APPENDIX M

Water Supply Assessment

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WATER SUPPLY ASSESSMENT

Water Code §10910 et seq.

To: City of San Luis Obispo
990 Palm Street
San Luis Obispo, CA 93401

Project Title: Avila Ranch Water Supply Assessment

The following determination has been made regarding the above-described project:

- [x] The projected water demand for the project was included in the City's most recently adopted urban water management plan.
- [ ] Based on additional sources of information, a sufficient water supply is available for the project. The total water supplies available to the City during normal, single-dry, and multiple-dry years within a 20-year projection will meet the projected water demand under the project in addition to the demand of existing and other planned future uses, including, but not limited to, agricultural uses.
- [ ] A sufficient water supply is not available for the project. *[Plan for acquiring and developing sufficient supply attached. Water Code§ 10911 (a)].*

The foregoing determination is based on the following Water Supply Assessment (WSA) Information and supporting information in the San Luis Obispo General Plan Update Background Report Section 5.1, Water and 5.3 Wastewater, as well as the records of the City of San Luis Obispo. The Land Use Circulation Plan (LUCE) WSA covers the cumulative water supply impacts, and this WSA will cover the project specific impacts.

Signature Date Title

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Appendices

1. INTRODUCTION

This water supply assessment is provided for the proposed Avila Ranch for the City of San Luis Obispo, pursuant to the requirements of Section 10910 of the State Water Code, as amended by Senate Bill No. 610, Chapter 643 (2001).

1.1 Background

Senate Bill No. 610, effective January 1, 2002, requires a city or county, which determines that a "project" (as defined in Water Code§ 10912) is subject to the California Environmental Quality Act (CEQA), to identify any public water system that may supply water for the project and to request those public water systems to prepare a specified water supply assessment. The assessment is required to include an identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project and water received in prior years pursuant to those entitlements, rights, and contracts. The assessment must be approved by the governing body of the public water system supplying water to the project. If the projected water demand associated with the project was included as part of the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in the water supply assessment. The bill requires the city or county, if it is not able to identify any public water system that may supply water for the project, to prepare the water supply assessment after a prescribed consultation. If the public water system concludes that water supplies are, or will be, insufficient, plans for acquiring additional water supplies are required to be submitted to the city or county. The city or county must include the water supply assessment in any environmental document prepared for the project pursuant to the act. It also requires the city or county to determine whether project water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses.

A "project" under Section 10912 includes the following:

a. A proposed residential development of more than 500 dwelling units.
b. A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
c. A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
d. A proposed hotel or motel, or both, having more than 500 rooms.
e. A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
f. A mixed-use project that includes one or more of the projects specified in this subdivision.
g. A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

The Avila Ranch project includes at least 500 units and 15,000 square feet of shopping center area, and the SB610 requirements apply to the project.

1.2 Project Location and Description

The proposed Avila Ranch is located in the City of San Luis Obispo along the north side of Buckley Road, extending from Vachell Lane to approximately 4,000 feet to the east, and approximately 2,000 feet to the north. The site consists of over 150 acres of property zoned for Business Park uses that will be developed into over 700 dwelling units and several land use categories; therefore, the requirements of Section 10910 of the California Water Code apply to the proposed project. The property was annexed to the City in 2008 and is covered by the City's UWMP and Water and Wastewater Element.

2. WATER SUPPLY

Water Code Section 10910(b) requires the identification of the public water system that may serve the project. The City is the sole water purveyor within the city limits and will provide water to the proposed Avila Ranch. The City's water is supplied from multiple surface water sources, in addition, to recycled water and groundwater to supplement irrigation demands.

The Water and Wastewater Element of the General Plan, first adopted in 1987 and most recently updated in 2010, specifies that the City utilize multiple water resources to meet its water supply needs. Having several sources of water avoids dependence on any one source that may not be available during a drought or other water supply reduction or emergency. With the update of the Water and Wastewater Element, the City Council reaffirmed the policy for a multi-source water supply. Consistent with the multi-source water supply concept, the City obtains water from five sources:

- Salinas Reservoir (Santa Margarita Lake) and Whale Rock Reservoir: Combined Safe Annual Yield 6,940 acre-feet (AF)/year
- Nacimiento Reservoir: 3,380 AF/year dependable yield/ contractual limit
- Recycled water from the City's Wastewater Reclamation Facility (WRF): potentially 1,000 AF/year available
- Groundwater: Supplemental usage, 100 AF/year in 2011

2.1 Surface Water Supply:

The Salinas Dam was built in 1942 by the War Department to supply water to Camp San Luis Obispo and secondarily, to meet the water needs of the City of San Luis Obispo. The Salinas Reservoir (Santa Margarita Lake) captures water from an 112-square mile watershed and can store up to 23,843 AF. Since the late 1940s, the San Luis Obispo County Flood Control and Water Conservation District has operated the Salinas Reservoir under a lease from the U.S. Army Corps of Engineers. Water from the reservoir is pumped through the one-mile long Cuesta Tunnel, and then flows by gravity to the City's Water Treatment Plant on Stenner Creek Road.

The Whale Rock Reservoir is a 40,662 acre-foot reservoir created by the construction of an earthen dam on Old Creek near the town of Cayucos. The Whale Rock Dam captures water from a 20.3 square mile watershed and water is delivered through 17.6 miles of 30-inch pipeline and by two pumping stations. The City of San Luis Obispo owns 55.05 percent of the water storage rights at the reservoir. The remaining water storage rights are divided between the two State agencies with Cal Poly owning 33.71 percent and the California Men's Colony owning 11.24 percent.

The Nacimiento Reservoir provides flood protection and is a source of supply for groundwater recharge for the Salinas Valley. It is owned and operated by the Monterey County Water Resources Agency. Since 1959, the San Luis Obispo County Flood Control and Water Conservation District has had an entitlement to 17,500 AF/year of water from the reservoir for use in San Luis Obispo County. Approximately 1,750 AF/year have been designated for uses around the lake, leaving 15,750 AF/year for allocation to other areas within the County of San Luis Obispo.

2.2 Recycled Water Supply:

Recycled water was envisioned as part of the City's overall water supply strategy since the 1980s. In 1994, the City began a major capital improvement project at the City's Water Reclamation Facility (WRF) that included addition of tertiary treatment and other unit processes required to meet stringent effluent quality limits, set forth by the Regional Water Quality Control Board, intended to protect and enhance the receiving waters of San Luis Obispo Creek. The City completed construction of the Water Reuse Project in 2006 and recycled water deliveries began in May that year. The main non-potable water source is the City's WRF which has a design flow rate of 5,700 AF/year (5.1 mgd). The City is required to release 1,807 AF/year of flow to San Luis Creek for environmental enhancement. In 2013, recycled water was delivered to 29 sites with total usage over 177 AF/year. Two new sites (American's Tire and Mangano Homes streetscape) since then have subsequently been connected to the city's recycled water distribution system to provide landscape irrigation. The recycled water usage for 2014 and 2015 totaled 185 AF/year and 168 AF/year, respectively. This is well below the WRF's maximum design capacity of approximately 2,800 AF/year (2.5 mgd). The Water Reuse project has the potential to deliver 1,000 AF/year of recycled water for appropriate non-potable uses including landscape irrigation, construction water for dust control and some industrial purposes.

2.3 Groundwater Supply:

The City's major source of water was groundwater and local creeks until 1944 when it began to use water from Salinas Reservoir. As a result of the drought beginning in 1986 and decreasing surface water supplies, the City activated groundwater wells in 1989 to meet water demand. The principal source of groundwater for the city is the San Luis Obispo Groundwater Basin. The basin is fifteen square miles and is drained by San Luis Obispo Creek. It extends from the northern limits of the city and continues southerly along the alignment of the creek to just south of Buckley Road. In the Los Osos Valley area, the basin extends four miles west to the Los Osos Basin, which includes the community of Los Osos/Baywood Park.

In 1990, at the height of the drought, the City had seven potable wells that accounted for approximately 50 percent of the water supplied during that period. The current groundwater program uses one potable well, one non-potable construction water well, and two irrigation wells. Two other of the City's wells were shut down in 1992 and 1993 due to elevated nitrate levels.

The majority of groundwater use from the San Luis Obispo Groundwater Basin is used for agricultural purposes and private property uses. The basin has not been defined to be in overdraft and has not been adjudicated. According to DWR's Bulletin 118, the basin is relatively small and recharges very quickly following normal rainfall years. Because of these factors, no groundwater management plan has been prepared for the basin. In 2011, the City relied on

groundwater to supply approximately two percent of the city's annual water demand. The City stopped the supply of groundwater to its drinking water system in April 2015 due to new regulatory requirements that would require additional costly treatment of the wells before the water could be used. The groundwater wells remain in operable standby condition should use of groundwater be required in the future. The City no longer relies on groundwater for long-term community water demands because of water quality and reliability issues and does not consider this source of supply as part of its water resources planning.

3. URBAN WATER MANAGEMENT PLAN APPLICABILITY

Water Code Section 10910(c)(1) requires a determination of whether or not the project was included in the City's most recently adopted Urban Water Management Plan (UWMP), adopted on June 21, 2011. The UWMP provides a description of the City's service area, demographics, multi-source water supply, treatment, and conveyance/distribution facilities. The UWMP also includes historical and future water demand to serve the buildout of the City consistent with the General Plan which includes the Avila Ranch Project.

Since 1987, the City's General Plan has included a Water and Wastewater Management Element. The water section of the Element includes policies related to present water demand and overall projected water demand. The Element also addresses water conservation, water resource availability, accounting for siltation, multi-source water supply, and recycled water.

The LUCE update included a Water Supply Assessment for the areas within the City's Urban Reserve Line (URL). This WSA was for undeveloped and developed lands to be developed pursuant to the LUCE.

4. WATER RESOURCE AVAILABILITY

As described in the Water Supply Section 2, the City has five water resources to meet current and future City water demands: Salinas Reservoir (Santa Margarita Lake), Whale Rock Reservoir, Nacimiento Reservoir, recycled water from the City's Water Reclamation Facility, and groundwater. In order to ensure water supply reliability, the City determined the amount of water available from these water resources on an annual basis. The method to determine the available yield from each resource varies based on water right, contractual agreement, or the amount of water actually supplied.

For Salinas and Whale Rock Reservoirs the term "safe annual yield" is used to define the annual amount of water available from these two resources. The two reservoirs are operated in a coordinated manner to increase the available water. In contrast, the "dependable yield" from Nacimiento Reservoir is the contractual amount of water to which the City has rights. Since Nacimiento Reservoir is operated as a water supply project for Monterey County, the concept of safe annual yield is not used for the City's contractual water supply from this source. For recycled water, the annual amount delivered is counted in the water availability calculation. Though groundwater is part of the City's water portfolio, due to the limitations on its use, the City will not consider this supply in estimating available water resources to meet community needs.

Another issue is the potential impact of climate change on the City's water resources. Climate change could have a significant impact on future water availability in the form of droughts or increased siltation in the reservoirs as a result of wildland fires which could affect the safe annual yield of the City's reservoirs. The City is currently experiencing its fourth consecutive year of drought conditions, yet has been able to maintain a 36.5% reserve (reliability reserve plus secondary water supply divided by primary water supply) above and beyond the amount

needed for full buildout for more severe or unforeseen circumstances. The City continues research on this topic and will monitor the potential for long-term impacts to its water supply resources.

Tables 4-1 and 4-2 are summaries of the City's available water resources.

Table 4-1. City Potable Water Resource Availability

Water Resource	2014 Annual Availability	
Salinas Reservoir and Whale Rock Reservoir	6,940 AF	Safe Annual Yield
Nacimiento Reservoir	3,380 AF	Contractual Limit
Siltation to 2060	(500 AF)	Policy A 4.2.2
TOTAL	9,820 AF	

Source: City of San Luis Obispo Water Resources Status Report, 2015

Note: Potable water supplies and recycled water supplies are separated for the purpose of this evaluation since recycled water supplies cannot be used for some irrigation and domestic water purposes.

Table 4-2. City Non-Potable Water Resource Availability

Water Resource	2014 Annual Availability	
Water Reclamation Facility	5,700 AF	2010 UWMP Section 5.2
Discharge to San Luis Obispo Creek	(1,807 AF)	2010 UWMP Section 5.2
Recycled Water Use	(185 AF)	2015 Water Resource Status Report
Recycled Water Distribution Capacity	1,000 AF	2008 OASP WSA
TOTAL	815 AF	

5. WATER SUPPLY RELIABILITY

The water supply and reliability analysis provided by the 2010 UWMP uses historical information since 1941 for evaluation of water supply availability and safe annual yield for the Salinas and Whale Rock Reservoirs. The analysis of water supply availability is based on the controlled drought period of the two reservoirs, which occurred between 1987 and 1991. Table 5-1 below summarizes the results of that analysis and indicates the City's water resources are reliable during extended drought periods. Through the coordinated operation of Salinas and Whale Rock Reservoirs and the ability to use other available water supplies (Nacimiento, recycled water, and limited groundwater), climatic conditions such as prolonged drought do not impact the City's water supply.

As required by Section 5 of the City's Water and Wastewater Element, the City will account for water supplies necessary to meet three specific community needs, including primary water supply, secondary water supply, and reliability reserve, see Table 5-2. The primary water supply is defined as the amount of water needed to serve the build-out population of the city as identified in the Land Use Element of the General Plan. The quantity of water needed for the primary water supply is calculated using the ten-year average of actual per capita water use and the city's build-out population. The ten year average per capita water use (2006-2015) is 114.4 gallons per capita per day (gpcd). The proposed LUCE build-out population is estimated to be 57,200, and the Primary Water Supply is estimated to be 7,330 AF in the 2015 Water Status Report.

The reliability reserve provides a buffer for future unforeseen or unpredicted long-term impacts to the City's available water supply. The quantity of water for the reliability reserve is established using twenty percent of the ten-year average of current per capita water use and the City's current population (45,802 in 2015). The reliability reserve provides as reserve above and beyond the existing needs of the community and may not be used for future development. It is currently estimated to be 1,174 AF.

The secondary water supply is the amount of water remaining from the City's available water resources above those needed to meet the primary water supply and reliability reserve. The secondary supply identified to meet peak water demand periods or short-term loss of City water supply sources. If combined with the reliability reserve, the secondary water supply provides an estimate of the contracted or available water supply above and beyond that necessary to support the buildout of the community.

Table 5-1. Water Supply Reliability

Average/Normal Water Year (acre feet)	Single Dry Water Year (acre feet)	Multiple Dry Water Years			
		Year 1	Year 2	Year 3	Year 4
10,471 (1)	9,820	9,820	9,820	9,820	9,820
Percent of Average/Normal Year	100%	100%	100%	100%	100%

Source: 2010 Urban Water Management Plan

Table 5-2. 2015 City Potable Water Supply Availability

Total	2015 Actual Usage	Primary Water Supply	Reliability Reserve	Secondary Water Supply
9,820	4,990	7,330	1,174	1,316

6. WATER USAGE

Water use in the city includes single-family, multi-family, commercial (including institutional and industrial), and irrigation customers. No agricultural uses are supplied by City water and the City does not sell water to other agencies. The City does not have additional water demands such as water use for saline barriers, groundwater recharge, etc. In 2014, the total water demand for the city was 5,524 AF, and total demand in 2015 was 4,990 AF. The total water demand is consistent with nationwide trends, due in part to conservation success and recent recessionary impacts (vacancy rates, etc).

In 2008, a Water Supply Assessment (WSA) was completed on the Orcutt Area Specific Plan (OASP) by the City. In this WSA, the projected water demand for the Orcutt Area was calculated using the following water use factors for each land use category.

Single-family residences (R-1)	0.3 AF/year/unit
Single Family (R-2)	0.21 AF/year/unit
Apartment (R-3/R-4)	0.18 AF/year/unit
Neighborhood Commercial	0.3 AF/year/1,000 SF
Parkland	2 AF/year/acre

6.1 Water Conservation Program:

Water conservation was first referenced as a part of the City's water management policy in 1973. In 1985, the City adopted the Annual Water Operational Plan policy, establishing water conservation as a means of extending water supplies during projected water shortages. Since 1985, many technological and philosophical changes have occurred which are proving water conservation to be both a short-term corrective measure for immediate water supply shortages and a long-term solution to water supply reliability. Experience from the drought of 1986 to 1991, the City developed a Water Shortage Contingency Plan to deal with immediate, short-term water shortages. The Plan is designed to require mandatory actions when there is a projected three year supply of water remaining from available water resources. The Plan uses a combination of water allocations based on customer classification and water use surcharges for exceeding the allocation as a means to decrease water use during critical water shortages. For instance, residential customers are given a water allocation based on the average water use for multi- or single-family households having three occupants. If there are more residents, additional water may be allocated with sufficient proof. Commercial customers are allocated water either by a reduction based on their historical water use or by the average water use by business type. Surcharges for exceeding a water allocation results in their bill either doubling or tripling depending on the actual amount of water used. The Plan is also a required component of the City's UWMP which is updated every five years per State Water Code. The City also recognizes the importance of long-term water efficiency by supporting programs that will enhance water supply reliability and comply with any current and/or future state mandates in water use reductions. In 2009, Senate Bill X7-7 was passed requiring water agencies to reduce per capita water use by 25 percent by the year 2020. The City's target per capita water use would be 117 gpcd. In 2013, the City already met that target with a use of 116 gpcd. In 2014, the City's use was estimated to be 95.8 gpcd. In terms of water supply reliability the City was one of the original signatories to the Memorandum of Understanding (MOU) Regarding Urban Water Conservation and has actively pursued the implementation of the water efficiency best management practices (BMPs) prescribed in the MOU. The MOU was a negotiated agreement between water purveyors statewide and environmental organizations on how best to utilize the State's water resources by incorporating conservation into their water management practices. The BMPs have been developed over the years by water purveyors, environmental groups, and industry stakeholders. They represent the best available water conservation practices based on research and experience and include:

- Water conservation pricing and rate structures,
- Technical assistance for water customers,
- Incentives for indoor and outdoor water saving technologies,
- Public information and outreach, and
- Water audits.

On July 15, 2014, the California State Water Resources Control Board adopted emergency drought regulations that were to be implemented by all urban water suppliers who have over 3,000 water connections regardless of that community's water supply situation. Water purveyors who do not implement the mandatory requirements face up to $10,000 per day in fines and other penalties. The Emergency Regulations are in effect for 270 days but can be rescinded, extended or amended based on drought conditions.

Notwithstanding the city's stable water supply position, the Emergency Regulations specifically mandate that the City implement mandatory outdoor water restrictions and water waste

prohibitions or face fines up to $10,000 a day and no access to state grants and loans. Accordingly, city council adopted an ordinance limiting the outdoor irrigation of ornamental landscape and turf with potable water to three days a week, and allocated funding for education and public outreach effects.

In response to the continued drought conditions, the State Water Board extended the 2014 emergency regulations and added new measures on March 17, 2015. As a result of these new measures, the City is required to reduce its water use by an average of 12 percent from June 2015 to February 2016. To achieve this reduction, the City Council adopted a drought response strategy in June 2015. This strategy includes:

- Adoption of a resolution declaring a drought emergency.
- Adoption of a resolution to defer new landscape installation or the use of modified landscape plans during the drought emergency.
- Introduction of an ordinance amending Chapter 13.07 of the City's Municipal Code to include two-day-a-week and time-of-day restrictions for outdoor watering.
- Approval of an incentive program for high efficiency toilets and washing machines.
- Adoption of a resolution establishing a permit fee for the use of the Corporation Yard groundwater well.

7. ENTITLEMENTS/REGULATORY APPROVALS

Water Code Section 10910(d)(2) requires the identification of existing water supply entitlements, water rights, or water service contracts, federal, state, and local permits for construction of necessary infrastructure, and any regulatory approvals required in order to be able to deliver the water supply. The City's entitlements are described above in the section describing water supply.

8. AVILA RANCH PROJECT

The Avila Ranch site will be developed into single-family and multi-family dwelling units, commercial, parks, and open space. Table 8-1 shows a summary of the project water demands under each land use area of the proposed site. These demands were calculated and presented in the Preliminary Irrigation Water-Use Estimate, see Appendix A. The estimated total water demand for the Avila Ranch Project is shown in Table 8-1.

Table 8-1. Avila Ranch Water Demand – Project Specific

AREAS	Person Per Unit	Irrigation Demand potable	Irrigation demand non-potable	Indoor Domestic Demand	Total
R-1	2.29	1,631,774		3,155,243	4,787,017
R-2	2.29	2,674,323		8,435,634	11,109,957
R-3	2.29		530,809	4,578,195	5,109,004
R-4	2.29		457,790	3,093,375	3,551,165
Commercial			144,412		144,412
Community Garden Beds			247,387		247,387
Riparian Open Space			3,518,296		3,518,296
Drought Tolerant Open Space			4,333,923		4,333,923
Turf (Park Area)			8,285,718		8,285,718
Bioretention Areas			864,905		864,905
Drought Tolerant Parkways			654,387		654,387
Total (gallons/year):		4,306,097	19,037,627	19,262,446	42,606,170
Total (acre-feet/year):		**13**	**59**	**59**	**131**

For comparison, Table 8-2 was developed to project Avila Ranch's water demand using the same water use factors that were used in the 2008 OASP WSA. These factors reflect water use factors from 2008 and before that, by current standards are approximately 30 percent higher than the water usage reported in 2015. Since that time the City and state have implemented water conservation measures for indoor and outdoor water usage. Nevertheless, these factors provide a useful comparison of the project's projected water usage to that of the most recent City specific plan, and provide an additional level of caution in making a determination of the adequacy of water supplies. Using these water demand factors shows that the total water use of Avila Ranch would potentially be 187.85 AF/year. This is higher than the estimated total water demand that has been calculated for the development.

Table 8-2. Avila Ranch Project Water Demand by Use Factors

AREAS	Water Use Factor	Quantity	Water Demand
Single-Family Residences (R-1)	0.3 AF/year/unit	105	31.5
Single Family (R-2)	0.21 AF/year/unit	305	64.05
Apartment (R-3/R-4)	0.18 AF/year/unit	310	55.8
Neighborhood Commercial	0.3 AF/year/1,000 SF	15,000	4.5
Parkland	2 AF/year/acre	16	32
Total (acre-feet/year):			**187.85**

Note: R-1 zoning = Single-family residence
R-2 zoning = Single family
R-3 & R-4 zoning = Apartments

Table 8-3 compares the City's available water with Avila's projected usage. Avila Ranch's potable water use is well within the limits of available water supply.

Table 8-3. City Water Supply Availability and Avila Ranch Water Usage

	City Water Supply	City Water Usage	City Water Available	Avila Ranch Use (project specific)	Avila Ranch Use (calculated by use factors)
Potable Water	9,820	4,990	4,830	72	155.85
Recycled Water	1,000	185	815	59	32

As shown in Table 8-1 above, 59 AF/year is planned to come from non-potable sources with the release of recycled water lines to the site. Appendix B shows the recycled water use area's within Avila Ranch. Recycled water from the City is an obvious first choice and the City has projected 1,000 AF/year of available supply. The project also has an existing well that is located on the north-west corner of the site. The well is currently being tested for water quality, as well as production capabilities. If production rates are high enough, this well could potentially be used for non-potable water at the proposed parks. This could result in a potential reduction in the overall demand from the City by up to 59 AF/year.

Potential water-saving programs will be implemented for the project in an attempt to reduce the water demand use even further as part of the Water Conservation Policy 7.2.2 in the Airport Area Specific Plan, see Appendix C. This involves using reclaimed water for all planter areas except the residential lots, water saving devices and features in the design of the homes and lots, and potential for using the existing onsite well for onsite irrigation. All plant species selected for the parkways, and drought tolerant open space areas of the site meet the Very Low Water Needs categories under the California Water Use Classification of Landscape Species (WUCOLS) list. All of the planter areas except the turf play areas and portions of the community garden beds are intended to be irrigated using drip and/or low-volume irrigation equipment. In addition, it is anticipated that the native plantings in the drought tolerant and riparian open space areas will receive temporary establishment irrigation that will be reduced over time and eventually activated only during periods of extended drought or prolonged periods of high temperatures.

The irrigation design shall implement all appropriate and available tools and techniques towards achieving maximum water application uniformity (distribution uniformity). Such measures will include utilizing dedicated landscape water meters, soil moisture sensors, central irrigation controllers and master valves combined with flow sensors. Weather based irrigation controllers that are tied to CIMIS (California Irrigation Management Information System) weather data will be used for the larger landscape areas. This type of controller communicates with a nearby CIMIS weather station and adjusts irrigation application based on real-time weather conditions. Other smaller landscape areas or POC's (Points of Connection) may utilize basic weather based 'smart' irrigation controllers, that adjust water application based on historic Eto data pre-programed into the controller, as opposed to actual real-time weather data.

Irrigation zones will be determined by means of defining hydrozones, whereby all irrigation circuits will be spatially defined by virtue of grouping plants with the same water needs and similar climatic and soil conditions (and/or other factors that impact watering needs).

Per appendix A, all planter areas, except Turf (Park Areas) are using ETAF (Evapotranspiration adjustment factor) of 0.50.

9. CONCLUSION

The water supply demand for the Avila Ranch project was included in the City's Land Use and Circulation Element Update Water Supply Assessment. A sufficient water supply is available to serve the project no matter which method is used to calculate the demand.

Using project-specific water demand information, 72 AF/year of the City's 4,830 AF/year of available supply is required (1.5% of available supply), and 59 AF/year of the 815 AF/year of available recycled water (7.2%) would be utilized. Both of these water needs are within the water demand calculated as part of the primary water supply.

Using land use water factors from the OASP WSA gives a total water demand of 187.85 AF/year. 155.85 AF/year of the City's 4,830 AF/year of available supply is required (3.2% of available supply), and 32 AF/year of the 815 AF/year of available recycled water (3.9%) would be utilized. These estimates are for comparison purposes and are based on 2008 water use factors in the community. Per capita water use in the community has declined substantially in the community since that time, both as a result of voluntary conservation efforts, changes in building code requirements, and state-mandated reductions in water usage. Nevertheless, based on these water use statistics, there is a sufficient supply of water to meet the project's needs.

This conclusion was determined based on this Water Supply Assessment and supporting information in the records of the City of San Luis Obispo.

REFERENCES

San Luis Obispo, City of. General Plan – Chapter 8 Water and Wastewater Management Element. Adopted February 24, 1987, Revised May 2015

San Luis Obispo, City of. 2010 Urban Water Management Plan. Adopted June 21, 2011

San Luis Obispo, City of. Land Use and Circulation Element Update Water Supply Assessment. Adopted June 2014

San Luis Obispo, City of. Orcutt Area Specific Plan – Water Supply Assessment. Approved March 5, 2008

San Luis Obispo, City of. 2015 Water Resources Status Report

Memorandum of Understanding Regarding Urban Water Conservation in California. Amended September 17, 2014

TECHNICAL APPENDICES

The following technical appendices are included:

- Appendix A: Preliminary Irrigation Water-Use Estimate
- Appendix B: Avila Ranch Recycled Water Use Areas
- Appendix C: Airport Area Specific Plan: Water Conservation Policy 7.2.2

APPENDIX A: PRELIMINARY IRRIGATION WATER-USE ESTIMATE

AVILA RANCH

Preliminary Irrigation Water-Use Estimate

9/15/2015

NOTES:

The following landscape irrigation calculations are based on the current TTM and preliminary site plans to date.
This Preliminary Irrigation Water-Use Estimate is only considered an approximation of the final landscape irrigation needs and is based on City of SLO Resolution: R-10628 and direction provided by Ron Munns.
Irrigation calculations may change as the project progresses, and calculations are subject to revisions as required on subsequent submittals.
Actual water use may be lower than as indicated in these calculations since planting density is likely to be less than average in the Native Riparian and Native Open Space categories.
ETo Rate of 43.80 used (Per California Dept. of Water Resources.
The Agricultural Parcel and Orchard areas are not included in these calculations.

SUMMARY OF ESTIMATED WATER USE

(Refer to Detailed Preliminary Calculations on the following page)

AREAS	HYDROZONES (SF)	MAWA (Gallons)	ETWU (Gallons)	ETAF Used	MAWA (Gallons) PRE-EMERGENCY REGULATIONS 43.8 x 0.62 x ([0.7 x LA) / (0.3 x SLA)
RIPARIAN OPEN SPACE	284,437	3,947,417	3,518,296	0.5	5,492,251
DROUGHT TOLERANT OPEN SPACE	463,422	6,431,371	4,333,923	0.5	8,948,308
TURF (at Parks) - Hybrid Bermuda	328,586	8,923,081	8,285,718	1.0	6,344,733
COMMUNITY GARDEN BEDS	20,000	277,560	247,387	0.5	386,184
BIORETENTION AREAS	72,448	1,005,433	864,905	0.5	1,398,913
DROUGHT TOLERANT PARKWAYS	52,904	734,202	654,387	0.5	1,021,534
COMMERCIAL (10% of Total SF)	11,675	162,026	144,412	0.5	225,435
R-3 RESIDENTIAL (20% of Total SF)	43,980	597,160	530,809	0.5	849,219
R-4 RESIDENTIAL (20% of Total SF)	37,930	515,014	457,790	0.5	732,398
R-2 / 4-PACK RESIDENTIAL	98,280	1,334,446	1,186,174	0.5	1,868,224
R-2 / 6-PACK RESIDENTIAL	123,300	1,674,167	1,488,149	0.5	2,343,834
R-1 / SINGLE FAMILY RESIDENTIAL	135,200	1,835,746	1,631,774	0.5	2,570,044
TOTAL IRRIGATED LANDSCAPE	**2,088,347**	**27,437,622**	**23,343,724**		**32,181,076**
TOTAL IRRIGATED LANDSCAPE IN ACRES:	**47.9**				**-14.74%**
ACRE FEET WATER:		**84.20**	**71.64**		

PERCENTAGE DIFFERENCE IN RELATION OF CURRENT MAWA TO PRE-EMERGENCY MAWA

MAWA - Maximum Applied Water Allowance

MAWA = (ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)]

where:

MAWA = Maximum Applied Water Allowance (gallons per year)
ETo = Reference Evapotranspiration from Appendix A (inches per year)
0.7 = ET Adjustment Factor (ETAF)
LA = Landscaped Area includes Special Landscape Area (square feet)
0.62 = Conversion factor (to gallons per square foot)
SLA = Portion of the landscape area identified as Special Landscape Area (square feet)
0.3 = the additional ET Adjustment Factor for Special Landscape Area (1.0 - 0.7 = 0.3)

Note: All planter areas except Turf at Parks are using **ETAF of 0.50**

ETWU - Estimated Total Water Use

$$ETWU = (ETo)(0.62)\left(\frac{PF \times HA}{IE} + SLA\right)$$

where:

ETWU = Estimated total water use per year (gallons per year)
ETo = Reference Evapotranspiration (inches per year)
PF = Plant Factor from WUCOLS (see Definitions)
HA = Hydrozone Area [high, medium, and low water use areas] (square feet)
SLA = Special Landscape Area (square feet)
0.62 = Conversion Factor (to gallons per square foot)
IE = Irrigation Efficiency (minimum 0.71)

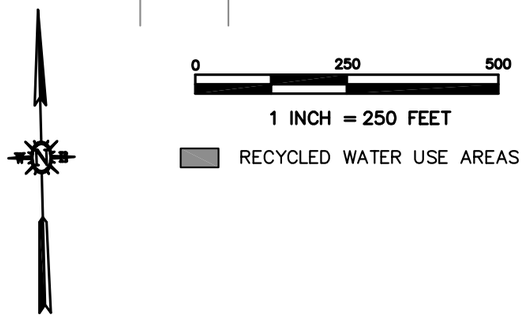
AVILA RANCH
Preliminary Irrigation Water-Use Estimate
9/15/2015

PROPOSED LAND USE	TOTAL LANDSCAPE AREA (SF)	WATER USE PER (WUCOLS)	PLANT FACTOR (WUCOLS)	REFERENCE Eto	Eto ADJUSTMENT FACTOR	ESTIMATED HYDROZONE (SF)	IRRIGATION EFFICIENCY	MAWA (Gal/Yr.)	ETWU (Gal/Yr.)	POTABLE OR RECLAIMED WATER	NOTES
RIPARIAN OPEN SPACE	296,266	MODERATE	0.4	43.8	0.5	284,437	0.9	3,947,417	3,518,296	Reclaimed	SLA included in calculation
DROUGHT TOLERANT OPEN SPACE	814,865	LOW	0.3	43.8	0.5	463,422	0.9	6,431,371	4,333,923	Reclaimed	SLA included in calculation
TURF (at Parks) - Hybrid Bermuda	379,900	HIGH	0.65	43.8	1.0	328,586	0.7	8,923,081	8,285,718	Reclaimed	ETAF of 1.0 used as directed by Ron Munns of City of SLO
COMMUNITY GARDEN BEDS	20,000	MODERATE	0.4	43.8	0.5	20,000	0.9	277,560	247,387	Potable	SLA included in calculation
BIORETENTION AREAS	74,047	LOW	0.3	43.8	0.5	72,448	0.7	1,005,433	864,905	Reclaimed	SLA included in calculation
DROUGHT TOLERANT PARKWAYS	52,904	LOW	0.4	43.8	0.5	52,904	0.9	734,202	654,387	Reclaimed	SLA included in calculation
COMMERCIAL (10% of Total SF)	11,675	LOW	0.4	43.8	0.5	11,675	0.9	162,026	144,412	Reclaimed	SLA included in calculation
R-3 RESIDENTIAL (20% of Total SF)	43,980	LOW	0.4	43.8	0.5	43,980	0.9	597,160	530,809	Reclaimed	ETAF of 0.5 used as directed by Ron Munns of City of SLO
R-4 RESIDENTIAL (20% of Total SF)	37,930	LOW	0.4	43.8	0.5	37,930	0.9	515,014	457,790	Reclaimed	ETAF of 0.5 used as directed by Ron Munns of City of SLO
R-2 / 4-PACK RESIDENTIAL	98,280	LOW	0.4	43.8	0.5	98,280	0.9	1,334,446	1,186,174	Potable	ETAF of 0.5 used as directed by Ron Munns of City of SLO
R-2 / 6-PACK RESIDENTIAL	123,300	LOW	0.4	43.8	0.5	123,300	0.9	1,674,167	1,488,149	Potable	ETAF of 0.5 used as directed by Ron Munns of City of SLO
R-1 / SINGLE FAMILY RESIDENTIAL	135,200	LOW	0.4	43.8	0.5	135,200	0.9	1,835,746	1,631,774	Potable	ETAF of 0.5 used as directed by Ron Munns of City of SLO
TOTAL PROJECT :	**2,088,347**							**27,437,622**	**23,343,724**		

IRRIGATION DESIGN APPROACH:

ALL PLANTER AREAS (EXCEPT THE LAWN & BIO-RETENTION AREAS) ARE INTENDED TO BE IRRIGATED USING DRIP AND/OR LOW-VOLUME IRRIGATION EQUIPMENT.
LAWN PLANTERS WILL LIKELY BE IRRIGATED WITH ROTOR OR ROTARY SPRAY POP-UP NOZZLES.
BIORETENTION AREAS WILL BE IRRIGATED WITH ROTOR OR ROTARY SPRAY POP-UP NOZZLES, DUE TO POSSIBLE SOIL MAINTENANCE DAMAGE TO A DRIP SYSTEM.
SMALL LAWN AREAS MAY BE IRRIGATED WITH SUB-SURFACE, IN-LINE DRIP EMITTERS WITH AIR RELIEF AND FLUSH VALVES.
RECLAIMED WATER WILL BE UTILIZED FOR ALL PLANTER AREAS, WITH THE EXCEPTION OF THE RESIDENTIAL LOTS.
WEATHER BASED IRRIGATION CONTROLLERS WILL BE UTILIZED AND WILL INCLUDE A WEATHER SENSOR OVERRIDE DEVICE.
ALL SYSTEMS WILL INCLUDE (1) MASTER VALVE AND FLOW SENSOR AT EACH POINT OF CONNECTION.
ALL TREES THAT ARE NOT LOCATED AMONG SHRUB BEDS AREAS SHALL RECEIVE DEEP ROOT BUBBLER IRRIGATION.
AN PLANT ESTABLISHMENT IRRIGATION SCHEDULE (FIRST 6 MONTHS) AND A POST-ESTABLISHMENT IRRIGATION SCHEDULE WILL BE PROVIDED WITH CONSTRUCTION DRAWINGS.

APPENDIX B: AVILA RANCH RECYCLED WATER USE AREAS



0 250 500

1 INCH = 250 FEET

RECYCLED WATER USE AREAS

F:\proj\2011\110926\3 Project Design\Civil\Construction Drawings\Exhibits\CE110926EX0036.dwg 11-20-15 10:52:14 AM JeffreyW

Cannon

1050 Southwood Drive
San Luis Obispo, CA 93401
P 805.544.7407 F 805.544.3863

AVILA RANCH
RECYCLED WATER USE AREAS
SAN LUIS OBISPO, CALIFORNIA

DRAWN BY	DATE	CA JOB NO.
JSW	11-20-15	110926
CHECKED BY	SCALE	SHEET
JCR	1" = 250'	1 OF 1

APPENDIX C: AIRPORT AREA SPECIFIC PLAN: WATER CONSERVATION POLICY 7.2.2

Policy 7.2.2 Water Conservation

The Avila Ranch project shall be designed so that the projected annual water consumption is 35 percent less than the average per-person annual community water consumption for residential units. To meet this goal, the following performance standards shall be used:

A. *Turf shall not be permitted for individual yard landscaping. Landscape plans shall be developed which require lower water usage, and which require lower maintenance. Landscape plans shall reflect the local climate zones and local plant material.*

B. *Turf may be used where it is associated with a common open space, parkways, sports field or other common area. Where feasible, these areas will be irrigated with recycled water supplies.*

C. *Landscape and irrigation plans should use drip irrigation systems to the extent feasible. General broadcast irrigation is discouraged.*

D. *New residential construction shall be plumbed to be "recycled water ready" so that onsite recycled water system may be added by homeowners, when feasible.*

E. *New residential development shall comply with the indoor water conservation guidelines contained the Environmental Protection Agency's "Watersense" New Home Specification program, or a program of equivalent effectiveness.*