# 3.0 Project Description

# 3.0 PROJECT DESCRIPTION

## 3.1 PROJECT LOCATION

Cambria is located in central California's coastal region, in the northwest portion of San Luis Obispo County (SLO County); refer to Exhibit 3-1, *Regional Context*. Cambria lies within the Santa Rosa Creek Valley, south of San Simeon. The Project site is located in unincorporated SLO County, north of Cambria, north and east of the Hearst San Simeon State Park (State Park). The Project site is more specifically located southeast of the San Simeon Monterey Creek Road/Van Gordon Creek Road intersection, at 990 San Simeon Monterey Creek Road; refer to Exhibit 3-2, *Local Context*. The approximately 96-acre Project site involves two parcels (APNs 013-051-024 and 013-051-008) owned by the Cambria Community Services District (CCSD). Access to the Project site is provided along the northern site boundary, via San Simeon Monterey Creek Road.

## 3.2 BACKGROUND AND HISTORY

Cambria Community Services District (CCSD) is an independent special district that provides water, wastewater, fire protection, administration, facilities and resources, parks and recreation and other community services. The CCSD encompasses nearly 3,200 acres (five square miles). Cambria's current population is approximately 6,400 persons with a substantial tourist and secondary home population. Cambria's water system served 4,048 service connections in 2016. A five-member Board of Directors elected by Cambria voters for four-year overlapping terms governs the CCSD.

### 3.2.1 PROJECT HISTORY

#### ASSESSMENT OF LONG TERM WATER SUPPLY ALTERNATIVES

The CCSD adopted the Potable Water Distribution System Analysis, Recycled Water Distribution System Master Plan, and Assessment of Long Term Water Supply Alternatives in August 2008 to provide a framework for their long-term water supply strategy. The Assessment of Long Term Water Supply Alternatives completed a preliminary analysis that considered the reliability, barriers to implementation, costs, and advantages of a variety of potential new water sources. Based on a qualitative screening level evaluation of the potential new water sources, the following alternatives were recommended for more detailed evaluation and cost development: seawater desalination; Nacimiento water supply; Whale Rock Exchange; hard rock drilling; recycled water; demand management; San Simeon Dam and Reservoir-Van Gordon site; and Jack Creek Dam and Reservoir. Additional evaluation was performed for these alternatives, according to specific criteria. The Assessment of Long Term Water Supply Alternatives ultimately recommended that CCSD's long-term water supply strategy consist of seawater desalination, recycled water, and


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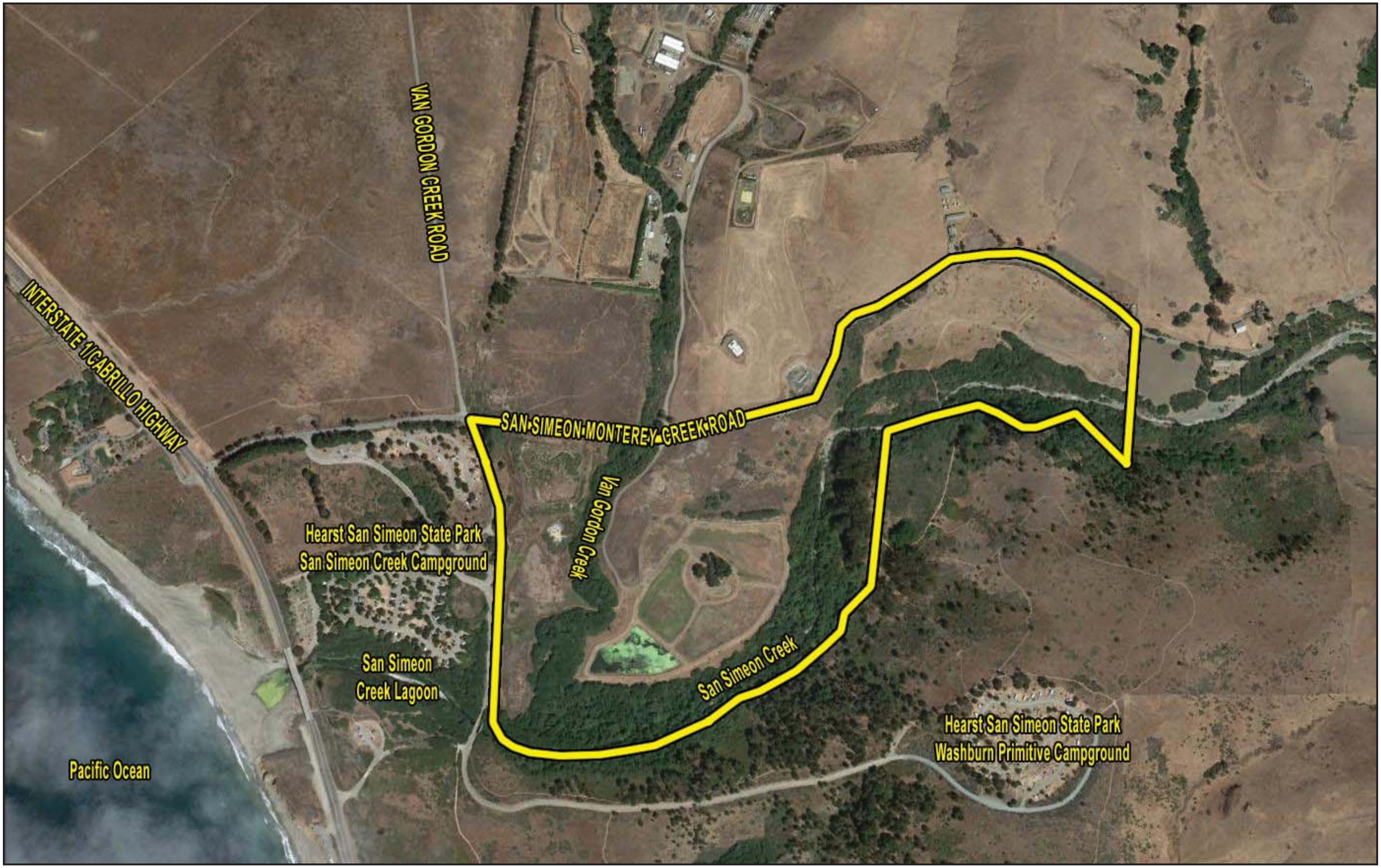
# Regional Context

**Exhibit 3-1**




Source: Google Earth, 2014.

- Project Boundary

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**Local Context**

**Exhibit 3-2**

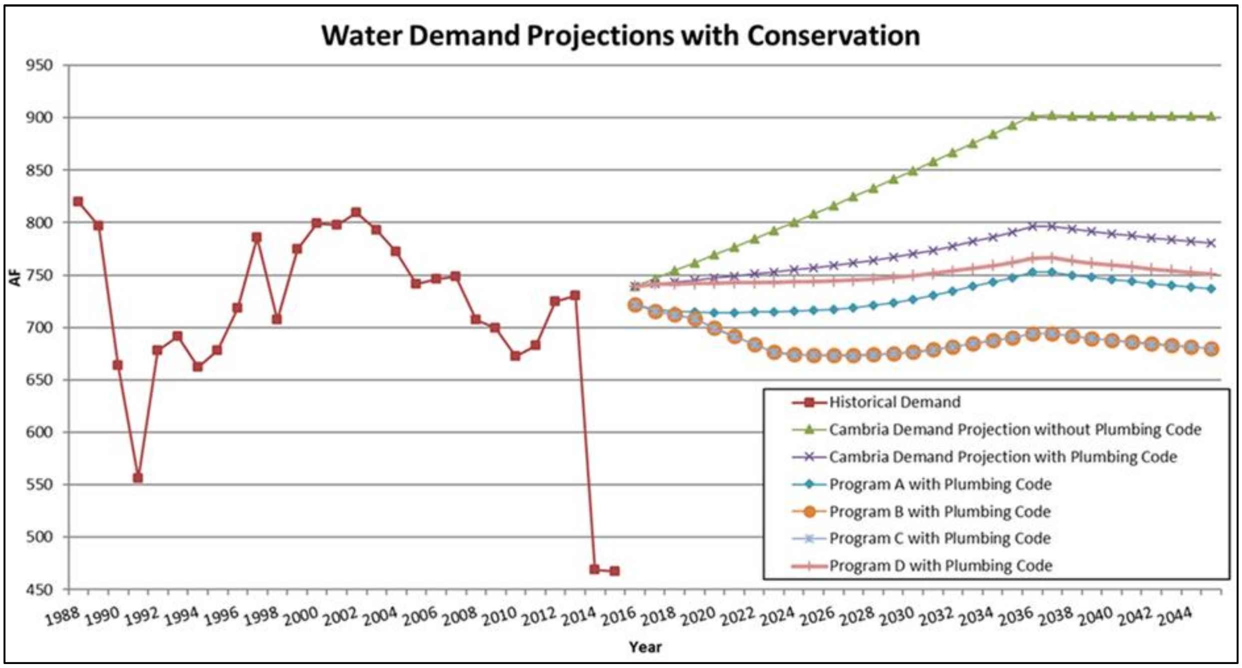
water demand management. These elements, along with the Potable Water Distribution System improvements, comprise the Water Master Plan (WMP) components evaluated in the WMP Program EIR. The WMP elements are described as follows:

- Seawater Desalination. To provide an additional water supply of up to 602 acre-feet per during the dry season, the CCSD proposed to implement seawater desalination. The seawater desalination element would consist of constructing a subterranean seawater intake, pumping and pipeline facilities to transport the seawater to a desalination plant, a RO desalination treatment process, a groundwater blending system, and pumping facilities to pump the treated water into the distribution system. Seawater concentrate from the RO process would be conveyed in a separate pipeline to a subterranean system for disbursement back into the groundwater near its junction with the seawater. The WMP seawater desalination element was not implemented due to environmental and regulatory challenges.

- Recycled Water System. This element involved utilizing recycled water for irrigation purposes at various locations within Cambria. The use of recycled water to meet non-potable demands would enable CCSD to reduce its potable water demand. CCSD operates a 1.0 million gallon per day (MGD) extended aeration waste water treatment plant (WWTP), which treats wastewater from Cambria and the San Simeon Creek Campground. Currently, the treated wastewater effluent is percolated into the ground between the San Simeon well field and Pacific Ocean to provide a "mound" of fresh water that slows the underflow of the San Simeon Creek Aquifer toward the sea. During the dry summer season, flows through the plant average approximately 650,000 gallons per day (gpd). As of the writing of this SEIR, the recycled water system element will be implemented when the existing WWTP is upgraded to tertiary treatment.

- Water Demand Management. Demand management involved improvements to the conservation program and regulations to reduce potable water use for interior and exterior use. Although CCSD's conservation practices had already reduced the average per capita potable water consumption below the state average, more efficient water demand management practices were proposed for further reduction in water consumption. The last update to the CCSD's conservation program occurred in 2013 when the CCSD Board adopted a Water Use Efficiency Plan (Efficiency Plan) (Maddaus Water Management). As of the writing of this SEIR, the water demand management element was being subsequently updated to include assessment of more recent advancements in water conservation technologies. This more recent analysis has shown that future demands can be further reduced depending upon the level of conservation required of any newly constructed homes, as well as continuation of existing conservation practices on existing homes. This current effort is further illustrated by the Figure below, which shows the projected water demands at a buildout of 4,650 existing and future (CCSD wait list) residential dwelling units. The supporting analysis for this plot assumed a 1-percent annual growth rate until reaching buildout.

**CCSD August 2016 Update to Future Water Demands**




The *Historical Demand* plot shows the existing CCSD production, which illustrates the exceptional level of conservation achieved between 2014 and 2016 in response to the areas epic drought. The 2016 modeling effort conservatively assumed customer demand would rebound to pre-drought levels at its starting point. The *Cambria Demand Projection without Plumbing Code* plot shows demands with no conservation occurring, including ones that are currently mandated by the existing plumbing code. The *Cambria Demand Projection with Plumbing Code* plot shows the future demands with the benefit of the existing plumbing code's more water efficient requirements taken into consideration. The *Program D with Plumbing Code* plot shows Program D, which was developed to show the total demand of existing and future connections, assuming no benefit from the conservation efforts of existing customers, while maximizing the use of recent water saving technologies being required within future homes.[1] The *Program C with Plumbing Code* plot shows Program C, which shows the future demand with existing water conservation demand management measures in place on existing customers (and with no stages of a water shortage emergency being in effect) and more recent conservation technologies being required on future homes. The *Program B with Plumbing Code* and *Program C with Plumbing Code* plots, which are so close in demands that they appear as one plot, show conservation programs B and C, respectively. Of all the plots shown, future conservation *Program B with Plumbing Code* is the most cost effective. Once finalized, the draft

1 For example, the Nexus E-water ® system, point of use recycled water system, which allows for flushing toilets within homes with treated gray water.

conservation measures shown in the Figure above will be presented to the CCSD Board to consider for adoption as an update to the CCSD's Urban Water Management Plan.[2]

- *Potable Water Distribution System Improvements*. Potable water system improvements focused on improving firefighting capabilities. Fire flows for existing single-family residential areas were proposed to increase from approximately 1,000 gpm to approximately 1,500 gpm, based on recommendations of the Cambria Fire Department. In addition, increases to tank storage volumes were also recommended. As of the writing of this SEIR, the following potable water system improvements have been implemented:
  - An interconnecting pipeline was constructed across the west Fiscalini Ranch area to improve distribution system flows and pressures;
  - Two new Pine Knolls Tanks were installed; and
  - The CCSD is currently replacing its upper pressure zone's Fiscalini Tank.

## WATER SUPPLY ALTERNATIVES ENGINEERING TECHNICAL MEMORANDUM

Because the CCSD faced water shortage issues during the six dry months of the year (typically, May 1 through October 31), it entered into a project cooperation agreement with the United States Army Corps of Engineers (ACOE), whose work products included a long-term water supply study for Cambria (November 27, 2013). The principal objective of the ACOE study was to identify, evaluate, and recommend the best long-term water supply alternative that would provide Cambria with a supplemental water supply during the six dry months of the year. The findings and results of the study were presented in a Cambria Water Supply Alternatives Engineering Technical Memorandum (2013 Engineering TM) (CDM Smith, November 27, 2013). The 2013 Engineering TM was prepared to present a range of water supply alternatives for the CCSD for the purpose of providing long-term drought protection and seasonally augmenting Cambria's potable water supply. The 2013 Engineering TM also summarizes the four facilitated public workshops that were conducted on water supply alternatives and describes the technical two-step screening process that was applied. Through the screening process, 8 out of 28 original water supply concepts were selected for further evaluation through formal environmental review. The 2013 Engineering TM ranked the brackish water alternative (Alternative Concept 5 - San Simeon Creek Road Brackish Water) the highest technically. Alternative Concept 5 was used as a starting point in the development of the Sustainable Water Facility (SWF), which is the subject of this SEIR. SWF plans, in combination with the 2013 Engineering TM, were used in this SEIR to develop the Project Description and Project Alternatives.

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[2] The Urban Water Management Planning Act includes an exemption from CEQA. The results from the CCSD's UWMP Update analyses are presented herein in response to questions posed within comments provided in letters commenting on this EIR's Notice of Preparation.

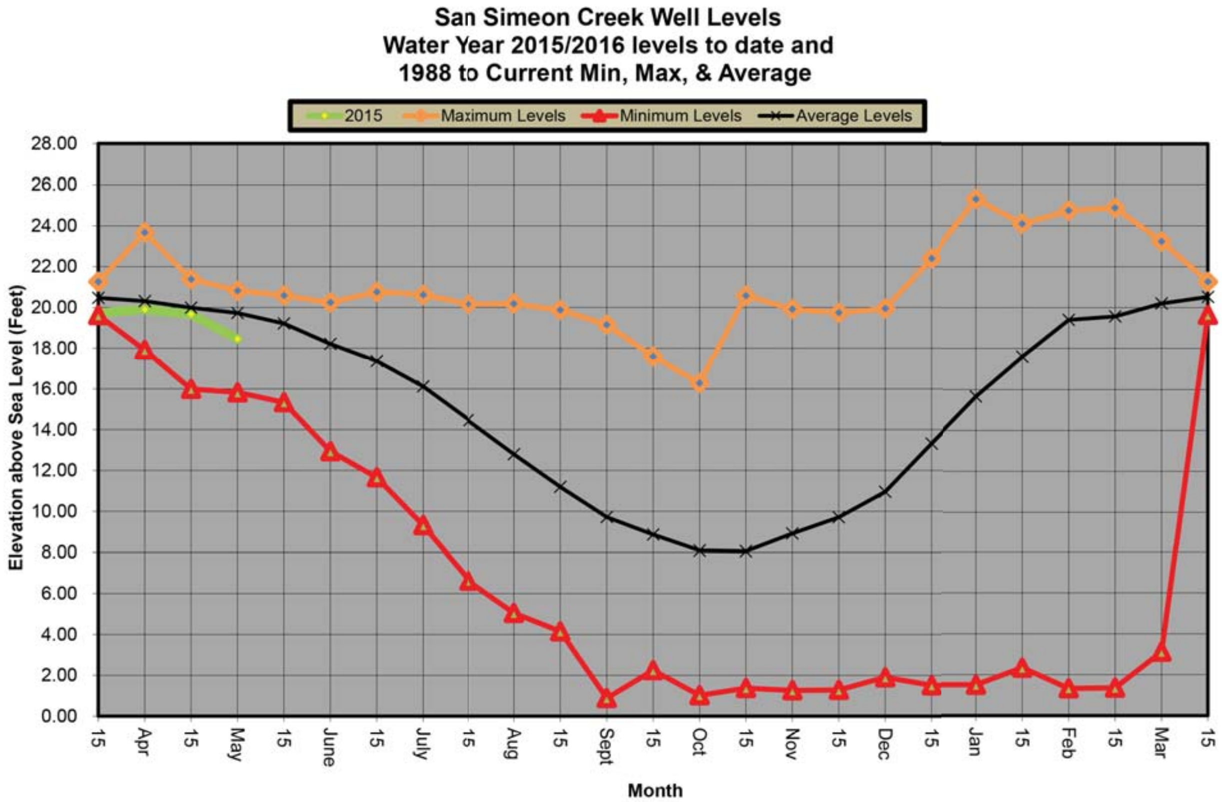
## WATER SUPPLIES AND DROUGHT

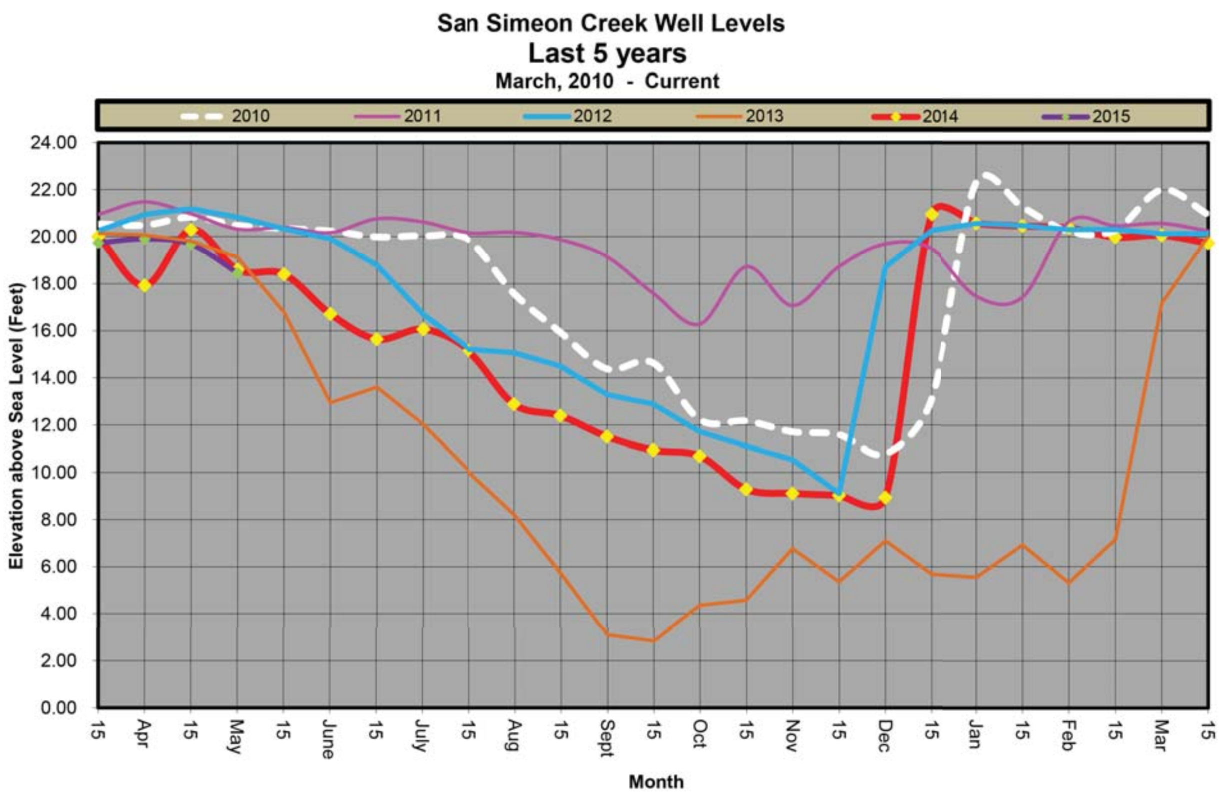
All of Cambria's potable water is supplied from groundwater wells in the San Simeon Creek and Santa Rosa Creek aquifers. The San Simeon and Santa Rosa aquifers are relatively shallow, narrow, and porous, with the groundwater levels typically recharged every year during the rainy season. With pumping, groundwater levels generally exhibit a consistent pattern of high levels during the wet season, steady decline during the dry season, and rapid rise when the wet season resumes.

Neither the San Simeon nor Santa Rosa aquifers have been adjudicated. However, the State of California mandates how much water CCSD can pump from both aquifers. Specifically, the CCSD's water rights are subject to the regulatory authority of the SWRCB, and to a certain extent, conditions imposed under development permits issued by the California Coastal Commission (CCC). The current SWRCB water rights diversion permits (20387 and 17827) allow CCSD to pump from both the San Simeon and Santa Rosa groundwater basins a maximum of 1,118 acre-feet (AF) of water during the wet season, and 630 AF of water during the dry season. The current CCC Development Permit limits the total diversion from both the San Simeon and Santa Rose groundwater basins to no more than 1,230 acre-feet per year (AFY). Additionally, the dry season start date, duration, and beginning groundwater levels limit the actual availability of groundwater from both basins.

As noted above, the aquifers are recharged primarily by seepage from San Simeon and Santa Rosa Creeks, which typically flow during winter and spring rainy seasons. However, rainfall (precipitation) in the recent past has been insufficient to fully recharge the two aquifers that are Cambria's sole water supply. For water year 2013/2014, the total rainfall in Cambria was significantly less than the minimum rainfall needed to recharge the two coastal stream aquifers.[3] This below-average rainfall follows two years of below-average rainfall (2012 and 2013). Exhibit 3-3, *San Simeon Creek Well Levels*, illustrates the average groundwater levels at San Simeon Creek Well, since 1988. As shown on Exhibit 3-3, the average groundwater level at San Simeon Creek Well ranges from eight to 20 feet in depth. In 2013, well levels dropped to as low as three feet during the month of September and fluctuated between four to seven feet in depth from October through February. During 2014, the San Simeon groundwater levels improved to average levels during the summer due to exceptional conservation occurring in combination with there being no pumping from the San Simeon aquifer during a critical tracer study that occurred from July 24, 2014 through September 29, 2014.

3 *California Regional Water Quality Control Board Central Coast Region Order No. R3-2014-0050 Waste Discharge Requirements and Water Recycling Requirements for the Cambria Community Services District Emergency Water Treatment Facility Recycled Water Re-Injection Project*, November 14, 2014.




Source: Cambria Community Services District, 2015.

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**San Simeon Creek Well Levels**

**Exhibit 3-3**

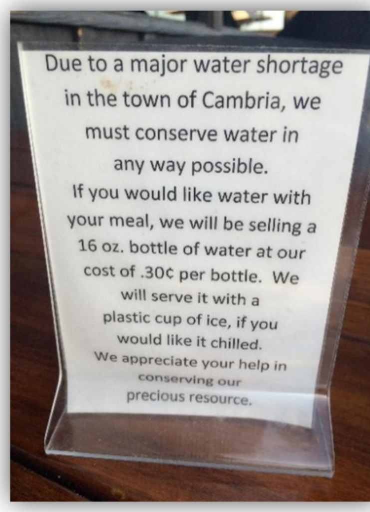
The 2013/2014 water year drought prompted the CCSD's decision to provide an emergency water supply for Cambria that could be quickly implemented. The technical concept of the highest ranked alternative (San Simeon Creek Road Brackish Water Alternative – Concept 5) was used as a starting point in the development of the SWF, which is the subject of this SEIR. This earlier alternative Concept 5 was further simplified to meet the CCSD's emergency water supply needs. Key changes to Concept 5 included: reducing the scope of the earlier alternative to fit entirely within existing CCSD-owned property; incorporating and reusing as much of the existing CCSD infrastructure as possible (e.g., Van Gordon Reservoir and extraction Well 9P7); housing the advanced water treatment plant in modular shipping containers; and, where feasible, using above-grade piping that would not require trenched excavations.

The Cambria Emergency Water Supply Project San Simeon Creek Basin Groundwater Modeling Report (GMR) (CDM Smith, May 14, 2014) was prepared to support Project design and determine the underground travel time of injected product water before reaching the CCSD's existing San Simeon well field production pumps (per Title 22 Indirect Potable Reuse criteria); refer to Appendix G, *Hydrology and Water Quality Technical Studies*. The GMR evaluated the Project's potential impacts on San Simeon Creek and the San Simeon Creek Lagoon, which subsequently led to incorporating the Project's design feature that provides water to the upper lagoon area to maintain lagoon water surface levels.

The Project includes design elements to prevent adverse impacts to sensitive habitats and species, and all water discharged by the Project is subject to discharge permits issued by the California Regional Water Quality Control Board (RWQCB), Central Coast Region. Such permits require that discharged water comply with numerous water quality objectives designed to protect habitat. The CCSD has also implemented an Adaptive Management Program (AMP) for the Project which ensures the design elements are working as intended, and includes ongoing monitoring of potentially affected sensitive habitats and species to verify that they are not adversely impacted by Project operations.

The Project facility started operation beginning January 20, 2015, and injected highly treated water from the advanced water treatment plant (AWTP) to the San Simeon well field through April 17, 2015. The Project facility was subsequently restarted on September 20, 2015 and continued to operate through October 2015. In comparing the San Simeon mid-October 2015 well levels with 2013, the average well levels were approximately five feet higher in 2015. Operation of the new facilities during the late 2015 summer/early fall has avoided the need to pump lower groundwater into the creek during the late dry season, thus avoiding the waste of limited freshwater supplies. Without the SWF, such pumping would have been required to control the hydraulic gradient between the up-gradient potable wells and down-gradient percolation ponds. Thus, this new operating regime serves to avoid wasting water by recovering and reusing water, which is now pumped by Well 9P7 to the new advanced water treatment plant for re-injection at the CCSD's San Simeon well field. Such use of the new facilities during the late summer through fall periods is planned to continue until seasonal rainfall arrives and the CCSD wells recover.

## WATER CONSERVATION




The CCSD's 2010 Urban Water Management Plan (UWMP) was prepared to support CCSD's long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. The UWMP assessed the reliability of Cambria's water sources over a 20-year planning horizon and reported their progress on achieving 20 percent reduction in gallons per capita per day (gpcd) urban water consumption by the year 2020, as required in the Water Conservation Bill of 2009 (SBX7-7). For the CCSD, a 10-year base average of 112.4 gpcd and a 5-year base average of 110.7 gpcd were identified, both less than the Central Coast Hydrologic Target of 117 gpcd (see UWMP Table 3-4).[4] It is also noted, Cambria's 10-year base average of 112.4 gpcd was the second lowest of the 25 urban water suppliers in the Central Coast Hydrologic Region.[5] Although the CCSD customers met and surpassed the Central Coast Hydrologic Target of 117 gpcd, SBx7-7 required an additional 5-percent reduction, resulting in a 2020 target of 105 gpcd and an interim 2015 target of 109 gpcd for Cambria (see UWMP Table 3-4).[6] To meet these SBx7-7 state mandated per capita target, the CCSD has continuously enforced water conservation requirements mandated by CCSD Code and executed the Demand Management Measures (DMM) described in UWMP Section 6. Additionally, Cambria's Water Use Efficiency Plan (adopted February 28, 2013) recommended a conservation program to further expand the CCSD's conservation efforts.

On April 7, 2015, the State Water Resources Control Board (SWRCB) released its monthly statewide survey of urban water retailers, comparing the June 2014 through February 2015 gpcd residential water use to the 2013 water use (see Table 3-1, *Cambria Water Conservation*). According to the SWRCB, 55 gpcd is the performance standard for indoor use, and the lowest and highest estimates for the reporting period were 37 and 379 residential gpcd, respectively.[7]

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4 The Central Coast Hydrologic Region covers approximately 7.22 million acres in Central California and has 50 delineated groundwater basins. SBX7-7 required urban water suppliers to calculate baseline water use and set 2015 and 2020 water use targets.

5 California Department of Water Resources Website, *Central Coast Baseline and Target Data – 2010 UWMP Retailers (11/14/14)*, www.water.ca.gov/.../Central%20Coast%20HR%2011-14-14.xlsx, Accessed April 7, 2015.

6 In addition to other restrictions, Governor Brown's Executive Order B-29-15 issued April 1, 2015 imposed a 25 percent mandatory water reduction in 2015 over 2013 usage.

7 State of California Water Resources Board, *June 2014 – February 2015 Urban Water Supplier Report*, April 7, 2015, http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/conservation_reporting_info.shtml, Accessed April 13, 2015.

**Table 3-1**
**Cambria Water Conservation**

| Reporting Month | Calculated R-GPCD for Cambria | | Change R-GPCD | |
|---|---|---|---|---|
| | 2014-2015 | 2013 | Number | Percent |
| January 2015 | 36.30 | 60.25 | (23.95) | -40% |
| December 2014 | 34.96 | 56.69 | (21.73) | -38% |
| November 2014 | 34.96 | 56.30 | (21.34) | -38% |
| October 2014 | 38.03 | 54.79 | (16.76) | -31% |
| September 2014 | 39.99 | 70.67 | (30.68) | -43% |
| August 2014 | 75.09 | 132.12 | (57.03) | -43% |
| July 2014 | 47.79 | 93.54 | (45.75) | -49% |
| June 2014 | 43.84 | 90.10 | (46.26) | -51% |
| *Average* | *43.87* | *76.81* | | -42% |

Note: R-GPCD = Residential gallons per capita per day.

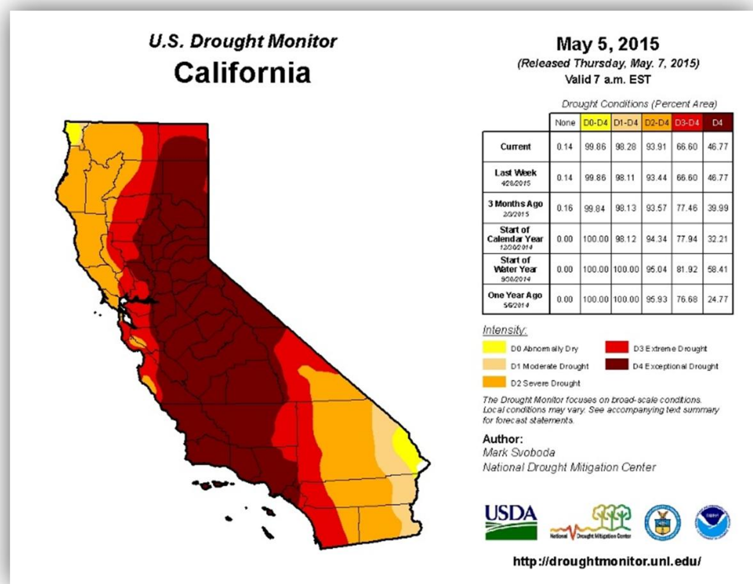
Source: State of California Water Resources Board, June 2014 – February 2015 Urban Water Supplier Report, April 7, 2015, http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/conservation_reporting_info.shtml, Accessed April 13, 2015.

As indicated in Table 3-1, Cambria's average residential water use of approximately 44 gpcd was well below the SWRCB's performance standard of 55 gpcd. Additionally, between June 2014 and January 2015, Cambria's residential gpcd usage decreased an average of 42 percent when compared to 2013 water usage. Comparatively, Cambria's estimated January 2015 residential usage of 36.30 gpcd was the lowest of the Central Coast Hydrologic Region's 16 urban water suppliers included in the April 7, 2015 Report.

Insufficient rainfall has resulted in severe drought conditions in Cambria and the Central Coast. According to the U.S. Drought Monitor, Cambria is experiencing "D4 - Exceptional Drought" conditions.[8] The Drought Monitor further notes the following concerning late March 2015 drought conditions:

> *In California, there were no changes to this week's depiction as the state entered a fourth consecutive year of drought. With temperatures averaging more than 10°F above normal for the week, snowpacks continued to dwindle; as of April 1, the state's total snowpack stood at a meager five percent of average. Indicative of the virtually non-existent snowpack, streamflows have dropped into the 5th percentile or lower over much of California. In addition, the 2014-15 Water Year has ended on an abysmal note, with precipitation over the past 30 days totaling a mere 10 percent of normal or less from Redding southward. Even with some precipitation in the forecast across central and northern California, any rain and mountain snow – while welcomed – would likely do little to improve the state's dire drought prospects.*

[8] United States Drought Monitor Website, http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA, Accessed April 7, 2015.




Since the drought exacerbated the CCSD's water shortage issues, the CCSD imposed stringent conservation measures on its customers on two occasions in 2013 to deal with its dwindling water supply. Nevertheless, by late 2013 the two aquifers were depleted to very low levels, as a result of two years of drought. The CCSD determined that if the drought continued, well levels could drop at accelerated rates, which could potentially result in the CCSD running out of water.

The severe and ongoing drought placed Cambria's water supply in jeopardy. As a result, the community continues to face the following challenges:

- Water supply shortages for both drinking and sanitation;
- Reduced water availability for agricultural production;
- Degraded habitats, including forests, for many fish and wildlife species;
- Exposure of people and structures to risk involving wildland fires;
- Threat of saltwater intrusion into freshwater aquifers; and
- Economic losses in local commerce, including tourism.

Uncertainty remained as to whether upper springs that provide underflow to the creeks during the dry season would cease earlier than normal due to the very dry conditions within each watershed. The potential existed for CCSD well levels to drop at an accelerated rate during the late summer to early fall period, leading to further water supply shortages, seawater intrusion, pumps losing suction, and potential subsidence.

Therefore, due to the ongoing drought conditions, it became necessary for the CCSD to implement expedited actions to reduce the adverse effects of water supply shortages, as well as other impacts resulting from severe drought conditions. Consequently, on January 30, 2014, the CCSD Board of Directors (Board) declared a Stage 3 Water Shortage Emergency Condition, the most severe of three levels.[9] In compliance with Water Code Section 350, this Stage 3 Condition was declared based on the Board's determination that "the demands and requirements of water consumers cannot be satisfied without depleting the water supply of the CCSD to the extent that there would be insufficient water for human consumption, sanitation, and fire protection and

[9] Cambria Community Services District, Resolution 04-2014, January 30, 2014.

that, based on this condition and on concerns regarding the anticipated prolonged drought conditions."[10] The Board approved implementation of a Stage 3 Water Conservation Program with enhanced water conservation measures and restrictions on the use of potable water (see also *Water Conservation* Section above). Also, as part of its same January 30, 2014 meeting, the Board implemented a two-pronged approach to address its water shortage: 1) the Board approved an emergency brackish water supply project off of the San Simeon Creek aquifer (based on a modified/substantially simplified version of San Simeon Creek Road Brackish Water Alternative – Concept 5 (see *Water Supplies and Drought* Section above), which ranked highest in the CCSD's 2013 Engineering TM); and 2) the Board approved rehabilitating and restarting older wells in the deeper section of the Santa Rosa Creek aquifer.

In connection with the emergency brackish water supply project, the Board: 1) approved an emergency authorization to suspend formal bidding regarding contracting for the project's detailed formulation and construction; 2) approved the expenditure of $500,000 for the emergency project's development and implementation, which was an initial authorization to begin the process of fine-tuning project plans; 3) authorized the CCSD's General Manager to enter into all contracts necessary to develop and implement the emergency project and take all necessary steps for its completion, as quickly as possible; and 4) determined that the emergency project was statutorily exempt from CEQA, as a specific action necessary to prevent or mitigate an emergency (CCSD Resolution 05-2014).

State and local officials also declared drought emergencies, reflecting the severity of the extreme drought conditions in the State of California and SLO County. Specifically, Governor Jerry Brown proclaimed a State of Emergency on January 17, 2014, and subsequently proclaimed continued States of Emergency on April 25, 2014[11], September 19, 2014 (Executive Order [EO] B-26-14), December 22, 2014 (EO B-28-14), and April 1, 2015 (EO B-29-15). Similarly, SLO County declared drought level condition D4 for the entire County (the worst federal drought rating), prompting the Board of Supervisors to adopt Resolution No. 2014-64 on March 11, 2014 proclaiming a local emergency in the entire County.

The emergency brackish water supply project was proposed in response to the area's exceptional drought and the CCSD Board's January 30, 2014 declaration of a Stage 3 Water Shortage Emergency Condition. To expedite its completion, the Project was designed to: fit entirely within existing CCSD-owned property; incorporate/reuse as much of the existing CCSD infrastructure as possible (e.g., Van Gordon Reservoir and extraction Well 9P7); house the advanced water treatment plant in modular shipping containers; and, where feasible, use above-grade piping that would not require trenched excavations.

The Project involves construction and operation of a sustainable water facility at the CCSD's existing San Simeon well field and treated wastewater effluent land disposal system property.

[10] Ibid.

[11] This proclamation expressly exempted emergency water projects (such as the Project) from CEQA.

More specifically, the Project proposes a sustainable water system that establishes a reuse/recycling process. Treated effluent and lost aquifer underflow are recovered, treated through advanced treatment processes to produce "advanced treated water," injected directly into the groundwater basin to augment the community's potable water supply, consumed and converted to wastewater, pumped to the percolation ponds (after secondary treatment), and infiltrated back into the groundwater to restart the cycle. Therefore, the Project operates as an Indirect Potable Reuse (IPR)[12] facility. The SWF provides an adequate water supply of appropriate quality to meet the needs of the Cambria community.

In his April 1, 2015 EO, Governor Brown declared that "a distinct possibility exists that the current drought will stretch into a fifth straight year in 2016 and beyond."[13] Similarly, the CCSD anticipates continued water shortages and drought conditions over the course of the next 20 years as a result of climate change impacts, and the likely need for the continuous use of the SWF for the next 20 years. Additionally, the SWF can also provide system-wide operational benefits during non-drought years, as discussed below in Section 3.3, *Project Purpose and Objectives*.

## EMERGENCY COASTAL DEVELOPMENT PERMIT

On February 13, 2014, the CCSD Board directed its General Manager to seek an Emergency Coastal Development Permit (E-CDP) from SLO County. On April 22, 2014, the CCSD submitted an application to the County for an E-CDP, to construct and operate the Project. On May 15, 2014, the County issued an E-CDP (ZON2013-00589), authorizing construction and operation of the emergency project, subject to various conditions that addressed construction/operations and general land use entitlement matters, as well as hydrology/water quality, light/glare, noise, air quality, cultural resources, and biological resources. The E-CDP is discussed in detail in Section 5.8, *Land Use and Planning*. The E-CDP Conditions of Approval are included in Appendix C, *E-CDP Conditions of Approval*, and key conditions are noted below.

**E-CDP Condition 2.** According to this Condition, the E-CDP is valid until such time that the CCSD Board-declared Stage 3 Water Shortage Emergency Condition has ended, or the Project has been approved as a permanent facility through a Regular Coastal Development Permit (R-CDP), whichever is sooner.

**E-CDP Condition 5.** This Condition required that construction work be started within 20 days from issuance of the E-CDP, with construction being completed within 180 days. Construction of the emergency Project began on May 20, 2014 and was substantially completed on November 14, 2014. The construction phase was followed by an approximately two-month start-up period

[12] Indirect Potable Reuse (IPR) involves blending advanced treated water (recycled or reclaimed) utilizing a natural water barrier (i.e., a groundwater basin or reservoir) and further treating the water prior to use as a drinking water source.

[13] State of California Website, *Executive Order B-29-15*, April 1, 2015, http://gov.ca.gov/docs/4.1.15_Executive_Order.pdf, Accessed April 13, 2015.

that included facility testing and commissioning. Production of potable water began on January 20, 2015.

**E-CDP Condition 6.** This Condition required that the CCSD apply for a regular Coastal Development Permit (R-CDP) to authorize the emergency work as permanent. The CCSD complied with this condition, as discussed in the following *Regular Coastal Development Permit* Section.

To ensure compliance with all E-CDP conditions, the CCSD prepared the *Emergency Coastal Development Permit Mitigation Monitoring and Reporting Program* (E-CDP MMRP), which involved monitoring and reporting during the Project's construction phase. The E-CDP and CDP MMRP are available for review on the CCSD's website (www.cambriacsd.org/cm/Home.html) and at the CCSD offices located at 1316 Tamson Drive, Suite 201, Cambria, California 93428.

## REGULAR COASTAL DEVELOPMENT PERMIT

On June 13, 2014, the CCSD submitted its application for an R-CDP. An Initial Study/ Mitigated Negative Declaration (IS/MND) was prepared to satisfy R-CDP CEQA requirements. The IS/MND was made available for a 30-day public review period from June 23, 2014 to July 22, 2014. Approximately 25 comment letters were received during the IS/MND public review period. Additionally, a meeting with key state and federal agencies was held at the CCC's Santa Cruz office on August 27, 2014. Subsequent to IS/MND release, the Project was further modified and additional design features were added in response to the comment letters and the consultation with public agencies. As a result, the CCSD determined that a Subsequent Environmental Impact Report (SEIR) was required for the Project. Notable differences between the project analyzed in the 2014 IS/MND and the facility that was constructed involve realignment of the filtrate, reverse osmosis (RO) concentrate disposal, product water pipelines, a gopher barrier and frog exclusionary fence at the evaporation pond's perimeter, and a fifth monitoring well. Additionally, more effective surface discharge near the confluence of the San Simeon and Van Gordon Creeks was included in place of the previously proposed Lagoon Injection Wells (LIW). Refer to Section 3.5.2, *Project Characteristics – Mitigation Measures (Project Modifications)*, below for a description of the proposed mitigation measures (Project modifications) concerning evaporation pond and lagoon surface discharge operations.

## OFFICE OF PLANNING AND RESEARCH CONCURRENCE

SLO County Code Section 23.01.080 requires that any court challenge to any decision on matters set forth in the County's Coastal Zone Land Use Ordinance, including the issuance of an E-CDP, be filed within 90 days of its issuance. That deadline expired on August 13, 2014 (90 days after the May 15, 2014 E-CDP issuance). Additionally, Public Resources Code Section 21167(d) requires that a challenge to a determination that a project is exempt from CEQA be filed within 180 days of the agency's approval of the Project where no Notice of Exemption (NOE) is filed.

That deadline expired on July 29, 2014 (180 days after the January 30, 2014 CCSD Board CEQA exemption determination).

Although the deadlines for challenging the County's E-CDP issuance and the CCSD Board's CEQA exemption determination passed, on September 9, 2014, the CCSD filed a NOE for the Cambria Emergency Water Supply Project,[14] noting among other factors that the Project was consistent with the Governor's January 17, 2014 State of Emergency Proclamation and his April 25, 2014 Proclamation of a Continued State of Emergency, EO Directives 12 and 19. The NOE included reference to Public Resources Code, § 21080, Subdivision (b)(4); California Code of Regulations, Title 14, § 15269, Subdivisions (b) and (c), and § 15301, which exempt from CEQA certain actions necessary to prevent or mitigate an emergency. Pursuant to the Governor's April 25, 2014 Proclamation of a Continued State of Emergency, EO Directives 12 and 19, on September 12, 2014, the State of California Office of Planning and Research (OPR) issued its concurrence that the Project was required to address the CCSD's critical drinking water shortages. The CCSD completed the Sustainable Water Facility (formerly Emergency Water Supply Project) consistent with the Governor's EOs.

Despite this history and related need to promptly address the area's water shortage emergency, and despite the CEQA exemption under which the Project was constructed and operates, as a good environmental steward, the CCSD has prepared this SEIR. The CCSD believes that transitioning from an emergency facility to a sustainable water facility offers numerous benefits to the Cambria community. The CCSD also intends to adopt further mitigation measures, including those concerning evaporation pond operations and surface discharge, which will be identified through this environmental analysis. By the issuance of an R-CDP, the CCSD intends to use the SWF to its fullest benefit, which would include operating the SWF to avoid a future Stage 3 Water Shortage Emergency Condition by providing long-term drought protection and seasonally augmenting Cambria's potable water supply, as well as providing a more water efficient means to control the late dry-season hydraulic gradient between the CCSD's San Simeon Creek aquifer's potable well field and percolation pond areas.

## MITIGATION MEASURES (PROJECT MODIFICATIONS)

Through the environmental analysis contained in this SEIR, and as a result of further input from regulatory agencies and the local community, various mitigation measures have been identified to avoid/reduce environmental impacts resulting from SWF operations. These mitigation measures, which generally involve the evaporation pond, RO concentrate disposal, and surface discharge, are described in detail in <u>Section 3.5.2</u>, <u>*Project Characteristics – Mitigation Measures (Project Modifications)*</u>, below.

[14] It is noted, the Cambria Emergency Water Supply Project name changed to "Sustainable Water Facility."

# 3.3 PROJECT PURPOSE AND OBJECTIVES

CEQA Guidelines Section 15124, *Project Description*, requires that the Project Description contain a statement of the objectives sought by the proposed project. The statement of objectives, which specifies what the CCSD seeks to accomplish, should also include the underlying purpose of the project, that is to say the reason behind the Project. The Project purpose and objectives are to:

- Provide a reliable water supply facility to serve existing development, which can be operated to maximize local water use efficiencies, address any current water shortages, and avoid future water shortages.
- Provide a reliable water supply, which would serve no more than 4,650 existing and future residential units (CCSD wait list) at full buildout, pursuant to the North Coast Area Plan (NCAP) and mitigation set forth in the CCSD's certified WMP PEIR.
- Provide a permanent water supply facility that can be operated to meet water demands during drought conditions and improve overall supply reliability.
- Safeguard Cambria against existing and future water shortages.
- Provide for the indirect potable reuse of recycled water, as part of the CCSD's efforts towards implementing sustainable practices for resilience to climate change impacts.
- Augment Cambria's water supply during shortages by recharging the San Simeon well field aquifer.
- Prevent the migration of secondary wastewater effluent into the San Simeon well field production wells.
- Prevent seawater intrusion into the San Simeon well field production wells.
- Avoid potential ground subsidence.
- Maintain adequate groundwater levels at the San Simeon well field to ensure proper production well operations (no loss of suction).
- Minimize the loss of fresh water to the ocean while also conserving the amount of freshwater remaining in aquifer storage by avoiding the need to pump groundwater (particularly during the late dry season), into the Van Gordon Creek to maintain a positive gradient between the up-gradient potable well field and the treated wastewater percolation ponds.

- Protect the down-gradient lagoon by the Project's design feature, which provides a surface water discharge into the lagoon when the facilities are in operation during the dry summer season, when there is no surface flow into the lagoon.

- Reduce salts and nutrients from the lower San Simeon groundwater basin by processing the water through reverse osmosis (RO) and disposing of RO concentrate, which would contain salts and nutrients.

- Respond in a timely and efficient manner by providing the existing Cambria community with an adequate and permanent water supply to meet drinking and sanitary needs.

- Reuse and repurpose existing CCSD infrastructure where feasible to minimize the Project's footprint, its potential impacts, and facilitate its timely completion.

- Protect habitats for wildlife species by avoiding impacts to these resources, and protecting San Simeon Creek Lagoon during dry weather conditions.

- Making the most efficient use of the area's water supplies, including the IPR of water.

- Meeting all regulatory agency permitted conditions, including those of SLO County and the State Water Board.

- Improving the quality of life for local businesses and residents who often resort to extraordinary measures to obtain the necessary water supply, such as manually hauling water in buckets and other make shift containers. This practice includes efforts by the community's elderly, retired population, who are limited in their physical capabilities and subject to injury from such efforts.

- Repurpose the SWF's evaporation pond to address potential environmental impacts while also providing approximately 6 to 7 million gallons of raw potable water that could be used for supply (following surface water treatment), as well as for fire-fighting helicopters during a wildland fire.

- Minimizing economic hardship and losses to local residences and businesses, including tourism.

# 3.4 ENVIRONMENTAL SETTING

The Project site includes areas underlain by a shallow alluvial aquifer along San Simeon Creek, including the Van Gordon Creek tributary. The creek valley forms a steep, narrow canyon near the headwaters. Before reaching the Pacific Ocean, along the final three to five miles, the valley widens to a floodplain that is up to approximately 1,000 feet wide. San Simeon Creek drains the western flanks of the Santa Lucia Range in SLO County and discharges into the Pacific Ocean. The floodplain is underlain by the groundwater basin and is flanked by steep hillsides that rise 200 to 800 feet above the valley floor. San Simeon Creek Lagoon is located at, and immediately up-stream from, the outlet of where San Simeon Creek flows into the Pacific Ocean. When not under the influence of high ocean surf, the lagoon is primarily a fresh water lagoon, which forms behind an ocean beach berm. San Simeon Creek Lagoon is supplied by groundwater discharge and seasonal surface water inflows.

CCSD and agricultural water users along San Simeon Creek use wells in the alluvial aquifer. Along the San Simeon Creek valley, there are numerous private wells that irrigate farmlands on flat areas adjacent to the creek channel. Groundwater occurs in the alluvial deposits beneath the creek. The alluvial deposits form flat valley floors, which are used for irrigated and non-irrigated agriculture. The alluvial aquifer is recharged primarily by seepage from San Simeon Creek, which typically flows during winter and spring rainy seasons, absent drought conditions.

## ONSITE LAND USES

The Project site is situated on CCSD-owned property currently used as their San Simeon well field and treated wastewater effluent percolation pond system site; see descriptions below. The Project site is predominantly vegetated with annual grassland and ruderal vegetation. Onsite soils are generally comprised of sandy and silty clays, underlain by clays and impermeable bedrock of Franciscan chert, volcanic rock, and sandstone. Onsite permeabilities generally decrease with depth and distance from surface waters. San Simeon Creek and Van Gordon Creek traverse the southeastern and western portions of the property, respectively. A CCSD-owned abandoned structure is located on the east side of Van Gordon Road, approximately 750 feet south of San Simeon Monterey Creek Road. A chain-link fence surrounds the structure.

The Project site contains various water and wastewater facilities, including the San Simeon Well Field and potable water supply line, pumping and monitoring wells, treated wastewater effluent percolation pond system, and Van Gordon Reservoir, as illustrated on Exhibit 3-4, *Existing Site Conditions*, and described below.


Source: CDM Smith, June 2014.

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SUBSEQUENT ENVIRONMENTAL IMPACT REPORT
CAMBRIA SUSTAINABLE WATER FACILITY PROJECT

# Existing Site Conditions

**Exhibit 3-4**

**<u>San Simeon Well Field and Potable Water Supply Line</u>.** The San Simeon Well Field (well field) is located at the eastern portion of the Project site, approximately one mile inland from the ocean. A gravel road that traverses this area provides access to the wells. The well field contains three municipal water wells (CCSD Wells SS-1, SS-2, and SS-3) used to extract groundwater from the San Simeon Aquifer. Natural drainage and water extraction during the dry season results in seasonal declines in groundwater levels.[15] An underground potable water supply pipeline, which generally parallels the northern and western site boundaries, is used to transport the potable water from the well field to Cambria, approximately 2.5 miles to the south.

**<u>Pumping and Monitoring Wells</u>.** A total of 11 wells are located on the Project site. The state identification numbers for these wells uses the township number, followed by the range, which is then followed by an alphanumeric tract number and state assigned well number. For the wells identified within the Project site, the township 27S and range 8E applies from the state's Mount Diablo baseline and meridian. For purposes of abbreviation, the 27S 8E is not being repeated within the discussion that follows for the wells that have an assigned state identifier. For example, Well 27S 8E 9P7, is simply called Well 9P7. Wells that have yet to receive a state identifier, such as those proposed by the Project, are simply referred to by the identifier used on the drawings.

The onsite wells include the following: CCSD municipal pumping wells 9J4 (CCSD Well SS-1), 9J5 (CCSD Well SS-2), and 9K3 (CCSD Well SS-3); Well 9P1, a ranch house supply well that is no longer in use (the house no longer exists); Well 9P2, which supplies a riparian irrigator via an agreement with the CCSD that replaced the use of Well 9K1; and, Well 9P7, a former gradient control well (repurposed as part of the SWF). Existing monitoring wells include Wells 16D1 and 9N2); and, abandoned irrigation wells 9K2 and 9L1. Historic monitoring well 9P5 (CCSD Well SS-4) is located offsite and south of San Simeon Creek on the State Park's property. The closest privately owned riparian irrigation well on the San Simeon aquifer is well 9J3, a prior irrigation well that was converted to domestic use, which is approximately 0.25 miles up-gradient from CCSD Well SS-1. Other neighboring property wells include two wells off of the Van Gordon Creek (M1 and M2) to the north, which are approximately 0.5 miles up-gradient from the confluence of Van Gordon and San Simeon Creeks. Wells 9P7 and MW-16D1 are particularly relevant to the Project, thus, are further discussed below.

15 USGS Report 98-4061, Hydrogeology, Water Quality, Water Budgets, and Simulated Responses to Hydrologic Changes in Santa Rosa and San Simeon Creek Ground-Water Basins, San Luis Obispo County, California, Page 82.

Well 9P7 was previously used as a groundwater gradient control well, and is located within the southwestern portion of the Project site. Well 9P7 is manually controlled and includes a 20 horsepower pump with a capacity of approximately 650 gallons per minute (gpm). Past gradient control relied upon pumping Well 9P7 into a buried eight-inch diameter PVC (Polyvinyl chloride) pipeline that discharged into Van Gordon Creek. The need for gradient control discharge would typically be limited to the late summer to early fall period prior to the arrival of seasonal rainfall, and when the average water table at the three San Simeon potable production wells became equal to or lower than the water table at Well 9P2 (a negative gradient condition).

Monitoring Well 16D1 is located at the southwest corner of the Project site and used to monitor groundwater quality down-gradient from the percolation ponds.

**Treated Wastewater Effluent Percolation Pond Disposal System.** The treated wastewater effluent percolation pond disposal system is located at the southwestern portion of the Project site. The system, which operates under RWQCB Waste Discharge Requirements Order No. 01-100 (December 7, 2001), includes four percolation ponds, and associated treated wastewater effluent pipelines.

Cambria's Wastewater Treatment Plant (WWTP) is located approximately 2.5 miles to the south, at 5500 Heath Lane, in Cambria. After secondary treatment, treated effluent is pumped to the four percolation ponds located on the Project site. Prior to about 1994, treated wastewater effluent from the WWTP was pumped to a land disposal system that utilized overhead spraying. The earlier system relied upon the final effluent being evaporated or infiltrated through the soil into the groundwater. The CCSD's Van Gordon Reservoir (see description below) was originally used to store the treated effluent prior to surface spraying. The surface spray operation was stopped following the 1994 construction of the percolation ponds. The percolation ponds are each designed with perimeter berms, which contain treated effluent that infiltrates slowly through the soil into the groundwater (i.e., the lower San Simeon Creek aquifer). Between 1994 and 2005, the Van Gordon Reservoir was used as an intermediate storage reservoir prior to discharge into the percolation ponds. Piping was reconfigured by the CCSD operators in 2005 to allow direct discharge of the treated effluent into the percolation ponds without using the Reservoir, which is the current operating practice.

Treated effluent recharges the aquifer through the ponds to maintain a hydraulic mound/barrier, which reduces potable groundwater losses at the San Simeon Creek aquifer/ocean interface and slows the creek underflow. This practice is also important in preventing saltwater intrusion into the freshwater aquifer.

**Van Gordon Reservoir.** As noted above, the Van Gordon Reservoir was originally constructed for the storage of treated effluent from the WWTP prior to spraying over the surface of the spray disposal areas. The Reservoir has not been in use since about 2005. The Reservoir is an earthen trapezoidal pond with a length and width of approximately 300 feet and a surface area of between

105,000 square feet to 137,000 square feet, depending on the Reservoir's water level. The berm elevation is approximately 47 feet with an interior slope of 4:1, an exterior slope of 3:1, and an overall depth varying from 8 to 10 feet.[16]

## SURROUNDING LAND USES

The land uses surrounding the Project site are illustrated on Exhibit 3-2 and described below:

- *North:* San Simeon Monterey Creek Road (aka San Simeon Creek Road) forms the Project site's northern boundary. San Simeon Creek Road is used as an access route to the agricultural, residential, and industrial uses located to the east. A northern reach of Van Gordon Creek Road, which is north of San Simeon Creek Road, also serves agricultural, residential, and industrial uses that are north of the Project site.

- *South:* San Simeon Creek both traverses and is located immediately south of the Project site. When present, seasonal surface water in San Simeon Creek flows to the west approximately one mile to the Pacific Ocean. The State Park's Washburn Primitive Campground is located approximately 2,000 feet (from the AWTP) to the southwest, and is situated on a ridgeline that overlooks the valley floor.

- *East:* Agricultural, residential, and industrial uses, including the Cambria Rock Quarry are located to the east.

- *West:* A southern reach of Van Gordon Creek Road forms the Project site's western boundary. When present, seasonal surface water in Van Gordon Creek flows south to the confluence with San Simeon Creek near the southwestern corner of the Project site. The southern reach of Van Gordon Creek Road, (which extends south from its intersection with San Simeon Creek Road), serves as a western boundary divide between the State Park San Simeon Creek Campground, which is approximately 200 feet to the west of the Project site. The campground fence is west from, and parallel to, the west side of Van Gordon Creek Road. Two single-family dwellings located within the San Simeon Creek Campground provide housing for State Park personnel (San Simeon Creek Campground hosts). The dwellings are located further west beyond Van Gordon Creek Road, approximately 750 feet south of San Simeon Monterey Creek Road.

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16 CDM Smith, Project Description Revised Final, Page 2-25, October 2014.

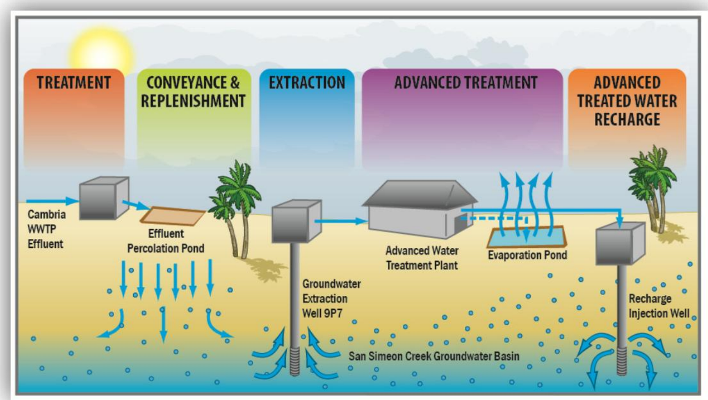
## LAND USE DESIGNATIONS

The Project site is located in the North Coast (NC) Planning Area, within the Rural North Coast (RNC) community. The NC Planning Area is addressed in the NCAP, which constitutes the County's General Plan Land Use and Circulation Elements for the NC Planning Area. The NC Planning Area is entirely within California's Coastal Zone. The *Coastal Zone North Coast Planning Area Rural Land Use Category Map*[17] separates the NC Planning Area into land use categories, which define regulations for land uses, density, and intensity of use. As shown on the Land Use Category Map, the Project site is designated Agriculture. The *Coastal Zone North Coast Planning Area Rural Combining Designation Map*[18] assigns Combining Designations to NC areas containing hazards, sensitive resource areas, environmentally sensitive habitat areas, historic and archaeologically sensitive areas, and public facilities. As shown on the Combining Designation Map, portions of the Project site are assigned the following Combining Designations:

- Geologic Study Area (GSA);
- San Simeon Creek Flood Hazard (FH);
- Sensitive Resource Area (SRA);
- Environmentally Sensitive Habitat Area, Terrestrial Habitat (ESHA-TH); and
- Environmentally Sensitive Habitat Area, Coastal Creek (ESHA-CC).

Additionally, the Project site (and all of the NC Planning Area) is assigned Local Coastal Program (LCP) Combining Designation.

# 3.5 PROJECT CHARACTERISTICS




The Project involves construction and operation of a Sustainable Water Facility (SWF) at the CCSD's existing San Simeon well field and percolation pond system property. The Project was designed and constructed to treat brackish groundwater using advanced treatment technologies to augment Cambria's potable water supply during the current epic drought, future droughts, and other dry periods by recharging the San Simeon well field aquifer with advanced treated water. Using advanced technologies, brackish

[17] County of San Luis Obispo Website, http://www.slocounty.ca.gov/planning/zoning/Map_Image_Download_Center/Land_Use_Maps.htm, Accessed May 4, 2015.

[18] Ibid.

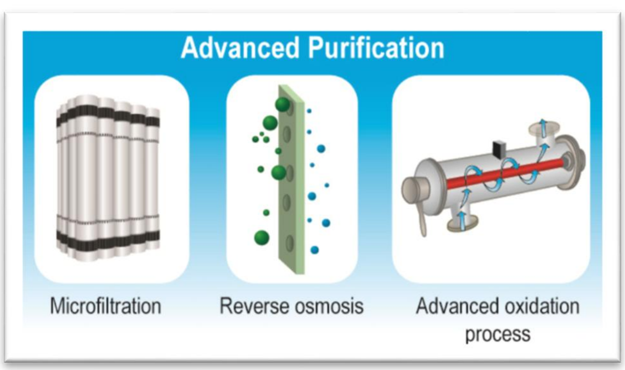
groundwater is treated to produce high quality water meeting California Water Board, Division of Drinking Water standards. Also, membrane filtration effluent and/or de-chlorinated and oxygenated product water is surface discharged near the upstream end of San Simeon Creek Lagoon to protect San Simeon Creek Lagoon during dry weather conditions.

Through the environmental analysis contained in this SEIR, various mitigation measures have been identified to avoid/reduce environmental impacts resulting from SWF operations. These operational mitigation measures, which generally involve evaporation pond repurposing, mechanical spray evaporator removal, offsite RO concentrate disposal, surface water treatment, and modified surface discharge to San Simeon Creek, are described in detail in the *Mitigation Measures (Project Modifications)* Section below.

As discussed in Section 3.6, *Project Phasing and Construction Activities*, Project construction began in May 2014 and was substantially completed by November 2014. Production of advanced treated water began on January 20, 2015. The SWF has operated intermittently, since January 2015. As previously noted, various operational mitigation measures have been identified to avoid/reduce environmental impacts resulting from SWF operations. Compliance with these operational mitigation measures would necessitate modifications to the SWF, including the evaporation pond, mechanical spray evaporators, and surface discharge to San Simeon Creek. Therefore, for purposes of this Project description and the analysis contained in this SEIR, the "Sustainable Water Facility" involves the built and operational Project components, whereas the "Mitigation Measures (Project modifications)" involve proposed Project components, including modifications to Project components required for compliance with evaporation pond and lagoon surface discharge operations-related mitigation measures.

## 3.5.1 SUSTAINABLE WATER FACILITY

The Sustainable Water Facility (SWF) is illustrated on Exhibit 3-5, *SWF Project Facilities*, and described below. The SWF is based upon the *Cambria Emergency Water Supply Project Description Revised Final*[19] (CDM PD) (CDM Smith, October 2014), in consultation with the CCSD.




- *Extraction Well*. The Project's source water is extracted from the aquifer at existing Well 9P7.

- *Advanced Water Treatment Plant (AWTP)*. The AWTP treats potentially impaired groundwater to advanced treated water quality suitable for injection further upstream into the

[19] The CDM PD is available for review on the CCSD's website at www.cambriacsd.org/cm/Home.html.

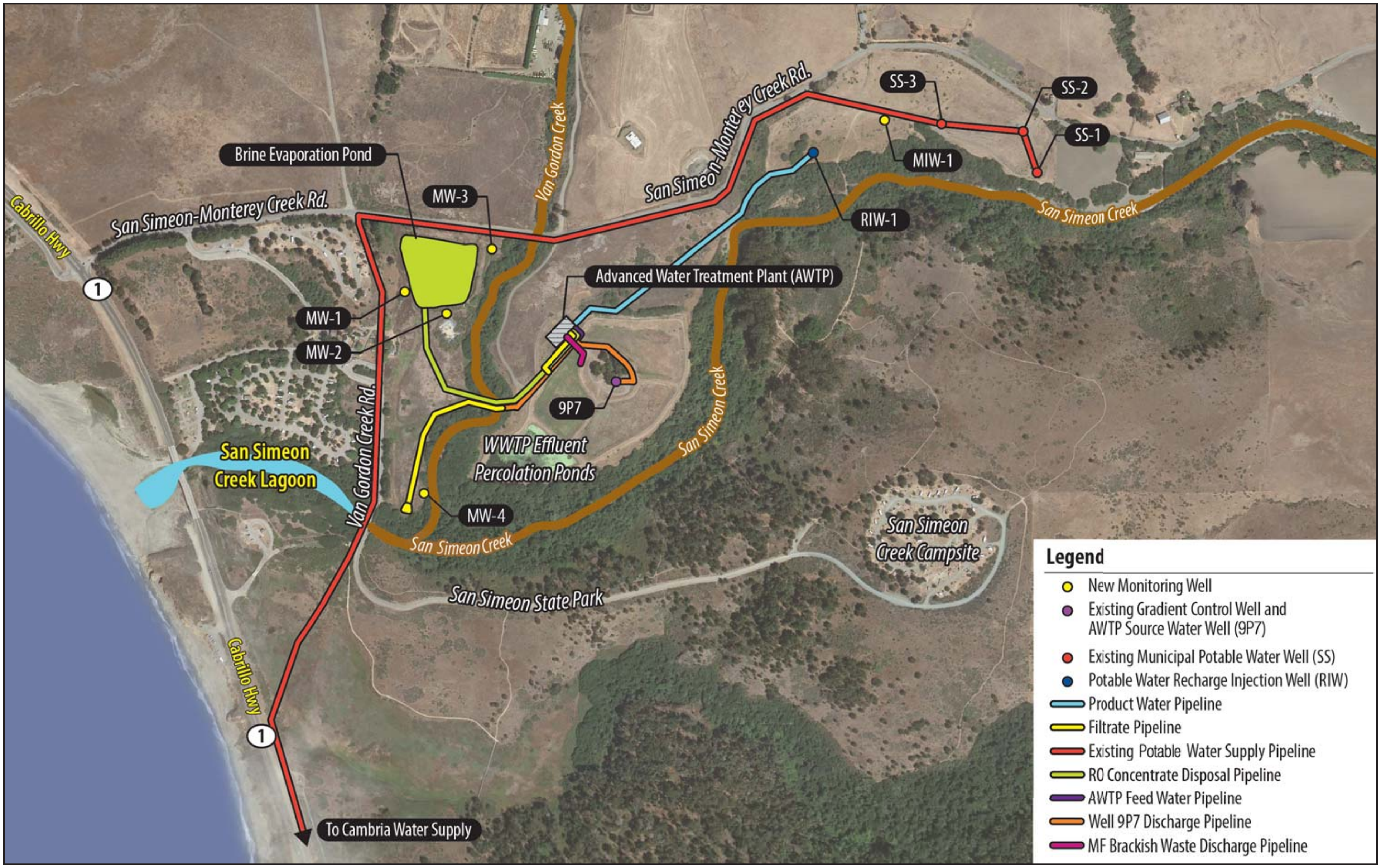
groundwater basin to augment the potable water supply and for surface discharge to protect San Simeon Creek Lagoon during dry weather conditions. The AWTP's main treatment processes include membrane filtration (MF), reverse osmosis (RO), and advanced oxidation process (AOP) utilizing ultraviolet (UV) light and hydrogen peroxide.

- *Recharge Injection Well (RIW-1)*. The stabilized AWTP finished product water is pumped for injection into the groundwater basin at the San Simeon Well Field utilizing new RIW-1.

- *Evaporation Pond and Evaporators*. The AWTP generated waste stream (RO concentrate or RO reject water) from the RO process, as well as any chemical cleaning waste, is contained for evaporation in the Title 27 compliant evaporation pond (in the same location and footprint that was once occupied by a treated wastewater holding basin (aka the Van Gordon Reservoir)). The evaporation pond includes a Title 27 compliant lining system for RO concentrate containment, as well as monitoring of liner integrity and groundwater. RO concentrate evaporation is aided with five mechanical spray evaporators spaced 25 feet apart located on the western berm, each surrounded by three-sided sound enclosures.

- *Lagoon Surface Discharge*. To maintain and enhance the San Simeon Creek Lagoon, micro-filter (MF) effluent and/or de-chlorinated and oxygenated product water is pumped during dry weather conditions for surface discharge to the upstream end of San Simeon Creek Lagoon. The filtrate (lagoon water) pipeline is used to deliver the lagoon water from the AWTP to a surface discharge structure. The discharge structure, which is located just north of the San Simeon Creek tree line, dissipates velocity, to create a sheet flow of mitigation water, prior to entering the upstream end of San Simeon Creek Lagoon.

When the AWTP product water is blended with the MF effluent for lagoon surface water discharge, the AWTP product water is de-chlorinated at the AWTP to reduce high chlorine residual in the water. Sodium bisulfite is used to de-chlorinate the AWTP product water to meet the RWQCB's low threat discharge permit requirements, which have a very low maximum limit of 0.02 mg/l for chlorine residual. Also included in the AWTP product water de-chlorination process is an in-line aeration system to make sure the water provided to the lagoon has sufficient dissolved oxygen prior to its discharge.




Source: Google Earth, 2014.

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CAMBRIA SUSTAINABLE WATER FACILITY PROJECT

**SWF Project Facilities**

**Exhibit 3-5**

- *Monitoring Wells*. The Project includes five monitoring wells (MW-1, MW-2, MW-3, MW-4, and MIW-1).

- *Lagoon Mitigation Water De-Chlorination*. Prior to entering the Simeon Creek Lagoon, the Project's lagoon water (MF effluent and/or product water) is de-chlorinated at the AWTP site to reduce chlorine residual in the water. Sodium bisulfite is used to de-chlorinate the Project's lagoon water discharge to meet the RWQCB's low threat discharge permit requirements, which have a very low maximum limit of 0.02 mg/l for chlorine residual. Also included in the mitigation water de-chlorination process is an in-line aeration system to provide the Project's lagoon water with additional dissolved oxygen prior to its discharge.

- *Pipelines*. There are five interconnecting pipelines:

  - Feed Water Extension Pipeline: connects into an existing Well 9P7 discharge pipeline, between Well 9P7 and the AWTP;
  - Product Water Pipeline: connects the AWTP to RIW-1;
  - San Simeon Creek Lagoon Water Pipeline: connects the AWTP to the lagoon discharge structure (includes a reach of horizontal directional drilling under Van Gordon Creek);
  - Micro-filter (MF) Backwash Pipeline: Connects the AWTP to the percolation ponds; and
  - RO Concentrate Disposal Pipeline: a double contained pipeline that connects the AWTP to the evaporation pond (includes a reach of horizontal directionally drilled pipeline under Van Gordon Creek).

### 3.5.1.1 SOURCE WATER – EXISTING WELL 9P7

The source water for the Project, which is pumped from existing Well 9P7, is comprised of a blend of native basin groundwater, deep aquifer brackish water, and percolated secondary effluent from the CCSD's WWTP. The brackish groundwater is comprised of diluted seawater (that occurs from the subterranean dispersion of salts from a deeper saltwater wedge into an overlying freshwater interface zone), creek underflow, and percolated treated wastewater effluent. The degree to which this groundwater source is impaired depends on the ultimate contribution of secondary effluent in the extracted water and the level of treatment achieved for this water through soil aquifer treatment and aquifer travel time. The potentially impaired groundwater is extracted from the San Simeon Creek Groundwater Basin, treated, and then reinjected further upstream at the existing CCSD potable well field, thus providing additional potable water supply to the

Cambria community. With the system in operation, the water elevation at the potable well field is maintained higher than the secondary effluent mound, and higher than that of seawater. This serves to prevent seawater from moving inland to the potable well field.

Key water quality data for Cambria WWTP effluent and brackish groundwater extracted from Well 9P7 is summarized in Table 3-2, *Source Water Quality for AWTP*. As indicated in Table 3-2, Well 9P7 water quality was generally better than the water quality assumed during design.

As part of the SWF, the existing 20 horsepower (hp) pump at well 9P7 was replaced with a 30 hp well pump. Well 9P7 has the capacity to pump 630 gpm.

### 3.5.1.2 ADVANCED WATER TREATMENT PLANT (AWTP)

The AWTP consists of multiple unit processes, including microfiltration (MF) or ultrafiltration (UF), reverse osmosis (RO), advance oxidation process (AOP) utilizing ultraviolet (UV) light and hydrogen peroxide ($H_2O_2$) and post-treatment chemical addition designed to stabilize the treated water before it is conveyed to RIW-1 for recharge. The overall treatment process flow is shown in Exhibit 3-6, *AWTP Process Flow Diagram*.

Key AWTP unit processes equipment were pre-packaged and mounted in six shipping containers, which were installed within an area measuring approximately 100 feet by 170 feet. Each treatment plant container is approximately 15 feet in height. UV vessels, water tanks, pump skids and self-contained chemical totes were installed outdoors on concrete housekeeping pads. During design and the development of local project financing for the project, it was found that the AWTP unit processes supplier had certain units readily available from a project that had been cancelled. This was among the reasons that the container-mounted equipment was found to be cost-effective while also being more readily available. The containerized approach was also deemed to be more favorable by the CCSD's lender when compared to other approaches.[20] The AWTP layout is shown is Exhibit 3-7, *AWTP Site Layout*.

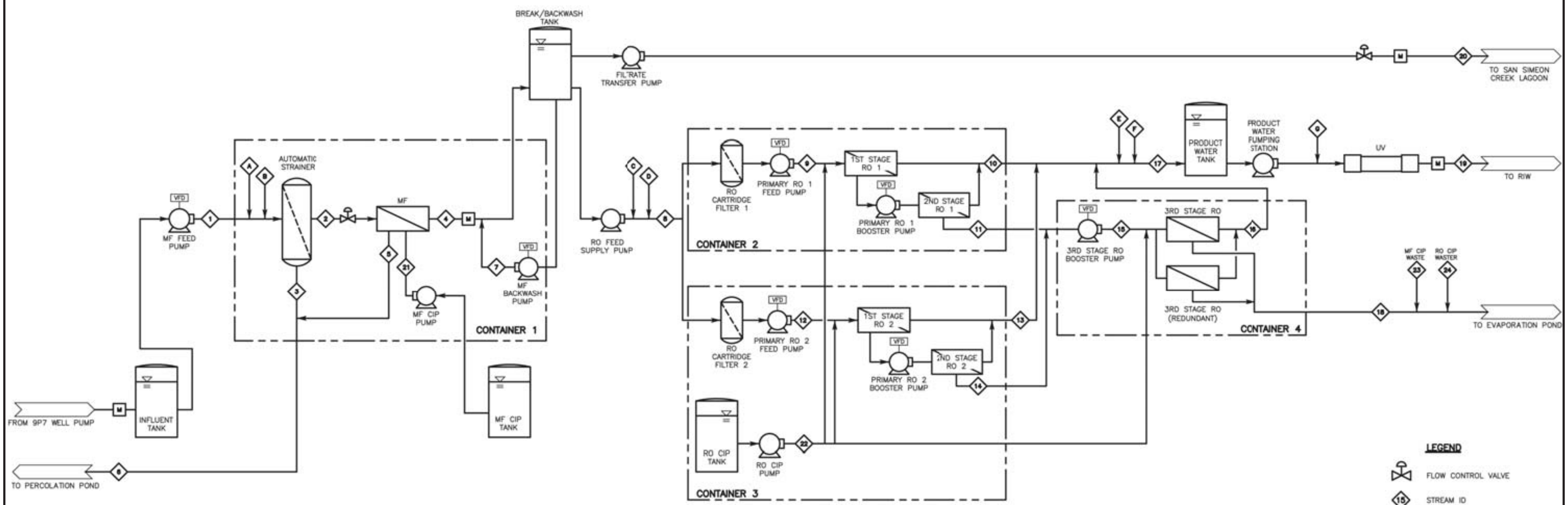
[20] Based on discussions with the CCSD's interim Finance Manager, the lender was more willing to provide a 20-year loan on equipment that was not mounted in temporary trailers.

## Table 3-2
## Source Water Quality for AWTP

| Parameter | Units | WWTP Effluent | | Well 9P7 | | Assumed Condition | Well 9P7 Water Quality Update[5] | |
|---|---|---|---|---|---|---|---|---|
| | | Average | Maximum | Average | Maximum | | Average | Maximum |
| Total Dissolved Solids | mg/L | 929[1] | 1270[1] | 425[1] | 510[1] | 1110 | 427 | 530 |
| pH | | 7.1[1] | 7.4[1] | 7.5[1] | 7.7[1] | 7.6 | 7.9 | 8.1 |
| Alkalinity | mg/L as $CaCo_3$ | 210[2] | | 240[2] | | 210 | NS | |
| Aluminum (Al) | mg/L | <0.01[2] | | <0.01[2] | | <0.01 | <0.023 | <0.023 |
| Ammonia-N ($NH_4$) | mg/L as N | 1.4[1] | 6.1[1] | <0.2[2] | | 0.3 | <0.10 | 0.17 |
| Arsenic (As) | mg/L | <0.002[2] | | <0.002[2] | | <0.002 | <0.001 | <0.001 |
| Barium (Ba) | mg/L | 0.08[2] | | 0.134[2] | | 0.08 | 0.135 | 0.160 |
| Boron (B) | mg/L | 0.32[2] | | 0.17[2] | | 0.32 | 0.21 | 0.25 |
| Calcium (Ca) | mg/L | 72[2] | | 66[2] | | 72 | 63 | 75 |
| Chloride (Cl) | mg/L | 347[2] | | 42[1] | 73[1] | 347 | 36 | 66 |
| Cyanide (CN) | mg/L | <0.004[2] | | <0.004[2] | | <0.004 | <0.002 | <0.002 |
| Fluoride (F) | mg/L | 0.1[2] | | <0.1[2] | | 0.1 | 0.12 | 0.13 |
| Iron (Fe) | mg/L | 0.15[2] | | <0.12[2] | | 0.15 | <0.020 | 0.06 |
| Lead (Pb) | mg/L | 0.0017[2] | | <0.0005[2] | | 0.0017 | NS | |
| Magnesium (Mg) | mg/L | 58[2] | | 44[2] | | 58 | NS | |
| Manganese (Mn) | mg/L | 0.0069[2] | | 0.004[2] | | 0.0069 | <0.0045 | 0.008 |
| Nitrate-N ($NO_3$) | mg/L as N | 27[1] | 44[1] | 2[1] | 4[1] | 4[4] | 3.7 | 9.9 |
| Phosphate ($PO_4$) | mg/L | 18[2] | | 0.4[2] | | 18 | NS | |
| Silica ($SiO_2$) | mg/L | 20[2] | | 21[2] | | 20 | NS | |
| Sodium (Na) | mg/L | 168[1] | 199[1] | 36[2] | 55[1] | 247 | 32 | 41 |
| Sulfate ($SO_4$) | mg/L | 107[2] | | 49[1] | | 107 | 51 | 62 |
| Total Organic Carbon (TOC) | mg/L | 3.9[2] | | 0.7[2] | | 3.9 | 0.6 | 0.8 |
| Caffeine | µg/L | 0.67[3] | | <0.001[3] | | 0.67 | NS | |
| Sucralose | µg/L | 45[3] | | 0.048[3] | | 45 | NS | |
| NDMA | µg/L | <0.002[3] | | <0.002[3] | | <0.002 | NS | |

Notes:
1. Based on Annual Report Summary from Cambria WWTP for 2012 through 2013.
2. Based on April 7, 2014 sampling event. No maximums are included as only single data point is available.
3. Based on April 21, 2014 sampling event. No maximums are included as only single data point is available.
4. Assumed that AWTP influent water would have lower Nitrate level than WWTP effluent after undergoing soil aquifer treatment, as demonstrated by Well 9P7 water quality.
5. Based on 2015 operations data
NS: Not Sampled.

Source: CDM Smith, *Cambria Emergency Water Supply Title 22 Engineering Report Revised Final Table 2-1*, November 2014.




**FLOW BALANCE**

| | |
|---|---|
| AUTOMATIC STRAINER RECOVERY | 99% |
| MF RECOVERY | 92% |
| OVERALL RO RECOVERY | 92% |
| CIP WASTE | 0.5% |

| FLOW STREAM | AWTP FEED | MF FEED | AUTOMATIC STRAINER WASTE | MF FILTRATE | MF BACKWASH WASTE (NOTE 1) | MF AND AUTOMATIC STRAINER COMBINED WASTE | MF BACKWASH FEED (NOTE 1) | COMBINED RO FEED | PRIMARY RO 1 FEED | PRIMARY RO 1 PERMEATE | PRIMARY RO 1 CONCENTRATE | PRIMARY RO 2 FEED | PRIMARY RO 2 PERMEATE | PRIMARY RO 2 CONCENTRATE | THIRD STAGE RO FEED | THIRD STAGE RO PERMEATE | COMBINED RO PERMEATE | THIRD STAGE RO CONCENTRATE | PRODUCT WATER TO RECHARGE INJECTION WELL (RIW) | MF FILTRATE TO SAN SIMEON CREEK LAGOON | MF CIP FEED (NOTE 1) | RO CIP FEED (NOTE 1) | MF CIP WASTE (NOTE 1) | RO CIP WASTE (NOTE 1) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FLOW STREAM ID** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** |
| Average Flow (GPM) | 691 | 684 | 7 | 629 | 55 | 62 | 55 | 529 | 265 | 212 | 53 | 265 | 212 | 53 | 106 | 64 | 487 | 42 | 484 | 100 | 2 | 1 | 2 | 1 |
| Pressure (psi) | 40 | 30 | 5 | 5 | 5 | 5 | 30 | 30 | 122 | 15 | 115 | 122 | 15 | 115 | 215 | 15 | 15 | 20 | 30 | 30 | 20 | 20 | 20 | 20 |
| TDS (mg/L) | 1374 | 1374 | 1374 | 1374 | - | 1374 | 1374 | 1374 | 1366 | 101 | 6756 | 1366 | 101 | 6756 | 6756 | 1108 | 222 | 14529 | 222 | 1374 | - | - | - | - |

| CHEMICAL | AQUEOUS AMMONIA | SODIUM HYPOCHLORITE | THRESHOLD INHIBITOR | SULFURIC ACID | SODIUM HYDROXIDE | CALCIUM CHLORIDE | HYDROGEN PEROXIDE |
|---|---|---|---|---|---|---|---|
| **CHEMICAL STREAM ID** | A | B | C | D | E | F | G |
| Bulk Chemical Concentration | 19.00% | 12.50% | 100.00% | 50.00% | 25.00% | 34.70% | 27.00% |
| Chemical Dose, Max | 1.5 mg/L | 6.0 mg/L | 3.0 mg/L | 180 mg/L | 50 mg/L | 35 mg/L | 5.0 mg/L |
| Dosing Rate, Max | 8.3 gpd | 38 gpd | 1.8 gpd | 49.0 gpd | 112 gpd | 52 gpd | 11.8 gpd |

NOTES
1. INTERMITTENT FLOW.
2. ALL THE CHEMICAL DOSING SKIDS EXEPT THRESHOLD INHIBITOR WILL BE INSTALLEDIN CONTAINER 5 (NOT SHOWN). THRESHOLD INHIBITOR DOSING SKIDS WILL BE INSTALLED IN CONTAINER 2 AND CONTAINER 3.
3. MAIN CONTROL ROOM AND OFFICE SPACE WILL BE SUPPLIED IN CONTINER 6 (NOT SHOWN).
4. RO FLOW CONDITIONS ARE BASED ON AN AVERAGE MEMBRANE AGE OF 3 YEARS.

Source: CDM Smith, June 2014.

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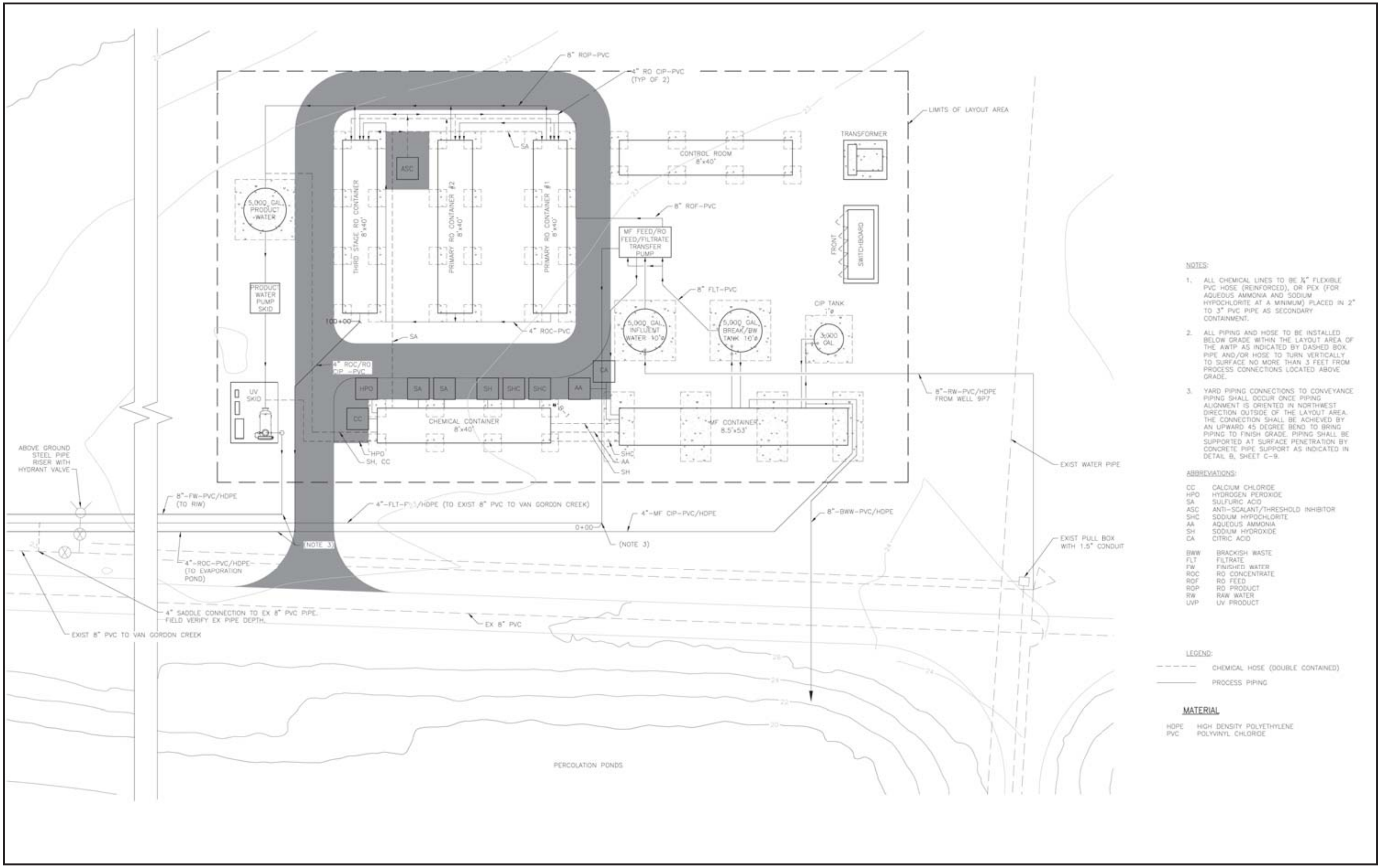
# AWTP Process Flow Diagram

**Exhibit 3-6**




Source: CDM Smith, June 2014.

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# AWTP Site Layout

**Exhibit 3-7**

# PRODUCTION FLOWS AND WATER QUALITY

Table 3-3, *AWTP Process Design Flows*, summarizes recoveries, waste flows, and treatment process capacities for MF and RO systems required to meet the target potable water augmentation of 250 AFY (432,000 gallons per day (gpd) over six months) and San Simeon Creek Lagoon water recharge of 81 AFY (144,000 gpd over six months). The water augmentation of 250 AFY was determined to meet the minimum capacity necessary to abate the water supply shortage and provide water supply to serve buildout at 4,650 dwelling units.

**Table 3-3**
**AWTP Process Design Flows**

| Parameter | Unit | Average Flow |
|---|---|---|
| MF recovery | % | 92 |
| RO recovery | % | 92 |
| Influent flow to AWTP | gpm | 629 |
| MF filtrate production | gpm | 592 |
| MF filtrate flow to San Simeon Creek Lagoon | gpm | 100 |
| MF filtrate flow to RO feed | gpm | 492 |
| RO permeate production | gpm | 452 |
| UV feed flow | gpm | 452 |
| AWTP product water flow for RIW-1 injection | gpm | 452 |
| Automatic strainer backwash and MF backwash waste | gpm | 37 |
| RO concentrate and membrane cleaning waste | gpm | 39 |

Source: CDM Smith, *Cambria Emergency Water Supply Project Description Table 2-2*, October 2014.

The AWTP's feed water flow rate is 629 gpm during the six months. Assuming all process associated losses and a 100 gpm flow of filtrate product water to recharge San Simeon Creek Lagoon, the AWTP's daily average product water flow rate is 452 gpm, producing water during six dry season months. Thus, 452 gpm of advanced treated water is pumped to RIW-1, located a minimum of two months travel time from existing potable production Wells SS-1 and SS-2. A total of 400 gpm maximum extraction from existing Wells SS-1 and SS-2 (or a combination of both) can occur during Project operations. The Project's net potable water production is approximately 300 gpm, or approximately 250 acre-feet over an assumed six-month dry season. The CCSD may also adjust the project's operational period according to need based on the amount and timing of seasonal rainfall, and the groundwater levels within the lower San Simeon aquifer.

Table 3-4, *AWTP MF Filtrate, RO Permeate, and RO Concentrate Water Quality*, summarizes the filtrate for lagoon discharge, RO permeate, and RO concentrate water quality. The RO permeate and concentrate water quality are based on an assumed mid-year membrane life following three years of operation. Since filtrate does not remove any ionic species, the filtrate and backwash waste retain ionic water qualities similar to the source water.

**Table 3-4**
**AWTP Projected Water Quality for MF Filtrate, RO Permeate, and RO Concentrate**

| Ion | Unit | MF Filtrate for Lagoon Protection Discharge | RO Permeate | RO Concentrate |
|---|---|---|---|---|
| Calcium (Ca) | mg/L | 72 | 4.1 | 940 |
| Magnesium (Mg) | mg/L | 58 | 3.3 | 760 |
| Sodium (Na) | mg/L | 247 | 62 | 2,700 |
| Potassium (K) | mg/L | 26 | 7.8 | 270 |
| Ammonia N ($NH_4$) | mg/L as N | 0.3 | 0.08 | 2.8 |
| Barium (Ba) | mg/L | 0.08 | 0.01 | 1.1 |
| Strontium (Sr) | mg/L | 0.58 | 0.03 | 7.1 |
| Carbonate ($CO_3$) | mg/L | 0 | 0 | 1.1 |
| Bicarbonate ($HCO_3$) | mg/L | 260 | 85 | 1,600 |
| Sulfate ($SO_4$) | mg/L | 107 | 6.3 | 1,800 |
| Chloride (Cl) | mg/L | 347 | 62.8 | 6,000 |
| Fluoride (F) | mg/L | 0.1 | 0.03 | 0.90 |
| Nitrate-N ($NO_3$) | mg/L as N | 4 | 2.3 | 17 |
| Boron (B) | mg/L | 0.32 | 0.10 | 2.9 |
| Silica ($SiO_2$) | mg/L | 20 | 6.76 | 200 |
| Dioxide ($CO_2$) | mg/L | 12 | 38 | 38 |
| Total Dissolved Solids (TDS) | mg/L | 1,110 | 242 | 14,000 |
| pH | mg/L | 7.6 | 6.6 | 7.8 |

Source: CDM Smith, *Cambria Emergency Water Supply Project Description Table 2-3*, October 2014.

## LAGOON SURFACE DISCHARGE

The Project includes a design element that provides non-chlorinated MF effluent, which can be mixed and augmented with de-chlorinated and oxygenated product water immediately upstream of the upper San Simeon Creek lagoon (hereinafter referred to as the Project's "lagoon water" supply design feature). The lagoon water is discharged from the AWTP to the San Simeon Creek Lagoon area to maintain surface water levels, while also benefiting existing fresh water conditions. A discharge flow of up to 100 gpm is provided, with the water quality identical to the source water quality for the AWTP, as presented previously in Table 3-2 above. A summary of water quality for the lagoon discharge is included in Table 3-4 above.

Discharge of the Project's lagoon water to the San Simeon Creek Lagoon is regulated through RWQCB *Order No. R3-2014-0050 Waste Discharge Requirements and Water Recycling Requirements for the Cambria Community Services District Emergency Water Treatment Facility Recycled Water Re-Injection Project; and, Draft Waste Discharge Requirements Order No. R3-2011-0223, National Pollutant Discharge Elimination System (NPDES) Permit No. CAG993001, General Permit for Discharges with Low Threat to Water Quality (and its associated Modified December 8, 2014 Monitoring and Reporting Program issued to the CCSD).*

## RO PRODUCT WATER

RO product water quality projections presented in Table 3-4 were developed using the source water assumptions listed in Table 3-2 with ten (10) percent safety margin and RO vendor design software.

## AWTP PRODUCT WATER

After injection into the groundwater basin, the AWTP product water that is mixed with the brackish groundwater is soft and low in TDS concentration. The AWTP produces water that is similar or higher quality than the existing groundwater basin water quality. Ultimately, the recharged AWTP product water is extracted by the existing potable water wells. Changes to the existing groundwater basin water quality are quantified through ongoing monitoring and future hydro-geochemical modeling.

The water quality measured in source Well 9P7, which supplies the AWTP, is high quality prior to treatment, already complying with drinking water Maximum Contaminant Levels (MCLs) and secondary MCL. The new potable water from the groundwater basin has improved quality due to the influence of the injected water with lower hardness, lower salinity, and lower dissolved metals. Table 3-5, *AWTP Projected Source Water and Product Quality for Key Constituents*, outlines the parameters that were measured in the source water at levels above the detection limit or that were assumed to be higher in the AWTP source water after prolonged well operation.

**Table 3-5**
**AWTP Projected Source Water and Product Quality for Key Constituents**

| Parameter | Units | Source Water | Treated Water | Regulatory Limit or Criterion |
|---|---|---|---|---|
| Total Dissolved Solids (TDS) | mg/L | 1110 | 250 | 500 |
| pH | | 7.6 | 8.5 | 6.5 – 8.5 |
| Boron (B) | mg/L | 0.32 | 0.1 | 1 |
| Chloride (Cl) | mg/L | 347 | 70 | 250 |
| Fluoride (F) | mg/L | 0.1 | <0.1 | 2 |
| Iron (Fe) | mg/L | 0.15 | <0.01 | 0.3 |
| Lead (Pb) | mg/L | 0.0017 | <0.0005 | 0.015 |
| Manganese (Mn) | mg/L | 0.007 | <0.002 | 0.05 |
| Nitrate-N ($NO_3$) | mg/L as N | 4 | 2.3 | 10 |
| Total Organic Carbon (TOC) | mg/L | 3.9 | 0.1 | 0.5 |
| Turbidity | NTU | 0.5 | 0.05 | 5 |
| NDMA | µg/L | <0.002 | ND | 0.01 |

Source: CDM Smith, *Cambria Emergency Water Supply Project Description Table 2-4*, October 2014.

As shown on Table 3-5, the parameters that were measured are below all of the regulatory limits/criteria. The AWTP product water meets drinking water and recycled water quality limits and guidelines, and is monitored periodically to confirm the quality of this product water.

The advanced treated product water used to recharge the San Simeon Well Field aquifer is also regulated through RWQCB Order No. R3-2014-0050 (see discussion above).

# MAIN TREATMENT PROCESSES

## Membrane Filtration (MF)

The MF system provides pretreatment for the RO system to reduce the particulate and biological fouling of the RO membranes. The MF system removes inert particulates, organic particulates, colloidal particulates, pathogenic organisms, bacteria and other particles by the membrane's size-exclusion sieve action. Table 3-6, *AWTP Membrane Filtration Water Quality Goals*, presents the MF water quality goals.

**Table 3-6**
**AWTP Membrane Filtration Water Quality Goals**

| Constituent | Design Criteria |
|---|---|
| Cryptosporidium | Undetectable[1] |
| Giardia | Undetectable[2] |
| Suspended Solids | Undetectable[3] |
| 95th Percentile Filtrate Turbidity | <0.1 NTU |
| Filtrate Silt Density Index (SDI) | <3 |

Source: CDM Smith, *Cambria Emergency Water Supply Project Description Table 2-6*, October 2014.

**Pre-Treatment Chemical Addition.** Although chemicals can be added upstream from the MF, they are shut off and not used. Instead, and to protect the RO membranes, ammonium hydroxide and sodium hypochlorite are added downstream from the flow split, which routes MF effluent to the San Simeon Creek Lagoon. This chemical addition occurs immediately upstream from the Break Tank, which allows for chloramination to prevent biological fouling of the RO filtration membranes.

**Membrane Filtration Pre-Filters.** MF pre-filters or strainers are provided immediately upstream of the MF membranes to protect the membranes from damage and/or fouling due to larger particles.

**Membrane Filtration Systems.** Both the MF and UF are capable of achieving the MF water quality goals described in Table 3-6 above. CDM PD Figure 2-5 shows the MF system layout. Backwash from the MF system is discharged to the existing percolation ponds. Because no chemical treatment processes are used with the MF backwash, and the membranes concentrate only suspended materials, the chemical constituents in the backwash waste are identical to the extracted groundwater used for supply. Discharge of this stream to the existing percolation ponds is regulated through RWQCB *Waste Discharge Requirements Order No. 01-100, Modified November 14, 2014 for the Cambria Community Services District Wastewater Treatment Plant*.

**Membrane Filtration Break Tank.** The MF break tank serves as a flow equalization reservoir for the MF filtrate prior to being pumped to the RO system.

## Reverse Osmosis (RO)

While RO is often used for purification and desalination in water treatment, it is also used effectively in drinking water and wastewater treatment processes for removal of a wide array of dissolved constituents, including Contaminants of Emerging Concerns (CECs).

RO is generally recognized as the best available treatment for reducing TDS and many CEC in brackish water that includes treated wastewater effluent. The RO process further serves as an effective barrier against potential pathogens. Therefore, the RO process was included within the AWTP. The RO facility includes the following processes:

- RO feed supply pumps;
- RO pre-treatment chemical addition (sulfuric acid and antiscalant for scale control);
- Cartridge filters;
- Primary RO feed pumps; and
- RO systems with interstage booster pumps.

Antiscalant is added to control scaling of the RO membranes. Sulfuric acid is added to lower the pH of the RO feed water, in order to control the calcium carbonate, sulfates of calcium, barium, and strontium from limiting the RO recovery. Each RO train is paired with a dedicated feed pump, which is required in addition to the RO booster pumps. A three-stage RO configuration is provided to increase recovery and reduce RO concentrate flow. CDM PD Figures 2-6a through 2-6c illustrate the RO system layout. All chemical storage occurs in double containment to prevent leaks.

## Advanced Oxidation Process (AOP)

The final advanced water treatment process is disinfection and advanced oxidation, as required by the most current State Groundwater Recharge Regulations. A disinfection process is needed to meet the pathogenic microorganism control requirements included in the regulations. The UV reactors serve a dual purpose of disinfection, and, with addition of hydrogen peroxide upstream, advanced oxidation. Advanced oxidation processes (AOPs) are considered the best available technology to address the destruction of CECs that are not fully removed by the RO membranes. As with the RO unit process, all chemical storage occurs in double containment to prevent leaks from entering the environment.

As noted above, the UV/hydrogen peroxide (UV/H2O2) system, which has been used extensively for removal of microconstituents found in treated water, is the most common AOP technology for IPR. The UV/$H_2O_2$ system is designed to meet the most current groundwater recharge regulations that meet the minimum performance criteria for AOP systems used for a groundwater recharge system. The UV system layout is shown on CDM PD Figure 2-7.

## Post-Treatment/Stabilization

Product water quality is required to minimize corrosion of the conveyance pipeline and the pumping equipment (Langelier Saturation Index). CDM PD Table 2-7 summarizes the stabilization goals for the treated water. The post-treatment strategy includes the addition of calcium chloride to increase hardness and the addition of caustic soda to increase pH. All post-stabilization chemical storage occurs in double containment to prevent leaks from entering the environment.

# AWTP POWER SUPPLY AND CONSUMPTION

Power demand for the AWTP is estimated to be 650 kilovolt-amps (KVA). Power for the AWTP is provided from a PG&E supplied pad mount transformer connected to a PG&E power line servicing Well Site 9P7 via a new power drop from the well site along the well site access road. The transformer's estimated capacity is 750 KVA at 480/277 volts. PG&E provides primary power to the transformer and supply, with service estimated at 1200 amperes. Table 3-7, *AWTP System Electric Load*, summarizes the estimated electrical load from the AWTP's major process equipment. As indicated in Table 3-7, the AWTP's total annual electrical demand is approximately 1,227 megawatt hours (MWh).

## Table 3-7
## AWTP System Electric Load

| Description/Location | No. of Duty | No. of Installed Standby | Power/Unit | | Max Operating | Average Operating | Installed Load | VFD |
|---|---|---|---|---|---|---|---|---|
| | | | HP | kW | (kW) | (kW) | (kW) | |
| **Well Extraction** | | | | | | | | |
| Well 9P7 | 1 | 0 | 20.0 | 14.9 | 14.9 | 14.9 | 14.9 | |
| **MF System** | | | | | | | | |
| MF Feed Pump | 1 | 0 | 40.0 | 29.8 | 20.4 | 20.4 | 20.4 | VFD |
| MF Air Compressor | 1 | 0 | 25.0 | 18.6 | 18.6 | 3.7 | 18.6 | |
| MF Backwash Pump | 1 | 0 | 50.0 | 37.3 | 30.9 | 6.2 | 30.9 | VFD |
| MF CIP Pump | 1 | 0 | 30.0 | 22.4 | 22.4 | 2.2 | 22.4 | |
| **RO System** | | | | | | | | |
| RO Feed Supply Pump | 1 | 1 | 15.0 | 11.2 | 11.2 | 11.2 | 22.4 | |
| Primary RO Feed Pump | 2 | 0 | 50.0 | 37.3 | 60.2 | 60.2 | 60.2 | VFD |
| Primary RO Booster Pump | 2 | 0 | 7.5 | 5.6 | 9.2 | 9.2 | 9.2 | VFD |
| RO Concentrate Concentrator RO Booster Pump | 1 | 0 | 15.0 | 11.2 | 8.6 | 8.6 | 8.6 | VFD |
| **RO CIP/Flush System** | | | | | | | | |
| RO CIP Pump | 1 | 0 | 50.0 | 37.3 | 37.3 | 0.4 | 37.3 | |
| **AOP** | | | | | | | | |
| UV | 1 | 0 | 20.1 | 15.0 | 15.0 | 15.0 | 15.0 | |
| **Well Injection** | | | | | | | | |
| Product Water Pump (for RIW-1 Injection) | 1 | 0 | 15.0 | 11.2 | 11.2 | 11.2 | 11.2 | |
| Filtrate Transfer Pump (LIW Injection) | 1 | 0 | 5.0 | 3.7 | 3.7 | 3.7 | 3.7 | |
| **Chemical Dosing** | | | | | | | | |
| Aqueous Ammonia Dosing Pump | 1 | 1 | 0.75 | 0.6 | 0.6 | 0.6 | 1.1 | |
| Sodium Hypochlorite Dosing Pump | 1 | 1 | 0.75 | 0.6 | 0.6 | 0.6 | 1.1 | |
| Sodium Hypochlorite Dosing Pump (MF Cleaning) | 1 | 1 | 0.75 | 0.6 | 0.6 | 0.0 | 1.1 | |
| Citric Acid Dosing Pump (MF Cleaning) | 1 | 1 | 0.75 | 0.6 | 0.6 | 0.0 | 1.1 | |
| Sulfuric Acid Dosing Pump | 1 | 1 | 0.75 | 0.6 | 0.6 | 0.6 | 1.1 | |
| Antiscalant Dosing Pump | 1 | 1 | 0.75 | 0.6 | 0.6 | 0.6 | 1.1 | |
| Hydrogen Peroxide Dosing Pump | 1 | 1 | 0.75 | 0.6 | 0.6 | 0.6 | 1.1 | |
| Sodium Hydroxide Dosing Pump | 1 | 1 | 0.75 | 0.6 | 0.6 | 0.6 | 1.1 | |
| ***Total Power (Kilowatt (kW))*** | | | | | ***268*** | ***170*** | ***284*** | |

Note: Assuming the AWTP operates continuously for six months (180 days/4,320 hours) per year, the AWTP's total annual electrical demand is 1,227 MWh.
Source: CDM Smith, *Cambria Emergency Water Supply Project Description Table 2-8*, October 2014.

## AWTP TIME AND HOURS OF OPERATION

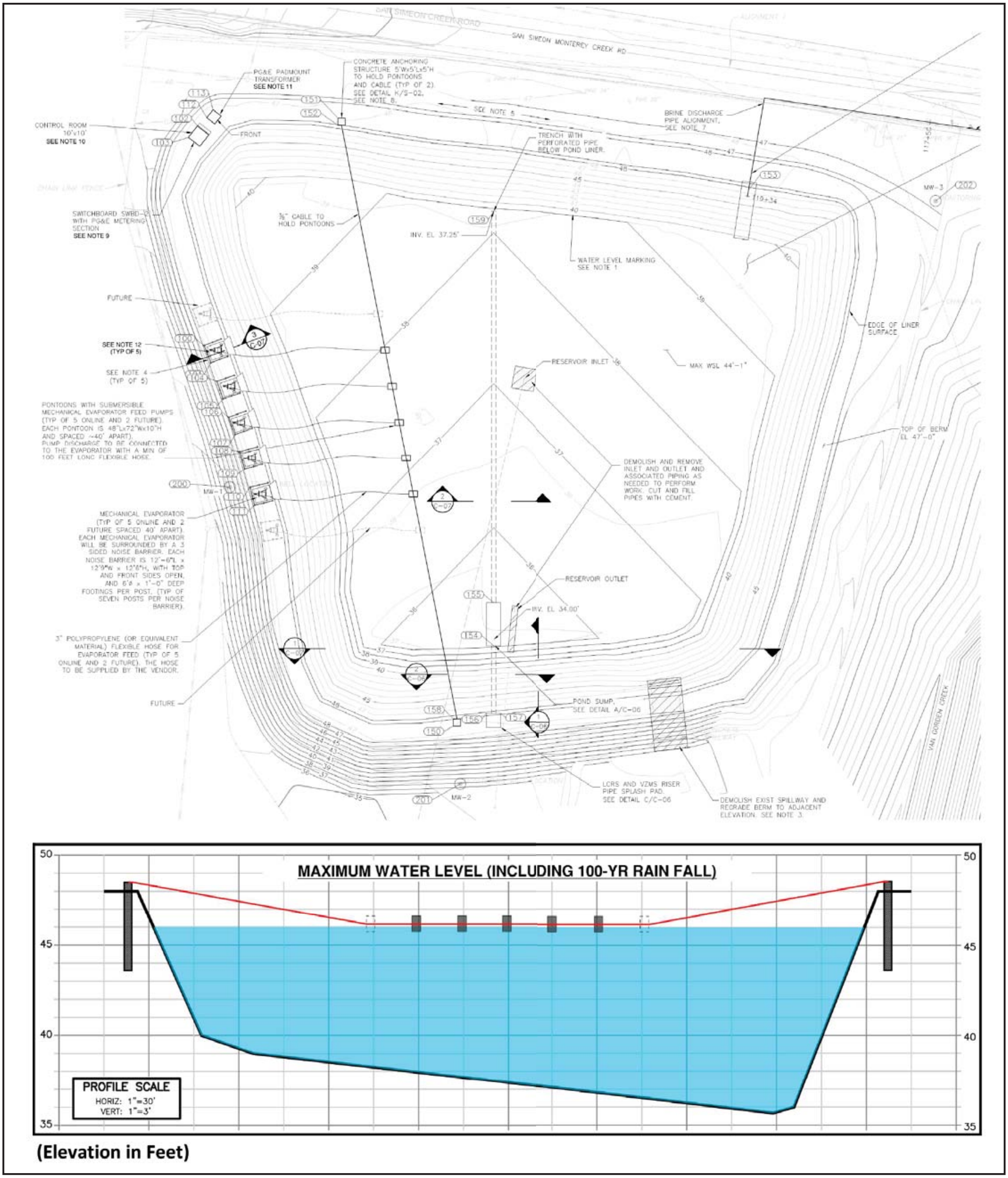
Operating and maintaining the equipment requires onsite full-time staff, although, the AWTP is designed to operate with minimal operator intervention.[21] Up to two employees visit the site daily to visually inspect and maintain the AWTP.

The AWTP is assumed to operate continuously for up to six months of the year when drought conditions are most severe, thus, it would not need to be operated during wet or normal rainfall periods, except for gradient control purposes. During such periods of inactivity, the AWTP is maintained in a ready state, which may include routinely exercising equipment and valves, as well as pickling of the RO elements.

## 3.5.1.3 EVAPORATION POND

The AWTP RO concentrate is sent to the evaporation pond for disposal through evaporation. The RO concentrate is conveyed to the evaporation pond via a pipe on the pond's southwest side; see Exhibit 3-8, *Evaporation Pond Plan and Section*. The evaporation pond was lined with an impermeable liner system to meet the State's Title 27 Class II waste discharge requirements. Discharge of RO concentrate to the evaporation pond is regulated through RWQCB *Waste Discharge Requirements Order No. R3-2014-0047, Waste Discharger Identification No. 3 400914531, for Cambria Community Services District Class II Surface Impoundment*.

[21] To abide by permit conditions and to gain operating experience following start up, the plant was staffed full time during its initial six months of operation.




Source: CDM Smith, October 2014.

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# Evaporation Pond Plan and Section

**Exhibit 3-8**

The spillway along the evaporation pond's southern berm was demolished and re-graded to provide a uniform top of slope elevation around the pond. Exhibit 3-8 provides a cross-section of the modified evaporation pond. The pond operates with a minimum freeboard of 2.0 feet, in compliance with Title 27 requirements. The evaporation pond provides 3.0 acres of surface area and 6.96 mg of usable storage capacity. The pond is designed to provide for a 5.0-foot minimum separation between the groundwater elevation and pond bottom, also per Title 27 requirement. In compliance with Title 27 requirements, a three-layer liner system, a leachate collection and removal system (LCRS), and a vadose zone monitoring system (VZMS) were installed in the Van Gordon Reservoir. The primary liner and textured drain liner materials are impermeable. The LCRS includes a perforated conductor pipe and trench along the pond bottom terminating into a collection sump. The LCRS is designed to maintain less than 1.0 foot of head on the secondary liner. The LCRS sump has a surface entry pipe for monitoring and removal of any accumulated leachate. Minimal earthwork was performed to grade the pond bottom and install the LCRS, vadose zone monitoring system. The pond is designed to withstand the maximum credible earthquake and the 100-year flood. Based on the FEMA map of the 100-year flood plain, the water surface elevation would rise to approximately the elevation of the toe of the exterior berm.

The RO concentrate is evaporated through natural evaporation, as well as mechanical spray evaporators (see discussion below). Over time, the dissolved salt concentration in the pond will increase until it begins to precipitate from solution. If excess solids build-up occurs, the slurry would be removed physically from the pond. The submersible pumps can be used to remove the super saturated waste slurry from the evaporation pond. The slurry would be hauled away in tanker trucks for disposal at an appropriate Class II waste disposal facility. It is anticipated that removal of the slurry will be required once per decade.[22]

## MECHANICAL SPRAY EVAPORATORS

Based on the monthly precipitation and evapotranspiration data for Cambria, RO concentrate evaporation would occur at an average net rate of 9.3 inches annually. Given an estimated average evaporation pond area of 2.2 acres and an average RO concentrate generation of 42 gpm, the evaporation pond does not have sufficient surface area to naturally evaporate the full RO concentrate flow (with the system operating 24 hours per day, 7 days per week, and continuously over a 6-month dry season period). Therefore, enhanced evaporation utilizing mechanical spray evaporators is used at the evaporation pond. Five mechanical evaporators, spaced approximately 25 feet apart, are located along the evaporation pond's west berm. The evaporators discharge eastward across the evaporation pond, in a downward direction. The evaporators are similar to snow making machines, and have blowers that force air

[22] Written Communication: You, Eun, Project Engineer, CDM Smith, October 12, 2015.

past a circular ring of spray nozzles at their outlet. The spray evaporators' design criteria are summarized in Table 3-8, *Mechanical Spray Evaporator Design Criteria*. Five submersible evaporator feed pumps supply feed water to the evaporator nozzles through individual three-inch flexible hoses. Two concrete anchor blocks on the east and west sides of the berm, with attached cables spanning the pond, secure each evaporator pump. To reduce noise, sound enclosures (approximately 13 feet by 13 feet, and 12.6 feet in height) are provided around three sides of the mechanical evaporators. Exhibit 3-9, *Spray Evaporator With Sound Enclosure*, illustrates the locations of the spray evaporators.

**Table 3-8**
**Mechanical Spray Evaporator Design Criteria**

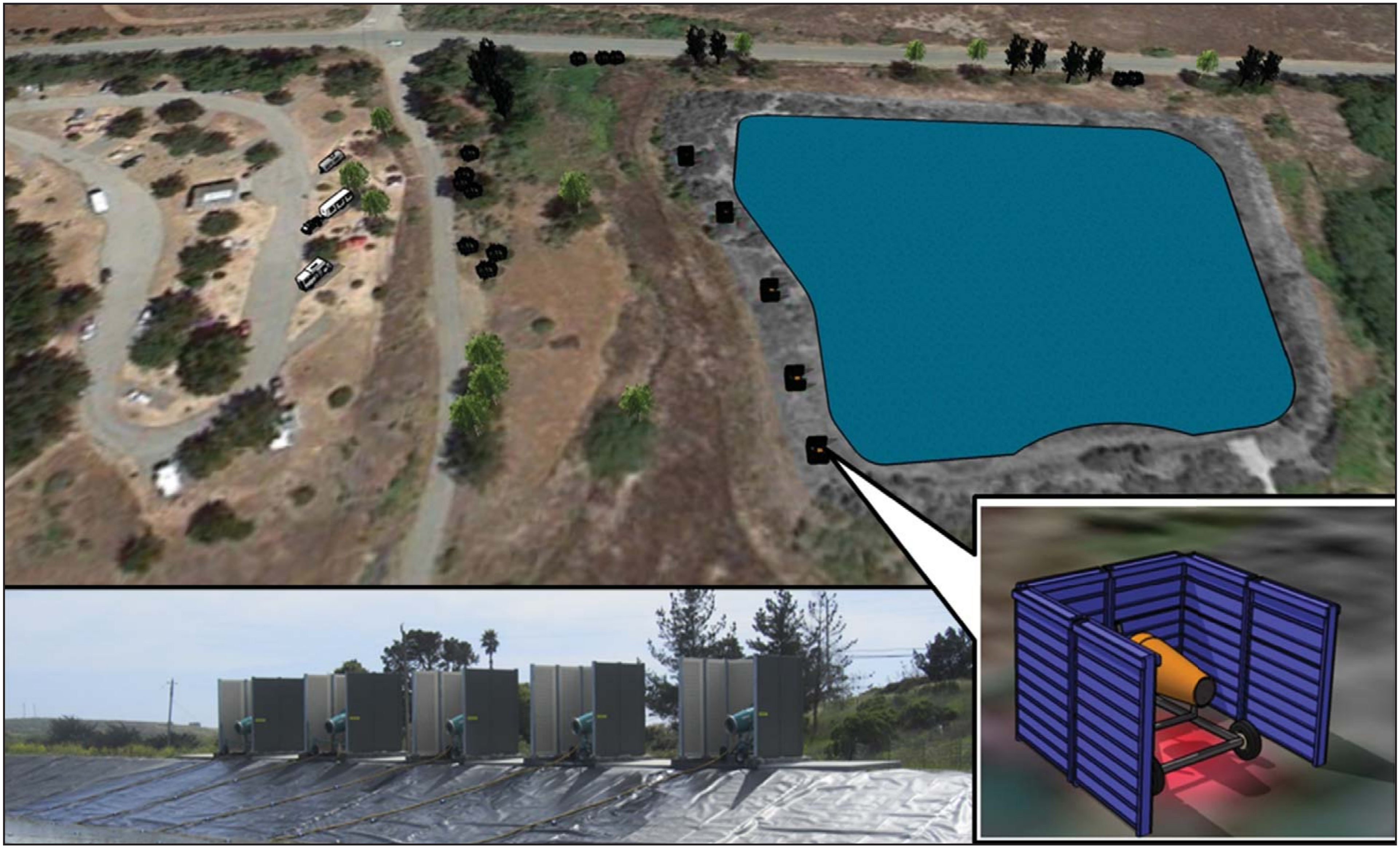
| Parameter | Criteria |
|---|---|
| Number of spray evaporators | 5 duty units |
| RO concentrate flow pumping rate | 65 gpm/unit |
| Evaporation efficiency | 30% |
| Evaporator operation time | 24/7, 365 days per year, weather permitting |
| Power | 32.5 hp/unit total<br>7.5 hp for a submersible pump and 25 hp for a spray fan |
| Note: gpm = gallons per minute; hp = horsepower | |
| Source: CDM Smith, *Cambria Emergency Water Supply Project Description Table 2-9*, October 2014. | |

## EVAPORATION SYSTEM POWER SUPPLY AND CONSUMPTION

Power demand for the evaporation system (evaporation pond pumps and mechanical spray evaporators) is an estimated 250 KVA. Power for the system is provided via a PG&E supplied pad mount transformer connected to a PG&E overhead power line along San Simeon Road via a new power drop along Van Gordon Creek Road. The transformer's estimated capacity is 300 KVA at 480/277 volts. Table 3-9, *Evaporation System Electric Load*, summarizes the system's estimated electrical load. As indicated in Table 3-9, the evaporation system's total annual electrical demand is approximately 262 MWh.

**Table 3-9**
**Evaporation System Electric Load**

| Description/Location | No. of Duty | No. of Installed Standby | Power/Unit | | Max Operating | Installed Load | VFD |
|---|---|---|---|---|---|---|---|
| | | | HP | kW | (kW) | (kW) | |
| **RO Concentrate Evaporation** | | | | | | | |
| Submersible Pumps | 5 | 0 | 7.5 | 5.6 | 28.0 | 28.0 | No |
| Mechanical Spray Evaporators | 5 | 0 | 25.0 | 18.6 | 93.0 | 28.0 | No |
| ***Total Power (kW)*** | | | | | **121** | **121** | |
| Note: The pumps and evaporators will be operated year round during favorable weather conditions. Assuming the system operates approximately 12 hours per day and year round (i.e., 50 percent of the time on annual average) (180 days/2,160 hours), the evaporation system's total annual electrical demand is approximately 262 MWh. | | | | | | | |
| Source: CDM Smith, *Cambria Emergency Water Supply Project Description Table 2-10*, October 2014. | | | | | | | |



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# Spray Evaporator With Sound Enclosure

**Exhibit 3-9**

## EVAPORATOR SYSTEM TIME AND HOURS OF OPERATION

The spray evaporator operation is controlled by the weather stations and operates only when wind direction and velocity, temperature, and humidity are within the preset ranges. Considering the local weather, the spray evaporators are anticipated to operate approximately 12 hours per day (no later than 10 PM), and year round (i.e., 50 percent of the time on annual average). Evaporators are anticipated to operate approximately 12 hours per day (no later than 10 PM), and year round (i.e., 50 percent of the time on annual average).

To control RO concentrate drift, the evaporators are controlled by an onsite weather station, which turns the evaporators on or off, depending on wind speed and direction. The evaporators are operated only when wind direction, wind velocity, temperature, and humidity are within the preset ranges. An adjustable time delay occurs from the time the weather changes to evaporator fan shut-off. Exhibit 3-10, *Weather Station Control Panel*, illustrates the weather station control panel, which is mounted atop the control building.

To minimize potential RO concentrate drift and noise impacts, evaporator operations were further adjusted optimized following initial start of the system, as follows:

- The maximum allowable wind speed for shut down of the mechanical evaporators was reduced from 6 miles per hour (mph) to 3 mph.

- The operating times for the evaporators was reduced to daytime periods, with the units being shut down at sunset.

- The time delay in shutting off the evaporator blowers was reduced from approximately 30 seconds to ten seconds. The shorter duration time delay adjustment was made to allow for any mist being discharged from each evaporator to settle into the evaporation pond more rapidly in response to high wind detection.

- The wind speed sensor was relocated to the cable anchor block on the southern berm of the pond, which is a more open and exposed area to the wind than its prior location at the evaporator control building (which is northwest of the pond and closer to tall trees and a hillside area located to the north and west). This will ensure that the weather station is not located within a wind shadow due to local terrain.

- The fan blade pitch was changed on the most southern evaporator to further reduce its discharge velocity.

- The evaporator spray nozzles were changed to produce larger droplet sizes, which will settle quicker. Throttling ball valves were also added to each evaporator’s supply pump to allow for further operator adjustment.

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# Weather Station Control Panel

**Exhibit 3-10**

- The discharge angle of each evaporator was adjusted from horizontal to downward.

In addition to the evaporator control adjustments, the CCSD's contractor also installed noise snubbers on the condensate blow off discharge from air compressors located within the AWTP. Additionally, in January 2014, the automated condensate blow off valve operations were modified, restricting them to only daytime operation.

## PROJECT TOTAL POWER CONSUMPTION

As indicated in Table 3-7, the AWTP's total annual electrical demand is approximately 1,227 MWh. As indicated in Table 3-9, the evaporation system's total annual electrical demand is approximately 262 MWh. Overall, the Project's total annual electrical demand is approximately 1,489 MWh.

## 3.5.1.4 PROJECT PIPING SYSTEMS

### YARD PIPING

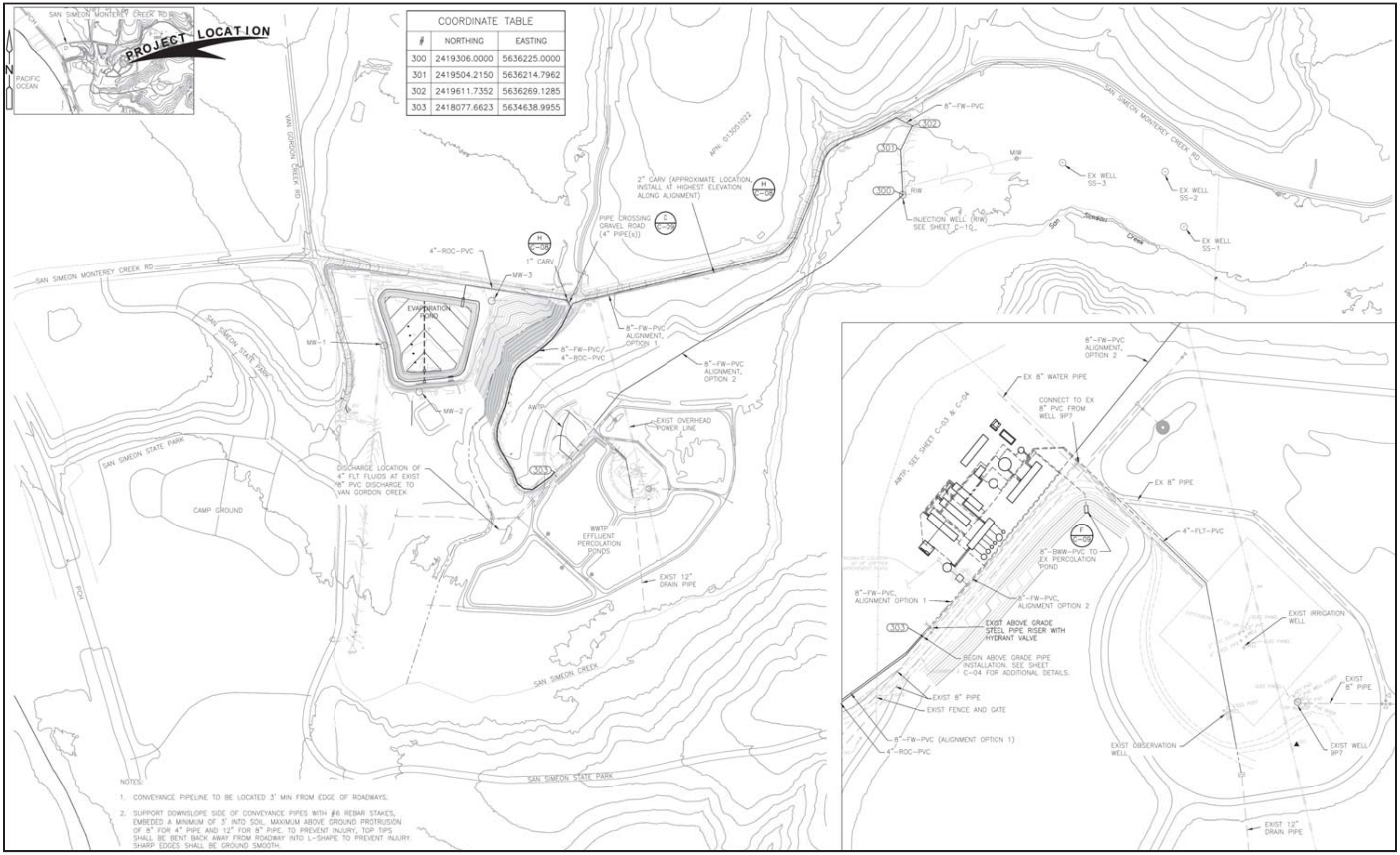
The schedule of yard piping contained within the AWTP is provided in CDM PD Table 2-13 and illustrated in CDM PD Figure 2-4b. All yard piping is installed below ground at the AWTP site.

### CONVEYANCE PIPING

The Project includes five pipelines, as outlined in Table 3-10, *SWF Conveyance Pipeline Schedule*, illustrated on Exhibit 3-5, *SWF Project Facilities*, and Exhibit 3-11, *SWF Conveyance Piping Plan*, and described below.

As indicated in Table 3-11, the conveyance piping totals approximately 4,630 linear feet (LF), most of which was installed above grade (480 LF were installed below grade). The interconnecting pipelines are constructed of either fused high density polyethylene (HDPE) or YeloMine polyvinyl chloride (PVC) and have a pressure rating of 150 pounds per square inch (psi).

**AWTP Feed Water Pipeline.** This pipeline delivers the source water for the Project, which consists of brackish groundwater from San Simeon Creek Groundwater Basin, extending between Well 9P7 and the AWTP. This pipeline connects with the Well 9P7 Discharge Pipeline, which was originally constructed to discharge pumped groundwater from Well 9P7.




COORDINATE TABLE

| # | NORTHING | EASTING |
|---|---|---|
| 300 | 2419306.0000 | 5636225.0000 |
| 301 | 2419504.2150 | 5636214.7962 |
| 302 | 2419611.7352 | 5636269.1285 |
| 303 | 2418077.6623 | 5634638.9955 |

Source: CDM Smith, October 2014.

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# SWF Conveyance Piping Plan

**Exhibit 3-11**

**Table 3-10**
**SWF Conveyance Pipeline Schedule**

| Pipe | Size (Inches) | Length (Linear Feet) Above Ground | Length (Linear Feet) Below Ground |
|---|---|---|---|
| AWTP Feed Water Pipeline (Existing Well 9P7 to AWTP) | 8 | | 200 |
| Product Water Pipeline (AWTP to RIW-1) | 8 | 2,000 | |
| Filtrate Pipeline (AWTP to San Simeon Creek Surface Discharge) | 4 | 850 | 150 |
| Backwash Waste Discharge Pipeline (AWTP to Existing Percolation Ponds) | 8 | | 130 |
| RO Concentrate Disposal Pipeline (AWTP to Evaporation Pond) | 4 | 1,150 | 150 |
| *Subtotal* | | *4,150* | *480* |
| ***Total*** | | | *4,630* |
| Sources: CDM Smith, Drawing No. C-02, *Conveyance Piping Plan,* August 24, 2015; and Written Communication: You, Eun, CDM Smith Engineer, August 27, 2015. | | | |

**Product Water Pipeline.** This pipeline delivers the AWTP product water from the AWTP to RIW-1, where it is injected into the basin.

**Filtrate Pipeline.** This pipeline delivers de-chlorinated MF effluent/product water from the AWTP to the surface discharge structure located near the confluence of the San Simeon and Van Gordon Creeks. The pipeline is a combination of pipeline laid along the ground surface, horizontal directionally drilled pipeline, and direct burial pipeline. The pipeline was direct burial within the existing service road from the AWTP to the eastern edge of the Van Gordon Creek riparian corridor. To avoid impacts to the Van Gordon Creek riparian corridor, a reach of this pipeline was installed using horizontal directional drilling under Van Gordon Creek; refer to Section 3.6.2, *SWF Construction Activities*, below. At the western edge of the Van Gordon Creek riparian corridor, the pipeline was continued outside of the Van Gordon Creek tree line and along the ground surface to the surface discharge structure. The discharge structure is located just north of the San Simeon Creek tree line.

**MF Backwash Waste Discharge Pipeline.** This pipeline delivers the backwash water from the AWTP's MF system to an existing percolation pond.

**RO Concentrate Disposal Pipeline.** This double contained pipeline delivers concentrate from the AWTP's RO process and chemical cleaning waste to the evaporation pond. This pipeline was direct buried along the service road from the AWTP to the eastern edge of the Van Gordon Creek tree line. A reach of this pipeline was installed under Van Gordon Creek using horizontal directional drilling; refer to Section 3.6.2. This double contained pipeline continues along the ground surface from the western edge of the Van Gordon Creek tree line to the evaporation pond.

## 3.5.1.5 RECHARGE INJECTION AND MONITORING WELLS

### RECHARGE INJECTION WELL

The stabilized AWTP finished product water is pumped for injection into the groundwater basin at the San Simeon Well Field utilizing a new recharge injection well (RIW-1). RIW-1 is located west of existing potable supply water Well SS-3. RIW-1 is 100 feet deep and constructed of 10-inch diameter mild steel well casing with 45 feet of type 304L stainless steel, wire-wrap screen with 0.08-inch wide slot openings. It is screened from 50 to 95 feet below ground surface (bgs). RIW has a 5.0-foot, stainless steel sediment trap below the well screen. A total of 452 gpm is injected into RIW-1.

The wellhead facilities are located above grade. Wellhead facilities include steel pipe, a control valve to control the flow into RIW-1, a flow meter to measure the flow, and isolation valves for removal of above ground equipment. No pumps or noise generating equipment are located at RIW-1. A small control panel is provided at the wellhead.

### MONITORING WELLS

The Project includes five monitoring wells (MW-1, MW-2, MW-3, MW-4, and MIW-1); see Exhibit 3-5. MW-1, MW-2, and MW-3 are up-gradient and down-gradient from the evaporation pond. MW-4 was installed outside of the tree drip line and approximately 150 feet up-gradient from the lagoon water discharge structure to ultimately replace existing MW-16D1. MW-4 was constructed in response to RWQCB concerns over the 100 gpm filtrate product water potentially biasing its testing towards higher quality results. MW-4 is used to monitor groundwater quality down-gradient of the percolation ponds. These wells are approximately 3.0 feet in height.

MIW-1 is located at the well field, between RIW-1 and the existing production wells. MIW-1 is 95 feet deep and constructed of four-inch diameter, schedule 40 PVC well casing with 45 feet of Schedule 40 PVC, mill slot screen with 0.04-inch wide slot openings. It is screened from 45 to 95 feet bgs. MIW-1 is 2.5 feet above ground and includes a lockable, eight-inch diameter steel stand pipe.

## 3.5.1.6 LAGOON SURFACE DISCHARGE

To maintain and improve fresh water conditions in the San Simeon Creek Lagoon, AWTP lagoon supply water is pumped and surface discharged near the confluence of the San Simeon and Van Gordon Creeks at 100 gpm. The discharge structure is located just north of the San Simeon Creek tree line.

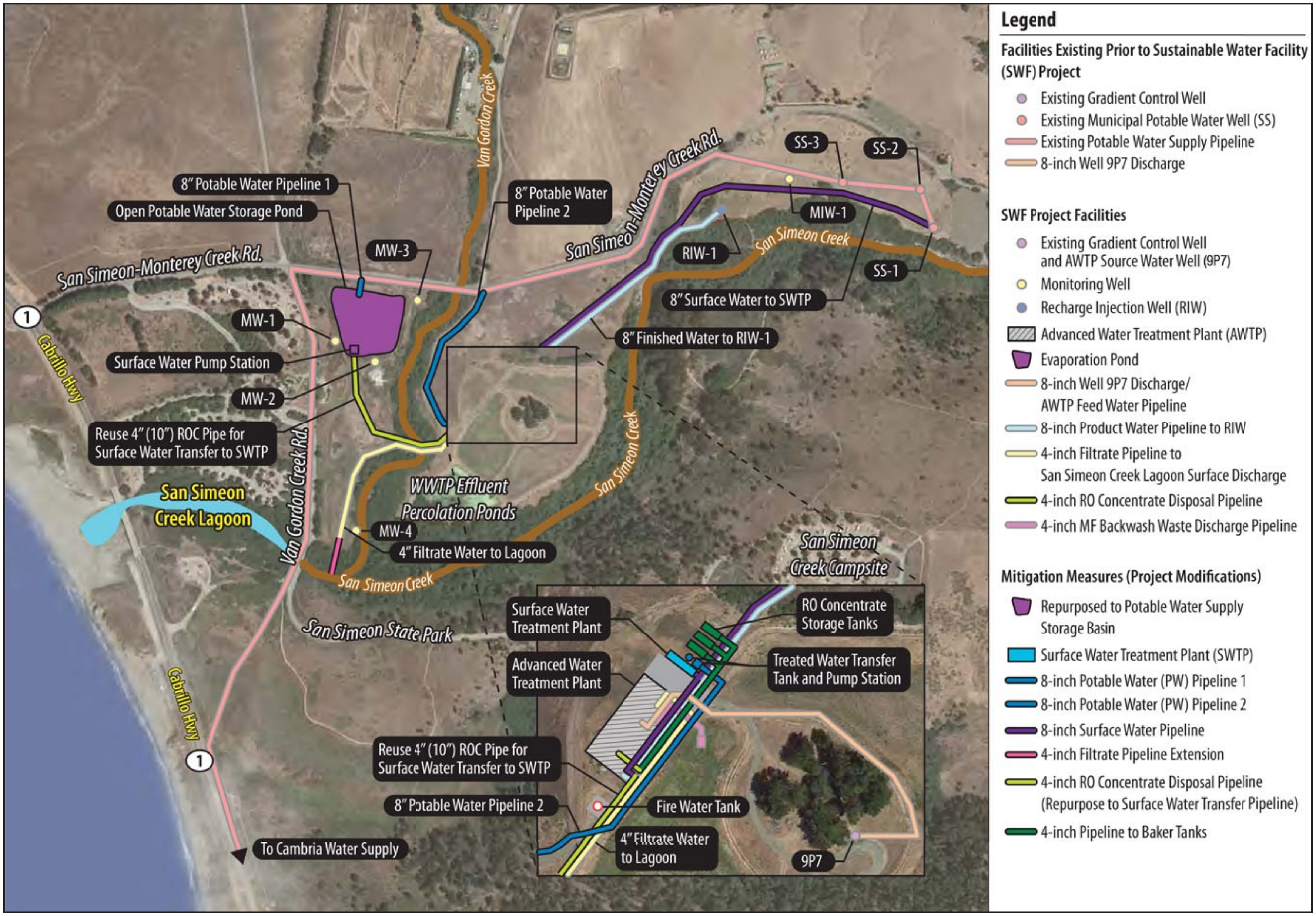
The water discharged to the lagoon is treated and tested to meet RWQCB conditions specified within Order No. R3-2011-0223, NPDES Permit No. CAG993001, *General Permit for Discharges with Low Threat to Water Quality*; and, *Draft Waste Discharge Requirements Order No. R3-2011-0223, National Pollutant Discharge Elimination System (NPDES) Permit No. CAG993001, General Permit for Discharges with Low Threat to Water Quality* (and its associated Modified December 8, 2014 Monitoring and Reporting Program issued to the CCSD). The surface discharge water quality for San Simeon Creek Lagoon protection is discussed in the *Production Flows and Water Quality* Section above.

## 3.5.2 MITIGATION MEASURES (PROJECT MODIFICATIONS)

As discussed above, various operational mitigation measures have been identified to avoid/reduce environmental impacts resulting from SWF operations. Specifically, these include Mitigation Measures AES-2 and BIO-3; refer to Section 5.1, *Aesthetics,* and *Section 5.3, Biological Resources.* These operational mitigation measures, which generally involve evaporation pond repurposing, mechanical spray evaporator removal, offsite RO concentrate disposal, surface water treatment, and modified surface discharge, are illustrated on Exhibit 3-12, *Mitigation Measures (Project Modifications)*, and described below. The following description of the Project modifications is based upon the *Cambria Sustainable Water Facility – Descriptions for Phased Mitigation Measure on Converting Evaporation Pond to Water Storage and Associated Modifications*[23] (CDM TM) (CDM Smith, June 30, 2016), in consultation with the CCSD.

Currently, the AWTP RO concentrate is contained in the evaporation pond, where evaporation is aided with five mechanical spray evaporators. The RO concentrate disposal pipeline connects the AWTP to the evaporation pond. The mitigation measures (Project modifications) involve discharging the AWTP RO concentrate to four (4) Baker tanks for storage prior to offsite disposal, instead of discharging to the evaporation pond. The five mechanical spray evaporators along with their enclosures would be removed. The evaporation pond would be repurposed as a potable water supply storage basin and the RO concentrate disposal pipeline would be repurposed as a potable water pipeline. A surface water transfer pump station would be installed to pump water from the basin to the surface water treatment plant (SWTP). Controls would be installed to maintain/monitor basin water levels. Five interconnecting new pipelines would be constructed, including the filtrate water pipeline extension to San Simeon Creek.

[23] The CDM TM is available for review on the CCSD's website at www.cambriacsd.org/cm/Home.html.




Source: CDM Smith, July 10, 2016.

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# Mitigation Measures (Project Modifications)

**Exhibit 3-12**

### 3.5.2.1 POTABLE WATER SUPPLY STORAGE BASIN (EVAPORATION POND REPURPOSING)

## EVAPORATION POND DECOMISSIONING

The evaporation pond has approximately 3.0 acres of surface area and 21.4 AF (or 6.96 MG) of usable storage capacity. The evaporation pond would be repurposed/ modified to serve as a raw potable water supply storage basin (I.e., prior to surface water treatment), as follows:

- The RO concentrate would be pumped out of the evaporation pond and the residual slurry would be hauled away for disposal at an appropriate Class II waste disposal facility. The evaporation pond liner would be cleaned using high pressure hoses to sluice the RO concentrate to the pond's lowest spot. The rinse water would similarly be hauled away for offsite disposal.

- The submersible evaporator pumps along with pontoons would be removed. This would include removal of the pump extraction cable, which is strung above the evaporation pond.

- The mechanical spray evaporators, appurtenances (electrical wiring and control panels), and sound enclosures would be removed.

## SOURCE WATER

The source water for the potable water supply storage basin would be stored potable water from CCSD groundwater wells SS-1 and SS-2. The potable water supply storage basin would be seasonally filled during the wet season when there is adequate flow occurring in the local creeks. The potable water supply storage basin's water quality would generally be similar to the Well SS-1 and Well SS-2 water quality. However, because the potable water supply basin is uncovered, water quality could potentially degrade due to various sources of contamination, including bird and animal waste, algal growth, insects and fish, and airborne deposition. Because open storage would diminish water quality, a containerized filtration unit is proposed to ensure water quality criteria are met. As a secondary benefit, a pipeline is proposed to allow for filtration of water from Well SS-1 during times when there is surface water flow in the nearby creek. This feature provides additional CCSD operations reliability, which is currently limited to operating Wells SS-2 or SS-3 when there is flow in the creek.

## SURFACE WATER TRANSFER PUMP STATION

A surface water transfer pump station would be installed to pump water from the potable water supply storage basin to the SWTP. The surface water transfer pump station would be located at the potable water supply storage basin. The surface water transfer pump station would be sized to feed the 500 gpm capacity SWTP. The surface water transfer pump station would not require a building or enclosure. By utilizing the submersible pump type, pumps would be submerged under water and would not be visible. The design criteria is provided in Table 3-11, *Surface Water Transfer Pump Station Design Criteria*.

**Table 3-11**
**Surface Water Transfer Pump Station Design Criteria**

| Facility | Units | Criteria |
|---|---|---|
| Number of Pumps | | 2 (1 Duty, 1 Standby) |
| Type | | Submersible |
| Flow per pump | gpm | 549 |
| Head | psi | 4 |
| Horsepower | hp | 5 |
| Drive | | VFD |
| Source: CDM Smith, *Cambria Sustainable Water Facility – Description for Phased Mitigation Measure on Converting Evaporation Pond to Water Storage and Associated Modifications*, June 2016. | | |

Controls would be installed to maintain and monitor water levels in the potable water supply storage basin.

The power demand for the surface water transfer pump station is estimated to be 25 KVA. Table 3-12, *Surface Water Transfer Pump Station Electrical Load*, summarizes electrical load estimations.

**Table 3-12**
**Surface Water Transfer Pump Station Electrical Load**

| Description/Location | Number of Duty | Number of Standby | Power/Unit | | Max Operating (kW) | Installed Load (kW) |
|---|---|---|---|---|---|---|
| | | | Motor (HP) | Motor (KW) | | |
| Surface Water Transfer Pumps | 1 | 1 | 5.0 | 3.7 | 3.7 | 3.7 |
| ***Total Power (kW)*** | | | | | ***4*** | ***4*** |

The power for the surface water transfer pump station would be obtained from the PG&E supplied transformer, which currently has a 300 KVA at 480/277 volts capacity. The service is 600 amp. This transformer currently supplies power for the mechanical evaporator system, which would be removed, as previously noted. Therefore, no new power supply would be required for the surface water transfer pump station.

The surface water transfer pump station would be operated on an as-needed basis to pump the water from the potable water supply storage basin to the SWTP, to supplement the potable water supply. In addition, the surface water transfer pump station would be operated to turn over the water in the potable water supply storage basin, to prevent water from aging. Long detention times in the potable water supply storage basin could result in the depletion of disinfectant residual, biological changes such as nitrification, and the emergence of taste or odor problems. The surface water transfer pump station would be operated regularly (at least every 29 days) to turn over the full potable water supply storage basin's full volume. The potable water supply storage basin's levels would be adjusted and limited to approximately 29 days of supply storage.

### 3.5.2.2 SURFACE WATER TREATMENT PLANT

The surface water treatment plant (SWTP) would be located adjacent to the AWTP, as shown on Exhibit 3-12. The SWTP would be sized to treat the surface water from the potable water supply storage basin or San Simeon Well SS-1 to improve the potable water supply's overall reliability. Treated water from the potable water supply storage basin would augment the AWTP production, should the Santa Rosa aquifer supply become unavailable due to an unforeseen emergency (e.g., power failure, pump, or other equipment failure, low level at Santa Rosa monitoring well WBE, contamination of Santa Rosa aquifer, etc.). Under such an operation scenario, the production from San Simeon well field would be limited to 400 gpm, and an additional 500 gpm would be provided from the SWTP to meet the projected maximum day demand.

Treating the water from Well SS-1, while there is surface flow occurring in the San Simeon Creek, would further increase the supply's reliability. For example, having this capability would be desirable if Well SS-2 were to be offline for maintenance, or if the AWTP is offline and operating both Wells SS-1 and SS-2 is desirable.

Based on the sizing criteria described above, the SWTP would be sized for 500 gpm capacity to treat influent flow between 370 and 549 gpm. The treated water flow would range from 337 to 500 gpm. Design flow information is outlined in Table 3-13, *SWTP Process Design Flows*.

The membrane filtration system would be designed to achieve the membrane filtration water quality goals described in Table 3-14, *SWTP Membrane Filtration Water Quality Goals*.

The assumed source water quality and estimated treated water quality for the SWTP are summarized in Table 3-15, *SWTP Estimated Source Water and Treated Water Quality for Key Constituents*. The treated water quality is anticipated to be similar to the source water quality, except that suspended solids and turbidity would be lower in the treated water. Other water quality parameters could be higher in the treated water, due to the effects of evaporation in the potable water supply storage basin.

## Table 3-13
## SWTP Process Design Flows

| Parameter | Potable Water Supply Storage Basin | San Simeon Well SS-1 |
|---|---|---|
| Strainer Recovery | 99% | 99% |
| Membrane Filtration (MF) Recovery | 92% | 92% |
| Source Water | Potable Water Basin | San Simeon Well SS-1 |
| Source Water Type | Surface Water | Groundwater under influence of surface water |
| Influent Water | 0.79 mgd (549 gpm) | 0.53 mgd (370 gpm) |
| Strainer Effluent/MF Feed | 0.78 mgd (543 gpm) | 0.53 mgd (366 gpm) |
| MF Filtrate | 0.72 mgd (500 gpm) | 0.49 mgd (337 gpm) |
| Treated Water | 0.72 mgd (500 gpm) | 0.49 mgd (337 gpm) |
| Automatic Strainer Backwash and MF Backwash Waste | 0.07[1] | 0.05 mgd[1] |

[1] Strainer backwash and MF backwash waste flows would be intermittent

Source: CDM Smith, *Cambria Sustainable Water Facility – Description for Phased Mitigation Measure on Converting Evaporation Pond to Water Storage and Associated Modifications*, June 2016.

## Table 3-14
## SWTP Membrane Filtration Water Quality Goals

| Constituent | Potable Water Supply Storage Basin |
|---|---|
| Suspended Soils | Undetectable[1] |
| Filtration Turbidity | < 0.2 NTU (95$^{th}$ percentile)<br>0.5 NTU (all times) |
| Filtration Silt Density Index (SDI) | < 3 |

[1] EPA method 160.2. Method detection limit is 1.0 mg/L, so the goal is to be < 1.0 mg/L

Source: CDM Smith, *Cambria Sustainable Water Facility – Description for Phased Mitigation Measure on Converting Evaporation Pond to Water Storage and Associated Modifications*, June 2016.

**Table 3-15**
**SWTP Estimated Source Water and Treated Water Quality for Key Constituents**

| Parameter | Units | MCL | SMCL | Assumed Source Water Quality | Estimated Treated Water Quality |
|---|---|---|---|---|---|
| Arsenic | ppb | 10 | -- | ND | ND |
| Barium | ppm | 2 | -- | 0.14 | 0.14 |
| Boron | ppm | -- | -- | 0.2 | 0.2 |
| Calcium | ppm | -- | -- | 58 | 58 |
| Chloride | ppm | -- | 500 | 20 | 20 |
| Copper | ppb | 1,300 | 1,000 | 4.6 | 4.6 |
| Fluoride | ppm | 4.0 | 2.0 | 0.12 | 0.12 |
| Hexavalent Chromium | ppb | 10 | -- | 1.4 | 1.4 |
| Iron | ppm | -- | 0.3 | 0.046 | 0.046 |
| Manganese | ppm | -- | 0.05 | 0.007 | 0.007 |
| Potassium | ppm | -- | -- | 2.6 | 2.6 |
| Sodium | ppm | -- | -- | 20 | 20 |
| Sulfate | ppm | -- | 500 | 50 | 50 |
| Zinc | ppm | -- | 5 | 0.65 | 0.65 |
| Color | Color Units | -- | 15 | < 5.0 | ND |
| Corrosivity | LSI | -- | Non-corrosive | 0.46 | 0.46 |
| pH | pH Units | -- | 6.5 – 8.5 | 7.8 | 7.8 |
| Specific Conductance | µmhos/cm | -- | 1,600 | 620 | 620 |
| Nitrate as N | ppm | 10 | -- | 0.51 | 0.51 |
| Nitrate + Nitrite as N | ppm | 10 | -- | 0.54 | 0.54 |
| Total Nitrogen | ppm | 10 | -- | 0.55 | 0.55 |
| Total Organic Carbon | ppm | -- | -- | 0.54 | 0.54 |
| Total Coliform | MPN/100mL | 5% [2] | -- | Note 4 | ND |
| Total Suspended Solids | ppm | -- | -- | ND | ND |
| Total Dissolved Solids | ppm | -- | 1,000 | 360 | 360 |
| Turbidity | NTU | TT [3] | 5 | 0.5 | ≤ 0.1 NTU average;<br>≤ 0.2 NTU over 95%;<br>≤ 0.5 NTU 100% |
| Hardness | ppm | -- | -- | 300 | 300 |

Note:

1. MCL refers to maximum contaminant level as defined in the National Primary Drinking Water Regulations. SCML refers to secondary maximum contaminant levels as defined in the National Secondary Drinking Water Regulations and adopted by the State of California. A "—" communicates that the constituent is not regulated by the respective drinking water standard.
2. No more than 5.0% samples total coliform-positive (TC-positive) in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or E. coli if two consecutive TC-positive samples, and one is also positive for E.coli fecal coliforms, system has an acute MCL violation.
3. TT – Treatment Technique
4. While the water quality from Wells SS-1 and SS-2 are non-detect, the water quality in the potable water supply storage basin could be impacted by contamination from bird and animal wastes.

## MF INFLUENT BREAK TANK AND MF FEED PUMPS

The SWTP would treat water from the potable water supply storage basin and Well SS-1. Therefore, the influent water from these two sources would be pumped to the MF influent break tank. The MF feed pumps would pump from the influent break tank to the MF system.

## MEMBRANE FILTRATION SYSTEM

The membrane filtration (MF) system would utilize a semi-universal skid configuration that could be installed with membranes from multiple different suppliers. The complete MF system includes the influent break tank, MF feed pumps, strainer, MF membrane skid, MF backwash tank, MF backwash pumps, MF clean-in-place (CIP) tank, MF CIP pump, compressed air system, and MF pretreatment and cleaning chemical feed system. The design criteria for the MF system is summarized in Table 3-16, *SWTP Membrane Filtration System Design Criteria*.

The chemical systems required for membrane cleaning and treated water disinfection are summarized in Table 3-17, *SWTP Chemical Storage Feed Systems*. Chemical bulk storage tanks for the AWTP would be used to supply the chemicals for the SWTP.

## TREATED WATER TRANSFER TANK AND PUMP STATION

The treated water transfer tank and pump station would be located at the SWTP. The treated water transfer pump station would be sized to boost the treated water's pressure into the distribution system. The treated water transfer tank and pump station design criteria are provided in Table 3-18, *Treated Water Transfer Pump Station Design Criteria*.

## SWTP ENCLOSURE

The MF system would be provided as a packaged system in a shipping container, similar to the AWTP's UF and RO systems. Exhibit 3-13, *SWTP MF System Layout*, illustrates the MF system layout. The container's footprint would be approximately 8.5 feet x 53 feet, and a height of 10 feet.

## POWER SUPPLY AND CONSUMPTION

The AWTP PG&E supplied transformer has a 750 KVA at 480/277 volts capacity and the service is 1200 amp. This transformer currently supplies power to the AWTP, which would continue to be operated. Therefore, a new power supply would be required for the SWTP.

**Table 3-16**
**SWTP Membrane Filtration System Design Criteria**

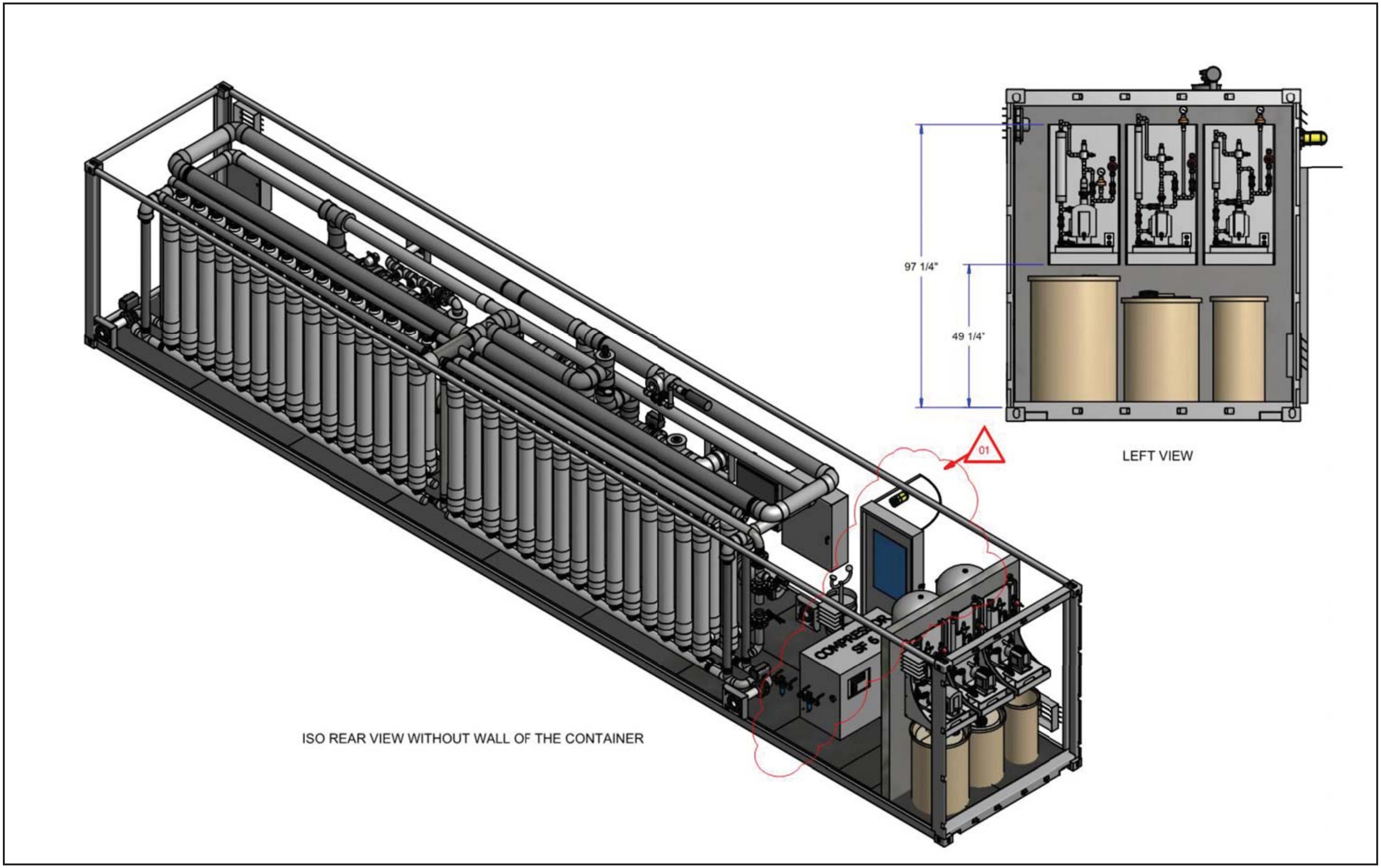
| Facility | Unit | Criteria |
|---|---|---|
| **Influent Break Tank** | | |
| Number of tanks | | 1 (1 Duty, 0 Standby) |
| Storage | minutes | 15 |
| Capacity per tank (Nominal) | gal | 10,300 |
| **MF Feed Pumps** | | |
| Number of pumps | | 2 (1 Duty, 1 Standby) |
| Type | | Centrifugal, Horizontal End Suction |
| Flow per pump | gpm | 549 |
| Head | psi | 56 |
| Horsepower (estimated) | hp | 40 |
| Drive | | VFD |
| **MF Pretreatment - particulate removal** | | |
| Type | | 0.3 mm Automatic Backwashing Strainer |
| Number of strainers | | 1 (1 Duty, 0 Standby) |
| Capacity per strainer | gpm | 555 |
| Strainer recovery | | 99% |
| **MF System** | | |
| MF System Capacity | gpm | 500 |
| Number of MF skids | | 1 (1 Duty, 0 Standby) |
| Capacity per skid/feed flow rate | gpm | 500 |
| Feed pressure | psi | 10 to 30 |
| Recovery | % | 92 |
| Flux | gfd | TBD |
| **MF Membranes** | | |
| Nominal pore size | micron | 0.01 – 0.1 |
| Material | | PVDF |
| Fiber flow path | | Outside-In |
| **Backwash Tank** | | Use Treated Water Tank |
| **Backwash Pumps** | | |
| Number of pumps | | 2 (1 Duty, 1 Standby) |
| Type | | Centrifugal, Horizontal End Suction |
| Capacity per pump | | TBD |
| Horsepower (estimated) | hp | 30 |
| Drive | | VFD |
| **CIP Tank** | | |
| Number of tanks | | 1 (1 Duty, 0 Standby) |
| Capacity per tank | gal | TBD |
| **CIP Pump** | | |
| Number of pumps | | 1 (1 Duty, 0 Standby) |
| Type | | Centrifugal, Horizontal End Suction |
| Capacity per pump | | TBD |
| Horsepower (estimated) | hp | 25 |
| Drive | | VFD |
| **Compressed Air System** | | |
| Number of units | | 2 (1 Duty, 1 Standby) |
| Capacity per unit | | TBD |
| Motor size | hp | 7.5 |

**Table 3-17**
**SWTP Chemical Storage and Feed Systems**

| Facility | Criteria |
|---|---|
| **Sodium Hypochlorite** | |
| Chemical Storage | Use AWTP chemical bulk storage tank. |
| Sodium Hypochlorite Dosing Pump (Pretreatment) | 2 (1 Duty, 1 Standby) |
| Sodium Hypochlorite Dosing Pump (Disinfection) | 2 (1 Duty, 1 Standby) |
| Sodium Hypochlorite Dosing Pump (MF Cleaning) | 1 (1 Duty, 0 Standby) |
| **Citric Acid** | |
| Chemical Storage | Use AWTP chemical bulk storage tank. |
| Citric Acid Dosing Pump (MF Cleaning) | 1 (1 Duty, 0 Standby) |
| **Sodium Hydroxide** | |
| Chemical Storage | Use AWTP chemical bulk storage tank. |
| Sodium Hydroxide Dosing Pump (Post-treatment) | 2 (1 Duty, 1 Standby) |
| Sodium Hydroxide Dosing Pump (MF Cleaning) | 1 (1 Duty, 0 Standby) |
| **Sodium Bisulfite** | |
| Chemical Storage | Use AWTP chemical bulk storage tank. |
| Sodium Bisulfite Dosing Pump (MF Cleaning) | 1 (1 Duty, 0 Standby) |

**Table 3-18**
**Treated Water Transfer Pump Station Design Criteria**

| Facility | Units | Criteria |
|---|---|---|
| **Treated Water Transfer Tank** | | |
| Number of tanks | | 1 (1 Duty, 0 Standby) |
| Capacity per tank (Nominal) | gal | 10,300 |
| **Treated Water Transfer Pumps** | | |
| Number of pumps | | 2 (1 Duty, 1 Standby) |
| Type | | Centrifugal, Horizontal End Suction |
| Flow per pump | gpm | 500 |
| Head | psi | 140 |
| Horsepower (estimated) | hp | 75 |
| Drive | | VFD |

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# SWTP MF System Layout

**Exhibit 3-13**

The SWTP's power demand is estimated to be 700 KVA. Table 3-19, *SWTP Electrical Load*, summarizes the estimated electrical load. Power for the SWTP would be obtained from a new PG&E supplied pad mount transformer. The estimated capacity of the transformer would be 750 KVA at 480/277 volts. PG&E is responsible for providing primary power to the transformer and supplying and setting the transformer. The contractor would install the transformer pad. PG&E would provide and install the secondary conductors from the transformer to the service entrance, and provide and install the current transformers and meter. The contractor would provide and install the meter socket and service entrance main circuit breaker. It is estimated the service would be 1200 amp.

**Table 3-19**
**SWTP Electrical Load**

| Description/Location | No. of Duty | No. of Standby | Power/Unit | | Max Operating (kW) | Installed Load (kW) | VFD |
|---|---|---|---|---|---|---|---|
| | | | Motor (HP) | Motor (KW) | | | |
| **UF System** | | | | | | | |
| Feed Pumps | 1 | 1 | 40 | 30 | 20 | 60 | VFD |
| Strainer | 1 | 0 | 0.25 | 0.2 | 0.2 | 0.2 | VFD |
| Strainer Backwash Pump | 1 | 0 | 2 | 1.5 | 0.9 | 1.5 | VFD |
| Air Compressor | 1 | 1 | 7.5 | 5.6 | 5.6 | 11 | |
| Backwash Pumps | 1 | 1 | 30 | 22 | 20 | 45 | VFD |
| CIP Pump | 1 | 0 | 25 | 19 | 17 | 19 | VFD |
| CIP Tank Heater | 1 | 0 | 54 | 40 | 40 | 40 | |
| **Treated Water Transfer Pump Station** | | | | | | | |
| Treated Water Transfer Pumps | 1 | 1 | 75 | 56 | 46 | 112 | VFD |
| **Chemical Dosing** | | | | | | | |
| Sodium Hypochlorite Dosing Pump (Pretreatment) | 1 | 1 | 0.75 | 0.6 | 0.56 | 1.1 | |
| Sodium Hypochlorite Dosing Pump (Disinfection) | 1 | 1 | 0.75 | 0.6 | 0.56 | 1.1 | |
| Sodium Hydroxide Dosing Pump (Post-treatment) | 1 | 1 | 0.75 | 0.6 | 0.56 | 1.1 | |
| Sodium Hypochlorite Dosing Pump (MF Cleaning) | 1 | 0 | 1.0 | 0.7 | 0.75 | 0.75 | |
| Citric Acid Dosing Pump (MF Cleaning) | 1 | 0 | 1.0 | 0.7 | 0.75 | 0.75 | |
| Sodium Hydroxide Dosing Pump (MF Cleaning) | 1 | 0 | 1.0 | 0.7 | 0.75 | 0.75 | |
| Sodium Bisulfite Dosing Pump (MF Cleaning) | 1 | 0 | 1.0 | 0.7 | 0.75 | 0.75 | |
| **Total Power (kW)** | | | | | **154** | **294** | |

Note: Assuming the SWTP operates continuously for six months (180 days/4,320 hours) per year, the SWTP's total annual electrical demand is 448 MWh.

The overhead power lines and poles have adequate capacity to supply the additional transformer for the SWTP.

## HOURS OF OPERATION

The SWTP would be operated on an as-needed basis to treat the water from the potable water supply storage basin or from SS-1 to supplement the potable water supply. In addition, the SWTP would be operated to turn over the water in the potable water supply storage basin, to prevent the water from aging. It is expected that the SWTP would be operated at least once a month.

### 3.5.2.3 MODIFIED SWF OPERATIONS

It is anticipated that the SWF would run for 24 hours per day seven days per week (24/7), during the driest time of the year (approximately six months). When the Project operates 24/7 during the driest time of year, the estimated RO concentrate volume would be approximately 57,600 gpd. However, it is unlikely that the Project would require 24/7 operation for extended periods throughout the year. Average operation would likely be 9 hours per day four days per week 12 months per year. Under this scenario, the estimated RO concentrate volume would be approximately 21,600 gpd.

### 3.5.2.4 PIPING SYSTEMS – PROJECT MODIFICATIONS

#### YARD PIPING

The schedule of yard piping contained within the SWTP is provided in CDM TM Table 11. All yard piping would be installed below ground, under the SWTP.

#### CONVEYANCE PIPING

Five new conveyance pipelines are proposed, as outlined in Table 3-20, *Conveyance Pipeline Schedule – Project Modifications*, illustrated on Exhibit 3-13, *Conveyance Piping Plan – Project Modifications*, and described below. As indicated in Table 3-20, the conveyance piping (Project modifications) totals approximately 5,800 LF, all of which would be installed below grade, except the filtrate water pipeline extension (300 LF). The interconnecting pipelines would be constructed of either fused HDPE or PVC and would have a pressure rating of 150 psi.

**Table 3-20**
**Conveyance Pipeline Schedule – Project Modifications**

| Pipe | Size (Inches) | Length (Linear Feet) Above Grade | Length (Linear Feet) Below Grade |
|---|---|---|---|
| Potable Water Pipeline #1 (CCSD Water Supply Pipeline to Potable Water Supply Storage Basin) | 8 | | 200 |
| Potable Water Pipeline #2 (SWTP to CCSD Water Supply Pipeline) | 8 | | 1,700 |
| Surface Water Pipeline (from SS-1 to SWTP) | 8 | | 3,400 |
| RO Concentrate Disposal Pipeline (AWTP to Baker tanks) | 4 | | 200 |
| Filtrate Water Pipeline (Extension from discharge structure to San Simeon Creek Bank) | 4 | 300 | |
| ***Subtotal*** | | ***300*** | ***5,500*** |
| ***TOTAL*** | | ***5,800*** | |

It is also noted, the RO concentrate disposal pipeline would be repurposed to be used as the surface water transfer pipeline. The pump discharge would connect to the RO concentrate pipeline, located at the south end of the potable water supply storage basin.

### 3.5.2.5 BAKER TANKS

The four Baker tanks would be located immediately east of the AWTP. Each Baker tank would be approximately 8 feet by 46.5 feet, and approximately 13 feet in height. Each would be double-walled, with a capacity of up to 17,640 gallons. The RO concentrate pipeline would connect from the third stage RO unit to the Baker tanks, with a four inch diameter fused polyethylene pipe double contained in a ten-inch diameter fused polyethylene pipeline.

### 3.5.2.6 OFFSITE RO CONCENTRATE DISPOSAL

Concentrate from the RO treatment process would be hauled away to a disposal site, such as the Kettleman Hills Hazardous Waste Facility (Kettleman Hills), which is located in Kings County, California, southwest of Kettleman City on State Route 41, approximately 85 miles from the Project site. For purposes of assessing the worst case scenario in terms of hauling distance and transportation impacts, the Kettleman Hills disposal location has been used within this SEIR. Kettleman is a fully permitted 1,600acre hazardous waste treatment, storage, and disposal facility operated by Waste Management, Inc.

It is anticipated that the SWF would run for 24 hours per day seven days per week (24/7), during the driest time of the year (approximately six months). Under this scenario, ten truck trips per day (limited to operating within the SWF site between the hours of 7:00 AM and 7:00 PM) would be needed to haul the RO concentrate to Kettleman Hills, assuming a 6,000 gallon truck would be used. However, it is unlikely that the Project would require 24/7 operation for extended periods throughout the year. Average operations would likely be nine hours per day four days per week 12 months per year. Under this scenario, four truck trips per day would be needed to haul the RO concentrate to Kettleman Hills.

For purposes of conducting a conservative analysis of the Project's potential environmental impacts associated with offsite RO concentrate disposal (i.e., mobile emissions, transportation, etc.), this SEIR assumes the SWF would operate 24/7 for six months per year, and the RO concentrate would be hauled away to Kettleman Hills for disposal.

### 3.5.2.7 LAGOON SURFACE DISCHARGE EXTENSION

As discussed above, membrane filtration effluent/de-chlorinated and oxygenated AWTP product water is surface discharged near San Simeon Creek to protect San Simeon Creek Lagoon during dry weather conditions. This proposed Project modification involves extending the filtrate pipeline to relocate the discharge point further south to the San Simeon Creek bank. The filtrate pipeline would be routed/placed by hand to protect the riparian habitat. This discharge location was identified as Mitigation Measure BIO-3 to further avoid biasing Well 16D1 water quality samples and more efficiently deliver surface water into the upper San Simeon Creek lagoon area. At the relocated discharge point, articulating concrete block (ACB) (Armorflex) lining or similar (Approximately 87 square feet) erosion prevention measures would be installed to protect the San Simeon Creek channel bank. Armorflex would allow for the continued growth of riparian vegetation, further protecting the channel from any potential erosion.

## 3.6 PROJECT PHASING AND CONSTRUCTION ACTIVITIES

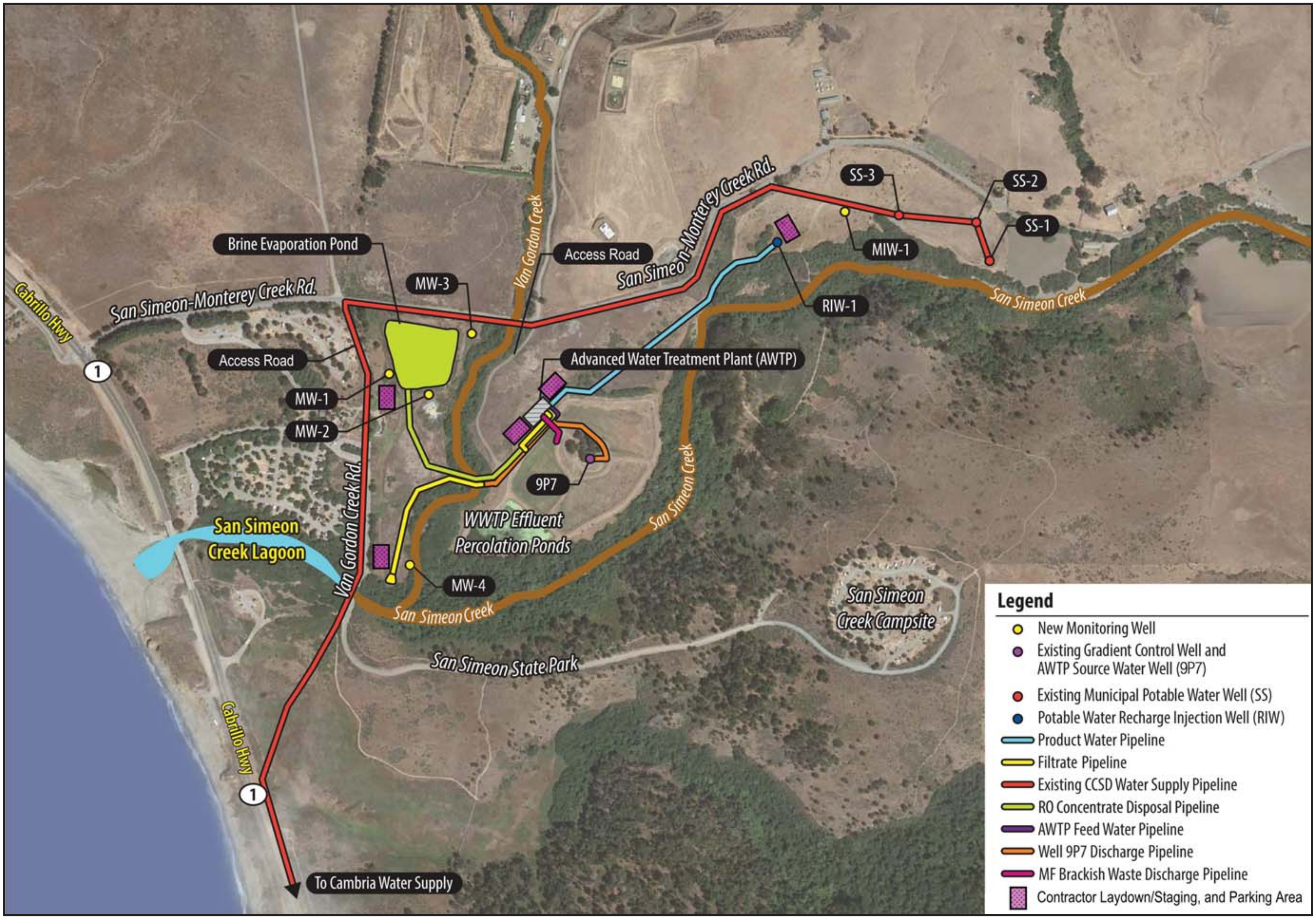
### 3.6.1 SWF PHASING

The Project involved a design-build construction delivery method that included construction and installation of the water facilities described above. Construction of the emergency Project occurred over approximately six months, with construction beginning on May 20, 2014 and substantially completed on November 14, 2014. Construction work times occurred between 7:00 AM and 5:00 PM, Mondays through Fridays, and between 8:00 AM and 5:00 PM, Saturdays, consistent with CZLUO Section 23.06.042 regulations. The construction phase was followed by an approximately two-month start-up period that included facility testing and commissioning.

### 3.6.2 SWF CONSTRUCTION ACTIVITIES

The SWF Project components required general construction activities including clearing, grading (nominal), excavating, trenching, pipe installation, placement of backfill, and installation of other limited equipment/improvements on structural footings and concrete housekeeping pads. Approximately 50 cubic yards (CY) of cut and 50 CY of fill were generated during construction of the proposed wells and AWTP, and approximately 200 CY of cut and 200 CY of fill were generated during pipeline installation. Ground disturbance activities for well construction include drilling between 40 and 100 feet in depth. Excavated soils were retained for backfill to avoid soil exportation and minimize truck trips. Additionally, vegetation was removed as part of the evaporation pond liner installation. The Project was constructed entirely within CCSD property boundaries. As shown in Exhibit 3-14, *SWF Construction Laydown/Staging Areas*, the laydown/staging areas were located at the northern and western portions of the Project site.

Project components were designed and constructed in accordance with applicable provisions of the SLO County-issued E-CDP, the California Water Board's General Construction Storm Water Permit, American Water Works Association (AWWA) Standards, California State Building Code (CBC), and the Uniform Building Code (UBC). Ground disturbing activities were reviewed and monitored by biological, archeological, and Native American monitors.




Source: Cambria Community Services District, 2015.

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# SWF Construction Laydown/Staging Areas

**Exhibit 3-14**

## TRENCHING AND DIRECTIONAL DRILLING

The Project included five interconnecting pipelines, with diameters ranging from 4 to 8 inches; see Table 3-10. To avoid potential impacts and expedite construction in compliance with E-CDP requirements, most of the pipeline was laid along the ground surface. Of the approximately 4,630 LF of pipeline, 4,150 LF were installed above grade and 480 LF were installed below grade. The below grade pipelines were installed using both trenching and horizontal directional drilling methods.

**Trenching.** The AWTP feed water and backwash waste discharge pipelines were installed using the trenching method, which involves a conventional cut-and-cover pipeline installation technique. The trenching technique included clearing of the site, trench excavation, pipe installation, and backfill operations. The trench widths were approximately two feet wide and five feet deep. Pipeline excavation involved approximately 200 CY of cut and 200 CY of fill. Use of trenching for pipeline installation was minimized and employed in select areas where above ground pipelines would create a tripping hazard or block facility access. In areas where trenching occurred, biological, archeological, and Native American monitors were used to ensure adverse impacts to biological/cultural resources were avoided. The biological monitors reviewed the proposed trenching alignments to avoid sensitive biological resources, prior to any open-cut trenching.

**Horizontal Directional Drilling.** Reaches of the filtrate pipeline to San Simeon Creek Lagoon and RO concentrate disposal pipeline that crossed under Van Gordon Creek were installed using horizontal directional drilling where they crossed under the Van Gordon Creek. Horizontal directional drilling is a trenchless construction method that was used for installing these pipeline reaches under Van Gordon Creek without disturbing the ground surface. This method was coordinated with the biological monitor with entrance and exit pits located outside of the tree drip line. Using a horizontal drill rig, the pipeline was installed in two stages: (1) a small diameter pilot hole was directionally drilled along a designed directional path; and (2) the pilot hole was then enlarged to a diameter that accommodated the pipeline, and the pipeline was pulled back through the enlarged hole.

# 3.6.3 MITIGATION MEASURES (PROJECT MODIFICATIONS) PHASING

The Mitigation Measures (Project modifications) would involve a design-build construction delivery method that would include construction and installation of the water facilities described above. Construction is anticipated to begin during 2017 and occur over approximately 12 months. Construction work times would occur between 7:00 AM and 5:00 PM, Mondays through Fridays, and between 8:00 AM and 5:00 PM, Saturdays, consistent with CZLUO Section 23.06.042 regulations.

## 3.6.4 MITIGATION MEASURES (PROJECT MODIFICATIONS) CONSTRUCTION ACTIVITIES

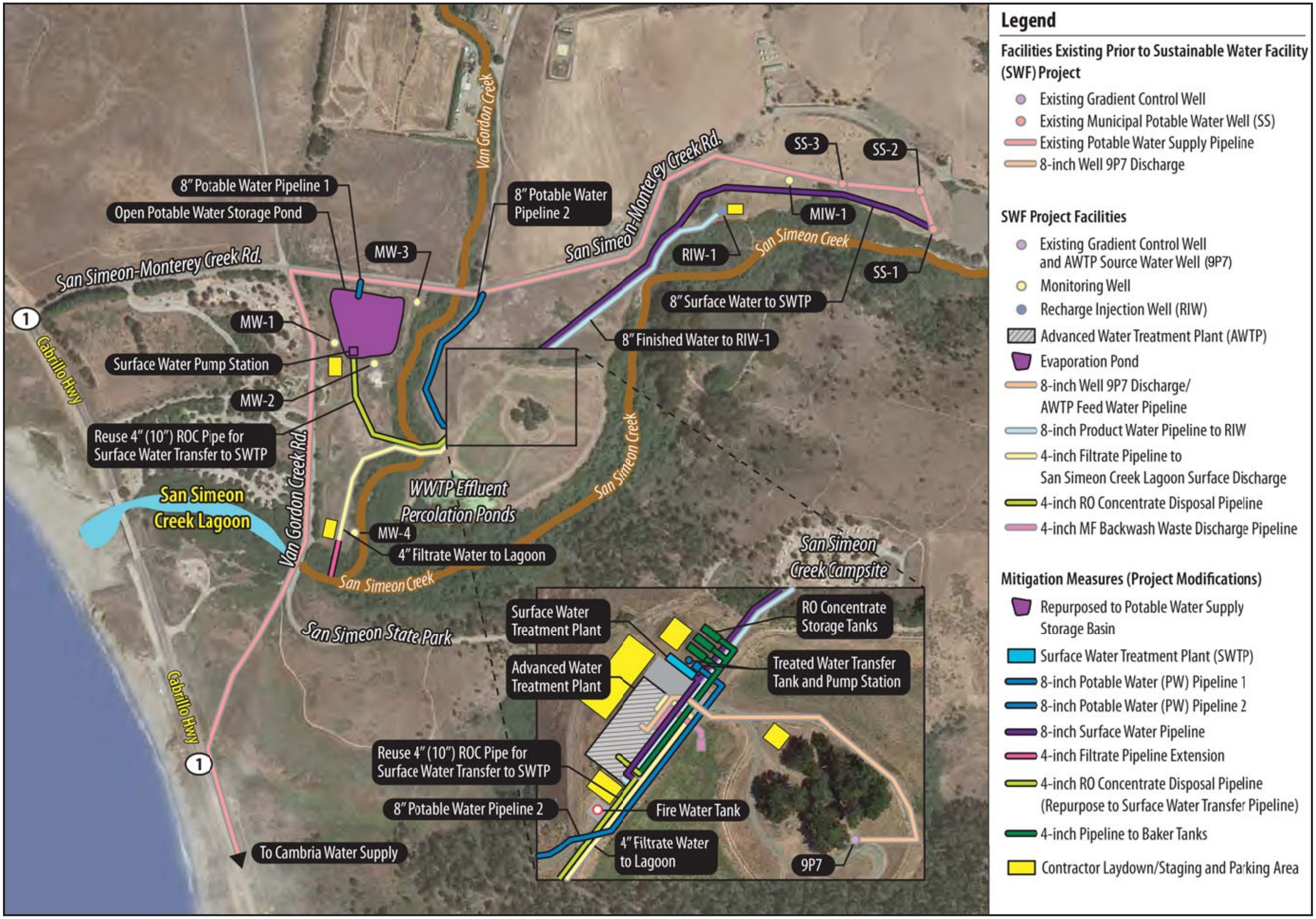
The Mitigation Measures (Project modifications) would require general construction activities including clearing, grading (nominal), excavating, trenching, pipe installation, placement of backfill, and installation of other limited equipment/improvements on structural footings and concrete housekeeping pads. Approximately 50 CY of cut and 50 CY of fill would be generated during construction of the proposed Project modifications, and approximately 2,533 CY of cut and 2,533 CY of fill would be generated during pipeline installation. Excavated soils would be retained for backfill to avoid soil exportation and minimize truck trips. The Project would be constructed entirely within CCSD property boundaries, except for two connections to the existing potable water distribution pipeline within San Simeon Monterey Creek Road. The proposed laydown/staging areas are shown on Exhibit 3-15, *Mitigation Measures (Project Modifications) Construction Laydown/Staging Areas*.

As discussed above, as part of its decommissioning, the evaporation pond would be emptied of the RO concentrate. The RO concentrate and the residual slurry would be transported for disposal at an appropriate Class II waste disposal facility. This is a one-time event and the number of truck trips required to empty the evaporation pond would vary depending on the volume of RO concentrate present when pond decommissioning begins. Construction phasing is structured such that either the evaporation pond would be empty or the proposed Baker tanks would be online when pond decommissioning begins. The evaporation pond liner would be cleaned using high pressure hoses to sluice the RO concentrate to the pond's lowest spot. The dirty water would similarly be transported for offsite disposal. For purposes of conducting a conservative analysis of the Project's potential environmental impacts (i.e., mobile emissions, transportation, etc.), associated with emptying the evaporation pond, this SEIR assumes the following: the evaporation pond would be full (6.96 mg); 6,000 gallon capacity trucks would be used; 1,160 truck trips would be required over 80 days; the residual RO concentrate would be transported to a disposal site, such as the Kettleman Hills Hazardous Waste Facility (Kettleman Hills), which is located approximately 85 miles from the Project site.

Project components would be designed and constructed in accordance with applicable provisions of the California Water Board's General Construction Storm Water Permit, AWWA Standards, the CBC, and the UBC. Ground disturbing activities would be reviewed and monitored by biological, archeological, and Native American monitors.

### TRENCHING AND DIRECTIONAL DRILLING

The Project modifications include five new interconnecting pipelines, with diameters ranging from 4 to 8 inches; see Table 3-20. Of the approximately 5,800 LF of proposed pipeline, approximately 300 LF would be installed above grade and approximately 5,500 LF would be installed below grade. The below grade pipelines would be installed using the trenching method.




Source: CDM Smith, July 15, 2016.

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# Mitigation Measures (Project Modifications) Construction Laydown/Staging Areas

**Exhibit 3-15**

The proposed below-grade Project modification pipelines would be installed using the trenching method, which involves a conventional cut-and-cover pipeline installation technique. The trenching technique would include clearing the site, trench excavation, pipe installation, and backfill operations. The trench widths would be approximately two feet wide and five feet deep. Pipeline excavation would involve approximately 100 CY of cut and 100 CY of fill. Use of trenching for pipeline installation would be employed where above ground pipelines would create a tripping hazard or block facility access. In areas where trenching is proposed, biological, archeological, and Native American monitors would be used to ensure adverse impacts to biological/cultural resources would be avoided. Biological monitors would review the proposed trenching alignments to avoid sensitive biological resources, prior to any open-cut trenching.

# 3.7 AGREEMENTS, PERMITS, AND APPROVALS

The Cambria Community Services District (CCSD), as Lead Agency for the Project, has discretionary authority over all Project components. Other agencies in addition to the CCSD are expected to use this SEIR in their decision making process. To implement the Project, at a minimum, the following discretionary permits/approvals (listed in chronological order) must be granted by the CCSD and SLO County:

- CCSD Board of Directors:
  - Public Hearing and SEIR certification.

- County of San Luis Obispo:
  - Regular Coastal Development Permit;
  - Grading Permit;
  - Single-Trip Transportation Permit; and
  - Encroachment Permit.

It is noted, as the SWF was constructed under an E-CDP, some of the permits outlined above have already been obtained, as discussed in Sections 5.1 through 5.7 of this SEIR.

Other public agencies whose approval may be required include the following:

- San Luis Obispo County Air Pollution Control District (Rule 202 Permits);
- Central Coast Regional Water Quality Control Board (CC RWQCB);
- Surface Water Discharges and Title 27 evaporation pond compliance;
- CC RWQCB, Division of Drinking Water;
- Title 22 –Indirect Potable Reuse of Recycled Water compliance;
- California Department of Fish and Wildlife;
- California Department of Parks and Recreation;
- California Coastal Commission; and
- U.S. Fish and Wildlife Service.