

H. UTILITIES AND ENERGY

This section provides a discussion of water, wastewater, stormwater, and energy facilities and infrastructure in Yolo County. In addition to the setting discussions, this section also summarizes potential impacts related to the adequacy of these utility systems to serve expected population growth under the Draft General Plan. This section is based on information provided in the Draft General Plan,¹ a review of background reports, which includes: 1) Yolo County General Plan County Infrastructure Conditions;² 2) Background Report for the Yolo County General Plan Update;³ and the 3) Integrated Regional Water Management Plan.⁴ In addition, consultation with utility providers was conducted in order to estimate the impact on existing services and infrastructure and whether new and expanded facilities would be required to serve the future growth allowed under the Draft General Plan.

This section is organized into subsections for each type of utility. The significance criteria, utilized to determine whether the project's impacts, are listed in the impacts and mitigation measures sub-section following the existing settings section for each topic below.

1. Water Supply and Infrastructure.

Yolo County relies on many different water supply sources, such as the Sacramento River, Cache Creek and groundwater. There are also many different water-related administrative bodies within the County, each of which has its own water supply sources and infrastructure for distributing water. This section discusses groundwater and surface water supplies, water distribution systems, water treatment, and water-related infrastructure.

a. Existing Setting. The 2007 Integrated Regional Water Management Plan for Yolo County projects that during average-year water conditions water demand in the County, including the incorporated cities, will increase from 915,000 acre-feet per year in 1995 to approximately 927,000 acre-feet per year in 2020.⁵ During this 25-year period water use by agriculture is expected to decrease from 95 percent to 92 percent of total demand while consumption by urban uses is expected to increase from 5 percent to 8 percent. During the same time period the total water supply available for Yolo County is projected to increase from 924,000 acre-feet per year to approximately 938,000 acre-feet per year, yielding a 9,000 acre-foot annual surplus of supply over demand for both the 1995 and 2020 average-year conditions.⁶ During drought-year conditions the Integrated Regional Water Management Plan projects that demand could exceed supply unless steps are taken to reduce water use. Crop changes are typically used to offset the water deficit associated with meeting agricultural demands; water conservation is typically implemented to reduce urban demands. A reduction in urban use of 5 percent would offset the projected deficit.⁷

¹ Yolo County, 2008. *Draft 2030 Countywide General Plan*. September.

² Design, Community & Environment, 2006. *Yolo County General Plan County Infrastructure Conditions*. December.

³ County of Yolo, 2005. *Background Report for the Yolo County General Plan Update*. Woodland, CA.

⁴ Water Resources Association of Yolo County, 2007. *Integrated Regional Water Management Plan*. April.

⁵ Ibid.

⁶ Ibid.

⁷ Ibid.

Based on information provided by the California Department of Water Resources (DWR) and by water purveyors in 2005 (the most recent year for which data are available) per person water use in both the cities and in unincorporated parts of Yolo County is approximately 0.274 acre-feet of water per year (244 gallons per day).⁸ Based on this estimated per capita rate of use, the current population of 23,265 residents living in unincorporated Yolo County uses approximately 6,375 acre-feet of water per year for residential uses. In addition, based on DWR data, the unincorporated County uses approximately 790,000 acre-feet of water annually for agricultural uses. Thus the combined annual water use in the unincorporated County is approximately 796,375 acre-feet. As the majority of water for domestic supplies comes from unmetered private groundwater wells, and groundwater is also used by farmers to irrigate agricultural crops, actual water use is assumed to be underestimated.

(1) Groundwater Resources. Yolo County overlies the Sacramento Valley groundwater basin, which provides most of the domestic water supply for the County. Individual users and private and public systems draw domestic water supplies from the basin, which supplies approximately 34 percent⁹ (311,000 acre-feet) of the total water supply in the County in non-drought years.¹⁰ Oversight of the groundwater resource is coordinated through the Yolo County Water Resources Association. For management purposes the Water Resources Association divides the basin into six subbasins that coincide with political boundaries in Yolo County. The groundwater subbasins are shown in Figure IV.H-1 and include: 1) Capay Valley, 2) Buckeye Creek, 3) Dunnigan Hills, 4) West Yolo, 5) East Yolo and 6) Sacramento River. Most wells draw from the basin's shallow aquifer, although many areas are developing deeper wells to avoid subsidence and contamination issues associated with the shallower aquifers.

Land subsidence associated with overdrafting of groundwater is a critical issue in Yolo County (see the discussion in Section IV.K, Hydrology and Water Quality in this EIR). Since the 1950s, land subsidence of up to 4 feet has been noted and attributed to groundwater extraction.¹¹ Land subsidence has impacted the integrity of highways, levees, irrigation canals, and wells, particularly in the eastern area of the County between the towns of Zamora, Knights Landing, and Woodland. Between 1999 and 2002, the greatest amount of subsidence in the County was detected near Davis (2 inches) and Zamora (3 inches). Groundwater recharge opportunities, whether through percolation or pumping of treated water into the aquifers, can assist in reducing subsidence but require a surface water source. As a protective measure, the Yolo County Code regulates the extraction and exportation of groundwater from Yolo County, requiring a permit for extraction of groundwater for use outside of the County.

Contamination of groundwater can originate from a variety of human sources, including fuel leaks from underground storage tanks, chemical spills, or leaching of coliform bacteria and nitrates from failing, underperforming, and/or over-concentration of on-site wastewater treatment systems (OWTS), as well as the over-fertilization of crops. High levels of contamination may make water

⁸ Aguilar, Andrew, 2009. Associate Water Use Scientist, Water Supply and Evaluation Section of the Department of Water Resources Central District. Written and personal communication with LSA Associates, Inc. March 26.

⁹ Ibid.

¹⁰ In drought years, the County relies more heavily on groundwater, which supplies 44 percent of demand in drought years. Water Resources Association of Yolo County, 2007. op cit.

¹¹ Yolo County Local Agency Formation Commission, 2005. *Municipal Service Review and Sphere of Influence Study Yolo County Public Water and Reclamation District*. March.

unusable for agriculture or domestic uses. The suitability of groundwater for agriculture and domestic uses may also be diminished by the presence of naturally occurring minerals. When contamination is restricted to shallow aquifers, pumping from deeper aquifers addresses contamination issues, but the natural recharge of deeper aquifers may take thousands of years.¹² In addition, deeper wells are more costly to build and if they are not properly constructed, they can act as conduits for contaminants to move from shallow to deeper aquifers. However, groundwater in the Sacramento Valley groundwater basin is generally of high enough quality that its treatment for contaminants before use is rare in the County, although water softeners or conditioners are often used to remove excessive, naturally occurring minerals from groundwater before use.¹³

(2) Surface Water Resources. While groundwater is used as the domestic water supply in unincorporated Yolo County, surface water is most commonly used for agricultural irrigation. A number of natural and man-made bodies of water throughout the County are used for water supply, storage and distribution. Figure IV.H-2 shows the major surface waters in Yolo County. Surface water resources in the County originate mostly from the Cache Creek and Putah Creek watersheds and from the Sacramento River. The Cache Creek watershed originates in Lake County to the northwest of Yolo County; the Putah Creek watershed originates in Napa County. Most remaining surface water supply comes directly from the Sacramento River and its associated waterways (various sloughs and the Deep Water Ship Channel), or from its watershed via the Central Valley Project's Tehama-Colusa Canal or Colusa Basin Drain, for example.

Yolo County's primary source of agricultural water comes from Clear Lake, located within the Cache Creek watershed in Lake County. The Yolo County Flood Control and Water Conservation District (YCFCWCD) obtained rights to Clear Lake in 1967 when it purchased the Clear Lake Water Company and Cache Creek Dam. Clear Lake covers approximately 44,000 acres when full and has a storage capacity of 1,155,000 acre-feet. The District is allowed to release up to 150,000 acre-feet of water annually.¹⁴ Major components of the water distribution system within the Cache Creek watershed in addition to Clear Lake are the Cache Creek Dam, the Indian Valley Reservoir and Dam, and the Capay Diversion Dam.

Cache Creek Dam is located 5 miles downstream of Clear Lake on Cache Creek. It impounds winter water from Clear Lake that would naturally flow into the Sacramento River. In the past, the amount of water released from Clear Lake during dry years was not enough to serve the agricultural needs of the County. To address this issue, the YCFCWCD constructed the Indian Valley Dam and Reservoir on the North Fork Cache Creek in 1975. The Indian Valley Reservoir has a capacity of 300,600 acre-feet.¹⁵ When water is released from Clear Lake and the Indian Valley Reservoir, it is diverted by the Capay Diversion Dam, which is located on Cache Creek about 2 miles north of the town of Capay, into the West Adams and Winters canals.

The Sacramento River, which flows along the eastern boundary of Yolo County, is the longest river in California, with a length of 382 miles, and a watershed covering approximately 27,000 square miles,

¹² Design, Community & Environment, 2006. op cit.

¹³ Ibid.

¹⁴ Yolo County Flood Control and Water Conservation District, 2007. *District Infrastructure*. Website: www.ycfcwcd.org/infrastructure.html December 18.

¹⁵ Ibid.

roughly 17 percent of the land area of California.¹⁶ It is a complex network of natural and man-made features that are operated to achieve established objectives for water supply, flood control, and environmental purposes. Its flow and the availability of water are controlled almost entirely by conditions outside of the County. The river starts near Mount Shasta in the Cascade Range, and flows through the northern central valley, between the Pacific Coast Range and the Sierra Nevada. The river then joins with the San Joaquin River in the Sacramento River Delta, and empties into Suisan Bay, in the northern portion of San Francisco Bay. Reclamation Districts 108, 150, 787, 999, 2035, and 2068 are the agencies responsible for reclamation and protection of the various sections of the Sacramento River. One of their responsibilities is to provide irrigation services for lands inside their jurisdictions.

The Colusa Basin Drain is a man-made channel designed to convey runoff and agricultural return flows to the Sacramento River at Knights Landing. The Drain's watershed comprises approximately 1,620 square miles in the Sacramento Valley, with approximately 225 square miles in Yolo County. There are 32 ephemeral streams that convey storm runoff to the drain, seven of which originate in the Dunnigan Hills of Yolo County.¹⁷ During high flows, the basin drain is often diverted through the Knights Landing Ridge Cut to the Yolo Bypass and to the Sacramento River. The basin drain is the single largest source of agricultural flows to the Sacramento River.¹⁸ Reclamation District 108, which provides irrigation water for part of Yolo County obtains water from the Colusa Basin Drain to supplement its Sacramento River entitlement. Major concerns about the quality of the drain include temperature, turbidity, herbicides and pesticides, soil erosion, and sedimentation. Water quality issues are discussed in Section IV. K, Hydrology and Water Quality in this EIR.

The Tehama-Colusa Canal is part of the Central Valley Project and travels through Tehama, Glenn, and Colusa Counties, into Yolo County. The Tehama-Colusa Canal is operated and maintained by the Tehama-Colusa Canal Authority. The canal is 110 miles long and serves a total of 14 water districts, including the Dunnigan Water District in Yolo County. Water from the canal is made available via contracts with the Bureau of Reclamation. The system was originally designed to divert water from the Sacramento River in Red Bluff. However, environmental concerns and regulatory requirements altered the operational practices of the dam. In order to provide water to irrigators, the Bureau of Reclamation installed three pumps in the 1990s, each with a capacity of between 80 to 100 cubic feet per second (cfs). A fourth pump was then installed in 2006, and with this pump, flows are estimated to reach as high as 1,700 cfs to service 26 pools.¹⁹

(3) Domestic Water Systems and Purveyors. Domestic water supplies in Yolo County are obtained primarily from groundwater sources. The incorporated cities of Davis, Winters and Woodland rely solely on groundwater. West Sacramento relies on surface water with supplemental groundwater wells. Water for domestic use in unincorporated County is also obtained primarily from

¹⁶ Sacramento Regional County Sanitation District, 2007. *Sacramento Watershed*. Website: www.srcsd.com/sacwater.html December 19.

¹⁷ Water Resources Association of Yolo County, 2007. op. cit.

¹⁸ California Department of Water Resources, 2007. *Colusa Basin Drain*. Website: www.nd.water.ca.gov/PPAs/WaterQuality/RiversStreams/SacramentoRiver/CBD/ December 19.

¹⁹ Tehama Colusa Canal Authority, 2007. *Tehama Colusa Canal Authority*. Website: www.tccanal.com/ December 19.

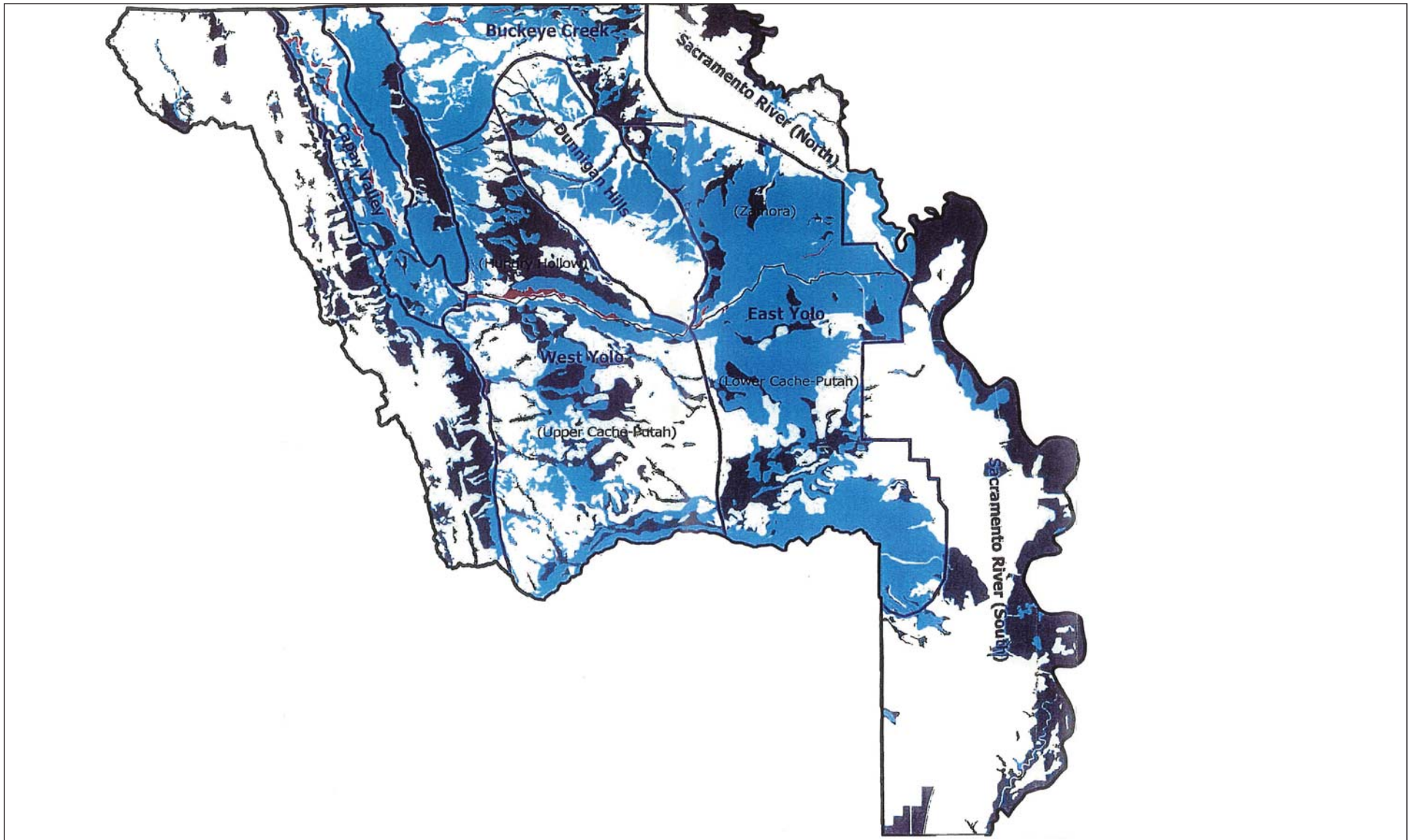


FIGURE IV.H-1

*Yolo County 2030 Countywide
General Plan EIR
Groundwater Subbasins and
Infiltration Rates in Yolo County*

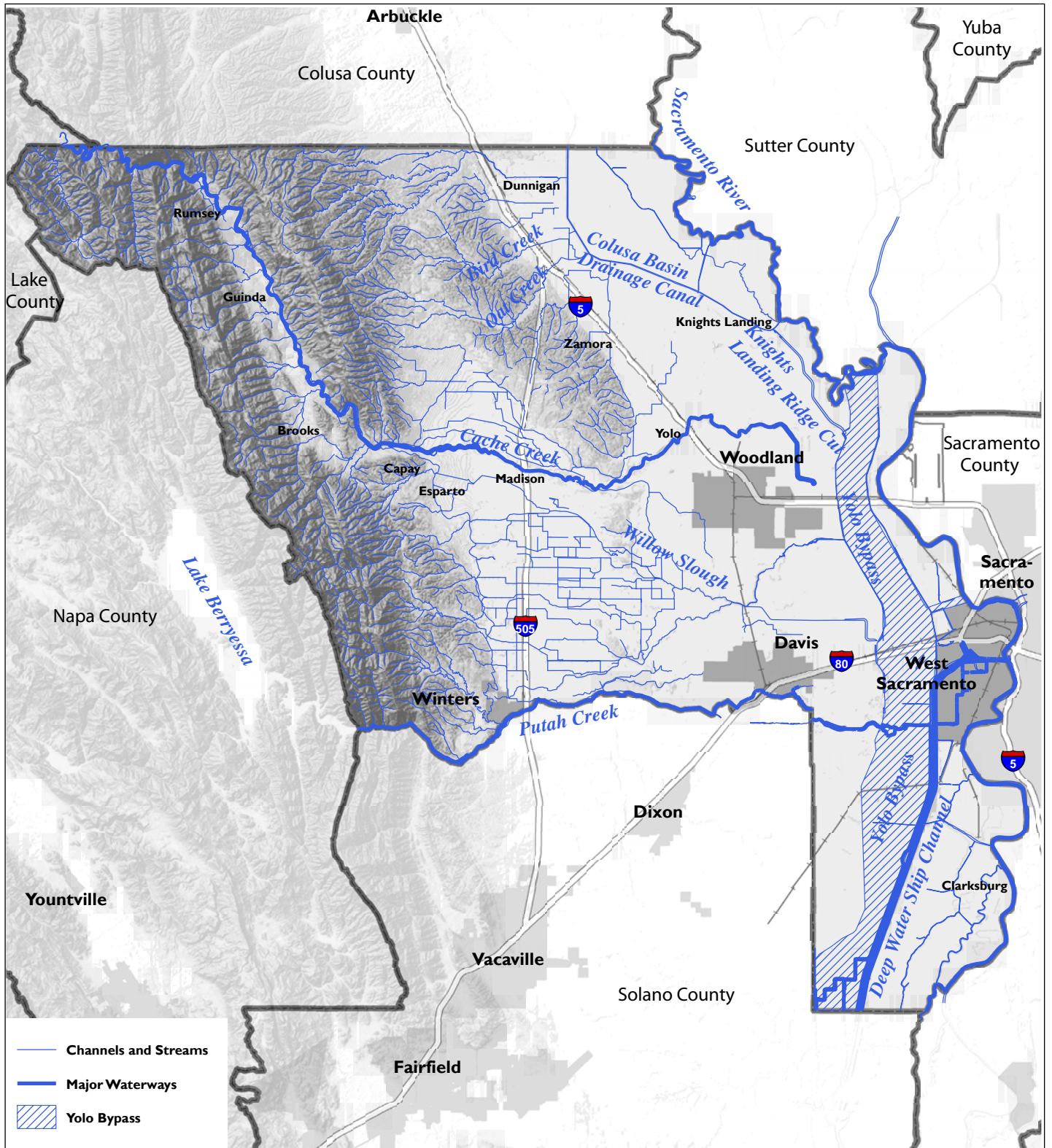
LSA



- | | | | |
|--|------------------------|--|-----------------------------|
| | YOLO COUNTY BOUNDARY | | HIGH INFILTRATION RATE |
| | SUBBASIN BOUNDARY | | MODERATE INFILTRATION RATE |
| | SUBBASIN AREA BOUNDARY | | SLOW INFILTRATION RATE |
| | | | VERY SLOW INFILTRATION RATE |

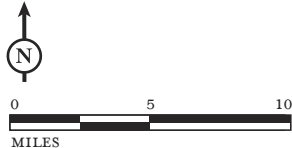
SOURCE: JONES & STOKES, 2005

I:\CYK0701 yolo county\figures\GP\Fig_IVH1.ai (4/9/09)



LSA

FIGURE IV.H-2



*Yolo County 2030 Countywide
General Plan EIR
Major Waterways and Surface Waters*

SOURCE: COUNTY OF YOLO, 2009.
I:\CYK0701 yolo county\figures\GP\Fig_IVH2.ai (4/10/09)

groundwater. Groundwater is pumped from wells by individual landowners or by a variety of water purveyors, including community service districts (CSDs), County service areas (CSAs), and a water agency, which then distribute the water to their customers. Other major water providers located within the unincorporated area (but outside of the County's land use authority) include the Cache Creek Casino Resort, D-Q University, and the University of California at Davis (UC Davis). This subsection provides an overview of the water systems in unincorporated County that are within the County's land use authority. Table IV.H-1 summarizes the domestic water systems in unincorporated County. Existing development in the community areas in the County not discussed below rely on private on-site wells for water.

Clarksburg. Clarksburg obtains its water supply from individual wells. There are approximately 432 residential units in the agricultural parts of the town, and 132 units within the Clarksburg town area.²⁰ In total, 564 residential units obtain water from private individual wells. Any additional infill development above one unit per acre would require a new water system. Development into the outlying rural areas is restricted due to Clarksburg's location within the Primary Zone of the Delta Protection Area. Due to a high water table under the town, groundwater is the best option for future water supplies, though, the adjacent Sacramento River could also be considered for surface water.

Dunnigan. Residents of Dunnigan receive drinking water from individual private wells. There are private shared water systems serving two mobile homes and multiple residences in the Old Town area where residential lots are smaller. There are two potential water resources problems identified by the Dunnigan Water District related to growth in the Dunnigan area. First, water quality sampling performed by Yolo County indicates that numerous wells in the area have nitrate concentrations that exceed drinking water quality standards. Second, historical groundwater elevations have shown that there is a limited amount of groundwater available in the Dunnigan area to serve additional growth.²¹ Studies performed by the Dunnigan Water District have shown that groundwater overdraft may occur if water management strategies are not put in place to mitigate the impacts of growth.²² If the town continues to rely solely on groundwater supplies, new and deeper wells would be needed due to nitrate contamination problems. The town could also potentially obtain surface water supplies from the Tehama-Colusa Canal through the Dunnigan Water District, which currently only supplies agricultural water. In order to obtain additional surface water supplies, water supply authorizations would need to be secured and a treatment, conveyance, storage, and distribution system would need to be developed.

Community Service Districts and County Service Areas. Yolo County has four CSDs: Cacheville CSD, Esparto CSD, Knights Landing CSD and Madison CSD, and four CSAs: El Macero CSA, North Davis Meadows CSA, Willowbank CSA and Wild Wings CSA, that supply County residents and businesses with water primarily for domestic use and other urban uses.²³ The boundaries of the CSDs and CSAs are shown in Figure IV.H-3. They also collect, treat, and dispose of sewage, waste, and stormwater. In Yolo County, the fundamental difference between a CSA and a

²⁰ Yolo County, 2004. *Old Sugar Mill Specific Plan, Draft EIR*. August.

²¹ Hendrix, Donita, 2008. General Manager, Dunnigan Water District. Written and personal communication with LSA Associates, Inc. November.

²² Ibid.

²³ Ibid.

Table IV.H-1: Water Systems in Unincorporated Yolo County

Area	Water System Conditions
Clarksburg	No community water system. Individual wells.
Dunnigan	No community water system. Individual wells. The Dunnigan Water District receives a contractual water supply from the Central Valley Project via the Colusa-Tehama Canal that is currently used for agriculture in the Dunnigan area and is a potential future source of domestic water. Domestic use would require contractual changes and the construction of water treatment and distribution facilities.
Esparto	Community water system based on groundwater, which is managed by the Esparto CSD.
Knights Landing	Community water system based on groundwater, which is managed by the Knights Landing CSD.
Madison	Community water system based on groundwater, which is managed by the Madison CSD. New well recently installed to address previous problems with coliform and nitrate contamination.
Yolo	Community water system based on groundwater, which is managed by the Cacheville CSD.
Monument Hills	Community water system based on groundwater for the Wild Wings development, which is managed by the Wild Wings CSA. Arsenic contamination is a potential problem. The remainder of the Monument Hills area relies on individual wells.
Willowbank, El Macero, North Davis Meadows, Royal Oaks	Willowbank, and El Macero have water systems managed by CSAs, which have been integrated with the City of Davis community water system. Royal Oaks is also served by the City of Davis. North Davis Meadows is managed by the North Davis Meadows CSA, which is separate from the city's water system. Nitrate contamination has been a problem in North Davis Meadows.
West Kentucky	Private water system based on groundwater. System improvements needed.
Zamora, Binning Farms, Patwin Road, West Plainfield, Willow Oak	No community water system. Individual wells.

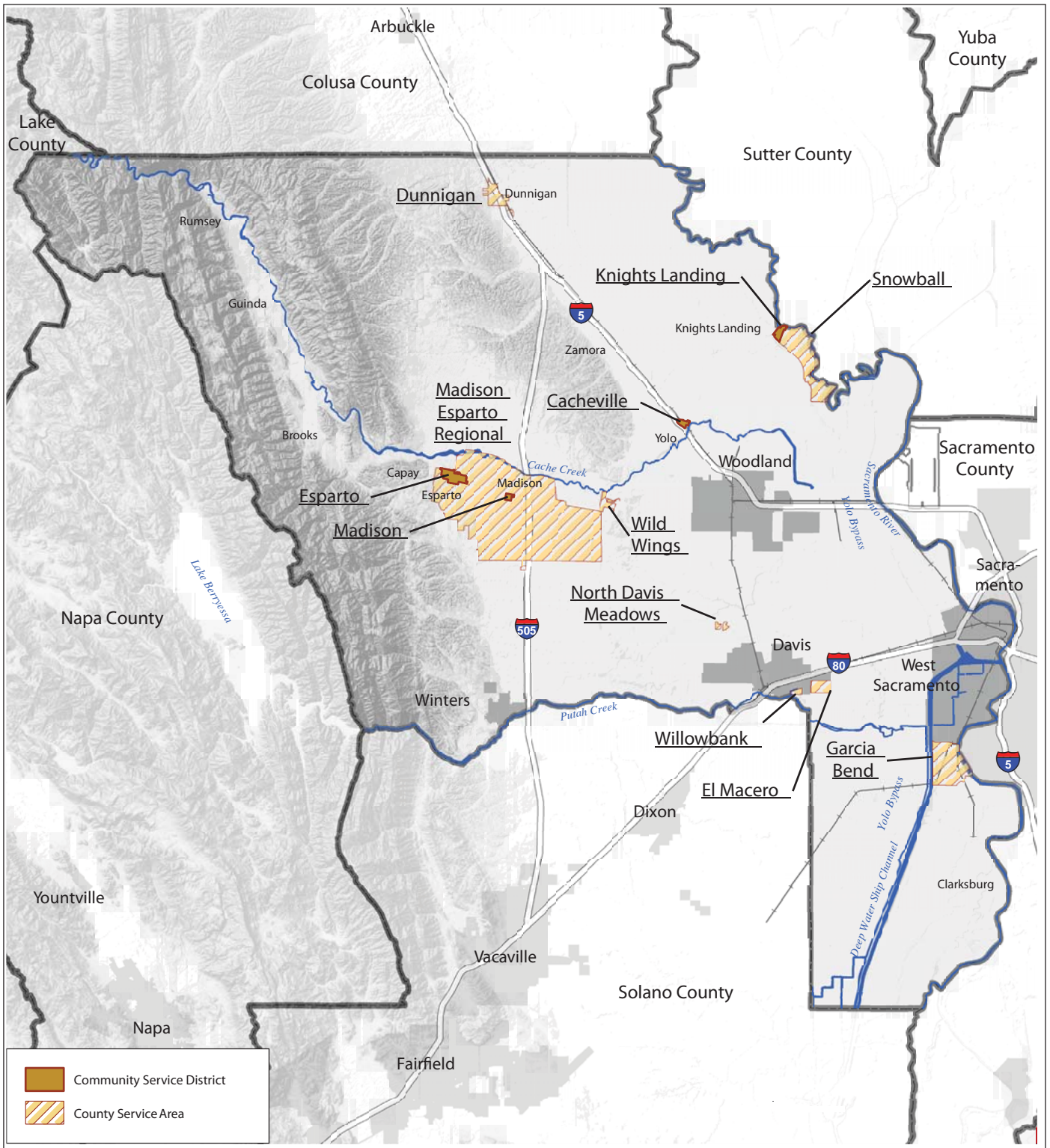
Source: Yolo County, 2008. *Draft 2030 Countywide General Plan*. September.

CSD is that the Yolo County Board of Supervisors is the governing body of the CSAs while CSDs are governed by an elected or appointed board of directors.²⁴

The town of Esparto receives its water from the Esparto CSD. The domestic water supply distributed by the Esparto CSD comes from four wells. In total, the wells have a capacity of 2,195 gallon per minute (gpm), and preliminary testing indicated that a fifth well could add another 750 gpm. Water is distributed through a network of water mains that vary in size from 6 to 12-inches. Recent upgrades to the system have allowed it to accommodate an additional 74 connections for a total of 923 connections. However, the water distribution pipes in the town center are too small to maintain acceptable fire flows and will need replacement. The Esparto CSD requires developers to provide improvements to the system to accommodate future growth in the town.

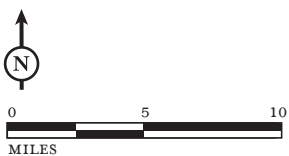
Residents of Knights Landing are served by the Knights Landing CSD, which pumps all water for domestic uses from three wells. In total, the three wells have a supply of approximately 3,400 gpm. Not including fire protection demand, the wells can supply the town's current average daily demand of 167 gpm and peak demand of 694 gpm. Nearly all of the remaining water capacity will be used by housing developments that are under construction as of March 2009. The distribution system was built in the 1970s and consists of 6-inch pipes that are undersized. Existing non-residential fire flows do not meet current requirements and the pipes are in need of expansion to provide adequate pressures for fire flows. Another issue is that the water supply is untreated, and there have been some issues with bacterial contamination. Any future development in the town would require new wells, storage facilities, and distribution infrastructure to be added to the existing system. Larger pipes and deeper wells have also been recommended for the area.

²⁴ Ibid.



LSA

FIGURE IV.H-3



*Yolo County 2030 Countywide
General Plan EIR
Community Service Districts and
County Service Areas*

SOURCE: YOLO COUNTY GIS 2009.

F:\CYK0701 yolo county\figures\EIR\Fig_IVH3.ai (4/14/09)

Madison is served by the Madison CSD which pumps domestic water supply for the town from two wells. The primary well has been in use since the late 1960s and is prone to contamination of coliform bacteria. This well must continually have State specified amounts of drinking water safe chlorination. A back up well was completed in 2007, and the Madison CSD determined in early 2008 that it had been improperly developed, and has caused an abnormal amount of sand production.²⁵ The CSD also determined that it was infeasible due to high costs to repair the wells. The wells have a combined capacity of 1,100 gpm and current demand is approximately 139 gpm (with landscape maintenance factored in) during the summer months and approximately 42 gpm during the winter months.²⁶

The water distribution system is made up of 6-inch transite pipes that are undersized and have a high rate of failure.²⁷ Therefore, despite ample supply, the water distribution system is severely limited in capacity. Additionally, neither well can produce the gpm water flow requirement to meet Insurance Service Organization (ISO) rating fire flow standards of 1,500 gpm for residential uses or 2,000 gpm for commercial uses.²⁸

The Cacheville CSD provides the domestic water supply for the town of Yolo. The CSD has one main well and one backup well. The main well pumps approximately 700 gpm and the backup well pumps approximately 200 to 250 gpm. The existing system is adequate for the current demand and has some additional capacity. The main well could support an additional 300 connections, and the back-up well could serve an additional 25 connections. Currently, fire flows are adequate, and water quality meets drinking water standards even though the water is not treated.

The Wild Wings CSA provides water to the 337-unit Wild Wings development and adjoining golf course in the Monument Hills area east of Woodland. The water system was designed to serve the homes in the Wild Wings development and does not have any additional capacity. All other homes in the Monument Hills area obtain water from individual private wells. Given that no domestic water system exists in Monument Hills, any new development at densities above one unit per acre would require a new water system.

While North Davis Meadows owns its own on-site water and drainage facilities, the communities of El Macero, Willowbank and Royal Oaks are served by the City of Davis. In 2005, the City had an estimated yearly demand of approximately 15,200 acre-feet. The City continues to add wells to serve new development. The City's 2000 Urban Water Management Plan estimated that the City will be able to supply enough water in order to meet demand through 2020, which is estimated to rise to 19,200 acre-feet. The City of Davis, along with Woodland, U.C. Davis, and the Yolo County Flood Control and Water Conservation District are currently attempting to obtain water from the Sacramento River. This water supply would allow these areas to discontinue their use of wells; however, it would require a water treatment plant as well as new pipelines to bring water to the developed areas.

²⁵ Refsland, Leo, 2008. General Manager, Madison Community Service District. Written Communication with LSA Associates, Inc. December 8.

²⁶ Ibid.

²⁷ Ibid.

²⁸ Ibid.

North Delta Water Agency. The North Delta Water Agency is the only water agency in Yolo County. It also serves parts of Sacramento, San Joaquin, and Solano counties. The North Delta Water Agency studies and identifies programs to protect the water supply of the lands within the agency’s boundaries against the intrusion of ocean salinity, and assures a dependable supply of water of suitable quality sufficient to meet the present and future needs of the lands within the agency’s jurisdiction.²⁹

(4) Agricultural Water Supply. Because rainfall in Yolo County is inadequate to sustain most crops, agriculture depends on a reliable irrigation water supply from a combination of both groundwater and surface water. Typical annual water use by crop type in the Sacramento River Valley is shown in Table IV.H-2.

In normal years, surface water is the primary source of irrigation water in Yolo County. The main sources of surface water supply for agriculture in Yolo County are the Sacramento River, Colusa Basin Drain, Putah Creek, Cache Creek, Yolo Bypass, Tule Canal, Willow Slough and the Tehama-Colusa Canal. Farmers rely on groundwater for approximately 40 percent of their supply in a normal year and rely more heavily on groundwater during drought years.³⁰ Agricultural water demand is expected to remain fairly stable or to decline slightly due to the increasing use of higher value, permanent crops and associated efficient irrigation systems.

Table IV.H-2: Applied Water Use by Crop Type in the Sacramento River Valley

Crop Type	Average Annual Applied Water (acre-feet/acre)
Rice	5.89
Alfalfa	4.5
Pasture	3.85
Onion/Garlic	3.81
Cotton	3.26
Tomato	3.2
Corn	3.09
Other Field	2.44
Dry Bean	2.41
Cucumber	1.6
Grain	1.27
Safflower	0.79

Source: Department of Water Resources, 2001. *Annual Land and Water Use Data: 2001 Water by Hydrologic Region (acre-feet/year)*.

Agricultural water users face problems with unreliable water supplies during drought conditions, due to subsidence from groundwater overdraft in the Upper Cache Creek region and the Dunnigan Hills region, competing demands from non-agricultural development, requirements for water to support environmental resources, and increasingly stringent, complex and costly water quality regulations.³¹ Yolo County is served by five major water districts: the Colusa County Water District, the Dunnigan Water District, the Yolo-Zamora Water District, the Yolo County Flood Control and Water Conservation District, and the Knights Landing Ridge Drainage District. The boundaries of the water districts are shown in Figure IV.H-4. The water districts produce, store and distribute water for irrigation, domestic, industrial, and municipal purposes. They also collect, treat, and dispose of sewage, waste, and stormwater.

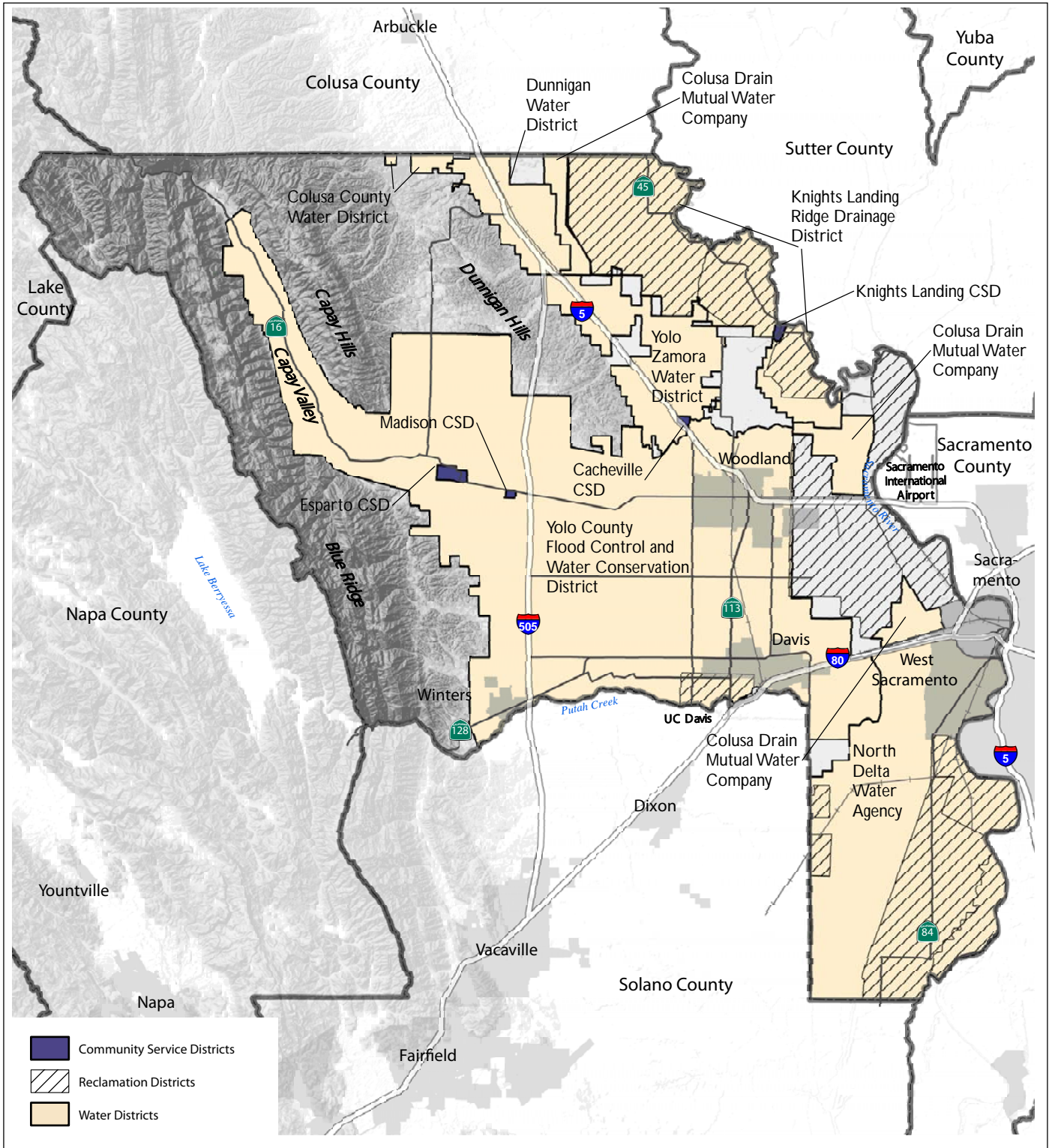
In addition, reclamation districts provide agricultural water service along with levee maintenance and other services to many portions of the County.³² They allocate water according to crops and acreage,

²⁹ Ibid.

³⁰ Water Resources Association of Yolo County, 2007. *Integrated Regional Water Management Plan: Model Policies for Water Resources for the Yolo County General Plan*.

³¹ Ibid.

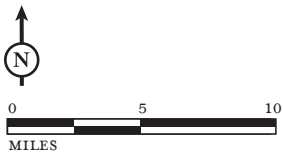
³² Ibid.



LSA

FIGURE IV.H-4

Yolo County 2030 Countywide
General Plan EIR
Water Districts



SOURCE: YOLO COUNTY LAFCO, 2009.

I:\CYK0701 yolo county\figures\EIR\Fig_IVH4.ai (4/14/09)

and grant water rights that allow the use of district storage and conduits.³³ Reclamation Districts that are water purveyors in Yolo County include 108, 150, 787, 999, 2035, and 2068. The Colusa Drain Mutual Water Company has water rights to the Colusa Basin Drain and supplies irrigation water to its users during the fall, summer and spring. The Rumsey Water User's Association diverts water for its members from Cache Creek for agricultural irrigation use.³⁴

The following section describes three major public water districts that serve agricultural uses in incorporated and unincorporated Yolo County as shown in Figure IV.H-4. Water resource issues are also addressed in other sections of this EIR, including Section IV.B, Agricultural Resources, and Section IV.K, Hydrology and Water Quality.

The Yolo County Flood Control and Water Conservation District. The Yolo County Flood Control and Water Conservation District (YCFCWCD) was created by the California Legislature in 1951 as an independent special district. At its inception, the primary purpose of the YCFCWCD was to seek new water sources and manage them efficiently.³⁵ Initially the YCFCWCD had no water rights and operated on a very small budget generated by property taxes. Today, the YCFCWCD provides agricultural water to approximately 195,000 acres, which represents approximately 40 percent of the valley lands in Yolo County.³⁶ It includes the cities of Woodland, Davis, and Winters, along with the communities of Capay, Esparto, Madison, and other communities in the Capay Valley. The YCFCWCD owns, operates, and maintains three dams, two hydroelectric plants, two reservoirs, and 175 miles of irrigation and drainage facilities.³⁷

The YCFCWCD's water delivery system consists of the Capay Diversion Dam on Cache Creek and the extensive network of canals and laterals serviced from the District's two main canals, the Winters Canal and the West Adam Canal. The YCFCWCD's surface water supply comes primarily from the Clear Lake-Indian Valley and Cache Creek system.³⁸ The YCFCWCD obtained some rights to Clear Lake and is allowed a maximum downstream withdrawal of 150,000 acre-feet per year.³⁹ In addition, the YCFCWCD owns and operates Cache Creek Dam, which is located 5 miles downstream from Clear Lake and approximately 49 miles upstream from the YCFCWCD's Capay Diversion Dam.⁴⁰ The YCFCWCD also owns the Indian Valley Dam and Reservoir, located on the North Fork Cache Creek, and has been used for storage and flood control since 1975. The facility has a storage capacity of 300,600 acre-feet per year.

³³ Yolo County, 2005. *Yolo County Integrated Regional Water Management Plan, Background Data and Information Appendix*. May.

³⁴ Yolo County, 2005. *Yolo County Integrated Regional Water Management Plan, Background Data and Information Appendix*. May.

³⁵ Yolo County Flood Control and Water Conservation District, 2007. Description of District. Website: www.ycfcwcd.org/district.html December 18.

³⁶ Ibid.

³⁷ Yolo County Flood Control and Water Conservation District, 2000. *Water Management Plan, Chapter VI: District's Water Delivery System*. October.

³⁸ Yolo County Flood Control and Water Conservation District, 2000. *Water Management Plan, Chapter IV: District's Water Supply System*. October.

³⁹ Yolo County Flood Control and Water Conservation District, 2007. *District Infrastructure*. Website: www.ycfcwcd.org/infrastructure.html December 18.

⁴⁰ Ibid.

Dunnigan Water District. The Dunnigan Water District (DWD) was formed in 1956 under Division 13 of the California Water Code. The District owns and operates a buried pipeline system that distributes Central Valley Project irrigation water from the Tehama-Colusa Canal to the DWD's service area. The DWD provides agricultural water to 10,600 acres within the District and has an annual entitlement of 19,000 acre-feet of water. Currently, average water demand is approximately 14,000 to 18,000 acre-feet per year.⁴¹ The DWD has a financial obligation to the Bureau of Reclamation for \$3 million for repayment on the District's system by 2025, and assesses the landowners in the DWD through the County taxes at a rate of \$17.00 per acre.⁴²

Overdraft of groundwater has been a severe problem in the Upper Cache Creek watershed and the Dunnigan Hills region. The overdraft results from increased pumping for agriculture, combined with restricted opportunities for recharge. However, importing surface waters by canals such as the Tehama-Colusa Canal has helped to relieve the problem, and groundwater in the entire County is adequately recharged during the wet years to offset drought period overdrafts.⁴³ Studies performed by the DWD have shown that overdraft conditions are likely to continue if the impacts from growth are not mitigated by proper water management.⁴⁴

Yolo-Zamora Water District. The Yolo-Zamora Water District was formed in 1955 under Division 13 of the California Water Code. The District does not currently provide services as it has no source for surface water supply. Water demand within the service area is currently being met with groundwater pumped from private wells. Over-pumping of the East Yolo sub-basin has caused serious land subsidence issues in this portion of the County. The highest degree of subsidence in the County was recorded east of Zamora by the U.S. Geological Survey.⁴⁵ Several options for the future of the District have been discussed, and the DWD and YCFCWCD have identified areas within the Yolo-Zamora District that they could serve within a 10-year horizon.⁴⁶

b. Regulatory Framework. The following describes agencies responsible for regulating water services, use and distribution, applicable federal, State, and local laws regulating water use and distribution, and regional and County water management plans.

(1) Responsible Agencies. The following section describes State and local agencies and entities involved in the County's water resources planning and development process.

California Department of Water Resources (DWR). DWR is responsible for the preparation of the California Water Plan, management of the State Water Project (an extensive water storage project for California), protection and restoration of the Sacramento-San Joaquin River Delta, regulation of dams, provision of flood protection, and other functions related to surface water and groundwater resources. These other functions include helping water agencies prepare their UWMPs

⁴¹ Hendrix, Donita, 2008. op. cit.

⁴² Ibid.

⁴³ Yolo County Local Agency Formation Commission, 2005. op. cit.

⁴⁴ Hendrix, Donita, 2008. op. cit.

⁴⁵ Yolo County Local Agency Formation Commission, 2005. op. cit.

⁴⁶ Ibid.

and reviewing such plans to ensure they comply with the related Urban Water Management Planning Act.

California Department of Fish and Game (CDFG). CDFG is responsible for the review of water rights applications and for issuing lake and streambed alteration permits for new water supply projects. CDFG works in conjunction with other State and federal agencies to mitigate the impacts of projects on fish and wildlife resources and is responsible for enforcing the California Endangered Species Act. CDFG also helps establish instream flows, the minimum releases below a dam or diversion structure, to maintain habitat. Such release schedules are included in the water rights appropriation and can affect the yield of a water project.

State Water Resources Control Board. The State Water Resources Control Board (SWRCB) was established in 1967 to administer State water rights and water quality functions of the State. The SWRCB and its nine regional water quality control boards (RWQCBs) administer water rights and enforce pollution control standards throughout the State. The SWRCB is responsible for granting water rights through an appropriation process that involves public hearings and an environmental review process. The SWRCB also issues water quality-related certifications to developers of projects under section 401 of the federal Clean Water Act.

Central Valley Regional Water Quality Control Board. Yolo County is located within the jurisdiction of the Central Valley RWQCB. The RWQCB is responsible for the preparation and implementation of basin water quality plans consistent with the federal Clean Water Act and enforcement of these plans to ensure that local water quality is protected.

Yolo County Local Agency Formation Committee (LAFCO). Yolo County LAFCO regulates local-agency boundary changes, including annexations and spheres of influence for each city and special district within the County. Yolo County LAFCO is responsible for determining the boundaries and spheres of influence for each of the water purveyors in the County. Areas seeking to access surface water supplies will likely require annexation to a public water purveyor, which must be approved by LAFCO.

Water Resources Association of Yolo County (WRA). The WRA is a consortium of entities authorized to provide a regional forum to coordinate and facilitate solutions to water issues in Yolo County. The purpose of the WRA is to obtain, protect, and maintain a high quality water supply adequate for the present and future needs of Yolo County. Specific projects include subsidence and groundwater monitoring programs along with public education campaigns. The WRA is governed by a Board of Directors who represents each of the member agencies. The WRA member agencies include: City of Davis; Dunnigan Water District; Reclamation District 2035; U.C. Davis; City of West Sacramento; City of Woodland; City of Winters; Yolo County; and Yolo County Flood Control and Water Conservation District.

Yolo County Subsidence Network. The Yolo County Subsidence Network was established in 1998 to provide information and to track trends and impacts of land subsidence and flood control in Yolo County. Monitoring stations using the Global Positioning System have been installed throughout Yolo County to perform subsidence monitoring.⁴⁷

⁴⁷ Yolo County Subsidence Network, 2000. *Recommendations for Future Monitoring*. Website: www.yarn.org/subsidence/about.html. May.

Delta Protection Commission. The Delta Protection Commission was created under the Delta Protection Act in order to assure the orderly, balances, conservation and development of Delta land resources while maintaining and improving flood protection to ensure an increased level of public health and safety. The Delta Protection Commission has designated the Primary and Secondary Zones of the Delta, including portions of Yolo County, and the establishment of policies through the Land Use and Resource Management Plan for the Primary Zone of the Delta, described in more detail below.⁴⁸

Yolo-County Sacramento Area Flood Control Agency (SAFCA) Lower Sacramento River Collaborative. On December 7, 2004, the Yolo County Board of Supervisors agreed to partner with the SAFCA to form the Lower Sacramento River Collaborative, facilitated by the Center for Collaborative Policy. The Lower Sacramento River Collaborative process allows the County and SAFCA to explore regional flood protection, ecosystem enhancement, and farming improvement opportunities.⁴⁹

(2) Water Regulations. The planning, development, and management of new water supplies needed to meet the growing water demand within Yolo County is a complex undertaking involving the coordination of numerous local, State, and federal agencies. The decision to pursue a local water supply project is subject to issuance of water rights, environmental review, including CEQA and sometimes the federal equivalent (NEPA), obtaining other regulatory permitting requirements, and often involves resolving complex issues among competing interests. The Water Commission Act of 1914 established today's water right permit process.

California's constitution, statutes, and common law erect a complex scheme of rights in surface and groundwater. California's system of water rights is referred to as a "duel system" in which both the riparian doctrine and the prior appropriation doctrine apply.⁵⁰ This duel system is administered by the California State Water Resources Control Board (SWRCB), and includes appropriative rights established before the advent of the SWRCB's jurisdiction in 1914.

Riparian users are entitled to make reasonable use of the natural flow of a surface water source that abuts their property. Riparian rights allow natural flows to be used for beneficial purposes without applying for a permit.⁵¹ Appropriative rights are acquired by those who do not own land physically connected to a water source, but who put surface water to beneficial use. An appropriative water right can be maintained only by continuous beneficial use, and can be lost by five or more continuous years of non-use. Riparian rights, on the other hand, cannot be lost through non-use.

Water is allocated among appropriative users based on seniority, under the principle of "first in time, first in right," though riparian rights still have a higher priority than appropriative rights. In times of water shortages, the most recent appropriative right holder must be the first to discontinue water use.

⁴⁸ Delta Protection Commission, 2007. *2007 Annual Report*. Website: www.delta.ca.gov/pdf/AnnualRpt.pdf. October 29

⁴⁹ Yolo County Local Agency Formation Commission, 2005. op. cit.

⁵⁰ Bureau of Land Management, 2001. *National Science and Technology Center. California Water Rights Fact Sheet*. Website: www.blm.gov/nstc/WaterLaws/california.html.

⁵¹ Ibid.

The priorities of riparian right holders generally carry equal weight, and during a drought all share the shortage among themselves.⁵²

Rights to groundwater that flows in subterranean streams is allocated by SWRCB. Rights to groundwater that does not flow in streams are not administered by any State agency, but rather are adjudicated by courts on a case-by-case basis, and in some cases may be regulated to some extent by local governments. When groundwater becomes overdrafted, overlying users have first priority in using the available water, followed by appropriative users (users of groundwater away from the property from where it is pumped) in order of seniority.⁵³ Where an appropriative user has been continuously withdrawing water from an overdrafted aquifer for more than five years, the appropriative right may become a prescriptive right, which is effectively treated as an overlaying right for purposes of groundwater allocation. Both surface water rights and groundwater rights are subject to a requirement in the State constitution that the manner in which water is used be reasonable and beneficial.

To ensure high quality and adequate supply, water resources in Yolo County are regulated by the following federal, State, and County laws.

Urban Water Management Planning Act of 1984. Since its enactment in 1984, the Urban Water Management Planning Act (California Water Code, Division 6, Part 2.6, Section 10610) has required public water purveyors that provide water for municipal purposes to more than 3,000 customers, or supply more than 3,000 acre-feet annually, to develop Urban Water Management Plans (UWMPs), in order to encourage the implementation of water conservation measures and long-term water supply planning.⁵⁴ The UWMPs must describe a purveyor's water supply and demand conditions (existing and projected), water conservation measures, and water shortage projections and contingency measures. The plans are reviewed by the California Department of Water Resources (DWR) and must be prepared every five years. In Yolo County, the cities of Davis, Woodland, and West Sacramento last updated their UWMPs in 2005. There are no UWMPs in the unincorporated communities of the County.

Senate Bills 901 and 610. Senate Bill (SB) 901 (Water Code Sections 10910-10915), which was signed into law in 1995, and SB 610 (Water Code Section 10910), which became effective in 2002 require land use agencies, such as the County Planning and Public Works Department, to consider the availability of water supplies when an EIR is required for the approval of certain types of larger development projects. Before SB 901 and SB 610, public water purveyors typically attempted to acquire new water supplies for any and all developments approved by counties and cities. SB 901 and SB 610 require a more formal and detailed analysis, including the identification of the water purveyors that would provide water service to the site, analysis of whether the water demand associated with the proposed project has been included and assessed in the latest UWMP, and whether water demand can be met in single and multiple dry years.

⁵² State Water Resources Control Board, 2008. *The Water Right Process*. Website: www.waterrights.ca.gov/html/wr_process.htm. October 29.

⁵³ Bureau of Land Management, 2001. op cit.

⁵⁴ California Department of Water Resources, 2007. *Urban Water Management Planning Program*. Website: www.owue.water.ca.gov/urbanplan/index.cfm December 19.

In particular, SB 610 requires that water retailers demonstrate that water supplies are sufficient to meet the projected demand of certain types of large development projects through the use of water supply assessments (WSA). SB 610 requires WSAs for a 500 unit residential development or a project that would increase in the number of the public water system's existing service connections by 10 percent. Under Water Code Section 10912(a)(7), SB 610 would also apply to a project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project. In order to determine whether an assessment is required under the 500 unit equivalency threshold, the municipality generally works with the water supplier to determine if the demand associated with the proposed project would be equivalent to or greater than the demand for a 500 unit project in that jurisdiction.

Senate Bill 221. SB 221 became effective in 2002 (Government Code 66473.7) and requires written verification of sufficient water supply from public water purveyors for residential development projects with more than 500 units when a tentative subdivision map is filed.

Yolo County Code. Title 7, Chapter 1, Section 7-1.04 of the Yolo County Code is a County regulation that requires fire sprinkler systems in all new residential and new non-residential buildings over 5,000 square feet, over 25 feet, or of three stories in height. High water flows are required to sustain commercial sprinkler systems. Most existing water systems do not operate at pressures sufficient to operate fire sprinkler systems, and consequently, community water systems would need to expand their available water capacity to provide sufficient water pressure to meet this County code requirement.

Yolo County Improvement Standards. The Yolo County Department of Planning and Public Works provides guidance and sets minimum standards (Improvement Standards) for improvements to be built within the County on County easement or right-of-way, or any private development under entitlement per *Title 8, Land Development and Planning* of the County Code.⁵⁵ The Improvement Standards serve as the “County Standards,” or “Design Standards” per County Code *Title 8, Chapter 1, Article 7*, and are sometimes referred to as Standards of Design or Development Standards. They guide the development of public improvements such as streets, storm drainage, sewerage, water supply, and site access, and set guidelines for similar private works. They represent the County’s minimum acceptable standards. Project-specific conditions of approval and/or mitigation requirements, as approved by the Board of Supervisors, may impose more stringent project requirements than those included in the standards. The Yolo County Improvement Standards are not in lieu of, but are in addition to, other regulatory requirements imposed by County, State, and Federal agencies.

Improvement Standards related to the provision of water are found in *Title 8, Section 8, Water Systems*. They apply to water supply and distribution facilities to be maintained by a CSA providing water services. The County Engineer may modify or require higher standards where unusual conditions are encountered.

(3) Water Management Plans. To ensure high quality and adequate supply, water use and distribution is guided by regional and County water management plans.

⁵⁵ Yolo County Department of Planning and Public Works, 2008. County of Yolo Improvement Standards, 5 August.

Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta. The Land Use and Resources Management Plan for the Primary Zone of the Delta (LURMP) was developed in response to the Delta Protection Act of 1992, by the State Delta Protection Commission. The Plan was adopted by the State in 1995 for the purpose of providing direction to local jurisdictions in the Delta region on land use decisions. The Plan addresses the environment, utilities and infrastructure, land use, agriculture, water, recreation and access, levees and boater safety. The general plans for all jurisdictions within the Delta Primary Zone, including portions of Yolo County, are required to be consistent with this Plan. The LURMP was adopted by the County as a General Plan amendment on March 18, 1997 by Resolution No. 97-34. The State is currently engaged in a process to update this plan. Upon completion, the County will be required to review the General Plan for consistency with the revised LURMP and make amendments as necessary.

Integrated Regional Water Management Plan. In 2007, the County adopted the Integrated Regional Water Management Plan (IRWMP), which is a multi-agency effort to coordinate water policies among the various jurisdictions of Yolo County. The IRWMP was developed by the Water Resources Association of Yolo County (WRA), in conjunction with the California Department of Water Resources (DWR). The IRWMP serves as an update to the County's 1992 water management plan, addressing major topics such as water supply, water quality, flood management, enhancement of aquatic and riparian habitat, and improvement of the County's recreational opportunities.

Other water supply and quality issues that Yolo County must address include increasingly stringent water quality regulations, availability of adequate water supplies during severe drought conditions, subsidence problems as a result of groundwater overdraft, rising costs of providing water services, and increasingly complex and expensive regulatory compliance. Many of these issues have been addressed through the IWRMP.

c. Draft 2030 Countywide General Plan for Yolo County. The following is a list of relevant Draft General Plan policies that relate to water resources, use, and distribution in Yolo County.

Land Use and Community Character Element

- Policy LU-3.6: Avoid or minimize conflicts and/or incompatibilities between land uses.
- Policy LU-5.5: Ensure that public facilities, services and amenities are distributed equitably and in locations that enhance the quality of life for the broadest number of County residents.
- Policy LU-5.6: Assist existing communities to obtain the services, support and infrastructure needed to thrive and be successful.
- Policy CC-2.2: Ensure that the appropriate base level of rural services and infrastructure for existing development in each community is required in connection with new development.
- Policy CC- 2.16: Require the following sustainable design standards as appropriate for projects located within the growth boundaries of the unincorporated communities:
 - Y. Incorporate low-water use appliances, drought tolerant landscaping and other water efficient features.
 - CC. Limit the amount of turf in yards for new residential developments to a maximum of 25 percent of the yard area.
 - DD. Require the installation of low output sprinklers, such as drip, soaker hoses, and microspray in new residential development whenever possible.

- EE. Use recycling systems for chillers and cooling towers.
- FF. Demonstrate adherence to LEED Neighborhood Design Standards or the equivalent, for new development, including Specific Plans.
- Policy CC-3.5: In addition to Table LU-10, achieve the following within the Dunnigan Specific Plan growth boundary:
 - G. Preserve the Tehama-Colusa Canal as Dunnigan's western boundary and as an important source of future water. Plan for development outside of the federal-designated critical habitat for the California tiger salamander, located to the northwest. Maintain Bird Creek as Dunnigan's southern boundary and as an important riparian habitat and open space area. Maintain the County Road 99W (railroad tracks) as the eastern boundary, with the exception of Old Town.
- Policy CC-4.11: Require site specific information appropriate to each application to enable informed decision-making, including but not limited to the following: biological resources assessment, noise analysis, traffic and circulation assessment, air quality calculations (including greenhouse gases), cultural resources assessment, geotechnical study, Phase One environmental site assessment, title report, storm drainage analysis, flood risk analysis, water supply assessment, sewer/septic capacity and service analysis and fiscal impact analysis.
- Policy CC-4.12: Require "green" design, construction and operation including:
 - A. Site planning sensitive to the natural environment.
 - B. Efficiency in resource use (including energy, water, raw materials and land).
 - C. Building reuse and adaptive reuse.
 - O. Water reuse systems.
 - P. Other systems to capture energy sources that would otherwise be wasted.
- Policy CC-4.32: Emphasize the use of regionally native drought-tolerant plants for landscaping where appropriate.

Public Facilities and Services Element

- Policy PF-12.6: Provide the public facilities and services necessary to meet community needs, in an efficient manner.
- Policy PF-12.10: Ensure that all basic community services (e.g. septic/sewage, water, drainage, roads, power, parks, schools, libraries, etc.) for new planned development, including all Specific Plan areas, are made available consistent with the target service levels established in this General Plan, prior to or concurrent with need, to the extent feasible.
- Policy PF-12.14: Identify appropriate locations for infrastructure sites, in consultation with the Community Service Districts, as early in the planning process as possible.

Agriculture and Economic Development Element

- Policy AG-2.1: Protect areas identified as significantly contributing to groundwater recharge from uses that would reduce their ability to recharge or would threaten the quality of the underlying aquifers.
- Policy AG-2.2: Preserve water resources for agriculture, both in quantity and quality, from competition with development, mitigation banks and/or interests from outside of the County.
- Policy ED-2.4: Support the development of adequate infrastructure for economic development, including communications and information technology, water supply, wastewater treatment, roadways and trails
- Policy ED-5.10: Require the re-use of processed water for landscaping and other appropriate activities, where feasible.

- Action ED-A31: Create incentives for businesses that reduce energy and water usage.

Conservation and Open Space Element

- Policy CO-5.1: Coordinate with water purveyors and water users to manage supplies to avoid long-term overdraft, water quality degradation, land subsidence and other potential problems.
- Policy CO-5.2: Support projects that provide reliable and sustainable surface water from a variety of energy efficient sources. Sources should be sufficient to serve existing and planned land uses in prolonged drought periods and protect natural resources and surface water flows.
- Policy CO-5.3: Strive to manage the County's groundwater resources on a sustainable yield basis that can provide water purveyors and individual users with reliable, high quality groundwater to serve existing and planned land uses during prolonged drought periods.
- Policy CO-5.4: Support educational programs to educate the public about practices and programs to minimize water pollution and reduce water usage.
- Policy CO-5.5: Integrate balanced water management programs that emphasize multiple benefits and balance competing needs into all aspects of the planning and development process.
- Policy CO-5.9: Within the Delta Primary Zone, ensure compatibility of permitted land use activities with applicable, properly adopted water policies of the Land Use and Resource Management Plan of the Delta Protection Commission.
- Policy CO-5.10: Encourage water purveyors to develop plans for responding to droughts and the effects of global climate change, including contingency plans, the sharing of water resources to improve overall water supply reliability, and the allocation of water supply to priority users.
- Policy CO-5.11: Facilitate and encourage the development of new reliable future sources of supply consistent with local land use plans and regional water needs, including the completion of the Tehama-Colusa Canal.
- Policy CO-5.14: Require proposals to convert land within or near areas identified as having a moderate to very high recharge capability to uses other than agriculture, open space, or habitat to demonstrate that groundwater recharge will not be significantly diminished.
- Policy CO-5.15: Encourage new development and redevelopment to use reclaimed wastewater, where feasible, to augment water supplies and to conserve potable water for domestic purposes.
- Policy CO-5.16: Require significant discretionary projects to demonstrate adequate long-term and sustainable water supplies by preparing a verified water supply assessment. The assessment shall demonstrate a long-term, reliable water supply satisfactory under normal and above normal rainfall conditions, as well as drought conditions.
- Policy CO-5.18: Encourage developers to build new homes to higher water-efficiency standards than already required.
- Policy CO-5.19: Strive for "water-neutral" development with new water demand offset by efficiency improvements elsewhere in the system. Require all new developments to offset new water demands to the greatest extent feasible.
- Policy CO-5.20: Encourage water purveyors to adopt conservation pricing strategies for existing and new development.
- Policy CO-5.24: Support the efforts of Davis, Woodland and UC Davis to acquire surface suppliers from the Sacramento River for domestic water uses.
- Policy CO-5.25: Provide financial and regulatory incentives for the installation of water conservation measures for agriculture.

- Policy CO-5.26: Encourage the development of groundwater management plans pursuant to the State Groundwater Management Act (Sections 10750-10756 of the California Water Code) for all regions of the County.
- Policy CO-5.27: Encourage the Water Resources Agency to implement and regularly update the Integrated Regional Water Management Plan.
- Policy CO-5.28: Vigorously protect all water rights related to lands within Yolo County, including areas of origin, riparian water rights, and other existing water rights.
- Policy CO-5.29: Anticipate and adapt to changes in the amount and timing of water availability due to predicted effects of global warming.
- Policy CO-8.6: Undertake an integrated and comprehensive approach to planning for climate change by collaborating with international, national, State, regional, and local organizations and entities.
- Action CO-A69: Collaborate with the Water Resources Agency to collect data from public water suppliers and other water users which use groundwater sources to monitor and report groundwater levels and yields, where appropriate, to manage long term aquifer conditions.
- Action CO-A70: Work cooperatively with water purveyors and with other land use planning agencies to share data on water supply availability, anticipated demand, land use, and population projections.
- Action CO-A71: Create a central database for all jurisdictions within the County of proposed, pending, and approved development activity to be used in cumulative analyses and water supply assessments.
- Action CO-A72: Work with water purveyors in the County to plan for possible changes to water supply and quality resulting from global warming.
- Action CO-A75: Coordinate with local water purveyors to develop a conjunctive use program, consistent with the Integrated Regional Water Management Plan, to make the most efficient use of surface and groundwaters.
- Action CO-A76: Ensure the collection and maintenance of data on water use, water supplies, and water quality to avoid long-term overdraft, water quality degradation, land subsidence and other potential groundwater problems.
- Action CO-A78: Work with local water purveyors to develop and implement urban and agricultural water management plans to provide a 20 percent improvement in water use efficiency throughout the County by 2030.
- Action CO-A81: Adopt a Water Efficient Landscape Ordinance to require greater use of regionally native drought-tolerant vegetation, limitations on the amount of turf in residential development, computer controlled irrigation systems, and other measures as appropriate. (Policy CO-5.2, Policy CO-5.3, Policy CO-5.4)
- Action CO-A88: Encourage roof catchment and the use of rainwater for non-potable uses to reduce the need for groundwater. (Policy CO-5.1, Policy CO-5.2, Policy CO-5.3, Policy CO-5.4)

d. Impacts and Mitigation Measures. This section discusses potential impacts to water supply resources and infrastructure that could result from build-out of the Draft General Plan and identifies mitigation measures, if appropriate.

(1) **Significance Criteria.** The Draft General Plan would have a significant impact related to water supply and infrastructure if development would:

- Result in increased demand for water in excess of available supply.

- Exceed the capacity of existing or planned water storage, conveyance, distribution, and treatment facilities.
- Require or result in construction of new water facilities, or expansion of existing facilities, resulting in significant environmental effects.
- Reduce groundwater supplies, or interfere with groundwater recharge, such that there would be a substantial decline in the groundwater available for existing or future groundwater users.

(2) **Impacts Analysis.** The following section provides an evaluation and analysis of the potential impacts associated with implementation of the Draft General Plan policies for each significance criteria listed above.

Result in Increased Demand for Water in Excess of Available Supply. Upon build-out of the approximately 14,798 additional dwelling units allowed under the Draft General Plan, unincorporated Yolo County's population would increase by approximately 41,435. In addition, the Draft General Plan allows 3,372 acres of commercial and industrial development that includes approximately 2,516 acres of commercial and industrial development and 854 acres of agricultural commercial/industrial uses to be added in the unincorporated County (Table IV.H-3). As previously described, most domestic water in unincorporated County is obtained from groundwater sources while agriculture relies upon surface water. Farmers rely on groundwater for approximately 40 percent of their supply in a normal year and rely more heavily on groundwater during drought years.⁵⁶ Based on these water use patterns, at build-out of the Draft General Plan the demand for groundwater in unincorporated County is expected to increase during average years while the demand for surface water would decrease. The impact of build-out of the Draft General Plan on the groundwater supply resource is discussed below.

At build-out, the Draft General Plan could convert approximately 9,072 acres of agricultural land within the unincorporated County to other uses. These uses include residential development, and non-agricultural industrial and commercial development, and open space. Additionally 5,684 acres of more intense agricultural development is assumed including farm dwellings and out-buildings, agricultural industrial operations, and agricultural commercial facilities. Under the Draft General Plan, 4,738 acres of agricultural land is designated for urban growth⁵⁷ (i.e., residential, commercial and industrial), 4,103 acres would be acquired for open space, and 221 acres would be occupied by trails and roadway widenings and other improvements. Some of this development (3,285 acres of urban growth) will be addressed in future Specific Plans for the Dunnigan, Knights Landing, Madison, and Elkhorn areas.

⁵⁶ Water Resources Association of Yolo County, 2007. *Integrated Regional Water Management Plan: Model Policies for Water Resources for the Yolo County General Plan.*

⁵⁷ Urban growth includes all land uses except agriculture and open space and would be located within the community area growth boundary.

Table IV.H-3: Projected 2030 Water Demand (gpd)

Town	Additional Multi-Family Dwelling Units ^{a,c}	Additional Single Family Dwelling Units ^{a,b}	Multi-Family Water Demand (du x 521) ^d	Single Family Water Demand (du x 728) ^d	Total Residential Water Demand (Single Family + Multi-Family)	Additional Commercial /Industrial Acreage	Commercial /Industrial Water Demand (acres x 2,598) ^d	Total Water Demand
Capay	0	53	0	38,584	38,584	127.6	331,505	370,089
Clarksburg	0	22	0	16,016	16,016	103	267,594	283,610
Dunnigan	975	7,306	507,975	5,318,768	5,826,743	790.5	2,053,719	7,880,462
Esparto	64	1,442	33,344	1,049,776	1,083,120	53.3	138,473	1,221,593
Knights Landing	240	1,173	125,040	853,944	978,984	51.1	132,758	1,111,742
Madison	250	1,246	130,250	907,088	1,037,338	182.6	474,395	1,511,733
Monument Hills	0	25	0	18,200	18,200	18.7	48,583	66,783
Yolo	0	56	0	40,768	40,768	19.9	51,700	92,468
Zamora	0	14	0	10,192	10,192	29.8	77,420	87,612
Remaining Unincorporated ^e	0	1,932	0	1,406,496	1,408,428	1,995.80	5,185,088	6,591,584
Total	1,529	13,269	796,609	9,659,832	10,456,411	3,372	8,761,235	19,217,676

^a Assumes remaining dwelling units allowed under the build-out under the 1983 General Plan plus new units added by the Draft General Plan.

^b For the purposes of this analysis, R-Rural, R-Low, and R-Med are assumed to allow only SF units.

^c For the purposes of this analysis, R-High is assumed to allow only MF units.

^d Water demand for single family and multi-family residential use is based on values provided in the Yolo County Improvement Standards, 5 August, 2008. While Yolo County assumes a water demand factor of 2,562 gpd/acre for industrial development, the commercial water demand factor of 2,598 gpd/acre was used for all commercial, industrial, and agricultural commercial/industrial acreage since the difference between the two rates is not substantial.

^e Includes the following areas of the County: Elkhorn; County Airport; I-505/CR14 or 12A; Davis Area, Winters area; Woodland area; and other incorporated areas of the County.

Source: LSA Associates, Inc., 2009, and Yolo County, 2008. *Standard Specifications and Detail, Section 8 Water Systems.*

Future water demands are based on the number of additional (single-family and multi-family) dwelling units and additional acres of commercial, industrial, and agricultural commercial/industrial uses occurring under build-out of the Draft General Plan as shown in Table IV.H-3. Using the County's water demand factors from the Improvement Standards,⁵⁸ total urban development at build-out of the Draft General Plan in 2030 would increase total water demand in Yolo County by 19,217,676 gpd (approximately 21,500 acre-feet per year).

The greatest amount of growth at build-out is projected to occur in Dunnigan. As shown in Table IV.H-3, build-out of the Draft General Plan would increase water demand in Dunnigan by up to approximately 7,880,462 gpd. In Dunnigan, all potable water is currently obtained from private wells. As part of the Specific Plan process, a new community water system would be required to serve new growth. In addition to the use of wells, surface water supplies could be obtained from the Tehama-Colusa Canal which would require an agreement with the Dunnigan Water District, which currently supplies only agricultural water. Policy CC-3.5G requires the preservation of the Tehama-Colusa Canal as an important future source of water.

⁵⁸ Yolo County Department of Planning and Public Works, 2008. County of Yolo Improvement Standards, 5 August.

In the other areas of unincorporated County, water demand would also increase at build-out of the Draft General Plan. As shown in Table IV.H-3, additional development in Capay would increase water demand by approximately 370,089 gpd, in Clarksburg additional water demand would be approximately 283,610, in Monument Hills additional demand would be approximately 66,783, in Yolo additional demand would be approximately 92,468, and in Zamora additional demand would be approximately 87,612. Development in the remaining portions of the unincorporated County would result in water demand of approximately 6,591,584 gpd. In Yolo, since the community wastewater system could serve an addition 300 connections, build-out of the Draft General Plan would not exceed the capacity of the water system. However, in many other areas, including Clarksburg, Monument Hills, Zamora, and the remaining portions of unincorporated County, water is obtained through individual wells. Any new development at densities above one unit per acre would require new community water systems in these areas.

Existing agricultural and open space uses use water and build-out of the Draft General Plan would result in the conversion of about 5,592 acres of these uses to urban uses. There would be a net change in water demand and the ability to manage water resources associated with the conversion of agricultural lands to other land uses. The Dunnigan Water District (DWD) has identified that approximately 2,075⁵⁹ acres would be converted to non-agricultural uses, which would result in a loss of 2,000 to 3,000 acre-feet a year of water sales to the DWD.⁶⁰ Future options for the DWD include becoming a wholesaler of water to new development in Dunnigan or annexing a portion of the Yolo-Zamora Water District.⁶¹ Neither of these alternatives would require additional water supplies. However, it is unknown if either of these options would be viable.

Determination of the significance of the effect of projected urban growth on County-wide water demands depends on whether urban water use is greater or less than irrigated agricultural use on an acre-for-acre basis. A 1992 study⁶² estimated that the water demand to serve an urban area (i.e., the City of Davis) with an average density of 3.9 units per acre (using 2005 data, 24,832 units divided by 6,355 acres of incorporated area) was approximately 2.3 feet of water per acre, whereas the average annual applied water use for agricultural uses in Yolo County was estimated to be approximately 2.6 feet per acre. The target average density of residential development in the Specific Plan areas of the Draft 2030 General Plan (where 98 percent of the residential build-out would occur) that have been planned using smart growth principles, is eight dwelling units per acre. Therefore, the higher densities in the Specific Plan areas would generally result in less water being required.⁶³ However, one must consider not only the total water consumption, but relative contributions of groundwater and surface water.

⁵⁹ In Dunnigan the acres of new growth are 1,256 acres of residential uses+ 791 of commercial/industrial + 28 acres of roadway improvements.

⁶⁰ Hendrix, Donita, 2008. op cit.

⁶¹ Ibid.

⁶² Jenkins, Mimi. 1992. *Yolo County California's Water Supply System, Conjunctive Use Without Management*, University of California Davis Department of Civil and Environmental Engineering. September.

⁶³ Residential density would increase by 400 percent, resulting in a 5 percent reduction for every 100 percent increase.

The net groundwater demand under the Draft General Plan is the difference between the groundwater currently consumed by agriculture and the projected future water demand by new uses allowed by the Draft General Plan on former agriculture land. The average water consumption for various Yolo County agricultural crops is summarized in Table IV.H-2. The annual water consumption is a range between 0.89 and 5.89 acre-feet/acre, with most crops using between 1 and 4 acre-feet/acre; the median use is approximately 3 acre-feet/acre. Based on these values the current annual water use on the agriculture lands that would be converted to other uses under the Draft General Plan is between 15,000 and 60,000 acre-feet, with a median value of approximately 45,000 acre-feet. Applying the assumption that 40 percent of agriculture irrigation water is obtained from groundwater, median values of approximately 18,000 acre-feet of groundwater and 27,000 acre-feet of surface water are currently consumed annually. Assuming all of the water to sustain future development would be obtained from groundwater, future annual demand would exceed current groundwater demand by about 3,500 acre-feet (less than 0.5 percent of the County's total annual consumption of 915,000 to 927,000 acre-feet) within the areas to be developed.

While urban uses may use less total water per acre (albeit more groundwater) than agriculture, the ability to manage water demands upon the conversion to urban uses would be reduced because urban water demand is constant and year round, whereas agricultural uses (especially field crops) peaks at certain times of the year or a field can be fallowed during a drought. Furthermore, field crops allow for more flexibility than "permanent" crops that take many years to mature (e.g., vineyards and orchards) when managing water supplies because not irrigating permanent crops would result in a significant economic loss to the farmer.

Specific Plans are required to be prepared for growth identified in Dunnigan, Knights Landing, Madison, and Elkhorn (per Policy CC-3.1). The specific plans will address both proposed new areas of development and existing areas designated for development. The preparation of these Specific Plans within the County as well as the community plans and specific plans for other areas where growth is targeted will require environmental review and CEQA compliance as part of the entitlement process. The Specific Plans, and the associated environmental review documents, must identify water sources and supplies and ensure they are available concurrent with the new growth being proposed and allowed under the Draft General Plan. Table LU-10 in the Draft General Plan identifies the provision or expansion of water services as a minimum standard for infrastructure in the Specific Plan areas.

For individual projects that meet the thresholds established in SB 610 (a 500 unit residential development, or its equivalent, or a project that would increase in the number of the public water system's existing service connections by 10 percent.) preparation of a water supply assessment (WSA) would be required to ensure that sufficient water was available to service the project. WSAs would be required for the following specific plan areas and community areas based on development allowed under the Draft General Plan: Dunnigan (8,281 dwelling units); Knights Landing (1,413 dwelling units); Madison (1,496 dwelling units); and Esparto (1,506 dwelling units). In addition, a WSA might be required for commercial and industrial uses in Elkhorn associated with development on the 305 acres of commercial and industrial use allowed under the Draft General Plan. WSAs would be completed for Dunnigan, Knights Landing, Madison, and Elkhorn during the Specific Plan process. In Esparto, Clarksburg and other areas where proposed development would meet the thresholds established in SB 610, a WSA would be required.

Throughout the County, but especially in Dunnigan where most growth would occur, the County has incorporated a framework of policies that require smart growth (per Policy CC-2.16) and “green” design, construction and operation and as appropriate for projects located within the growth boundaries (per Policy CC-4.12). These policies emphasize sustainable design standards, compact development within growth boundaries, a jobs/housing balance, low energy use, and a reduction of vehicle miles traveled. Implementation of these policies will be a key component in achieving a reduction in water use as, Policy CC-2.16 requires low water use appliances; drought tolerant landscaping and other water efficient features; limits the maximum amount of turf to 25 percent of the yard area; requires the installation of low output sprinklers, and the use of water recycling systems for chillers and cooling towers. For new development, Policy CC-4.12 requires efficiency in water use, reduction in water use for buildings and landscaping, and water reuse systems. Incorporation of these smart growth practices has been shown to lower water use.

Other policies in the Draft General Plan would reduce impacts associated with increased water demand by requiring new development to demonstrate adequate long-term water supplies (Policy CO-5.16), to use higher water efficiency (Policy CO-5.18), to use reclaimed wastewater, where feasible, to augment water supplies and to conserve potable water for domestic purposes (Policy CO-5.15), and to strive for water-neutral development (Policy CO-5.19). In addition, implementation of the Draft General Plan policies listed above would reduce impacts associated with the increased demand for water by encouraging a reduction of water use through water conservation techniques, educational programs, and conservation pricing strategies (Policies CO-5.5, CO-5.4, and CO-5.20), developing new reliable future sources of supply (Policies CO-5.2 and CO-5.11), using reclaimed wastewater to augment water supplies (Policy CO-5.15), striving to maintain the County’s groundwater resources on a sustainable yield basis (Policy CO-5.3), and by developing plans for responding to droughts (Policy CO-5.10).

Impact UTIL-1: Build-out of the Draft General Plan may result in a demand for water in excess of available groundwater supply. (S)

Although implementation of the policies described above may reduce some of the adverse environmental impacts associated with the increased demand for water in the County, there is uncertainty about the capacity of the groundwater water supply. Recent depletion and/or contamination of groundwater supplies in certain areas such as Dunnigan suggest that groundwater availability may be compromised in the future. In addition, the lack of direct County jurisdiction over public water supplies in the region results in a level of uncertainty about the adequacy of future supplies in unincorporated areas. Implementation of the following mitigation measure would reduce this impact but not to a less-than-significant level.

Mitigation Measure UTIL-1a: The Draft General Plan shall be amended to include the following new policy in the Land Use and Community Character Element.

Policy CC-#: As part of the Dunnigan Specific Plan process, establish and implement construction criteria, infrastructure standards, landscaping requirements, etc. to limit water use under normal conditions to a specified daily maximum. Use that threshold for purposes of sizing the community water system.

Mitigation Measure UTL-1b: Implement Mitigation Measure LU-2b that modifies Policy CC-4.11 and requires site-specific technical information (including a water supply assessment) be provided, subject to site conditions and as determined by the County lead department, to enable informed decision-making by the County regarding site specific issues for individual projects.

Even with implementation of Draft General Plan policies and this mitigation measure, groundwater overdraft could still occur because the new groundwater resources management program would not have the regulatory authority to limit groundwater withdrawal from private water supply wells. This impact is significant and unavoidable. (SU)

Exceed the Capacity of Existing or Planned Water Storage, Conveyance, Distribution, and Treatment Facilities. Concurrent with the increase in demand for groundwater supply to serve the new population and employment growth associated with build-out of the Draft General Plan, an increase in water infrastructure, including storage, conveyance, distribution, and treatment facilities, would be required. Areas that are outside of CSD boundaries or areas that do not have a community water system (i.e., that are within CSAs) would either need to be served through annexation of additional properties into the CSD or would require the development of a new community water system. Portions of the County where future growth would occur within existing CSDs would obtain water from those suppliers. Some CSDs would need to expand their facilities to accommodate growth.

The Knights Landing CSD, Madison CSD, and Esparto CSD would need to expand or upgrade their facilities to service new growth in their districts at build-out of the Draft General Plan.^{64,65} In the Knights Landing CSD, the demand would exceed the capacity of existing water supply infrastructure. An upgraded water system with sufficient pressure to support required fire flow is needed to serve new development. In addition, if additional wells are needed in the future, it is recommended that they be drilled deeper in order to produce higher quality water and to reduce the possibility of overdraft and subsidence.⁶⁶ In the Madison CSD, the current delivery system is inadequate to handle the expansion of facilities to support new growth. New wells, storage tanks, and improved water delivery infrastructure would be needed to serve growth allowed under the Draft General Plan.⁶⁷ In Esparto CSD, new water distribution facilities would be required to serve the new growth areas.

New water demand to serve the growth projected to occur in Dunnigan would require a new community water system and water supply infrastructure that could be based on wells.⁶⁸ It is likely that wells to support the new growth would need to be drilled deeper and be sealed where they pass through the shallower aquifer. An alternative to the use of wells is surface water supplies from the Tehama-Colusa Canal. If agreements for additional surface water supplies are obtained, new treatment, conveyance, storage and distribution systems would need to be developed.

⁶⁴ Design, Community & Environment, 2006. op cit.

⁶⁵ Refsland, Leo, 2008. op cit.

⁶⁶ Design, Community & Environment, 2006. op cit.

⁶⁷ Ibid.

⁶⁸ Hendrix, Donita, 2008. op cit.

Per Policy CC-3.1, specific plans must be prepared for Dunnigan, Knights Landing, Madison and Elkhorn before any development is allowed to occur in the specific plan areas. The specific plans must detail how new or expanded water systems would be provided to serve the new growth being proposed and allowed under the Draft General Plan. This planning process and environmental review would ensure that water systems are provided concurrent with new growth, as required by policies CC-3.5, CC-3.6, CC-3.7, CC-3.8, CC-3.9, and CC-3.10.

Table LU-10 of the Draft General Plan (included as Table IV.G-2 in Chapter IV.G, Public Services), provides community planning guidelines for additional growth, as supported by Policies CC-3.5, CC-3.6, CC-3.7, CC-3.8, CC-3.9, CC-3.10, and PF-12.10. As noted on the table and per Policy PF-12.10, a new municipal water system is required to be made available prior to or concurrent with need to serve growth in Dunnigan and Elkhorn; an upgraded water system for commercial fire flow is required to serve Knights Landing; and an upgraded water system is required to serve the entire town of Madison.

Implementation of the following Draft General Plan policies would reduce some of the environmental impacts associated with need to build or expand water supply facilities in other towns and areas of Yolo County where growth would occur: LU-3.6; LU-5.5; LU-5.6; CC-2.2; PF-12.6; PF-12.10; PF-12.14; CO-5.2; CO-5.3; CO-5.4; CO-5.5; CO-5.9; CO-5.11; CO-5.15; CO-5.16; CO-5.18; and CO-5.19. Implementation of the Draft General Plan policies listed above would reduce impacts associated with the increased demand for water by: encouraging a reduction of water use through water conservation techniques and educational programs (Policies CO-5.5 and CO-5.4); developing new reliable future sources of supply (Policies CO-5.2 and CO-5.11); using reclaimed wastewater to augment water supplies (Policy CO-5.15); striving to maintain the County's groundwater resources on a sustainable yield basis (Policy CO-5.3); requiring new development to demonstrate adequate long-term water supplies (Policy CO-5.16); to use higher water efficiency standards (Policy CO-5.18); and to strive for "water-neutral" development (Policy CO-5.19).

The policies identified above, including but not limited to planning process requirements that new or upgraded water systems be developed concurrent with growth, would avoid or reduce the potential impact by ensuring that adequate water storage, conveyance, distribution, and treatment facilities would be available to serve the build-out of the Draft General Plan. Implementation of the policies would reduce the potential significant environmental effects associated with exceeding system capacities to a less-than-significant level.

Require or Result in Construction of New Water Facilities, or Expansion of Existing Facilities, Resulting in Significant Environmental Effects. The demand for water supplies to serve new growth under build-out of the Draft General Plan would require new or expanded water supply facilities and infrastructure, the construction of which could result in adverse environmental effects. Implementation of Policy CC-4.11 (as amended per Mitigation Measure LU-2b) is key to reducing environmental impacts associated with building new or expanding water supply facilities in other community areas within Yolo County where growth would occur. This policy requires site specific technical information be provided for individual projects, subject to site conditions and as determined by the County lead department, to enable informed decision-making by the County regarding site specific issues would reduce for individual projects. The following Draft General Plan policies also serve to reduce impacts associated with the construction or expansion of new water facilities by

minimizing conflicts and/or incompatibilities between land uses (Policy LU-3.6), ensuring that public facilities, services and amenities are distributed equitably and in locations that enhance the quality of life for the broadest number of County residents (Policy LU-5.5), providing the public facilities and services necessary to meet community needs (Policy PF-12.6), ensuring that all basic community services are provided to or concurrent with new planned development (Policy PF-12.10), identifying appropriate locations for infrastructure sites (Policy PF-12.14), ensuring that the appropriate base level of rural services and infrastructure for existing development in each community is required in connection with new development (Policy CC-2.2), reducing activities that encroach on nature through planning for compact and clustered residential development and the reduction or elimination of impervious paving materials; and ensuring compatibility of land use activities within the Delta Primary Zone (Policy CO-5.9). Implementation of these policies would reduce the potential for significant environmental effects to occur in relation to the construction or expansion of water systems to a less-than-significant level.

Reduce Groundwater Supplies or Interfere with Groundwater Recharge. Build-out under the Draft General Plan would result in additional demands on available groundwater resources. Aquifer overdraft (or overpumping) can cause permanent damage to an aquifer if the aquifer materials settle, reducing its future storage capacity. In addition, overdraft has caused land subsidence at the ground surface, especially in the area east of Zamora to south to the City of Davis. New development may also result in covering recharge areas with impervious surfaces, reducing aquifer recharge.

At build-out of the Draft General Plan, new development could result in a slight increase of up to approximately 3,500 acre-feet per year of groundwater, which represents approximately 40 percent of the remaining average-year groundwater supply in the County (9,000 acre-feet per year). While this increase is less than the remaining total supply, build-out of the Draft General Plan would concentrate development in a few areas of the County where groundwater supply has been an issue. Overdrafting of groundwater, which has led to subsidence issues, has been a problem in the Upper Cache Creek watershed and the Dunnigan Hills region.⁶⁹ While the importing of surface waters by canals such as the Colusa Basin Drainage Canal and the Tehama-Colusa Canal, has helped to relieve the problem, data collected by the Yolo County Subsidence Network in 2003 show that there is continued subsidence throughout the County.⁷⁰ The 2003 monitoring results also show that the subsidence is highly localized, depending on soil conditions, rate and volume of groundwater extraction, and available recharge. New development associated with the build-out of the Draft General Plan would lead to increased demand for groundwater, and the majority of that demand could be supplied from groundwater sources near Dunnigan, unless alternative surface water rights were secured.

Impact UTIL-2: Build-out of the Draft General Plan could result in increased overdraft of County aquifers and a net increase in ground surface subsidence. (S)

The increase in water demand, shown in Table IV.H-3, has the potential to cause significant environmental impacts to the groundwater supply in Yolo County. The Draft General Plan includes a policy (Policy CO-5.3) that addresses groundwater resources, under which the County would “strive to manage the County’s groundwater resources on a sustainable yield basis that can provide water purveyors and individual users with reliable, high quality groundwater to serve existing and planned

⁶⁹ Yolo County Local Agency Formation Commission, 2005.op cit.

⁷⁰ Ibid.

land uses during prolonged drought periods.” However, this policy would not ensure that overpumping is discontinued.

The use of deep aquifers would address some of the issue of subsidence and existing contamination, however recharge of the deep aquifers may take thousands of years, whereas shallower aquifers may take only decades or hundreds of years to recharge. For these reasons, groundwater does not have an unlimited potential to meet the County’s domestic water needs.⁷¹ In the Dunnigan Hills region, land subsidence due to the overdraft of the shallow aquifer has been a concern, and this problem could return if overdraft of the shallow groundwater supplies continues. In addition, nitrogen contamination of the groundwater is also an existing concern in this area. In order to serve increased demand, new wells would need to be developed and would need to be drilled deeper and sealed where they pass through the contaminated shallower aquifer. Subsidence and possible aquifer overdraft have also been a concern east of Zamora and in the Davis area. The impacts related to groundwater quality, recharge, and ground surface subsidence are addressed in Section IV.K, Hydrology and Water Quality (Impact HYD-1).

In addition, while the County as a whole would likely have enough water supplies during normal years, there would not be enough water to supply demand generated by the Draft General Plan during multiple dry years, as recharge of the groundwater would not be possible. Under existing conditions there may be a shortfall of water supplies during drought conditions, and the additional demand generated by the Draft General Plan would make this issue worse.⁷²

Implementation of the following Draft General Plan policies would help to reduce some impacts related to the increased use of groundwater supplies that would occur as a result of build-out of the Draft General Plan: CO-5.1; CO-5.3; CO-5.4; CO-5.5; CO-5.10; CO-5.11; CO-5.14; CO-5.15; CO-5.16; CO-5.18; CO-5.19; and CO-5.20.

As previously described, several of the policies would reduce some impacts associated with increased demand for groundwater supplies by requiring new development to demonstrate adequate long-term water supplies (Policy CO-5.16), that would convert land as having a moderate to very high recharge capability to demonstrate groundwater recharge will not be significantly diminished (Policy CO-5.14), to use higher water efficiency (Policy CO-5.18), to use reclaimed wastewater, where feasible, to augment water supplies and to conserve potable water for domestic purposes (Policy CO-5.15), and to strive for water-neutral development (Policy CO-5.19). In addition, implementation of the Draft General Plan policies listed above would reduce impacts associated with the increased demand for groundwater water by coordinating with water purveyors and water users to manage supplies to avoid overdraft (Policy CO-5.1), encouraging a reduction of water use through water conservation techniques, educational programs, and conservation pricing strategies (Policies CO-5.5, CO-5.4, and CO-5.20), developing new reliable future sources of supply (Policies CO-5.2 and CO-5.11), using reclaimed wastewater to augment water supplies (Policy CO-5.15), striving to maintain the County’s groundwater resources on a sustainable yield basis (Policy CO-5.3), and by developing plans for responding to droughts (Policy CO-5.10).

⁷¹ Design, Community & Environment, 2006. op cit.

⁷² Water Resources Association of Yolo County, 2007. op. cit.

While implementation of these Draft General Plan policies would reduce some impacts of build-out of the Draft General Plan on water supplies, there is still uncertainty regarding whether current groundwater supplies in the County are available to meet future demand. Subsidence issues throughout the County, and particularly in the Dunnigan Hills, indicate that groundwater supplies may not be adequate to serve demand. In addition, the lack of direct County jurisdiction over public water supplies and private wells in the region results in a level of uncertainty about the adequacy of future groundwater supplies in the unincorporated areas of the County. In addition, implementation of the following policies and actions, as also noted in Section IV.K, Hydrology and Water Quality, would address potential impacts related to groundwater resources: CO-5.4, CO-5.5, CO-5.12, CO-5.18, CO-5.19, CO-5.21, HS-A.9, CO-A78, CO-A80, and CO-A87. Implementation of the following mitigation measures would also reduce impacts to water supplies, though not to a less-than-significant level.

Mitigation Measure UTIL-2a: The Draft General Plan shall be amended to include the following new policy in the Land Use and Community Character Element.

Policy CC #: Create guidelines for local water providers to enact programs that promote investigations of new sustainable sources such as recycled water and graywater that match water quantity and quality to the beneficial uses and the securing of additional water rights for the water purveyors.

Mitigation Measure UTIL-2b: The Draft General Plan shall be amended to include the following new policy in the Land Use and Community Character Element.

Policy CC #: Encourage the Madison and Esparto CSDs to explore the availability of Cache Creek water via the Flood Control District. Encourage the Knights Landing CSD to explore the availability of Sacramento River water.

Mitigation Measure UTIL-2c: The Draft General Plan shall be amended to include the following new policy in the Land Use and Community Character Element.

Policy CC #: In water districts where there is insufficient water to serve new development, the County shall require new development to offset demand so that there is no net increase in demand through one or more of the following measures, as appropriate: use of reclaimed water; water catchments and reuse on site; water retention serving multiple sites; retrofits of existing uses in the district to offset increased demand; and other such means. These measures should be achieved in partnership with the applicable water district.

Mitigation Measure UTIL-2d: Implement Mitigation Measure LU-1b that amends Policy CC-3.5 regarding the Dunnigan Specific Plan process.

However, even with implementation of these mitigation measures, increased groundwater overdraft could still occur because the new groundwater resources management program would not have the regulatory authority to limit groundwater withdrawal from private water supply wells. This impact is significant and unavoidable. (SU)

2. Wastewater and On-site Wastewater Treatment Systems

This section discusses the existing wastewater systems and the use of on-site wastewater treatment systems (OWTSs) such as septic tank systems in unincorporated Yolo County, along with applicable regulations, and potential impacts resulting from build-out of the Draft General Plan.

a. Setting. This subsection provides an overview of the characteristics of wastewater, the types of facilities and systems used to treat wastewater, and wastewater systems utilized in the communities of unincorporated Yolo County, including the amount of wastewater produced under existing conditions and the available capacity of these systems.

(1) Wastewater Treatment and Disposal. Domestic wastewater is generated through the use of toilets, urinals, bathroom sinks, showers and bathtubs, kitchen sinks, garbage disposals, washing machines, and dishwashers. Wastewater generated by toilets and urinals is referred to as black water, while the other types of wastewater from residential buildings are known as grey water. Wastewater contains dissolved organic and inorganic materials, suspended solids, and microorganisms, including bacteria and viruses. Characteristics of wastewater that will be considered in this analysis include the amount or flow of wastewater produced, the type of treatment provided by on-site OWTSs or centralized treatment plants, and the amount and type of pollutant loadings contained in wastewater as it exits the treatment system.

In general, wastewater treatment in Yolo County is provided by three types of treatment systems: (1) wastewater treatment plants (WWTP), (2) on-site wastewater treatment systems (OWTSs), and (3) community wastewater treatment systems. The cities of Davis, Winters, and Woodland each have municipal WWTPs that treat wastewater generated in their respective cities. These treatment plants are able to provide primary and secondary treatment. In 2009, the City of Woodland will complete a major upgrade project to provide tertiary treatment at the WWTP in order to meet the stringent wastewater discharge standards of the State Regional Water Quality Control Board. These municipal systems are not available to serve development in the unincorporated parts of the County unless the areas are within the sphere of influence of the cities and annexation is anticipated. For example, the Davis WWTP also serves the unincorporated communities of El Macero, Willowbank, North Davis Meadows, Jury Industrial, and Royal Oaks because these areas are within the City of Davis sphere of influence. Similarly, Woodland serves some of the developed areas within the North Woodland community area.

While a few unincorporated communities are served by a municipal wastewater treatment system and WWTP, the majority of the wastewater generated in the unincorporated areas of the County is treated through the use of OWTSs. OWTSs generally rely upon septic tanks and on-site disposal using leach fields and other types of soil absorption systems. Private on-site septic systems are the most common method of wastewater storage and treatment in the unincorporated areas of the County. The use of OWTSs usually requires lot sizes of 0.8 to 1 acre, and where wells are used for domestic water supplies, 1.5-acre lots may be necessary to meet County requirements. It is estimated that the unincorporated areas of Yolo County contain about 6,700 OWTS and these tanks yield approximately

1.5 to 2 million gallons of septic waste per year.⁷³ OWTS must be pumped periodically to remove the settled solids and sludge in order to avoid system failure and local contamination. The waste is pumped into septic trucks and then taken to a disposal facility. Currently, there are no disposal facilities located in Yolo County. In California, municipal wastewater treatment plants will accept wastes from OWTS, but many wastewater treatment plants in and around Yolo County have limited space or stopped accepting septic waste because the cost and liability of processing the waste has significantly increased.⁷⁴

Currently, haulers take septic waste generated in Yolo County to Vallejo Regional WWTP in Solano County or to a private treatment facility located in the City of Lincoln in Placer County.⁷⁵ The County has considered disposal at the Yolo County Central Landfill as a possible location for septic waste. However, the Class 2 landfill leachate ponds were not designed to handle the additional septic waste volume, and construction of a new pond was considered to be too costly in 2006. The landfill has not accepted any off-site generated liquid waste since 1998. Another option the County is considering for disposing of septic waste in the future is the construction of a special seepage treatment facility similar to a small wastewater treatment facility at the landfill or another site in the County, which would accept both septic waste and on-site generated leachate.⁷⁶

Community wastewater treatment systems have been developed to serve unincorporated areas that have a higher concentration of development, generally, over one unit per acre. Community systems treat wastewater more efficiently than OWTSs and allow for lower unit costs, the use of advanced technologies that are able to attain a higher level of treatment, more control over desired location and types of developments, and more site planning flexibility. All existing community systems are managed by a County Service Area (CSA) or a Community Service District (CSD). The wastewater collection, treatment, and disposal systems within each the unincorporated area of the County are discussed below.

(2) Wastewater Collection Systems. Table IV.H-4 summarizes the characteristics of the wastewater collection, treatment and disposal method utilized in the unincorporated community areas of Yolo County, which are described in greater detail below.

Clarksburg. Clarksburg does not have a community wastewater system. Instead, wastewater is collected in OWTS which, due to the high local water table, are required to be constructed above ground level (e.g., using a mound system). Based on the density ranges for Residential Rural (RR), Residential Low (RL), and Residential Medium (RM) land use designations, only the RR and the lower end of the RL designation could be developed in Clarksburg because OWTSs require lot sizes of 0.8 to 1 acre. Any new residential development in the RM zones would require that a new shared community system be developed to provide centralized wastewater treatment.

⁷³ Yolo, County of, 2006. Planning, Resources, and Public Works Department. *Memorandum: Consider Recommendations on the Options for Wastewater Treatment Sludge and Septic Waste Disposal (No General Fund Impact)*. Website: www.yolocounty.org/org/BOS/agendas/2006/080106/305.pdf. August 1.

⁷⁴ Ibid.

⁷⁵ Ibid.

⁷⁶ Ibid

Table IV.H-4: Wastewater Systems in Unincorporated Yolo County

Unincorporated Area(s)	Wastewater Treatment System Conditions
Clarksburg	No community wastewater system. OWTS. Due to high local water table, septic systems require special design (e.g., above-ground mounded systems).
Dunnigan	No community wastewater system. Nine private wastewater pond treatment systems. Ponds do not receive secondary treatment.
Esparto	Community clay pipe system managed by a CSD. Two additional ponds are being constructed; treatment plant will be at capacity for currently planned construction.
Knights Landing	Community wastewater system, managed by a CSD, is currently at capacity. However, nine more acres of treatment and disposal ponds are planned. Land is available for additional expansion.
Madison	Community clay pipe system managed by the Madison CSD. System is severely over-capacity. The Central Valley Regional Water Quality Control Board has issued a cease-and-desist order pending improvements and a revenue plan. Planned improvements will meet current demand.
Monument Hills	No community wastewater system except for Wild Wings development, which has a tertiary treatment facility that re-uses wastewater for golf course irrigation, and is managed by a CSA. Mostly private OWTS and wells.
Yolo, Zamora, Willow Oak, West Kentucky, Binning Farms, Patwin Road, West Plainfield, Willowbank	No community wastewater system. Private and individual OWTS.
El Macero, North Davis Meadows, and Royal Oaks	Wastewater system provided by City of Davis. The Davis sewer plant needs to be upgraded to meet increasingly stringent discharge requirements for Yolo Bypass.

Source: Yolo County, 2008. Draft 2030 Countywide General Plan. September.

Dunnigan. Dunnigan does not have a publicly managed wastewater treatment system, and the majority of residents utilize private OWTSs to collect and treat wastewater. The town also has nine small, private, on-site wastewater pond treatment systems operated by commercial and industrial facilities and the County Fair Estates Mobile Home Park. The County Fair Estates system does not have capacity to serve commercial development along County Road 8. In addition, these ponds provide minimal and unreliable treatment, fail to achieve secondary treatment levels, and have the potential to contaminate the groundwater.

Esparto. The Esparto CSD, was formed in 1969 and provides the town of Esparto with drinking water and wastewater services. The existing wastewater system consists of 6-, 8-, and 10-inch clay pipes within which sewage flows under gravity to lift pumps at the head of the wastewater treatment plant (WWTP). The aging and cracking clay pipes allow infiltration and inflow of stormwater into the sewer system. The inflow of drainage water into the wastewater pipe network increases total demand on the system and treatment facilities.

The WWTP treats wastewater in two facultative ponds and is disposed of in six percolation/evaporation ponds. The 28-acre WWTP is able to meet current demands, and sufficient land is available to provide additional ponds for evaporation and percolation, as well as construction of aeration lagoons. The WWTP and associated facilities has enough remaining capacity to serve

development projects currently under construction.⁷⁷ Development beyond what is currently under construction would require additional pond construction.⁷⁸

Knights Landing. The Knights Landing CSD provides wastewater services to the town of Knights Landing. Sewage is collected through a system of pipes and transported to the 30-acre Knights Landing wastewater treatment facility (WWTF), which consists of a wet lift station, and eight wastewater stabilization ponds. The WWTF uses a system of sewage treatment ponds which treat the sewage through aeration, providing a marginal level of secondary treatment prior to evaporation and percolation into the ground. The Knights Landing WWTF is currently at capacity.⁷⁹ The current average dry weather flow is approximately 80,000 gpd. However, the CSD has purchased approximately 31 acres east of the existing ponds for expansion to serve build-out of the Knights Landing Specific Plan. Construction of facilities in the expansion area would provide an additional capacity of 105,000 gpd average dry weather flow and could treat 48.4 million gallons influent flow annually. These flows are expected to be reached after the addition of 115 new homes and 39 new commercial/industrial connections which is less than the remaining development allowed under the 1983 General Plan (993 units and 100 acres of commercial/industrial uses).

Madison. The town of Madison is served by the Madison CSD, which was formed in 1966 and provides water, wastewater, and park services to the town. The Madison CSD operates seven percolated evaporation ponds on 17 acres and serves 500 year-round residents, with an additional 480 persons served during the harvest season. The ponds receive and treat an average dry weather inflow of 90,000 gpd.⁸⁰ Currently the Madison CSD is under a State issued cease and desist order because the CSD has failed to comply with the waste discharge requirements (WDRs) adopted by the Central Valley Regional Water Quality Control Board. Most items contained in the cease and desist order have been corrected, including the expansion of the pond system. The capacity of the expanded ponds can handle approximately 280 connections, and currently there are 237 total connections in use, and thus, a remaining capacity of 43 additional residential connections, which is less growth than allowed under the 1983 General Plan - 83 units.⁸¹ The only remaining item in the State's order that is not addressed by the Madison CSD as of 2009 is to improve the headworks, and the CSD has no plans to correct this item within the next two years.⁸²

Monument Hills. Tertiary wastewater service in the Wild Wings portion of Monument Hills is provided by the Wild Wings CSA. No additional capacity was included in the wastewater system beyond what was needed to serve the Wild Wings development. Other residential areas in the Monument Hills community area rely on OWTS for wastewater treatment. Any new development at densities above one unit per acre would require a new wastewater system.

⁷⁷ Loudon, Ron, 2009. General Manager, Esparto Community Service District. Written communication with LSA Associates, Inc. March 16.

⁷⁸ Ibid.

⁷⁹ Yolo County Local Agency Formation Commission, 2007. *Executive Officer's Report for the Snow Annexation to the Knights Landing Community Services District (LAFCO Proceeding No. 904)*. June 25. Website: www.yolocounty.org/lafco/Meetings/2007%20Information/Agenda%202007/PDF/6-25-07/Item%209.pdf

⁸⁰ Refsland, Leo, 2008. op cit.

⁸¹ Yolo, County of, 2006. op cit.

⁸² Ibid.

El Macero, Willowbank, North Davis Meadows, and Royal Oaks. Wastewater from these unincorporated communities is treated by the City of Davis WWTP. Raw sewage is collected in 42 and 48 inch trunk sewer lines, which increase to 66 inches before the line terminates three stories below the influent pumping station. After the wastewater is treated, it is discharged into Willow Slough or the Davis Wetlands. The Davis Wetlands further treats the wastewater before finally discharging it into the Yolo Bypass. The WWTP experiences an average daily dry weather flow of 5.4 million gallons per day (mgd) and 12.6 mgd wet weather flow. The plant has a capacity of 7.5 mgd, resulting in 2.1 mgd of unused capacity. The plant will need to undergo upgrades in order to meet increasingly stringent requirements of the Central Valley Regional Water Quality District to discharge into the Yolo Bypass.

Yolo, Zamora, Willow Oak, West Kentucky, Binning Farms, Patwin Road, West Plainfield, and Willowbank. There is no community wastewater service in the towns of Yolo or Zamora or the other unincorporated community areas, and OWTs provide wastewater treatment and disposal in these areas. Any additional development at densities greater than one unit per acre would require the development of new community wastewater systems. The Yolo-Zamora Water District could potentially expand their services to provide a centralized wastewater treatment system to support new growth in these areas, or a new CSA would need to be identified. Land designated for RL and RM residential development is identified within Yolo; however, a minimum of one acre is needed for on-site wastewater systems, and therefore only the lower end of the RL designation could be developed unless a community system is developed.

Other Wastewater Systems. Two municipal wastewater treatment systems serve portions of the unincorporated County. El Rio Villa is served by the City of Winters, and portions of North Woodland are served by the City of Woodland.

The Rumsey Band of Wintun Indians Cache Creek destination resort also has its own WWTP that provides tertiary treatment of wastewater in compliance with California Code of Regulations Title 22 standards for reuse.⁸³ This WWTP is not a public system, and does not serve private residences or farm facilities in the area.⁸⁴ UC Davis operates a WWTP that provides tertiary wastewater treatment to the campus, and discharges effluent to the Putah Creek.⁸⁵ The UC Davis does not serve portions of the unincorporated County.

a. Regulatory Framework. The following describes the regulatory framework related to the provision of wastewater facilities. Section IV.K, Hydrology and Water Quality, contains additional information regarding water quality regulations.

National Pollutant Discharge Elimination System. The National Pollutant Discharge Elimination System (NPDES) permit program was established by the Clean Water Act of 1972 (CWA, 33 U.S.C. Section 1251 et seq.) to regulate municipal and industrial discharges to surface waters in the United States. The discharge of wastewater to surface waters is prohibited unless an NPDES permit has been issued that allows that discharge. The NPDES permit program is overseen by

⁸³ The Rumsey Band of Wintun Indians, 2009. *Cache Creek Destination Resort Draft TEIR*. April.

⁸⁴ Ibid.

⁸⁵ UC Davis, 2005. *Campus Wastewater Treatment Plant Expansion Final Focused Tiered Environmental Impact Report*. November 14.

the U.S. Environmental Protection Agency's (EPA) stormwater program. The State of California has been authorized to administer the NPDES program within California. Starting in 1990, Phase I of the EPA's stormwater program required municipalities with populations greater than 100,000 to develop and implement stormwater management programs. In California, Phase I municipalities now have individual NPDES permits that are administered by Regional Water Quality Control Boards (Water Boards), which in Yolo County is the Central Valley Regional Water Quality Control Board (CVRWQCB).⁸⁶

Within the NPDES program, the sub-program that applies to wastewater treatment projects and activities in unincorporated Yolo County is the Municipal Program. Within this program, the CVRWQCB regulates stormwater discharges from municipal storm sewer systems (MS4s discharges) by the General Permit for Discharges of Storm Water From Small Municipal Separate Storm Sewer Systems program. This permit was issued in two phases. Under Phase One, which started in 1990, the Water Boards issued NPDES stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities. There are no medium or large MS4s in Yolo County. Phase two covered small municipalities, including non-traditional MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes. Woodland, Davis, Yolo, UC Davis, and West Sacramento and areas within their service districts are each covered under a Phase II MS4 General Permit. In the unincorporated County, only the communities of El Macero and Willowbank are subject to a Phase II MS4 General Permit due to their location in proximity to Davis and the density of residential development in these communities. Section IV.K, Hydrology and Water Quality, contains additional discussion and information regarding the NPDES permit program.

Yolo County Environmental Health Department. The development of individual on-site waste disposal systems (septic systems) is regulated by the Yolo County Environmental Health Department. The Environmental Health Department requires that a permit be applied for whenever a domestic sewage disposal system is installed, repaired, replaced or abandoned, or if leach lines are replaced or repaired. The County also investigates improper sewage disposal practices as reported by the public. The main enforcement code used by Environmental Health is ordinance 765 the Water Quality Law of the County of Yolo.

Yolo County Code. In the Yolo County Code, Title 6, Chapter 5 Sewage Disposal and Chapter 8 Water Quality provide regulations concerning the provision of public and private wastewater systems. Yolo County Code Section 6-8.603 requires a Sewage Disposal Permit for the construction, re-construction, repair, or abandonment of a septic system. The guidelines document provided by Environmental Health of Yolo County provides an extensive discussion of design parameters and requirements, including site concerns and practical guidance in permitting, system selection and sizing. Sections 6-5.610 and 6-5.611 of the code requires sewage disposal plans as a prerequisite to issuance of building permits or certificates of occupancy.

b. Draft 2030 Countywide General Plan for Yolo County. The following describes applicable wastewater Draft General Plan policies and actions.

⁸⁶ Yolo County, 2004. *Stormwater Management Program*. October.

Land Use and Community Character Element

- Policy LU-3.6: Avoid or minimize conflicts and/or incompatibilities between land uses.
- Policy LU-3.7: Maintain the compatibility of surrounding land uses and development, so as not to impede the existing and planned operation of public airports, landfills and related facilities and community sewage treatment facilities.
- Policy LU-5.5: Ensure that public facilities, services and amenities are distributed equitably and in locations that enhance the quality of life for the broadest number of County residents.
- Policy LU-5.6: Assist existing communities to obtain the services, support and infrastructure needed to thrive and be successful.
- Policy CC-2.2: Ensure that the appropriate base level of rural services and infrastructure for existing development in each community is required in connection with new development.

Public Facilities and Services Element

- Policy PF-1.1: Require discretionary projects to demonstrate adequate long-term wastewater collection, treatment and disposal capacity, including full funding for land acquisition, facility design and construction, and long-term operations and maintenance for needed wastewater treatment and disposal facilities. Where such funding is dependent upon a community vote, approval of the project by the County shall be contingent upon a successful voting outcome.
- Policy PF-1.2: Promote innovative and efficient options for sewage and septic treatment that are appropriate for the type of development to be served, existing facilities available, and administrative alternatives.
- Policy PF-1.3: Ensure that nitrates and other pollutants of concern entering the groundwater from septic disposal systems will not significantly impair groundwater quality.
- Policy PF-1.4: Encourage the use of small package wastewater systems to facilitate clustering of homes and preservation of agricultural land.
- Policy PF-1.5: Encourage the development or expansion of community wastewater treatment systems in areas with widespread septic system problems.
- Policy PF-1.6: Facilitate the extension of sewer service to nearby underserved existing unincorporated development, such as Binning Farms.
- Policy PF-1.7: Require wastewater treatment facilities that remove or destroy pathogens while minimizing or eliminating contaminated discharge.
- Policy PF-1.8: Promote 200-year flood protection for all wastewater treatment facilities.
- Action PF-A1: Establish the cost of operating and maintaining wastewater collection, treatment, and disposal systems/facilities and assign those costs proportionately to those receiving benefit, through the establishment of an appropriate special district.
- Action PF-A3: Require service hook-up for all septic users within a community when new sewer treatment facilities are made available.
- Action PF-A11: Establish a funding program to identify all septic systems and wells, both operational and non-operational, and map them into the County's Geographic Information System.
- Action PF-A13: Investigate the feasibility of a countywide septage district to collect user fees for the purpose of development and operation of a centralized facility to accept and treat septic waste from the unincorporated area.
- Policy PF-12.6: Provide the public facilities and services necessary to meet community needs, in an efficient manner.

- **Policy PF-12.10:** Ensure that all basic community services (e.g. septic/sewage, water, drainage, roads, power, parks, schools, libraries, etc.) for new planned development, including all Specific Plan areas, are made available consistent with the target service levels established in this General Plan, prior to or concurrent with need, to the extent feasible.
- **Policy PF-12.14:** Identify appropriate locations for infrastructure sites, in consultation with the Community Service Districts, as early in the planning process as possible.

Agriculture and Economic Development Element

- **Policy AG-1.11:** Protect agricultural lands from urban encroachment by limiting the extension of urban service facilities and infrastructure, particularly sewers.

c. Impacts and Mitigation Measures. This section discusses potential impacts to wastewater services and infrastructure that could result from build-out of the Draft General Plan and identifies mitigation measures, if appropriate.

(1) Significance Criteria. The Draft General Plan would have a significant impact if development would:

- Result in increases in wastewater that exceed existing or planned collection, treatment, and disposal capabilities.
- Require or result in construction of new wastewater facilities, or expansion of existing facilities, construction of which could cause significant environmental effects.
- Fail to meet wastewater treatment requirements of the Central Valley Regional Water Quality Control Board.

(2) Impacts Analysis. The following section provides an evaluation and analysis of the potential impacts associated with growth projected at build-out of the Draft General Plan for each of the significance criteria listed above.

Generate Wastewater Flows that Exceed Existing or Planned Treatment Facilities. Build-out of the Draft General Plan would result in increased urban development in unincorporated areas that would generate additional wastewater. While urban growth is planned for communities within a CSD that provides wastewater services (e.g., Esparto, Knights Landing, and Madison); only the Knights Landing CSD has plans for expansion, and all other CSDs are at or over capacity. The majority of new development under the Draft General Plan would occur in areas that are currently served by OWTSSs. The County does not currently map or quantify capacity limits of existing individual wastewater systems. Draft General Plan Action PF-A11 call for the establishment of a funding program to identify all septic systems and wells and map them into the County's GIS program.

Impact UTIL-3: Build-out of the Draft General Plan would generate wastewater flows that would exceed the capacities of existing wastewater treatment systems. (S)

Using the County's Improvement Standards to estimate wastewater generation factors, as shown in Table IV.H-5, build-out of the Draft General Plan would result in 5,121,750 gpd of wastewater from residential development, commercial and industrial uses would generate 8,334,333 gpd of wastewater, for a total of 13,456,082 gpd of additional wastewater generated at build-out of the Draft General Plan. As discussed below, the additional wastewater associated with growth would exceed the capacity of existing and planned treatment facilities in the County.

Table IV.H-5: Projected Residential 2030 Wastewater Generated at Build-out of the Draft General Plan (gpd)

Town	Additional Multi-Family Dwelling Units ^{a,c}	Additional Single Family Dwelling Units ^{a,b}	Multi-Family Wastewater (du x 300) ^d	Single Family Wastewater (du x 350) ^d	Total Residential Wastewater (Single Family + Multi-Family)	Additional Commercial /Industrial Acreage	Commercial /Industrial Wastewater (acres x 2,598) ^{d,e}	Total Wastewater Generated
Capay Valley	0	53	0	18,550	18,550	127.6	319,000	337,550
Clarksburg	0	22	0	7,700	7,700	103.0	257,500	265,200
Dunnigan	975	7,360	292,500	2,576,000	2,868,500	790.5	1,976,250	4,844,750
Esparto	64	1,442	19,200	504,700	523,900	53.3	133,250	657,150
Knights Landing	240	1,173	72,000	410,550	482,550	51.1	127,750	610,300
Madison	250	1,246	75,000	436,100	511,100	138.6	360,083	871,182
Monument Hills	0	25	0	8,750	8,750	18.7	46,750	55,500
Yolo	0	56	0	19,600	19,600	19.9	49,750	69,350
Zamora	0	14	0	4,900	4,900	29.8	74,500	79,400
Remaining Unincorporated ^f	0	1,932	0	676,200	676,200	1,995.8	4,989,500	5,665,700
Total	1,529	13,323	458,700	4,663,050	5,121,750	3,328.3	8,334,333	13,456,082

^a Includes dwelling units allowed under the build-out of the 1983 General Plan plus additional units per the Draft General Plan.

^b For the purposes of this analysis, R-Rural, R-Low, and R-Medium are assumed to allow only single family units.

^c For the purposes of this analysis, R-High is assumed to allow only multi-family units.

^d Wastewater generation factors for single family, multi-family, and commercial/industrial are from: Yolo County, 2008. *Standard Specifications and Details*, Section 7 Sanitary Sewers, Table 7-1.

^e Yolo County identifies a wastewater demand factor of 2,500 gpd/acre for office/commercial development which has been used as a conservative estimate for both commercial and industrial growth (for which the County demand factor is 2,000 gpd/acre).

^f Includes the following areas of the County: Elkhorn; County Airport; I-505/CR14 or 12A; Davis Area, Winters area; Woodland area; and other incorporated areas.

Source: LSA Associates, Inc., 2009.

Under the Draft General Plan, the majority of residential and commercial/industrial growth is directed to the towns of Dunnigan (8,281 units and 791 acres of commercial/industrial uses), Esparto (1,506 units and 53 acres of commercial/industrial uses), Knights Landing (1,413 units and 51 acres of commercial/industrial), and Madison (1,496 units and 139 acres of commercial/industrial). Per policies CC-3.1, CC-3.5, CC-3.6, CC-3.7, CC-3.8, CC-3.9, CC-3.10, and CC-3.11, Dunnigan, Knights Landing, Madison, and Elkhorn (303 acres of commercial/industrial uses) have been designated as Specific Plan areas, and specific plans and an extensive environmental evaluation under CEQA must be prepared before development is allowed to occur in those communities. The specific plan process would address 76 percent of the residential growth and 51 percent of the commercial/industrial growth allowed at build-out of the Draft General Plan. Additionally, Policy CC-3.1 also requires new or updated Area Community Plans or Specific Plans for Capay Valley, Clarksburg, Esparto and Monument Hills, and that an area community plan be prepared for Yolo/Zamora. As amended per Mitigation Measure LU-2a, Policy CC-3.1 would also require a specific plan or master plan for the Covell/Pole Line Road property. The specific plans must detail how new or expanded community wastewater services and facilities would be provided to serve the new growth being proposed and allowed under the Draft General Plan as well as existing development. Table LU-10 (reproduced as Table IV.G-2 in Section IV.G, Public Services) of the Draft General Plan provides

community planning guidelines for growth in the Specific Plan areas (as supported by Policies CC-3.5, CC-3.6, CC-3.7, CC-3.8, CC-3.9, CC-3.10, and 3-11). As noted in the table, and per Policy PF-12.10, a new municipal tertiary wastewater system is required to be made available prior to or concurrent with need to serve growth in Dunnigan; and upgraded wastewater systems providing tertiary treatment are required to serve Knights Landing and Madison.

Additionally, to ensure that existing development in or adjacent to these Specific Plan areas also receive necessary wastewater services, Draft General Plan Policy CC-2.2 and actions PF-A1 and PF-A3 would ensure that existing development would also receive the base level of infrastructure along with new development; would establish and assign the costs of new systems proportionally to those receiving benefit, and would require that existing development that is currently using septic systems connect to a new sewer treatment service when available.

The provision of wastewater services for community areas that would experience substantial amounts of additional growth at build-out of the Draft General Plan or that currently have a community wastewater system in place are discussed below.

Dunnigan would experience the greatest amount of growth under the Draft General Plan in the unincorporated County, and currently the majority of wastewater is treated by private OWTSs. The additional residential, commercial, and industrial development allowed by the Draft General Plan is estimated to generate approximately 4,844,750 gpd of wastewater. As stated previously, the new development allowed under the Draft General Plan would require a new community system with tertiary wastewater treatment within a CSD or CSA.

In Knights Landing, wastewater is treated at the Knights Landing WWTF which treats the sewage through aeration providing a marginal level of secondary treatment prior to pumping effluent to ponds for evaporation and percolation into the ground. The Knights Landing WWTF is currently at capacity with a current average dry weather flow of 80,000 gpd. The planned expansion of the WWTF is expected to increase capacity to serve build-out of the Knights Landing Specific Plan. It is expected that the expanded WWTF will have a capacity of 105,000 gpd average dry weather flow which is expected to meet the demand of 115 new homes and 39 commercial or industrial connections. Under the Draft General 1,413 additional units and 51 acres of commercial/industrial uses would be allowed. Build-out of the Draft General Plan would result in additional residential, commercial, and industrial development that would generate approximately 610,300 gpd of wastewater. This additional wastewater flow would exceed the capacity of the WWTF, and it would need to be expanded and improved to provide tertiary treatment for the new growth.

In Madison, build-out of the Draft General Plan would result in additional residential, commercial, and industrial development (1,496 units and 139 acres of commercial/industrial uses) which would generate approximately 871,182 gpd of wastewater. Currently, wastewater generated in Madison is treated by seven ponds run by the Madison CSD, which has the capacity to allow treatment of 43 additional residential connections. The residential units, businesses and industries planned for at build-out of the Draft General Plan would generate wastewater that would exceed the capacity of the system and an upgraded sewer system to provide tertiary treatment for the entire town is required per Policy PF-12.-10.⁸⁷

⁸⁷ Refsland, Leo, 2008. op cit.

In Esparto, the existing WWTP is planned to undergo expansion in order to provide two additional ponds. The current WWTP is able to meet current demands, and the addition of the two ponds will provide capacity for development that is currently under construction. Build-out of the Draft General Plan in Esparto would result in additional residential (1,506 units), commercial, and industrial development (53 acres) that would generate approximately 657,150 gpd of wastewater. Development allowed under the Draft General Plan would exceed the capacity of the WWTP. Additional pond construction or other improvements would be required to treat the additional wastewater generated by allowed growth.

Growth under build-out of the Draft General Plan would increase wastewater generated in the unincorporated areas of the County, and development outside of the Specific Plan areas and CSAs or CSDs. There would be approximately 2,100 residential units (14,798 – 11,190- 1,506) at build-out in other unincorporated community areas in Yolo County not served by community wastewater systems and outside of the Specific Plan areas. Wastewater treatment for these units would most likely be provided by OWTSSs. The majority of these units (approximately 1,932⁸⁸) are expected to be farm dwellings, and the new housing would also occur in community areas such as Capay Valley and Clarksburg. OWTSSs would also provide wastewater service for the remaining approximately 1,179 acres of commercial and industrial uses (2,516 - 1,284 -53) designated to be developed at build-out of the Draft General Plan, and that are outside a Specific Plan area or a CSA or CSD. Other areas where industrial and commercial growth would occur are the Davis Area, Woodland Area, County Airport and Capay Valley. Additionally, at build-out an estimated 1,178 acres could be developed as agricultural commercial and/or agricultural industrial uses on land designated as Agriculture. These uses would also be served OWTSSs. The County will continue to require that new development served by OWTSSs apply for and comply with permits for individual treatment systems.

As previously stated, specific plans are required for Dunnigan, Knights Landing, Madison and Elkhorn. The provision of wastewater to serve the new growth at build-out of the Draft General Plan would be addressed as part of the planning process for these communities. Implementation of Policy CC-2.2, Action PF-A1 and Action PF-A3 would ensure that existing development is also served when new wastewater systems are constructed to serve new growth.

The Draft General Plan also contains the following policies that address the provision of wastewater services in relation to new growth. Policy PF-1.1 would require discretionary projects to demonstrate adequate long-term wastewater collection, treatment and disposal capacity, including the provision of funding for land acquisition, facility design and construction, and long-term operations and maintenance for needed wastewater treatment and disposal facilities. Policy CC-4.11 would require site specific information, including a wastewater capacity and service analysis, be supplied for each development application so that the County can make informed decisions regarding new development. Policy PF-12.10 would ensure that all basic community services, including septic and sewer, are made available for new planned development, prior to or concurrent with need, to the extent feasible.

⁸⁸ For farm dwellings, County staff assumed 1,610 units under build-out of the 1983 General Plan plus another 322 assumed units added under the 2030 General Plan for a total of 1,932 new units. To conservatively identify the number of acres to be developed with new farm dwellings by 2030, County staff assumed a 2.5-acre home site for every farm dwelling or farm dwelling complex, therefore 1,932 units x 2.5 acres = 4,830 acres. For agricultural industrial and agricultural commercial activities, approximately 854 acres are estimated to be impacted, per Table III-11.

To address existing problems (e.g., water contamination) associated with the use of septic systems, Policy PF-1.3 addresses nitrates and other pollutants of concern from septic systems and their potential impact on groundwater; Policy PF-1.5 encourages the development of community wastewater treatment systems in those areas; Policy PF-1.6 encourages the expansion of community systems to underserved community areas; and Policy PF-1.7 requires treatment facilities that remove or destroy pathogens while eliminating contaminated discharge. Policy PF-1.8 promotes 200-year flood protection for all wastewater treatment facilities to avoid water contamination during a flood event.

While growth under build-out of the Draft General Plan would result in increases in wastewater that would exceed existing wastewater facilities, compliance with the policies and actions identified above would ensure the provision of wastewater treatment facilities to serve the Specific Plan community areas where the majority of growth under the Draft General Plan would occur. Additionally, compliance with the policies and actions would provide a framework to ensure that the increased demand for wastewater services for unincorporated areas outside of Specific Plan or CSD or CSA areas would be met.

In addition to implementation of Draft General Plan policies, implementation of the following mitigation measure would ensure that Draft General Plan impacts related to the increased generation of wastewater associated with new growth would be less than significant.

Mitigation Measure UTIL-3: Implement Mitigation Measure LU-2b that modifies Policy CC-4.11 and requires site specific technical information (including a sewer capacity and service analysis) be provided, subject to site conditions and as determined by the County lead department, to enable informed decision-making by the County regarding site specific issues for individual projects. (LTS)

Result in Significant Impacts from New Wastewater Facilities. As described above, growth associated with build-out of the Draft General Plan would generate approximately 13,456,082 gpd (13.45 mgd) of wastewater in the County which would exceed the existing capacity of wastewater treatment facilities in Knights Landing, Madison, and Esparto. Construction of the new or expanded wastewater facilities that are required to serve new growth in Dunnigan and the other Specific Plan areas as well as small private wastewater systems that are developed to serve other community areas may result in environmental impacts. However, the site specific effects of facilities serving the Specific Plan areas cannot be determined until the new or expanded facilities and systems are proposed and subject to environmental review associated with the specific plan process. Typical impacts related to development of new wastewater facilities would likely result from construction-related noise, dust, and grading. Wastewater facilities may also be located near streams or water bodies, and construction of wastewater facilities could potentially result in impacts to riparian and wetland habitats and the plants and animals that depend on them.

Per Policy CC-3.1, specific plans must be prepared for Dunnigan, Knights Landing, Madison and Elkhorn before any development is allowed to occur in the Specific Plan areas. The specific plans would address both proposed new areas of development and existing areas designated for development (per policies CC-3.5, CC-3.6, CC-3.7, CC-3.8, CC-3.9, CC-3.10, and CC-3.11). The specific plans must detail where new or expanded wastewater systems would be provided to serve the

new growth being proposed and allowed under the Draft General Plan (Policy PF-12.10). The specific plan process and associated site specific analysis would ensure that environmental impacts associated with construction or expansion of wastewater systems to serve these communities would be mitigated

Implementation of the following Draft General Plan policies would reduce impacts associated with the construction of new or expanded wastewater collection, treatment, and disposal infrastructure: LU-3.6; LU-3.7; CC-4.11; PF-1.1; PF-1.2; PF-1.4; PF-1.5; PF-1.6; PF-1.7; PF-12.14; and AG-1.11. The implementation of two policies in particular would reduce potential impacts associated with the construction of new wastewater facilities. Policy CC-4.11 would require site specific information be supplied, as determined by the County lead department, for development applications, including for the construction of wastewater facilities, so that the County can make informed decisions regarding new development. Policy PF-1.1 requires discretionary projects to demonstrate adequate long-term wastewater collection, treatment and disposal capacity, including full funding for land acquisition, facility design and construction, and long-term operations and maintenance for needed wastewater treatment and disposal facilities. Implementation of these policies would ensure that new development is served by wastewater collection, treatment, and disposal facilities and systems and that environmental impacts associated with their construction are addressed.

Implementation of other Draft General Plan policies also would reduce impacts to the environment from the construction of new wastewater facilities by promoting the use of innovative and efficient sewage treatment options (Policy PF-1.2), encouraging the use of small package wastewater systems (Policy PF-1.4), protecting agricultural lands from urban encroachment by limiting the extension of sewers (Policy AG-1.11), promoting 200-year flood protection for treatment facilities (Policy PF-1.8); maintaining the compatibility of surrounding land uses and development (Policies LU-3.7 and LU-3.6), identifying appropriate locations for infrastructure sites (Policy PF-12.14), ensuring that the appropriate base level of rural services and infrastructure for existing development in each town is required in connection with new development (Policy CC-2.2), and ensuring compatibility of land use activities within the Delta Primary Zone (Policy CO-5.9). Policies PF-1.3, PF-1.5, PF-1.6, PF-1.7 and actions PF-A3, PF-A11, and PF-A13 address issues associated with OWTSSs including the reducing the number of private systems by requiring connection to community systems when they are available, treatment of septic waste, and pollutants from septic systems.

The Draft General Plan policies would reduce the environmental impacts related to the construction and expansion of wastewater treatment facilities to serve communities outside of the Specific Plan areas. However, the analysis of potential impacts without identified sites and complete designs would be speculative and would be addressed at the time that the facilities are proposed. The potential significant adverse environmental effects associated with providing such facilities and services would be evaluated in future specific environmental reviews, and would incorporate mitigation as necessary to reduce the significant adverse effects. As described above, the Draft General Plan contains policies that address the construction of OWTSSs, and the County will continue to require that new development apply for and comply with permits and the Yolo County Code requirements for individual treatment systems. Therefore, implementation of these Draft General Plan policies and Mitigation Measures UTIL-2a and UTIL-2b and the existing County regulations would reduce impacts related to the construction of new wastewater treatment facilities to a less-than-significant level.

Fail to Meet Wastewater Treatment Requirements of the CVRWQCB. As previously stated, growth associated with build-out of the Draft General Plan would generate wastewater flows that exceed the existing capacities of the wastewater treatment systems in unincorporated Yolo County. Build-out of the Draft General Plan would generate up to an additional 13.45 mgd of wastewater. The existing wastewater treatment systems and facilities would need to be upgraded or expanded to treat increased flows in the Madison and Knights Landing Specific Plan areas, and a new wastewater facility would be required in Dunnigan. The new wastewater facilities and facility expansions would be required to meet the wastewater treatment requirements and receive a Phase II MS4 General Permit to discharge treated wastewater to surface waters from the Central Valley Regional Water Quality Control Board (CVRWQCB).

As part of the specific plan process (per Policy CC-3.1), plans for the new or expanded tertiary treatment wastewater facilities to serve Dunnigan, Knights Landing, Madison and Elkhorn would be reviewed by the CVRWQCB to ensure their requirements are met before any development is allowed to occur. The specific plans must detail how new or expanded wastewater systems would be provided to serve the new growth being proposed and allowed under the Draft General Plan.

Implementation of other Draft General Plan policies would ensure that wastewater systems serving community areas outside of the Specific Plan areas meet the requirements of the CVRWQCB, including: PF-1.1; PF-1.2; PF-1.4; PF-1.5; PF-1.6; PF-1.7; and AG-1.11. Specifically, Policy PF-1.1 would require discretionary projects to demonstrate adequate long-term wastewater collection, treatment and disposal capacity, which would ensure that wastewater generated by new development would be treated per the requirements of the CVRWQCB. In addition, implementation of policies PF-1.5, PF-1.6, and CC-2.2 would ensure the provision of wastewater services and treatment systems in connection with new development in the unincorporated parts of Yolo County. Implementation of Policy PF-1.7 would require treatment facilities that remove or destroy pathogens while minimizing or eliminating contaminated discharge, thereby helping to meet requirements of the CVRWQCB.

Implementation of the Draft General Plan policies discussed above would ensure that CVRWQCB requirements are met through the environmental review and completion of the specific plans, improvements to existing facilities, and the construction of new WWTPs to serve the majority of new growth under the Draft General Plan. While the County does not have direct jurisdiction to ensure that new wastewater treatment facilities would meet the requirements of the CVRWQCB, implementation of Draft General Plan policies would ensure that build-out of the Draft General Plan would not result in exceedence of the CVRWQCB requirements. In addition, as previously stated, any exceedence would be temporary in nature, as the CVRWQCB can stop operation of a wastewater treatment facility through a cease and desist order if it does not comply with requirements. Therefore, build-out of the Draft General Plan would result in a less-than-significant impact in regards to meeting the requirements of the CVRWQCB.

3. Stormwater

This section discusses the existing stormwater drainage and collection systems in unincorporated Yolo County, along with applicable regulations, and potential impacts resulting from build-out of the Draft General Plan. This section focuses on the provision of stormwater drainage systems; Section IV.K, Hydrology and Water Quality, discusses water quality and flooding issues and regulations associated with surface waters. For a discussion of the potential effects of global climate change on

storm drainage systems related to sea-level rise, increased potential for flooding, and hydrologic changes see Section IV.F, Global Climate Change.

b. Setting. The follow subsection includes information about current stormwater hazards and conditions, regulations associated with the provision of stormwater services in Yolo County, and relevant Draft General Plan policies.

(1) Physical Environment. Yolo County is located within the Sacramento River watershed, which covers approximately 27,000 square miles, roughly 17 percent of the land area of California. This watershed is composed of smaller watersheds. One of these is the Putah Creek watershed which encompasses approximately 710 square miles and extends from the Coast Ranges in Lake County to the Yolo Bypass. The Cache Creek watershed is also part of the larger Sacramento River watershed. The Cache Creek watershed covers land in parts of Colusa, Napa, Lake, Mendocino, Sonoma, and Yolo counties. Both Putah Creek and Cache Creek drain into the Yolo Bypass and are the main receiving waters of runoff from Yolo County.⁸⁹

(2) Stormwater Hazards. Flooding is the primary hazard related to stormwater runoff. Urban development generally increases the amount of impervious surfaces. When rainfall or snowmelt exceeds the ground infiltration rate, stormwater runs off and collects in drainage facilities, which may be in the form of roadways, storm drains, or natural creeks and rivers. Additional impervious surfaces increase the flow rate and volume of water in the drainage channels during and after a storm event. Other problems connected with increased stormwater runoff include erosion, sedimentation, and degradation of water quality. Section IV.K, Hydrology and Water Quality addresses issues related to flooding, erosion, sedimentation and other issues related to water quality..

(3) Stormwater Drainage Systems. The following subsection describes the stormwater drainage system and agencies responsible for maintaining drainage systems in unincorporated Yolo County. Drainage facilities in the unincorporated portions of the County are limited and localized flooding frequently occurs. Much of the County's drainage system is in poor condition and requires improvements that often exceed the capacity of local districts. While on-site ditches, which convey water to existing roadside ditches, may be adequate for development densities at two units per acre or less, higher density developments would likely require curbs and gutters and an on-site collection network to convey runoff to on- or off-site detention basins. Management of these types of facilities would require expansion of the responsibilities of an existing entity or the creation of a new CSD or CSA.

Most of the community areas, including Dunnigan, Capay Valley and Zamora, have limited storm drainage facilities which generally consist of on-site swales and ditches, which convey water to existing roadside ditches. Community areas for which stormwater service is provided by a service district or agency are described below.

Clarksburg. Stormwater service is provided to the town of Clarksburg by Reclamation District 999. Storm drainage flows to roadside swales and low spots, and then to irrigation canals. Any future development in the town would likely require new storm drainage facilities.⁹⁰

⁸⁹ Yolo County, 2004. *Stormwater Management Program*. October.

⁹⁰ Design, Community & Environment, 2006. op.cit.

Esparto. Stormwater facilities in Esparto are maintained by the Madison-Esparto Regional Community Service Area (CSA). In older parts of Esparto, runoff is collected in roadside ditches and in a limited system of undersized pipes that discharges into the Lamb Valley Slough. Any new infill construction in the older part of town would be required to install curbs and gutters. The new subdivisions in Esparto have been equipped with curbs, gutters, and detention basins. Any new development in the town would increase the stormwater flow to the slough. However, the potential for increasing the capacity of the slough is severely restricted due to adjacent developments and bridges. The Madison-Esparto CSA is considering construction of a community detention pond to address the issue of increased stormwater drainage.⁹¹

Knights Landing. Knights Landing is surrounded by major waterways, including the Sacramento River, the Colusa Basin Drain, and the Knights Landing Ridge Cut. The Yolo County Public Works Department provides storm drainage for the town, while Reclamation District 730 maintains other drainage facilities in the area. A pipe distribution network conveys water into the irrigation canals and to the Sacramento River. Drainage also collects in roadside swales and low spots where evaporation eventually occurs. This method of surface drainage often results in localized flooding. Any new development in the area would require new stormwater drainage facilities, and detention basins.⁹²

Madison. The stormwater drainage system in Madison is managed by the Madison-Esparto Regional Community Service Area (CSA). In Madison, stormwater collects in roadside ditches and discharges into the Madison Drain, which then empties into the Willow Slough. Due to the proximity of the slough, flooding has been an issue. Another issue is that stormwater enters sewage lines which reduces the capacity of the wastewater system. New infill development would require on-site drainage ditches that would convey water to existing roadside ditches. Development outside the town core would require on-site storm drain detention ponds and possibly the construction of a new flood control basin, in order to extend the release time of stormwater into the Madison Drain and Willow Slough.⁹³

Monument Hills. In the Monument Hills area, the Wild Wings subdivision has on-site detention pond designed for a 100-year flood located adjacent to the golf course. Drainage for Wild Wings is conveyed to the detention pond. The stormwater is then time released to the Moore Canal which drains into Cache Creek outside of the Wild Wings subdivision. The rest of the Monument Hills area relies on roadside swales and low spots for storm drainages, and generally functions without any municipal services. Under current conditions, the roadside swales are subject to flooding during heavy storms. New development in Monument Hills that involves grading in excess of one acre would require on-site stormwater drainage systems.⁹⁴

⁹¹ Ibid

⁹² Ibid.

⁹³ Ibid.

⁹⁴ Ibid.

Yolo. The Yolo County Public Works Department maintains the stormwater drainage system in the town of Yolo. Pipes convey water from curb drains to discharge pipes that flow into the Cache Creek.

c. Regulatory Framework. The following describes the federal, State, and local programs and regulations related to the provision of stormwater facilities. See Section IV.K, Hydrology and Water Quality, for a discussion of stormwater quality regulations.

(1) Subdivision Map Act of 1970. The Subdivision Map Act granted local jurisdictions the power to impose drainage improvements, fees, or assessments. Specifically, local jurisdictions may require the provision of drainage facilities, proper grading and erosion control, dedication of land for drainage easements, or payment of fees needed for construction of drainage improvements. The types of applicable standards for the improvements may be specified in the local ordinance.

(2) National Pollutant Discharge Elimination System. As described previously in the regulatory framework section for wastewater services, the National Pollutant Discharge Elimination System (NPDES) permit program regulates construction-related, municipal and industrial stormwater discharges to surface waters in the United States. The State of California has been authorized to administer the NPDES program through the Regional Water Quality Control Boards.⁹⁵ The NPDES program provides for general permits (those that cover a number of similar or related activities) and individual permits (those issued on a project-by-project basis). Section IV.K, Hydrology and Water Quality provides additional information regarding the NPDES program.

(3) Yolo County Stormwater Management Program. Yolo County implements and meets the requirements of the NPDES program by having prepared a Stormwater Management Program (SWMP) in March of 2003 (revised in October 2004) to address stormwater quality within the County's jurisdiction. The focus of the SWMP is on identifying best management practices (BMPs) needed to reduce pollutants to the maximum extent feasible in the urbanized communities of El Macero and Willowbank, the only two communities in the unincorporated County that must comply with the NPDES's Small MS4 General Permit. Maximum extent feasible is generally considered to be achieved when pollution prevention and source control BMPs are emphasized, in combination with treatment methods.⁹⁶ The Small MS4 General Permit requires the County to develop and implement six program elements in the SWMP, which address: public education and outreach; public involvement and participation; illicit discharge; construction activities; new development and redevelopment; and municipal operations.

(4) Yolo County Code. Chapter 9 of the Yolo County Code is the Stormwater Management and Discharge Control code (known as The Stormwater Ordinance) which also implements the required stormwater management regulations per the NPDES permit program. The Stormwater Ordinance provides for the regulation and reduction of pollutants discharged into the waters of the United States by extending NPDES requirements to stormwater and urban runoff discharges into the County storm drain system. The County's Stormwater Management Program, adopted by the County on December 7, 2004, requires the County to effectively prohibit non-stormwater discharges from the

⁹⁵ Yolo County, 2004. *Stormwater Management Program*. October.

⁹⁶ *Ibid.*

unincorporated area of the County from entering the County storm drain system except as otherwise permitted by law.

d. Draft 2030 Countywide General Plan for Yolo County. The following is a list of relevant Draft General Plan policies and actions that relate to stormwater issues.

Land Use and Community Character Element

- Policy LU-3.6: Avoid or minimize conflicts and/or incompatibilities between land uses.
- Policy LU-5.5: Ensure that public facilities, services and amenities are distributed equitably and in locations that enhance the quality of life for the broadest number of County residents.
- Policy LU-5.6: Assist existing communities to obtain the services, support and infrastructure needed to thrive and be successful.
- Policy CC-2.2: Ensure that the appropriate base level of rural services and infrastructure for existing development in each community is required in connection with new development.
- Policy CC-4.14: Strongly encourage LEED certification⁹⁷ for all public, private and existing buildings and LEED-Neighborhood Design (ND) for other applicable projects.

Public Facilities and Services Element

- Policy PF-2.2: Construct on-site stormwater detention facilities that are designed so that runoff from the 100-year storm event does not: (1) result in an increase in peak release rate; (2) result in a time decrease associated with the time of concentration; (3) contribute to adjacent flood problems; and/or (4) significantly alter the direction of runoff.
- Policy PF-2.4: Encourage sustainable practices for stormwater management that provide for groundwater recharge and/or improve the quality of runoff through biological filtering and environmental restoration.
- Action PF-A15: Continue to implement and enforce stormwater management requirements, guidelines and best practices that enable existing and new systems to meet applicable State and federal permit requirements.
- Policy PF-12.6: Provide the public facilities and services necessary to meet community needs, in an efficient manner.
- Policy PF-12.10: Ensure that all basic community services (e.g. septic/sewage, water, drainage, roads, power, parks, schools, libraries, etc.) for new planned development, including all Specific Plan areas, are made available consistent with the target service levels established in this General Plan, prior to or concurrent with need, to the extent feasible.
- Policy PF-12.14: Identify appropriate locations for infrastructure sites, in consultation with the Community Service Districts, as early in the planning process as possible.

Agriculture and Economic Development Element

- Policy AG-1.19: When undertaking improvement of public roadways and drainage facilities, consult with adjoining farmland owners and incorporate designs that minimize impacts on agriculture.

Conservation and Open Space Element

- Action CO-A89: Adopt development design standards to reduce or eliminate impervious surfaces where possible. (Policy CO-5.6)

⁹⁷ The LEED certification program awards points for water conservation amongst other things.

- Action CO-A93: Adopt design standards that use low-impact development techniques that emulate the natural hydrologic regime and reduce the amount of runoff and associated pollutants. Examples include vegetated swales, landscaped detention basins, permeable paving, and green roofs. (Policy CO-5.5, Policy CO-5.6)

Health and Safety Element

- Action HS-A10: Limit the construction of extensive impermeable surfaces and promote the use of permeable materials for surfaces such as driveways, and parking lots. (Policy HS-2.1)

c. Impacts and Mitigation Measures. This section discusses potential impacts to stormwater drainage systems that could result from build-out of the Draft General Plan and identifies mitigation measures, if appropriate.

(1) Significance Criteria. The Draft General Plan would result in a significant impact if development would:

- Create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems.
- Result in a substantial alteration of existing drainage patterns or a substantial increase in the rate or amount of surface runoff in a manner that would result in flooding on-site or off-site.
- Result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

(2) Impacts Analysis. This section discusses potential impacts to stormwater services and infrastructure that could result from build-out of the Draft General Plan and identifies mitigation measures, if appropriate.

Exceed the Capacity of Stormwater Drainage Systems. Future development in Yolo County would create additional impervious surfaces that would increase stormwater runoff to on- or off-site locations. As discussed in Chapter III, Project Description, the potential area of effect evaluated in this EIR is the area of growth allowed (but not built) under the 1983 General Plan plus additional growth identified in the Draft General Plan within the unincorporated County. Table 3 in Appendix B was prepared by County Planning and Public Works Department staff and summarizes the potential area of effect and underlying assumptions for the acres designated for development (i.e., residential, commercial, industrial, and other acres developed for roadway improvements and trails). Build-out of the approximately 4,738 acres designated for future urban uses (i.e., all acres within a growth boundary); 854 acres of agricultural commercial and industrial uses; the 69 acres assumed for future roadway improvements identified in the Circulation Element, and the 162 acres for future trails (assuming they are paved) would result in increased impervious surfaces and additional stormwater runoff that could exceed the capacity of existing stormwater drainage systems which is a significant impact.

Depending on the soil type, vegetative cover, land forms, and topography, development at densities less than one dwelling unit per two acres would generally have infiltration rates that are effectively the same as those for undeveloped land. As such, residential development allowed under the Draft General Plan at or below such densities would not be expected to result in increased runoff, and this assumption would apply to the 1,602 acres of RR land use designation and all farm dwellings (assuming 1,932 farm dwellings at 2.5 acres per unit, per Appendix B).

The remaining acres that are expected to be developed with urban growth, would develop at densities that generally exceed one dwelling unit per two acres, and would result in increased runoff to off-site locations, and may result in changes in flow characteristics, such as increases in total runoff volume and peak flow rate. As developments are constructed within a drainage area, new impervious surface cover would cause additional incremental amounts of runoff that would be added to existing volumes. Unless appropriate controls are in place, over time the cumulative runoff could exceed the capacity of existing drainage facilities during peak-flow conditions resulting in localized flooding.

The areas within a growth boundary with the most acres of land designated for residential uses are the towns of Dunnigan, Esparto, Madison, and Knights Landing. The areas within a growth boundary with the most acres of land designated for commercial and industrial acres are Dunnigan, Elkhorn, Madison, Davis Area, Woodland Area, and County Airport. Agricultural-related commercial and industrial uses could occur anywhere on land designated as agriculture. However, four sites totaling 854 acres are specifically targeted in Clarksburg, Madison, Zamora, and near Winters.

Dunnigan currently does not have a community-serving or engineered drainage system in place. Stormwater generally collects in roadside swales and low spots, and localized flooding is a common problem in the area. New development at densities greater than one dwelling unit per two acres would result in increased stormwater runoff that would exceed the capacity of existing drainage infrastructure and would require new storm drainage facilities and a community system. As described previously, while stormwater facilities and services are provided by reclamation districts and CSAs in Clarksburg, Esparto, Knights Landing, and Madison, the growth resulting from build-out of the Draft General Plan would exceed the capacity of the existing systems and new drainage facilities and infrastructure would be required to serve new urban growth. For example, new development in Madison would require on-site storm drain detention and possibly construction of new detention basins to extend the time release of stormwater into existing channels. Urban growth in Elkhorn, Davis Area, Woodland Area, County Airport, and other community areas would also require storm drainage facilities.

As stated previously, per Policy CC-3.1, specific plans must be prepared for Dunnigan, Knights Landing, Madison, and Elkhorn before any development is allowed to occur in the Specific Plan areas. The specific plan process would address 76 percent of the residential growth and 51 percent of the commercial/industrial growth allowed at build-out of the Draft General Plan. Additionally, Policy CC-3.1 also requires new or updated Area Community Plans or Specific Plans for Capay Valley, Clarksburg, Esparto and Monument Hills, and that an area community plan be prepared for Yolo/Zamora. As amended per Mitigation Measure LU-2a, Policy CC-3.1 would also require a specific plan or master plan for the Covell/Pole Line Road property. The specific plans must detail how new or expanded stormwater systems and facilities would be provided to serve the new growth being proposed and allowed under the Draft General Plan as well as existing development. Table LU-10 (reproduced as Table IV.G-2 in Section IV.G, Public Services) of the Draft General Plan provides community planning guidelines for growth in the Specific Plan areas (as supported by Policies CC-3.5, CC-3.6, CC-3.7, CC-3.8, CC-3.9, CC-3.10, and 3-11). As noted in the table, and per Policy PF-12.10, stormwater drainage systems are required to be made available prior to or concurrent with need to serve the towns of Dunnigan, Knights Landing and Madison, which would include both existing and new development in those towns.

Implementation of the Draft General Plan policies would reduce stormwater runoff and the potential for exceeding existing capacity by requiring the construction of on-site stormwater detention facilities that are designed to minimize flood problems (Policy PF-2.3), encouraging stormwater management that would provide for groundwater recharge (Policy PF-2.4), adopting design mandates to reduce impervious surfaces where possible (Action CO-A89), adopting design standards that use low-impact development techniques that emulate the natural hydrologic regime and reduce the amount of runoff and associated pollutants (Action CO-A93), and limiting the construction of extensive impermeable surfaces (Policy HS-2.1). Policy CC-4.11 would require site specific information, including a storm drainage capacity and service analysis, be supplied with development applications as appropriate so that the County can make informed decisions regarding new development.

Additionally, new development must comply with programs and regulations currently in place that regulate storm drainage facilities, including NPDES regulations, the Stormwater Management Plan, and the Stormwater Ordinance. Per Action CO-A91 the County intends to implement and regularly update the County Stormwater Management Plan and associated programs. Compliance with the community planning guidelines from Table LU-10, existing programs and regulations, and the implementation of the Draft General Plan policies and actions listed above, would ensure that stormwater systems and facilities are available to adequately serve new development projected under the Draft General Plan. Therefore, the project would have a less-than significant impact associated with the creation or contribution of runoff that could exceed stormwater drainage systems.

Substantially Alter Drainage Patterns or Increase the Rate of Runoff. As described above, build-out of the Draft General Plan and the increase in impervious surfaces associated with new development would increase the amount and rate of stormwater runoff volumes which could alter drainage patterns in unincorporated Yolo County. The increase in stormwater runoff in combination with altered drainage patterns could lead to on-site or off-site flooding. Section IV.K, Hydrology and Water Quality provides further discussion of the impacts of the Draft General Plan on flooding, water quality and alteration of drainage patterns in the County.

The following Draft General Plan policies address potential impacts related to new development and increased stormwater flows by reducing flows: CC-4.3, CC-4.14, PF-2.2, PF-2.4, CO-A87, CO-A89, CO-A90, HS-A.9, and HS-A10. Specifically, Policy PF-2.2 would require the construction of on-site stormwater detention facilities, Policy PF-2.4 would encourage stormwater management that would provide for groundwater recharge, Action CO-A86 would require the County to adopt design mandates to reduce impervious surfaces where possible, Action CO-A93 specifies that the County adopt design standards that use low-impact development techniques that emulate the natural hydrologic regime to reduce the amount of runoff and associated pollutants, and Policy HS-2 would limit the construction of extensive impermeable surfaces. However, none of these policies or actions provide specific implementation measures or thresholds. Yolo County has not yet developed an inventory of vulnerable creek segments or thresholds for the quantity of new impervious area that could cause alterations in drainage patterns due to the increased rate of runoff.

Compliance with the programs and regulations currently in place that regulate storm drainage facilities, including NPDES regulations, the Stormwater Management Plan, and the Stormwater Ordinance, implementation of the Draft General Plan policies and actions described above would ensure that Draft General Plan impacts related to altering drainage patterns and increased runoff associated with stormwater facilities would be less than significant.

Environmental Impacts from Construction of New Stormwater Drainage Facilities. As previously described, the Draft General Plan would increase the amount of stormwater runoff in unincorporated areas of the County primarily within identified growth boundaries but also related to agriculture commercial and industrial growth, roadway improvements and trails. The areas within a growth boundary with the most acres of land designated for residential uses are the towns of Dunnigan, Esparto, Madison, and Knights Landing. The areas within a growth boundary with the most acres of land designated for commercial and industrial acres are Dunnigan, Elkhorn, Madison, Davis Area, Woodland Area, and County Airport. Agricultural-related commercial and industrial uses could occur anywhere on land designated as agriculture. However, four sites totaling 854 acres are specifically targeted in Clarksburg, Madison, Zamora, and near Winters. To serve this new development new stormwater drainage facilities or expansion of existing facilities would need to occur, the construction of which could cause significant environmental effects.

Per Policy CC-3.1, specific plans must be prepared for Dunnigan, Knights Landing, Madison and Elkhorn before any development is allowed to occur in the Specific Plan areas. The specific plans would address both proposed new areas of development and existing areas designated for development (per policies CC-3.5, CC-3.6, CC-3.7, CC-3.8, CC-3.9, CC-3.10, and CC-3.11). As amended per Mitigation Measure LU-2a, Policy CC-3.1 would also require a specific plan or master plan for the Covell/Pole Line Road property. The plans must detail where new or expanded stormwater drainage systems would be provided to serve the new growth being proposed and allowed under the Draft General Plan (Policy PF-12.10). The site specific effects of new storm drainage facilities cannot be determined until the new or expanded facilities and systems are proposed and subject to environmental review associated with the specific plan process. Typical impacts related to development of new drainage systems can include construction-related noise, dust, and grading and impacts to riparian and wetland habitats if discharge facilities are located within creeks and waterways. The specific plan process and associated site specific analysis would ensure that environmental impacts associated with construction or expansion of stormwater drainage systems to serve these communities would be mitigated

Other unincorporated communities in the County that would experience growth under the Draft General Plan would also experience increased amounts of stormwater runoff, which may require the construction of new stormwater drainage facilities that could result in potential adverse environmental effects.

The following Draft General Plan policies and actions would help reduce environmental impacts associated with the construction or expansion of stormwater drainage facilities: PF-2.2; PF-2.4; AG-1.19; PF-12.10; CC-2.2; LU-3.6; LU-5.5; LU-5.6; PF-12.14, and CC-4.14, HS-A.10, and CO-A89. Implementation of the Draft General Plan policies and actions would reduce impacts associated with the need for new storm drainage facilities by: reducing the amount of stormwater runoff (policies PF-2.2; PF-2.4; CC-4.14, HS-A.10, and CO-A89); requiring that appropriate sites for new infrastructure would be identified (Policy PF-12.14; ensuring that the appropriate base level of rural services and infrastructure for existing development in each community is required in connection with new development (Policy CC-2.2); requiring appropriate locations for infrastructure sites and compatibility of land use activities within the Delta Primary Zone (Policy CO-5.9), encouraging the compatibility of surrounding land uses and development (Policy LU-3.7 and Policy LU-3.6), ensuring that improvement projects to drainage facilities do not impact adjoining agricultural uses (Policy AG-1.19). Policy CC-4.11 would require site specific information be supplied, as determined by the

County lead department, for each development application, including for the construction of storm drainage facilities, so that the County can make informed decisions regarding new development.

Implementation of Draft General Plan policies and existing County programs and ordinances would reduce the environmental impacts related to the construction and expansion of storm wastewater treatment facilities to serve communities outside of the Specific Plan areas. The Draft General Plan policies also would require sufficient runoff facilities and infrastructure are available to serve new development projects. Therefore, the Draft General Plan would have a less-than-significant impact associated with the construction of new storm drainage facilities.

4. Solid Waste

This section discusses the provision of solid waste services and disposal in unincorporated Yolo County, along with applicable regulations, and potential impacts resulting from build-out of the Draft General Plan. Hazard waste including household hazardous waste is addressed in Section IV.M, Hazards and Hazardous Materials.

a. Existing Conditions. Solid waste and recycling services are provided by the Yolo County Division of Integrated Waste Management. In the unincorporated portion of Yolo County, most of the solid waste is generated by non-residential business uses. In 2004, the business waste stream accounted for 84 percent of total waste disposal, with 20,013 tons annually, while residential uses accounted for 16 percent of the overall disposal, with 3,812 tons annually. Residents and employees within the unincorporated County generate approximately 1 pound of waste per resident per day and 5.3 pounds of waste per employee per day.⁹⁸

Waste and recycling are taken to either the Yolo County Central Landfill, located two miles northeast of the City of Davis, or the Esparto Convenience Center. Approximately 88 percent of solid waste generated within Yolo County is disposed of at the Central Landfill or is taken to and processed at the Esparto Convenience Center.⁹⁹ These facilities along with other solid waste disposal facilities in the County are described below.

The Central Landfill, a 722-acre facility, is a Class III solid waste landfill which provides comprehensive solid waste and recycling services, including municipal solid waste, recycling, salvaging, household hazardous waste, and business hazardous waste. Permitted maximum disposal (“throughput”) at the Central Landfill is 1,800 tons per day.¹⁰⁰ At the current waste disposal rate (also assuming a diversion rate of 70 percent, no large increase of waste from outside the County, and future waste cells operated as bioreactors described below) the landfill’s closure date is estimated to be January 1, 2081, an operational life of about 72 years.¹⁰¹ The Central Landfill has several unique features and operations that distinguish it from typical waste management facilities and has been

⁹⁸ California Integrated Waste Management Board, 2008. *Jurisdiction Profile Overview: California Waste Stream Profiles*. Website: www.ciwmb.ca.gov/Profiles/County/. November.

⁹⁹ California Integrated Waste Management Board, 2009. *Yolo County: Waste Outflows to Landfills in 2004*. Available at <http://www.ciwmb.ca.gov/LGCentral/Summaries/57/2004/Outflow.htm>.

¹⁰⁰ California Integrated Waste Management Board, 2009. *Active Landfill Profile for Yolo County Central Landfill*. Website: www.ciwmb.ca.gov/Profiles/Facility/Landfill/Default.asp. January 5.

¹⁰¹ Ibid.

recognized by the U.S. Environmental Protection Agency for its innovative approach to reducing its impact on the environment, as follows:

- **Bioreactor.** A portion of the landfill is operated as a bioreactor, where the decomposition of waste is accelerated by adding liquid and recirculating the leachate. This process enhances the growth of microbes that promote solid waste decomposition, and as a result, landfill waste can be decomposed and stabilized within 10 to 15 years rather than decades. Benefits of bioreactor operations include: an increased rate of gas generation and energy production which allows increased gas collection efficiency and a reduction in greenhouse gas emissions; reduced pollution; extended use of the landfill facility by refilling stabilized areas; and reduced closure maintenance costs.
- **Phytoremediation.** The area surrounding the landfill has a high groundwater table. In order to keep the groundwater table low, groundwater is pumped from 16 wells along the northern landfill boundary. Shallow groundwater in this area of the valley contains boron and selenium. These minerals are naturally-occurring but the amount in the water is too high for the water to be released into the adjacent Willow Slough bypass. As a result, the landfill uses phytoremediation (treating water with plant growth) to reduce the boron and selenium concentrations present in the groundwater. The water is stored and used to grow 45-acre parcels of kenaf, a hibiscus relative, which is known to accumulate boron and selenium. The kenaf is harvested and used as alternative daily cover at the landfill in place of soil.
- **Energy Production.** A landfill gas-to-energy plant is located in the southwest portion of the landfill. The plant owner leases rights to the landfill gas and the energy production rights from the County under an agreement, and subcontracts with Minnesota Methane to operate the energy plant. The plant produces a maximum of 3,860 kilowatts per hour.

The Esparto Convenience Center is an 11-acre County-operated facility that accepts residential municipal solid waste and recycling. The transfer station in Esparto does not have an estimated operational life. It will be closed when it is no longer needed.

The UC Davis Landfill is a 39-acre facility that is a Class III solid waste landfill which provides solid waste disposal and greenwaste processing for waste generated on the campus and Medical Facility in Sacramento. Under its current permit, the UC Davis landfill is expected to close January 1, 2040, for a future operational life of about 31 years.

The Grover Landscape Services Composting Facility in Zamora is a 56-acre facility that provides greenwaste and wood processing and composting for the San Francisco Bay Area and Sacramento Area.

The Davis Waste Removal's Green Material Facility is a 15-acre chipping and grinding facility for greenwaste processing and transfer of materials generated in or near the City of Davis to allow for transfer to another facility for composting.

The County does not provide curbside collection services, but has executed franchise agreements to serve most communities and businesses in the unincorporated area through contracts with Waste Management of Woodland and Davis Waste Removal for waste and recycling hauling services. Communities close to Davis are served by Davis Waste Removal, and the remaining communities in the unincorporated County are served by Waste Management of Woodland.

b. Regulatory Framework. This subsection will examine State and local regulations that control the disposal of solid waste in Yolo County. In addition, Draft General Plan policies related to solid waste are listed.

(1) County Integrated Waste Management Plan. The California Integrated Waste Management Act of 1989 (Act) requires each County to prepare a County Integrated Waste Management Plan (CIWMP). Yolo County's CIWMP includes the following documents, the Source Reduction and Recycling Element (SRRE), the Household Hazardous Waste Element (HHWE), and the Nondisposal Facility Element (NDFE) for Yolo County and the cities of Davis, West Sacramento, Winters, and Woodland, plus the Countywide Siting Element (CSE) and the County Summary Plan (SP). Yolo County's CIWMP documents were approved by the CIWMB on December 18, 1996.

These documents provide the goals, objectives and guidelines for the County and cities to meet the Act's diversion requirements to reduce the amount of solid waste disposed in landfills and diverted through source reduction, recycling, and composting activities by 25 percent by 1995 and by 50 percent by the year 2000. Diversion may be used to reduce the wastes sent to landfills by no more than 10 percent in 2000 and subsequent years. The unincorporated diversion rates for 2000 through 2006 were 65 percent, 67 percent, 64 percent, 63 percent, 67 percent, 69 percent, and 74 percent, respectively.¹⁰² The current diversion rate of over 70 percent demonstrates the success of the County's waste management program. The CIWMP documents cover the following issues:

- County demographics.
- Waste quantities generated in the County.
- Funding sources for administration of the countywide siting element and summary plan.
- Administrative responsibilities for the plan.
- Program implementation.
- Permitted disposal capacity and quantities of waste disposed of in the County.
- Available markets for recyclable materials.
- Plan implementation schedule.

The Integrated Waste Management Act requires each city and County to review its source reduction and recycling element (SRRE) or the CIWMP at least once every five years. The CIWMP was reviewed by the WAC in 2001 and 2006, and the respective five-year review reports were approved by the Board of Supervisors and the CIWMB in 2002 and 2007. The next five-year CIWMP review is due in 2011.

(2) Yolo County Code. Title 2, Chapter 7 of the Yolo County Code addresses litter and contaminants.¹⁰³ The code governs the disposal of solid waste generated by residential, commercial, and industrial properties within Yolo County.

¹⁰² Sinderson, Linda, 2009. Assistant Director, Integrated Waste Management Division. Written communication with David Morrison. March 11.

¹⁰³ Yolo County, 2008. *County Code*. Website: www.yolocounty.org/CountyCode/Title06.pdf. January 4.

On June 24, 2008, the Yolo County Board of Supervisors adopted a Construction and Demolition (C&D) Debris Recycling and Diversion Ordinance (Yolo County Code Title 6, Chapter 16) that requires construction, demolition, and renovation projects to dispose of their job waste in an environmentally sustainable manner.¹⁰⁴ This ordinance is in accordance with Assembly Bill (AB) 939 which requires local jurisdictions to divert 50 percent of discarded materials from the landfill.

(3) Green Procurement Policy. As part of Yolo County's ongoing commitment to reduce greenhouse gas emissions, minimize its carbon footprint, and increase sustainability, the Yolo County Board of Supervisors adopted a Green Procurement Policy on March 18, 2008. This policy emphasizes the purchases of recycled products and alternative fuel vehicles, and promotes recycling and waste reduction.¹⁰⁵

c. Draft 2030 Countywide General Plan for Yolo County. The following lists relevant Draft General Plan policies related to solid waste.

Public Facilities and Services Element

- Policy PF-9.1: Meet or exceed State waste diversion requirements.
- Policy PF-9.2: Manage property to ensure adequate landfill space for existing and planned land uses.
- Policy PF-9.3: Employ innovative strategies to ensure efficient and cost-effective solid waste and other discarded materials collection, disposal, transfer and processing.
- Policy PF-9.4: Prioritize disposal and processing capacity at the landfill for waste materials generated within Yolo County, but accept waste materials from outside the County when capacity is available and the rates cover the full cost of disposal and processing.
- Policy PF-9.5: Promote technologies, including biomass or biofuels, that allow the use of solid waste as an alternative energy source.
- Policy PF-9.6: Treat waste materials as potential revenue sources for the County, and maximize the revenue potential associated with the waste stream as new products, economies, needs, and technologies emerge.
- Policy PF-9.7: Solid waste franchisees shall support the smart growth policies for community design contained in this General Plan. This may result in restrictions on collection vehicle size in order to support narrow streets and other desirable community features.
- Policy PF-9.8: Require salvage, reuse or recycling of construction and demolition materials and debris at all construction sites.
- Policy PF-9.9: Encourage use of salvaged and recycled materials in construction.
- Policy PF-9.10: Work with private solid waste handlers to expand collection and recycling services within the unincorporated area.
- Policy PF-9.11: Expand opportunities for energy and/or fuel production resulting from the solid waste disposal process.

¹⁰⁴ Yolo County, 2009. *Construction and Demolition Recycling*. Website: www.yolocounty.org/Index.aspx?page=1616. March 16.

¹⁰⁵ California State Association of Counties, 2008. *California Counties: Around Our Counties*. March 26.

- Action PF-A47: Develop a program to encourage local businesses and farms to: 1) expand their diversion, reuse and recycling efforts including proper recycling or disposal of universal and hazardous wastes; 2) increase their use of recycled materials; and 3) reduce the amount of materials used to package products manufactured in the County.
- Action PF-A49: Develop new and/or expand current diversion and recycling programs for residential, commercial, office, educational, agricultural, and recreational uses.
- Action PF-A50: Acquire sufficient land to maintain long-term landfill operations, including property for mitigation and soil cover.
- Action PF-A58: Maintain the current 70 percent waste diversion for the unincorporated County through 2030.
- Action PF-A59: Designate lands in the vicinity of the landfill and other waste-related processing and transfer facilities through the Yolo County Zoning Code to ensure that potential incompatible land uses which may lead to safety hazards and/or which may imperil the continued operation of these facilities are prohibited.

d. Impacts and Mitigation Measures. This section discusses potential impacts related to the generation and disposal of solid waste that could result from build-out of the Draft General Plan and identifies mitigation measures, if appropriate.

(1) Significance Criteria. The Draft General Plan would result in a significant impact if development would:

- Result in the construction of new solid waste disposal facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Fail to minimize the waste stream for any given land use.

(2) Impacts Analysis. This section discusses potential impacts related to the generation and disposal of solid waste that could result from build-out of the Draft General Plan and identifies mitigation measures, if appropriate.

Result in New Solid Waste Disposal Facilities. As previously described, the majority of solid waste generated in Yolo County would be transported to the Yolo County Central Landfill, which has a future operational life of approximately 72 years (until approximately 2081).

Construction of new development associated with build-out of the Draft General Plan would generate additional solid waste in the County which could require the expansion of the existing disposal facilities which would be a significant impact.

In addition, during the operational phase of development allowed under the Draft General Plan commercial and residential development would produce additional solid waste in the County. Build-out of the Draft General Plan would result in an additional 41,435 residents in the unincorporated County. According to the California Integrated Waste Management Board, residents of Yolo County generate approximately 1 pound of nonhazardous solid waste per day.¹⁰⁶ New employees would also generate additional solid waste. At build-out of the Draft General Plan, unincorporated Yolo County

¹⁰⁶ California Integrated Waste Management Board, 2008. California Waste Stream Profiles: Counties. Website: www.ciwmb.ca.gov/Profiles/County/. November.

would have approximately 32,333 new jobs. According to the California Integrated Waste Management Board, on average employees in Yolo County generate 5.3 pounds of solid waste per day.¹⁰⁷ As shown in Table IV.H-6, growth associated with build-out of the Draft General Plan would generate a total of 41,435 pounds of solid waste from residential uses, and 290,974 pounds of solid waste per day from jobs. In total, at build-out of the Draft General Plan approximately 332,409 pounds (166 tons) of solid waste would be generated per day in the unincorporated portions of the County. This represents approximately 9.2 percent of the permitted daily throughput of the Yolo County Central Landfill (1,800 tons). Therefore, the current capacity of the Yolo County Central Landfill would be sufficient to serve the growth projected to occur under the Draft General Plan.

The following Draft General Plan policies and actions would reduce impacts related to solid waste generated by planned growth by reducing the waste stream, meeting State waste diversion requirements, and maintaining the current 70 percent waste diversion for the unincorporated County: Policies PF-9.1, PF-9.2, PF-9.4, PF-9.5, PF-9.8, PF-9.9, PF-9.10, PF-9.11, and Actions PF-A47 and PF-A58. In regards to construction waste, development projects would be required to salvage, reuse, or recycle construction and demolition materials (Policy PF-9.8) which would reduce a portion of the solid waste sent to the landfill. While the generation of solid waste associated with planned growth is not expected to shorten the life of the Yolo County Central Landfill, per Policy PF-9.2, the County would manage the landfill to ensure adequate space for existing and planned uses, and Action PF-A50 demonstrates the intent of the County to acquire sufficient land to maintain long-term landfill operations, including property for mitigation associated with any expansion and soil cover.

Implementation of the Draft General Plan policies and actions described above and the County programs in place to minimize the waste stream would ensure that construction of new solid waste disposal facilities would not be required, and the expansion of the existing facilities to serve growth allowed under the Draft General Plan would result in a less-than-significant impact.

Fail to Minimize Waste Streams. Build-out of the Draft General Plan would increase solid waste generation within Yolo County. Waste would be generated in association with existing land uses and new development contemplated under the Draft General Plan.

The following Draft General Plan policies and actions would reduce impacts related to solid waste generated by planned residential and commercial growth by reducing the waste stream, meeting State waste diversion requirements, and maintaining the current 70 percent waste diversion for the unincorporated County: Policies PF-9.1, PF-9.2, PF-9.4, PF-9.5, PF-9.8, PF-9.9, PF-9.10, PF-9.11, and Actions PF-A47 and PF-A58. In regards to construction waste, the salvage, reuse, or recycling of construction and demolition debris is required by Policy PF-9.8, and Policy PF-9.9 would help achieve the diversion rate by requiring the recycling or reuse of construction materials and encouraging the use of salvaged and recycled materials in construction.

¹⁰⁷ Ibid.

Table IV.H-6: Additional Solid Waste Generated at Build-out of Draft General Plan (pounds/day)

Town	Additional Residents at Build-out	Residential Debris (residents x 1)	Additional Jobs at Build-out	Job Debris (jobs x 5.3)	Total Amount of Debris Generated at Build-out
Capay Valley	148	148	857	4,542	4,690
Clarksburg	61	61	1,138	10,356	10,417
Dunnigan	23,104	23,104	8,525	77,578	100,682
Esparto	4,202	4,202	258	2,348	6,550
Knights Landing	3,942	3,942	416	3,786	7,728
Madison	4,174	4,174	3,091	28,128	32,302
Monument Hills	70	70	70	637	707
Yolo	156	156	317	2,885	3,041
Zamora	39	39	279	2,539	2,578
Remaining Unincorporated	5,539	5,539	17,382	158,176	163,715
Total	41,435	41,435	32,333	290,974	332,409

Source: LSA Associates, Inc. and California Integrated Waste Management Board, 2009.

Once the new uses allowed under the Draft General Plan are operational, additional waste would be generated by new facilities, operations, businesses, residents, employees, and visitors. Policy PF-9.10 would require the County to work with private solid waste handlers to expand collection and recycling services within the unincorporated area. In addition, implementation of the following Draft General Plan policies would reduce waste streams of all land uses: PF-9.1; Policy PF-9.8; and Policy PF-9.9. Per Action PF-A47, the County will develop a program to encourage local businesses and farms to “1) expand their diversion, reuse and recycling efforts including proper recycling or disposal of universal and hazardous wastes; 2) increase their use of recycled materials; and 3) reduce the amount of materials used to package products manufactured in the County.”

As noted previously, through the CIWMP programs and the ordinances Yolo County has achieved the diversion of more than 50 percent of debris since 2000, and a diverted 74 percent of waste in 2006. Continued compliance with State solid waste regulations, implementation of the County’s CIWMP and waste reduction regulations and programs, and the Draft General Plan policies would ensure that the County would minimize the waste stream from all land uses. Therefore, implementation of the Draft General Plan would not have a significant impact related to minimizing the waste stream.

5. Energy

The following subsection describes energy production and use in the unincorporated areas of Yolo County.

a. Existing Conditions. Energy in the County is currently available from fossil fuels, natural gas fields, hydroelectric facilities, solar energy, hydrogen fuel, and biofuels.

(1) Energy Supplier. The Pacific Gas and Electric Company (PG&E) supplies most of Yolo County with electricity and natural gas. PG&E operates electricity infrastructure in the County and throughout Northern California, including power lines, powerhouses, and substations. A map showing

the electrical substations and transmission lines is shown in Figure IV.H-5. PG&E serves a total of 15 million people throughout a 70,000 square mile service area in northern and central California. Private companies provide service for some of the unincorporated areas of the County that are not covered by PG&E.¹⁰⁸ In 2007, the total amount of electricity consumed by Yolo County was 1,744 million kilowatt hours (1,744,000 megawatt hours)¹⁰⁹ consumed by 79,926 residential and nonresidential accounts. While nearly 70,000 of those accounts were residential in nature, the nonresidential accounts used nearly 70 percent of the total electricity consumed by the entire County.¹¹⁰

(2) Energy Sources. Power is generated in the County from a variety of sources including: fossil fuels, natural gas fields, hydroelectric facilities, solar energy, hydrogen fuel and biofuels, each of which are discussed below.

Power Plants. There are three power plants located within the County. One is a 3-megawatt (MWh) oil/gas facility located owned and operated by U.C. Davis. Primary fuel for this facility is natural gas. In addition, there are two waste-to-energy (WTE) facilities located in Yolo County that operate on biofuels, specifically agricultural wastes, wood wastes and landfill gas. As previously discussed, one of the WTE sites is in the Yolo County Central Landfill facility in Woodland where the County contracts with an outside company to recover the landfill gas and generate energy.

Currently, the landfill plant, which is operated by Minnesota Methane, has a capacity of 2 to 3 megawatts. This energy is sold under contract to the Sacramento Municipal Utility District (SMUD). The other WTE facility is Woodland Biomass, located in the eastern industrial area of the City of Woodland. It burns discarded wood and plant material, such as pallets, tree trimmings, rice hulls, and agricultural waste, to power a steam turbine that has a capacity of 25 megawatts.

Natural Gas. In recent years, natural gas has become more important to the County's economy. According to the California Department of Transportation, there are approximately 25 gas fields located within Yolo County. Natural gas has been produced from the Dunnigan Hills, from the Fairfield Knolls gas field northeast of Winters, and from the Rumsey Hills area east of Rumsey. Natural gas wells have also been established in Clarksburg, Yolo, and Davis. A large gas storage area, with a maximum capacity of 3.25 billion cubic feet, has been identified at the dry Pleasant Creek gas field, located 2.5 miles north of Winters. The 1982 Energy Plan for Yolo County listed Yolo County estimated natural gas reserves at 117,402 million cubic feet (MMcf). While further research is needed to determine the extent of present day countywide reserves, active drilling by Aspen (which has obtained approximately 20 gas/oil permits since 2002) indicates that there are remaining gas reserves in deeper, overlooked, or undrilled areas of the County.¹¹¹

¹⁰⁸ Yolo County, 2003. Yolo County Administrative office, Economic Development Council. *Yolo County Business Matters 2003 Profile*. April.

¹⁰⁹ California Energy Commission, 2009. *Electricity Consumption by County*. Website: ecdms.energy.ca.gov/elecbycounty.asp. January 5.

¹¹⁰ California Energy Commission, 2005. *California Electricity Consumption by County in 2005*. Website: www.energy.ca.gov/electricity/electricity_by_county_2005.html

¹¹¹ Morrison, David, 2009. Assistant Director, Yolo County Planning and Public Works Department. Written communication with LSA Associates, Inc. March 14.

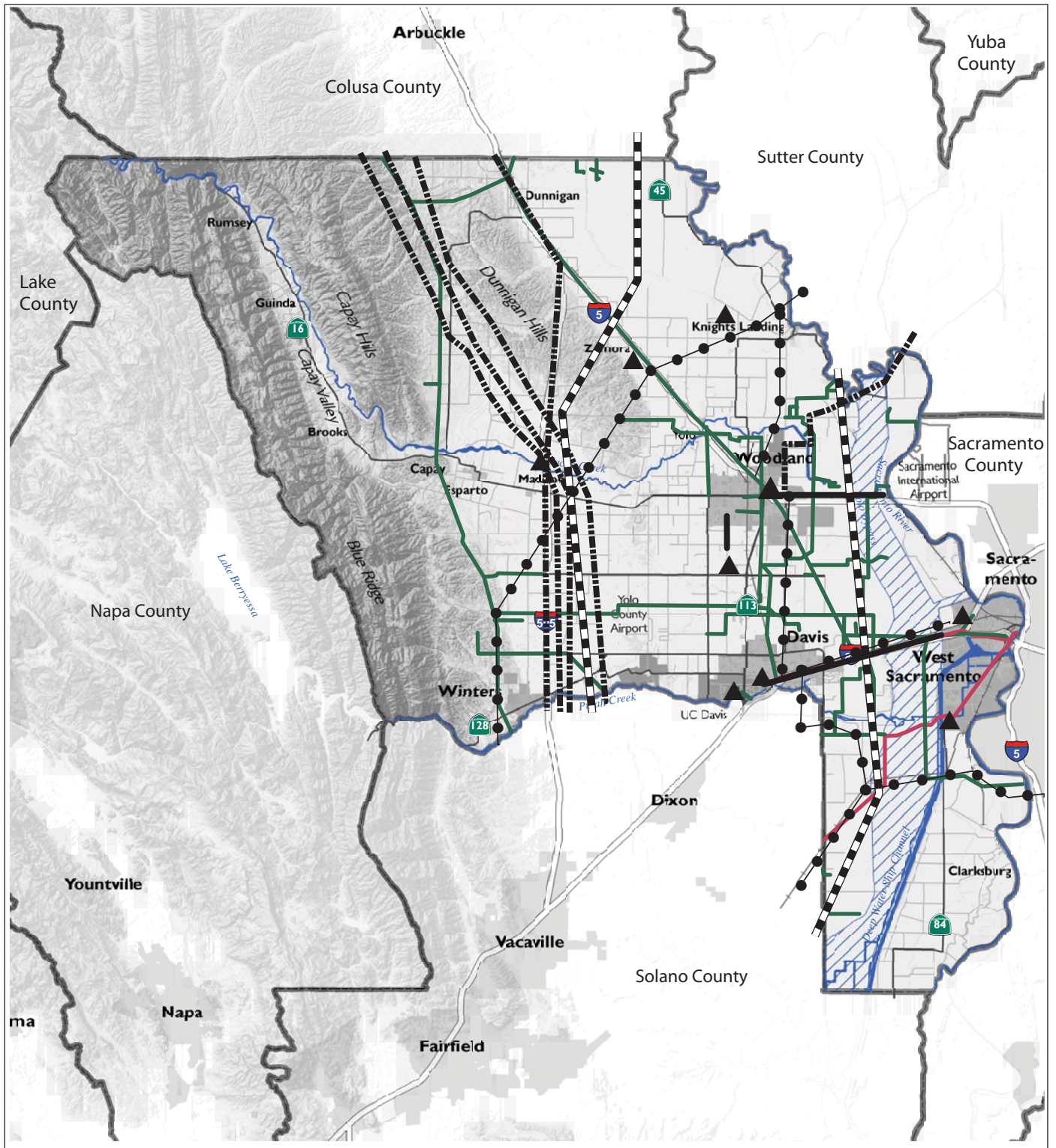
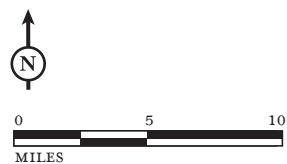


FIGURE IV.H-5

LSA



- ▲ Substation
- 60 kV Line
- 115kV Line
- +—+—+ 230 kV Line
- +—+—+ 500 kV Line
- Gas Transmission
- Hazardous Liquid
- Incorporated Cities

Yolo County 2030 Countywide
General Plan EIR
Utility Easements

SOURCE: TRANSMISSION LINE ELEMENT, YOLO COUNTY GENERAL PLAN, 1990.

F:\CYK0701 yolo county\figures\EIR\Fig_IVH5.ai (4/10/09)

Propane. Propane, also known as liquefied petroleum gas, is also used in the County as an energy source in areas without access to natural gas distribution lines. From the refinery or processing plant, propane is shipped to an intermediate terminal, and from there, it is shipped to the local propane supplier for delivery to commercial, residential, industrial, agricultural, and recreational users. Once purchased by businesses and residents, the propane is generally stored in private storage tanks at homes and business operations. Tanks for residential uses are available in a variety of sizes and may either be above ground or underground. Propane is typically used for home heating, water heating, cooking, clothes drying, barbecuing, and pool heating.

Propane is supplied to the County by various propane suppliers, including Viking Propane, Suburban Propane, Amerigas, Sheldon Gas, Allied Propane, and Capitol City Propane. For many of the propane suppliers, data regarding amount of propane sold to users in Yolo County is not readily available. Viking Propane estimates that they sold 930,000 gallons of propane in 2008,¹¹² and Suburban Propane estimates they sold approximately 700,000 gallons of propane in 2008.¹¹³ These rough estimates indicate that more than 1,630,000 gallons of propane were sold to residential, commercial, industrial, agricultural, and recreational users in the County.

Hydroelectric Power. Although there are no hydroelectric facilities within the County, the Yolo County Flood Control and Water Conservation District operates two hydroelectric plants both of which are located in Lake County. The generator at Indian Valley Reservoir has a maximum capacity of 3,000 kilowatts, while the facility at Cache Creek Dam (downstream of Clear Lake) has a capacity of 1,750 kilowatts.

Solar Energy. Solar power is utilized throughout the County. Since 2006, there have been more than 100 permits for residential solar installation.¹¹⁴ Two of the larger facilities in the County that generate solar energy are the owned by the City of Davis and Cache Creek Casino Resort. The City of Davis currently leases the Davis Photovoltaics for Utility Scale Applications solar panels and research facility to a private company for operation. Energy generated at this site goes into the energy grid and the City of Davis receives credits for the energy generated. The facility currently has authorization to generate 1.0 megawatt of power.

The Cache Creek Casino Resort generates and uses solar energy to power the resort. The resort commissioned a 307.2kW photovoltaic power generation station on the resort's grounds. The solar panels are able to produce electricity equivalent to the requirements of about 73 homes a year for at least the next 25 years to power the casino and related facilities.

Potential for solar energy use exists in all sectors of Yolo County, including residential, commercial, industrial, and agricultural. While solar energy may or may not be economically viable in certain sectors or regions within the County at present, it remains an existing energy resource that may be

¹¹² Erickson, Karah, 2009. Manager, Viking Propane, Inc. Written communication with David Morrison, Yolo County Planning and Public Works Department. March 11.

¹¹³ Darwazen, Kevin, 2009. Manager, Suburban Propane. Personal communication with LSA Associates, Inc. March 12.

¹¹⁴ Morrison, Davis, 2009. Assistant Director, Yolo County Planning and Public Works Department. Written communication with LSA Associates, Inc. February.

utilized as an alternative to traditional energy sources in the future. Further research would need to be conducted to determine economic viability in the current economy.

Other Sources. The County has explored other indigenous energy sources, such as geothermal and wind. The County has commissioned studies to determine the potential for indigenous energy production and concluded that there are no geothermal resource areas within the County, but there is potential for a large-scale application of wind power which appears to be both technically and economically feasible. Wind power to date has only been developed at small scales by private landowners.

Hydrogen fuels is another energy source that is produced and sold by U.C. Davis from an on-site hydrogen fueling station that provides hydrogen enriched natural gas and pure hydrogen energy.

(2) Energy Conservation Efforts. Energy conservation is a central component of Yolo County's energy policy. Conservation is achieved through a reduction in electricity usage and private automobile use, encouraging efficient siting and exposure for buildings, and implementing land use and transportation policies that encourage fewer and shorter vehicle trips. In addition to these general tactics, several other conservation efforts have helped the County reduce energy use.

One of the objectives of the 1982 Yolo County Energy Plan is to promote the most energy efficient systems for agricultural irrigation. Currently, PG&E is funding the Agricultural Pumping Efficiency Program (APEP), which is expected to run through 2008. The program addresses ENO 13, as it intends to focus on several important resource management problems in California, including: energy conservation, water conservation, water quality, and air quality. The goals of APEP is to put highly efficient hardware (including pumping plants, irrigation systems, and water distribution systems) in the field and to ensure this hardware is managed correctly. Each year, APEP provides approximately 2,050 subsidized pump efficiency tests, gives out cash incentives for 295 pump retrofit projects, and holds 14 educational seminars.

APEP is part of a continuous effort by the Center for Irrigation Technology (CIT) which seeks to achieve energy conservation through improved irrigation efficiency. From 2001 to 2005, CIT provided water pumpers with 431 pump retrofits and repair rebates totaling \$1,300,000 in incentive rebates. In total, those projects have saved 19,400,000 kWh hours and 355,000 therms annually. From 2001 through 2003, CIT was able to conserve 88.6 gigaWatt-hours of energy annually through the Agricultural Peak Load Reduction Program.

The Yolo County Efficiency Project (YEPP) was an energy conservation program that provided Yolo County residents and business with energy efficiency rebates. YEPP ran from 2004 and 2005 and during that time distributed free compact fluorescent light bulbs, gave a \$1 per square foot rebate on sun screens, and significant rebates for lighting improvements for small businesses. It is estimated that by the end of 2005, Yolo County saved approximately 7.7 million kWh hours of electricity and \$1.1 million on energy bills. The energy savings translates into about \$16 million over the 15-year lifetime of the energy measures.

On September 11, 2007 Yolo County joined the other 12 charter member counties in pledging to participate in the Cool Counties Climate Stabilization Declaration, a new initiative to combat global

warming. As a participant, Yolo County will seek to reduce global warming emissions 80 percent by 2050.

b. Regulatory Framework. The following subsection details the regulatory framework for energy production in California.

(1) Federal Energy Regulatory Commission. Prior to the construction of any hydroelectric facilities, licenses must be obtained from the Federal Energy Regulatory Commission (FERC). As part of the license application process, environmental analysis pursuant to the National Environmental Policy Act (NEPA) must be conducted. FERC also regulates the construction of interstate natural gas pipelines that serve California. FERC acts under the legal authority of the Federal Power Act of 1935, the Public Utility Regulatory Policies, and the Energy Policy Act of 1992, as well as several other federal acts.

(2) California Public Utilities Commission. The California Public Utilities Commission (CPUC) regulates privately owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. General Order 121-D grants the CPUC permitting authority over the construction of new and expanded power plants, electric transmission lines, and substations. Pursuant to CEQA, an environmental analysis must be conducted before issuance of construction permits by CPUC. The CPUC also regulates local natural gas distribution facilities and services, as well as interstate pipelines.

(3) California Energy Commission. The California Energy Commission (CEC) is the State's primary energy policy and planning agency. It was first created by the Legislature in 1974 and their responsibilities include: forecasting future energy needs and keeping historical energy data; licensing thermal power plants 50 megawatts or larger; promoting energy efficiency through appliance and building standards; developing energy technologies and supporting renewable energy; and planning for and directing State response to energy emergencies.¹¹⁵

(4) California Energy Efficient Standards. California State Building Standards Code Title 24, Part 6, the "Energy Efficiency Standards for Residential and Nonresidential Buildings" were established in 1978 as a response to a legislative mandate to reduce California's energy consumption. Title 24, Part 6 requires that all new residential and nonresidential development comply with several energy conservation standards through the implementation of a variety of energy conservation measures in new construction, including ceiling, wall, and concrete slab insulation; vapor barrier; weather stripping on doors and windows; closeable doors on fireplaces; insulated heating and cooling ducts; water heater insulation blankets; and certified energy efficient appliances.

The Standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The CEC adopted changes to the 2005 Building Energy Efficiency Standards in 2004 and revised in 2006 for a number of reasons, including: to respond to California's energy crisis; reduce energy bills; increase energy delivery system reliability; and contribute to an improved economic condition of the State.

¹¹⁵ California Energy Commission, 2008. Website: www.energy.ca.gov/commission/index.html

(5) **Yolo County Energy Plan.** The Yolo County Energy Plan was adopted in 1982 as part of the Yolo County General Plan.¹¹⁶ The plan provides goals, objectives, policies, and implementation measures that address various aspects of energy conservation. The plan encourages the use of biomass energy resources, the use of solar, wind, and hydroelectric energy sources for agricultural applications, other measures to achieve energy efficient agricultural practices, and to increase the fuel economy for passenger vehicles and pickups. These are just a few of the numerous energy conservation strategies outlined in the plan. The County proposes to update this plan under the Draft General Plan (see Action CO-A115).

(6) **Community-Choice Energy Alliance.** The County also has an opportunity to establish a Community-Choice Energy Alliance (enabled by Assembly Bill 117, Statutes of 2002) which would allow the County through the alliance to take over the role of purchasing electricity for its residents, businesses and municipal facilities. The County proposes to examine this opportunity under the Draft General Plan (Policy PF-10.1).

c. **Draft 2030 Countywide General Plan for Yolo County.** The following lists relevant General Plan policies related to energy production and conservation.

Land Use and Community Character Element

- Policy CC-2.3: Include open space corridors and trails throughout each community to provide off-street bicycle and pedestrian access, as well as connections to intra-county corridors and trails.
- Policy CC-2.5: Plan future land uses within communities so that more dense/intense uses are located within the downtown area and/or at neighborhood centers, transitioning to less dense/intense uses at the growth boundary edge. There is no intent to create or allow a ring of “transitional” rural residential development outside the growth boundaries.
- Policy CC-2.6: Encourage infill development and the appropriate redevelopment of vacant and underutilized properties within existing unincorporated communities and prioritize infill projects over development on land at the planned community edge.
- Policy CC-2.7: Provide for higher density housing and mixed-use development in the downtown areas of the unincorporated communities to support commercial uses, create more pedestrian travel, extend activity into the evening, increase the variety of housing opportunities to include affordable and special needs housing, enhance safety, reduce traffic and support regular, frequent fixed-route transit service.
- Policy CC-2.16: Require the following sustainable design standards as appropriate for projects located within the growth boundaries of the unincorporated communities:
 - A. Imaginative and comprehensive planning that seeks to make best use of existing community features and fully integrate new development.
 - B. Compact and cohesive communities that promote walking, bicycling and public transit.
 - C. Well defined neighborhoods served by parks, schools, greenbelts and trails.
 - D. The fiscal impacts of development projects shall be revenue neutral or positive in terms of impacts to the County General Fund. Appropriate exceptions for socially beneficial projects such as affordable housing, parks, etc. may be allowed.
 - E. Distinct neighborhood focal points such as a park and/or school and/or small neighborhood-serving retail site.

¹¹⁶ Yolo County, 1982. *Yolo County Energy Plan*.

- F. Narrow streets lined with evenly-spaced trees of the same or alternating species forming a shade canopy.
- G. Vertical curbs and sidewalks separated from the street by landscaping.
- H. Street lighting and trail lighting, as appropriate, at a scale appropriate for pedestrians and bicycles.
- I. Maximum block lengths of 600 feet.
- J. Schools within walking distance of a majority of the homes served.
- K. A wide range of housing types, densities, sizes and affordability.
- L. Where housing is not near the downtown area, allow small neighborhood commercial nodes that provide retail and small office opportunities for neighborhood residents with the goal of accommodating routine daily needs within walking distance of most residents.
- M. Incorporate a grid street network that provides safe and efficient travel for all modes throughout the community with multiple connections to exterior routes.
- N. Orient the grid pattern of new streets to align north/south and east/west, to give a sense of place and direction in new community areas, as well as to maximize solar access.
- O. Downtown streets shall have parking on both sides.
- P. Downtown areas shall have one or more civic nodes such as a central park, town square, fountain plaza, etc.
- Q. Homes that do not back onto roads, parks, schools, greenbelts, trails, or water bodies. Instead, homes that front on these features shall access by way of single-loaded streets or other designs to improve public aesthetics and neighborhood security.
- R. Development regulations and design standards shall emphasize healthy community design and safe neighborhoods.
- S. Avoid noise walls to the greatest possible extent.
- T. Entry features shall be provided at all main community entrances and exits and shall announce the community by name.
- U. Except for parking provided onsite for individual residential lots, parking shall be located to the rear of the facility being served and screened from public view. Parking shall be landscaped to achieve a minimum of 50 percent shading.
- V. Development and incorporation of community art and activities.
- W. Encourage specific land uses and designs that support community diversity.
- X. Protect and preserve to the greatest feasible extent creeks, riparian areas and other biological values within or adjoining an area.
- Y. Incorporate low-water use appliances, drought tolerant landscaping and other water efficient features.
- Z. Provide convenient and secure bicycle parking in downtown areas.
- AA. To the greatest possible extent, avoid cul-de-sacs that create barriers for pedestrian and bicycle access to adjacent areas.
- BB. Include recharging stations, preferred parking, and other incentives for alternative energy vehicles.
- CC. Limit the amount of turf in yards for new residential developments to a maximum of 25 percent of the yard area.

- DD. Require the installation of low output sprinklers, such as drip, soaker hoses, and microspray in new residential development whenever possible.
- GG. Use recycling systems for chillers and cooling towers.
- HH. Demonstrate adherence to LEED Neighborhood Design Standards or the equivalent, for new development, including Specific Plans.
- II. Demonstrate consistency with the County's Greenhouse Gas Emissions Reduction/Climate Action Plan(s), upon adoption.
- Policy CC-4.1: Reduce dependence upon fossil fuels, extracted underground metals, minerals and other non-renewable resources by:
 - Requiring projects to take advantage of shade, prevailing winds, landscaping and sun screens to reduce energy use.
 - Encouraging projects to use regenerative energy heating and cooling source alternatives to fossil fuels.
 - Encouraging projects to select building materials that require less energy-intensive production methods and long-distance transport, in compliance with Leadership in Energy and Environmental Design (LEED) or equivalent standards.
- Policy CC-4.3: Reduce activities that encroach upon nature, through:
 - Reuse of existing buildings and sites for development.
 - Compact and clustered residential development, including reduced minimum lot sizes.
 - Reduction or elimination of impervious paving materials.
 - Development patterns that respect natural systems such as watersheds and wildlife corridors.
- Policy CC-4.4: Encourage all new construction to be zero-net energy by combining building energy efficiency design features with on-site clean distributed generation so as to result in no net purchases from the electricity or gas grid.
- Policy CC-4.5: Encourage individual and community-based wind and solar energy systems (micro-grids).
- Policy CC-4.6: Encourage all new residences to exceed Title 24 energy standards by at least 15 percent, and encourage all new commercial buildings to exceed Title 24 by at least 20 percent.
- Policy CC-4.7: Require energy efficient design for all buildings.
- Policy CC-4.8: Require measures to minimize "heat islands" by requiring light-colored and reflective roofing materials and paint; light colored roads and parking lots; extensive numbers of shade trees in parking lots; and shade trees and/or overhangs on the south and west sides of new or renovated buildings.
- Policy CC-4.9: Encourage construction and other heavy equipment vehicles (e.g. mining, agriculture, etc.) to use retrofit emission control devices.
- Policy CC-4.10: Require project design to demonstrate adherence to sustainable and neo-traditional design as described in the Ahwahnee Principles and as provided in the SACOG Blueprint, including any amendments or successor documents thereto.
- Policy CC-4.11: Require site specific information appropriate to each application to enable informed decision-making, including but not limited to the following: biological resources assessment, noise analysis, traffic and circulation assessment, air quality calculations (including greenhouse gases), cultural resources assessment, geotechnical study, Phase One environmental site assessment, title report, storm drainage analysis, flood risk analysis, water supply assessment, sewer/septic capacity and service analysis and fiscal impact analysis.

- Policy CC-4.12: Require “green” design, construction and operation including:
 - A. Site planning sensitive to the natural environment.
 - B. Efficiency in resource use (including energy, water, raw materials and land).
 - C. Building reuse and adaptive reuse.
 - D. Selection of materials and products based on their life-cycle environmental impacts.
 - E. Use of materials and products with recycled content.
 - F. Use of materials provided from within the region.
 - G. Recycling of construction and demolition waste.
 - H. Reduction in the use of toxic and harmful substances in the manufacturing of materials and during construction.
 - I. Use of passive and active solar strategies and efficient heating and cooling technologies.
 - K. Reduction in water use for buildings and landscaping.
 - L. Light pollution reduction.
 - M. Improvements to interior and exterior environments leading to increased health, comfort and productivity.
 - N. Facility maintenance and operational practices that reduce or eliminate harmful effects on people and the natural environment during occupancy.
- Policy CC-4.13: Strongly encourage LEED certification for all public, private and existing buildings and LEED-Neighborhood Design (ND) for other applicable projects.
- Action CC-A11: Adopt a “Green Building Program” to promote green building standards. Require energy efficient appliances and equipment in all new development. (Policy CC-4.13, Policy CC-4.14)
- Action CC-A29: Develop and enforce bike parking standards and design criteria for all land uses identified in zoning code, including number of spaces, location and type of facilities.
- Action CC-A31: Amend the County Code to incorporate “smart growth” planning principles and design guidelines that emphasize compact, walkable neighborhoods, open space, alternative transportation, public safety, sustainable design, and sensitivity to natural resources.

Circulation Element

- Policy CI-2.1: When constructing or modifying roadways, plan for use of the roadway space by all users, including automobiles, trucks, alternative energy vehicles, agricultural equipment, transit, bicyclists, and pedestrians, as appropriate to the road classification and surrounding land uses.
- Policy CI-2.2: Encourage employers (including the County) to provide transit subsidies, bicycle facilities, alternative work schedules, ridesharing, telecommuting and work-at-home programs, employee education and preferential parking for carpools/vanpools.
- Policy CI-2.3: Ensure that, wherever feasible, public transit and alternative mode choices are a viable and attractive alternative to the use of single-occupant motor vehicles.
- Policy CI-2.4: The comfort, convenience, and safety of bicyclists and pedestrians are as important as, and should be balanced to the greatest feasible extent with, those same values for drivers.
- Policy CI-5.1: Work with local and regional agencies to implement a regional bikeway and/or alternative energy vehicle system that connects the cities, larger unincorporated communities and scenic areas. Implement a dedicated multi-purpose bikeway between Woodland and Davis as part of this effort.

- Policy CI-5.5: Integrate bicycle, pedestrian and transit facilities into new developments.
- Policy CI-5.8: Include sidewalks and bikeways on newly constructed or modified bridges and overpasses, where feasible.
- Policy CI-5.9: Strive to incorporate bikeways and sidewalks with modifications or upgrades to existing roadways consistent with the Bicycle Transportation Plan.
- Policy CI-5.12: Support development of facilities that link bicyclists and pedestrians with other modes of transportation.
- Policy CI-5.15: Develop and design a system of bikeways and sidewalks that promote safe bicycle riding and walking for transportation and recreation, with particular emphasis on establishing a network of safe routes from residential areas to schools.
- Policy CI-6.4: Support convenient and efficient public transportation to workplaces, government services, shopping and other destinations.
- Policy CI-6.5: Integrate transit stops into new residential and employment center developments.
- Policy CI-6.6: Support YCTD in establishing, expanding and improving a balanced public transportation system, integrated with Sacramento Regional Transit.
- Policy CI-6.11: Require new development to include design elements that promote transit use, such as:
 - Locating sheltered bus stops near neighborhood focal points.
 - Locating transit routes on streets serving medium-high density development whenever feasible.
 - Linking neighborhoods to bus stops through continuous bikeways and sidewalks.
 - Providing direct bicycle and pedestrian access to transit stops, park-and-ride lots, alternative fuel stations, bicycle racks, train access (e.g. Dunnigan, Yolo and Zamora), public docks for water taxis (Clarksburg, Elkhorn and Knights Landing) and airport shuttles (Elkhorn).
- Action CI-A3: Update the Bicycle Transportation Plan, including the California Delta Trail, and other potential routes along levees, abandoned railroads, waterways, transmission right-of-ways and willing landowners.
- Action CI-A6: Develop a transit plan as a part of each Specific Plan. Condition future development to provide right-of-way or public easements for identified transportation and circulation facilities including bikeways, trails and transit facilities. The transit plan shall include future targets for public transportation ridership, levels of service and measurable steps to achieve the targets.
- Action CI-A22: Create special districts in Specific Plan areas and other areas where appropriate to fund operation and maintenance of alternative transportation modes, with an emphasis on public transit.

Public Facilities and Services Element

- Policy PF-10.1: Pursuant to AB 117 (Statutes of 2002) explore “community choice aggregation” as a means of facilitating the purchase of electrical energy at the local level for community needs.
- Policy PF-10.2: Streamline the permitting process for the production of other energy alternatives (including but not limited to photovoltaic, solar, wind, biofuels, and biomass) to reduce dependency on fossil fuels.
- Policy PF-10.3: Provide financial and regulatory incentives for the installation of alternative energy and alternative energy conservation measures in all development approvals.
- Policy PF-10.4: Provide financial and regulatory incentives for the installation of alternate energy and other alternate energy conservation measures for agriculture.

- Action PF-A64: Amend the County Code to streamline permitting requirements for small community power systems that utilize clean resource-based renewable energy (e.g. wind, solar, and biodiesel).
- Policy PF-11.1: Encourage the development of power generating and transmission facilities sufficient to serve existing and planned land uses.
- Action PF-A68: Promote, and require where feasible, use of sustainable renewable energy sources to power homes, businesses, agriculture, and infrastructure.
- Action OF-A70: Establish location and design criteria for siting of power plants and transmission facilities.

Agriculture and Economic Development Element

- Action AG-A13: Reduce development restrictions for new and/or expanded agricultural processing, on-site agricultural sales, and bioenergy production.
- Policy ED-5.1: Assist businesses in reducing their dependence upon non-renewable resources, such as fossil fuels.

Conservation and Open Space Element

- Policy CO-5.2: Support projects that provide reliable and sustainable surface water from a variety of energy efficient sources. Sources should be sufficient to serve existing and planned land uses in prolonged drought periods and protect natural resources and surface water flows.
- Policy CO-7.1: Encourage conservation of natural gas, oil and electricity, and management of peak loads in existing uses.
- Policy CO-7.2: Support efforts to improve energy efficiency in existing irrigation systems.
- Policy CO-7.3: Require all projects to incorporate energy-conserving design and construction techniques and features.
- Policy CO-7.4: Require the use of Energy Star certified appliances, such as water heaters, swimming pool heaters, cooking equipment, refrigerators, furnaces and boiler units, where feasible.
- Policy CO-7.5: Require all new parking lots to significantly increase shading to relieve the potential for "heat islands."
- Policy CO-7.6: Encourage the use of building materials and methods that increase energy efficiency a minimum of 15 percent beyond State Title-24 standards for residential buildings and 20 percent beyond State Title 24 standards for commercial buildings.
- Policy CO-7.7: Support farmers and landowners in their efforts to maximize the efficiency of agricultural end uses.
- Policy CO-7.8: Increase energy efficiency and alternative energy utilization in existing buildings where feasible.
- Policy CO-7.9: Require that new site and structure designs maximize energy efficiency.
- Policy CO-7.10: Encourage residents to retrofit existing residences to maximize energy efficiency.
- Policy CO-7.11: Strongly encourage LEED certification or equivalent for all public, private, existing buildings, and strongly encourage LEED-Neighborhood Design (ND) certification for other applicable projects, particularly within the Specific Plan areas.
- Action CO-A115: Develop a Greenhouse Gas (GHG) Emissions Reduction Plan and/or Climate Action Plan (CAP) for the County, to control and reduce net GHG emissions, and to address economic and social adaptation to the effects of climate change. Development of this plan(s) shall include the following steps: 1) conduct a baseline analysis (GHG emissions inventory) for 1990; 2) adopt an emissions reduction target; 3) develop strategies and actions for reducing emissions including direct offsets and fees to purchase offsets;

4) develop strategies and actions for adaptation to climate change; 5) implement strategies and actions; and 6) monitor emissions and verify results a minimum of every five years starting in 2010. Encourage collaboration with the cities to include the incorporated areas in the plan(s). Require County operations and actions, as well as land use approvals to be consistent with this plan(s). Utilize the 1982 Energy Plan as a starting point for this effort.

d. Impacts and Mitigation Measures. This section discusses potential impacts to energy services and infrastructure that could result from build-out of the Draft General Plan and identifies mitigation measures, if appropriate.

(1) Significance Criteria. The Draft General Plan would have a significant impact on the environment if it would:

- Create a substantial adverse increase in overall per-capita energy consumption;
- Increase the demand for electricity, propane, or natural gas in excess of available or planned supply or distribution;
- Increase reliance on non-renewable energy resources;
- Fail to encourage the use of alternative fuels, renewable energy sources, and energy conservation;
- Use fuel or energy in an inefficient, wasteful, or unnecessary manner;
- Fail to result in siting, orientation, and/or design to minimize energy consumption;

(2) Impacts Analysis. This section discusses potential impacts to energy use, services and infrastructure that could result from build-out of the Draft General Plan and identifies mitigation measures, if appropriate.

Create Substantial Increase in Overall Consumption. Build-out of the Draft General Plan would generate additional demand for energy supplies and energy supply services, including the provision of electricity, natural gas, and propane.

According to the California Energy Commission's Energy Consumption Data Management System,¹¹⁷ the total electricity consumption for Yolo County for the year 2007 (the most recent year for which data is available) was 1,744,000 MWh, representing an electricity energy consumption rate of 8.927 MWh per capita.¹¹⁸ The projected total annual energy demand at build-out of the Draft General Plan is shown in Table IV.H-7 as being approximately 2,118,826 MWh. This represents a 21 percent increase in electricity energy consumption over existing (2007 data year) conditions. However, based on the projected total County population under build-out of the Draft General Plan of 227,126 persons for the year 2030, this would represent an energy consumption rate of 9.328 MWh per capita. This represents only a 4.49 percent increase in per capita electricity energy consumption over existing (2007 data year) consumption rates.

¹¹⁷ California Energy Commission, Energy Consumption Data Management System.
<http://ecdms.energy.ca.gov/gasbycounty.asp>

¹¹⁸ Based on population data obtained from State of California, Department of Finance, E-1 Population Estimates for Cities, Counties and the State with Annual Percent Change — January 1, 2007 and 2008. Sacramento, California, May 2008.
http://www.dof.ca.gov/research/demographic/reports/estimates/e-1_2006-07/

Table IV.H-7: Projected Annual Energy Demand At Build-out Of Draft General Plan (kwh)

Town	Additional Dwelling Units	Household Energy Demand (du x 10,660) ^a	Additional Commercial/Industrial Acreage	Additional Commercial/Industrial square footage (acres x 21,780) ^c	Commercial/Industrial Energy Demand per square foot (sq ft x 26.7)	Total Energy Demand at Build-out
Capay Valley	53	564,980	127.6	2,779,128	74,202,718	74,767,698
Clarksburg	22	234,520	103	2,243,340	59,897,178	60,131,698
Dunnigan	8,281	88,275,460	790.5	17,217,090	459,696,303	547,971,763
Esparto	1,506	16,053,960	53.3	1,160,874	30,995,336	47,049,296
Knights Landing	1,413	15,062,580	51.1	1,112,958	29,715,979	44,778,559
Madison	1,496	15,947,360	182.6	3,977,028	106,186,648	122,134,008
Monument Hills	25	266,500	18.7	407,286	10,874,536	11,141,036
Yolo	56	596,960	19.9	433,422	11,572,367	12,169,327
Zamora	14	149,240	29.8	649,044	17,329,475	17,478,715
Remaining Unincorporated	1,932	20,595,120	1,995.80	43,468,524	1,160,609,591	1,181,204,711
Total	14,798	157,746,680	3,372	73,448,694	1,961,080,130	2,118,826,810

^a Assumption of annual household electricity use of 10,660 kwh per household is from: Yolo County, 2008. U.S.

Household Energy Consumption: Non-LEED Home.

^b Assumption of annual commercial energy use of 26.7 kwh per square foot is from: Energy Information Administration, 2008. *Annual Energy Review 2007; Energy Consumption by Sector.* June.

^c While there are 43,560 square feet per acre, 21,780 square feet was used because the Draft General Plan allows an FAR of 0.5 for Commercial General and Industrial uses.

Source: LSA Associates, Inc. 2009.

The assumption of annual household and commercial/industrial electricity use is based on consumption rates of conventional (non-LEED) homes and commercial/industrial buildings. Therefore, the projected total County energy consumption is a very conservative estimate as the Draft General Plan contains numerous policies that encourage LEED certification of buildings and require implementation of energy efficiency measures. Therefore, it is expected that this per capita consumption rate would actually decrease under build-out of the Draft General Plan (although it is not feasible to calculate by what degree). Thus, the additional energy demand projected at build-out of the Draft General Plan would not represent a substantial increase in overall per-capita energy consumption.

In addition, implementation of the following Draft General Plan policies would promote smart growth in the County and would minimize energy consumption: CC-2.3; CC-2.5; CC-2.6; CC-2.7; CC-2.16; CC-4.1; CC-4.4; CC-4.5; CC-4.6; CC-4.7; CC-4.8; CC-4.9; CC-4.10; CC-4.11; CC-4.12; CC-13; CI-1.3; CI-2.1; CI-2.2; CI-2.3; CI-5.1; CI-5.5; CI-5.6; CI-5.8; CI-5.9; CI-5.12; CI-5.15; CI-6.4; CI-6.5; CI-6.6; CI-6.11; ED-5.1; PF-9.4; PF-10.1; PF-10.2; PF-10.3; CO-5.2; CO-7.1; CO-7.2; CO-7.3; CO-7.4; CO-7.5; CO-7.6; CO-7.7; CO-7.8; CO-7.9; and CO-7.10.

Specifically, implementation of the above Draft General Plan policies would help to minimize energy consumption by: encouraging higher density infill development (policies CC-2.5; CC-2.6; CC-2.7; and CC-2.16); encouraging energy conservation, efficiency, and green design in new construction and existing buildings (policies CC-4.4, CC-4.6, CC-4.7, CC-4.10, CC-4.12, CC-4.13, CO-7.3, CO-7.4, CO-7.6, CO-7.9, and CO-7.10); reducing the infrastructure energy demands by encouraging

alternative transportation such as bicycling, walking, and public transit (policies CC-2.3, CI-2.1, CI-2.2, CI-2.3, CI-5.1, CI-5.5, CI-5.6, CI-5.8, CI-5.9, CI-5.12, CI-5.15, CI-6.4, CI-6.5, CI-6.6, and CI-6.11); and through the promotion of alternative energy sources (policies CC-4.5 and CO-7.3). The Draft General Plan policies and mitigation measures for reducing vehicle miles traveled (VMT) and greenhouse gas emissions are discussed in section IV.C Transportation and Circulation and section IV.F Global Climate Change.

The policies listed above that specifically encourage energy efficient development include policies that strongly encourage LEED certification or equivalent for all public, private, and existing buildings, and strongly encourage LEED-Neighborhood Development (ND) certification for other applicable projects, particularly those within the Specific Plan areas. While it is too speculative to analyze the exact reduction in energy consumption that would result from projects throughout the County that do achieve these levels of certification, it should be noted LEED certified buildings do result in substantial reductions in energy consumption. For example, according to the final report for Energy Performance of LEED for New Construction Buildings,¹¹⁹ the average LEED certified building realizes 25 to 30 percent in energy savings over the national average new building. In addition, average savings increase substantially as performance goals increase with higher levels of LEED certification (i.e., gold and platinum rated buildings average energy consumption rates are 45 percent better than non-LEED buildings).

Thus, although it is too speculative to calculate the anticipated energy savings that would result from implementation of these specific policies, it is evident that build-out of the General Plan would realize a reduction in per capita energy consumption. Build-out of the Draft General Plan would not result in a substantial increase in overall per-capita energy consumption, and this impact would be less than significant.

Increase Demand in Excess of Planned Supplies or Distribution. As previously stated, build-out of the Draft General Plan would generate additional demand for electricity, natural gas, and propane supplies and distribution. Build-out of the Draft General Plan is projected to result in an annual electricity energy consumption of approximately 2,118,826 MWh. While the additional energy demand projected at build-out of the Draft General Plan would not represent a substantial increase in energy consumption the projected energy consumption would likely require new infrastructure and facilities to serve new demand.

PG&E may need to construct new or expanded electric-energy transmission infrastructure, which would be needed to serve the future population of the County, especially in areas of greatest expected growth such as Dunnigan, Knights Landing, Madison and Esparto. The County has little control over the siting of new facilities, as new infrastructures could be developed anywhere in the County, or outside the County. In addition, the County has limited authority for siting of energy infrastructure, because land approval authority is preempted by the Federal Regulation and Oversight of Energy (FERC), California Public Utilities Commission (CPUC), and California Energy Commission (CEC.) In addition to PG&E transmission infrastructure, additional power plants, which may be operated by a number of private suppliers who would then sell electricity to PG&E, may be necessary to supply electrical energy to the County at build-out of the Draft General Plan.

¹¹⁹ New Buildings Institute, 2008. *Energy Performance of LEED for New Construction Buildings*. March 14.

While the Draft General Plan would increase overall energy consumption in the County, the plan includes a number of policies that would minimize the projected increase: CC-2.3; CC-2.5; CC-2.6; CC-2.7; CC-2.16; CC-4.1; CC-4.4; CC-4.5; CC-4.6; CC-4.7; CC-4.8; CC-4.9; CC-4.10; CC-4.11; CC-4.12; CC-13; CI-1.3; CI-2.1; CI-2.2; CI-2.3; CI-5.1; CI-5.5; CI-5.6; CI-5.8; CI-5.9; CI-5.12; CI-5.15; CI-6.4; CI-6.5; CI-6.6; CI-6.11; ED-5.1; PF-9.4; PF-10.1; PF-10.2; PF-10.3; CO-5.2; CO-7.1; CO-7.2; CO-7.3; CO-7.4; CO-7.5; CO-7.6; CO-7.7; CO-7.8; CO-7.9; and CO-7.10.

Specifically, implementation of the above Draft General Plan policies would help to minimize the increase in energy consumption by: reducing vehicle use and encouraging higher density infill development (policies CC-2.5; CC-2.6; CC-2.7; and CC-2.16); encouraging energy conservation, efficiency, and green design in new construction and existing buildings (policies CC-4.4, CC-4.6, CC-4.7, CC-4.10, CC-4.12, CC-4.13, CO-7.3, CO-7.4, CO-7.6, CO-7.9, and CO-7.10); reducing the consumption of fossil fuels by encouraging alternative transportation such as bicycling, walking, and public transit (policies CC-2.3, CI-1.3, CI-2.1, CI-2.2, CI-2.3, CI-5.1, CI-5.5, CI-5.6, CI-5.8, CI-5.9, CI-5.12, CI-5.15, CI-6.4, CI-6.5, CI-6.6, and CI-6.11); and through the promotion of the utilization of alternative energy sources (policies CC-4.5 and CO-7.3).

In addition, while environmental impacts could result from the development of new energy infrastructure, new facilities or improvement projects to existing facilities would be required to undergo a separate permit process at the State and federal level including environmental analysis. While build-out of the Draft General Plan may require the construction of new energy production and transmission facilities, there is not enough information to make a significance determination about the likely impacts that could result. Section 15145 of the CEQA Guidelines directs that when an impact is too speculative for evaluation, this should be noted and the discussion ended.

Increase Reliance on Non-renewable Energy Resources. As previously stated, build-out of the Draft General Plan is projected to result in an annual electricity energy consumption of approximately 2,118,826 MWh. While energy consumption would increase in the County, Draft General Plan policies (listed above) would ensure that new development would be energy efficient and would not increase reliance on non-renewable energy resources.

In addition, implementation of the following Draft General Plan policies would promote energy-efficient smart growth in the County and would discourage reliance on non-renewable energy resources: CC-2.3; CC-2.5; CC-2.6; CC-2.7; CC-2.16; CC-4.1; CC-4.4; CC-4.5; CC-4.6; CC-4.7; CC-4.8; CC-4.9; CC-4.10; CC-4.11; CC-4.12; CC-13; CI-1.3; CI-2.1; CI-2.2; CI-2.3; CI-5.1; CI-5.5; CI-5.6; CI-5.8; CI-5.9; CI-5.12; CI-5.15; CI-6.4; CI-6.5; CI-6.6; CI-6.11; ED-5.1; PF-9.4; PF-10.1; PF-10.2; PF-10.3; CO-5.2; CO-7.1; CO-7.2; CO-7.3; CO-7.4; CO-7.5; CO-7.6; CO-7.7; CO-7.8; CO-7.9; and CO-7.10.

Implementation of the above Draft General Plan policies would discourage reliance on non-renewable energy resources by: reducing vehicle use and the associated infrastructure development by encouraging higher density infill development (policies CC-2.5; CC-2.6; CC-2.7; and CC-2.16); encouraging energy conservation, efficiency, and green design in new construction and existing buildings (policies CC-4.4, CC-4.6, CC-4.7, CC-4.10, CC-4.12, CC-4.13, CO-7.3, CO-7.4, CO-7.6, CO-7.9, and CO-7.10); reducing the consumption of fossil fuels through encouraging alternative transportation such as bicycling, walking, and public transit (policies CC-2.3, CI-1.3, CI-2.1, CI-2.2, CI-2.3, CI-5.1, CI-5.5, CI-5.6, CI-5.8, CI-5.9, CI-5.12, CI-5.15, CI-6.4, CI-6.5, CI-6.6, and CI-6.11);

and through the promotion of the utilization of alternative energy sources (policies CC-4.5 and CO-7.3). Therefore, the Draft General Plan would discourage reliance on non-renewable energy resources through the encouraged use of renewable resources, alternative fuels, and energy conservation and thus reducing this impact to a less-than-significant level.

Use of Alternative Fuels, Renewable Energy Sources, and Energy Conservation. The Draft General Plan would result in an increased demand for energy in the County. The increase in demand for energy may be satisfied by a variety of power generation facilities, such as waste-to-fuel conversion plants, wind energy plants, hydroelectric facilities, and solar panels. The Draft General Plan provides a framework for smart growth in the County and includes many policies that encourage the use of alternative fuels, renewable energy sources, and energy conservation techniques. Draft General Plan policies aimed at ensuring smart growth development and conservation of energy (listed above) would ensure that the County encourages the use of alternative energy sources.

Implementation of the following Draft General Plan policies would promote smart growth in the County and would reduce adverse environmental impacts associated with the increased energy consumption that would occur under build-out of the Draft General Plan to less-than-significant levels: CC-2.3; CC-2.16; CC-4.1; CC-4.4; CC-4.5; CC-4.6; CC-4.7; CC-4.8; CC-4.9; CC-4.10; CC-4.11; CC-4.12; CC-13; CI-1.3; ED-5.1; PF-9.4; PF-10.1; PF-10.2; PF-10.3; CO-5.2; CO-7.1; CO-7.2; CO-7.3; CO-7.4; CO-7.5; CO-7.6; CO-7.7; CO-7.8; CO-7.9; and CO-7.10. Specifically, implementation of the Draft General Plan policies CC-4.5, CC-4.6, and CO-7.3 would encourage the use of alternative fuels and energy sources.

Build-out of the Draft General Plan would encourage the use of alternative fuels, energy sources, and energy conservation. This impact would be less-than-significant as a result.

Inefficient, Wasteful, Or Unnecessary Use of Fuel. As previously stated, the Draft General Plan would increase energy consumption in Yolo County. However, implementation of the following Draft General Plan policies would promote smart growth in the County and would reduce adverse environmental impacts associated with the increased energy consumption that would occur under build-out of the Draft General Plan to less-than-significant levels: CC-2.3; CC-2.5; CC-2.6; CC-2.7; CC-2.16; CC-4.1; CC-4.4; CC-4.5; CC-4.6; CC-4.7; CC-4.8; CC-4.9; CC-4.10; CC-4.11; CC-4.12; CC-13; CI-1.3; CI-2.1; CI-2.2; CI-2.3; CI-5.1; CI-5.5; CI-5.6; CI-5.8; CI-5.9; CI-5.12; CI-5.15; CI-6.4; CI-6.5; CI-6.6; CI-6.11; ED-5.1; PF-9.4; PF-10.1; PF-10.2; PF-10.3; CO-5.2; CO-7.1; CO-7.2; CO-7.3; CO-7.4; CO-7.5; CO-7.6; CO-7.7; CO-7.8; CO-7.9; and CO-7.10.

While the Draft General Plan would increase energy consumption in the County, implementation of the above Draft General Plan policies would require the efficient use of fuel and energy by: reducing vehicle use and encouraging higher density infill development (policies CC-2.5; CC-2.6; CC-2.7; and CC-2.16); encouraging energy conservation, efficiency, and green design in new construction and existing buildings (policies CC-4.4, CC-4.6, CC-4.7, CC-4.10, CC-4.12, CC-4.13, CO-7.3, CO-7.4, CO-7.6, CO-7.9, and CO-7.10); reducing the consumption of fossil fuels by encouraging alternative transportation such as bicycling, walking, and public transit (policies CC-2.3, CI-1.3, CI-2.1, CI-2.2, CI-2.3, CI-5.1, CI-5.5, CI-5.6, CI-5.8, CI-5.9, CI-5.12, CI-5.15, CI-6.4, CI-6.5, CI-6.6, and CI-6.11); and through the promotion of the utilization of alternative energy sources (policies CC-4.5 and CO-7.3).

Further discussion of measures for reducing the County's VMT (and associated fuel consumption) and for reducing the County's overall GHG emissions can be found in section IV.C Transportation and Circulation and section IV.F Global Climate Change.

The policies listed above that specifically encourage energy efficient development include policies that strongly encourage LEED certification or equivalent for all public, private, and existing buildings, and strongly encourage LEED-Neighborhood Development (ND) certification for other applicable projects, particularly those within the Specific Plan areas. While it is speculative to analyze the exact reduction in energy and fuel consumption that would result from projects throughout the County that do achieve these levels of certification, it should be noted LEED certified buildings do result in substantial reductions in energy and fuel consumption. For example, according to the final report for Energy Performance of LEED for New Construction Buildings, the average LEED certified building realizes 25 to 30 percent in energy savings over the national average new building. In addition, average savings increase substantially as performance goals increase with higher levels of LEED certification: gold and platinum rated buildings average energy consumption rates are 45 percent better than non-LEED buildings.

Thus, although it would be speculative to calculate the anticipated energy and fuel savings that would result with build-out of Draft General Plan, it is evident that the County's policies would reduce inefficient, wasteful, and unnecessary use of fuel. Therefore, the Draft General Plan would have a less-than-significant impact associated with the inefficient use of fuel or energy.

Fail To Result In Siting, Orientation, And/or Design To Minimize Energy Consumption.

The Draft General Plan contains policies that would ensure appropriate siting, orientation, and design of new development to minimize energy consumption by: encouraging higher density infill development (policies CC-2.5; CC-2.6; CC-2.7; and CC-2.16); encouraging energy conservation, efficiency, and green design in new construction and existing buildings (policies CC-4.4, CC-4.6, CC-4.7, CC-4.10, CC-4.12, CC-4.13, CO-7.3, CO-7.4, CO-7.6, CO-7.9, and CO-7.10); reducing the consumption of fossil fuels by encouraging alternative transportation such as bicycling, walking, and public transit (policies CC-2.3, CI-1.3, CI-2.1, CI-2.2, CI-2.3, CI-5.1, CI-5.5, CI-5.6, CI-5.8, CI-5.9, CI-5.12, CI-5.15, CI-6.4, CI-6.5, CI-6.6, and CI-6.11); and through the promotion of the utilization of alternative energy sources (policies CC-4.5 and CO-7.3). These policies in combination with implementation of Policy CC-4.11, that requires site specific technical information be provided with development applications, subject to site conditions and as determined by the County lead department, would allow for additional review in regards to the siting, orientation and design of buildings to ensure that energy consumption is minimized. Therefore, the Draft general Plan would have a less-than-significant impact in regards to failing to site, orient or design new development to minimize energy consumption.

6. Other Significance Criteria

The following are additional significance criteria that address the impacts of the Draft General Plan on utilities services and infrastructure generally. The Draft General Plan would have a significant impact on the environment related to public utilities and infrastructure if it would:

- Substantially conflict with applicable plans, policies and regulations of other agencies where such conflict would result in an adverse physical change in the environment;

- Result in new policies that would result in significant adverse physical impacts as compared to the 1983 General Plan policies.

a. Conflict with Plans and Policies of Other Agencies. The Draft General Plan contains goals, policies, and actions throughout all elements that explicitly require consistency with the Delta Protection Commission Land Use and Resource Management Plan (LURMP) for the Primary Zone of the Delta. These include Goal LU-4, Policies PF-12.5, AG-6.3, CO-1.13, CO-3.4, CO-4.14, CO-5.9, HS-2.5, HS-5.4, and HS-6.3, HS-7.2, HO-7.1, Goal HO-7, and Action HS-A43. Growth in the Primary Zone of the Delta is prohibited unless it is consistent with both the Draft General Plan and the LURMP, as addressed directly by Goal LU-4. Additionally, through an appeals process, the Delta Protection Commission has separate and distinct review and decision-making authority should the Commission disagree with a local determination of consistency.

The town of Clarksburg is within the Primary Zone and is under the jurisdiction of the Delta Protection Commission. The growth anticipated under the Draft General Plan in Clarksburg is consistent with the land use designations in place in 1992 when the LURMP was adopted. At build-out of the Draft General Plan, 22 additional residential units could be constructed in Clarksburg. As described in this EIR section, and per LURMP Policy P-2, these new homes would be served by private wells and on-site septic systems. Therefore, the construction of these units and the provision of private on-site water and wastewater systems to serve them would not result in conflicts with LURMP policies. Utilities and Infrastructure Policy P-3 of the LURMP prohibits any new sewage treatment facilities, including storage ponds, within the Primary Zone. A potential conflict could occur in regards to Draft General Plan Policy CC-3.14 that identifies three alternative sites in Clarksburg for the location of a 103-acre winery-related agricultural commercial/industrial facility (the location of the sites are shown in Figure III-4). Two of the alternative sites (A and B) are located within the Primary Zone, while alternative site C is located outside of the Primary Zone. Development of the 103 acres with agricultural commercial/industrial uses would result in the generation of wastewater (estimated to be 257,500 gpd per Table IV.H-5) which would likely need to be treated on-site as Clarksburg is not served by a community wastewater treatment system. Identification of site C, which is outside the Primary Zone, as the proposed site for the construction of the facility would reduce the potential for conflicts with the LURMP to a less-than-significant level.

Other significant responsibilities associated with the provision of utilities for the County involve implementation of State and federal laws, regulations, and programs. The County's Integrated Regional Water Management Plan coordinates water policy and use in conjunction with requirements of the California Department of Water Resources which in turn is responsible for meeting and incorporating federal requirements. For the provision of wastewater and stormwater systems, the County Environmental Health Department is charged with implementing State and federal requirements associated with the National Pollutant Discharge Elimination System administered by the State Regional Water Quality Control Boards. The County also is responsible for implementing State solid waste diversion regulations. In regards to the construction, provision and use of energy and telecommunications, the County must meet the requirements of the Federal Energy Regulatory Commission, the State Public Utilities Commission, the Energy Commission and the State Energy Efficient Standards. The Draft General Plan is consistent with these responsibilities to laws, programs, and regulations from other agencies, and no significant impact resulting from inconsistencies would result.

b. Result in Adverse Impacts from Draft General Plan Policies Compared to 1983 General Plan Policies. The 1983 General Plan did not establish community levels of service, other than for traffic operations. The Draft General Plan would establish explicit community service levels and quality of life thresholds for public services, facilities, and utilities as described in this section. As one example, Table LU-10 provides community planning guidelines that identify minimum infrastructure standards for the Specific Plan areas of Dunnigan, Knights Landing and Madison where the majority of new growth (76 percent of residential units and 39 percent of commercial/industrial acres) would occur. The Draft General Plan contains policies and actions that provide a more comprehensive framework for the provision of utilities to serve new growth with water, wastewater, storm drainage, solid waste disposal and energy than the 1983 General Plan, and therefore implementation of the Draft General Plan would result in a beneficial impact, compared to the 1983 General Plan.

While build-out of the Draft General Plan would allow more growth in the County, implementation of the goals, policies, and actions of the Draft General Plan would provide an overall benefit to the County because the policies and actions contained therein would require the developers to build smart growth communities and ensure that utility services are provided concurrent with growth. The Draft General Plan would ensure more orderly growth and the provision of necessary utility infrastructure, facilities, and services than the 1983 General Plan. Therefore, the policies of the Draft General Plan would not result in significant adverse physical impacts as compared to the 1983 General Plan.

