

ISSUE DISCUSSION PAPER

Infrastructure

The purpose of this Issue Discussion Paper is to identify and evaluate infrastructure related issues and strategies that serve as a framework for future decisions on land use alternatives and policy options for the Sutter County General Plan Update. Key infrastructure issues addressed include water quality, water and sewer infrastructure, agricultural water supplies, interior flooding from local runoff, flooding due to levee failure, bikeways, and traffic congestion. The intent is to facilitate the community’s understanding of these issues in order to address infrastructure choices for the future.

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June 2008

1 INTRODUCTION

Sutter County has initiated a comprehensive update of its General Plan to evaluate current conditions in the community, reaffirm a vision for the County's future, and outline a systematic set of actions by which to achieve that vision. As part of this process County residents have defined Sutter County's key assets; those things that make Sutter County a desirable place to live, and its major issues; those things that threaten the ability of the County to sustain those assets.

Through the above effort it has become evident that certain infrastructure limitations are a concern to County residents and businesses. In particular groundwater contamination, water and sewer infrastructure systems, agricultural water supplies, flooding, limited bikeway facilities, and traffic congestion have all been identified as infrastructure issues by County residents. Adequate infrastructure is critical in providing a high quality of life for existing and future residents, businesses, and visitors of Sutter County. It also plays a major role in the ability to be competitive in attracting new employment opportunities to Sutter County. Maintaining adequate infrastructure for existing and future populations of the County is a challenge that will impact the County's choices for its future.

This Issue Discussion Paper identifies and evaluates infrastructure related issues and strategies. These issues and strategies serve as a framework for future decisions on land use alternatives and policy options for the Sutter County General Plan Update. The intent is to facilitate the community's understanding of these issues in order to address future opportunities.

For each key issue, background information is included along with a discussion of some potential strategies available for Sutter County to address the issue.

2 KEY INFRASTRUCTURE ISSUES

As discussed in detail below, there are ten key issues addressed in this Issue Discussion Paper related to infrastructure limitations in Sutter County. These include:

- Arsenic contamination of potable groundwater
- Contamination of potable groundwater from septic systems
- Robbins water and sewer infrastructure
- Inadequate agricultural water supplies in dry years
- Infrastructure requirement to prevent increased flooding due to recent and future city growth
- Flooding in the Pleasant Grove area
- Poor condition of major levees and risk of catastrophic flooding from levee failure
- Revisions to the County's Public Works Design Standards
- Fragmented and limited bikeway system
- Increasing traffic congestion

■ ARSENIC CONTAMINATION OF POTABLE GROUNDWATER

Background

The source of potable water for most of Sutter County is groundwater (except most of Yuba City). Throughout most of the County, potable water is provided by privately owned wells that serve individual properties. Adequate quality of potable water supply for existing and future growth is an issue.

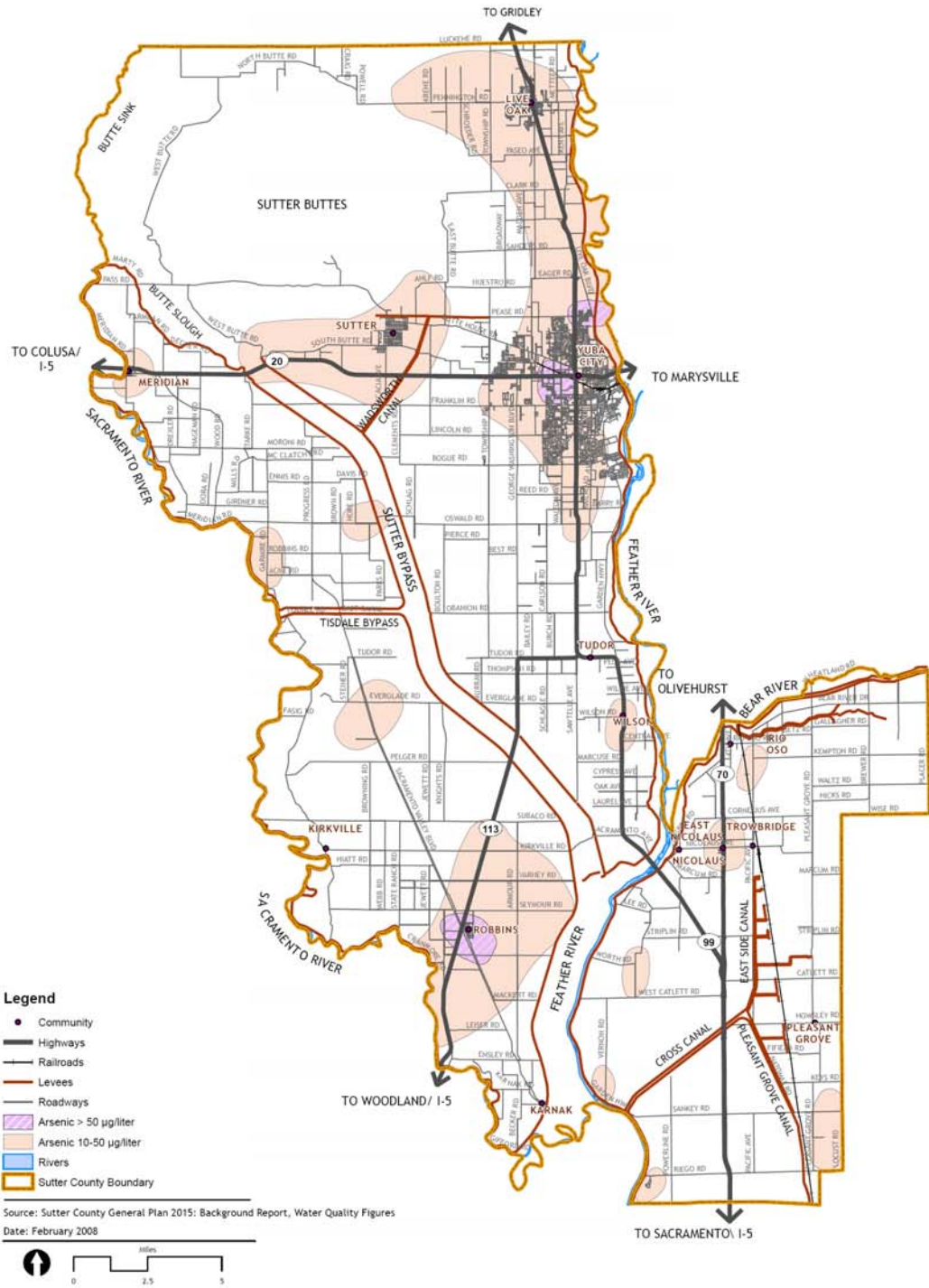
Arsenic occurs naturally in the soils/bed rock of several areas in Sutter County. This naturally occurring arsenic enters the groundwater at concentrations that exceed the EPA's maximum contaminant level (MCL) of 10 µg/L (micrograms per liter). Areas of arsenic contamination of the groundwater are shown in Figure 1.

Many of the private and public groundwater wells in the county do not meet the current MCL for Arsenic of 10 µg/L; however, the EPA arsenic MCL applies only to public water systems (not to private wells).

Groundwater in local districts near Yuba City has an average arsenic concentration of 14.4 µg/L. The City is evaluating options to address this issue, including converting these existing groundwater districts to surface water supplies.¹

¹ Lewis, William P., Utilities Director, Yuba City, Personal Communication, September 17 and 19, 2007.

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GROUNDWATER QUALITY-ARSENIC
Figure 1

Groundwater from the Robbins Well 1 has had arsenic concentrations of up to 60 µg/L. The Robbins Well 2 has had arsenic concentrations in the range of 7-22 µg/L².

The Sutter Community Service District (CSD) has three groundwater wells. One of the three wells has periodically tested high for arsenic; however, at this time it does not require treatment.

Live Oak's water is supplied by five groundwater wells located at various locations around the City. Currently, all five groundwater wells exceed the MCL for arsenic. Greensand arsenic removal systems are being constructed at four of the wells. Greensand is an iron rich mineral that incorporates oxidation, ion exchange, and adsorption to remove arsenic from the water.

Issue

The key issue is that groundwater in some areas of the county has arsenic levels that exceed the current MCL of 10 µg/L. The question is how to comply with the EPA's MCL for arsenic.

Strategies

Conversion from Use of Groundwater to Surface Water

This approach is dependent upon having or being able to acquire surface water rights. One potential source of surface water supplies for potable use is conversion of the beneficial use of agricultural water rights to municipal and industrial use. However, it can be expensive to design, construct, and operate surface water treatment facilities and the pipelines and pump stations needed to convey the surface water. Consequently, this is only a feasible option for cities or large developments that can support these high costs. Currently in Sutter County, this is a feasible option only for Yuba City. It may also be feasible for the potential future Sutter Pointe (Measure M) project.

Treatment of Groundwater to Remove Arsenic

There are several technologies that can be used to remove arsenic from potable water supplies. These technologies include reverse osmosis, oxidation/coagulation/filtration, ion exchange resins, activated alumina beds, greensands, and others. Some of these technologies are suitable for individual homes and some for community water systems. Different treatment technologies work better or worse depending on the chemistry of the water to be treated. These technologies are available as pre-engineered units from many private companies or they can be individually engineered systems.

Sutter County could research the best treatment technologies for the specific chemistry of the groundwater in the County and identify the best specific technologies on the County Web site.

² Sutter County WWD #1 (Robbins) 2005 Water Quality Consumer Confidence Report, Public Water System #5100107.

■ CONTAMINATION OF POTABLE GROUNDWATER FROM SEPTIC SYSTEMS

Background

On-site wastewater treatment systems, or septic systems, are an effective method of treating wastewater from individual or small groups of houses and businesses. These septic systems can, however, lead to contamination of groundwater if they are not properly sited, designed, constructed, operated and maintained. In such cases, septic systems can introduce nitrates, salts, bacteria, viruses, medications, household chemicals, and other contaminants into the groundwater. These contaminants can then enter potable water supplies through pumping of the contaminated water by water supply wells.

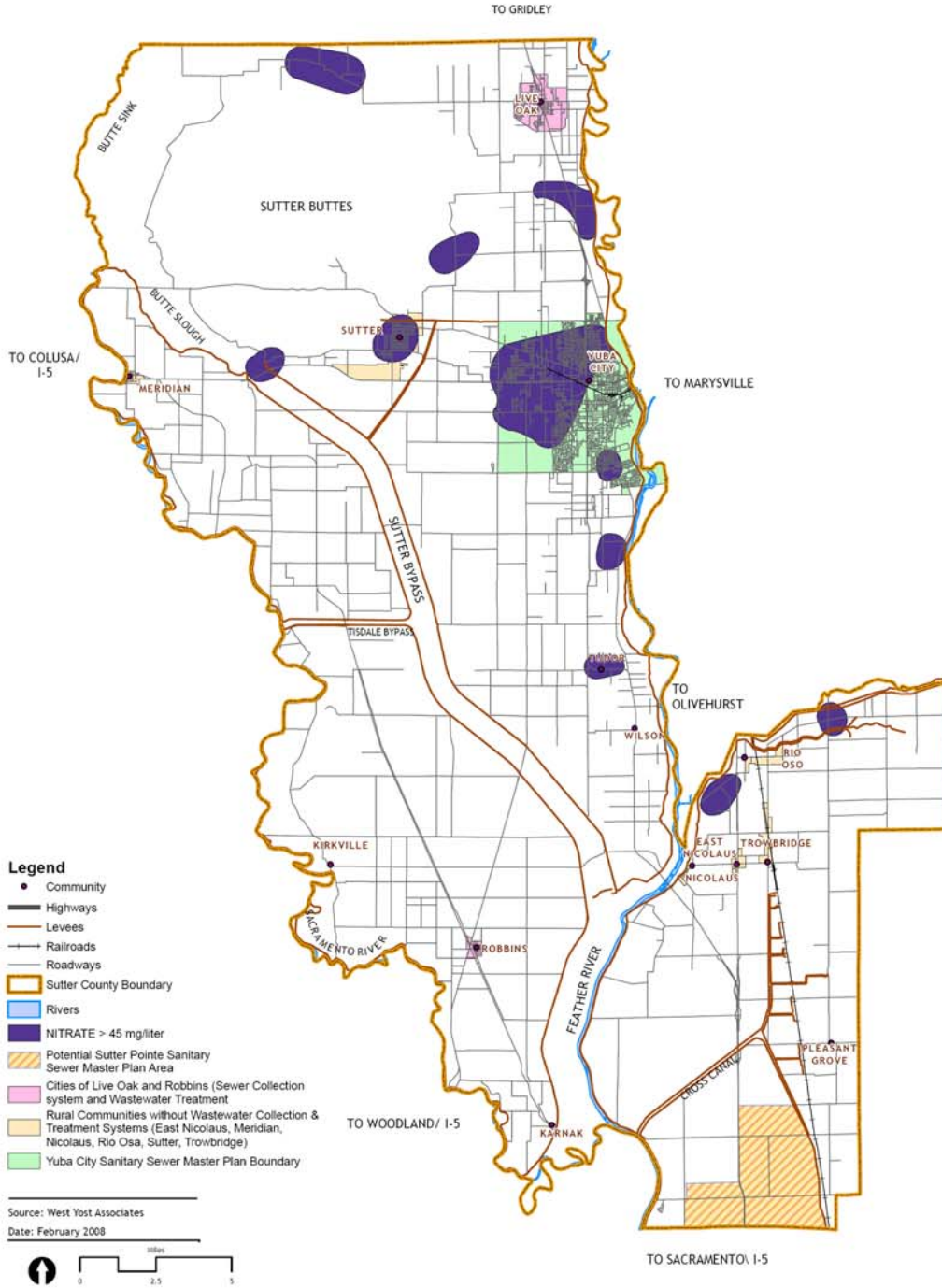
Privately owned septic systems provide for the treatment and disposal of wastewater throughout much of the rural areas of Sutter County. Also, many homes and businesses in the small communities within Sutter County use septic systems, including the communities of Sutter, Rio Oso, Nicolaus, East Nicolaus, and Trowbridge. Yuba City, the City of Live Oak, and the Community of Robbins are the only areas in the county with sanitary sewer collection systems and wastewater treatment facilities. All other areas rely on septic systems.

Nitrate contamination can come from several sources, commonly including septic systems and agricultural practices. Shown on Figure 2 are areas of the County with high nitrate concentrations in the groundwater. The MCL for nitrate in potable water is currently 45 mg/L and may be reduced to 10 mg/L in the future (as nitrate). Figure 2 also shows the communities that use septic systems within Sutter County.

A septic tank is a large, underground, watertight container that is connected to a residence's or business' sewer line. While typically designed with a 1,000-gallon liquid capacity, the size of the tank is determined by the number of bedrooms in the home or the amount of water use for the commercial unit.³ Septic tanks are rectangular and may be made of concrete, fiberglass or polyethylene. Raw waste water from the home or commercial unit flows into the tank where the solids separate from the liquid. Light solids, such as soap suds and fat, float to the top and form a scum layer. This layer remains on top and gradually thickens until the tank is cleaned. The heavier solids settle to the bottom of the tank where they are gradually decomposed by bacteria. Some non-decomposed solids remain, forming a sludge layer that eventually must also be pumped out. The liquid waste flows into the drain field. Septic tanks have two compartments. Two-compartment tanks do a better job of settling solids and are required for new installations. Tees at the tank's inlet pipe slow the incoming wastes and reduce disturbance of the settled scum and sludge. A tee at the outlet keeps the solids or scum in the tank. All tanks should have accessible covers for checking the condition of the baffles and for pumping the scum and sludge out of both compartments.

³ Ag/Extension Communications for Montana State University web site, August 2005, (<http://www.montana.edu/wwwpb/pubs/mt9401.htm>)

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SEWER SERVICES
Figure 2

Further treatment of wastewater occurs in the soil beneath the drain field. The drain field consists of long underground perforated pipes or tiles connected to the septic tank. The network of pipes is laid in gravel-filled trenches (2–3 feet wide), or beds (over 3 feet wide) in the soil. Effluent flows from the septic tank or treatment process and is evenly distributed into the soil through the piping system. The soil below the drain-field provides the final treatment and disposal of the septic tank effluent. After the effluent has passed into the soil, most of it percolates downward and outward, with some eventually entering the groundwater. A large percentage is taken up by plants through their roots, or evaporates from the soil. The soil filters the effluent as it passes through the pore spaces. Chemical and biological processes treat the effluent before it reaches groundwater, or a restrictive layer, such as hardpan, bedrock, or clay soils. These processes work best where the soil is somewhat dry, permeable, and oxygenated several feet below the drain field. The size and type of drain field depends on the estimated daily wastewater flow and soil conditions.

To function successfully, septic systems must only be installed at locations with appropriate soil conditions. These appropriate conditions include permeable soils with adequate depth to groundwater. Much of the flat Sacramento Valley floor in Sutter County has soils with high clay content and very shallow groundwater. Some of these areas also have hardpan soil layers, which restricts percolation of septic tank effluent. In areas with clay or hardpan soils, failure of septic systems often leads to untreated or partially treated effluent rising to the ground surface. In areas with high groundwater, failure of septic systems often results in contamination of the groundwater with partially treated tank effluent. Both of these failure types do occur periodically in Sutter County.

For septic systems to operate successfully, they must be designed correctly, be installed in appropriate locations, and be operated and maintained appropriately. Sutter County ensures that septic systems are designed and installed appropriately by requiring that the system be permitted by the Community Services Department (Environmental Health Division). The permitting process includes testing of the soils to determine suitability for use with septic systems. If the soils are found to be good, then a standard system can be installed by the home owner. If the soils are less suitable (most often the case in Sutter County), then an engineered septic system is required. An approved consultant must prepare the plans for the system, and the plans must be reviewed and approved by the County's Environmental Health Division. Environmental Health also inspects the construction to ensure that the system is installed correctly.

The septic system tanks must also be serviced periodically. This includes pumping out the solids and scum (septage). Almost all of the septage from Sutter County is disposed of and treated at Yuba City's wastewater treatment plant.⁴

Issue

The key issue is that groundwater in some areas of the county has nitrate levels that exceed the current MCL of 45 mg/L. The high levels of nitrates may partially result from septic systems. The question is how to protect the County residents from the health risks associated with contamination of groundwater from septic tank effluent seeping into the groundwater.

⁴ Hill, Jan, Environmental Health Specialist III, Sutter County, Personal Communication, January 25, 2008.

Strategies

Connection of the Homes or Businesses to a Wastewater Treatment Plant

This approach would require construction of new sewer systems from the homes/businesses to a wastewater treatment plant, or, the use of highly technical on-site systems. Construction of new, highly technical on-site systems, sewers and wastewater treatment facilities are all quite expensive; consequently, this approach is probably only feasible for the area with several ranchette parcels just south of Yuba City because this area could be connected to the existing City sewer system. Also, Sutter County is evaluating the feasibility of connecting the community of Sutter to the Yuba City Wastewater Treatment Plant.

Passing and Enforcement of More Strict Septic System Regulations

Assembly Bill 885 - California Onsite Wastewater Treatment System (OWTS) Regulations (AB 885) has not yet been enacted by the State of California. If enacted, Assembly Bill 885 (AB 885) will result in more strict septic system regulations to prevent contamination of groundwater.⁵ Sutter County could also pass more strict regulations even if AB 885 is not enacted.

Increasing the Minimum Lot Size on Which Septic Systems Can be Utilized

This approach involves fewer houses/businesses using septic systems, which result in greater dilution of septic system effluent by the underlying groundwater and reduces the concentration of contaminants in the groundwater. Sutter County is in the process of preparing a Groundwater Management Plan. One goal of the plan is to determine the quantity and quality of available groundwater and how to best manage the existing groundwater basins. This study could also provide recommendations for minimum parcel sizes needed for use of septic systems.

■ ROBBINS WATER AND SEWER INFRASTRUCTURE

Background

Water

Sutter County runs the Water Works District #1 (WWD1), which provides water and sewer service to the Community of Robbins.⁶ The water supply system and the wastewater collection and treatment systems for the Community of Robbins are operating at capacity and are in need of repairs and rehabilitation. Also, the water and sewer rates collected from the community do not cover the costs of operation and maintenance of these facilities; consequently, adequate funds are not available to plan, design, or construct the required improvements.

The water system currently includes one active ground water well (Well No. 2), one backup ground water well (Well No. 1), one storage tank, about 5 miles of water pipelines ranging in size from 3 to 12 inches (mostly Polyvinyl Chloride [PVC] and

⁵ SWRCB, OWTS Regulations <http://www.swrcb.ca.gov/ab885/index.html>, 2007.

⁶ Water Works District No. 1 Water Rate Study, Prepared by Department of Public Works Division of Water Resources, February 8, 2008 and Personal communications with Dan Peterson, Deputy Director for Water Resources, Sutter County Department of Public Works, March 2008.

Asbestos Concrete pipe [ACP]), fire hydrants, and 93 lateral connections (connections to homes or businesses). Since about 1989, WWD1 has required water meters to be installed on new connections, resulting in 17 single family homes and 2 businesses with water meters. This system provides the Community's residents with potable water. The active ground water well includes treatment for iron and manganese.

The total system was designed to meet the then-current health standards; however, the back-up well (Well No. 1) located on Sacramento Valley Boulevard does not meet current health standards for arsenic, as discussed above. During peak demand periods, the back-up well is automatically activated. This well's usage is restricted to 15 days of production per year by the Department of Health Services due to elevated levels of arsenic. Arsenic is a primary contaminant of concern and has a maximum contaminant limit (MCL) of 10 µg/L. Arsenic has been measured in Well No. 1 at 61 µg/L.

There have also been public complaints concerning secondary standards not being met. Manganese is a secondary contaminant of concern with a MCL of 50 µg/L. Water pumped from well 1 has been measured at 84 µg/L. Iron is also a secondary contaminant concern with a MCL of 300 µg/L. Water pumped from well 1 has been measured at 118 µg/L. However, the well's treatment facility removes nearly 98 percent of the manganese and nearly all of the iron.

The water service system in the town of Robbins, as presently configured and operated, is at capacity. The system delivers an average of 43 million gallons of water per year to single family and multi-family residences and commercial businesses in Robbins. The peak month water demand is in July, when approximately seven million gallons are produced. The maximum daily production is roughly 255,000 gallons. Additional connections to this system have not been allowed in recent years, thereby limiting development to parcels with current water service.

It has been over fifteen years since utility rates have been increased in Robbins. In 1992 the residential rate for water was established at \$22.50 per month. Since that time, operation and maintenance costs have steadily increased. In Fiscal Year (FY) 2006-2007, these water rates generated annual revenue of \$33,789. However, the FY 2006-2007 expenses were \$81,657. For FY 2008-2009 the estimated expenses for the system operations and maintenance are expected to be \$114,614. To adequately fund the estimated expenses, the water rates need be increased. All residential customers will be charged a flat rate for water service. For non residential customers, the proposed rates are dependent upon whether the water connection is metered or unmetered (but metered rates will not be charged in 2008/2009). For either case, the rates will be over three times the current rate. These estimated FY 2008-2009 expenses do not include collection of money to fund the future replacement of the water supply infrastructure or collection of any money for a future expansion of the water system.

Wastewater

The wastewater system that serves the community of Robbins currently consists of septic tanks within the community, a STEP (septic tank effluent pumping) system, a treatment facility consisting of four recalcitrating sand filters and four 10,000 gallon dosing tanks, a treated effluent pumping station, and three disposal/evaporation ponds.⁷

⁷ Personal communications with Dan Peterson, Deputy Director for Water Resources, Sutter County

The wastewater system was constructed in 1997 and was funded by a small community grant, a state loan, and a County general fund loan.

Current Waste Discharge Requirements (WDRs) for the facility issued by the California Regional Water Quality Control Board (RWQCB) contain the following effluent limitations:

Parameter or Constituent	Average Monthly Limit	Maximum Daily Limit
Dry Weather Flow	30,000 gallons per day	N/A
5-Day Biochemical Oxygen Demand	40 mg/l	80 mg/l
Settleable Solids	0.2 mg/l	0.5 mg/l

The average monthly dry weather flow to the treatment facility is currently about 28,000 to 29,000 gallons per day. In 2003, the permit limit was exceeded during the period of June through October, with a peak in September of 37,177 gallons. This system is currently at capacity and is in need of repairs and renovation.

The WWTP Operations staff has indicated that: several of the duplex submersible recirculation pumps have failed over the years and have required repair/replacement. Also, the filter media is nearing the end of its service life, and will soon require replacement.

Issue

The key issues for the water and sewer systems for the Community of Robbins are:

- The water system operates at or beyond capacity. The back-up well exceeds the current MCL for arsenic. The current water rates do not result in collection of adequate revenue to fund the on-going annual operations and maintenance of the water system nor collection for funds for future replacement of water facilities.
- The wastewater system operates at or beyond capacity. Some of the wastewater treatment facilities have been damaged and repaired in the past, or will require replacement in the future.

Strategies

The strategies to address these issues include performing planning level engineering studies to determine the water and wastewater system facility improvements needed to provide reliable long-term water and wastewater service. The capital costs of these facility improvements need to be estimated. A funding plan needs to be developed and adopted to collect revenues that are adequate to fund the currently required improvements, the on-going operations and maintenance costs, and collecting funds for future repairs and replacement of infrastructure. Recently, Sutter County has held meetings with residents of Robbins to begin the process of increasing the water rates and to cover the costs of operating the system. The county has also begun the process of identifying what water and wastewater facilities improvements will be needed and estimating the costs of those improvements. Sutter County has pursued and should continue to seek state or federal grants or loans to help fund the required system

improvements. However, Robbins is not considered an economically disadvantaged community, and consequently may not be eligible for state or federal grants or loans.

■ INADEQUATE AGRICULTURAL WATER SUPPLIES IN DRY YEARS

Background

Several irrigation water companies and districts provide irrigation water within Sutter County. The main sources of this water are diversions from the Feather and Sacramento Rivers. These entities range in size from as small as 600 acres to over 50,000 acres as shown on Figure 3. Generally, irrigation water supplies throughout the county are adequate. However, in dry years when surface water supplies are reduced, some irrigation districts do not have adequate supplies. During shortages of surface water, some of the irrigation districts and companies are able to supplement the surface water supplies with use of groundwater. Also, when an agricultural water supply is located within a reclamation district or stormwater management district, it is possible for pumps to be placed in the drainage channels to reuse the drainage water from these channels.

The existing agricultural irrigation entities in Sutter County are listed below, along with an assessment of the whether the entity has adequate dry-year surface water rights:

Meridian Farms Water Company. The Meridian Farms Water Company is a 10,000 acre agricultural water service company. Meridian Farms maintains a water right permit for direct diversion from the Sacramento River. The permit allows 9,000 acre-feet of water to be diverted annually, and typically, they use all 9,000 acre-feet of water each year. Water is also pumped from the RD 70 drainage channels for reuse within the company's service area. When the Sacramento River is low, Meridian Farms pumps are not able to lift sufficient water from the river to fully utilize their water rights or satisfy the agricultural water demands. To supplement its surface water supply Meridian Farms has submitted an application to Sutter County for permits to drill two groundwater wells. Assuming the well permits are approved, Meridian Farms should have sufficient water for the future.⁸

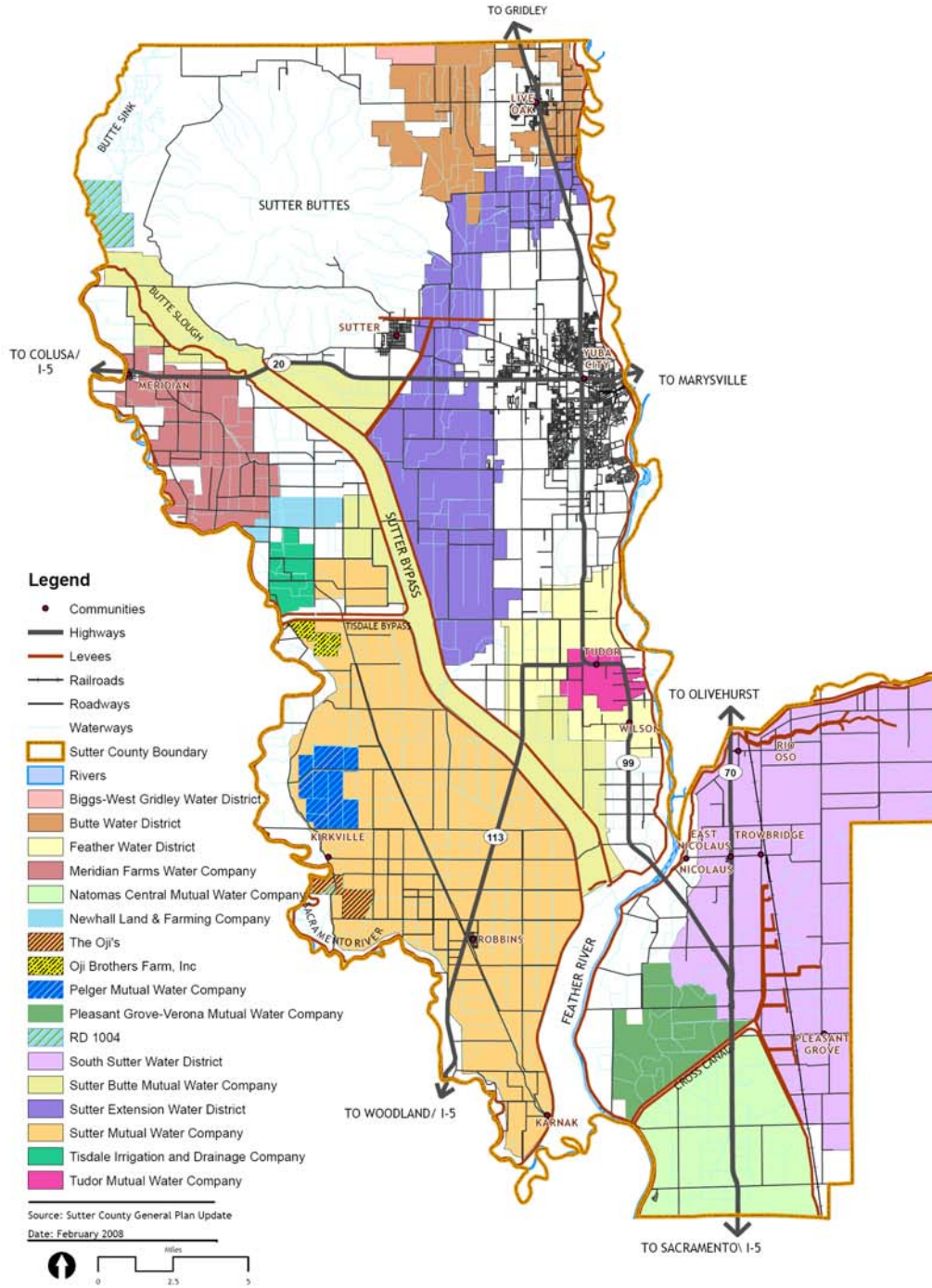
Natomas Central Mutual Water Company. The Natomas Central Mutual Water Company (NCMWC) is a private, nonprofit irrigation district consisting of 31,575 acres. Water is supplied primarily by surface water diverted from the Sacramento River, by reuse of tail water (previously used irrigation water that has flowed off of the fields and into drainage ditches), and by one groundwater well that serves one property adjacent to Garden Highway. NCMWC has six water right permits and contracts with the Bureau of Reclamation that allow 120,200 acre-feet per year of water to be diverted from the Sacramento River. During critical, dry years the available water can be reduced by 25 percent, but even during critical dry years, NCMWC staff has stated that they have an adequate water supply.⁹

Pleasant Grove/Verona Mutual Water Company. The Pleasant Grove/Verona Mutual Water Company provides irrigation water for 7,330 acres of farmland through two co contracts with the Bureau of Reclamation for a total supply of 26,290 acre-feet of surface water diverted from the Sacramento River. Individually owned wells also provide some of the annual water supply. In addition, the Pleasant Grove/Verona Mutual Water

⁸ Ruiz, Daniel, Meridian Farms Water Company, personal communication October 4, 2007.

⁹ Personal Communication with Dee Swearingen, NCMWC General Manager, March 10, 2008.

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IRRIGATION WATER AGENCIES
Figure 3

Company has been very successful at recycling and reusing water within their service area. However, Company staff is concerned about the adequacy of the water supply during critical, dry years when surface water supply is reduced by the Bureau of Reclamation.¹⁰

Sutter Extension Water District. The Sutter Extension Water District provides water for agricultural use in Sutter County. The water is supplied by two pre-1914 water rights permits that allow for a combined total of 11,000 acre-feet of water per year and a third permit allowing 6,500 acre-feet of water per year. Sutter Extension has sufficient water supply to meet current demands and has never been short of water in the past. Sutter Extension procures their water through the Joint Water District (The Joint Water District is comprised of Sutter Extension Water District, Butte Water District, Biggs-West Gridley Water District and Richville Water District). Since the early 1900's the amount of water allotted to the district has only been reduced three times, reducing the overall water intake by 50 percent. Consequently, it appears that this District has adequate water supplies.¹¹

Sutter Mutual Water Company. The adequacy of Sutter Mutual's water supply is dependant on the type of crops being grown during that year and the availability of water from the Sacramento River. When rice has been widely planted, the water demand exceeds the available water supply. In these situations Sutter Mutual has purchased water from other sources. When crops such as tomatoes, carrots and beans are widely planted, the available water supply is adequate. During drought years, Sutter Mutual is always very short of water because its supplies are reduced.^{12,13}

Butte Water District. The Butte Water District appears to have adequate water rights, and has supplied other districts with some of its excess water during dry years. Butte Water District is currently constructing two groundwater wells as part of its conjunctive use program.¹⁴

Biggs-West Gridley Water District. During dry years, the Biggs-West Gridley Water District has supplemented their water supply with unused supplies from other members of the Joint Water District. Also, there are a few District customers who supplement their supplies with groundwater. Biggs-West Gridley has recently hired a private engineering consulting firm to help address long term water supply issues through more efficient water use. Consequently, this District appears to lack adequate dry year water supplies.¹⁵

Pelger Water District. To provide an adequate water supply, this district recycles drain water back to the irrigation ditches. Also, during drought years supplemental ground

¹⁰ Nicolas, Nicoli, Pleasant Grove/Verona Mutual Water Company, Personal communication, November 29, 2007.

¹¹ Phillips, Lynn, Sutter Extension Water District, personal communication, October 1, 2007 and January 21, 2008.

¹² Sakato, Max, Manager Sutter Mutual Water Company, personal communication, October 5, 2007.

¹³ Peterson, Dennis, Sutter Mutual Water Company, personal communication, October 5, 2007.

¹⁴ Orme, Mark, General Manager Butte Water District, personal communication, January 23, 2008.

¹⁵ Peters, Karen, Office Administrator Biggs-West Gridley Water District, personal communication, January 21, 2008.

water is supplied by private landowners' water wells. Consequently, this District lacks adequate dry year water supplies.¹⁶

Tisdale Water District. The Tisdale Water District has one permit to divert 9,900 acre-feet per year of water from the Sacramento River. Tisdale has one district owned well that is used periodically each year to supplement the Sacramento River supply. There are also 3 to 4 private wells that may be put into service in dry years; however, this is not a common a practice. Thus, it appears that this water company does not have an adequate dry year water supply.¹⁷

South Sutter Water District. South Sutter Water District is a public agency that provides irrigation water to the surrounding 52,000 acres of land. The surface water supply is from the Camp Far West Reservoir (on the Bear River). The District maintains the water rights for this Bear River water supply. In the past South Sutter has also purchased surplus water from the Nevada Irrigation District. Thus, it appears that during some dry years, this district may lack adequate water supplies.¹⁸

The following water districts and companies are also located within Sutter County, but no information related to the adequacy of their water supplies was available: Swinford Tract Irrigation District; Oswald Water District; Feather Water District; Tudor Mutual Water Company; and Garden Highway Mutual Water Company.

Issue

The key issue is that many of the agricultural irrigation agencies or companies lack adequate water supplies during dry years. Several of these agencies supplement their surface water supplies with groundwater in dry years. If adequate water is not available, crop production can be reduced. The question is how to provide adequate dry year agricultural water supplies.

Strategies

It is unlikely that additional water rights for summertime water diversions from the Sacramento River, Feather River, or other nearby surface water bodies will be approved. Consequently, listed below are other options/strategies for addressing the inadequacy of dry year agricultural surface water supplies:

Use of Groundwater

Increased use of groundwater can provide an increased dry year water supply. However, if this option is used too widely, it can lead to the depletion of the underlying groundwater supply.

¹⁶ Tucker, Scott, Manager/President Pelger Mutual Water Company, personal communication, January 22, 2008.

¹⁷ Chesini, Larry, President of the Board of Tisdale Irrigation and Drainage Company, personal communication, January 23, 2008.

¹⁸ Arnold, Brad, General Manager of South Sutter Water District, Personal communication, November 29, 2007.

Implement a Conjunctive Use Program

A conjunctive use program includes use of surface water supplies when they are available (e.g. during normal and wet years). During dry years when the surface water supply is reduced, groundwater is also used. This approach results in an adequate water supply in dry years, and results in the recharging of the underlying groundwater during normal and wet years. Sutter County is currently preparing a groundwater management plan that should provide information that could help the County to develop a Conjunctive Use Program.

Increase Water Recycling

Reuse of irrigation runoff can result in increased water supplies. However, this requires the installation of new pumping systems and channels to lift the tailwater from the drainage ditches back into the irrigation supply system. Also, the tailwater is usually not as high of quality as the original water diverted from the rivers. It should be noted that several of the agricultural water purveyors already use recycled water (e.g. NCMWC) and for those purveyors, this strategy would have limited additional benefit.

Decrease System Losses

Irrigation water is lost through seepage into the ground from the distribution channels and evaporation from the channels. These channels can be lined with concrete (or other linings) to reduce seepage losses. Piping of the channels would reduce both seepage losses and evaporation losses. However, these improvements are very expensive to implement, and may not be suitable for most agricultural water agencies.

■ **INFRASTRUCTURE REQUIRED TO PREVENT INCREASED FLOODING FROM FUTURE GROWTH**

Background

Development in and around the cities of Yuba City and Live Oak could lead to increased risk of localized flooding along the drainage channels in the cities or in the County upstream or downstream of the cities.

The City of Yuba City adopted a new General Plan in April 2004. This General Plan included development of the areas west of the existing City to Township Road and from Pease Road south to Bogue Road. Much of this area is currently farmland, and unless peak flow attenuation facilities are provided as a component of the new developments, the runoff rate would increase significantly. If the runoff rate is allowed to increase without implementing appropriate mitigation measures, the potential for localized flooding would increase. To prevent this increased flooding, Yuba City prepared the West Yuba City Master Drainage Study that identified the channels, culverts, peak flow attenuation basins, and pump stations needed to eliminate the potential increase in flooding within the City and downstream in the County (dated March 2006). A draft amendment to this report was also prepared (April 4, 2007) that changed the recommended project to a lower cost alternative. The Yuba City Storm Drain Nexus Fee Study (June 23, 2006) and an associated draft amendment (dated April 6, 2007) were also prepared that developed the drainage impact fees needed to fund the required improvements. At this time, neither the Master Drainage Study nor the Nexus Fee Study has been adopted by the City. Also, future development in the eastern part of Yuba City was not evaluated in the West Yuba City Master Drainage Study.

The City of Live Oak is currently updating their General Plan, and it is possible that the new General Plan will result in the potential for the City to double or triple in size at full build out. Much of this area is currently farmland, and unless peak flow attenuation facilities are provided as a component of the new developments, the runoff rate would increase significantly. If the runoff rate is allowed to increase without implementing appropriate mitigation measures, the potential for localized flooding would increase in the City or in the County upstream or downstream of the City. Reclamation District (RD) 777 encompasses all of the existing City and most of the likely future development areas of the City. RD 777 owns, operates, and maintains the drainage channels that serve the City and surrounding areas. However, a small area in the northwest corner of the likely future growth area of the City is located within RD 2056. The City of Live Oak and RD 777 are cooperatively preparing Master Drainage Studies that will identify the channels, culverts, peak flow attenuation basins, and pump stations needed to eliminate the potential increase in flooding from future development. After this Master Drainage Study is completed, a Nexus Fee Study should be prepared, and development impact fees should be adopted to allow the City/RD 777 to collect adequate funds to design and construct the necessary flood control improvements.

The master drainage studies for Yuba City and the City of Live Oak do not address flooding from failure of levees on the Feather River, Sacramento River, or Sutter Bypass.

Issue

The key issue is that future growth of Yuba City and the City of Live Oak could increase the potential for localized flooding unless (1) the developments include peak flow attenuation, or (2) the conveyance capacity of the drainage system is increased. The issue is how to allow for the growth of these cities without causing an increase in the potential for localized flooding.

Strategies

The Master Drainage Studies discussed above have evaluated or will evaluate options to address the potential increased flooding. They have or will identify a preferred alternative and estimate the costs of the required flood control facilities. Appropriate development impact fees have or will be identified.

To help prevent increased flooding from development around Yuba City, Sutter County should support and encourage Yuba City to:

- Adopt the West Yuba City Master Drainage Study
- Adopt the drainage impact fees and collect the required funds to design and construct the recommended flood control improvements
- Cooperate with the City in preparing a Master Drainage Study for Eastern Yuba City, and identify and adopt the needed impact fees

To help prevent increased flooding from development around the City of Live Oak, Sutter County should support and encourage the City of Live Oak, RD 777, and RD 2056 to:

- Complete the City's and RD 777's Master Drainage Studies
- Adopt the drainage impact fees and collect the required funds to design and construct the recommended flood control improvements

■ FLOODING IN THE PLEASANT GROVE AREA

Background

The Pleasant Grove area of Sutter County occasionally experiences localized flooding during large storm events. This localized flooding is typically widespread and relatively shallow. The area has been mapped as within the FEMA 100-year flood zone. This localized flooding has been exacerbated by increased development in Placer County upstream of this area. High water levels in the Sacramento River and the Natomas Cross Canal also contribute to this localized flooding, as described further below.

Sutter County has been working with Placer County, the Sacramento Area Flood Control Agency (SAFCA), and other agencies to address this localized flooding and other flooding in the region. In 1994 SAFCA prepared the *Reconnaissance-Level Report South Sutter County Flood Control Alternatives*. This report determined that the causes of the localized flooding are high water levels in the Sacramento River, the Cross Canal, the East Side Canal, and Pleasant Grove Canal. These high water levels reduce the effectiveness of the channel system to convey stormwater to the Sacramento River, which can result in overtopping of the local levees. Also, east of the railroad, localized flooding occurs due to the inadequate capacities of the creek channels and culverts. This report also concluded that increased development east of Sutter County will further exacerbate the existing localized flooding problems. This study evaluated eight alternative solutions. For example, one solution was to construct a parallel Cross Canal, but the cost was estimated at about \$70 million (in 1994 dollars). Another alternative included allowing this area to continue to flood and constructing flood protection for just the individual houses and other higher value structures (\$22 million). Other alternatives were evaluated that had lower costs, but they did not significantly reduce the localized flooding in this area.

Issue

The key issue is that the Pleasant Grove Area is subject to shallow localized flooding on a relatively frequent basis. This localized flooding occurs because the local drainage infrastructure is inadequate, and not because of failure of a major levee. The question is how to provide better drainage for the Pleasant Grove Area.

Strategies

The only feasible option to address this localized flooding is for Sutter County to continue to work with other agencies involved in regional flood control planning. By doing so, Sutter County can help ensure that resolution of localized flooding in this area is included in the regional flood control plans. Sutter County should request that all development east of this area be required to include peak flow attenuation basins (also called detention basins) to eliminate increased runoff from the development area. The peak flow attenuation basins should be designed to release water after flooding of the Pleasant Grove area has passed. Sutter County could also prepare more detailed studies of the individual creeks through this area to determine if there are specific culverts or creek segments that could be improved that would reduce localized flooding at specific locations. However, the improvements would need to be constructed in a way that does not pass the localized flooding from one location downstream to another location. These specific improvements may reduce some of the localized flooding, but will not eliminate the major flooding from overtopping of levees caused by high water

levels in the Sacramento River. To solve the major flooding in this area will require implementation of a regional solution.

■ **POOR CONDITION OF MAJOR LEVEES AND RISK OF CATASTROPHIC FLOODING FROM LEVEE FAILURE**

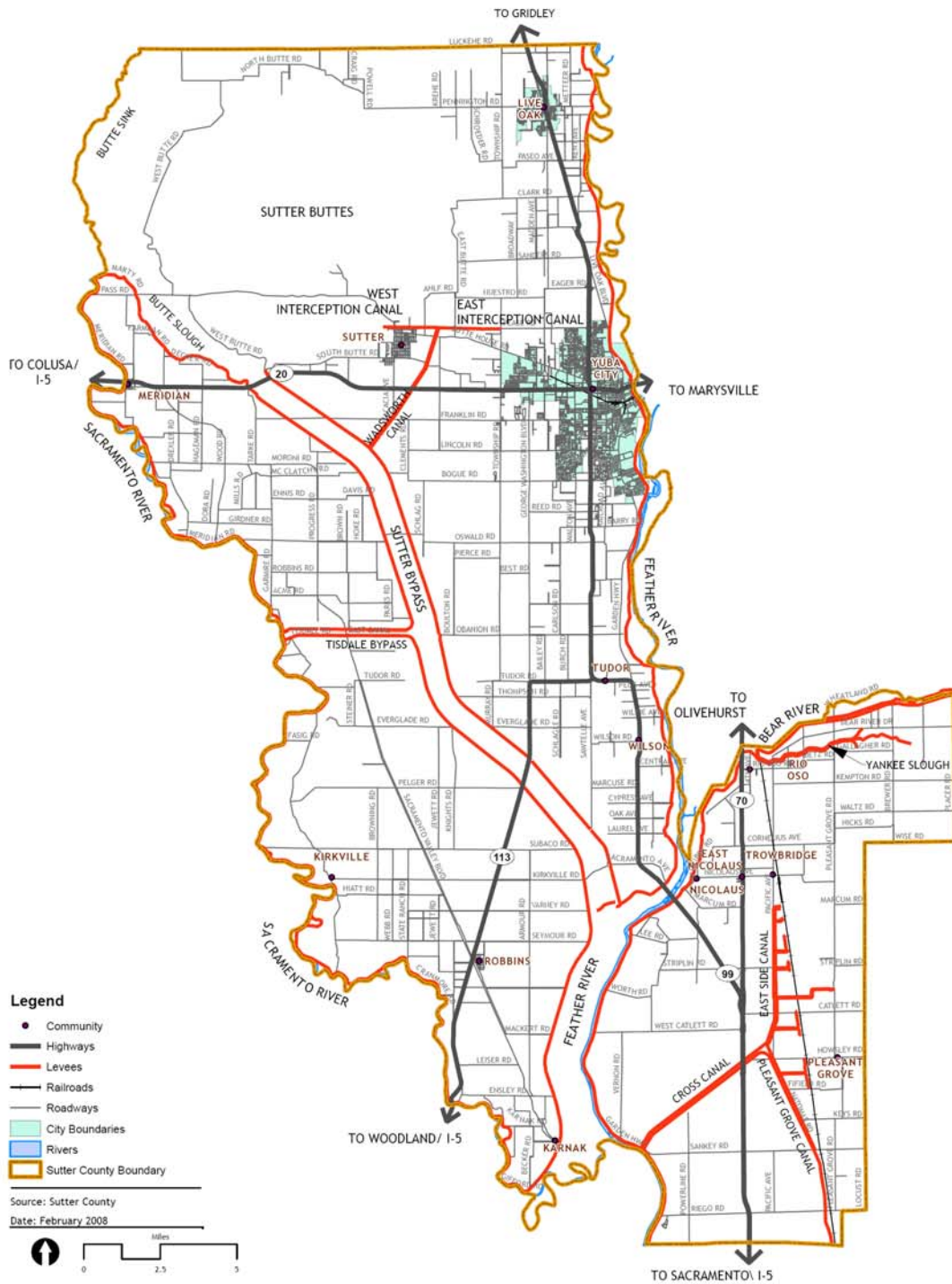
Background

The primary method for major flood control in Sutter County is a system of levees along the Sacramento and Feather Rivers, as shown in Figure 4. There are approximately 280 miles of levees within the county that provide flood protection to the area. Failure of any of these levees could cause major flooding in the County. Recent and on-going studies have found that some levees within the county do not meet, or have not been certified as meeting, the current levee design criteria. As a result, much of the County is considered vulnerable to flooding due to levee failure. FEMA has issued draft FIRM maps that re-zone much of Sutter County into Special Flood Hazard Areas. SAFCA has a levee improvement project underway that is designed to provide 100-year protection to the Natomas Basin by 2010 and 200-year protection by 2012. It is anticipated that the Sutter County Feasibility Study being performed by the Corps of Engineers will produce a plan to provide 100-year protection to the major urban areas within the County. It will be several years before this study is complete. However, the non-federal sponsor's planning objective is to achieve 200-year flood protection and to obtain FEMA levee certification.

Sutter County is actively working with several other agencies to ensure that the levee system that protects the County has adequate capacity that the structural integrity of the levees is thoroughly evaluated, and that required repairs and maintenance are performed. Sutter County is one of several members of the recently formed Sutter Butte Flood Control Agency (SBFCA). SBFCA is a Joint Exercise of Powers Agency that includes Sutter County, Butte County, City of Yuba City, City of Live Oak, City of Gridley, City of Biggs, Levee District 1, Levee District 9, and the Sutter County Water Agency. The purpose of the SBFCA is to plan, design, acquire, construct, operate, maintain, and manage flood control facilities to protect its member agencies.

Current flood maps published by FEMA show that the levee systems, with some exceptions, protect the County from flooding during a 100-year storm event. However, most of these flood maps were published in 1988 with a few in 1998 and they do not necessarily reflect the most recent flood studies. When FEMA first produced flood maps for the County, most of the levees were assumed to provide adequate protection based on studies prepared by the U.S. Army Corps of Engineers in the 1960's. However, these levees have not been certified as meeting current levee protection criteria. This is a significant issue because FEMA, as a part of its Map Modernization Program, now requires that all levees be certified before the protection they provide will be recognized and reflected on new or updated flood maps. This is true for all levees, even those that were recognized as providing protection on previous maps. To obtain certification, a levee owner must provide FEMA with engineering data that demonstrates compliance with all of the appropriate levee criteria. These requirements include evaluations of freeboard, closure structures (gate structures that provide reliable closure of a pipe that passes under or through a levee), embankment protection, embankment and foundation stability, settlement potential, interior drainage, operations and maintenance, and as-built conditions.

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FLOOD CONTROL LEVEES
Figure 4

Currently there are draft FEMA floodplain maps that show much of Sutter County within the 100-year floodplain. These maps are expected to be adopted by FEMA around December 2008. When adopted, the lenders holding mortgages for homes and other properties within these 100-year flood zones will require the home owners to purchase flood insurance.

A number of studies have been completed or are in progress that will affect the flood protection and FEMA flood mapping within the County. These are described below.

Lower Feather River Floodplain Mapping Study

The California Department of Water Resources (DWR) commissioned a study by the U.S. Army Corps of Engineers to map the floodplain along the Lower Feather River. DWR forwarded the study to FEMA and requested that new flood maps be issued for the study area. Draft flood maps were published by FEMA in August 2006 that showed large portions of the study area within the 100-year floodplain. The proposed floodplain covers the area roughly south of Stewart Road between the Feather River and the Sutter Bypass; the area between the Feather River, the Natomas Cross Canal and Highway 70; and, also large portions of the area east of Highway 70. Revised draft maps have been released with final maps expected to be released around December 2008. Development within these floodplain areas will be significantly restricted upon adoption of the new maps.

Upper Feather River Floodplain Mapping Study

At the request of DWR, the U.S. Army Corps of Engineers is also currently performing a study to define the floodplain along the upper portions of the Feather River. This study has not been completed, but it is expected to be complete in the near future. It is anticipated that the study will show large portions of northern Sutter County to be within the 100-year floodplain. A FEMA representative has indicated that they will begin working on the draft floodplain maps in 2009. The schedule for the completion of draft flood maps is uncertain.

Natomas Basin Project

The Natomas Basin is located at the southern end of the County and is bounded by the Sacramento River on the west, the Natomas Cross Canal on the north, Pleasant Grove Canal on the east, and the County line on the south. This area is currently shown on FEMA flood maps as having protection from the 100-year flood. In 2006, the U.S. Army Corps of Engineers determined that the levees protecting the Natomas Basin do not meet the current levee underseepage criteria and, as a result, FEMA intends to update the floodplain maps for the basin. In September 2007, FEMA denied a request by Sutter County and other affected agencies to give the Natomas Basin an A99 or AR designation and instead will issue an AE designation. An A99 designation would not have resulted in severe restrictions on development, and an AR designation would have allowed infill development if structures are raised 3 feet above the existing ground. The AE designation essentially restricts development until the levee system repairs are all completed. Draft floodplain maps were recently released by FEMA, and FEMA anticipates that these maps will be adopted and become effective in December 2008.

SAFCA in conjunction with the U.S. Army Corps of Engineers and the State of California have developed a levee improvement project that is planned to restore 100-year flood

protection to the Natomas Basin by 2010 (or possibly as late as 2012 with remapping one year later) and increase the protection to a 200-year level by 2012.

Sutter County Feasibility Study

The U.S. Army Corps of Engineers initiated a feasibility level study to determine the Federal Government's level of interest in achieving the federal flood protection requirements. This study will help develop preliminary flood protection measures for Sutter County. Sutter County and the State Reclamation Board are sharing the local cost share for the study. The study began in 2000 and is partially complete. The results from a geotechnical analysis indicate that about 15 percent of the Sacramento River Flood Control Project levees have a high probability of failure. Failure is expected mostly as a result of excessive seepage or embankment instability rather than overtopping. The remainder of the study is expected to take several years to complete, and it is the non-federal sponsor's planning objective to achieve 200-year flood protection and to obtain FEMA levee certification.

California Department of Water Resources Levee Evaluation Program

DWR has initiated a program to evaluate and upgrade the levees along the Sacramento and San Joaquin River Valleys and the Delta. DWR has begun evaluation of 300 miles of high priority levees protecting urban areas in the valleys. Included in the high priority categories are levees within Sutter County along the Feather River and the east side of the Sutter Bypass. The levee evaluations are being conducted over a two- to three-year period. During that time, DWR is reviewing existing levee historical data; mapping near-surface geology; conducting field explorations; performing engineering, stability and seepage analyses; and preparing preliminary design and construction estimates for repairing and upgrading the levees, where needed.

Issue

The key issue is that the levees protecting Sutter County may not provide 100-year flood protection. Also, until the levees are shown to provide adequate protection, the areas behind the levees are considered to be subject to 100-year flooding and can be remapped as within the 100-year flood plain. If and when these areas are remapped into the 100-year flood plain, development within these areas will be severely restricted and flood insurance will be required. The question is how to ensure the levees provide adequate flood protection.

Strategies

Sutter County is actively participating in the regional flood control planning that has been ongoing for several years. Because the magnitude of the potential flood control problems is so large and the costs to solve the problems are so high, it is infeasible for Sutter County to address these issues alone. The only feasible approach is for Sutter County to continue participating in the regional flood control planning and continue to participate as the planning progresses into construction of flood control projects.

Of critical importance is the County's continued involvement in the flood control planning for the Natomas Basin, which is proposed for major future development with the Sutter Pointe (Measure M) project. As a member of SAFCA, Sutter County will be an active participant in the effort to improve flood protection in this area. SAFCA is aggressively pursuing an improvement project that is scheduled to restore 100-year flood protection

by 2010 or later (remapping is anticipated in 2011) and provide 200-year protection by 2012. Sutter County should continue to support this effort.

Sutter County should also continue its partnership with the U.S. Army Corps of Engineers and the State of California for the Sutter County Feasibility Study. That study is focused on key portions of the Sacramento Flood Control Project that protects large portions of the County. The study will define the level of flood protection provided by the system and identify the improvements that are required.

Prior to completion of the ongoing studies and flood protection projects, Sutter County should continue to keep residents informed of the known flood risks in the County and continue to enforce its flood damage prevention ordinance.

■ REVISION TO THE COUNTY'S PUBLIC WORKS DESIGN STANDARDS

Background

The Sutter County Public Works Design Standards (dated November 2005) were adopted by the County on January 24, 2006. These standards were developed for relatively small rural developments that have occurred in the County in the past. Some of these standards are not suitable for moderate and large development projects, such as the Sutter Pointe Specific Plan (SPSP) currently proposed for South Sutter County within the Natomas Basin. Also, for some complex infrastructure projects, the standards do not provide enough guidance to plan or design the required facilities.

Provided below are examples of how the current standards are not appropriate for modern, complex, moderate to large, development projects.

- The sanitary sewer design criteria apply to developments with peak wet weather flow (PWWF) of up to 10 million gallons per day (mgd). However, for example, the SPSP development PWWF is calculated to be 32.9 mgd using the procedures in the Sutter County Standards.
- The Sutter County Standards provide a sewer flow peaking factor chart for sewer flows only up to 1.0 mgd Average Dry Weather Flow. However, the SPSP development has a ADWF of over 11 mgd (calculated using the methods in the Sutter County Standards).
- The sewer pump station and force main requirements do not address back up pumping capacity, standby power generation, or most other design requirements.
- The current storm drainage standards allow channels with side slopes of 1.5 horizontal to 1 vertical. This side slope is sometimes used in agricultural channels where access is restricted to maintenance staff. However, this slope is very steep and could be very difficult for a person to climb out of if the water in the channel was deep or if the channel banks were wet and muddy. A side slope of 4 horizontal to 1 vertical is more appropriate for urban areas.

Issue

The key issue is that the Sutter County's current Public Works Design Standards do not provide enough information to plan or design some aspects of moderate or large development projects. The standards are appropriate for rural/agricultural areas, but not

for urban areas. Similarly, these standards do not provide adequate guidance for more complex infrastructure like sewer pump stations.

Strategies

To address this issue, Sutter County should revise their Public Works Design Standards to provide planning and design guidance for larger developments. The revised standards should be compared with other nearby agency standards, in particular with agencies that have expertise with each infrastructure area. For example, the County's revised sewer standards should be compared with Sacramento County Sanitation District – 1 (CSD-1) standards. When a set of revised standards have been developed and reviewed by County staff and the public, the revised standards should be adopted by the County Board of Supervisors. County staff is currently developing revised Public Works Design Standards.

■ FRAGMENTED AND LIMITED BIKEWAY SYSTEM

Background

Bikeways are generally categorized into three classes; Class I, II, and III. A Class I Bikeway (Multi-Use Path)¹⁹ is defined as a path physically separated from motor vehicle traffic by open space or a barrier. Multi Use Paths are located either within a highway right-of-way or within an independent right-of-way, and are used by bicyclists, pedestrian, joggers, skaters and other non-motorized travelers. Because the availability of uninterrupted rights-of-way is limited, this type of facility is often difficult to locate and expensive to build relative to other types of bicycle and pedestrian facilities. Prime locations for the Multi Use Paths are areas such as power-line easements, utility easements, canal banks, river levees, drainage easements, railroad or highway rights-of-way, or regional community parks.

A Class II Bikeway (Bike Lanes)²⁰ is a portion of a roadway that has been set aside by striping and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes are intended to promote an orderly flow of bicycle and vehicle traffic. This type of facility is established by using the appropriate striping, legends, and signs.

Class III Bikeways (Bike Routes)²¹ are facilities shared with motor vehicle traffic. Bike routes must be of benefit to the bicyclist and offer a higher degree of service than adjacent streets. They provide for specific bicycle demand and may be used to connect discontinuous segments of Class I or Class II bikeways. If the pavement width is sufficient and traffic volume/speeds warrant, an edge line may be painted to further delineate the bike route. Bike routes are signed with a Bike Route marker, but no striping or legends are required.

Currently, there are only 4.6 miles (7.4 km) of Class I bikeways, 10.6 miles (17.1 km) of Class II bikeways, and 0.7 miles (1.1 km) of Class III bikeways in unincorporated Sutter

¹⁹ Sacramento Area Council of Governments, *Regional Bicycle, Pedestrian and Trails Master Plan*, Final Draft Amendment, July 19, 2007.

²⁰ Sacramento Area Council of Governments, *Regional Bicycle, Pedestrian and Trails Master Plan*, Final Draft Amendment, July 19, 2007.

²¹ Sacramento Area Council of Governments, *Regional Bicycle, Pedestrian and Trails Master Plan*, Final Draft Amendment, July 19, 2007.

County. As shown on Figure 5, all of the bikeways are located in the vicinity of Yuba City and the Community of Sutter.

The key components of the existing bikeway system include:

- The Class I bikeway (the Sutter Commuter Bikeway) extends from Hooper Road along the old Northern Sacramento Railroad right of way to Acacia Avenue.
- The Class II bike lanes are generally on:
 - Acacia Avenue from the Sutter Commuter Bikeway to Pass Road
 - Butte House Road from Live Oak Canal to Gray Avenue in Yuba City
 - Franklin Road from Township Road to Walton Avenue
 - Lincoln Road from George Washington Boulevard to east of Walton Avenue
 - Phillips Road from Lincoln Road to Jones Road
 - Teesdale Road from Phillips Road east to Jones Road about ¼ mile
 - Township Road from Marlette to SR 20
- The Class III bike lane is on Walton Avenue, starting at Bogue Road and extending 2,150 feet north of Bogue Road, where it becomes a Class II bicycle route.

Sutter County adopted the Yuba-Sutter Bikeway Master Plan (YSBMP) in 1998 and approved an update in 2002. Implementation of the YSBMP will provide a comprehensive bikeway network for Sutter and Yuba Counties. Since the YSBMP is a two-county bikeway master plan, it focuses on providing bikeway connections between the incorporated cities, adjacent counties and major regional destinations. The YSBMP also identified bikeway facilities which are consistent with the planned facilities in each city and in neighboring jurisdictions. The YSBMP proposed bikeway system includes a total of about 395 miles of bikeway facilities, connecting each city in Sutter and Yuba County and providing regional connections to Butte, Colusa, Nevada, Placer, Sacramento, and Yolo Counties.

Other plans for additional bike lanes include the proposed Sutter Pointe Specific Plan, which proposes 34 miles of Class I Bike Paths and 18 miles of Class II bike lanes.

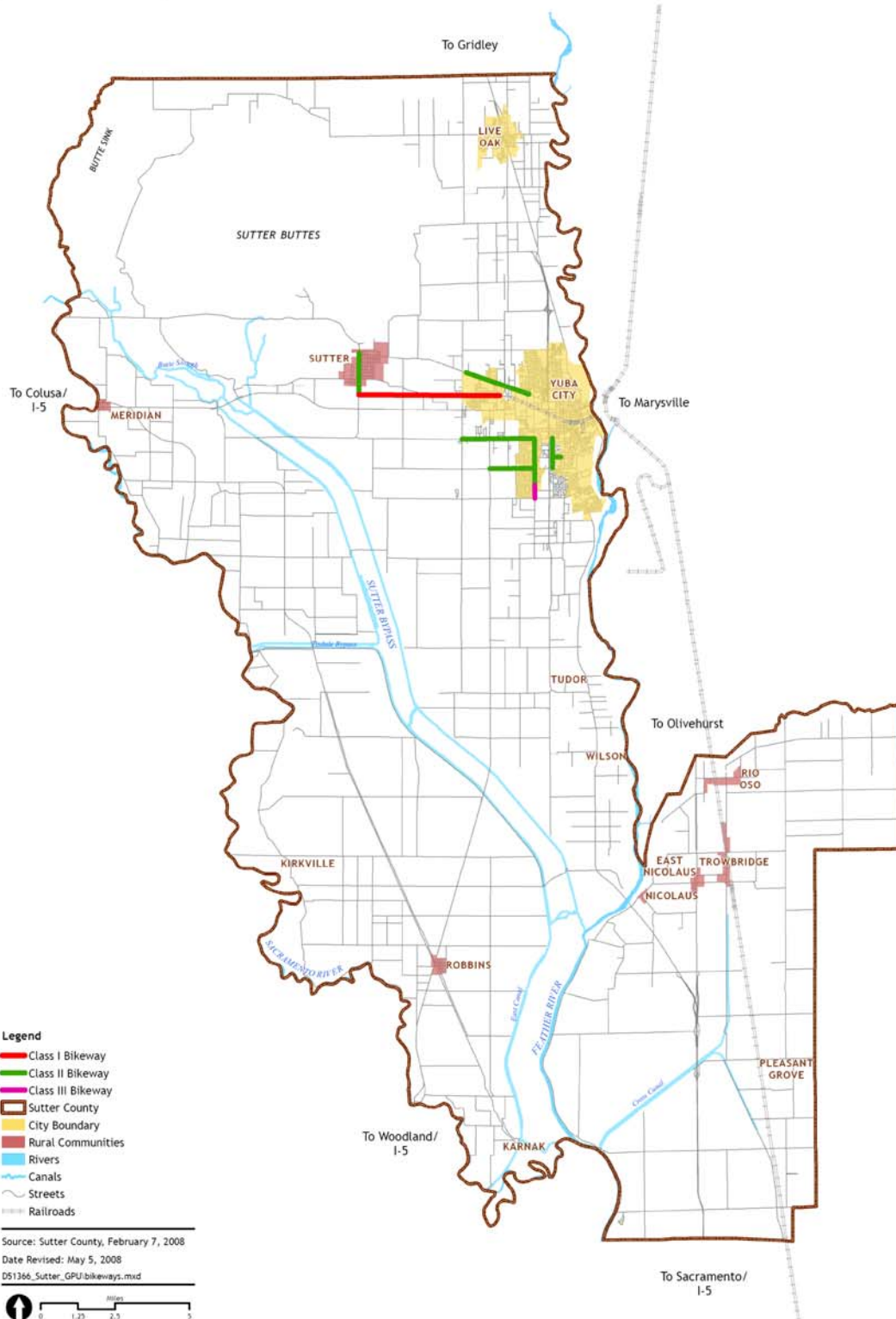
Issue

The County's existing bikeway system is somewhat limited and fragmented.

Strategies

In order to create a comprehensive bikeway system and to compliment the YSBMP, the General Plan could require the construction of bike lanes and sidewalks to be completed in conjunction with roadway construction and/or roadway widening/improvements along identified bike routes. For additional design guidance, the County could refer to the Federal Highway Administration's Design Guidance for Accommodating Bicycle and Pedestrian Travel for a list of good practices in new developments.

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SUTTER COUNTY EXISTING BIKWAYS
Figure 5



For example, the Design Guidance recommends that, in rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day. Paved shoulders have safety and operational advantages for all road users in addition to providing a place for bicyclists and pedestrians to operate.

As for additional funding options, the County could mandate that any changes or reauthorization of Sales Tax provide a component for the funding of bicycle/pedestrian projects and for Safe Routes to Schools (program operations and capital). Other potential funding sources include:

Developer Impact Fees

Local government agencies charge developers a developer impact fee to offset the public costs required to accommodate new development with public infrastructure. Developer fees generally are used for local rather than regional improvements such as water and sewer facilities, arterials, local roads, parks, collector roads, sidewalks and bikeways. Neighboring Sacramento County already uses developer impact fees to fund the construction of improvements to roadway, transit, bicycle and pedestrian facilities; specifically those improvements that are needed to accommodate increasing vehicle traffic and transit ridership, as well as bike and pedestrian trips generated by new land development.²²

Local Air District Projects Funded by Vehicle Registration Fee

Various state legislation has authorized air districts in California to impose a two to four dollar additional motor vehicle registration fee to provide funds for air districts to meet responsibilities mandated under the California Clean Air Act (CCAA). The funds can be used to support programs and projects that reduce air pollution from motor vehicles and to implement Transportation Control Measures (TCMs) contained in local Air Quality Attainment Plans. Previously applied vehicle registration fee programs include:

The City of Riverside and the City of Lawndale authorized the South Coast Air Quality Management District (SCAQMD) to impose an additional motor vehicle registration fee of two dollars commencing April 1, 1991, and increasing to four dollars commencing April 1, 1992, to finance the implementation of transportation measures embodied in the AQMP and the provisions of the California Clean Air Act.^{23,24}

Local Sales Tax for Transportation

Voters in counties have approved one-half percent to one percent sales tax increases to fund transportation projects. According to the Guide to Bicycle Project and Program Funding in California:

- In Alameda County, voters approved a reauthorized Measure B in 2000. Measure B provides a benchmark for non-motorized transportation in that it allocates about five percent to non-motorized transportation projects and programs. According to the Alameda County Congestion Management

²² Sacramento County Department of Transportation, *Update Sacramento County Transportation Development Fee*, March 2008.

²³ City of Riverside, *Municipal Code*, Website: <http://www.riversideca.gov/municode/pdf/03/338.pdf> (April 2008).

²⁴ City of Lawndale, *Municipal Code, Title 8: Health and Safety*, Website: <http://lawndalecity.org/html/codeonline/>. (April 2008).

Agency (CMA), Measure B is expected to fund over \$80 million in bicycle and pedestrian safety projects during its 20-year duration.

- In Contra Costa County, voters approved a one-half cent sales tax (Measure C) in November 1988, which earmarks \$3 million for regional bicycle and pedestrian trails through 2009.
- In Los Angeles County, the Neighborhood Parks Proposition of 1992 (Proposition A) funds recreational and park programs, and is administered by the Los Angeles County Regional Park and Open Space District. A one-half cent sales tax for gasoline (Proposition C) provides funds for the Regional Bikeway program through the discretionary program, and allocates monies to local jurisdictions, which can choose to fund bikeway projects.
- In San Diego County, a one-half cent sales tax (Proposition A/Transnet) was passed in November 1987, and provides \$1 million for bicycle transportation projects until 2007.
- In San Joaquin County, voters approved a one-half cent sales tax (Proposition K) in November 1990, which earmarks \$5 million for bicycle facilities over its 20-year span.
- In Santa Clara County, Measure B is expected to produce annual revenues of about \$110 million. Bicycle and pedestrian safety projects receive five percent of these funds at about \$5.5 million per year or an estimated \$110 million over 20 years.

County Gas Tax

County Gas Tax can be used to fund bike and pedestrian access. For example, in the City of Berkeley California, a portion (\$300,000 per year) of the Measure B one-half cent County gas tax is reserved for bikeway and pedestrian improvements.

Transportation Development Act (TDA) – Article 3

TDA states that one-quarter cent of retail sales tax is returned to the county of origin for the purpose of funding transportation improvements in that county such as bicycle and pedestrian facilities, safety programs and planning projects in that county.

The City of Santa Cruz receives annual Transportation Development Act Allocation funds of approximately \$50,000, which is reserved for bicycle and pedestrian facility development and maintenance.²⁵ In Santa Cruz, these TDA funds are set aside for capital projects and or bikeway maintenance; over the last 30 years this has been the most consistent funding available for bikeway development. A number of the bike paths and bike lanes in the Santa Cruz have been funded using these funds.

■ INCREASING TRAFFIC CONGESTION AND ROADWAY MAINTENANCE COSTS

Background

Sutter County has approximately 1,107 miles of public roadways including the roadways within the incorporated cities. These roadways carry an estimated 663 million vehicle

²⁵ Santa Cruz Public Works Department, *City of Santa Cruz Bicycle Transportation Plan 2004*.

miles of travel demand annually.²⁶ Approximately 788 miles of roadways in the County are under the jurisdiction of Sutter County.²⁷ The remainder is under the jurisdictions of the cities or State.

As reflected on Figure 6, the roadways in Sutter County lie predominantly in north-south and east-west directions. SR 20 and SR 99 are the primary regional transportation corridors within the county. SR 20 serves east-west regional travel providing connection to Yuba County and beyond to the east, and Colusa County and beyond to the west. SR 99 serves as the north-south regional travel corridor providing connection to Butte County and beyond to the north, and Sacramento County and beyond to the south. SR 70 and SR 113 are two other State highways that support north-south regional travel. This regional system of State highways is interconnected by a system of major (arterial/collector) and minor (local) county roads. The combination of regional and local roadway systems compliment each other to support the basic movement of goods and people.

Physical constraints to the County's circulation system include both natural and man-made barriers that limit roadway connections and alignments. The main natural barriers to travel are the three rivers (Sacramento, Feather and Bear Rivers) that border Sutter County. The major man-made barrier to travel in Sutter County is the Sutter Bypass, bisecting the county from the Sutter Buttes in the northwest to the Sacramento River in the south.

Sutter County's streets and highways are organized in a hierarchy according to their functional classification. This hierarchy recognizes the distinct stages which are involved in making a trip; primary movement on highways and arterials, collection/distribution on collectors, and access with termination on local streets. In addition, the streets are also classified as rural and urban to reflect the areas and the type of traffic the streets serve.

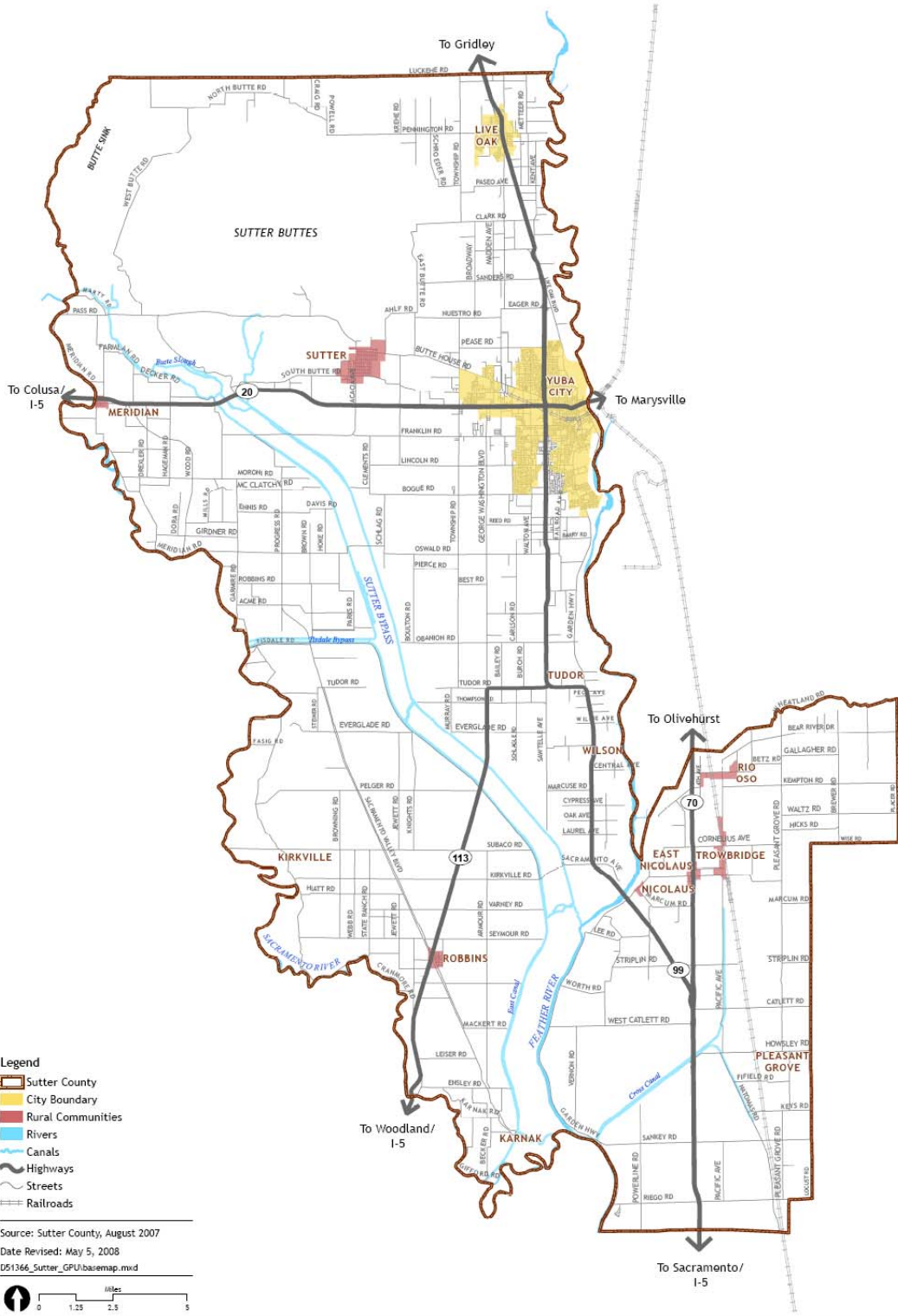
To quantitatively evaluate traffic operating conditions and to provide a basis for comparison of operating conditions, roadway Levels of Service (LOS) are used. LOS as defined in the 2000 Highway Capacity Manual is "a quantitative measure describing operational conditions within a traffic stream". LOS definitions generally describe these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions and comfort and convenience. LOS is commonly dictated by a (format issue here on spacing) facility's "volume to capacity" (V/C) ratio. V/C ratios are a measure of the proportion of the roadways capacity that is being used by traffic, and are simply the traffic volumes on the roadway divided by the roadway's capacity. As an example, a V/C ratio of 1.00 represents complete utilization of the roadway's capacity.

Six levels of service are defined and given letter designations, from "A" to "F", with LOS "A" representing the best operating conditions and LOS "F" the worst. Local governments adopt LOS standards for roadways under their jurisdiction. Generally, LOS "C" or "D" is considered adequate, although some communities adopt higher or lower standards depending on the needs, desires, and funding capacity of the community.

²⁶ Daily traffic volumes from the SACOG (2005) SACMET model were summarized to estimate 2005 VMT.

²⁷ Caltrans, *2006 California Public Road Data*, July, 2007.

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ROADWAY NETWORK
Figure 6

The increasing levels of traffic congestion and traffic delays in the County's urbanized areas and on its major highways are becoming a concern among Sutter County residents. Sutter County has adopted LOS "D" as the minimum acceptable standard for County roadways. LOS "D" borders on a range in which small increases in flow may cause substantial increases in delay and decreases in travel speed²⁸. All County roadways presently operate at LOC "C" or better and, therefore, meet the County's current adopted standard.

Caltrans has adopted varying LOS standards for highways in the county ranging from LOS "D" to "E". In general, all highway segments in Sutter County meet currently defined Caltrans LOS standards, with the exception of SR 70. Caltrans has adopted LOS "D" as the minimum acceptable standard for SR 70, and it is currently operating at LOS "E".

In addition to increasing traffic congestion, County Public Works staff has expressed concerns that truck traffic might be a major contributor to the deterioration of the County's roadways. From the public's standpoint, pavement wear is of interest because rough pavement affects the cost of travel. These costs include vehicle operating costs, delay, and crash or accident costs. Further, the County's Public Works Department has expressed concerns about maintaining the County's roadways given the available roadway maintenance funds.²⁹

There are a number of designated truck routes within Sutter County. These include both County and State designated routes. Rural roads in Sutter County are not officially designated as truck routes. Trucks using these roads are subject to load limits of bridges, and county transport permitting requirements.

In 1990, Sutter County adopted a truck route ordinance, restricting 14,000+ gross weight vehicles to specific routes. The table on the following page lists the State designated truck routes within Sutter County with their beginning and end points and regulatory designations. Caltrans has designated SR 20, SR 70, SR 99 and SR 113 as truck routes.

²⁸ 2000 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209.

²⁹ Hay, Neil, Associate Civil Engineer, Sutter County, Personal Communication, February 19, 2008.

Route	Beginning PM	Ending PM	Segment		Begin	End
			Miles	Type		
20	R0.00	E15.573	15.46	TA	Colusa / Sutter County Line	Jct Rte 99
20	15.57	17.06	1.48	CL40	Jct Rte 99	Sutter / Yuba County Line
70	R0.051	8.30	8.25	TA	Jct Rte 99	Sutter / Yuba County Line
99	0.00	E42.389	41.99	TA	Sacramento / Sutter County Line	Sutter / Butte County Line
113	0.00	E16.38	16.37	TA	Yolo / Sutter County Line	Jct Rte 99
Walton Ave			0.3	TA	State Route 20	Sunsweet
Pacific Ave			1.4	TA	Sysco	Riego Rd
Riego Rd			0.8	TA	State Route 99	Pacific Ave
<i>Oswald Rd</i>			<i>0.4</i>	<i>TA</i>	<i>State Route 99</i>	<i>3865 Railroad Ave</i>

Sources: <http://www.dot.ca.gov/hq/traffops/trucks/truckmap/index.htm> December 5, 2007 and Sutter County DOT, January 2008.

Notes:

Segment Type

TA Terminal Access Route

CL40 40-foot KPRA, 65-foot overall length (KPRA = Kingpin-to-Rear Axle

Postmile Prefix

R First realignment

E Post Mile Equation

Italics = proposed

Issue

Increasing traffic congestion and corresponding traffic delays are a key issue for the County’s urbanized areas and on its major highways. In addition, the maintenance of County roadways is a concern.

Strategies

In order to address the issue of increasing traffic congestion, the County could monitor traffic on the County’s roadways in or near urbanized areas annually or bi-annually, quantifying growth in traffic volumes insuring that the County’s roadways meet the adopted level of service (LOS) standard. Currently Sutter County has adopted LOS “D” as the minimum acceptable standard for county roadways. As part of the General Plan update, the County could revisit its level of service policy and adopt a revised LOS policy if the current LOS standard does not meet public expectations.

The County’s current roadway LOS policy is based on roadway capacity (or segment capacity). Often in urbanized areas, the roadway intersections are the bottlenecks with insufficient capacity while the roadway segments between intersections have adequate carrying capacity. The County could update the roadway LOS policy, adopting a peak hour intersection based LOS standard thus insuring that both the County’s roadways and its intersections have adequate capacity to accommodate the County’s mobility

needs. Transportation impact fees could be investigated as an additional capital funding source for roadway improvements.

The County's concerns of truck traffic accelerating roadway deterioration are consistent with FHWA, academic, and local studies.³⁰ The life of a pavement is determined by a number of factors: vehicle loading (axle loads, tire pressure and Gross Vehicle Weight), traffic volume and mix, environment, subgrade condition, initial pavement design, initial construction practices, maintenance and pavement age. According to engineering principles, pavement deterioration increases with axle weight and with the number of axle loadings which a pavement experiences.³¹ Studies have shown that truck traffic causes considerably more damage to streets than passenger vehicles, and that truck traffic accounts for up to 60% of the damage to the streets.³²

The County's truck route designations and restrictions could be revisited; truck route ordinances updated such that truck traffic is directed to specific and designated routes and discouraged on non-truck routes. Special provisions or exceptions would have to be made for local farmers and farm support; for hauling of agricultural products and for hauling fuel and other commodities needed to support the County's agriculture (e.g. gasoline, diesel fuel, fertilizers). Additionally, updated truck route ordinances could provide the County with pavement standards for designated truck routes, thus enabling the County to prioritize roadway maintenance functions (e.g. repaving) and focus maintenance funds on these designated trucking routes.

Currently, Sutter County does not impose any regional transportation fees, local sales tax (in addition to State's sales tax of 7.25 %), or any parking tax on its residents, businesses, or business patrons. The use of these fees and taxes could help the County provide the needed yet underfunded roadway maintenance needs.

The State Transportation Improvement Program is a statewide five-year program of state highway and local transportation projects, funded with revenues from state and federal funding sources for capital improvements. These funds can be used for a wide variety of transportation projects including local road rehabilitation, road widening/capacity, intersection improvements, bicycle and pedestrian facilities, public transit, passenger rail, and other projects that enhance the region's transportation infrastructure.

The Regional Surface Transportation Program was established by the State of California to utilize federal Surface Transportation Program funds for a wide variety of transportation projects. The State allows the Transportation Agency to exchange these federal funds for state funds to maximize the ability of local public works departments to use the funds on a wide variety of projects including street and road maintenance.

On March 20, 2008, SACOG's Board of Directors approved the Draft Final Metropolitan Transportation Plan for 2035 (MTP2035). The MTP 2035 includes an investment of \$12.4 billion (\$21.3 billion in escalated costs), providing an increase of 17 percent from 2006 MTP levels for the following key investment Road Maintenance areas:

³⁰ Department of Public Works, Marin County, California, *Roadway Impact Fees*, June 2003.

³¹ U.S. Department of Transportation, *Comprehensive Truck Size and Weight Study*, 2001.

³² Department of Public Works, Marin County, California, *Roadway Impact Fees*, June 2003.

- Preventive maintenance projects that include repaving on a shorter cycle to lengthen the lifecycle of highways and local roads.
- More regular repair, rehabilitation, and reconstruction of roadways, including faster response pothole repair.
- Improved landscaping and regular litter clean-up on highway corridors.

Additionally, construction impact fees (to be imposed on new developments) could be investigated to mitigate the damage to County roadways from new development construction and/or to fund their fare share for increased roadway capacity. To illustrate the potential damage from construction related traffic: the Town of Tiburon California estimated that approximately 45% of regular street damage and deterioration within the Town was attributable to vehicles used in the course of construction.

Developer impact fees have been successfully levied by local jurisdictions across the state for the purpose of defraying all or a portion of the cost of public facilities related to the development project. Several local jurisdictions in the Sacramento region are already collecting development impact fees, including Sacramento and El Dorado Counties, along with the Cities of Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento and West Sacramento.

■ **NEXT STEPS**

Addressing the infrastructure limitations facing Sutter County is important in maintaining a high quality of life for residents and businesses. The new General Plan has an opportunity to explore and implement some of these strategies, and provide a framework for future actions to ensure adequate infrastructure is provided.

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APPENDIX A: REGULATORY CONTEXT

Regulatory Context

The relevant local policies and programs associated with potable water, agricultural water, wastewater, drainage, flood control, and mobility issues are summarized below.

■ POTABLE WATER

Federal

EPA Arsenic Standards. In 2002, the Federal Environmental Protection Agency reduced the amount of arsenic allowable in potable drinking water from 50 µg/L to 10 µg/L. This new regulation became effective on January 23, 2006. Many of the private and public groundwater wells in the county are not currently able to meet this standard.

Clean Water Act. See Wastewater for a summary of the Clean Water Act.

State

The State of California has passed several State bills pertinent to water supply and water management as summarized on their website,³³ including:

- **AB 3030 Groundwater Management Act** allows existing local agencies to develop a groundwater management plan. Sutter County is currently developing a groundwater management plan.
- **SB 1938 Amendments to Local Groundwater Management Water Codes** requires any agency requesting funds from the Department of Water Resources to develop a comprehensive plan outlining the agencies objectives for basin management, basin planning, and basin monitoring. The goal of the legislation is that agencies would be more involved in their basin management to ensure proper planning and prevent over utilization of the basin.
- **AB 303 Local Groundwater Management Assistance Act of 2000** provides public agency grants to study and manage groundwater with the expectation the agency will become better suited to manage the water supply quality, delivery, and storage.
- **SB 610 Water Supply Assessments and SB 221 Verification of Sufficient Water Supply** were passed to prevent development from proceeding without adequate consideration for water supply to the developed area. Senate Bill 610 was passed in 2001, and it specifically requires that for a public water system to be eligible for flood relief funds from the Department of Water Resources, that entity must provide an urban water management plan. That plan should outline all water supplies available for that entity's use over the next five years. The plan should also include water supply for any anticipated

³³ California Department of Water Resources, www.groundwater.water.ca.gov/water_laws/index.cfm#sb221, October 2007.

growth. Reliability of the water supply should also be evaluated. SB 221 requires any development having more than 500 parcels or units to have a complete water supply plan prior to approval for development. Review and approval of these documents would fall to the local governing board (rather than the State of California).

- **AB 901 Water Supply Planning** requires Urban Water Management Plans to include information relating to the quantity of existing sources of water available to an urban water supplier over given time periods and the manner in which water quantity affects water management strategies and supply. This information includes, but is not limited to, the historic, current, and future reliability of the supply source and quality of the water source. A plan for what actions would be taken if the quantity or quality of water deteriorates is also required. Additional and supplemental sources of water must also be included in the Urban Water Management Plan.
- **Bulletin 74-90 and Bulletin 74-81 Water Well Standards for the State of California** establish requirements for water well construction, use, maintenance, and other services associated with water wells. Published in June 1991, Bulletin 74-90 is an update of Bulletin 74-81.
- **California Laws for Wells** was published March 2003 and relates directly to the construction, operation and maintenance of wells.

Local

Groundwater Management Plan. Sutter County is in the process of preparing a Groundwater Management Plan. The goal of the plan is to determine the quantity and quality of available groundwater and how to best manage the existing groundwater basins.

Sutter County Department of Public Works Design Standards. The Sutter County Public Works Design Standards (dated November 2005) were adopted by the County on January 24, 2006. Domestic Water Supply standards are covered in Section 6 of these standards. The Sutter County Public Works Design Standards govern the engineering design of all domestic water systems intended for operation and maintenance by Sutter County or other agencies, such as Community Service Districts, where the Board of Supervisors is the agency board. The intent of these standards are to provide a water system that will safely convey adequate amounts of high quality water throughout the distribution system at the least cost. These standards provide guidance for the planning, design, and construction of potable water systems and associated infrastructure. The County's design standards recommend compliance with Bulletin 74-81, "Water Well Standards: State of California" in the well design section.

■ AGRICULTURAL WATER

Federal

The United States Bureau of Reclamation manages the Central Valley Project, which controls flows in the Sacramento River through discharge from Shasta Dam/Reservoir. A number of entities in Sutter County have settlement agreements/contracts with the Bureau of Reclamation for water supplies from the Sacramento River.

State

The State manages surface water diversion rights. As described in the Water Section above, the State has also enacted several laws covering use of groundwater. The State, through the Department of Water Resources, also operates the State Water Project (SWP). The SWP has settlement contracts with agricultural water users along the Feather River, and also provides water under contract to water entities throughout the State.

Local

Many of the irrigation districts have their own Governing boards, and design, operations, and maintenance criteria.

■ WASTEWATER

Federal

Clean Water Act. The Federal Clean Water Act (CWA), established by Congress in 1972, is the cornerstone of surface-water-quality protection in the United States. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct discharges of pollutants into waterways, finance municipal wastewater-treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water" (U.S. EPA, 2003). Section 303 of the CWA requires States to adopt water-quality standards for all surface waters of the United States. Section 304(a) requires EPA to publish water-quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. The CWA prohibits the discharge of pollutants to navigable waters from a point source unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit, as described below.

National Pollutant Discharge Elimination System (NPDES) Permits. The NPDES permit system was established in the federal CWA to regulate municipal and industrial discharges to surface waters of the United States. Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that EPA must consider in setting effluent limits for priority pollutants. The quality of the effluent that can be discharged to waterways within the Sacramento area is established by the Central Valley Regional Water Quality Central Board (RWQCB) through Waste Discharge Requirements (WDRs) that implement the NPDES permit. WDRs are updated at least every five years. A new permit must be issued in the event of a major change or expansion of a wastewater treatment facility.

State

Assembly Bill 885. California Onsite Wastewater Treatment System (OWTS) Regulations (AB 885). This bill has not yet been enacted by the State of California. Nevertheless, it is summarized below.³⁴

State Assembly Bill 885 intends to regulate all new and existing onsite wastewater treatment systems including its design, operation, and maintenance. The objective of this bill is to prevent contamination of the surrounding groundwater resources from these onsite wastewater treatment systems. Local governing bodies may pass more stringent rules in addition to the ones listed by AB 885. AB 885 aims to prevent further pollution from onsite wastewater treatment systems by minimizing the concentrations of contaminants like nitrates, total coliforms, iron, manganese, total suspended solids (TSS), and biochemical oxygen demands (BOD) in the effluent. Some of the requirements of this bill include:

- All treatment systems must be inspected at least every five years.
- If an onsite wastewater treatment system (OWTS) exists on a property also containing a domestic well, groundwater monitoring is needed. Two samples are required; one from a monitoring well 100 feet down gradient of the system and the other from the existing domestic well. The first sample must be taken within 30 days of the OWTS installation. Both wells must be monitored at least once every five years thereafter.
- All new OWTS must be designed to maximize the zone of unsaturated treatment and increase the aerobic decomposition of the effluent.
- All new OWTS must be designed by a licensed professional.
- New tanks must reduce solids to one-eighth (1/8) an inch prior to passing into the dispersal system.
- Cesspools are not allowed anywhere within the State.
- Additional treatment will be required for systems with insufficient soil depth, high BOD or high TSS levels, and systems requiring nitrogen reduction or disinfection.
- At least a three foot separation will be required between the dispersal system and any bedrock, high groundwater levels or impermeable strata. The three feet must be a continuous soil that has been undisturbed and is unsaturated. The soil may not contain more than thirty percent of rock.
- If the effluent has undergone additional treatment prior to entering the dispersal system, a reduced separation of two feet may be allowed.
- For systems unable to meet the minimum separation requirement engineered fill is recommended to elevate the system. A foot and a half of engineered fill is the equivalent of one foot of natural soil.

³⁴ SWRCB, OWTS Regulations <http://www.swrcb.ca.gov/ab885/index.html>, 2007.

Sacramento and San Joaquin River Basin Plan. The Water Quality Plan for the Sacramento and San Joaquin River Basins (Basin Plan) includes the entire Sacramento and San Joaquin River basins (including all the tributary rivers such as the Feather River). The Sacramento River basin covers 27,210 square miles and drains to the Sacramento River. For planning purposes, this includes all watersheds tributary to the Sacramento River that are north of the Cosumnes River watershed. Because the County is located within the Central Valley RWQCB's jurisdiction, discharges to surface water or groundwater are subject to Basin Plan requirements. Beneficial uses for specific water bodies are developed in the Basin Plan.

Collection System Regulations. Sanitary Sewer Overflow (SSO) Waste Discharge Requirements (WDRs) were issued by the State Water Resources Control Board (SWRCB) on May 2, 2006. The WDRs apply to collection systems within the State. As part of these regulations, collection system owners and operators are required to develop a Sewer System Management Plan (SSMP).

The beneficial uses of surface waters that can be impaired by SSOs include, but are not limited to the following: aquatic life, drinking water supply, recreation, and aesthetics.

The beneficial uses of groundwater that can be impaired by SSOs include, but are not limited to, drinking water and agricultural supply. Surface and groundwater throughout the State support these uses to varying degrees.

To facilitate proper funding and management of sanitary sewer systems to avoid SSOs, each sanitary sewer system owner or operator is required to develop and implement a system specific SSMP. To be effective, SSMPs must include provisions to provide proper and cost-effective management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Additionally, an SSMP must contain a spill response plan that establishes standard procedures for immediate response to an SSO in a manner designed to minimize water quality impacts and potential nuisance conditions. The SSMP would need to be developed over a three or four year period, depending on the size of the service area.

Local

On-Site Sewage Ordinance. Sutter County has adopted an on-site sewage ordinance, Ordinance No. 700, which is based upon the California Health and Safety Code, Porter Cologne Water Quality Control Act, Water Code Section 1300 and the Central Valley Regional Water Quality Control Board Water Quality Control Plan. The goals of the Ordinance are to protect the public from on-site sewage hazards, regulate the design, installation, maintenance and removal of on-site sewage systems and minimize the effect of on-site sewage systems on groundwater supplies and waters of the State.

Septic System Permits. The County Environmental Health Division issues permits for septic systems to serve residential, industrial and commercial projects in Sutter County. However, depending on the flows and composition of the waste, additional permitting from the State and Federal government may be required.

Sutter County Department of Public Works Design Standards. The Sutter County Public Works Design Standards (dated November 2005) were adopted by the County on

January 24, 2006. Sanitary sewer standards are covered in Section 7 of these standards. The sanitary sewer standards provide guidance for the planning, design, and construction of sanitary sewers and associated infrastructure.

■ DRAINAGE AND FLOOD CONTROL

Federal

National Flood Insurance Act. The National Flood Insurance Act of 1968 made federally subsidized flood insurance available to property owners in communities that participate in the National Flood Insurance Program (NFIP). Sutter County participates in the NFIP and is subject to its regulations. The NFIP is administered by FEMA.

State

California Code of Regulations Title 23 establishes regulations related to the State Plan of Flood Control and State adopted floodways. These regulations are applicable to the levee systems included in the Sacramento River Flood Control Project (including the Feather River).

In October 2007, the State of California enacted several relevant bills, as summarized below:

Senate Bill 5. This bill requires:

- The State must develop 100-year and 200-year flood maps for the Central Valley by July 1, 2008.
- The State must establish a Central Valley flood protection plan by 2012.
- Within 2 years after the adoption of a flood protection plan by the Central Valley Flood Protection Board (formerly the Reclamation Board), communities within the Sacramento-San Joaquin Valley must amend their general plans to include the data and analysis contained in the plan, goals and policies for the protection of lives and property from flooding, and related feasible implementation measures. Within 1 year of the general plan adoption, zoning ordinance amendments must be enacted to maintain consistency with the general plan.
- By 2015, for areas with a population of 10,000 or greater, local governments cannot approve new developments unless the land under review has 200-year flood protection or efforts are in place to provide that level of protection. For areas with a population of less than 10,000, new developments cannot be approved unless the area has 100-year flood protection.
- Requires counties to collaborate with cities within its jurisdiction to develop flood emergency plans.

Senate Bill 17. Renames the Reclamation Board to the Central Valley Flood Protection Board, sets new criteria for members of the Board, and establishes Senate confirmation for Board members nominated by the Governor.

Assembly Bill 70. Beginning in 2008, local governments could be held financially liable if they unreasonably approve new developments that are susceptible to flood damage.

Assembly Bill 162. Requires local governments to consider flood risks in their general plans (after January 1, 2009), including:

- Annually review areas covered by the general plan that are subject to flooding as identified by FEMA or the State Department of Water Resources.
- The Safety Element of the general plan must include flood hazards and set goals, policies and objectives for the protection of the community.
- For communities/counties within the Central Valley, the Safety Element must be submitted to and reviewed by the State Central Valley Flood Protection Board (Formerly the Reclamation Board).
- Allows flood risk to be considered in evaluating the available land suitable for urban development if the flood protection infrastructure required for development would be impractical due to cost or other considerations.
- There is no reimbursement from the State to the local communities for implementing the requirements of this bill.

Assembly Bill 156. Requires the State to prepare flood maps for areas in the Central Valley that are protected by State levees and to annually notify owners of property behind those levees of their flood risks, starting in 2010.

Local

Sutter County Flood Damage Prevention Ordinance. As a participant in the NFIP, Sutter County is required to adopt and enforce a floodplain management ordinance that minimizes future flood risks to new or existing construction. The County adopted a flood damage prevention ordinance in 1993 and updated it in 2000. It is anticipated that the ordinance will be updated again in 2008. Sutter County's flood damage prevention ordinance is intended to promote public health and safety and minimize losses due to flooding. The ordinance seeks to accomplish these goals by:

- Restricting land-use in flood prone areas;
- Requiring flood protection measures at the time of initial construction for uses that are vulnerable to floods;
- Controlling the alteration of natural floodplains;
- Controlling activities that may increase flood damage; and
- Preventing or regulating unnatural diversions of floodwaters that could increase flood hazards in other areas.

Sutter County Department of Public Works Design Standards. The Sutter County Public Works Design Standards (dated November 2005) were adopted by the County on January 24, 2006. Drainage standards are covered in Section 5 of these standards. The goal of the drainage standards is to protect structures from the 100-year flood event, to protect two lanes (in each direction) of arterial roads from the 100-year flood event, and to protect one lane (in each direction) of other roads from the 10-year flood event. The drainage standards provide guidance for the planning, design, and construction of storm drainage facilities and infrastructure.

■ BIKEWAYS

State

California Department of Transportation (Caltrans). Caltrans sets requirements for bicycle master plans and requires an adopted plan to be eligible for State bicycle funding.

Local

Sacramento Area Council of Governments (SACOG). SACOG prepares the Regional Bicycle, Pedestrian, and Trails Master Plan, which includes facilities in Sutter County and sets priorities for funding.

■ ROADWAYS

Federal

Federal Highway Administration (FHWA). FHWA is the agency of the U.S. Department of Transportation (DOT) responsible for the Federally-funded roadway system, including the interstate highway network and portions of the primary State highway network. FHWA funding is provided through the Safe, Accountable, Flexible, Efficiency Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SAFETEA-LU can be used to fund local transportation improvement projects, such as projects to improve the efficiency of existing roadways, traffic signal coordination, bikeways, and transit system upgrades.

State

California Department of Transportation (Caltrans). Caltrans is responsible for planning, designing, constructing, and maintaining all State highways. The jurisdictional interest of Caltrans extends to improvements to roadways at the interchange ramps serving area freeways. Any Federally-funded transportation improvements would be subject to review by Caltrans staff and the California Transportation Commission.

Local

Sacramento Area Council of Governments (SACOG). SACOG is responsible for development of the State- and Federally-required Metropolitan Transportation Plan (MTP) every four years in coordination with 22 cities and six counties in the greater Sacramento area. It also incorporates the long-range plans of El Dorado and Placer Counties. Local projects must be included in the MTP in order to obtain State and federal funding. The current MTP 2025 and its complement 2006 MTP extends the horizon year to 2027. SACOG is developing a new plan, MTP 2035. For the first time, the MTP 2030 will pro-actively link land use, air quality, and transportation needs based on the SACOG Board-adopted 2050 Blueprint project, which encourages the use of smart growth principles in local jurisdictional planning.

As the designated metropolitan planning organization, SACOG is also responsible for maintaining a Federal Metropolitan Transportation Improvement Program (MTIP). Projects included in the MTIP are consistent with those in the MTP. The next update of the MTIP will be embedded in MTP 2035.

Truck Routes. Designated truck routes within the urban area are governed by Chapter 1137 of Sutter County Ordinance Code.

Weight Restrictions. California Vehicle Code (CVC Section 35701) requires County agencies to coordinate weight restrictions of roads which traverse between county lines.