P. WATER RESOURCES

~~**Please note that this section replaces the Water Resources section included in the Draft EIR (2008) and Recirculated Draft EIR (2012). If you submitted comments on this section in response to the Draft EIR (2008) and/or the Recirculated Draft EIR (2012) please be advised that in order for your comments to be addressed in writing in the Final EIR you must either (1) resubmit your comments, as applicable, or (2) prepare and submit new comments in response to this Recirculated EIR (2013).**~~

This section provides general background information on the state of existing project site water supply information, current water usage estimates, water demand estimates, and water-related impacts due to the onsite wastewater treatment facility, surface water quality, and identification of potential impacts as a result of the proposed project. Following public circulation of the Draft EIR (2008), public comments were received identifying potential inadequacies in the technical reports that supported the EIR analysis and determination of effect. Upon review of these comments, the County determined that further analysis of water resources was necessary to adequately assess the baseline conditions and environmental effects of the project, including sustainable yield. An independent peer review of technical reports provided by the applicant and the Draft EIR analysis was conducted in April 2009. As a result of the independent peer review, cyclic well testing and monitoring was conducted from October 16, 2009, through December 31, 2010, including sustainable yield testing between September and December 2010. A third-party, independent analysis of the well and sustainable yield testing was conducted, and a sustainable yield assessment was provided to supplement the analysis presented in this Recirculated Draft EIR section.

In addition, the Draft EIR (2008) included the proposed use of Wells 10, 11, 12, and 13 for domestic water supply. As noted in the Draft EIR (2008), use of Wells 12 and 13 would affect stream flow within Los Berros Creek. In response to the Draft EIR (2008), the applicant modified the project by removing Wells 12 and 13 from the proposed domestic water supply system, and currently proposes to use Wells 10, 11, 14, and 15 for domestic water supply. Existing Wells 14 and 15 are located within the northeastern portion of the project site. An existing buried water line extends from these wells into the vineyards and is located within an agricultural road. This line would be replaced to serve the residential development. The domestic water supply and storage system, including wells, pipes, feed and distribution lines, and water tanks, would be separate from the agricultural water supply and storage system.

This section references a number of recent groundwater studies and/or reports conducted for this project by the applicant's consultant, an independent consultant retained by the County, and a third-party consultant retained to provide peer review and documentation for the EIR; these studies are referenced where applicable. Information contained within each of the reports was used in assessing the potential impacts of the proposed project. These reports, which are appended to this document where indicated and are on-file with the County Environmental and Resource Management Division, are listed below.

Documents included in the Draft EIR (2008):

- *Water Resources of the Arroyo Grande – Nipomo Mesa Area in 2002:* California Department of Water Resources (DWR), October 25, 2002 (hereinafter referred to as the 2002 DWR report)

- *Hydrology & Hydraulic Report,* RRM Design Group, January 5, 2004. The RRM hydrology report includes an analysis of existing and future storm water runoff

- *Water Supply Assessment for Laetitia Vineyard and Winery,* Cleath and Associates, Arroyo Grande, California, January 27, 2004

- *Revised Water Demand and Source Capacity for Laetitia Agricultural Cluster,* Cleath and Associates, San Luis Obispo County, October 6, 2005

- *Additional Water Resources Development, Laetitia Vineyard and Winery,* Cleath and Associates, Arroyo Grande, San Luis Obispo County, October 6, 2005

- *Response to County Comments on Water Resources, Laetitia Agricultural Cluster EIR,* Cleath and Associates, Arroyo Grande, San Luis Obispo County, March 28, 2008

- *Mitigation of Stream Flow Impacts, Laetitia Agricultural Cluster,* Cleath and Associates, Arroyo Grande, San Luis Obispo County, November 4, 2008

Documents prepared for and/or incorporated into the Recirculated Draft EIR (2012, 2013):

- *Hydrogeologic Review Water Resources Section of the Draft Environmental Impact Report Laetitia Agricultural Cluster Subdivision, Tentative Tract Map and Conditional Use Permit, SCH No. 2005041094,* Fugro Consultants, Inc., (Fugro) April 23, 2009

- *Response to Hydrogeological Peer Review of Water Resources Section, Laetitia Agricultural Cluster Draft Environmental Impact Report,* Cleath and Associates, June 24, 2009

- *Supplemental Hydrogeologic Review Water Resources Section of the Draft Environmental Impact Report Laetitia Agricultural Cluster Subdivision, Tentative Tract Map and Conditional Use Permit, SCH No. 2005041094,* Fugro, June 9, 2009

- *Response to Supplemental Hydrogeological Peer Review of Water Resources Section, Laetitia Agricultural Cluster Draft Environmental Impact Report,* Cleath and Associates, July 2, 2009

- *Laetitia Well Testing and Sustainable Yield Assessment,* Cleath-Harris Geologists, July 2010

- *Laetitia Well Testing and Sustainable Yield Assessment Addendum,* Cleath-Harris Geologists, March 2011

Documents provided in Appendix H:

- *Review of Well Testing and Sustainable Yield Assessment Proposed Laetitia Agricultural Cluster Subdivision,* Geosyntec Consultants, Inc. (Geosyntec), September 2011

- *Baseline Water Demand,* Geosyntec, April 2012

- *Review of Laetitia Residential Water Demand, Geosyntec, April 2013*

1. Existing Conditions

a. Hydrogeology and Water Supply

The project site is located within the Oceano Hydrologic Sub-area (HSA), which has a watershed area of 97,830 acres, and is outside of the Santa Maria Groundwater Basin, as defined by the Santa Clara Superior Court (Case CV 770214). The Tri-Cities Mesa Arroyo Grande Plain and Nipomo Mesa HSA are located to the west and southwest of the project site (refer to Figure V.P.-1). All existing and future water demands at the project site are served or would be served by onsite groundwater resources, including wells in the upper Los Berros Canyon. Existing vineyard/winery/ranch facilities would maintain the existing use of wells.

1) Rainfall

Mean annual rainfall within the Arroyo Grande-Nipomo area ranges from 12 to 35 inches, with 75 percent occurring between December and March (DWR, 2002). Based on a contour map of equal mean precipitation for the period of record from 1870 to 1995, the expected mean annual rainfall for the project site is approximately 17 inches. Beginning in January 2010, rainfall was recorded at three rain gauges installed at the project site. Based on correlation of the onsite data with a private gauge in east Arroyo Grande Valley, the rainfall record was extended back to July 2009. Three years of below average rainfall occurred from 2002 through 2004, and from 2007 through 2009. Based on a comparison of current and historic data, the total rainfall in the project area between July 2009 and March 2011 was 138 percent of average.

2) Surface Water Flow

The project site is within the upper portion of the Los Berros Canyon Watershed (refer to Figure V.P-2). Los Berros Creek borders the southeast margin of the site and is a tributary of Arroyo Grande Creek, which flows into the Pacific Ocean near the community of Oceano. Flow in Los Berros Creek is intermittent and influenced by the distribution and depth of alluvial deposits along the creek (Cleath and Associates, 2004; Cleath-Harris Geologists, 2010).

The headwaters of Los Berros Creek are located northeast of Temettate Ridge and south of Newsom Ridge. The Los Berros Creek Watershed is 28 square miles in area and has a length of approximately 14 miles. Runoff from Temettate Creek and numerous other small tributaries accumulates prior to emptying into Los Berros Creek. DWR reported annual runoff between 800

and 1,100 acre feet for the entire Los Berros Creek watershed for the base period (1984 to 1995) used for a study of Water Resources of the Arroyo Grande-Nipomo Mesa Area (DWR, 2002). A gauge established on Los Berros Creek in August 1968 by L. Lopp in cooperation with San Luis Obispo County Flood Control monitors runoff from the upper 54 percent of the Los Berros watershed. The United States Geological Survey (USGS) maintained a continuous daily record of streamflow at the gauging station from 1968 to 1978. In October 1979, the County Department of Engineering (Public Works) assumed control of the gauge. The gauging station is northeast of U.S. Highway 101 at the mouth of the upper canyon near the middle of the southeast margin of the project site, 0.8 miles downstream from Adobe Creek and 3.7 miles north of Nipomo on the upstream side of the bridge where Los Berros Road crosses the creek (refer to Figure V.P.-2). The road crossing is a box culvert with a 15-foot concrete lip that has become a grade control structure. The channel downstream has been down-cut significantly; consequently, the culvert can be a barrier to fish passage (Central Coast Salmon Enhancement, 2005). Downstream of the gauge most of the surface flow in Los Berros Creek seeps into the alluvial deposits of the lower valley. For this period of the USGS records (1968 to 1978), the mean flow rate of Los Berros Creek was in the range of one and eight cubic feet per second (cfs) during the months of January to May, and 0.16 to 0.68 cfs during the months of June to December. Based on the minimum flow in the USGS record, the resolution of low flow at the Los Berros gauging station was 0.01 cfs, or 4.5 gallons per minute (gpm). The only days with zero flow were during a continuous period without any flow from early October to late December in 1977.

The County Department of Public Works provided available daily flow data for the Los Berros Creek gauging station for the period from 1978 to March 2011. However, no gauging data for Los Berros Creek are available for the period from 2002 to 2005. Some field records with the County indicate that the creek was dry during that period but no data logs have been found to confirm the creek stage or flow during this period. The Bartleson Development Plan (Morro Group, 1996) indicated that discharge of groundwater maintained base flow in Los Berros Creek during the dry season prior to approximately 1981 when groundwater pumping was increased from the fractured tuff aquifers of the Obispo Formation. The stream gauging data also show zero flow prior to 1981 in the creek during the dry season in 1977, 1979, and 1980. Refer to Appendix H, Figure 5, which shows the estimated mean monthly flow rate in Los Berros Creek both for the entire period of record 1968 to 2001 and for the period from 1981 to 2001.

3) Hydrogeology

The project site is underlain by Early Miocene age rocks of the Obispo and Monterey Formations, Pliocene-Pleistocene age rocks of the Paso Robles Formation, and localized shallow unconsolidated alluvial deposits along Los Berros Creek, Adobe Creek, and other drainages. In the vicinity, the Paso Robles Formation is largely unsaturated and above the regional water table. The alluvium along Los Berros Creek is a water supply aquifer, unlike the alluvial deposits of Adobe Creek or other drainages in the upper canyon. The location of onsite wells and underlying geology is shown in Figures V.P.-3 and V.P.-4. The majority of wells in the vicinity of the project site are completed within fractured bedrock aquifers in the Obispo and Monterey Formations.

The 2002 DWR report stated that the Early Miocene Obispo Formation and the Miocene Monterey Formation are both important sources of water supply in the vicinity. The Obispo Formation consists of resistant mineralized tuff and fine- to coarse-grained crystalline tuff,

interbedded with lava flows and fine-grained calcareous sediments. Locally, the tuffs are intruded by dikes and sills. Portions of the lava flows, dikes, sills, and the majority of the ashy matrix of the coarse-grained tuff are commonly altered to clay. Groundwater within the Obispo Formation occurs primarily within fractures in the relatively unaltered resistant mineralized tuff. The Monterey Formation consists of a range of sedimentary rock types including silicified siltstone, claystone, sandstone, well-bedded claystone, cherty or porcelaneous shale, and dolomitic shale. Much of the Monterey Formation is fractured and sheared. Groundwater within the Monterey Formation occurs mainly within fractures and parting parallel to bedding.

The Pliocene-Pleistocene Paso Robles Formation is present in the western portion of the project area and includes unconsolidated to poorly consolidated gravel and clay, sand and clay, silty clay, conglomerate with clasts of Monterey Formation, and some lenses of gravel and sand. Localized unconsolidated Holocene alluvial sedimentary deposits are present along the lower portion of Los Berros Creek and other drainages in the area. Some shallow wells are completed in the alluvial deposits along creeks.

1) Wells and Infrastructure

Seven wells were constructed at the project site between 1983 and 1999. Historically, onsite water supply included separate domestic and agricultural irrigation systems. The domestic supply included Wells 2 and 7 (FV Wells 4 and 2) that provided water for the winery, shop, and two single-family residences. The agricultural irrigation system included Wells 1, 4, 5, and 9 (F&T 2, F.V. Wells 3, F.V. Wells 1, and F&T 1) and two reservoirs each with storage capacity of 25 acre-feet (af). Vineyard irrigation Wells F&T-1 and 2 were installed in 1998. The domestic well (FV Well 2) and the four irrigation wells are all completed in the fractured tuff of the Obispo Formation. Additional wells included a shallow domestic well (Enloe-1) completed in alluvium adjacent to Los Berros Creek and an older windmill-powered well near the maintenance shop (refer to Figure V.P.-5 for well and reservoir locations).

Nearby offsite wells are also completed in the fractured tuff of the Obispo Formation and include the Tremper irrigation well, which is approximately 800 feet southeast of FV Well 1 and 1.25 miles from Wells 10 and 11, Fitzgerald Well located approximately one mile from Well 11, and three irrigation wells (Bartleson 35Ka, 35Ra, and 35 Rb), which are located west of the project site and U.S. Highway 101, approximately 2.25 miles from Well 10. Springs occur in some places where the fractured rock aquifers are exposed along slopes. Water from a spring northwest of Well F&T-1, with a reported flow rate of two to five gallons per minute (gpm), was piped to a storage tank that supplied water to the ranch headquarters. Average annual production from the onsite irrigation wells was 161 afy between 1999 and 2003. The domestic wells are not metered. In 2003, Cleath and Associates estimated the total water production from the two domestic wells was 6.72 afy.

In addition, a shallow (six feet deep) well in the Los Berros Creek channel reportedly provides water to a residence near the southeast corner of the project site (dude ranch parcel). Six new wells that range in total depth from 305 feet to 560 feet were drilled in the northeastern portion of the project site between 2003 and 2006 (refer to Figure V.P.-5). Groundwater pumped from four of the new wells completed in fractured bedrock (Wells 10, 11, 14, and 15) is proposed as the domestic water supply for the proposed project. Wells 10 and 11 are screened in the fractured

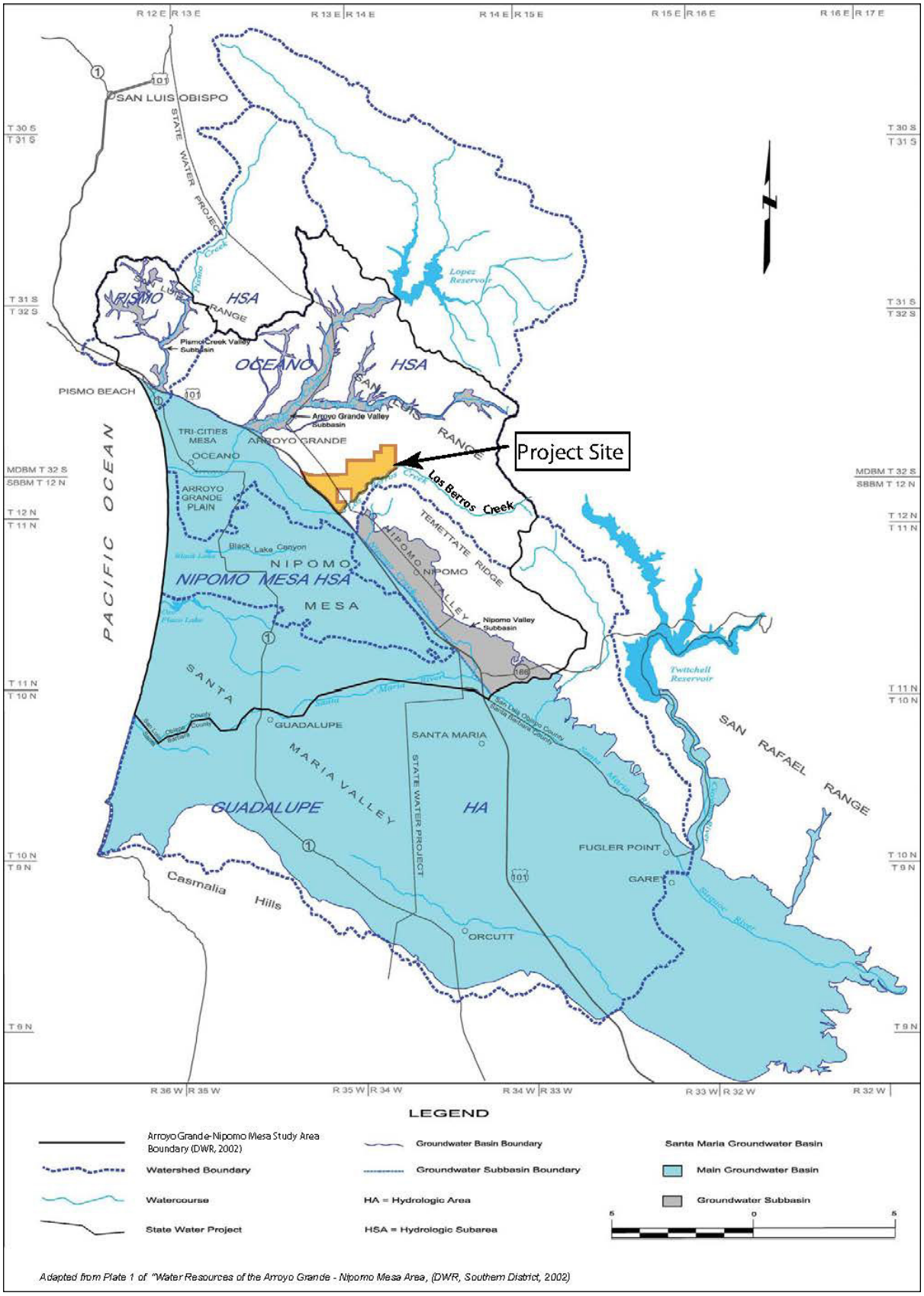
resistant volcanic tuff of the Obispo Formation and Wells 14 and 15 are screened in the siliceous shale of the Monterey Formation.

The applicant proposes a looped water-main distribution system for all new facilities served by the four domestic wells, which would be separate from the agricultural/irrigation water supply and storage system. All domestic water system facilities would be designed and installed in accordance with the County's Standards for Water Systems. In addition, the applicant intends to develop a mutual water company as approved by the County Environmental Health Services. Operation of the water system will be monitored in accordance with all applicable standards and regulations using a certified operator to oversee well pumping, storage, distribution, maintenance of the system, and overall water quality in accordance with all State and County requirements. A 268,500-gallon water storage tank is proposed to provide fire suppression requirements and peak daily water demand usage requirements.

2) Existing Water Use

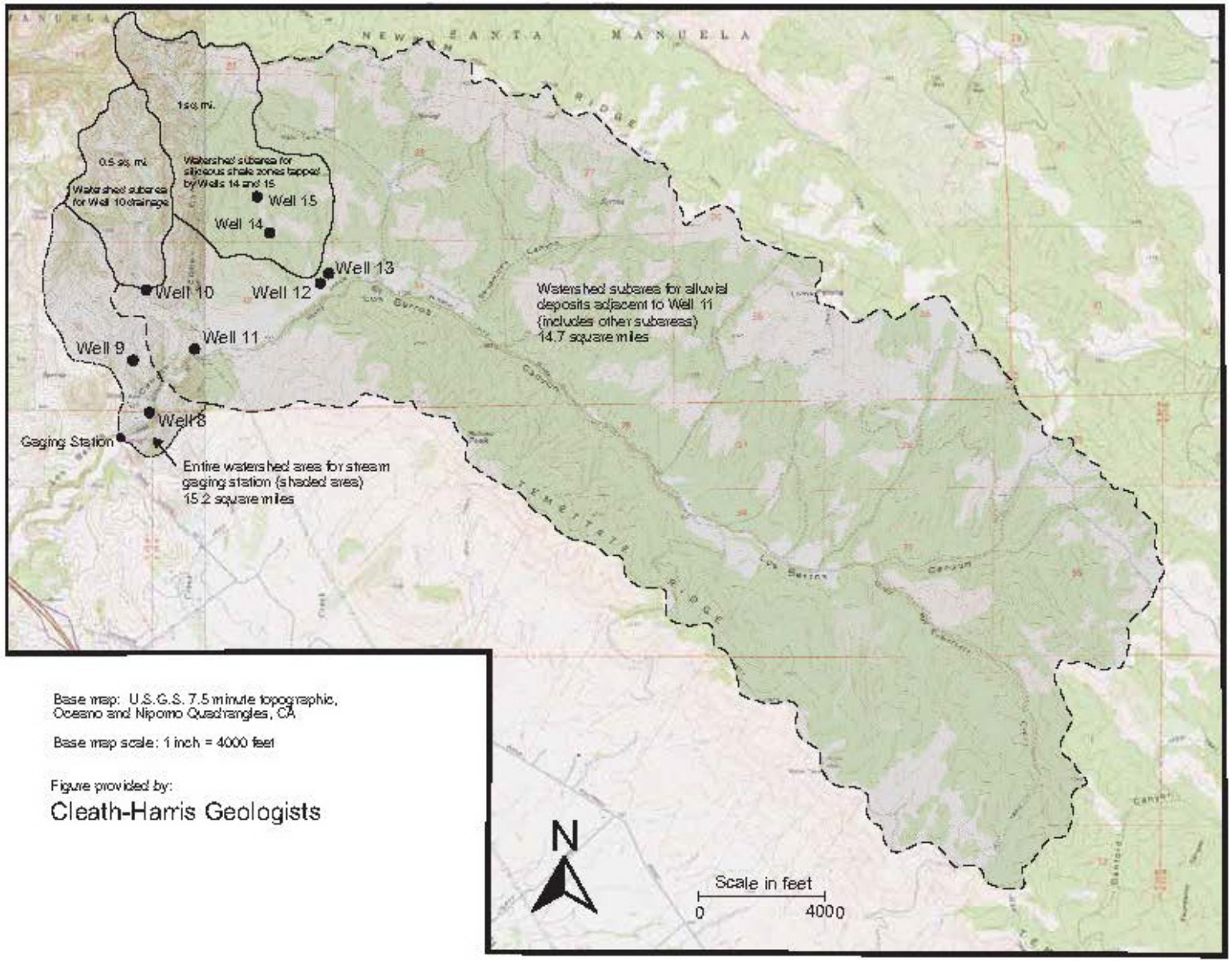
Information contained in this section is based on the resource capacity studies prepared by Cleath and Associates (2005) for the proposed project, information provided by the applicant regarding irrigation rates and agricultural water usage (Cleath-Harris, 2012), *Baseline Water Demand* letter report (Geosyntec, 2012), and *Review of Laetitia Residential Water Demand* (Geosyntec, 2013). The existing vineyard, winery, and ranch facilities will continue the historic use of groundwater resources on the west side of the property. Existing water use of these facilities is approximately 168 acre-feet per year (afy), of which 161 afy is used for 620 acres of vineyard and 4.9 acres of orchard irrigation, and approximately 6.71 afy is used by the winery and existing residential uses (based on available records for 1994 and 2003). The vineyards and orchards were irrigated by water from Wells 1, 3, 4, 5, and 9 and the winery and residence use water from Wells 2 and 7.

In 2011, 208 af of water was pumped from Wells 1, 4, and 9 for agricultural irrigation, indicating a water demand rate of 0.34 af/acre. This rate is lower than typical water demand rates for vineyards; however, the vineyard uses a drip irrigation system and there has not been a need for frost protection (i.e., use of water to prevent frost) at the site (Cleath and Associates, 2004; Geosyntec, 2012). Conservative estimates of typical agricultural irrigation rates (0.7 to 1.3 af/year with frost protection) are provided in the Baseline Water Demand report (Geosyntec, 2012), available in Appendix H. This rate is more typical of standard vineyard irrigation in coastal areas of the county. Establishment of new vineyards would require a short-term additional water demand within the newly planted areas. The project includes disposal of recycled wastewater within 20.8 acres of proposed vineyard area. Table V.P.-1 presents the estimated amount of annual water demand for existing and proposed agricultural uses on the project site, based on 2011 water usage.



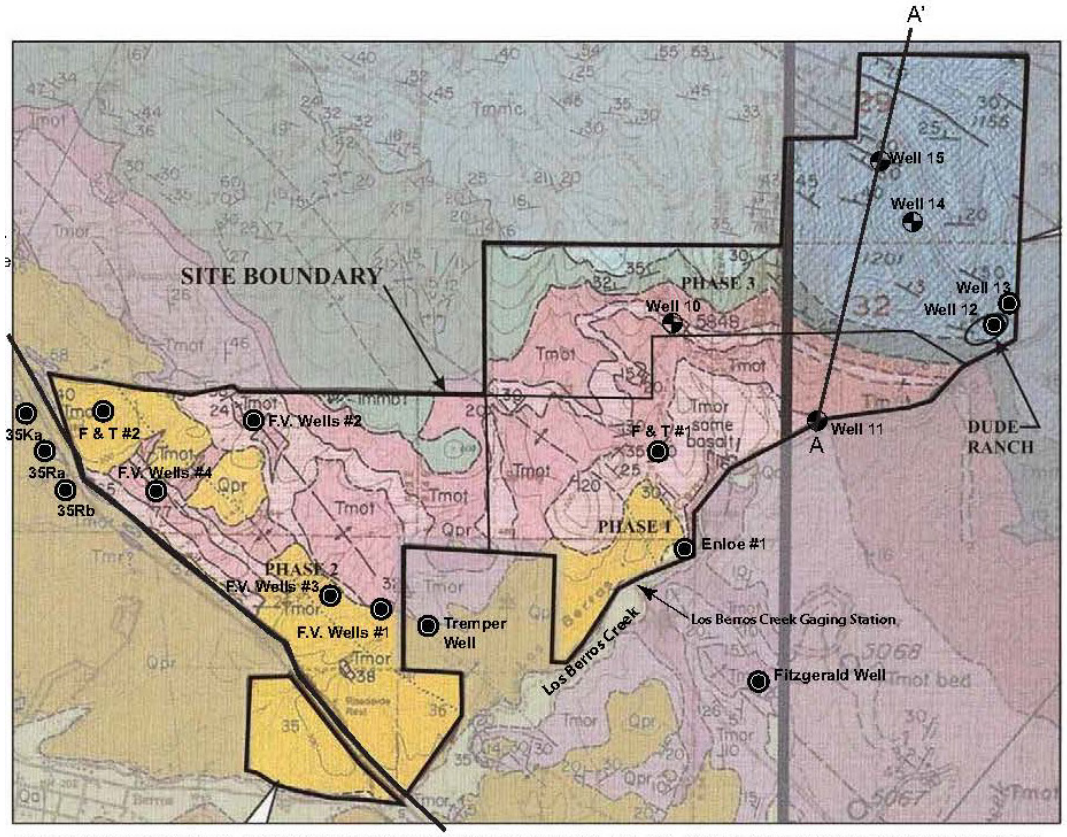
Source: Geosyntec, 2011

Site Location and Hydrologic Setting
FIGURE V.P.-1



Source: Geosyntec, 2011

Los Berros Canyon Watershed
FIGURE V.P.-2



Adapted from DEIR Figure V.A.-1, Geologic Map of the Arroyo Grande Quadrangle, C.A. Hall, 1973 and Geologic Map of the Nipomo Quadrangle, Hall and Corbato, 1967

Source: Geosyntec, 2011

N

0 2400 ft

Approximate Scale

EXPLANATION

Qal — **Unconsolidated Quaternary Alluvial Deposits**

Qpr — **Paso Robles Formation**
Pliocene-Pleistocene in age
Unconsolidated or poorly consolidated sandsone, siltstone, and claystone

Tmmc — **Monterey Formation**
Miocene in age
Siliceous shale, siltsone, chert, dolomite
Tmmb - Siltstone or chert and dolomitic claystone or silt
Tmmc - Opaline or cherty shale, dolomite

Tmmb

Tmor — **Obispo Formation**
Miocene in age
Volcanic tuff and some lava
Tmor - Resistant cemented tuff (water-bearing)
Tmot - Generally soft ashy tuff matrix

Tmot

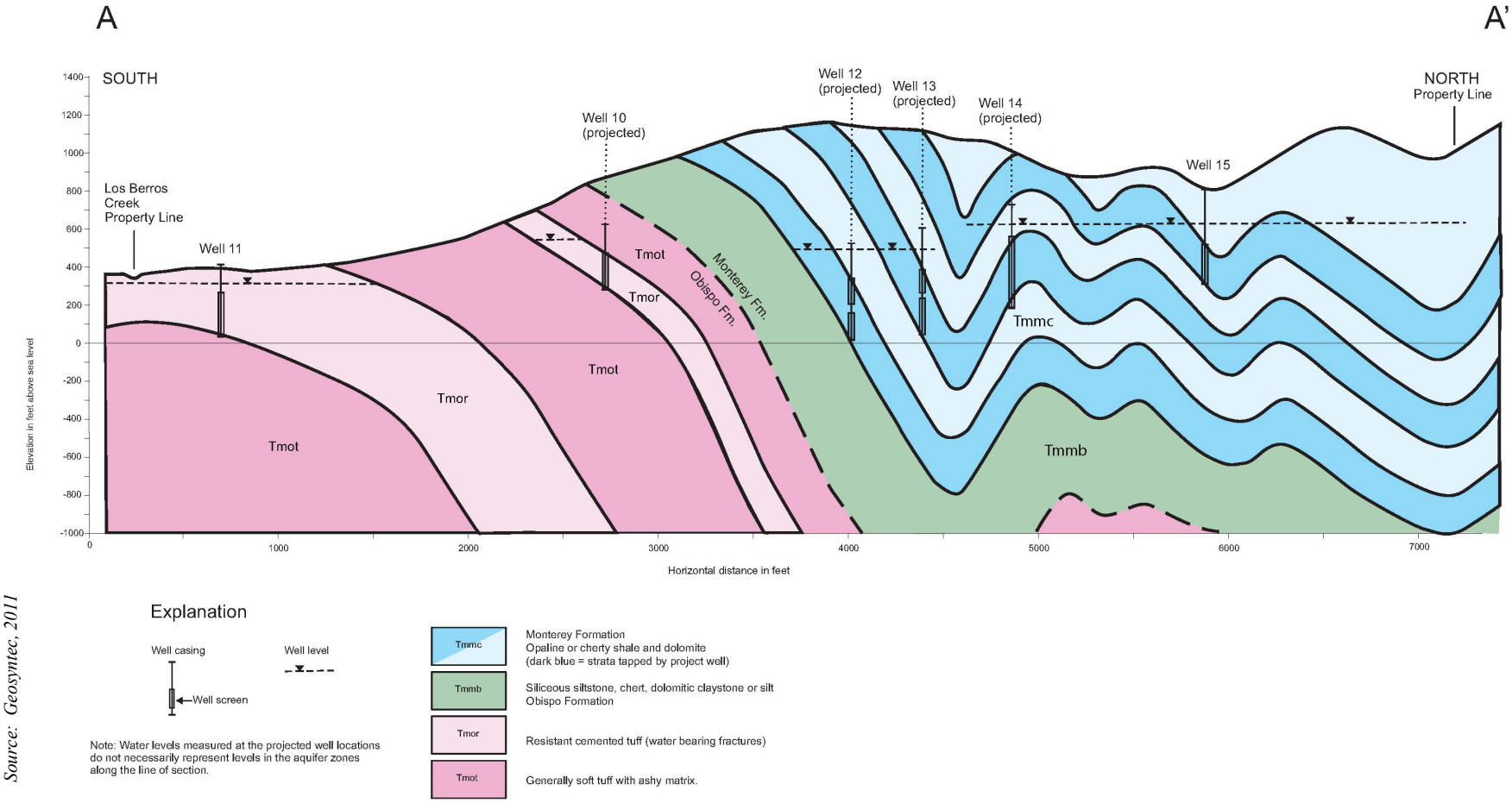
A' — A — **Location of Geologic Cross-Section (Figure 4)**

Well 10 — **Water Supply Well for Proposed Subdivision**

F & T #1 — **Other Water Well**

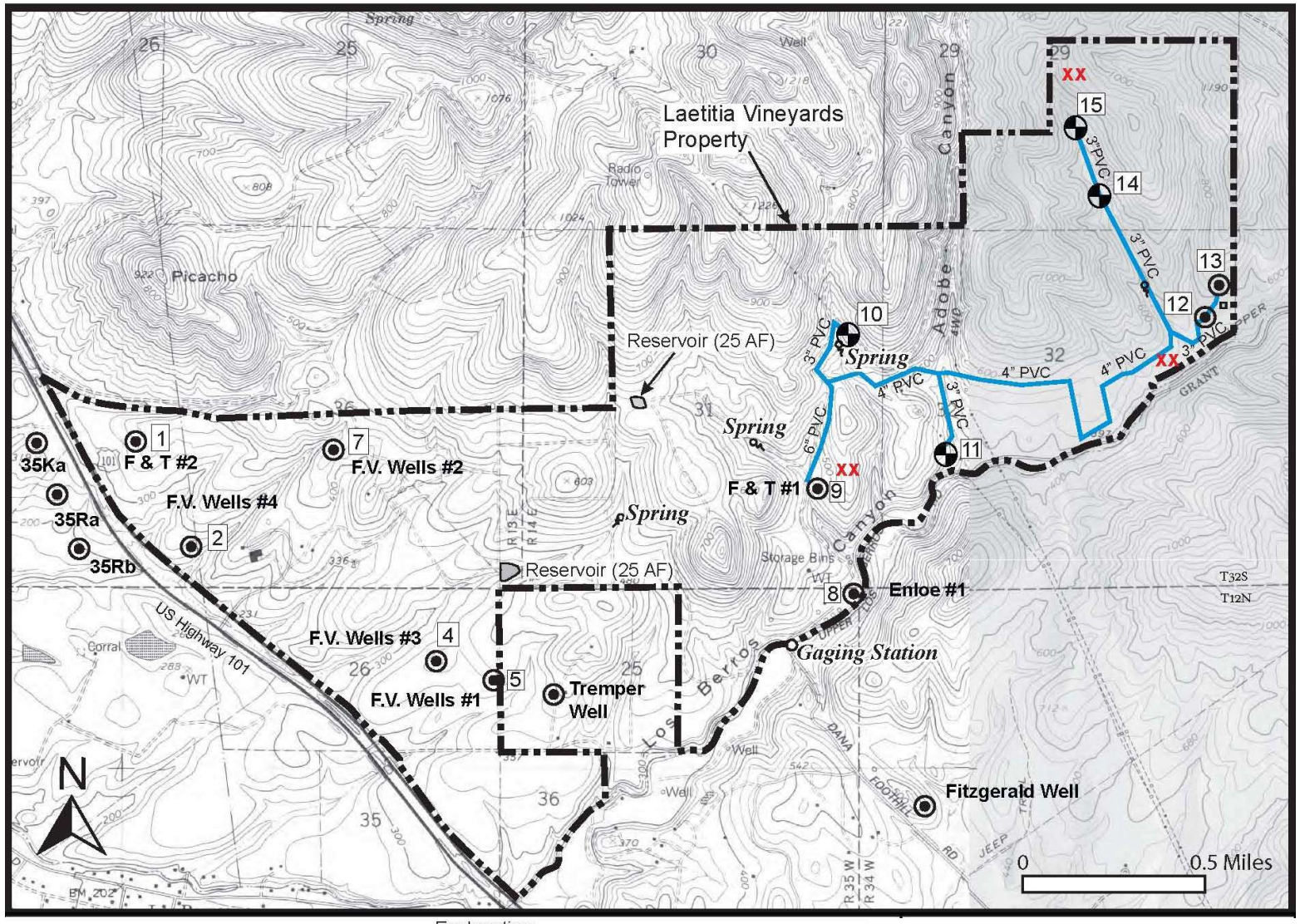
Well Locations Approximate

Local Geologic Map and Well Locations
FIGURE V.P.-3



Source: Geosyntec, 2011

Geologic Cross Section A-A'
FIGURE V.P.-4



Source: Geosyntec, 2013

Base map: U.S.G.S. 7.5 minute topographic, Oceano and Nipomo Quadrangles, CA
Base map scale: 1 inch = 2000 feet
Well locations approximate
Adapted from CHG memo, 4 Jan 2011

Explanation

15 Well Location and number

Well discharge piping

XX Weather recording station

Water Supply Well for Proposed Subdivision

Topographic Map
FIGURE V.P.-5

TABLE V.P.-1
Existing Water Demands and Additional Agricultural Demand
(Using 2011 Water Rates)

Land Use	Units / Description	Rate (afy/acre)	Water Demand (afy)
Domestic	One residence, one caretakers unit, offices, tasting room, landscaping, shop	---	8.95
Winery, production	One winery	---	5.3
Vineyards and orchards	620 acres (vineyard) 4.9 acres (orchard)	0.34	~~208~~212.4
Total, existing			~~222.3~~226.7
Planned Vineyards	27 acres	0.34	9.2
Total (existing and planned agricultural demand)			~~231.5~~235.85

Source: Cleath-Harris, 2012; Geosyntec, 2012

As shown in Table V.P.-1, existing baseline water demands are approximately ~~222~~ 226 afy, and an additional 27 acres of planned vineyards would add approximately 9 afy of demand to this figure for a total of ~~231~~235 afy, assuming the current rate of .34 afy/acre is applicable in the long-term. Approximately ~~93.5~~93.6 percent (~~208~~212 afy) of the existing water demand is for vineyard and orchard irrigation. Approximately ~~2.5~~2.3 percent (5 afy) is used for wine production, and the remaining 4 percent (9 afy) is used for other purposes, including residential uses, offices, tasting room, shop, and ornamental landscaping. The addition of 27 acres of vineyards would increase the demand ratio for agricultural irrigation by approximately ~~0.5~~0.35 percent. Typically, approximately 32 percent of agricultural water use results in groundwater recharge; however, use of drip irrigation limits groundwater recharge, because the water is consumed by the agricultural crop. The net consumptive use for existing agricultural irrigation is approximately ~~217~~ 221.6 afy, applying 2011 water rates.

For comparison purposes, if conservative rates including use of irrigation water for frost protection are applied, the water demand for existing uses including agriculture would range from 451.68 to 826.62 afy. As shown in Table V.P.-2, the water demand for an additional 27 acres of vineyard would range from 18.9 to 35.1 afy, resulting in a total "existing plus agricultural use" water demand of 456.33 to 847.47. This demand would be offset by the use of 37 af of treated effluent from the wastewater treatment facility.

TABLE V.P.-2
Variation in Vineyard Irrigation Demand
(Using WMP Rates)

Land Use	Rate (afy/acre)	Water Demand (WMP, Low)	Rate (afy/acre)	Water Demand (WMP, High)
Existing: 620 acres (vineyard), 4.9 acres (orchard)	0.7	437.43	1.3	812.37
Planned Net Increase: 27 acres (vineyard)	0.7	18.9	1.3	35.1
Total (existing and planned agricultural demand)		*456.33*		*847.47*

Source: ESA, 2010.

The County does not regulate or impose restrictions on agricultural well use, aside from compliance with existing state Water Code regulations related to state powers (Division 1), water quality (Division 7), and the Health and Safety Code. The applicant's existing and proposed water conservation measures and practices for irrigation (non-domestic) wells are voluntary.

1) Groundwater Quality

Analytical water quality tests were performed to determine suitability for domestic uses. Water quality in each of the four new wells was determined suitable for domestic uses (refer to Table V.P.-3). There were no concentrations of analytes exceeding the maximum contaminant level (MCL) for either the primary drinking water standards or the upper limit MCLs for secondary drinking water standards established by the California Department of Health Services (DHS).

TABLE V.P.-3
Project Well Water Quality

	Well Number			
	10 (2004-3)	11 (2005-1)	14 (2006-1)	15 (2006-2)
Flow Rate (gpm)	200	130	230	150
Casing	10-inch PVC	8-inch PVC	8-inch PVC	8-inch PVC
Ground Elevation	620	410	710	830
Sanitary Seal Depth	100	50	n/a	n/a
Total Depth	330	305	530	520
TDS (MCL=1000)	860	650	590	540
Hardness	340	470	520	470
Iron (MCL=0.3)	0.2	0.1	0.2	0.2
Manganese (MCL=0.05)	<0.02	<0.02	0.04	0.03
Sulfate (MCL=500)	350	140	78	46

	Well Number			
	10 (2004-3)	**11 (2005-1)**	**14 (2006-1)**	**15 (2006-2)**
Sulfide	<0.1	<0.1	n/a	0.1
Chloride (MCL=500)	52	53	34	27
Notes: water quality results in milligrams per liter, MCL= Maximum Contaminant Level, gpm = gallons per minute, depths in feet				

b. Drainage and Surface Water Quality

The issue of surface water quality is important because of the habitat value of Los Berros Creek and its tributaries, including habitat for several endangered or threatened plant and animal species. Surface water entering water courses from undeveloped areas usually travels over vegetative cover and there is little erosion or production of sediment. Developed areas typically contain pollutants on the ground surface that are harmful to water quality. These include heavy metals, hydrocarbons, detergents, fertilizers, and pesticides that originate from vehicles, agricultural equipment, and commercial and residential land use activities. For the most part, these pollutants are associated with sediments that collect on roadways and are flushed into the creek system either in dry weather flows during construction wash-down or by rainfall runoff. Construction activities also create erosion and cause sediment to be transported offsite by surface water runoff. Therefore, water quality depends mainly on the hydrologic characteristics of the drainage basin, the makeup of the soils in the watershed, and sources of pollution in the watershed.

The project site consists of 19 sub-watersheds that drain into Los Berros Creek and its tributaries. Soil conditions and topography vary throughout the project site and several undeveloped and developed areas contain steep slopes or soils subject to erosion where containment of sediment onsite would require special construction and design considerations. Generally, due to their clayey nature, the onsite surface materials in their natural state are considered to have a low erosion potential. The potential for erosion would be significant, however, if site development activities result in concentration of drainage, or uncontrolled surface drainage, or if soils that are more prone to erosion are imported to the site during grading. Permeability is generally slow, and the rate of surface water runoff ranges from medium to rapid, primarily depending on slope.

2. Regulatory Setting

a. Federal Policies and Regulations

1) Safe Drinking Water Act of 1974

The Safe Drinking Water Act implemented by the Environmental Protection Agency (EPA) is the primary federal regulation controlling drinking water quality. The Safe Drinking Water Act grants the EPA the authority to establish and enforce guidelines for the achievement of minimum national water quality standards for every public water supply system serving 25 people or more.

This act was originally implemented in 1974 with significant revisions in 1986. The Safe Drinking Water Act originally set standards for 83 individual constituents, including pesticides, trihalomethanes, arsenic, selenium, radionuclides, nitrates, toxic metals, bacteria, viruses, and

pathogens. The 1996 amendment to the Safe Drinking Water Act made some significant changes, most of which resulted in more stringent application of control technology. The amended Safe Drinking Water Act also adopted a more rigorous schedule for amending the Disinfectants/Disinfection By-Products Rule and the Enhanced Surface Water Treatment Rule, both of which took effect in 1998.

2) The Clean Water Act

The Clean Water Act (CWA) controls the discharge of toxic material into surface water bodies. Under this act, states are required to identify water segments impaired by pollutants and develop control strategy/management plans to reduce pollution and meet certain water quality standards.

3) Waters of the U.S: Sections 404 and 401 of the Clean Water Act of 1977

Since it has been identified that construction of the proposed wastewater collection system would require crossing several tributaries to Los Berros Creek, federal regulations regarding impacts to "Waters of the U.S." would be addressed.

Regulatory protection for water resources throughout the United States is under the jurisdiction of the ACOE. Section 404 of the CWA prohibits the discharge of dredged or fill material into waters of the United States without formal consent from the ACOE. Waters of the U.S. include marine waters, tidal areas, stream channels, and associated wetlands. Wetlands include freshwater marshes, vernal pools, freshwater seeps, and riparian areas.

Under Section 404, activities in Waters of the U.S. may be subject to either an individual permit or a general permit, or may be exempt from regulatory requirements. Some activities have been given blanket authorization under the provisions of a general permit through the Nationwide Permit system. Individual Permits require the applicant to prepare and submit an alternatives analysis of the project.

Section 401 of the CWA and its provisions ensure that federally permitted activities comply with the federal CWA and state water quality laws. Section 401 is implemented through a review process conducted by the Regional Water Quality Control Board (RWQCB), and is usually triggered by the 404 permitting process. Specifically, the RWQCB certifies via Section 401 that the proposed project complies with applicable effluent limitations, water quality standards, and other conditions of California law. If the RWQCB denies certification, the lead federal agency must deny the federal permit application.

b. State Policies and Regulations

The establishment and enforcement of water quality standards for the discharge into and maintenance of water throughout California is managed by the State Water Resources Control Board (SWRCB) and its nine RWQCBs. The SWRCB enforces the federal CWA on behalf of the EPA. Most of the quantitative objectives are based on the California Code of Regulations (CCR), Title 22 – State Drinking Water Standards. Other considerations include the University of California Agricultural Extension Guidelines for Agricultural Irrigation Use, the Porter-Cologne Water Quality Control Act, and the RWQCB's Non-degradation Policy. San Luis Obispo County lies entirely within Region 3 – Central Coast RWQCB. The RWQCB is the

primary State agency ensuring that the quality of potable water supplies is protected from harmful effects by man.

The California Department of Health Services (DHS) is responsible for overseeing the quality of water once it is in storage and distribution systems. DHS oversees the self-monitoring and reporting program implemented by all water purveyors, performs inspections, and assists with financing water system improvements for the purpose of providing safer and more reliable service. DHS regulations, described in CCR Title 22, stipulate disinfection levels required for specific crops where disposal of treated effluent is by irrigation.

1) State Water Code

Section 10910 of the California Water Code (CWC) requires the County to identify the agency or entity responsible for providing water service to the area and to request that the agency determine whether the project was included within the current Urban Water Management Plan maintained by that water agency. If no such plan exists, or if the proposed project was not considered, then the agency must prepare a water supply assessment for the project. The assessment shall include a discussion as to whether the public agency or entities total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project. In addition, the agency's existing and planned future uses, including agricultural and manufacturing uses need to be taken into account. There are other specifications regarding the water supply assessment in the CWC, and the County must prepare the assessment if it is unable to identify a water supply agency. The implementation of this requirement is triggered by the County's determination that the project is subject to CEQA and is completed separate from but simultaneously to the CEQA process.

Section 13260(a) of the CWC requires that any person discharging waste or proposing to discharge waste within any region, other than to a community sewer system, that could affect the quality of the waters of the State, file a report of waste discharge (WDR). All WDR's must implement the applicable water quality control plan (Basin Plan) for the Region affected by the discharge. Therefore, WDR's require the project to comply with all applicable Basin Plan provisions, including any prohibitions and water quality objectives, governing the discharge. The siting, design, construction, operation, maintenance, and monitoring of all small domestic systems must comply with all of the applicable provisions of the RWQCB's Basin Plan. The project shall not discharge waste in excess of the maximum design and disposal capacity of the small domestic system. The discharger must comply with any more stringent standards in the Basin Plan. In the event of a conflict between the provisions of RWQCB Order No. 97-10-DWQ and the Basin Plan, the more stringent provision prevails. Where treated wastewater is applied to land by sprinkler or spray methods, the discharger shall manage wastewater application to prevent it from commingling with storm water runoff, or such runoff shall be fully retained.

2) The Porter-Cologne Water Quality Control Act of 1987

The Porter-Cologne Water Quality Control Act provides the authority and method for the State of California to implement its water management program. The act establishes waste discharge requirements for both point and non-point source discharges, affecting surface water and groundwater.

3) Safe Drinking Water and Toxic Enforcement Act of 1986

The Safe Drinking Water and Toxic Enforcement Act prohibits the discharge or release of any significant amount of chemical known to cause cancer or reproductive toxicity into the drinking water supply, by any person in the course of doing business.

4) The Groundwater Management Act of 1992 (AB 3030)

The Groundwater Management Act was designed to provide local public agencies with increased management authority over groundwater resources in addition to existing groundwater management capabilities. A key element of this law is the development and implementation of groundwater management plans.

5) California Department of Fish and Game

The California Department of Fish and Game (CDFG) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. California law requires any person, agency, or public utility proposing a project that may impact a river, stream, or lake to notify the CDFG before beginning the project. If the CDFG determines that the project may adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required. This Agreement lists the CDFG conditions of approval for the proposed project, and serves as an agreement between applicants and the CDFG.

6) Los Berros Creek Subwatershed Total Maximum Daily Load

In May 2012, the RWQCB approved a Total Maximum Daily Load (TMDL) for Nitrate within the Los Berros Creek Subwatershed (approved by the EPA in June 2012). Los Berros Creek is listed on Central Coast Region's Clean Water Act Section 303(d) list for nitrate impairment. Consequently, designated drinking water supply and groundwater recharge beneficial uses are not being supported. Creek water also is not meeting non-regulatory recommended guidelines for nitrate in agricultural supply water for sensitive crop types, indicating that potential or future designated agricultural supply beneficial uses may be detrimentally impacted. The groundwater recharge beneficial use of Los Berros Creek provides a nexus between water quality in both the surface water and groundwater because the creek and the underlying groundwater resource are both designated for beneficial uses.

The proposed TMDL, numeric targets, and load allocations for nitrate will result in meeting numeric water quality objectives for nitrate in the Los Berros Creek Subwatershed. Central Coast Water Board staff has identified sources of nitrate that are causing or contributing to water quality impairment (e.g., primarily irrigated agriculture and natural sources), has identified parties responsible for these sources, and has proposed load allocations necessary to achieve the TMDLs. The Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands in the Central Coast Region (Agricultural Order) is the existing regulatory mechanism to achieve the TMDLs. No new regulatory mechanisms were proposed to implement and achieve the TMDLs. Agricultural owners and operators are required to comply with the requirements outlined in the Agricultural Order, and subsequent revisions of the Order.

7) Groundwater Rights

In most areas of California, overlying land owners may extract percolating groundwater and put it to beneficial use without approval from the SWRCB or a court. California does not have a permit process for regulation of groundwater use. In several basins, however, groundwater use is subject to regulation in accordance with court decrees adjudicating the groundwater rights within the basins (such as the Santa Maria Groundwater Basin).

The California Supreme Court decided in the 1903 case Katz v. Walkinshaw that the "reasonable use" provision that governs other types of water rights also applies to groundwater. Prior to this time, the English system of unregulated groundwater pumping had dominated but proved to be inappropriate to California's semiarid climate. The Supreme Court case established the concept of overlying rights, in which the rights of others with land overlying the aquifer must be taken into account. Later court decisions established that groundwater may be appropriated for use outside the basin, although appropriator's rights are subordinate to those with overlying rights (SWRCB, 2013).

c. Local Policies and Regulations

At the time of subdivision or building permit issuance, the County determines a project's water demand and the availability of water for allocation to the project. The County influences the use of water for residential and non-residential purposes by considering the availability of water in the approval of development projects and has measures in place to reduce long-term impacts to water supply. Long-term water supply is analyzed annually as part of the County Resource Management System (RMS).

The County Environmental Health Services is responsible under the provisions of Section 4.019.9 of the California Health and Safety Code for the regulation of water systems that fall under the state criteria of Public Water Systems. In 1991, the State assumed responsibility for regulation of these systems. However, budget problems have prevented the state from taking over as the actual service provider, and the State has contracted with County Health for continuation of these services. Environmental Health will continue to regulate systems with two to four connections under provisions of the County Code. Environmental Health also permits individual domestic wells. Currently, all public water supply wells in the County are required by the local DHS office to be disinfected. They are charged with implementing the Groundwater Disinfection Rule that became effective in 2002.

The County Environmental Health Services regulates small water systems to assure that safe drinking water is provided to the public. Small water systems are defined as having between 15 to 199 service connections and regularly serving 25 or more individuals daily at least 60 days out of the year. The Environmental Health Services also regulates small water systems that are defined as having between five to 14 service connections and not regularly serving more than an average of 25 individuals daily for more than 60 days out of the year.
The County Environmental Health Services and the Central Coast RWQCB are the local agencies responsible for effluent treatment standards and siting of wastewater disposal fields. These agencies ensure that proposed projects conform to all applicable local standards. Since the proposed project includes onsite wastewater treatment and disposal, requirements that would be imposed on this project potentially affecting water resources include:

- Depth to groundwater (minimum vertical separation of five feet from the bottom of the disposal field for soils having percolation rates slower than 30 minutes per inch. Greater separation distances are required for faster percolation rates).

- Setbacks (minimum setback of 100 feet between disposal area and any water supply well, spring, or water course).

- Surface and Subsurface Irrigation Water Recycling (subject to Title 22 of California Code of Regulations for water reuse criteria).

The following policies are contained in the Central Coast RWQCB Basin Plan:

- Groundwater recharge with high quality water shall be encouraged.

- In all groundwater basins known to have an adverse salt balance, total salt content of the discharge shall not exceed that which normally results from domestic use, and control of salinity shall be required by local ordinances, which effectively limit municipal and industrial contributions to the sewerage system.

- Wastewaters percolated into the groundwaters shall be of such quality at the point where they enter the ground so as to assure the continued usability of all groundwaters of the basin.

Section 22.22.150 Agricultural Lands Clustering (2002) of the Land Use Ordinance includes required findings related to water resources:

- The water resources and all necessary services are adequate to serve the proposed development, including residential uses as well as existing and proposed agricultural operations on the subject site and in the site vicinity (22.22.150.G.4).

Chapter 22.52 of the County's Land Use Ordinance (Title 22 of the County Code) contains site development standards for the County, including drainage, grading, erosion, and sedimentation control. Sections that are applicable to drainage, grading, erosion, and sedimentation are outlined below.

Section 22.52.010 (2002) states that the County's standards for grading and excavation are to minimize hazards to life and property; protect against erosion and the sedimentation of water courses; and to protect the safety, use, and stability of public rights of way and drainage channels. Grading must follow the standards provided in the Uniform Building Code (Section 3309) and the following standards:

- Areas of cut and fill are to be limited to the minimal amount necessary.
- Grading for a building site is prohibited on slopes of 30 percent or greater.
- Contours are to be blended with the natural terrain.
- Grading may not alter watercourses except as permitted through CDFG and various watercourse protection methods shall be followed.

- Areas where natural vegetation has been removed must be replanted by various approved methods.

Section 22.52.080 (2002) of the Land Use Ordinance states that standards for the control of drainage and drainage facilities are designed to minimize harmful effects of stormwater runoff and resulting inundation and erosion on proposed projects, and to protect neighboring and downstream properties from drainage problems resulting from new development. Erosion and sedimentation control to protect damaging effects onsite and on adjoining properties is discussed in Section 22.52.090 (2002) of the Land Use Ordinance. A sedimentation and erosion control plan would be required for future developments, and shall include temporary and final measures including:

- Slope surface stabilization including temporary mulching or other stabilization measures to protect exposed areas of high erosion potential during construction and interceptors and diversions at the top of slopes to redirect runoff;

- Erosion and sedimentation control devices such as absorbing structures or devices to reduce the velocity of runoff;

- Final erosion control measures including mechanical or vegetative measures.

Interim Low Impact Development (LID) Guidelines is a project sponsored by municipalities in San Luis Obispo County and the Central Coast RWQCB to help reduce onsite stormwater runoff. The guidelines and regulations act as a transition into new rules that will be developed as a part of a joint effort to develop new hydromodification control criteria. The new rules, titled *Post-Construction Stormwater Management Requirements for Development Projects in the Central Coast Region* (California RWQCB Central Coast Region, 2013), were drafted in September 2012 with an anticipated adoption date of July 12, 2013.

In addition to the environmental benefits, LID may provide aesthetic benefits, and in some cases, an economic benefit as well. The interim guidelines categorize projects into three performance requirement tiers based on the square footage of increased impervious surfaces created by the project. Projects with a potential to result in polluted stormwater discharge (e.g. automotive Repair shops, gasoline stations, residential hillside development, restaurants, 5,000-square-foot parking lots), and residential tentative subdivisions with a potential for five or more units are designated as Tier 3 projects, and are required to incorporate at least two LID measures that retain or reduce runoff and meet any additional agency requirements. The RWQCB Requirements designate three Performance Requirement Tiers, and Requirement No. 3 (Runoff Retention) applies to detached single-family homes resulting in 15,000 square feet or greater net impervious area in specified Watershed Management Zones (including the proposed project site). LID measures are required in additional to a Stormwater Control Plan.

3. Thresholds of Significance

a. CEQA Guidelines

CEQA Appendix G (Environmental Checklist) states that a significant water resource impact would occur if the project:

- Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Requires or results in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental issues; or,
- Did not have sufficient water supplies available to serve the project from existing entitlements and resources.

For the purpose of the project specific-evaluation in this EIR, significant water supply and infrastructure impacts would occur if the demands placed on the area from this development exceeded the available water supply and resulted in a net deficit in aquifer volume or a lowering of the groundwater table level, there was a disruption in existing agricultural operations due to the newly created residential demand, or if the well capacity of adjoining parcels was diminished so as to create unsustainable yields or disruption of existing localized water supply. The conclusions regarding significance are influenced more by the adequacy of current and future supplies rather than by the magnitude of potential increased demands.

Criteria for evaluating the significance of hydrology and water quality impacts included in the CEQA Guidelines (14 CCR Appendix G) are directed toward identifying substantial changes in drainage patterns, drainage volumes, or violations of water quality standards. For the proposed project, the best interpretation of these guidelines relates to the potential to direct development in areas with existing drainage concerns and incrementally create significant cumulative impacts to an area such as runoff exceeding downstream capacity or an increase of offsite sedimentation resulting in significant siltation of surface water areas. Impacts would be considered significant if development would result in any of the following:

- Potentially degrade surface or groundwater quality below standards established by the RWQCB;
- Substantially interfere with groundwater recharge;
- Substantially alter the existing drainage pattern of the area such that substantial erosion or siltation occurs;
- Substantially alter the existing drainage pattern or substantially increase the rate or amount of surface runoff in a manner which results in flooding;
- Create or contribute runoff which would exceed the capacity of stormwater drainage systems;
- Substantially add additional sources of polluted runoff to a water body; or,
- Place housing within a 100-year floodplain.

b. County of San Luis Obispo Initial Study Checklist

The County's Initial Study Checklist provides the following thresholds for determining significance with respect to water quantity and quality. Water quantity and quality impacts would be considered significant if the proposed project would:

- Violate any water quality standards;
- Discharge into surface waters or otherwise alter surface water quality (e.g., turbidity, temperature, dissolved oxygen, etc.);
- Change the quality of groundwater (e.g., saltwater intrusion, nitrogen-loading, etc.);
- Change the quantity or movement of available surface or groundwater; and,
- Adversely affect community water service provider.

4. Impact Assessment and Methodology

The impacts of any proposed development project are evaluated based on an assessment of project-related impacts on existing water supply, utilities, and service systems, as well as an assessment of site activities based on the intended land uses. The impact analysis determines if the proposed wells would be able to supply enough water to support the project, whether the underlying aquifers could supply the project and the existing and future agricultural uses, and if implementation of the project would substantially deplete groundwater supplies or interfere substantially with groundwater recharge resulting in a net deficit in aquifer volume or lowering of the groundwater table level. This last parameter includes the assessment of whether the project would have an adverse effect on the long-term sustainability of the aquifer.

Water usage estimates were revised following circulation of the Draft EIR (2008) based on modifications to the project components, including elimination of the equestrian center and incorporation of outdoor landscaping limitations (Cleath-Harris Geologists, 2010). All data and reports prepared prior to public circulation of the Draft EIR (2008), public comments received in response to the Draft EIR (2008), applicant comments and technical reports received in response to the Draft EIR (2008), and all supplemental documentation to support further analysis of hydrogeology and sustainable yield was peer reviewed by Geosyntec, a third-party independent consultant. Geosyntec provided a comprehensive assessment, including conclusions and recommendations, which are incorporated into this EIR section and impact analysis below.

The impacts of the proposed project were evaluated based on proposed water use requirements, which were derived from the maximum proposed density, irrigated landscaping limitations, and intended use of the parcels, as identified in the project description. Water demand was determined through the use of water duty factors contained in the Laetitia Well Testing and Sustainable Yield Assessment prepared by Cleath-Harris Geologists (2010) for the proposed project, the County of San Luis Obispo Water Master Plan Update (CWMP, 2012), and peer review of the vineyard and residential baseline and demand rates (Geosyntec, 2012, 2013).

Water usage rates included in the 2010 Cleath-Harris report were derived from The Landscape Coefficient Method (University of California Cooperative Extension and DWR, 2000). The Residential Water Demand review conducted by Geosyntec reviewed a range of sources, including the Model Water Efficient Landscape Ordinance (DWR, 2009), Estimating Unmetered

Landscaping (U.S. Department of Energy [DOE], 2010), Calculating Baseline per Capita Use (DWR, 2011), Water Conservation Plan Guidelines (EPA, 1998), and Water Use in the California Residential Home (California Homebuilding Foundation, 2010).

a. Water Supply and Infrastructure

Initial water studies were prepared by Cleath and Associates (2005), including an evaluation of pump testing, site geology, water level data, groundwater storage and aquifer recharge, and determination of sustainable yield. The results of these studies are summarized in the Draft EIR (2008), and the 2011 technical review report (Geosyntec, 2011) is appended to this Recirculated Draft EIR (refer to Appendix H). Following circulation of the Draft EIR (2008), the applicant proposed to replace use of Wells 12 (Well 2004-1) and 13 (Well 2004-2) with Wells 14 (Well 2006-1) and 15 (Well 2006-2) to avoid significant adverse impacts to Los Berros Creek.

In addition, based on receipt of substantial evidence following public review of the Draft EIR (2008), the County requested that a third party provide review of existing information, conduct independent testing, and evaluate if the existing wells can provide a sustainable water supply to meet the needs of the proposed development project. The California Water Code outlines two methods for evaluation of well capacity in fractured bedrock. Method 1 requires a report that includes well testing, evaluation of hydrogeology, historical use, and monitoring data from other local wells. Method 2 is either a 72-hour or 10-day test without the more comprehensive report.

Cleath-Harris Geologists initiated long-term testing of the wells in October 2009 and proposed a well testing program specifically designed for the project and setting, which would be consistent with Method 1 of the California Water Code Methods for Well Capacity Determination in fractured rocks. The *Laetitia Well Testing and Sustainable Yield Assessment Report* (Cleath-Harris Geologists, 2010) documents the first two phases of testing and presented an estimate of sustainable yield from the four project wells of 87 afy. Geosyntec conducted an independent peer review of the well testing data and *Laetitia Well Testing and Sustainable Yield Assessment Report.* Based on continuing decline of water levels exhibited in three of the four wells tested during the seven-month period, Geosyntec expressed concern that the average pumping rates from these three wells used during the testing is not sustainable. Accordingly, prior to further evaluation of the testing data and estimates of production capability, Geosyntec recommended additional testing during the dry season, and requested all available historical data and water level data in other wells in the vicinity to help assess seasonal variation (Geosyntec, 2010).

1) Well Pumping Tests 2009 – 2010

The estimated total water demand of the project reported in the Draft EIR (2008) was 143 afy, which is equivalent to a production rate of 89 gpm (total capacity achieved by one or more wells). The applicant has eliminated the equestrian facility and incorporated water conservation measures into the project, which would reduce the estimated project water demand to 46.3 afy, which is equivalent to approximately 29 gpm (Cleath-Harris Geologists, 2010).

Three phases of cyclic pumping were conducted at the project site between October 2009 and December 2010. The third phase of pumping was conducted from late September 2010 through December 2010 at the estimated sustainable yield rate of 87 afy (54 gpm total for all four wells), which was based on the first two phases of testing (Cleath-Harris Geologists, 2010). During the

three phases of pumping, the total volume of groundwater production from the four wells over the fifteen months was 93 af, equivalent to 74.4 afy, which is substantially more than the allocated project demand of 46.3 afy. Table V.P.-4 summarizes the three phases of pump testing, including total pumped af, calculated afy, and calculated gpm for Wells 10, 11, 14, and 15.

TABLE V.P.-4
Pump Testing Rates and Schedule

	Well 10	Well 11	Well 14	Well 15	Total	% of Project Demand
Phase 1 – October 12-December 16, 2009						
Operational Q gpm	50	45	50	35		**174%**
Total Pumped af	4	3.7	4.6	3.2	15.5	
Annualized afy	20.8	19.2	23.9	16.6	**80.6**	
Annualized gpm	12.9	11.9	14.8	10.3	50.0	
Phase 2 – January 16 to May 10-14, 2010						
Operational Q gpm	50	60	60	60		**191%**
Total Pumped af	11.7	16.1	12.9	13.1	53.8	
Annualized afy	35.1	48.3	38.7	39.3	**161.4**	
Annualized gpm	21.8	29.9	24.0	24.4	100.1	
Phase 3 – September 27-December 30, 2010						
Operational Q gpm	44	55	42	44		**191%**
Total Pumped af	2.8	10.3	5.2	5.5	23.8	
Annualized afy	10.2	38.3	19.4	20.4	**88.3**	
Annualized gpm	6.3	23.7	12.0	12.6	54.7	
Allocated Project Demand:					**46.3 afy 28.7 gpm**	

Abbreviations
gpm = gallons per minute
af = acre feet
afy = acre feet per year
Q = pumping rate

Source: Geosyntec, 2011, 2013

During the well pumping tests, full recovery of water levels occurred only at Well 11, which is within a few hundred feet of Los Berros Creek. The hydrograph for Well 11 shows strong correlation between rainfall and groundwater levels in the vicinity of Well 11, which indicates that groundwater levels in the vicinity of Well 11 are influenced by the base flow of Los Berros Creek (refer to Appendix H to review hydrographs and detailed data). Conversely, pumping from Well 11 likely influences base flow of Los Berros Creek. Wells 10, 14, and 15 are approximately 3,000, 2,700, and 4,000 feet from the creek, respectively, and compared to Well 11 are more isolated stratigraphically from the creek. Based on the fact that water levels in three of the four wells (Wells 10, 14, and 15) were still generally dropping during the Phase 3

pumping, and the groundwater in the aquifers near these wells did not reach equilibrium levels, continued pumping at the Phase 3 rates (54 gpm) will continue to deplete aquifer storage.

(a) Equilibrium

Under pre-development conditions (prior to the development of any wells or water extraction onsite) ground-water systems are in long-term equilibrium. Under equilibrium conditions, which are averaged over a defined period of time, the amount of water entering or recharging the system is approximately equal to the amount of water leaving or discharging from the system. The quantity of water stored in the system is constant or varies about some average condition in response to annual or longer-term climatic variations (USGS 1999).

Based on the available data, groundwater production needed for the proposed project is feasible, but will result in long-term average declines in groundwater levels. Additional depletion of groundwater storage associated with each proposed domestic well appears to be necessary to sustain long-term water production to meet project demands. With continued pumping, equilibrium water levels may be attained in time (Geosyntec 2011, 2013).

As described in the section below, the testing data was analyzed to determine pumping rates and schedules that would allow for equilibrium to be established at each of the proposed domestic well locations.

2) Sustainable Yield

Sustainable yield does not have a "correct" value, but is a subjective concept, and its evaluation is an interdisciplinary issue. The concept of sustainable yield has been broadly defined as the amount of water that can be pumped indefinitely without unacceptable environmental, economic, or social consequences (e.g., Alley et al., 1999). According to the World Commission on Environment and Development (1987), sustainable development must meet the needs of the present without compromising the ability of future generations to also meet their needs. Typically, however, sustainable yield must also allow for sufficient natural discharge of groundwater to preserve streams, springs, wetlands, and riparian corridor ecosystems (e.g., Sophocleous, 1997, 2000).

As groundwater in storage is depleted and groundwater elevations continue to drop with ongoing pumping, the "cone of depression" associated with each pumping well (or group of wells) expands and groundwater within an increasing area flows toward the well. The extent of groundwater that ultimately flows to the pumping well is sometimes termed the extent of groundwater "capture" (e.g., Bredehoeft, 1997). The groundwater captured by pumping is derived from decreases in natural discharge and increases in recharge. Natural groundwater discharge commonly supports riparian and wetland ecosystems as well as the base flow of streams and rivers. The groundwater "captured" can also include increased recharge induced by pumping if the boundaries of the groundwater system include a surface water body or adjacent aquifer, but typically the majority of the capture associated with pumping consists of intercepted groundwater that would otherwise discharge or transpire elsewhere. Accordingly, the quantity of sustainable groundwater development usually depends on how much natural groundwater discharge can be captured (e.g., Bredehoeft, 1997, 2002; Ponce, 2007).

With continued pumping, the water level in an aquifer near a well can continue to drop ("drawdown") until it reaches the bottom of the well screen or pump intake, or the water levels may stabilize if capture expands to equal the pumping rate and a new equilibrium groundwater condition is attained. If a new equilibrium condition is attained the pumping rate theoretically may be sustainable with no further decline in water level (i.e., no additional depletion of groundwater in storage). However, the time to achieve equilibrium pumping conditions can take decades or centuries. And if the groundwater pumping exceeds the potential for capture, new equilibrium conditions are not possible (e.g., Bredehoeft and Durbin, 2009; Walton, 2011; Alley and Leake, 2004).

Based on the Phase 1 and 2 pumping and recovery data, the estimated long-term sustainable yield for each of the four wells totaled 87 afy with allowance for full recovery of water levels during average years to "operational static water levels established during Phase 1" pumping (Cleath-Harris Geologists, 2010). Table V.P.-5 on the following page lists the annualized average pumping rates for each of the four wells.

The Phase 3 testing established that water levels continued to drop at three of the four wells with pumping at the estimated sustainable yield rates; thus, equilibrium groundwater conditions were not attained with the Phase 3 production rates and depletion of groundwater storage continued. The "equilibrium discharge rate" approach used for the Phase 1 and 2 data was also used to calculate revised estimates of "equilibrium interval" sustainable pumping rates by accounting for the time for groundwater levels to recover to pre-Phase 3 "operational static" elevations and scaling the Phase 3 pumping rates accordingly. Scaling down the production rates to account for time for water levels to return to levels at the beginning of the Phase 3 testing (the approach used for the Phase 1 and 2 data) reduces the estimates of viable long-term production rates for Wells 10, 14, and 15 by 35, 52, and 45 percent, respectively. Scaling of the production rate was not applied to the Phase 3 testing data recorded at Well 11 because prominent recharge influence on water levels at this well occurred that was independent of pumping (Los Berros Creek).

Although the production capacity of Well 11 was substantially higher than the other wells, water level data in this well show rapid recharge likely due to good hydraulic connection between the aquifer and base flow in Los Berros Creek. Based on review of this data, Geosyntec recommends a modified production schedule, which includes curtailment of pumping from Well 11 from August through November each year to help preserve base flow in Los Berros Creek during the dry season, but a slight increase in Well 11 pumping from December through July.

Well 15 is the deepest of the four wells and has the largest available drawdown between the water level attained during Phase 3 pumping and the top of the well screen (approximately 80 feet). Consequently, a production rate from Well 15 that results in continuing gradual drawdown is more sustainable at Well 15 than at the other wells. Accordingly, the recommended long-term production rate for Well 15 includes a 25 percent increase to the revised calculated sustainable pumping rate that is based on the Phase 3 production and recovery data.

Table V.P.-5 lists the estimated sustainable pumping rates calculated by Cleath-Harris Geologists using the Phase 1 and 2 data, the actual Phase 3 pumping rates, and the revised estimates of viable long-term pumping rates based on the water levels recorded in the four wells during the Phase 3 pumping and subsequent recovery. The production capability of the proposed domestic

wells is based on equivalent pumping rates, not the short-term operational pumping rates during the cyclic pumping schedules utilized for Phase 1, 2, and 3 testing. Change in water level in an aquifer in response to pumping is approximately proportional to the log of time; therefore, lines fitted to graphs of elapsed time vs. drawdown of water level data plotted on semi-log graphs are commonly used to analyze aquifer properties. Fitting lines to the entire set of water level data recorded during the Phase 3 testing and projection of these trends is reasonable and consistent with standard practice for analysis of aquifer testing data (Geosyntec, 2013).

The table includes Geosyntec's recommended adjustment of pumping schedule at Well 11 and increased production from Well 15 (relative to the revised rate scaled to the Phase 3 recovery). The resulting total production rate is approximately 62 afy or 39 gpm. This is a 28 percent decrease compared to the sustainable rate initially estimated to determine Phase 3 testing pumping rates, but 135 percent of the allocated project demand of 46.3 afy (29 gpm).

The resulting revised estimate of optimized sustainable yield from the four wells is approximately 62.4 afy, which equates to an average pumping rate of 38.7 gpm (total production for all four wells).

TABLE V.P.-5
Estimates of Sustainable Yields for Domestic Wells 10, 11, 14, and 15

	Well 10	Well 11	Well 14	Well 15	Total	% of Project Demand
1. Estimated Sustainable Yield Based on Phase 1 & 2 Testing (Cleath-Harris Geologists, 2010)						
Afy	10	38	19	20	**87.0**	**188%**
gpm	6.2	23.6	11.8	12.4	53.9	
2. Phase 3 Testing – Production Schedule Duration of 14 Weeks (Cleath-Harris Geologists, 2011)						
Operational Q gpm	44	55	42	44		**191%**
Total Pumped af	2.75	10.30	5.23	5.48	23.8	
Annualized afy	10.2	38.3	19.4	20.4	**88.3**	
Annualized gpm	6.3	23.7	12.0	12.6	54.7	
3.1 Calculated Yield Based on Phase 3 Testing						
Pumping Start-Recovery Dates	9/27/10-2/27/11	*	9/27/10-4/27/11	9/27/10-3/27/11		
Pumping Period (weeks)	14	14	14	14		
Recovery Period (weeks)	8	0	16	12		
Total Weeks	22	14	30	26		
Calculated Yield – afy	6.5	38.3	9.1	11.0	**64.8**	**140%**
Calculated Yield – gpm	4.0	23.7	5.6	6.8	40.2	

	Well 10	Well 11	Well 14	Well 15	Total	% of Project Demand
3.2 Adjustment to Protect Creek Baseflow (No Q from Well 11 Aug-Nov, and 10% increase Dec-June)**						
Afy	6.5	28.1	9.1	15	**58.6**	**127%**
annualized gpm	4.0	26.1***	5.6	9.3	36.3	
3.3 Optimized Conservative Estimated Sustainable Yield (Well 11 as above and increase Q at Well 15 by 25%)**						
afy	6.5	28.1	9.1	18.8	**62.4**	**135%**
annualized gpm	4.0	26.1***	5.6	11.6	38.7	
4.0 Alternate Estimated Sustainable Yield (35% increase at Well 11 Dec-June)**						
afy	6.5	38	10	20	**74.5**	**161%**
annualized gpm	4.0	23.6	6.2	12.4	46.2	
% of Phase 1 & 2 estimates	**65%**	**100%**	**53%**	**100%**	**86%**	
% decrease relative to Phase 1 & 2 estimates	35%	0%	47%	0%	14%	
Allocated Project Demand (Domestic):					**46.3 afy 28.7 gpm**	

Notes
gpm = gallons per minute
af = acre feet
afy = acre feet per year
Q = pumping rate
* No adjustment for Well 11 recovery due to influence by creek.
**For 3.2, 3.3, and 4.0, annualized gpm for Well 11 is actually the average rate for 8 months, but Q for Wells 10, 14, and 15 is average rate for 12 months

Source: Geosyntec, 2011, 2013.

3) Aquifer Properties

Portions of the water level data recorded at Wells 10, 11, 14, and 15 during the testing program were analyzed by Geosyntec to estimate the rate that groundwater flows horizontally through an aquifer (transmissivity). Aquifer type-curves used for analyses included the Theis confined solution, Copper-Jacob approximation of the Theis solution, and the Hantush-Jacob Leaky Aquifer solution (e.g., Kruseman and de Ridder, 1992). Four general methods were used to estimate transmissivity; the aquifer testing analyses are provided in Appendix H.

The methods used for estimating transmissivity and hydraulic conductivity of the aquifers tapped by the wells at the project site are based on the assumption that the aquifers are uniform throughout and in all directions. Generally, fractured bedrock is not uniform and isotropic; however, at a large scale, fractured bedrock aquifers can be reasonably represented by an equivalent homogenous porous media, although a directional bias of hydraulic conductivity is common.

Initial yield from wells in fractured bedrock aquifers is often not representative of longer-term yields, which are typically lower. As groundwater is released from storage in fractures, the hydraulic gradient toward the well becomes progressively lower, which causes the well yield to decline. A relatively lower hydraulic gradient at the end of the pumping period limits the rate of groundwater flow back into the area of drawdown, so recovery is often substantially slower than drawdown (e.g., Robinson, Noble & Saltbush, 2004; Morrison-Maierle, 2002).

Although the standard analytical techniques for groundwater flow assume uniform radial flow of groundwater toward a pumping well, flow within fracture systems commonly have more linear geometry (e.g., Morrison-Maierle, 2002). For radial flow systems, the rate of drawdown gradually decreases with pumping duration because the volume of aquifer influenced by pumping increases by the distance squared. For a system of linear fractures tapped by a well in bedrock, the volume of aquifer influence by pumping can increase linearly with distance, so the rate of drawdown with pumping will be faster than for radial systems.

b. Surface Water Quality and Quantity

An impact would occur if proposed use of groundwater decreases surface flows in Upper Los Berros Creek and its tributaries. An impact would occur if the proposed project results in development in areas with existing drainage concerns without careful consideration of the potential impact of runoff exceeding downstream capacity in the area. Potential impacts would be assessed based on site topography, the proposed layout and elevations of potential project components, the erodibility of soils, and the regulatory framework applicable to the project.

With respect to water quality, determining significance is more indirect because there are no specific discharge requirements or standards for storm water runoff that can be compared at this time. For the purposes of this EIR, the determination of significance is based on a review of typical construction site pollutants usually found on job sites that might contribute to disproportionate amounts of polluting materials in runoff. The SWRCB has not attempted to identify numerical limits to be achieved in runoff from construction sites. Instead, the General Order contains narrative restrictions referencing best available technology economically achievable and the best conventional pollution control technology. In addition, land disposal of treated wastewater is regulated by the RWQCB (refer to Section V.O., Wastewater, for additional discussion and analysis). Thus, the significance of water quality impacts will be judged in terms of conformance with these requirements and regulations.

5. Project-specific Impacts and Mitigation Measures

a. Project-wide

1) Sustainable Water Supply

The estimated total water demand of the project reported in the Draft EIR (2008) was 143 afy, based on analysis by Cleath and Associates (2005). This original demand factor assumed up to 30,500 square feet of onsite irrigated landscaping, with up to 7,000 square feet of turf per residential lot. Water conservation measures initially proposed by the applicant, which are intended to be incorporated into project design, include: the use of low-flush and low-flow appliances; insulation and circulation of hot water systems; minimized use of water for outdoor cleaning; use of drought-tolerant landscape plant species; use of automatic irrigation systems;

use of water-conserving pumps and filters for swimming pools and spas; and regular maintenance of all appliances, systems, and facilities. In response to the Draft EIR (2008), the applicant proposed the following limitations on allowable landscaping per residential lot: a total of 1,500 square feet of irrigated landscaping, including up to 300 square feet of warm-season turf (maximum), and the remaining 1,200 square feet of landscaped area consisting of drought-tolerant, low-water use plants. A dual-meter system would be installed at each residence to monitor indoor and outdoor water use separately.

The previous outdoor water demand estimate per lot (including 30,500 square feet of landscaping) was estimated at 0.882 afy per lot. Based on the 95 percent reduction in irrigated area (down to 1,500 square feet), the outdoor water demand estimate per lot is reduced to 0.0626 afy (92 percent reduction in outdoor water use). The estimate for indoor water use, 0.38 afy per lot, remains the same, resulting in a total water demand rate of 0.44 afy per residential lot.

The ranch headquarters and homeowners association facility would consist of an office, conference room, lounge, kitchen, and a swimming pool with hot tub. Demand for this facility is approximately one afy. Implementation of water conservation measures would result in an estimated outdoor water demand for the project of up to 6.7 afy. Indoor use is estimated at 39.6 afy for a total project water demand of 46.3 afy, which is equivalent to approximately 29 gpm (continuous flow from one or more wells). Table V.P.-6 provides updated water demand estimates for the proposed project, in addition to existing water uses and proposed additional vineyards. The proposed project water demand (46.3 afy) and net gain of 27 acres of vineyard (9.2 afy) represents an approximately 26 percent increase in water demand relative to the baseline demand. Excluding the 27 or 5.1 acre net increase of vineyards, the project would result in an approximately 22 percent increase in water demand. Total estimated water demand would be approximately 280 afy, which includes 46.3 afy estimated for the proposed project, 9.2 afy for the additional 27 acres of irrigated vineyards, and approximately 222.3 afy for existing uses (domestic, winery production, vineyards, and orchard). The project includes the use of approximately 37 afy of tertiary treated water for agricultural irrigation within approximately 20 acres of new vineyards, which would contribute to a reduction in overall water demand. Operation of the 75-unit dude ranch, which is not currently included in the current project application or Table V.P.-6 below, would require approximately 13 afy (Cleath and Associates, 2008).

TABLE V.P.-6
Estimated Project Water Demand

Project Component	Unit Type	Duty Factor	Number of Units	Water Demand (Indoor) (afy)	Water Demand (Outdoor) (afy)	Water Demand (Total) (afy)
Residential (one-acre lot)	Outdoor	0.0626	102	0	6.4	6.4
	Indoor	0.381	102	38.9	0	38.9
Ranch Headquarters	Per acre	0.72	1.4	0.7	0.3	1
Total Project Demand				**39.6**	**6.7**	**46.3**
Vineyards (proposed net increase)*	Per acre	0.34	27	0	9.2	9.2
Total Water Demand (proposed)				**39.6**	**15.9**	**55.5**
Existing Domestic	---	---	---	---	---	8.95
Existing Winery	---	---	---	---	---	5.3
Vineyards and orchards (existing)	Per acre	0.34	624.9	---	---	~~208~~212.4
Existing Water Use				**---**	**---**	**~~222.3~~226.7**
Total Water Use (existing plus proposed demand)						**~~280~~282.2**
**Demand would be partially off-set by the use of tertiary treated wastewater that would be used for irrigation within the proposed vineyard areas*						

Sources: Cleath and Associates, 2005; Cleath-Harris, 2012; Geosyntec, 2011, 2012.

TABLE V.P.-7
Estimated Water Demand by Development Phase

Project Component	Units	Water Demand (afy)
Phase One		
Residential	43 units	19.10
Ranch Headquarters	1.4 acres	1.0
Phase Two		
Residential	40 units	17.74
Phase Three		
Residential Units	19 units	8.43
Future Development Proposal		
Dude Ranch (not included in use permit application)	75 units	13.0
Total	**----**	**59.27**

Sources: Cleath and Associates, 2005; Cleath-Harris, 2012; Geosyntec, 2011, 2012

Based on an independent assessment of estimated water use, the overall estimated demand for each residential lot (0.44 afy) is reasonable, based on the limitations on outdoor landscaping. Based on calculations of residential water demand using standardized rates, water use would range from 0.21 to 0.36 afy per lot, equating to 21 to 37 afy total (Geosyntec, 2013). The applicant's estimated demand for indoor water use (0.38 afy) is higher than standardized rates ranging from 0.14 to 0.29 afy. The estimated demand for outdoor water use falls below standardized rates ranging from 0.069 to 0.072 afy. For the purposes of this document, the applicant's estimated total rate of 0.44 afy per lot is reasonable because it is slightly greater than the standardized rate of 0.36 afy per lot.

Regarding vineyard water use, available data from the County's Water Master Plan indicates that standard rates range from 0.7 afy per acre to 1.3 afy per acre (County of San Luis Obispo, 2012). This estimate includes 0.25 afy per acre for frost protection. If an assumption is made that drought conditions would require a higher irrigation rate, up to 1.3 afy per acre, then the total demand for existing vineyards would be approximately 812 afy, and the total demand for existing plus additional proposed vineyards (652 acres) would be 847.6 afy. Based on calculations for water demand, vineyard irrigation could range from 277.75 afy (using applicant provided historical rates during a non-drought year), to 456.4 afy (low factor standard), to 847.6 afy (high factor standard).

Therefore, total operational water demand would range from ~~277.75~~282.2 afy (assuming incorporation of applicant-proposed water conservation measures and continued vineyard irrigation/water conservation practices), to 494.09 afy, up to 938.33 afy. Irrigation demand would be partially off-set by the applicant's proposal to store and apply approximately 37 afy of treated, recycled water from the private wastewater treatment facility into irrigated vineyard areas. An additional water conservation measure that may be voluntarily implemented by the applicant include use of floating pond liners on agricultural reservoirs, which would conserve approximately 8.0 afy of stored water lost to evaporation in the currently uncovered reservoirs (Cleath-Harris, 2013).

Water demand during construction would include provisions and storage for fire safety and use of water for dust control. Standard requirements for dust suppression include use of reclaimed, non-potable water, applied by a water truck. The water could be supplied by the construction fleet or obtained from on-site wells. The quantity of water required for dust suppression would vary depending on area of disturbance on a given day and wind speeds, but may vary from 750 to 3,500 gallons per day.

An evaluation of the effects of the proposed project was prepared in order to document the anticipated water demand that would result from residential and the various related facilities included in the proposed project. CEQA states that a significant water resource impact would occur if the project: 1) substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level; or, 2) if the project did not have sufficient water supplies available to serve the project from existing entitlements and resources.

Community water supply systems are required to have adequate source capacity to meet maximum daily demand (MDD) at all times. In accordance with State guidelines, Cleath-Harris

Geologists estimated the MDD for the proposed project as 1.5 times the average daily demand (ADD) for the maximum demand month (June). The calculated project water demand in June is 4.06 af, which equates to 30.6 gpm for continuous flow. The MDD during June would be a factor of 1.5 higher, which is approximately 46 gpm (Cleath-Harris Geologists, 2010).

The estimated sustainable rate based on Phase 1 and 2 testing data and pumped from the four wells during Phase 3 was equivalent to 87 afy, or approximately 54 gpm, which exceeds the maximum MDD value of 46 gpm. Based on evaluation of the Phase 3 testing data and incorporation of measures to conserve base flow in Los Berros Creek (i.e., ceasing use of Well 11 during the dry season), the revised estimated viable long-term production rate is 62.4 afy, which equates to 38.7 gpm (less than the MDD of 46 gpm).

In summary, based on the testing data, the capacity of the wells is more than adequate to sustain a continuous flow of 46 gpm for one month. Moreover, water in storage tanks can be used to supplement groundwater pumping during short-term high demands. The estimates of viable long-term groundwater production rates are based on evaluation of water levels recorded in four wells for the period from October 2009 to March 2011, which included several months of pumping. As noted above, below average rainfall occurred from 2007 through 2009, immediately prior to Phase 1 testing; therefore, the calculations based on Phase 1 testing reflect drought conditions. Rainfall during the testing program was 138 percent of average in 2010/2011. In addition, long-term yields of water wells producing from bedrock aquifers, which may have linear fracture systems, commonly are substantially less than short-term yields. Nonetheless, long-term groundwater production rates of 21 afy for each of two irrigation wells at the project site (Cleath-Harris Geologists, 2010) supports that 62 afy is a viable long-term groundwater production rate for the four project wells combined. In addition, proposed wells are deep and have long screened intervals, therefore, large amounts of drawdown during pumping and utilization of groundwater storage is possible during drought conditions. Projection of "time vs. water level" trends based on the Phase 3 pumping data indicates that Phase 3 pumping rates are sustainable for at least several decades.

Due to the size of the proposed project, an onsite water company that manages well pumping rates water quality health standards, maintenance of the system, and other tasks associated with domestic water treatment and delivery is proposed. In addition, according to the *Management and Buffers Plan*, use of groundwater for irrigation may be limited during drought conditions. In the event of a water supply shortage, mandatory water conservation measures (listed in the applicant's proposed priority for implementation) would include: 1) increases in residential water rates and/or penalties to encourage water reductions; 2) a reduction or moratorium on irrigation for residential landscaping; 3) a reduction or moratorium on irrigation for common area and homeowners association facility landscaping (unless served by reclaimed water); 5) a prohibition on water use for swimming pools and spas; 6) mandatory water allocations for residential users; 7) potential purchase of water from an offsite party; and, 8) reduction or periodic cessation of agricultural irrigation. While it is acceptable for a vineyard manager to implement water conservation measures independent of the proposed residential development, Iimplementation of the proposed policy to reduce agricultural irrigation at the benefit of the proposed residential and facility development may significantly affect onsite agricultural production.

Based on the above analysis of groundwater supply conditions (i.e., CEQA thresholds of significance, which state there is a significant impact if a proposed project does not have sufficient water supplies available to serve the project from existing entitlements and resources), and the applicant's incorporation of water conservation measures identified in the Draft EIR (2008) into the currently proposed project, the proposed water source is adequate to serve the project because the estimated project demand (46.3 afy) is less than the estimated sustainable yield (62.4 afy) for Wells 10, 11, 14, and 15. Existing agricultural wells would continue to serve as a water source for vineyard and orchard irrigation (existing and proposed), and would be supplemented by 37 af of treated effluent from the wastewater treatment facility. Further discussion of the project's effect on surface and groundwater is presented below, including effects to underlying groundwater levels, Los Berros Creek and well interference.

(a) Effects to Groundwater

Continuing general decline of water levels in Wells 10, 14, and 15 during the three phases of pumping indicates that stable equilibrium groundwater conditions were not attained, and continued decline in water levels at three of the four wells during the Phase 3 pumping indicates that the 87 afy sustainable yield estimated by Cleath-Harris Geologists (2010) will not result in full recovery to "the Phase 1 operational static water levels," but will cause additional depletion of groundwater storage. Supplemental information provided by the applicant for agricultural Wells 1, 4, 5, and 9 show downward trends of water level for each well during the testing period, despite the increased rainfall in 2010 and 2011. Declining groundwater levels do not indicate that Phase 3 pumping rates are not sustainable, but rather that the system did not reach equilibrium.

The projections of downward water level trends exhibited during testing and the unknown time to possibly achieve equilibrium pumping conditions underscores that time frame is an important issue with respect to long-term viability of the wells to meet the proposed project demands. Climate change is predicted to result in rainfall occurring in fewer and more intense periods (DWR, 2002), which would likely result in more runoff, perhaps less recharge to groundwater, and possibly long-term decrease in base flow of creeks.

As described in Section 5.c (Sustainable Yield) and quantified by Geosyntec (2011), the revised estimate of sustainable yield from the four wells is approximately 62.4 afy, which equates to an average pumping rate of 38.7 gpm. This sustained yield for the four domestic wells is more than the estimated demand; therefore, the long-term use of these wells at the recommended sustainable rate would not have a significant adverse effect on underlying groundwater in the study area.

The classic "cone of depression" of the water table typically associated with pumping groundwater from an aquifer may not be applicable in a fractured bedrock aquifer because systems of fractures can function as localized isolated aquifers, each of which can have different drawdowns. Based on the available data, groundwater production needed for the proposed project is feasible, but will result in long-term average declines in groundwater levels associated with each proposed domestic well. Additional depletion of groundwater storage is necessary to sustain long-term water production to meet project demands. With continued pumping, equilibrium water levels for each well may be attained in time.

Santa Maria Groundwater Basin, Seawater Intrusion, and Subsidence

Los Berros Creek and subsurface waters flow from the project site to the northern cities management area of the Tri-Cities Mesa – Arroyo Grande Plain portion of the Santa Maria Groundwater Basin (DWR, 2002). The Wilmar Avenue Fault comprises the inland (northeast) border of the Tri-Cities Mesa – Arroyo Grande Plain portion of the Santa Maria Groundwater Basin from the inland local alluvial valleys and bedrock aquifers (refer to Plate ES1, DWR, 2002). Based on groundwater contour maps, estimates of hydraulic conductivity, and Darcy's Law (proportional relationship between the instantaneous discharge rate through a porous medium, the viscosity of the fluid and the pressure drop over a given distance), DWR calculated a groundwater influx of 1,600 afy across the Wilmar Fault from the inland bedrock aquifers to the Tri-Cities Mesa – Arroyo Grande Plain portion of the Santa Maria Groundwater Basin (refer to Table 25, page 135, DWR, 2002).

The length of the bedrock aquifers in the project area, as measured from opposite Picacho Mountain to Thompson Avenue, along this border is approximately 27 percent of the entire length of the inland margin of the Tri-Cities Mesa – Arroyo Grande Plain. Accordingly, assuming uniform transmissivity of the bedrock along the border, the project area portion of inflow constitutes approximately 27 percent of the groundwater influx from inland bedrock.

DWR reports inflow of 7,200 afy for the total water budget of the Tri-Cities Mesa – Arroyo Grande Plain (Table 25, page 135, DWR, 2002), of which inland groundwater influx from bedrock comprises 22 percent, including outflow from the project area. Taken alone, the groundwater inflow flow from the project area comprises approximately six percent of the reported water budget for the Tri-Cities Mesa – Arroyo Grande Plain.

The total annual groundwater production within the Nipomo Mesa Management Area (NMMA) portion of the Santa Maria Groundwater Basin is 10,538 acre-feet (NMMA 2011). The groundwater influx from bedrock comprises approximately 15 percent including outflow from the project area. Taken alone, the groundwater inflow from the project site comprises approximately four percent of the reported groundwater production budget for the NMMA portion of the Santa Maria Groundwater Basin. The 2011 NMMA report states that although recharge to alluvium along Los Berros Creek may be significant "any groundwater flow from these [bedrock] formations to the NMMA is likely negligible" (page 12, NMMA, 2011). The recommended pumping schedule for the proposed domestic wells included measure to protect flows within Los Berros Creek.

The existing and proposed groundwater pumping at the project site does not have the potential to increase the threat of salt-water intrusion or subsidence of coastal aquifers. The site is approximately six miles from the coast, and the lowest water level elevations during testing of the four domestic wells were hundreds of feet above sea level. Drawdown of groundwater levels below sea level is not possible in the project wells because the bottom of the screened intervals is well above sea level (refer to Figures 9 and 10, Geosyntec, 2011).

(b) Effects to Los Berros Creek

The production capacity of Well 11 was substantially higher than the other wells; however, the rapid recharge response, close proximity to the creek, and dropping water level beginning in June

even without pumping indicates that the production capacity of Well 11 is dependent on base flow in Los Berros Creek and will likely decrease during summer and drought conditions. Moreover, pumping from Well 11 during late summer and autumn would likely substantially reduce base flow in the Los Berros Creek channel. During the months of August through November, the proposed pumping rate from Well 11 exceeds 30 percent of the average flow in Los Berros Creek.

In the long-term, an estimated total 22 to 26 percent increase in total groundwater production may decrease baseflow of Los Berros Creek, and subsequently downstream wells. Therefore, water production limitations are recommended for Wells 10 and 11, and curtailment of pumping from Well 11 is recommended from August through November when creek flows are lowest. Well 15 is the deepest of the four wells and has the largest available drawdown between the water level attained during Phase 3 pumping and the top of screen (approximately 80 feet). Consequently, a production rate from Well 15 that results in continuing gradual drawdown is more sustainable at Well 15 than at the other wells. Accordingly, the recommended long-term viable production rate for Well 15 includes a 25 percent increase to the revised calculated sustainable pumping rate for Well 15 based on the Phase 3 production and recovery. Compliance with the recommended pumping schedule is necessary to avoid significant adverse impacts to Los Berros Creek.

(c) Interference

The supplemental analysis conducted by Geosyntec included review of hydrographs for onsite Wells 5, 8, 9, 12, and 13; these wells were instrumented with transducers and data loggers. Daily rainfall and the test pumping schedule are included on the hydrographs to facilitate evaluation of potential influence of both rainfall recharge and the project test pumping on water levels in these wells (refer to Appendix H).

The hydrograph for Well 8, which is completed in shallow alluvium along Los Berros Creek, shows a rapid 30-foot increase in water level in response to abundant rainfall in December 2010 and January 2011. Although discontinuous water level records and uncertainty about pumping limit interpretation, the hydrographs for Wells 5 and 9, which are completed in the Obispo Tuff, also show increases in water level following periods of abundant rainfall. Water level rise is particularly evident in Well 9 in response to the heavy rainfall in December 2010 and January 2011.

Hydrographs for Wells 12 and 13, which are deeper and completed within the Monterey Formation, show only a few feet of fluctuation in water level over the entire period of the testing program. Although these wells show an increase in water level in the range of two to four feet that is clearly related to the heavy rainfall in December 2010 and January 2011, time frame for replenishment of groundwater flowing within the deeper Monterey Formation aquifers is expected to be much longer (i.e., years, decades, or more).

Water levels recorded in Wells 5, 9, 12, and 13 during the testing program show no significant response to the three phases of pumping from Wells 10, 11, 14, and 15. No water level monitoring data are available from offsite wells such as the Tremper and Fitzgerald Wells to evaluate potential interference between the project wells and offsite wells during the production testing conducted at Wells 10, 11, 14, and 15. Based on available data, pumping from the project

wells is not expected to provide significant drawdown interference with other wells due to the additive overlap of the pumping cone of depression. However, production rates from other wells in the area could decrease if pumping from project wells is conducted in excess of sustainable yields of the aquifers, which would result in general lowering of the water levels due to depletion of groundwater storage. Although there are only a few data points for Wells F&T-1, F&T-2, FVW-1, and FVW-3, over periods of several years, the data show a general decline in groundwater elevation at these wells over 30 years.

With the exception of Well 9, the historical water supply for the vineyards and existing facilities are over a mile away from proposed domestic wells. The relatively close proximity of Well 9 (agricultural) to Wells 10 and 11 (proposed domestic supply), and the fact these wells all tap groundwater within fractures in the Obispo Tuff, is cause for concern that the long-term production rate of Well 9 may decrease with operation of Wells 10 and 11. Testing indicated hydraulic connection between Wells 9 and 11, but small influence of pumping from one on the other. However, Well 9 is close to a north-south trending drainage, which is also close to Well 10. If pumping from Well 10 induces increased recharge from this drainage to the fractured tuff unit in which Well 10 is located, less water may be available downstream for recharge to lower fractured tuff unit in which Well 9 is completed. Therefore, compliance with the sustainable pumping rates identified for each proposed domestic well is recommended to avoid adverse effects to on- and offsite wells.

As noted above, Wells 11, 12, and 13 are influenced by, and influence in turn, flow within Los Berros Creek. Use of these wells during the dry season would subsequently affect stream flow and availability of water downstream. The applicant proposes to eliminate use of Wells 12 and 13 to avoid this identified potential impact. Based on further analysis of Wells 10 and 11, production and use limitations are recommended to avoid effects year-round, and particularly during the dry season (refer to analysis above and Appendix H). Based on implementation of these measures, and compliance with the recommended pumping limitations and schedule, potential effects due to interference would be less than significant.

2) Impact Summary

Substantial depletion of groundwater supplies or substantial interference with groundwater recharge. Based on the analysis, there is existing adequate water supply to serve the project. Depletion of groundwater storage for each well will occur over time; however, sustainable yield and pumping rates are identified, which would allow for equilibrium to be established at each of the proposed domestic well locations. The drawdown, or lowering of the groundwater level, would be limited to each proposed domestic well, and would not result in a decrease in the production rate of other existing wells on or offsite. The existing agricultural wells would continue to serve the vineyards and proposed replacement vineyards. The proposed domestic wells are deep and have long-screened intervals; therefore, large amounts of drawdown during pumping and utilization of groundwater storage is possible during drought conditions.

This impact determination is contingent on the applicant's proposal to limit outdoor landscaping to a total of 1,500 square feet per residential lot and incorporation of standard indoor water conservation measures, and compliance with identified sustainable yield rates and monthly pumping schedules. The estimated project demand is 46.3 afy, and the estimated sustainable

yield is 62.4 afy. Based on implementation of and compliance with water conservation measures and identified mitigation, the potential impact would be less than significant.

Quality of groundwater. As presented above, the existing and proposed groundwater pumping at the project site does not have the potential to increase the threat of salt-water intrusion or subsidence of coastal aquifers. Based on implementation of and compliance with identified mitigation measures, the potential impact would be less than significant.

Quantity or movement of available surface or groundwater. As noted above, operation of proposed domestic Well 11 may have an adverse effect on streamflow within Los Berros Creek. A specific annual sustainable yield and pumping schedule is recommended to avoid reduction in streamflow, particularly during the dry season. Based on implementation of and compliance with identified mitigation measures, the potential impact would be less than significant.

As noted above, implementation of the project would not result in a reduction in available groundwater associated with other on- and offsite wells. The project site is not located within the Santa Maria Groundwater Basin; however, groundwater inflow from the project site comprises approximately four percent of the reported groundwater production budget for the NMMA portion of the Santa Maria Groundwater Basin. The 2011 NMMA report states that although recharge to alluvium along Los Berros Creek may be significant, "any groundwater flow from these [bedrock] formations to the NMMA is likely negligible" (page 12, NMMA, 2011). The recommended pumping schedule for the proposed domestic wells included measures to protect flows within Los Berros Creek. Therefore, implementation of the project would not have a substantial, or significant, adverse impact on the Santa Maria Groundwater Basin or offsite groundwater resources.

WAT Impact 1 **Development of the proposed project would potentially result in a direct, long-term impact to the surface and groundwater quantity if over-pumping or inefficient use of available domestic water resources occurs.**

WAT/mm-1 At the time of application for subdivision improvement plans, the applicant shall prepare a Water Master Plan for approval by the County Department of Planning and Building and Environmental Health Services. The Water Master Plan shall be developed by a County-qualified consultant with experience specific to interior and exterior water usage for each type of approved use (e.g., the residential landscape watering section would be prepared by a landscape architect or contractor familiar with the area's vegetation to provide guidelines for residents covering water conservation techniques, and lists of ornamental drought-tolerant plants that would do well in the native soils, etc.). The program shall address all consumer-controlled water uses (e.g., landscaping, washing, showers, etc.). <u>The program shall identify maximum water use of 0.44 acre feet per year, per lot.</u> Once the program is developed, the plan shall also specify how this information will be disseminated to all future home builders and residents.

a. The Water Master Plan shall show how the initial landscaping will have low-water requirements. As applicable, at a minimum, the following shall be used: (1) all common area and residential irrigation shall employ low water use techniques (e.g., soil moisture sensors, drip irrigation); (2) residential landscaping shall be limited to 1,500 square feet (maximum), with turf area limited to 300 square feet, and with remaining landscaping being drought-tolerant and having low water requirements (e.g., use of native vegetation, etc.); and (3) all common area landscaping shall use no turf or other water intensive groundcover and will use ornamental native plants where feasible.

b. The Water Master Plan shall include a Drought Water Management Program, which shall provide guidelines on how all land uses shall be managed during "severe" drought (drought exceeding three years), including landscaping. These measures would go into effect during periods of "severe" drought. This plan shall include, but is not necessarily limited to:
   1. The definition of a "severe" drought year (as defined by National Oceanic and Atmospheric Administration's Palmer Drought Severity method or other similarly recognized methodology);
   2. Identification of general measures available to reduce indoor water usage for future development;
   3. Identification of specific measures to be applied for landscape watering;
   4. Determination of appropriate early triggers to determine when "severe" drought conditions exist and process for initiating additional water conservation measures for tract and future development; ~~and,~~
   5. Proposed drought-management policies shall not include a "reduction or periodic cessation of agricultural irrigation" in order to provide additional water for domestic purposes~~.~~; and,
   ~~5.~~ 6. The Program shall include a provision to import and provide supplemental water to developed residential lots following implementation of water restrictions and conservation measures.

   Once it is determined that a "severe" drought condition exists, restricted (drought) water usage measures shall remain in effect until it is shown satisfactorily to the County that the "severe" drought condition no longer exists.

c. The Water Master Plan shall include provisions that operations of the domestic water system would be monitored in accordance with all applicable standards and regulations using a certified operator(s) to oversee well pumping, storage, distribution, maintenance of the system, and overall water quality in accordance with all State and County requirements. The Water Master Plan shall delineate all domestic wells, pump stations, water tanks, and pipelines, and include

a schedule and maximum production rate for each well by month. The Water Master Plan shall incorporate the following restrictions:

1. Use of Well 11 shall be prohibited during the months of August through November.
2. Maximum yield for Well 10 shall not exceed 6.5 afy.
3. Maximum yield for Well 11 (during the months of December through July) shall not exceed 28.1 afy.
4. Maximum yield for Well 14 shall not exceed 9.1 afy.
5. Maximum yield for Well 15 shall not exceed 18.8 afy.
6. Total maximum yield (including Wells 10, 11, 14, and 15) shall not exceed 62.4 afy.

d. The Water Master Plan shall be administered by the Mutual Water Company and enforced by the Homeowners Association.

Prior to issuance of any construction permit for Phase Two, the Mutual Water Company and Homeowners Association shall demonstrate compliance with the Master Water Plan. In the event the Mutual Water Company and Homeowners Association are out of compliance at any time for Phase One, they shall demonstrate compliance for a minimum of one year prior to issuance of any construction permit for Phase Two.

Prior to issuance of any construction permit for Phase Three, the Mutual Water Company and Homeowners Association shall demonstrate compliance with the Master Water Plan. In the event the Mutual Water Company and Homeowners Association are out of compliance at any time for Phase Two, they shall demonstrate compliance for a minimum of one year prior to issuance of any construction permit for Phase Three.

The Mutual Water Company shall prepare an annual report documenting (at a minimum): water use per residence and for the ranch headquarters; pumping rates for Wells 10, 11, 14, and 15; quantity and rate of tertiary treated water disposal; water loss summary; maintenance activities and corrective actions; and compliance with the conditions of the Water Master Plan. The annual report shall be stamped by a Registered Engineer. The Homeowners Association shall submit the annual report to the County Public Health Services and County Planning and Building Department, and the approved Water Master Plan and annual report shall available for review at the ranch headquarters. For the life of all phases of the project, in the event the Mutual Water Company and Homeowners Association are out of compliance with the Water Master Plan, no additional building permit, operational permit, or business license <u>that requires use of domestic potable water supply</u> will be issued for any lot

within the project until any identified remedial work has been completed.

WAT/mm-2 Prior to approval of subdivision improvement plans, and upon submittal of the Water Master Plan, the applicant shall provide funding for a County-qualified consultant to conduct an independent review of the Water Master Plan. The applicant shall provide a scope of work and cost estimate from the County-qualified consultant, to be reviewed and approved by the County of San Luis Obispo. The County-qualified consultant shall be under contract to the County of San Luis Obispo. Costs of the independent review, and any county administrative fees, shall be paid for by the applicant.

WAT/mm-3 At the time of application for subdivision improvement plans, the applicant shall submit revised plans showing the use of tertiary treated effluent to provide irrigation for common area landscaping in a manner consistent with the Basin Plan. These plans shall be incorporated into the Water Master Plan, including, but not limited to, proposed infrastructure and irrigation application rates and schedules.

WAT/mm-4 At the time of application for subdivision improvement plans (for common areas) and prior to permit issuance (for individual lots), the following measures shall be shown on applicable plans for landscaped and turf areas, consistent with the approved Water Master Plan:

a. To maximize drought-tolerance and minimize water usage, warm season grasses (excludes bermuda grass) such as buffalo grass, shall be used;
b. A computerized irrigation controller shall be installed that can estimate cumulative evapo-transpiration losses to establish the most efficient and effective watering regimes;
c. To minimize establishment of shallow roots, the following shall be avoided on turf areas, and provided in all applicable documents (e.g., educational brochure, Covenants, Conditions and Restrictions [CC&Rs], landscape plans): close mowing, overwatering, excessive fertilization, soil compaction and accumulation of thatch; and,
d. Watering times shall be programmed for longer and less frequently rather than for short periods and more frequently.

WAT/mm-5 Prior to issuance of building permits for individual lot development and the homeowners association facility, recreation center, and community center, proposed construction plans shall include indoor water conservation measures identified in the approved Water Master Plan including, but not limited to: low water-use toilets, showerheads, and faucets; automatic shut-off devices for bathroom and kitchen faucets or installation of high efficiency toilets; and point-of-use supplemental water heater systems or circulating hot water systems in bathrooms and kitchen.

For structures where the pipe from the hot water heater to any faucet is greater than 20 feet in length, apply one or more of the following: 1) install a hot water pipe circulating system for entire structure; 2) install "point-of-use" water heater "boosters" near all hot water faucets (that are greater than 20 linear pipe feet from water heater), or 3) use the narrowest pipe possible (e.g., from 1- to 0.5-inch diameter). This measure shall be included on an additional map sheet prior to recordation of the final map and incorporated in the Covenants, Conditions, and Restrictions.

WAT/mm-6 Prior to issuance of construction permits for individual lot development, the applicant shall submit landscape plans for the proposed parcels that include the following outdoor conservation measures identified in the approved Water Master Plan: limited irrigated landscape area of 1,500 square feet (maximum), turf area limited to 300 square feet, with remaining landscaping being drought-tolerant and having low water requirements (e.g., use of native vegetation), and incorporation of soil moisture sensors, and drip irrigation systems. This measure shall be included on an additional map sheet prior to recordation of the final map and incorporated in the Covenants, Conditions, and Restrictions.

WAT/mm-7 Prior to issuance of construction permits for individual lot development, the applicant shall install stream flow gauges within Los Berros Creek to monitor stream flow. Data shall be reported to the County Department of Public Works on an annual basis to provide long-term streamflow monitoring. Installation of the streamflow gauges shall be conducted consistent with identified Biological Resource mitigation for work within riparian and aquatic habitats, and regulatory permits and authorizations issued by federal and state agencies, including but not limited to the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, NOAA Fisheries, California Department of Fish and Wildlife, Regional Water Quality Control Board.

WAT/mm-8 At the time of application for subdivision improvement plans, plans shall show that water meters shall be installed at all wells providing water to the proposed project (potable and non-potable uses), and for each approved use/building, consistent with the approved Water Master Plan. All common landscaped areas and structures being provided water shall install a water meter. Monthly meter readings shall be taken at all meters and evaluated for possible water loss from pipes. Should a greater than 15 percent loss of delivered water be shown (or loss amount determined appropriate by the County Public Health Services), the leaking pipe(s) within the development shall be identified and replaced within 60 days from when the leak is detected.

Residual Impact The preparation, implementation, and enforcement of a comprehensive Water Master Plan is required to ensure that the use of onsite wells to support the project would not have an adverse effect on ground and

surface waters, including Los Berros Creek. While the project would require additional water use, compliance with restrictive measures related to use and production are recommended for the life of the project to support a conclusion that the proposed water source is sustainable, and would not have a significant adverse effect on water resources and agricultural production (both on- and offsite).

With implementation and enforcement of the above measures, the project's effect on water supply would be considered *less than significant with mitigation, Class II*.

3) Drainage and Flooding

Implementation of the proposed project, including all phases of development, would create additional impervious surfaces including rooftops, paved roads, driveways, and parking areas. Based on the hydrology report submitted by the applicant, and peer reviewed by the EIR consultant, implementation of the project would result in a 2.8 percent increase in net peak runoff during a 100-year storm (RRM Design Group, 2004). Table V.P.-8~~7~~ below shows the net increase of run-off for 10-year, 25-year, and 100-year storm events.

Based on the hydrology report, increases in flow rates over existing conditions would occur for approximately five minutes during storm events, before dropping to existing peak runoff rates. The report states that the peak increase in project-generated runoff would occur prior to the peak flow rate within Los Berros Creek; therefore, the amount of peak flow-rate increase would not result in a significant increase in offsite runoff rates. However, current regulations state that "post-development peak stormwater runoff discharge rates shall not exceed the estimated pre-development rate" (County of San Luis Obispo, 2011). In addition, the County Public Works Department has identified a concern regarding downstream flooding in the lower reaches of Arroyo Grande Creek during 2-year, 5-year, and 10-year storm events. Potential increases in flood levels within Arroyo Grande Creek as a result of the project would be a significant impact, and mitigation is identified below.

TABLE V.P.-8~~7~~
Net Peak Runoff Rate

Storm Event	Existing Conditions (cfs)	Proposed Project Conditions (cfs)	Percent Increase
10-year	2,806	2,931	4.4
25-year	3,527	3,662	3.8
100-year	5,424	5,575	2.8

Source: RRM Design Group, 2004

The proposed project's drainage plan includes the use of over-side drains and low-point drainage inlets within roadways to facilitate stormwater flow into existing natural drainages onsite (refer to Figures III-20 through III-26). Culverts would be installed at each proposed drainage

crossing. Stormwater runoff would be discharged into a series of existing natural ditches and swales prior to entering Los Berros Creek. No onsite water stormwater detention basins are currently proposed. Although the proposed tract map is vested, compliance with current regulations specific to stormwater runoff is recommended to mitigate drainage impacts to the maximum extent feasible. Elements that would be incorporated into the tract-wide improvement plans include Best Management Practices (BMPs) and Low Impact Development (LID) design techniques. Individual lot development should incorporate design techniques, including but not limited to strategies identified in the *San Luis Obispo County Homeowner's Guide to Rainwater Management for Low Impact Development* (San Luis Obispo Coalition of Appropriate Technology [SLO-COAT], 2010). For example roof runoff should be directed to drainage swales and not to impervious surfaces, rain barrels, stormwater ponds, bio-retention systems, or other methods as approved by the County Public Works Department. Implementation of these measures, consistent with current ordinance requirements, would promote groundwater recharge and mitigate potential draining and stormwater impacts to less than significant.

WAT Impact 2 **Implementation of the proposed project would create additional impervious surfaces, and would result in a net increase in peak stormwater discharge, resulting in a potentially significant impact.**

WAT/mm-9 Prior to recordation of the final map, the applicant shall comply with the following requirements, in addition to Post-Construction Stormwater Management Requirements for Development Projects in the Central Coast Region (California Regional Water Quality Control Board Central Coast Region, July 12, 2013) which shall apply to both subdivision tract improvements and individual lot development, and shall be submitted to the County Department of Public Works for review and approval:

a. Stormwater Quality Plan incorporating LID Standards, consistent with Land Use Ordinance Section 22.10.155.G.1, including but not limited to the following options:
   1. Parking lots shall be designed to drain to vegetated depressions, rain gardens, or open areas to allow for stormwater infiltration.
   2. Roof runoff should be directed to landscape areas (rain gardens) and / or vegetated drainage swales and shall not be directed to impervious surfaces that have the potential to contain pollutants.
   3. Vegetated drainage swales shall be constructed along the access driveway and discharge to an approved location in a non-erosive manner.
   4. Pavement disconnection within ~~the~~ parking areas.
   5. Other measures, as approved by the County Planning Department in consultation with Public Works, which may include stormwater basin(s).

b. BMPs and associated long-term maintenance plan, consistent with Land Use Ordinance Sections 22.10.155.G.7 and 22.10.155.G.8.

c. Final drainage plan consistent with Land Use Ordinance Section 22.52.110, demonstrating that post-development peak stormwater runoff discharge rates shall not exceed the estimated pre-development rate. The plan shall also include an evaluation of 2-year, 5-year, and 10-year storm events, and shall demonstrate no increases in flood levels within the lower reach of the Arroyo Grande flood channel (between Highway 1 and 22nd Street). The updated hydrology report shall address or incorporate the HEC HMS/HEC RAS Model developed in the Arroyo Grande Creek Erosion, Sedimentation and Flooding Alternatives Study (Swanson Hydrology and Geomorphology, January 2006).

d. These measures shall be implemented prior to final inspection.

e. These measures shall be included on an additional map sheet prior to recordation of the final map and incorporated in the Covenants, Conditions, and Restrictions.

WAT/mm-10 At the time of application for construction permits for individual lot development, the applicant shall show on the construction plans, project designs that will promote groundwater recharge (22.52.140) by application of Low Impact Development (LID) design techniques. At least three designer selected LID/stormwater runoff reduction measures shall be applied to the project, including but not limited to the following options:

a. Roof runoff should be directed to landscape areas (rain gardens) and / or vegetated drainage swales and shall not be directed to impervious surfaces that have the potential to contain pollutants.
b. Vegetated drainage swales, buffers, and strips shall be constructed along the access driveway and discharge to an approved location in a non-erosive manner.
c. Landscape plans shall incorporate tree boxes to capture and infiltrate stormwater runoff.
d. Pavement features shall be permeable where feasible.
e. Soil amendments shall be applied to increase infiltration rates.
f. Rain barrels and cisterns shall be used to reduce stormwater runoff.
g. Other measures, as approved by the County Planning Department in consultation with Public Works.

This measure shall be included on an additional map sheet prior to recordation of the final map and incorporated in the Covenants, Conditions, and Restrictions.

Secondary Impacts Implementation of mitigation measures WAT/mm-9 and WAT/mm-10 may result in additional ground disturbance as a result of grading and construction associated with drainage and stormwater management facilities and features. The final siting and design of these facilities and

features may result in additional impacts to farmland, biological resources, and cultural resources, similar to impacts identified for the project development.

Mitigation measures BIO/mm-1 through BIO/mm-19 and AR/mm-1 through AR/mm-11 shall apply.

Residual Impact Implementation of the project would create additional impervious surfaces, and would increase the potential for additional stormwater runoff. While the tentative map is vested, mitigation is included to ensure compliance with existing regulations and policies related to stormwater, drainage, and LID. With implementation of the above measures, this impact would be considered *less than significant with mitigation, Class II*.

4) Water Quality

(a) Construction-related Sedimentation and Pollutant Discharge

During construction activities for all proposed phases of development, grading operations would require the removal of vegetation, disturbance of soil layers, and the creation of soil stockpiles. This would expose large areas of soil to the erosive forces of rainfall and runoff as storm water leaves the project site. The severity of erosion hazard impacts would be high based on the steepness of natural topography and proposed cut and fill slopes. The adverse effects of erosion and sediment transport include deposition of sediment within downstream drainage structures, which may increase the risk of localized flooding and the introduction of sediment into surface waters and sensitive habitats.

Construction activities could also affect water quality due to the potential for pollutants to be discharged to surface water bodies. Construction of the proposed project would involve the use, fueling, and storage of heavy equipment onsite. Soil and associated building material has the potential to enter a stream and drainage channels, cause an increase in suspended sediments, sedimentation of aquatic habitat, and introduce compounds that could potentially be toxic to aquatic organisms. Construction materials such as fuel, oil, paints, and concrete could be harmful to aquatic species if released into the environment. In addition, construction of roadbeds and structures requires use of asphalt, cement and concrete, and adhesives. These materials can be sources of pollutants in storm water discharges. These impacts during the construction phase of the project are potentially significant.

During project construction, a number of techniques are available to reduce the potential for erosion, sedimentation, and introduction of pollutants into runoff water and downstream sensitive habitat. Implementation of the proposed project improvements, construction of facilities, and installation of infrastructure would result in disturbance exceeding one acre; therefore, a Stormwater Pollution Prevention Plan (SWPPP) would be required. The SWPPP would evaluate the minimum required BMPs identified in the SWPPP Preparation Manual. BMP examples would include: erosion control barriers such as silt fences, hay bales, drain inlet protection, and gravel bags; preservation of existing vegetation to the maximum extent feasible, and; stabilization of disturbed areas with vegetation or hard surface treatments upon completion of construction in any specific area. All inactive disturbed soil areas are required to be stabilized

with both sediment and temporary erosion control prior to the onset of the rainy season (October 15 to April 15). The best approach to minimizing the potential for erosion is to minimize the time during which bare soil is exposed to the elements. To achieve this goal, construction should be scheduled to occur during the dry season of the year to the extent practicable and the paving and landscaping operations should be completed as quickly as possible. In the event construction activities occur during the rainy season (October 15 to April 15), additional erosion and sedimentation control measures are necessary to ensure construction impacts are minimized.

WAT Impact 3 **Vegetation removal, grading, trenching, and construction activities associated with all phases of development, including tract improvements, facility construction, individual lot development, and utility installation would result in erosion and down-gradient sedimentation and pollutant discharges (e.g., sediment, oil, fuel, materials) into sources of surface water, including Los Berros Creek and its tributaries.**

WAT/mm-11 Prior to issuance of construction permits and prior to ground disturbance for all development, the applicant shall submit a detailed sediment and erosion control plan pursuant to Land Use Ordinance Sections ~~22.52.090 and County Code Title 8 Chapter 8.68 (Stormwater Pollution Control and Discharge Ordinance)~~ 22.10.155 (Stormwater Management), 22.52.120 (Erosion and Sedimentation Control Plan Required), and 22.52.130 (Stormwater Pollution Prevention Plan Required) for approval, which shall address both temporary and permanent measures to control erosion and reduce sedimentation. Erosion and soil protection shall be provided on all cut and fill slopes. Revegetation shall be facilitated by mulching, hydro-seeding or other methods, and shall be initiated as soon as possible after completion of grading, and prior to the onset of the rainy season (October 15). Permanent revegetation and landscaping shall emphasize drought-tolerant perennial ground coverings, shrubs, and trees, to improve the probability of slope and soil stabilization without adverse impacts to slope stability due to irrigation infiltration and long-term root development. If vegetation is included as the means to stabilize the soils, it shall be planted at least 30 days before the beginning of the wet season, and watered regularly to ensure adequate root establishment. Otherwise, non-vegetative means shall be employed. All plans shall show that sedimentation and erosion control measures are installed prior to any other ground disturbing work.

This measure shall be included on an additional map sheet prior to recordation of the final map and incorporated in the Covenants, Conditions, and Restrictions.

WAT/mm-12 Prior to issuance of construction permits and prior to ground disturbance, the applicant shall prepare and submit a Notice of Intent and SWPPP to the RWQCB or SWRCB in accordance with the requirements of the State General Order related to construction projects. The SWPPP shall identify

storm water management procedures, pollution control technologies, spill response procedures, and other means that will be used to minimize erosion and sediment production and the release of pollutants to surface water during construction. Compliance will be verified by the County Environmental Monitor through submission of compliance reports. A copy of the SWPPP shall be submitted to the County for approval to show that sedimentation and erosion control measures are installed prior to any other ground disturbing work.

This measure shall be included on an additional map sheet prior to recordation of the final map and incorporated in the Covenants, Conditions, and Restrictions.

WAT/mm-13 Prior to issuance of grading permits, the applicant shall incorporate Natural Resource Conservation Service (NRCS) Field Office Technical Guide (FOTG) practices into all grading, erosion, and sedimentation control plans. The NRCS or the ~~Upper Salinas-Los Tablas Resource Conservation District can be contacted at (805) 434-1036~~ Coastal San Luis Resource Conservation District can be contacted at (805) 772-4391 for assistance in implementing FOTG practices.

This measure shall be included on an additional map sheet prior to recordation of the final map and incorporated in the Covenants, Conditions, and Restrictions.

Residual Impact Implementation of the project would create additional impervious surfaces, and would increase the potential for additional stormwater runoff and discharge of pollutants into surface waters. While the tentative map is vested, mitigation is included to ensure compliance with existing regulations and policies related to stormwater, drainage, and water quality. With implementation of the above measures, this impact would be considered *less than significant with mitigation, Class II*.

(b) Operational Sediment and Pollutant Discharge

Implementation of the proposed project would create additional impervious surfaces, and would potentially result in increased concentrations of water pollutants (e.g., oils, fuels, and other hydrocarbons) in stormwater runoff. In addition, the proposed project would discharge collected stormwater into natural swales and ditches, which would gather sediment and transfer that sediment into Los Berros Creek. Another potential impact example would be the design of culverts, specifically at their outlet. If rock or hard surfaces are not placed at the outlet of a culvert, the water, which has been concentrated in the culvert, has more energy to cause erosion when it reaches the ground surface. This eroded material is then transferred downstream and deposited when the velocity of the water flow is decreased. If designed correctly and maintained, culverts would effectively transport runoff from storms to a natural water body while not degrading the quality of that water. If stormwater management systems for project-wide tract improvements and individual lot development are not properly designed and maintained, potential impacts could occur from future development of the proposed project. Several

measures are currently identified in the County's Land Use Ordinance (Section 22.10.155-Stormwater Management, Section 22.52.120-Erosion and Sedimentation Control Plan Required, and Section 22.52.130-Stormwater Pollution Prevention Plan Required). Additional recommendations are identified in the *Arroyo Grande Creek Erosion, Sedimentation and Flooding Alternatives Study* (Swanson Hydrology + Geomorphology 2006), which includes BMPs to minimize sedimentation in Arroyo Grande Creek. Los Berros Creek is a tributary to Arroyo Grande Creek; therefore, applicable BMPs are identified in mitigation measures WAT/mm-14 below.

WAT Impact 4 **The creation of additional impervious services may result in accelerated and concentrated stormwater runoff within natural drainages, causing gully erosion, down-gradient sedimentation, and discharge of fuel, oils, and other hydro-carbon based pollutants into sources of surface water including Los Berros Creek.**

Implement WAT/mm-9 and WAT/mm-10.

WAT/mm-14 Prior to issuance of construction permits for tract improvements, the applicant shall submit plans incorporating best management practices to reduce and diffuse stormwater runoff (e.g., rip-rap or other technologies), consistent with the County of San Luis Obispo Post Construction Requirements Handbook (March 2014). The plan shall also demonstrate how pollutants and sediments will be removed from stormwater runoff prior to discharge into natural drainage courses (e.g., low impact development, biofiltration treatment systems, filter blankets, or particulate filters). ~~Proposed methods may include, but not be limited to, filter blankets or particulate filters.~~ The Homeowners Association shall be responsible for the long-term maintenance of stormwater management facilities and infrastructure. Proposed measure may include, but not be limited to the following best management practices:

Tract Infrastructure and Common Areas

a. Disperse/Slow Runoff: Use grass-lined swales, infiltration trenches, rolling dips and water bars, out-slope roadways, use compacted gravel or decomposed granite on applicable driveways and roads.
b. Control Concentrated Runoff: Place flow into culverts appropriately sized for runoff volume, extend culvert outlets and fit with energy dissipators, use curbs where applicable to direct runoff on paved roads.
c. Soil Stabilization: Pave road surfaces with asphalt, compacted gravel, or decomposed granite (as applicable), line drainage ditches with rocks, install retaining/slough walls to stabilize road cuts and trap sediments, stabilize road cuts and sidecast with vegetation.
d. Sediment Retention: Install staged catch basins, install vegetated filter strips, install organic debris filters, and install sediment retention basins.

Individual Lot, Wastewater Treatment Facility, and Ranch/HOA Headquarters Development

a. Disperse Runoff: Direct runoff to infiltration trenches, direct runoff into grass-lined swales and/or open flat vegetated areas.
b. Control Concentrated Runoff: Install roof gutter and downspout systems and control drainage in pipe, install pipe extensions and energy dissipators to safe outlet.
c. Soil Stabilization: Mulch and plant vegetation on exposed soils, install retaining structures to support fill slopes, install retaining/slough walls on cut slopes.
d. Sediment Retention: Install vegetated filter strips in drainage paths and/or in flow dispersion areas, install catch basins at inlets or culvert discharge points, control outflow by dispersion and/or energy dissipation.

Residual Impact Implementation of the project would create additional impervious surfaces, and would increase the potential for additional stormwater runoff and discharge of pollutants into surface waters. While the tentative map is vested, mitigation is included to ensure compliance with existing regulations and policies related to stormwater, drainage, and water quality. With implementation of the above measures, this impact would be considered *less than significant with mitigation, Class II*.

5) Agricultural Operations

Continued and proposed agricultural operations are not considered discretionary actions to be considered as part of the project. The applicant is required to comply with the RWQCB's 2012 Los Berros Subwatershed TMDL, including the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Agricultural Order).

b. Phase One

1) Wastewater Treatment Facility

(a) Water Supply

The project site is located within the Oceano HSA (SWRCB, 2002). Groundwater depth in the area of the proposed disposal area is approximately over 15 feet below ground surface. Using a required minimum separation of five feet from the ground surface and depth to groundwater, adequate separation to groundwater would exist. Given the fact that the treatment level of the wastewater would be tertiary-disinfected (well above typical discharge requirements), depth to groundwater is not anticipated to be a significant impact.

(b) Water Quality

Two lined wet weather storage ponds are proposed to facilitate management of the treated domestic effluent (refer to Figures III-13 and III-14). Domestic recycled water would be stored separately from winery process recycled water in an adjacent storage pond. Well 6 is located

immediately adjacent to and down gradient from the disposal field area. The applicant proposes to implement a 100-foot setback between the treated wastewater application area and Well 6 and outer perimeter of vineyards. Well 6 is a pre-existing agricultural supply well, and would not be used to supply domestic water for residential uses. The proposed disposal area is located outside of the 100-year flood plain and maintains a 100-foot setback from all wells, springs, and creeks (refer to Figure III-16).

Surface waters near the proposed disposal field include Los Berros Creek, which flows in a southwesterly direction along the south/eastern edge of the property. Los Berros Creek is located down gradient approximately 200 feet southeast of the proposed disposal area. There are also several small spring-fed tributary streams feeding Los Berros Creek that border the east side of the property along Upper Los Berros Road. Los Berros Creek has been designated as having multiple beneficial uses in the RWQCB's Central Coast Basin Plan. Due to the close proximity and topographic conditions existing between the proposed disposal area and Los Berros Creek, the potential exists that if system failure occurs, treated effluent has the potential to flow directly into the creek. Adequate measures should be taken to assure that flood or surface drainage waters do not erode or otherwise damage the discharge facilities. The applicant proposes two feet of freeboard, and operation of an alarm system in the event of high waters. The applicant shall be required to demonstrate management and maintenance of the facility for the life of the project, feasibility and response of emergency contingency measures, and compliance with regulations specific to the treatment, storage, and disposal of wastewater (i.e., CCR Title 22, Basin Plan, County Land Use Ordinance). Based on the required compliance with existing regulations, and preparation and implementation of an emergency contingency plan to avoid or minimize accidental release of effluent into Los Berros Creek, potential impacts to water quality would be less than significant.

WAT Impact 5 **Incidental failure of treated effluent storage facilities could result in over-topping or sudden accidental release of treated effluent resulting in direct impacts to Los Berros Creek.**

Implement WW/mm-1:

WW/mm-1 Prior to issuance of construction permits for the wastewater treatment plant and associated collection, storage, and disposal facilities, the applicant shall prepare and submit project-specific emergency contingency plan including health and safety procedures, implementation of best available technology to ensure de-chlorination and oxidization of treated effluent, and specific operation and maintenance instructions for all system components and equipment during normal operation and in case of reasonable emergency situations. The plan shall also identify emergency notification procedures for alerting onsite and downstream users whenever an unauthorized release of project-generated effluent occurs. Emergency notification should be given as soon as the release is discovered so that downstream well users have adequate response time to take any appropriate measures. In addition to required permits and authorizations, the plan shall be submitted to the Central Coast Regional Water Quality

Control Board, County Department of Public Works, and County Public Health Services for review and approval.

This measure shall be included on an additional map sheet prior to recordation of the final map.

Residual Impact The development and operation of facilities for wastewater collection, treatment, and disposal creates a potential source of pollutants, which may adversely affect ground and surface waters in the event of an unanticipated incident (i.e., leak, spill, malfunction). These risks are considered in the preliminary design of the facility, and will be further evaluated by the County of San Luis Obispo and Regional Water Quality Control Board. In addition to compliance with standard regulations, and proposed design features to prevent an adverse effect to water resources, mitigation is recommended to include the preparation of a project-specific emergency contingency plan to address unexpected events. With implementation of the above measure, this impact would be considered *less than significant with mitigation, Class II*.

6. Cumulative Impacts

a. Water Supply

No major discretionary projects have been approved or are currently under consideration by the County within the project area or watersheds affecting Los Berros Creek. Existing subdivisions in the region, including Rim Rock, Rancho Nipomo, and Highland Hills, contain currently undeveloped lots that may be developed in the future. These residential lots rely on underlying groundwater for water supply. Existing and future use of groundwater wells may affect flows in Los Berros Creek and underlying supply in fractured rock and tuff, depending on the depth, location, and pumping yield of the well. Agricultural uses onsite and in the area, such as orchards on the Fitzgerald Ranch and other crops within Los Berros Canyon and surrounding areas, fluctuate at the discretion of the landowners, and are anticipated to vary in crop type and production, which affect water demand from private wells. The applicant has not submitted an application for a Dude Ranch, currently conceptually located in the eastern portion of the property. In the event the applicant moves forward with a land use permit request for a Dude Ranch, the subsequent additional water demand would be approximately 13 afy, to be provided by an onsite private well. Currently, a shallow (six feet deep) well in the Los Berros Creek channel provides water to a residence located on the parcel proposed for the Dude Ranch. Use of this well to provide water for the Dude Ranch may result in adverse effects to Los Berros Creek, including a reduction in base stream flow during dry months. At the time an application is submitted, project-specific information would be provided including identification of the well(s) proposed to provide water supply, and a project-specific analysis of hydrological impacts. Based on the underlying geology, and characteristics of the wells evaluated in this EIR for proposed residential domestic use, identified wells have the capacity to meet water demand, and caps are placed on annual water use to address a sustainable yield of each well, achieve equilibrium, avoid or minimize interference with other domestic and agricultural wells, and avoid adverse impacts to Los Berros Creek.

The proposed project would be supplied by the newly developed groundwater resources located on the project site. Due to the fractured subsurface geology that underlies the project site, the wells proposed for use tap into individual aquifers, and would not contribute to regional groundwater withdrawal. Under average rainfall conditions, operation of the proposed project would not have a significant effect on coastal aquifers (Arroyo Grande Plain, Santa Maria Groundwater Basin); however, during the dry season, use of Well 11 may influence flow within Los Berros Creek. This effect would be exacerbated by prolonged drought conditions (over three years). As previously noted, water levels have declined over the past 30 years on the project site in individual wells, and comments received from landowners in the immediate area in response to the Draft EIR (2008) have noted a decline as well. Due to similar geology in the area, and the cumulative use of offsite wells within and near the creek, this effect may also occur on adjacent properties within the Los Berros Creek watershed and surrounding areas including partially undeveloped residential subdivisions, resulting in a significant cumulative effect on water resources.

The proposed project would result in an approximately 22 to 26 percent increase in water production, compared to baseline conditions. The use of wells near the creek, including agricultural Well 9 and proposed domestic Wells 10 and 11, may contribute to reductions in Los Berros Creek baseflow. Project-specific mitigation measures are recommended to reduce overall water usage, ensure implementation of domestic water conservation measures during drought conditions, comply with recommended water production rates for domestic Wells 10 and 11, and avoid use of Well 11 during the driest part of the year (August through November). Implementation of these measures would reduce the project's contribution to this cumulative impact.

WAT Impact 6 **During prolonged drought conditions, operation of the proposed project would contribute to the cumulative reduction of available water supply within the Los Berros Creek watershed, and the reduction of downstream flow.**

Implement WAT/mm-1 through WAT/mm-8.

Residual Impact The continued use of water resources within the Los Berros Creek Watershed will have an adverse effect on the availability of water within and adjacent to the creek. While agricultural water use is not under the discretion of the County, strict measures can be applied to other uses, such as residential development, to minimize the project-specific effect on water supply. While the project would contribute to increased water demand, compliance with restrictive measures related to use and production are recommended for the life of the project to support a conclusion that the proposed water source is sustainable, and would not have a significant adverse cumulative effect on water resources and agricultural production (both on- and offsite). With implementation of the above measures, this impact would be considered *less than significant with mitigation, Class II*.

b. Drainage

Implementation of the proposed project, in addition to future adjacent residential and agricultural development within the Los Berros Creek watershed would potentially interfere with natural drainage patterns and peak runoff discharge rates. The applicant proposes to maintain existing drainage patterns by allowing stormwater to discharge into existing natural swales, which direct runoff into Los Berros Creek. Regarding cumulative development within the watershed, the County Land Use Ordinance requires submittal of a drainage plan on a project specific basis, which minimizes individual projects' effects on drainage and surface water resources. No large projects are currently proposed within the watershed; however, future development in the area would be required to comply with standard requirements. Implementation of project-specific mitigation, and compliance with standard requirements would minimize the potential for significant cumulative drainage impacts.

WAT Impact 7 **Implementation of the proposed project may result in cumulatively significant impacts to existing drainage patterns and flow rates within the Los Berros Creek watershed.**

Implement WAT/mm-9 and WAT/mm-10.

Residual Impact Implementation of the project would contribute to area-wide effects on stormwater runoff rates and downstream flooding. Mitigation is recommended to ensure consistency with existing regulations related to drainage, stormwater runoff, and LID. With implementation of the above measures, the cumulative impact would be considered *less than significant with mitigation, Class II*.

c. Water Quality

Sedimentation and pollutant discharge occurs during both the construction and operational phases of development. The County Land Use Ordinance requires preparation and implementation of an erosion and sedimentation control plan for project requiring a grading permit, and a SWPPP is required for projects resulting in the disturbance of over one acre. Based on the amount of proposed grading, depth of cut and fill slopes, and topography of the project site, the potential water quality impacts would be cumulatively significant. Implementation of erosion and sedimentation control measures and BMPs associated with a SWPPP would minimize potential cumulative impacts to less than significant.

The surrounding area is rural, and wastewater treatment and disposal is generally managed by individual septic systems and leachfields. The proposed community wastewater system is unique to the immediate area, although similar systems are operating in the Nipomo area. All development in the County is regulated by the state and local codes and ordinances, which would also apply to the proposed project. Preparation and implementation of an emergency contingency plan (as previously noted) would further mitigate the potential for accidental discharge and subsequent adverse effects to water quality within Los Berros Creek and downstream surface waters. Based on compliance with existing regulations and implementation of recommended mitigation, potential cumulative impacts would be less than significant.

WAT Impact 8 **Implementation of the proposed project may result in cumulatively significant impacts to water quality, including discharge of sediments and other pollutants during construction and operation of the project.**

Implement WAT/mm-11 through WAT/mm-14 and WW/mm-1.

Residual Impact Implementation of the project would contribute to area-wide effects on water quality. Mitigation is recommended to ensure consistency with existing regulations in place to avoid or minimize erosion and down-gradient sedimentation, and discharge of hydrocarbons, chemicals, and other urban pollutants into surface waters. With implementation of the above measures, this cumulative impact would be considered *less than significant with mitigation, Class II*.

This page intentionally left blank.