K. WATER RESOURCES

The Water Resources section of the EIR evaluates potential impacts of the proposed project on groundwater and surface water resources. The analysis is based primarily on the 2008 *Water Resources Assessment* (2008 Report) and on the *2010 Technical Memorandum 2* (2010 Report), both prepared by Fugro (refer to Appendix G). These documents: 1) identify a groundwater study area based on local hydrogeologic conditions; 2) include well pumping test analyses; 3) include a water demand audit; and, 4) summarize water quality data.

In addition to the information included in the above-referenced documents, the applicant has proposed a modification to the project evaluated in the 2009 Draft EIR and the 2011 Recirculated Draft EIR which affects the Water Resources section. This project modification occurred in December 2011 and includes the removal of open windrow composting from the project being evaluated in this EIR. This modification is of note, as the former compost operation would have required a substantial portion of the overall water budget for the proposed project. The project as proposed does not include any other form of composting. Green waste and wood waste would still be hauled to the Landfill and utilized for ADC.~~The proposed maximum capacity of the Compost Operation (CO) has been reduced from 450 tons per day (tpd) to 300 tpd. This is equal to the currently permitted limit, but more than the approximately 100 tpd actually processed in recent years.~~

This section describes existing local hydrologic (surface water and groundwater) conditions, identifies the impacts of the proposed project on those conditions, and recommends mitigation measures to reduce any significant impacts identified.

1. Existing Conditions

a. Geologic Conditions

The Central Coast hydrologic basin planning area, as defined by the Central Coast RWQCB, encompasses all coastal drainages flowing to the Pacific Ocean between the Pajaro River in southern Santa Clara County and Rincon Point on the coast of western Ventura County. The Landfill is located in the southern portion of the 779-square mile Estero Bay watershed immediately down gradient from the San Luis Obispo groundwater basin and up-gradient of the narrow northeast-southwest trending lower Pismo groundwater basin. The Landfill is located in the Pismo (geologic) Basin along the northeastern flank of the Pismo Syncline. The Pismo Basin is bounded on the northeast by the Huasna fault zone and on the west by the Hosgri fault zone. A discussion of specific geologic formations can be found in the Geology and Soils section of the ~~2009 Draft~~ FEIR.

b. Regional Hydrogeology

The principal aquifer of the Pismo Basin consists of the recent alluvial deposits. The alluvium consists of sand, gravel, and clay to a maximum thickness of 100 feet. The Monterey and Pismo formations that underlie the site are not considered major groundwater aquifers, although they do yield usable quantities of water for small-scale operations such as domestic and livestock purposes. Within the Monterey and Pismo Formations, groundwater generally occurs under semi-confined to confined conditions. Recharge to the aquifer occurs by percolation of stream flow, percolation of precipitation, and subsurface underflow. Basin discharges occur through surface outflow, springs, groundwater pumpage, and evapotranspiration (ETo).

c. Groundwater Recharge

An estimate of recharge in the hydrogeologic study area was performed by considering percolation of precipitation and percolation of irrigation water (Fugro, 2008). Only a small portion of total rainfall percolates to groundwater. Some of the rainfall runs off, some evaporates directly from the soil surface, or is taken up by plants to be transpired to the atmosphere (a process jointly referred to as ETo). Only after a sufficient amount of rainfall has saturated the soil to some depth can any additional precipitation percolate to become groundwater.

Detailed estimates of percolation of precipitation require surface area, soil type, daily measurements of precipitation, and ETo and runoff data. Based on studies completed by the Department of Water Resources (DWR) for the Arroyo Grande Plain and the Santa Maria Valley, between nine and 16 percent of average annual precipitation percolates to groundwater (Fugro, 2008). For this EIR, the lower, more conservative rate of nine percent is used. Average annual precipitation in the area is approximately 22.1 inches per year. Nine percent of 22.1 is approximately 2.0 inches, which when applied over a basin of approximately 1,687 acres would lead to percolation, or "recharge," of approximately 281 acre feet into the basin. This number would be reduced somewhat due to the impermeability of the Landfill area, but would potentially increase when the potential of irrigation water to percolate is considered. The potential recharge capacity of the basin is considered an approximate number based on general assumptions of hydrogeologic conditions in the vicinity of the Landfill, and is provided as context for subsequent discussion of cumulative impacts (refer to Section V.K.6).

d. Local Hydrogeology

Hydrogeologic conditions at the Landfill are based on data from the drilling and installation of monitoring wells. The drilling, installation, pump testing, and regular sampling of the network of monitoring wells at the Landfill have allowed determination of water level data, hydraulic gradient, flow direction, water quality, and aquifer characteristics (Fugro, 2008).

A total of 20 monitoring wells are present at the Landfill (refer to Figure III-10). The depth to the water surface varies between approximately 7 and 93 feet from the ground surface. Groundwater elevations range between approximately 230 feet above mean sea level (MSL) in the northern well (P-14) and 180 feet above MSL in the southern well (P-11). Groundwater elevations are measured quarterly in the site monitoring wells and the hydrographs are presented in Appendix G. The hydrographs indicate that Monitoring Well 2 (MW-2) and P-5 (Monterey Formation wells) have an extended period of seasonal variability.

e. Hydrogeologic Connectivity

The Landfill is located in an area relatively isolated from its surroundings hydrogeologically. The hydrogeologic study area, which contains the Landfill, is bounded on the north by the Edna Valley fault and the south, east, and west by shallow alluvial valleys (Fugro, 2008). The hydrogeologic study area is underlain largely by the Pismo and Monterey Formations, with alluvial clay and sand deposits in the surrounding valleys. The hydrogeologic study area encompasses approximately 1,687 acres, of which the proposed project would encompass 209 acres. Groundwater users outside of the hydrogeologic study area would likely not be affected by groundwater pumpage at the Landfill because the boundaries of the study area consist of a barrier to flow (northern boundary) or a recharge boundary (alluvium).

f. Existing Water Supply

1) Weir Wells

A cluster of three groundwater wells, known as the "Weir wells," are located on the southeastern edge of the proposed expansion area. The wells, designated as Weir Wells #1, #2, and #3 on Figure V.K.-1, produce water from the Pismo Formation and consist of five-inch-diameter PVC casing and are gravel packed. Well #1 is 186 feet deep, Well #2 is 156 feet deep, and Well #3 is 245 feet deep. Until pump testing was performed on the wells during 2009 as part of the development of the 2010 Report, only Wells#1 and #2 were connected and in use. None of the three wells were fitted with meters until this analysis, and therefore previous estimates of their capacities, used in the 2009 Draft EIR analysis, were based on the Applicant's estimates. These previous estimates were higher than the proven current capacities of the wells (Fugro, 2010).

Groundwater produced from these wells is pumped directly to an 86,000-gallon steel tank behind the Materials Recovery Facility (MRF) or to the detention basin between the MRF and former CO (Golder, 2007). This basin is referred to as the "sediment pond" in the 2010 Report and throughout the remainder of this section.

As part of preparation of the 2010 Report, a well testing program was performed on the three Weir wells to determine their capacity in November and December 2009. The wells were each pumped individually for a period of three days, and simultaneously for a period of one day and seven days. The results of the individual and seven day pumping tests, and potential well capacities are shown in Plate 1 of the 2010 Report (refer to Appendix G).

During the testing program the water levels in adjacent monitoring wells and two neighboring off-site wells were measured and recorded in five-minute intervals to determine the degree of well drawdown and interference from pumping the Weir wells. The results of the monitoring are discussed in the Project-Specific Impacts and Mitigation Measures section.

(a) Weir Well No. 1

The individual pumping test of Weir Well No. 1 was initiated at a rate of 32 gallons per minute (gpm). Between 100 minutes after the test began through the end of the 72-hour period, the well pumped continually at a decreased average rate of 25 gpm. During this time, the water level had dropped entirely below the depth of the water level transducer (144 feet below the depth of the top of the casing) and, therefore, the total drawdown could not be recorded. However, the observed pumping level is equal to or greater than 71.3 feet of drawdown, which results in a specific capacity value of less than 0.35 gpm/ft. Assuming the water level within the well continued to decline during pumping, the total theoretical drawdown would have been about 85 feet (Fugro, 2010).

(b) Weir Well No. 2

The individual pumping test of Weir Well No. 2 was initiated at a rate of about 10 gpm. After about 10 minutes, the pumping rate climbed to approximately 16 gpm for unknown reasons, then moderated to 13 gpm. Subsequently, the pump then ran continually for a period of approximately two hours during which the well pumped at an average rate of approximately 12 gpm. After this time, the pump began a cycle of switching on for five to six minutes approximately three times per hour. During the times of pumping, the well pumped at approximately 12 to 13 gpm. This cycling continued though the end of the testing period of 72 hours. The average pumping rate for the duration of the test was 5.5 gpm. The pumping resulted in a relatively rapid drawdown of between 20 and 50 feet and a maximum drawdown of 90 feet (Fugro, 2010).

(c) Weir Well No. 3

The individual pumping test for Weir Well No. 3 was initiated at a rate of 11 gpm. After approximately 35 minutes of pumping, the water meter indicated that the pumping rate had increased to 18 gpm, at which time the valve was manually closed partially over a period of several minutes. After 43 minutes of pumping, the flow rate was regulated back down to 11 gpm. For most of the 72-hour test, the pump switched on and off in short cycles of several minutes each. During this time the pumping rate remained constant at 10 to 11 gpm. After approximately two days of pumping, the average flow was approximately 10 gpm. After three days of pumping the average pumping rate had declined to 4.5 gpm. The average pumping rate during the test period was 8.5 gpm. At the end of the test drawdown was approximately 60 feet (Fugro, 2010).

(d) Weir Wells #1, 2, and 3 Simultaneous Pumping

The Weir wells were switched on simultaneously for a period of one week between Monday, November 30 and Monday, December 7, 2009. During this week-long pumping period, the wells combined to pump approximately 21.5 gpm, or 31,000 gpd. Hydrographs of the pumping tests are shown in Appendix D of the 2010 Report (refer to Appendix G).

TABLE V.K.-1
Weir Well Pump Test Capacities

Well	2009 Test Date	Depth	Average Pumping Rate (gpm)	Production (gpd)	Drawdown (ft)
Weir Well No. 1	11/9-11/12	186	25	36,000	85
Weir Well No. 2	11/16-11/19	156	5.5	7,920	50
Weir Well No. 3	11/22-11/25	244	8.5	12,240	60
Simultaneous	11/30-12/7	n/a	21.5	31,000	n/a

2) Shop Wells

In the western corner of the Landfill are three wells known as the "Shop Wells," located adjacent to the shop, east of the existing Resource Recovery Park (RRP). Two of these wells operate as a single water source, estimated by the applicant to produce 10 gpm. The third shop well is not used. None of the wells are metered, and they would all be destroyed as part of the proposed project because they are located where Module 10 is proposed; therefore, the capacities of the shop wells were not considered when evaluating potential future groundwater supplies for the project.

3) Surface Water Supply

Two ponds are currently used as a supply of surface water for the Landfill – the Module 8 pond and the sediment pond. The sediment pond includes a formal "filling station" used to fill trucks that irrigated the former CO or provide dust control throughout the Landfill. The capacities of the ponds are not known, although based on the 2010 Report, the ponds have the potential to supply the Landfill with approximately 123,000 gallons per month (gal/Mo), on average (refer to Table V.K.-2).

4) Leachate

Historically, the leachate collected in the Landfill's leachate collection and recovery system has been approved for use as dust control at the Landfill. Based on reports prepared by the applicant for the RWQCB, ~~I~~it has been estimated that as much as 0.85~~2.1~~ acre feet per year (afy) of leachate has been available historically for dust control by the RWQCB~~ (Fugro, 2008)~~.

5) Imported Water

Due to limited capacity of the on-site wells, during periods when the modules are being excavated (an approximately 6 month period which occurs every five years on average) the Landfill has historically imported from the adjacent vineyard (Fugro, 2008). The applicant estimates that module construction requires approximately 24,000 gallons per day (gpd) ~~, 87,000 gal/Mo, or 522,000 gallons~~ (1.60 acre-feet) per module.

6) Total Water Supply

Based on what is currently know about the Landfill's on-site water supply system, it could potentially provide up to approximately 33~~34~~afy of water to meet Landfill demands (refer to Table V.K.-2).

TABLEV.K.-2
Potential Water Supply

Well	Supply (afy)
Weir Wells	25[1]
Surface Water	7[1]
Leachate	0.85 ~~2.1~~[2]
Imported Water (off-site)	1.6
Total On-site Supply	32.85 ~~4.1~~[3]
[1]Based on 2010 Report (Fugro, 2010) [2]Based on applicant-provided historical use [3]Does not include imported water	

g. Existing Water Demand

The Landfill uses water for the following activities:

a. ~~Compost Operation (CO) Irrigation~~(CO Removed from Existing and Proposed Project);
b. Dust Control;
c. Materials Recovery Facility (MRF);
d. Non-Potable Water for Employee Use; and,
e. Potable Water for Employee Use.

1) Former Compost Operation Irrigation

Irrigation for the former Compost Operation (CO) ~~irrigation is~~ was the single largest water use at the Landfill. In order to facilitate the breakdown of green waste into compost, the Landfill ~~irrigates~~ irrigated the compost windrows. When in operation during recent years, the CO ~~has~~ included approximately 16 windrows of between 200 and 600 feet long, and seven feet high. The windrows ~~are~~ were irrigated to maintain a specific moisture content. Irrigation demand ~~is~~ was generally higher during the dry, warm season (April-October), and lower during the winter seasons (November-March). During monitoring of water use in 2010, the former CO irrigation demand ranged from 91,000 to 448,000 gal/Mo (refer to Table V.K.-3).

2) Dust Control

Based on the water demand assessment, dust control is the second largest water use at the Landfill. For Landfill-related dust control, ~~including at the CO,~~ water is conveyed by water truck and spread as needed around the heavily-trafficked areas. Dust control is necessary at the ~~CO,~~ RRP, disposal areas, and unpaved roads within the Landfill. Water demand for dust control is highest during dry and/or windy periods. During monitoring of water use in 2010, dust control demand ranged from 15,200 to 330,000 gal/Mo (refer to Table V.K.-3).

3) Materials Recovery Facility (MRF)

Other than for employee water use, the MRF uses water only for periodic washing down of the facility. It has been estimated that less than 1,000 gpd is used during the weekdays, and 300 gpd on the weekends for these operations.

4) Non-Potable Employee Use

Based on discussions with the County of San Luis Obispo's Public Health Department (SLOCOPHD) Environmental Health division, light-industrial workers use an average of about 15 gpd for non-potable uses (Fugro, 2008). In total 79 employees currently work in all components of the Landfill including administrative, disposal area, scalehouse, MRF, ~~CO,~~ RRP, household hazardous waste, and universal and electronic waste components on weekdays. The entire Landfill staff is estimated to use about 1,185 gpd on weekdays and less on weekends, when the number of employees is much lower.

(a) Total Existing Demand (Non-Potable)

To determine existing water demand for the activities that require the most water at the Landfill, a water demand analysis was prepared (Fugro, 2010). To quantify the volume of water supplied to each of the on-site water uses, the Landfill operator was requested to maintain records of the on-site water use. To facilitate this data collection, Landfill staff was provided with forms to record the meter readings for each of the three Weir wells and for a meter installed at the outfall to the sediment pond and another at the 86,000 gallon tank adjacent the MRF. In addition, forms were provided for each of the water trucks so that "pulls" from the ponds filling station for use as dust control throughout the Landfill and for irrigation of the former CO could be recorded.

Data collection began in early November 2009 and continued until August 2010. The most complete records are those from January 2010 through July 2010. The recorded water demand from irrigation at the former CO, and dust control are shown in Table V.K.-3. (The recorded demand data did not include MRF or non-potable employee use; however, the table does include the assumed demands from the MRF and non-potable employee use, based on previous estimates from the applicant included in the 2008 Report.)

The total demand recorded during the seven month period was higher than the total of the former CO irrigation and dust control records. In the 2010 Report, the difference is attributed to evaporation and/or percolation from the ponds, and to the inherent difficulties of accurately measuring water demand by use, per truck trip, over a relatively long period.

The water demand analysis also recorded the source of water (i.e., surface or groundwater) used by the Landfill to meet the demand. During some months there are considerable discrepancies between the total supply and total demand recorded, even when the potential evaporation is included. In other months, the difference is less than five percent. Table 2 in the 2010 Report (refer to Appendix G) includes detailed supply and demand records.

TABLE V.K.-3
Water Demand 7-month Period
(gal/Mo)

Month (2010)	Former CO Irrigation[1]	Landfill Dust Control[1]	MRF[2]	Non-Potable Employee[2]	Total
January	91,200	15,200	30,000	30,000	166,400
February	72,200	26,600	30,000	30,000	158,800
March	127,950	151,050	30,000	30,000	339,000
April	141,200	231,800	30,000	30,000	433,000
May	255,400	287,850	30,000	30,000	603,250
June	448,100	315,450	30,000	30,000	823,550
July	400,900	330,600	30,000	30,000	791,500
Average	219,564	194,079	30,000	30,000	473,643
Total	1,536,950	1,358,550	210,000	210,000	3,315,500

[1] Based on Fugro's 2010 Report
[2] Based on estimates of historical use previously provided by the applicant (Fugro, 2008).

As shown in Table V.K.-3 the average total demand per month was 473,643 gal/Mo. Based on this average, the total annual demand would be 5,683,716 gallons, or 17.4 acre feet. This amount is in relative agreement with page 17 of the 2010 Report which concludes that "total site demand may be equal to or less than 18 afy" (Fugro, 2010), even though their analysis did not specifically document MRF or non-potable employee use. The existing demand with, and without the former compost operation, by component, based on average gallon per month use and converted to afy (i.e., where 325,851 gallons equals 1 acre-foot), is shown in Table V.K.-4.

TABLE V.K.-4
Existing Water Demand

Component	Demand (afy)
Former Compost Operation	8.1
Dust Control	7.1
MRF	1.1
Non-Potable Employee	1.1
Total	17.4
Total (Adjusted – No CO)	9.3

5) Potable Employee Use

The Landfill provides employees with potable drinking water from bottled sources. In San Luis Obispo County, certain non-community water systems, such as schools and small offices that have either poor water quality or an unreliable supply, are allowed to use bottled water for potable uses. Because the facility uses bottled water for potable use, drinking water demand on groundwater is non-existent.

h. Regional Water Quality

Groundwater quality data from EMCON Associates (1992) and RMC Geoscience (2007) were reviewed in order to determine: 1) the background water quality on and surrounding the site; 2) the variability of the existing water quality; 3) the impact of the various operations at the Landfill on water quality; and, 4) the record of compliance with relevant groundwater quality requirements.

Generally, water quality, both regionally and from wells within a one-mile radius of the Landfill, includes magnesium bicarbonate as a chemical character and has not changed significantly since Landfill operations began (Fugro, 2008).

Groundwater within the Monterey Formation is generally high in total dissolved solids (TDS) and slightly elevated with respect to sodium. Typical constituents of the TDS are calcium, phosphates, nitrates, sodium, potassium, and chloride. Generally TDS is considered a secondary pollutant not necessarily associated with health effects. High levels of TDS can affect the palatability of water and higher levels indicate “hard water.”

The Monterey Formation also has elevated levels of hydrogen sulfide (H_2S) concentrations, which limit its potability. Hydrogen sulfide is commonly associated with hydrocarbons in the diatomaceous Monterey Formation. Hydrogen sulfide can be harmful to human health at high concentrations. Elevated levels of the substance result in a “rotten egg” odor in drinking water.

Water quality from the alluvium and Pismo Formation, which lies below portions of and southeast of the Landfill, is generally considered to be of potable quality – TDS concentrations are lower, but sodium levels are elevated. The three Weir wells are located in the Pismo Formation (Fugro, 2008).

i. On-site Water Quality

Water quality data for the Landfill are more complete than regional water quality data. Groundwater sampling has been performed at the Landfill regularly since 1987, originally as part of a hydrogeologic site characterization study (EMCON, 1987). In February 1989, groundwater samples collected from six wells were analyzed for organic and inorganic constituents for comparison with California drinking water standards maximum contaminant limits (MCLs). The results indicate that secondary (aesthetic) MCLs were exceeded for:

- TDS in all wells;
- Electrical conductivity in all wells except MW-3;
- Chloride in PW-2; and,

- Sulfate in MW-2.

Groundwater in the vicinity of the Landfill generally flows from the north (up gradient from the Landfill) to the south (down gradient from the Landfill). To identify any changes to the groundwater that are a result of the Landfill operations, water quality up gradient is compared to water quality down gradient. Except for chloride and sulfate, all down-gradient exceedances of MCLs were also exceeded in up-gradient MW-5. Therefore it was determined that the Landfill had little or no impact on groundwater. Monitoring wells discussed in this section are shown on Figure III-10.

The elevated chloride and sulfate character of the groundwater may reflect natural groundwater conditions within the shallow geologic formations in which they were detected. The chloride and sulfate concentrations are likely controlled by relatively higher solubility of chloride and sulfate minerals relative to naturally-occurring bicarbonate minerals (Fugro, 2008).

The RWQCB issued Waste Discharge Requirements (WDRs) for the Landfill in 1975, subsequently updated in January 1990 (Order 90-33). Order No. 93-51 was issued in 1993 to allow a horizontal and vertical expansion of the Landfill. The WDRs require semi-annual~~quarterly~~ monitoring of groundwater quality to determine if a statistical exceedance occurred in any well and constituent. In response to the requirements of the order, the Landfill capped 14 acres of the unlined area and constructed a gas extraction system.

j. Enforcement Actions

Order 90-33 was updated in 2002, during which RWQCB staff issued a letter indicating that the Landfill was in substantial compliance with the requirements of the Order and that a comprehensive file review from 1993 to 2002 failed to turn up a single Notice of Violation or other formal enforcement action. The report also indicated that Volatile Organic Compounds (VOC) had been reduced to levels below detectable limits as a result of several corrective actions.

The 2002 RWQCB report also indicated that there may have been a release (of undocumented constituents) from the existing Landfill in the vicinity of MW-2 and MW-3. However, upon installing Wells P-8 and P-9, and performing subsequent monitoring, it was determined that the release had not migrated beyond MW-2 and MW-3. Subsequent groundwater monitoring reports have not identified any release.

In February 2010 the RWQCB issued the Landfill a Notice of Violation for inadequate capacity in precipitation and drainage controls, and discharge of inappropriate surface runoff in December 2010 (County of San Luis Obispo, 2010). In response, the Landfill completed wet weather preparations for the 2010-2011 rainy season, as required by the RWQCB. These preparations included maintenance and improvements to Landfill detention basins, and identifying and re-working Landfill slopes that contributed to Landfill runoff violations. As a result of the applicant's elimination of the CO, compost area runoff violations are no longer an issue. ~~To address compost area runoff violations, the applicant hasproposed specific drainage improvements for the composting pad and processing area that include construction of a~~

~~dedicated pond to retain compost impacted runoff on-site for beneficial reuse. The location of the pond is consistent with the compost runoff pond shown in Figure III-8.~~

In February 2011 the RWQCB issued the Landfill a Notice of Violation for violations noted during inspections of the site on December 20th and December 30th, 2010. Issues noted during the inspections include:

> *" . . .several sediment transport and erosion issues on-site including slope sloughs (non-landfill), eroded drainageways over waste, and excessive sediment within v-ditches. Although significant sediment was observed in the drainage system, landfill slopes appeared to be holding up with only minor rilling on new slopes directly below the wet weather disposal area. Additionally, Water Board staff observed a lack of drainage ditch and downdrain liners over waste that were contributing to sediment and erosion issues, and percolation of water into waste."*

Specifically, the following violations were noted by RWQCB staff:

- Lack of drainageway and downdrain liners over waste;
- Leachate seep discharge;
- Interior holding pond overcapacity and ponding over waste; and,
- Impacted stormwater discharge.

Due to the violations, the RWQCB mandated that the Landfill comply with a number of additional monitoring measures. These measures include inspect landfill drainages for subsurface to surface seepage every day during, and for three days following, a storm event that produces runoff; sample leachate seeps and compost tea seeps from slopes to drainageways; sample and analyze leachate from the leachate collection and recovery system sump; and sample applicable off-site/on-site stormwater discharge locations for pollutants during the next storm event that results in runoff. In addition, the Landfill was required to submit a technical report that discusses rainfall data, leachate and compost seeps, the results of monitoring, a description of BMPs implemented, and an evaluation of leachate handling capacity. The report was to be submitted by March 31, 2011. A description the actions agreed upon by the Landfill and RWQCB as well as the results of their implementation is included in Section V.H.1.f(1)(a), Hazards and Hazardous Materials.

k. Groundwater Quality Monitoring System

The Landfill is subject to water quality sampling requirements contained in the adopted Waste Discharge Requirements (WDR) Monitoring and Reporting Program (MRP) No. R3-2002-0065. The MRP requires that 15 of the monitoring wells on-site be sampled and analyzed on a quarterly or semiannual basis as a part of three routine monitoring programs. Detection monitoring includes those constituents that have not been exceeded. Corrective action monitoring is based on inorganic constituents that occasionally exceed statistically-derived concentration limits for chloride, sulfate, or dissolved manganese. All constituents involved with corrective action monitoring are naturally-occurring or associated with naturally-occurring oil and tar in the geologic formations underlying the site. A summary of the monitoring status of each of the monitoring wells is presented in Table V.K.-5, and the well locations are shown in

Figure III-9. The RWQCB has confirmed that there have been no recent changes to the monitoring program (Fletcher, 2011).

TABLE V.K.-5
Summary of Existing Groundwater Monitoring Requirements

Well	Detection Monitoring	Corrective Action Monitoring	Other Monitoring
MW-1	X (VOCs)	X (Inorganics)	
MW-2		X (VOCs and Inorganics)	
MW-3	X (VOCs)	X (Inorganics)	
MW-5	X		
P-1A			X
P-1B	X		
P-2			X
P-3A	X (VOCs)	X (Inorganics)	
P-3B	X		
P-4			X
P-5	X		
P-6			X
P-7	X (VOCs)	X (Inorganics)	
P-8	X		
P-9	X		
X indicates inclusion in monitoring program			

2. Regulatory Setting

This section includes a discussion of federal, state, and local regulations that address water resources. There are a number of agencies responsible for assuring compliance with these regulations, including the Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE), the RWQCB, and the San Luis Obispo County Public Health Department, Division of Environmental Health (SLOCOPHD), among others.

a. Federal Policies and Regulations

1) Safe Drinking Water Act of 1974

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

2) The Clean Water Act

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

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

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

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

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

b. State Policies and Regulations

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

The California Department of Health Services (DHS) is responsible for overseeing the quality of water once it is in storage and distribution systems. DHS oversees the self-monitoring and reporting program implemented by all water purveyors, performs inspections, and assists with financing water system improvements for the purpose of providing safer and more reliable service.

1) CalRecycle Title 27, Chapter 3

CalRecycle Title 27, Chapter 3 (Criteria for all Waste Management Units, Facilities, and Disposal sites) ensures liner system and leachate management system are designed and constructed to substantially reduce the potential for release of leachate. Chapter 3 outlines procedures that shall be followed for all landfill activities including siting the facility, water monitoring, operating criteria, using daily covers, fire control, gas monitoring, and closure and post-closure procedures.

2) State Water Code

Section 13260(a) of the California Water Code requires that any person discharging waste or proposing to discharge waste within any region, other than to a community sewer system, that could affect the quality of the waters of the State, file a report of waste discharge. These must implement the applicable water quality control plan (Basin Plan) for the Region affected by the discharge.

The RWQCB regulates the Landfill through Waste Discharge Requirements (WDR) Order No. R3- 2002-0065, which includes prohibitions, specifications, and provisions addressing waste disposal design and operations to protect water quality. The WDR describes requirements to protect groundwater quality related to the operation of the Landfill. The WDR discusses the site description and history of monitoring; status of the monitoring programs; basin water quality issues; prohibitions; and, provisions for groundwater monitoring, on-site use of water, post-closure maintenance plans, reporting, and general provisions. The Monitoring and Reporting Program (MRP) discusses the self-monitoring program to document compliance with RWQCB requirements as follows. The MRP identifies the monitoring and observation schedules; site, leachate, and drainage system inspections; specific monitoring points; sampling methods, analyses, and frequency; and, record keeping and reporting requirements. The MRP also summarizes the contingency response necessary if a release is tentatively identified including general conditions for the preparation of an Evaluation Monitoring and Reporting Program, and release discovery responses.

The Landfill is also regulated in accordance with the State Water Resources Control Board (State Water Board) Water Quality Control Order No. 97-03-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001, Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities (General Industrial Stormwater Permit). The General Industrial Stormwater Permit prohibits the discharge of unauthorized non-stormwater to waters of the United States, and requires a Stormwater Pollution Prevention Plan and best management practices (BMPs) to prevent and reduce pollutants that cause or contribute to exceedances of applicable water quality standards.

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

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

4) Safe Drinking Water and Toxic Enforcement Act of 1986

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

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

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

c. Local Policies and Regulations

~~At the time of building permit issuance, the~~The County determines a project's water demand and the availability of water for allocation to the project. County staff then evaluates existing water supply to see if it is sufficient to meet the increase in demand, accounting for adjustment of the adopted growth rate. The County can influence the use of water for residential and non-residential purposes at the project specific level as well as at an area wide level. At the project level, the County considers the availability of water as part of the discretionary approval process. Long-term water supply is analyzed annually as part of the County Resource Management System (RMS). As limitations are identified under this process, mitigation measures or more detailed studies are recommended.

The ~~SLOCOPHD~~ County Department of Planning and Building and the Central Coast RWQCB are the local agencies responsible for effluent treatment standards and siting of wastewater disposal fields. These agencies ensure that proposed projects conform to all applicable local standards. Since the proposed project now includes on-site wastewater treatment and disposal, requirements that would be imposed on this project potentially affecting water resources include:

- Depth to groundwater (minimum vertical separation of five feet from the bottom of the disposal field for soils having percolation rates slower than 30 minutes per inch. Greater separation distances are required for faster percolation rates).
- Setbacks (minimum setback of 100 feet between disposal area and any water supply well, spring, or water course).
- Surface and Subsurface Irrigation Water Recycling (subject to Title 22 of California Code of Regulations for water reuse criteria).
- Depth to bedrock and the potential for effluent daylighting.

3. Thresholds of Significance

Thresholds of significance relevant to this section of the EIR are found in Appendix G of the CEQA Guidelines, Hydrology and Water Quality, and Utilities sections and the County's Initial

Study Checklist, Water section. Potentially significant water resource impacts could occur if the project:

- Changes the quantity or movement of available surface or groundwater;
- Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Would not have sufficient water supplies available from existing entitlements and resources, or ~~are~~ new or expanded entitlements are necessary;
- Violates any water quality standards or waste discharge requirements; and,
- Otherwise substantially degrades water quality.

4. Impact Assessment and Methodology

This section evaluates potential impacts of the proposed project on groundwater and surface water resources. This section describes the estimated current and future water demand for the project, assesses the hydrologic connectivity between the landfill and adjacent properties, assesses on-site water supply, and identifies potential short- and long-term impacts to local groundwater supplies including well drawdown effects. It also identifies potential impacts to local groundwater supplies from the cumulative demand of other groundwater users based on standard water use factors developed by the County of San Luis Obispo.

The assessment of impacts relies heavily on two reports, one which describes groundwater quality based on a review of data collected by various agencies (Fugro 2008). The second report (Fugro 2010) provides data on a well pump test, well interference effects, and a "water demand audit" which quantified water demand at the Landfill in the first half of 2010, and characterized the source (groundwater or surface water) used to meet the demand. Both reports have been included in their entirety in Appendix G.

5. Project-specific Impacts and Mitigation Measures

a. Groundwater and Well Interference Impacts

During the pumping test program, water levels in the Weir wells, adjacent on-site monitoring wells and two off-site wells, were measured and recorded at five-minute intervals to determine the degree of well drawdown and interference effects from pumping the Weir wells. Many of the wells surrounding the Landfill, which pump water from the same geologic formation as the Weir wells, were *not chosen* for inclusion for monitoring for various reasons, including (1) lack of access for installation of a pressure transducer, (2) unknown well design information (i.e., depth and perforated interval), or (3) because they were known to pump relatively continually or frequently, which would mask any interference effects from pumping of the Weir wells (Fugro, 2010).

The wells eventually chosen to be monitored included the Weir wells, adjacent on-site monitoring wells (B-1, P-6, P-10, P-12), and two off-site wells, the Gomez and Clement wells (refer to V.K.-1). The Gomez well is located approximately 200 feet south of Weir Well No. 1 and is 120 feet deep. The Clements well is 127 feet deep and located approximately 1,900 feet ~~south~~ northwest of the ~~Landfill and west of the~~ Weir wells and 150 feet west of the Landfill. The pumps in both wells are set at a depth of 100 feet. Both wells produce groundwater from the Pismo formation. Hydrographs of the entire period of record for each of the wells in the monitoring network are presented in the 2010 Report (refer to Plates 2 through 10, Appendix G).

1) Interference Effects from Weir Well No. 1

During the pumping of Weir Well No. 1, water levels within the adjacent on-site monitoring wells, the Clements well, and Weir Well No. 3 indicated that no drawdown interference had occurred. Water level data from Weir Well No. 2, which is located a distance of 312 feet from the pumping well indicated that the water level was drawn down by approximately 0.33 feet during the pumping of Weir Well No. 1. This drawdown reached its maximum depth approximately one day after pumping began and moderated (rose) thereafter.

Although the water level data from the Gomez well, located approximately 212 feet south the pumping well, indicated that it was pumped regularly during the pumping test, it may be inferred that the pumping level of the Gomez well was drawdown a maximum of three to four feet during the pumping test.

In response to comments received on the 2011 Recirculated Draft EIR, Water Resources Section, Fugro conducted further inspection of well interference pump test results. Upon further inspection and analysis of the relationship of observed drawdown in the Gomez well and the pumping cycles of the Weir Well No. 1, Fugro agrees that the “possible interference” of three to four feet of very regular and cyclical drawdown in the Gomez well is not the result of pumping the Weir Well No. 1. Fugro further agrees that the three to four feet of repeated cycles of drawdown can be better explained by very short term pressure drops in the Gomez water system which result in the Gomez well turning on for short periods of time (likely on the order of a few seconds) to restore pressure in the water system. Upon further review of the drawdown data, Fugro concurs that the three to four feet of repeated cycles of drawdown are caused by pressure drops in the Gomez water system and are not attributable to interference effects from the operation of the Weir wells, or from other Landfill wells. It should be noted, however, that although no interference impacts were observed during the pumping tests, the aquifer characteristics indicate that a minor interference drawdown in the Gomez well should be expected after one year of pumping.

Upon further evaluation by Fugro, they conclude that groundwater withdrawal in the range of 25 AFY to as high as 34 AFY can be supported by the data. It should be noted that groundwater pumpage during the multiple day tests did not cause drawdown in the adjacent Gomez Well. However, during prolonged periods of pumping it is anticipated that the combined use of the Weir wells will cause moderate drawdown in adjacent wells. Based on the proposed pumping rates and durations, Fugro performed a standard Theis analysis at pumping rates equal to 25 afy for one year (31,000 gpd during 5 days per week, average pumping rate of 15.4 gpm, storativity equal to 0.25, and transmissivity equal to 637 gpd/ft). The analysis assumed all of the pumpage would derive from Weir Well No. 1 (which is not altogether warranted based on Fugro's understanding of the system). Based on the analysis, the interference drawdown at the Gomez Well, located approximately 200 feet from Weir Well No. 1 would be approximately five feet. At a reduced pumping rate equal to 10 afy (12,400 gpd or an average of 6.2 gpm), the anticipated drawdown at the Gomez Well after one year of pumping the Weir Well No. 1 would be approximately two feet.

These longer term predicted water level drawdown effects (i.e., interference) are within the range of seasonal water level variations which occur in the basin and therefore would not create an unreasonable and adverse impact to the Gomez well, or other wells in the groundwater basin.

2) Interference Effects from Weir Well No. 2

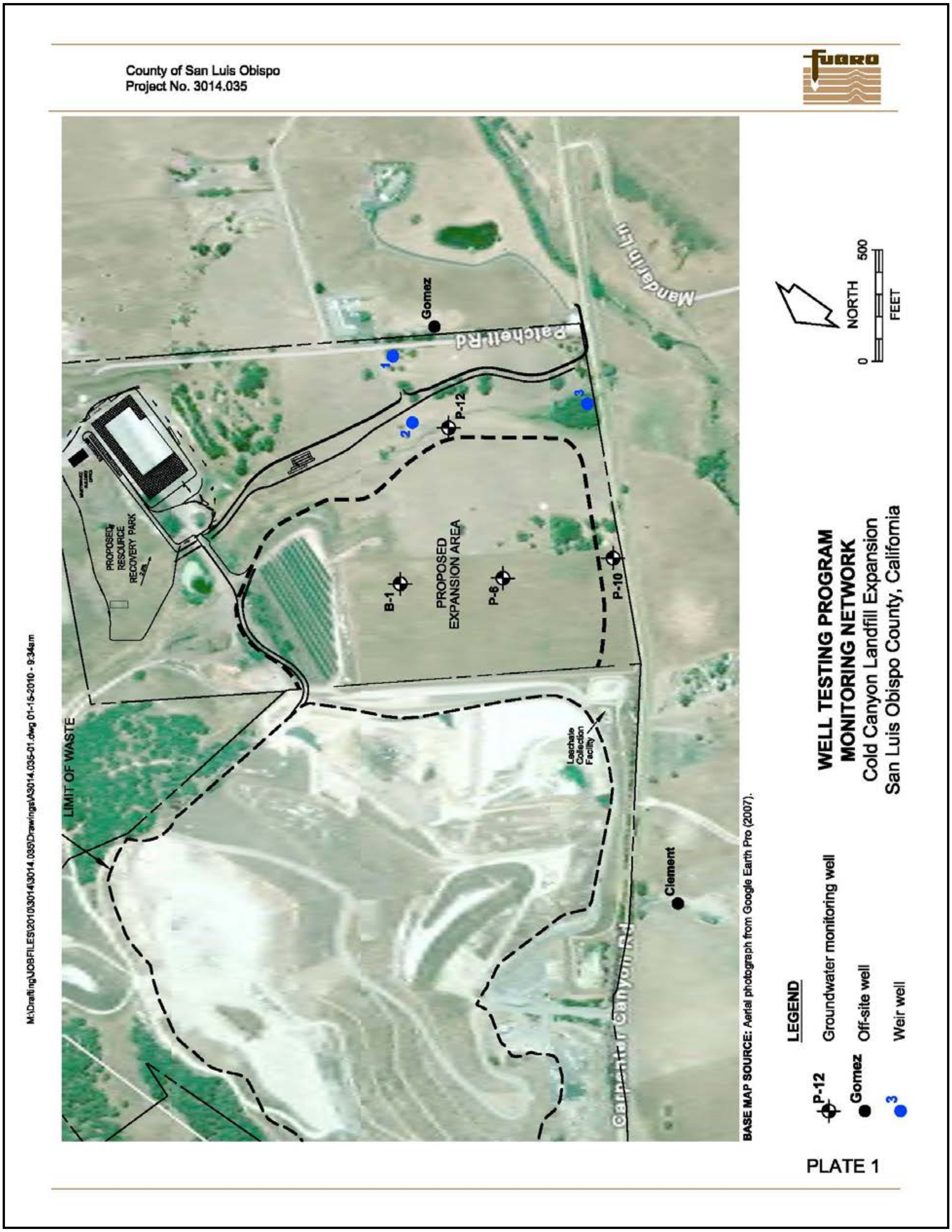
During the pumping of Weir Well No. 2, water levels within the adjacent on-site monitoring wells, Weir wells, and off-site monitoring wells indicated that no drawdown interference had occurred. Although the adjacent Gomez well was pumping regularly during the pumping test of Weir Well No. 2, the water level declines did not appear to coincide with the pumping of Weir Well No. 2 (Fugro, 2010).

1) Interference Effects from Weir Well No. 3

During the pumping of Weir Well No. 3, water levels within the adjacent on-site monitoring wells, Weir wells and off-site monitoring wells indicated that no drawdown interference had occurred. Although the Gomez well was pumped irregularly during the pumping test, the water level declines did not seem to coincide with the pumping of Weir Well No. 3 (Fugro, 2010).

2) Interference Effects from Simultaneous Pumping

During the simultaneous pumping of the Weir wells operated by Landfill staff following the end of the pumping program, water levels within all of the wells were measured and recorded. During this time, the water meters for the individual Weir wells were not recorded, but several water meter readings at the pond outfall meter were recorded. Based on the infrequent cumulative pond water meter readings and the continuous water level data from each of the wells, it was surmised that all of the Weir wells were pumping in repeated on/off cycles throughout the seven day period between November 30 and December 7, 2009. The pumping rate was approximately 31,000 gpd, or 25 afy. Of the off-site and monitoring wells, only the Gomez well appeared to be affected by the pumping (refer to 2010 Report Plates 5 through 11, Appendix G). The Gomez well is affected by some pumping stresses, on the order of several feet (Fugro, 2010).



Well Testing Program
FIGURE V.K.-1

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A Theis analysis is generally performed by using a relatively simple equation to determine aquifer properties, such as the aquifer's ability to transmit and/or store water (i.e., transmissivity and storativity) from drawdown data collected during an aquifer test. Once these properties are known, additional drawdown predictions can be made. Fugro performed a Theis distance-drawdown analysis in a manner similar to that used in the 2009 Draft EIR (Fugro, 2008) to estimate potential longer-term drawdown on the Gomez well. Fugro calculated the predicted effect of pumping the combined wells at 30 gpm for one year, assuming 71 percent pumpage (five of seven days). The average combined pumping rate would be 21 gpm or 31,000 gpd, or 25 afy. At this rate, the predicted drawdown at the Gomez well would be ~~less than~~approximately five feet after one year which would be within the range of seasonal water level variations which occur in the basin and therefore not create an unreasonable or adverse impact to the Gomez well or other wells in the groundwater basin.

TABLE V.K.-6
Interference Effects (Drawdown) from Pumping Tests

Well Pumped	On-site Monitoring Wells[1]	Gomez Well		Clement Well	
	Drawdown (ft)[1]	Drawdown (ft)	Distance (ft)	Drawdown(ft)	Distance (ft)
Weir Well No. 1	0	4	212	0	2,200
Weir Well No. 2	0	0	473	0	1,900
Weir Well No. 3	0	0	809	0	1,800
Simultaneous	0	3	498 (avg)	0	1,967 (avg)

[1]No interference was recorded for any of the on-site monitoring wells included in the 2009 pumping test (B-1, P-6, P-10, P-12), and therefore they have been treated as one well. The distance of each well from the Weir wells is shown in the 2010 Report (refer to Plates 6, 8, and 10, Appendix G).

Based on the data in the 2010 Report summarized in Table V.K.-6, the Weir wells could be pumped at a rate that provides 25 afy with insignificant impacts to neighboring wells. The 2010 Report notes the following in regards to well interference.

> *" . . the landfill well production rates, range of drawdown, aquifer properties and distances between the landfill wells and off-site private wells sufficiently mitigates significant interference created by the landfill wells on off-site wells. This is because the landfill well yields simply cannot sufficiently stress the aquifer to create large distance interference effects."*

There is no well pumping data in the 2010 Report to suggest the Weir wells can sustainably produce more than 25 afy. However, based on the discussions below, with the compost operation having been eliminated from future consideration, the Landfill will not ~~may~~ need the wells to produce at a level greater than 25 afy. The total water needs for the proposed project now stands at 10.2 afy (refer to Table V.K.-8).~~Pumping at a higher rate would potentially increase drawdown at both on and off-site wells and change the quantity or movement of groundwater in the basin. Water levels in on-site and proximate off-site wells may drop to a~~

~~level where they can no longer serve the existing surrounding or off-site uses (i.e., residential, agriculture).~~ As stated above, the predicted drawdown at the Gomez well would be approximately five feet after one year which would be within the range of seasonal water level variations which occur in the basin and therefore not create an unreasonable or adverse impact to the Gomez well or other wells in the groundwater basin. This finding, combined with the overall reduction of water (including groundwater) required for proposed project from approximately 34.5 afy to 10.2 afy (due to elimination of the compost operation) results in groundwater drawdown (i.e., interference) impacts being considered *less than significant (Class III).* No mitigation is required.

~~**WR Impact 1**~~ ~~**Pumping the Weir wells at a rate greater than 25 afyhas the potential to deplete groundwater supplies or interfere substantially with groundwater such that the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses.**~~

~~WR/mm-1~~ ~~**Limit Groundwater Extraction**. Throughout the life of the project, to protect groundwater resources, the applicant shall not extract more than 25 afy from the three Weir wells in any 12-month period.~~

~~WR/mm-2~~ ~~**Weir Well Water Use and Monitoring Program**. Prior to issuance of the Notice to Proceed for any component of the proposed project, in order to monitor ongoing groundwater use at the Landfill, the applicant shall prepare and submit to the Department of Planning and Building, a Weir well monitoring program prepared by a qualified hydrogeologist. The program shall:~~

- ~~Document how use of the Weir wells shall be monitored to ensure accurate long-term recording of use in a consistent manner.~~
- ~~Include an easily implementable water use conservation strategy which would be implemented as these wells approach the 25 afy rate, and more substantial water reduction measures required to insure that the 25 afy rate is not exceeded.~~
- ~~Be coordinated with the other long-term monitoring efforts, such as those described in HAZ/mm-10 to address odors.~~
- ~~Include a provision that requires monthly reports be provided to the County Department of Planning and Building that include extraction rates and measures applied to avoid exceeding the 25 afy threshold. The Applicant shall notify the County immediately should the 25 afy threshold be exceeded to determine the appropriate course of additional actionto avoid significant impacts to surrounding wells.~~

~~*Residual Impact*~~ ~~These measures would limit groundwater production on-site to a level that can be sustained without interfering with other on-site or off-site wells. Impacts would be *less than significant with mitigation (Class II)*. No additional mitigation is required.~~

b. Daily Operations Water Supply and Demand

1) Former Compost Operation (CO)

The former CO ~~,which is~~ was recognized as one of the most water intensive components of the project; however, as stated above, it has been eliminated from future consideration. By eliminating the CO from the project, the previously projected water use demand would be reduced by 24.3 afy (this number derived due 8.1 afy being formerly required to process 100 tpd of compost and 300 tpd having formerly been proposed). , ~~would potentially increase capacity from approximately 100 tpd, which has been typical in recent years, to a maximum of 300 tpd. Average water use to process 100 tpd is approximately 8.1 afy. With respect to the relationship between daily greenwaste acceptance and water demand, the water demand audit in the 2010 Report concluded that "there appears to be no obvious relationship between greenwaste acceptance and associated water use" (Fugro, 2010). The relationship is shown in Appendix E of the 2010 Report (refer to Appendix G). However, the 2010 Report goes on to note that the conclusion is reached with limited data, and notes that rainfall during the reporting period was relatively high. For purposes of this EIR, it is assumed that demand would increase proportionately to the increase in CO capacity – in this case three times or 300 percent (i.e., 8.1 afy to 24.3 afy).~~

2) Dust Control

Dust control demand resulting from the proposed project would change little when compared to the existing demand, despite the proposed increase in Landfill capacity. This is because those uses which require the dust control, such as the haul roads, disposal areas, and the RRP, would not significantly increase in size. Water use for this activity is estimated to be approximately 7.1 afy.

3) Materials Recovery Facility (MRF)

Water is used at the MRF for washing down the facility periodically, but not for processing. The MRF building would be increased in size from 55,000 square feet to 68,800 square feet. Washing is expected to occur with the same frequency, but given that the facility would be approximately 25 percent larger, this analysis assumes that water demand at the MRF would also increase by 25 percent (i.e., 1.1 afy to 1.4 afy).

4) Non-Potable Water Employee Demand

The number of employees at the Landfill would increase by approximately ~~50~~45 percent, from ~~79~~ 75 to ~~120~~114. Employee demand for non-potable water would increase proportionally (i.e., 1.1 afy to 1.7 afy).

5) Landscaping

As part of the proposed project, water would be needed for landscaping associated with the relocation of a new scalehouse and entrance (refer to Figure III-11). The extent of this water demand was estimated in the Landscape Plan provided by the applicant (Wallace Group, 2008). The demand was based on a worst-case water demand estimate for re-landscaping. The Landscape Plan focuses on southwestern, southern, and southeastern boundaries of the Landfill and would consist of planting natives or plants adapted to the Central Coast climate. A summary of the estimated water demand associated with the Landscape Plan is presented in Table V.K.-7. The values presented in Table V.K.-7 have not been adjusted for precipitation, which would potentially offset some portion of the landscaping demand.

This analysis assumes that the landscaping demand would only last for approximately three years, and would be completed well before Landfill operations were at full capacity. Therefore it is *not* considered part of the future water demand shown in Table V.K.-8.

TABLE V.K.-7
Summary of Estimated Landscape Water Demand

Planting Type	Water Demand 1st Year (afy)	Water Demand 2nd Year (afy)[1]	Water Demand 3rd Year (afy)[2]
Screen Planting	2.86	1.43	0.71
Wetland Enhancement	3.89	1.94	0.97
Bioswale	0.83	0.42	0.21
Bioretention	0.61	0.31	0.15
Oak Trees	0.09	0.04	0.02
Total	8.27	4.14	2.07

[1] Second year demand is calculated as half of first year demand
[2] Third year demand is calculated as quarter of first year demand

6) Total Potential Future Annual Demand

The potential future demand, expected to exist when the facility is operating at full proposed capacity is shown in Table V.K.-8.

TABLE V.K.-8
Existing and Estimated Potential Future Water Demand (afy)

Component[1]	Existing Demand	% Increase	~~Potential~~Proposed Demand
Former Compost Operation (irrigation)	~~8.1~~ 0	~~300~~ 0	~~24.3~~ 0
Dust Control (haul roads, disposal area, RRP, etc.)	7.1	0	7.1
MRF	1.1	25	1.4
Non-Potable Employee Use (toilets, cleaning)	1.1	50	1.7
Total (afy)	~~17.4~~ 9.3	n/a	~~34.5~~ 10.2

Landscaping water not included in table as it would be completed in approximately three years, well before other components are expanded to maximum levels.

7) Total Potential Annual Supply

Based on what is currently know about the Landfill's water supply system, it could potentially provide up to approximately 32.85 ~~34~~afy of water to meet Landfill demands (refer to Table V.K.-9).

TABLEV.K.-9
Potential On-site Water Supply (afy)

Well	Supply
Weir Wells	25
Surface Water	7
Leachate	~~2.1~~ 0.85
Total	~~34.1~~ 32.85

Based on Tables V.K-8 and 9, daily maximum demands (~~34.5~~ 10.2 afy) could ~~potentially~~ be met with existing supplies (~~34.1~~ 32.85 afy). ~~However, during~~During drier years (a reasonable worst-case scenario), less surface water and leachate, which currently provide as much as ~~9~~ 7.85 afy, would be available for use. In addition, future modules may not include a pond capable of supplying surface water in the amounts currently supplied by the Module 8 pond. During dry years, the Landfill may need to rely almost entirely on groundwater to meet demand, and there is no data available to indicate that the Weir wells can sustainably produce more the 25 afy. Nevertheless, even during this worst-case dry year scenario, the water demand would not exceed supply and supply could be met by utilizing approximately 50% of the estimated onsite groundwater and a buffer of 14.8 afy would remain (refer to Table V.K.-10) and demand impacts would be considered *less than significant (Class III)*. No mitigation is required.~~Therefore, the water demand would potentially exceed supply by approximately 9 afy~~.

TABLE V.K.-10
Potential On-site Water Supply (afy) During Dry Years

Quantity (afy)	Description
32. 85 - 10.2 = 22.65	Supply Demand Remaining Supply
22.65 - 7.85 = 14.8	Remaining Supply Not Available During Dry Years Dry Year Buffer

~~As an alternative to increased groundwater pumping, the Landfill could increase the available surface water potentially available, reduce the water demand, or find an off-site supply. Measures recommended in other sections of this EIR, including the Noise and Hazards sections, could result in the enclosure of the CO and RRP, and/or potentially the implementation of alternative technologies for composting, such as Anaerobic Digestion (AD). These measures would potentially reduce water use, as irrigation requirements are different, and because AD generally takes place in a vessel of some kind, dust control and associated water demands may also be lower.~~

~~**WR Impact 2**~~ ~~**During periods when surface water and leachate supplies are lowest and the Landfill demand for water is highest (dry periods when dust control and CO irrigation is highest) water demand may exceed the total supply.**~~

~~Implement WR/mm-1, **Limit Groundwater Extraction**, andWR/mm-2, **Weir Well Water Use and Monitoring Program**.~~

~~WR/mm-3~~ ~~**Dust Control Plan**. Prior to issuance of the Notice to Proceed, the required Dust Control Plan (AQ/mm-2) shall incorporate non-water based dust control methods to the maximum extent feasible. The Plan shall identify all roads and other portions of the site where permanent dust control such as paving, using chemical soil stabilizers, or seeding shall be incorporated.~~

~~WR/mm-4~~ ~~**Use of Stormwater**. Upon submittal of final drainage plans/grading permit, the proposed detention basins and other drainage improvements shall be designed to retain stormwater for use on-site as dust control or as irrigation water for the Compost Operation, to the extent allowed by other regulations. To minimize the percolation of surface water from sediment ponds and detention basins, they shall be lined.~~

~~WR/mm-5~~ ~~**Off-site Reclaimed Waters**. Prior to issuance of the Notice to Proceed, the applicant shall investigate the feasibility of utilizing reclaimed water from off-site sources. Potential sources include the Price Canyon Oilfield produced water, and the City of San Luis Obispo's reclaimed wastewater. A report of the conclusions of that investigation shall be submitted to the Department of Planning and Building. Feasible aspects of this approach shall be added to the Weir Well Monitoring Program (WR/mm-2).~~

~~In the event the above measures do not resolve the dry period water use issue, implement HAZ/mm-13 and NS/mm-6. These measures require the applicant to enclose the CO and/or implement alternative composting technologies such as AD or Aerated Static Piles (ASP) in the event that noise and or odor thresholds cannot be met through other methods.~~

~~*Residual Impact*~~ ~~The measures above would all potentially reduce water demand or increase on-site supply. But, the effects of these measures are not necessarily quantifiable at this time. This is because, for example,~~

~~leachate production can vary over time, regulations may limit groundwater retention as part of vectors control (mosquitos), the area on-site available to construct a retention basin is limited, and the depth of the basins is limited by safety and engineering constraints.~~

~~The Noise and Hazards mitigation measures which would potentially require the applicant to convert to an alternative composting technology, such as ASP or AD, if determined to be necessary during monitoring of the Landfill, would potentially reduce water associated with irrigating compost. ASP uses covers which may reduce moisture loss from evaporation. However, according to a recently published Draft Program EIR for AnaerobicDigestors:~~

~~*"The volume of water required to operate AD facilities, including pre-processing, digestion, and postprocessing, is expected to vary widely depending upon the anerobic digester and digester feedstock's characteristics"* (CalRecycle, 2011).~~

~~Therefore, it is concluded that because (1) the only proven long-term water supply at the Landfill is groundwater, (2) the sustainable groundwater production rate is 25 afy, (3) the effects of the recommended mitigation measures are not quantifiable and could vary widely over time, and (4) the maximum water demand would be as high as 34.5afy, even after implementation recommended mitigation measures, the existing water supply would not meet the estimated demands. The impact would be *significant and unavoidable(Class I)*.~~

~~*Secondary Impact*~~ ~~Given the distance of the CO from public roads, the ASP process would not result in a new aesthetic resources impact, should it be implemented. Aeration of the piles may be passive or active. Active aeration would require the use of blowers, which would produce noise. Because the specific ASP technology which may be implemented has not been determined, noise impacts are unknown. Subsequent evaluation would be required.~~

~~AD would require the construction of new structures or vessels in which the composting could occur. It is assumed that the structure(s) would be located in proximity to, but smaller than the MRF. Aesthetic Resources mitigation recommended in Section V.A. for the MRF and other structures would be applicable to AD structures as well. These measures would likely reduce any secondary aesthetic resources impacts to a less than significant level; however, depending on the design eventually proposed, subsequent environmental review may be required to verify this conclusion.~~

~~In the event that the Landfill would need to export greenwaste from the CO, there would be a short-term increase in truck trips along the haul~~

routes. Most likely the greenwaste would be taken to an existing facility in Santa Maria. This would also result in a short-term increase in air emissions and noise along the truck routes. The on-site emissions, odors, and noise would be reduced with less material to process during these dry periods.

c. Module Construction Supply and Demand

Construction of the Landfill modules would entail a significant short-term increase in water demand associated with excavation and construction. The proposed project would include construction of seven additional cells with a total area of approximately 46 acres and a total disposal capacity of 13.1 million cubic yards. Based on construction of previous modules, the excavation and construction of each new module would likely occur for approximately six to seven months (however, module excavation would occur for a limited time during that period) and require approximately 24,000 gpd, 522,00087,000gal/Mo, or 522,000 gallons (1.60 acre feet) per module (Fugro, 2008). Construction would generally occur during the dry season when surface water sources are least available and CO irrigation demand is highest. During these periods, the on-site supply may not would be adequate to meet demand.

The use of water for module construction is a short-term and temporary demand which would occur once every five to seven years. The use is approximately equivalent to the annual use of three single-family residences (0.53 acre feet each, or 1.59 acre feet total). Historically, the Landfill has imported water during excavation and preparation of the modules to meet this demand. In the future it is unknown what the source of module construction water would be. Based on the analysis of supply and demand above, the Landfill may would be able to accommodate the demand with production from the Weir wells (particularly now that the CO has been eliminated from future consideration if the CO is not re-initiated). However, as with WR Impact 2, duringDuring dry years, and/or when the Landfill is operating at high capacity, the Landfill may wouldnot be able to meet the demand with on-site sources and impacts would be considered *less than significant (Class III)*. No mitigation is required.

WR Impact 3 **During module construction, the water short-term daily demand may exceed the capacity of the on-site supply, and use of off-site water may stress other groundwater basins.**

Implement WR/mm-1, **Limit Groundwater Extraction**; WR/mm-2, **Weir Well Water Use and Monitoring Program**; WR/mm-3, **Dust Control Plan**; WR/mm-4, **Use of Stormwater**; and,WR/mm-5, **Off-site Reclaimed Waters**.

WR/mm-6 **Module Construction – Water Use**. Prior to issuance of the Notice to Proceed for construction of each module, the applicant shall provide verification to the Department of Planning and Building of the source of the water to be used for construction purposes. Water used for construction shall only come from any combination of the following sources:

1. On-site ground or surface water supplies as long as it will not require on-site groundwater production of greater than 25 afy;

2. ~~Reclaimed or recycled water (i.e., Price Canyon Oilfield, vineyard wastewater, City of San Luis Obispo “purple pipe”); and,~~
3. ~~An alternative source shown to be a sustainable supply.~~

~~Efforts shall be made to utilize reclaimed or recycled water to the extent feasible. If reclaimed water is not used, the applicant shall describe why it is not feasible. In the event that water is imported from off-site, the applicant shall provide verification that the water is from a sustainable source, and a description of the source and method of distribution (trucks, pipeline, etc.).~~

~~*Residual Impact*~~ ~~Because water resources in the basin (and County in general) are limited, this measure encourages use of reclaimed water to the extent feasible during construction. In the event that on-site groundwater is used, this measure also requires the applicant to confirm that construction use of groundwater would not require a total annual production of greater than 25 afy. As an alternative, the applicant could also use another source, if it can be shown to be a sustainable source. Use of reclaimed water, or ground or surface water from on-site would reduce the impact to *less than significant (Class II).*~~

~~*Secondary Impact*~~ ~~Mitigation Measure WR/mm-6 would potentially result in the Landfill utilizing water from an off-site source. During the excavation of previous modules, water was obtained from the adjacent vineyard. Other scenarios identified above include wastewater from the Price Canyon Oilfield and/or the City of San Luis Obispo. For purposes of this analysis, it is assumed that the water from any of these sources would be hauled to the site by water truck.~~

~~Assuming that each module would require approximately 1.6 acre feet over a six month period (5 working days per week), the Landfill would need to import, on average, approximately 4,000 gallons per day. Water trucks at the Landfill have a capacity of approximately 3,800 gallons (Fugro, 2010). Therefore, importing water during module construction may result in a short-term increase in truck traffic on Price Canyon Road and/or Highway 227 by up to two truck trips per day. During particularly busy periods, when temperatures are high and compaction of soils is also necessary, perhaps as many as ten additional truck trips would be necessary in any single day. This short-term increase in truck traffic (and associated emissions) is a *less than significant impact* to traffic, noise, and air quality *(Class III)*. No additional mitigation measures are required. In the event that some other method is used to supply the Landfill with off-site water (i.e., pipeline) subsequent environmental review may be required.~~

d. Potable Water Supply

The Landfill currently meets potable water demands through use of bottled water. According to the County's Division of Environmental Health this is an acceptable way to meet potable water demands for employees, but generally they need proof that the on-site supply is capable of meeting basic water quality standards. There are cases, however, in which public facilities whose on-site water supply does not meet drinking water standards are still permitted by the Division of Environmental Health (Prior, 2008) and meet their potable water demands through use of bottled water. There is no water quality data from the Weir wells, however they were previously used as the potable water source for the Weir residences, and therefore most likely would be able to meet potable water quality standards, particularly if treated.

WR Impact 4 **The proposed on-site water supply may be incapable of providing potable water supply for employees of the Landfill.**

WR/mm-7 **Transient Water Supply. Prior to issuance of ~~construction permits~~the Notice to Proceed**, the applicant shall provide verification to the County Department of Planning and Building that it has been permitted by the Division of Environmental Health to function as a "non-transient, non-community water system," or that it has been granted an exemption to this standard. The Landfill shall comply with all applicable regulations, including posting signs that indicate groundwater is non-potable, if necessary.

Residual Impact With implementation of this measure, the impact would be mitigated to a *level of insignificance (Class II)*. No additional mitigation is required.

e. Groundwater Quality

Cold Canyon Landfill has an extensive monitoring system and a substantial amount of water quality data going back 20 years or more. That data shows that the Landfill has not significantly impacted groundwater quality.

There have been incidents identified during the standard monitoring protocol that required additional testing and remedial work. These incidents include a potential "release" in 2002 identified by the RWQCB. Subsequent groundwater testing and monitoring required by the RWQCB has not shown any signs of the release.

In March 2002, the Landfill documented that chloride and sulfate concentrations measured in Well P-7 were statistically significant. The cause was identified as seepage associated with a former wet-weather fill area. That seepage has since been corrected. Conditions in Well P-7 have not been replicated since, and additional monitoring or corrective action was not required.

Per State law, before the expansion of the disposal area can begin, the applicant must obtain one year~~eight quarters~~ of background water quality data from the monitoring well network. Data obtained from these ~~datawould~~data would be used to develop the future WDRs and MRPs (Fugro, 2008). The intent of the MRP would be to obtain water quality data from the recently installed monitoring wells (P-10 through P-14) and the existing monitoring well network.

Compliance with the WDRs and MRPs would require quarterly review of water quality data for identification of any statistically-significant releases from the facility.

The RWQCB requires that any release from the Landfill, as determined from periodic groundwater, leachate, and landfill gas monitoring be reported immediately and followed by implementation of a corrective action plan. Such plans typically include comprehensive investigations to assess the vertical and horizontal extent of the release. If any groundwater contamination is deemed significant, a groundwater remediation program would be required by the RWQCB.

Compliance with existing regulations, including CalRecycle Title 27, Chapter 3 would require expansion of the groundwater monitoring program, and quarterly testing of monitoring wells. Construction of new modules would occur within the federal and state framework, providing construction standards intended to minimize seepage of contaminated leachate from the Landfill modules. The Landfill has a consistent record of compliance with these measures. Continued compliance with federal and state regulations governing landfill construction and groundwater monitoring would result in impacts that are *less than significant (Class III)*. No additional mitigation would be required.

f. Surface Water Quality

In order to limit the percolation of stormwater into disposal areas, it is directed to detention basins on the Landfill. Currently these basins are located adjacent to the Landfill entrance, at the southern corner of the existing disposal area, and between the former CO and the MRF (refer to Figure III-5). The proposed project would include detention basins located at various places within the Landfill footprint~~, and include a specific CO runoff pond~~ (refer to Figure III-8). Off-site discharge of surface water from the proposed project would occur from the existing drainage swale located within the expansion area, between the disposal area expansion and the new entrance road. That swale connects to the Corral de Piedra Creek and eventually to Pismo Creek.

Impacts to surface water quality could result from fugitive trash entering the water, from erosion of the Landfill slopes, ~~from CO runoff,~~ from stormwater runoff from all components of the project, including the MRF and RRP, and from dust from the Landfill settling off-site, for example. Surface water quality at the Landfill is regulated by the RWQCB under Waste Discharge Requirements Order No. R3-2002-0065, which includes prohibitions, specifications, and provisions addressing waste disposal design and operations to protect water quality. The Landfill is also regulated in accordance with the State Water Resources Control Board (State Water Board) Water Quality Control Order No. 97-03-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001, Waste Discharge Requirements (WDR) for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities (General Industrial Stormwater Permit). Construction activities for the modules will also require an individual Stormwater Pollution Prevention Plan (SWPPP).

Recent inspections of the Landfill by the RWQCB have shown that the Landfill has had difficulties meeting these standards during periods of heavy rain.

WR Impact 5 **The proposed project would potentially violate water quality standards and/or waste discharge requirements.**

WR/mm-8 **Prior to issuance of the Notice to Proceed for any components of the proposed project**, and prior to development of each subsequent module, the applicant shall provide verification to the Department of Planning and Building, that any WDR violations have been addressed to the satisfaction of the RWQCB. Any violations that require improvements shall be reviewed by the County for permit requirements prior to taking action on the response plan.

Residual Impact By requiring verification of compliance with the WDRs for the Landfill, this measure would reduce potential surface water impacts to *less than significant (Class II)*. Potential impacts to surface water from dust would be mitigated by dust control measures ~~WR/mm-3 and~~ AQ/mm-2. No additional measures are required.

6. Cumulative Impacts

The Cumulative Development Scenario proposed in Section IV, Environmental Setting, is such that it is most appropriate to take an approach to cumulative impacts that uses a water-specific “build out” within the groundwater basin, based on the assumption that: 1) parcels not currently developed with intensive agriculture, but within the agriculture land use category would be developed with vineyards; and, 2) within the basin, secondary dwellings would be built on parcels classified in the Residential Rural (RR) land use category. Figure V.K.-2 shows parcels within the basin where water consumption may increase significantly due to vineyard planting and/or residential development.

a. Agriculture Demand

Currently, and into the foreseeable future, the predominant agricultural crop on Agricultural designated land is and would be grapes. Other land uses include dry-land farming of grains and use of native vegetation to support livestock grazing. Approximately 147 acres of vineyards and other agricultural commodities are planted within the hydrologic study area. The primary intensified agricultural use in the basin which requires irrigation is vineyards. Based on data from the Water Demand assessment prepared for the County’s Draft Water Master Plan Update (ESA, 2010), vineyards in the San Luis Obispo/Avila area demand approximately 0.8 acre-feet of water per acre per year (afy/ac). At these rates, the current water demand to irrigate 147 acres of agricultural lands, as described above, is approximately 118 afy.

To determine cumulative water demands for agriculture, this analysis assumes that hay, grazing or fallow lands would be converted to vineyards. The soil types and topography in the area are similar to those in areas to the north and east of the Landfill currently developed with vineyards. In some places, steep slopes and heavy vegetation make vineyard development less likely. These areas have not been included in the acreage calculations. Based on Figure V.K.-2, as many as approximately 550 acres of agricultural land could be converted to vineyards, and for this analysis it is assumed that half of that, 275 acres, would be converted over the next 20 years. This intensification would increase demand for groundwater by approximately 220 afy. Total groundwater demand to satisfy agricultural demands in the basin would equal 338 afy, considerably more than the recharge rate of 281 afy estimated previously in this section.

b. Residential Demand

Approximately 70 parcels exist within the basin. For this analysis, it is assumed that all parcels except for the Landfill currently have at least one single dwelling. Also, it is assumed that Agriculture designated (AG) parcels would only have one dwelling unit, as the remainder of the land would be used for the agricultural intensification described above. This scenario represents the reasonable worst case for water use. Based on the County's standard water consumption rates, each dwelling located on a large lot in a rural area requires approximately 0.53 afy. Therefore, the current domestic water consumption within the hydrogeologic study area is approximately 37 afy.

For this analysis it is assumed that construction of secondary dwellings would be the only source of residential development within the study area over the next 20 years. This type of development is possible for parcels that are ~~both~~ designated within the Residential Rural (RR) land use category and within the study area. Future residential demand does not include secondary residences on AG parcels, because agricultural intensification of those parcels would result in the reasonable worst case scenario for water use.

A total of 42 such parcels exist on which secondary dwelling units could potentially be constructed. To develop a reasonable worst-case development scenario, this analysis assumed that all parcel configurations within the RR land use category could accommodate a secondary dwelling. This may not be the case on smaller parcels and those with steep slopes. Based on County water use standards, each secondary dwelling requires approximately 0.33 afy. Therefore, total water consumption resulting from future development of secondary dwellings would equal approximately 14 afy.

The proposed project would increase demand by approximately ~~7~~ 0.9 afy. Total cumulative groundwater demand could increase from approximately ~~173~~ 164.3 afy to more than ~~400~~ 399.2 afy, well beyond the potential recharge potential. At maximum potential buildout, the Landfill water demand would increase by approximately ~~39~~ 10 percent, domestic demand by 38 percent and agricultural demand by nearly 186 percent. Recharge of the basin has been estimated to be approximately 281 afy. Estimates of current and maximum future groundwater demand within the study area are presented in Table V.K.-11~~10~~.

TABLE V.K.-~~10~~11
Estimated Current and Maximum Future Groundwater Demand within the Groundwater Basin

Groundwater User	Current Demand (afy)	Increase (afy)	Maximum Future Demand (afy)	% Increase
Cold Canyon Landfill (current)	~~18~~ 9.3[1]	~~7~~ 0.9	~~25~~ 10.2	~~39~~ 10
Residential Use	37	14	51	38
Agriculture (vineyards / row crops)	118	220	338	186
Total	~~173~~ 164.3	~~241~~ 234.9	~~414~~ 399.2	~~146~~ 143

[1] Represents current demand at the Landfill, minus the CO (which hasn't been in operation since September 2010) and has been removed from the Project Description – this is considered the baseline condition for water supply.

This maximum increased Landfill groundwater demand of ~~7~~ 0.9 afy would occur from the period when the Landfill is at full operating capacity (five or ten years into the future, or more) until the proposed expanded disposal area has been filled, which would be a period of less than 25 years. At that time water used for dust control associated with excavation and disposal would not exist. The increased demand of 0.9 afy represents 0.2% of the overall 399.2 afy future groundwater basin demand and the maximum future demand of 10.2 afy represents 2.5% of the overall future groundwater basin demand. If taken as a range (i.e., 0.2% to 2.5%), these percentages are not cumulatively considerable as they represent less that 10 percent of the existing demand (i.e., 164.3 afy), less than 10 percent of the annual yield of water which may still be available in the basin (i.e., 281 afy), and less than 10 percent of the future increase in demand (i.e., 234.9 afy).

The proposed project would not therefore contribute significantly to a cumulative groundwater demand and impacts would be considered *less than significant (Class III)*. No mitigation required.

~~But, as currently proposed, the CO would most likely be continued on-site in perpetuity and the demand for CO irrigation and dust control water would still remain. This demand would be close to 25 afy (refer to Table V.K. 8), a 7afy increase. This increase is approximately 4 percent of the existing demand of 173 afy. It also represents approximately 6.5 percent of the remaining capacity (108 afy) of the basin. As comparison, 7afy is equivalent to 14 new large-lot residences, *or* 9 acres of new vineyards using 0.8 afy.~~

~~Despite the relatively limited contribution the proposed project would have, as shown in Table V.K.-10 above, the cumulative development scenario demand would exceed the estimated recharge of the basin, resulting in overdraft of the local groundwater supply.~~

~~**WR Impact 6** **The proposed project would contribute to a cumulative groundwater demand that along with agricultural intensification would potentially substantially deplete groundwater supplies.**~~

~~Implement HAZ/mm-13, **Compost Operation – Alternative Approach**; NS/mm-6, **Noise Monitoring Restart of Compost Operation;** WR/mm-1, **Limit Groundwater Extraction**;~~

~~WR/mm-2, **Weir Well Water Use and Monitoring Program**; WR/mm-3, **Dust Control Plan**; WR/mm-4, **Use of Stormwater**; WR/mm-5, **Off-site Reclaimed Waters**; WR/mm-6, **Module Construction – Water Use**; and WR/mm-7, **Transient Water Supply**.~~

~~*Residual Impact*~~ ~~While it is unclear precisely how much water may be saved by the mitigation measures listed above, WR/mm-1 limits groundwater production to no more than 25 afy, a 7afy increase over existing levels. This amount is not cumulatively considerable as it represents less than 10 percent of the existing demand, less than 10 percent of the annual yield of water which may still be available in the basin, and less than 10 percent of the future increase in demand. With implementation of the above measures, The mitigation measures above would reduce potential cumulative impacts to *less than significant* levels *(Class II)*. No additional mitigation is required.~~

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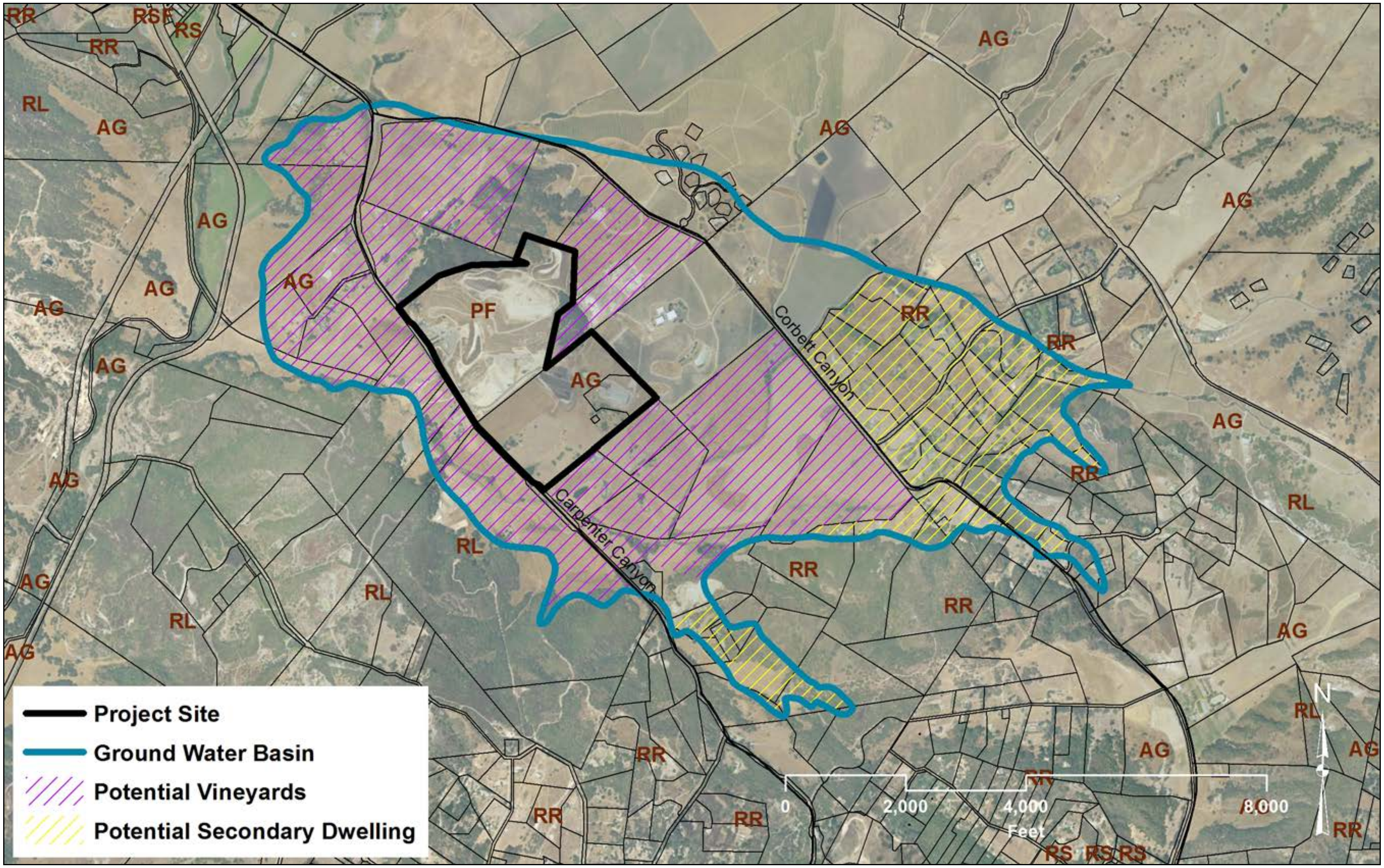

Source: Land Use – County of San Luis Obispo Department of Planning and Building; Parcels – 2008 Barclay Maps; Water Wells from DWR files or field surveys

NORTH
Scale as Shown

Surrounding Wells and Land Use Categories
FIGURE V.K.-2

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