
Earlimart		2-3		Daniel Benas
East Orosi				
East Porterville				
El Rancho				
Fairways Tract				
Goshen		N/A	N/A	MGT
Ivanhoe		2-3		Daniel Benas
Lemon Cove		3		Daniel Benas
Tulare County Housing Authority - Linnelle		2-3		Daniel Benas
London (New London)		1	2	Daniel Benas
Pixley	2	1	1	MGT
Poplar		2		Daniel Benas
Richgrove		2-3		Daniel Benas
Seville				Warren Gross
Springville				
Strathmore		3	2-1	Daniel Benas
Sultana				
Yetter				
Terra Bella		2-3	3	Daniel Benas
Tonyville				
Tooleville		2		Daniel Benas
Traver		2	1-2	Daniel Benas
Wells Tract				
Woodville		2		Daniel Benas
Woodville Farm Labor Camp		2-3		Daniel Benas
Three Rivers CSD				
Tipton		2		Daniel Benas
Western Sky Mobile Home Park				
<b>Kern County</b>				
Arvin		1	1	Daniel Benas
Button Willow		1	1	Daniel Benas
Lamont PUD		1-2	3	Daniel Benas
Lost Hills		2		Daniel Benas
Mexican Colony				
East Niles				
Stoco				
WeedPatch				
North Shafter Farm Labor Camp		1-2		Daniel Benas
<b>Fresno County</b>				
Biola		2	1-2	Daniel Benas
Cantua Creek		2-3		Daniel Benas
Caruthers	2	1	1	Daniel Benas
Del Rey		1-2	2	Daniel Benas
El Provenir		2-3		Daniel Benas
Laton CSD		2		Daniel Benas
Riverdale		2		Daniel Benas
Shady Lake MHP		3		Daniel Benas
Shafter North				
Tranquillity PUD		2-3		Daniel Benas
Easton	N/A	N/A	N/A	
Herndon Water Company				

Ratings

1	Good
2	Fair
3	Poor

MGT Comments



## 5 POTENTIAL ALTERNATIVES

Disadvantaged communities may have the option to investigate several different alternatives regarding new source development. The alternatives may include:

- Physical Consolidation,
- Exchanges/contracting for surface water,
- Recharge of Local Area,
- Regional Facility,
- New Water Supply Well,
- Water Treatment Facility (existing or new well),
- Conservation, and
- Restrict Potable Water Deliveries from Agricultural or Large Turf Irrigation
- Mitigate a source of contamination such as on-site systems

This chapter and subsequent chapters in this pilot study include guidance regarding the issues to be considered for the various alternatives. Flowcharts, or “decision trees” are included that may serve to assist disadvantaged communities consider viable alternatives to solve the unique challenges they may face.

The other pilot studies and the alternatives identified therein will overlap with the alternatives identified below. For example, physical consolidation of water systems may be evaluated in parallel with ownership transfer alternative discussed in the Management and Non-Infrastructure pilot study discussed herein. Similarly, water quality issues that may require treatment would overlap with the Technical Solutions pilot study. Considerations of water quality, such as nitrate, for communities without a community sanitary sewer system may overlap with alternatives presented in the Individual Households pilot study.

### 5.1 Physical Consolidation

Physical consolidation of a water system to a neighboring water system may be a viable alternative to address water supply or water quality concerns. Physical consolidation involves connection of distribution pipelines or water service pipelines between two systems. Typically, the system with water supply or water quality problems benefits from connection to the system that has sufficient capacity or water quality that satisfies regulatory requirements. Physical consolidation of a private system to a publicly owned community system (such as the Lacey Courts Mobile Home Park) may be accomplished with the extension of a water service to the property. The private well would be required to be destroyed and the property would typically be required to annex to the publicly owned community system.

Physical consolidation of a small community water system to a larger community water system may require the complete reconstruction of the smaller community’s distribution system to satisfy current distribution system standards. Physical consolidation typically

**SECTION FIVE**

results in the dissolution of the ownership or management of the smaller system. The requirements associated with operation and maintenance of the water system is retained by the larger community system.

Considerations for evaluation of physical consolidation include:

- Distance between water systems
  - Physical consolidation of water systems may be limited by the capital costs associated with constructing the physical facilities (pipelines, storage, pumping) that may be required to accomplish the consolidation. The capital cost associated with consolidation may exceed the costs associated with improving the individual system to satisfy water supply and water quality requirements.
- Viable route for connecting infrastructure
  - Physical consolidation may be limited by geographical or property constraints. Water systems may be within proximity, however may be separated by a river, private property, political bodies (ie. County boundaries), or other challenges that may impact a viable route to connect the systems.
- Capital cost of improvements
  - Capital cost of improvements is a key consideration of many infrastructure projects. Cost effectiveness is a key consideration for any funding agency or private entity that would provide the capital funds to construct the improvements.
- Water Supply and redundancy of water supply
  - Physical consolidation must result in satisfactory water supply and water quality for each entity/community involved. Typically, a larger system will have sufficient redundancy of water supply sources and a means to fund and maintain necessary treatment facilities.
- Condition of existing infrastructure
  - Physical consolidation to a larger water system may include the requirement that the distribution system of the smaller system be upgraded or replaced to meet current standards. For example, if the water distribution system of a smaller system is characterized by small, leaking water mains, the distribution system may need to be replaced to the standards of the larger system to ensure that all customers of the final water system have a consistent level of service.
- Monthly water service charges
  - Water service charges are a key financial consideration. Customers of the system that would be consolidated into the larger system would be required to pay the same water service charges as all other customers of

the larger system. It is possible that the consolidating system has not updated water service charges to the level necessary for the system to meet the present regulatory requirements. A review of the current and necessary modifications to water service charges would be required in any evaluation.

- Politics – willingness of both entities to allow the consolidation
  - Physical consolidation requires the agreement of both parties to the action. Each entity may have reasons to support the consolidation. Similarly, each entity may have concerns regarding the consolidation.
- Water quality of each community water system
  - The typical scenario for physical consolidation is that the larger system has a water quality that satisfies current regulatory requirements. If the water quality of the larger system does not meet requirements, the additional improvements necessary for water quality upgrades, and the shared responsibility for costs associated with those upgrades would be a consideration for both water systems.
- Governance structure and representation considerations
  - Governance structure and representation may be a significant concern of the DAC, as physical consolidation to a larger system may require the dissolution of the current governance structure of the DAC and less representation or power over decision-making. In the case of contracts or master meters there may be no decision-making power or representation on the larger system decision-making body all together.
- Regulatory Compliance
  - Any improvements, expansions, or modifications to community water systems require conformance with the appropriate regulatory requirements. Consideration of any alternatives must include consultation and coordination with the appropriate regulatory agencies (ie. CDPH, RWQCB, County Environmental Health Departments, etc.).

Examples of community water systems that have physically consolidated, or are preparing for physical consolidation, are identified in the Case Studies chapter of this report.

## 5.2 Exchanges/Contracting for surface water or other source

There may be opportunities for a community to contract for the delivery of a surface water supply from another entity. The surface supply will require water treatment and may have limitations regarding the reliability of the supply. **Table 5-1** identifies existing DACs that receive a surface water supply. It is noted that the Westlands Water District provides water to many DACs, as shown in **Figure 5-1**.

Contracting for groundwater sources of supply from another entity is another example of this alternative.

Considerations for an evaluating exchanges or contracting for surface water include:

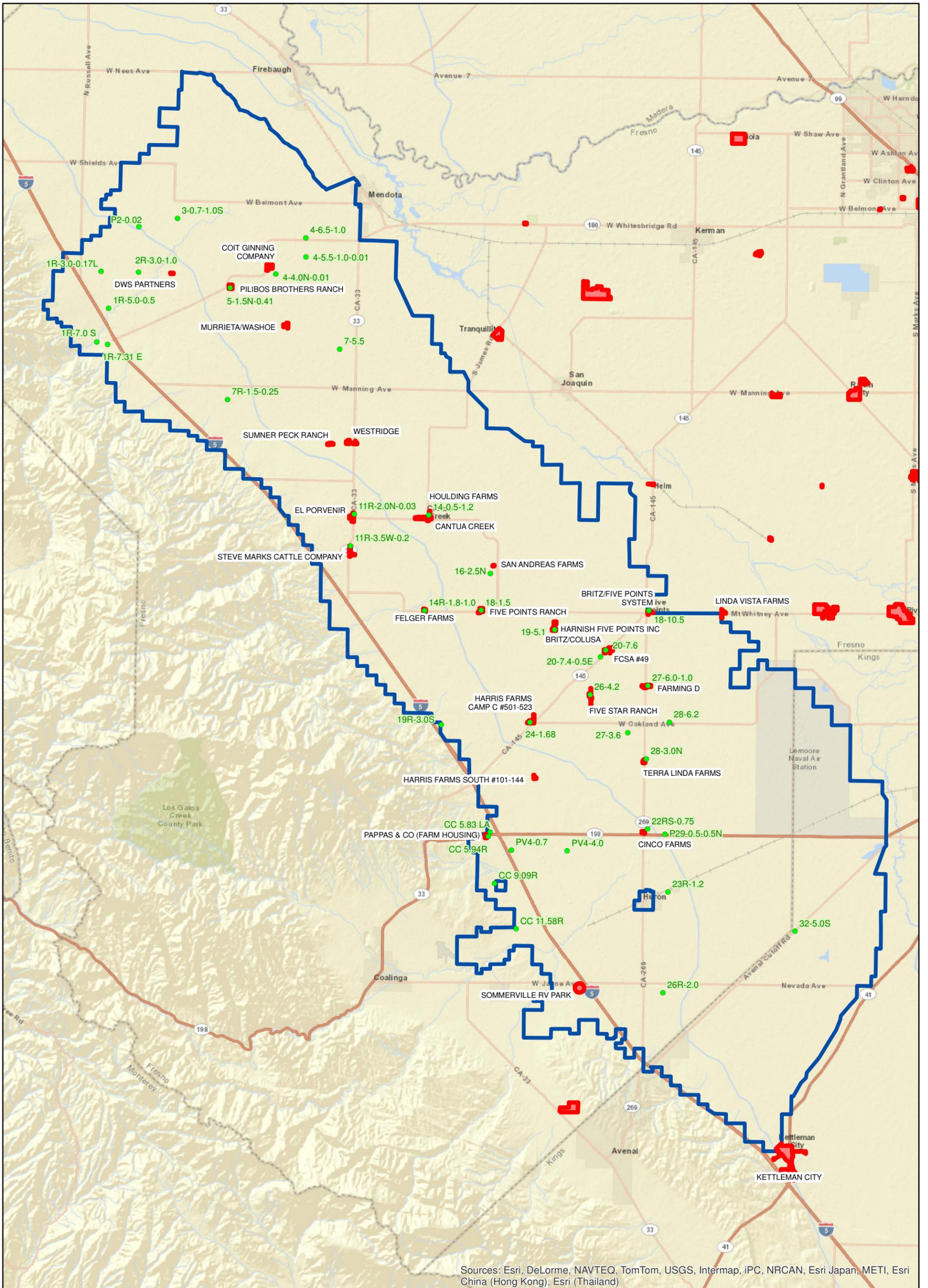
- Availability of a defined surface water supply
  - Surface water supplies must be purchased. A key consideration is the availability of surface water for sale.
- Reliability of the defined surface water supply
  - In addition to the issue of availability of a surface water supply for sale, surface water sources have limitations regarding the reliability of the surface water supply to be available for delivery. The subject of surface water reliability is one that is complicated and dependent upon each individual surface water source. The specifics of each unique source would require consideration and is beyond the scope of this pilot study.
- Cost of the defined surface water supply
  - As with any commodity, the cost of a surface water supply is defined by the owner of the supply and the marketplace. The cost of a surface water supply should be reviewed in comparison to other alternatives.
- Surface water quality and associated water treatment requirements
  - As with groundwater, surface water quality is variable and would require specific water treatment considerations to perform and evaluation of the alternative. Water treatment facilities would be constructed and operated in conjunction with water storage and pumping facilities because treatment facility operations do not coincide with water demand cycles of the community. Treatment considerations are discussed in the Technical Solutions pilot study.
- Distance and viable route between water system and source
  - The distance between the surface water supply and the water system would be a factor to consider and will impact the capital cost of conveyance facilities. Conveyance facilities may also have certain losses of water supply associated with them, which need to be considered.
- Capital cost of improvements
  - Capital cost of improvements is a key consideration of many infrastructure projects. Cost effectiveness is a key consideration for any funding agency or private entity that would provide the capital to construct the improvements.
- Redundancy of water supply

## SECTION FIVE

- Surface water supplies may not be available during all years or seasons, depending upon the source. The DAC should include the consideration of redundancy of water supply during the evaluation.
- Monthly water service charges (Operation and Maintenance)
  - Water service charges are a key financial consideration. Customers of the system that would be purchasing, conveying, treating, storing, pumping, and distributing a surface water supply would be required to be able to pay the water service charges necessary to support those activities. It is possible that the DAC system has not updated water service charges to the level necessary to meet current requirements for a system to meet the present regulatory requirements. A review of the current and necessary modifications to water service charges would be required in any evaluation.
- Politics – willingness of both entities to enter into an agreement
  - Purchase of a water supply source requires the agreement of both parties to the action. Each entity may have reasons to support the consolidation. Similarly, each entity may have concerns regarding the consolidation.
- Regulatory Compliance
  - Any improvements, expansions, or modifications to community water systems require conformance with the appropriate regulatory requirements. Consideration of any alternatives must include consultation and coordination with the appropriate regulatory agencies (ie. CDPH, RWQCB, County Environmental Health Departments, etc.).

**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY  
TABLE 5-1  
LIST OF DISADVANTAGED COMMUNITIES  
RECEIVING SURFACE WATER AS A SOURCE OF SUPPLY**

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	County	Description
FIVE POINTS RANCH	1009020	130	37	SDAC	FRESNO	Westlands M and I
CANTUA CREEK	1000359	342	78	SDAC	FRESNO	Westlands M and I
COIT GINNING COMPANY	1009131	90	31	SDAC	FRESNO	Westlands M and I
EL PORVENIR	1000019	230	51	SDAC	FRESNO	Westlands M and I
BRITZ/FIVE POINTS SYSTEM	1009179	150	33	SDAC	FRESNO	Westlands M and I
STEVE MARKS CATTLE COMPANY	1009214	25	24	SDAC	FRESNO	Westlands M and I
HOULDING FARMS	1009051	50	15	SDAC	FRESNO	
HARRIS FARMS SOUTH #101-144	1009028	160	41	DAC	FRESNO	
PILIBOS BROTHERS RANCH	1009035	35	15	SDAC	FRESNO	Westlands M and I
SUMNER PECK RANCH	1009232	92	28	SDAC	FRESNO	
FARMING D	1009147	100	38	DAC	FRESNO	Westlands M and I
FIVE STAR RANCH	1000175	120	22	SDAC	FRESNO	Westlands M and I
CINCO FARMS	1009206	30	9	DAC	FRESNO	Westlands M and I
PAPPAS & CO (FARM HOUSING)	1009006	50	13	SDAC	FRESNO	Westlands M and I
SAN ANDREAS FARMS	1009258	53	16	SDAC	FRESNO	Westlands M and I
FELGER FARMS	1009215	40	12	SDAC	FRESNO	Westlands M and I
TERRA LINDA FARMS	1009222	40	3	DAC	FRESNO	Westlands M and I
HARRIS FARMS CAMP C #501-523	1009027	300	77	SDAC	FRESNO	Westlands M and I
BRITZ/COLUSA	1009023	106	29	SDAC	FRESNO	Westlands M and I
FCSA #49	1000546	450	46	DAC	FRESNO	Westlands M and I
SHAMROCK FARMING	1600301	40	12	SDAC	FRESNO	Westlands M and I
FARM 1		50	15	SDAC	FRESNO	Westlands M and I
VAQUERO FARMS	1009172	70	17	SDAC	FRESNO	Westlands M and I
FARM 2		20	8	SDAC	FRESNO	Westlands M and I
LA JOLLA FARMS	1000493	30	10	SDAC	FRESNO	Westlands M and I
FARM 3		20	8	SDAC	FRESNO	Westlands M and I
EAST NILES	1510006	24900	7338	DAC	KERN	
SPLIT MOUNTAIN	1500407	333	237	SDAC	KERN	
OILDALE	1510015	26000	7820	DAC	KERN	
STRATHMORE	5410012	2352	690	SDAC	TULARE	
EL RANCHO - TRACT 191	5410052	124	24	SDAC	TULARE	
SPRINGVILLE	5410011	1300	639	SDAC	TULARE	
TERRA BELLA	5410013	2340	714	SDAC	TULARE	



Sources: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand)

0 2 4 6 Miles

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**Legend**

- Delivery (M & I)
- Community
- Westlands WD

**TITLE**

Description 1

Description 2



### 5.3 Recharge of Local Area

There may be opportunities for a community to contract for the delivery of a surface water supply from another entity for the purposes of recharging the groundwater of an area in need of supplemental water to mitigate declining groundwater levels or improve quality.

As described previously, the Tulare Lake Basin Study Area is subject to declining groundwater levels. It is noted that there may be recharge sites that are not shown in the exhibits as there is not a comprehensive list of every site in the basin. However, the fact is that there exist recharge sites throughout the basin area. Further, the rivers, canals, and streams that exist in the Tulare Lake Basin serve as recharge facilities when they convey water. **Figure 5-2** through **Figure 5-5** provide the location of many recharge sites in each county within the Study Area.

Considerations for evaluation recharge alternatives include:

- Defined correlation between recharge and resulting impact to available potable water sources
  - An evaluation of the local geology and hydrogeology would be required to determine if there would be a quantifiable beneficial impact to recharge near a community water system. The evaluation would also need to identify potential environmental considerations that would result from such an activity.
- Availability of a defined surface water supply
  - Surface water supplies must be purchased. A key consideration is the availability of surface water for sale.
- Reliability of the defined surface water supply
  - In addition to the issue of availability of a surface water supply for sale, surface water sources have limitations regarding the reliability of the surface water supply to be available for delivery. The subject of surface water reliability is one that is complicated and dependent upon each individual surface water source. The specifics of each unique source would require consideration and is beyond the scope of this pilot study.
- Cost of the defined surface water supply
  - As with any commodity, the cost of a surface water supply is defined by the owner of the supply and the marketplace. The cost of a surface water supply should be reviewed in comparison to other alternatives.

## SECTION FIVE

- Availability of a recharge site
  - In addition to purchasing water to deliver for recharge, the recharge site must be available either through purchase or other contractual agreement with the owner of an existing recharge site.
- Surface water quality
  - As with groundwater, surface water quality is variable and may have impacts to the groundwater quality.
- Distance and viable route between water system and source
  - The distance between the surface water supply and the water system would be a factor to consider and will impact the capital cost of conveyance facilities. Conveyance facilities may also have certain losses of water supply associated with them, which need to be considered.
- Capital cost of improvements
  - Capital cost of improvements is a key consideration of many infrastructure projects. Cost effectiveness is a key consideration for any funding agency or private entity that would provide the capital to construct the improvements.
- Condition of existing delivery or basin infrastructure
  - The necessary conveyance and basin infrastructure, if existing. Would need to be evaluated to determine the potential to receive the additional water.
- Potential adverse impacts to neighboring properties
  - Groundwater recharge may have impacts to surrounding properties. Depending on the geology review and hydrogeologic analysis, the impact of recharge would be unknown. The use of the surrounding properties is important in the evaluation of positive or adverse impacts.
- Potential of developing a regional entity to coordinate acquisition and delivery of surface water for recharge purposes
  - A regional entity to coordinate acquisition and delivery of surface water would be a significant endeavor. The viability of several of the considerations listed above (availability of supply, cost of conveyance, location of recharge site, potential benefit to the DAC water systems) would require study prior to creation of a regional entity. A review of political and environmental impacts would be significant in the evaluation of such an effort. A regional entity would likely extend beyond the considerations of individual DACs.

**SECTION FIVE**

- Regulatory Compliance
  - Any improvements, expansions, or modifications to community water systems require conformance with the appropriate regulatory requirements. Consideration of any alternatives must include consultation and coordination with the appropriate regulatory agencies (ie. CDPH, RWQCB, County Environmental Health Departments, etc.).

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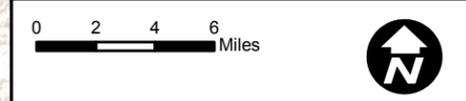
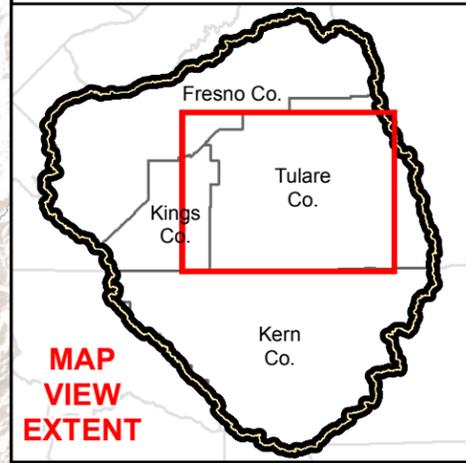
**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**TULARE COUNTY  
Communities**

DAC and SDAC Communities  
Water Districts and Recharge Projects

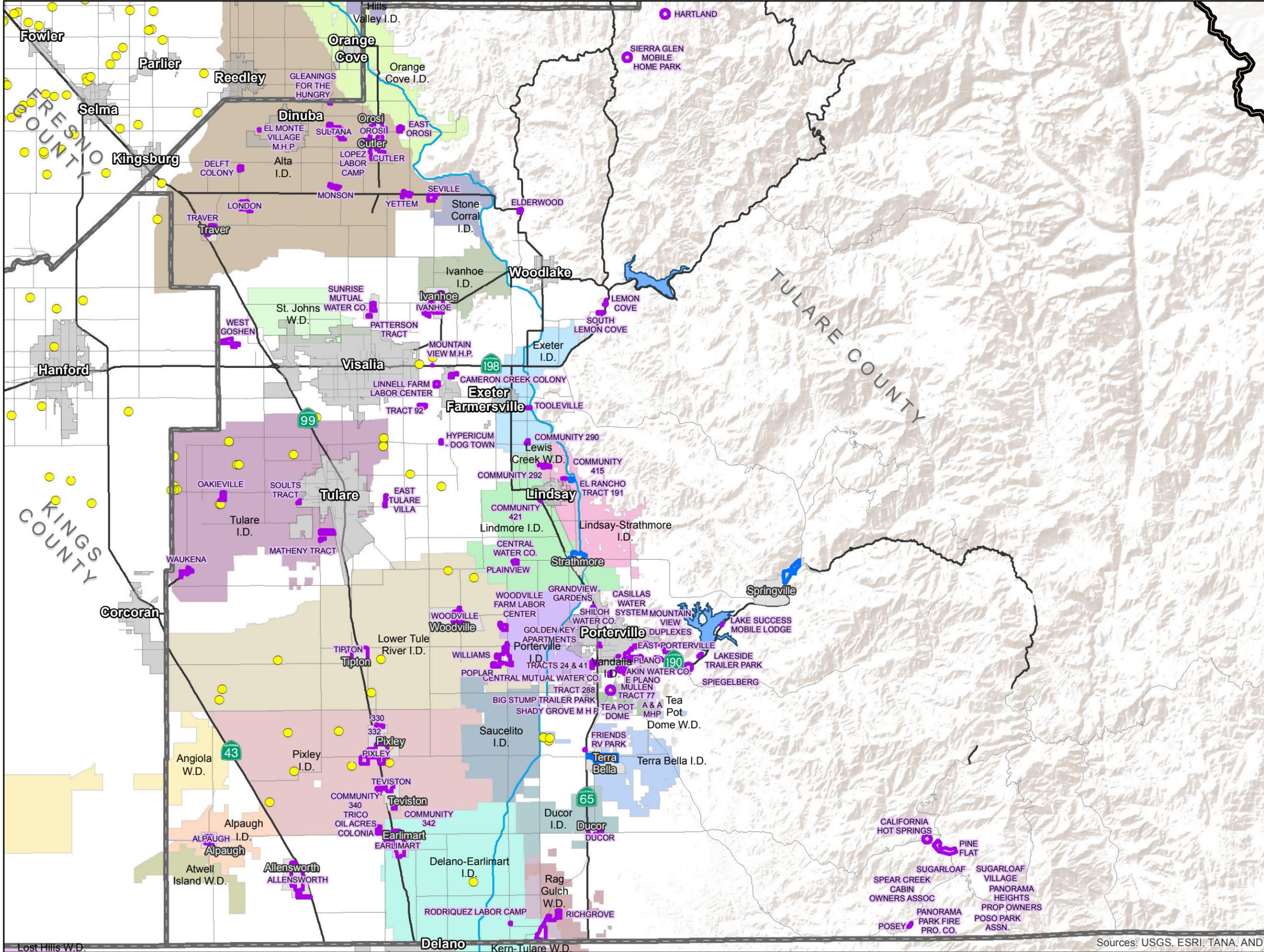
- Legend**
- Recharge Site
  - Tulare Lake Basin
  - County
  - City
  - Community (Non-Incorporated)
  - Groundwater (or Unknown) Source
  - Surface Water Source
  - Major Road
  - Highway / Interstate
  - Major Canal

**Exhibit 23  
DRAFT**



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Sources: USGS, ESRI, TANA, AND



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**KINGS COUNTY  
Communities**

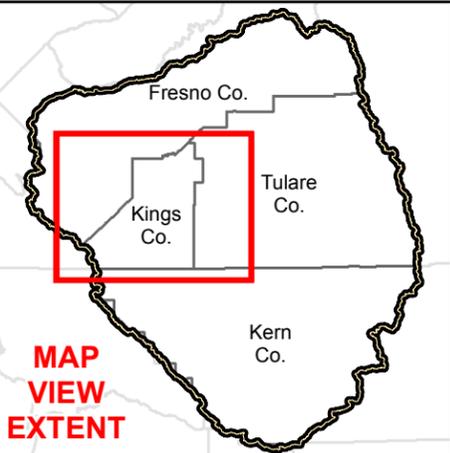
DAC and SDAC Communities  
Water Districts and Recharge Projects

**Legend**

-  Recharge Site
-  Tulare Lake Basin
-  County
-  City
-  Community (Non-Incorporated)
-  DAC or SDAC Community (Groundwater or Unknown Source)
-  Major Road
-  Highway / Interstate
-  Major Canal

Exhibit 24

**DRAFT**



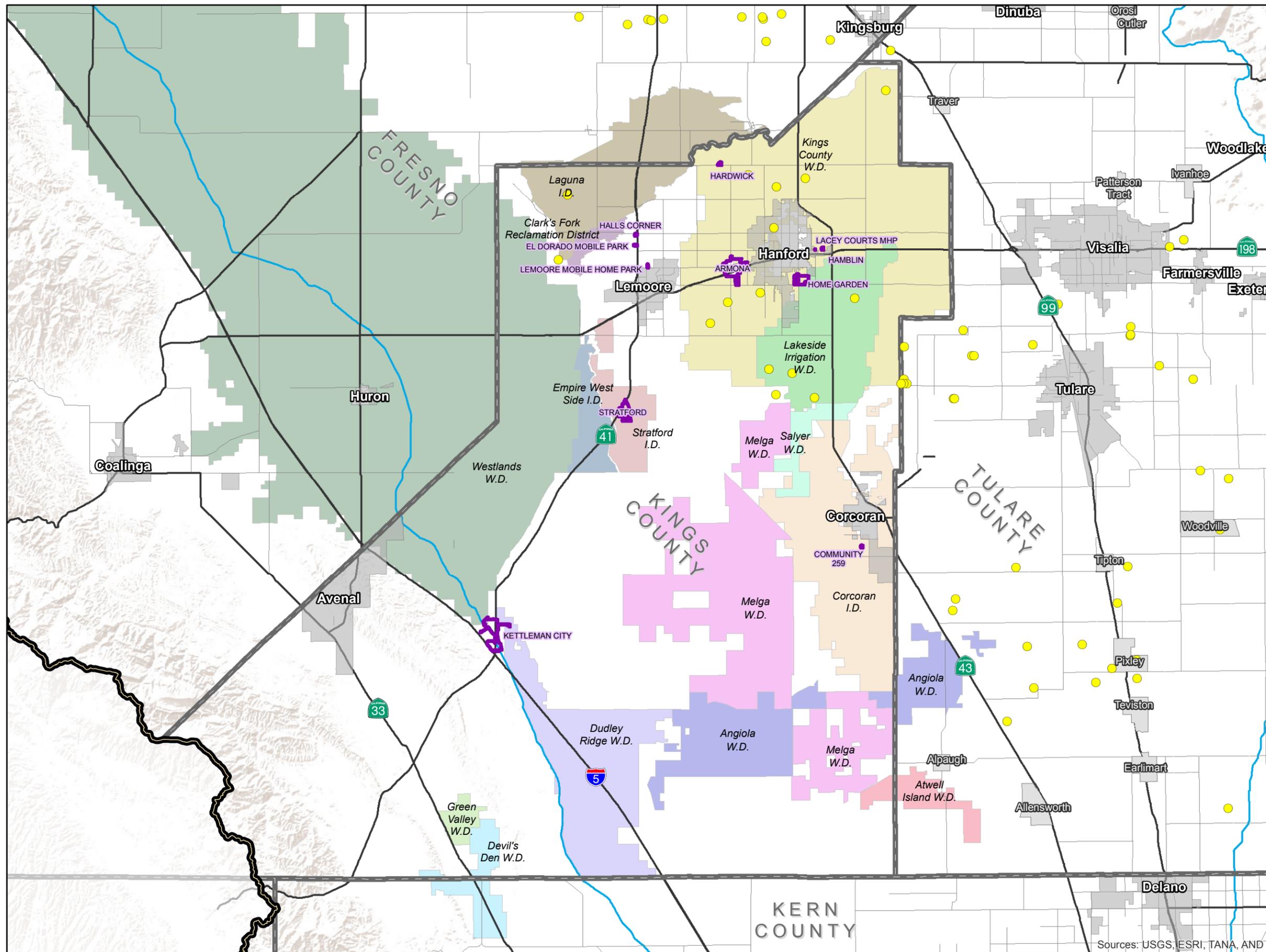
**MAP  
VIEW  
EXTENT**



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PRITCHARD**  
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Sources: USGS, ESRI, TANA, AND





**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**FRESNO COUNTY  
Communities**

DAC and SDAC Communities  
Water Districts and Recharge Projects

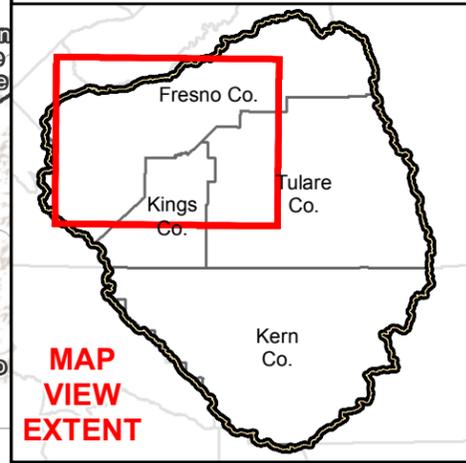
**Legend**

- Recharge Site
- Tulare Lake Basin
- County
- City
- Community (Non-Incorporated)

**DAC or SDAC Community**

- Groundwater (or Unknown) Source
- Surface Water Source
- Major Road
- Highway / Interstate
- Major Canal

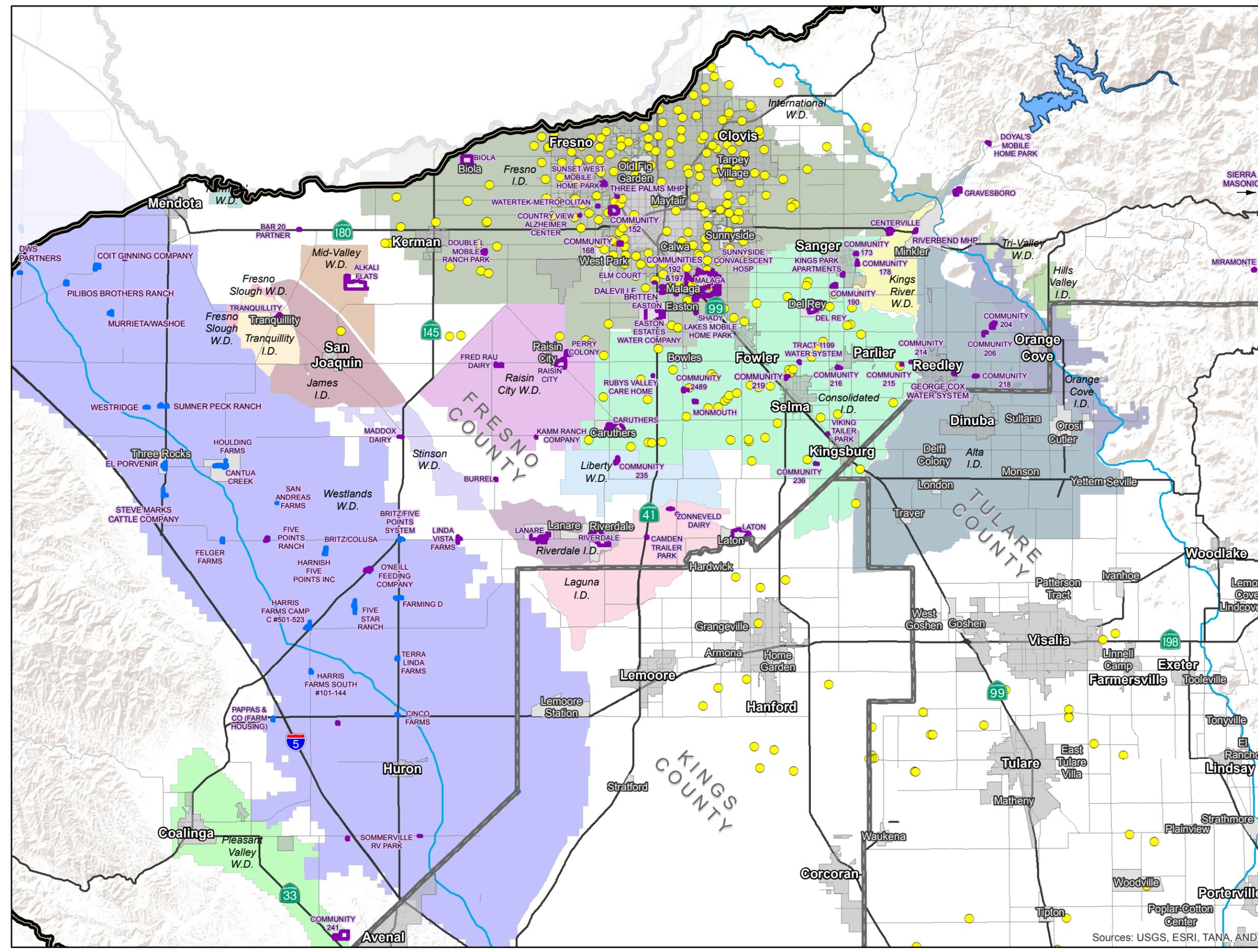
**Exhibit 25  
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0 2 4 6 Miles

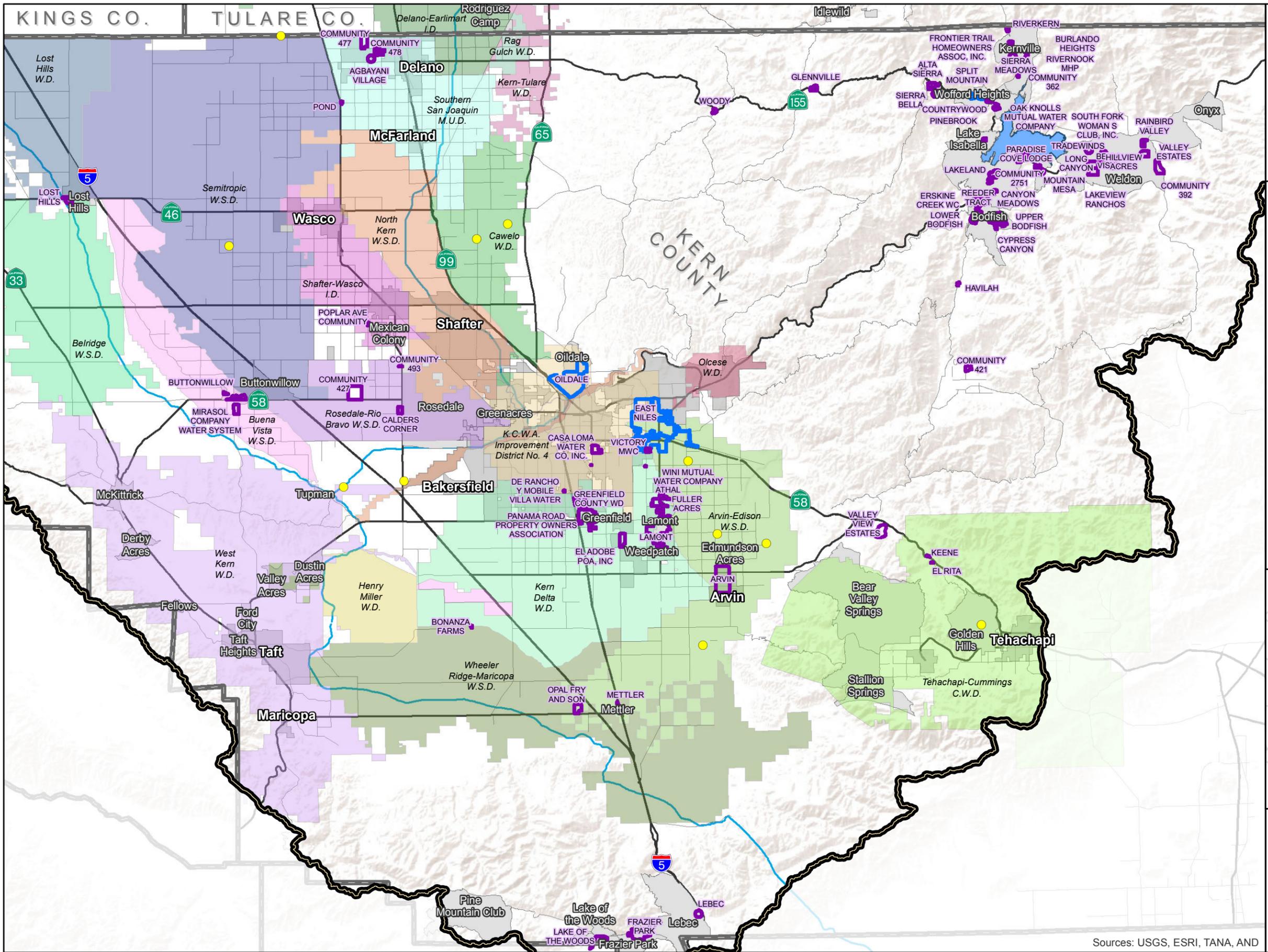
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Sources: USGS, ESRI, TANA, AND...





**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**KERN COUNTY  
Communities**

DAC and SDAC Communities  
Water Districts and Recharge Projects

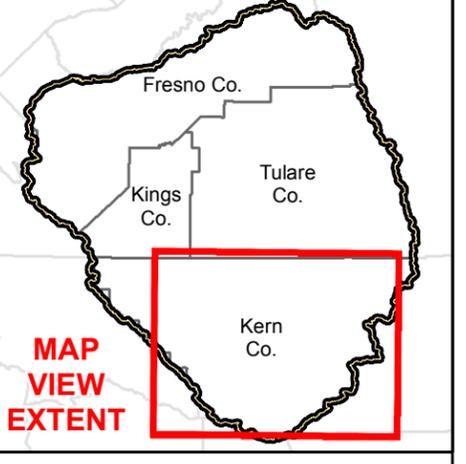
**Legend**

- Recharge Site
- Tulare Lake Basin
- County
- City
- Community (Non-Incorporated)

**DAC or SDAC Community**

- Groundwater (or Unknown) Source
- Groundwater and Surface Water Source
- Major Road
- Highway / Interstate
- Major Canal

**Exhibit 26  
DRAFT**



0 2 4 6 Miles

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Sources: USGS, ESRI, TANA, AND



## 5.4 Regional Facility (Water or Wastewater)

There may be opportunities for communities to combine resources and create a regional system for water supply or waste water treatment. This alternative is similar to consolidation, however, it is likely that a new political entity would be created to own, operate, and maintain the regional facility.

An example of a regional system is the Selma Kingsburg Fowler County Sanitation District. This system is directed toward sanitary sewer collection, treatment, and disposal.

Considerations for an evaluation of a regional system include:

- Availability of water supply
  - A defined water supply source would be required as the potential of a regional system may be evaluated.
- Water quality
  - The water quality of the supply would require definition so that the associated treatment improvements may be defined.
- Water or wastewater treatment requirements
  - The quality of the water (or wastewater) to be treated may present several treatment alternatives. The Technical Solutions Pilot Study would overlap into this consideration.
- Type of new political body
  - A regional system would require the formation of a new political body that would own and operate the system. The interaction of the new political body with existing communities and political entities would need to be defined.
- Viable route for connecting infrastructure
  - A regional facility would require connection to the individual communities or systems served. The location of the routes necessary to provide the associated services would need to be defined.
- Capital cost of improvements
  - Upon the definition of the regional system and connecting infrastructure, the analysis of capital cost as relating to benefits provided would be reviewed, in conjunction with the review of other alternatives, so that the appropriate cost effective alternative may be defined.
- Monthly water service charges (Operation and Maintenance)

- Water service charges are a key financial consideration. Customers of the system that would be purchasing, conveying, treating, storing, pumping, and distributing the water supply would be required to be able to pay the water service charges necessary to support those activities. It is possible that the DAC system has not updated water service charges to the level necessary to meet current requirements for a system to meet the present regulatory requirements. A review of the current and necessary modifications to water service charges would be required in any evaluation.
- Politics – willingness of both entities to enter into an agreement
  - Participation in a regional facility requires the agreement of all parties to the action. Each entity may have reasons to support the regional facility. Similarly, entities may have concerns regarding the regional facility.
- Regulatory Compliance
  - Any improvements, expansions, or modifications to community water systems require conformance with the appropriate regulatory requirements. Consideration of any alternatives must include consultation and coordination with the appropriate regulatory agencies (ie. CDPH, RWQCB, County Environmental Health Departments, etc.).

## 5.5 New Water Supply Well

There may be opportunities for communities to construct a new water supply well that could provide the quantity and quality required. A new water supply well could however require treatment. It is noted that Figure 4-5 through Figure 4-8 identify raw water quality from water supply wells where water quality objectives for constituents such as arsenic, nitrate, and uranium are exceeded.

Examples of new water supply wells are identified in the Case Studies portion of this report.

Considerations for an evaluation include:

- Availability of water supply
  - Groundwater levels in the Tulare Lake Basin continue to decline, thereby requiring wells to be deeper to obtain sufficient water.
- Raw water quality
  - Raw groundwater quality is variable throughout the Tulare Lake Basin and is subject to change as groundwater levels fluctuate. Local geology and hydrogeology are critical to the evaluation of groundwater quality in any specific location. In addition, there may be emerging constituents of concern that are not presently subject to regulatory limitations.

- Identification of a well site(s)
  - Each specific location in the Tulare Lake Basin may require a specific hydrogeological evaluation to determine viable well site locations to optimize water supply and minimize water quality concerns. The alternative physical locations of potential wells may require acquisition of property and significant transmission facilities to deliver the water to the water system.
- Impact to or by existing wells in the vicinity
  - Sitting of any new well requires the consideration of impacts to or impacts from existing wells in the vicinity.
- Water treatment requirements
  - Groundwater quality is variable and would require specific water treatment considerations to perform an evaluation of the alternative. Water treatment facilities would be constructed and operated in conjunction with water storage and pumping facilities because treatment facility operations do not coincide with water demand cycles of the community. Treatment considerations are discussed in the Technical Solutions pilot study.
- Capital cost of improvements
  - Capital cost of improvements is a key consideration of many infrastructure projects. Cost effectiveness is a key consideration for any funding agency or private entity that would provide the capital to construct the improvements.
- Monthly water service charges (Operation and Maintenance)
  - Water service charges are a key financial consideration. Customers of the system that would be purchasing, conveying, treating, storing, pumping, and distributing a new well would be required to be able to pay the water service charges necessary to support those activities. It is possible that the DAC system has not updated water service charges to the level necessary to meet current requirements for a system to meet the present regulatory requirements. A review of the current and necessary modifications to water service charges would be required in any evaluation.
- Politics – willingness of entities to enter into an agreement
  - Construction of a new well may impact neighboring communities or entities. Identification of impacted parties is necessary to determine if agreements or other considerations are necessary.

- Regulatory Compliance
  - Any improvements, expansions, or modifications to community water systems require conformance with the appropriate regulatory requirements. Consideration of any alternatives must include consultation and coordination with the appropriate regulatory agencies (ie. CDPH, RWQCB, County Environmental Health Departments, etc.).

## 5.6 Water Treatment Facility on an Existing Water Supply Well

There may be opportunities for communities to construct a new water treatment facility to treat the water from an existing well. Treatment may also be performed by blending water from two different sources prior to distribution so that the final water meets regulatory requirements. Treatment may also be achieved through rehabilitation of the existing well. If portions of the well are known to be causing the water quality exceedances, it may be possible to seal off those portions of the well to reduce the water quality exceedances. It is noted that Figure 4-5 through Figure 4-8 identify raw water quality from water supply wells where water quality objectives for constituents such as arsenic, nitrate, and uranium are exceeded.

Considerations for an evaluation include:

- Availability of water supply
  - Groundwater levels in the Tulare Lake Basin continue to decline, thereby requiring wells to be deeper to obtain sufficient water. The physical definition of the existing well as relating to groundwater levels would be evaluated to determine if water supply would be sustainable from the existing well.
- Raw Water quality
  - Raw groundwater quality is variable throughout the Tulare Lake Basin and is subject to change as groundwater levels fluctuate. Local geology and hydrogeology are critical to the evaluation of groundwater quality in any specific location. In addition, there may be emerging constituents of concern that are not presently subject to regulatory limitations.
- Water treatment requirements
  - Groundwater quality is variable and would require specific water treatment considerations to perform and evaluation of the alternative. Water treatment facilities would be constructed and operated in conjunction with water storage and pumping facilities because treatment facility operations do not coincide with water demand cycles of the community. Treatment facilities will have waste streams that would require proper handling. Treatment considerations are discussed in the Technical Solutions pilot study.

- Age of the existing well and condition of existing well casing
  - The age and condition of the existing well would be a consideration in any evaluation of constructing treatment facilities for an existing well. If the age and condition of the existing well would not be expected to support the continued operation of a water treatment facility for the life cycle of the treatment facilities then the viability of the alternative may be in question.
  - The age, materials, and condition of the existing well casing are also considerations if rehabilitation is considered. Rehabilitation may involve sealing portions of the perforated casing, which includes physical modifications to the casing. Considerations also include the condition of the gravel pack and the risk of not being able to fully seal off the zones contributing the constituent of concern. Impacts to the overall production of the well after rehabilitation should also be considered.
- Capital cost of improvements
  - Capital cost of improvements is a key consideration of many infrastructure projects. Cost effectiveness is a key consideration for any funding agency or private entity that would provide the capital to construct the improvements.
- Monthly water service charges (Operation and Maintenance)
  - Water service charges are a key financial consideration. Customers of the system that would be purchasing, conveying, treating, storing, pumping, and distributing a new well would be required to be able to pay the water service charges necessary to support those activities. It is possible that the DAC system has not updated water service charges to the level necessary to meet current requirements for a system to meet the present regulatory requirements. A review of the current and necessary modifications to water service charges would be required in any evaluation.
- Politics – willingness of entities to enter into an agreement
  - Construction of a new treatment facility may impact neighboring communities or entities. Identification of impacted parties is necessary to determine if agreements or other considerations are necessary. The Management Non-Infrastructure pilot study discusses issues associated with developing an agreement between entities to share in costs associated with operation of treatment or other facilities.
- Regulatory Compliance
  - Any improvements, expansions, or modifications to community water systems require conformance with the appropriate regulatory requirements. Consideration of any alternatives must include consultation

and coordination with the appropriate regulatory agencies (ie. CDPH, RWQCB, County Environmental Health Departments, etc.).

## 5.7 Conservation

There may be opportunities for communities to implement water conservation measures including the installation of water meters and implementation of the associated metered water rate schedule for all connections. Other water conservation measures could include performing leak detection studies and implementing the necessary corrective actions, requiring low flow appliances within residences, or providing rebates for the installation of low flow appliances. Water conservation, as encouraged through water meters, tiered volumetric, rate schedule, and other water conservation measures may result in water savings for a community. Each community is unique, however, a water savings of up to 20 percent is not unreasonable.

Considerations for an evaluation include:

- Availability of water supply
  - Conservation of water may essentially result in an increase of available water supply for the community. The increase of available water supply may be necessary to satisfy peak demands, redundancy of supply sources, or growth of the community.
- Access to water service lines where customer meters would be located
  - Installation of water meters is a common conservation alternative. The location of meters is typically required to be within public right of way or a public utility easement so that the system operator can read and maintain the meter. The location of existing water service lines is a critical issue in determining the viability of installing water meters. There have been instances where a water meter project requires the construction of new water mains and services in locations that are accessible to the water system entity.
- Public's willingness to implement voluntary conservation measures
  - Besides water meters, there are other conservation measures that may be implemented, such as low flow appliances and limitations to landscape irrigation. The willingness of the local residents to implement these voluntary measures may impact water conservation results.
- Establishment of an appropriate water rate schedule
  - A specific impact to the installation of water meters in a community is the establishment of a water rate schedule based on the amount of water used. Each community is unique and would require a unique rate schedule. The anticipated impact of the anticipated rate schedule

compared to the existing rate schedule in the community would require evaluation.

- Capital cost of water conservation measures
  - The cost of any improvement project should be evaluated with respect to the relative benefits derived from it. The evaluation of the anticipated benefits for a water meter project would be a consideration prior to implementation.
- Politics
  - Residents of individual communities may have specific points of view regarding water meters as a means to measure and charge for water used by each property. There would be a need to identify the individual community concerns regarding water meters prior to implementation of a project.
- Regulatory Compliance
  - Any improvements, expansions, or modifications to community water systems require conformance with the appropriate regulatory requirements. Consideration of any alternatives must include consultation and coordination with the appropriate regulatory agencies (ie. CDPH, RWQCB, County Environmental Health Departments, etc.).

## 5.8 Restrict Potable Water Deliveries from agricultural or large tTurf Irrigation

There may be opportunities for communities to encourage or require the restriction of potable water supply and delivery to non-potable uses. Examples of non-potable uses that could be supplied by sources other than the community's potable supply source may be turf irrigation of schools or parks, or agricultural irrigation. If potable water use is to be separated from non-potable water use in a property, there must be a means to measure the relative use of each water source on that property.

Communities such as Armona CSD, Pixley PUD, and Ivanhoe PUD have schools within their boundaries that have installed shallow groundwater wells for the purpose of landscape irrigation. The heavy summer demands of large landscape areas may be significant for communities within the Study Area.

Considerations for an evaluation include:

- Availability of water supply
  - Conservation of potable water may essentially result in an increase of available water supply for the community. The increase of available water supply may be necessary to satisfy peak demands, redundancy of supply sources, or growth of the community.

- Dual Pipe Distribution System
  - If a water system has sufficient water supply to satisfy the requirements of the community, and may be able to limit the size of the treatment, storage, and pumping systems associated with the potable water demands, an alternative may include the installation of a dual pipe distribution system to allow for separate potable and non-potable water distribution. The costs of construction, operation, and maintenance would be critical in the evaluation of the alternative for any given community.
- Cross Connection control
  - Allowing potable and non-potable water use on the same property requires the implementation of cross connection control to ensure protection of the potable water system.
- Establishment of an appropriate water rate schedule
  - A specific impact to the installation of water meters in a community is the establishment of a water rate schedule based on the amount of water used. Each community is unique and would require a unique rate schedule. The anticipated impact of the anticipated rate schedule compared to the existing rate schedule in the community would require evaluation.
- Capital cost of improvements
  - The cost of any improvement project should be evaluated with respect to the relative benefits derived from it. The evaluation of the anticipated benefits for a potable water use limitation project would be a consideration prior to implementation.
- Politics
  - Residents of individual communities may have specific points of view regarding water meters as a means to measure and charge for water used by each property. There would be a need to identify the individual community concerns regarding a dual water system prior to implementation of a project.
- Regulatory Compliance
  - Any improvements, expansions, or modifications to community water systems require conformance with the appropriate regulatory requirements. Consideration of any alternatives must include consultation and coordination with the appropriate regulatory agencies (ie. CDPH, RWQCB, County Environmental Health Departments, etc.).

## 5.9 Mitigate a Source of Contamination such as On-Site Systems

There may be opportunities for communities to encourage or require the mitigation of sanitary sewer treatment and disposal systems that may have an adverse impact on source water quality. For example, **Table 5-2** includes several Case Studies that have the circumstance of elevated nitrate concentration in the water supply where the sanitary sewer methods utilized consist of on-site septic tanks and leach fields. The on-site systems may be contributing to the elevated nitrate concentrations.

Considerations for an evaluation include:

- Hydrogeology
  - Confirmation of whether the on-site systems have a direct impact to potable water quality for a specific community.
- Viability of a Community Sanitary Sewer System
  - If a community sanitary sewer system may be constructed the improved effluent quality and location of disposal may mitigate the influence on water quality. Similarly, improvements to the on-site systems may result in mitigation of nitrate contributions to groundwater.
- Establishment of a Community Sewer System Management Entity
  - A community sanitary sewer system must be managed and owned by an entity. The entity may be a community services district, county service area, or other entity.
- Establishment of an appropriate sewer rate schedule
  - A specific impact to the installation of community sanitary sewer system is the establishment of a sewer rate schedule. Each community is unique and would require a unique rate schedule. The anticipated impact of the rate schedule compared to the existing costs in the community would require evaluation.
- Capital cost of improvements
  - The cost of any improvement project should be evaluated with respect to the relative benefits derived from it. The evaluation of the anticipated benefits for a community sanitary sewer system project would be a consideration prior to implementation.
- Politics
  - Residents of individual communities may have specific points of view regarding community sanitary sewer systems and the requirements of individual property owners to conform to the requirements of the community system. There would be a need to identify the individual community concerns prior to implementation of a project.

- Regulatory Compliance
  - Establishment or improvements to community sanitary sewer systems require conformance with the appropriate regulatory requirements. Consideration of any alternatives must include consultation and coordination with the appropriate regulatory agencies (ie. CDPH, RWQCB, County Environmental Health Departments, etc.).

DRAFT

**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY  
TABLE 9  
LIST OF DISADVANTAGED COMMUNITIES  
IDENTIFIED AS DEMONSTRATION PROJECTS**

	Ownership	Problems				# Connections NumConn	Approximate Population AppPop	Approximate Cost AppCost	Approximate Capital Cost TotPrct	Status
		Quantity 1 Quant1	Quality 1 Qual1	Quality 2 Qual2	Other OthProb					
1	Akin Water Company with Porterville	Public	Nitrate	No Community Sewer System	Feasibility Study Only	22	50	315,500		Pending
2	Allensworth CSD	Public	Arsenic	No Community Sewer System	Feasibility Study Only	96	300	390,000		Pending
3	Alpaugh JPA	Public	Arsenic	No Community Sewer System	Feasibility Study Only	350	910	474,264		Pending
4	Armona CSD	Public	None	None		1255	3239	6,000,000	\$ 6,000,000	Pending
5	Arvin CSD	Public	Arsenic				11,847	499,432		Pending
6	Beverly Grand	Public	Single Well	Nitrate	Plans & Specs 2013	28	108	914,000	\$ 943,600	Pending
7	Burnett Road (portion of Tipton PUD)	Public	failed well, temporary connection to Tipton PUD			11	40	312,283		Pending
8	Caruthers Community Services District	Public	None	Arsenic	None	674	2103	5,097,850	\$ 5,097,850	Pending
9	Central Water Company (near Plainview)	Private	Single Well	Nitrate	No Community Sewer System	42	170			Pending
10	CSA 49	Public	None	None	SWTF didn't meet regulator	43	333	2,564,431		Complete
11	Cutler PUD	Public	None	Nitrate	DBCP			2,931,300		Pending
12	Ducor	Public	None	Nitrate	No Community Sewer System	102	411	138,850		Pending
13	East Niles CSD regional consolidation	Public	Consolidate East Wilson Road WS, San Joaquin Estates, and Wilson Road WC.				24,900	12,204,450		Pending
14	Edmundson Acres MWC with Arvin CSD	Private	Arsenic				520	1,524,371		Pending
15	El Monte Village MHP	Private	Single Well	Nitrate	No Community Sewer System	49	100	202,900		Pending
16	El Rancho Subdivision (Curtis Water Co)	Private	2 Inadequate Wells	Arsenic	Uranium	142	568	1,050,000	\$ 1,050,000	Complete
17	El Rancho - Tract 191	Public	filtration of surface water			24	124	1,100,000	\$ 1,100,000	Pending
18	Fairmont School - Sanger / Near Quail Lakes - CSA 47	Public						1,500,000		Pending
19	Fairways Tract	Public	Single Well	Nitrate		59		916,105	\$ 916,105	Complete
20	Four Seasons Mobile Home Park	Private	Single Well	Arsenic exceeds Federal Limit	None	86	129	252,000	\$ 262,000	Pending
21	Hamblin Mutual Water Company	Private	Single Well	Arsenic exceeds Federal Limit	None	40	240	357,000	\$ 367,000	Pending
22	Hardwick	Private	Single Well	Uranium	No Community Sewer System	39	138	1,491,827		Pending
23	Kettleman City	Public	None	Arsenic	Benzene	321	1500	1,084,309		Pending
24	Kit Carson School (w City of Hanford)	Public	None	Arsenic	None	1	429	3,101,818		Pending
25	Lacey Courts Mobile Home Park	Private	Single Well	Arsenic exceeds Federal Limit	None	21	50	59,000	\$ 70,000	Pending
26	Lakeside School with Bakersfield	Public	None	Arsenic	Feasibility Study Only			196,000		Pending
27	Lamont PUD / Weedpatch Sewer Connectiong to Lamont POD	Public					14,000			Pending
28	Lanare	Public	None	Arsenic	No Community Sewer System	169	600	500,000		Pending
29	Lemon Cove	Public	One well	Nitrate	Feasibility Study Only	50	150	412,000		Pending
30	Lindsay Strathmore ID - El Rancho Water System with Page Moore Water System	Public	Surface water	Nitrate	Feasibility Study Only	25	150	168,143		Pending
31	London CSD	Public	Low producing wells, inadequate storage; low pressure conditions at times			450	1638	4,244,000		Pending
32	Lone Oak Subdivision	Private	Single Well	Nitrate exceeds Federal Limit	Uranium exceeds Federal Limit	42	70	65,051	\$ 65,051	Complete
33	Lovell School with Cutler PUD	Public	None	Nitrate	DBCP			926,900		Pending
34	Malaga County Water District	Public	Insufficient for peak demand	DBCP	Nitrate, Coliform	472	900	1,134,223	\$ 1,134,223	Complete
35	Matheny Tract (Pratt Mutual Water Co)	Private	None	Nitrate	Arsenic	323	1200	5,485,528	\$ 5,485,528	Pending
36	Pioneer School	Public	400gpm	Arsenic exceeds Federal Limit	None	1	1577	1,600,000	\$ 1,600,000	Complete
37	Pixley Public Utility District	Public	Insufficient for peak demand	Arsenic	None	815	3310	5,000,000	\$ 5,000,000	Pending
38	Richgrove CSD	Public	None	Arsenic	Nitrate, DBCP, Coliform, Iron, H2S,	520	3330	6,532,500	\$ 6,532,500	Pending
39	Riverdale PUD	Public	None	Arsenic	Color	950	2900	7,000,000	\$ 7,000,000	Pending
40	Rodriguez Labor Camp w Richgrove CSD	Private	Single Well	Nitrate	No Community Sewer System	35	140	404,900	\$ 404,900	Pending
41	RS MWC with California Water Service - Kern County	Private	None	Arsenic	Uranium	25	25	115,000		Pending
42	Semi Tropic School with Lost Hills Utility District	Public	None	Arsenic	Feasibility Study Only		263	469,051		Pending
43	Seventh Standard MWC with Oildale MWC	Private	None	Nitrate		22	66	1,962,655		Pending
44	Son Shine with Arvin CSD	Public	None	Nitrate		500	106	2,600,000		Pending
45	Soult's Mutual Water Company	Private	Single Well	Nitrate exceeds Federal Limit	None	41		153,000		Pending
46	Tevison	Public	One well	None	No Community Sewer System	105	300	383,250		Pending
47	Tonyville with Lindsay	Public	None	Nitrate	Feasibility Study Only	50	350	257,500		Pending
48	Tooleville with Exeter	Public	None	Arsenic				3,021,535		Pending
49	Tract 92	Public	None	Coliform presences	None	93	261	3,941,000	\$ 3,941,000	Pending
50	Tranquillity ID	Public	None	Arsenic exceeds Federal Limit	None	341	1064	5,005,100	\$ 5,005,100	Pending
51	West Goshen	Private	single well with partial collapse	Nitrate	No Community Sewer System	80	200	437,000		Pending
52	Yettem - Seville Water Systems	Public	None	Nitrate	Feasibility Study Only	138	700	598,000		Pending
53	Zonneveld Dairy Housing	Private	None	Nitrate exceeds Federal Limit	Arsenic exceeds Federal Limit	34	141	40,800		Pending
	Total					8686	81650			

Note 1  
need to update

Note  
1 - per 2012 Construction Grant Application

Orange highlight = missing or needs to be double-checked

<http://www.ed-data.k12.ca.us>

East Niles Consolidation includes East Wilson, San Joaquin, Wilson Road (Spoke with Tim Ruiz, GM to confirm 5/1/13)

30	Aerial Acres Mutual Water Company, Kern County - other side of Tehachapi mountains						122 people			
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## 6 IMPLEMENTATION PROCESS

### 6.1 Implementation Process

As is common to most rural water systems, distressed rural economies preclude straight-forward capital-intensive solutions without outside sources of funding. Creative solutions for sharing common functions (billings, operations, etc.) could help free up resources for capital investment.

One of the key topics associated with water supply and quality issues is to develop a knowledge base of the existing conditions. When a community has knowledge regarding its water and wastewater infrastructure and the local conditions that may impact the operation of the facilities, the community has the opportunity to proactively address challenges. Local leadership associated with water and wastewater issues is critical to sustainable solutions that may be available. Many disadvantaged communities will require technical assistance to develop solutions and funding assistance for capital improvements, however, long term operation and maintenance of the facilities remains the responsibility of the local community.

The implementation of long term solutions may also incorporate recommendations contained in the Management and Non-Infrastructure pilot study and the Technical Solutions pilot study.

Decision Trees are discussed in Section 6.4 of this pilot study and are intended to be a tool for community leaders to use to assist them to develop appropriate solutions to water and wastewater challenges.

### 6.2 Public versus Private Governance

The solutions described will generally apply for publicly owned water or wastewater systems, although private systems can also participate. Public systems have greater access to state funding. There are funding opportunities available for private systems, but often only as loans and not grants. It is also possible that a public entity can be formed to replace an existing private entity in order to allow a project to be implemented. Private water systems, such as a Mutual Water Company, have the ability to extend services to public or private systems, either through a simple provision of service or by purchasing the entire system. In some circumstances, public funding may be available for such consolidations if the funding is provided directly to the public entity.

### 6.3 Policy Issues

Various existing policies and programs are beneficial to, or can encourage implementation of partnership solutions. There are also some policies that could potentially be implemented to further assist or encourage these types of solutions. Some existing policies include:

- Incentives for consolidation using funding at state level (Consolidation Incentive Program)
- Opportunities for formation of a legal entity (Pre-Planning and Legal Entity Formation Assistance Program)
- Various funding programs described in Section 9

Some potential policy issues that could be considered to further encourage these types of solutions include:

- Funding assistance for pre-work (initiating the process, outreach and communications)
- Additional opportunities for incentives
- Land use planning restrictions to ensure safe and reliable water can be provided
- Farm labor housing policy amendment to restrict construction of such housing where safe and reliable water is not available

More specific recommendations are presented in Chapter 12 of this report.

## 6.4 Decision Trees

In order to aid communities in determining potential New Source decision trees were developed (**Appendix G**). The decision trees are designed to highlight the information needed, major processes, and decisions that need to be made to determine which alternatives may be applicable to a particular community. The Decision Trees do not provide the specific answers to the challenges of the community, however, they provide an overview of the information needed, the decisions required, and the relative sequence of events that may be expected as specific challenges are defined and alternative solutions are evaluated. The Decision Trees also provide the community with a reference of what tasks have been performed and the reasons for the decisions that have been made.

### Definition

A Decision Tree is a schematic tree-shaped diagram used to determine a course of action or show a statistical probability. Each branch of the Decision Tree represents a possible decision or occurrence. The tree structure shows how one choice leads to the next, and the use of branches indicates that each option is mutually exclusive.

### Description

A Decision Tree can be used to clarify and find an answer to a complex problem. The structure allows users to take a problem with multiple possible solutions and display it in a simple, easy-to-understand format that shows the relationship between different events or decisions. The furthest branches on the tree represent possible end results.

**SECTION SIX**Use

The Decision Trees were developed to guide communities to possible solutions. The processes in rectangles indicate an action that should be completed prior to moving forward. The processes in diamonds are decisions that the community should make in consultation with an engineer or other knowledgeable group.

The Community may highlight the path taken within the Decision Tree. Supporting documentation associated with the action or tasks that provide information to be considered for each decision. It is noted that several of the identified tasks will require the expenditure of funds (consultants, other expenses) and will require extended periods of time.

A. New Sources Decision Starting Tree - This is the first decision tree that a community should use. It provides an overview of the process, essentially a table of contents of the remaining Decision Trees, which are listed below:

- 1) Physical Consolidation Decision Tree – This decision tree guides the community through decisions regarding .....
- 2) Exchanges/Contracting for Surface Water or other source
- 3) Recharge of Local Area
- 4) Regional Facility
- 5) New Water Supply Well
- 6) Water Treatment Facility
- 7) Conservation
- 8) Restrict Potable Water Deliveries from Agricultural or Large Turf Irrigation
- 9) Mitigate a Source of Contamination

Examples of Decision Trees are provided in **Appendix G**, within the Community Review Processes for Sultana CSD (**Appendix I**), Ivanhoe PUD (**Appendix J**), Stratford PUD (**Appendix K**), and an additional Case Study for Caruthers CSD (**Appendix L**)



## 7 CASE STUDIES

Many disadvantaged communities within the Tulare Lake Basin Study Area have taken steps toward addressing water supply challenges. For the purposes of this Pilot Study, the projects initiated or completed by the communities are defined as case studies. A brief description of several case studies is provided in this section of the Pilot Study. The information may offer insight to other communities facing similar challenges. It is recognized that each community is unique and will have a unique pathway toward resolving water supply issues. The types of problems faced and the chosen solution are broken down into 3 categories – Physical Consolidation (Quality or Supply), New well (Quality or supply), and Other (treatment or consolidation and new well). A reiteration of the process each of the Case Studies went through is not included in this report. The purpose of this report is to provide examples of real communities within the Tulare Lake Basin that have either successfully met the challenges of water supply or water quality issues, or communities that are in the process of meeting those challenges. Limited information regarding each example is provided to be able to identify key issues that may be common to other communities. In many cases, the individual communities prepared applications for funding assistance that include detailed information. This report limits the information regarding each community in an effort to not compromise any confidential information. The communities are identified so that if representatives of a DAC identify some common themes with one of the Case Studies, they may contact the identified community for additional information or advice.

It is noted that the Operations and Maintenance costs identified in the examples below are based on monthly user charges for the overall system for the community.

For the purposes of this Pilot Study, the population for schools is assumed to be undefined due to too many variables that would contribute to the equivalent population. Schools have a student and faculty population for a portion of the weekdays, however, there are variables associated with cafeteria facilities, gymnasium facilities, landscape irrigation, vehicle maintenance facilities, or other.

In addition to the communities listed in this chapter, the Report to Legislature (**Appendix D**) includes a listing of many projects that were anticipated to receive funding assistance through Proposition 84 to address water supply and quality deficiencies.

For the purposes of this report, the annual operation and maintenance costs for the system are assumed to be the annualized monthly user charges.

## SECTION SEVEN

## 7.1 Quality or Supply Problem: Solution – Physical Consolidation

### 7.1.1 Four Seasons Mobile Home Park

- Problem (quantity, quality)
  - Quantity (single well)
  - Quality-Arsenic exceeds the Federal limit of 10 ppb
- Number of Connections – 86
- Approximate Population – 129 (Assume 1.5 people per connection)
- Ownership – Private
- Alternatives considered
  - Abandonment of the Mobile Home Park
  - Treatment and storage for existing well
  - Construction of new water supply wells that may include treatment and storage
  - Consolidation with the City of Hanford
- Solution
  - Annex to the City of Hanford
  - Extend City of Hanford Water Main to property
  - Destroy existing well
- Location
  - Approximately ¼ mile west of the City of Hanford
- Decision Making Process
  - Owner of Mobile Home Park
  - City of Hanford
- Funding Source(s)
  - Proposition 84 (Feasibility Study Grant)
  - Proposition 84 (Construction Grant received in 2014)
- Approximate Capital Cost (application, design, capital facilities) - approx \$252,000 (Total project \$4,852,000)
- Approximate Capital Cost per connection (population) – \$2,930 (\$1,954)
- Approximate Annual O&M Cost per connection - \$262.66
- Challenges
  - Funding to construct improvements
  - Payment of debt service for potential loan(s)
  - Required improvements to the City of Hanford water system to allow the consolidation
  - Required the approval of the City of Hanford to allow the annexation

## SECTION SEVEN

- Time Frame (identification of problem to completion of solution)
  - Initial Application (to SDWSRF) – January 2008
- Feasibility Grant – July 2011 (combined with three others)
  - Construction Grant – received in 2014

7.1.2 Lacey Courts Mobile Home Park

- Problem (quantity, quality)
  - Quantity (single well)
  - Arsenic exceeds 10 ppb
- Number of Connections – 21
- Approximate Population – 50
- Ownership - Private
- Alternatives Considered
  - Abandonment of the Mobile Home Park
  - Treatment and storage for existing well
  - Construction of new water supply wells that may include treatment and storage
  - Consolidation with the City of Hanford
- Solution
  - Annex to the City of Hanford
  - Destroy existing well
- Location
  - Lacey Courts Mobile Home Park is surrounded by the City of Hanford
- Decision Making Process
  - Owner of Mobile Home Park
- Funding Source(s)
  - Proposition 84 (Feasibility Study Grant)
  - Proposition 84 (Construction Grant received in 2014)
- Approximate Capital Cost (application, design, capital facilities) approx \$59,000 (\$4,852,000 total project)
- Approximate Capital Cost per connection (population) – \$2,810 (\$1,180)
- Approximate Annual O&M Cost per connection - \$262.66
- Challenges
  - Funding to construct improvements
  - Payment of debt service for potential loan(s)
  - Required improvements to the City of Hanford water system to allow the consolidation
  - Required approval of the City of Hanford to allow annexation
- Time Frame (identification of problem to completion of solution)
  - Initial Application – July 2009
  - Feasibility Grant – July 2011
  - Construction Grant – received in 2014

**SECTION SEVEN****7.1.3 Hamblin Mutual Water Company**

- Problem (quantity, quality)
  - Quantity (single well)
  - Arsenic exceeds 10 ppb
- Number of Connections – 40
- Approximate Population – 240
- Ownership - Private
- Alternatives Considered
  - Treatment and storage for existing well
  - Construction of new water supply wells that may include treatment and storage
  - Consolidation with the City of Hanford
- Solution
  - Annex to the City of Hanford
  - Destroy existing well
  - Install new distribution system, services and meters
  - Dissolve Mutual Water Company
- Location
  - Immediately surrounded by the City of Hanford
- Decision Making Process
  - Mutual Water Company
  - County of Kings
  - City of Hanford
- Funding Source(s)
  - Proposition 84 (Feasibility Study Grant)
  - Proposition 84 (Construction Grant pending)
- Approximate Capital Cost (application, design, capital facilities) \$357,000 (\$4,852,000 total project)
- Approximate Capital Cost per connection (population) – \$8,925 (\$1,488)
- Approximate Annual O&M Cost per connection - \$262.66
- Challenges
  - Lack of funds to pursue solutions (no reserves)
  - Age of existing system
  - Required improvements (including a new well) to the City of Hanford water system to allow the consolidation
  - Required the owners of the Mutual Water Company to agree to dissolve the Company
  - Funding to construct improvements
  - Payment of debt service for potential loan(s)
- Time Frame (identification of problem to completion of solution)
  - Initial Application – July 2009
  - Feasibility Grant – July 2011
  - Construction Grant - pending

**SECTION SEVEN****7.1.4 Lone Oak Subdivision**

- Problem (quantity, quality)
  - Quantity (single well)
  - Nitrate and uranium exceed Federal levels
  - Unmetered connections
- Number of Connections – 42
- Approximate Population – 70
- Ownership - Private
- Solution
  - Annex to the City of Tulare
  - Extend water main to subdivision
  - Install new metered water services
  - Destroy existing well
  - Dissolve Mutual Water Company
- Location
  - Adjacent to the City of Tulare
- Decision Making Process
  - Mutual Water Company
  - Tulare County Redevelopment Agency
  - City of Tulare
- Funding Source(s)
  - Community Development Block Grant
- Approximate Capital Cost (application, design, capital facilities) \$65,051.38
- Approximate Capital Cost per connection (population) – \$1,548 (\$929)
- Approximate Annual O&M Cost per connection - \$288
- Challenges
  - Maintaining water supply during construction
- Time Frame (identification of problem to completion of solution)
  - Initial Funding Application Approval - 1999
  - Design - 2000
  - Complete Construction - 2001

**7.1.5 El Rancho Subdivision, Kings County (Curtis Water Company)**

- Problem (quantity, quality)
  - Quantity (2 inadequate wells)
  - Arsenic and Uranium
- Number of Connections – 142
- Approximate Population – 568 (Assume 4 per connection)
- Ownership - Private
- Solution
  - Annex to the City of Hanford
  - Destroy existing well and remove water tanks
  - Construct new water mains in the frontage of the residences

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- Construct new water services and meters in the frontage of the residences (water services were previously in the rear of the residences)
- Location
  - Immediately surrounded by the City of Hanford
- Decision Making Process
  - Owner of Curtis Water Company passed away
  - County of Kings
  - City of Hanford
- Funding Source(s)
  - Drinking Water State Revolving Fund
- Approximate Capital Cost (application, design, capital facilities) \$1,050,000.
- Approximate Capital Cost per connection (population) – \$7,395 (\$1,849)
- Approximate Annual O&M Cost per connection - \$262.66
- Challenges
  - Lack of funds to pursue solutions (no reserves)
  - Age of existing system
- Time Frame (identification of problem to completion of solution)
  - Initiate Funding Application 2000
  - Complete Construction 2005

7.1.6 Matheny Tract (Pratt Mutual Water Company)

- Problem (quantity, quality)
  - Nitrate and Arsenic above Federal levels
- Number of Connections – 323
- Approximate Population – 1,200
- Ownership - Private
- Solution
  - Consolidation with the City of Tulare
  - Destruction of existing water supply wells
- Location
  - South of Tulare, West of Highway 99
- Decision Making Process
  - Feasibility Study identified consolidation as best option
  - Old cracked, leaking pipelines
  - Matheny Tract
  - City of Tulare
  - County of Tulare
- Funding Source(s)
  - Proposition 84
  - State Revolving Fund
- Cost (application, design, capital, operations)
  - \$407,278 Preliminary Engineering Report
  - \$5,078,250 Construction
- Approximate Capital Cost (application, design, capital facilities) \$5,485,528

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- Approximate Capital Cost per connection (population) – \$16,983.06 (\$4,571.27)
- Approximate Annual O&M Cost per connection - \$309.60
- Challenges
  - Connecting to 323 services on private property
  - Insufficient funds to cover private property connections
- Time Frame (identification of problem to completion of solution)
  - Preliminary Engineering Report completed in December 2006
  - Construction Grant 2013

**7.1.7 Kit Carson School with City of Hanford**

- Problem (quantity, quality)
  - Water significantly above Federal Arsenic level of 10 ppb
  - Deep water levels
- Number of Connections – 1
- Approximate Population – not applicable
- Ownership - Public
- Location
  - East of Hanford – 2 miles east
- Decision Making Process
  - Drill new 1,250 foot well, still has 30 ppb arsenic
  - Connect to City of Hanford water supply
- Funding Source(s)
  - Proposition 84 (Feasibility Study for pipeline)
  - Proposition 84 (Construction of new pipeline)
- Cost (application, design, capital, operations)
- Approximate Capital Cost (application, design, capital facilities)
  - \$849,150 Drill New Well
  - \$146,668 Feasibility for new Pipeline
  - \$2,106,000 Construction of Pipeline
- Approximate Capital Cost per connection (population) – Not Applicable
- Approximate O&M Cost per connection – Not Applicable
- Challenges
  - Outside City of Hanford Limits, new City Council approval
- Time Frame (identification of problem to completion of solution)
  - New well drilled in 2008 – failed to solve the problem
  - Waiting on Construction Funding, possibly 2013

**7.2 Quality or Supply Problem:  
Solution – New Well****7.2.1 Pioneer School**

- Problem (quantity, quality)
  - Quantity 400 gpm

## SECTION SEVEN

- Arsenic exceeds the Federal limit of 10 ppb
- Number of Connections – 1
- Approximate Population – Not Applicable
- Solution
  - Construct new well, storage tank, no treatment
- Location
  - 14<sup>th</sup> Avenue and Grangeville
- Decision Making Process
  - School needing new water source
  - Pioneer School
- Funding Source(s)
  - Proposition 84
  - Drinking Water State Revolving Fund
  - Proposition 50
  - American Recovery and Reinvestment Act of 2009
- Approximate Capital Cost (application, design, capital facilities) \$1,600,000
- Approximate Capital Cost per connection (population) – Not Applicable
- Approximate Annual O&M Cost per connection – Not Applicable
- Challenges
  - Proper water bearing zone with arsenic levels below Federal limits
  - Drilled well to 1,300 feet, screened from 900 – 980 feet for arsenic levels below federal limits
  - Proposition 84 funding frozen from 2008 to 2011
- Time Frame (identification of problem to completion of solution)
  - Initial work began in 2006
  - Construction complete April 2012

### 7.2.2 Caruthers Community Services District

- Problem (quantity, quality)
  - Arsenic exceeds 10 ppb in three of four wells
- Number of Connections – 674
- Approximate Population – 2,103
- Solution
  - Drill new water supply well
  - Construct Water Storage Tank
  - Construct Water Treatment Plant
  - Construct Transmission Main from an existing well to the Water Treatment Plant
  - Destroy two (2) existing water supply wells
- Location
  - Rural Fresno County near Mountain View and Marks Avenues
  - Approximately 9 miles from Riverdale, 10 miles from Easton
- Decision Making Process
  - Caruthers CSD Board of Directors

## SECTION SEVEN

## PILOT STUDY

- Funding Source(s)
  - Proposition 84 (Feasibility Grant)
  - Proposition 84 (Construction Grant received in March 2013)
- Cost (application, design, capital, operations)
- Approximate Capital Cost (application, design, capital facilities) \$5,097,850
- Approximate Capital Cost per connection (population) – \$7,564 (\$2,424)
- Approximate Annual O&M Cost per connection \$396
- Challenges
  - The local groundwater is characterized by arsenic concentrations that exceed the Federal limit. In addition, the local groundwater contains uranium and vanadium. Identification of groundwater that does not require treatment was not successful. Water treatment is required, which will require a continued increase in Operation and Maintenance for the water system.
- Time Frame (identification of problem to completion of solution)
  - Initial Funding Application - 2006
  - Feasibility Study (design) Complete – January 2012
  - Receive Construction Grant – March 2013

### 7.2.3 Armona CSD new well and water treatment facility

- Problem (quantity, quality)
  - Arsenic levels above Federal Limits
- Number of Connections – 1,255
- Approximate Population – 3,239
- Solution
  - New treatment plant to remove arsenic
  - Well with modified well head treatment
  - New well to be installed
- Location
  - Highway 198 between Hanford and Lemoore
- Decision Making Process
  - Test hole drilled showed arsenic levels above Federal Standard
  - Treatment next best option
- Funding Source(s)
  - Drinking Water State Revolving Fund
- Approximate Capital Cost (application, design, capital facilities) \$6,000,000
- Approximate Capital Cost per connection (population) – \$4,781 (\$1,852)
- Approximate Annual O&M Cost per connection \$456
- Challenges
  - Administrative Order from EPA Enforcement issued in October 2008
  - Availability of Funds has delayed the schedule
- Time Frame (identification of problem to completion of solution)
  - Initial work began in 2006
  - Construction pending in 2013

## SECTION SEVEN

7.2.4 Riverdale PUD new well and water treatment facility

- Problem (quantity, quality)
  - Arsenic above Federal Standard
  - Color also an issue
- Number of Connections – 950
- Approximate Population – 2,900
- Solution
  - Treatment plant with existing well #1
  - Treatment plant with new well #2
- Location
  - Fresno County, 8 miles south of Caruthers, west of Highway 41
- Decision Making Process
  - Consolidation not an option
  - Existing Well #2 went dry
  - Treatment plant did not work
- Funding Source(s)
  - Proposition 84 (Treatment)
  - Drinking Water State Revolving Fund (Treatment)
  - USDA Rural Utility Service (New well)
- Approximate Capital Cost (application, design, capital facilities) \$7,000,000
- Approximate Capital Cost per connection (population) – \$7,368 (\$2,414)
- Approximate Annual O&M Cost per connection - \$480
- Challenges
  - Administrative Order from EPA Enforcement issued in October 2008
- Time Frame (identification of problem to completion of solution)
  - Initial work began in 2006
  - Construction anticipated in 2015

7.2.5 Richgrove CSD new well and storage (note that the Rodriguez Labor Camp intends to consolidate with Richgrove CSD for water supply)

- Problem (quantity, quality) borderline nitrate, DBCP and arsenic issues in District,
- Number of Connections – 520
- Approximate Population – 2,882
- Solution
  - Construct a new Water Supply Well approximately 3 miles outside of the District
  - Construct Transmission Main to the District
  - Construct Water Storage Tank
- Location
  - Tulare County
- Decision Making Process
  - Board of Directors

## SECTION SEVEN

- Tulare County LAFCo
- Recommendations from Self Help Enterprises
- Funding Source(s)
  - CDBG (test well and design of improvements, \$373,129)
  - Proposition 84 (Planning Grant, \$100,000)
  - Proposition 84 (Construction Grant pending \$4,150,974)
- Cost (application, design, capital, operations)
- Approximate Capital Cost (application, design, capital facilities) construction of \$6,532,500
- Approximate Capital Cost per connection (population) – \$12,560 (\$2,270)
- Approximate Annual O&M Cost per connection \$600
- Challenges
  - Identify potential locations for a new water supply well
  - Funding to construct a test well
- Time Frame (identification of problem to completion of solution)
  - Initiate Funding Application - unknown
  - Complete Design – 2011, update Design - 2013
  - Complete Construction – pending Construction Grant

7.2.6 Hardwick

- Problem (quantity, quality)
  - Uranium
  - One well working
  - 20 existing connections
  - Multiple private wells (at least 16)
- Number of Connections – existing (20), potential (39) (based on the assumption that the homes with existing private wells will abandon the private wells and connect to the community system)
- Approximate Population - 138
- Solution
  - Drill new well and zone testing
  - Upgrade distribution system
  - Add water storage facilities
- Location
  - Kings County
- Decision Making Process
  - Well head treatment expensive for disposal of uranium
  - Connection to Laton would require a river crossing and connection across two counties
  - Hardwick Water Company Board of Directors
- Funding Source(s)
  - USDA Rural Utility Services (replacement of distribution system)
  - Safe Drinking Water State Revolving Fund (new water supply well)
- Cost (application, design, capital, operations)

## SECTION SEVEN

- Approximate Capital Cost (application, design, capital facilities) \$1,484,800 (Pilot test well, Production Well Installation and piping upgrades)
- Approximate Capital Cost per connection (population) – \$38,252 (\$10,810)
- Approximate Annual O&M Cost per connection - \$2,352
- Challenges
  - Removing Uranium is considered a Hazardous waste and regulated by the Nuclear Regulatory Commission
  - Shallow aquifers have high uranium levels; deeper aquifers may have high arsenic levels
  - Half the community is served water from private wells. Almost all have high levels of uranium. Once a new system is built, the owners of these properties will weigh benefits of connecting to new system.
- Time Frame (identification of problem to completion of solution)
  - Funding Application 2009 to CDPH
  - Feasibility Study Grant - funding agreement with CDPH executed December 2012 and planning work underway
  - Construction - USDA preapplication and application will need to be prepared to fund replacement water distribution system. CDPH construction application to be submitted upon completion of planning phase.

#### 7.2.7 Pixley Public Utility District

- Problem (quantity, quality)
  - Arsenic above Federal levels in three of four wells
  - Insufficient quantity for peak demands with the primary well out of service
- Number of Connections – 837
- Approximate Population – 3,300
- Solution
  - Construct two (2) new water supply wells
  - Destruction of three (3) existing contaminated water supply wells
  - Construct new storage tank and pipelines
- Location
  - South of Tulare, along Highway 99
- Decision Making Process
  - Feasibility Study identified construction of three new water supply wells as best option
- Funding Source(s)
  - Proposition 84
  - Drinking Water State Revolving Fund if necessary
- Cost (application, design, capital, operations) - \$4,938,700
- Approximate Capital Cost (application, design, capital facilities)
  - \$500,000 Feasibility Study Grant
  - \$4,438,700 Construction
- Approximate Capital Cost per connection (population) – \$1,745 (\$6,173)

**SECTION SEVEN**

- Approximate Annual O&M Cost per connection - \$540
- Challenges
  - Obtain three (3) new properties for water supply wells/storage tank
  - Connection to aged and small water distribution facilities.
- Time Frame (identification of problem to completion of solution)
  - Feasibility Study Application submitted in October, 2011.
  - Feasibility Study Grant obtained in August, 2012.
  - Feasibility Study completed in April, 2014.

**7.2.8 Tranquillity ID new wells**

- Problem (quantity, quality)
  - TID well above Federal Standard for Arsenic
- Number of Connections – 341
- Approximate Population – 1,064
- Solution
  - Convert two irrigation wells to drinking water wells with treatment for arsenic, iron and manganese
- Location
  - Between San Joaquin and Mendota in west Fresno County
- Decision Making Process
  - Tranquillity Irrigation District Board of Directors
  - Drilled new test well in 2010
  - High levels of Iron and Manganese
- Funding Source(s)
  - Drinking Water State Revolving Fund (Feasibility Study)
  - Proposition 84 (Design and Construction)
- Cost (application, design, capital, operations)
- Approximate Capital Cost (application, design, capital facilities) \$5,005,100
- Approximate Capital Cost per connection (population) – \$14,678 (\$4,704)
- Approximate O&M Cost per connection \$540
- Challenges
- Time Frame (identification of problem to completion of solution)
  - Grant application submittal in 2009 for test wells
  - April 2010 – Funding Agreement received
  - 2011 – Feasibility Study submitted
  - 2012 – Grant Application submitted for Construction
  - Construction planned upon receipt of Funding Agreement

**7.2.9 Zonneveld Dairy Housing**

- Problem (quantity, quality)
  - Nitrate and Arsenic above Federal levels
- Number of Connections – 34
- Approximate Population - 141
- Solution

## SECTION SEVEN

- Test well drilled showed levels above acceptable arsenic and nitrate health standards
- A feasibility is presently being conducted to determine the appropriate solution
- Location
  - Southwest of Fowler, East of Highway 41
- Decision Making Process
  - Property Owner (Owner of Labor Housing)
  - Feasibility Study to identify point source or treatment consolidation
  - Drill new well without contamination not an option
- Funding Source(s)
  - Proposition 84
- Cost (application, design, capital, operations)
  - \$500,000 Feasibility Study
  - Capital Cost to be determined
- Approximate Capital Cost (application, evaluation, design) \$500,000 plus construction costs
- Approximate Capital Cost per connection (population) –TBD
- Approximate O&M Cost per connection - TBD
- Challenges
  - Insufficient funds to cover private property connections
- Time Frame (identification of problem to completion of solution)
  - Feasibility Study Application completed in 2011
  - Feasibility Study grant agreement negotiated in April 2013

7.2.10 Tract 92

- Problem (quantity, quality)
  - Coliform presence
  - Chlorination system failing
- Number of Connections – 93
- Approximate Population - 500
- Solution
  - Drill new well (for primary water source)
  - Partial Consolidation with the City of Visalia (for redundancy and emergency/fire flow supply)
  - Destruction of existing water supply wells including abandoned individual domestic wells
- Location
  - Between Visalia and Farmersville East of Highway 99
  - Distance from Visalia – 1.1 miles
- Decision Making Process
  - Tract 92 CSD Board of Directors
  - California Water Service Company

## SECTION SEVEN

- Feasibility Study identified new well and partial consolidation as best option
- Old cracked, leaking pipelines
- Funding Source(s)
  - Drinking Water State Revolving Fund (DWSRF)
  - Community Development Block Grant (CDBG)
- Cost (application, design, capital, operations)
  - \$200,000 Feasibility Study
  - \$2,941,000 Construction
- Approximate Capital Cost (application, design, capital facilities) - \$3,441,000
- Approximate Capital Cost per connection (population) – \$13,194 (\$37,000)
- Approximate O&M Cost per connection - \$468
- Challenges
  - Connecting to 93 services on private property
  - Insufficient funds to cover private property connections
  - Many abandoned individual domestic wells
- Time Frame (identification of problem to completion of solution)
  - Application for Prop 50 funding – June 2012
  - Feasibility Study initiated in 2012 with CDBG funding
  - Feasibility Study to be completed (including test well and design) in 2013-14 with DWSRF funding
  - Feasibility Study completed in 2012
  - Application for Construction Funding expected in 2014
  - Construction Funding – Expected 2015
- Other
  - The CSD will be required to raise its rates by about \$7 per connection, per month, to receive 100% grant funding for planning through SRF. This stipulation is due to the requirement that SRF grant funds can only be used for disadvantaged communities whose water rate already meets the Target Consumer Rate of 1.5% of the community's MHI.

#### 7.2.11 Malaga County Water District

- Problem (quantity, quality)
  - Insufficient Source Quantity
  - Coliform presence
  - Nitrate
- Number of Connections – 472 (note that many connections are commercial/industrial)
- Approximate Population - 900
- Solution
  - Acquire a Well site
  - Construct a Test Hole
  - Construct a new water supply well and extend the water distribution system to connect to the site

## SECTION SEVEN

- Remove contaminated wells from the active system
- Location
  - Immediately south of Fresno
  - Near State Route 99 and Central Avenue
- Decision Making Process
  - Malaga County Water District
- Funding Source(s)
  - CDBG (\$167,250)
  - Malaga County Water District
- Approximate Capital Cost (application, design, capital) \$1,134,223
- Approximate Capital Cost per connection - \$1,260
- Approximate O&M Cost per connection - \$189.36 per year flat rate, \$231.96 per year metered rate (3/4 inch service)
- Challenges
  - Acquisition of new well site
  - Obtain funding for construction of the production well
- Time Frame (identification of problem to completion of solution)
  - Application for CDBG funding – 2007
  - Complete Test Hole – 2010
  - Complete Construction of production well - March 2013

### 7.3 Quality or Supply Problem: Solution: Treatment Facilities and Consolidation of neighboring systems.

#### 7.3.1 CSA 49

- Problem (quantity, quality)
  - Surface water treatment facilities that did not meet regulatory requirements
  - 42 Residences and Westside Elementary School
- Number of Connections – 43
- Approximate Population - 333
- Solution
  - Consolidate two surface water treatment plants into one plant
  - Managed by the County of Fresno (CSA 49)
  - Install new water storage tank
  - Replace water distribution mains
  - Install water meters
- Location
  - Approximately 35 miles Southwest of Fresno near Five Points along Highway 145
- Decision Making Process
  - Solution provided greatest benefit for the cost
  - Water meets current water quality standards

## SECTION SEVEN

- County of Fresno
- Westside School District
- Owner of Labor Housing
- Funding Source(s)
  - State Drinking Water State Revolving Fund (\$1,884,431)
  - State Drinking Water Bond Law (\$200,000)
  - Community Development Block Grant (\$440,000)
  - Community funded (\$40,000)
- Cost (application, design, capital, operations)
- Approximate Capital Cost (application, design, capital facilities) Total \$2,564,431
- Approximate Capital Cost per connection (population) – \$59,638 (\$7,700)
- Approximate O&M Cost per connection
- Challenges
  - Properties separated from each other
- Time Frame (identification of problem to completion of solution)
  - November 2003 – Applied for grant funding
  - October 2008 – Awarded construction project
  - February 2012 – Notice of Completion

### 7.3.2 Rodriguez Labor Camp with Richgrove CSD

- Problem (quantity, quality) water exceeds Nitrate MCL by a factor of nearly 3
- Number of Connections – 35
- Approximate Population – 140 (using 4 per connection)
- Solution
  - Obtain water supply from Richgrove CSD
  - Richgrove CSD install new well and tank to connect to Rodriguez Labor Camp
- Location
  - Approximately 2.5 miles west of Richgrove on Road 192 near Avenue 8
- Decision Making Process
  - Rodriguez Labor Camp Owner
  - Richgrove CSD
- Funding Source(s)
  - Proposition 84 (\$4,150,974 – total project)
  - CDBG (\$373,129 – total project)
- Approximate Capital Cost (application, design, capital facilities) - \$4,524,103
- Approximate Capital Cost per connection (population) – \$129,260 (\$32,315)
- Approximate Annual O&M Cost per connection - \$600
- Challenges
  - The existing water system must be operational during construction.
  - No records of existing water system
  - Required a contractual agreement between the Labor Camp and Richgrove CSD

## SECTION SEVEN

- Time Frame (identification of problem to completion of solution)
  - Initiate Funding Application - unknown
  - Complete Design – 2011
  - Complete Construction – pending Construction Grant

A more comprehensive list of Case Studies, the status, and relative capital cost of the projects is included as **Table 5-2**. The Table lists the Case Studies by County and by Category of water supply problem. The Table includes the population of the community and identifies whether the water system is privately owned or publicly owned. In addition the information is presented in **Figure 7-1** as a geographical representation of the data.

The capital cost and estimated operation and maintenance costs for several Case Studies that have either been completed, or for which the design of improvements is sufficient to provide a reliable capital and operational opinion of cost, are listed in **Table 7-1**. The projects are differentiated between Consolidation Projects and New Well Projects. **Figure 7-2** includes information for consolidation projects and new water supply projects.

Included in the Appendix (**Appendix D**) is a copy of the Report to the Legislature Senate Bill X2 1. The Report includes a list of projects that had been awarded Proposition 84 funding in 2010-11. The status of the projects in the list may not have been verified for the purposes of this report. The projects may, however, supplement the Case Studies described above.

Review of the information from the Case Study Projects identified above reveal the following observations:

- Time frame: The time to move from identification of a problem to completion of a solution to the problem is usually several years
- Costs: Costs associated with the solution of water supply problems includes Investigation and analysis reports, engineering reports, funding applications, legal costs associated with rates and identification of the political body responsible for implementation of solutions, capital costs, replacement costs, and operation and maintenance costs.
- Cost per connection: The cost of service per connection is likely to require initial increases and regular increases in the future.
- Rate impacts: The rates charged to customers are like to require initial increases and regular increases in the future.
- Interaction with other agencies: Many of the projects required cooperation and coordination with other political or regulatory agencies. It is noted that the objectives of the various entities are not always the same.
- Responsibility of owners: Ultimately, the projects that succeed rely upon the owner of the water system to take responsibility for the issue. Until the

owner(s) of the system take on the responsibility of the issue, the problem will not be resolved.

- Political resistance: It is noted that there may be political resistance against the recommended technical alternatives to solve the issue. For example, the resistance may be in the form of not wanting to dissolve the existing system and annex to an adjacent city. The resistance associated with a perceived loss of community identity is a real issue to be resolved in several instances.
- Funding – loan, grant: Funding assistance for the projects has been in the form of a) self funded, b) grant (Federal or State), c) loan (Federal or State), or d) a combination of the previous sources. It is noted that each source of funding contains rules, limitations, obligations, and procedures that must be adhered to. The various requirements associated with funding sources need to be fully understood by the DAC prior to proceeding toward obtaining the funding assistance.
- TMF compliance for sustainability: The test of a successful solution is whether it is sustainable. The Technical, Managerial, and Financial (TMF) Report topics (**Appendix M**) provide a viable guideline to determine if the community is prepared to proceed with a solution to the problem that may be sustained.

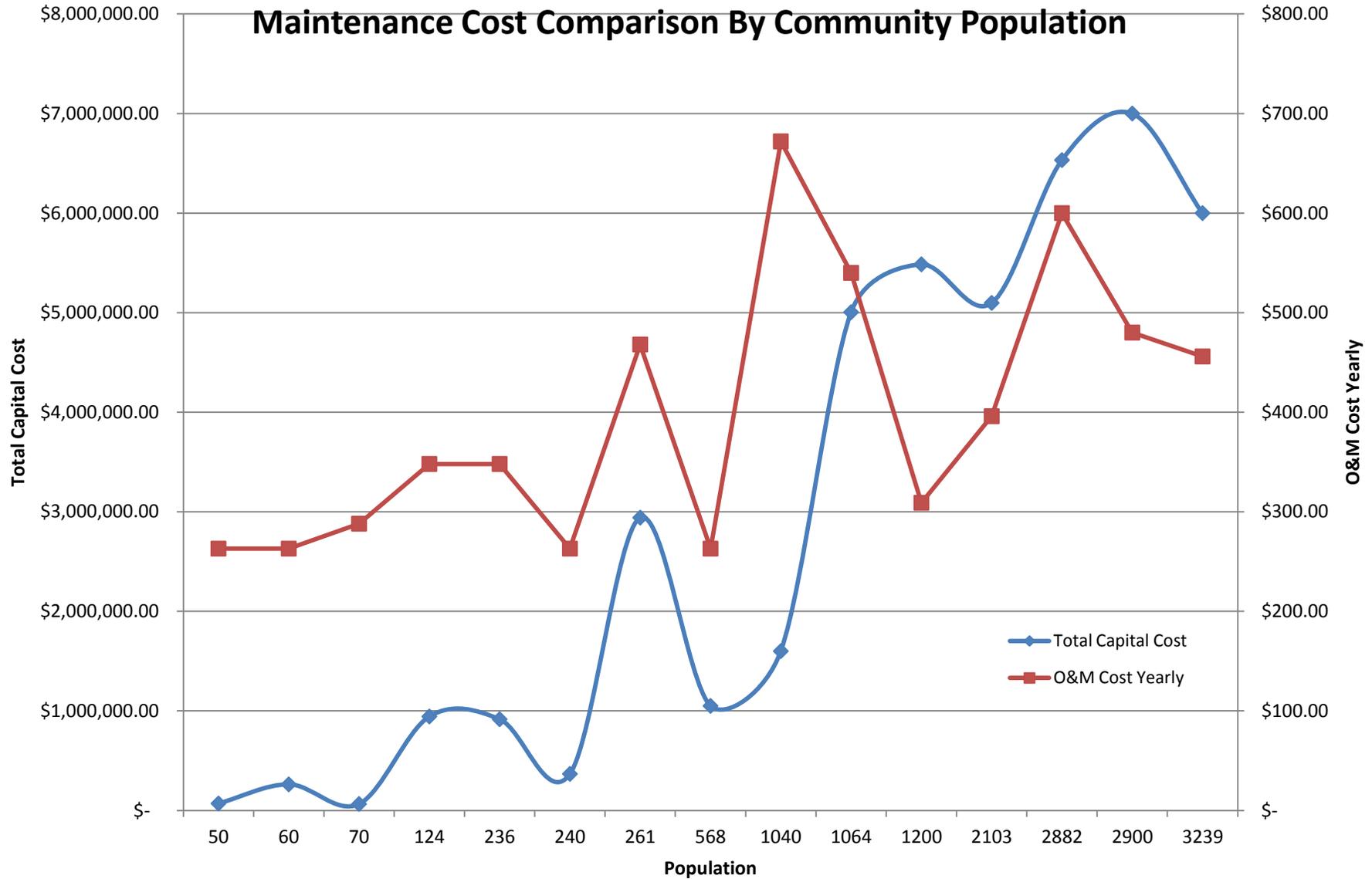
**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY  
TABLE 7-1  
LIST OF DISADVANTAGED COMMUNITIES  
IDENTIFIED AS CONSOLIDATION OR NEW WELL PROJECTS**

<b>Community</b>	<b>Connections</b>	<b>Population</b>	<b>O&amp;M Cost Yearly - Consolidate</b>	<b>Total Capital Cost - Consolidate</b>				<b>Solution</b>
Lacey Court Mobile Home Park	21	50	\$ 263.00	70,000	\$ 263.00	annual		Consolidate
Four Seasons Mobile Home Park	86	60	\$ 263.00	262,000	\$ 263.00	annual		Consolidate
Lone Oak Subdivision	42	70	\$ 288.00	65,051	\$ 24.00	monthly		Consolidate
Beverly Grand	31	124	\$ 348.00	943,600	\$ 29.00	monthly		Consolidate
El Rancho Subdivision Tract 191	24	124	\$ 239.64	1,100,000	\$ 19.97	monthly		Consolidate
Rodriguez Labor Camp	35	140	\$ 600.00	404,900	\$ 50.00	monthly		Consolidate
Fairways Mutual	59	236	\$ 348.00	916,105	\$ 29.00	monthly		Consolidate
Hamblin Mutual Water Company	40	240	\$ 263.00	367,000	\$ 263.00	annual		Consolidate
El Rancho Subdivision, Curtis Water Company	142	568	\$ 263.00	1,050,000	\$ 263.00	annual		Consolidate
Malaga County Water District	472	900	\$ 232.00	1,134,223	\$ 232.00	annual		Consolidate
Matheny Tract	323	1200	\$ 309.00	5,485,528	\$ 309.00	annual		Consolidate

			<b>O&amp;M Cost Yearly - New Well</b>	<b>Total Capital Cost - New Well</b>				
Hardwick	20	138	\$ 480.00	1,492,000	\$ 40.00	monthly		New Well
Tract 92	93	261	\$ 468.00	3,941,000	\$ 39.00	monthly		New Well
Pioneer School	351	1040	\$ 672.00	1,600,000	\$ 56.00	monthly		New Well
Tranquillity	341	1064	\$ 540.00	5,005,100	\$ 45.00	monthly		New well
London	450	1638	\$ 408.00	4,244,000	\$ 34.00	monthly		New Well
Caruthers Community Services District	655	2103	\$ 396.00	5,097,850	\$ 33.00	monthly		New well
Richgrove CSD	520	2882	\$ 600.00	6,532,500	\$ 50.00	monthly		New well
Riverdale PUD	950	2900	\$ 480.00	7,000,000	\$ 40.00	monthly		New well
Armona Community Services District	1255	3239	\$ 456.00	6,000,000	\$ 38.00	monthly		New Well
Pixley	815	3310	\$ 348.00	5,000,000	\$ 29.00	monthly		New well

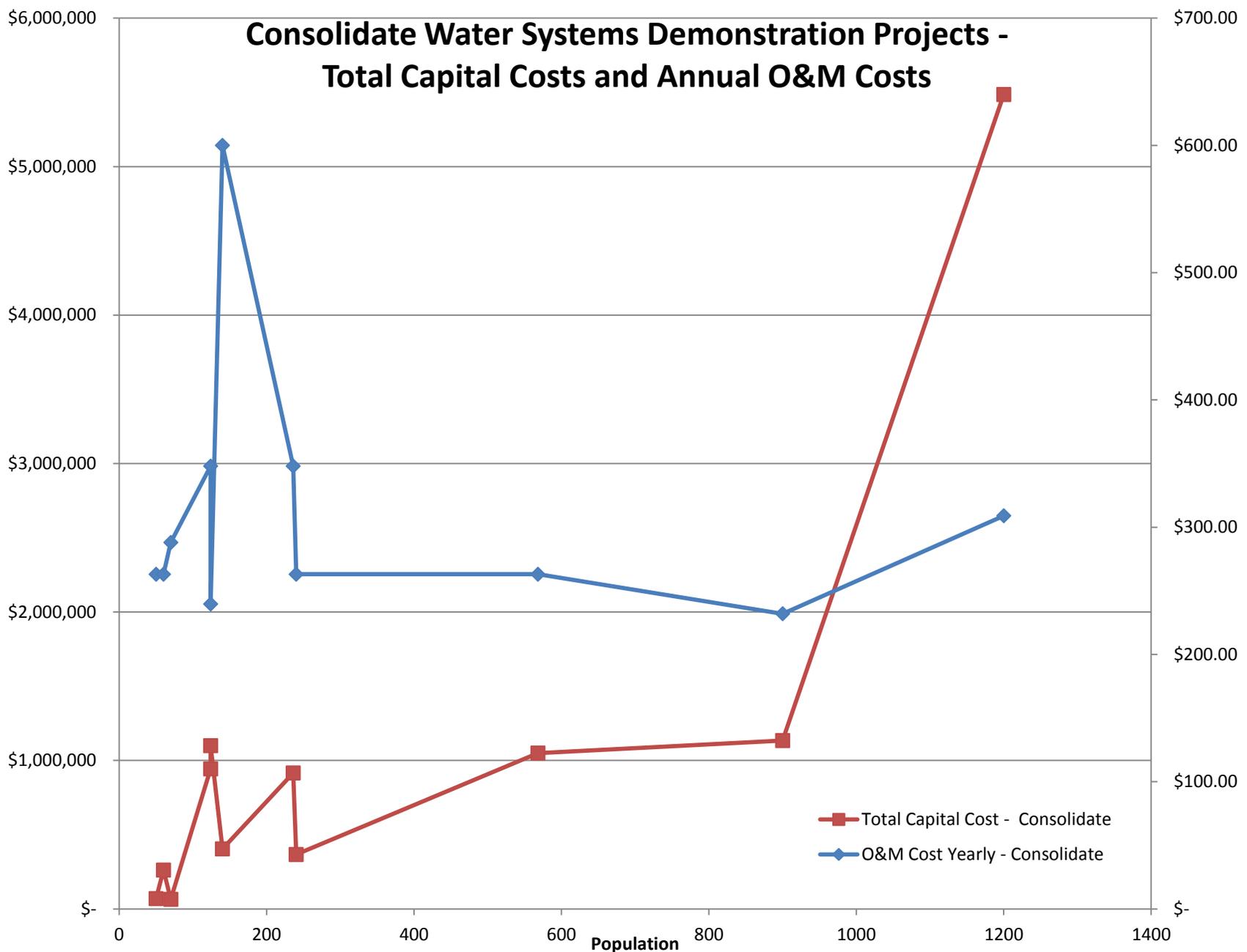
## EXHIBIT 27

### Demonstration Project Total Capital Cost and Operation and Maintenance Cost Comparison By Community Population



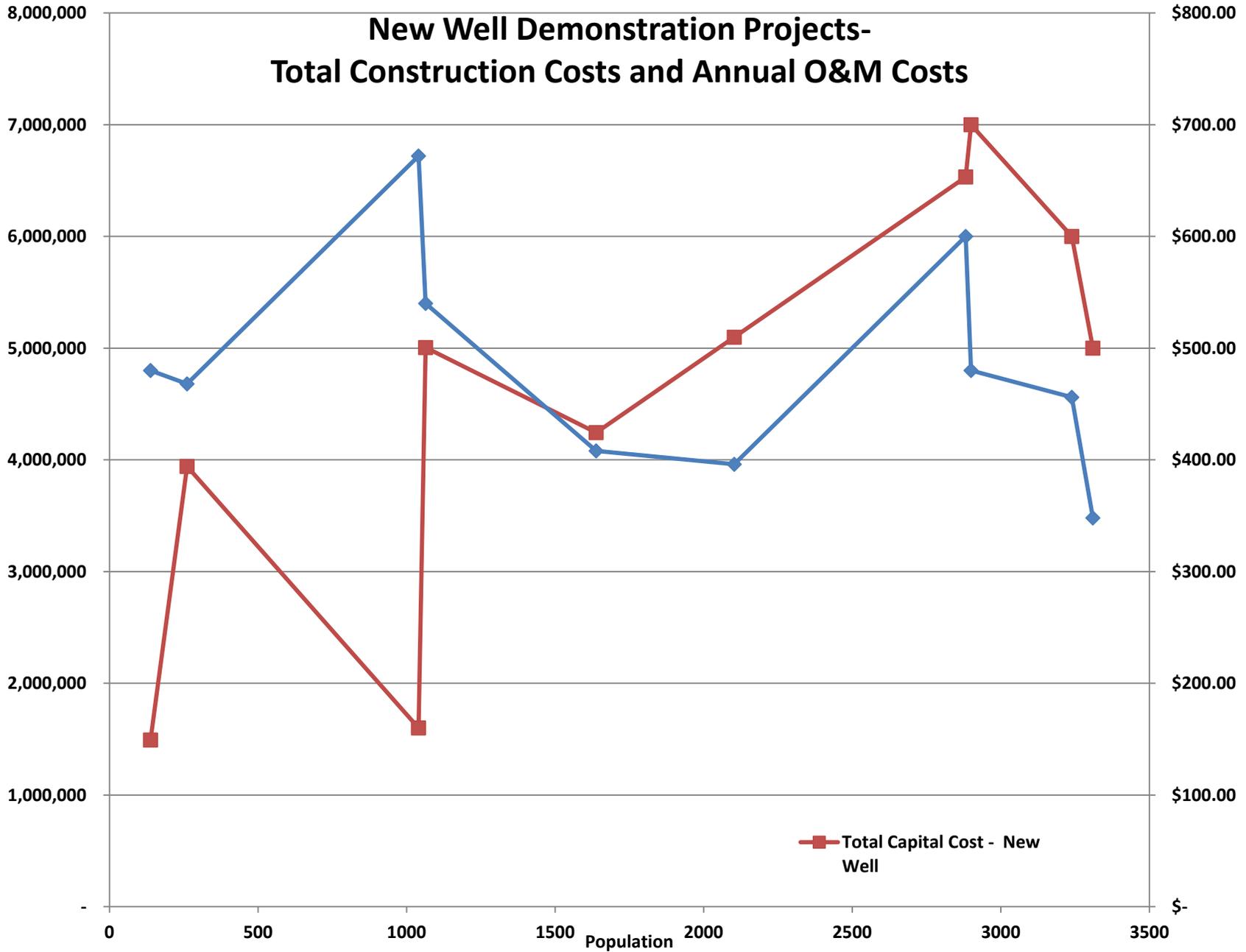


### Consolidate Water Systems Demonstration Projects - Total Capital Costs and Annual O&M Costs





# New Well Demonstration Projects- Total Construction Costs and Annual O&M Costs





**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

DEMONSTRATION  
PROJECTS:  
NEW SOURCE

**Legend**

-  Tulare Lake Basin
-  County
-  Demonstration Project

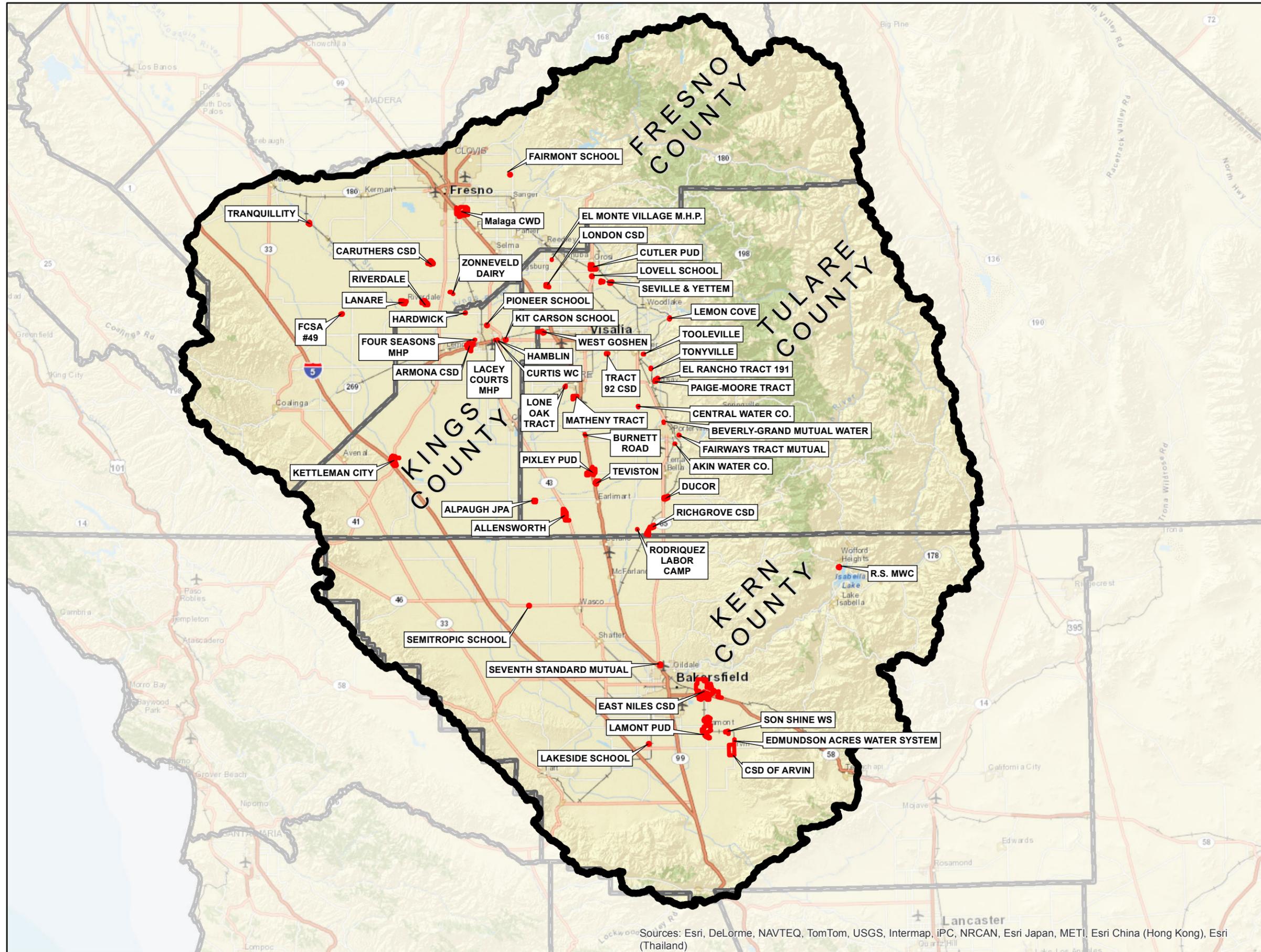
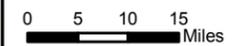


Exhibit 28

**DRAFT**



EST. 1968  
**PROVOST & PRITCHARD**  
CONSULTING GROUP  
*An Employee Owned Company*

286 W. Cromwell Ave.  
Fresno, CA 93711-6162  
(559) 449-2700

Sources: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand)



## 8 COMMUNITY PILOT PROJECTS

### Evaluation of Potential Community Pilot Projects

The goal of the community review process was to further evaluate and perform a specific pilot study review of several communities that face water supply challenges in order to ground truth the potential solutions identified and to help develop a roadmap to implement applicable alternative solutions. The roadmap that is developed with the assistance of the community review process will be useful to guide other communities considering the same types of solutions.

Potential community pilot projects were prioritized by starting from the list of DACs identified in **Table 4-4** and removing the DACs identified in **Table 7-1** as those communities have already initiated the process of moving toward a solution of their water supply challenge. The resulting list of disadvantaged communities within each County that have a water supply challenge, and are not presently engaged in a funded working solution of the problem are listed in order of population in **Table 8-1** through **Table 8-4**. The list is based on the information available as described previously. The remaining communities listed in **Table 8-1** through **Table 8-4** were also reviewed with respect to whether the type of water supply challenge faced by the community is representative of that faced by other communities. These communities were then prioritized based on several considerations.

#### Prioritization considerations:

- Population:
  - Population was considered as it is appropriate to consider assisting in the resolution of a water system challenge that would impact the greater number of persons as a first priority
- System ownership (publicly owned or privately owned):
  - System ownership was considered as appropriate as public funds are deemed to be appropriate toward assisting public water systems prior to private (for profit) water systems. This consideration does not in any way place the importance of the persons using a private water system as any less important, however, the weight of responsibility toward resolving the water system problems may appropriately be the primary responsibility of the private owner of the water system.
- Severity of the problem:
  - Water system challenges range in severity and the potential for detrimental impacts to the health and welfare of the persons relying upon the water system.
- Ease of solution:
  - The relative ease of identifying a solution to the water system problem was also a consideration. It is deemed appropriate that a more complex problem may benefit from the resources available in this pilot study,

## SECTION EIGHT

compared to a problem that has a straight forward recommended alternative.

This section presents representative communities in the Tulare Lake Basin region for which a New Source alternative may be viable. This is based mainly on system size and proximity. It is understood that the communities may collaborate based on identifying common needs and common solutions. These potential community pairings are presented as an illustration for the reader to better understand the alternatives described. These potential projects may or may not be viable in reality, and the communities themselves must initiate the process and be ready to move forward with a partnership approach. It is not necessarily recommended that the potential projects presented be implemented. Further evaluation and community outreach will be required to determine the feasibility of an alternative.

For each pilot study, a Pilot Project Stakeholder Advisory Group (PSAG) was formed to provide review of the pilot study, and advise on potential communities to provide outreach efforts as part of a community review process. Members of the PSAG for the New Source pilot study included representatives from CDPH, DWR, Central Valley RWQCB, Tulare County, Fresno County, Kings County, Kern County, Tulare County LAFCo, USDA, Rural Community Assistance Corporation (RCAC), California Rural Legal Assistance Foundation (CRLAF), United Way, as well as various water districts and community representatives.

The community review process involved conducting community review meetings to ground truth findings, to learn about what the residents in the community review focus area need and want, and to assess their thoughts regarding the proposed alternatives presented within the draft pilot study. Participants in the community review process included board members, owners, operators, and residents of communities specifically selected as having potential to implement a New Source type alternative.

Based upon the process described above, the communities of Sultana, Ivanhoe, and Stratford were identified as potential community pilot projects.

A one page summary of the intended Community Review Process (**Appendix H**) was prepared by the Community Water Center and distributed to each of the communities identified above.

DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
 NEW SOURCE DEVELOPMENT PILOT STUDY  
 TABLE 8-1  
 LIST OF DISADVANTAGED COMMUNITIES IN TULARE COUNTY  
 WITH A WATER SUPPLY CHALLENGE NOT PRESENTLY A DEMONSTRATION PROJECT

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Active Sources	Raw WQ Issues	Delivered WQ Issues	Ownership
CUTLER	5410001	6300	1197	SDAC	6	Y		Public (state, federal, local)
IVANHOE	5410019	4474	1174	DAC	4	Y	Y	Public (state, federal, local)
STRATHMORE	5410012	2352	690	SDAC	4	Y		Public (state, federal, local)
POPLAR	5410026	2200	555	SDAC	4	Y		Public (state, federal, local)
TIPTON	5410014	1792	587	SDAC	4	Y	Y	Public (state, federal, local)
CENTRAL WATER CO.	5400682	170	42	SDAC	1	Y	Y	Private
GLEANINGS FOR THE HUNGRY	5402047	31	10	DAC	1	Y		Private
LAKE SUCCESS MOBILE LODGE	5400660	20	18	SDAC	1	Y	Y	Private



DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
 NEW SOURCE DEVELOPMENT PILOT STUDY  
 TABLE 8-2  
 LIST OF DISADVANTAGED COMMUNITIES IN KINGS COUNTY  
 WITH A WATER SUPPLY CHALLENGE NOT PRESENTLY A DEMONSTRATION PROJECT

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Active Sources	Raw WQ Issues	Delivered WQ Issues	Ownership
HOME GARDEN	1610007	1750	450	SDAC	3	Y	Y	Public (state, federal, local)
STRATFORD	1610006	1215	240	DAC	3	Y		Public (state, federal, local)



**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY**

**TABLE 8-3**

**LIST OF DISADVANTAGED COMMUNITIES IN FRESNO COUNTY  
WITH A WATER SUPPLY CHALLENGE NOT PRESENTLY A DEMONSTRATION PROJECT**

<b>NAME</b>	<b>CDPH System ID</b>	<b>Population Estimate</b>	<b>Connections Estimate</b>	<b>Type</b>	<b>Active Sources</b>	<b>Raw WQ Issues</b>	<b>Delivered WQ Issues</b>	<b>Ownership</b>
SUNNYSIDE CONVALESCENT HOSP	1000366	116	3	SDAC	1	Y	Y	Private
DOUBLE L MOBILE RANCH PARK	1000248	80	37	SDAC	1	Y	Y	Private
FRED RAU DAIRY	1009120	80	24	SDAC	1	Y	Y	Private
LINDA VISTA FARMS	1000445	40	26	SDAC	1	Y	Y	Private



DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
 NEW SOURCE DEVELOPMENT PILOT STUDY  
 TABLE 8-4  
 LIST OF DISADVANTAGED COMMUNITIES IN KERN COUNTY  
 WITH A WATER SUPPLY CHALLENGE NOT PRESENTLY A DEMONSTRATION PROJECT

WEST KERN CWD	1510022	16800	7589	DAC	15	Y		Public (state, federal, local)
ARVIN	1510001	14713	3536	SDAC	13	Y	Y	Public (state, federal, local)
LAMONT	1510012	13858	3381	SDAC	15	Y		Public (state, federal, local)
GREENFIELD COUNTY WD	1510024	8400	2411	DAC	10	Y		Public (state, federal, local)
LEBEC	1510051	1285	243	DAC	3	Y	Y	Public (state, federal, local)
VALLEY ACRES	1510022	336	140	DAC	15	Y		Public (state, federal, local)
OILDALE	1510015	26000	7820	DAC	6	Y	Y	Private
ERSKINE CREEK WC	1510009	2500	1031	SDAC	3	Y		Private
LOWER BODFISH	1510056	2037	558	SDAC	6	Y		Private
LOST HILLS	1510046	1991	434	DAC	2	Y	Y	Private
VICTORY MWC	1500231	740	172	DAC	1	Y		Private
UPPER BODFISH	1510026	591	201	SDAC	3	Y		Private
FULLER ACRES	1500296	571	200	SDAC	2	Y		Private
LAKELAND	1510049	473	215	DAC	3	Y		Private
TRADEWINDS	1500406	450	214	SDAC	2	Y		Private
RAINBIRD VALLEY	1500393	188	83	SDAC	2	Y		Private
ATHAL	1500289	150	62	SDAC	2	Y		Private
VALLEY VIEW ESTATES	1500569	81	39	SDAC	6	Y	Y	Private
BONANZA FARMS	1502482	80	17	SDAC	0	Y		Private
LAKEVIEW RANCHOS	1500525	59	49	DAC	3	Y	Y	Private
KERVALE	1500364	52	20	SDAC	1	Y	Y	Private



**SECTION EIGHT****8.1 Sultana Community Pilot Project****8.1.1 Description of Sultana Community Services District**

The Tulare County community of Sultana is located along Avenue 416 and roughly half way between the City of Dinuba and the town of Orosi. The railroad was built in the 1870's through the area now known as Sultana. The Sultana town site was not laid out until 1912, decades after the nearby town sites of Dinuba and Orosi were settled. Sultana was a shipping point for local farm growers and packing sheds. Currently, the community of Sultana has a one (1) post-office; one (1) elementary school; two (2) churches; ten (10) commercial businesses; and two (2) grocery store/gas station mini-marts that serve both of the communities of Sultana and Monson.

**Staff**

Sultana CSD has the following staff:

- One (1) Part-time Bookkeeper.
- One (1) Part-time Office Manager
- One (1) Part-time Water System Operator
- One (1) Part-time Sewer System Operator

The District employs one (1) part-time Office Manager that is accountable to the Board of Directors; who are responsible for setting water rates. Apparently the Office Manager fills the role of a General Manager. The District lacks the resources to hire a full-time manager and there is not a need for full-time management.

Since the District's water system has less than 200 connections, the system is monitored by the Tulare County Health & Human Services Agency, Tulare County Public Health Environmental Health Division. Tulare County is the Local Primacy Agency under the State Department of Public Health in monitoring compliance for and in enforcing EPA's Safe Drinking Water Act. The California Department of Public Health (CDPH) will assume Local Primacy responsibilities for Tulare County systems as of July 1, 2014.

**Water System Description**

Due to the drought of 1976-77 many private domestic wells in Sultana were going dry. In response, the community organized a Community Services District (District) that was formed in 1978. The District applied to the Farmers Home Administration (USDA) and received a 50/50 grant/loan to construct a community water system. A single well drilled at that time (Well No.1) supplied water to the community for many years. In the 1980's the District received CDBG funding and drilled a second well. This additional supply was important to both provide additional capacity as well as serving a backup source if one well went down. Unfortunately, the Well No. 1 became contaminated with nitrate. In 2005, Well No.1 was removed from service due to high Nitrate levels (59 mg/L). Additionally, Well No.2 has not been in operation since 2005 due to DBCP levels above

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the MCL and overall poor well production. The nitrate concentration of Well No. 2 in 2012 was 43.9 mg/l. The District successfully applied for Safe Drinking Water Program funding from the State and received a grant to construct Well No.3 in 1996, which currently is the only source of potable water for the community. As of the date of this report, the District is operating with only one well, Well No.3. Well No.2 serves as a marginal back-up, albeit contaminated, source. The system is not equipped with a reliable backup source of water thus adversely affecting the reliability of the community's water supply. The District contracts with one (1) part-time individual to operate and maintain the District's water system.

Currently, the District's water system serves one-hundred and sixty (160) water connections providing water to two-hundred forty-two (242) residences; one (1) post office; nine (9) commercial establishments; two (2) gas station/grocery stores; one (1) church; one (1) packing house; and the Monson-Sultana School.

The water system is currently supplied by one primary active well (Well No.3) which was drilled in 1996 to a depth of 430 feet; has an annular seal to a depth of 250 feet with a 14-inch casing installed to a depth of 430 feet perforated between 260 and 420 feet. The well is equipped with a 60 hp oil lubricated turbine pump and 5,500 hydro pneumatic tank. A natural gas generator is located at the well site to provide power when electrical service is interrupted. The District's backup well (Well No.2) was drilled to a depth of 358 feet; has an annular seal to a depth of 60 feet with a 14-inch casing installed to a depth of 332. This well was equipped with a 75 hp oil lubricated turbine pump and also a 5,500 gallon hydro pneumatic tank.

Water pumped from the District's primary well (Well No.3) meets all Title 22 standards. However, the system's backup well (Well No.2) has produced water exceeding the DBCP Maximum Contaminant Level set by EPA and CDPH. Included in **Appendix I** is a table listing DBCP and nitrate levels from Well No. 2 from 1993 through September 2012. This table shows that Well No. 2 has produced water exceeding the DBCP MCL five (5) times over this period.

#### Wastewater System Description

In response to septic system problems, in the 1980's the District applied for and received funding through both the USDA and the SWRCB's previous Clean Water Grant Program to build a community sewer system and transport the wastewater to the Cutler-Orosi Wastewater Treatment Facility for treatment and disposal. In addition, the District contracts with one (1) part-time individual to operate and maintain the District's sewer collection system which includes two sewer lift stations.

The District also provides sewer service to all of the above water service users. The sewer system was constructed in the early 1980s. The sewer collection system consists of SDR-35 PVC mains. There is one sewer lift station in the community and another at the end of the collection system that pumps wastewater into a force main which transports the sewage to the Cutler Orosi Wastewater Joint Powers Authority (COWJPA) Wastewater Treatment and Disposal Facility. The District has entered into a

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contract with the COWJPA that defines capacity, charges, and other terms of service for treating the wastewater.

### Financial

Per the last decennial census to calculate median household income, the 2000 Census, the median annual income for households in Tulare County Census Tract 3.01 Block Group 1 that incorporates the community of Sultana, was calculated at \$30,987 or 65.2% of the statewide median household income at that time. Since then the US Census Bureau no longer asks the income question in the decennial census, but rather collects income data through the continually occurring American Community Survey (ACS) where a smaller sampling is done annually. This data is expressed as a 5-year adjusted average. For Sultana, this comparative data is for Census Tract 3.01 Block Group 1 for the 2005-09 ACS and since then the Sultana Census Designated Place (CDP).

The median annual household income for the Year 2000 Census and the past four rounds of the ACS (3 of which as a CDP) is expressed as:

Period	Area	MHI	Margin of Error	% of State MHI
2000	CT3.01BG1	\$30,987		65.2%
2005-2009	CT3.01BG1	\$42,321	+/- \$18,575	70.1%
2006-2010	CDP	\$44,250	+/- \$23,185	77.2%
2007-2011	CDP	\$30,956	+/- \$9,518	50.2%
2008-2012	CDP	\$31,528	+/- \$15,709	51.3%

It appears that the 2007-11 ACS data for the CDP is the most accurate. The margin of error is still at 30%, but this is more accurate than the prior 2006-10 and the later 2008-12 ACS data which both have margins of error of 50% or more. For this reason, Sultana can be viewed as a severely disadvantaged community with a median household income less than 60% of the statewide median.

Based on the 2007-11 ACS data, an estimated 44% of households have annual incomes less than \$25,000; and 61% of households have annual incomes less than \$35,000. The ACS data also indicates that 33.0% +/- 19.6% of Sultana residents live below the poverty line. As such, there is very little disposable income available to families who reside in the community.

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The 2010 United States Census reported that Sultana had a population of 775. The racial makeup of Sultana was 315 (40.6%) White, 0 (0.0%) African American, 3 (0.4%) Native American, 6 (0.8%) Asian, 0 (0.0%) Pacific Islander, 424 (54.7%) from other races, and 27 (3.5%) from two or more races. 695 persons or 89.7% of the population identified themselves as Hispanic or Latino.

According to 2010 United States Census data, the average household size was 3.52 within 242 individual housing units, of which 75 (34.1%) were owner-occupied; and 145 (65.9%) were occupied by renters. The homeowner vacancy rate was 4.9%; the rental vacancy rate was 3.2%. 254 people (32.8% of the population) lived in owner-occupied housing units and 521 people (67.2%) lived in rental housing units.

### Rates

The **Appendix I** includes some graphical representations of the District's Total Cash in the County Treasury, Water Fund Net Operating Income, Water Fund Cash Available, Sewer Fund Net Operating Income, and Sewer Fund Cash Available for the past 10 years. Although the District's sewer system operates only slightly at a loss, the District's water system operates at a deficit every year. The total cash available to the District is slightly below \$100,000, which is not sufficient to respond to any infrastructure emergency. In FY 2012-13 it was necessary for the District to make a short term loan of \$25,000 from the sewer fund to the water fund to help with cash flow. In addition, according to the District's 2012-2013 audit report, the District has a balance owed of \$43,721 and \$48,000 respectively for water and sewer bonds as of the end of the fiscal year.

Currently, the monthly flat water rate per household is \$27.13 per month, which is 1.1 percent of the community's median household income. The monthly sewer rate is \$40.02 dollars per month, which is 1.6 percent of the community's median household income. The District sends out bills for flat rate water and sewer charges by mail on a monthly basis.

### Connection Fees

There are no additional connection fee structures in place at this time.

### Previous Funding Applications

Four different funding applications have been submitted to various agencies for Sultana CSD.

- The North Tulare County Area Surface Water Treatment Application for Safe Drinking Water State Revolving Fund Pre-Planning Funds by the County of Tulare was submitted in November 2013.

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- The Grant Application for funding through the Kings Basin Water Authority for Round 2 of IRWMP Proposition 84 Implementation funds administered by the California DWR was submitted in January 2013.
- The CDPH Safe Drinking Water State Revolving Fund Application For Monson by Sultana CSD for Planning Funds was submitted in February 2010.
- The CDPH Safe Drinking Water State Revolving Fund Application for Construction Funds was submitted in February 2009.

A copy of each of these Applications is included in **Appendix I**

### 8.1.2 Challenges Faced by Sultana Community Services District

The challenges faced by the Sultana Community Services District include:

- Disadvantaged Community
- A single water supply well that meets potable water quality regulations but is not sufficient for peak or fire demands
- A second water supply well that exceeds water quality regulations for nitrate and DBCP
- Unknown water demands
- Unknown water losses
- Undersized water distribution mains
- No water storage
- Local groundwater that has high nitrates and DBCP
- Minimal cash reserves
- The 2014 Drought has imposed additional challenges, including reduced surface water supplies, declining groundwater levels, increased costs of new wells, and increased potential of new agricultural wells that may draw upon the same groundwater resources as the District.

### 8.1.3 Goals of the Sultana Community Pilot Project

The goals of the Sultana Community Pilot Project included:

- Provide information to the community participants about the goals and objectives of the Tulare Lake Basin DAC study and the New Sources Pilot Study.
- Develop an understanding of the local water and wastewater challenges faced by the community.
- Provide preliminary alternative solutions identified in the New Sources pilot study.

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- Obtain feedback on the preliminary alternative solutions identified.
- Provide recommendations to the community for future actions to consider.
- Develop Decision Trees that represent past and potential actions for Sultana CSD to consider.

#### 8.1.4 Description of the Sultana Community Pilot Project

##### Authorization to Include Sultana CSD in the DAC Study

Michael Taylor of Provost & Pritchard and Maria Herrera of Community Water Center attended a regularly scheduled Board Meeting of the Sultana Community Services District on October 3, 2013. Ms. Herrera and Mr. Taylor briefly described the Disadvantaged Community Study that was being conducted and requested the Sultana Community Services District authorize its inclusion in the Study through the Community Pilot Project process. The Board of Directors of the Sultana Community Services District authorized the participation.

##### Pilot Project Activities Summary

15. Obtain and review records
16. Field review – well, community
17. Meet with District and operations staff
18. Discussions with CDPH – regulatory and funding
19. Discussions with City of Dinuba
20. Review of Monson
21. Review of Northern Tulare County Regional Water Treatment Project alternative
22. Review sewer discharge agreement
23. Review past studies
24. Review past funding applications
25. Prepare draft Decision Trees
26. Conduct a Community Review Meeting
27. Summarize activities
28. Provide recommendations for District consideration

##### Community Review Meeting

A community meeting was held on February 20, 2014 at the Monson-Sultana Elementary School (minutes of the meeting are included as **Appendix I**). The meeting was attended by two Sultana CSD Board Members, residents of the Sultana community, Self-Help Enterprises, Community Water Center, and Provost & Pritchard.

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The meeting was organized and facilitated by Maria Herrera and Susana DeAnda of Community Water Center. Michael Taylor of Provost & Pritchard Consulting Group provided information on the overall Tulare Lake Basin Disadvantaged Community Study, a general description of Decision Trees, and the alternatives that may be viable for Sultana to consider addressing its water supply challenges. All attendees were encouraged to ask questions and provide any additional information for the study. The discussion was translated to Spanish during the meeting.

Each of the nine (9) generic water supply alternatives were described and discussed regarding the potential relevance to the community of Sultana.

### Physical Consolidation

The potential of a physical connection to the City of Dinuba had been included in previous documentation. The issue was reviewed during this process. Discussions with the City Engineer indicated that from a technical perspective, a physical connection would be possible by extending a water main along El Monte (**Appendix I**).

In addition, physical consolidation projects are encouraged by funding and regulatory agencies. It may be possible for a consolidation project to be defined by the construction of a new City of Dinuba well southwest of the City, extending a new water main east along El Monte to the community of Sultana, construction of a water storage tank within Sultana, and potentially extending a water main and connection to the El Monte Mobile Home Park west of Dinuba (**Appendix I**).

It was apparent during the community review meeting that Sultana may prefer to explore the construction of a new water supply well for Sultana prior to consideration of a connection to the City of Dinuba. Primary considerations include potential loss of local control and the uncertainty of future water rates from the City of Dinuba.

The present water rates for the City of Dinuba are included in **Appendix I**.

Below is a table comparing Cutler, Dinuba, East Orosi, Orosi, and Sultana water and sewer rates.

System	Water Rate	Sewer Rate
Cutler PUD	\$28.00	\$28.00
City of Dinuba	\$20.20	\$22.63
East Orosi CSD	\$17.15	\$40.00
Orosi PUD	\$19.08	\$22.97
Sultana CSD	\$23.45	\$34.60

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The potential of a sanitary sewer connection to the City of Dinuba was also discussed, however, specifics of such a connection were not pursued within this study.

**Monson**

Most discussions regarding water supply for the community of Sultana included consideration of potential consolidation with the area known as Monson. The County of Tulare has received a Planning Grant to perform hydrogeologic studies for a potential well for Monson. The presence of DBCP and nitrates in the local groundwater are a prime consideration for siting any new potable water supply well. A previous study of groundwater in the vicinity is included as **Appendix I**.

Exchanges/Contracting for Surface Water or other source.

The community is not near existing surface water conveyance facilities.

The community is near the City of Dinuba, and the possibility of contracting for water supply through a master meter is an alternative.

Recharge of Local Area

The community is not near existing surface water conveyance facilities.

Regional Facility

Sultana is an interested party for a potential regional surface water treatment plant that may be located in East Orosi. A water supply for the potential plant has been acquired. The engineering firm of Keller Wegley prepared a study regarding the concept in 2007. Funding has been obtained for additional planning and definition of the potential surface water treatment plant and regional conveyance system. The current tasks being performed under the Planning Grant include confirming the water supply, confirming participants, defining potential capital and operating costs for the facilities and distributing the information to the potential participants (Orosi, East Orosi, Cutler, Sultana, Tulare County-Monson, Yettam, and Seville. It is anticipated that the Planning Study would be complete in 2014. The Alta Irrigation District would supply the water and could fill roles of treatment facility operator, water wholesaler to the participating districts, and water re-saler to individuals that may be adjacent to the future distribution system.

Future steps would include applications for funding of final construction documents and construction of the facilities.

New Water Supply Well

Sultana CSD has determined that the near term preferred alternative is to pursue the construction of a new water supply well. No potential well sites had been identified. It is

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recommended that if the District decides to pursue a new well, that a hydrogeologic study of the area is performed to determine the location of viable well sites.

Water Treatment Facility

A water treatment facility for Well No. 2 would have to reduce both nitrate and DBCP. The treatment facilities required for these two constituents are mutually exclusive. In addition, the marginal production capacity of the well, insufficient property available for treatment facilities, additional operational costs, and the requirement to handle treatment byproducts do not make the consideration of a water treatment facility viable.

An ion exchange process may be the best option for nitrate removal in Sultana. The ion exchange process involves a special media that will remove nitrates from the water and store the nitrate in the media. When the media becomes incapable of removing any more nitrate, it must be regenerated. This regeneration is accomplished by pumping a concentrated salt solution (brine) through the media. This spent brine solution must be disposed of properly; either discharged to a wastewater treatment plant or hauled off site to a centralized brine treatment facility.

*Pros* – Water Treatment processes exist that can remove nitrates in the water regardless of nitrate concentrations in the raw water. Ion exchange is a relatively simple treatment process with no chemical addition or hazardous waste to dispose.

*Cons* – A water treatment plant would require a supplement to the existing Water Supply Permit, additional testing and reporting requirements, and additional water operator certificate requirements. Sufficient property would be required for the treatment facilities. The capital cost and ongoing O&M costs may be too high for the customers. Capital costs may also require some indebtedness if a grant is not available for the capital costs. All Central Valley wastewater treatment plants have an electroconductivity (EC) limit. The brine discharged from an ion exchange process is very high in EC and may cause issues at the wastewater treatment plant. The cost of alternative brine disposal (part of the O&M costs) may be too high for the customers.

The subject of well rehabilitation had been discussed with the District. However, information regarding any zone testing of Well No. 2 does not exist. Therefore, it is not recommended that this alternative is pursued.

Conservation

Water meters have several benefits for District consideration. In addition, current water meter technology allows for meters that can be read remotely. The District does not utilize water meters. Billing based on usage would result in water conservation as all customers would pay for water based on water used.

*Pros* – Encourages water conservation.

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*Cons* – Would require a new rate structure that would include a base rate that would be billed regardless of how much water is used and then a per gallon rate for water used. The new rate structure may cause some water bills to increase which may adversely affect some customers.

Restrict Potable Water Deliveries from Agricultural or Large Turf Irrigation

The District may wish to consider metering the water use of the school to determine if the construction of a non potable water supply well for irrigation of the school landscaping would be viable. If so, the District may consider applying for funding for such a project.

All potable water use at the school would require a separate water distribution system from the non potable system.

The Monson Sultana Joint Elementary School is located within Sultana (See **Appendix I**).

Mitigate a Source of Contamination

This alternative does not apply to the circumstances of Sultana CSD.

8.1.5 Recommended Future Actions and Schedule

1. Monitor and record the water use of Well No. 3 and Well No. 2 daily.
2. Determine the standing water level in Well No. 3 and Well No. 2.
3. Update the Funding Application for a new water supply well with the additional consideration that the District does not have a sufficient water supply.
4. Identify potential water supply well and water storage sites.
5. Perform a hydrogeological study of the area to determine if potable water supply is available. Construct a test well to confirm the availability of sustainable potable water.
6. Proceed with funding and construction of a water supply well.
7. Consider adjustment of water rates. The District is in dire need of additional reserves and operating funds.
8. Consider applying for funding and installation of water meters.

The District should consider including the installation of new water meters that can be read remotely in any larger project. A new billing rate structure would need to be determined that would include a base rate to cover basic O&M costs that would be billed regardless of how much water is used and then a per gallon rate for water used. This would encourage water conservation within the District.

1. Consider prohibiting any new connections.
2. Consider establishing connection fees once a sustainable water supply is obtained.
3. Consider contracting for water service from the City of Dinuba.

The District should consider consolidation with the City of Dinuba when pursuing grant funding. Projects that include consolidation are strongly preferred by CDPH and tying consolidation into any water system improvements may result in a higher ranking for the project. The same may be true with Monson connect to the Sultana CSD water system.

1. Coordinate with Monson and Tulare County with any local hydrogeological investigations.
2. Maintain interest in the Northern Tulare County Safe Drinking Water Project for future water supply alternatives.

Financial analysis of any proposed projects would need to evaluate affordability, revenue sources, estimated capital costs, estimated operation and maintenance costs, estimated debt service and proposed rate adjustments, if needed, and their impact on the community.

During the feasibility study and alternatives analysis it is important to provide information to the public through public meetings and presentations. It is important for the community to understand and be involved with any changes to their water and wastewater systems. Due to the large Spanish speaking population in the community, it is important to have materials translated into Spanish and have interpreters available at any public meetings. An informed community may be more likely to become involved in the process and have a constructive voice in determination of any recommended improvements.

## **8.2 Ivanhoe Community Pilot Project**

### **8.2.1 Description of Ivanhoe Public Utility District**

Ivanhoe, an unincorporated community in Tulare County, is located in the northwest portion of the County, northeast of Visalia. The Ivanhoe PUD, formed in October 1951, has a primary function of providing domestic water and sanitary sewer service to residents within the community. Domestic water and sanitary sewer collection, treatment, and disposal are the primary services provided by the Ivanhoe PUD that are subject to a MSR.

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Ivanhoe is located along State Route (SR) 216 approximately 7 1/2 miles northeast of downtown Visalia. The community is rectangular in shape and is bisected in a northwest-southeasterly direction by the San Joaquin Valley railroad tracks. North-south railroad crossings exist along Road 156, Road 159, and Road 160 (Depot Drive). East-west railroad crossings exist along Avenue 332, Avenue 330, and SR 216. Ivanhoe is an agriculturally oriented service community surrounded on all sides by lands in agricultural production, scattered rural residential uses and vacant land.

Water System Description

The Ivanhoe PUD is responsible for providing domestic water service within the District's Boundary. Ivanhoe's water supply is derived from five deep underground wells that pump at a consistent water level between 250 and 350 feet. According to District staff, the five wells provide water supply requiring no chlorination or treatment. District staff indicated that the production capacity of the wells ranges between 360 and 950 gallons per minute (gpm) and that the five wells have a total maximum production capacity of approximately 3,091 gpm. Wells are located throughout the community at locations identified below.

- Well No. 1 – Southeast corner of the Azalea Avenue and Manzanita Road intersection
- Well No. 2 – Southeast corner of the Fuchsia Avenue and Manzanita Road intersection
- Well No. 3 – Northwest corner of the Avenue 332 and Road 160 intersection (closed)
- Well No. 4 – Northwest corner of the Jasmine Avenue and Road 158 intersection
- Well No. 5 – East of the Aspen Avenue and Manzanita Road intersection
- Well No. 6 – Northeast corner of the Road 156 and Avenue 330 intersection
- Well No. 7 – East of the Lantana Avenue and Road 160 intersection
- Well No. 8 – Southwest of the intersection of Grove St. and Avenue 327

As previously indicated, only five of the eight wells are in operation, as Well No. 3 was lost in 1990 after DBCP contamination (from grape chemicals) was found. The loss of the well resulted in an \$800,000 settlement being awarded to the District. The District indicated that the community water system (as of August 2004) supports 1,114 single and multi-family residential connections. The District was unsure exactly how many commercial connections were on the system, but estimated that there is approximately 1,200 total connections to the system. The Ivanhoe PUD water system has been fully metered since 1991. Since then the District has billed customers based upon a metered usage. Water consumption data indicated that there was an immediate decrease in domestic water usage as a result of metering.

Wastewater System Description

The Ivanhoe PUD is also responsible for providing sanitary sewer collection, treatment, and disposal services to residents within its Boundary. The District indicated that as of August 2004 there were 1,114 single and multi-family residential connections to the sewer system managed by the Ivanhoe PUD. District staff

**SECTION EIGHT****PILOT STUDY**

estimated that there are approximately 1,200 total connections to the system. Raw sewage is collected in a series of collection pipes ranging in size from 4 to 15 inches (including Vitrified Clay Pipe and Polyvinyl Chloride Pipe) and then transported to a WWTF that is owned and operated by the Ivanhoe PUD.

The District operates a WWTF located southwest of the community west of the Avenue 324/Road 156 intersection. The WWTF is operated under the provisions of Order No. 98-090 issued by the California Regional Water Quality Control Board (RWQCB). The District's WWTF provides secondary treatment of wastewater via a clarigester, three stabilization ponds, and a sludge drying bed. Treated effluent from the third stabilization pond is recycled on 61.2 acres of pasture land south of the WWTF, which is leased by the District for grazing of non-milking cattle. Industrial developments discharging to the WWTF are primarily citrus packing plants. Order No. 98-090 prescribes that the monthly average daily discharge shall not exceed 0.56 MGD.

Financial

Reviewing the District's budget for the current and previous fiscal years indicates that the District is financially stable with regard to its sewer and water funds. The District's annual revenues cover the annual operating expenses of the District including reserve allocations and contingency appropriations.

The District generally requires new development projects to construct the necessary infrastructure to serve their development. A program of developer obligated infrastructure improvements provides for the installation of physical infrastructure to serve development sites and therefore relieves the financial obligation of the District. Developers are also required to pay fees for rights to water and sewer capacity, which are ultimately used by the District for capital capacity improvements including, but not limited to, additional wells, storage facilities, or capital WWTF improvements. These fees are set by the Board of Directors by resolution, and are allocated to a restricted reserve account.

Rates

Water rates consist of a base of \$16.75 plus \$0.49/100 cf per month. The average monthly water rates lie between \$20 and \$25 per month.

Fees

The District requires development projects to pay fees for water and sewer capacity rights, which are currently set at \$1,700 and \$1,890 per EDU, respectively.

Previous Funding Applications

Ivanhoe PUD has submitted (July 6, 2011) an application to the CDPH Proposition 84 Funding Program for the purposes of constructing a Test Well Project (Well No. 9).

A copy of the Application is included in **Appendix J**.

**8.2.2 Challenges Faced by Ivanhoe Public Utility District**

The challenges faced by the Ivanhoe Public Utility District include:

**SECTION EIGHT****PILOT STUDY**

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- Disadvantaged Community
- Increasing Nitrate concentrations in Wells, presence of DBCP, TCP
- Undersized water distribution mains in a portion of the District
- Some water distribution valves do not close completely
- No water storage
- Although information available from the Department of Water Resources indicate that the standing water elevation of agricultural wells in the vicinity of Ivanhoe have declined by approximately 50 feet since the mid 1980's, the District indicated that standing water levels of the municipal wells have not been significantly impacted. It is recommended that in light of the current drought, the District monitor the water levels of the water supply wells on a regular basis.

### 8.2.3 Goals of the Ivanhoe Community Pilot Project

The goals of the Ivanhoe Community Pilot Project included:

- Provide information to the community participants about the goals and objectives of the Tulare Lake Basin DAC study and the New Source Pilot Study.
- Develop an understanding of the local water and wastewater challenges faced by the community.
- Provide preliminary alternative solutions identified in the New Sources pilot study.
- Obtain feedback on the preliminary alternative solutions identified.
- Provide recommendations to the community for future actions to consider.
- Develop Decision Trees that represent past and potential actions for Ivanhoe PUD to consider.

### 8.2.4 Description of the Ivanhoe Community Pilot Project

#### Authorization to Include Ivanhoe PUD in the DAC Study

Michael Taylor of Provost & Pritchard and Maria Herrera of Community Water Center attended a regularly scheduled Board Meeting of the Ivanhoe Public Utility District on November 4, 2013. Mr. Taylor briefly described the Disadvantaged Community Study that was being conducted and requested the Ivanhoe Public Utility District authorize its inclusion in the Study through the Community Pilot Project process. The Board of Directors of the Ivanhoe Public Utility District authorized the participation.

#### Pilot Project Activities Summary

1. Obtain and review records
2. Meet with District and operations staff
3. Discussions with CDPH – regulatory and funding

**SECTION EIGHT**

4. Review potential of physical consolidation with Cal Water (City of Visalia)
5. Review past funding application
6. Prepare draft Decision Trees
7. Conduct a Community Review Meeting
8. Summarize activities
9. Provide recommendations for District consideration

Community Review Meeting

A community meeting was held on February 12, 2014 at the Ivanhoe Public Utility District office (minutes of the meeting are included in **Appendix J**). The meeting was attended by one Ivanhoe PUD Board Member, residents of the Ivanhoe community, Community Water Center, and Provost & Pritchard. The meeting was organized and facilitated by Maria Herrera and Susana DeAnda of Community Water Center. Michael Taylor of Provost & Pritchard Consulting Group provided information on the overall Tulare Lake Basin Disadvantaged Community Study, a general description of Decision Trees, and the alternatives that may be viable for Ivanhoe to consider to address its water supply challenges. All attendees were encouraged to ask questions and provide any additional information for the study.

Each of the nine (9) generic water supply alternatives were described and discussed regarding the potential relevance to the community of Ivanhoe.

Physical Consolidation

The potential of a physical connection to the City of Visalia (Cal Water) was reviewed during this process. The Urban Area Boundary of the City of Visalia encroaches to the Ivanhoe WWTP. However, an extension of the Cal Water system from Houston Avenue would require approximately 4 miles of pipeline and a crossing of the St. Johns River. If a connection was constructed, it would be recommended that a water storage tank be included in the construction to allow for delivery of water to Ivanhoe during off peak periods. The capital cost of a physical connection to the City of Visalia system would significantly exceed the capital cost of constructing a new water supply well for the community of Ivanhoe.

It was apparent during the community review meeting that Ivanhoe residents would prefer to explore the construction of a new water supply well for Ivanhoe prior to other alternatives such as consolidation with the City of Visalia system. Primary considerations include potential loss of local control and the uncertainty of future water rates from a private water company.

An Exhibit that includes the Urban Development Boundary for the City of Visalia is included as **Appendix J**.

Exchanges/Contracting for Surface Water or other sources

The Ivanhoe Public Utility District does not presently own surface water rights. Although the Ivanhoe Irrigation District is adjacent to the Ivanhoe Public Utility District, the requirements of purchasing surface water, contracting for conveyance to the District,

**SECTION EIGHT****PILOT STUDY**

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constructing a surface water treatment plant, and operation of a surface water treatment plant are extensive and do not warrant further consideration at this time.

Recharge of Local Area

A review of the Ivanhoe Irrigation District Water Conservation Plan (1998) confirms that the Ivanhoe Irrigation District uses groundwater recharge areas when the U.S. Bureau of Reclamation make non-storable water available. The Ivanhoe Public Utility District is located adjacent to the Ivanhoe Irrigation District and therefore benefits from said groundwater recharge activities.

Regional Facility

Ivanhoe PUD is not located near other communities facing similar challenges.

New Water Supply Well

The Ivanhoe PUD recently (2013) constructed a new water supply well (Well No. 8). Ivanhoe PUD has determined that the near term preferred alternative is to pursue the construction of a new water supply well. An application for financial assistance to perform the hydrogeologic study, construct up to two (2) test wells, and define design criteria for a new water supply well had been submitted to the CDPH in 2011. A site for the test well has been defined.

Water Treatment Facility

Install ion exchange to remove nitrates in the raw water. Based on the existing water quality data, the ion exchange process would be the best option for nitrate removal in Ivanhoe. The ion exchange process involves a special media that will remove nitrates from the water and store the nitrate in the media. When the media becomes incapable of removing any more nitrate, it must be regenerated. This regeneration is accomplished by pumping a concentrated salt solution (brine) through the media. This spent brine solution must be disposed of properly; either discharged to a wastewater treatment plant or hauled off site to a centralized brine treatment facility.

*Pros* – Water Treatment processes exist that can remove nitrates in the water regardless of nitrate concentrations in the raw water. Ion exchange is a relatively simple treatment process with no chemical addition or hazardous waste to dispose.

*Cons* – A water treatment plant would require a supplement to the existing Water Supply Permit, additional testing and reporting requirements, and additional water operator certificate requirements. Sufficient property would be required for the treatment facilities. The capital cost and ongoing O&M costs may be too high for the customers. Capital costs may be also require some indebtedness if a grant is not available for the capital costs. All Central Valley wastewater treatment plants have an electroconductivity (EC) limit. The brine discharged from an ion exchange process is very high in EC and may cause issues at the wastewater treatment plant. The cost of alternative brine disposal (part of the O&M costs) may be too high for the customers.

**SECTION EIGHT**Blending

Blending of water may be an alternative to consider to mitigate the high nitrate concentrations in several of the District's water supply wells. Well No. 3 and Well No. 8 presently supply water that meets the regulatory limits for nitrate. Typical requirements of the CDPH would include achieving a blended nitrate concentration of less than 35 mg/l. Blending of the water would require construction of transmission mains from the wells that exceed nitrate limits to a water storage tank to be used as the blending site. Water from the potable supply wells would also be delivered to the blending tank in quantities that would achieve the necessary final nitrate concentration. Water would not be delivered from the water storage tank to the distribution system until testing confirmed the nitrate concentration was below the requirements.

It is noted that Well No. 3 is approximately 53 years old and only produces approximately 360 gpm.

If the District determined to pursue blending as a treatment alternative, the potential location(s) of a water storage tank site would need to be determined. Analysis would include the design criteria of the blending tank, design criteria of water transmission mains, an operational plan for the blending tank, capital cost, operational cost, availability of funding assistance, and a comparison of the benefits of blending to the construction of new potable water supply wells.

Conservation

Ivanhoe PUD presently utilizes water meters. The Ivanhoe PUD is presently reviewing the establishment of water conservation policies and/or public education associated with water conservation.

Restrict Potable Water Deliveries from Agricultural or Large Turf Irrigation

The Ivanhoe school presently owns and operates a private well for irrigation purposes. There are no other identified significant non potable water uses within the District.

Mitigate a Source of Contamination

This alternative does not apply to the circumstances of the Ivanhoe PUD, the source of nitrates may not be mitigated.

The contaminants identified as TCP and DBCP may be subject to legal action to receive compensation for damages sustained. The legal action may result in monetary compensation that may be used for the construction of new water supply wells that can avoid the contamination.

**8.2.5 Recommended Future Actions and Schedule**

1. Place Wells No. 2 and No. 7 as standby in the Water Supply Permit.
2. Update the Funding Application for a new water supply well with the additional consideration that the District does not have a sufficient water supply.

**SECTION EIGHT****PILOT STUDY**

3. When funding becomes available, perform a hydrogeological study of the area to determine if potable water supply is available. Construct a test well to confirm the availability of sustainable potable water. Utilize the hydrogeological study to immediately explore the location for future well sites.
4. Proceed with funding and construction of a water supply well.
5. Consider the review of blending new water supply wells with either of the standby water supply wells for the purposes of achieving acceptable Nitrate levels. This review would include the review of potential water storage tank sites.
6. It is recommended that the District maintain interest in the Kaweah River Basin IRWMP as it may be available as a vehicle to utilize to apply for funding assistance for future water supply improvements.

Financial analysis of any proposed projects would need to evaluate affordability, revenue sources, estimated capital costs, estimated operation and maintenance costs, estimated debt service and proposed rate adjustments, if needed, and their impact on the community.

During the feasibility study and alternatives analysis it is important to provide information to the public through public meetings and presentations. It is important for the community to understand and be involved with any changes to their water and wastewater systems. Due to the large Spanish speaking population in the community, it is important to have materials translated into Spanish and have interpreters available at any public meetings. An informed community may be more likely to become involved in the process and have a constructive voice in determination of any recommended improvements.

### **8.3 Stratford Community Pilot Project**

#### **8.3.1 Description of Stratford Public Utility District**

The town of Stratford is located in Kings County, approximately 4.5 miles south of Lemoore California. As a rural area with a population of 1,277 (Census 2010), the community is surrounded by open space and agriculture land. The Stratford Public Utility District (SPUD) provides community services (Water, Sewer, Refuse Collection, and streetlights) to the residents of Stratford.

SPUD has only one staff person.

#### **Water System Description**

**SECTION EIGHT****PILOT STUDY**

The Stratford Public Utility District operates a water distribution system. The existing infrastructure of the water distribution system consists of approximately 300 metered service connections, 4 inch and 6 inch diameter asbestos cement piping, and approximately 65 existing fire hydrants. There are currently three (3) existing wells in Stratford (Well No.s 5, 6, and 7). Well No.5 produces approximately 500 gallons per minute (gpm), Well No. 6 is not operational, and Well No. 7 produces approximately 500 gpm. Currently, the SPUD maintains a water storage tank that has a storage capacity of approximately 30,000 gallons.

**Existing Facilities**

Currently all water produced from wells is chlorinated at the well head prior to entry into the distribution system. The existing infrastructure of the water distribution system consists of approximately 300 metered service connections, 4 inch and 6 inch diameter asbestos cement piping, and approximately 65 existing fire hydrants. The existing water distribution system is currently operating under the State Department of Health Services Water Permit No. 1610006. Water quality is further analyzed in 2005 Annual Drinking Water Quality Report dated July 1, 2006. The SPUD continues to monitor water quality of existing water supply in accordance with applicable State and Federal regulations. The results are reported to the residents in the Annual Consumer Confidence Report as required by law.

**Future Facilities**

SPUD has identified the need to install adequate storage facilities to meet the Maximum Day Demand of the system as required by the California Water Works Standards. SPUD has also identified the need to install emergency generators to maintain system pressure during prolonged power outages. Water Quality

New Federal Arsenic Minimum Containment Level (MCL) of 0.010 milligrams per liter were established by the United States Environmental Protection Agency (EPA) went into effect January 2006. The State of California is in the process of developing and adopting new standards for levels of arsenic containments in drinking water. The EPA has the enforcement authority for new Federal Arsenic MCL until California regulations are adopted. The Stratford PUD has detected intermittent traces of methane and manganese in the groundwater pumped from one of the PUD's well site. In addition, the District has been addressing secondary water quality issues which includes; water color, odor, and iron.

**Water Storage**

Currently, the SPUD maintains a water storage tank that has a storage capacity of approximately 30,000 gallons.

**Wastewater System Description**

**SECTION EIGHT****PILOT STUDY**

The Stratford Public Utility District operates a Sewer Collection System and Wastewater Treatment Facility. The existing Collection System includes a network of sewer mains, sewer laterals, and associated facilities that collect wastewater from residents and businesses in the town. The collection system brings the wastewater to an existing treatment plant. Currently the system has approximately 300 sewer residential and commercial laterals which collect and ultimately convey an average of 88,500 gallons of wastewater to the treatment plant per day. The wastewater is pumped into aeration ponds located on the treatment plant property.

#### Wastewater Treatment Plant and Disposal

The existing wastewater treatment was constructed in 1959 and includes a treatment and discharge facility. This facility was abandoned in 1988 due to the poor condition of the facility and high operation and maintenance cost. Currently, SPUD utilizes facultative ponds for treatment, disposal is through evaporation and percolation. The California Regional Water Quality Control Board Central Valley Region Order No. 82-068, identifies the plant capacity to be 150,000 gal/day.

#### Financial

The Fiscal Year 2012/2013 budget (water only) is \$144,100. The Fiscal Year 2012/2013 year to date expenditures (water only) were \$178,442. The 2010 median household income was \$26,000.

The water rate is metered with a base rate of \$13.00 per month regardless of meter size, includes 4,000 gallons and \$1.20 per 1,000 gallons over the 4,000 gallons. The average monthly water bill is approximately \$36.40.

The connection fees for service are \$4,000 for water service and \$6,000 for sanitary sewer service.

#### Previous Funding Applications

Stratford PUD has submitted five pre-applications to the State Drinking Water State Revolving Fund for

1. Above Ground Storage Tanks August 2008, \$200,000
2. Odor Mitigation and Water Storage Project February 2009, \$750,000
3. Well 7 Methane Reduction September 2009, \$1,400,000
4. System Pressure and Source Capacity Enhancement, September 2009, \$1,700,000
5. Source Capacity Mitigation Project July 2013, \$4,412,000

#### 8.3.2 Challenges Faced by Stratford Public Utility District

The challenges faced by the Stratford Public Utility District include:

**SECTION EIGHT****PILOT STUDY**

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- Disadvantaged Community
- Insufficient water supply to meet maximum day demands with the largest well out of service
- Aged and Undersized water distribution mains
- Perched water and corrosive soils
- Minimal water storage
- No cash reserves
- Not able to join an IRWM

### 8.3.3 Goals of the Stratford Community Pilot Project

The goals of the Stratford Community Pilot Project included:

- Provide information to the community participants about the goals and objectives of the Tulare Lake Basin DAC study and the New Sources Pilot Study.
- Develop an understanding of the local water and wastewater challenges faced by the community.
- Provide preliminary alternative solutions identified in the New Sources pilot study.
- Obtain feedback on the preliminary alternative solutions identified.
- Provide recommendations to the community for future actions to consider.
- Develop Decision Trees that represent past and potential actions for Stratford PUD to consider.

### 8.3.4 Description of the Stratford Community Pilot Project

#### Authorization to Include Stratford PUD in the DAC Study

Michael Taylor of Provost & Pritchard attended a regularly scheduled Board Meeting of the Stratford Public Utility District on November 13, 2013. Mr. Taylor briefly described the Disadvantaged Community Study that was being conducted and requested the Stratford Public Utility District authorize its inclusion in the Study through the Community Pilot Project process. The Board of Directors of the Stratford Public Utility District authorized the participation.

#### Pilot Project Activities Summary

1. Obtain and review records
2. Meet with District and operations staff
3. Discussions with CDPH – regulatory and funding
4. Review potential of physical consolidation with Cal Water (City of Visalia)
5. Review past funding applications

**SECTION EIGHT**

6. Prepare draft Decision Trees
7. Conduct a Community Review Meeting
8. Summarize activities
9. Provide recommendations for District consideration

Community Review Meeting

A community meeting was held on February 25, 2014 at the Stratford Public Utility District office (minutes of the meeting are included as **Appendix K**). The meeting was attended by two Stratford PUD Board Members, residents of the Stratford community, Self Help Enterprises, Community Water Center, and Provost & Pritchard. The meeting was organized and facilitated by Maria Herrera of The Community Water Center. Michael Taylor of Provost & Pritchard Consulting Group provided information on the overall Tulare Lake Basin Disadvantaged Community Study, a general description of Decision Trees, and the alternatives that may be viable for Stratford to consider to address its water supply challenges. All attendees were encouraged to ask questions and provide any additional information for the study. The discussion was translated to Spanish during the meeting.

1. Stratford PUD Community Review Process
  - a. Goals of the Stratford Community Review
    - i. Stratford would like a reliable drinking water source.
  - b. Selection of Stratford PUD for Community Review
    - i. Stratford is truly an isolated water system that cannot look to others for help. They must find a solution to provide a viable drinking water system that will not cause health issues for the residents.
  - c. Results of Stratford PUD Community Review
    - i. Stratford appears to be open to discussion regarding how to upgrade their current water system. As well as the issues with the wells, the distribution system is also older than 50 years old and is in need of upgrades.
  - d. Potential Water System New Sources
    - i. Stratford cannot consolidate with another water system since there are no systems within a reasonable and economically feasible distance. Well 6 needs to be fixed and redeveloped if possible. Well 7 needs a tank to aerate the methane from the water, so it is safe to drink.
  - e. Recommended Future Action
    - i. Determine whether Well 6 can be fixed or if it needs to be listed as Non-Active with CDPH. Resubmit the most recent, July 2013, State Drinking Water State Revolving Fund pre-application to show insufficient water supply during maximum day and peak hour.

**SECTION EIGHT****PILOT STUDY**

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Currently, the system is placed within the SRF Category M. This means the water system does not meet the Water Works Standard or does not meet the TMF criteria but does have a project that could be listed in any of the above categories.

Each of the nine (9) generic water supply alternatives were described and discussed regarding the potential relevance to the community of Stratford.

Physical Consolidation

Stratford is truly an isolated water system that cannot look to others for help. They must find a solution to provide a viable drinking water system that will not cause health issues for the residents.

Exchanges/Contracting for Surface Water

The Stratford Public Utility District does not presently own surface water rights. Although the Stratford Irrigation District is near the Stratford Public Utility District, the requirements of purchasing surface water, contracting for conveyance to the District, constructing a surface water treatment plant, and operation of a surface water treatment plant are extensive and do not warrant further consideration at this time.

Recharge of Local Area

The Stratford Public Utility District lies adjacent to the South Fork of the Kings River. Recharge of the local area is not a need for the District. In fact, some of the challenges faced by the District are due to the perched water conditions of the area.

Regional Facility

Stratford is truly an isolated water system that cannot look to others for help. They must find a solution to provide a viable drinking water system that will not cause health issues for the residents.

New Water Supply Well

Due to the insufficient water supply, it is determined that the Stratford PUD requires an additional water supply well. The Stratford PUD recently applied for financial assistance to address the deficiency of source water in July 2013.

A site for the proposed well and water storage tank has not been defined.

Water Treatment Facility

The Stratford Public Utility District does not require a water treatment plant to address primary constituents, however, the District does require a water storage tank that would allow for venting of the methane that is a constituent of Well No. 7.

Conservation

**SECTION EIGHT**

**PILOT STUDY**

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Stratford PUD presently utilizes water meters. The Stratford PUD is presently reviewing the establishment of water conservation policies and/or public education associated with water conservation.

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**SECTION EIGHT**Restrict Potable Water Deliveries from Agricultural or Large Turf Irrigation

The District may wish to consider coordinating with the school for the construction of a non potable water supply well for irrigation of the school landscaping. If so, the District may consider applying for funding for such a project. It is also possible for the school to apply for funds to construct a well for the purposes of landscape irrigation and fire demands.

All potable water use at the school would require a separate water distribution system from the non potable system.

Mitigate a Source of Contamination

This alternative does not apply to the circumstances of the Stratford PUD.

8.3.5 Recommended Future Actions and Schedule

1. Place Well No. 6 as standby in the Water Supply Permit.
2. Update the Funding Application for a new water supply well with the reinforced consideration that the District does not have a sufficient water supply.
3. Upon receipt of funding assistance, proceed with construction of a water supply well and water storage tank.
4. It is recommended that the District maintain interest in the Kings Basin IRWMP as it may be available as a vehicle to utilize to apply for funding assistance for future water supply improvements. IRWMP's may be a viable mechanism to utilize to receive funding assistance.
5. Investigate the potential of working with the school to construct a new water supply well for the purpose of irrigation of school landscaping.

Financial analysis of any proposed projects would need to evaluate affordability, revenue sources, estimated capital costs, estimated operation and maintenance costs, estimated debt service and proposed rate adjustments, if needed, and their impact on the community.

During the feasibility study and alternatives analysis it is important to provide information to the public through public meetings and presentations. It is important for the community to understand and be involved with any changes to their water and wastewater systems. Due to the large Spanish speaking population in the community, it is important to have materials translated into Spanish and have interpreters available at any public meetings. An informed community may be more likely to become involved in the process and have a constructive voice in determination of any recommended improvements.



## 9 FUNDING OPPORTUNITIES

Funding alternatives that may be available to DACs would generally include grants, loans, and rate adjustments to increase revenues. Specific sources of funding assistance may include:

- Safe Drinking Water State Revolving Fund (SDWSRF)
- State of California Bond Measures such as Proposition 50 and Proposition 84
- Department of Water Resources (DWR)
- State Water Resources Control Board (SWRCB)
- The Department of Housing and Urban Development (HUD) – Community Development Block Grant (CDBG) program
- United States Department of Agriculture (USDA) Rural Utilities
- Environmental Protection Agency (EPA)
- United States Bureau of Reclamation (USBR)
- California Infrastructure and Economic Development Bank

Each of the funding alternatives has qualifying requirements and specific application requirements. The community may qualify for the funding opportunity, or the community may need to coordinate the application through another entity such as a County or Integrated Regional Water Management Authority (IRWMA).

Additional information on the funding sources listed above may be found through the California Financing Coordinating Committee (CFCC) at [www.cfcc.ca.gov](http://www.cfcc.ca.gov). The CFCC has available a Common Funding Inquiry Form that may be completed and submitted for review by all CFCC member agencies. The community would then receive feedback regarding potential funding assistance opportunities for the community and the specific needs identified. The CFCC conducts Funding Fairs each year to provide education regarding the various funding assistance programs, and to provide interested parties an opportunity to meet with representatives of specific funding agencies.

### 9.1 Traditional State Drinking Water Funding Programs

CDPH currently administers and oversees several sources of funds to address drinking water quality issues. The sources of these funds are summarized below.

#### 9.1.1 Safe Drinking Water State Revolving Fund (SDWSRF)

CDPH uses the resource of the SRF for low interest loans or grants to enable water systems to fund necessary infrastructure improvements. CDPH manages SDWSRF resources to fund projects to ensure that public water systems are able to provide an adequate, reliable supply of safe drinking water that conforms with federal and state drinking water standards. The funds are provided from the federal government, with 20 percent match from the State required. Interest and loan repayments are re-

**SECTION NINE**

incorporated into the fund. The SRF currently provides ongoing allocations of approximately 100 to 150 million dollars per year in California.

**9.1.2 Proposition 50 Funding**

California voters passed Proposition 50 – Water Security, Clean Drinking Water, Coastal and Beach Protection Act, in 2002. CDPH is responsible for portions of this act that deal with water security, safe drinking water, and treatment technology. Proposition 50 allocated approximately 500 million dollars to CDPH for use as direct grants and loans to community water systems for infrastructure development, construction, and maintenance. Proposition 50 also allocated funds to the State Water Resources Control Board (SWRCB) and to the Department of Water Resources (DWR). CDPH's portion of the Proposition 50 funds has been fully allocated, and **CDPH is no longer accepting applications for this funding source.**

**9.1.3 Proposition 84 Funding**

California voters passed Proposition 84 – Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Act, in 2006. Proposition 84 allocated approximately 250 million dollars to CDPH for grants and loans to communities for drinking water planning and infrastructure. This 250 million dollar allotment included 60 million dollars specifically earmarked for use as grants to reduce or prevent contamination of groundwater that serves as a source of drinking water. Proposition 84 also allocated funds to DWR for use in Integrated Regional Watershed Management planning and development. The CDPH component of Proposition 84 is fully allocated and **CDPH is no longer accepting applications for this funding source from projects that are not already on the Proposition 84 funding stream.**

**9.1.4 DWR IRWM Program**

In 2002, Senate Bill 1672 created the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplied to improve the quality, quantity, and reliability.

DWR has a number of IRWM grant program funding opportunities. Current IRWM grant programs include: planning, implementation, and stormwater flood management. DWR's IRWM Grant Programs are managed within DWR's Division of IRWM by the Financial Assistance Branch with assistance from the Regional Planning Branch and regional offices.

The locations of the Integrated Regional Water Management Planning Groups within the Tulare Lake Basin are shown in **Figure 9-1.**

# Tulare Lake Basin Disadvantaged Community Water Study

STUDY AREA

IRWM Planning Groups

## Legend

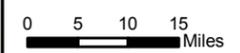
Tulare Lake Basin

County

## IRWM Planning Groups

- (24) Poso Creek
- (38) Upper Kings Basin Water Forum
- (14) Kaweah River Basin\*
- (15) Kern County
- (33) Southern Sierra
- (35) Tule\*
- (44) Westside - San Joaquin

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An Employee Owned Company

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Fresno, CA 93711-6162  
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Sources: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand)

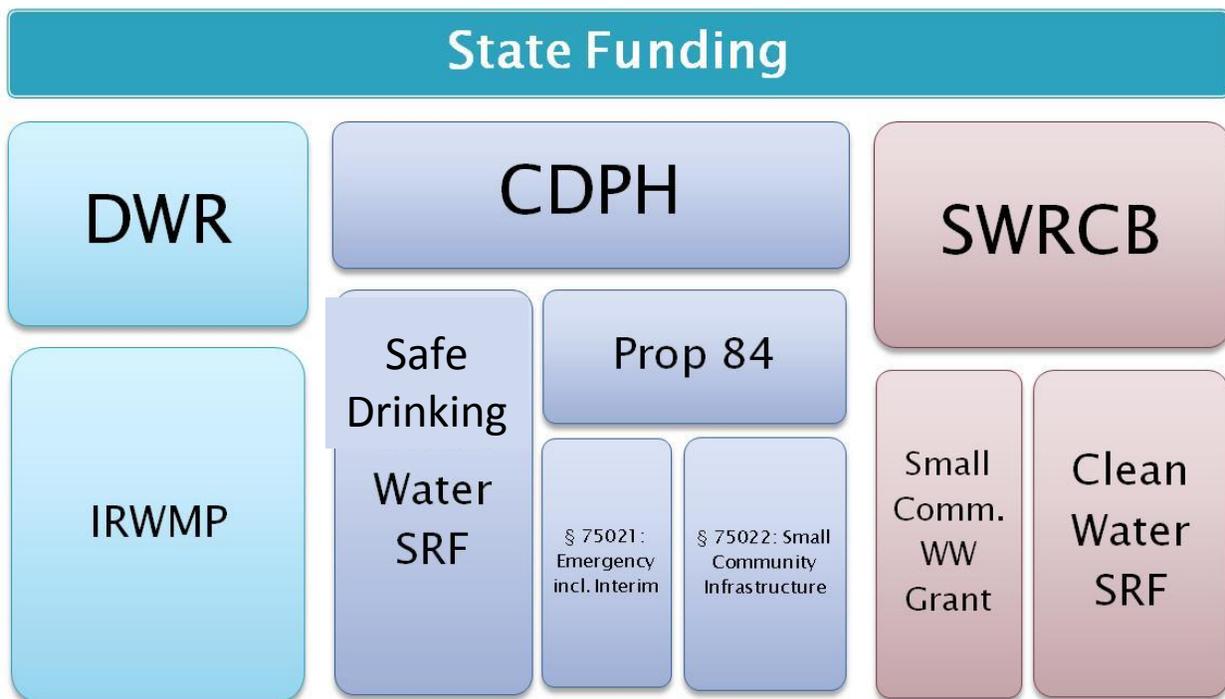


**SECTION NINE**

9.1.5 State Water Resources Control Board

The SWRCB’s Division of Financial Assistance (Division) funds wastewater projects that serve DACs. The Clean Water State Revolving Fund (CWSRF) can provide loan and principal forgiveness (grant) funding for planning, design and construction of wastewater infrastructure to serve disadvantaged communities. The Small Community Wastewater Grant Program (when funds are available) can provide grants of up to \$2,000,000 to cover planning, design and construction of wastewater infrastructure to serve disadvantaged communities. In general, a DAC must bring its sewer rates to at least 1.5% of the MHI for the community before grants can be issued.

[ [http://www.swrcb.ca.gov/water\\_issues/programs/grants\\_loans/](http://www.swrcb.ca.gov/water_issues/programs/grants_loans/) ]



**9.2 Federal Funding Programs**

9.2.1 Community Development Block Grant Program

The Community Development Block Grant (CDBG) program is a flexible program that provides communities with resources to address a wide range of unique community development needs. The CDBG program is a federally funded program run by the Department of Housing and Urban Development (HUD). The CDBG program was created by the Housing and Community Development Act of 1974 and continues to provide funding. Grants through this program are only given to cities and counties. Community water systems can receive funding through their local county.

**SECTION NINE****PILOT STUDY**

DACs can compete for CDBG funds to resolve water, wastewater and storm drain/flooding issues. The HUD CDBG program is broken into two primary components. Cities and counties with larger population centers such as Fresno and Kern Counties receive an annual formula-driven allotment of CDBG funds which is considered an entitlement. Smaller cities and counties including Kings and the non SMA portions of Tulare counties compete on an annual basis for CDBG discretionary “small cities program” funds administered by the State Department of Housing and Community Development. [<http://hcd.ca.gov/fa/cdbg/index.html> ]

Under the entitlement program in Fresno and Kern Counties, communities compete for funding at the County level. An advisory committee makes recommendations to the Fresno County Board of Supervisors which makes the decisions on CDBG funding provided the proposed project meets HUD criteria. In the unincorporated portions of Kings and Tulare Counties, the local Board of Supervisors selects projects to compete for funding at the state level.

CDBG funding is one of the few sources available to cover project-related work on private property. Such work may include sewer and water connections and abandonment of old water wells and septic tanks.

Some entitlement counties and small cities have opted out of Fresno County’s entitlement program because there is the potential that a larger amount of funding could be secured through the competitive process through the Small Cities Program. On the flip side, the jurisdiction may receive no CDBG funding in an annual funding cycle if their application does not compete well. This is a highly competitive program and in order to compete, the City would need to emphasize health and/or safety issues related to water, wastewater or storm water needs that would be resolved by the proposed project. To be competitive, the community would also need to have a very high percentage of low income households.

Under the discretionary small cities program, pre-design Feasibility Study costs can be applied for through CDBG’s Planning and Technical Assistance grants for a maximum of \$50,000.

### 9.2.2 USDA Rural Development, Rural Utility Service

United States Department of Agriculture (USDA) Rural Development provides program assistance funding through direct loans, guaranteed loans, and grants. USDA Rural Development provides direct loans and grants to develop water and waste disposal systems in rural areas and towns with a population not in excess of 10,000. These funds are available to public bodies, non-profit corporations, and Indian tribes. Additionally, USDA Rural Development provides loan guarantees for the construction or improvement of water and waste disposal projects serving the financially needy communities in rural areas. The water and waste disposal guarantee loans are to serve a population not in excess of 10,000 in rural areas.

- USDA Rural Utilities Service (RUS) has been the largest funding source for rural water and wastewater system improvements over the years. RUS

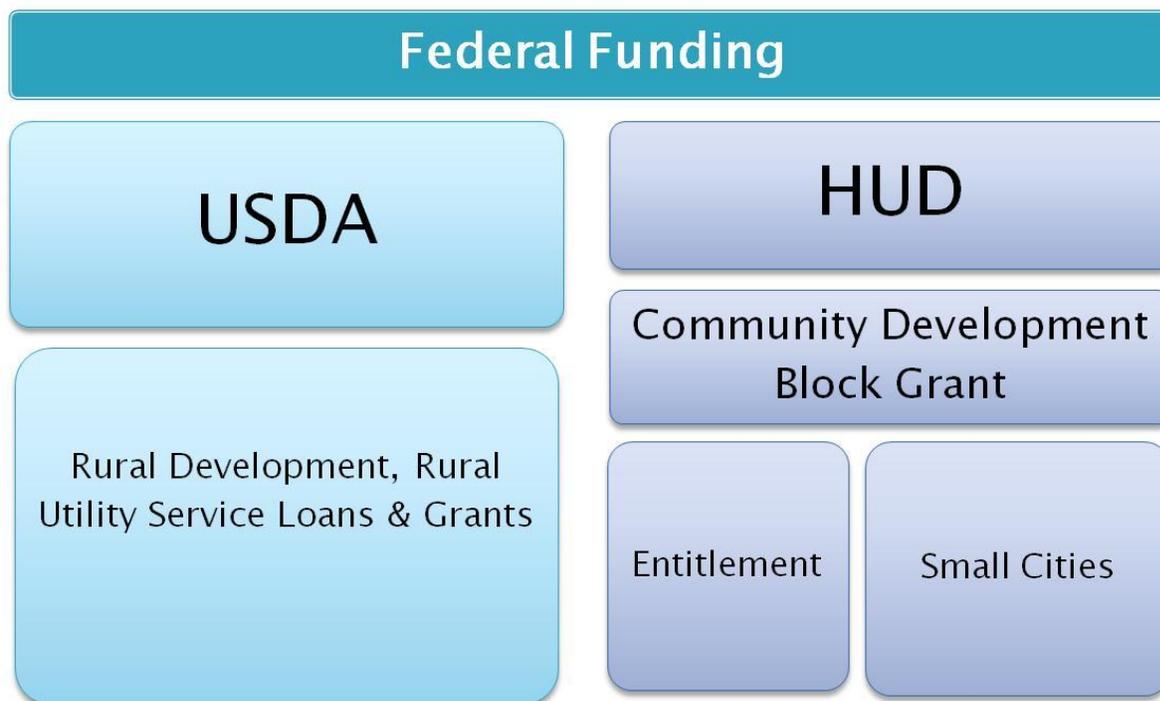
## SECTION NINE

funding is often quicker to secure than State funding but there is usually less grant available and the community normally takes on a higher percentage of loan. In recent years, RUS's loan interest rate has been lowered to rates competitive with State-operated SRF programs.

[ [http://www.rurdev.usda.gov/UWEP\\_HomePage.html](http://www.rurdev.usda.gov/UWEP_HomePage.html) ]

- RUS funding usually covers a broader definition of eligible project costs than many State operated programs. This simplifies the process when USDA is the sole source of project funding. When USDA funding complements other funding sources, USDA can often finance costs ineligible in other programs such as land purchase and contingencies (not eligible in SWRCB programs for example) or replacement of a water distribution system (often times ineligible in CDPH programs). In "unusual cases" (RUS Instruction 1780) USDA water and wastewater program funds can be used to fund water and sewer service connections on private property and the abandonment of old private wells and on-site septic systems.
- Individual loan applications may be submitted by income eligible property owners that reside on their property to USDA's 504 housing rehabilitation program. This program can cover the costs of water and sewer service connections and/or the abandonment of old water wells or on-site septic systems, though funding is often limited.

[[http://www.usda-rural-development-direct-mortgage.com/504\\_repair\\_loan\\_and\\_grant.htm](http://www.usda-rural-development-direct-mortgage.com/504_repair_loan_and_grant.htm) ]



### 9.3 Newer and Emerging CDPH Funding Programs

#### 9.3.1 Pre-Planning and Legal Entity Formation Assistance Program

The Pre-Planning and Legal Entity Formation Assistance Program (Pre-Planning) is designed to assist communities that do not have access to safe drinking water, and public water systems not eligible for SDWSRF funding due to the lack of an eligible entity. CDPH had grant funds available under a new local assistance set-aside for a pilot program to assist with the formation of a legal entity with the necessary authority to enable access to the SDWSRF project funding process for subsequent planning and construction funding. Funds through this program are to be used to explore formation of an eligible legal entity and to complete such formation where it is feasible and desired by the affected community. Possible project outcomes include the identification and/or creation of a regional authority, identification of an existing authority which could extend service, or the creation of a new governing authority.

Pre-Planning applications were accepted through November 2013. This was a pilot program whose results will be reviewed to determine future funding availability.

#### Program Eligibility and Application Information:

Currently, communities of private well owners and state smalls<sup>2</sup> (systems between 5-14 connections) do not qualify for funding under the Safe Drinking Water State Revolving Loan Fund (SDWSRF), which grants millions of dollars a year to PWSs for water related projects. Under a new set-aside, communities of private wells or state smalls that want to create a new water system or be consolidated into existing PWSs are eligible to receive SDWSRF funding. Entities that are eligible to submit an application on behalf of one or more affected communities include: public entities such as cities, counties, special districts, LAFCo; existing PWSs; public colleges; public universities; non-profit organizations; and joint powers authorities. Applicants are required to demonstrate their ability to carry out the activities identified in the work plan.

<http://www.cdph.ca.gov/services/funding/Pages/Pre-Planning.aspx>

#### 9.3.2 Consolidation Incentive Program

The Consolidation Incentive Program is designed to promote consolidation as a cost-effective solution to water systems that do not meet safe drinking water standards. CDPH is providing an incentive to encourage larger systems to consolidate nearby noncompliant systems. Through the consolidation incentive process, lower ranked projects that do not usually receive SRF invitations can become eligible for funding. By agreeing to consolidate a neighboring noncompliant system, CDPH will re-rank a low-ranked project into a fundable category.

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<sup>2</sup> State small system serves at least five, but not more than 14 service connections and does not regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of the year.

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Consolidation Incentive Planning applications were accepted through March 2014. Consolidation Incentive Construction applications were accepted through June 2014.

Program Eligibility and Application Information:

In order to apply for a consolidation incentive project, systems must first submit a re-ranking request form for a project that was previously submitted but not funded. Once approved, CDPH will notify the system and invite the newly-ranked projects to submit full applications during the next round of invitations.

<http://www.cdph.ca.gov/services/funding/Pages/ConsolidationIncentive.aspx>

9.3.3 The Small Water Systems Program Plan (SWSP)

In 2012, CDPH announced plans to concentrate funding and other resources on 177 specific small public water systems (PWSs)<sup>1</sup> in need of meeting drinking water standards. Most of the water systems are in disadvantaged communities. This program outlines specific actions that CDPH intends to take that will incrementally reduce the number of small systems not meeting the State's water quality standards. CDPH staff have set a goal of bringing 63 of the 177 identified small systems into compliance by the end of 2014 and most of the remaining others within three years.

Specific Actions Taken by CDPH Staff:

CDPH and third-party providers will prioritize these small systems over other systems for receiving available technical and financial resources and work with stakeholders to identify opportunities for consolidation.

CDPH will track progress towards resolving problems and provide stakeholders an annual report on the status of all water systems still listed.

CDPH staff, working with counties, will prepare a one-page summary for each system on the list that identifies issues and barriers that keep water systems from executing permanent drinking water solutions.

CDPH will create a small system specific webpage, with technical information and updates.

Program Eligibility and Application Information:

Eligible communities are those with small systems with fewer than 1,000 service connections and a population up to 3,300. Communities that meet these criteria and are currently out of compliance, with one or more drinking water quality violations, will be contacted by CDPH with further details on how to participate in this program. CDPH intends to work closely with third party provider to fully implement this program. Communities in the Central Valley, that believe they qualify for this program, but aren't listed as one of the 177 identified communities should contact CDPH Drinking Water Program staff, the Community Water Center, or a respective regional third party provider (Rural Community Assistance Corporation (RCAC), California Rural Water Association (CRWA) and Self-Help Enterprises). **San Joaquin Valley Contact List:** CDPH Drinking Water Program (916) 552-9127, Marques.Pitts@cdph.ca.gov;

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Community Water Center (559) 733-0219 or (916) 706-3346; Self-Help Enterprises (559) 651-1000.

**9.4 New Drinking Water Legislation****9.4.1 Assembly Bill 21 (Alejo): Small Community Safe Drinking Water Grant Fund**

This bill would provide funds for disadvantaged communities without safe drinking water by authorizing the assessment of a charge in lieu of interest payments on loans and depositing the monies into a newly created grant fund. The new grant program would allow disadvantaged communities who are unable to repay interest-bearing loans to apply for grants to remedy their unsafe drinking water.

This bill was signed by Governor Brown on October 8, 2013.

**9.4.2 Assembly Bill 30 (Perea): Small Community Grant Funds**

The State Water Pollution Control Revolving Fund Small Community Grant Fund (SCG Fund) finances wastewater treatment projects in small disadvantaged communities. The SCG Fund is scheduled to sunset in 2014. This bill would extend the sunset date to 2019.

This bill was signed by Governor Brown on October 8, 2013.

**9.4.3 Assembly Bill 115 (Perea): Small Community Consolidation**

This bill would clarify applicant eligibility for state drinking water funding and encourage existing PWSs, and private well owners, primarily in disadvantaged communities with unsafe drinking water, to consolidate and form a new or revised PWS.

This bill was signed by Governor Brown on October 8, 2013.

**9.4.4 Senate Bill 103: Public Water System Drought Emergency Response Program**

Senate Bill 103 was amended in Assembly February 25, 2014 to revise items of appropriation and make other changes for the purpose of addressing drought conditions in the State. SB 103, as amended, directed that, of the amount appropriated in Schedule (7), \$15,000,000 shall be available for encumbrance until June 30, 2016, for purposes consistent with subdivisions (a) and (c) of Section 75021 of the Public Resources Code for grants of up to \$500,000 per project for public water systems to address drought-related drinking water emergencies or threatened emergencies. The State Department of Public Health shall develop new guidelines for the allocation and administration of these moneys, including guidelines that dictate the circumstances under which the per-project limit of \$500,000 may be exceeded. The department shall make every effort to use other funds available to address drinking water emergencies, including federal funds made available for the drought, prior to using the funds specified in this provision.

**SECTION NINE****PILOT STUDY****9.4.5 Interim Replacement Drinking Water for Economically Disadvantaged Communities with Contaminated Water Supplies**

On March 1, 2014, Governor Brown approved a \$687.4-million emergency drought relief package to take effect immediately. As a result of the Governor's action, the State Water Resources Control Board (State Water Board) approved \$4 million in funding from the Cleanup and Abatement Account (CAA) to provide interim replacement drinking water for economically disadvantaged communities with contaminated water supplies.

In an effort to distribute funds as quickly and efficiently as possible, the State Water Board will coordinate with the Regional Water Quality Control Boards, the California Department of Public Health (CDPH) district offices, the Office of Emergency Services, and other stakeholders (e.g. environmental justice groups, community assistance groups, etc.) to identify those disadvantaged communities that are most at-risk and would benefit from financial assistance.



## 10 SUSTAINABILITY OF SOLUTIONS

This section discusses the steps that may be taken to insure the long-term sustainability of the solutions presented in this study, when they are implemented.

A sustainable water system is one that can meet fiscal and customer performance goals over the long-term. Sustainable systems have the following characteristics:

- A commitment to meet service expectations.
- Access to water supplies of sufficient quality and quantity to satisfy future demand.
- A distribution and treatment system that meets customer expectations and regulatory requirements.
- The technical, institutional, and financial capacity to satisfy public health and safety requirements on a long-term basis.

Small systems today face severe challenges, including rapidly increasing regulations, declining water quality and quantity, legal liability for failing to meet the Safe Drinking Water Act, financial distress, and customer resistance. A system's ability to deal with these challenges depends, to a great degree, on its managerial, technical, and financial capabilities.

Small water systems must find ways to make the capital improvements or operational changes necessary to ensure long-term sustainability. Maintaining this long-term focus in the face of pressing immediate needs is one of the greatest challenges small water systems face.

As is often the case, financial capacity lies at the heart of this challenge. Small systems in particular are hampered by limited access to capital often due to an insufficient rate and/or tax base, either because the number of customers is small or because the population served has a low MHI.

The alternatives mentioned in this pilot study will have an estimated life of at least 20 years if properly maintained. A major issue with any of the technical alternatives will be the ability of the community to pay for and operate the solution. The operations and maintenance costs will increase the utility bills of the residents. The ability of residents to pass any required rate increases and pay those increases will be the biggest issue affecting sustainability. A related issue affecting sustainability is the ability of the community to find and retain qualified operators to operate the technical solutions.

The Rural and Small Systems Guidebook to Sustainable Utility Management (EPA and USDA, 2013) discusses ten key management areas of sustainability that can help rural and small water and wastewater system managers address many ongoing challenges and move toward sustainable management of both operations and infrastructure.



Rural and Small Systems Guidebook to Sustainable Utility Management (EPA, 2013)

The first step in identifying where a system should start making improvements in the ten management areas is completing a candid and comprehensive self assessment. The ten key areas of management sustainability identified in the Rural and Small Systems Guidebook to Sustainable Utility Management (Guidebook) are described below.

**Product Quality:** The system is in compliance with permit requirements and other regulatory or reliability requirements. It meets its community's expectations for the potable water or treated effluent and process residuals that it produces. The system reliably meets customer, public health, and ecologic needs.

**Customer Satisfaction:** The system is informed about what its customers expect in terms of service, water quality, and rates. It provides reliable, responsive, and affordable services, and requests and receives timely customer feedback to maintain responsiveness to customer needs and emergencies. Customers are satisfied with the services that the system provides.

**Employee & Leadership Development:** The system recruits and retains a workforce that is competent, motivated, and safe-working. Opportunities exist for employee skill development and career enhancement, and training programs are in place, or are available, to retain and improve their technical and other knowledge. Job descriptions and performance expectations are clearly established (in writing), and a code of conduct is in place and accepted by all employees.

**Operational Optimization:** The system ensures ongoing, timely, cost-effective, reliable, and sustainable performance in all aspects of its operations. The key operational

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aspects of the system (e.g., pressure, flow, quality) are documented and monitored. It minimizes resource use, loss, and impacts from day-to-day operations. It has assessed its current energy use and water loss and performed related audits.

Financial Viability: The system establishes and maintains an effective balance between long-term debt, asset values, operations and maintenance expenditures, and operating revenues. The rates that it charges are adequate to pay its bills, put some funds away for both future capital expenditures and unanticipated issues, and maintain, repair, and replace its equipment and infrastructure as needed. The system discusses rate requirements with its customers, decision making authorities, and other key stakeholders.

Infrastructure Stability: The system understands the condition and costs associated with its critical infrastructure assets. It has inventoried its system components, conditions, and costs, and has a plan in place to repair and replace these components. It maintains and enhances the condition of all assets over the long-term at the lowest possible life-cycle cost and acceptable level of risk.

Operational Resiliency: The system ensures that its leadership and staff members work together to anticipate and avoid problems. It proactively identifies legal, financial, non-compliance, environmental, safety, security, and natural threats to the system. It has conducted a vulnerability assessment for safety, natural disasters, and other environmental threats, and has prepared an emergency response plan for these hazards.

Community Sustainability & Economic Development: The system is active in its community and is aware of the impacts that its decisions have on current and long-term future community health and welfare. It seeks to support overall watershed, source water protection, and community economic goals, where feasible. It is aware of, and participates in, local community and economic development plans.

Water Resource Adequacy: The systems ensure that water availability is consistent with current and future customer needs. It understands its role in water availability, and manages its operations to provide for long-term aquifer and surface water sustainability and replenishment. It has performed a long-term water supply and demand analysis, and is able to meet the water and sanitation needs of its customers now and for the reasonable future.

Stakeholder Understanding & Support: The system actively seeks understanding and support from decision making bodies, community members, and regulatory bodies related to service levels, operating budgets, capital improvement programs, and risk management decisions. It takes appropriate steps with these stakeholders to build support for its performance goals, resources, and the value of the services that it provides, performing active outreach and education to understand concerns and promote the value of clean, safe water and the services the utility provides, consistent with available resources.

The EPA Guidebook includes a self assessment designed to help rural and small systems identify their strengths and challenges to prioritize where efforts and resources

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should be focused. It can be completed by individuals within a utility (e.g., managers, staff, or operators), or as a team exercise amongst management, staff, and external stakeholders such as board members or customers (if appropriate). A Self Assessment Worksheet is included in the Rural and Small Systems Guidebook to Sustainable Utility Management, attached in **Appendix N**.

**10.1 Operation and Maintenance**

Consideration of the operations and maintenance impacts can sometimes be difficult to convey to users. Sometimes the costs per connection may be higher when an alternative is first implemented, and the economies of scale do not begin to show strongly until after years of sound management. This may be because system maintenance has been neglected due to inadequate revenue, and so there may be capital improvement needs that must be completed. Once the system has been improved and “brought up to speed” as far as appropriate maintenance activities, they may have had to take on some debt and increased rates, but their infrastructure will be good, and the rates will stabilize. It would be difficult to state or show this generally in a way that would be meaningful to all communities. A cost benefit analysis would need to be completed for any potential project that is being considered.

For example, in the Porterville focus area that was studied as part of the Technical Solutions pilot study, water rates ranged from \$30 or less per connection to \$80 per connection per month. The wide variation in water rates is due to many factors unique to each community. Factors that may impact the water rates for a given community include size of community, topography, depth to groundwater, water quality and whether treatment is required, age of system components, outstanding debt, level of volunteerism used to operate the system, quality of service, etc. For one community, implementation of a management solution may improve their cost per connection because they already operate in a sustainable manner. Another community may see an increase in their water rates because there are system components or management issues that have been lacking and need to be addressed. These improvements would provide better quality of service, but may come at a price. These tradeoffs would need to be weighed when evaluating the feasibility of implementing any alternative. If a solution does require a rate increase, then the system would need to plan for that and provide residents an opportunity to learn about the proposed changes and protest if desired.

**10.2 Community Involvement**

Every community has unique characteristics that create challenges as well as opportunities. These unique characteristics must be identified and addressed for each of the communities involved.

Local decision makers must involve the community in the process, and invite assistance providers if necessary to explain the collaborative effort. Public meetings should be held about the new source option being proposed. If multiple communities are involved,

these meetings should be held within the different communities, since many will feel more comfortable in their 'home' setting. Rather than holding meetings at a "central" location, holding meetings at the various communities involved may encourage cooperation and get the communities engaged.

In addition to communicating with board members, decision makers, and council members, it is important to reach out to the community and get them involved. The community members (customers) typically care about quality of service, including reliable supply and water quality, and reasonable rates, and may bring a different perspective to the table. Often, community members are not aware of the water system needs that exist. The community members need to be educated on the deficiencies and needs of their water systems, and understand the water quality issues. By showing community members actual costs to operate and maintain a water system, they may begin to understand and appreciate the cost of the service to deliver water to the customer's tap

### **10.3 Leadership Development**

Leadership development is critical to the sustainability of any system or program. It is important that the leaders of the community water or wastewater system continue to seek additional education and training. As mentioned previously, there are existing leadership development and other training programs available. Ultimately, continued education and training will enable water and wastewater system purveyors to be better leaders for their staff, help them to more efficiently run the system, and may inform them of potential funding opportunities that are available to make improvements to the system.

Long term planning is also critical to the success and sustainability of a system. Once the system is operated and managed by an entity (newly created or existing), then the decision makers can focus on long term planning and completing different tools for the effective management of the systems, as discussed in the previous section

### **10.4 Regulatory**

Regulatory impacts to communities – new or stricter regulations.

### **10.5 Land Use**

Land use is typically not in the control of DAC's

### **10.6 Legislative**

Legislative impacts to communities:

- Additional requirements

- Result in additional costs

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IRWM Legislation – priority of funding.

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## 11 OBSTACLES AND BARRIERS

### 11.1 Potential Obstacles and Barriers

There are numerous obstacles that a community must overcome in order to implement a new source solution. Some of these obstacles include:

**Proper selection of new source** – This pilot study provides a guide of possible new source solutions. However, a more detailed evaluation of the new source alternatives would need to be done to select an alternative that will sustainably solve the problem(s) unique to each community.

**Solution** – Select an engineering firm with experience in dealing with water supply or quality issues similar to the community's issues. Experience with consolidations is also recommended. The engineering firm should also be familiar with helping the community obtain funding for any possible improvements. Experience with the pooling of funding sources is also beneficial.

**Community acceptance** – In order for the new source solution to be feasible it would need to be accepted by the community. Community acceptance would help with the passing of any rate increases and the payment of future utility bills. The community understanding the reason for and benefits associated with any new source solution would be beneficial.

**Solution** – It is critical to get the community involved early on in the process of any new source solution. The community should be given the opportunity to be informed of new source solutions being considered and how the changes may affect their water/wastewater and the additional costs. Levels of community acceptance will rise with increased community understanding of the necessity and benefits associated with any solution.

**Capital costs** – There will be capital costs associated with any new source solution. The ability to secure the necessary funding could be a major obstacle.

**Solution** – Engineering firms or some community groups (like Self Help Enterprises) are experienced in helping small communities obtain funding. These firms or groups are familiar with the available funding and the process needed to secure the funding.

**Operation and maintenance costs** - The community may be able to obtain grants or low interest loans to pay for the associated capital costs for a new source solution. There is currently no funding mechanism in place to assist with operation and maintenance costs. These costs will have to be borne by the

citizens in the community. Depending on the median household income in the community, the utility rate increase may adversely impact the citizens.

**Solution** – Selecting the best new source solution that meets the water quality standards, allows for fiscal sustainability of the facilities, and is most cost effective for the rate payers. It is likely any new source solution will involve some rate increase to cover increased O&M, provide funds for reserves, or payback any loans for the capital costs. Community acceptance of the new source solution may help ease the acceptance of any rate increases.

**Water meters** – Using water meters and billing based on usage are ways to encourage water conservation. Some DACs have water meters however sometimes the meters are not used in billing due to the fact that staff is not available to read the meters. For these DACs, water billings are done at a flat rate.

**Solutions** – Current funding through CDPH does not allow for replacement of water meters. DACs would benefit from State funding for water meter replacement. The replacement meters should be capable of being read remotely. Additionally, the DAC would need to modify their billing system to bill customers based on the volume of water used.

**Licensed operators** – The new source solutions may require a higher level certified operator than is currently employed or contracted to the community. The operator at the higher level would likely command a higher salary due to the scarcity of higher level operators.

**Solutions** – Explore the possibility of an existing operator for the community upgrading their certification to be able to operate and maintain the new source solution. If an operator cannot be found from existing staff, the community may need to explore the possibility of hiring a contract operator. Another option is to share operators with neighboring communities. This option is discussed in more detail in the Management and Non-Infrastructure Pilot study.

## 11.2 Overcoming Obstacles and Barriers

For communities that are interested in pursuing one of the New Source Development alternatives presented in this pilot study, additional action is recommended. To implement one of these alternatives, it is recommended that communities consider the following tasks:

- Prepare a Self Assessment of the existing infrastructure, capacity, demands, and items that may impact any of the items.
- Seek funding to conduct a feasibility study to evaluate alternatives

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- Prepare a Technical, Managerial, and Financial Assessment
- Consider the impact to consumers (cost per connection)
- Consider the impact to water system (revenues versus expenses)
- Confirm that the solution will satisfy regulatory requirements
- Confirm the solution is fiscally sustainable

Recommendations for various funding agencies as well as the Legislature were also developed as part of this pilot study, and for the overall Tulare Lake Basin DAC Study. Some recommendations or considerations include:

- County planning departments may consider specific limitations when proposals for new small systems are received
- Regulatory changes (water and wastewater) should be evaluated with the perspective of and impact to the service providers and consumers in mind.
- Providing technical and/or financial support for DACs to prepare funding applications.
- Promote grant application workshops or training.

Regulatory agencies can also be partners in the process to help with messaging and providing technical information to the communities. As technical experts, CDPH could help educate the community about the state of the water system and the implications related to public health. CDPH could participate in public meetings, explaining what the regulations are, and explaining what non-compliance means for the system. CDPH can explain the effect of poor water quality on public health. It may be beneficial for both sides to have CDPH available to educate and help promote a water system partnership effort, rather than interacting with the system in an enforcement action. In communicating in this manner, it may help develop more of a relationship between the water systems and the regulatory agency, and make cooperation better in an ongoing basis.



## 12 CONCLUSIONS AND RECOMMENDATIONS

In order to meet the objectives of this study, the following five tasks were performed:

1. Baseline Data Gathering, Mapping, and Database Creation of Disadvantaged Communities in the Tulare Lake Basin
2. Stakeholder Consultation and Community Outreach
3. Selection of Pilot Projects and Studies to Develop Representative Solutions to Priority Issues
4. Implementation of Pilot Project Stakeholder Process to Develop Studies and Representative Solutions to Priority Issues
5. Preparation of Final Report

Each of the pilot studies evaluated various solution types and alternatives to help address the different water and wastewater issues identified for the Study Area. However, there were barriers identified through various stakeholder efforts that make implementation of such alternatives challenging. The purpose of the recommendations presented in this Section is to provide a plan to address the priority issues and barriers identified through the stakeholder processes and this pilot study. Implementation of the recommendations discussed herein would improve the ability to allow for the provision of safe, clean and affordable potable water supply within rural, disadvantaged communities.

### 12.1 Summary of Findings

Through the Study, various findings were developed. It was found that drinking water and wastewater infrastructure needs, including water quality monitoring, treatment and contaminant removal, new wells, equipment, and operational needs, exceed the amount of funds that are available. Funding that is available is limited or not accessible for certain types of infrastructure projects, non-infrastructure projects aimed at improving TMF capacity, projects for private entities, or individual households.

In the past decade large investments have been made toward California's drinking water infrastructure. These investments have significantly improved the ability of communities to deliver safe drinking water that meets all public health standards. However, there is still extensive need remaining, and Proposition 50 and 84 funding have been exhausted. The SRF will address some of the unmet needs, but these funds are insufficient to address all of the known and expected drinking water issues remaining.

Additionally, it was found that there is a large need for improved technical, managerial, and financial capabilities for DACs. Many lack the proper training or education to properly operate or manage a system. Training programs are currently available, but it is difficult for staff to attend, especially since in many cases water and wastewater

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system staff have other jobs and cannot afford the time or travel to attend training programs.

Upon completion of the Study, several major successes of the project were noted:

- A comprehensive inventory of DACs has been prepared and included in this Report;
- A “roadmap” or set of decision trees was developed to guide communities and funding agencies through some critical steps to selecting an appropriate alternative for their specific issues and situation;
- Through various stakeholder outreach efforts, the interest and awareness of communities related to water and wastewater related issues within the Tulare Lake Basin was expanded;
- Identification and acknowledgement of priority issues common to communities throughout the Study Area, and various obstacles and barriers to addresses those issues;
- Development of recommendations for local service providers, various regulatory and funding agencies, as well as the Legislature to help overcome those obstacles and barriers so that the priority issues afflicting DACs within the Study Area can be adequately addressed;
- Tulare Lake Basin Study data was compiled and will be stored in a location accessible to the public (Tulare County website); and
- The Tulare Lake Basin Disadvantaged Water Study Final Report was distributed and made available on the Tulare County website.

The recommendations provided below are intended for various local, state, and federal agencies, the Legislature, as well as local service providers (entities providing water and/or wastewater service for DACs). For communities that are interested in pursuing any of the alternatives presented in this Study, additional action is recommended. To implement an alternative, communities should work on the following:

- Prepare a Self Assessment of the existing infrastructure, capacity, demands, and items that may impact any of the items (information may be available in recent sanitary surveys and inspection reports) (see **Appendix N**)
- Seek funding to conduct a feasibility study to evaluate alternatives
- Prepare a Technical, Managerial, and Financial Assessment (see **Appendix M**)
- Consider the impact to consumers (cost per connection)
- Consider the impact to water system (revenues versus expenses)
- Confirm that the solution will satisfy regulatory requirements

## 12.2 Plan Recommendations

Tulare County and the project team were tasked with preparing a plan to address the drinking water and wastewater needs of rural, disadvantaged communities in the Tulare Lake Basin Study Area. Through the SOAC process and in consultation with the database developed through this Study, several priority issues were identified as the major challenges faced by rural disadvantaged communities in the Study Area. Four pilot projects were selected which sought out to identify solutions to those priority issues, funding opportunities that are available to implement the recommended solutions, steps to insure long-term sustainability of an implemented solution, and identification of obstacles and barriers to implementation of a recommended solution, and a proposal for how to eliminate those obstacles or barriers. Those recommendations related to funding opportunities, long-term sustainability, and overcoming obstacles and barriers that are in the way of implementing solutions to the priority issues that have been identified, are the basis for the plan to address the drinking water and wastewater needs of DACs in the Study Area. Implementation of the recommendations presented herein will set the stage to resolve the priority issues that are faced by DACs in the Tulare Lake Basin Study Area. This section therefore serves as a plan to address the drinking water and wastewater needs of rural, disadvantaged communities in the Tulare Lake Basin.

Because various state, federal, and local agencies are involved directly in the provision of drinking water and wastewater services, or provide regulatory oversight of drinking water and wastewater systems, this plan describes various recommendations on how the appropriate agencies at various levels can help the region to address the water and wastewater needs of DACs.

Several recommendations for future action were developed from observations witnessed during the Tulare Lake Basin Disadvantaged Community Water Study efforts, specific comments from participants, and questions discussed during the development of the pilot studies. These recommendations have been developed to carry the objectives of this project forward beyond this Study.

Recommendations are made to various types of entities, including the service provider, local county agencies, IRWMP groups, State agencies, federal agencies, and the legislature. These recommendations are made to address a specific priority issue or set of priority issues that were identified by the SOAC prior to developing the pilot studies. These recommendations are intended to serve as a plan to address the drinking water and wastewater needs of rural, disadvantaged communities in the Tulare Lake Basin.

### 12.2.1 Improve Local TMF Capacity

#### Priority Issues

Lack of Technical, Managerial, and Financial (TMF) Capacity by Water and Wastewater Providers – Lack of adequately trained technical, legal, financial, and managerial professionals, as well as inadequate training and ongoing education and assistance for

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existing water and wastewater providers; lack of institutional capacity; lack of knowledge of available training, assistance, and educational support to support local employment in these sectors.

Note: Federal and state statute enables CDPH to require a demonstration of TMF capacity only (1) on formation of a new public water system; (2) on change of ownership of a public water system; or (3) when state funding is provided to a public water system through one of its three funding sources. CDPH can recommend TMF assessments at other times and has been able to require specific TMF demonstrations through some enforcement actions. Also, note that wastewater system permittees are not required to provide a demonstration of TMF capacity under the SWRCB permits.

### Potential Solutions

Potential solutions to resolve the priority issue described above include:

1. Enhance internal awareness to build TMF capacity (communities)
2. Provide more assistance and training
3. Encourage sharing of resources to build TMF capacity

Several recommendations to facilitate and encourage these potential solutions are described below.

### Recommended Actions

1. Enhance Internal Awareness

Local Service Provider:

- A. Ensure that the specifics regarding existing infrastructure are known. The location, size, condition, and capacity of facilities should be known and records maintained by the community services management personnel.
  1. *Who: Water or wastewater system owner*
  2. *Why: When the owner of infrastructure has information regarding the location, size, depth, materials, age, capacity, and condition of the facilities, the owner will be able to a) effectively respond to problems with the facilities, and b) know the capability of the existing infrastructure to meet existing and proposed demands. Knowledge of the existing infrastructure is critical when planning expansions or upgrades to said infrastructure.*
  3. *How: Records of existing infrastructure should be available at the office of the local service provider. If records of existing infrastructure are not readily available, the County may have information regarding infrastructure within existing rights of way. Another source of information may be the engineer of record for the respective improvements. The RWQCB and CDPH may also have information associated with wastewater treatment and water supply infrastructure, respectively. If no records are available, a survey of ground surface infrastructure (manhole lids, cleanouts, valves, hydrants, meters, wells) may provide limited information regarding the location of infrastructure.*

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4. *When: Improvement plans are required to be approved by the local service provider prior to construction. Copies of the "as built" plans are to be maintained by the local service provider upon completion of construction. Records of repairs or modifications to the existing infrastructure are to be maintained by the local service provider.*
  5. *Funding: The source of funding is the water or sewer fund of the local service provider. The source of revenues is the monthly water or sewer charge for service.*
- B. Conduct a review of fiscal resources annually and determine the necessary levels of reserves for replacement and maintenance of all infrastructure. Determine an appropriate time frame and funding plan to achieve the necessary levels of reserves.
1. *Who: Water or wastewater system owner*
  2. *Why: The owner of the water or wastewater system has the responsibility to operate and maintain the facilities. Operation and maintenance responsibilities include payment for power, chemicals, labor, insurance, communications, maintenance equipment, regular maintenance of the facilities, response to failures or damage of the facilities, and replacement of facilities that have reached the end of their respective useful life. Reserves are necessary to be able to respond to catastrophic failures or emergencies (ie. failure of a wellpump). If the fiscal resources are not sufficient to satisfy the basic demands of sustaining the facilities, adjustments to the monthly rates are necessary.*
  3. *How: Public water and sewer systems are subject to annual audits of fiscal resources and procedures. In addition, the owners of water and sewer systems should define an operations budget for all required expenditures. Private water and sewer systems should also define an operations budget for all required expenditures.*
  4. *When: Review and adjustments to fiscal resources should be an on-going activity. However, the owner of the facilities should define a budget annually. Typical fiscal year cycles for public systems begin on July 1 of each year. The activity of preparing the budget for the next fiscal year would typically include a review of the fiscal performance of the previous year so that appropriate adjustments may be included in the upcoming budget.*
  5. *Funding: Review of fiscal resources and performance of the water or sewer system is funded through the operations funds of the owner of the facilities.*
2. Provide Assistance and Training
- Local Service Provider:
- A. Attend training programs and convince other staff and board members to attend training programs.

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1. *Who: Water or wastewater system owner*
  2. *Why: Training is appropriate for everyone involved in the management of a water or wastewater system, regardless of size. Especially in small or isolated communities, boards and staff may get stuck in ruts or patterns of management that persist over many years. Minimal outside intervention and a limited pool of board/staff candidates combine to create an insular environment that may be resistant to change. Training brings in new perspectives and new approaches and can revitalize institutions that lack forward motion.*
  3. *How:*
    - *Convey the importance of attending trainings and what it can mean for the community.*
    - *Attend trainings provided by Rural Community Assistance Corporation (RCAC) in coordination with CDPH. RCAC provides free statewide training throughout the year at locations around California under a contract with CDPH. Local CDPH District Offices can request specific training topics be offered in their area, if information is available indicating an interest in that topic. CDPH encourages local water providers and assistance organizations to review the RCAC training topics and provide input to the local CDPH District Office on desired local training. The RCAC training program can be viewed at <http://www.rcac.org/event/1114>.*
    - *Operator training – Participate in existing local entities such as California Water Environment Association (CWEA) and California Rural Water Association (CRWA).*
    - *Board and leadership training – Participate in board training opportunities such as leadership training and ethics training. CDPH in coordination with Rural Community Assistance Corporation (RCAC) and Self-Help Enterprises (SHE) will be providing targeted board training for several communities in the Study Area; there is potential for this program to be expanded and continued to other communities.*
    - *Network with other communities, share resources and information, and provide informal training to one another.*
  4. *When: Ongoing.*
  5. *Funding: Water or Wastewater system provider's operations funds. Technical assistance funding from CDPH or through the State Water Board could also potentially address this need.*
3. Provide resources to update the Decision Trees developed through this Study in the future, to accommodate any changes in the funding or implementation process, and to make them more accessible and useful tools. It is recommended that these Decision Trees be developed into a web-based format for maximum usability.
1. *Who: Department of Water Resources*

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2. *Why: The decision trees developed through this Study are useful tools for outlining the implementation process of various alternatives identified. In the current flow chart format, the decision trees are difficult to use for most board members or operators. Developing a web-based format for the decision trees, where users could answer a single question at a time, would make these tools more useful for a wider audience.*
  3. *How: Hire an engineer and web-site developer to convert these into a web-based format, stored either on a State website or on a local County website. Once the website and web-based format has been developed, the web-based decision trees should be updated regularly to accommodate any changes in the funding or implementation process.*
  4. *When: Within the next two years, then updated annually thereafter.*
  5. *Funding: DWR*
4. Encourage Sharing of Resources to Build TMF Capacity

## Local Service Provider:

- A. Attend Integrated Regional Water Management Planning group meetings and consider becoming an “Interested Party” or “Member” of an IRWMP group.
1. *Who: Water or wastewater system owner or manager*
  2. *Why: Participation in local IRWM groups allow systems to understand the regional water management efforts being developed, inform those efforts with the needs of their local community, and develop joint projects to improve water quality, water supply, storm water management and flood control in each sub-basin. Disadvantaged community impacts and needs may not be adequately addressed in local management plans or understood by water management and other local agencies if local disadvantaged communities do not participate. Additionally, disadvantaged communities need to participate in order to ensure specific projects are developed and funded that address their critical needs.*
  3. *How: Each IRWM group has its own unique governance structures and meeting process. Community representatives should contact the group in their region to get on the email list and ask how to become members or interested parties of the group. In general, becoming a member allows you to vote on decisions made by the group. Membership may be limited to public agencies in some cases. In some cases, fees are required, although DWR states that IRWM groups cannot require payment for local stakeholders to participate. Becoming an interested party may be a good way of getting started. That formal status means that an entity has adopted and is supportive of the regional plan and its goals and objectives, and means it is a formal part of the planning group and generally invited to be part of any Advisory Board or stakeholder group meetings. Some IRWM groups only allow for formal submittal of projects by members, so interested parties can only propose projects that are formally sponsored by members.*

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4. *When: Entities can join IRWM groups at any time. Contact each one to find out when the next meeting is and what the process is for becoming part of the group. It is best to join soon so that communities are able to be part of the process by the time the next funding and planning update takes place.*
5. *Funding: Each IRWM has different membership fee requirements, although all have an option for some form of formal participation that is free for disadvantaged communities. So no funding is necessary to get involved. Communities should ask for technical assistance to support their ability to effectively participate in planning and project development from local IRWM groups, the Department of Water Resources (DWR), and local technical assistance providers. IRWM groups can include projects in regional applications that fund planning and project development and constructions for disadvantaged communities. Under DWR's current funding guidelines for funding available to IRWMs, projects that advance critical needs in disadvantaged communities qualify for extra points and are not required to meet the same funding match and project readiness requirements as other projects. Additionally, at least 10% of DWR's IRWM funding is required to fund disadvantaged community projects so local IRWMs should include DAC projects in regional applications to increase the competitiveness of funding applications.*

## 5. Increase Revenues

## Local Service Provider:

- A. Evaluate water and sewer rates at least every three to five years and when any major improvements are constructed, and modify as appropriate to achieve the necessary financial resources for annual operations and reserves for the next five year period.
  - o Develop a rate study to determine appropriate reserves and rate increases, and follow Prop 218 requirements. Typically the Prop 218 hearing will address increases for several years and, if necessary, will include increases for subsequent years at a set frequency.
1. *Who: Local water and/or wastewater providers*
2. *Why: Many community water or wastewater systems do not bring in enough revenue to offset the system expenses. This is often due to rates that were set many years ago and rarely if ever increased. Increases in regulatory requirements, system age, changes in the economy (inflation), as well as other factors necessitate an increase in rates at least every five years, if not more frequently. Additionally, any changes to the system that impact the operation and maintenance costs, should be reflected in the rates. Delaying adequate cost increases means O&M costs are not addressed, needed repairs are not made, and systems are not planning to address water capacity and/or water quality issues.*

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3. *How: Develop a rate study determine appropriate reserves and rate increases, and follow Proposition 218 requirements. This will likely require the services of an engineer or other technical service provider.*
  4. *When: At minimum, every five years, and when any major improvements are constructed or other changes to the system that impact O&M costs.*
  5. *Funding: Local service provider*
- B. Each local service provider (water or wastewater) should develop a single rate structure and no exceptions should be made to that structure.
- A tiered rate structure should be developed with appropriate base rates and water usage rates to encourage conservation while ensuring sufficient revenue.
  - Certain discounts (such as senior citizen discounts) may be employed, as long as they are consistently used and part of the written rate structure.
  - If a proposed rate structure results in an increase to any customer, compliance with Prop 218 is required. The Court has recently ruled that it is NOT required to consider protest votes by category of user.
1. *Who: The water or wastewater system owner.*
  2. *Why: The rate structures for many communities have not been updated or reviewed for many years. In addition, there are many occasions that have been discovered where special undocumented rates had been established for specific properties many years ago. There have been other instances of properties receiving service with no requirement to pay for said services.*
  3. *How: A review of the fiscal requirements to operate the water or wastewater system should be conducted annually by the owner. An equitable distribution of charges necessary to sustain the water or wastewater system is necessary so that all customers are treated in a consistent manner. The owner of the system may need to contract for the services of legal counsel and a rate structure consultant to determine an appropriate rate structure.*
  4. *When: The basis for charging for water or wastewater service should be consistent and sufficient to meet system demands at all times.*
  5. *Funding: The source of funding is the water or sewer fund of the local service provider. The source of revenues is the monthly water or sewer charge for service.*
- C. Seek funding to install water meters. The meters should be capable of being read remotely (if the system size or agreements with neighboring systems support it).
- Consider installing same meters as neighboring community(ies) so that meter reading and billing systems can be shared.
  - Develop a tiered rate structure with appropriate base rates and water usage rates to encourage conservation while ensuring sufficient revenue.

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1. *Who: Local government boards, technical assistance providers/consultants, and funding agencies*
  2. *Why: Installation of water meters is a basic and very effective method of water conservation. Metering leads to natural behavioral changes by water consumers because meters tie water use directly to household finances. Reduction in water use results in lower operating and maintenance expenses to the utility. Use of water meters also provokes the development and use of tiered rate structures, which are an excellent tool for improving overall utility finances and distributing costs over customers with different use patterns. Additionally, installing compatible meters in several locations in a given region can provide a very good opportunity for communities to enter into contractual agreements to share equipment, software, billing functions and staffing positions.*
  3. *When: Immediate and ongoing; could have an immediate impact on water systems statewide.*
  4. *Funding: CDPH could redefine Category H projects (as defined by the State Revolving Fund Project Ranking Criteria) to include replacement metering projects, including meter reading equipment and necessary software. DWR could fund an ongoing Water Use Efficiency program (currently the program is funded only periodically) in which metering and re-metering projects are eligible.*
- D. Establish appropriate connection fees for any new connections.
1. *Who: The water or wastewater system owner.*
  2. *Why: The water or wastewater systems are faced with capital expenditures necessary to satisfy infrastructure demands resulting from growth of the population served and from needs of the existing population (changes to regulatory requirements and the need to replace existing facilities). Connection fees are imposed as a means to collect funds from new developments to be served by the water or wastewater system. The existing water or wastewater system should not be required to assume additional capital improvement burdens imposed by new development demands upon the systems.*
  3. *How: The water or wastewater system owner may conduct a review of the existing infrastructure and its relative ability to serve the existing and future demands. Capital improvements necessary to meet the demands of existing and future populations of the service area may be described and the relative capital cost of the improvements may be estimated. The relative benefit of the capital improvements for the existing and future population may be estimated. Based on the information described above, the relative connection fee per new connection may be estimated. The owner of the water or wastewater system would review the information and determine the appropriate connection fee.*

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**When:** If there is not a connection fee established for the system, the owner should prepare the supporting documents and establish connection fees as soon as possible. If connection fees are established, the basis for the fees, and the fees themselves, should be reviewed at a frequency of at least every few years.

**Funding:** The source of funding is the water or sewer fund of the local service provider. The source of revenues is the monthly water or sewer charge for service.

Local Service Provider:

- E. Develop an O&M plan that includes the types of ongoing O&M costs needed, O&M servicing and parts replacement schedule, and amount needed for O&M fund reserve to help the community plan ahead to address covering O&M adequately. This will also help identify any potential for cost savings through reduced O&M costs and explain any need for regular rate increases.
1. *Who: The water or wastewater system owner.*
  2. *Why: The water or wastewater system is subject to regulatory requirements from the CDPH, County Environmental Health Department, or RWQCB. In addition, the physical facilities require maintenance and confirmation that the facilities operate as required. An operations and maintenance plan provides the basis for the activities and procedures necessary to satisfy the regulatory and operational demands of the systems.*
  3. *How: The owner of the water or wastewater system is required to have certified operators for the systems. Either the owner, operator, or a consultant may prepare the appropriate operation and maintenance plan for the system(s).*
  4. *When: An operations and maintenance plan should be in place at all times.*
  5. *Funding: The source of funding is the water or sewer fund of the local service provider. The source of revenues is the monthly water or sewer charge for service.*

### 12.2.2 Improve Water Supply Quality and Reliability

#### Priority Issues

**Poor Water Quality** – Existing contamination of drinking water source (acute and chronic contaminants), increasing groundwater pollution, new and emerging contaminants, problems with secondary contaminants, and health impacts.

**Inadequate Supply Reliability** – Systems with only a single source of supply, reliant on a contaminated backup source, insufficient storage capacity lack of fire flow capacity.

**Inadequate Existing Infrastructure** – Infrastructure that is aging, poorly constructed, or of insufficient capacity to meet current or future community needs.

**Insufficient Quantity of Water** – Insufficient supply or lack of reliable water supply, including surface and groundwater, including groundwater storage capacity, surface water storage and supply.

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Potential Solutions

Potential solutions to resolve the priority issues described above include:

1. Prevent Worsening of Problems
  - a. Avoid permitting new development or water or wastewater users without first securing adequate water supply, water quality, infrastructure, and TMF capacity.
  - b. Improve groundwater management to protect and improve groundwater quality and quantity.
2. Promote adoption of shared solutions that reduce community vulnerability.

Several recommendations to facilitate and encourage these potential solutions are described below.

Recommended Actions

## 1. Prevent Worsening of Problems

Several recommendations to help prevent or minimize worsening of the problems that currently exist are described herein.

Local Service Provider:

A. Do not allow new connections if the service capacity is not confirmed. This may require imposition of a moratorium. Developing appropriate connection fees, as recommended above, is necessary to provide a means to ensure that capacity can be made available for planned new connections.

1. *Who: The water or wastewater system owner.*
2. *Why: An existing system is responsible to provide the water and wastewater services to the properties connected to the system. The existing system would not be able to fulfill the service obligation to new connections if the capacity was not available.*
3. *How: The owner of the water or wastewater system must know what the relative capacity and demands of the system is at all times so a determination of whether sufficient capacity is available to meet the proposed demands.*
4. *When: On-going.*
5. *Funding: The source of funding is the water or sewer fund of the local service provider. The source of revenues is the monthly water or sewer charge for service.*

State Agencies:

B. Improve Groundwater Management Planning to address both declining water levels and increased water quality contaminant levels, as well as ways the two trends exacerbate each other.

1. *Who: The State of California.*

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2. *Why: Groundwater levels within many areas of the Tulare Lake Basin Study Area have declined over time and there does not appear to be any reason to expect groundwater levels to stabilize.*
  3. *How: To be determined by the State of California.*
  4. *When: On-going.*
  5. *Funding: Unknown.*
- C. Clarify the interpretation of a well site control zone with a 50-foot radius, as referred to in Title 22, Chapter 16, Article, Section 64560 of the California Regulations Related to Drinking Water. The current interpretation in Tulare County is that there must be a 50-foot radius onsite around a well. This interpretation would require communities to purchase properties that are significantly larger than necessary. This interpretation would also eliminate existing lots within the community from consideration for use as well sites. Guidance should clarify how well sites may be able to meet the requirement to have a 50-foot control zone for source water protection, even if the well site itself is smaller.
1. *Who: California Department of Public Health.*
  2. *Why: It is noted that there is an acknowledgement of the need for some control of facilities or activities within the immediate proximity of a public water supply wells. However, there have been interpretations of the subject code section that would require owners of new wells to physically acquire property that would exceed many properties available within a community. It is not believed that the intent of the code section is consistent with some of the interpretations. Some interpretations would impose a significant financial hardship to both acquire a large parcel and construct the water distribution facilities to connect the parcel to the existing community system. In addition, the definition of a control zone is in need of clarification for all parties involved (owner of the water system, County regulatory staff, CDPH regulatory staff). Considerations of existing property uses and existing public rights of way adjacent to proposed water supply wells require clarification.*
  3. *How: It is suggested that examples are provided by the CDPH that would clarify the definition of a control zone, as it may extend beyond the limits of the actual well site property.*
  4. *When: Now.*
  5. *Funding: Unknown.*
- D. Consider ways to encourage and provide funding to sewer communities that rely on individual septic systems that are failing or are on inadequately sized lots.
1. *Who: Funding agencies State Water Resources Control Board, USDA and possibly County agencies utilizing Community Development Block Grant funds*

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2. *Why: Failing septic tanks endanger public health in a number of ways, not least by exposing humans to raw sewage, and by contaminating groundwater supplies with bacteria and nitrates.*
3. *How: Conduct studies in communities that gauge the degree to which septic tanks are failing, what it costs homeowners to pump, repair and/or replace them. Conduct preliminary engineering studies that recommend a solution and project costs and monthly sewer bills, so homeowners can make informed decisions.*
4. *When: Immediate and ongoing*
5. *Funding: State Water Board, USDA, CDBG*

### 12.2.3 Improve Scoring Criteria and Guidelines

#### State Agencies:

- A. Consider changes on Category E (insufficient source water capacity or delivery capability) project rankings, to make it easier to get funding for that category of projects.
  1. *Who: California Department of Public Health.*
  2. *Why: There are many communities with insufficient water supply, however, the criteria for funding eligibility is heavily weighted on water quality challenges. The lack of sufficient water quantity is often a significant problem.*
  3. *How: Review and revise the guidelines for ranking of funding eligibility criteria to enable funding assistance for water supply sources, especially for those communities with a single source of supply.*
  4. *When: Now.*
  5. *Funding: Unknown.*
- B. Continue the Pre-Planning and Legal Entity Formation Assistance Program. Consider creation of similar programs for wastewater for areas currently on septic.
  1. *Who: State Drinking Water SRF administering agency and the State Water Board.*
  2. *Why: There is a need for more flexible pre-planning funding to enable evaluation of appropriate governance alternatives to develop shared and regional solutions and to support solutions for areas not currently served by a public water system. The first round of applications for this showed there was a large demand and unmet need, and additional rounds should be extended. This will both enable California to use its SRF effectively, and help communities most in need of developing solutions be able to do the analysis it needs to develop the best solution, and address eligibility barriers by developing appropriate entities for construction and full project implementation. Historically the evaluation and development of regional solutions has not been able to*

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*score high or pass through eligibility barriers and this funding pot was created specifically to help address those challenges and allow these sorts of projects to be developed when they address disadvantaged community safe drinking water needs.*

*Similarly, creation of a similar program should be evaluated for areas on septic or with unaffordable wastewater services to evaluate development of shared or regional wastewater solutions.*

3. *How: Implement this through the IUPs of the SRF programs.*
  4. *When: The IUPs are developed annually. Additionally, applications should be accepted throughout the year.*
  5. *Funding: This is primarily aimed at utilizing funding through the SRF programs.*
- C. Continue the Consolidation Incentive Program, however, modify the system so that large systems do not obtain benefits that are significantly out of proportion to the benefits provided by consolidation.
1. *Who: California Department of Public Health.*
  2. *Why: There does not appear to be any limitation on the benefits received by the entity willing to allow the consolidation of a smaller system. If the larger entity (Incentive System) can receive funding assistance drastically beyond the scale of the cost of improvements to receive a consolidation then the use of public funds consistent with the Priority Categories may be in question.*
  3. *How: Consider placing a limit on the allowed value of Incentive System projects that may be re-ranked to a higher Priority Category by virtue of a consolidation project.*
  4. *When: Now.*
  5. *Funding: Additional funding is not necessary.*
- D. Require privately owned systems to conform to all requirements of publicly owned systems in order to receive public funding assistance.
1. *Who: State of California.*
  2. *Why: Private systems are owned by an individual or private corporation. The general purpose of a private system is associated with the fiscal incentive for the owner of the system. Providing public funding assistance to upgrade privately owned water or wastewater systems may be construed as a gift of public funds. Private systems may not have been constructed or operated to the same standards as public systems. It may periodically be perceived that the users (tenants) of the private system are the primary consideration for determining if public funding assistance is appropriate. Care should be exercised to not remove the private owner responsibility for the water or wastewater infrastructure.*

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3. *How: Ensure that the requirements associated with audits, fiscal reserves, rate structures, operational budgets, operational and managerial requirements, and technical requirements are mandated equally to all potential recipients of public funding assistance.*
4. *When: On-going.*
5. *Funding: No additional funding is necessary.*

#### 12.2.4 Improve DAC Awareness and Participation

##### Priority Issues

Lack of Informed, Empowered, or Engaged Residents – Residents lack good information, or do not feel that they have the power or ability to change their situation, or are not engaged in decision-making processes that impact local water or wastewater service, including inadequate or confusing information about water quality and what is safe drinking water, lack of information to residents on grant opportunities available to the community, knowledge about health impacts.

##### Potential Solutions

Potential solutions to resolve the priority issue described above include:

1. Provide community outreach and engagement as part of project development
  - a. Include community outreach and engagement in project budgets and annual budget of water systems
  - b. Implement appropriate and effective practices when conducting outreach and engagement (e.g., provide translation and use in-person, phone, and mail for outreach, not just email)
  - c. Conduct analysis that facilitates community engagement in project development.

Several recommendations to facilitate and encourage these potential solutions are described below.

##### Recommended Actions

#### 1. Provide Community Outreach and Engagement

Local Service Provider, Counties and IRWMs:

- A. Provide the community as much information as possible and opportunity to provide input early on in the process. Local water providers should include funding and/or staff time as part of annual and project budgets to conduct community outreach, education, consultation with community residents/users (through community meetings) in order to address barriers and lack of information and to evaluate and implement recommendations identified by the users.

1. *Who: Local water or wastewater providers or entities acting as project applicants on behalf of DACs.*

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2. *Why: Communication is critical for community acceptance. Community acceptance will help implementation of the solutions and overcoming barriers. It will also help support acceptance of reasonable rate increase needed to ensure adequate service or improvements.*
3. *How: Local providers should consider holding regular community meetings and sending out letters to consumers with updates on services and inviting them to participate in consideration of alternatives and throughout the development of major projects. The more transparent information that is available and opportunities for discussion, the more that community leaders can support informed choices and gain broad support.*

There are two primary activities to accomplish this.

- a. An effective communications plan. Local services providers should proactively update the community on its services and notify customers of opportunities for input on new project development. Notices should be delivered to each household and translation should be provided as needed. In most DACs, a significant percentage of the population is primarily Spanish-speaking and therefore Spanish translation should be provided for notices and at public meetings. Local service providers should consider having bilingual staff or securing a contract with a translator to regularly translate important public documents and provide interpretation at public meetings when needed. Translation should be included in job descriptions or contracts included as part of the system's annual budget.
  - b. A responsive scope of work for project development. Local service providers should ensure that any scope of work with an engineering firm includes transparent evaluation of alternatives to minimize O&M costs, and includes the need to explain project alternatives to the community and effectively incorporate and respond to feedback. For large, complex project planning processes involving more than one community, the contracts should include subcontracts with a community facilitation team as well as engineers, and that should be included in any funding scope of work. The more that board members and community members and other interested parties can be provided analysis of the pros and cons and realistic estimated costs for consumers of various alternatives, the better decision-making that can take place.
1. *When: This is particularly important for systems when developing new projects, and is important to include within any project application scope of work. But there is also an on-going need to communicate with consumers effectively about the services being provided.*
  2. *Funding: Funding for on-going regular communication should be included in the system's annual budget as part of the cost of services. However, when more intensive analysis, facilitation and communication services are needed around*

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*major project development, this can be funded by including it in the scope of work for project applications, particularly within planning and pre-planning funding sources.*

3. Improve Land Use Planning to Minimize Creation of New Water/Wastewater Issues

#### Priority Issues

Lack of Vision and Integrated Planning to Develop Solutions – Lack of shared visions of sustainable solutions for DAC water and wastewater needs within community planning documents, water planning documents, individual water and wastewater provider plans, county general plans, and Integrated Regional Water Management Plans, lack of regional coordination and planning with larger entities in planning efforts.

Many of the priority issues identified by the SOAC and discussed above are perpetuated by allowing new development in areas where there is not a sustainable system with adequate water supply reliability and quality. While water and wastewater related issues are being resolved in some communities, similar issues are being created in new areas.

#### Potential Solutions

Potential solutions to resolve the priority issue described above include:

1. Development permits (including any new domestic wells or septic systems) should require that:
  - a. Adequate supply, quality, and TMF capacity will be available for long-term water and wastewater service before a building permit is issued.
  - b. Any new development near an existing system to connect and help bring the existing system into compliance, rather than create new systems.
2. Planning and zoning should be appropriately targeted and updated to ensure water and wastewater systems have the capacity needed to serve projected development.

Several recommendations to facilitate and encourage these potential solutions are described below.

#### Recommended Actions

##### 1. Restricting Permits for Development

Legally, through LAFCo, there should be no new development without a finding of adequate quality water supply or a connection to an existing system that has adequate water supply. County:

- A. Only zone for residential development where there is safe and reliable water, except in situations where there are plans to provide safe and reliable drinking water, and additional growth may create more economies of scale and bring a greater rate payer base that will allow for a solution to be funded.

## SECTION TWELVE

1. *Who: County Planning Department.*
2. *Why: Implying the potential for growth in areas that do not have proven safe and reliable water supply sources is not exercising due diligence in land use planning.*
3. *How: Require proof of the existence or reasonable capability to provide safe and reliable water supply to an area prior to defining land uses or zoning for potential land uses in areas within the County.*
4. *When: On-going.*
5. *Funding: No additional funding required.*

### 12.2.5 Develop & Maintain Information on DAC Water/Wastewater Needs

#### Priority Issues

Lack of Information on DACs – Lack of information about water rates and usage, lack of information about water quality in areas that have no public water provider (i.e., private wells), barriers to accessing information on water quality (i.e., confidentiality requirements), lack of information about wastewater treatment in areas without wastewater system providers, etc. Lack of data on water and wastewater infrastructure compatible with GIS and online so it can be accessed by the general public.

#### Potential Solutions

Potential solutions to resolve the priority issue described above include:

1. Improve Data Collection (including collection of new data and ongoing updates of key data)
2. Improve Data Management and Accessibility

Several recommendations to facilitate and encourage these potential solutions are described below.

#### Recommended Actions

##### 1. Improve Data Collection

County:

A. Tulare County will continue to update and maintain the database that was developed through this Study. Local data stewards from each of the other three counties (Fresno, Kern, and Kings) should be established to assist in the quality control of the data collected for each respective county. The uses of this database could be many, but the primary purpose would be to track improvements to the water supply quality and reliability in the Study Area.

1. *Who: Tulare County (Lead), Fresno, Kern, and Kings Counties (local data stewards)*

## SECTION TWELVE

## PILOT STUDY

2. *Why: The uses of this database could be many, but the primary purpose would be to track water quality and supply issues in the Study Area, as well as changes overtime (improvements in the conditions, or otherwise).*
  3. *How: The website that will host the data is currently being developed. Data will be maintained by Tulare County and updated on approximately an annual basis.*
  4. *When: Current and ongoing.*
  5. *Funding: Tulare County*
- B. Tulare County should track progress with respect to the priority issues identified in this Study. The current condition should be clearly identified. Monitor and measure the success of this Study through implementation of recommendations, relative condition of drinking water supplies, and condition of wastewater service.
1. *Who: Tulare County (Lead), Fresno, Kern, and Kings Counties (local data stewards)*
  2. *Why: To monitor and measure the success of this Study through implementation of recommendations, based on relative condition of drinking water supplies and wastewater service.*
  3. *How: The website that will host the data is currently being developed. Data will be maintained by Tulare County and updated on approximately an annual basis. Statistics related to the number of water quality issues, water supply issues, wastewater treatment and disposal issues, and other factors can be compared and charted to monitor progress.*
  4. *When: Ongoing*
  5. *Funding: Tulare County*
2. Improve Data Management and Accessibility
- County:
- A. Improve the County Environmental Health Department responsibilities, fee authorities, and requirements to permit and monitor on-site systems. (There was a frequent observation that records for on-site systems were non-existent – i.e. Plainview, Rodriquez Labor Camp).
1. *Who: County Environmental Health Department.*
  2. *Why: It is apparent that there are many private, on-site water and wastewater systems with non-existent or insufficient records of the facilities. The lack of records includes topics such as design capacity, on-site sustainability, inspections, and records of “as-constructed” facilities. The lack of records impacts the ability to evaluate adequacy of existing systems and impacts the ability to develop new community systems in areas that are served by on-site systems.*

## SECTION TWELVE

3. *How: The building permit process must include complete records regarding proposed and "as-constructed" on-site water and wastewater systems.*
4. *When: On-going.*
5. *Funding: Unknown.*

DRAFT



## 13 REFERENCES

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- California Department of Water Resources, 2003. *California's Groundwater*, Bulletin 118, October 2003.
- Christian-Smith, Balazs, Heberger, Longley, 2013, *Assessing Water Affordability: A Pilot Study in Two Regions of California*, dated August 2013.
- HDR, 2009. *Study 3, Regionalization Strategies to Assist Small Water Systems in Meeting New SDWA Requirements*, prepared for Brazos G Water Planning Group, dated April 2009.
- Provost & Pritchard Consulting Group (P&P), 2013. *Disadvantaged Community Water Study Master Database*.
- State Water Resources Control Board (SWRCB), 2012. *Communities that Rely on Contaminated Groundwater*, State Water Resources Control Board, Report to the Legislature, Draft dated February 2012.
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- United States Geologic Survey (USGS), 2009. *Groundwater Availability of the Central Valley Aquifer, California*, Professional Paper 1766, 2009.
- University of California, Davis, 2012. *Addressing Nitrate in California's Drinking Water, with a Focus on Tulare Lake Basin and Salinas Valley Groundwater*, Report for the State Water Resources Control Board Report to the Legislature, dated January 2012.

### P&P 2013 Data Sources:

1. State of California, Department of Public Health
  - a. Processed by Tulare County September 2011
  - b. Updated data from CDPH October 2012
2. State of California, State Water Resources Control Board
  - a. GeoTracker GAMA  
[http://geotracker.waterboards.ca.gov/gama/data\\_download.asp](http://geotracker.waterboards.ca.gov/gama/data_download.asp)
  - b. Personal Communications
  - c. Provided spreadsheet

## SECTION THIRTEEN

3. State of California, Department of Water Resources
4. Tulare County, Resource Management Agency
5. Carolina Balaz PhD, UC Berkeley/Community Water Center
6. Community Water Center
7. Self-Help Enterprises
8. UC Davis Nitrate Study, 2012
9. PolicyLink
10. Fresno County, Public Works and Planning, Special Districts
11. US Department of Commerce, United States Census, American Fact Finder,  
<http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>
12. US Department of Commerce, United States Census, TIGER Products,  
<http://www.census.gov/geo/maps-data/data/tiger.html>
13. State of California, Department of Finance,  
[http://www.dof.ca.gov/budgeting/documents/Price-Population\\_2011.pdf](http://www.dof.ca.gov/budgeting/documents/Price-Population_2011.pdf)
14. Fresno County LAFCo
15. Tulare County LAFCo
16. Kern IRWMP
17. Kings County LAFCo
18. Provost and Pritchard GIS data resources

## **APPENDICES**

New Sources Pilot – Community Review Process

