

**NEW SOURCES DEVELOPMENT PILOT  
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)

**DRAFT  
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***Prepared for:***

*County of Tulare*

*Final Submittal to:*

*The Department of Water Resources*

***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 SOURCES DEVELOPMENT**

**PILOT STUDY**

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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
O&M .....	Operation and Maintenance
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
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)

**NEW SOURCES DEVELOPMENT**

**PILOT STUDY**

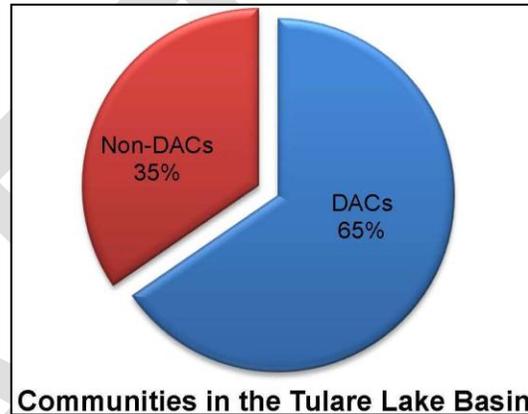
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SSWS.....	State Small Water System
SWP .....	State Water Project
SWRCB.....	State Water Resources Control Board
SWS .....	Small Water System
TCP .....	1,2,3-Trichloropropane
THM(s) .....	Trihalomethane(s)
TLB.....	Tulare Lake Basin
TMF .....	Technical 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 352 of the 538 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 Sources 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 352 disadvantaged communities (DACs) identified within the Tulare Lake Basin Study Area, of which 195 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 352 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 Group 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 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

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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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## PILOT STUDY

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 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 retained by the larger community system.

### Exchanges or Contracting for Surface Water

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**.

### 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.

### 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

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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 implement the associated metered water rate schedule for all connections. Other water conservation measures could include requiring low flow appliances within residences. Water conservation, as encouraged through water meters, rate schedule, and encouragement of 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 from 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.

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

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**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 the source of 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 topics associated with 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.

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

**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.

**EXECUTIVE SUMMARY****PILOT STUDY****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, 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.

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

**EXECUTIVE SUMMARY**

- 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
4. Discussions with CDPH – regulatory and funding
5. Discussions with City of Dinuba
6. Review of Monson
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. Place Well 2 as standby in the Water Supply Permit.

2. Monitor and record the water use of Well No. 3 and Well No. 2 daily.
3. Determine the standing water level in Well No. 3 and Well No. 2.
4. Update the Funding Application for a new water supply well with the additional consideration that the District does not have a sufficient water supply.
5. Identify potential water supply well and water storage sites.
6. 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.
7. Proceed with funding and construction of a water supply well.
8. Consider adjustment of water rates. The District is in dire need of additional reserves and operating funds.
9. 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.

10. Consider prohibiting any new connections.
11. Consider establishing connection fees once a sustainable water supply is obtained.
12. 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 with Monson connect to the Sultana CSD water system.

13. Coordinate with Monson and Tulare County with any local hydrogeological investigations.
14. Maintain interest in the East Orosi Water Treatment Facility 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
- 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.

### 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.

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

- 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, No. 6, 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.
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.

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

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.

StratfordChallenges Faced by Stratford Public Utility District

The challenges faced by the Stratford Public Utility District include:

- Disadvantaged
- 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

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.

Description of the Stratford Community Pilot ProjectPilot Project Activities Summary

**EXECUTIVE 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
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 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.

### **Funding Opportunities**

State regulators and funders can begin encouraging non-infrastructure solutions by providing educational material as well as funding opportunities. Existing funding opportunities and proposed 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.
- 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.

### **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 particular problem(s).

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

**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. Providing the community as much information as possible, early on in the process is critical for community acceptance.

**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 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 or payback any loans for the capital costs. Community acceptance of the new source solution may help ease the acceptance of any rate increases.

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

**Water meters** – Using water meters and billing based on usage are ways to encourage water conservation. Many DACs have water meters however 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 Solutions Pilot report.

**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, 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.
- 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

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.

**EXECUTIVE SUMMARY**

**PILOT STUDY**

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- Providing technical and/or financial support for DACs to prepare funding applications.
- Promote grant application workshops or training.

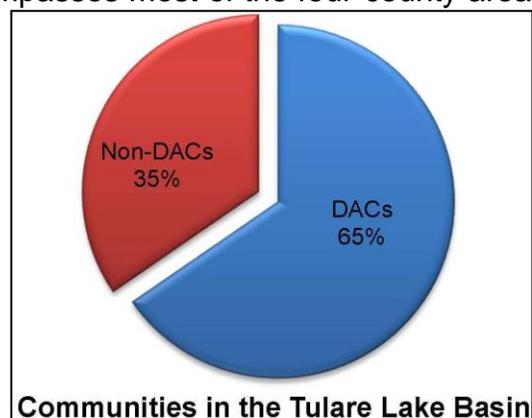
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# 1 INTRODUCTION

## 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, Kobot, 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 352 of 538 identified communities within the Tulare Lake Basin are disadvantaged or severely disadvantaged. The estimated population within these 352 communities is approximately 280,000<sup>1</sup>. **Figure 1-2** through **Figure 1-5** show the disadvantaged



<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**

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

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**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

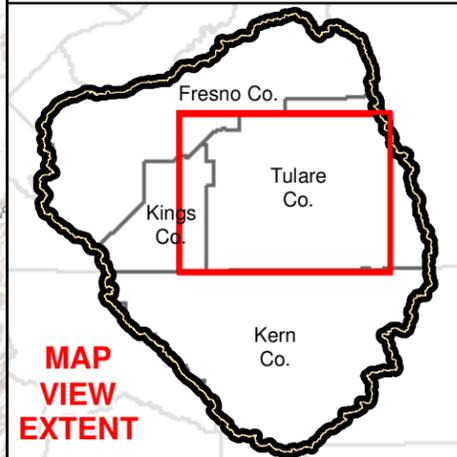
**TULARE COUNTY  
Communities**

DAC and SDAC Communities

**Legend**

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

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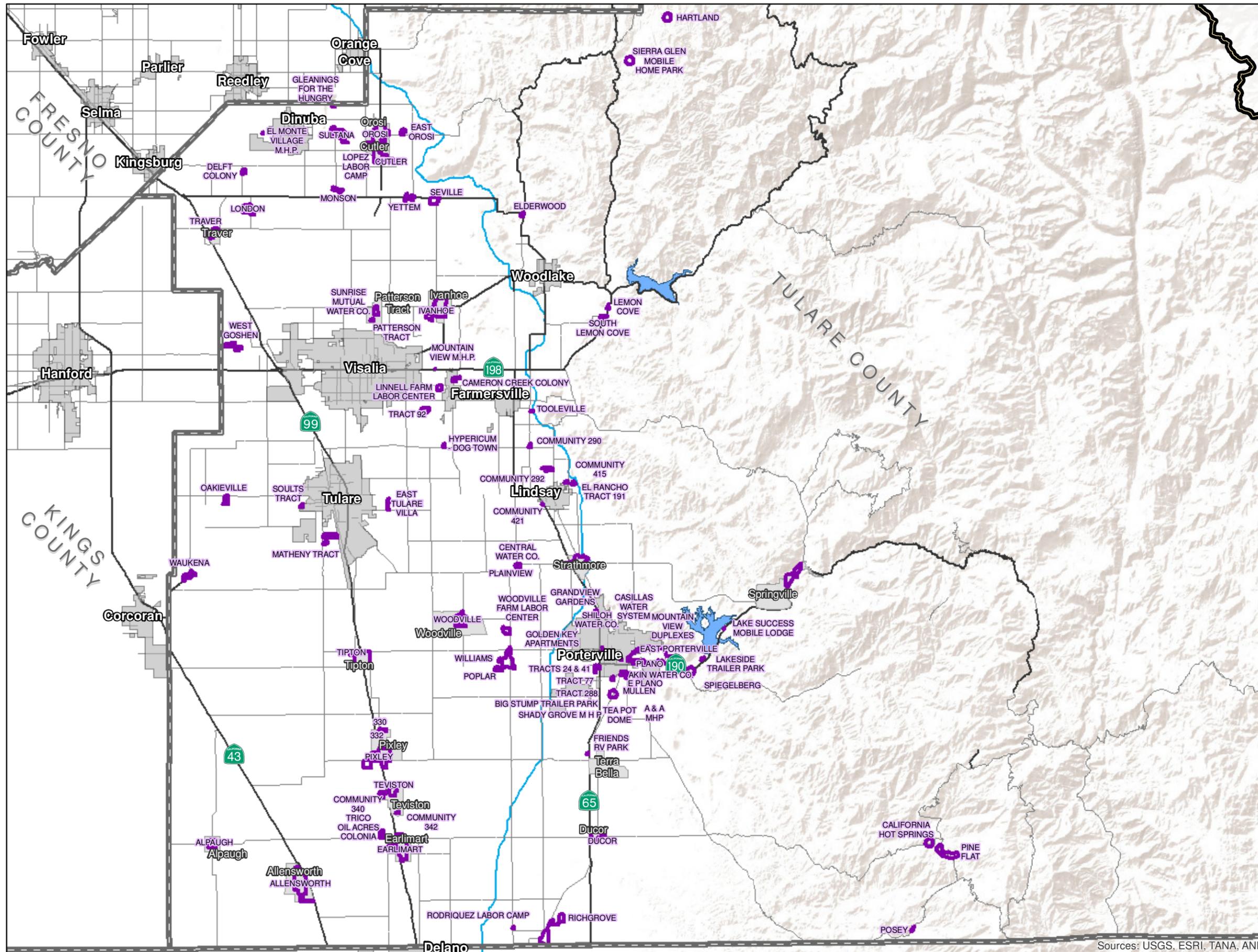


**MAP  
VIEW  
EXTENT**



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**

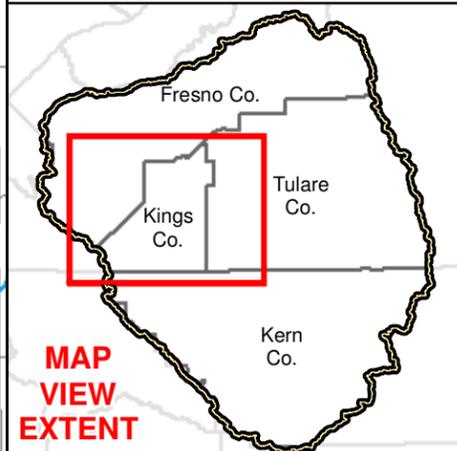
KINGS COUNTY  
Communities

DAC and SDAC Communities

**Legend**

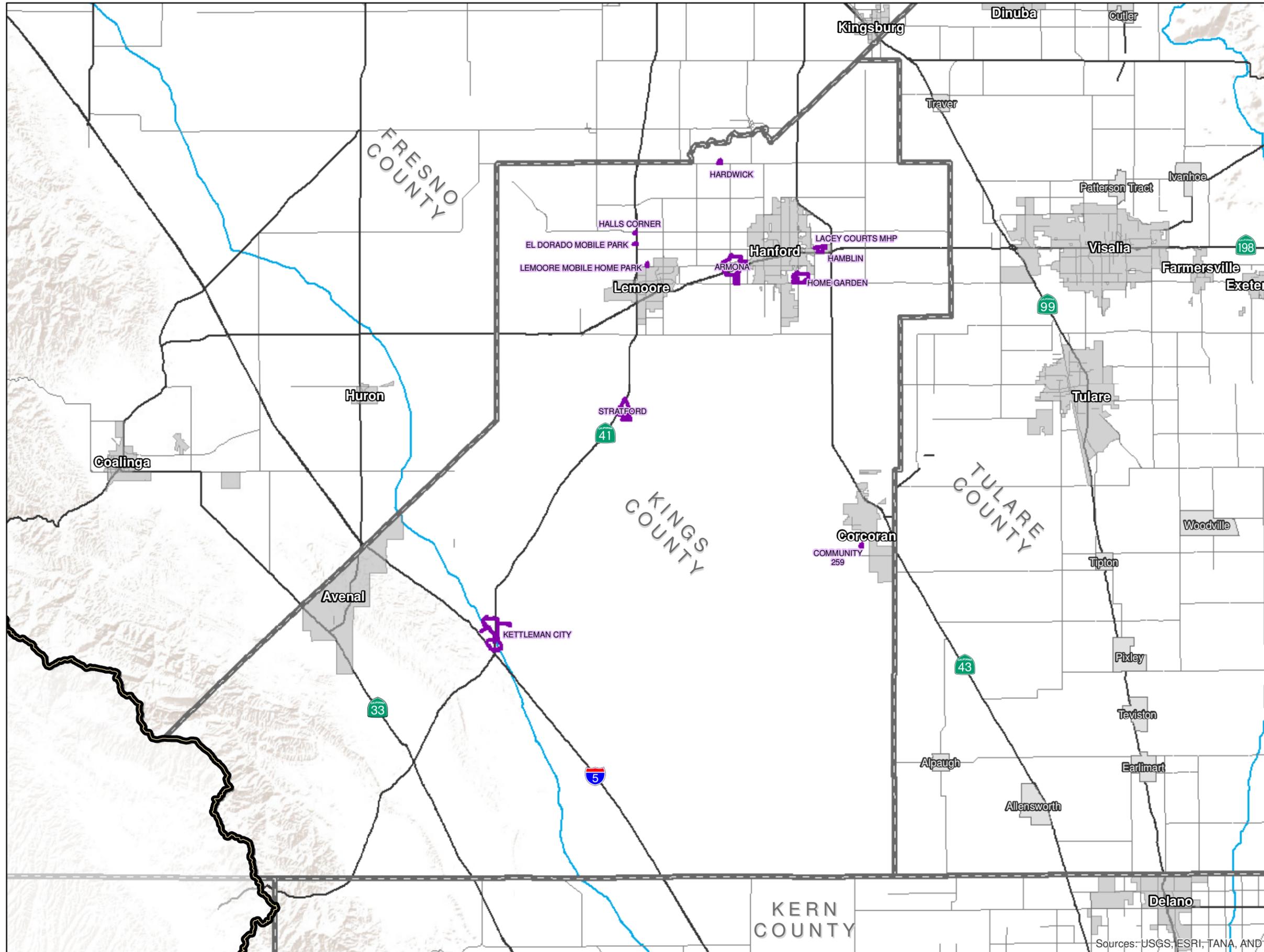
-  Tulare Lake Basin
-  County
-  DAC or SDAC Community
-  City
-  Community (Non-Incorporated)
-  Major Road
-  Highway / Interstate
-  Major Canal

Exhibit 2  
**DRAFT**



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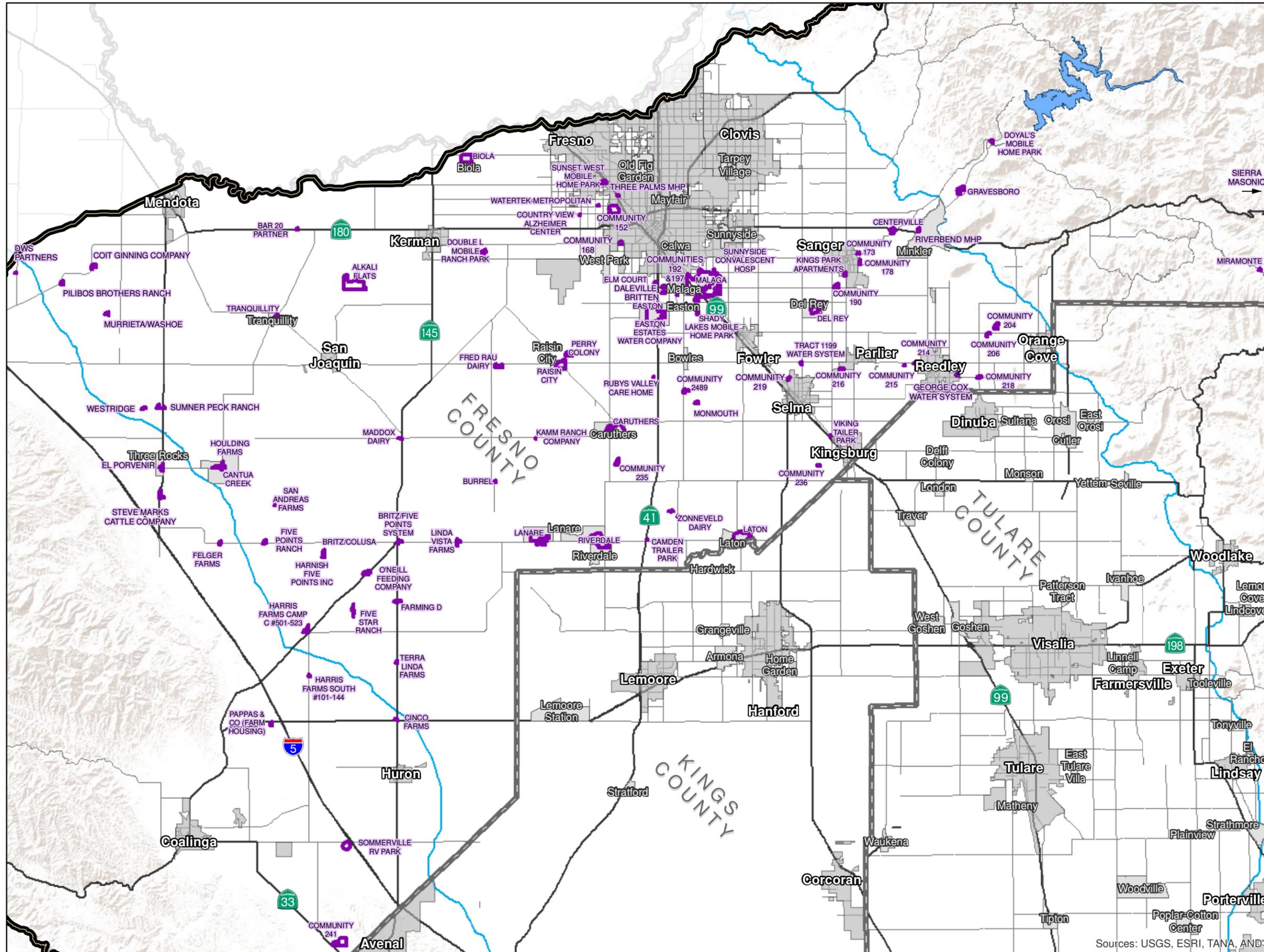


Sources: USGS, ESRI, TANA, AND

**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

FRESNO COUNTY  
Communities

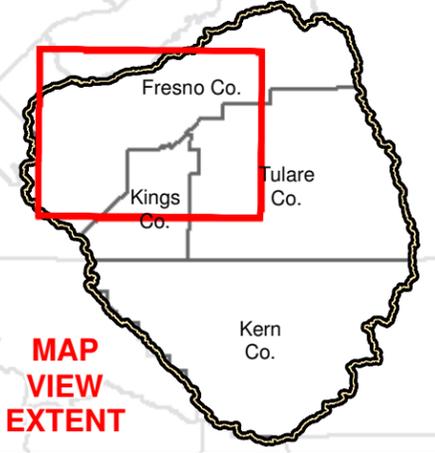
DAC and SDAC Communities



**Legend**

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

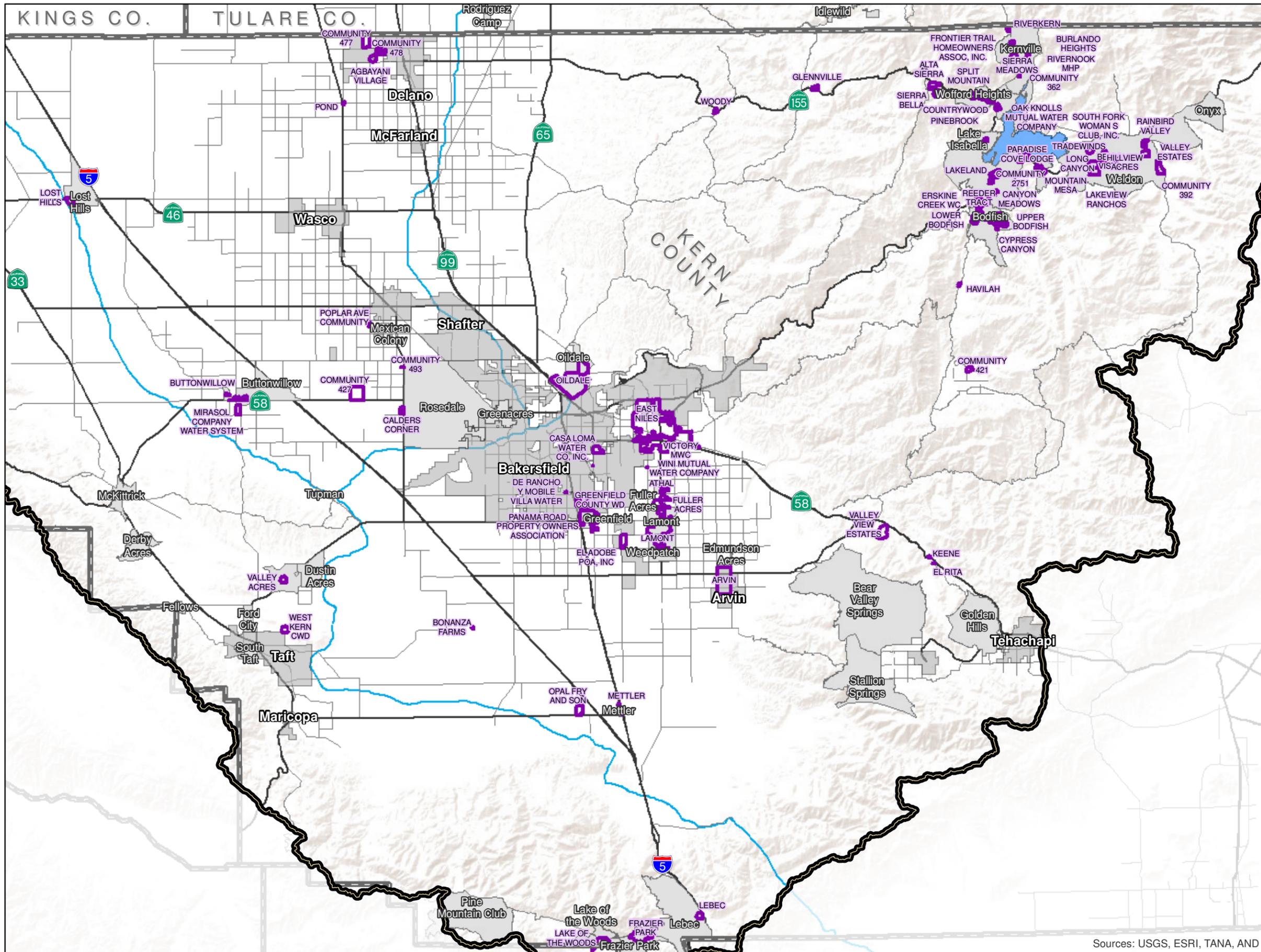
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Sources: USGS, ESRI, TANA, AND...



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

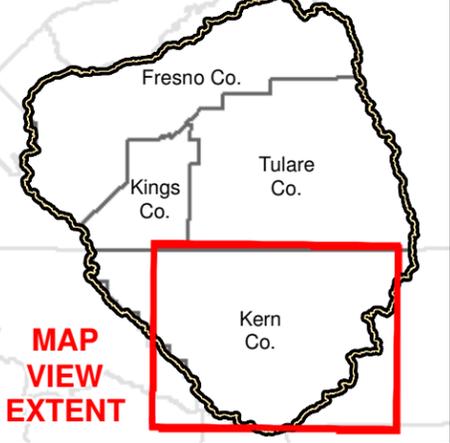
**KERN COUNTY  
Communities**

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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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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An Employee Owned Company

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(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

## PILOT STUDY

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****PILOT STUDY**

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**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**

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 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 Sources Development pilot study aims to address is summarized as follows:

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:

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

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- 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****PILOT STUDY**

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.

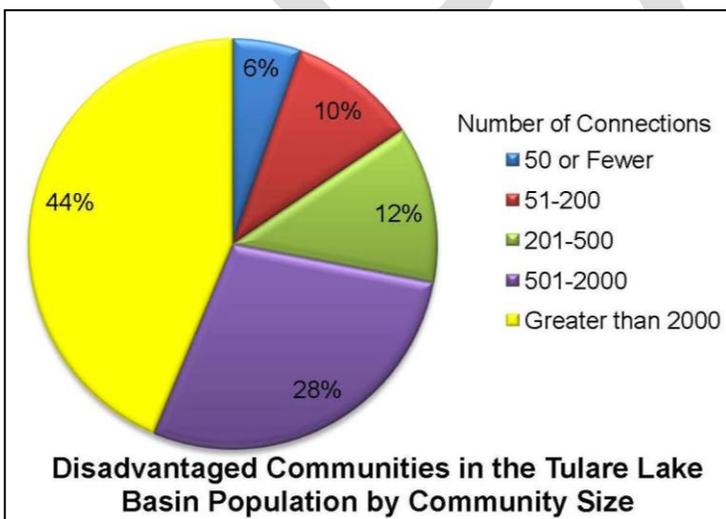
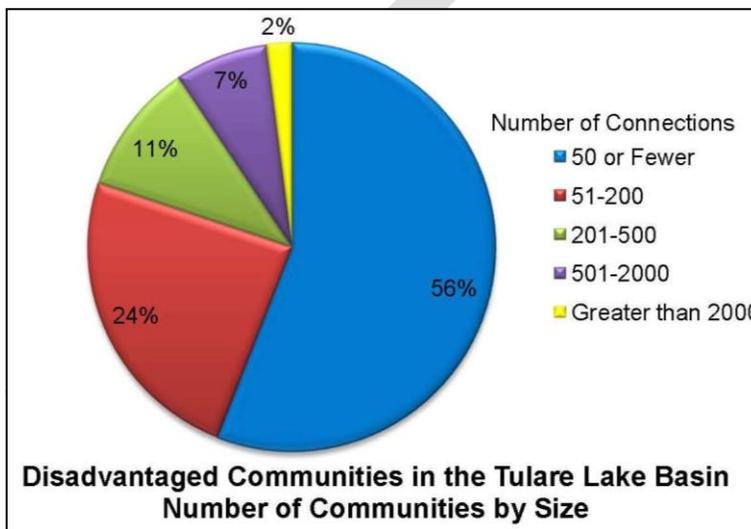
SECTION TWO

2.1.3 Changes to the Regulatory Setting

As of July 1, 2014, the drinking water division of CDPH will operate under the SWRCB.

2.2 Summary of Database Findings

There are approximately 352 disadvantaged communities (DACs) within the Tulare Lake Basin Study Area. Of these 352 DACs, approximately 195 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 (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.

## SECTION TWO

## PILOT STUDY

Coliform exceedances are also common, but coliform is readily treatable as discussed and documented in the Technical Solutions pilot study.

Approximately 89 out of the 352 DACs in the region reported at least one water quality exceedance between 2008 and 2010. A single exceedance 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. 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.

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

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

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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.

DRAFT

**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

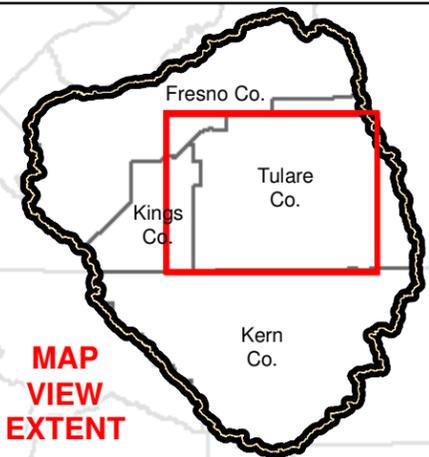
**TULARE COUNTY  
Communities**

DAC and SDAC Communities  
With Unknown Water Source

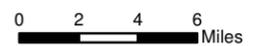
**Legend**

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

**Exhibit 6  
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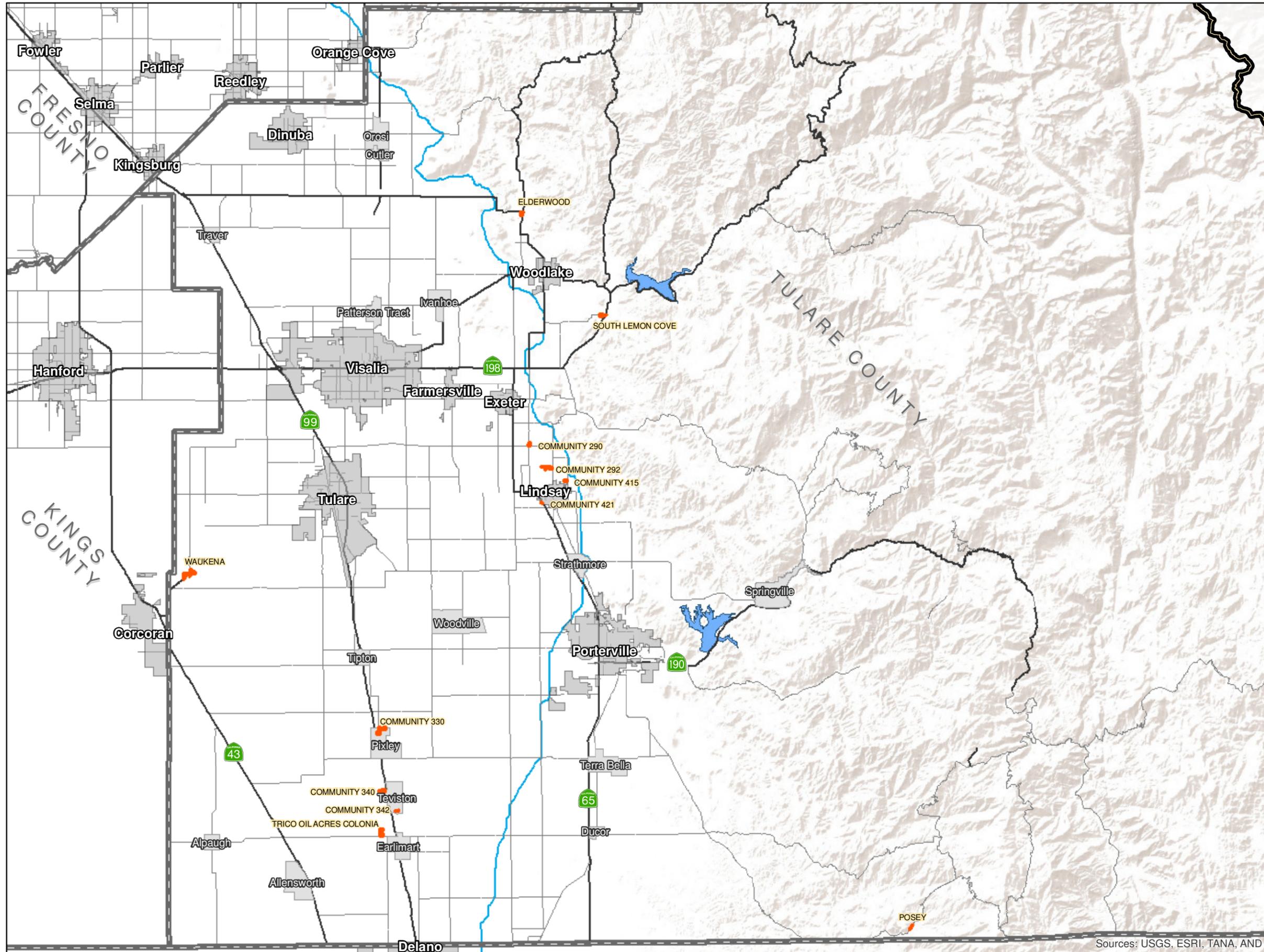


**MAP  
VIEW  
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Sources: USGS, ESRI, TANA, AND

**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

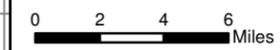
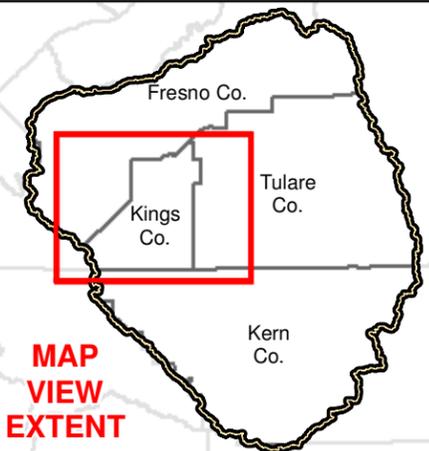
**KINGS COUNTY  
Communities**

DAC and SDAC Communities  
With Unknown Water Source

**Legend**

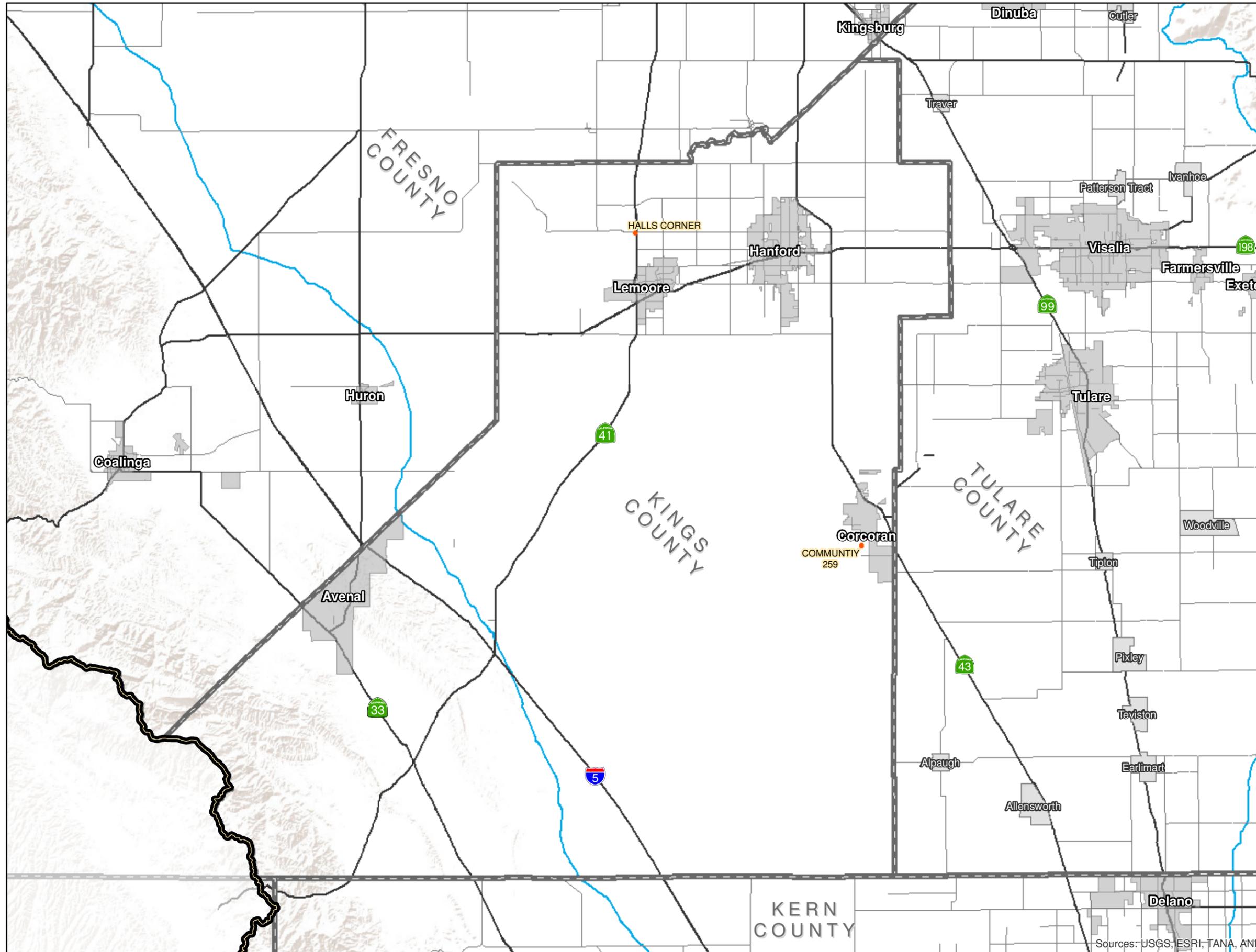
-  Tulare Lake Basin
-  Unknown Water Source
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-  Major Canal

**Exhibit 7  
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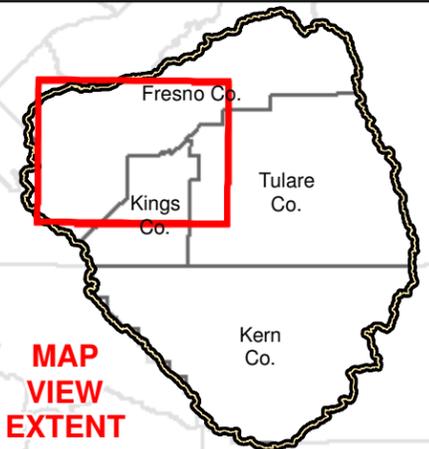
**FRESNO COUNTY  
Communities**

DAC and SDAC Communities  
With Unknown Water Source

**Legend**

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

**Exhibit 8  
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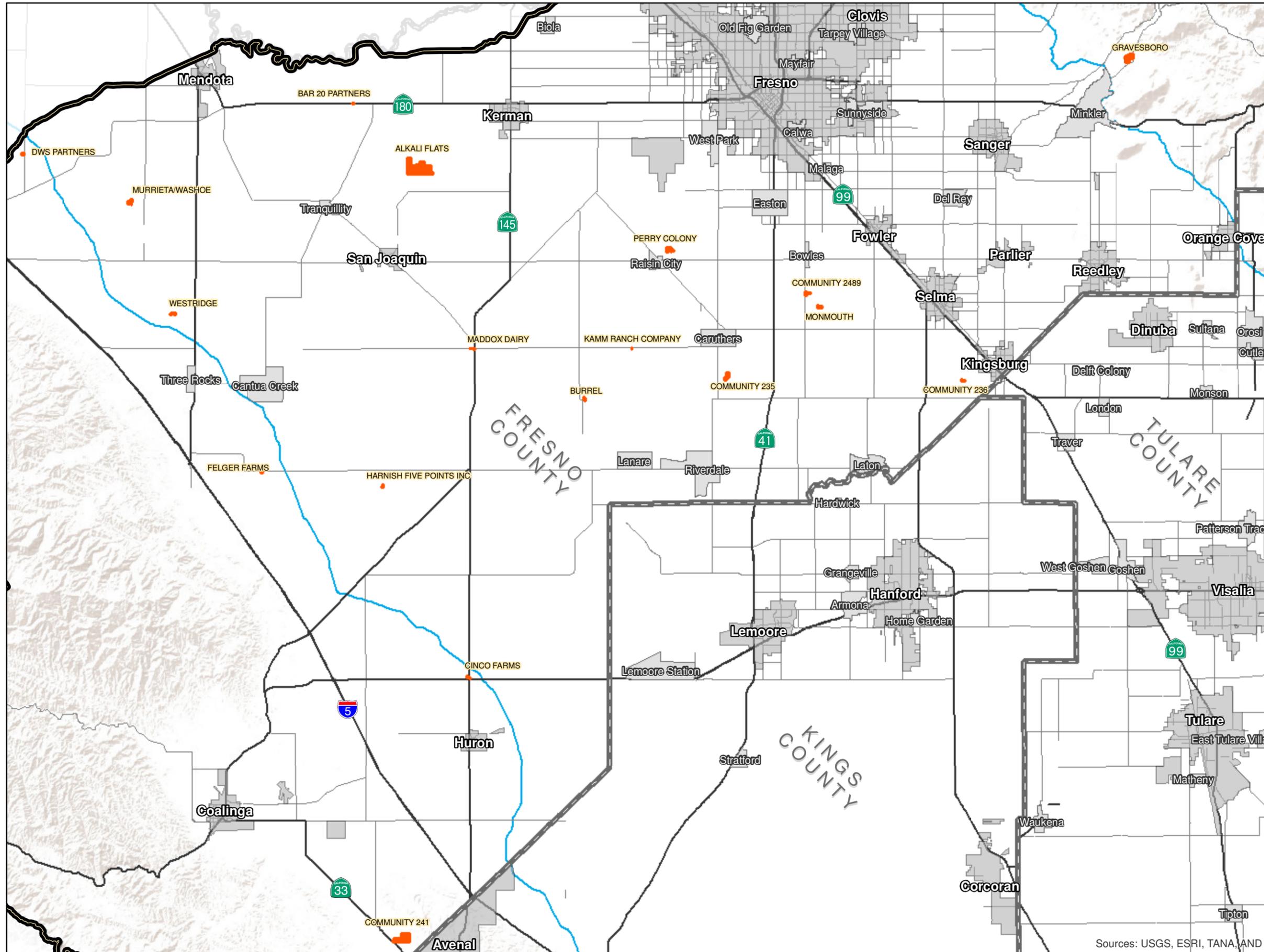


**MAP  
VIEW  
EXTENT**

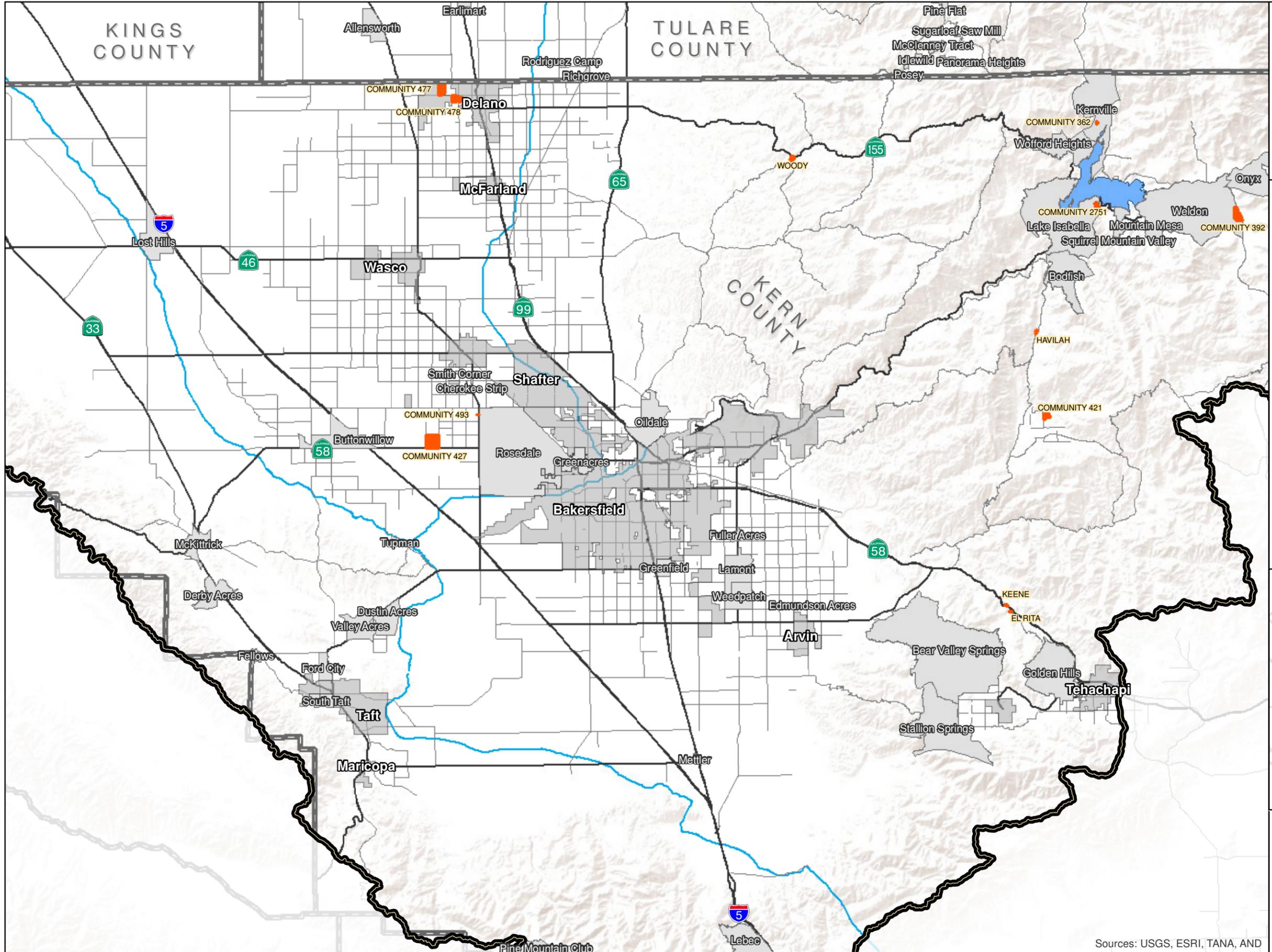


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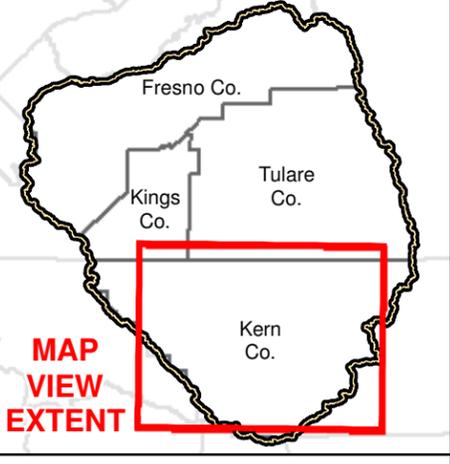
DAC and SDAC Communities  
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**Legend**

- Tulare Lake Basin
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- City
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- Highway / Interstate
- Major Canal

**Exhibit 9**

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## 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.

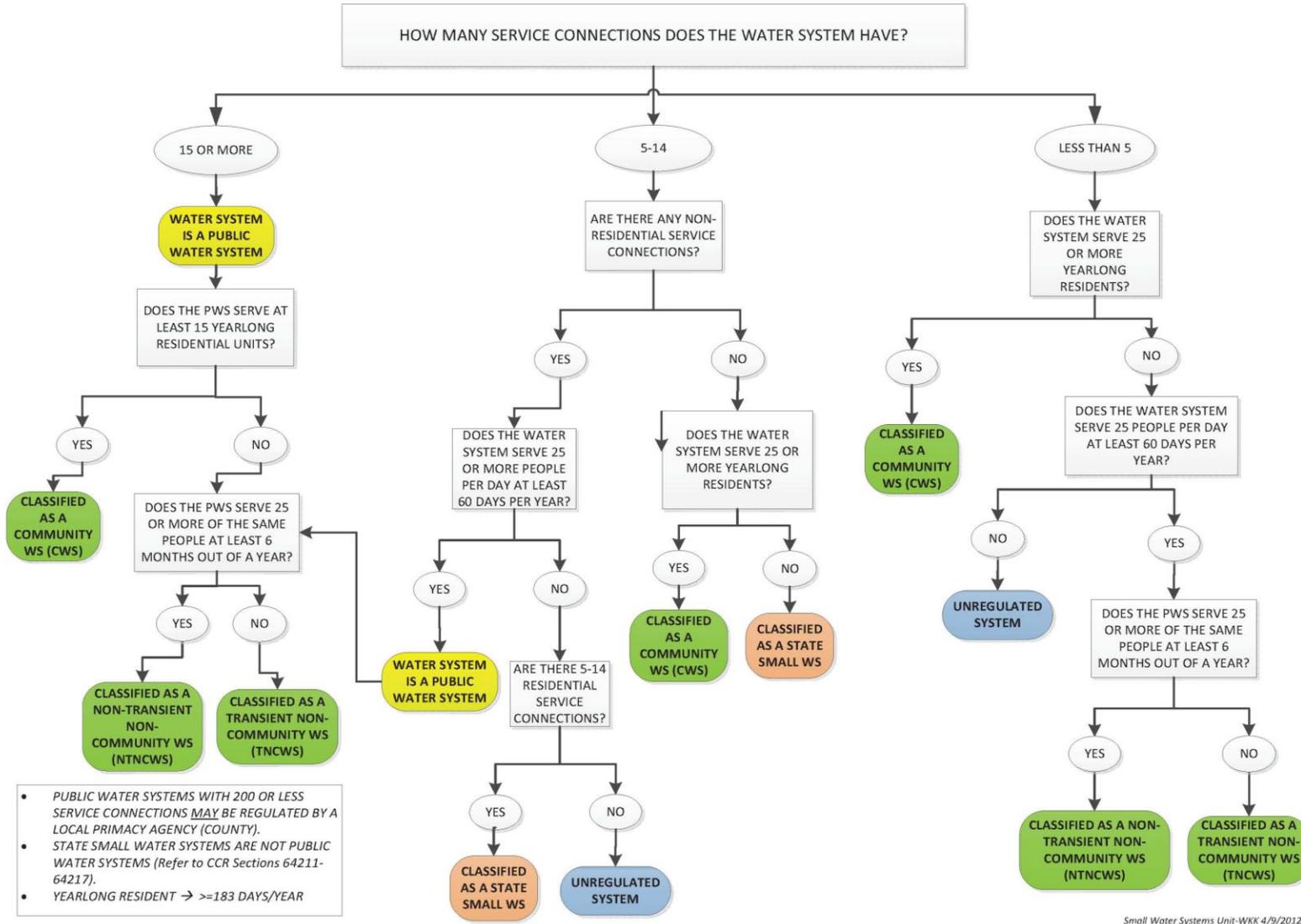
State Small Water System (SSWS): A system for the provision of piped water to the public for human consumption that serves at least five, but not more than 14, service connections and does not regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of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



**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 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 a MHI of \$30,000, this would equate to \$450, 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 California Median Household Income (MHI) for 2006-2010 was \$60,883. A DAC is therefore a community whose 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. The Knox-Nisbet Act of 1963 established LAFCo's in law. There is a list of 14 factors that LAFCo's consider when conducting any of the nine boundary changes. As part of this effort, LAFCo's conduct sphere of influence assessments and municipal service reviews.

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 is 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 XIII D, § 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

California Median Household Income (MHI) for 2006-2010 was \$60,883. A SDAC is therefore a community whose 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 the New Sources 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 and non-compliance 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) which 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 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

## SECTION FOUR

lowest). It is noted that several disadvantaged communities are not applicable to 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. Some of this clean up will be done within the Pilot Study and some will be left to the future. There should be a column for those communities that require investigation to get to a point where the table either does not exist or only shows those communities where water supply is not applicable.

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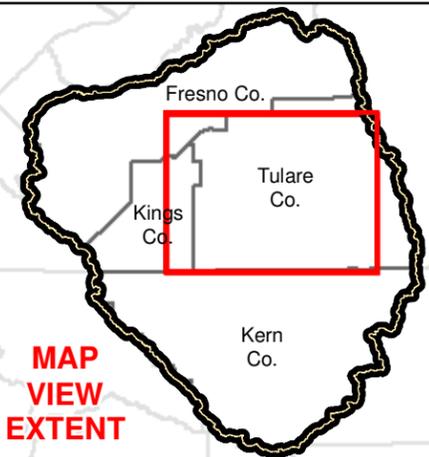
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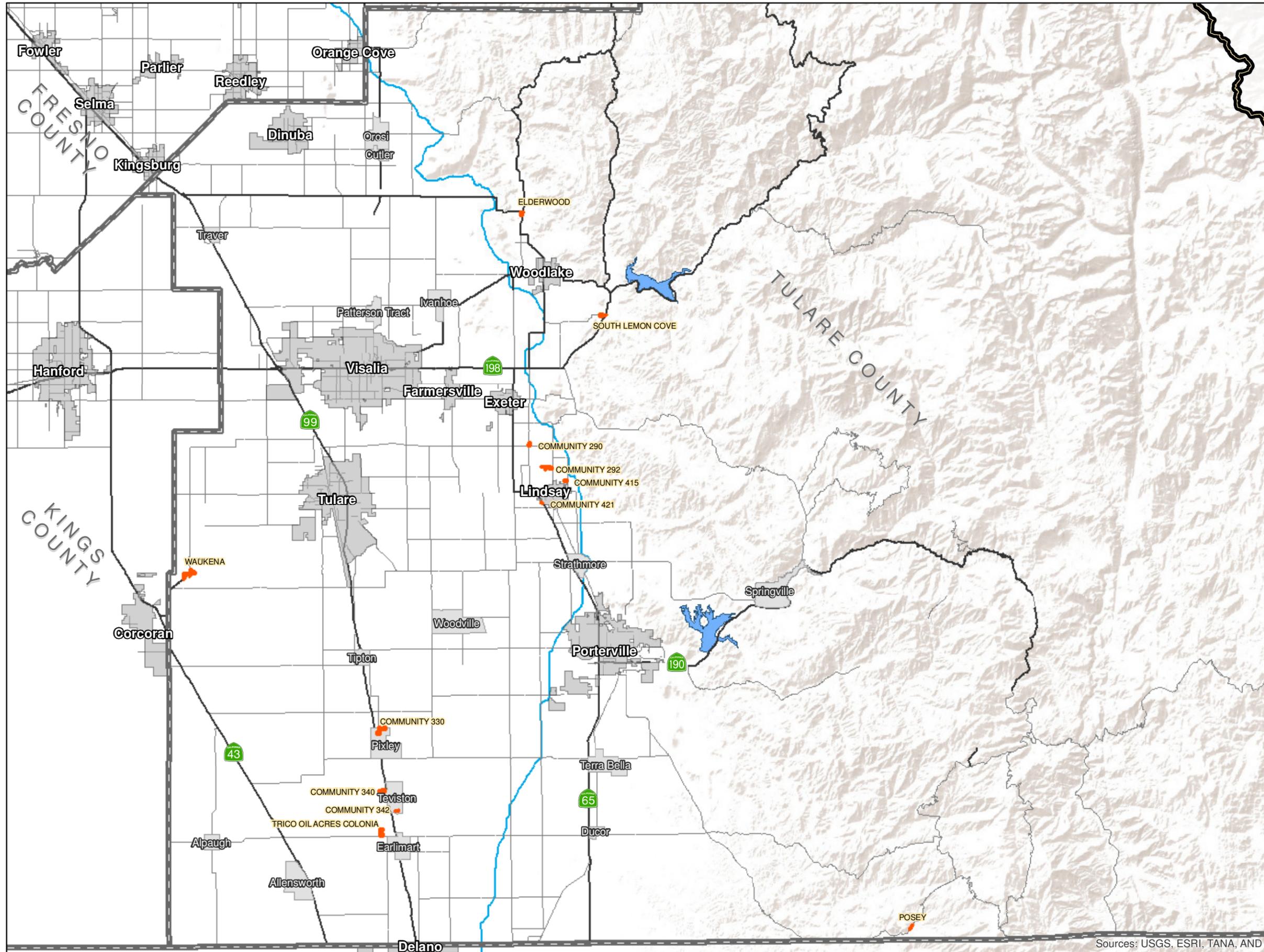


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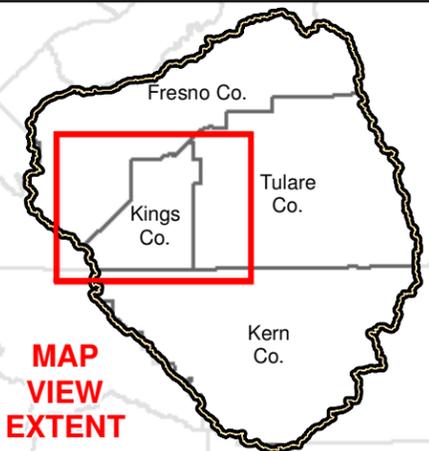
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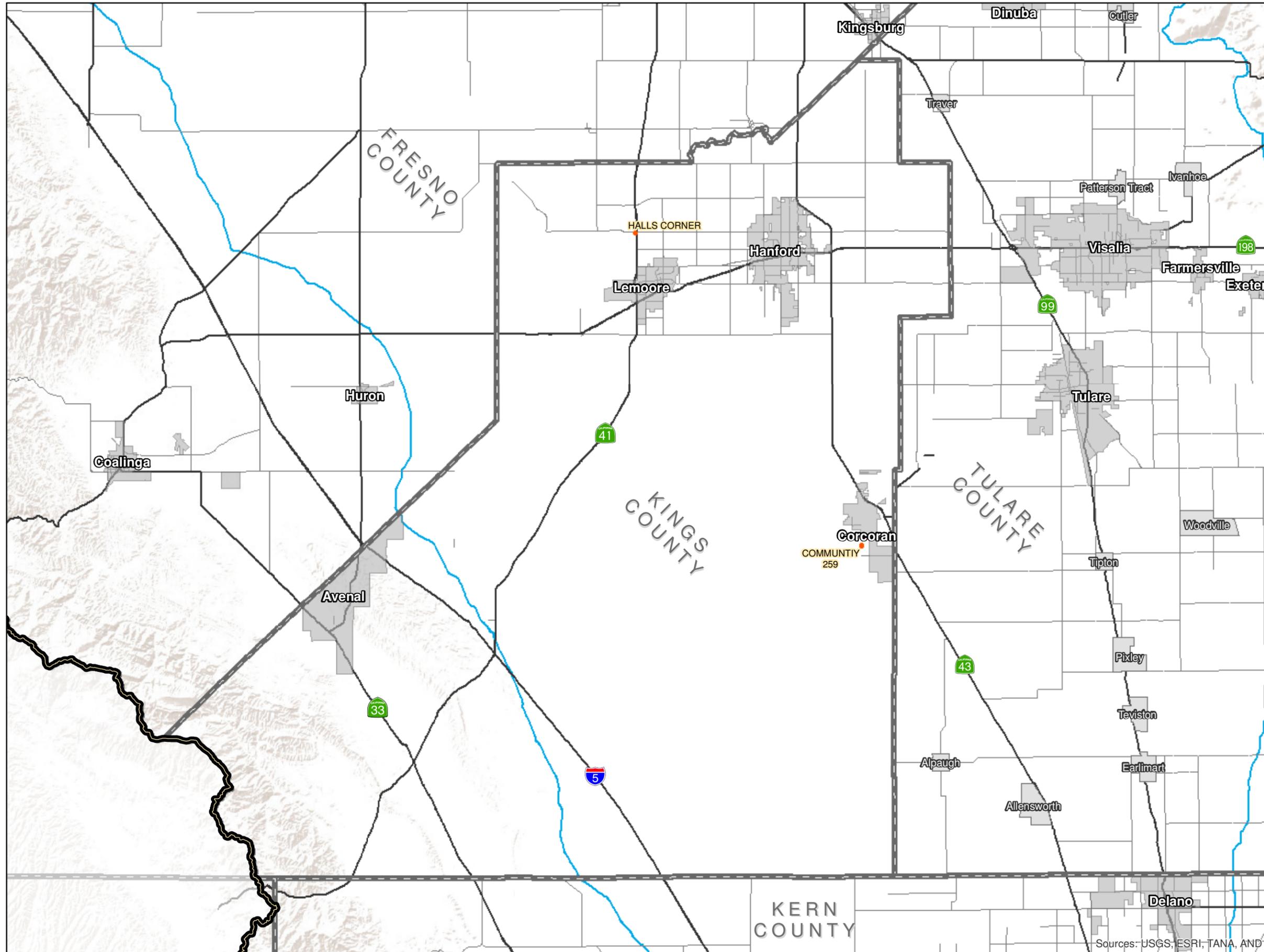
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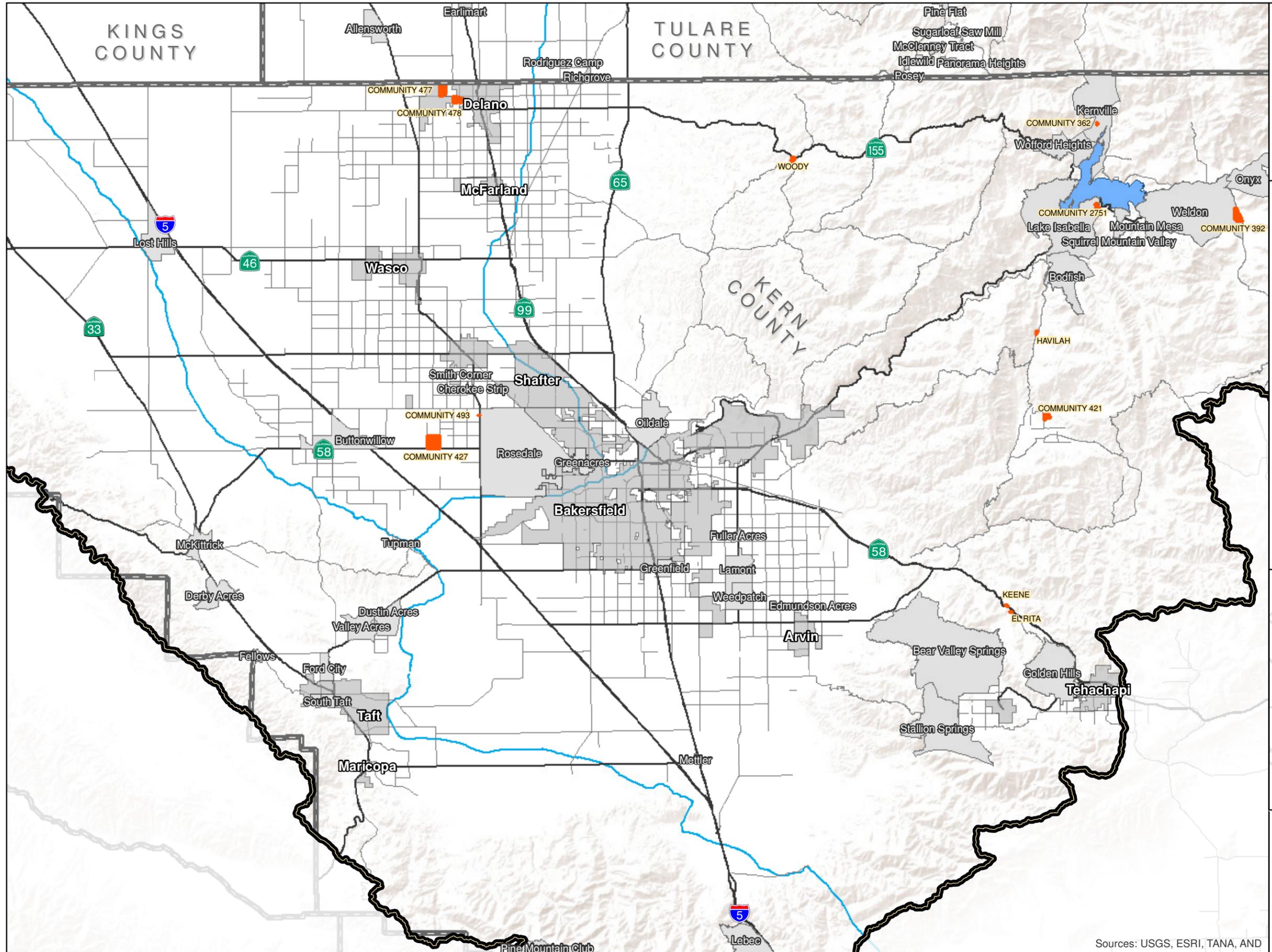
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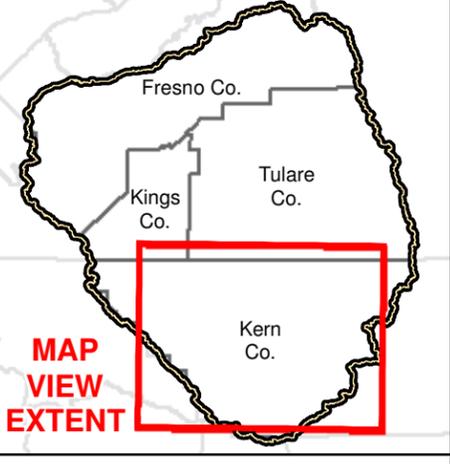
**KERN COUNTY  
Communities**

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

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(559) 449-2700

Sources: USGS, ESRI, TANA, AND

**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

## SECTION FOUR

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, communities with only one source of water supply are 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 per County. 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
RODRIQUEZ 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

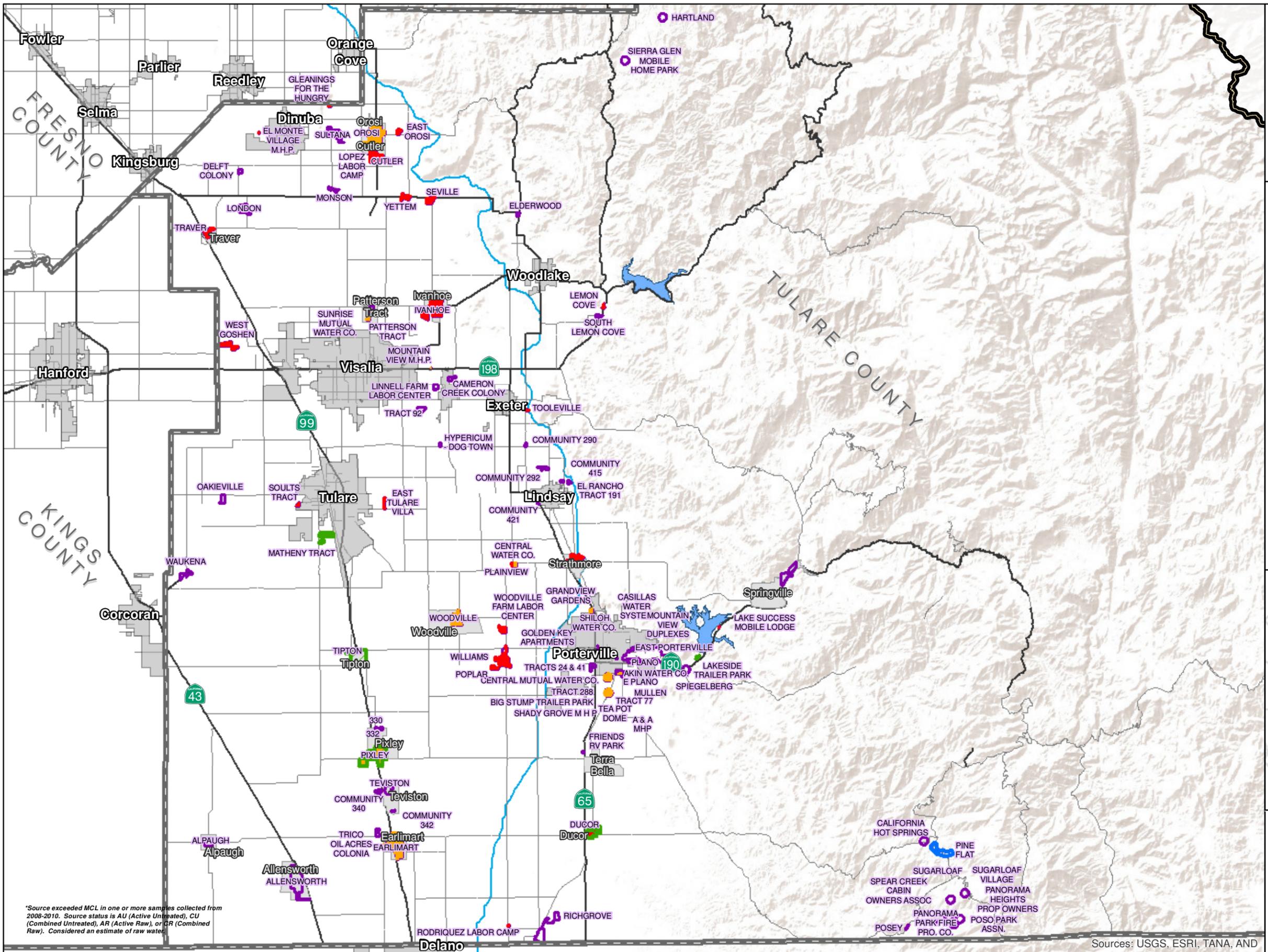
NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Active Sources	Ownership
LEMOORE MOBILE HOME PARK	1600031	125	38	DAC	1	Private
LACEY COURTS MHP	1600010	50	21	DAC	1	Private
HARDWICK	1600507	40	40	SDAC	1	Private

**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 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 10**

**DRAFT**

MAP VIEW EXTENT

0 2 4 6 Miles

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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

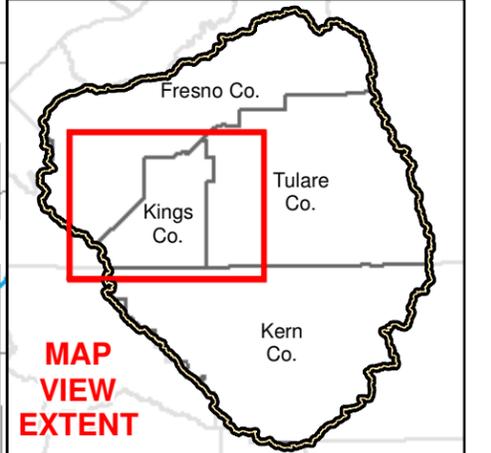
## KINGS COUNTY Communities

DAC and SDAC Communities  
\*Raw Water Quality Issues

### Legend

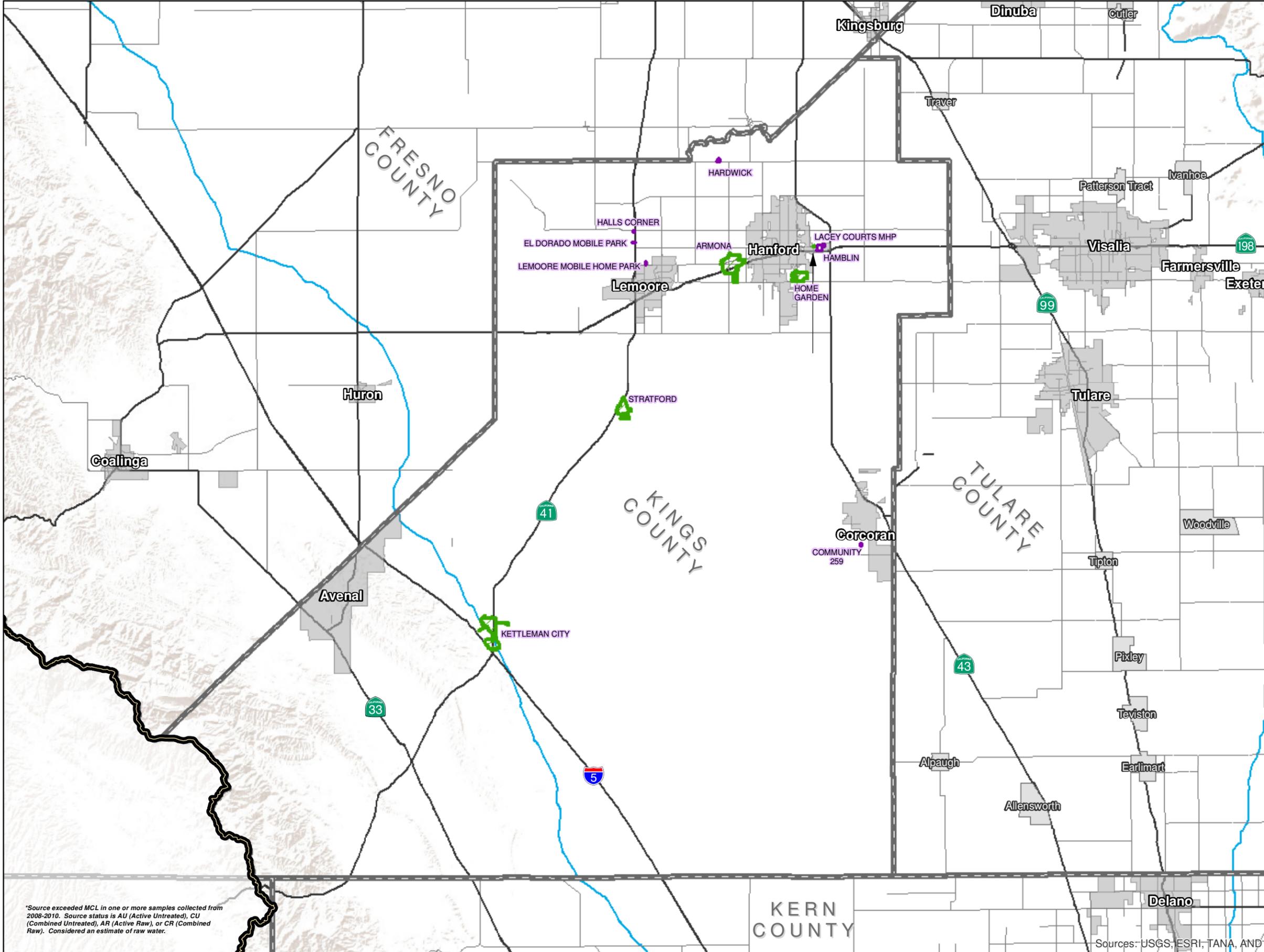
-  Tulare Lake Basin
-  County
-  DAC or SDAC Not Identified With WQ Issue
-  Arsenic (Source Max Value  $\geq 10$  ug/l)
-  Uranium (Source Max Value  $\geq 20$  pC/l)
-  Nitrate as NO3 (Source Max Value  $\geq 45$  mg/l)
-  Nitrate as NO3 (Source Max Value  $\geq 22.5 < 45$  mg/l)
-  City
-  Community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

**Exhibit 11**  
**DRAFT**



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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), 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

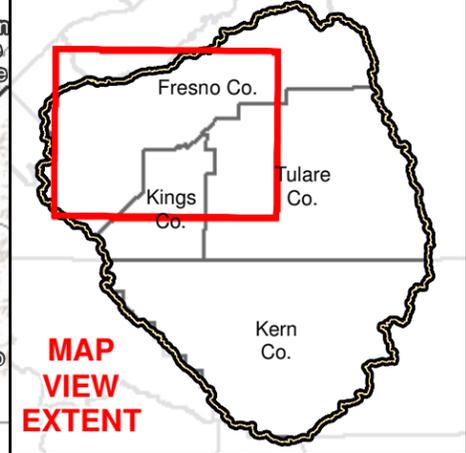
## FRESNO COUNTY Communities

DAC and SDAC Communities  
\*Raw Water Quality Issues

### Legend

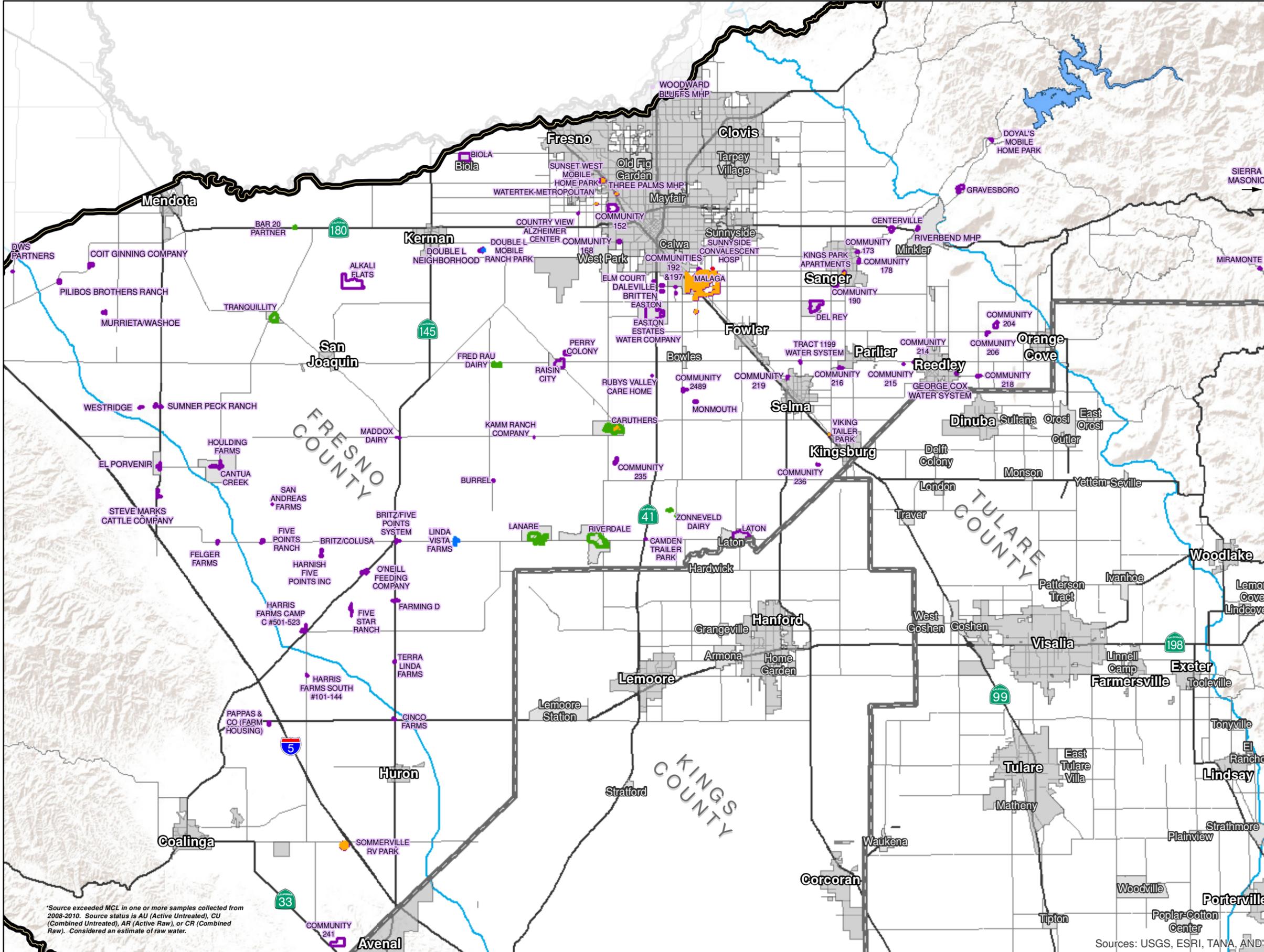
-  Tulare Lake Basin
-  County
-  DAC or SDAC Not Identified With WQ Issue
-  Uranium (Source Max Value  $\geq 20$  pCi/l)
-  Arsenic (Source Max Value  $\geq 10$  ug/l)
-  Nitrate as NO3 (Source Max Value  $\geq 45$  mg/l)
-  Nitrate as NO3 (Source Max Value  $\geq 22.5 < 45$  mg/l)
-  City
-  Community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

**Exhibit 12**  
**DRAFT**



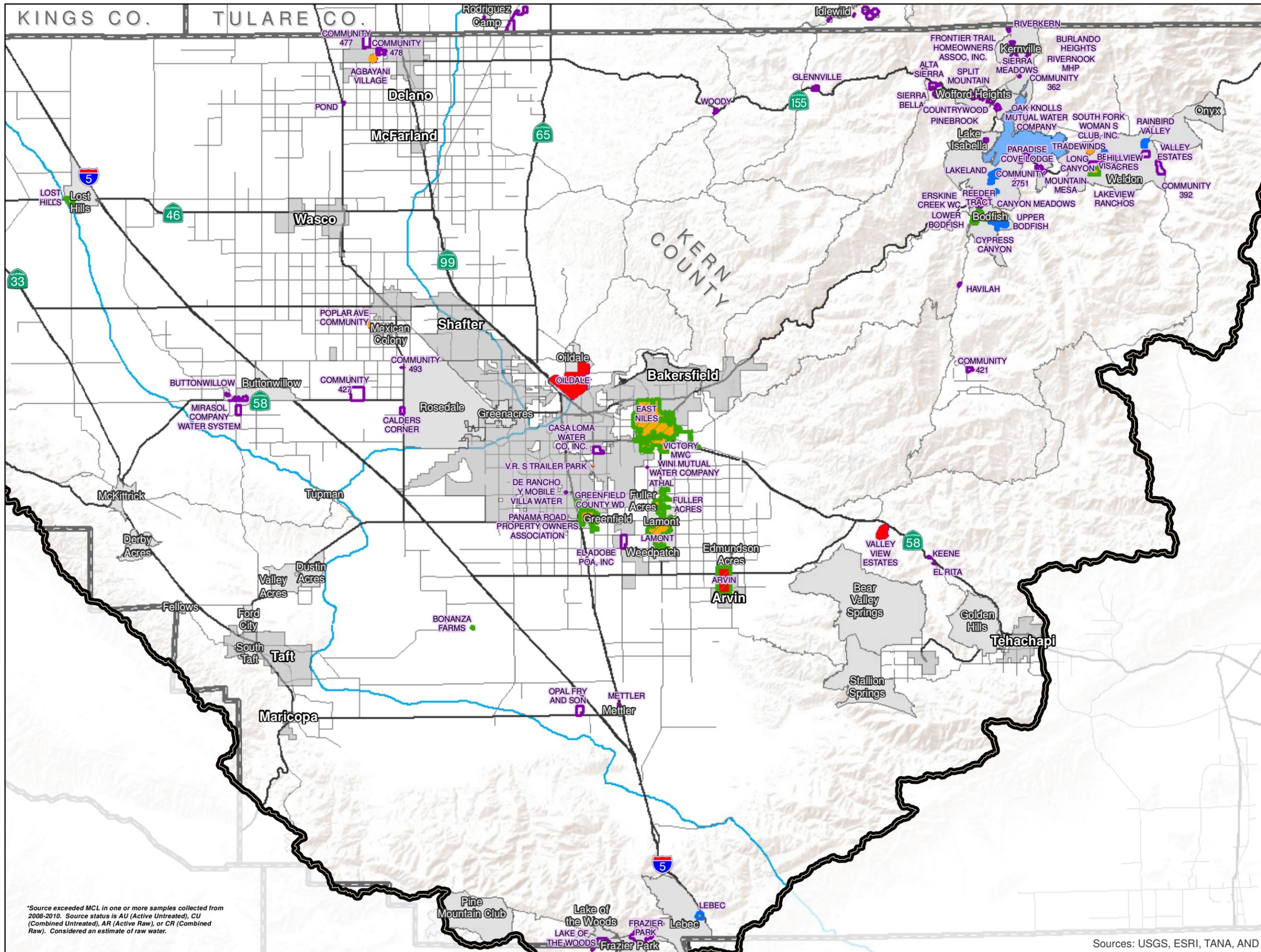
EST. 1968  
**PROVOST & PRITCHARD**  
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\*Source exceeded MCL in one or more samples collected from 2008-2010. Source status is AU (Active Untreated), CU (Combined Untreated), AR (Active Raw), or CR (Combined Raw). Considered an estimate of raw water.

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



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**KERN COUNTY  
Communities**

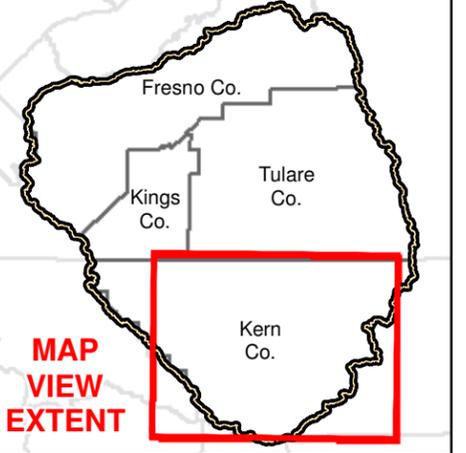
DAC and SDAC Communities  
\*Raw Water Quality Issues

**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

**Exhibit 13**

**DRAFT**



0 2 4 6 Miles

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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

### 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. 123 TCP). Therefore, a community water system may be in compliance today and then may exceed the regulations 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 communities 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. The table below summarizes the information from **Table 4-3**.

**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

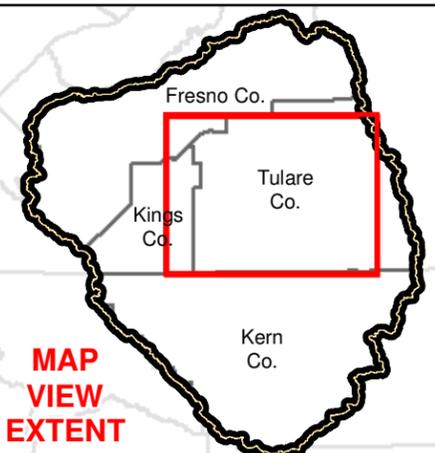
## TULARE COUNTY Communities

DAC and SDAC Communities  
\*Delivered Water Quality Issues

### Legend

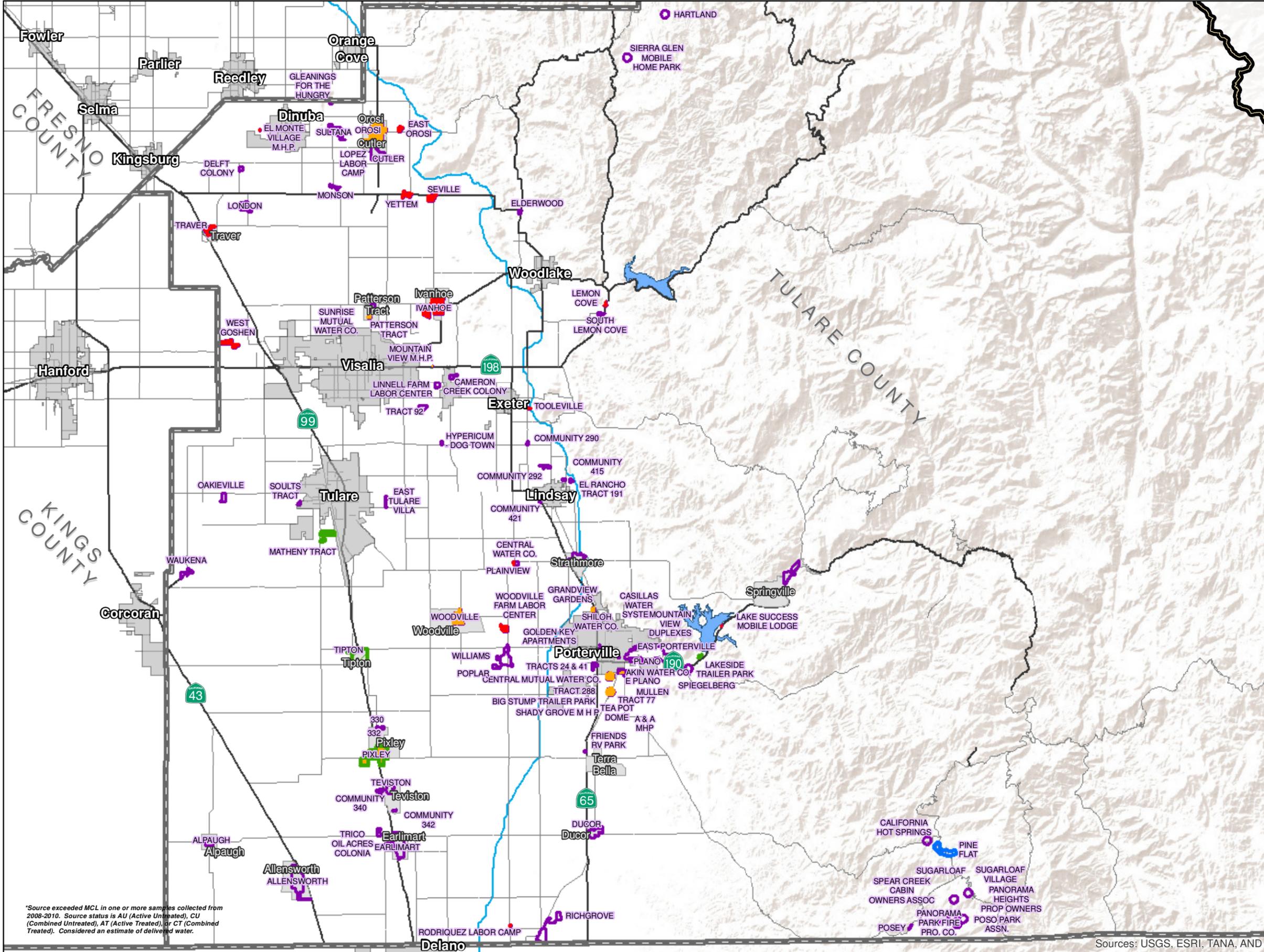
-  Tulare Lake Basin
-  County
-  DAC or SDAC Not Identified With WQ Issue
-  Uranium (Source Max Value >=20 pCi/l)
-  Arsenic (Source Max Value >=10 ug/l)
-  Nitrate as NO3 (Source Max Value >= 45 mg/l)
-  Nitrate as NO3 (Source Max Value >= 22.5 < 45 mg/l)
-  City
-  Community (Non-Incorporated)
-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

Exhibit 14  
**DRAFT**



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

286 W. Cromwell Ave.  
Fresno, CA 93711-6162  
(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

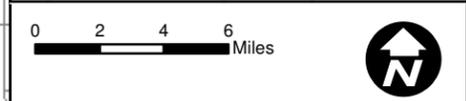
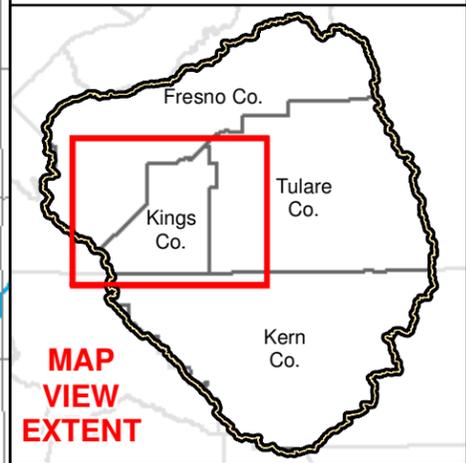
## KINGS COUNTY Communities

DAC and SDAC Communities  
\*Delivered Water Quality Issues

### Legend

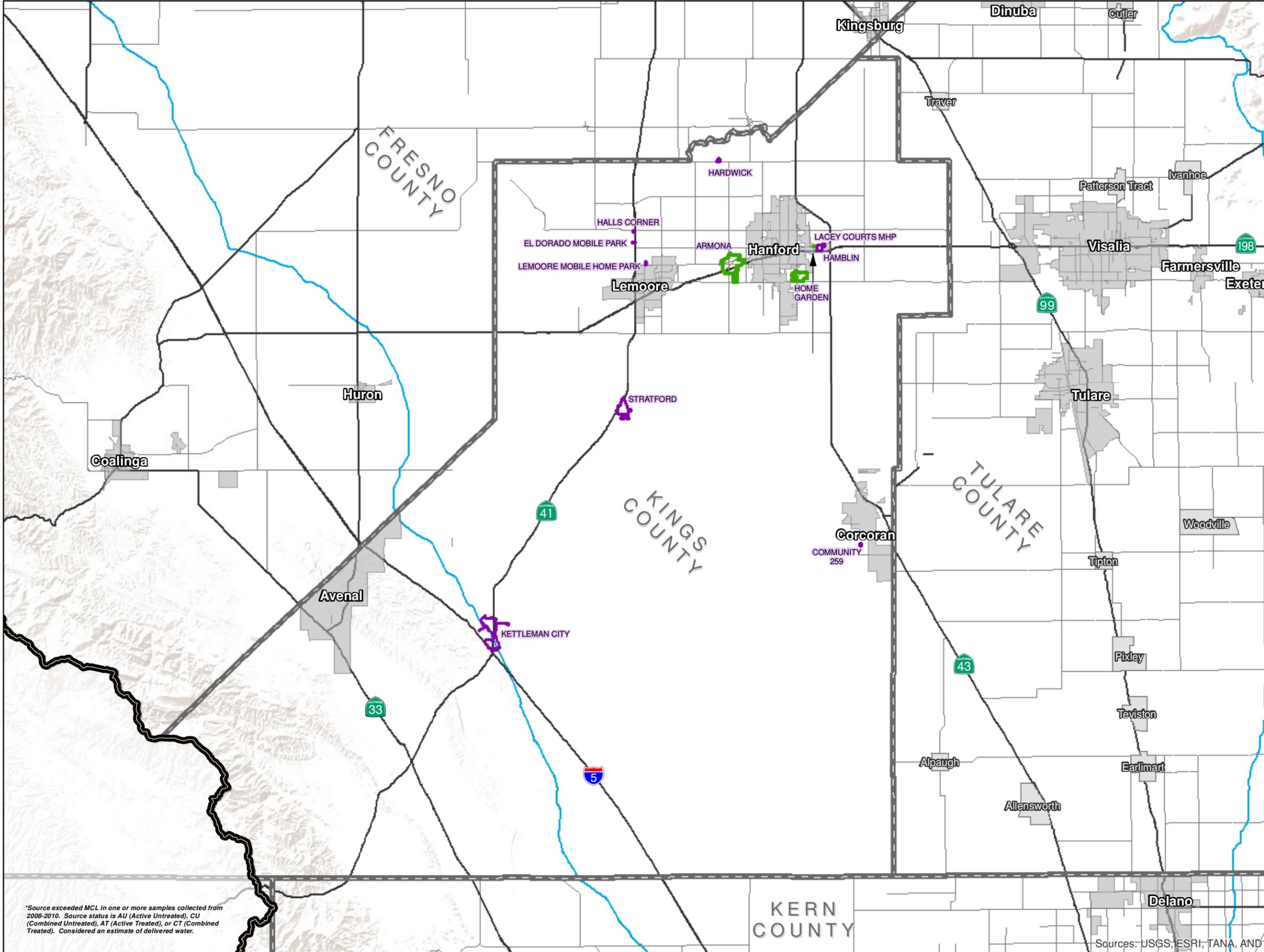
-  Tulare Lake Basin
-  County
-  DAC or SDAC Not Identified With WQ Issue
-  Uranium (Source Max Value  $\geq 20$  pCi/l)
-  Arsenic (Source Max Value  $\geq 10$  ug/l)
-  Nitrate as NO3 (Source Max Value  $\geq 45$  mg/l)
-  Nitrate as NO3 (Source Max Value  $\geq 22.5 < 45$  mg/l)
-  City
-  Community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

**Exhibit 15**  
**DRAFT**



EST. 1968  
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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

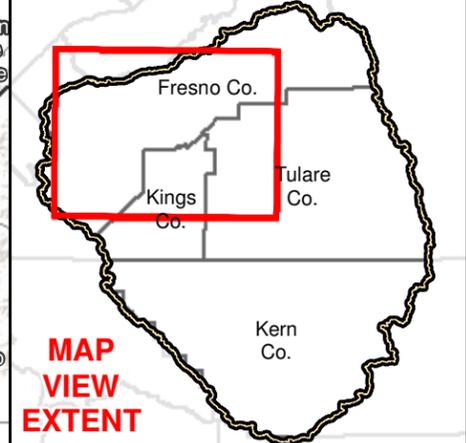
## FRESNO COUNTY Communities

DAC and SDAC Communities  
\*Delivered Water Quality Issues

### Legend

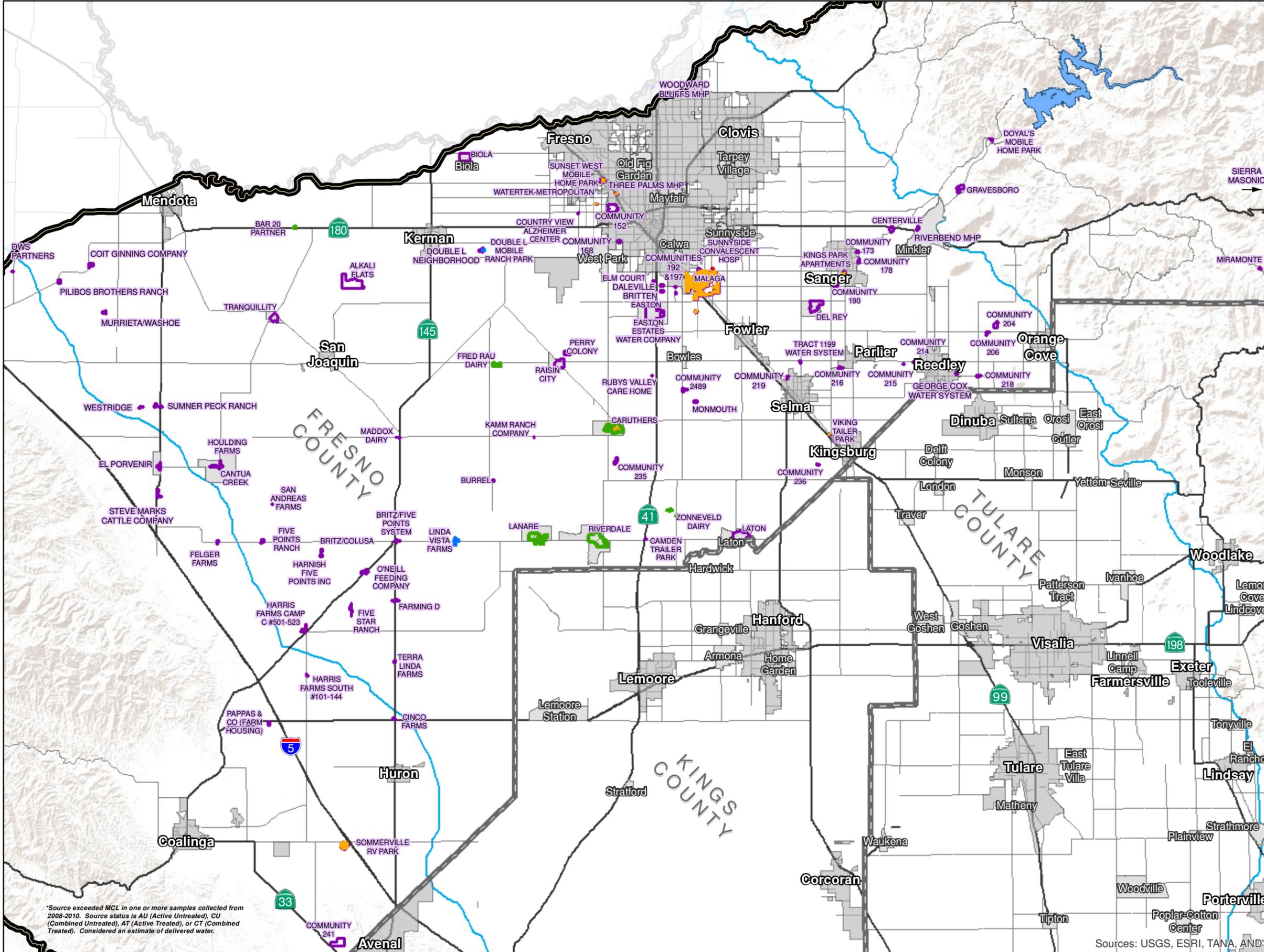
-  Tulare Lake Basin
-  County
-  DAC or SDAC Not Identified With WQ Issue
-  Uranium (Source Max Value >=20 pCi/l)
-  Arsenic (Source Max Value >=10 ug/l)
-  Nitrate as NO3 (Source Max Value >= 45 mg/l)
-  Nitrate as NO3 (Source Max Value >= 22.5 < 45 mg/l)
-  City
-  Community (Non-Incorporated)
-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

**Exhibit 16**  
**DRAFT**



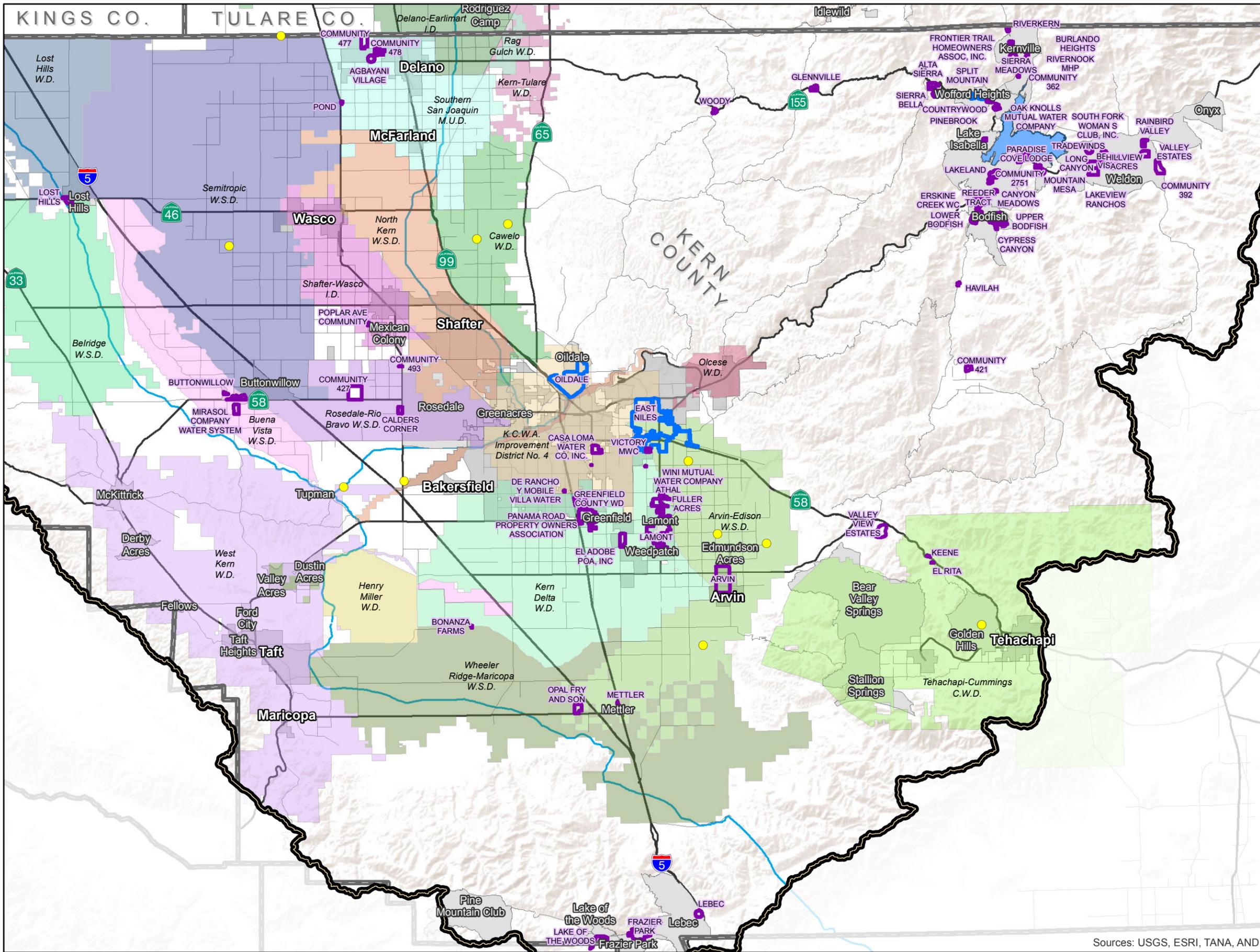
EST. 1968  
**PROVOST & PRITCHARD**  
CONSULTING GROUP  
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(559) 449-2700



\*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...



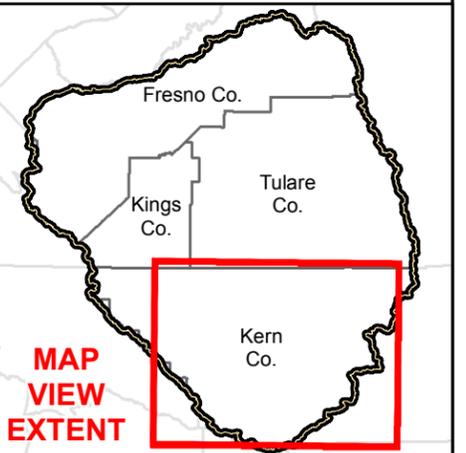
**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**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



0 2 4 6 Miles

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

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**Exhibit 17  
DRAFT**

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 and 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
KERNS VALLEY	1500364	KRVWC - KERNS VALLEY 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
RODRIGUEZ LABOR CAMP	5400735	RODRIGUEZ 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 sufficient 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 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 project 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 report include guidance regarding the issues to be considered for the various alternatives. Draft 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 Management or Non Infrastructure alternatives. 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 Household 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 the 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 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

**SECTION FIVE**

requirements associated with operation and maintenance of the water system is retained by the larger community system.

Considerations for an evaluation 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 to construct the improvements.
- Water Supply and redundancy of water supply
  - Physical consolidation must provide satisfactory water supply and water quality for the DAC. 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 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 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.
- 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

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**.

Considerations for an evaluation include:

- Availability of a defined surface water supply

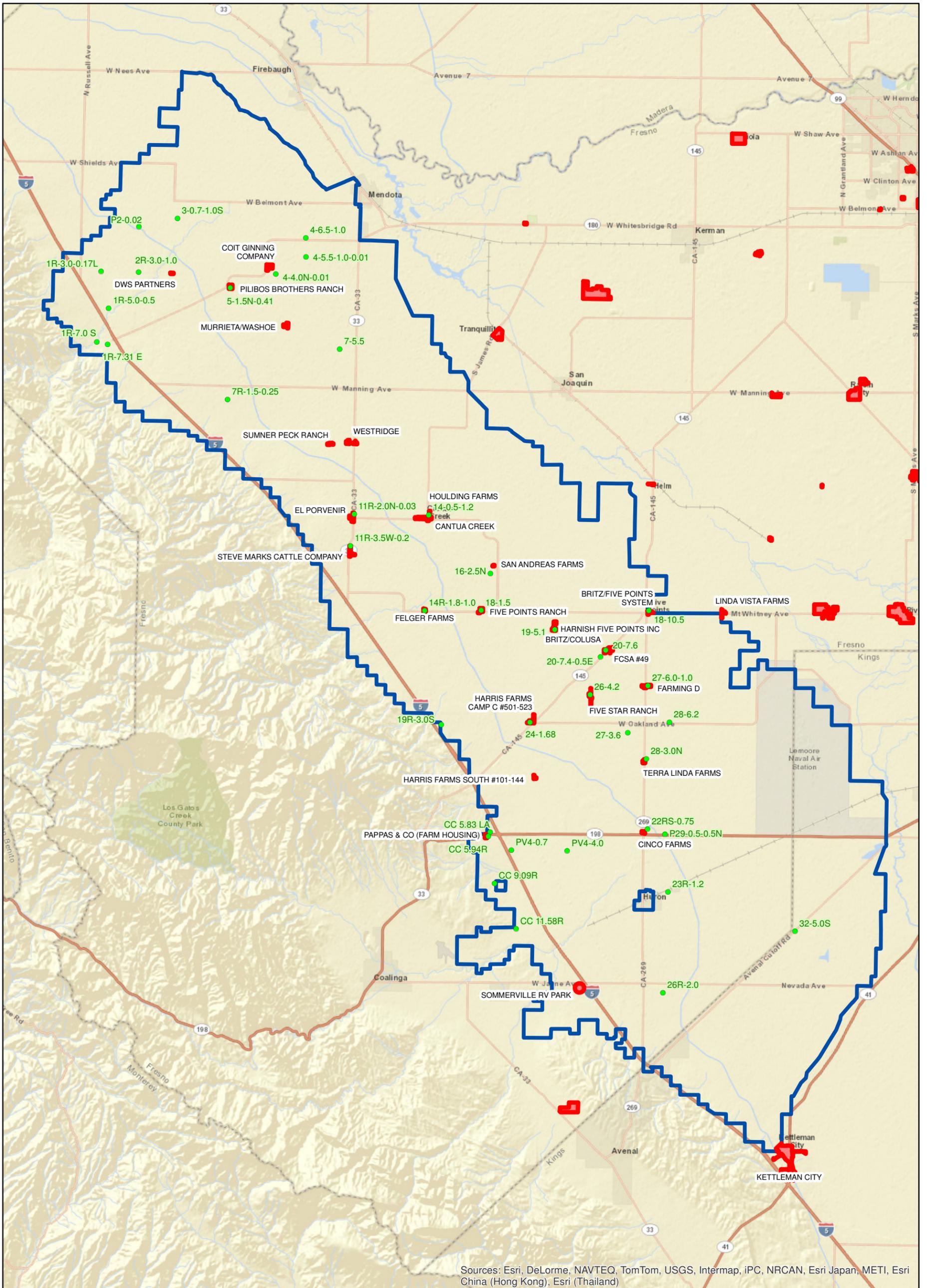
## SECTION FIVE

- 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 report.
- 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 would overlap to 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
  - 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.

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.

Considerations for an evaluation 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 and 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 report.
- 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.
- Availability of a recharge site

## SECTION FIVE

- 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.
- Regulatory Compliance

**SECTION FIVE****PILOT STUDY**

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- 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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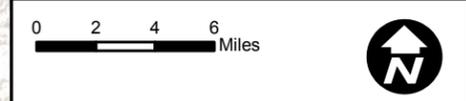
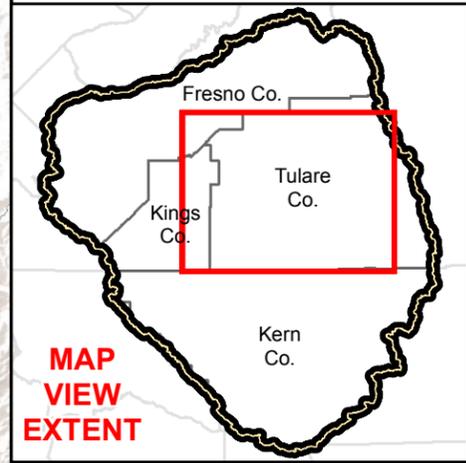
**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**TULARE COUNTY  
Communities**

DAC and SDAC Communities  
Water Districts and Recharge Projects

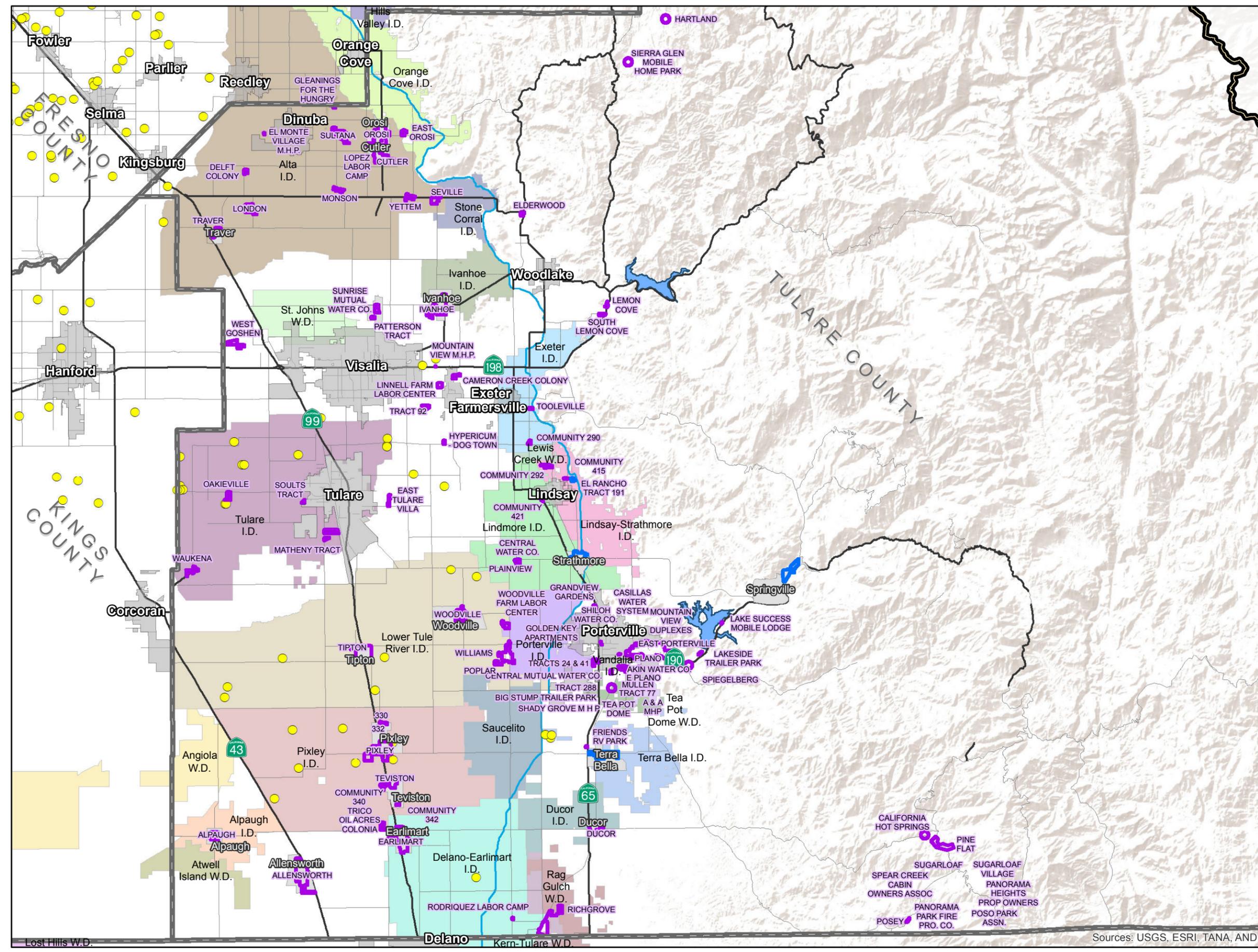
- Legend**
- Recharge Site
  - Tulare Lake Basin
  - County
  - City
  - Community (Non-Incorporated)
  - Groundwater (or Unknown) Source
  - Surface Water Source
  - Major Road
  - Highway / Interstate
  - Major Canal

**Exhibit 23  
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Sources: USGS, ESRI, TANA, AND

**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**KINGS COUNTY  
Communities**

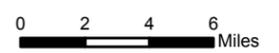
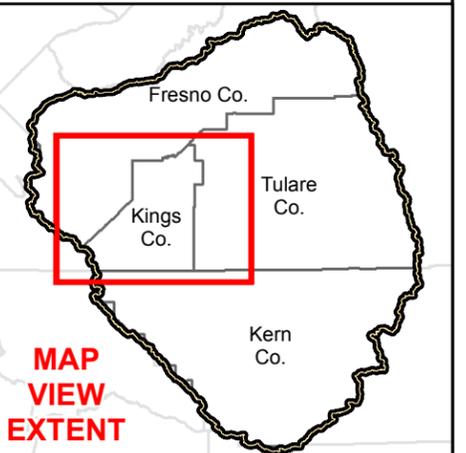
DAC and SDAC Communities  
Water Districts and Recharge Projects

**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

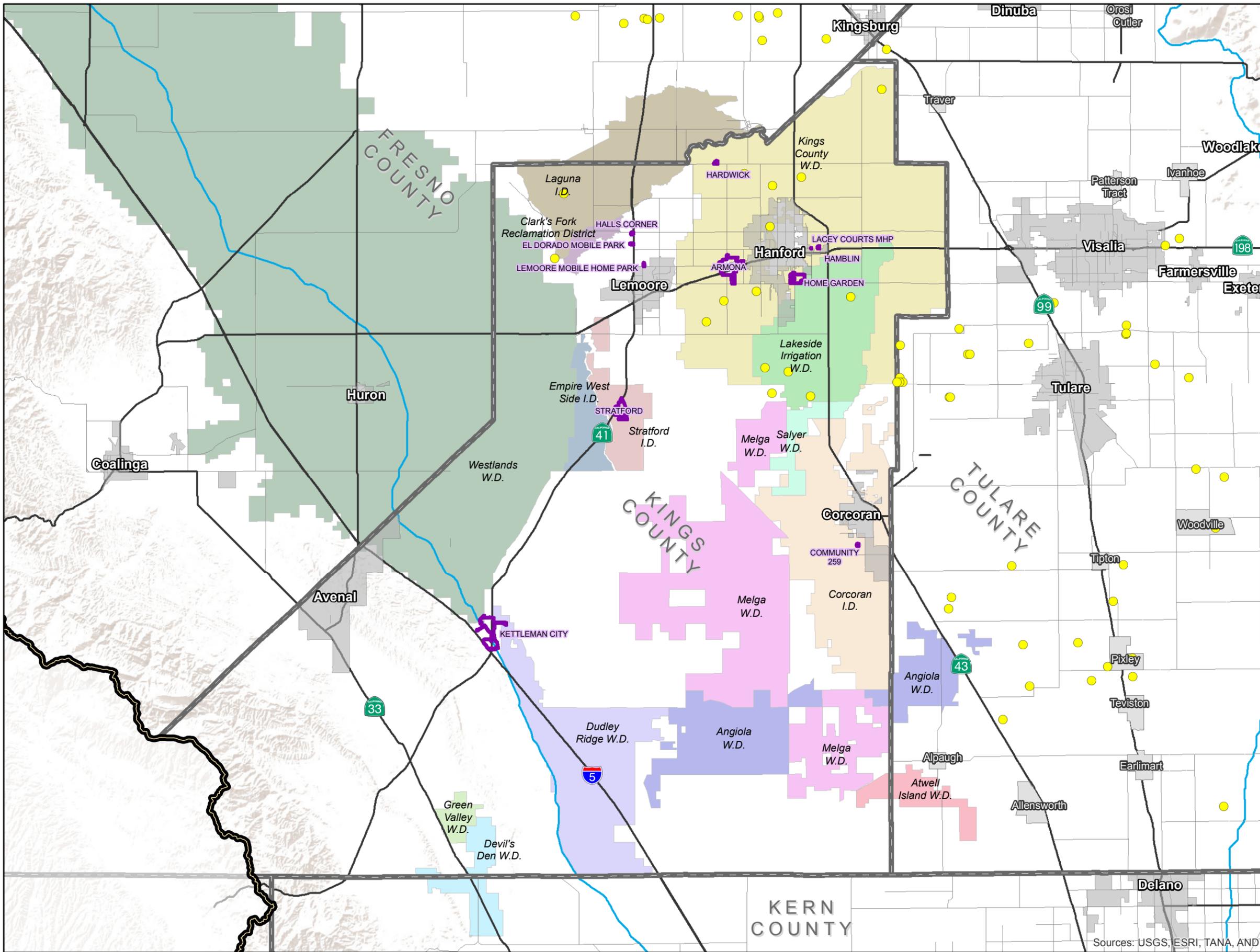
Exhibit 24

**DRAFT**



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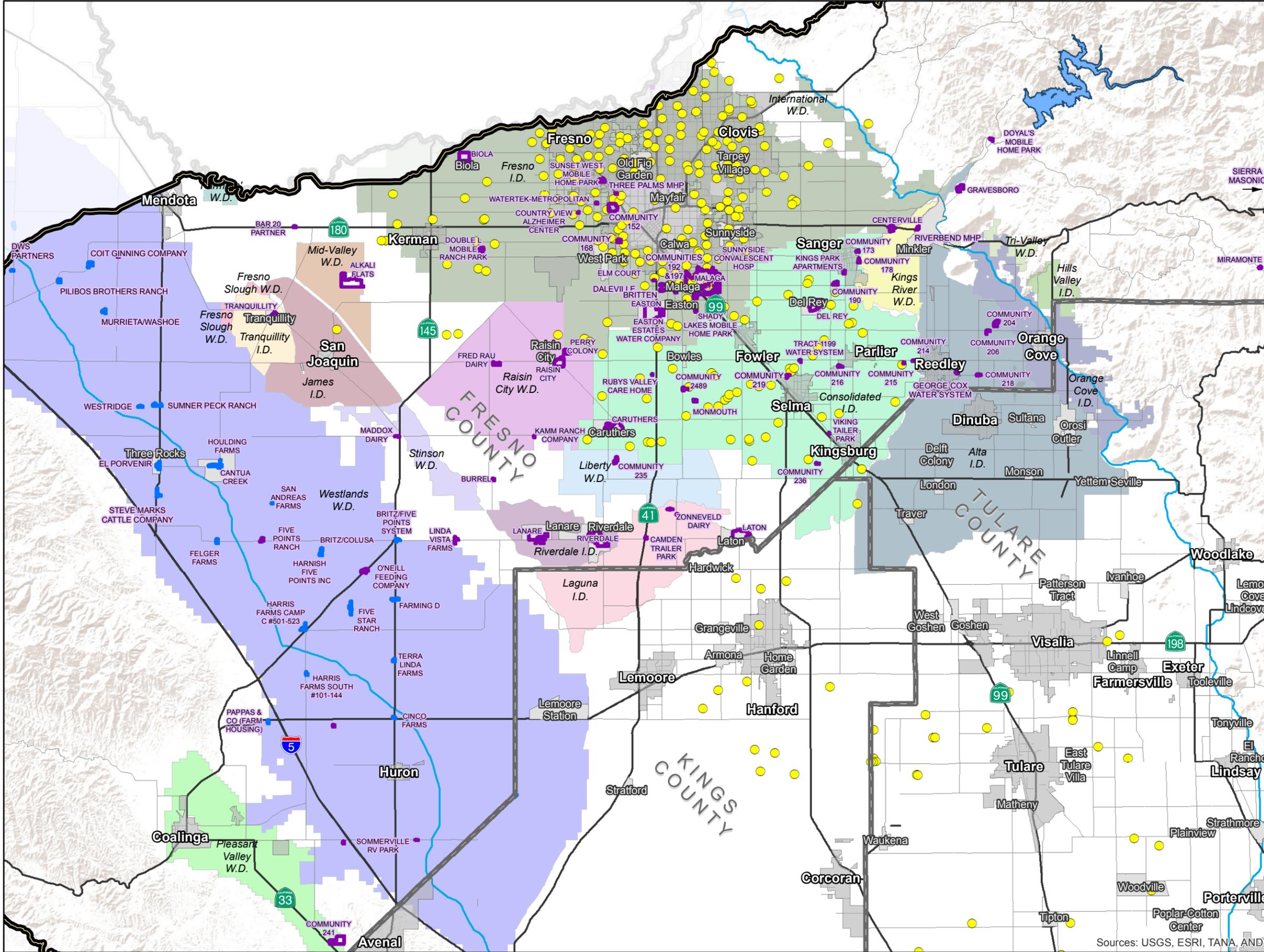


Sources: USGS, ESRI, TANA, AND

**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**FRESNO COUNTY  
Communities**

DAC and SDAC Communities  
Water Districts and Recharge Projects

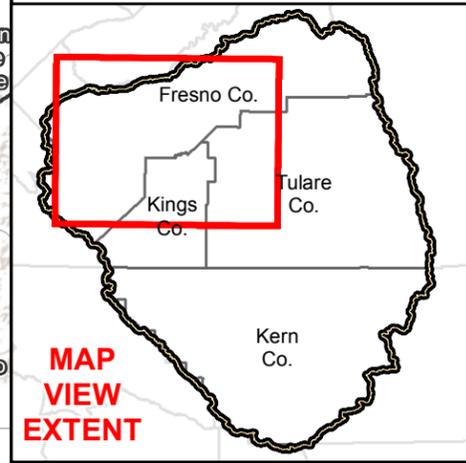


**Legend**

- 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

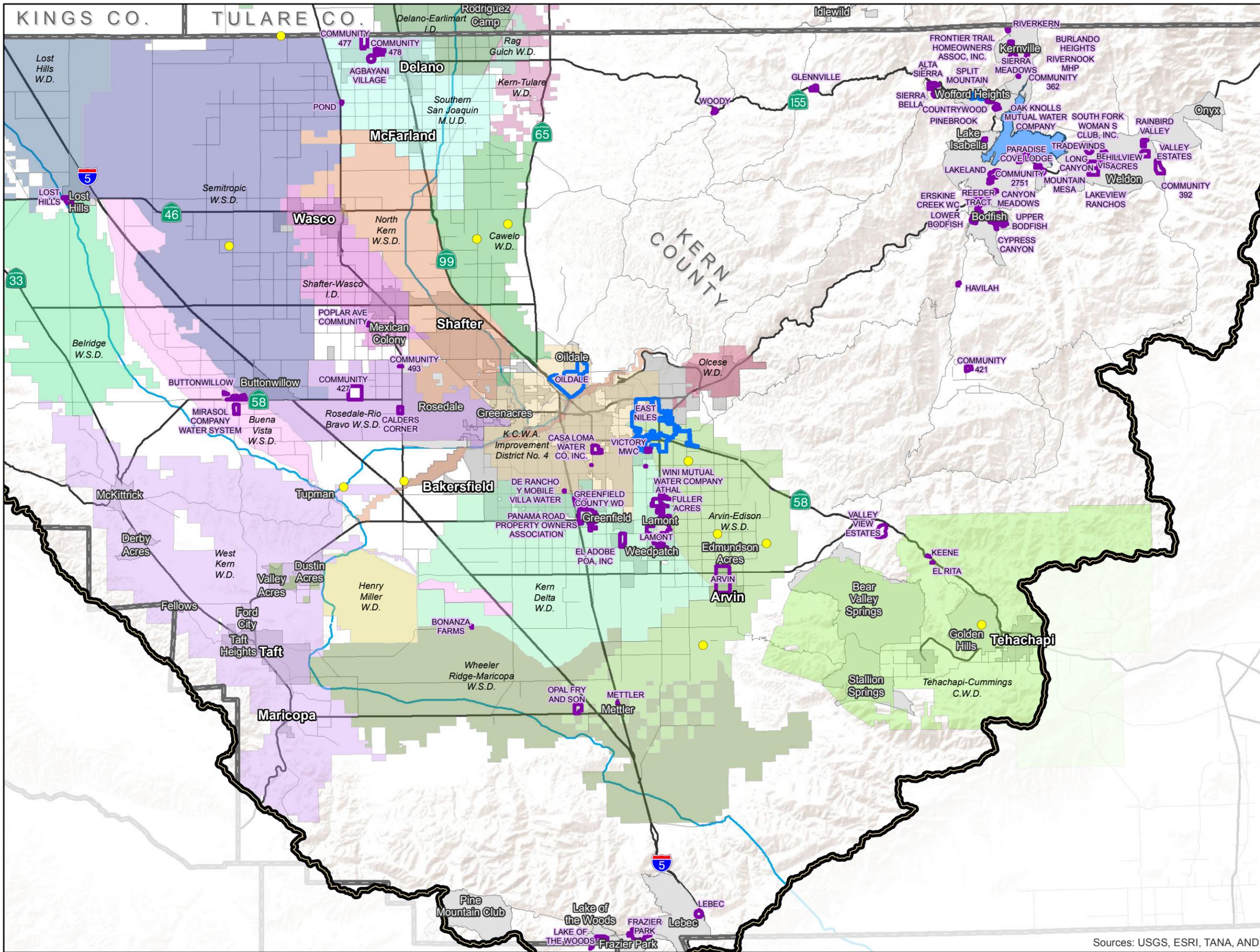


0 2 4 6 Miles

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



**Tulare Lake Basin  
Disadvantaged Community  
Water Study**

**KERN COUNTY  
Communities**

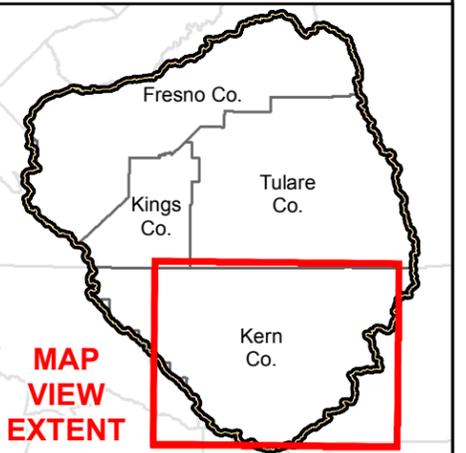
DAC and SDAC Communities  
Water Districts and Recharge Projects

**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



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. 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
  - Siting 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 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 would overlap to 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. 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 would overlap to 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.

- 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. There may be an overlap with Management Non-Infrastructure Pilot Study issues associated with an agreement between entities to share in costs associated with operation of treatment 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 implement the associated metered water rate schedule for all connections. Other water conservation measures could include requiring low flow appliances within residences. Water conservation, as encouraged through water meters, rate schedule, and encouragement of 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.

**SECTION FIVE**

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
  - Construction 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 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.

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 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

**SECTION FIVE****PILOT STUDY**

- 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 the source of 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.
- 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 in a community is the establishment of a sewer rate schedule. Each community is unique and would require a unique rate schedule. The anticipated impact of the anticipated 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.).

**Table 5-2 List of Case Studies with Anticipated Project Cost**

[REPLACE PAGE WITH 11X17 FIGURE]

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**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		Nitrate	DBCP			2,931,300		Pending
12	Ducor	Public		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		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		Arsenic	Feasibility Study Only			196,000		Pending
27	Lamont PUD / Weedpatch Sewer Connectiong to Lamont POD	Public					14,000			Pending
28	Lanare	Public		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		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		Arsenic	Uranium	25	25	115,000		Pending
42	Semi Tropic School with Lost Hills Utility District	Public		Arsenic	Feasibility Study Only		263	469,051		Pending
43	Seventh Standard MWC with Oildale MWC	Private		Nitrate		22	66	1,962,655		Pending
44	Son Shine with Arvin CSD	Public		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		No Community Sewer System	105	300	383,250		Pending
47	Tonyville with Lindsay	Public		Nitrate	Feasibility Study Only	50	350	257,500		Pending
48	Tooleville with Exeter	Public		Arsenic				3,021,535		Pending
49	Tract 92	Public		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		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 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.

Decision Trees are discussed in Section 6.4 of this report 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; however 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

## 6.4 Decision Trees

In order to aid communities in determining potential technical solutions 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.

### 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.

### Use

The Decision Trees were developed to guide communities to possible technical 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

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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
  - 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 have taken steps toward addressing water supply challenges. For the purposes of this report, 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 report. 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 report, 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.

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

### 7.1.1 Four Seasons Mobile Home Park

- Problem (quantity, quality)
  - Quantity (single well)
  - 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

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- 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

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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 (might include treatment)**

**7.2.1 Pioneer School**

- Problem (quantity, quality)
  - Quantity 400 gpm

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- 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

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- 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

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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

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- 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 three (3) new water supply wells
  - Destruction of three (3) existing contaminated water supply wells
- 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)
- Approximate Annual O&M Cost per connection - \$540

## SECTION SEVEN

- Challenges
  - Obtain three (3) new properties for water supply wells
  - 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.

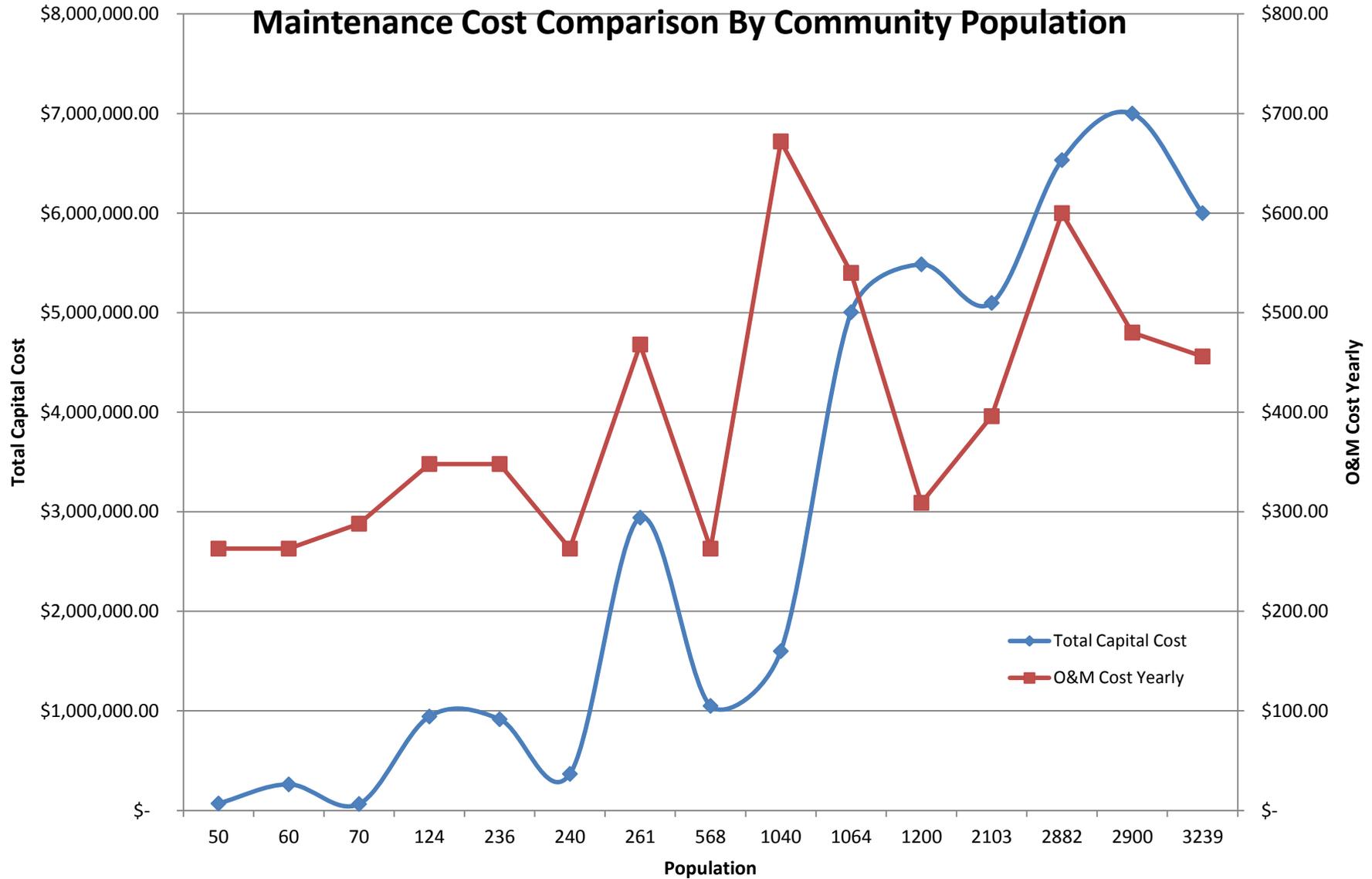
**DISADVANTAGED COMMUNITIES WATER STUDY TULARE LAKE BASIN  
NEW SOURCE DEVELOPMENT PILOT STUDY  
TABLE 7-1  
LIST OF DISADVANTAGED COMMUNITIES  
IDENTIFIED AS CONSOLIDATION OR NEW WELL PROJECTS**

<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

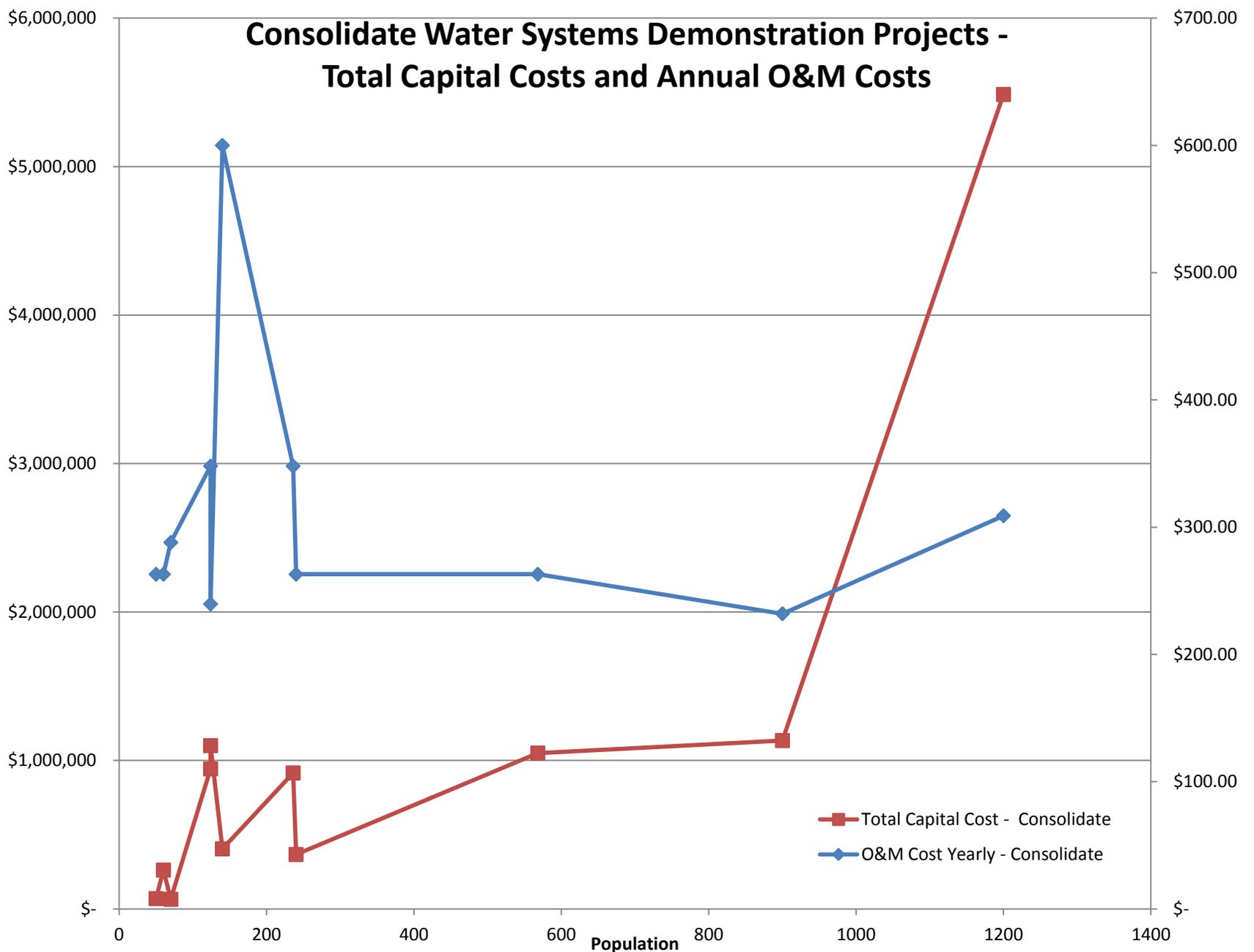
			<b>O&amp;M Cost Yearly - New Well</b>	<b>Total Capital Cost - New Well</b>				
Hardwick	20	138	\$ 480.00	1,492,000	\$ 40.00	monthly		New Well
Tract 92	93	261	\$ 468.00	3,941,000	\$ 39.00	monthly		New Well
Pioneer School	351	1040	\$ 672.00	1,600,000	\$ 56.00	monthly		New Well
Tranquillity	341	1064	\$ 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

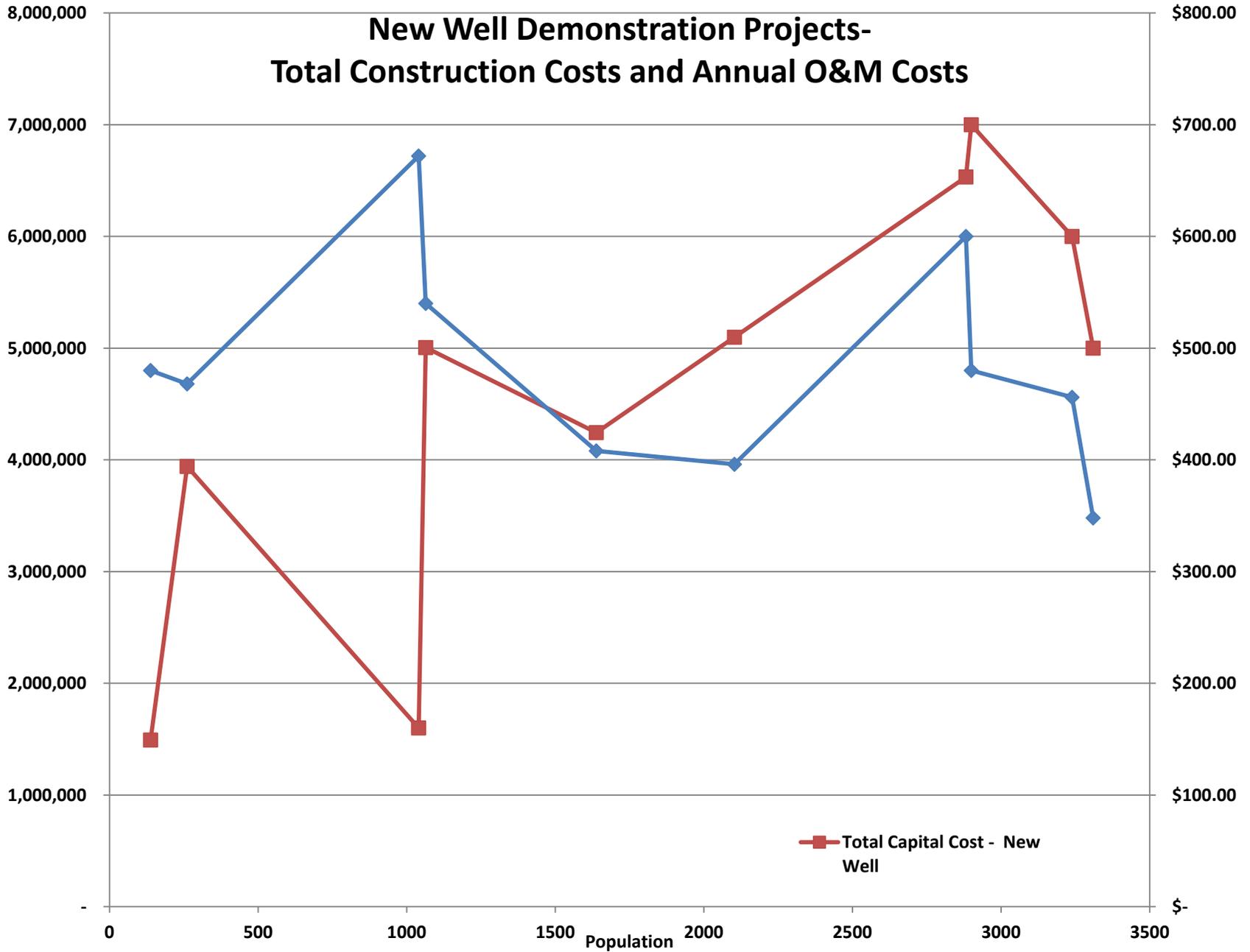
### Demonstration Project Total Capital Cost and Operation and Maintenance Cost Comparison By Community Population



# 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

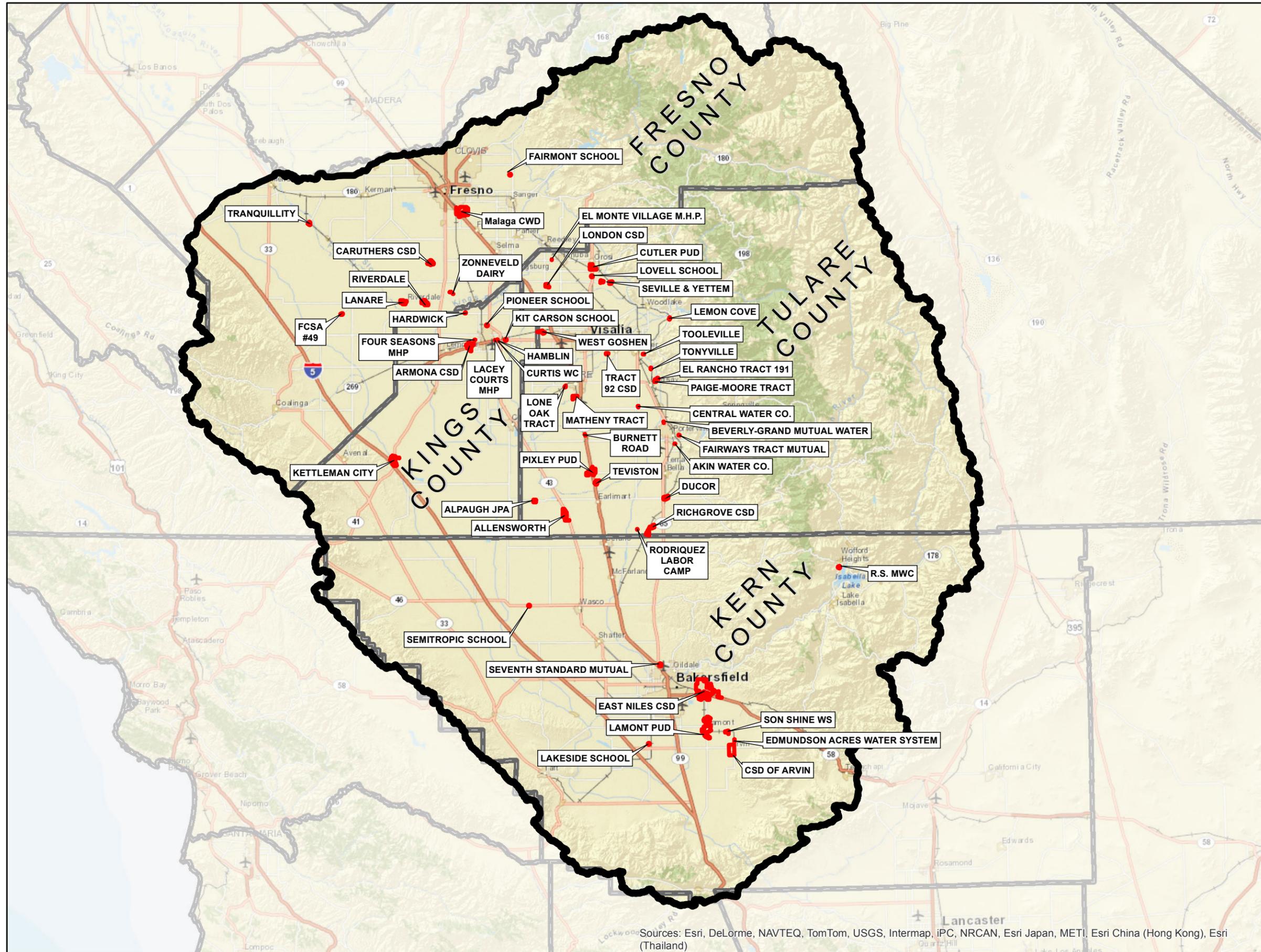
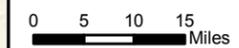


Exhibit 28

**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. As new or additional information is discovered, the list of pilot projects to be investigated may be amended. 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.

### 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 management or non-infrastructure 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 Management and Non-Infrastructure 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 management or non-infrastructure 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

NAME	CDPH System ID	Population Estimate	Connections Estimate	Type	Active Sources	Raw WQ Issues	Delivered WQ Issues	Ownership
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
KERNVALE	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 Orsi. 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 Orsi 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 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 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 including 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 pays a monthly fee to the COWJPA for treating the wastewater.

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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 second most recent (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.

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

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(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.
- 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.

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- 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
- **2014 Drought!**

### 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.
- 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.

**SECTION EIGHT****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 the 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 East Orosi surface water plant 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. The meeting was organized and facilitated by Maria Herrera and Susana De Anda 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 Sultana to consider addressing its water supply challenges. All attendees were

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## PILOT STUDY

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

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

**SECTION EIGHT**

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

The community is not near existing surface water conveyance facilities.

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, Yetttem, 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.

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.

### 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.

*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.

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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

15. Place Well 2 as standby in the Water Supply Permit.
16. Monitor and record the water use of Well No. 3 and Well No. 2 daily.
17. Determine the standing water level in Well No. 3 and Well No. 2.
18. Update the Funding Application for a new water supply well with the additional consideration that the District does not have a sufficient water supply.
19. Identify potential water supply well and water storage sites.
20. 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.
21. Proceed with funding and construction of a water supply well.
22. Consider adjustment of water rates. The District is in dire need of additional reserves and operating funds.
23. 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.

24. Consider prohibiting any new connections.
25. Consider establishing connection fees once a sustainable water supply is obtained.
26. 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

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higher ranking for the project. The same may be true with Monson connect to the Sultana CSD water system.

27. Coordinate with Monson and Tulare County with any local hydrogeological investigations.

28. Maintain interest in the East Oroshi Water Treatment Facility 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.

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 crossing 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.

#### **Staff**

#### **How many employees?**

#### **Water System Description**

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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 efficiency of the wells ranges between 360 and 950 gallons per minute (gpm) and that the five wells have a total maximum production efficiency of approximately        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 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

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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.

Based upon information contained in the *Wastewater User Charge Survey Report FY 2004-05* (Cal EPA – State Water Resources Control Board, May 2005), the average dry weather flow at the WWTF is approximately 0.36 MGD. Based upon the available capacity at the WWTF (200,000 GPD), it is estimated that approximately 650 additional connections (EDUs) to the system could be supported. Based upon a review of monthly monitoring reports submitted to the RWQCB, the District's wastewater inflows are typically higher during summer months than during winter months indicating that there is no significant inflow and infiltration into the collection system during the winter months. This is an indication that the collection system is in adequate operating condition.

The above evaluations indicate that the District will need to increase the capacity of its WWTF to support projected growth through year 2025. Based upon information contained in the *Wastewater User Charge Survey Report FY 2004-05* (Cal EPA – State Water Resources Control Board, May 2005), the District has not received any grants for the construction of wastewater facility improvements for at least the past thirty years. It is recommended that the District research State and Federal grants and/or loans that may be available to help finance improvements to the District's WWTF. Potential grants and loans include US-EPA Clean Water Construction Grants (CWG), State Revolving Fund Loans (SRF), and State Small Community Grants (SCG).

### 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. It is likely that development within the SOI will rely on infrastructure available from the District. For this reason the District should be prepared to accommodate such growth. The preparation of water and sewer master plans would increase the District's preparedness when development within its SOI is proposed.

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. Based upon discussions with the District Engineer, the District will not expand capacity of current WWTF even through developers have offered to pay the costs associated with a major capacity expansion. A major capacity expansion of the WWTF would increase the operation and maintenance costs to current residents and

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Board does not consider this a desirable alternative. For this reason operation and maintenance costs associated with increasing the capacity of the WWTF is considered a significant financial constraint of the District. Growth within the Ivanhoe community would result in additional utility customers, and could ultimately help offset unreasonable operation and maintenance cost increases to existing customers associated with expanding the capacity of the existing WWTF.

The District's financial constraints involve the governmental structure and the desires of the people in the community to fund certain activities by establishing assessment districts or fees. The laws under which a Public Utility District is governed provide the structure for funding activities. Key revenue sources for the Ivanhoe PUD include property taxes, monthly sewer and water fees, connection fees, interest on reserves, and pass through monies. One-time revenues, that are pass-through funds, account for the increases and decreases in revenue from year to year.

On the expenditures side, the District budgets for the services paid for by residents and provides for other expenses using property tax, and if appropriate, restricted reserve accounts. Key expenditures include personnel, services and supplies, pass through revenues for projects, and principal and interest payments for long term debt.

**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 \$1700 and \$1890 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 each 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:

- Disadvantaged
- 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

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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 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.

### 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 the 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

10. Obtain and review records
11. Meet with District and operations staff
12. Discussions with CDPH – regulatory and funding
13. Review potential of physical consolidation with Cal Water (City of Visalia)
14. Review past funding application
15. Prepare draft Decision Trees
16. Conduct a Community Review Meeting
17. Summarize activities
18. Provide recommendations for District consideration

**SECTION EIGHT**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 De Anda 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 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

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, 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

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

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 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.

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.

**SECTION EIGHT**

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**

7. Place Wells No. 2, No. 6, and No. 7 as standby in the Water Supply Permit.
8. Update the Funding Application for a new water supply well with the additional consideration that the District does not have a sufficient water supply.
9. 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.
10. Proceed with funding and construction of a water supply well.

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

11. 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.
12. 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 1,250 (Census 2000), the community is surrounded by open space and agriculture land. The Stratford Public Utility District (SPUC) provides community services (Water, Sewer, and a Park) to the residents of Stratford.

#### **Staff**

**How many people are employed by SPUD?**

#### **Water System Description**

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

**SECTION EIGHT**

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.

#### Future Facilities

At this time the Stratford Public Utility District has not identified any future improvements to existing facilities.

#### 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 benzene 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

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

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

The existing wastewater treatment was constructed in the 1930's and includes a treatment and discharge facility. Currently, the collection system conveys on average 88,500 gallons of wastewater per day to the treatment facility. The wastewater is pumped into aeration ponds located on the plant site. 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.

**Cash****Rates**

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.

**Fees**

**What are the connection fees? Any other fees?**

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:

- Disadvantaged
- 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

**SECTION EIGHT**

- 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

10. Obtain and review records
11. Meet with District and operations staff
12. Discussions with CDPH – regulatory and funding
13. Review potential of physical consolidation with Cal Water (City of Visalia)
14. Review past funding applications
15. Prepare draft Decision Trees
16. Conduct a Community Review Meeting
17. Summarize activities
18. Provide recommendations for District consideration

## SECTION EIGHT

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. Currently, the system is placed within the SRF Category M. This means the water system does not meet the Water Works Standard or

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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

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.

**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

6. Place Well No. 6 as standby in the Water Supply Permit.
7. Update the Funding Application for a new water supply well with the reinforced consideration that the District does not have a sufficient water supply.
8. Upon receipt of funding assistance, proceed with construction of a water supply well and water storage tank.
9. 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.
10. 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. Interest and loan repayments are re-incorporated into the

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fund. The SRF currently provides ongoing allocations of approximately 100 to 150 million dollars per year.

**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.**

**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

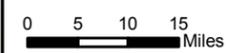
Tulare Lake Basin

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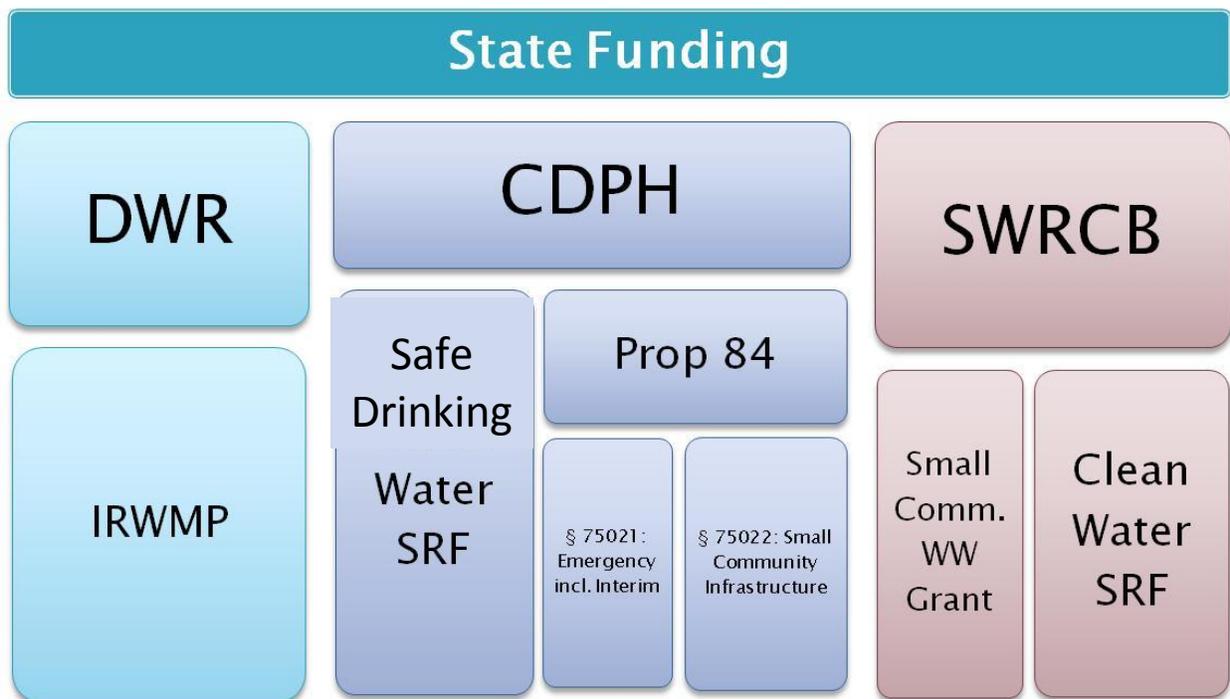
Sources: Esri, DeLorme, NAVTEQ, TomTom, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand)

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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.

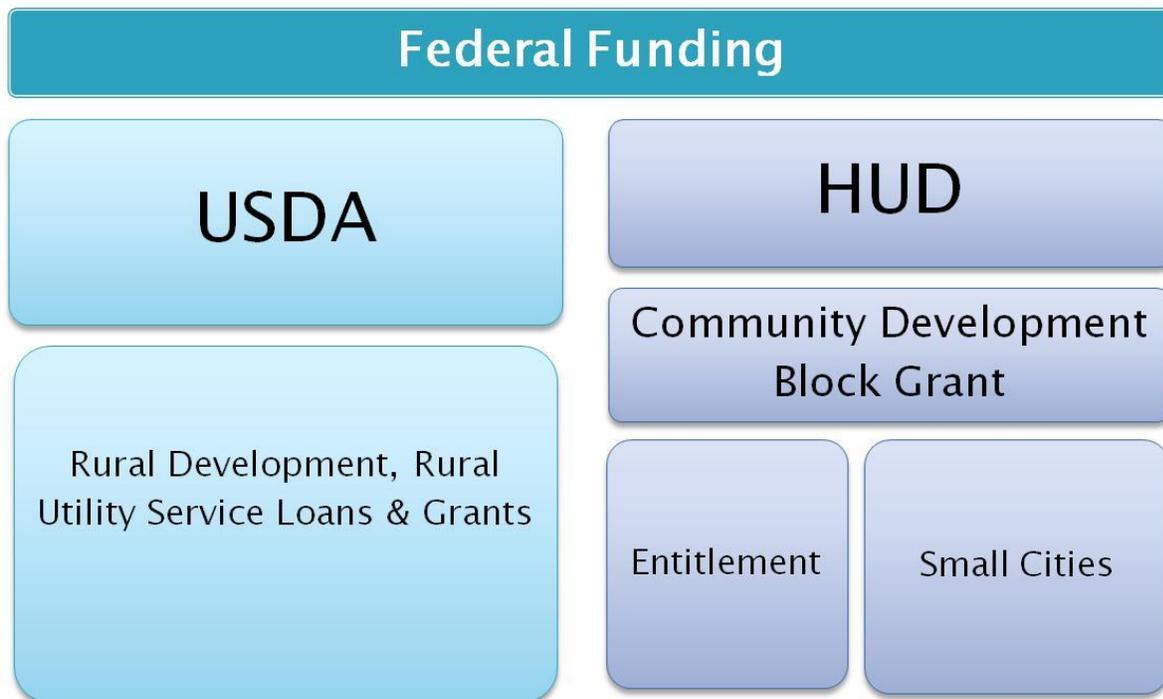
- USDA Rural Utilities Service (RUS) has been the largest funding source for rural water and wastewater system improvements over the years. RUS

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.

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

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**

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 technical alternatives mentioned in this report 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

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 H**.

### 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 this 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 management or non-infrastructure 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 more strict 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

IRWM Legislation – priority of funding.

## 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 particular problem(s).

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

**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. Providing the community as much information as possible, early on in the process is critical for community acceptance.

**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 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 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. Many DACs have water meters however 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 Solutions Pilot report.

## 11.2 Overcoming Obstacles and Barriers

Know the Infrastructure.

Obtain technical guidance

RCAC

CDPH

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.

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Education for Leadership and Community

Encourage public participation

Funding Assistance Resources

Share operational costs (Management Non-Infrastructure Pilot Study)

DRAFT

## 12 CONCLUSIONS AND RECOMMENDATIONS

### 12.1 Summary of Findings

[Are there viable alternatives]

Funding

Local Leadership

Knowledge of System

TMF Capacity

Land Use Control

### 12.2 Recommendations for Future Action

["Recommendations" should tie back to "Goals"]

### 12.3 Community System Recommendations

#### 12.3.1 Local Service Provider (DAC Level)

- a) Ensure that the specifics regarding existing infrastructure are known. The location, size, condition, and capacity of facilities should be known and recorded for the community services management personnel.
- b) Conduct an audit of fiscal resources annually and determine the necessary levels of reserves for replacement and maintenance of all infrastructure. Determine an appropriate time frame to achieve the necessary levels of reserves.
- c) Modify water and sewer rates annually to achieve the necessary financial resources for annual operations and reserves.
  - o Develop rate study to determine appropriate reserves and rate increases, and follow Prop 218 requirements
- d) Remove special rates whenever possible. Several communities have inconsistent rate structures.
- e) Establish appropriate connection fees for any new connections.
- f) Do not allow new connections if the service capacity is not confirmed.
- g) Attend training programs, and encourage other staff and board members to attend training programs.
  - o Operator training
  - o Board and leadership training
- h) Attend Integrated Regional Water Management Planning group meetings.

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- i) Consider becoming an “Interested Party” or “Member” of an IRWMP group.

### 12.3.2 Local Agencies – County Administrative

- a) Tulare County to 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) to assist in the quality control of the data collected for their respective county.
- b) Tulare County to track progress. 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.

### 12.3.3 Local Agencies – County Environmental Health

- a) Establish a resource clearinghouse (potentially County Environmental Health) – individuals could go to this clearinghouse to get answers as to where to go/ how to begin to start resolving their questions and issues. Create a single “point of entry” for communities needing assistance.
- b) Establish an organization (County, non-profit organization, association, task force, or other) whose primary focus is to help build capacity within DACs (TMF, training, information, education, guidance, etc.) **to support development and funding of sustainable and affordable shared solutions.** Specific responsibilities could include:
- Help maintain an inventory of DAC water needs.
  - Provide outreach, communication, and capacity development with local disadvantaged communities in unincorporated areas (including those served by public water systems and districts, as well Smalls and private well.)
  - Facilitate communications to support development of informal arrangements between and among communities)
  - Represent and integrate disadvantaged communities into local and regional planning processes (IRWMPs).
  - Provide direct management and operations of DAC water systems.
  - Support project and grant management activities such as submission of reimbursements.
  - Work with state and federal agencies, cities, and counties, as well as local partners, stakeholders, and non-governmental organizations, including Environmental Justice groups and Self Help groups, investigate ways to provide assistance to DACs disadvantaged private well owners that have lost their water supply due to the drought or contamination issues; and.

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- c) Set up a Council of Governments-type organization where communities in an area (or county) can meet and discuss their shared water and wastewater issues. Try to breakdown some of the adversarial walls communities have built up.

#### 12.3.4 Local Agencies – County Planning

- a) County planning departments need to be looking at the feasibility of connecting new development to existing public infrastructure, not permitting new small systems. Permitting of new small systems, especially in areas with known groundwater contamination, only adds to the problem.
- b) Land use planning:
- o Do not zone for residential development where there is not safe and reliable water.
  - o Require and actively support investment in bringing system into compliance and developing long-term sustainable and affordable solutions before and as part of permitting growth in communities where the existing water system cannot accommodate growth because of inadequate drinking or wastewater infrastructure.
- c) Low income housing – is designating low income housing areas in DACs with insufficient water quality/quantity and/or TMF capacity issues perpetuating the problem? **[may improve economies of scale]**
- d) Although comprehensive updates to UWMPs are required roughly every five (5) years, agencies amending their general plans to allow additional population growth or expand their geographic area should be required to simultaneously prepare a companion update of the UWMP to reflect the implications of the proposed new growth or territorial expansion with companion updates to their Municipal Service Review (MSR) through LAFCo.
- e) If an agency has adopted Development Impact Fees and an update to its General Plan and/or UWMP indicates the necessity of additional backbone infrastructure to accommodate future growth, that agency **should similarly be required to either simultaneously update the fee structure to reflect costs associated with infrastructure necessary to support such new development, or should require, as a condition of approving new development, that the proponent form an assessment district or similar entity which will have the authority to collect fees from residents to reimburse the cost of installing said infrastructure.**
- f) All Counties shall identify areas where new growth will be directed based on the existence of a public water and sewer governance and infrastructure.
- g) All Counties shall continue to be innovative on new policies that allow tempered growth based on documented water supply and delivery capacity.

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- h) All Counties shall have action plans that define methods to assure governance and funding for construction, maintenance and operation of water and sanitary sewer infrastructure.
- i) All County General Plans shall include Goals, Policies/Objectives, and Implementation Measures/Programs to address existing water supply and long-term sustainability: i.e. water conservation methods, recycling, recharge, etc.
- j) All County General Plans are currently required to describe their relationship to other plans and policies applicable within that County (§65359 of the California Government Code). County General Plans shall not be amended unless the Urban Water Management Plans, Agricultural Water Management Plans, and/or Municipal Service Reviews are also concurrently amended to support or verify that there is sufficient long-term water supply and delivery capacity to support the proposed General Plan changes.

### 12.3.5 Local Agencies - IRWMP Level

- a) Attempt to use mail, phone or in-person outreach to DACs as much as possible; email should be utilized as a last option.
- b) Consider utilizing local non-government organizations (NGOs) or community-based organizations (CBOs) to aid in Outreach and updating contact information of local DACs.
- c) Consider organizing pre-application and grant application workshops or one-on-one training opportunities for DACs.
- d) Consider preparing and distributing Outreach and Education materials as funding from DWR is made available.

### 12.3.6 State Agencies - Water Regulations and Policy Recommendations

- a) Centralized reporting and data management
- b) Improve Groundwater Management Planning – declining water levels leading to increased water quality contaminant levels.
- c) Reconsider and/or 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.
- d) Regulatory changes that impact the affordability of water/wastewater service, but do not change the quality should be evaluated with the perspective of the service providers and consumers in mind.

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- e) IRWMP pros and cons. Clarify the relative benefits and drawbacks for participation in IRWMPs. Clearly define State policies regarding funding of improvements through the IRWMPs. Provide for a mechanism for DACs to join or become interested parties in IRWMPs (ie. Stratford).
- f) CEQA issues – provide exemptions for smaller projects/systems
- g) Moratorium on connecting to a PWS leads to challenges at County level. If they do not issue permit to drill a private well on a property, that property becomes unusable, and County risks being sued by the property owner. However, by permitting drilling of a private well in certain areas, it may be known that the new well will be contaminated. Recommend policy at state level to prohibit counties from issuing permits in these situations?
- h) Consider providing technical and/or financial support for DACs to prepare funding application materials potentially including preparation costs, one-on-one discussions between DACs and DWR on best approach to prepare a competitive application, and provide funding to IRWMPs to prepare and distribute Outreach/Educational Materials to DACs.
- i) Allow Fireflow to be provided by dual system in rural communities [Look at rural water supply programs in midwest and how they deal with fire flow.]
  - o Q for Attorney – Can Counties allow this through local ordinances? Does this require legislation at state level.
- j) EPA and CDPH could support fledgling water treatment technologies (i.e. titanium based nanofibers for arsenic removal, carbon nanotubes for nitrate removal, membrane biofilm reactor (MBfR) for wastewater treatment, anaerobic migrating blanket reactors (AMBR) for wastewater treatment) through a verification program. Approved technologies should be kept in an available online database that would include complete information on source and finished water quality, for standard treatment units, and costs for each technology.

### 12.3.7 State Agencies - Wastewater Regulations and Policy Recommendations

- a) Regulatory changes that impact the affordability of water/wastewater service, but do not change the quality should be evaluated with the perspective of the service providers and consumers in mind.

### 12.3.8 State Agencies - Department of Real Estate Recommendations

- a) Disclosure of water quality data – Require disclosure of water quality on sale of property. In areas where there is a PWS, this may be in the form of recent Consumer Confidence Reports.

**SECTION TWELVE****12.3.9 State Agencies - Funding Recommendations (Existing)**

- 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.
- b) Continue the Pre-Planning and Legal Entity Formation Assistance Program.
- 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.
- d) Consider ways to close the gap – communities cannot apply for funding until they have a significant water quality or supply issue. Once initial funding is awarded, it can take several years to fully implement a solution through various phases and funding steps.
- e) Increase accessibility of funding sources to DACs, and make it easier for communities to navigate the agency/funding systems and requirements.

**12.3.10 State Agencies - Funding Recommendations (Potential)**

- a) Require private systems to conform to all requirements of public systems in order to receive public funding assistance.
- b) Provide block grants to counties to help expedite the funding process.
- c) Consider a transitional funding program to assist with O&M costs on a temporary basis (define a duration for “temporary”).
  - o Consider requiring/providing TMF training and improvements as a condition of this O&M funding
- d) Consider funding incentive to form a JPA to provide a specified service(s), similar to consolidation incentive. This may provide a similar benefit, as in a regional WWTF, while allowing communities to maintain a level of autonomy.
- e) Consider funding assistance opportunities for pre-work, such as initiating the process to determine that there are issues that can be resolved, conducting outreach and other communications.
- f) If a community cannot demonstrate that it can afford O&M for a proposed project, they are not eligible to receive most available funding.
  - o Consider ways to assist communities overcoming this hurdle (e.g. what can the community do to improve its revenues and/or reduce costs? Consider providing funding assistance to assess TMF improvements that can be implemented to improve the financial health.)
  - o Encourage consideration of other alternatives to achieve safe drinking water that may be more affordable (e.g. consolidation)
- g) Consider ways to encourage sewerage of communities that rely on individual septic systems.

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- h) Fund and develop an education campaign throughout the Tulare Lake Basin region to educate board members, operators, and residents on the water issues that are faced by communities in the area, and begin to plant the seed regarding potential options to overcome some of the challenges that water and wastewater systems face.
- i) Provide funding for installation of water meter that can be read remotely. Currently, these projects are ranked lower than larger projects that involve treatment or new sources.
- j) Improvements to the water or wastewater system will likely require the community to obtain additional land. The community would need the funds and legal services to attempt to acquire the needed property. Small systems may not have the money and legal expertise to facilitate the needed land purchases. State funding could be made available to aid small water and wastewater systems in acquiring land for needed improvements.

12.3.11 Federal Agencies

- a) Clarify conflicting policies. For example, the requirement for counties to allow farm labor housing is inconsistent with the requirement to provide safe drinking water (in areas where water quality is poor). There is no requirement to issue a permit if doing so causes a violation of water quality standards. However, these conflicting policies put counties in a difficult position.
- b) Reconsider the nitrate MCL – is it appropriate, or is it too high?

12.3.12 Legislature

- a) Provide new legislation and funding opportunities to encourage and promote the development of regional cooperation, partnerships, and consolidation of services. This may begin with regulation of any new system within a municipality or within ½ mile radius of an existing entity providing water or sewer service to attempt to obtain service from that provider. For existing public water systems that are struggling to meet compliance or have a history of non-compliance, promote or enforce action towards consolidation for any system that violates a final order.
- b) Consider providing tax incentives to organizations that assume responsibility for failing water systems.

12.3.13 Other

- a) Consider staffing a regional DAC coordinator to assist DACs in assessing and addressing their issues.
- b) Using community based organizations for outreach and DAC contacts.
- c) Providing technical and/or financial support for DACs to prepare funding applications.

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- d) Conduct grant application workshops or training.
- e) Drinking water regulatory agencies at local and State levels should more actively identify and address TMF capacity issues.
- f) Utilize existing technical assistance and set-aside programs to fund non-profits or public agencies to conduct low-income assistance programs.
- g) Address cash flow problems for small systems (streamline process for reimbursement)
- h) Address lack of licensed water and wastewater operators. Consider operator training programs at local community colleges.

**12.4 Individual Household and State Small System Recommendations****12.4.1 Local Service Provider (DAC Level)**

- a) Ensure that the specifics regarding existing infrastructure are known. The location, size, condition, and depth of facilities should be known and recorded for the owner.
- b) Require any private system to conform to all requirements of public systems in order to receive public funding assistance.

**12.4.2 Local Agencies - County Environmental Health**

- a) Improve data collection, reporting, and management for private wells and state small systems and private domestic wells.
  - o Include water testing results requirement on sale of property.
    - i. Allow for use of existing water quality characterizations by public water systems (CCRs).
    - ii. Report private domestic well and state small testing to local County and have local counties report into centralized database
    - iii. Use groundwater characterizations by water management agencies and/or State/regional board to identify constituents of concern that should be tested for.
- b) Improve the County Environmental Health Department responsibilities and authority to permit and monitor on-site systems. (There was a frequent observation that records for on-site systems were non-existent – ie. Plainview, Rodriquez Labor Camp)
- c) County requirements for water quality testing for state smalls – consist requirement between counties; improve data collection and management

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- d) Establish a resource clearinghouse (potentially County Environmental Health) – individuals could go to this clearinghouse to get answers as to where to go/ how to begin to start resolving their questions and issues. Create a single “point of entry” for communities and/or private well owners needing assistance.

**12.4.3 Local Agencies – County Planning**

- a) County planning departments need to be looking at the feasibility of connecting new development to existing public infrastructure, not permitting new small systems. Permitting of new small systems, especially in areas with known groundwater contamination, only adds to the problem.
- b) Land use planning for individual households:
- Do not give building permits where known bad water
  - Disclosure of water quality information

**12.4.4 State Agencies - Department of Real Estate Recommendations**

- a) Disclosure of water quality data – Require disclosure of water quality on sale of property.

**12.4.5 State Agencies - Funding Recommendations (Existing)**

- a) Continue the Pre-Planning and Legal Entity Formation Assistance Program.

**12.4.6 State Agencies – Funding Recommendations (Potential)**

- a) Consider funding needs of communities with private wells and state smalls (fewer than 15 connections) – funding needs may include appropriate testing of individual wells, facilitation of community meetings to understand the problem and evaluate alternatives, etc.
- If funding individual well testing – does that information become public record?

**12.4.7 Legislature**

Prohibit counties from issuing building permits where safe and reliable water is not available

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### P&P 2013 Data Sources:

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  - 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
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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
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17. Kings County LAFCo
18. Provost and Pritchard GIS data resources

## **APPENDICES**

New Sources Pilot – Community Review Process