4.15 UTILITIES

This section evaluates the adequacy of existing and planned utilities to accommodate the demands/ generation associated with the project. Specifically, this section addresses:

- water supply, distribution, and treatment;
- wastewater treatment and disposal;
- solid waste disposal; and
- electricity and natural gas facilities.

Please refer to Section 4.7, "Greenhouse Gas Emissions, Climate Change, and Energy" for an analysis of energy efficiency related to implementation of the project pursuant to State CEQA Guidelines, Appendix F requirements. Impacts related to storm drainage and water quality are addressed in Section 4.9, "Hydrology and Water Quality."

4.15.1 Environmental Setting

WATER

Water Supply

The analysis presented herein is based on the water supply assessment (WSA) completed by Brown and Caldwell and included as Appendix J. The City of Davis currently provides potable water service to residents within the City of Davis, as well as residents within the El Macero and Willowbank areas of unincorporated Yolo County. The City currently uses groundwater as its sole source of potable water supplies and maintains/operates 20 groundwater wells within the City's water service area, with two additional wells that are either on standby or have yet to be completed. The City pumps groundwater from the Yolo subbasin, which is a portion of the larger Sacramento Valley groundwater basin. The Yolo subbasin is not adjudicated, and there are no legal restrictions to groundwater pumping. The City obtains groundwater from both the deep and intermediate depth aquifers. The City's deep aquifer zone exists throughout the service area, but is more predominant to the north and west. The deep aquifer zone slopes downward from the west of the service area, with gradual flattening towards the east. As the City and University of California at Davis (UC Davis) primarily rely on the deep aquifer because of its generally better quality in terms of hardness and total dissolved solids compared to water produced from the intermediate depth aquifer, the City and UC Davis prepared/approved a groundwater management plan (GWMP) in April 2006, which is explained in further detail in Section 4.15.2 below. Of the 20 active groundwater wells, five are deep wells and 15 are considered to be at intermediate depth (Brown and Caldwell 2015a). The current capacity of the City's groundwater wells is up to 40.6 mgd from all wells or 13.2 mgd from deep wells (Brown and Caldwell 2015a).

Aquifers in the Davis area are recharged by percolation of rainfall and to a lesser extent irrigation water. Other significant sources include infiltration in streambeds, channels, and the Yolo Bypass. Relatively course-grained deposits line both Putah and Cache Creeks, allowing substantial infiltration. The deep aquifer has a much longer recharge period as compared to the intermediate depth aquifer, on the order of thousands of years versus hundreds of years, respectively (Brown and Caldwell 2015a). In the vicinity of Davis and UC Davis, the base of fresh groundwater occurs at a depth of approximately 2,800 feet below mean sea level, implying that the fresh water aquifer is approximately 2,800 feet thick. The total amount of water contained to a depth of 2,000 feet within the boundaries established by the City's GWMP (approximately 11,600 acres) is estimated to be over 2,000,000 af (af). The amount of water that has been pumped and stored is estimated to be approximately 120,000 af (Brown and Caldwell 2015a).

The City's water supply quantity available from groundwater is not impacted by dry, average, or wet years. In dry years the groundwater levels may decline, but this does not reduce the pumping capacity of the City's wells until the groundwater levels drop significantly (Brown and Caldwell 2015a). Bulletin 118 states that the Yolo subbasin does not exhibit any significant declines in groundwater levels, with the exception of localized pumping depressions in several areas including in the vicinity of Davis (DWR 2003). Historical groundwater elevation measurements show that groundwater elevations declined through the 1950s and 1960s and then increased as a result of the implementation of the Lake Berryessa and Indian Valley Reservoir regional surface water supply projects. In addition to the groundwater elevation changes resulting from variation in land and water use practices over time, groundwater elevations have fluctuated in response to changes in precipitation. Groundwater elevations in the falls of 1977and 1992 were near the historical lows recorded in the mid-1960s. The maximum groundwater elevation measurements were recorded in spring 1983, the same year that the maximum annual precipitation was recorded (City of Davis 2006).

In 2011, the State Water Resources Control Board (SWRCB) approved the diversion of up to 45,000 af per year (afy) from the Sacramento River for the Davis-Woodland Water Supply Project (DWWSP), to be operated by the Woodland Davis Clean Water Agency (WDCWA). The purpose behind the DWWSP was to provide additional/redundant water supplies for the Cities of Davis and Woodland and UC Davis and to address localized issues associate with providing water, including aging water systems, more stringent water quality standards and regulations, and increasing water demands (Reclamation 2013). Depending on the availability of the approved surface water supplies through the DWWSP, the City is planning on purchasing wholesale surface water from the WDCWA to use in combination with groundwater from the deep wells. A surface water treatment plant to be operated by WDCWA is currently under construction with an estimated completion date of September 2016 and will have a capacity of 30 million gallons per day (mgd) (WDCWA 2015). Surface water deliveries could occur as early as late 2016.

Of the 30 mgd capacity of the water treatment plant that is currently under construction, up to 12 mgd will be conveyed to the City through a 30 inch diameter transmission pipeline. The City will be supplying up to 1.8 mgd of surface water to UC Davis, which means that the maximum capacity available for the City will be 10.2 mgd, as shown in Table 4.15-1 (Brown and Caldwell 2015a). Pursuant to this planning effort, the intermediate aquifer wells would be retired, placed on standby, and/or converted to non-potable service. The City anticipates a sharp drop of projected groundwater use, coinciding with the beginning of wholesale surface water deliveries (Brown and Caldwell 2015a).

As noted above, the WDCWA has Sacramento River water rights of up to 45,000 afy, but also has a secondary right of 10,000 afy. The City's share of this supply would be 18,700 afy, assuming that it is proportional to the share of the capacity of the treatment plant that is currently under construction. The capacity of the surface water treatment plant that is currently under construction would have to be enlarged for the City to be able to fully utilize the amount allowed under the two aforementioned water rights (Brown and Caldwell 2015a).

Table 4.15-1 Water Supply Capacity with Combined WDCWA Surface Water Deliveries and Deep Well Groundwater

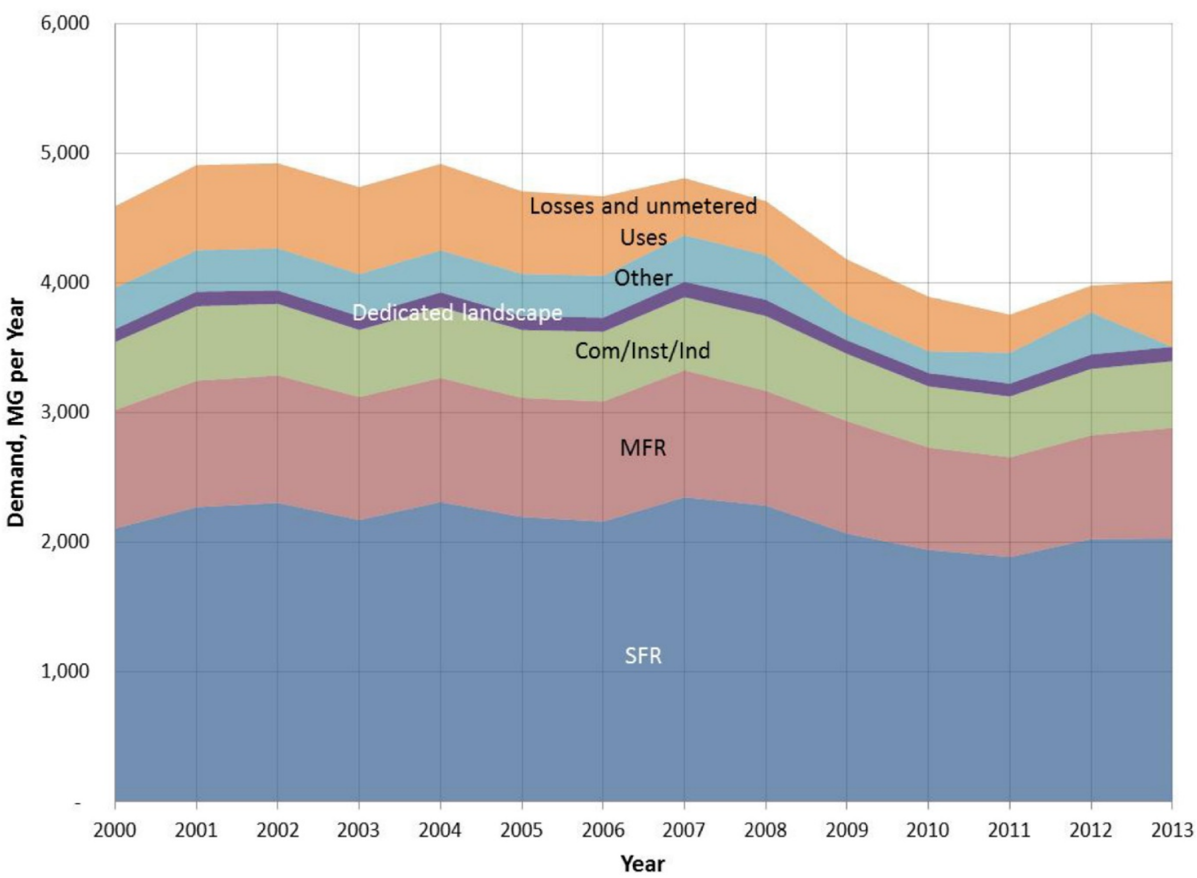
Water Supply	Maximum day (mgd)	Annual with maximized surface water (afy)	Annual with maximized groundwater (afy)
Surface Water	10.2	10,404	2,996
Groundwater	13.2	4,848	12,257
Total	23.4	15,253	15,253

Source: Brown and Caldwell 2015a, Table 4-3

Water rights in California are complex. Restrictions can vary depending on the seniority of water rights, among other factors. The primary water right is subject to Term 91, a condition applied to water from the State Water Project (SWP) and Central Valley Project (CVP) that flows into the Sacramento-San Joaquin River Delta. When natural flows to the Delta are insufficient to meet water quality standards, the SWP and CVP are required to be operated to meet instream water quality standards, and this typically results in release of stored water for water quality, rather than consumptive use, and consumptive use is curtailed. Additionally, when the US Bureau of Reclamation declares a Lake Shasta critical year, the secondary water right is reduced to 7,500 afy. Historically, the majority of Term 91 curtailments have been 3 months or less in duration. Last year (2014) was unique in that, because of the severe drought, it was the first year since the Term 91 regulations went into effect in 1984 that the curtailments have been in effect for most of the year. A Lake Shasta critical year has been declared in 2012, 2013, and 2014, which are three of the seven years of the occurrence of this declaration over the last 40 years. The WDCWA has the option of purchasing supplemental Sacramento River water from water rights holders not covered by Term 91. As a result, in case of Term 91 curtailments, the City would either increase the use of groundwater supplies or the wholesale supply amounts would remain the same through the use of the option to purchase supplemental Sacramento River water.

Historic Water Demand

Figure 4.15-1 presents the City's historic water demand from 2000 to 2013. The City's total annual water use grew steadily until 2002, when it peaked at 15,112 afy and has decreased since then. Figure 4.15-1 shows how many millions of gallons of water were being used every year by various land use types. Figure 4.15-2 presents the City's historical per capita water demand, including a reflection of a 2020 target for per capita water demand of 167 gallons per capita per day (gpcd) established by the City's Natural Resources Commission.



Source: Brown and Caldwell 2015 X14010097 02 003

Figure 4.15-1 **Historical Water Use by Customer Category**

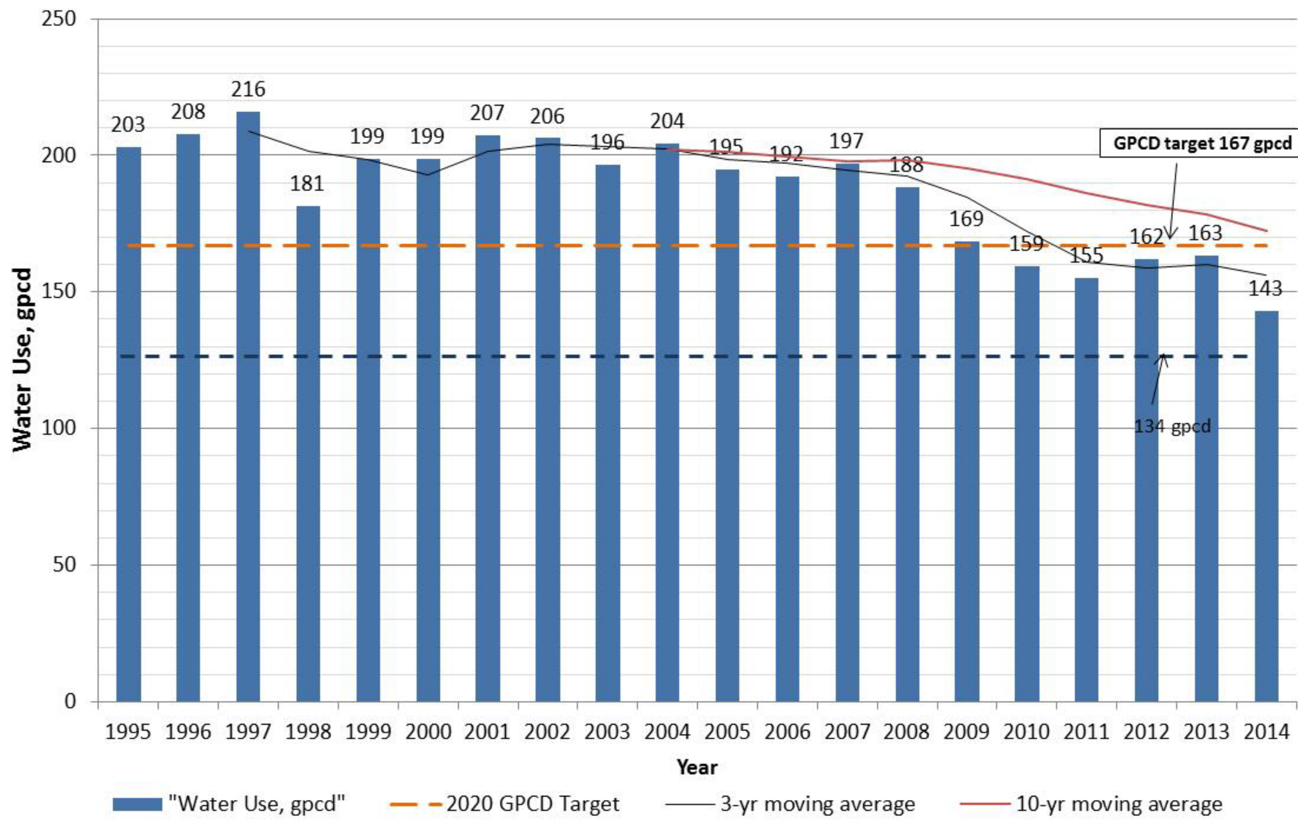


Figure 4.15-2 **Historical Per Capita Water Use**

<u>Projected Water Demand</u>

The City's historical water use combined with demographic data provides demand factors that are adjusted and then used to estimate future water use. Based on water usage since 2010 within the City, the WSA assumed that per capita water use within the City's existing service area would be 161 gpcd from 2015 to 2020. The per capita water use for the population residing within the existing service area is then assumed to decline to 150 gpcd by 2030 (Brown and Caldwell 2015a) as more water conservation measures are employed.

As shown in Table 4.15-2, the water demand at the buildout of the City's existing water system service area is projected to be 13,258 afy. This demand is equivalent to an overall demand of 161 gpcd. The projected buildout maximum day demand is 21.3 mgd. As the impact of increased water conservation takes effect and the overall per capita demand is reduced to 150 gpcd, the buildout demand of the existing service area is projected to decline to 12,336 afy by 2030.

Table 4.15-2 Buildout Water Demands by Water Use Sector – Current City Service Area

Type of Use	2013 Connections	2013 Demand (afy)	Additional Connections	gpd/ connection	Total Demand at Buildout (afy)	Max Daily Demand at Buildout (mgd)
Single family residential	14,516	6,233	815	345	6,548	
Multifamily residential	541	2,618	63	3,888	2,894	
Commercial/ Institutional/ Industrial	745	1,577	101	1,890	1,791	
Landscape Irrigation	544	341			341	
Other uses	237					
Losses and Unmetered Uses		1,568				
Total (water production)		12,336			13,258	21.3

Source: Brown and Caldwell 2015a, Table 3-5

Water Supply Reliability

As part of the WSA, Brown and Caldwell also examined the ability for the City to maintain water supplies during an average year, a single dry year, and multiple dry years. As shown in Table 4.15-3 and because of the City's existing groundwater infrastructure and capacity to rely on groundwater supplies when surface water supplies are not readily available (i.e. during Term 91 curtailments and when other supplemental water is not purchased), the City is projected to consistently have up to 15,253 afy of potable water for use within its service area. Dry year conditions (single and multiple) were also evaluated under future conditions for 2020, 2025, 2030, and 2035, as shown in Table 4.15-4. As presented in these tables, projected demands (up to 13,258 afy) associated with buildout of land uses within the City's service area would have adequate water supplies.

Table 4.15-3 Projected Supply Availability by Source for Average, Single Dry, and Multiple Dry Years

Water Supply Source	Average/ Normal Water Year Supply (afy)	Single Dry Year (afy)	Multiple Dry Years (afy)			
			Year 1	Year 2	Year 3	Year 4
Surface water through WDCWA	10,404	2,996	2,996	2,996	2,996	2,996
Groundwater through City wells	4,848	12,257	12,257	12,257	12,257	12,257
Total	15,253	15,253	15,253	15,253	15,253	15,253

Source: Brown and Caldwell 2015a, Table 4-6

Table 4.15-4 Projected Dry Year Supply Availability

	2015	2020	2025	2030	2035
Single dry year	13,328	15,253	15,253	15,253	15,253
Multiple dry years					
Year 1	12,888	15,253	15,253	15,253	15,253
Year 2	13,328	15,253	15,253	15,253	15,253
Year 3	12,951	15,253	15,253	15,253	15,253

Note: Projected available supplies constrained by the capacities of the supply facilities identified above, except 2015 is projected use of the supply. The breakdown of surface water and groundwater quantities is shown in Table 4.15-3.

Source: Brown and Caldwell 2015a, Table 4-6

Recycled Water

The City does not currently use recycled water to offset potable water demands for landscaping or other permissible uses within the City's water system service area. The City currently uses an estimated 340 afy of secondary-treated effluent as the primary source of water for approximately 77 acres of a 398-acre, City-owned reclamation wetland facility (Brown and Caldwell 2015a). As recycled water is not currently used to offset potable water demand within the City, recycled water supplies are not considered to be a currently implementable measure to reduce potable water demands within the City service area.

Global Climate Change and Water Supply

In recent years, scientific consensus has begun to accept that Earth's climate is changing and this consensus has broadened to consider increasing concentrations of greenhouse gases, attributable to anthropogenic activities, as a primary cause of global climate change. The United Nations Intergovernmental Panel on Climate Change predicts that changes in Earth's climate will continue through the 21st century and that the rate of change may increase substantially in the future because of human activity (IPCC 2001, 2007). Extensive background information on global climate change, including modeling and trends, is found in Chapter 5, "Cumulative Impacts," of this volume.

Today, the issue of global climate change has begun to play an increasing role in scientific and policy debates in multiple issue areas. Of particular concern are the existing and potential future effects of global climate change on hydrologic systems and water management (e.g., domestic water supply, agricultural water supplies, flood control, and water quality). There is evidence that global climate change has already had an effect on California's hydrologic system; for example, historical data indicate a trend toward declining volumes of spring and summer runoff from the Sierra Nevada.

The California Water Plan (Bulletin 160) first briefly addressed climate change in 1993 (DWR 1994). This analysis has most recently been expanded and refined in the 2005 update of the California Water Plan, which explores a wide range of climate impacts and risks, including risks to water resources (Kiparsky and Gleick 2005, Roos 2005). The 2005 update also describes efforts that should be taken to quantitatively evaluate climate change effects for the next update of the California Water Plan (DWR 2005).

Influence on Water Supply Projections

Several recent studies have shown that existing water-supply systems are sensitive to climate change. Many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in inflows as a result of rainfall and snowpack (Kiparsky and Gleick 2005, Cayan et al. 2006). Little work has been performed on the effects of climate change on specific hydrologic basins, though groundwater recharge reduction, higher evaporation, and shorter rainfall seasons could be expected (Kiparsky and Gleick 2005). Conversely, rapid or additional winter runoff would be occurring at a time when some basins, particularly in Northern California, are being recharged at their maximum capacity. However, the specific extent to which various meteorological conditions will change and the impact of that change on hydrologic systems are both unknown.

DWR's 2005 report focused on climate change impacts on State Water Project (SWP) operations and on the Delta. The results of that analysis suggest several impacts of climate change on overall SWP operations and deliveries. In three of the four climate scenarios simulated, reservoirs north of the Delta experienced shortages during droughts. Van Rheenen et al. (2004) studied the potential effects of climate change on the hydrology and water resources of the Sacramento–San Joaquin River basin using five PCM scenarios. The study concluded that most mitigation alternatives examined satisfied only 87–96% of environmental targets in the Sacramento system, and less than 80% in the San Joaquin system. Therefore, modifications and improvements to system infrastructure could be necessary to accommodate the volumetric and temporal shifts in flows predicted to occur with future climates in the Sacramento–San Joaquin River basin.

Lund et al. (2003) examined the effects of a range of estimates of climate warming on the long-term performance and management of California's water system. The study estimated changes in California's water availability, including effects of forecasted changes in year-2100 urban and agricultural water demands, using a modified version of the CALVIN model. Some of the main conclusions are summarized as follows:

- Methodologically, it is useful and realistic to include a wide range of hydrologic effects, changes in population and water demands, and changes in system operations in studies of climate change.
- A broad range of climate-warming scenarios show significant increase in wet-season flows and significant decreases in spring snowmelt. The magnitude of effects of climate change on water supplies is comparable to increases in water demand from population growth in the 21st century.
- In Southern California, population growth is expected to be more problematic than climate change. Population growth, conveyance limits on imports, and the high economic value of water in Southern California could result in high levels of wastewater reuse and substantial use of desalinated seawater along the coast.
- California's water system could economically adapt to all the climate-warming scenarios examined in the study. California can adapt to population growth and global climate change by using new technologies for efficiency of water supply, treatment, and water use; implementing water transfers and conjunctive use; coordinating operation of reservoirs; and improving flow forecasting. The cooperation of the federal,

state, regional, and local governments can also be helpful. Even if these strategies are implemented, however, the costs of water management are expected to be high and there is likely to be less “slack” in the system than under current operations and expectations.

Summary of Global Climate Change on Water Supply

As described by several projections, the overall conclusion is that climate change is expected to have a greater effect in Southern California than Northern California. For example, for 2020 conditions, where optimization is allowed (i.e., using the CALVIN model), scarcity is essentially zero in the Sacramento Valley for both urban and agricultural users, and generally zero for urban users in the San Joaquin and Tulare basins. Rather, most water scarcity will be felt by agricultural users in Southern California, although urban users in Southern California, especially those in the Coachella Valley, will also experience some scarcity. By 2050, urban water scarcity will remain almost entirely absent north of the Tehachapi Mountains, although agricultural water scarcity in the Sacramento Valley could increase to about 2% (Medellin et al. 2006).

Based on the conclusions of current literature regarding California’s ability to adapt to global climate change, it is reasonably expected that, over time, the state’s water system will be modified to be able to handle the projected climate changes, even under dry and/or warm climate scenarios (DWR 2005). Although coping with climate change effects on California’s water supply could come at a considerable cost, based on a thorough investigation of the issue, it is reasonably expected that statewide implementation of some, if not several, of the wide variety of adaptation measures available to the state will likely enable California’s water system to reliably meet future water demands. For example, traditional reservoir operations may be used, in conjunction with other adaptive actions, to offset the impacts of global warming on water supply (Medellin et al. 2006; see also Tanaka et al. 2006 and Lund et al. 2003). Other adaptive measures include better water-use efficiency practices by urban and agricultural users, conjunctive use of surface water and groundwater, desalination, and water markets and portfolios (Medellin et al. 2006; see also Lund et al. 2003 and Tanaka et al. 2006). More costly statewide adaptation measures could include construction of new reservoirs and enhancements to the state’s levee system. As described by Medellin et al. 2006, with adaptation to the climate, water deliveries to urban centers are expected to decrease by only 1%, with Southern California shouldering the brunt of this decrease.

Water Supply Infrastructure

Water is currently provided to the West Olive Drive portion of the project site via connections to the existing City distribution system. The Nishi site does not currently receive potable water via connections to either the City infrastructure or water distribution infrastructure associated with UC Davis. A water well is located within the Nishi site that currently provides water service to agricultural lands south of I-80, but as the Nishi site is currently a dry-farming operation, there are no potable water connections/uses at the site.

Existing City water facilities in the vicinity include 6” and 10” pipelines located in West Olive Drive and a 12” pipeline within Richards Boulevard. Additional UC Davis water facilities in the vicinity include a 10” main in Old Davis Road and a 6” main south of Solano Park.

WASTEWATER

Wastewater Treatment

The City’s Wastewater Treatment Plant (WWTP) is located about 7 miles northeast of the project site along County Road 28H. The WWTP was originally constructed in 1970 and provides primary and secondary treatment by oxidation ponds and overland flow. The WWTP was modified in 1980 by the addition of an overland flow treatment step and again in 1989, with a new chlorination/dechlorination system. The initial design and construction of the WWTP allowed the City of Davis to treat an average dry weather flow of up to 7.5 mgd and a peak wet weather flow of 12.6 mgd (City of Davis 2015a).

In recent years, the City has been working with the SWRCB regarding the quality of effluent leaving the WWTP. Changing regulatory requirements have come into effect that greatly lower the limits on various constituents such as biological oxygen demand (BOD), total suspended solids, chlorine, selenium, ammonia, and other elements in the discharge (City of Davis 2005). The City's WWTP is currently being upgraded to ensure compliance with all existing and anticipated wastewater discharge standards and would be sized to accommodate an average dry weather flow of 6.0 mgd, as shown in Table 4.15-5 (West Yost 2015a).

Table 4.15-5 Summary of Existing and Future Capacity and Flow/Loading Conditions

Condition	Average Dry Weather Flow (mgd)	Average Dry Weather BOD Load, lbs/day
WWTP Capacity	6.0	10,100
Existing Generation	4.34	8,300[a]
Anticipated Generation from General Plan Buildout	5.05[b]	9,440[c]
Existing Remaining Capacity	1.66	1,800
Anticipated Remaining Capacity	0.95	660

Notes: BOD = biochemical oxygen demand
[a] Includes a 5% safety factor.
[b] Based on City sewer flow factors and projected buildout land uses.
[c] Includes a 20% safety factor for wastewater generated by new uses.

Source: West Yost 2015a, Table 1

Wastewater Collection Infrastructure

The City sewer system includes over 150 miles of sewer lines which convey wastewater from residences and businesses to the WWTP (City of Davis 2015b). Wastewater generated by existing uses within West Olive Drive are collected and conveyed via the existing City sewer system. More specifically, an existing 8" sewer line located within Olive Drive currently serves the West Olive Drive area. That line splits into a 6" gravity sewer that flows northward under the railroad tracks onto I Street and an 8" gravity sewer that also flows northward under the railroad tracks onto L Street. After picking up additional flows from the surrounding area, the two lines eventually reconverge at the intersection of 3rd Street and L Street. Thereafter, flows are conveyed within a 12" gravity sewer to Sewer Lift Station No. 4, into which significant additional flows from surrounding areas are added. The resultant flows are then pumped via a 14" force main to a 12" gravity sewer that begins just west of the railroad tracks. This 12" sewer continues westward before turning northward at G Street, at which point it upsizes to 18," 21" and 27" sewers in G and H Streets before eventually connecting with the 36" trunk sewer within Covell Boulevard (West Yost 2015b, Jue, pers. comm., 2015).

There is no existing sewer connection or infrastructure located on the Nishi site.

SOLID WASTE

Solid waste collection and disposal in the City of Davis, and surrounding areas which include the project site, is provided by Davis Waste Removal, Inc., a contractor to the City. Davis Waste Removal provides curbside pick-up of garbage, recycling, and green waste. In addition, they provide street sweeping, construction debris box services, and operate a drop-off/buy-back center for recyclable materials (2727 Second Street, Davis). Recyclable materials include mixed paper, glass, aluminum cans, steel and tin cans, most plastics, corrugated cardboard, yard waste and used motor oil (Davis Waste Removal 2015).

All non-recyclable waste generated by the City of Davis is collected and disposed at the 724.5-acre Yolo County Central Landfill, which is located off County Road 28H near its intersection with County Road 104. The landfill is owned and operated by the Yolo County Department of Planning and Public Works. The facility includes 10 acres of transfer/processing, 473 acres for disposal, and 5 acres used for composting. The landfill has a maximum permitted capacity of 49,035,200 cubic yards and 1,800 tons per day (California Department of Resources Recycling and Recovery [CalRecycle] 2015). The average daily throughput for disposal purposes is currently 500 tons per day (Kieffer, pers. comm., 2015). The closure date for the landfill is estimated to be January 1, 2081 (CalRecycle 2015).

In addition to the facilities mentioned above, the City of Davis, UC Davis, and Yolo County have been working to reduce waste transferred to the landfill. The UC Davis bio-digester project accepts food waste from the city (Case 2014), and Davis Waste Removal, Yolo County has a BioGreen digester project which accepts yard and food waste from Yolo County cities and unincorporated areas, and the Northern Recycling Compost – Zamora accepts yard and food waste from the City/Davis Waste Removal.

ELECTRICITY AND NATURAL GAS

Pacific Gas & Electric (PG&E) provides both natural gas and electricity to customers in the City of Davis and in unincorporated Yolo County. PG&E generates electricity at hydroelectric (16%), nuclear (22%), renewable solar, geothermal and biomass (14%), natural gas (39%), and coal (8%) facilities (Yolo County 2011). PG&E owns and operates overhead electric transmission and electric distribution facilities as well as gas transmission facilities within the proposed project boundary. Overhead electric lines are located along the northern edge of the project site, along the Union Pacific Railroad (UPRR) right-of-way, and include 115 kilovolt (kV) and 12 kV lines. There are also two natural gas pipelines (one 6" and one 10") that extend along the perimeter of the project site.

4.15.2 Regulatory Setting

FEDERAL

Clean Water Act

The Clean Water Act (CWA) employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The U.S. Environmental Protection Agency (EPA) established primary drinking water standards in Section 304 of the CWA. States are required to ensure that the public's potable water meets these standards.

Section 402 of the CWA creates the NPDES regulatory program. Point sources must obtain a discharge permit from the proper authority (usually a state, sometimes EPA, a tribe, or a territory). NPDES permits cover various industrial and municipal discharges, including discharges from storm sewer systems in larger cities, storm water associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than 1 acre, and mining operations. All so-called "indirect" dischargers are not required to obtain NPDES permits. "Indirect" dischargers send their wastewater into a public sewer system, which carries it to the municipal sewage treatment plant, through which it passes before entering a surface water.

Safe Drinking Water Act

As mandated by the Safe Drinking Water Act (Public Law 93-523), passed in 1974, EPA regulates contaminants of concern to domestic water supply. Such contaminants are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by EPA primary and secondary maximum contaminant levels (MCLs). MCLs and the process for setting these standards are reviewed triennially. Amendments to the Safe Drinking Water Act enacted in 1986 established an accelerated schedule for setting drinking water MCLs. EPA has delegated responsibility for California's drinking water program to the SWRCB Division of Drinking Water. SWRCB Division of Drinking Water is accountable to EPA for program implementation and for adoption of standards and regulations that are at least as stringent as those developed by EPA.

STATE

California Water Code, Water Supply

According to CWC Section 10910 (referenced in CEQA Guidelines Section 15155), lead agencies (in this case City of Davis), are required to identify the public water system(s) that would serve a project and assess whether the water supply is sufficient to provide for projected water demand associated with a project when existing and future uses are also considered (CW C Section 10910 [c] [3]). The definition of a water-demand project is the same as CEQA Guidelines Section 15155 (see discussion in Section 14.1.1).

A lead agency (City of Davis) must condition approval of a subdivision of certain sizes (including the project), upon "a requirement that a sufficient water supply shall be available" (Government Code Section 66473.7 [b][1]).

Urban Water Management Planning Act

In 1983, the California Legislature enacted the Urban Water Management Planning Act (Water Code Sections 10610 – 10656). The act requires that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 afy of water, prepare and adopt an urban water management plan. The act states that urban water suppliers should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The act also states that the management of urban water demands and the efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

California Water Code, Water Supply Wells and Groundwater Management

The California Water Code (CWC) is enforced by DWR. DWR's mission is "to manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments." DWR is responsible for promoting California's general welfare by ensuring beneficial water use and development statewide. The laws regarding groundwater wells are described in CWC Division 1, Article 2 and Articles 4.300 to 4.311; and Division 7, Articles 1-4. Further guidance is provided by bulletins published by DWR, such as bulletins 74-81 and 74-90 related to groundwater well construction and abandonment standards.

Groundwater Management is outlined in the CW C, Division 6, Part 2.75, Chapters 1-5, Sections 10750 through 10755.4. The Groundwater Management Act was first introduced in 1992 as Assembly Bill (AB) 3030, and has since been modified by Senate Bill (SB) 1938 in 2002, AB 359 in 2011, and AB 1739 in 2014. The intent of the Groundwater Management Act is to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions and to provide a methodology for developing a Groundwater Management Plan.

Senate Bills 610 and 221

The State of California enacted SB 610, effective January 1, 2002, which amended the Water Code requirements within the CEQA process and broadened the types of information required in a UWMP. SB 610 requires the preparation of "water supply assessments" for large developments (i.e., more than 500 dwelling units or nonresidential equivalent) proposed under the jurisdiction of a County or City lead agency. Such assessments, prepared by public water systems responsible for serving local projects, address whether existing and projected water supplies are adequate to serve a proposed project while also meeting existing urban and agricultural demands and the needs of other anticipated development in the service area in which the project is located. If the most recently adopted UWMP accounted for the projected water demand associated with the project, the public water system may incorporate the requested information from the UWMP. If the UWMP did not account for the project's water demand, or if the public water system has no UWMP, the project's water supply assessment (WSA) shall discuss whether the system's total projected water supplies (available during normal, single dry, and multiple dry water years during a 20-year projection) would meet the project's water demand in addition to the system's existing and planned future uses, including agricultural and manufacturing uses.

Where a WSA concludes that insufficient supplies are available, the public water system must provide to the City or County considering the development project its plans for acquiring and developing additional water supplies. Based on all the information in the record relating to a project, including all applicable WSAs and all other information provided by the relevant public water systems, the City or County must determine whether sufficient water supplies are available to meet the demands of the project in addition to existing and planned future uses. Where a WSA concludes that insufficient supplies are available, the WSA must lay out the steps that would be required to obtain the necessary supplies. The WSA is required to include (but is not limited to) identification of the existing and future water supplies over a 20-year projection period. This information must be provided for average normal, single dry, and multiple dry years. The absence of an adequate current water supply does not preclude a project's approval, but it does require a lead agency to address a water supply shortfall in its project findings.

Sustainable Groundwater Management Act of 2014

The Sustainable Groundwater Management Act of 2014 (SGMA)[1] became law on January 1, 2015, and applies to all groundwater basins in the state (Water Code Section 10720.3). By enacting the SGMA, the legislature intended to provide local agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater within their jurisdiction (Water Code Section 10720.1). The SGMA is a follow up to SB X7-6, adopted in November 2009, which mandated a statewide groundwater elevation monitoring program to track seasonal and long-term trends in groundwater elevations in California's groundwater basins. In accordance with this amendment to the Water Code, DWR developed the California Statewide Groundwater Elevation Monitoring (CASGEM) program.

Pursuant to the SGMA, any local agency that has water supply, water management or land use responsibilities within a groundwater basin may elect to be a "groundwater sustainability agency" for that basin (Water Code Section 10723). Local agencies have until January 1, 2017 to elect to become or form a groundwater sustainability agency. In the event a basin is not within the management area of a groundwater sustainability agency, the county within which the basin is located will be presumed to be the groundwater sustainability agency for the basin. However, the county may decline to serve in this capacity (Water Code Section 19724). The City is currently in the planning stages to partner with other local agencies in compliance with the SGMA.

The SGMA also requires DWR to categorize each groundwater basin in the state as high-, medium-, low-, or very low priority (Water Code Sections 10720.7, 10722.4). All basins designated as high- or medium-priority basins must be managed by a groundwater sustainability agency under a groundwater sustainability plan that complies with Water Code Section 10727 et seq. If required to be prepared, groundwater sustainability plans must be prepared by January 31, 2020 for all high- and medium-priority basins that are subject to critical conditions of overdraft, as determined by DWR, or by January 31, 2022 for all other high- and medium-priority basins. In lieu of preparation of a groundwater sustainability plan, a local agency may submit an alternative that complies with the SGMA no later than January 1, 2017 (Water Code Section 10733.6).

In June 2014, DWR released the final CASGEM Basin Prioritization Results which show that DWR has ranked the Sacramento basin and Yolo sub-basin as "high priority" and state that there are two problems with this sub-basin; using untreated groundwater for manufacturing because of total dissolved solids and some subsidence in the sub-basin northeast of Davis and in northern Yolo County.

Water Conservation Act of 2009

Requirements regarding per capita water use targets are defined in the Water Conservation Act of 2009 that was signed into law in November 2009 as part of a comprehensive water legislation package. Known as Senate Bill X7-7, the legislation sets a goal of achieving a 20% reduction in urban per capita water use statewide by 2020. SB X7-7 requires that retail water suppliers define in their 2010 urban water management plans the gpcd targets for 2020, with an interim 2015 target.

[1] The SGMA is comprised of three separate bills: Senate Bill 1168, Senate Bill 1319, and Assembly Bill 1739. All three were signed into law by the Governor on September 16, 2014.

Water purveyors are required to select one of the four methods that the legislation defines for establishing a gpcd target. The City of Davis selected in the 2010 Urban Water Management Plan the gpcd target which results in a 167 gpcd target by the year 2020. With a 2013 per capita water use of 163 gpcd, the City's per capita water use is already lower than the 2020 target. The estimated 2014 per capita water use of 143 gpcd is even lower likely because of the reduction of water use by the City's customers as a response to the drought. The City's per capita water use has been trending downward and has been under 167 gpcd since 2010.

California's Integrated Waste Management Act of 1989

California's Integrated Waste Management Act of 1989 (AB 939) set a requirement for cities and counties to divert 50% of all solid waste from landfills by January 1, 2000, through source reduction, recycling and composting. In order to achieve this goal, AB 939 requires that each City and County prepare and submit a Source Reduction and Recycling Element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

Assembly Bill 341

AB 341 requires CalRecycle to issue a report to the legislature that includes strategies and recommendations that would enable the state to recycle 75% of the solid waste generated in the state by January 1, 2020, requires businesses that meet specified thresholds in the bill to arrange for recycling services by July 1, 2012, and also streamlines various regulatory processes.

Senate Bill 1374

SB 1374, Construction and Demolition Waste Materials Diversion Requirements, requires that jurisdictions summarize their progress realized in diverting construction and demolition waste from the waste stream in their annual AB 939 reports. SB 1374 required the California Integrated Waste Management Board (which is now CalRecycle) to adopt a model construction and demolition ordinance for voluntary implementation by local jurisdictions.

California Green Building Standards Code

The State of California historically establishes progressive standards that serve as models for other states and even the federal government. With the adoption of the 2010 California Green Building Standards Code (CALGreen), California became the first state to incorporate green building strategies into its building code. Known as the CALGreen Code, this section comprises Part 11 of the California Buildings Standards Code in Title 24 of the California Code of Regulations. CALGreen outlines mandatory and voluntary requirements for new residential and nonresidential buildings (e.g., retail, office, public schools, hospitals) throughout the state beginning on January 1, 2011.

The development and implementation of the CALGreen Code aims to (1) reduce GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to directives by the Governor. Pursuant to the California Global Warming Solutions Act of 2006 (AB 32), CALGreen provides strategies to reduce building-related sources of GHG to attain California's 2020 and 2050 goals.

The provisions of CALGreen include both voluntary and mandatory measures for green building. Buildings/communities that have obtained the sole CALGreen title have met the minimum requirements of the code; these include: (1) reduction in water consumption, (2) diversion of construction waste from landfills, (3) installation of low-emitting materials, and (4) commission of new buildings over 10,000 square feet (sf).

CALGreen also includes Appendices which consist of voluntary measures designed to be adopted by local governments. This gives local jurisdictions the power to decide which measures they wish to pursue. Tier 1 communities must comply with the provisions of section A4.601.4.2 of CALGreen. This includes compliance with all mandatory measures, improvements in efficiency and reduction of waste, as well as the adoption of at least eight additional measures from each category: planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. Tier 2 rated communities must exceed the Tier 1 standard by adopting at least 12 voluntary measures, and establish even more stringent efficiency policies.

The City of Davis has adopted a requirement for mandatory compliance with Tier 1 of the CALGreen Code, which would otherwise be voluntary. The measures apply to residential and nonresidential projects that include new construction, demolition, and/or additions and alterations. Upon submission of an application, projects must provide plans to comply with the Tier 1 standards set forth by CALGreen.

By implementing a statewide baseline for green building strategies, California openly recognized the adverse effects of anthropogenic climate change. CALGreen not only serves a tool for California to reduce GHG emissions and physical waste, while increasing our energy and water efficiency, it provides a standard for other governments to emulate and implement.

LOCAL

City of Davis Urban Water Management Plan

The City of Davis prepared an Urban Water Management Plan in 2010, as required by the Urban Water Management Planning Act of 1983. The focus of the Plan is the conservation and efficient use of water in the Davis service area, and the development and implementation of plans to assure reliable water service in the future. The Plan contains projections for future water use, discusses the reliability of the City's water supply, describes the City's water treatment system, and contains a water shortage contingency plan. In addition, the Plan contains best management practices for efficient water use.

City of Davis Groundwater Management Plan

Under mutual agreement, the City and UC Davis GWMP was developed in 2006 to address groundwater management needs specific to the City and UC Davis service areas. (These areas are not directly included or managed under the Yolo County Flood Control and Water Conservation District GWMP.) The GWMP documents planned groundwater management activities and describe potential future actions to increase the effectiveness of groundwater management in the Davis area. The GWMP incorporates information from the Phase I and Phase II Deep Aquifer Studies and other regional groundwater investigations into a plan for managing and monitoring the effects of groundwater utilization. The GWMP includes all mandatory and suggested components outlined in CWC §10750 et seq. and §10753.7.

City of Davis Wastewater Facilities Strategic Master Plan

In 2005, the City of Davis prepared the Davis Wastewater Facilities Strategic Master Plan. The purpose of the Master Plan is to provide a strategic plan that outlines wastewater treatment, disposal, and reuse facility needs for a 25---year planning horizon. The Master Plan outlines the facilities needed and steps required to: 1) meet treatment requirements specified in the then active 2001 NPDES permit, 2) provide flexibility to meet anticipated future regulatory requirements, 3) determine repair and replacement needs for the facility, 4) improve reliability to ensure process performance, and 5) provide community benefits.

City of Davis Municipal Code, Chapter 32

Chapter 32 of the City's Municipal Code regulates the management of garbage, recyclables, and other wastes. Chapter 32 sets forth solid waste collection and disposal requirements for residential and commercial customers, and addresses yard waste, hazardous materials, recyclables, and other forms of solid waste. Article 32.04 establishes the Diversion of Construction and Demolition Debris Ordinance, which requires projects necessitating a building permit, with exceptions as set forth in the ordinance, to divert fifty% of construction and demolition debris generated from applicable construction, remodeling, or demolition projects from disposal to landfills through recycling, reuse and diversion programs.

City of Davis Integrated Waste Management Plan

The City of Davis published their Integrated Waste Management Plan in 2013. The goal is to reduce waste disposal to 1.9 pounds per person per day calculated by CalRecycle by the year 2020 and as close to zero pounds per person per day as possible by year 2025.

City of Davis General Plan

The City of Davis General Plan contains the following goals and policies that are relevant to utilities and service systems:

Goal WATER 1. Minimize increases in water use. Reduce per capita water consumption by 20% as compared to historic use through programs encouraging water conservation.

- **Policy WATER 1.1.** Give priority to demand reduction and conservation over additional water resource development.
- **Policy WATER 1.2.** Require water conserving landscaping.
- **Policy WATER 1.3.** Do not approve future development within the City unless an adequate supply of quality water is available or will be developed prior to occupancy.

Goal WATER 2: Ensure sufficient supply of high quality water for the Davis Planning Area.

- **Policy WATER 2.1:** Provide for the current and long-range water needs of the Davis Planning Area, and for protection of the quality and quantity of groundwater resources.
- **Policy WATER 2.2:** Manage groundwater resources so as to preserve both quantity and quality.

Goal WATER 5. Remain within the capacity of the City wastewater treatment plant.

- **Policy WATER 5.1.** Evaluate the wastewater production of new large scale development prior to approval to ensure that it will fall within the capacity of the plant.
- **Policy WATER 5.2.** Provided that the existing plant capacity is not exceeded, require new large scale development to pay its fair share of the cost of extending sewer service to the site.

Goal MAT 2. Provide adequate waste disposal capacity for Davis.

- **Policy MAT 2.1.** Plan for the long-term waste disposal needs of Davis.

Goal POLFIRE 3. Increase fire safety through provision of adequate fire protection infrastructure, public education and outreach programs.

- **Policy POLFIRE 3.1.** Provide adequate infrastructure to fight fires in Davis.

  Action e. Provide sufficient water system capacity through wells, mains and water storage facilities to provide for a fire flow of 2,500 gallons per minute for four (4) hours at 20 lbs. residual pressure, assuming operation at 80% of available well capacity.

City of Davis Municipal Code, Article 40

Article 40 of the Davis Municipal Code provides specific requirements for the provision of water efficient landscaping and verification of implementation to be performed by the City.

4.15.3 Impacts and Mitigation Measures

SIGNIFICANCE CRITERIA

Based on Appendix G of the State CEQA Guidelines, the proposed project would result in a potentially significant impact on utilities if it would:

- have insufficient water supplies available to serve the project from existing entitlements and resources, or need new or expanded entitlements;
- require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- not result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs;
- not comply with federal, state, and local statutes and regulations related to solid waste;
- require or result in the construction of new utility (electrical and natural gas) infrastructure, the construction of which could cause significant environmental effects; or
- conflict, or create an inconsistency, with any applicable plan, policy, or regulation adopted for the purpose of avoiding or mitigating environmental effects related to utilities and service systems.

METHODS AND ASSUMPTIONS

Components of the Nishi Sustainability Implementation Plan That Could Affect Project Impacts

The following goals and objectives from the Nishi Sustainability Implementation Plan are applicable to the evaluation of utilities and service systems impacts:

Goal 4: Maximize water and wastewater efficiency through the use of conservation, reuse and integrated landscaping and stormwater management strategies.

- **Objective 4.1:** Meet or exceed 2013 CALGreen Tier 1 water use efficiency requirements for indoor water use.
- **Objective 4.2:** Minimize use of potable water in outdoor landscaping and maximize the use of non-potable water.
- **Objective 4.3:** Work towards achieving zero net water usage through use of best management practices and innovative technologies.
- **Objective 4.4:** Incorporate creative low-impact development (LID) solutions to meet stormwater treatment and water quality requirements.

Goal 5: Create synergy with other project design goals and existing community sustainability initiatives.

- **Objective 5.5:** Reduce landfilled waste by maximizing on-site opportunities for waste reduction, reuse and recycling.
- **Objective 5.6:** Incorporate opportunities to educate and empower future residents and employees to increase awareness of resource consumption and their carbon footprint.

Impact Analysis Methodology

As noted in Chapter 3, "Project Description," this EIR evaluates development of the Nishi site at a project level and potential redevelopment that may occur within West Olive Drive as a result of rezoning/redesignation at a programmatic level.

Evaluation of potential utilities impacts were based on data obtained from the WSA (Brown and Caldwell 2015a), a technical evaluation of the need for on-site utilities at the Nishi site (Cunningham 2015), and other documents provided to and by the City of Davis.

ISSUES NOT EVALUATED FURTHER

No issues related to utilities have been eliminated from further discussion in this EIR.

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

Impact 4.15-1: Impacts on water supply.

Nishi Site

Development of the Nishi site would increase potable water demand within the City. However, adequate water supplies are available to serve the demands at the Nishi site without the need for additional entitlements. Impacts would be **less than significant.**

Based on the projected land uses for the Nishi site, the water demand of the project, including that of the Nishi site, would be approximately 167 afy, as shown in Table 4.15-6. Average daily demand would be 149,271 gpd, while maximum daily demand would be 178,299 gpd (Brown and Caldwell 2015a).

Table 4.15-6 Projected On-Site Water Demand

Land Use	Average Annual Demand				Maximum Daily Demand		
	Indoor Demand (gpd)	Outdoor Demand (gpd)	Total Demand (gpd)	Annual Demand (afy)	Indoor Demand (gpd)	Outdoor Demand (gpd)	Total Demand (gpd)
Office and R&D	29,121		29,121	33	35,475		27,534
Retail	6,555		6,555	8	6,987		6,987
Residential	100,035		100,035	112	110,039		110,039
Open Space		34,170[a]	34,170[a]	38[a]		65,010[a]	65,010[a]
Total	*135,711*	*34,170*[a]	*169,881*[a]	*190*[a]	*152,501*	*65,010*[a]	*209,570*[a]

Notes: Projected Office and R&D demand and project Retail demand each include approximately 27,500 sf of potential redevelopment within Olive Drive.

[a] Water demands were updated compared to what is shown in the WSA (Appendix J) to reflect changes to the land plan for more open space. For the purposes of this analysis, it was assumed that up to 85% of the parks, greenbelts, and open space, excluding the on-site detention basin, may require irrigation.

Source: Brown and Caldwell 2015a

Long-term Water Sufficiency Analysis

Consistent with the requirements of State CEQA Guidelines Section 15155, existing and projected future normal-year water supplies and demands are presented in Table 4.15-7 and 4.15-8, respectively. Note that two additional developments, the proposed Mace Ranch Innovation Center and Davis Innovation Center, have been accounted for in the future demand calculations because they are considered reasonably foreseeable development that could be annexed to the City and affect the City's overall ability to meet water demand within its service area.

Table 4.15-7 Average Year Water Demand and Supply Comparison, afy

	2015	2020	2025	2030	2035
Demand within current service area	12,574	12,889	12,767	12,356	12,356
Demand of Mace Ranch and Davis Innovation Centers	0	556[a]	899	899	899
Demand of Project	0		190[a]	190[a]	190[a]
Total Demand	12,574	13,444[a]	13,856[a]	13,444[a]	13,444[a]
Supply	12,574	15,253	15,253	15,253	15,253
Supply Minus Demand	0	1,808[a]	1,396[a]	1,808[a]	1,808[a]

Notes: Projected available supplies are based on data presented in Tables 4.15-3 and 4.15-4, except 2015 is projected use of the supply.

[a] Water demands were updated compared to what is shown in the WSA (Appendix J) to reflect changes to the land plan for more open space. For the purposes of this analysis, it was assumed that up to 85% of the parks, greenbelts, and open space, excluding the on-site detention basin, may require irrigation.

Source: Brown and Caldwell 2015a

Table 4.15-8 Projected Dry Year Supply Availability

	2015	2020	2025	2030	2035
Single dry year					
Demand	13,328	14,250[a]	14,686[a]	14,249[a]	14,249[a]
Supply	13,328	15,253	15,253	15,253	15,253
Supply Minus Demand	0	1,003[a]	567[a]	1,003[a]	1,003[a]
Multiple dry years					
Year 1					
Demand	12,888	13,780[a]	14,202[a]	13,780[a]	13,780[a]
Supply	12,888	15,253	15,253	15,253	15,253
Supply Minus Demand	0	1,473[a]	1,051[a]	1,473[a]	1,473[a]
Year 2					
Demand	13,328	14,2250[a]	14,686[a]	14,249[a]	14,249[a]
Supply	13,328	15,253	15,253	15,253	15,253
Supply Minus Demand	0	1,003[a]	567[a]	1,003[a]	1,003[a]
Year 3					
Demand	12,951	13,847[a]	14,271[a]	13,847[a]	13,847[a]
Supply	12,951	15,253	15,253	15,253	15,253
Supply Minus Demand	0	1,405[a]	982[a]	1,406[a]	1,406[a]

Notes: Projected available supplies constrained by the capacities of the supply facilities identified above, except 2015 is projected use of the supply. The breakdown of surface water and groundwater quantities is shown in Table 4.15-3.

[a] Water demands were updated compared to what is shown in the WSA (Appendix J) to reflect changes to the land plan for more open space. For the purposes of this analysis, it was assumed that up to 85% of the parks, greenbelts, and open space, excluding the on-site detention basin, may require irrigation.

Source: Brown and Caldwell 2015a, Table 4-6

During single- and multiple-dry years, groundwater supplies available to the City are constant, and as stated above, are limited by the current infrastructure's ability to provide potable water. As a result, potential reductions in available surface water supplies are not anticipated to affect the City's ability to meet demand. As shown in Tables 4.15-7 and 4.15-8, total water supply is greater than total water demand for all water year types, and there is a water surplus of at least 567 afy in all years. It should be noted that the lowest surplus is anticipated to occur in Year 2 of a multiple dry year (under 2025 conditions) because of the aforementioned anticipated changes in per capita consumption that would occur under 2030 conditions as opposed to 2025 conditions. Nonetheless, there are sufficient water supplies available to serve the anticipated water demand of the Nishi site from existing resources and entitlements and to continue to serve the site at existing levels in the long-term. No new or expanded entitlements would be required as a result of development and operation of the proposed uses at the Nishi site. Further, the above numbers, as presented in the WSA (Appendix J) and updated herein do not reflect quantifiable, project-specific water use reduction initiatives that are included as part of the project and would decrease the daily and annual demand for potable water at the Nishi site.

Because existing water supplies are sufficient to serve the proposed uses at the Nishi site from existing resources and entitlements, and implementation of the project would not require new or expanded entitlements, the impact would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

West Olive Drive

Potential redevelopment of West Olive Drive could increase potable water demand within the City. However, adequate water supplies are available to serve the potential increase in demands within West Olive Drive without the need for additional entitlements. Impacts would be **less than significant.**

Potential redevelopment of West Olive Drive that could occur as a result of the proposed rezoning and redesignation of West Olive Drive could result in additional water demand, similar to the proposed Nishi site development. Unlike the proposed development of the Nishi site, West Olive Drive is currently developed and within the City's current service area for potable water. The WSA conducted by Brown and Caldwell included potential additional water demand associated with West Olive Drive as part of its evaluation of future buildout conditions/demand within the existing City service area and projected water demands shown in Table 4.15-6. As a result and as shown in Table 4.15-7 and 4.15-8, there are sufficient water supplies available to serve the anticipated water demand resulting from West Olive Drive from existing resources and entitlements and to continue to serve the site at existing levels in the long-term. No new or expanded entitlements would be required as a result of potential redevelopment of West Olive Drive.

Existing water supplies are sufficient to serve the project based on the analysis presented in the WSA. This would be a ***less-than-significant*** *impact.*

Mitigation Measures

No mitigation measures are required.

Impact 4.15-2: Impacts to water infrastructure.

Nishi Site

Development of the Nishi site would increase demands on water infrastructure in the vicinity of the project site. Based on modeling conducted of potential fire flow requirements, which would result in the greatest hydraulic demand on local infrastructure, existing water pipelines in the area are anticipated to provide adequate fire flow and daily water supplies to accommodate the demands generated at the Nishi site, however because of the necessity for redundancy, existing pipelines within West Olive Drive are not adequate to provide a secondary method of providing water to the site. As a result, this impact is **significant.**

As noted above, maximum daily demand for potable water by development within the Nishi site would be approximately 209,570 gpd, which equates to approximately 145 gallons per minute (gpm). However, instantaneous demand for water at the Nishi site could result in inadequate water pressure, especially during a fire event when highly pressurized water (up to 2,000 gpm) may be needed. Based on a hydraulic analysis conducted by Brown and Caldwell, the existing 12" pipeline within Richards Boulevard, which would connect to the Nishi site via piping within West Olive Drive, would adequately provide daily potable water and necessary fire flow to the Nishi site (Brown and Caldwell 2015b). However, because of the requirements related to the provision of water via redundant water lines, the existing 6" and 10" water lines within West Olive Drive would also potentially provide potable water and fire flow to the Nishi site. Based on Brown and Caldwell's analysis, the existing pipes would not be sufficient to provide the necessary fire flow to the Nishi site.

Because the existing water pipes within Olive Drive, east of Richards Boulevard, would not be sufficient to provide necessary fire flow to the Nishi site, impacts would be ***significant****.*

Mitigation Measures

Mitigation Measure 4.15-2: Prior to approval of improvement plans for construction at the Nishi site, the applicant shall coordinate with the City of Davis Public Works Department to fund and replace approximately 3,000 feet of the existing 6" and 10" water lines within Olive Drive, east of Richards Boulevard, with a 12" pipe. This improvement shall be completed before initiation of operation of land uses within the Nishi site.

Significance after Mitigation

With implementation of Mitigation Measure 4.15-2, redundant fire flow and potable water supplies would be available to the Nishi site, and the impact would be reduced to **less than significant**. It should be noted that the impacts associated with construction of this improvement, which would occur entirely within the paved portion of Olive Drive, are addressed as part of this EIR.

West Olive Drive

West Olive Drive is currently developed with commercial uses that could be redeveloped as part of the project. As West Olive Drive currently meets fire flow requirements within the City, redevelopment of uses within West Olive Drive is not anticipated to substantially increase demands such that existing infrastructure would not be sufficient. Impacts would be **less than significant**.

West Olive Drive is currently developed with various uses that require water supplies for daily use. In addition, West Olive Drive currently meets the City's fire flow requirements for this portion of the project site. As a result, redevelopment of uses within West Olive Drive is not anticipated to substantially increase potable water demand or fire flow requirements such that additional infrastructure would be necessary.

Existing infrastructure within and adjacent to West Olive Drive would provide adequate water supplies and fire flow to uses within West Olive Drive. Impacts would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Impact 4.15-3: Impacts to wastewater infrastructure.

Nishi Site

Development of the Nishi site would increase wastewater generation and demands on wastewater infrastructure in the vicinity of the project site and in the City. Based on City sewer generation factors, existing sewer pipelines in the area do not have adequate capacity to accommodate peak wet weather flows with operation of the Nishi site. As a result, this impact is **significant**.

As currently proposed, the project would be served by the City's existing sewer collection and treatment infrastructure, including the City WWTP and the 8" sewer line within Olive Drive in the eastern portion of the project site. Buildout of the Nishi site would generate approximately 0.177 mgd of wastewater on average, as shown in Table 4.15-9. Peak flows, depending on dry or wet weather conditions, would range between 0.442 and 0.477 mgd.

Based on a review of City Sewer Spreadsheets, the City's existing 8" sewer line within Olive Drive has a pipe slope of 0.33%, which corresponds to a full-pipe capacity of 0.45 mgd (West Yost 2015b). As a result, peak wet weather flows as a result of development within the Nishi site are anticipated to exceed the capacity of existing infrastructure in the immediate vicinity of the project site.

Table 4.15-9 Estimated Wastewater Generation – Average Daily Generation

Category	Projected Wastewater Flows (mgd)	Projected BOD Load (lbs/day)
Average dry weather flow, mgd	0.177	300[a]
Peak dry weather flow, mgd	0.442	–
Peak wet weather flow, mgd	0.477	–

Notes: BOD = biochemical oxygen demand
[a] Includes a 20% safety factor.
Source: West Yost 2015b

With respect to the City's WWTP capacity and as noted in Table 4.15-5 above, existing capacity (based on average dry weather flows) is approximately 1.66 mgd. Taking into account the potential for buildout of the City's General Plan, approximately 0.95 mgd of capacity would remain to serve the project. Remaining BOD load capacity at the City's WWTP is currently 1,800 lbs/day and anticipated to be 660 lbs/day, with buildout of the City's current General Plan. As shown above in Table 4.15-9, the project's anticipated wastewater generation would be approximately 0.177 mgd coupled with 300 lbs/day of additional BOD. As a result, adequate capacity is available at the City's WWTP under existing and future (General Plan buildout) conditions to handle the wastewater generated by Nishi project.

*Although adequate capacity is available at the City's WWTP to handle the wastewater generated at the Nishi site, the existing 8" sewer line within West Olive Drive would not have adequate capacity to handle peak flows generated by the proposed development. As a result, this impact would be **significant**.*

Mitigation Measures

Mitigation Measure 4.15-3: Prior to issuance of building permits for the Nishi site, the applicant shall coordinate with the City of Davis Public Works Department and conduct a refined engineering analysis, including flow monitoring, of existing sewer lines between the project site and Sewer Lift Station No. 4 to confirm adequate flow capacity. At a minimum, the applicant shall replace the existing 8" sewer line within Olive Drive with a 12" pipe. Should additional sewer pipe upsizing be deemed necessary through coordination with the City Public Works Department, the applicant shall replace those pipes before operation of on-site uses.

Significance after Mitigation

With implementation of Mitigation Measure 4.15-3, the impact on sewer facilities would be **less than significant.** It should be noted that the impacts associated with replacement of the 8" sewer line, which would occur entirely within the paved portion of Olive Drive, are addressed as part of this EIR.

West Olive Drive

West Olive Drive is currently developed with commercial uses that could be redeveloped as part of the project. The potential redevelopment of on-site uses within West Olive Drive is not anticipated to substantially increase demands such that existing wastewater infrastructure would not be sufficient. Impacts would be **less than significant**.

West Olive Drive is currently developed with various uses that generate wastewater on a daily basis. In addition, uses within West Olive Drive were included as part of the future condition (City General Plan Buildout) shown in Table 4.15-5 above, which identifies additional capacity within City facilities. As a result, redevelopment of uses within West Olive Drive is not anticipated to substantially increase wastewater generation such that additional infrastructure would be necessary.

*Existing infrastructure within and adjacent to West Olive Drive would provide adequate capacity to uses within West Olive Drive. Impacts would be **less than significant**.*

Mitigation Measures

No mitigation measures are required.

Impact 4.15-4: Impacts to solid waste facilities.

Nishi Site

Development of the Nishi site would increase solid waste generation within the City. However, adequate landfill capacity is available at the Yolo County Central Landfill to accommodate solid waste generated by the project. This is a **less-than-significant** impact.

As proposed, development of the Nishi site is anticipated to result in up to 1,920 new residents and 1,508 new employees. Using the General Plan Update EIR's generation rate of 3.12 pounds per person per day, the proposed project would generate 5,990 lbs/day (3 tons/day) of solid waste from the proposed residential uses. In order to determine solid waste generation from the non-residential uses proposed at the project site, a rate of 5.11 pounds per day per 1,000 sf was used. This waste generation rate is consistent with the guidance provided by the California Department of Recycling and Resources Recovery for large office uses (CalRecycle 2006). Using this generation rate, the project's non-residential component would generate up to 1,764 lbs/day (0.9 tons/day) of solid waste. Total solid waste generated at the Nishi site as part of the project would be 7,754 lbs/day, or approximately 3.9 tons/day.

The project would be required to comply with applicable state and local requirements including those pertaining to solid waste, construction waste diversion, and recycling. Specifically, Chapter 32 of the City's Municipal Code regulates the management of garbage, recyclables, and other wastes. Chapter 32 sets forth solid waste collection and disposal requirements for residential and commercial customers, and addresses yard waste, hazardous materials, recyclables, and other forms of solid waste.

As previously described, permitted maximum disposal at the Yolo County Central Landfill is 1,800 tons/day day and average daily throughput is 500 tons/day. In addition, the total permitted capacity of the landfill is 49,035,200 cubic yards, which is expected to accommodate an operational life of about 68 years (January 1, 2081). The addition of the volume of 3.9 tons/day of solid waste as a result of development on the Nishi site would not exceed the landfill's permitted daily throughput nor substantially affect the total permitting capacity of the landfill.

*Development of new residential and non-residential uses at the project site would increase the demand for solid waste collection and disposal; however, the solid waste generated by proposed development would not exceed the permitted capacity of the Yolo County Central Landfill, which would receive solid waste from the project site. Therefore, the impact would be **less than significant**.*

Mitigation Measures

No mitigation measures are required.

West Olive Drive

Development of West Olive Drive would increase solid waste generation within the City. However, adequate landfill capacity is available at the Yolo County Central Landfill to accommodate solid waste generated by the project. This is a **less-than-significant** impact.

Similar to what was described above for the Nishi site, additional solid waste generated within West Olive Drive as a result of redevelopment pursuant to the rezoning and redesignation of West Olive Drive as part of the project would be accommodated by the Yolo County Central Landfill. Taking into account the potential net increase of 55,000 sf of commercial space within West Olive Drive, 281 lbs/day (0.14 tons/day) of additional solid waste may be generated within West Olive Drive as a result of the project. As the project would comply with applicable state and local requirements pertaining to solid waste, including waste reduction requirements, the additional 0.14 tons/day is not anticipated to substantially affect the capacity of the Yolo County Central Landfill.

*Development of new residential and non-residential uses at the project site would increase the demand for solid waste collection and disposal; however, the solid waste generated by potential redevelopment within West Olive Drive would not exceed the permitted capacity of the Yolo County Central Landfill, which would receive solid waste from the project site. Therefore, the impact would be **less than significant**.*

Mitigation Measures

No mitigation measures are required.

Impact 4.15-5: Impacts to electricity and natural gas facilities.

Nishi Site

Electrical power would be provided to the Nishi site through an existing underground distribution power line adjacent to the project site. A distribution natural gas line would also be extended to the project site from West Olive Drive. This impact would be **less than significant**.

Implementation of the proposed project would increase demands for electricity and natural gas and would require connections to existing utility lines in the area. Electrical power would be provided to the Nishi site via existing power lines located adjacent to the western boundary of the project site. Natural gas would be delivered to the project site via a distribution natural gas line within West Olive Drive. As development of the project site was included as part of previous and current local and regional planning efforts and as PG&E incorporates those planning efforts and associated growth projections as part of its assessment of infrastructure, no off-site infrastructure is anticipated to be required. PG&E staff has indicated that it would be able to serve the project site (Perez, pers. comm., 2015).

Because minor electrical and natural gas infrastructure improvements/connections related to the project would be constructed within the project site and connect to existing infrastructure, and no off-site *improvements are anticipated to accommodate the electricity and natural gas demands of the project, impacts associated with the construction of new electrical and natural gas facilities would be **less than significant**.*

Mitigation Measures

No mitigation measures are necessary.

West Olive Drive

The redevelopment of West Olive Drive would incrementally increase electrical and natural gas demands but would not require changes to the electrical or natural gas distribution systems. Impacts would be **less than significant**.

Similar to what was described above for the Nishi site, further development of West Olive Drive was assumed as part of the City's General Plan and subsequent planning efforts. As PG&E takes those planning efforts and associated growth projections into account when performing infrastructure evaluations of its facilities, the potential redevelopment of West Olive Drive is not anticipated to require additional infrastructure beyond additional connections on-site. Further, PG&E staff has indicated that it would be able to serve the project site (Perez, pers. comm., 2015).

*Due to the existing level of development within West Olive Drive, potential redevelopment that may occur within West Olive Drive may result in incremental increases in demand for electricity and natural gas service but is not anticipated to require off-site improvements to electricity or natural gas infrastructure. Impacts would be **less than significant**.*

Mitigation Measures

No mitigation measures are required.

Impact 4.15-6: Conflict, or create an inconsistency, with any applicable plan, policy, or regulation adopted for the purpose of avoiding or mitigating environmental effects related to geology, soils, or mineral resources.

Nishi Site

Implementation of the project within the Nishi site would be consistent with the policies of the City of Davis General Plan related to utilities. This would be a **less-than-significant** impact.

The City of Davis General Plan includes policies related to the provision and maintenance of utilities within the City. The features of the proposed development of the Nishi site and mitigation measures discussed in this document are consistent with the policies of the City of Davis General Plan as shown in Table 4.15-10.

*Development of the Nishi site as part of the project would not conflict with any local policies or ordinances related to utilities. Impacts would be **less than significant**.*

Mitigation Measures

No mitigation measures are required.

West Olive Drive

Redevelopment that could occur as a result of the redesignation/rezoning of parcels located in West Olive Drive would be consistent with the policies of the City of Davis General Plan related to utilities. This would be a **less-than-significant** impact.

Similar to what was discussed above, potential redevelopment of West Olive Drive would not create conflicts or result in inconsistencies with the policies of the City General Plan related to utilities.

Potential redevelopment associated with the proposed General Plan Amendment and zoning change of West Olive Drive would not conflict with any regulations related to the provision and maintenance of utilities within the City. Impacts would be ***less than significant****.*

Mitigation Measures

No mitigation measures are required.

Table 4.15-10 City of Davis General Plan Policy Consistency

Policy	Project Consistency
Policy MAT 1.1: Promote reduced consumption of non-renewable resources.	The sustainability plans developed for the proposed project include measures to conserve resources and reduce future consumption. As noted in Chapter 3, "Project Description" these measures include waste reduction, water use reduction, and energy conservation actions that are consistent with this policy.
Policy MAT 2.1. Plan for the long-term waste disposal needs of Davis.	As noted above under Impact 4.15-6, the project would not affect the long-term waste disposal capacity of the Yolo County Central Landfill and is not anticipated to substantially reduce the availability of long-term waste disposal opportunities for the City of Davis, consistent with this policy.
Policy POLFIRE 3.1 Provide adequate infrastructure to fight fires in Davis.	As described in Impact 4.15-1, with implementation of mitigation, adequate fire flow would be provided at the project site such that adequate infrastructure would be available to fight fires in Davis, including the project site. The project would be consistent with this policy.
Policy WATER 1.1. Give priority to demand reduction and conservation over additional water resource development.	See discussion related to Policy MAT 1.1. The project would be consistent with this policy.
Policy WATER 1.2. Require water conserving landscaping.	See discussion related to Policy MAT 1.1. The project would be consistent with this policy.
Policy WATER 1.3. Do not approve future development within the City unless an adequate supply of quality water is available or will be developed prior to occupancy.	As discussed in Impact 4.15-1, the water supply is adequate to serve the project as well as General Plan buildout of the City. The project would be consistent with this policy.
Policy WATER 5.1. Evaluate the wastewater production of new large scale development prior to approval to ensure that it will fall within the capacity of the plant.	As discussed in Impact 4.15-3, adequate capacity is available at the WWTP to accommodate the wastewater generated by the project. The project would be consistent with this policy.
Policy WATER 5.2. Provided that the existing plant capacity is not exceeded, require new large scale development to pay its fair share of the cost of extending sewer service to the site.	As part of the project approval process, the applicant would be all applicable fees in accordance with City requirements, including fees related to utility service and planning. The project would be consistent with this policy.