This section describes the regulatory setting, regional hydrology and water quality impacts that are likely to result from project implementation, and includes measures to reduce potential impacts related to stormwater drainage, flooding and water quality. This section is based in part on the following documents, reports and studies:

- City of Davis General Plan (City of Davis, 2001; as amended through 2007);
- City of Davis Final 2015 Urban Water Management Plan (Brown Caldwell, 2016); and
- West Davis Active Adult SB 610 Water Supply Assessment (Tully & Young, 2017).

Comments were received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from the following: Patrick S. Blacklock, County of Yolo (April 18, 2017), Gregor Blackburn, FEMA (April 19, 2017), Toni Terhaar and Russ Kanz (April 26, 2017), Stephanie Tadlock, Central Valley Regional Water Quality Control Board (CVRWQCB) (May 8, 2017), Christine M. Crawford, Yolo Local Agency Formation Commission (LAFCo) (May 11, 2017), Greg Rowe (May 11, 2017), and Eileen M. Samitz (May 13, 2017). Each of the comments related to this topic are addressed within this section.

3.9.1 ENVIRONMENTAL SETTING

REGIONAL HYDROLOGY

The project site is located in the City of Davis, within Yolo County at the southwestern end of the Sacramento Valley, approximately 30 miles north of the confluence of the San Joaquin and Sacramento Rivers. The Sacramento Valley is bordered by the Coast Ranges and Delta on the west and the foothills of the Sierra Nevada to the east. Water resources in this region include rivers, streams, sloughs, marshes, wetlands, channels, harbors, and underground aquifers. The topography is generally flat, and is drained by the Sacramento River and the Yolo Bypass, which is part of the Sacramento River Flood Control Project.

Climate

Summers in the city are warm and dry, and winters are cool and mild. The region is subject to wide variations in annual precipitation, and also experiences periodic dry periods and wild fires in the regional watershed and surrounding areas with chaparral and oak lands. Summers can be hot at times with weekly periods of 100 degree Fahrenheit temperatures, greatly increasing summer irrigation requirements.

The city's average monthly temperature ranges from 45 to 75 degrees Fahrenheit, but the extreme low and high daily temperatures have been 12 and 116 degrees Fahrenheit, respectively. The historical annual average precipitation is approximately 19 inches. The rainy season normally begins in November and ends in March. Evapotranspiration (ETo) records, which measure the loss of water from the soil both by evaporation and by transpiration from the plants growing thereon, indicate average monthly values ranging from 1.2 inches in the city's wet January to 8.3 inches in much drier June and July. Low humidity usually occurs in the summer months, from May through

September. The combination of hot and dry weather results in high water demands during the summer.

Watersheds

A watershed is a region that is bound by a divide that drains to a common watercourse or body of water. Watersheds serve an important biological function, oftentimes supporting an abundance of aquatic and terrestrial wildlife including special-status species and anadromous and native local fisheries. Watersheds provide conditions necessary for riparian habitat.

The State of California uses a hierarchical naming and numbering convention to define watershed areas for management purposes. This means that boundaries are defined according to size and topography, with multiple sub-watersheds within larger watersheds. Table 3.9-1 shows the primary watershed classification levels used by the State of California. The second column indicates the approximate size that a watershed area may be within a particular classification level, although variation in size is common.

TABLE 3.9-1. STATE OF CALIFORNIA WATERSHED HIERARCHY NAMING CONVENTION

WATERSHED LEVEL	*APPROXIMATE SQUARE MILES (ACRES)*	*DESCRIPTION*
Hydrologic Region (HR)	12,735 (8,150,000)	Defined by large-scale topographic and geologic considerations. The State of California is divided into ten HRs.
Hydrologic Unit (HU)	672 (430,000)	Defined by surface drainage; may include a major river watershed, groundwater basin, or closed drainage, among others.
Hydrologic Area (HA)	244 (156,000)	Major subdivisions of hydrologic units, such as by major tributaries, groundwater attributes, or stream components.
Hydrologic Sub-Area (HSA)	195 (125,000)	A major segment of an HA with significant geographical characteristics or hydrological homogeneity.

SOURCE: CALIFORNIA DEPARTMENT OF WATER RESOURCES, 2012.

HYDROLOGIC REGION

The City of Davis is located in the Sacramento River Hydrologic Region, which covers approximately 17.4 million acres (27,200 square miles) and all or large portions of Modoc, Siskiyou, Lassen, Shasta, Tehama, Glenn, Plumas, Butte, Colusa, Sutter, Yuba, Sierra, Nevada, Placer, Sacramento, El Dorado, Yolo, Solano, Lake, and Napa counties. Small areas of Alpine and Amador counties are also within the region. Geographically, the region extends south from the Modoc Plateau and Cascade Range at the Oregon border, to the Sacramento-San Joaquin Delta. The Sacramento Valley, which forms the core of the region, is bounded to the east by the crest of the Sierra Nevada and southern Cascades and to the west by the crest of the Coast Range and Klamath Mountains. Other significant features include Mount Shasta and Lassen Peak in the southern Cascades, Sutter Buttes in the south central portion of the valley, and the Sacramento River, which is the longest river system in the State of California with major tributaries the Pit, Feather, Yuba, Bear and American rivers. The region is home to over two million people. Area population centers include Sacramento, Redding, Chico, and Davis.

VALLEY PUTAH-CACHE HYDROLOGIC UNIT

The City of Davis is located within the Valley Putah-Cache Hydrologic Unit. For purposes of regional planning, hydrologic units are generally considered to be the appropriate watershed planning level. However, the hydrologic unit level is generally too large in terms of a planning scale for individual projects, and a hydrologic area or hydrologic subarea may be considered more appropriate.

LOWER PUTAH CREEK HYDROLOGIC AREA

The City of Davis is located within the Lower Putah Creek Hydrologic Area. This watershed is approximately 225,301 acres and is bound by Putah Creek to the south and Cache Creek to the north. The headwaters of the watershed begin just west of Winters near Lake Berryessa and extend to the east approximately 25 miles to the Sacramento River. There are 17 water bodies on the 303(d) list (list of impaired and threatened waters), six of which have a TMDL for various pollutants. A Total Maximum Daily Load, or TMDL, is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards. None of the listed 303(d) water bodies are located in the vicinity of the project site.

LOCAL SETTING

The project site consists of approximately 74 acres located northwest and adjacent to the City of Davis within the City of Davis Sphere of Influence (SOI) of unincorporated Yolo County. Approximately 11.29 acres of off-site improvements would also occur within developed and undeveloped areas surrounding the project site (see Figure 2.0-5 in Section 2.0, Project Description). The project site is bounded by existing agricultural land within unincorporated Yolo County (within the City's SOI) to the west, mapped rural residential subdivision lots to the north, the Sutter Davis Hospital and Risling Court to the east, and West Covell Boulevard to the south.

Within the Lower Putah Creek Hydrologic Area, there are several principal watersheds. The project site is located within the Tule Canal-Toe Drain watershed (see Figure 3.9-1, Watersheds Map). The Dry Slough and the Willow Slough watersheds are located to the west and north of the project site and contribute flows to the Willow Slough Bypass channel. The Putah Creek-South Fork Putah Creek watershed is located to the south of the Tule Canal-Toe Drain watershed.

The major streams that drain the unincorporated County areas around Davis are Putah Creek to the south and Willow Slough Bypass to the north, both of which empty into the Yolo Bypass. Willow Slough Bypass is a leveed channel that drains approximately 200 square miles and receives flows from Willow, Cottonwood, Chickahominy, and Dry Sloughs south of Cache Creek.

Several major drainage facilities exist near the project site and the City of Davis. They are listed below.

- Box culvert (under Highway 113 east of project site)
- Covell Drain (along southern boundary of project site)
- Sutter Drainage Pond (near northeastern corner of project site)

Flooding

The risks of flooding hazards in the City of Davis and immediate surroundings are primarily related to large, infrequent storm events. These risks of flooding are greatest during the rainy season between November and March. Flooding events can result in damage to structures, injury or loss of human and animal life, exposure to waterborne diseases, and damage to infrastructure. In addition, standing floodwater can destroy agricultural crops, undermine infrastructure and structural foundations, and contaminate groundwater.

100-YEAR FLOODPLAIN

The 100-Year floodplain denotes an area that has a one percent chance of being inundated during any particular 12-month period. Floodplain zones (Special Flood Hazard Areas [SFHA]) are determined by the Federal Emergency Management Agency (FEMA) and used to create Flood Insurance Rate Maps (FIRMs). These tools assist communities in mitigating flood hazards through land use planning. FEMA also outlines specific regulations, intended to be adopted by the local jurisdictions, for any construction, whether residential, commercial, or industrial within 100-year floodplains.

Lands within the FEMA-designated 100-year floodplain (SFHA) are subject to mandatory flood insurance as required by FEMA. The insurance rating is based on the difference between the base flood elevation (BFE), the average depth of the flooding above the ground surface for a specific area, and the elevation of the lowest floor. Because the City of Davis participates in the National Flood Insurance Program, it must require development permits to ensure that construction materials and methods will mitigate future flood damage, and to prevent encroachment of development within floodways. New construction and substantial improvements of residential structures are also required to "have the lowest habitable floor (including the basement if it is, or easily could be 'habitable') elevated to or above the base flood level." Non-residential structures must have their utility systems above the BFE or be of flood-proof construction.

Figure 3.9-2 illustrates the areas within the Federal Emergency Management Agency (FEMA) designated 100-year floodplain. The proposed project is shown on the FEMA Flood Insurance Rate Map (FIRM) number 06113C dated June 18, 2010. The project site is located within FEMA Zone A (shaded), which represents area that is within the designated 100-year floodplain. FEMA regulates flooding up to and including the 100-year storm event which Zone A represents.

Drainage

Existing: The project site is located within the Covell Drain Watershed, with approximately 17 square miles of the watershed lying upstream of the site. The project site includes the Covell Drain channel, which conveys stormwater and agricultural runoff from western portions of the City of Davis and from portions of unincorporated Yolo County west of the site. In the vicinity of the project site, the Covell Drain flows east along the north side of Covell Boulevard toward SR 113, turning north along the west edge of SR 113, and then discharging to an existing three- to 10-foot by 5-foot box culvert under the freeway. East of SR 113, the Covell Drain continues to the

northeast along the north edge of Davis, through the Wildhorse Golf Course, and eventually discharges to Willow Slough Bypass northeast of the City.

The City of Davis maintains a storm drain pipe network in the project area which discharges to the Covell Drain. This network collects water from the south side of Covell Boulevard and pipes to the north into the existing channel. Storm drain pipes ranging from 15-inches to 42-inches provide collection and conveyance of stormwater throughout the Sutter Hospital Facility and along John Jones Road, tying into the Covell Drain parallel to SR 113.

The City of Davis also maintains a stormwater detention pond adjacent to the West Davis Water Tank site. The pond provides attenuation for the stormwater associated with the water tank site and the Sutter Davis Hospital site.

Proposed: Proposed drainage infrastructure are shown in detail in Figure 2.0-10 in Section 2.0, Project Description.

As shown on Figure 2.0-10, the proposed drainage infrastructure would include greenway swales, a perimeter drainage channel, an offsite detention basin, and relocation of the Covell Drain north to accommodate the widening of Covell Boulevard. The ditch would need to be contained within a culvert under the new entrance from Covell.

A guiding stormwater management principle for project should be that it does not result in new impacts to properties downstream or upstream. Potential impacts include considerations of both stormwater quantity and quality. With regard to stormwater quality, the project would be designed to conform with current City of Davis standard requirements, as discussed below. For water quantity, the objective of the preliminary analysis completed for the project is to identify the basic post-project storage volumes needed onsite in order to limit post-project peak discharges and associated peak water surface elevations (WSEs) to estimated existing levels in the Covell Drain on its approach to the SR 113 box culvert.

Dam Failure

The Monticello Dam, located approximately 25 miles from Davis at Lake Berryessa, has the potential to inundate the City of Davis if it were to fail. The failure of this dam is estimated by the California Emergency Management Agency to cause flooding up to three meters deep in Davis. Dam failure is generally a result of structural instability caused by improper design or construction, instability resulting from seismic shaking, or overtopping and erosion of the dam.

Larger dams that are higher than 25 feet or with storage capacities over 50 acre-feet of water are regulated by the California Dam Safety Act, which is implemented by the California Department of Water Resources, Division of Safety of Dams (DSD). The Monticello Dam is regulated by the California Dam Safety Act. The DSD is responsible for inspecting and monitoring these dams. The Act also requires that dam owners submit to the California Office of Emergency Services inundation maps for dams that would cause significant loss of life or personal injury as a result of dam failure. The County Office of Emergency Services is responsible for developing and

implementing a Dam Failure Plan that designates evacuation plans, the direction of floodwaters, and provides emergency information.

Stormwater Quality

Potential hazards to surface water quality include the following nonpoint pollution problems: high turbidity from sediment resulting from erosion of improperly graded construction projects, concentration of nitrates and dissolved solids from agriculture or surfacing septic tank failures, contaminated street and lawn run-off from urban areas, and warm water drainage discharges into cold water streams.

A critical period for surface water quality is following a rainstorm which produces significant amounts of drainage runoff into streams at low flow, resulting in poor dilution of contaminants in the low flowing stream. Such conditions are most frequent during the fall at the beginning of the rainy season when stream flows are near their lowest annual levels and contaminants have accumulated on impervious surfaces over the drier summer months. Besides greases, oils, pesticides, litter, and organic matter associated with such runoff, heavy metals such as copper, zinc, and cadmium can cause considerable harm to aquatic organisms when introduced to streams in low flow conditions.

Urban stormwater runoff was managed as a non-point discharge (a source not readily identifiable) under the Federal Water Pollution Control Amendments of 1972 (PL 92-500, Section 208) until the mid-1980s. However, since then, the Federal Environmental Protection Agency has continued to develop implementing rules which categorize urban runoff as a point source (an identifiable source) subject to National Pollution Discharge Elimination System (NPDES) permits. Rules now affect medium and large urban areas, and further rulemaking is expected as programs are developed to meet requirements of Federal water pollution control laws.

Surface water pollution is also caused by erosion. Excessive and improperly managed grading, vegetation removal, quarrying, logging, and agricultural practices can lead to increased erosion of exposed earth and sedimentation of watercourses during rainy periods. In slower moving water bodies these same factors often cause a buildup of sediment, which ultimately reduces the capacity of the water system to percolate and recharge groundwater basins, as well as adversely affects both aquatic resources and flood control efforts.

303(d) Impaired Water Bodies: Section 303(d) of the federal Clean Water Act requires States to identify waters that do not meet water quality standards or objectives and thus, are considered "impaired." Once listed, Section 303(d) mandates prioritization and development of a Total Maximum Daily Load (TMDL). The TMDL is a tool that establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby the basis for the States to establish water quality-based controls. The purpose of TMDLs is to ensure that beneficial uses are restored and that water quality objectives are achieved.

There are seventeen 303(d) impaired waterbodies in the Lower Putah Creek Hydrologic Area, including major rivers, creeks, and tributaries. Two of the impairments are located along Cache

Creek, two are located along Putah Creek, three are located along the Sacramento River, and ten are located along the Delta Waterways. These water bodies are impaired by a variety of contaminants including: mercury, chlorpyrifos, DDT, diazinon, total dissolved solids, exotic species, Group A pesticides, and unknown toxicities. These constituents originate from a variety of sources, but generally include agricultural activities, resource extraction, urban runoff/storm sewers, and unknown sources. The project location does not directly discharge into any of the regionally identified 303(d) listed impaired waterbodies. As such TMDLs do not apply to this project site for post-construction treatment of stormwater runoff.

WATER RESOURCES

Davis Groundwater Supply

Prior to mid-2016, the City used groundwater as its sole potable water supply source. The City pumps from the Sacramento Valley groundwater basin, Yolo subbasin, 5-21.67. The Yolo subbasin is not adjudicated and there are no legal restrictions to groundwater pumping. The Department of Water Resources' Bulletin 118 does not consider the basin to be in overdraft. In 2006, the City and UC Davis developed a groundwater management plan (GWMP) that focuses on the sustainability of the yield and water quality of the groundwater basin.

The City's deep aquifer zone exists throughout the Davis planning area, and is more predominant to the north and west. The deep aquifer zone slopes downward from the Plainfield Ridge, 3.5 miles west of the Davis planning area, with gradual flattening towards the east. These productive aquifers occur in the Tehama and younger formations, which are found at depths of 700 feet to 1500 feet below ground surface.

Aquifers in the Davis area are recharged by a number of sources. Deep percolation of rainfall and to a lesser extent irrigation water, are major components of groundwater recharge. 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.

Water moves very slowly between aquifers at different depths. In some places, water moves between aquifers through wells that have been screened at a number of different depths to enhance production. This causes the well columns to act as open pipes to equalize the water pressure of aquifers at different depths. 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. Both the City and UC Davis are increasingly reliant on the deep aquifer due to its superior quality of water.

The City has few physical constraints on its groundwater supply other than the pumping capacities of existing wells. The Plainfield Ridge creates a minor restriction to east-west groundwater flow just west of the City. There are no other major restrictions to horizontal groundwater flow in the area (DWR, 2003).

The City has been studying the deep aquifer and groundwater pumping capacity for many years. In 2004, the City prepared a *Davis Deep Aquifer Assessment Technical Memorandum* (Brown and

Caldwell and Winzler & Kelley, 2004) in support of the City's EIR for its Well Capacity Replacement Project. Because of concerns expressed over possible interference with University of California, Davis deep aquifer groundwater well capacity, the *Final Well Capacity Replacement EIR* (July 2005) limited the City's deep aquifer groundwater capacity to an additional 4,500 gallons per minute (gpm). With the development of Well DDW-33, and DDW-34 on the City's property, the City is in the process of constructing the deep well capacity documented in the *Final Well Capacity Replacement EIR*.

Groundwater Quality

Water quality affects the City's water management strategies through efforts to comply with Federal and State drinking water regulations. These regulations require rigorous water quality testing, source assessments, and treatment in some cases. Drinking water quality also impacts wastewater quality and affects the City's National Pollutant Discharge Elimination System (NPDES) permit requirements regulating discharges to the environment. The challenges related to groundwater quality is one of the reasons the City has pursued a surface water supply.

The quality of the existing groundwater and surface water supply sources over the next 25 years in the City of Davis is expected to be adequate. However, future water quality regulations (e.g. related to chromium) could result in the need to treat Davis' groundwater. Groundwater found in the intermediate depth wells has high total dissolved solids and hardness, which causes scaling in plumbing systems and taste and odor issues. Over one-half of the residential homes in Davis use water softeners to lower hardness levels. In recent years a number of City intermediate-depth wells have been removed from service due to water quality problems, including high concentrations of nitrates, iron, manganese, and selenium. The City has constructed wells in the deep aquifer to obtain water with higher overall quality versus the current quality of water from the intermediate depth aquifer. Groundwater will continue to be disinfected, and treated as necessary to meet drinking water standards. Additionally, given the addition of new surface water supplies to the City, the need for deep well pumping will in Davis will be reduced in coming years, compared with the City's prior groundwater pumping needs.

As deep well pumping continues, some lower quality intermediate depth aquifer water will flow into the deep aquifer. As indicated above, the vertical hydraulic connection between the intermediate and deep aquifers does not allow as much flow as horizontal connection. However, some flow would be expected. The rate at which the deep aquifer water quality would degrade is not known at this time.

Surface Water

Until mid-2016, the City utilized no surface water, relying solely on local groundwater resources for its entire community water supply. However, the City of Davis is now under contract to purchase wholesale surface water from the Woodland Davis Clean Water Agency (WDCWA) to use in combination with groundwater from the deep wells. The project participants consist of the City of Davis, City of Woodland, and UC Davis. Wholesale surface water supply became available in mid-2016. Following the addition of surface water supplies to the City's portfolio of water supply

sources, some of the City's intermediate aquifer wells would be kept for emergency supply; deep aquifer wells would remain online to help supply maximum day and peak hour demands.

Water Distribution System

The City's water distribution system operates as a single pressure zone with one elevated tank and two ground level storage tanks with booster pump stations. The hydraulic grade in the system is based on the level in the elevated tank. The wells are controlled by a Supervisory Control and Data Acquisition (SCADA) system based on the level in the elevated tank.

PIPELINES

The City's water system consists of piping ranging from 6 to 14-inches (in). Almost 90 percent of the distribution system consists of 6 to 10-in diameter pipelines. The City's pipeline system was constructed to support localized supply, with wells spread throughout the City. This type of localized supply does not require large diameter transmission mains.

STORAGE FACILITIES/BOOSTER PUMP STATIONS

There are three storage tanks in the City's water system: the Elevated Tank, West Area Tank (WAT) and the East Area Tank (EAT). The three tanks have a combined storage capacity of 8.5 million gallons (MG). The WAT has a booster pumping capacity of 4,200 gpm and the EAT has a total pumping capacity of 8,000 gpm. The WAT and EAT fill during off-peak demand periods and then the booster station pumps stored water back into the system during peak periods based on time and system pressure.

INTERTIES

The only other water system to which the City is connected is the UC Davis water system via two interties of which UC Davis retains ownership. UC Davis entered into a water supply agreement with the City on July 9, 2010, which was in effect through June 30, 2016. The water supply agreement allowed the City to receive water supply up to 300,000 cubic feet per year with a flow rate not to exceed 1,500 gpm from UC Davis.

Water Use

Water production is the volume of water measured at the source, which includes all water delivered to residential, commercial, and public authority customers, as well as unaccounted-for water. There are three primary water rights and contracts (collectively, "water supplies") that are used within the City's existing service area and Sphere of Influence (SOI). All three of these water supplies are used to meet the water demands for the City's residents. In several areas within the City, the water supplies can be interchanged and commingled for delivery to end users. The water supplies are:

- Woodland-Davis Clean Water Agency (WDCWA) State Water Resources Control Board (SWRCB) Appropriative Water Right Permit 20281;
- WDCWA's Central Valley Project (CVP) Contract No. 14-06-200-7422X-R-1; and

- City of Davis' groundwater rights.

The City's water supplies have historically included water supplies solely derived from its groundwater resources. In June of 2016, the City began using a new water diversion facility from the Sacramento River and began taking water supplies from WDCWA's surface water assets. The City's additional water sources will reduce its historical reliance upon groundwater and improve other water quality issues associated with utilization of groundwater resources.

For the year 2016, City water use was supplied from groundwater (3,704 acre-feet [AF]), WDCWA Permit 20281 (1,391 AF), and CVP Contract No. 14-06-200-7422X-R-1 (4,400 AF). For the period 1995 to 2005, annual treated groundwater production for the City's water system varied from 11,908 AF per year (AFY) (1998) to 15,112 AFY (2002) (Tully & Young, 2017). For the period 2010 to 2016, annual treated groundwater production fluctuated with a high of 12,338 AFY in 2013 to a low of 3,704 AFY in 2016. The City expects total water demand to increase to 13,492 AFY by 2020, and 13,560 AFY by 2035 (City of Davis 2015 UWMP, 2016).

3.9.2 REGULATORY SETTING

There are a number of regulatory agencies whose responsibility includes the oversight of the water resources of the state and nation including the Federal Emergency Management Agency, the US Environmental Protection Agency, the State Water Resources Control Board, and the Regional Water Quality Control Board. The following is an overview of the federal, state and local regulations that may be applicable to projects within the City of Davis.

FEDERAL AND STATE

Clean Water Act (CWA)

The Clean Water Act (CWA), initially passed in 1972, regulates the discharge of pollutants into watersheds throughout the nation. The State Water Resources Control Board (SWRCB) is responsible for implementing the Clean Water Act and does so through issuing NPDES permits to cities and counties through regional water quality control boards. Federal regulations allow two permitting options for stormwater discharges (individual permits and general permits). The SWRCB elected to adopt a statewide general permit (Water Quality Order No. 2013-0001-DWQ) for small MS4s covered under the CWA to efficiently regulate numerous stormwater discharges under a single permit. Permittees must comply with all requirements as specified under the general permit.

303(d) Impaired Water Bodies: Section 303(d) of the federal Clean Water Act requires States to identify waters that do not meet water quality standards or objectives and thus, are considered "impaired." Once listed, Section 303(d) mandates prioritization and development of a Total Maximum Daily Load (TMDL). The TMDL is a tool that establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby the basis for the States to establish water quality-based controls. The purpose of TMDLs is to ensure that beneficial uses are restored and that water quality objectives are achieved. However, there are no discharges to 303(d) listed

impaired water bodies within the City of Davis and no TMDLs required within the Phase II Small MS4 General Permit for the City of Davis.

Federal Emergency Management Agency (FEMA)

As noted above, Davis is a participant in the National Flood Insurance Program (NFIP), a Federal program administered by FEMA. Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted as a desired level of protection, an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of once in 100 years, although such a flood may occur in any given year. Communities are occasionally audited by the Department of Water Resources to insure the proper implementation of FEMA floodplain management regulations.

200-Year Flood Protection in the Central Valley

Both State policy and recently enacted State legislation (Senate Bill 5) call for 200-year (0.5% annual chance) flood protection to be the minimum level of protection for urban and urbanizing areas in the Central Valley. Senate Bill 5 (SB5) requires that the 200-year protection be consistent with criteria used or developed by the Department of Water Resources. SB 5 requires all urban and urbanizing areas in the Sacramento and San Joaquin Valleys to achieve 200-year flood protection in order to approve development. The new law restricts approval of development after 2016 if "adequate progress" towards achieving this standard is not met. Urban and urbanizing areas protected by State-Federal project levees cannot use "adequate progress" as a condition to approve development after 2025. Adequate progress is defined as meeting all of the following:

1. The project scope, cost and schedule have been developed;
2. In any given year, at least 90% of the revenues scheduled for that year have been appropriated and expended consistent with the schedule;
3. Construction of critical features is progressing as indicated by the actual expenditure of budget funds;
4. The city or county has not been responsible for any significant delay in completion of the system; and
5. The above information has been provided to the DWR and the Central Valley Flood Protection Board and the local flood management agency shall annually report on the efforts to complete the project.

California Water Code

The Federal Clean Water Act places the primary responsibility for the control of surface water pollution and for planning the development and use of water resources with the states, although this does establish certain guidelines for the States to follow in developing their programs and

allows the Environmental Protection Agency to withdraw control from states with inadequate implementation mechanisms.

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Division 7 of the California Water Code) (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resources Control Board (SWRCB) and each of the RWQCBs power to protect water quality, and is the primary vehicle for implementation of California's responsibilities under the Federal Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a water quality control plan (Basin Plan) for its region. The regional plans are to conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its State water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

National Pollutant Discharge Elimination System (NPDES)

National Pollutant Discharge Elimination System (NPDES) permits are required for discharges of pollutants to navigable waters of the United States, which includes any discharge to surface waters, including lakes, rivers, streams, bays, the ocean, dry stream beds, wetlands, and storm sewers that are tributary to any surface water body. NPDES permits are issued under the Federal Clean Water Act, Title IV, Permits and Licenses, Section 402 (33 USC 466 et seq.)

The RWQCB issues these permits in lieu of direct issuance by the Environmental Protection Agency, subject to review and approval by the Environmental Protection Agency Regional Administrator. The terms of these NPDES permits implement pertinent provisions of the Federal Clean Water Act and the Act's implementing regulations, including pre-treatment, sludge management, effluent limitations for specific industries, and anti- degradation. In general, the discharge of pollutants is to be eliminated or reduced as much as practicable so as to achieve the Clean Water Act's goal of "fishable and swimmable" navigable (surface) waters. Technically, all NPDES permits issued by the RWQCB are also Waste Discharge Requirements issued under the authority of the California Water Code.

These NPDES permits regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. NPDES permits are issued for periods of five years or less, and are therefore to be updated regularly. The rapid and dramatic population and urban growth in the Central Valley Region has caused a significant increase in NPDES permit applications for new waste discharges. To expedite the permit issuance process, the RWQCB has adopted several general NPDES permits, each of which regulates numerous discharges of similar types of wastes. Stormwater discharges from

industrial and construction activities in the Central Valley Region can be covered under these general permits, which are administered jointly by the SWRCB and RWQCB.

Water Quality Control Plan for the Central Valley Region

The Water Quality Control Plan for the Central Valley Region (Basin Plan) includes a summary of beneficial water uses, water quality objectives needed to protect the identified beneficial uses, and implementation measures. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The term "water quality standards," as used in the Federal Clean Water Act, includes both the beneficial uses of specific water bodies and the levels of quality that must be met and maintained to protect those uses. The Basin Plan includes an implementation plan describing the actions by the RWQCB and others that are necessary to achieve and maintain the water quality standards.

The RWQCB regulates waste discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under a number of programs and authorities. The terms and conditions of these discharge permits are enforced through a variety of technical, administrative, and legal means. Water quality problems in the region are listed in the Basin Plan, along with the causes, where known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. The Basin Plan reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code and the Clean Water Act.

LOCAL

City of Davis General Plan

The City of Davis General Plan contains the following goals and policies that are relevant to hydrology and water quality aspects of the proposed project:

MUNICIPAL WATER SUPPLY

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.
>
> **Policy WATER 2.3.** Maintain surface water quality.

FLOOD HAZARDS AND PROTECTION

Goal HAZ 1. Provide flood protection which minimizes potential damage, while enhancing recreational opportunities and wildlife habitats and water quality.

> **Policy HAZ 1.1.** Site and design developments to prevent flood damage.

Standard. No development may occur in flood-prone areas, including all areas below an elevation of 25 feet, unless mitigation of flood risk is assured. Any mitigation proposed by the project proponent to mitigate flood risks shall demonstrate that the mitigation/design does not adversely impact other properties.

Policy HAZ 1.2. Continue to provide flood control improvements that are sensitive to wildlife habitat and open space preservation.

STORMWATER DRAINAGE

Goal WATER 3. Design stormwater drainage and detention facilities to maximize recreational, habitat, and aesthetic benefits.

Policy WATER 3.1. Coordinate and integrate development of storm ponds and channels Citywide, to maximize recreational, habitat, and aesthetic benefits.

Policy WATER 3.2. Coordinate and integrate design, construction, and operation of proposed stormwater retention and detention facilities City-wide, to minimize flood damage potential, and improve water quality.

REGIONAL COORDINATION

Goal WATER 4. Monitor issues in the region that affect quality and quantity of water in the Davis Planning Area.

Policy WATER 4.1. Research, monitor, and participate in issues in Yolo County and the area of origin of the City's groundwater that affect the quality and quantity of water.

3.9.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the proposed project will have a significant impact on the environment associated with hydrology and water quality if it will:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion, siltation, run-off or flooding on- or off-site;

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of or the substantial increase in the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Result in inundation by seiche, tsunami or mudflow.

As described in the Initial Study, there are no significant bodies of water near the project site that could be subject to a seiche or tsunami. Additionally, the project site and the surrounding areas are essentially flat, which precludes the possibility of mudflows occurring on the project site. As such, implementation of the proposed project would have a ***less than significant*** impact relative to these topics, and these environmental issues are not further addressed in this EIR.

IMPACTS AND MITIGATION MEASURES

Impact 3.9-1: The project may violate water quality standards or waste discharge requirements during construction (Less than Significant with Mitigation)

Grading, excavation, removal of vegetative cover, and loading activities associated with construction activities could temporarily increase runoff, erosion, and sedimentation. Construction activities also could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at construction sites and staging areas.

Petroleum, when improperly managed and stored, can present health hazards and threaten the environment, particularly navigable waters and adjoining shorelines. To prevent harm to the public and the environment, the federal Oil Pollution Prevention regulation, promulgated under the authority of §311 of the Clean Water Act, sets forth requirements for prevention of, preparedness for, and response to oil discharges at specific non-transportation-related facilities. To contain potential discharges of oil, the regulation requires these facilities to develop and implement Spill Prevention Countermeasure and Control (SPCC) Plans and establishes procedures, methods, and equipment requirements.

As required by the Clean Water Act, each phase of construction will require an approved Stormwater Pollution Prevention Plan (SWPPP) that includes best management practices for grading, and preservation of topsoil. The project proponent or contractor is required to submit the SWPPP with a Notice of Intent to the Regional Water Quality Control Board (RWQCB) to obtain

coverage under the State Construction General Permit. The State Water Resources Control Board (SWRCB) is an agency responsible for reviewing the SWPPP with the Notice of Intent (NOI), prior to issuance coverage under the State Construction General Permit for the discharge of stormwater during construction activities. Mitigation Measure 3.6-1 in Section 3.6, Geology and Soils, requires an approved SWPPP that includes best management practices for grading, and preservation of topsoil. Implementation of the following mitigation measures would ensure consistency with the regulatory requirements and ensure that the proposed project would have a ***less than significant*** impact on construction related water quality.

MITIGATION MEASURE(S)

*Implement **Mitigation Measure 3.6-1**.*

Mitigation Measure 3.9-1: *Prior to the commencement of construction activities, the project proponent shall submit, and obtain approval of, a Spill Prevention Countermeasure and Control Plan (SPCC) to the Yolo County Health Department. The SPCC shall specify measures and procedures to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during all construction activities, and shall meet the requirements specified in the Code of Federal Regulations, title 40, part 112.*

SIGNIFICANCE AFTER MITIGATION

Implementation of Mitigation Measures 3.6-1 (Section 3.6, Geology and Soils) and 3.9-1 would ensure that an NOI, SWPPP, and SPCC are submitted and obtained by the project proponent, which would reduce potential impacts related to violation of water quality standards or waste discharge requirements during construction to a ***less than significant*** level.

Impact 3.9-2: The project may violate water quality standards or waste discharge requirements post-construction (Less than Significant with Mitigation)

The long-term operations of the proposed project could result in impacts to surface water quality from urban stormwater runoff. The proposed project would result in new impervious areas associated with streets, driveways, parking lots, buildings, and landscape areas. Normal activities in these developed areas include the use of various automotive petroleum products (i.e. oil, grease, fuel), household hazardous materials, heavy metals, pesticides, herbicides, and fertilizers. Within urban areas, these pollutants are generally called nonpoint source pollutants. The pollutant levels vary based on factors such as time between storm events, volume of storm event, type of land uses, and density of people.

The proposed project will be required to comply with the Phase II Small MS4 General Permit (see Article 30.02 and 30.04 of the City of Davis Municipal Code). The proposed project must meet the guidelines and requirements set forth in the "Phase II Small MS4 General Permit, 2013-0001-DWQ," dated February 5, 2013, adopted by the City of Davis. Permittees must implement a post-

construction stormwater management program, as specified in Section E.12 of the Phase II Small MS4 General Permit

In order to meet the guidelines and requirements set forth in the "Phase II Small MS4 General Permit, 2013-0001-DWQ," permanent storm water control measures would be incorporated into the project in order to mitigate the impacts of pollutants in storm water runoff from the proposed project. The proposed project would incorporate site design measures, source control measures, and treatment control measures. As shown on Figure 2.0-10 in Section 2.0, the proposed drainage infrastructure would include greenway swales, a perimeter drainage channel, an offsite detention basin, and relocation of the Covell Drain north to accommodate the widening of Covell Boulevard. The ditch would need to be contained within a culvert under the new entrance from Covell.

A guiding stormwater management principle for project should be that it does not result in new impacts to properties downstream or upstream. Potential impacts include considerations of both stormwater quantity and quality. With regard to stormwater quality, the project would be designed to conform with current City of Davis standard requirements, as discussed below. For water quantity, the objective of the preliminary analysis is to identify the basic post-project storage volumes needed onsite in order to limit post-project peak discharges and associated peak water surface elevations (WSEs) to estimated existing levels in the Covell Drain on its approach to the SR 113 box culvert.

Stormwater from the proposed project buildings and site would flow into the proposed greenway swales, perimeter drainage channel, and offsite detention basin. In order to meet the guidelines and requirements set forth in the "Phase II Small MS4 General Permit, 2013-0001-DWQ," dated February 5, 2013, adopted by the City of Davis, permanent storm water control measures are proposed to be incorporated into the project in order to mitigate the impacts of pollutants in storm water runoff from the proposed project.

The term "site design measures" refers to land use or site planning practices that are used in design to reduce the project's impact on water quality and beneficial uses. Utilizing site design measures in a project can help reduce the size of the required treatment measures. The following text discusses the site design measures proposed for use in the proposed project.

1. Tree Planting and Preservation
    - Numerous trees are proposed to be planted throughout the proposed project site.
2. Rooftop and Impervious Area Disconnection
    - None of the downspouts from the proposed buildings or any of the proposed impervious areas would flow directly into the proposed storm drain system. All of the roof drainage and impervious paving area drainage would flow through bio-treatment areas prior to entering the proposed storm drain system.

The term "source control measures" refers to land use or site planning practices, or structures that aim to prevent urban runoff pollution by reducing the potential for contamination at the source of pollution. Source control measures minimize the contact between pollutants and urban runoff.

The following text discusses the source control measures proposed for use in the proposed project.

1. Covered dumpster area, drain to sanitary sewer:
   - All of the trash collection areas for the proposed site would be designed with measures that would minimize pollution from stormwater runoff.
2. Beneficial landscaping (minimize irrigation, runoff, pesticides and fertilizers; promotes treatment):
   - The landscaping systems would be designed to include features to prevent irrigation during and after precipitation events and control water loss in the event of broken sprinkler heads or lines. The design of the irrigations system would be tailored to each landscape area's specific water requirements and would be laid out to prevent overspray to paved surfaces.
3. Maintenance (pavement sweeping, catch basin cleaning, good housekeeping)
   - The site and storm drain system would be maintained as required by the operations and maintenance plan.
4. Storm drain labeling:
   - Concrete stamping, or other storm drain labeling, would be provided for catch basins and any inlets located within the project site.

The term low impact development (LID) means a storm water management and land development strategy that emphasizes conservation and the use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely reflect predevelopment hydrologic functions. The project intends to integrate LID measures throughout the project to provide stormwater quality treatment. These LID measures would likely include both volume-based best management practices (BMPs) (i.e., bioretention, infiltration features, pervious pavement, etc.) and flow-based BMPs (i.e., vegetated swales, stormwater planter, etc.). The use of these features would be dependent upon the location and setting within the project site. These treatment measures would be designed in accordance with the City of Davis Storm Water Quality Control Standards. Sizing and configuration of these treatment measures would be determined with the future development of the tentative map and improvement plans for the project. The following text discusses the low impact development treatment systems that would be employed in the proposed project.

1. Bio-retention areas:
   - Bio-retention areas function as soil and plant-based filtration measures that remove pollutants through a variety of physical, biological, and chemical treatment processes. These facilities normally consist of a ponding area, a mulch layer, plants, and bio-treatment soil mix, underlain by drain rock and an underdrain (if required). Bio-retention areas are designed to distribute stormwater runoff evenly across the surface ponding area. Water stored in the ponding area percolates through the bio-treatment

soil mix to the drain rock layer and then either infiltrates into native soil or flows out through the underdrain to the storm drain system.

- Bio-retention areas can be any shape, including linear. Bio-retention areas with underdrains would be designed to maximize infiltration to native soils by placing the underdrain near the top of the drain rock layer unless infiltration is not permitted due to site conditions (e.g., high groundwater table, steep slopes, proximity to structures, presence of contaminated soil or groundwater, etc.). Bio-retention areas without underdrains are sometimes referred to as "bio-infiltration" measures. All bio-retention areas would include an overflow/bypass system to convey runoff volumes that are greater than the water quality design volume.

Implementation of the above-referenced water quality control measures would ensure project compliance with the guidelines and requirements set forth in the "Phase II Small MS4 General Permit, 2013-0001-DWQ," dated February 5, 2013, adopted by the City of Davis. Implementation of the following mitigation measure would reduce potential surface water quality impacts post-construction to a ***less than significant*** level. No additional mitigation is required.

MITIGATION MEASURE(S)

Mitigation Measure 3.9-2*: Prior to issuance of building or grading permits, the applicant shall submit a final stormwater and drainage plan identifying permanent stormwater control measures to be implemented by the project to the City. The plan shall include measures consistent with the adopted guidelines and requirements set forth in the "Phase II Small MS4 General Permit, 2013-0001-DWQ," dated February 5, 2013 and shall be subject to review and approval by the Public Works Department.*

SIGNIFICANCE AFTER MITIGATION

Implementation of Mitigation Measure 3.9-2 would ensure that the permanent stormwater control measures are consistent with the guidelines and requirements set forth in the "Phase II Small MS4 General Permit, 2013-0001-DWQ," dated February 5, 2013, which would reduce potential impacts related to violation of water quality standards or waste discharge requirements post-construction to a ***less than significant*** level.

Impact 3.9-3: Project implementation could interfere substantially with groundwater recharge (Less than Significant)

(*Note: The following discussion is associated with potential impacts of the proposed project on groundwater as it relates to stormwater infiltration and groundwater recharge. Depletion of groundwater supplies as it relates to water usage is addressed in Section 3.15, Utilities.*)

The proposed project would result in new impervious surfaces and could reduce rainwater infiltration and groundwater recharge. Infiltration rates vary depending on the overlying soil types. In general, sandy soils have higher infiltration rates and can contribute to significant amounts of ground water recharge; clay soils tend to have lower percolation potentials; and impervious

surfaces such as pavement significantly reduce infiltration capacity and increase surface water runoff.

According to the *Soil Survey of Yolo County, California* (USDA, 1972) and the USDA NRCS Web Soil Survey (NRCS, 2016), the soils on the project site are classified as Brentwood silty clay loam (BrA) (permeability is moderately slow), Marvin silty clay loam (Mf) (permeability is slow), Pescadero silty clay, saline-alkali (Pb) (permeability is very slow), and Willows clay, alkali (Wc) (permeability is very slow).

Table 3.9-2 below identifies the soils in the project site and the soils infiltration rate. The majority of project site has soils all have a hydrologic rating of "C", which is indicative of soils having a low infiltration rate (high runoff potential) when thoroughly wet. The pescadero and willows soils have a hydrologic rating of "D", which is indicative of soils having an even lower low infiltration rate (high runoff potential).

TABLE 3.9-2: SOILS HYDROLOGIC RATING

DESCRIPTION	*SOURCE MATERIAL*	*RATING*
Brentwood silty clay loam	Alluvium derived from sedimentary rock	C
Marvin silty clay loam	Mixed silty and clayey alluvium	C
Pescadero silty clay, saline-alkali	Alluvium derived from sedimentary rock	D
Willows clay, alkali	Mixed alluvium	D

SOURCE: NCRS 2016.

The infiltration rate of the soils on the project site is considered low.

The new impervious surfaces, such as pavement, concrete, and structures that would be built on the project site, could reduce infiltration capacity, compared to the existing conditions. However, the proposed project is designed to promote infiltration of groundwater in areas with pervious surface. The proposed drainage infrastructure would include greenway swales, a perimeter drainage channel, and an offsite detention basin, all of which would provide opportunities for on-site groundwater infiltration. For water quantity, the objective of the project is to identify the basic post-project storage volumes needed onsite in order to limit post-project peak discharges. On-site storage of stormwater would provide opportunities for groundwater infiltration. Additionally, as required by Mitigation Measure 3.6-2 in Section 3.6, Geology and Soils, the project would be required to comply with the California Stormwater Best Management Practice New Development and Redevelopment Handbook and Section E.12 of the Phase II Small MS4 General Permit. These drainage design requirements aim to in promote stormwater infiltration, among other goals. Furthermore, the project site is not considered a significant groundwater recharge area for the region and the hydrologic ratings for the site soils indicate that the infiltration ability of the project site is low.

Therefore, implementation of the proposed project would have a ***less than significant*** impact to groundwater recharge.

Impact 3.9-4: Project implementation could alter the existing drainage pattern in a manner which would result in substantial erosion, siltation, flooding, or polluted runoff (Less than Significant)

The project site is located within the Lower Putah Creek Hydrological Area. The Lower Putah Creek Hydrological Area is approximately 225,301 acres and is bound by Putah Creek to the south and Cache Creek to the north. The headwaters of the watershed begin just west of Winters, near Lake Berryessa, and extend to the east, approximately 25 miles, to the Sacramento River. Within the Putah Creek Hydrological Area, there are four principal watersheds, which total 198 square miles. The project site is located within the Covell Drain watershed. The Covell Drain watershed includes the areas located in the central and north portions of the City, bounded by Putah Creek to the south, Dry Slough and Willow Slough bypass to the north, and the East Davis watershed to the east.

The development of the proposed project, when complete, would result in new impervious surfaces and thus could result in an incremental reduction in the amount of natural soil surfaces available for the infiltration of rainfall and runoff, thereby generating additional runoff during storm events. Additional runoff could contribute to the flood potential of natural stream channels or contribute runoff that could exceed the capacity of the City's drainage system.

When the proposed project is developed, the on-site impervious area would increase, leading to faster runoff rates. However, the increased rate of runoff would be attenuated using on-site and off-site facilities (including bio-retention areas). In general, runoff from the site would be routed through a network of proposed bio-treatment basins, proposed storm drain systems, and proposed off-site detention basin to the adjacent existing connection points.

In addition to the water quality treatment measures, the project proposes to provide mitigation for the expected increase in the site's post-project peak discharge relative to pre-project conditions. As a result of the project development, the effective impervious area for the site would increase, which in turn would increase the peak rate of runoff from the site.

The project is proposing 13.5 acres of open space/landscaping around the perimeter of and throughout the project site. The resulting 100-year peak discharge from the proposed development was estimated at 53.2 cubic feet per second (cfs).

Proposed mitigation for the pre-to-post increment in peak discharge would be accomplished by integrating of an offsite detention storage with the project, with the design goal of limiting the site's post-development peak flow to existing levels. A detention basin approximately 450-feet by 150-feet with a maximum water depth of 3.4 feet (5.75 acre-feet) may be required.

This detention basin would be located offsite of the northeast of the project site adjacent to the existing City of Davis detention basin. The proposed detention basin would be located within the footprint of the proposed perimeter drainage channel. The depth of the detention basin would be approximately equivalent to the existing City detention basin.

During final design of the project, the final layout of the storm drain system and detention basins will be determined, the stage-storage relationship of the final design of the detention basins will be modeled, and detention outlet works will be sized. Additionally, emergency outlet works will be sized to safely convey the 10-year un-detained storm event (assuming the 10-year detention storage volume is full when the peak 10-year flow arrives).

In order to meet the guidelines and requirements set forth in the "Phase II Small MS4 General Permit, 2013-0001-DWQ," dated February 5, 2013, adopted by the City of Davis, permanent storm water control measures would be incorporated into the project in order to mitigate the impacts of pollutants in storm water runoff from the proposed project. The proposed project would incorporate site design measures, source control measures, and treatment control measures consisting of bio-treatment basins dispersed throughout the site, as described under Impact 3.9-2 (above). At final design, an Operation and Maintenance plan would be developed specifying the inspection frequencies, maintenance activities, and record keeping required to maintain the proposed permanent stormwater control measures. Regular inspection and maintenance would be required for landscaped areas, irrigation systems, bio-treatment areas, and storm drain systems on-site.

Incorporation of the aforementioned proposed project drainage system and the implementation of Mitigation Measure 3.9-2 would ensure that the proposed project would not substantially alter the existing drainage pattern of the site or area, in a manner that would result in substantial erosion or siltation, result in flooding, or exceed the capacity of the existing or planned stormwater drainage systems. Therefore, this is a ***less than significant*** impact.

Impact 3.9-5: The proposed project could otherwise substantially degrade water quality (Less than Significant)

Water Quality Impacts from Discharges to 303(d) Listed Water Bodies: Section 303(d) of the federal Clean Water Act requires States to identify waters that do not meet water quality standards or objectives and thus, are considered "impaired." However, the City of Davis does not directly discharge to any 303(d) listed water bodies. Therefore, the proposed project would not be expected to further impair any 303(d)-listed water body.

Additionally, a previously-required mitigation measure (Mitigation Measure 3.6-1 in Section 3.6) requires the project proponent to submit a Notice of Intent and SWPPP to the RWQCB in accordance with the NPDES General Construction Permit requirements. The SWPPP will utilize BMPs and technology to reduce erosion and sediments to meet water quality standards during construction. Furthermore, Mitigation Measure 3.9-1 would require the development of a project-specific Spill Prevention Countermeasure and Control Plan (SPCC).

Further, the project design includes the use of stormwater quality features that will minimize nonpoint source pollution and long-term urban runoff impacts. These would include site design measures, source control measures, and low impact development. These LID measures would likely include both volume-based BMPs (i.e., bioretention, infiltration features, pervious pavement,

etc.) and flow-based BMPs (i.e., vegetated swales, stormwater planter, etc.). The use of these features would be dependent upon the location and setting within the project site. These treatment measures would be designed in accordance with the City of Davis Storm Water Quality Control Standards. Sizing and configuration of these treatment measures would be determined with the future development of the tentative map and improvement plans for the project. Mitigation Measure 3.9-2 requires the applicant to submit a final plan identifying permanent stormwater control measures to be implemented by the project to the City.

These stormwater quality features are intended to treat runoff close to the source. Through the preparation of improvement and grading plans these measures will be refined so that they will functionally minimize stormwater quality impacts. Implementation of previously listed mitigation measure and the BMPs outlined in the project description will ensure that the proposed project would have a ***less than significant*** impact on these issues.

Impact 3.9-6: The project may place housing or structures that would impede/redirect flows within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map (Less than Significant with Mitigation)

The risks of flooding hazards in the City of Davis and immediate surroundings are primarily related to large, infrequent storm events. These risks of flooding are greatest during the rainy season between November and March. Flooding events can result in damage to structures, injury or loss of human and animal life, exposure to waterborne diseases, and damage to infrastructure. In addition, standing floodwater can destroy agricultural crops, undermine infrastructure and structural foundations, and contaminate groundwater.

The 100-Year floodplain denotes an area that has a one percent chance of being inundated during any particular 12-month period. Floodplain zones (Special Flood Hazard Areas [SFHA]) are determined by the Federal Emergency Management Agency (FEMA) and used to create Flood Insurance Rate Maps (FIRMs). These tools assist communities in mitigating flood hazards through land use planning. FEMA also outlines specific regulations, intended to be adopted by the local jurisdictions, for any construction, whether residential, commercial, or industrial within 100-year floodplains.

Lands within the FEMA-designated 100-year floodplain (SFHA) are subject to mandatory flood insurance as required by FEMA. The insurance rating is based on the difference between the base flood elevation (BFE), the average depth of the flooding above the ground surface for a specific area, and the elevation of the lowest floor. Because the City of Davis participates in the National Flood Insurance Program, it must require development permits to ensure that construction materials and methods will mitigate future flood damage, and to prevent encroachment of development within floodways. New construction and substantial improvements of residential structures are also required to "have the lowest habitable floor (including the basement if it is, or easily could be 'habitable') elevated to or above the base flood level."

Figure 3.9-2 illustrates the areas within the FEMA-designated 100-year floodplain. The proposed project is shown on the FEMA Flood Insurance Rate Map (FIRM) number 06113C dated June 18, 2010. The project site is located within FEMA Zone A (shaded), which represents area that is within the designated 100-year floodplain. FEMA regulates flooding up to and including the 100-year storm event which Zone A represents.

Because Zone A floodplains do not have a published Base Flood Elevation, the depth of floodwater onsite during the 100-year event is undetermined. However, anecdotal information suggests that large storm flooding on and near the project site is expected to be characterized by shallow (possibly one- to two-feet deep), slow-moving flows.

Based on the preliminary hydrology and hydraulic modeling efforts, construction of the proposed project without appropriate drainage/flood mitigations may increase peak discharges in the Covell Drain, and would most likely increase the maximum water surface elevations in the floodplain on and near the site. This potential impact would be mitigated through a combination of proposed detention storage near the existing water tank site and around the perimeter of the project site. Implementation of the following mitigation measures would reduce potential impacts related to the 100-year flood hazard area to a ***less than significant*** level. No additional mitigation is required.

MITIGATION MEASURE(S)

Mitigation Measure 3.9-3: *Prior to the issuance of grading permits and subsequently prior to the issuance of building permits, the project applicant shall either demonstrate that the developed portions of the project site are outside of the anticipated 100-year flood hazard area, or incorporate measures into the proposed project to achieve a 100-year level of flood protection for any site installations. This may include elevating the proposed building pads above the base flood elevation, installing adequate storm water retention areas, or other measures commonly accepted by the City of Davis.*

Mitigation Measure 3.9-4: *Prior to commencement of grading operations, the project proponent shall prepare and submit an application for Conditional Letter of Map Revision (CLOMR) to FEMA for approval. The CLOMR shall include revised local base flood elevations based on current modeling of the project site. No building permit shall be issued in the area impacted by the CLOMR until a CLOMR has been approved by FEMA.*

Mitigation Measure 3.9-5: *The building pads for all onsite structures shall be set a minimum of 1.0 foot above the maximum 100-year water surface elevations on the project site, as shown on the Conditional Letter of Map Revision (CLOMR) approved by FEMA. No building permit shall be issued until a CLOMR has been approved by FEMA, and it has been demonstrated that no building pads would be placed below 1.0 feet above the calculated local base flood elevations.*

SIGNIFICANCE AFTER MITIGATION

Implementation of Mitigation Measures 3.9-3, 3.9-4, and 3.9-5 would ensure that the proposed housing and structures are not placed within a 100-year flood hazard area, which would reduce potential impacts related to flood hazards to a ***less than significant*** level.

Impact 3.9-7: The project may expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam (Less than Significant)

The project site is not located in an area that is at risk of flooding from a levee failure, seiche, tsunami, or mudflow, beyond the potential for localized flooding at the site, as described above.

However, the City of Davis, including the project site, is located such that a catastrophic failure of Monticello Dam at Lake Berryessa could cause flooding of up to three meters. Due to the size of this dam, it is regulated by California Dam Safety Act, which is implemented by the California Department of Water Resources, Division of Safety of Dams (DSD). The DSD is responsible for inspecting and monitoring the dam in perpetuity. The proposed project would not result in actions that could result in a higher likelihood of dam failure at Monticello Dam. There will always be a remote chance of dam failure that results in flooding of the City of Davis, including the project site. However, given the regulations provided in the California Dam Safety Act, and the ongoing monitoring performed by the DSD, the risk of loss, injury, or death to people or structures from dam failure is considered ***less than significant***.

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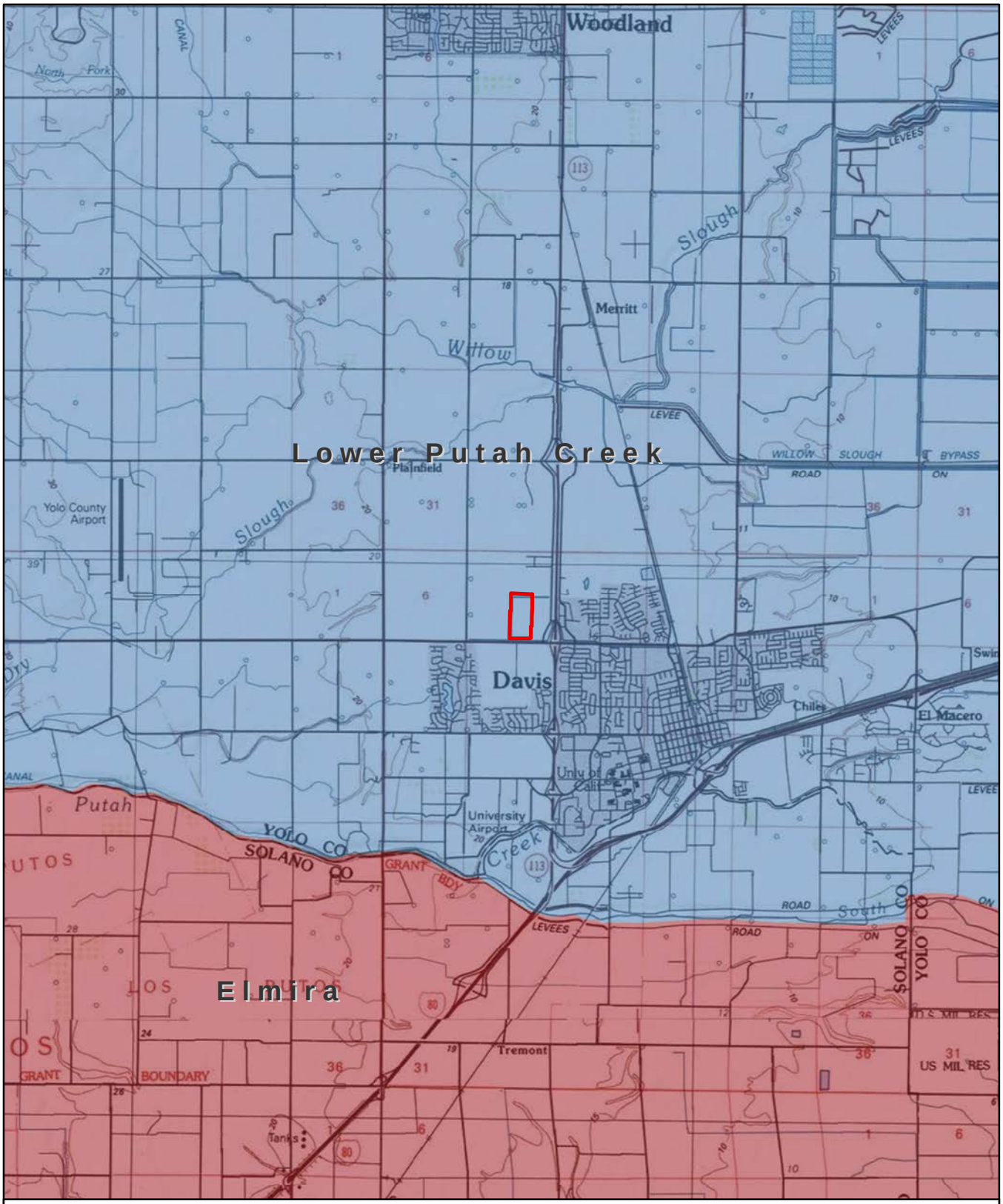

Legend

- Project Location

Hydrologic Area

- Elmira
- Lower Putah Creek

N

0 ½ 1

Miles

1:100,000

Sources: California Department of Forestry and Fire Protection, CalWater 2.2.1; Yolo County GIS; ArcGIS Online USGS Topographic Map Service. Map date: June 19, 2017.

CITY OF DAVIS
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Figure 3.9-1: Principal Watersheds Map

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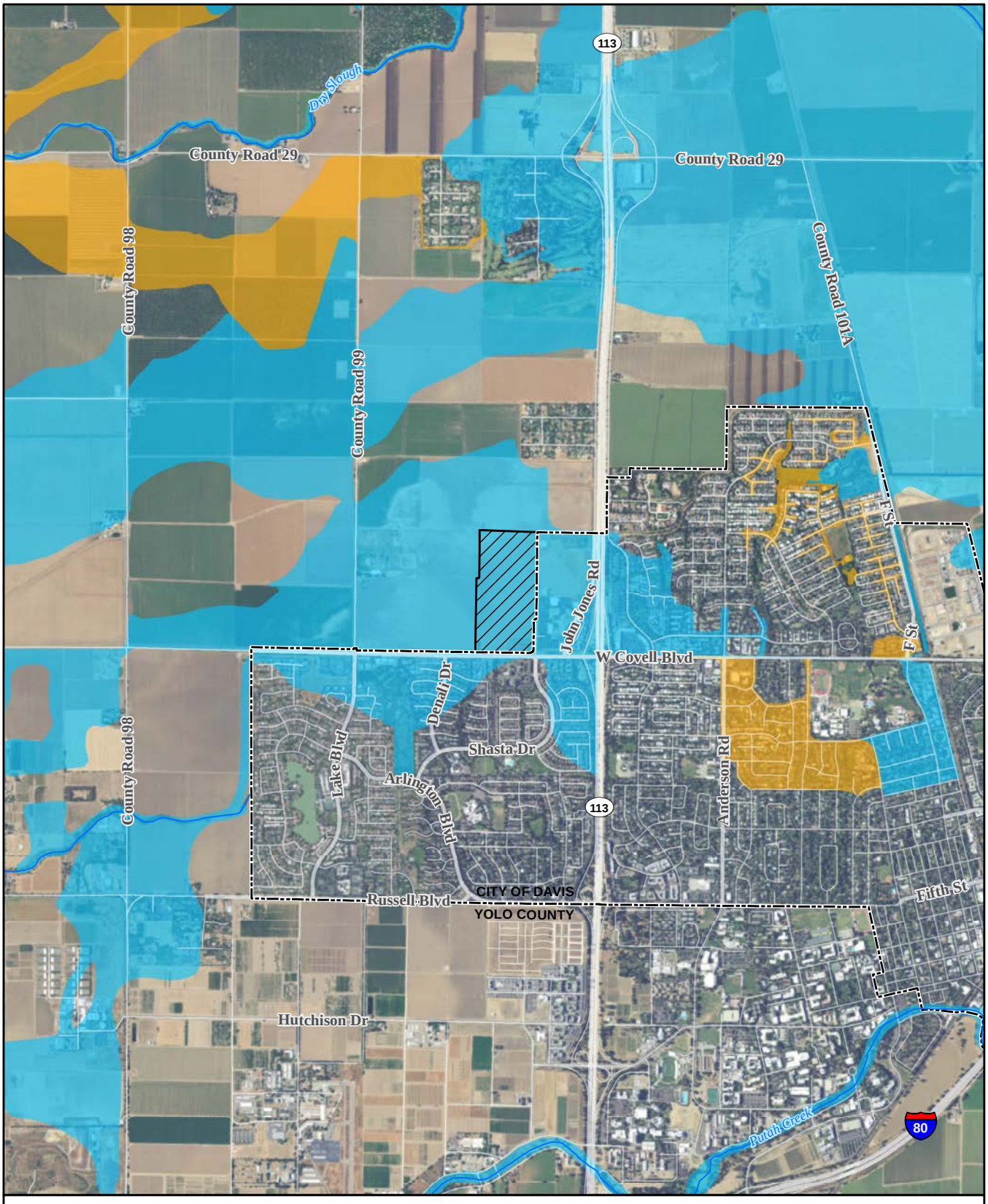

Legend

- Project Parcel (74.95 ac)
- 1% Annual Chance Flood Hazard (100-yr Flood)
- 0.2% Annual Chance Flood Hazard (500-yr Flood)

Source: FEMA's National Flood Hazard Layer (Official).
Basemap: ArcGIS Online Imagery Service.
Map date: August 24, 2017.

N

0 1,000 2,000

Feet

1:36,000

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Figure 3.9-2. FEMA Flood Insurance Rate Map

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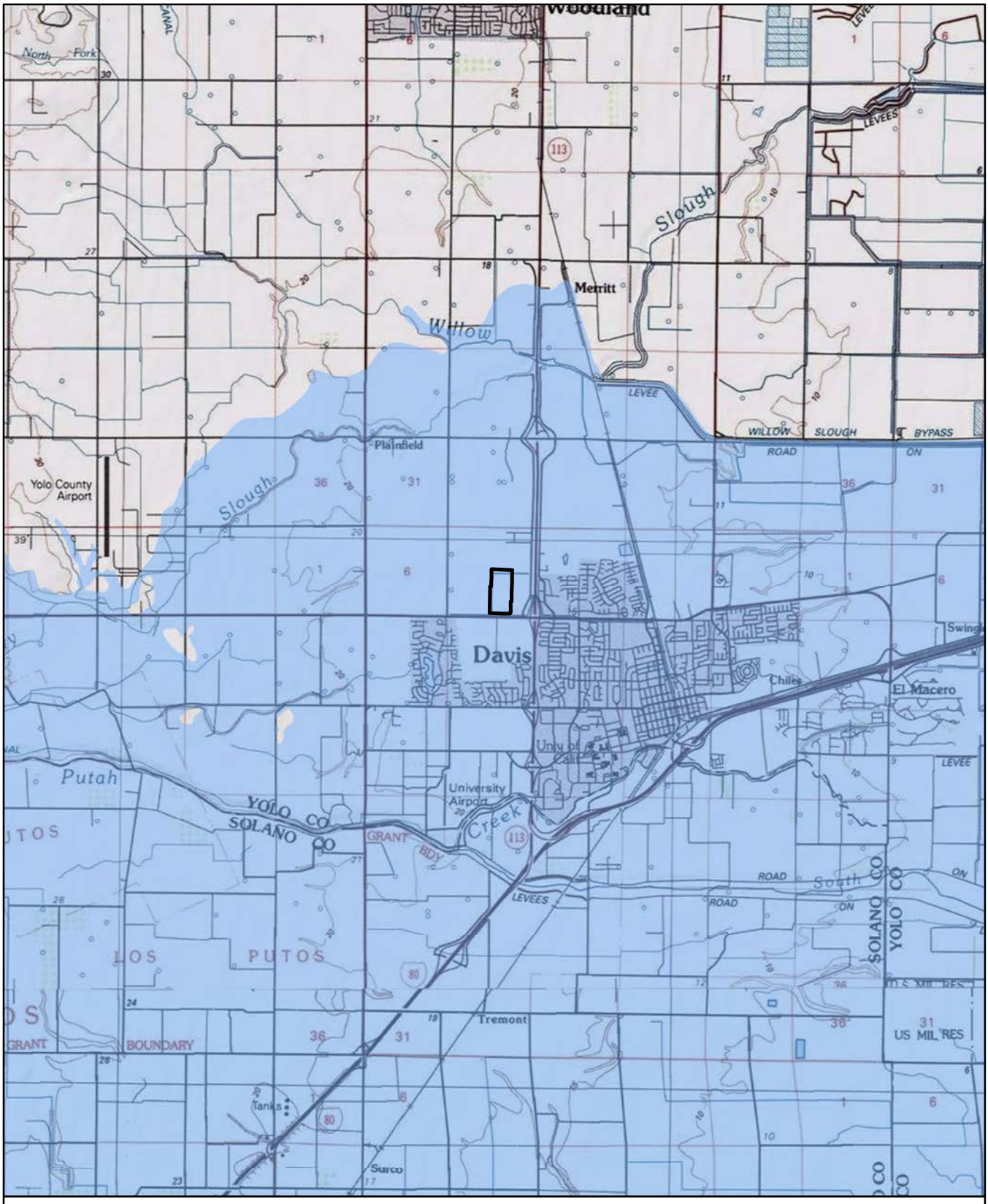

Legend

- Project Parcel (74.95 ac)
- Monticello Dam Inundation Area

N

0 ½ 1

Miles

1:100,000

Source: California OES Dam Inundation Layer, ArcGIS Online.
Basemap: ArcGIS Online Topographic Map Service.
Map date:April 7, 2017.

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Figure 3.9-3. Dam Inundation Areas

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