

**OTAY HILLS CONSTRUCTION AGGREGATE AND INERT
DEBRIS ENGINEERED FILL OPERATION PROJECT**

APPENDIX D2

GROUNDWATER INVESTIGATION REPORT

for the

**PUBLIC REVIEW
DRAFT ENVIRONMENTAL IMPACT REPORT**

PDS2004-3300-04-004 (MUP);
PDS2004-3310-04-001 (RP);
PDS2010-3813-10-002 (SPA);
LOG No. 04-190-04

JUNE 2020

Prepared for:

COUNTY OF SAN DIEGO
PLANNING & DEVELOPMENT SERVICES
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January 13, 2012

Superior Ready Mix Concrete
Mr. Arnie Veldkamp
1508 W. Mission Road
Escondido, CA 92029

Subject: Limited Groundwater Investigation Report, Proposed Otay Hills Quarry, Case Numbers: P04-004, RRP04-001

Dear Mr. Veldkamp:

AECOM is pleased to present you with this modeling and analysis report of water in the proposed Otay Hills Quarry located in the San Ysidro Mountains in southern San Diego County, California. The field work, modeling and analysis, and this report were completed in accordance with our contract dated July 14, 2011 and the County of San Diego letter dated June 14, 2011.

The proposed pit may extend to an elevation of 100 feet above mean sea level if water conditions allow. The area of the top of the pit is planned to be about 88 acres (see Figure 1). At the conclusion of mining the pit will be backfilled and reclaimed. Water demands for processing aggregate, dust control and concrete mixing have been estimated at 75 acre-feet per year (afy). This water is expected to originate from municipal sources. However, where there is water accumulated in the pit, the operations would utilize these sources so long as they met water quality standards for the intended use (e.g., concrete mixing).

A land use analysis for the small tributary basin has been prepared by EnviroMINE and is included as an attachment to this report. The analysis concludes that there are no groundwater-dependent homes in the basin, nor are any expected to be developed under the current General Plan. As discussed with the County Groundwater Geologist, because there are no groundwater-dependent homes in the surrounding basin nor are there likely to be any at basin buildout; this project is *not* subject to the County Groundwater Ordinance.

Water Quality Sampling

On September 15, 2011, Stehly Brothers Drilling purged approximately 1.3 well volumes (1,179 gallons) from an existing well located on assessor's parcel number (APN) 648-050-14 near the northern boundary of the proposed excavation (labeled Well 5 on Table 3 below and Figure 1).

AECOM recorded the pH, temperature, oxidation reduction potential, conductivity, and dissolved oxygen until the readings substantially stabilized. The final recorded field measurement of the well purge water is presented in Table 1 below.

Table 1: Final Field Measurement of Well Purge Water

Parameter	Reading	Units
pH	7.17	pH units
Temperature	26.74	Degrees Celsius
Oxidation Reduction Potential	153	Millivolts
Conductivity	3.92	Millisiemens
Dissolved Oxygen	5.65	Milligrams per liter (mg/L)

Based on these field measurements of the development water, the water is in an oxidizing condition.

Following purging, the well was sampled and the samples were transported to Test America under chain-of-custody procedures and analyzed for:

- General Minerals: bicarbonate, carbonate, chloride, chemical oxygen demand, nitrate (as N), phosphate, sulfate, total dissolved solids (TDS), cyanide, and sulfide
- Dissolved metals (antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, tin, vanadium, and zinc) by EPA Series 6000/7000.

Dissolved metals samples were filtered by the laboratory to remove particulates. Results are summarized in Table 2 below. Complete analytical results are presented in Appendix A.

Table 2: Groundwater Sample Analytical Results

Analyte	Concentration (mg/L)	Analyte	Concentration (mg/L)
Dissolved Metals		General Minerals	
Antimony	Non-detect	Alkalinity, total (as CaCO ₃)	260
Arsenic	Non-detect	Alkalinity, bicarbonate	310
Barium	0.017	Carbonate	Non-detect
Beryllium	Non-detect	Hydroxide	Non-detect
Cadmium	Non-detect	Chemical oxygen demand	Non-detect
Calcium	160	Chloride	900
Chromium	Non-detect	Cyanide – total	Non-detect
Cobalt	Non-detect	Nitrate-N	0.18
Copper	0.032	Orthophosphate – PO ₄	Non-detect
Iron	Non-detect	Sulfate	200
Lead	Non-detect	Sulfide	Non-detect
Magnesium	81	TDS	2,200
Manganese	0.072		
Mercury	Non-detect		
Nickel	Non-detect		
Potassium	4.2		
Selenium	0.024		
Silver	Non-detect		
Sodium	520		
Thallium	Non-detect		
Tin	Non-detect		
Vanadium	Non-detect		
Zinc	0.1		

mg/L: milligrams per liter

Non-detect – analyte not detected above reporting limit

Water Balance Model

AECOM prepared a monthly water balance spreadsheet model for a 30-year period taking into account the worst-case periods of past rainfall (i.e., 1977 to 1980 and 1992 to 1998 as identified by the County) to estimate the amount of water that would be anticipated to accumulate within the pit.

The water balance considered monthly inflows from direct precipitation, runoff from the tributary basin, and groundwater inflow from sidewall seepage (provided the level of water in the pit was below the recent static water level). Outflows considered included losses from surface water evaporation and the use of water for site operations (assuming all site usage was from groundwater). When inflows exceeded outflows the net water was considered to be accumulated water in the pit.

Inflows

Direct precipitation was estimated by multiplying the nearby Lower Otay Reservoir monthly rainfall data and the area of the top of the pit (88 acres).

Measurements of runoff from stream gauging stations provide the most accurate depiction of runoff occurring within a given watershed. Since runoff records are unavailable for this small watershed, runoff was estimated. The United States Department of Agriculture (USDA) Soil Conservation Service (SCS) developed the Curve Number Method which considers the hydrologic soil group and land use type in determining an antecedent runoff condition (USDA, 1986). The technique is based on a simplified infiltration model of runoff and empirical approximations. The method is based on selection of a curve number that has been developed by empirically rating the hydrologic performance of a large number of soils and vegetative covers throughout the United States. The type of land use dictates the amount of impervious cover and greatly influences the ability of water to infiltrate the soil surface. While the method was designed for a single storm event, it can be scaled to find average monthly runoff values.

Runoff curves were developed for various combinations of hydrologic soil groups and land uses (County of San Diego General Plan Update Groundwater Study, 2010). Runoff from the contributing watershed was calculated by multiplying the area of the small basin draining to the proposed pit and monthly contributing runoff using the SCS equation below:

$$Q = (P-I)^2 / (P-I+S)$$

Where:

Q = monthly contributing runoff (inches)

P = monthly rainfall (inches reported at the Lower Otay Reservoir)

S = runoff factor of 2.05 (calculated as [(1000 / CN) -10])

I = initial abstraction of 0.41 (estimated as 0.2 * S)

CN = curve number for hydrologic soil group (estimated as 85 per email conversation with Chang Consultants).

Groundwater inflow from sidewall seepage into the pit was calculated by multiplying the area of the pit (below the recent static water level) with the assumed hydraulic conductivity and an assumed hydraulic gradient of 1 ft/ft. The actual hydraulic gradient is likely underestimated when the water level in the pit is significantly lower than the static water level but more closely approximates the gradient when the water level in the pit is near the static water level,

On the other hand, the small contributing basin and low storativity of the bedrock would potentially result in significant declines in groundwater levels surrounding the quarry pit. These lower groundwater levels would reduce the hydraulic gradient and may strand shallow water-bearing fractures. These would both likely result in lower groundwater inflows to the quarry pit and therefore lower water levels in the pit as compared to those estimated by the spreadsheet.

Outflows

The standing water surface area in the pit will vary depending on geometry and water level in the excavation. A lookup table was constructed which estimated this surface area. Losses from surface water evaporation were calculated by multiplying the surface area with the potential evaporation recorded from the Lower Otay Reservoir. Assumed water use for site operations was 75 (afy).

The bottom of the proposed excavation is proposed to be approximately 100 feet mean sea level (msl). At the time of drilling the static water level in Well 5 was reported at about 300 feet below ground surface (bgs). The ground surface at the well was estimated to be about 670 feet above mean sea level based on inspection of the USGS topographic map. Therefore the static water level in the area is estimated to be approximately 370 feet msl. The direction of groundwater flow is assumed to be generally from the east to the west.

AECOM relied on reported well yields from the five known wells drilled in the vicinity of the proposed pit. Note that the other 4 wells were abandoned and grouted at the time of drilling. As discussed above, Well 5 was purged and sampled by AECOM. The median and mean estimated well yields of the five wells are approximately 4 and 7-1/2 gpm, respectively. Discounting Well 3 - due to a shallow, and possibly perched, water table - the mean of the remaining 4 wells is roughly 4 gpm. The location of Well 5 is shown on Figure 1. The exact locations of the other 4 wells are hard to determine based on the sketches provided by the driller, but they are reported to be located in the general area of the proposed pit. A summary of the reported well yields is provided in Table 3 below:

Table 3: Reported Well Yields

Well Name	Assessor's Parcel Number	Total Depth Drilled (feet bgs)	Reported Well Yield (gpm)
Well 1	648-050-16	1,513	4
Well 2	648-050-16	1,360	10
Well 3	648-050-16	1,010	20 ¹
Well 4	648-050-16	1,010	2
Well 5	648-050-14	1,013	0.5

¹: note that the water in the water-bearing fracture in this well was reported to be only 60 to 70 feet deep.
gpm: gallons per minute

Driller reported well yields are based on short-term airlifting performed at the end of drilling and often overestimate long-term well capacity. The driller-reported well yields in Table 3 roughly translate to hydraulic conductivities on the order of 0.001 to 0.1 feet per day (ft/d).

On November 3, 2011, AECOM discussed the water balance model with Mr. Jim Bennett, the County Groundwater Geologist. As part of the discussions, a hydraulic conductivity of 0.02 ft/day was agreed to be generally representative of the conditions local to the proposed quarry, however there is considerable uncertainty in this value.

Water Quality Analysis

Using the water balance analysis above and the laboratory results for TDS; AECOM assessed potential changes to water quality with time. Direct rain and contributing watershed runoff inflows were multiplied by an assumed rainwater TDS concentration of 100 mg/L. Groundwater inflow and operational extraction outflow were multiplied by the Well 5 TDS concentration of 2,200 mg/L.

Conclusions

Using a hydraulic conductivity value of 0.2 ft/d the water balance model predicts that the water in the pit may rise as much as 200 feet (300 feet msl) without mitigation. Since it is not likely that the accumulated water could be discharged via storm drain or sanitary sewer it is not anticipated that mitigation is practicable. The spreadsheet predicts that water will slowly enter the excavation and will rise approximately 25 to 100 feet per decade.

Based on the 30-year water quality analysis, the maximum concentration of TDS in the accumulated pit water and is estimated to rise to be approximately 3,000 mg/L.

Note that that there is considerable uncertainty in both the estimation of accumulated water in the pit and the TDS concentration of the accumulated water. It is possible that water will accumulate at slower or faster rates than those estimated herein. However, based on operational limitations of the equipment, since accumulated pit water would not likely be allowed into the sanitary sewer or storm drain system, and since the applicant has stipulated that he would not excavate the pit more than a few feet below standing water, the chance of significant accumulation in the pit is minimal.

Recommendations

Any well not used for the project shall be abandoned and a Well Destruction Permit obtained. Proof of destruction by a C57 licensed contractor is required prior to the approval of any grading, improvement plans, or recordation of the Final Map.

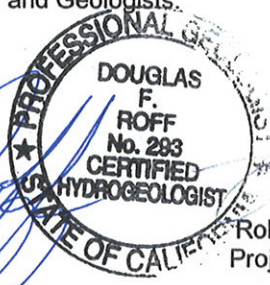
If you have any questions, please contact us at (858) 300-2701 or (858) 352-8243. We thank you for the opportunity to work with you.

The following statement is provided as required by Section 3066 of Title 16, Division 29 of the California Code of Regulations: We, the undersigned, are licensed by the California Board for Professional Engineers, Land Surveyors, and Geologists.

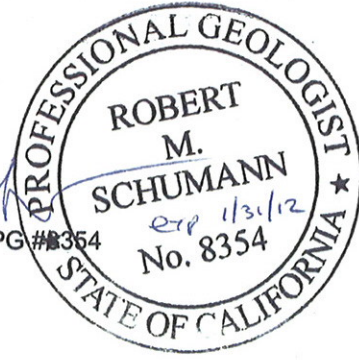
Very truly yours,

AECOM

[Handwritten signature of Douglas F. Roff]
Douglas F. Roff, CHG #293
Senior Hydrogeologist



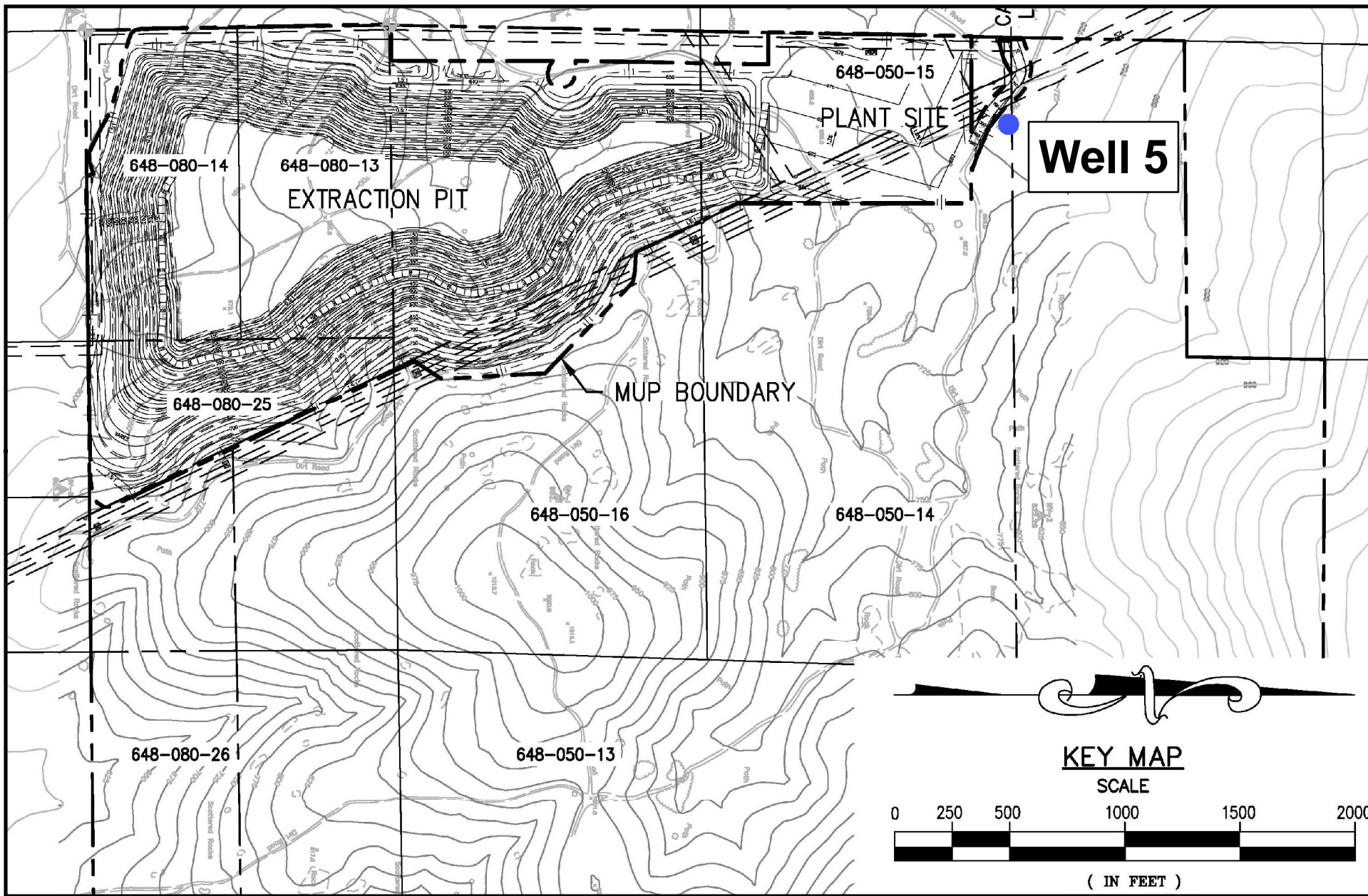
[Handwritten signature of Robert M. Schumann]
Robert M. Schumann, PG #8354
Project Geologist



- Attachments: Figure 1
 - Water Balance Spreadsheet
 - Water Quality Spreadsheet
 - Laboratory data from Test America
 - Otay Hills Land Use Analysis from EnviroMINE

Figure 1

FIGURE 1 - OTAY HILLS SAMPLED WELL LOCATION



! APPROXIMATE WELL LOCATION

AECOM



Proposed Quarry Groundwater Letter Report
Otay Hills Quarry San Diego County, California

Water Balance Spreadsheet

Water Levels in the Otay Hills Quarry

	Areas			Runoff factors		Groundwater parameters
area of top of pit	87.72	acres		S	1.76	K
area of contributing watershed	32.2	acres		I	0.41	A
area of pit floor	20.13	acres				i
operational use of water	6.25	afm				0.02 ft/day
bottom of pit elevation (ft msl)	100					39 acres
						1 ft/ft

Rain Year	Monthly Rainfall (inches)	Runoff [Q = (P-I)² / (P-I+S)] (inches)	Potential Evaporation (Inches)	Evaporation Surface (af)	Direct Rainfall into Pit * Monthly Rainfall (afm)	Runoff from Contributing Watershed (afm)	Groundwater Inflow [KAi] (afm)	Total Inflows (afm)	Evaporation from Standing Water in Pit Floor (afm)	Proposed On-site Extraction (afm)	Total Outflows (afm)	Net Change in Water in Pit (afm)	Cumulative Water Remaining in Pit (af)	Depth of Water in Pit (feet)	Elevation of GW Surface (ft msl)	Max
																300.0
1974/1975	9.90															
													Assumed Initial			
July	0.00	-0.41	0.00	5.3	18.1	0.00	0.00	23.40	23.40	7.99	6.25	14.24	9.2	9.2	0.0	101.0
August	0.00	-0.41	0.00	5.1	18.1	0.00	0.00	23.40	23.40	0.00	6.25	6.25	17.2	26.3	1.0	101.0
September	0.00	-0.41	0.00	4.3	18.1	0.00	0.00	23.40	23.40	6.49	6.25	12.74	10.7	37.0	1.0	101.0
October	1.00	0.59	0.15	3.1	18.1	7.31	1.08	23.40	31.79	4.68	6.25	10.93	20.9	57.8	1.0	101.0
November	1.10	0.69	0.19	1.9	18.1	8.04	1.42	23.40	32.86	2.87	6.25	9.12	23.7	81.6	1.0	101.0
December	0.60	0.19	0.02	1.4	18.1	4.39	0.14	23.40	27.92	2.11	6.25	8.36	19.6	101.1	1.0	101.0
January	0.30	-0.11	0.00	1.2	18.1	2.19	0.00	23.40	25.59	1.81	6.25	8.06	17.5	118.7	1.0	101.0
February	0.80	0.39	0.07	1.5	18.1	5.85	0.52	23.40	29.77	2.26	6.25	8.51	21.3	139.9	1.0	101.0
March	3.90	3.49	2.32	2.1	18.1	28.51	16.96	23.40	68.87	3.17	6.25	9.42	59.5	199.4	1.0	101.0
April	2.00	1.59	0.75	3	18.1	14.62	5.52	23.40	43.54	4.53	6.25	10.78	32.8	232.1	1.0	101.0
May	0.10	-0.31	0.00	3.9	18.1	0.73	0.00	23.40	24.13	5.88	6.25	12.13	12.0	244.1	1.0	101.0
June	0.10	-0.31	0.00	4.2	18.1	0.73	0.00	23.40	24.13	6.34	6.25	12.59	11.5	255.7	1.0	101.0
1975/1976	10.90												Carry Over			
July	0.00	-0.41	0.00	5.3	18.1	0.00	0.00	23.40	23.40	0.00	6.25	6.25	17.2	272.8	1.0	101.0
August	0.00	-0.41	0.00	5.1	18.1	0.00	0.00	23.40	23.40	7.69	6.25	13.94	9.5	282.3	1.0	101.0
September	0.00	-0.41	0.00	4.3	18.1	0.00	0.00	23.40	23.40	6.49	6.25	12.74	10.7	293.0	1.0	101.0
October	0.50	0.09	0.00	3.1	18.1	3.66	0.03	23.40	27.09	4.68	6.25	10.93	16.2	309.1	1.0	101.0
November	1.20	0.79	0.24	1.9	18.1	8.77	1.79	23.40	33.96	2.87	6.25	9.12	24.8	334.0	1.0	101.0
December	0.40	-0.01	0.00	1.4	18.1	2.92	0.00	23.40	26.32	2.11	6.25	8.36	18.0	351.9	1.0	101.0
January	0.00	-0.41	0.00	1.2	18.1	0.00	0.00	23.40	23.40	1.81	6.25	8.06	15.3	367.3	1.0	101.0
February	5.50	5.09	3.78	1.5	18.1	40.21	27.65	23.40	91.25	2.26	6.25	8.51	82.7	450.0	1.0	101.0
March	1.50	1.09	0.42	2.1	18.1	10.97	3.05	23.40	37.41	3.17	6.25	9.42	28.0	478.0	1.0	101.0
April	1.70	1.29	0.55	3	18.1	12.43	3.99	23.40	39.82	4.53	6.25	10.78	29.0	507.0	25.0	125.0
May	0.10	-0.31	0.00	3.9	20.1	0.73	0.00	23.40	24.13	6.53	6.25	12.78	11.4	518.4	25.0	125.0
June	0.00	-0.41	0.00	4.2	20.1	0.00	0.00	23.40	23.40	7.03	6.25	13.28	10.1	528.5	25.0	125.0
1976/1977	11.20												Carry Over			
July	0.00	-0.41	0.00	5.3	0.0	0.00	0.00	23.40	23.40	0.00	6.25	6.25	17.2	545.7	25.0	125.0
August	0.00	-0.41	0.00	5.1	20.1	0.00	0.00	23.40	23.40	8.54	6.25	14.79	8.6	554.3	25.0	125.0
September	1.80	1.39	0.61	4.3	20.1	13.16	4.48	23.40	41.04	7.20	6.25	13.45	27.6	581.9	25.0	125.0
October	0.60	0.19	0.02	3.1	20.1	4.39	0.14	23.40	27.92	5.19	6.25	11.44	16.5	598.4	25.0	125.0
November	1.90	1.49	0.68	1.9	20.1	13.89	4.99	23.40	42.28	3.18	6.25	9.43	32.9	631.2	25.0	125.0
December	0.80	0.39	0.07	1.4	20.1	5.85	0.52	23.40	29.77	2.34	6.25	8.59	21.2	652.4	25.0	125.0
January	2.70	2.29	1.29	1.2	20.1	19.74	9.47	23.40	52.60	2.01	6.25	8.26	44.3	696.7	25.0	125.0
February	0.10	-0.31	0.00	1.5	20.1	0.73	0.00	23.40	24.13	2.51	6.25	8.76	15.4	712.1	25.0	125.0
March	1.10	0.69	0.19	2.1	20.1	8.04	1.42	23.40	32.86	3.51	6.25	9.76	23.1	735.2	25.0	125.0
April	0.10	-0.31	0.00	3	20.1	0.73	0.00	23.40	24.13	5.02	6.25	11.27	12.9	748.1	25.0	125.0
May	2.10	1.69	0.83	3.9	20.1	15.35	6.05	23.40	44.80	6.53	6.25	12.78	32.0	780.1	25.0	125.0
June	0.00	-0.41	0.00	4.2	20.1	0.00	0.00	23.40	23.40	7.03	6.25	13.28	10.1	790.2	25.0	125.0
1977/1978	21.90												Carry Over			
July	0.00	-0.41	0.00	5.3	0.0	0.00	0.00	23.40	23.40	0.00	6.25	6.25	17.2	807.4	25.0	125.0
August	1.80	1.39	0.61	4.3	20.1	13.16	4.48	23.40	41.04	8.54	6.25	14.79	26.3	833.6	25.0	125.0
September	0.00	-0.41	0.00	4.3	20.1	0.00	0.00	23.40	23.40	7.20	6.25	13.45	10.0	843.6	25.0	125.0
October	0.60	0.19	0.02	3.1	20.1	4.39	0.14	23.40	27.92	5.19	6.25	11.44	16.5	860.0	25.0	125.0
November	0.10	-0.31	0.00	1.9	20.1	0.73	0.00	23.40	24.13	3.18	6.25	9.43	14.7	874.7	25.0	125.0
December	2.70	2.29	1.29	1.4	20.1	19.74	9.47	23.40	52.60	2.34	6.25	8.59	44.0	918.8	25.0	125.0
January	5.50	5.09	3.78	1.2	20.1	40.21	27.65	23.40	91.25	2.01	6.25	8.26	83.0	1001.8	25.0	125.0
February	4.00	3.59	2.41	1.5	20.1	29.24	17.61	23.40	70.25	2.51	6.25	8.76	61.5	1063.2	50.0	150.0
March	5.70	5.29	3.97	2.1	21.5	41.67	29.02	23.40	94.08	3.76	6.25	10.01	84.1	1147.3	50.0	150.0
April	1.40	0.99	0.36	3	21.5	10.23	2.61	23.40	36.24	5.37	6.25	11.62	24.6	1171.9	50.0	150.0
May	0.10	-0.31	0.00	3.9	21.5	0.73	0.00	23.40	24.13	6.98	6.25	13.23	10.9	1182.8	50.0	150.0
June	0.00	-0.41	0.00	4.2	21.5	0.00	0.00	23.40	23.40	7.52	6.25	13.77	9.6	1192.5	50.0	150.0
1978/1979	15.70												Carry Over			
July	0.00	-0.41	0.00	5.3	0.0	0.00	0.00	23.40	23.40	0.00	6.25	6.25	17.2	1209.6	50.0	150.0
August	0.00	-0.41	0.00	5.1	21.5	0.00	0.00	23.40	23.40	9.13	6.25	15.38	8.0	1217.6	50.0	150.0
September	0.50	0.09	0.00	4.3	21.5	3.66	0.03	23.40	27.09	7.70	6.25	13.95	13.1	1230.8	50.0	150.0
October	0.10	-0.31	0.00	3.1	21.5	0.73	0.00	23.40	24.13	5.55	6.25	11.80	12.3	1243.1	50.0	150.0
November	3.10	2.69	1.63	1.9	21.5	22.66	11.89	23.40	57.95	3.40	6.25	9.65	48.3	1291.4	50.0	150.0
December	2.40	1.99	1.06	1.4	21.5	17.54	7.72	23.40	48.66	2.51	6.25	8.76	39.9	1331.3	50.0	150.0
January	4.30	3.89	2.68	1.2	21.5	31.43	19.58	23.40	74.41	2.15	6.25	8.40	66.0	1397.3	50.0	150.0
February	1.40	0.99	0.36	1.5	21.5	10.23	2.61	23.40	36.24	2.68	6.25	8.93	27.3	1424.6	50.0	150.0

Water Levels in the Otay Hills Quarry

Rain Year	Monthly Rainfall (inches)	INFLOWS							OUTFLOWS				Net Change in Water in Pit (afm)	Cumulative Water Remaining in Pit (af)	Depth of Water in Pit (feet)	Elevation of GW Surface (ft msl)
		Runoff [Q = (P-I)² / (P-I+S)] (inches)	Potential Evaporation (Inches)	Evaporation Surface (af)	Direct Rainfall into Pit * Monthly Rainfall (afm)	Runoff from Contributing Watershed (afm)	Groundwater Inflow [KAI] (afm)	Total Inflows (afm)	Evaporation from Standing Water in Pit Floor (afm)	Proposed On-site Extraction (afm)	Total Outflows (afm)					
March	3.60	3.19	2.06	2.1	21.5	26.32	15.03	23.40	64.74	3.76	6.25	10.01	54.7	1479.4	50.0	150.0
April	0.00	-0.41	0.00	3	21.5	0.00	0.00	23.40	23.40	5.37	6.25	11.62	11.8	1491.1	50.0	150.0
May	0.20	-0.21	0.00	3.9	21.5	1.46	0.00	23.40	24.86	6.98	6.25	13.23	11.6	1502.8	50.0	150.0
June	0.10	-0.31	0.00	4.2	21.5	0.73	0.00	23.40	24.13	7.52	6.25	13.77	10.4	1513.1	50.0	150.0
1979/1980	16.00	15.59	14.01										Carry Over	1513.1		150.0
July	0.00	-0.41	0.00	5.3	0.0	0.00	0.00	23.40	23.40	0.00	6.25	6.25	17.2	1530.3	50.0	150.0
August	0.10	-0.31	0.07	5.1	21.5	0.00	0.48	23.40	23.88	9.13	6.25	15.38	8.5	1538.8	50.0	150.0
September	0.00	-0.41	0.12	4.3	21.5	0.00	0.91	23.40	24.31	7.70	6.25	13.95	10.4	1549.2	50.0	150.0
October	0.60	0.19	0.02	3.1	21.5	0.00	0.14	23.40	23.54	5.55	6.25	11.80	11.7	1560.9	50.0	150.0
November	0.20	-0.21	0.03	1.9	21.5	0.00	0.21	23.40	23.61	3.40	6.25	9.65	14.0	1574.9	50.0	150.0
December	0.10	-0.31	0.07	1.4	21.5	0.00	0.48	23.40	23.88	2.51	6.25	8.76	15.1	1590.0	50.0	150.0
January	6.30	5.89	4.53	1.2	21.5	0.00	33.15	23.40	56.55	2.15	6.25	8.40	48.2	1638.1	75.0	175.0
February	3.80	3.39	2.23	1.5	22.9	0.00	16.31	23.40	39.71	2.86	6.25	9.11	30.6	1668.7	75.0	175.0
March	3.10	2.69	1.63	2.1	22.9	0.00	11.89	23.40	35.29	4.01	6.25	10.26	25.0	1693.8	75.0	175.0
April	1.40	0.99	0.36	3	22.9	0.00	2.61	23.40	26.01	5.73	6.25	11.98	14.0	1707.8	75.0	175.0
May	0.40	-0.01	0.00	3.9	22.9	0.00	0.00	23.40	23.40	7.44	6.25	13.69	9.7	1717.5	75.0	175.0
June	0.00	-0.41	0.12	4.2	22.9	0.00	0.91	23.40	24.31	8.02	6.25	14.27	10.0	1727.5	75.0	175.0
1980/1981	8.10	7.69											Carry Over	1727.5		175.0
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	1745.6	75.0	175.0
August	0.00	-0.41	0.12	5.1	22.9	0.00	0.91	23.40	24.31	9.74	6.25	15.99	8.3	1753.9	75.0	175.0
September	0.00	-0.41	0.12	4.3	22.9	0.00	0.91	23.40	24.31	8.21	6.25	14.46	9.9	1763.8	75.0	175.0
October	0.20	-0.21	0.03	3.1	22.9	0.00	0.21	23.40	23.61	5.92	6.25	12.17	11.4	1775.2	75.0	175.0
November	0.00	-0.41	0.12	1.9	22.9	0.00	0.91	23.40	24.31	3.63	6.25	9.88	14.4	1789.7	75.0	175.0
December	0.50	0.09	0.00	1.4	22.9	0.00	0.03	23.40	23.43	2.67	6.25	8.92	14.5	1804.2	75.0	175.0
January	1.40	0.99	0.36	1.2	22.9	0.00	2.61	23.40	26.01	2.29	6.25	8.54	17.5	1821.6	75.0	175.0
February	1.60	1.19	0.48	1.5	22.9	0.00	3.51	23.40	26.91	2.86	6.25	9.11	17.8	1839.4	75.0	175.0
March	3.30	2.89	1.80	2.1	22.9	0.00	13.13	23.40	36.53	4.01	6.25	10.26	26.3	1865.7	75.0	175.0
April	0.90	0.49	0.11	3	22.9	0.00	0.78	23.40	24.18	5.73	6.25	11.98	12.2	1877.9	75.0	175.0
May	0.20	-0.21	0.03	3.9	22.9	0.00	0.21	23.40	23.61	7.44	6.25	13.69	9.9	1887.8	75.0	175.0
June	0.00	-0.41	0.12	4.2	22.9	0.00	0.91	23.40	24.31	8.02	6.25	14.27	10.0	1897.9	75.0	175.0
1981/1982	11.60	11.19											Carry Over	1897.9		175.0
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	1915.9	75.0	175.0
August	0.00	-0.41	0.12	5.1	22.9	0.00	0.91	23.40	24.31	9.74	6.25	15.99	8.3	1924.2	75.0	175.0
September	0.10	-0.31	0.07	4.3	22.9	0.00	0.48	23.40	23.88	8.21	6.25	14.46	9.4	1933.7	75.0	175.0
October	0.50	0.09	0.00	3.1	22.9	0.00	0.03	23.40	23.43	5.92	6.25	12.17	11.3	1944.9	75.0	175.0
November	1.40	0.99	0.36	1.9	22.9	0.00	2.61	23.40	26.01	3.63	6.25	9.88	16.1	1961.1	75.0	175.0
December	0.90	0.49	0.11	1.4	22.9	0.00	0.78	23.40	24.18	2.67	6.25	8.92	15.3	1976.3	75.0	175.0
January	3.10	2.69	1.63	1.2	22.9	0.00	11.89	23.40	35.29	2.29	6.25	8.54	26.7	2003.1	75.0	175.0
February	0.70	0.29	0.04	1.5	22.9	0.00	0.30	23.40	23.70	2.86	6.25	9.11	14.6	2017.6	75.0	175.0
March	4.10	3.69	2.50	2.1	22.9	0.00	18.26	23.40	41.66	4.01	6.25	10.26	31.4	2049.1	75.0	175.0
April	0.60	0.19	0.02	3	22.9	0.00	0.14	23.40	23.54	5.73	6.25	11.98	11.6	2060.6	75.0	175.0
May	0.00	-0.41	0.12	3.9	22.9	0.00	0.91	23.40	24.31	7.44	6.25	13.69	10.6	2071.2	75.0	175.0
June	0.20	-0.21	0.03	4.2	22.9	0.00	0.21	23.40	23.61	8.02	6.25	14.27	9.3	2080.6	75.0	175.0
1982/1983	18.90	18.49											Carry Over	2080.6		175.0
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	2098.6	75.0	175.0
August	0.00	-0.41	0.12	5.1	22.9	0.00	0.91	23.40	24.31	9.74	6.25	15.99	8.3	2107.0	75.0	175.0
September	0.10	-0.31	0.07	4.3	22.9	0.00	0.48	23.40	23.88	8.21	6.25	14.46	9.4	2116.4	75.0	175.0
October	0.00	-0.41	0.12	3.1	22.9	0.00	0.91	23.40	24.31	5.92	6.25	12.17	12.1	2128.5	75.0	175.0
November	2.40	1.99	1.06	1.9	22.9	0.00	7.72	23.40	31.12	3.63	6.25	9.88	21.2	2149.8	75.0	175.0
December	1.80	1.39	0.61	1.4	22.9	0.00	4.48	23.40	27.88	2.67	6.25	8.92	19.0	2168.7	75.0	175.0
January	1.90	1.49	0.68	1.2	22.9	0.00	4.99	23.40	28.39	2.29	6.25	8.54	19.9	2188.6	75.0	175.0
February	2.40	1.99	1.06	1.5	22.9	0.00	7.72	23.40	31.12	2.86	6.25	9.11	22.0	2210.6	75.0	175.0
March	8.40	7.99	6.55	2.1	22.9	0.00	47.86	23.40	71.26	4.01	6.25	10.26	61.0	2271.6	100.0	200.0
April	1.90	1.49	0.68	3	25.0	0.00	4.99	23.40	28.39	6.25	6.25	12.50	15.9	2287.5	100.0	200.0
May	0.00	-0.41	0.12	3.9	25.0	0.00	0.91	23.40	24.31	8.12	6.25	14.37	9.9	2297.4	100.0	200.0
June	0.00	-0.41	0.12	4.2	25.0	0.00	0.91	23.40	24.31	8.75	6.25	15.00	9.3	2306.7	100.0	200.0
1983/1984	5.31	4.90											Carry Over	2306.7		200.0
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	2324.8	100.0	200.0
August	0.40	-0.01	0.00	5.1	25.0	0.00	0.00	23.40	23.40	10.62	6.25	16.87	6.5	2331.3	100.0	200.0
September	0.60	0.19	0.02	4.3	25.0	0.00	0.14	23.40	23.54	8.96	6.25	15.21	8.3	2339.7	100.0	200.0
October	0.20	-0.21	0.03	3.1	25.0	0.00	0.21	23.40	23.61	6.46	6.25	12.71	10.9	2350.6	100.0	200.0
November	1.60	1.19	0.48	1.9	25.0	0.00	3.51	23.40	26.91	3.96	6.25	10.21	16.7	2367.3	100.0	200.0
December	1.57	1.16	0.46	1.4	25.0	0.00	3.37	23.40	26.77	2.92	6.25	9.17	17.6	2384.9	100.0	200.0
January	0.31	-0.10	0.01	1.2	25.0	0.00	0.04	23.40	23.44	2.50	6.25	8.75	14.7	2399.6	100.0	200.0
February	0.00	-0.41	0.12	1.5	25.0	0.00	0.91	23.40	24.31	3.12	6.25	9.37	14.9	2414.5	100.0	200.0
March	0.00	-0.41	0.12	2.1	25.0	0.00	0.91	23.40	24.31	4.37	6.25	10.62	13.7	2428.2	100.0	200.0
April	0.55	0.14	0.01	3	25.0	0.00	0.08	23.40	23.48	6.25	6.25	12.50	11.0	2439.2	100.0	200.0
May	0.00	-0.41	0.12	3.9	25.0	0.00	0.91	23.40	24.31	8.12	6.25	14.37	9.9	2449.1	100.0	200.0
June	0.08	-0.33	0.08	4.2	25.0	0.00	0.56	23.40	23.96	8.75	6.25	15.00	9.0	2458.0	100.0	200.0
1984/1985	10.22	9.81											Carry Over	2458.0		200.0
July	0.47	0.06	0.00	5.3	0.0	0.00	0.01	23.40	23.41	0.00	6.25	6.25	17.2	2475.2	100.0	200.0
August	0.31	-0.10	0.01	5.1	25.0	0.00	0.04	23.40	23.44	10.62	6.25	16.87	6.6	2481.8	100.0	200.0

Water Levels in the Otay Hills Quarry

Rain Year	Monthly Rainfall (inches)	INFLOWS							OUTFLOWS				Net Change in Water in Pit (afm)	Cumulative Water Remaining in Pit (af)	Max Depth of Water in Pit (feet)	300.0 Elevation of GW Surface (ft msl)
		Runoff [Q = (P-I)² / (P-I+S)] (inches)	Potential Evaporation (Inches)	Evaporation Surface (af)	Direct Rainfall into Pit * Monthly Rainfall (afm)	Runoff from Contributing Watershed (afm)	Groundwater Inflow [KAI] (afm)	Total Inflows (afm)	Evaporation from Standing Water in Pit Floor (afm)	Proposed On-site Extraction (afm)	Total Outflows (afm)					
September	0.00	-0.41	0.12	4.3	25.0	0.00	0.91	23.40	24.31	8.96	6.25	15.21	9.1	2490.9	100.0	200.0
October	0.35	-0.06	0.00	3.1	25.0	0.00	0.02	23.40	23.42	6.46	6.25	12.71	10.7	2501.6	100.0	200.0
November	1.50	1.09	0.42	1.9	25.0	0.00	3.05	23.40	26.45	3.96	6.25	10.21	16.2	2517.8	100.0	200.0
December	5.31	4.90	3.61	1.4	25.0	0.00	26.35	23.40	49.75	2.92	6.25	9.17	40.6	2558.4	100.0	200.0
January	0.43	0.02	0.00	1.2	25.0	0.00	0.00	23.40	23.40	2.50	6.25	8.75	14.7	2573.1	100.0	200.0
February	1.22	0.81	0.26	1.5	25.0	0.00	1.87	23.40	25.27	3.12	6.25	9.37	15.9	2589.0	100.0	200.0
March	0.55	0.14	0.01	2.1	25.0	0.00	0.08	23.40	23.48	4.37	6.25	10.62	12.9	2601.8	100.0	200.0
April	0.00	-0.41	0.12	3	25.0	0.00	0.91	23.40	24.31	6.25	6.25	12.50	11.8	2613.6	100.0	200.0
May	0.08	-0.33	0.08	3.9	25.0	0.00	0.56	23.40	23.96	8.12	6.25	14.37	9.6	2623.2	100.0	200.0
June	0.00	-0.41	0.12	4.2	25.0	0.00	0.91	23.40	24.31	8.75	6.25	15.00	9.3	2632.5	100.0	200.0
1985/1986	11.81	11.40											Carry Over	2632.5		200.0
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	2650.6	100.0	200.0
August	0.00	-0.41	0.12	5.1	25.0	0.00	0.91	23.40	24.31	10.62	6.25	16.87	7.4	2658.0	100.0	200.0
September	0.04	-0.37	0.10	4.3	25.0	0.00	0.72	23.40	24.12	8.96	6.25	15.21	8.9	2666.9	100.0	200.0
October	0.28	-0.13	0.01	3.1	25.0	0.00	0.08	23.40	23.48	6.46	6.25	12.71	10.8	2677.7	100.0	200.0
November	4.76	4.35	3.10	1.9	25.0	0.00	22.64	23.40	46.04	3.96	6.25	10.21	35.8	2713.5	100.0	200.0
December	1.22	0.81	0.26	1.4	25.0	0.00	1.87	23.40	25.27	2.92	6.25	9.17	16.1	2729.6	100.0	200.0
January	0.75	0.34	0.06	1.2	25.0	0.00	0.40	23.40	23.80	2.50	6.25	8.75	15.1	2744.7	100.0	200.0
February	2.32	1.91	0.99	1.5	25.0	0.00	7.27	23.40	30.67	3.12	6.25	9.37	21.3	2766.0	100.0	200.0
March	1.89	1.48	0.68	2.1	25.0	0.00	4.94	23.40	28.34	4.37	6.25	10.62	17.7	2783.7	100.0	200.0
April	0.55	0.14	0.01	3	25.0	0.00	0.08	23.40	23.48	6.25	6.25	12.50	11.0	2794.7	100.0	200.0
May	0.00	-0.41	0.12	3.9	25.0	0.00	0.91	23.40	24.31	8.12	6.25	14.37	9.9	2804.6	100.0	200.0
June	0.00	-0.41	0.12	4.2	25.0	0.00	0.91	23.40	24.31	8.75	6.25	15.00	9.3	2813.9	100.0	200.0
1986/1987	9.33	8.92											Carry Over	2813.9		200.0
July	0.04	-0.37	0.10	5.3	0.0	0.00	0.72	23.40	24.12	0.00	6.25	6.25	17.9	2831.8	100.0	200.0
August	0.00	-0.41	0.12	5.1	25.0	0.00	0.91	23.40	24.31	10.62	6.25	16.87	7.4	2839.2	100.0	200.0
September	0.94	0.53	0.12	4.3	25.0	0.00	0.90	23.40	24.30	8.96	6.25	15.21	9.1	2848.3	100.0	200.0
October	1.18	0.77	0.23	3.1	25.0	0.00	1.71	23.40	25.11	6.46	6.25	12.71	12.4	2860.7	100.0	200.0
November	0.51	0.10	0.01	1.9	25.0	0.00	0.04	23.40	23.44	3.96	6.25	10.21	13.2	2874.0	100.0	200.0
December	1.30	0.89	0.30	1.4	25.0	0.00	2.19	23.40	25.59	2.92	6.25	9.17	16.4	2890.4	100.0	200.0
January	1.50	1.09	0.42	1.2	25.0	0.00	3.05	23.40	26.45	2.50	6.25	8.75	17.7	2908.1	125.0	225.0
February	1.81	1.40	0.62	1.5	26.5	0.00	4.53	23.40	27.93	3.31	6.25	9.56	18.4	2926.5	125.0	225.0
March	1.22	0.81	0.26	2.1	26.5	0.00	1.87	23.40	25.27	4.63	6.25	10.88	14.4	2940.8	125.0	225.0
April	0.71	0.30	0.04	3	26.5	0.00	0.32	23.40	23.72	6.62	6.25	12.87	10.9	2951.7	125.0	225.0
May	0.12	-0.29	0.06	3.9	26.5	0.00	0.42	23.40	23.82	8.60	6.25	14.85	9.0	2960.7	125.0	225.0
June	0.00	-0.41	0.12	4.2	26.5	0.00	0.91	23.40	24.31	9.27	6.25	15.52	8.8	2969.5	125.0	225.0
1987/1988	17.10	16.69											Carry Over	2969.5		225.0
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	2987.5	125.0	225.0
August	0.24	-0.17	0.02	5.1	26.5	0.00	0.13	23.40	23.53	11.25	6.25	17.50	6.0	2993.5	125.0	225.0
September	0.75	0.34	0.06	4.3	26.5	0.00	0.40	23.40	23.80	9.49	6.25	15.74	8.1	3001.6	125.0	225.0
October	2.24	1.83	0.93	3.1	26.5	0.00	6.82	23.40	30.22	6.84	6.25	13.09	17.1	3018.7	125.0	225.0
November	2.01	1.60	0.76	1.9	26.5	0.00	5.57	23.40	28.97	4.19	6.25	10.44	18.5	3037.3	125.0	225.0
December	4.57	4.16	2.92	1.4	26.5	0.00	21.37	23.40	44.77	3.09	6.25	9.34	35.4	3072.7	125.0	225.0
January	1.38	0.97	0.34	1.2	26.5	0.00	2.52	23.40	25.92	2.65	6.25	8.90	17.0	3089.7	125.0	225.0
February	1.85	1.44	0.65	1.5	26.5	0.00	4.74	23.40	28.14	3.31	6.25	9.56	18.6	3108.3	125.0	225.0
March	0.91	0.50	0.11	2.1	26.5	0.00	0.81	23.40	24.21	4.63	6.25	10.88	13.3	3121.6	125.0	225.0
April	3.03	2.62	1.57	3	26.5	0.00	11.46	23.40	34.86	6.62	6.25	12.87	22.0	3143.6	125.0	225.0
May	0.12	-0.29	0.06	3.9	26.5	0.00	0.42	23.40	23.82	8.60	6.25	14.85	9.0	3152.6	125.0	225.0
June	0.00	-0.41	0.12	4.2	26.5	0.00	0.91	23.40	24.31	9.27	6.25	15.52	8.8	3161.4	125.0	225.0
1988/1989	5.29	4.88											Carry Over	3161.4		225.0
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	3179.4	125.0	225.0
August	0.00	-0.41	0.12	5.1	26.5	0.00	0.91	23.40	24.31	11.25	6.25	17.50	6.8	3186.2	125.0	225.0
September	0.00	-0.41	0.12	4.3	26.5	0.00	0.91	23.40	24.31	9.49	6.25	15.74	8.6	3194.8	125.0	225.0
October	0.00	-0.41	0.12	3.1	26.5	0.00	0.91	23.40	24.31	6.84	6.25	13.09	11.2	3206.0	125.0	225.0
November	0.86	0.45	0.09	1.9	26.5	0.00	0.67	23.40	24.07	4.19	6.25	10.44	13.6	3219.7	125.0	225.0
December	1.92	1.51	0.70	1.4	26.5	0.00	5.10	23.40	28.50	3.09	6.25	9.34	19.2	3238.8	125.0	225.0
January	0.36	-0.05	0.00	1.2	26.5	0.00	0.01	23.40	23.41	2.65	6.25	8.90	14.5	3253.3	125.0	225.0
February	0.84	0.43	0.08	1.5	26.5	0.00	0.62	23.40	24.02	3.31	6.25	9.56	14.5	3267.8	125.0	225.0
March	1.13	0.72	0.21	2.1	26.5	0.00	1.53	23.40	24.93	4.63	6.25	10.88	14.0	3281.8	125.0	225.0
April	0.15	-0.26	0.05	3	26.5	0.00	0.33	23.40	23.73	6.62	6.25	12.87	10.9	3292.7	125.0	225.0
May	0.03	-0.38	0.10	3.9	26.5	0.00	0.76	23.40	24.16	8.60	6.25	14.85	9.3	3302.0	125.0	225.0
June	0.00	-0.41	0.12	4.2	26.5	0.00	0.91	23.40	24.31	9.27	6.25	15.52	8.8	3310.8	125.0	225.0
1989/1990	7.81	7.40											Carry Over	3310.8		225.0
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	3328.9	125.0	225.0
August	0.00	-0.41	0.12	5.1	26.5	0.00	0.91	23.40	24.31	11.25	6.25	17.50	6.8	3335.7	125.0	225.0
September	0.31	-0.10	0.01	4.3	26.5	0.00	0.04	23.40	23.44	9.49	6.25	15.74	7.7	3343.4	125.0	225.0
October	0.32	-0.09	0.00	3.1	26.5	0.00	0.04	23.40	23.44	6.84	6.25	13.09	10.3	3353.7	125.0	225.0
November	0.04	-0.37	0.10	1.9	26.5	0.00	0.72	23.40	24.12	4.19	6.25	10.44	13.7	3367.4	125.0	225.0
December	0.33	-0.08	0.00	1.4	26.5	0.00	0.03	23.40	23.43	3.09	6.25	9.34	14.1	3381.5	125.0	225.0
January	2.81	2.40	1.38	1.2	26.5	0.00	10.12	23.40	33.52	2.65	6.25	8.90	24.6	3406.1	125.0	225.0
February	1.21	0.80	0.25	1.5	26.5	0.00	1.83	23.40	25.23	3.31	6.25	9.56	15.7	3421.8	125.0	225.0
March	0.67	0.26	0.03	2.1	26.5	0.00	0.24	23.40	23.64	4.63	6.25	10.88	12.8	3434.6	125.0	225.0

Water Levels in the Otay Hills Quarry

Rain Year	Monthly Rainfall (inches)	INFLOWS							OUTFLOWS				Net Change in Water in Pit (afm)	Cumulative Water Remaining in Pit (af)	Depth of Water in Pit (feet)	Elevation of GW Surface (ft msl)
		Runoff [Q = (P-I)² / (P-I+S)] (inches)	Potential Evaporation (Inches)	Evaporation Surface (af)	Direct Rainfall into Pit * Monthly Rainfall (afm)	Runoff from Contributing Watershed (afm)	Groundwater Inflow [KAI] (afm)	Total Inflows (afm)	Evaporation from Standing Water in Pit Floor (afm)	Proposed On-site Extraction (afm)	Total Outflows (afm)	Max				
April	0.50	0.09	0.00	3	26.5	0.00	0.03	23.40	23.43	6.62	6.25	12.87	10.6	3445.1	125.0	225.0
May	0.33	-0.08	0.00	3.9	26.5	0.00	0.03	23.40	23.43	8.60	6.25	14.85	8.6	3453.7	125.0	225.0
June	1.29	0.88	0.29	4.2	26.5	0.00	2.14	23.40	25.54	9.27	6.25	15.52	10.0	3463.7	125.0	225.0
1990/1991	12.66	12.25												Carry Over	3463.7	225.0
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	3481.8	125.0	225.0
August	0.05	-0.36	0.09	5.1	26.5	0.00	0.68	23.40	24.08	11.25	6.25	17.50	6.6	3488.4	125.0	225.0
September	0.00	-0.41	0.12	4.3	26.5	0.00	0.91	23.40	24.31	9.49	6.25	15.74	8.6	3496.9	125.0	225.0
October	0.02	-0.39	0.11	3.1	26.5	0.00	0.81	23.40	24.21	6.84	6.25	13.09	11.1	3508.1	125.0	225.0
November	0.52	0.11	0.01	1.9	26.5	0.00	0.05	23.40	23.45	4.19	6.25	10.44	13.0	3521.1	125.0	225.0
December	1.39	0.98	0.35	1.4	26.5	0.00	2.56	23.40	25.96	3.09	6.25	9.34	16.6	3537.7	125.0	225.0
January	1.43	1.02	0.37	1.2	26.5	0.00	2.74	23.40	26.14	2.65	6.25	8.90	17.2	3554.9	125.0	225.0
February	1.33	0.92	0.32	1.5	26.5	0.00	2.31	23.40	25.71	3.31	6.25	9.56	16.1	3571.1	125.0	225.0
March	7.75	7.34	5.92	2.1	26.5	0.00	43.28	23.40	66.68	4.63	6.25	10.88	55.8	3626.9	150.0	250.0
April	0.12	-0.29	0.06	3	28.7	0.00	0.42	23.40	23.82	7.16	6.25	13.41	10.4	3637.3	150.0	250.0
May	0.05	-0.36	0.09	3.9	28.7	0.00	0.68	23.40	24.08	9.31	6.25	15.56	8.5	3645.8	150.0	250.0
June	0.00	-0.41	0.12	4.2	28.7	0.00	0.91	23.40	24.31	10.03	6.25	16.28	8.0	3653.8	150.0	250.0
1991/1992	15.08	14.67												Carry Over	3653.8	250.0
July	0.20	-0.21	0.03	5.3	0.0	0.00	0.21	23.40	23.61	0.00	6.25	6.25	17.4	3671.2	150.0	250.0
August	0.26	-0.15	0.01	5.1	28.7	0.00	0.10	23.40	23.50	12.18	6.25	18.43	5.1	3676.3	150.0	250.0
September	0.06	-0.35	0.09	4.3	28.7	0.00	0.64	23.40	24.04	10.27	6.25	16.52	7.5	3683.8	150.0	250.0
October	0.60	0.19	0.02	3.1	28.7	0.00	0.14	23.40	23.54	7.40	6.25	13.65	9.9	3693.7	150.0	250.0
November	0.13	-0.28	0.05	1.9	28.7	0.00	0.39	23.40	23.79	4.54	6.25	10.79	13.0	3706.7	150.0	250.0
December	2.01	1.60	0.76	1.4	28.7	0.00	5.57	23.40	28.97	3.34	6.25	9.59	19.4	3726.0	150.0	250.0
January	1.67	1.26	0.53	1.2	28.7	0.00	3.84	23.40	27.24	2.87	6.25	9.12	18.1	3744.2	150.0	250.0
February	4.91	4.50	3.23	1.5	28.7	0.00	23.65	23.40	47.05	3.58	6.25	9.83	37.2	3781.4	150.0	250.0
March	4.78	4.37	3.12	2.1	28.7	0.00	22.77	23.40	46.17	5.01	6.25	11.26	34.9	3816.3	150.0	250.0
April	0.29	-0.12	0.01	3	28.7	0.00	0.06	23.40	23.46	7.16	6.25	13.41	10.1	3826.3	150.0	250.0
May	0.17	-0.24	0.04	3.9	28.7	0.00	0.28	23.40	23.68	9.31	6.25	15.56	8.1	3834.4	150.0	250.0
June	0.00	-0.41	0.12	4.2	28.7	0.00	0.91	23.40	24.31	10.03	6.25	16.28	8.0	3842.5	150.0	250.0
1992/1993	17.42	17.01												Carry Over	3842.5	250.0
July	0.03	-0.38	0.10	5.3	0.0	0.00	0.76	23.40	24.16	0.00	6.25	6.25	17.9	3860.4	150.0	250.0
August	0.08	-0.33	0.08	5.1	28.7	0.00	0.56	23.40	23.96	12.18	6.25	18.43	5.5	3865.9	150.0	250.0
September	0.00	-0.41	0.12	4.3	28.7	0.00	0.91	23.40	24.31	10.27	6.25	16.52	7.8	3873.7	150.0	250.0
October	0.49	0.08	0.00	3.1	28.7	0.00	0.03	23.40	23.43	7.40	6.25	13.65	9.8	3883.5	150.0	250.0
November	0.04	-0.37	0.10	1.9	28.7	0.00	0.72	23.40	24.12	4.54	6.25	10.79	13.3	3896.8	150.0	250.0
December	0.00	-0.41	0.12	1.4	28.7	0.00	0.91	23.40	24.31	3.34	6.25	9.59	14.7	3911.5	150.0	250.0
January	10.93	10.52	9.01	1.2	28.7	0.00	65.88	23.40	89.28	2.87	6.25	9.12	80.2	3991.7	150.0	250.0
February	3.93	3.52	2.35	1.5	28.7	0.00	17.15	23.40	40.55	3.58	6.25	9.83	30.7	4022.4	150.0	250.0
March	1.48	1.07	0.40	2.1	28.7	0.00	2.96	23.40	26.36	5.01	6.25	11.26	15.1	4037.5	150.0	250.0
April	0.00	-0.41	0.12	3	28.7	0.00	0.91	23.40	24.31	7.16	6.25	13.41	10.9	4048.4	150.0	250.0
May	0.00	-0.41	0.12	3.9	28.7	0.00	0.91	23.40	24.31	9.31	6.25	15.56	8.7	4057.2	150.0	250.0
June	0.44	0.03	0.00	4.2	28.7	0.00	0.00	23.40	23.40	10.03	6.25	16.28	7.1	4064.3	150.0	250.0
1993/1994	9.38	8.97												Carry Over	4064.3	250.0
July	0.01	-0.40	0.12	5.3	0.0	0.00	0.86	23.40	24.26	0.00	6.25	6.25	18.0	4082.3	150.0	250.0
August	0.00	-0.41	0.12	5.1	28.7	0.00	0.91	23.40	24.31	12.18	6.25	18.43	5.9	4088.2	150.0	250.0
September	0.04	-0.37	0.10	4.3	28.7	0.00	0.72	23.40	24.12	10.27	6.25	16.52	7.6	4095.8	150.0	250.0
October	0.12	-0.29	0.06	3.1	28.7	0.00	0.42	23.40	23.82	7.40	6.25	13.65	10.2	4105.9	150.0	250.0
November	0.77	0.36	0.06	1.9	28.7	0.00	0.45	23.40	23.85	4.54	6.25	10.79	13.1	4119.0	150.0	250.0
December	0.88	0.47	0.10	1.4	28.7	0.00	0.72	23.40	24.12	3.34	6.25	9.59	14.5	4133.5	150.0	250.0
January	0.97	0.56	0.14	1.2	28.7	0.00	0.99	23.40	24.39	2.87	6.25	9.12	15.3	4148.8	150.0	250.0
February	3.13	2.72	1.65	1.5	28.7	0.00	12.07	23.40	35.47	3.58	6.25	9.83	25.6	4174.4	150.0	250.0
March	2.08	1.67	0.81	2.1	28.7	0.00	5.94	23.40	29.34	5.01	6.25	11.26	18.1	4192.5	150.0	250.0
April	1.27	0.86	0.28	3	28.7	0.00	2.06	23.40	25.46	7.16	6.25	13.41	12.0	4204.6	150.0	250.0
May	0.11	-0.30	0.06	3.9	28.7	0.00	0.45	23.40	23.85	9.31	6.25	15.56	8.3	4212.9	150.0	250.0
June	0.00	-0.41	0.12	4.2	28.7	0.00	0.91	23.40	24.31	10.03	6.25	16.28	8.0	4220.9	150.0	250.0
1994/1995	15.77	15.36												Carry Over	4220.9	250.0
July	0.04	-0.37	0.10	5.3	0.0	0.00	0.72	23.40	24.12	0.00	6.25	6.25	17.9	4238.8	150.0	250.0
August	0.10	-0.31	0.07	5.1	28.7	0.00	0.48	23.40	23.88	12.18	6.25	18.43	5.5	4244.2	150.0	250.0
September	0.00	-0.41	0.12	4.3	28.7	0.00	0.91	23.40	24.31	10.27	6.25	16.52	7.8	4252.0	150.0	250.0
October	0.28	-0.13	0.01	3.1	28.7	0.00	0.08	23.40	23.48	7.40	6.25	13.65	9.8	4261.8	150.0	250.0
November	0.68	0.27	0.04	1.9	28.7	0.00	0.26	23.40	23.66	4.54	6.25	10.79	12.9	4274.7	150.0	250.0
December	1.25	0.84	0.27	1.4	28.7	0.00	1.98	23.40	25.38	3.34	6.25	9.59	15.8	4290.5	150.0	250.0
January	4.93	4.52	3.25	1.2	28.7	0.00	23.78	23.40	47.18	2.87	6.25	9.12	38.1	4328.6	150.0	250.0
February	2.32	1.91	0.99	1.5	28.7	0.00	7.27	23.40	30.67	3.58	6.25	9.83	20.8	4349.4	150.0	250.0
March	3.61	3.20	2.06	2.1	28.7	0.00	15.09	23.40	38.49	5.01	6.25	11.26	27.2	4376.6	175.0	275.0
April	0.90	0.49	0.11	3	30.2	0.00	0.78	23.40	24.18	7.55	6.25	13.80	10.4	4387.0	175.0	275.0
May	0.94	0.53	0.12	3.9	30.2	0.00	0.90	23.40	24.30	9.82	6.25	16.07	8.2	4395.2	175.0	275.0
June	0.72	0.31	0.05	4.2	30.2	0.00	0.34	23.40	23.74	10.57	6.25	16.82	6.9	4402.2	175.0	275.0
1995/1996	6.29	5.88												Carry Over	4402.2	275.0
July	0.05	-0.36	0.09	5.3	0.0	0.00	0.68	23.40	24.08	0.00	6.25	6.25	17.8	4420.0	175.0	275.0
August	0.00	-0.41	0.12	5.1	30.2	0.00	0.91	23.40	24.31	12.84	6.25	19.09	5.2	4425.2	175.0	275.0
September	0.00	-0.41	0.12	4.3	30.2	0.00	0.91	23.40	24.31	10.83	6.25	17.08	7.2	4432.4	175.0	275.0

Water Levels in the Otay Hills Quarry

Rain Year	Monthly Rainfall (inches)	Runoff [Q = (P-I)² / (P-I+S)] (inches)	Potential Evaporation (Inches)	Evaporation Surface (af)	Direct Rainfall into Pit * Monthly Rainfall (afm)	Runoff from Contributing Watershed (afm)	Groundwater Inflow [KAI] (afm)	Total Inflows (afm)	INFLOWS			OUTFLOWS			Net Change in Water in Pit (afm)	Cumulative Water Remaining in Pit (af)	Depth of Water in Pit (feet)	Elevation of GW Surface (ft msl)
									Evaporation from Standing Water in Pit Floor (afm)	Proposed On-site Extraction (afm)	Total Outflows (afm)	Max	300.0					
October	0.00	-0.41	0.12	3.1	30.2	0.00	0.91	23.40	24.31	7.81	6.25	14.06	10.3	4442.7	175.0	275.0		
November	0.08	-0.33	0.08	1.9	30.2	0.00	0.56	23.40	23.96	4.78	6.25	11.03	12.9	4455.6	175.0	275.0		
December	0.45	0.04	0.00	1.4	30.2	0.00	0.01	23.40	23.41	3.52	6.25	9.77	13.6	4469.2	175.0	275.0		
January	1.15	0.74	0.22	1.2	30.2	0.00	1.60	23.40	25.00	3.02	6.25	9.27	15.7	4485.0	175.0	275.0		
February	2.55	2.14	1.17	1.5	30.2	0.00	8.58	23.40	31.98	3.78	6.25	10.03	22.0	4506.9	175.0	275.0		
March	1.60	1.19	0.48	2.1	30.2	0.00	3.51	23.40	26.91	5.29	6.25	11.54	15.4	4522.3	175.0	275.0		
April	0.37	-0.04	0.00	3	30.2	0.00	0.01	23.40	23.41	7.55	6.25	13.80	9.6	4531.9	175.0	275.0		
May	0.04	-0.37	0.10	3.9	30.2	0.00	0.72	23.40	24.12	9.82	6.25	16.07	8.1	4540.0	175.0	275.0		
June	0.00	-0.41	0.12	4.2	30.2	0.00	0.91	23.40	24.31	10.57	6.25	16.82	7.5	4547.4	175.0	275.0		
1996/1997	8.95	8.54											Carry Over	4547.4	175.0	275.0		
July	0.02	-0.39	0.11	5.3	0.0	0.00	0.81	23.40	24.21	0.00	6.25	6.25	18.0	4565.4	175.0	275.0		
August	0.00	-0.41	0.12	5.1	30.2	0.00	0.91	23.40	24.31	12.84	6.25	19.09	5.2	4570.6	175.0	275.0		
September	0.18	-0.23	0.03	4.3	30.2	0.00	0.25	23.40	23.65	10.83	6.25	17.08	6.6	4577.2	175.0	275.0		
October	1.51	1.10	0.42	3.1	30.2	0.00	3.09	23.40	26.49	7.81	6.25	14.06	12.4	4589.6	175.0	275.0		
November	1.69	1.28	0.54	1.9	30.2	0.00	3.94	23.40	27.34	4.78	6.25	11.03	16.3	4605.9	175.0	275.0		
December	0.86	0.45	0.09	1.4	30.2	0.00	0.67	23.40	24.07	3.52	6.25	9.77	14.3	4620.2	175.0	275.0		
January	3.43	3.02	1.91	1.2	30.2	0.00	13.95	23.40	37.35	3.02	6.25	9.27	28.1	4648.3	175.0	275.0		
February	0.76	0.35	0.06	1.5	30.2	0.00	0.42	23.40	23.82	3.78	6.25	10.03	13.8	4662.1	175.0	275.0		
March	0.00	-0.41	0.12	2.1	30.2	0.00	0.91	23.40	24.31	5.29	6.25	11.54	12.8	4674.9	175.0	275.0		
April	0.50	0.09	0.00	3	30.2	0.00	0.03	23.40	23.43	7.55	6.25	13.80	9.6	4684.5	175.0	275.0		
May	0.00	-0.41	0.12	3.9	30.2	0.00	0.91	23.40	24.31	9.82	6.25	16.07	8.2	4692.7	175.0	275.0		
June	0.00	-0.41	0.12	4.2	30.2	0.00	0.91	23.40	24.31	10.57	6.25	16.82	7.5	4700.2	175.0	275.0		
1997/1998	23.71	23.30											Carry Over	4700.2	175.0	275.0		
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	4718.3	175.0	275.0		
August	0.00	-0.41	0.12	5.1	30.2	0.00	0.91	23.40	24.31	12.84	6.25	19.09	5.2	4723.5	175.0	275.0		
September	1.22	0.81	0.26	4.3	30.2	0.00	1.87	23.40	25.27	10.83	6.25	17.08	8.2	4731.7	175.0	275.0		
October	0.21	-0.20	0.03	3.1	30.2	0.00	0.19	23.40	23.59	7.81	6.25	14.06	9.5	4741.2	175.0	275.0		
November	0.86	0.45	0.09	1.9	30.2	0.00	0.67	23.40	24.07	4.78	6.25	11.03	13.0	4754.3	175.0	275.0		
December	2.80	2.39	1.38	1.4	30.2	0.00	10.06	23.40	33.46	3.52	6.25	9.77	23.7	4778.0	175.0	275.0		
January	2.06	1.65	0.80	1.2	30.2	0.00	5.84	23.40	29.24	3.02	6.25	9.27	20.0	4797.9	175.0	275.0		
February	9.57	9.16	7.68	1.5	30.2	0.00	56.17	23.40	79.57	3.78	6.25	10.03	69.5	4867.5	175.0	275.0		
March	3.29	2.88	1.79	2.1	30.2	0.00	13.07	23.40	36.47	5.29	6.25	11.54	24.9	4892.4	175.0	275.0		
April	2.52	2.11	1.15	3	30.2	0.00	8.41	23.40	31.81	7.55	6.25	13.80	18.0	4910.4	175.0	275.0		
May	1.07	0.66	0.18	3.9	30.2	0.00	1.32	23.40	24.72	9.82	6.25	16.07	8.6	4919.0	175.0	275.0		
June	0.11	-0.30	0.06	4.2	30.2	0.00	0.45	23.40	23.85	10.57	6.25	16.82	7.0	4926.1	175.0	275.0		
1998/1999	9.99	9.58											Carry Over	4926.1	175.0	275.0		
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	4944.1	175.0	275.0		
August	0.00	-0.41	0.12	5.1	30.2	0.00	0.91	23.40	24.31	12.84	6.25	19.09	5.2	4949.4	175.0	275.0		
September	0.08	-0.33	0.08	4.3	30.2	0.00	0.56	23.40	23.96	10.83	6.25	17.08	6.9	4956.2	175.0	275.0		
October	1.10	0.69	0.19	3.1	30.2	0.00	1.42	23.40	24.82	7.81	6.25	14.06	10.8	4967.0	175.0	275.0		
November	1.27	0.86	0.28	1.9	30.2	0.00	2.06	23.40	25.46	4.78	6.25	11.03	14.4	4981.4	175.0	275.0		
December	1.39	0.98	0.35	1.4	30.2	0.00	2.56	23.40	25.96	3.52	6.25	9.77	16.2	4997.6	175.0	275.0		
January	2.24	1.83	0.93	1.2	30.2	0.00	6.82	23.40	30.22	3.02	6.25	9.27	20.9	5018.6	175.0	275.0		
February	0.63	0.22	0.02	1.5	30.2	0.00	0.18	23.40	23.58	3.78	6.25	10.03	13.6	5032.1	175.0	275.0		
March	1.11	0.70	0.20	2.1	30.2	0.00	1.46	23.40	24.86	5.29	6.25	11.54	13.3	5045.4	175.0	275.0		
April	2.02	1.61	0.77	3	30.2	0.00	5.62	23.40	29.02	7.55	6.25	13.80	15.2	5060.7	175.0	275.0		
May	0.00	-0.41	0.12	3.9	30.2	0.00	0.91	23.40	24.31	9.82	6.25	16.07	8.2	5068.9	175.0	275.0		
June	0.15	-0.26	0.05	4.2	30.2	0.00	0.33	23.40	23.73	10.57	6.25	16.82	6.9	5075.8	175.0	275.0		
1999/2000	7.31	6.90											Carry Over	5075.8	175.0	275.0		
July	0.42	0.01	0.00	5.3	0.0	0.00	0.00	23.40	23.40	0.00	6.25	6.25	17.2	5092.9	175.0	275.0		
August	0.00	-0.41	0.12	5.1	30.2	0.00	0.91	23.40	24.31	12.84	6.25	19.09	5.2	5098.2	175.0	275.0		
September	0.23	-0.18	0.02	4.3	30.2	0.00	0.15	23.40	23.55	10.83	6.25	17.08	6.5	5104.6	175.0	275.0		
October	0.00	-0.41	0.12	3.1	30.2	0.00	0.91	23.40	24.31	7.81	6.25	14.06	10.3	5114.9	175.0	275.0		
November	0.00	-0.41	0.12	1.9	30.2	0.00	0.91	23.40	24.31	4.78	6.25	11.03	13.3	5128.2	175.0	275.0		
December	0.57	0.16	0.01	1.4	30.2	0.00	0.10	23.40	23.50	3.52	6.25	9.77	13.7	5141.9	175.0	275.0		
January	0.64	0.23	0.03	1.2	30.2	0.00	0.19	23.40	23.59	3.02	6.25	9.27	14.3	5156.2	175.0	275.0		
February	3.51	3.10	1.98	1.5	30.2	0.00	14.45	23.40	37.85	3.78	6.25	10.03	27.8	5184.0	200.0	300.0		
March	1.01	0.60	0.15	2.1	32.2	0.00	1.12	23.40	24.52	5.63	6.25	11.88	12.6	5196.7	200.0	300.0		
April	0.82	0.41	0.08	3	32.2	0.00	0.57	23.40	23.97	8.05	6.25	14.30	9.7	5206.3	200.0	300.0		
May	0.05	-0.36	0.09	3.9	32.2	0.00	0.68	23.40	24.08	10.46	6.25	16.71	7.4	5213.7	200.0	300.0		
June	0.06	-0.35	0.09	4.2	32.2	0.00	0.64	23.40	24.04	11.27	6.25	17.52	6.5	5220.2	200.0	300.0		
2000/2001	10.36	9.95											Carry Over	5220.2	200.0	300.0		
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	5238.3	200.0	300.0		
August	0.24	-0.17	0.02	5.1	32.2	0.00	0.13	23.40	23.53	13.68	6.25	19.93	3.6	5241.9	200.0	300.0		
September	0.18	-0.23	0.03	4.3	32.2	0.00	0.25	23.40	23.65	11.53	6.25	17.78	5.9	5247.8	200.0	300.0		
October	0.74	0.33	0.05	3.1	32.2	0.00	0.38	23.40	23.78	8.32	6.25	14.57	9.2	5257.0	200.0	300.0		
November	0.41	0.00	0.00	1.9	32.2	0.00	0.00	23.40	23.40	5.10	6.25	11.35	12.1	5269.0	200.0	300.0		
December	0.12	-0.29	0.06	1.4	32.2	0.00	0.42	23.40	23.82	3.76	6.25	10.01	13.8	5282.8	200.0	300.0		
January	3.41	3.00	1.89	1.2	32.2	0.00	13.82	23.40	37.22	3.22	6.25	9.47	27.8	5310.6	200.0	300.0		
February	2.34	1.93	1.01	1.5	32.2	0.00	7.38	23.40	30.78	4.02	6.25	10.27	20.5	5331.1	200.0	300.0		
March	1.23	0.82	0.26	2.1	32.2	0.00	1.91	23.40	25.31	5.63	6.25	11.88	13.4	5344.5	200.0	300.0		
April	1.56	1.15	0.45	3	32.2	0.00	3.32	23.40	26.72	8.05	6.25	14.30	12.4	5356.9	200.0	300.0		

Water Levels in the Otay Hills Quarry

Rain Year	Monthly Rainfall (inches)	Runoff [Q = (P-I)² / (P-I+S)] (inches)	Potential Evaporation (Inches)	Evaporation Surface (af)	INFLOWS				OUTFLOWS				Net Change in Water in Pit (afm)	Cumulative Water Remaining in Pit (af)	Max Depth of Water in Pit (feet)	Elevation of GW Surface (ft msl)
					Direct Rainfall into Pit * Monthly Rainfall (afm)	Runoff from Contributing Watershed (afm)	Groundwater Inflow [KAi] (afm)	Total Inflows (afm)	Evaporation from Standing Water in Pit Floor (afm)	Proposed On-site Extraction (afm)	Total Outflows (afm)					
May	0.13	-0.28	0.05	3.9	32.2	0.00	0.39	23.40	23.79	10.46	6.25	16.71	7.1	5364.0	200.0	300.0
June	0.00	-0.41	0.12	4.2	32.2	0.00	0.91	23.40	24.31	11.27	6.25	17.52	6.8	5370.8	200.0	300.0
2001/2002	3.64	3.23											Carry Over	5370.8		300.0
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	5388.9	200.0	300.0
August	0.00	-0.41	0.12	5.1	32.2	0.00	0.91	23.40	24.31	13.68	6.25	19.93	4.4	5393.3	200.0	300.0
September	0.00	-0.41	0.12	4.3	32.2	0.00	0.91	23.40	24.31	11.53	6.25	17.78	6.5	5399.8	200.0	300.0
October	0.00	-0.41	0.12	3.1	32.2	0.00	0.91	23.40	24.31	8.32	6.25	14.57	9.7	5409.5	200.0	300.0
November	0.92	0.51	0.11	1.9	32.2	0.00	0.84	23.40	24.24	5.10	6.25	11.35	12.9	5422.4	200.0	300.0
December	0.54	0.13	0.01	1.4	32.2	0.00	0.07	23.40	23.47	3.76	6.25	10.01	13.5	5435.9	200.0	300.0
January	0.48	0.07	0.00	1.2	32.2	0.00	0.02	23.40	23.42	3.22	6.25	9.47	14.0	5449.8	200.0	300.0
February	0.15	-0.26	0.05	1.5	32.2	0.00	0.33	23.40	23.73	4.02	6.25	10.27	13.5	5463.3	200.0	300.0
March	1.09	0.68	0.19	2.1	32.2	0.00	1.39	23.40	24.79	5.63	6.25	11.88	12.9	5476.2	200.0	300.0
April	0.46	0.05	0.00	3	32.2	0.00	0.01	23.40	23.41	8.05	6.25	14.30	9.1	5485.3	200.0	300.0
May	0.00	-0.41	0.12	3.9	32.2	0.00	0.91	23.40	24.31	10.46	6.25	16.71	7.6	5492.9	200.0	300.0
June	0.00	-0.41	0.12	4.2	32.2	0.00	0.91	23.40	24.31	11.27	6.25	17.52	6.8	5499.7	200.0	300.0
2002/2003	11.32	10.91											Carry Over	5499.7		300.0
July	0.00	-0.41	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	5517.8	200.0	300.0
August	0.35	-0.06	0.00	5.1	32.2	0.00	0.02	23.40	23.42	13.68	6.25	19.93	3.5	5521.2	200.0	300.0
September	0.35	-0.06	0.00	4.3	32.2	0.00	0.02	23.40	23.42	11.53	6.25	17.78	5.6	5526.9	200.0	300.0
October	0.24	-0.17	0.02	3.1	32.2	0.00	0.13	23.40	23.53	8.32	6.25	14.57	9.0	5535.8	200.0	300.0
November	1.64	1.23	0.51	1.9	32.2	0.00	3.70	23.40	27.10	5.10	6.25	11.35	15.8	5551.6	200.0	300.0
December	1.55	1.14	0.45	1.4	32.2	0.00	3.28	23.40	26.68	3.76	6.25	10.01	16.7	5568.3	200.0	300.0
January	0.05	-0.36	0.09	1.2	32.2	0.00	0.68	23.40	24.08	3.22	6.25	9.47	14.6	5582.9	200.0	300.0
February	3.70	3.29	2.14	1.5	32.2	0.00	15.67	23.40	39.07	4.02	6.25	10.27	28.8	5611.7	200.0	300.0
March	1.60	1.19	0.48	2.1	32.2	0.00	3.51	23.40	26.91	5.63	6.25	11.88	15.0	5626.7	200.0	300.0
April	1.44	1.03	0.38	3	32.2	0.00	2.78	23.40	26.18	8.05	6.25	14.30	11.9	5638.6	200.0	300.0
May	0.23	-0.18	0.02	3.9	32.2	0.00	0.15	23.40	23.55	10.46	6.25	16.71	6.8	5645.4	200.0	300.0
June	0.17	-0.24	0.04	4.2	32.2	0.00	0.28	23.40	23.68	11.27	6.25	17.52	6.2	5651.6	200.0	300.0
2003/2004	6.84	6.43											Carry Over	5651.6		300.0
July	0.03	-0.38	0.10	5.3	0.0	0.00	0.76	23.40	24.16	0.00	6.25	6.25	17.9	5669.5	200.0	300.0
August	0.00	-0.41	0.12	5.1	32.2	0.00	0.91	23.40	24.31	13.68	6.25	19.93	4.4	5673.9	200.0	300.0
September	0.00	-0.41	0.12	4.3	32.2	0.00	0.91	23.40	24.31	11.53	6.25	17.78	6.5	5680.4	200.0	300.0
October	0.00	-0.41	0.12	3.1	32.2	0.00	0.91	23.40	24.31	8.32	6.25	14.57	9.7	5690.1	200.0	300.0
November	0.66	0.25	0.03	1.9	32.2	0.00	0.23	23.40	23.63	5.10	6.25	11.35	12.3	5702.4	200.0	300.0
December	0.60	0.19	0.02	1.4	32.2	0.00	0.14	23.40	23.54	3.76	6.25	10.01	13.5	5715.9	200.0	300.0
January	0.58	0.17	0.01	1.2	32.2	0.00	0.11	23.40	23.51	3.22	6.25	9.47	14.0	5730.0	200.0	300.0
February	3.63	3.22	2.08	1.5	32.2	0.00	15.22	23.40	38.62	4.02	6.25	10.27	28.3	5758.3	200.0	300.0
March	0.45	0.04	0.00	2.1	32.2	0.00	0.01	23.40	23.41	5.63	6.25	11.88	11.5	5769.9	200.0	300.0
April	0.89	0.48	0.10	3	32.2	0.00	0.75	23.40	24.15	8.05	6.25	14.30	9.9	5779.7	200.0	300.0
May	0.00	-0.41	0.12	3.9	32.2	0.00	0.91	23.40	24.31	10.46	6.25	16.71	7.6	5787.3	200.0	300.0
June	0.00	-0.41	0.12	4.2	32.2	0.00	0.91	23.40	24.31	11.27	6.25	17.52	6.8	5794.1	200.0	300.0



Proposed Quarry Groundwater Letter Report
Otay Hills Quarry San Diego County, California

Water Quality Spreadsheet

Total Dissolved Solids Concentration in the Otay Hills Quarry

Rain Year	Monthly Rainfall (inches)	Runoff [Q = (P-I) ² / (P-I+S)] (inches)	Potential Evaporation (Inches)	Evaporation Surface (af)	Direct Rainfall into Pit * Monthly Rainfall (afm)	Runoff from Contributing Watershed (afm)	Groundwater Inflow [KAi] (afm)	Total Inflows (afm)	Evaporation from Standing Water in Pit Floor (afm)	Proposed On-site Extraction (afm)	Total Outflows (afm)	Net Change in Water in Pit (afm)	Cumulative Water Remaining in Pit (af)	Depth of Water in Pit (feet)	Elevation of GW Surface (ft msl)	Resultant TDS Concentration (TDS)
September	0.50	0.00	4.3	21.5	3.66	0.03	23.40	27.09	7.70	6.25	13.95	13.1	1257.3	50.0	150.0	1,706.6
October	0.10	0.00	3.1	21.5	0.73	0.00	23.40	24.13	5.55	6.25	11.80	12.3	1269.6	50.0	150.0	1,722.3
November	3.10	1.63	1.9	21.5	22.66	11.89	23.40	57.95	3.40	6.25	9.65	48.3	1317.9	50.0	150.0	1,694.5
December	2.40	1.06	1.4	21.5	17.54	7.72	23.40	48.66	2.51	6.25	8.76	39.9	1357.8	50.0	150.0	1,677.8
January	4.30	2.68	1.2	21.5	31.43	19.58	23.40	74.41	2.15	6.25	8.40	66.0	1423.8	50.0	150.0	1,635.1
February	1.40	0.36	1.5	21.5	10.23	2.61	23.40	36.24	2.68	6.25	8.93	27.3	1451.1	50.0	150.0	1,634.0
March	3.60	2.06	2.1	21.5	26.32	15.03	23.40	64.74	3.76	6.25	10.01	54.7	1505.9	50.0	150.0	1,606.8
April	0.00	0.00	3	21.5	0.00	0.00	23.40	23.40	5.37	6.25	11.62	11.8	1517.6	50.0	150.0	1,621.6
May	0.20	0.00	3.9	21.5	1.46	0.00	23.40	24.86	6.98	6.25	13.23	11.6	1529.3	50.0	150.0	1,636.4
June	0.10	0.00	4.2	21.5	0.73	0.00	23.40	24.13	7.52	6.25	13.77	10.4	1539.6	50.0	150.0	1,652.2
1979/1980	16.00	14.01										Carry Over	1539.6		150.0	
July	0.00	0.00	5.3	0.0	0.00	0.00	23.40	23.40	0.00	6.25	6.25	17.2	1556.8	50.0	150.0	1,660.5
August	0.10	0.07	5.1	21.5	0.00	0.48	23.40	23.88	9.13	6.25	15.38	8.5	1565.3	50.0	150.0	1,677.8
September	0.00	0.12	4.3	21.5	0.00	0.91	23.40	24.31	7.70	6.25	13.95	10.4	1575.6	50.0	150.0	1,693.0
October	0.60	0.02	3.1	21.5	0.00	0.14	23.40	23.54	5.55	6.25	11.80	11.7	1587.4	50.0	150.0	1,706.2
November	0.20	0.03	1.9	21.5	0.00	0.21	23.40	23.61	3.40	6.25	9.65	14.0	1601.3	50.0	150.0	1,716.9
December	0.10	0.07	1.4	21.5	0.00	0.48	23.40	23.88	2.51	6.25	8.76	15.1	1616.5	75.0	175.0	1,726.1
January	6.30	4.53	1.2	22.9	0.00	33.15	23.40	56.55	2.29	6.25	8.54	48.0	1664.5	75.0	175.0	1,706.8
February	3.80	2.23	1.5	22.9	0.00	16.31	23.40	39.71	2.86	6.25	9.11	30.6	1695.1	75.0	175.0	1,702.9
March	3.10	1.63	2.1	22.9	0.00	11.89	23.40	35.29	4.01	6.25	10.26	25.0	1720.1	75.0	175.0	1,703.9
April	1.40	0.36	3	22.9	0.00	2.61	23.40	26.01	5.73	6.25	11.98	14.0	1734.1	75.0	175.0	1,714.2
May	0.40	0.00	3.9	22.9	0.00	0.00	23.40	23.40	7.44	6.25	13.69	9.7	1743.8	75.0	175.0	1,728.0
June	0.00	0.12	4.2	22.9	0.00	0.91	23.40	24.31	8.02	6.25	14.27	10.0	1753.9	75.0	175.0	1,741.4
1980/1981	8.10											Carry Over	1753.9		175.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	1771.9	75.0	175.0	1,746.8
August	0.00	0.12	5.1	22.9	0.00	0.91	23.40	24.31	9.74	6.25	15.99	8.3	1780.3	75.0	175.0	1,761.5
September	0.00	0.12	4.3	22.9	0.00	0.91	23.40	24.31	8.21	6.25	14.46	9.9	1790.1	75.0	175.0	1,774.6
October	0.20	0.03	3.1	22.9	0.00	0.21	23.40	23.61	5.92	6.25	12.17	11.4	1801.6	75.0	175.0	1,785.8
November	0.00	0.12	1.9	22.9	0.00	0.91	23.40	24.31	3.63	6.25	9.88	14.4	1816.0	75.0	175.0	1,793.9
December	0.50	0.00	1.4	22.9	0.00	0.03	23.40	23.43	2.67	6.25	8.92	14.5	1830.5	75.0	175.0	1,801.7
January	1.40	0.36	1.2	22.9	0.00	2.61	23.40	26.01	2.29	6.25	8.54	17.5	1848.0	75.0	175.0	1,806.9
February	1.60	0.48	1.5	22.9	0.00	3.51	23.40	26.91	2.86	6.25	9.11	17.8	1865.8	75.0	175.0	1,811.8
March	3.30	1.80	2.1	22.9	0.00	13.13	23.40	36.53	4.01	6.25	10.26	26.3	1892.0	75.0	175.0	1,809.9
April	0.90	0.11	3	22.9	0.00	0.78	23.40	24.18	5.73	6.25	11.98	12.2	1904.2	75.0	175.0	1,819.5
May	0.20	0.03	3.9	22.9	0.00	0.21	23.40	23.61	7.44	6.25	13.69	9.9	1914.2	75.0	175.0	1,831.1
June	0.00	0.12	4.2	22.9	0.00	0.91	23.40	24.31	8.02	6.25	14.27	10.0	1924.2	75.0	175.0	1,842.5
1981/1982	11.60											Carry Over	1924.2		175.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	1942.3	75.0	175.0	1,846.1
August	0.00	0.12	5.1	22.9	0.00	0.91	23.40	24.31	9.74	6.25	15.99	8.3	1950.6	75.0	175.0	1,858.8
September	0.10	0.07	4.3	22.9	0.00	0.48	23.40	23.88	8.21	6.25	14.46	9.4	1960.0	75.0	175.0	1,870.3
October	0.50	0.00	3.1	22.9	0.00	0.03	23.40	23.43	5.92	6.25	12.17	11.3	1971.3	75.0	175.0	1,879.8
November	1.40	0.36	1.9	22.9	0.00	2.61	23.40	26.01	3.63	6.25	9.88	16.1	1987.4	75.0	175.0	1,884.9
December	0.90	0.11	1.4	22.9	0.00	0.78	23.40	24.18	2.67	6.25	8.92	15.3	2002.7	75.0	175.0	1,890.5
January	3.10	1.63	1.2	22.9	0.00	11.89	23.40	35.29	2.29	6.25	8.54	26.7	2029.4	75.0	175.0	1,886.9
February	0.70	0.04	1.5	22.9	0.00	0.30	23.40	23.70	2.86	6.25	9.11	14.6	2044.0	75.0	175.0	1,892.9
March	4.10	2.50	2.1	22.9	0.00	18.26	23.40	41.66	4.01	6.25	10.26	31.4	2075.4	75.0	175.0	1,886.0
April	0.60	0.02	3	22.9	0.00	0.14	23.40	23.54	5.73	6.25	11.98	11.6	2087.0	75.0	175.0	1,894.6
May	0.00	0.12	3.9	22.9	0.00	0.91	23.40	24.31	7.44	6.25	13.69	10.6	2097.6	75.0	175.0	1,904.0
June	0.20	0.03	4.2	22.9	0.00	0.21	23.40	23.61	8.02	6.25	14.27	9.3	2106.9	75.0	175.0	1,914.4
1982/1983	18.90											Carry Over	2106.9		175.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	2125.0	75.0	175.0	1,916.8
August	0.00	0.12	5.1	22.9	0.00	0.91	23.40	24.31	9.74	6.25	15.99	8.3	2133.3	75.0	175.0	1,928.0
September	0.10	0.07	4.3	22.9	0.00	0.48	23.40	23.88	8.21	6.25	14.46	9.4	2142.7	75.0	175.0	1,938.0
October	0.00	0.12	3.1	22.9	0.00	0.91	23.40	24.31	5.92	6.25	12.17	12.1	2154.9	75.0	175.0	1,945.5
November	2.40	1.06	1.9	22.9	0.00	7.72	23.40	31.12	3.63	6.25	9.88	21.2	2176.1	75.0	175.0	1,945.6
December	1.80	0.61	1.4	22.9	0.00	4.48	23.40	27.88	2.67	6.25	8.92	19.0	2195.1	75.0	175.0	1,947.3
January	1.90	0.68	1.2	22.9	0.00	4.99	23.40	28.39	2.29	6.25	8.54	19.9	2214.9	75.0	175.0	1,948.3
February	2.40	1.06	1.5	22.9	0.00	7.72	23.40	31.12	2.86	6.25	9.11	22.0	2236.9	100.0	200.0	1,947.7
March	8.40	6.55	2.1	25.0	0.00	47.86	23.40	71.26	4.37	6.25	10.62	60.6	2297.6	100.0	200.0	1,919.7
April	1.90	0.68	3	25.0	0.00	4.99	23.40	28.39	6.25	6.25	12.50	15.9	2313.5	100.0	200.0	1,924.2
May	0.00	0.12	3.9	25.0	0.00	0.91	23.40	24.31	8.12	6.25	14.37	9.9	2323.4	100.0	200.0	1,933.1
June	0.00	0.12	4.2	25.0	0.00	0.91	23.40	24.31	8.75	6.25	15.00	9.3	2332.7	100.0	200.0	1,942.4
1983/1984	5.31											Carry Over	2332.7		200.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	2350.8	100.0	200.0	1,944.3
August	0.40	0.00	5.1	25.0	0.00	0.00	23.40	23.40	10.62	6.25	16.87	6.5	2357.3	100.0	200.0	1,955.6
September	0.60	0.02	4.3	25.0	0.00	0.14	23.40	23.54	8.96	6.25	15.21	8.3	2365.6	100.0	200.0	1,965.3
October	0.20	0.03	3.1	25.0	0.00	0.21	23.40	23.61	6.46	6.25	12.71	10.9	2376.5	100.0	200.0	1,972.8
November	1.60	0.48	1.9	25.0	0.00	3.51	23.40	26.91	3.96	6.25	10.21	16.7	2393.2	100.0	200.0	1,975.8
December	1.57	0.46	1.4	25.0	0.00	3.37	23.40	26.77	2.92	6.25	9.17	17.6	2410.8	100.0	200.0	1,978.1

Total Dissolved Solids Concentration in the Otay Hills Quarry

Rain Year	Monthly Rainfall (inches)	Runoff [Q = (P-I) ² / (P-I+S)] (inches)	Potential Evaporation (Inches)	Evaporation Surface (af)	Direct Rainfall into Pit * Monthly Rainfall (afm)	Runoff from Contributing Watershed (afm)	Groundwater Inflow [KAi] (afm)	Total Inflows (afm)	Evaporation from Standing Water in Pit Floor (afm)	Proposed On-site Extraction (afm)	Total Outflows (afm)	Net Change in Water in Pit (afm)	Cumulative Water Remaining in Pit (af)	Depth of Water in Pit (feet)	Elevation of GW Surface (ft msl)	Resultant TDS Concentration (TDS)
January	0.31	0.01	1.2	25.0	0.00	0.04	23.40	23.44	2.50	6.25	8.75	14.7	2425.5	100.0	200.0	1,982.2
February	0.00	0.12	1.5	25.0	0.00	0.91	23.40	24.31	3.12	6.25	9.37	14.9	2440.5	100.0	200.0	1,986.2
March	0.00	0.12	2.1	25.0	0.00	0.91	23.40	24.31	4.37	6.25	10.62	13.7	2454.2	100.0	200.0	1,991.2
April	0.55	0.01	3	25.0	0.00	0.08	23.40	23.48	6.25	6.25	12.50	11.0	2465.1	100.0	200.0	1,998.1
May	0.00	0.12	3.9	25.0	0.00	0.91	23.40	24.31	8.12	6.25	14.37	9.9	2475.1	100.0	200.0	2,006.0
June	0.08	0.08	4.2	25.0	0.00	0.56	23.40	23.96	8.75	6.25	15.00	9.0	2484.0	100.0	200.0	2,014.5
1984/1985	10.22											Carry Over	2484.0		200.0	
July	0.47	0.00	5.3	0.0	0.00	0.01	23.40	23.41	0.00	6.25	6.25	17.2	2501.2	100.0	200.0	2,016.2
August	0.31	0.01	5.1	25.0	0.00	0.04	23.40	23.44	10.62	6.25	16.87	6.6	2507.8	100.0	200.0	2,026.4
September	0.00	0.12	4.3	25.0	0.00	0.91	23.40	24.31	8.96	6.25	15.21	9.1	2516.9	100.0	200.0	2,034.6
October	0.35	0.00	3.1	25.0	0.00	0.02	23.40	23.42	6.46	6.25	12.71	10.7	2527.6	100.0	200.0	2,041.4
November	1.50	0.42	1.9	25.0	0.00	3.05	23.40	26.45	3.96	6.25	10.21	16.2	2543.8	100.0	200.0	2,043.9
December	5.31	3.61	1.4	25.0	0.00	26.35	23.40	49.75	2.92	6.25	9.17	40.6	2584.4	100.0	200.0	2,029.9
January	0.43	0.00	1.2	25.0	0.00	0.00	23.40	23.40	2.50	6.25	8.75	14.7	2599.1	100.0	200.0	2,033.3
February	1.22	0.26	1.5	25.0	0.00	1.87	23.40	25.27	3.12	6.25	9.37	15.9	2614.9	100.0	200.0	2,036.0
March	0.55	0.01	2.1	25.0	0.00	0.08	23.40	23.48	4.37	6.25	10.62	12.9	2627.8	100.0	200.0	2,040.8
April	0.00	0.12	3	25.0	0.00	0.91	23.40	24.31	6.25	6.25	12.50	11.8	2639.6	100.0	200.0	2,046.5
May	0.08	0.08	3.9	25.0	0.00	0.56	23.40	23.96	8.12	6.25	14.37	9.6	2649.2	100.0	200.0	2,053.7
June	0.00	0.12	4.2	25.0	0.00	0.91	23.40	24.31	8.75	6.25	15.00	9.3	2658.5	100.0	200.0	2,061.2
1985/1986	11.81											Carry Over	2658.5		200.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	2676.6	100.0	200.0	2,061.8
August	0.00	0.12	5.1	25.0	0.00	0.91	23.40	24.31	10.62	6.25	16.87	7.4	2684.0	100.0	200.0	2,070.6
September	0.04	0.10	4.3	25.0	0.00	0.72	23.40	24.12	8.96	6.25	15.21	8.9	2692.9	100.0	200.0	2,078.1
October	0.28	0.01	3.1	25.0	0.00	0.08	23.40	23.48	6.46	6.25	12.71	10.8	2703.7	100.0	200.0	2,084.1
November	4.76	3.10	1.9	25.0	0.00	22.64	23.40	46.04	3.96	6.25	10.21	35.8	2739.5	100.0	200.0	2,073.3
December	1.22	0.26	1.4	25.0	0.00	1.87	23.40	25.27	2.92	6.25	9.17	16.1	2755.6	100.0	200.0	2,075.4
January	0.75	0.06	1.2	25.0	0.00	0.40	23.40	23.80	2.50	6.25	8.75	15.1	2770.7	100.0	200.0	2,078.0
February	2.32	0.99	1.5	25.0	0.00	7.27	23.40	30.67	3.12	6.25	9.37	21.3	2792.0	100.0	200.0	2,076.8
March	1.89	0.68	2.1	25.0	0.00	4.94	23.40	28.34	4.37	6.25	10.62	17.7	2809.7	100.0	200.0	2,077.9
April	0.55	0.01	3	25.0	0.00	0.08	23.40	23.48	6.25	6.25	12.50	11.0	2820.7	100.0	200.0	2,083.5
May	0.00	0.12	3.9	25.0	0.00	0.91	23.40	24.31	8.12	6.25	14.37	9.9	2830.6	100.0	200.0	2,089.8
June	0.00	0.12	4.2	25.0	0.00	0.91	23.40	24.31	8.75	6.25	15.00	9.3	2839.9	100.0	200.0	2,096.6
1986/1987	9.33											Carry Over	2839.9		200.0	
July	0.04	0.10	5.3	0.0	0.00	0.72	23.40	24.12	0.00	6.25	6.25	17.9	2857.8	100.0	200.0	2,097.0
August	0.00	0.12	5.1	25.0	0.00	0.91	23.40	24.31	10.62	6.25	16.87	7.4	2865.2	100.0	200.0	2,105.1
September	0.94	0.12	4.3	25.0	0.00	0.90	23.40	24.30	8.96	6.25	15.21	9.1	2874.3	100.0	200.0	2,111.8
October	1.18	0.23	3.1	25.0	0.00	1.71	23.40	25.11	6.46	6.25	12.71	12.4	2886.7	100.0	200.0	2,116.2
November	0.51	0.01	1.9	25.0	0.00	0.04	23.40	23.44	3.96	6.25	10.21	13.2	2899.9	125.0	225.0	2,119.7
December	1.30	0.30	1.4	26.5	0.00	2.19	23.40	25.59	3.09	6.25	9.34	16.2	2916.2	125.0	225.0	2,121.2
January	1.50	0.42	1.2	26.5	0.00	3.05	23.40	26.45	2.65	6.25	8.90	17.6	2933.7	125.0	225.0	2,121.9
February	1.81	0.62	1.5	26.5	0.00	4.53	23.40	27.93	3.31	6.25	9.56	18.4	2952.1	125.0	225.0	2,122.1
March	1.22	0.26	2.1	26.5	0.00	1.87	23.40	25.27	4.63	6.25	10.88	14.4	2966.5	125.0	225.0	2,124.9
April	0.71	0.04	3	26.5	0.00	0.32	23.40	23.72	6.62	6.25	12.87	10.9	2977.4	125.0	225.0	2,130.0
May	0.12	0.06	3.9	26.5	0.00	0.42	23.40	23.82	8.60	6.25	14.85	9.0	2986.3	125.0	225.0	2,136.4
June	0.00	0.12	4.2	26.5	0.00	0.91	23.40	24.31	9.27	6.25	15.52	8.8	2995.1	125.0	225.0	2,143.0
1987/1988	17.10											Carry Over	2995.1		225.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	3013.2	125.0	225.0	2,142.9
August	0.24	0.02	5.1	26.5	0.00	0.13	23.40	23.53	11.25	6.25	17.50	6.0	3019.2	125.0	225.0	2,151.2
September	0.75	0.06	4.3	26.5	0.00	0.40	23.40	23.80	9.49	6.25	15.74	8.1	3027.3	125.0	225.0	2,158.1
October	2.24	0.93	3.1	26.5	0.00	6.82	23.40	30.22	6.84	6.25	13.09	17.1	3044.4	125.0	225.0	2,159.1
November	2.01	0.76	1.9	26.5	0.00	5.57	23.40	28.97	4.19	6.25	10.44	18.5	3062.9	125.0	225.0	2,159.0
December	4.57	2.92	1.4	26.5	0.00	21.37	23.40	44.77	3.09	6.25	9.34	35.4	3098.4	125.0	225.0	2,148.6
January	1.38	0.34	1.2	26.5	0.00	2.52	23.40	25.92	2.65	6.25	8.90	17.0	3115.4	125.0	225.0	2,149.3
February	1.85	0.65	1.5	26.5	0.00	4.74	23.40	28.14	3.31	6.25	9.56	18.6	3134.0	125.0	225.0	2,149.2
March	0.91	0.11	2.1	26.5	0.00	0.81	23.40	24.21	4.63	6.25	10.88	13.3	3147.3	125.0	225.0	2,152.3
April	3.03	1.57	3	26.5	0.00	11.46	23.40	34.86	6.62	6.25	12.87	22.0	3169.3	125.0	225.0	2,150.4
May	0.12	0.06	3.9	26.5	0.00	0.42	23.40	23.82	8.60	6.25	14.85	9.0	3178.2	125.0	225.0	2,156.3
June	0.00	0.12	4.2	26.5	0.00	0.91	23.40	24.31	9.27	6.25	15.52	8.8	3187.0	125.0	225.0	2,162.4
1988/1989	5.29											Carry Over	3187.0		225.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	3205.1	125.0	225.0	2,162.2
August	0.00	0.12	5.1	26.5	0.00	0.91	23.40	24.31	11.25	6.25	17.50	6.8	3211.9	125.0	225.0	2,169.5
September	0.00	0.12	4.3	26.5	0.00	0.91	23.40	24.31	9.49	6.25	15.74	8.6	3220.5	125.0	225.0	2,175.6
October	0.00	0.12	3.1	26.5	0.00	0.91	23.40	24.31	6.84	6.25	13.09	11.2	3231.7	125.0	225.0	2,179.8
November	0.86	0.09	1.9	26.5	0.00	0.67	23.40	24.07	4.19	6.25	10.44	13.6	3245.3	125.0	225.0	2,182.4
December	1.92	0.70	1.4	26.5	0.00	5.10	23.40	28.50	3.09	6.25	9.34	19.2	3264.5	125.0	225.0	2,181.6
January	0.36	0.00	1.2	26.5	0.00	0.01	23.40	23.41	2.65	6.25	8.90	14.5	3279.0	125.0	225.0	2,183.5
February	0.84	0.08	1.5	26.5	0.00	0.62	23.40	24.02	3.31	6.25	9.56	14.5	3293.5	125.0	225.0	2,185.5
March	1.13	0.21	2.1	26.5	0.00	1.53	23.40	24.93	4.63	6.25	10.88	14.0	3307.5	125.0	225.0	2,187.8
April	0.15	0.05	3	26.5	0.00	0.33	23.40	23.73	6.62	6.25	12.87	10.9	3318.4	125.0	225.0	2,192.0

Total Dissolved Solids Concentration in the Otay Hills Quarry

Rain Year	Monthly Rainfall (inches)	Runoff [Q = (P-I) ² / (P-I+S)] (inches)	Potential Evaporation (Inches)	Evaporation Surface (af)	Direct Rainfall into Pit * Monthly Rainfall (afm)	Runoff from Contributing Watershed (afm)	Groundwater Inflow [KAi] (afm)	Total Inflows (afm)	Evaporation from Standing Water in Pit Floor (afm)	Proposed On-site Extraction (afm)	Total Outflows (afm)	Net Change in Water in Pit (afm)	Cumulative Water Remaining in Pit (af)	Depth of Water in Pit (feet)	Elevation of GW Surface (ft msl)	Resultant TDS Concentration (TDS)	
	May	0.03	0.10	3.9	26.5	0.00	0.76	23.40	24.16	8.60	6.25	14.85	9.3	3327.7	125.0	225.0	2,197.3
	June	0.00	0.12	4.2	26.5	0.00	0.91	23.40	24.31	9.27	6.25	15.52	8.8	3336.5	125.0	225.0	2,202.9
1989/1990	7.81												Carry Over	3336.5		225.0	
	July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	3354.5	125.0	225.0	2,202.4
	August	0.00	0.12	5.1	26.5	0.00	0.91	23.40	24.31	11.25	6.25	17.50	6.8	3361.3	125.0	225.0	2,209.2
	September	0.31	0.01	4.3	26.5	0.00	0.04	23.40	23.44	9.49	6.25	15.74	7.7	3369.0	125.0	225.0	2,215.4
	October	0.32	0.00	3.1	26.5	0.00	0.04	23.40	23.44	6.84	6.25	13.09	10.3	3379.4	125.0	225.0	2,219.7
	November	0.04	0.10	1.9	26.5	0.00	0.72	23.40	24.12	4.19	6.25	10.44	13.7	3393.1	125.0	225.0	2,221.9
	December	0.33	0.00	1.4	26.5	0.00	0.03	23.40	23.43	3.09	6.25	9.34	14.1	3407.2	125.0	225.0	2,223.8
	January	2.81	1.38	1.2	26.5	0.00	10.12	23.40	33.52	2.65	6.25	8.90	24.6	3431.8	125.0	225.0	2,219.6
	February	1.21	0.25	1.5	26.5	0.00	1.83	23.40	25.23	3.31	6.25	9.56	15.7	3447.5	125.0	225.0	2,220.6
	March	0.67	0.03	2.1	26.5	0.00	0.24	23.40	23.64	4.63	6.25	10.88	12.8	3460.2	125.0	225.0	2,223.3
	April	0.50	0.00	3	26.5	0.00	0.03	23.40	23.43	6.62	6.25	12.87	10.6	3470.8	125.0	225.0	2,227.4
	May	0.33	0.00	3.9	26.5	0.00	0.03	23.40	23.43	8.60	6.25	14.85	8.6	3479.4	125.0	225.0	2,232.7
	June	1.29	0.29	4.2	26.5	0.00	2.14	23.40	25.54	9.27	6.25	15.52	10.0	3489.4	125.0	225.0	2,237.2
1990/1991	12.66												Carry Over	3489.4		225.0	
	July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	3507.4	125.0	225.0	2,236.5
	August	0.05	0.09	5.1	26.5	0.00	0.68	23.40	24.08	11.25	6.25	17.50	6.6	3514.0	125.0	225.0	2,243.0
	September	0.00	0.12	4.3	26.5	0.00	0.91	23.40	24.31	9.49	6.25	15.74	8.6	3522.6	125.0	225.0	2,248.3
	October	0.02	0.11	3.1	26.5	0.00	0.81	23.40	24.21	6.84	6.25	13.09	11.1	3533.7	125.0	225.0	2,251.8
	November	0.52	0.01	1.9	26.5	0.00	0.05	23.40	23.45	4.19	6.25	10.44	13.0	3546.7	125.0	225.0	2,254.1
	December	1.39	0.35	1.4	26.5	0.00	2.56	23.40	25.96	3.09	6.25	9.34	16.6	3563.3	125.0	225.0	2,254.3
	January	1.43	0.37	1.2	26.5	0.00	2.74	23.40	26.14	2.65	6.25	8.90	17.2	3580.6	125.0	225.0	2,254.1
	February	1.33	0.32	1.5	26.5	0.00	2.31	23.40	25.71	3.31	6.25	9.56	16.1	3596.7	125.0	225.0	2,254.6
	March	7.75	5.92	2.1	26.5	0.00	43.28	23.40	66.68	4.63	6.25	10.88	55.8	3652.5	150.0	250.0	2,234.0
	April	0.12	0.06	3	28.7	0.00	0.42	23.40	23.82	7.16	6.25	13.41	10.4	3662.9	150.0	250.0	2,237.9
	May	0.05	0.09	3.9	28.7	0.00	0.68	23.40	24.08	9.31	6.25	15.56	8.5	3671.4	150.0	250.0	2,243.0
	June	0.00	0.12	4.2	28.7	0.00	0.91	23.40	24.31	10.03	6.25	16.28	8.0	3679.5	150.0	250.0	2,248.3
1991/1992	15.08												Carry Over	3679.5		250.0	
	July	0.20	0.03	5.3	0.0	0.00	0.21	23.40	23.61	0.00	6.25	6.25	17.4	3696.8	150.0	250.0	2,247.9
	August	0.26	0.01	5.1	28.7	0.00	0.10	23.40	23.50	12.18	6.25	18.43	5.1	3701.9	150.0	250.0	2,255.0
	September	0.06	0.09	4.3	28.7	0.00	0.64	23.40	24.04	10.27	6.25	16.52	7.5	3709.4	150.0	250.0	2,260.5
	October	0.60	0.02	3.1	28.7	0.00	0.14	23.40	23.54	7.40	6.25	13.65	9.9	3719.3	150.0	250.0	2,264.6
	November	0.13	0.05	1.9	28.7	0.00	0.39	23.40	23.79	4.54	6.25	10.79	13.0	3732.3	150.0	250.0	2,266.7
	December	2.01	0.76	1.4	28.7	0.00	5.57	23.40	28.97	3.34	6.25	9.59	19.4	3751.7	150.0	250.0	2,265.4
	January	1.67	0.53	1.2	28.7	0.00	3.84	23.40	27.24	2.87	6.25	9.12	18.1	3769.8	150.0	250.0	2,264.7
	February	4.91	3.23	1.5	28.7	0.00	23.65	23.40	47.05	3.58	6.25	9.83	37.2	3807.0	150.0	250.0	2,254.2
	March	4.78	3.12	2.1	28.7	0.00	22.77	23.40	46.17	5.01	6.25	11.26	34.9	3841.9	150.0	250.0	2,245.3
	April	0.29	0.01	3	28.7	0.00	0.06	23.40	23.46	7.16	6.25	13.41	10.1	3852.0	150.0	250.0	2,249.1
	May	0.17	0.04	3.9	28.7	0.00	0.28	23.40	23.68	9.31	6.25	15.56	8.1	3860.1	150.0	250.0	2,254.1
	June	0.00	0.12	4.2	28.7	0.00	0.91	23.40	24.31	10.03	6.25	16.28	8.0	3868.1	150.0	250.0	2,259.2
1992/1993	17.42												Carry Over	3868.1		250.0	
	July	0.03	0.10	5.3	0.0	0.00	0.76	23.40	24.16	0.00	6.25	6.25	17.9	3886.0	150.0	250.0	2,258.4
	August	0.08	0.08	5.1	28.7	0.00	0.56	23.40	23.96	12.18	6.25	18.43	5.5	3891.6	150.0	250.0	2,264.9
	September	0.00	0.12	4.3	28.7	0.00	0.91	23.40	24.31	10.27	6.25	16.52	7.8	3899.4	150.0	250.0	2,270.0
	October	0.49	0.00	3.1	28.7	0.00	0.03	23.40	23.43	7.40	6.25	13.65	9.8	3909.1	150.0	250.0	2,273.9
	November	0.04	0.10	1.9	28.7	0.00	0.72	23.40	24.12	4.54	6.25	10.79	13.3	3922.5	150.0	250.0	2,275.7
	December	0.00	0.12	1.4	28.7	0.00	0.91	23.40	24.31	3.34	6.25	9.59	14.7	3937.2	150.0	250.0	2,276.7
	January	10.93	9.01	1.2	28.7	0.00	65.88	23.40	89.28	2.87	6.25	9.12	80.2	4017.4	150.0	250.0	2,245.5
	February	3.93	2.35	1.5	28.7	0.00	17.15	23.40	40.55	3.58	6.25	9.83	30.7	4048.1	150.0	250.0	2,238.9
	March	1.48	0.40	2.1	28.7	0.00	2.96	23.40	26.36	5.01	6.25	11.26	15.1	4063.2	150.0	250.0	2,240.1
	April	0.00	0.12	3	28.7	0.00	0.91	23.40	24.31	7.16	6.25	13.41	10.9	4074.1	150.0	250.0	2,243.4
	May	0.00	0.12	3.9	28.7	0.00	0.91	23.40	24.31	9.31	6.25	15.56	8.7	4082.8	150.0	250.0	2,247.8
	June	0.44	0.00	4.2	28.7	0.00	0.00	23.40	23.40	10.03	6.25	16.28	7.1	4089.9	150.0	250.0	2,253.0
1993/1994	9.38												Carry Over	4089.9		250.0	
	July	0.01	0.12	5.3	0.0	0.00	0.86	23.40	24.26	0.00	6.25	6.25	18.0	4107.9	150.0	250.0	2,252.3
	August	0.00	0.12	5.1	28.7	0.00	0.91	23.40	24.31	12.18	6.25	18.43	5.9	4113.8	150.0	250.0	2,258.3
	September	0.04	0.10	4.3	28.7	0.00	0.72	23.40	24.12	10.27	6.25	16.52	7.6	4121.4	150.0	250.0	2,263.2
	October	0.12	0.06	3.1	28.7	0.00	0.42	23.40	23.82	7.40	6.25	13.65	10.2	4131.6	150.0	250.0	2,266.7
	November	0.77	0.06	1.9	28.7	0.00	0.45	23.40	23.85	4.54	6.25	10.79	13.1	4144.7	150.0	250.0	2,268.6
	December	0.88	0.10	1.4	28.7	0.00	0.72	23.40	24.12	3.34	6.25	9.59	14.5	4159.2	150.0	250.0	2,269.7
	January	0.97	0.14	1.2	28.7	0.00	0.99	23.40	24.39	2.87	6.25	9.12	15.3	4174.5	150.0	250.0	2,270.4
	February	3.13	1.65	1.5	28.7	0.00	12.07	23.40	35.47	3.58	6.25	9.83	25.6	4200.1	150.0	250.0	2,266.3
	March	2.08	0.81	2.1	28.7	0.00	5.94	23.40	29.34	5.01	6.25	11.26	18.1	4218.2	150.0	250.0	2,265.8
	April	1.27	0.28	3	28.7	0.00	2.06	23.40	25.46	7.16	6.25	13.41	12.0	4230.2	150.0	250.0	2,268.3
	May	0.11	0.06	3.9	28.7	0.00	0.45	23.40	23.85	9.31	6.25	15.56	8.3	4238.5	150.0	250.0	2,272.7
	June	0.00	0.12	4.2	28.7	0.00	0.91	23.40	24.31	10.03	6.25	16.28	8.0	4246.6	150.0	250.0	2,277.3
1994/1995	15.77												Carry Over	4246.6		250.0	
	July	0.04	0.10	5.3	0.0	0.00	0.72	23.40	24.12	0.00	6.25	6.25	17.9	4264.4	150.0	250.0	2,276.5

Total Dissolved Solids Concentration in the Otay Hills Quarry

Rain Year	Monthly Rainfall (inches)	Runoff [Q = (P-I) ² / (P-I+S)] (inches)	Potential Evaporation (Inches)	Evaporation Surface (af)	Direct Rainfall into Pit * Monthly Rainfall (afm)	Runoff from Contributing Watershed (afm)	Groundwater Inflow [KAi] (afm)	Total Inflows (afm)	Evaporation from Standing Water in Pit Floor (afm)	Proposed On-site Extraction (afm)	Total Outflows (afm)	Net Change in Water in Pit (afm)	Cumulative Water Remaining in Pit (af)	Depth of Water in Pit (feet)	Elevation of GW Surface (ft msl)	Resultant TDS Concentration (TDS)
August	0.10	0.07	5.1	28.7	0.00	0.48	23.40	23.88	12.18	6.25	18.43	5.5	4269.9	150.0	250.0	2,282.4
September	0.00	0.12	4.3	28.7	0.00	0.91	23.40	24.31	10.27	6.25	16.52	7.8	4277.7	150.0	250.0	2,287.0
October	0.28	0.01	3.1	28.7	0.00	0.08	23.40	23.48	7.40	6.25	13.65	9.8	4287.5	150.0	250.0	2,290.4
November	0.68	0.04	1.9	28.7	0.00	0.26	23.40	23.66	4.54	6.25	10.79	12.9	4300.4	150.0	250.0	2,292.2
December	1.25	0.27	1.4	28.7	0.00	1.98	23.40	25.38	3.34	6.25	9.59	15.8	4316.2	150.0	250.0	2,292.6
January	4.93	3.25	1.2	28.7	0.00	23.78	23.40	47.18	2.87	6.25	9.12	38.1	4354.2	150.0	250.0	2,282.7
February	2.32	0.99	1.5	28.7	0.00	7.27	23.40	30.67	3.58	6.25	9.83	20.8	4375.1	175.0	275.0	2,280.8
March	3.61	2.06	2.1	30.2	0.00	15.09	23.40	38.49	5.29	6.25	11.54	27.0	4402.0	175.0	275.0	2,276.4
April	0.90	0.11	3	30.2	0.00	0.78	23.40	24.18	7.55	6.25	13.80	10.4	4412.4	175.0	275.0	2,279.5
May	0.94	0.12	3.9	30.2	0.00	0.90	23.40	24.30	9.82	6.25	16.07	8.2	4420.6	175.0	275.0	2,283.7
June	0.72	0.05	4.2	30.2	0.00	0.34	23.40	23.74	10.57	6.25	16.82	6.9	4427.5	175.0	275.0	2,288.6
1995/1996	6.29											Carry Over	4427.5		275.0	
July	0.05	0.09	5.3	0.0	0.00	0.68	23.40	24.08	0.00	6.25	6.25	17.8	4445.4	175.0	275.0	2,287.8
August	0.00	0.12	5.1	30.2	0.00	0.91	23.40	24.31	12.84	6.25	19.09	5.2	4450.6	175.0	275.0	2,293.6
September	0.00	0.12	4.3	30.2	0.00	0.91	23.40	24.31	10.83	6.25	17.08	7.2	4457.8	175.0	275.0	2,298.2
October	0.00	0.12	3.1	30.2	0.00	0.91	23.40	24.31	7.81	6.25	14.06	10.3	4468.1	175.0	275.0	2,301.3
November	0.08	0.08	1.9	30.2	0.00	0.56	23.40	23.96	4.78	6.25	11.03	12.9	4481.0	175.0	275.0	2,303.0
December	0.45	0.00	1.4	30.2	0.00	0.01	23.40	23.41	3.52	6.25	9.77	13.6	4494.6	175.0	275.0	2,304.3
January	1.15	0.22	1.2	30.2	0.00	1.60	23.40	25.00	3.02	6.25	9.27	15.7	4510.4	175.0	275.0	2,304.6
February	2.55	1.17	1.5	30.2	0.00	8.58	23.40	31.98	3.78	6.25	10.03	22.0	4532.3	175.0	275.0	2,302.2
March	1.60	0.48	2.1	30.2	0.00	3.51	23.40	26.91	5.29	6.25	11.54	15.4	4547.7	175.0	275.0	2,302.8
April	0.37	0.00	3	30.2	0.00	0.01	23.40	23.41	7.55	6.25	13.80	9.6	4557.3	175.0	275.0	2,306.0
May	0.04	0.10	3.9	30.2	0.00	0.72	23.40	24.12	9.82	6.25	16.07	8.1	4565.3	175.0	275.0	2,310.1
June	0.00	0.12	4.2	30.2	0.00	0.91	23.40	24.31	10.57	6.25	16.82	7.5	4572.8	175.0	275.0	2,314.5
1996/1997	8.95											Carry Over	4572.8		275.0	
July	0.02	0.11	5.3	0.0	0.00	0.81	23.40	24.21	0.00	6.25	6.25	18.0	4590.8	175.0	275.0	2,313.6
August	0.00	0.12	5.1	30.2	0.00	0.91	23.40	24.31	12.84	6.25	19.09	5.2	4596.0	175.0	275.0	2,319.1
September	0.18	0.03	4.3	30.2	0.00	0.25	23.40	23.65	10.83	6.25	17.08	6.6	4602.6	175.0	275.0	2,323.8
October	1.51	0.42	3.1	30.2	0.00	3.09	23.40	26.49	7.81	6.25	14.06	12.4	4615.0	175.0	275.0	2,325.8
November	1.69	0.54	1.9	30.2	0.00	3.94	23.40	27.34	4.78	6.25	11.03	16.3	4631.3	175.0	275.0	2,325.8
December	0.86	0.09	1.4	30.2	0.00	0.67	23.40	24.07	3.52	6.25	9.77	14.3	4645.6	175.0	275.0	2,326.6
January	3.43	1.91	1.2	30.2	0.00	13.95	23.40	37.35	3.02	6.25	9.27	28.1	4673.7	175.0	275.0	2,321.5
February	0.76	0.06	1.5	30.2	0.00	0.42	23.40	23.82	3.78	6.25	10.03	13.8	4687.5	175.0	275.0	2,322.5
March	0.00	0.12	2.1	30.2	0.00	0.91	23.40	24.31	5.29	6.25	11.54	12.8	4700.3	175.0	275.0	2,324.2
April	0.50	0.00	3	30.2	0.00	0.03	23.40	23.43	7.55	6.25	13.80	9.6	4709.9	175.0	275.0	2,327.3
May	0.00	0.12	3.9	30.2	0.00	0.91	23.40	24.31	9.82	6.25	16.07	8.2	4718.1	175.0	275.0	2,331.1
June	0.00	0.12	4.2	30.2	0.00	0.91	23.40	24.31	10.57	6.25	16.82	7.5	4725.6	175.0	275.0	2,335.2
1997/1998	23.71											Carry Over	4725.6		275.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	4743.7	175.0	275.0	2,334.2
August	0.00	0.12	5.1	30.2	0.00	0.91	23.40	24.31	12.84	6.25	19.09	5.2	4748.9	175.0	275.0	2,339.5
September	1.22	0.26	4.3	30.2	0.00	1.87	23.40	25.27	10.83	6.25	17.08	8.2	4757.1	175.0	275.0	2,343.3
October	0.21	0.03	3.1	30.2	0.00	0.19	23.40	23.59	7.81	6.25	14.06	9.5	4766.6	175.0	275.0	2,346.3
November	0.86	0.09	1.9	30.2	0.00	0.67	23.40	24.07	4.78	6.25	11.03	13.0	4779.7	175.0	275.0	2,347.7
December	2.80	1.38	1.4	30.2	0.00	10.06	23.40	33.46	3.52	6.25	9.77	23.7	4803.3	175.0	275.0	2,344.4
January	2.06	0.80	1.2	30.2	0.00	5.84	23.40	29.24	3.02	6.25	9.27	20.0	4823.3	175.0	275.0	2,342.7
February	9.57	7.68	1.5	30.2	0.00	56.17	23.40	79.57	3.78	6.25	10.03	69.5	4892.8	175.0	275.0	2,320.4
March	3.29	1.79	2.1	30.2	0.00	13.07	23.40	36.47	5.29	6.25	11.54	24.9	4917.8	175.0	275.0	2,316.9
April	2.52	1.15	3	30.2	0.00	8.41	23.40	31.81	7.55	6.25	13.80	18.0	4935.8	175.0	275.0	2,316.5
May	1.07	0.18	3.9	30.2	0.00	1.32	23.40	24.72	9.82	6.25	16.07	8.6	4944.4	175.0	275.0	2,320.0
June	0.11	0.06	4.2	30.2	0.00	0.45	23.40	23.85	10.57	6.25	16.82	7.0	4951.5	175.0	275.0	2,324.2
1998/1999	9.99											Carry Over	4951.5		275.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	4969.5	175.0	275.0	2,323.2
August	0.00	0.12	5.1	30.2	0.00	0.91	23.40	24.31	12.84	6.25	19.09	5.2	4974.7	175.0	275.0	2,328.3
September	0.08	0.08	4.3	30.2	0.00	0.56	23.40	23.96	10.83	6.25	17.08	6.9	4981.6	175.0	275.0	2,332.5
October	1.10	0.19	3.1	30.2	0.00	1.42	23.40	24.82	7.81	6.25	14.06	10.8	4992.4	175.0	275.0	2,335.0
November	1.27	0.28	1.9	30.2	0.00	2.06	23.40	25.46	4.78	6.25	11.03	14.4	5006.8	175.0	275.0	2,335.7
December	1.39	0.35	1.4	30.2	0.00	2.56	23.40	25.96	3.52	6.25	9.77	16.2	5023.0	175.0	275.0	2,335.7
January	2.24	0.93	1.2	30.2	0.00	6.82	23.40	30.22	3.02	6.25	9.27	20.9	5043.9	175.0	275.0	2,333.7
February	0.63	0.02	1.5	30.2	0.00	0.18	23.40	23.58	3.78	6.25	10.03	13.6	5057.5	175.0	275.0	2,334.8
March	1.11	0.20	2.1	30.2	0.00	1.46	23.40	24.86	5.29	6.25	11.54	13.3	5070.8	175.0	275.0	2,336.0
April	2.02	0.77	3	30.2	0.00	5.62	23.40	29.02	7.55	6.25	13.80	15.2	5086.0	175.0	275.0	2,336.6
May	0.00	0.12	3.9	30.2	0.00	0.91	23.40	24.31	9.82	6.25	16.07	8.2	5094.3	175.0	275.0	2,340.1
June	0.15	0.05	4.2	30.2	0.00	0.33	23.40	23.73	10.57	6.25	16.82	6.9	5101.2	175.0	275.0	2,344.2
1999/2000	7.31											Carry Over	5101.2		275.0	
July	0.42	0.00	5.3	0.0	0.00	0.00	23.40	23.40	0.00	6.25	6.25	17.2	5118.3	175.0	275.0	2,343.5
August	0.00	0.12	5.1	30.2	0.00	0.91	23.40	24.31	12.84	6.25	19.09	5.2	5123.6	175.0	275.0	2,348.4
September	0.23	0.02	4.3	30.2	0.00	0.15	23.40	23.55	10.83	6.25	17.08	6.5	5130.0	175.0	275.0	2,352.6
October	0.00	0.12	3.1	30.2	0.00	0.91	23.40	24.31	7.81	6.25	14.06	10.3	5140.3	175.0	275.0	2,355.1
November	0.00	0.12	1.9	30.2	0.00	0.91	23.40	24.31	4.78	6.25	11.03	13.3	5153.6	175.0	275.0	2,356.2

Total Dissolved Solids Concentration in the Otay Hills Quarry

Rain Year	Monthly Rainfall (inches)	Runoff [Q = (P-I) ² / (P-I+S)] (inches)	Potential Evaporation (Inches)	Evaporation Surface (af)	Direct Rainfall into Pit * Monthly Rainfall (afm)	Runoff from Contributing Watershed (afm)	Groundwater Inflow [KAi] (afm)	Total Inflows (afm)	Evaporation from Standing Water in Pit Floor (afm)	Proposed On-site Extraction (afm)	Total Outflows (afm)	Net Change in Water in Pit (afm)	Cumulative Water Remaining in Pit (af)	Depth of Water in Pit (feet)	Elevation of GW Surface (ft msl)	Resultant TDS Concentration (TDS)
December	0.57	0.01	1.4	30.2	0.00	0.10	23.40	23.50	3.52	6.25	9.77	13.7	5167.3	175.0	275.0	2,357.1
January	0.64	0.03	1.2	30.2	0.00	0.19	23.40	23.59	3.02	6.25	9.27	14.3	5181.6	200.0	300.0	2,357.7
February	3.51	1.98	1.5	32.2	0.00	14.45	23.40	37.85	4.02	6.25	10.27	27.6	5209.2	200.0	300.0	2,353.1
March	1.01	0.15	2.1	32.2	0.00	1.12	23.40	24.52	5.63	6.25	11.88	12.6	5221.8	200.0	300.0	2,354.5
April	0.82	0.08	3	32.2	0.00	0.57	23.40	23.97	8.05	6.25	14.30	9.7	5231.5	200.0	300.0	2,357.2
May	0.05	0.09	3.9	32.2	0.00	0.68	23.40	24.08	10.46	6.25	16.71	7.4	5238.8	200.0	300.0	2,360.9
June	0.06	0.09	4.2	32.2	0.00	0.64	23.40	24.04	11.27	6.25	17.52	6.5	5245.4	200.0	300.0	2,365.0
2000/2001	10.36											Carry Over	5245.4		300.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	5263.4	200.0	300.0	2,364.0
August	0.24	0.02	5.1	32.2	0.00	0.13	23.40	23.53	13.68	6.25	19.93	3.6	5267.0	200.0	300.0	2,369.3
September	0.18	0.03	4.3	32.2	0.00	0.25	23.40	23.65	11.53	6.25	17.78	5.9	5272.9	200.0	300.0	2,373.6
October	0.74	0.05	3.1	32.2	0.00	0.38	23.40	23.78	8.32	6.25	14.57	9.2	5282.1	200.0	300.0	2,376.5
November	0.41	0.00	1.9	32.2	0.00	0.00	23.40	23.40	5.10	6.25	11.35	12.1	5294.2	200.0	300.0	2,378.0
December	0.12	0.06	1.4	32.2	0.00	0.42	23.40	23.82	3.76	6.25	10.01	13.8	5308.0	200.0	300.0	2,378.7
January	3.41	1.89	1.2	32.2	0.00	13.82	23.40	37.22	3.22	6.25	9.47	27.8	5335.7	200.0	300.0	2,374.0
February	2.34	1.01	1.5	32.2	0.00	7.38	23.40	30.78	4.02	6.25	10.27	20.5	5356.2	200.0	300.0	2,372.1
March	1.23	0.26	2.1	32.2	0.00	1.91	23.40	25.31	5.63	6.25	11.88	13.4	5369.7	200.0	300.0	2,373.1
April	1.56	0.45	3	32.2	0.00	3.32	23.40	26.72	8.05	6.25	14.30	12.4	5382.1	200.0	300.0	2,374.7
May	0.13	0.05	3.9	32.2	0.00	0.39	23.40	23.79	10.46	6.25	16.71	7.1	5389.2	200.0	300.0	2,378.4
June	0.00	0.12	4.2	32.2	0.00	0.91	23.40	24.31	11.27	6.25	17.52	6.8	5396.0	200.0	300.0	2,382.2
2001/2002	3.64											Carry Over	5396.0		300.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	5414.0	200.0	300.0	2,381.1
August	0.00	0.12	5.1	32.2	0.00	0.91	23.40	24.31	13.68	6.25	19.93	4.4	5418.4	200.0	300.0	2,385.9
September	0.00	0.12	4.3	32.2	0.00	0.91	23.40	24.31	11.53	6.25	17.78	6.5	5424.9	200.0	300.0	2,389.9
October	0.00	0.12	3.1	32.2	0.00	0.91	23.40	24.31	8.32	6.25	14.57	9.7	5434.7	200.0	300.0	2,392.4
November	0.92	0.11	1.9	32.2	0.00	0.84	23.40	24.24	5.10	6.25	11.35	12.9	5447.6	200.0	300.0	2,393.4
December	0.54	0.01	1.4	32.2	0.00	0.07	23.40	23.47	3.76	6.25	10.01	13.5	5461.0	200.0	300.0	2,394.2
January	0.48	0.00	1.2	32.2	0.00	0.02	23.40	23.42	3.22	6.25	9.47	14.0	5475.0	200.0	300.0	2,394.8
February	0.15	0.05	1.5	32.2	0.00	0.33	23.40	23.73	4.02	6.25	10.27	13.5	5488.4	200.0	300.0	2,395.6
March	1.09	0.19	2.1	32.2	0.00	1.39	23.40	24.79	5.63	6.25	11.88	12.9	5501.3	200.0	300.0	2,396.7
April	0.46	0.00	3	32.2	0.00	0.01	23.40	23.41	8.05	6.25	14.30	9.1	5510.4	200.0	300.0	2,399.4
May	0.00	0.12	3.9	32.2	0.00	0.91	23.40	24.31	10.46	6.25	16.71	7.6	5518.0	200.0	300.0	2,402.7
June	0.00	0.12	4.2	32.2	0.00	0.91	23.40	24.31	11.27	6.25	17.52	6.8	5524.8	200.0	300.0	2,406.4
2002/2003	11.32											Carry Over	5524.8		300.0	
July	0.00	0.12	5.3	0.0	0.00	0.91	23.40	24.31	0.00	6.25	6.25	18.1	5542.9	200.0	300.0	2,405.2
August	0.35	0.00	5.1	32.2	0.00	0.02	23.40	23.42	13.68	6.25	19.93	3.5	5546.4	200.0	300.0	2,410.3
September	0.35	0.00	4.3	32.2	0.00	0.02	23.40	23.42	11.53	6.25	17.78	5.6	5552.0	200.0	300.0	2,414.4
October	0.24	0.02	3.1	32.2	0.00	0.13	23.40	23.53	8.32	6.25	14.57	9.0	5561.0	200.0	300.0	2,417.0
November	1.64	0.51	1.9	32.2	0.00	3.70	23.40	27.10	5.10	6.25	11.35	15.8	5576.7	200.0	300.0	2,416.9
December	1.55	0.45	1.4	32.2	0.00	3.28	23.40	26.68	3.76	6.25	10.01	16.7	5593.4	200.0	300.0	2,416.4
January	0.05	0.09	1.2	32.2	0.00	0.68	23.40	24.08	3.22	6.25	9.47	14.6	5608.0	200.0	300.0	2,416.6
February	3.70	2.14	1.5	32.2	0.00	15.67	23.40	39.07	4.02	6.25	10.27	28.8	5636.8	200.0	300.0	2,411.6
March	1.60	0.48	2.1	32.2	0.00	3.51	23.40	26.91	5.63	6.25	11.88	15.0	5651.8	200.0	300.0	2,411.8
April	1.44	0.38	3	32.2	0.00	2.78	23.40	26.18	8.05	6.25	14.30	11.9	5663.7	200.0	300.0	2,413.3
May	0.23	0.02	3.9	32.2	0.00	0.15	23.40	23.55	10.46	6.25	16.71	6.8	5670.5	200.0	300.0	2,416.8
June	0.17	0.04	4.2	32.2	0.00	0.28	23.40	23.68	11.27	6.25	17.52	6.2	5676.7	200.0	300.0	2,420.6
2003/2004	6.84											Carry Over	5676.7		300.0	
July	0.03	0.10	5.3	0.0	0.00	0.76	23.40	24.16	0.00	6.25	6.25	17.9	5694.6	200.0	300.0	2,419.4
August	0.00	0.12	5.1	32.2	0.00	0.91	23.40	24.31	13.68	6.25	19.93	4.4	5699.0	200.0	300.0	2,424.0
September	0.00	0.12	4.3	32.2	0.00	0.91	23.40	24.31	11.53	6.25	17.78	6.5	5705.5	200.0	300.0	2,427.6
October	0.00	0.12	3.1	32.2	0.00	0.91	23.40	24.31	8.32	6.25	14.57	9.7	5715.3	200.0	300.0	2,429.9
November	0.66	0.03	1.9	32.2	0.00	0.23	23.40	23.63	5.10	6.25	11.35	12.3	5727.6	200.0	300.0	2,431.0
December	0.60	0.02	1.4	32.2	0.00	0.14	23.40	23.54	3.76	6.25	10.01	13.5	5741.1	200.0	300.0	2,431.6
January	0.58	0.01	1.2	32.2	0.00	0.11	23.40	23.51	3.22	6.25	9.47	14.0	5755.1	200.0	300.0	2,432.0
February	3.63	2.08	1.5	32.2	0.00	15.22	23.40	38.62	4.02	6.25	10.27	28.3	5783.5	200.0	300.0	2,427.2
March	0.45	0.00	2.1	32.2	0.00	0.01	23.40	23.41	5.63	6.25	11.88	11.5	5795.0	200.0	300.0	2,428.6
April	0.89	0.10	3	32.2	0.00	0.75	23.40	24.15	8.05	6.25	14.30	9.9	5804.8	200.0	300.0	2,430.8
May	0.00	0.12	3.9	32.2	0.00	0.91	23.40	24.31	10.46	6.25	16.71	7.6	5812.4	200.0	300.0	2,433.9
June	0.00	0.12	4.2	32.2	0.00	0.91	23.40	24.31	11.27	6.25	17.52	6.8	5819.2	200.0	300.0	2,437.3



Proposed Quarry Groundwater Letter Report
Otay Hills Quarry San Diego County, California

Laboratory Data

LABORATORY REPORT

Prepared For: AECOM Inc - San Diego
7807 Convoy Court, Suite 200
San Diego, CA 92111
Attention: Rob Schumann

Project: Otay Hills/60222529.1

Sampled: 09/15/11
Received: 09/16/11
Issued: 09/27/11 16:45

NELAP #01108CA California ELAP#2706 CSDLAC #10256 AZ #AZ0671 NV #CA01531

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The Chain of Custody, 1 page, is included and is an integral part of this report.

This entire report was reviewed and approved for release.

CASE NARRATIVE

SAMPLE RECEIPT: Samples were received intact, at 2°C, on ice and with chain of custody documentation.

HOLDING TIMES: All samples were analyzed within prescribed holding times and/or in accordance with the TestAmerica Sample Acceptance Policy unless otherwise noted in the report.

PRESERVATION: Samples requiring preservation were verified prior to sample analysis.

QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers.

COMMENTS: No significant observations were made.

SUBCONTRACTED: No analyses were subcontracted to an outside laboratory.

LABORATORY ID

IUI1620-01

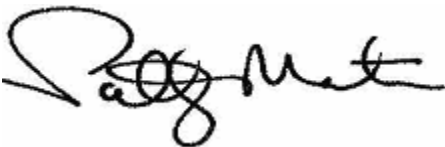
CLIENT ID

Otay-091511

MATRIX

Water

Reviewed By:



TestAmerica Irvine

Patty Mata
Project Manager

AECOM Inc - San Diego
7807 Convoy Court, Suite 200
San Diego, CA 92111
Attention: Rob Schumann

Project ID: Otay Hills/60222529.1

Report Number: IUI1620

Sampled: 09/15/11
Received: 09/16/11

DISSOLVED METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IUI1620-01 (Otay-091511 - Water)								
Reporting Units: mg/l								
Mercury	EPA 7470A-Diss	11I2047	0.00020	ND	1	9/18/2011	9/19/2011	
Antimony	EPA 6010B-Diss	11I2623	0.010	ND	1	9/22/2011	9/24/2011	
Arsenic	EPA 6010B-Diss	11I2623	0.010	ND	1	9/22/2011	9/24/2011	
Barium	EPA 6010B-Diss	11I2623	0.010	0.017	1	9/22/2011	9/24/2011	
Beryllium	EPA 6010B-Diss	11I2623	0.0040	ND	1	9/22/2011	9/24/2011	
Cadmium	EPA 6010B-Diss	11I2623	0.0050	ND	1	9/22/2011	9/24/2011	
Calcium	EPA 6010B-Diss	11I2623	0.10	160	1	9/22/2011	9/24/2011	MHA
Chromium	EPA 6010B-Diss	11I2623	0.0050	ND	1	9/22/2011	9/24/2011	
Cobalt	EPA 6010B-Diss	11I2623	0.010	ND	1	9/22/2011	9/24/2011	
Copper	EPA 6010B-Diss	11I2623	0.010	0.032	1	9/22/2011	9/24/2011	
Iron	EPA 6010B-Diss	11I2623	0.040	ND	1	9/22/2011	9/24/2011	M1
Lead	EPA 6010B-Diss	11I2623	0.0050	ND	1	9/22/2011	9/24/2011	
Magnesium	EPA 6010B-Diss	11I2623	0.020	81	1	9/22/2011	9/24/2011	MHA
Manganese	EPA 6010B-Diss	11I2623	0.020	0.072	1	9/22/2011	9/24/2011	
Nickel	EPA 6010B-Diss	11I2623	0.010	ND	1	9/22/2011	9/24/2011	
Potassium	EPA 6010B-Diss	11I2623	0.50	4.2	1	9/22/2011	9/24/2011	
Selenium	EPA 6010B-Diss	11I2623	0.010	0.024	1	9/22/2011	9/24/2011	
Silver	EPA 6010B-Diss	11I2623	0.010	ND	1	9/22/2011	9/24/2011	
Sodium	EPA 6010B-Diss	11I2623	0.50	520	1	9/22/2011	9/24/2011	MHA
Thallium	EPA 6010B-Diss	11I2623	0.010	ND	1	9/22/2011	9/24/2011	
Tin	EPA 6010B-Diss	11I2623	0.10	ND	1	9/22/2011	9/24/2011	
Vanadium	EPA 6010B-Diss	11I2623	0.010	ND	1	9/22/2011	9/24/2011	
Zinc	EPA 6010B-Diss	11I2623	0.020	0.10	1	9/22/2011	9/24/2011	

TestAmerica Irvine

Patty Mata
Project Manager

AECOM Inc - San Diego
7807 Convoy Court, Suite 200
San Diego, CA 92111
Attention: Rob Schumann

Project ID: Otay Hills/60222529.1

Report Number: IUI1620

Sampled: 09/15/11
Received: 09/16/11

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IUI1620-01 (Otay-091511 - Water)								
Reporting Units: mg/l								
Alkalinity as CaCO3	SM2320B	11I2123	2.0	260	1	9/19/2011	9/19/2011	
Bicarbonate	SM2320B	11I2123	2.4	310	1	9/19/2011	9/19/2011	
Carbonate	SM2320B	11I2123	1.2	ND	1	9/19/2011	9/19/2011	
Hydroxide	SM2320B	11I2123	0.70	ND	1	9/19/2011	9/19/2011	
Chemical Oxygen Demand	SM5220D	11I2117	20	ND	1	9/19/2011	9/19/2011	
Chloride	EPA 300.0	11I2126	50	900	100	9/19/2011	9/19/2011	
Total Cyanide	SM4500CN-E	11I3066	0.0050	ND	1	9/26/2011	9/26/2011	
Nitrate-N	EPA 300.0	11I1882	0.11	0.18	1	9/16/2011	9/17/2011	
Orthophosphate - PO4	EPA 300.0	11I1882	0.50	ND	1	9/16/2011	9/17/2011	
Sulfate	EPA 300.0	11I1882	10	200	20	9/16/2011	9/17/2011	
Sulfide	SM4500-S C, D	11I2336	0.10	ND	1	9/20/2011	9/20/2011	
Total Dissolved Solids	SM2540C	11I2055	20	2200	1	9/19/2011	9/19/2011	

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Patty Mata
Project Manager

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IUI1620 <Page 3 of 13>

AECOM Inc - San Diego
7807 Convoy Court, Suite 200
San Diego, CA 92111
Attention: Rob Schumann

Project ID: Otay Hills/60222529.1

Report Number: IUI1620

Sampled: 09/15/11

Received: 09/16/11

SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: Otay-091511 (IUI1620-01) - Water					
EPA 300.0	2	09/15/2011 19:40	09/16/2011 16:20	09/16/2011 21:00	09/17/2011 00:15
Filtration	1	09/15/2011 19:40	09/16/2011 16:20	09/16/2011 19:27	09/16/2011 19:28

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IUI1620 <Page 4 of 13>

AECOM Inc - San Diego
7807 Convoy Court, Suite 200
San Diego, CA 92111
Attention: Rob Schumann

Project ID: Otay Hills/60222529.1

Report Number: IUI1620

Sampled: 09/15/11
Received: 09/16/11

METHOD BLANK/QC DATA

DISSOLVED METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<u>Batch: 11I2047 Extracted: 09/18/11</u>										
Blank Analyzed: 09/19/2011 (11I2047-BLK1)										
Mercury	ND	0.00020	mg/l							
LCS Analyzed: 09/19/2011 (11I2047-BS1)										
Mercury	0.00791	0.00020	mg/l	0.00800		99	80-120			
Matrix Spike Analyzed: 09/19/2011 (11I2047-MS1)										
					Source: IUI1620-01					
Mercury	0.00746	0.00020	mg/l	0.00800	ND	93	70-130			
Matrix Spike Dup Analyzed: 09/19/2011 (11I2047-MSD1)										
					Source: IUI1620-01					
Mercury	0.00768	0.00020	mg/l	0.00800	ND	96	70-130	3	20	
<u>Batch: 11I2623 Extracted: 09/22/11</u>										
Blank Analyzed: 09/24/2011 (11I2623-BLK1)										
Antimony	ND	0.010	mg/l							
Arsenic	ND	0.010	mg/l							
Barium	ND	0.010	mg/l							
Beryllium	ND	0.0040	mg/l							
Cadmium	ND	0.0050	mg/l							
Calcium	ND	0.10	mg/l							
Chromium	ND	0.0050	mg/l							
Cobalt	ND	0.010	mg/l							
Copper	ND	0.010	mg/l							
Iron	ND	0.040	mg/l							
Lead	ND	0.0050	mg/l							
Magnesium	ND	0.020	mg/l							
Manganese	ND	0.020	mg/l							
Nickel	ND	0.010	mg/l							
Potassium	ND	0.50	mg/l							
Selenium	ND	0.010	mg/l							
Silver	ND	0.010	mg/l							
Sodium	ND	0.50	mg/l							
Thallium	ND	0.010	mg/l							
Tin	ND	0.10	mg/l							
Vanadium	ND	0.010	mg/l							
Zinc	ND	0.020	mg/l							

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Report Number: IUI1620

Sampled: 09/15/11
Received: 09/16/11

METHOD BLANK/QC DATA

DISSOLVED METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11I2623 Extracted: 09/22/11										
LCS Analyzed: 09/24/2011 (11I2623-BS1)										
Antimony	1.02	0.010	mg/l	1.00		102	80-120			
Arsenic	0.985	0.010	mg/l	1.00		99	80-120			
Barium	1.04	0.010	mg/l	1.00		104	80-120			
Beryllium	1.00	0.0040	mg/l	1.00		100	80-120			
Cadmium	0.994	0.0050	mg/l	1.00		99	80-120			
Calcium	5.39	0.10	mg/l	5.00		108	80-120			
Chromium	1.04	0.0050	mg/l	1.00		104	80-120			
Cobalt	0.991	0.010	mg/l	1.00		99	80-120			
Copper	1.03	0.010	mg/l	1.00		103	80-120			
Iron	1.07	0.040	mg/l	1.00		107	80-120			
Lead	0.987	0.0050	mg/l	1.00		99	80-120			
Magnesium	5.00	0.020	mg/l	5.00		100	80-120			
Manganese	0.999	0.020	mg/l	1.00		100	80-120			
Nickel	0.984	0.010	mg/l	1.00		98	80-120			
Potassium	10.4	0.50	mg/l	10.0		104	80-120			
Selenium	0.961	0.010	mg/l	1.00		96	80-120			
Silver	0.537	0.010	mg/l	0.500		107	80-120			
Sodium	10.2	0.50	mg/l	10.0		102	80-120			
Thallium	0.993	0.010	mg/l	1.00		99	80-120			
Tin	0.977	0.10	mg/l	1.00		98	80-120			
Vanadium	1.02	0.010	mg/l	1.00		102	80-120			
Zinc	0.968	0.020	mg/l	1.00		97	80-120			

Matrix Spike Analyzed: 09/24/2011 (11I2623-MS1)

Source: IUI1620-01

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Antimony	1.03	0.010	mg/l	1.00	ND	103	75-125			
Arsenic	1.03	0.010	mg/l	1.00	ND	103	75-125			
Barium	1.03	0.010	mg/l	1.00	0.0168	102	75-125			
Beryllium	1.00	0.0040	mg/l	1.00	ND	100	75-125			
Cadmium	0.966	0.0050	mg/l	1.00	ND	97	75-125			
Calcium	167	0.10	mg/l	5.00	162	102	75-125			MHA
Chromium	1.02	0.0050	mg/l	1.00	0.00263	102	75-125			
Cobalt	0.956	0.010	mg/l	1.00	ND	96	75-125			
Copper	1.10	0.010	mg/l	1.00	0.0325	107	75-125			
Iron	1.33	0.040	mg/l	1.00	0.0275	130	75-125			MI
Lead	0.962	0.0050	mg/l	1.00	ND	96	75-125			
Magnesium	85.2	0.020	mg/l	5.00	81.1	84	75-125			MHA

TestAmerica Irvine

Patty Mata
Project Manager

AECOM Inc - San Diego
7807 Convoy Court, Suite 200
San Diego, CA 92111
Attention: Rob Schumann

Project ID: Otay Hills/60222529.1

Report Number: IUI1620

Sampled: 09/15/11
Received: 09/16/11

METHOD BLANK/QC DATA

DISSOLVED METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11I2623 Extracted: 09/22/11										
Matrix Spike Analyzed: 09/24/2011 (11I2623-MS1)					Source: IUI1620-01					
Manganese	1.07	0.020	mg/l	1.00	0.0716	100	75-125			
Nickel	0.933	0.010	mg/l	1.00	ND	93	75-125			
Potassium	15.5	0.50	mg/l	10.0	4.21	113	75-125			
Selenium	0.986	0.010	mg/l	1.00	0.0237	96	75-125			
Silver	0.547	0.010	mg/l	0.500	ND	109	75-125			
Sodium	521	0.50	mg/l	10.0	516	45	75-125			MHA
Thallium	0.974	0.010	mg/l	1.00	ND	97	75-125			
Tin	0.969	0.10	mg/l	1.00	ND	97	75-125			
Vanadium	1.03	0.010	mg/l	1.00	ND	103	75-125			
Zinc	1.07	0.020	mg/l	1.00	0.104	96	75-125			
Matrix Spike Dup Analyzed: 09/24/2011 (11I2623-MSD1)					Source: IUI1620-01					
Antimony	1.03	0.010	mg/l	1.00	ND	103	75-125	0.01	20	
Arsenic	1.02	0.010	mg/l	1.00	ND	102	75-125	0.4	20	
Barium	1.05	0.010	mg/l	1.00	0.0168	103	75-125	1	20	
Beryllium	1.02	0.0040	mg/l	1.00	ND	102	75-125	1	20	
Cadmium	0.980	0.0050	mg/l	1.00	ND	98	75-125	1	20	
Calcium	165	0.10	mg/l	5.00	162	56	75-125	1	20	MHA
Chromium	1.03	0.0050	mg/l	1.00	0.00263	102	75-125	0.6	20	
Cobalt	0.972	0.010	mg/l	1.00	ND	97	75-125	2	20	
Copper	1.12	0.010	mg/l	1.00	0.0325	109	75-125	2	20	
Iron	1.41	0.040	mg/l	1.00	0.0275	138	75-125	6	20	MI
Lead	0.967	0.0050	mg/l	1.00	ND	97	75-125	0.5	20	
Magnesium	85.0	0.020	mg/l	5.00	81.1	79	75-125	0.3	20	MHA
Manganese	1.09	0.020	mg/l	1.00	0.0716	102	75-125	2	20	
Nickel	0.939	0.010	mg/l	1.00	ND	94	75-125	0.6	20	
Potassium	14.7	0.50	mg/l	10.0	4.21	105	75-125	6	20	
Selenium	0.992	0.010	mg/l	1.00	0.0237	97	75-125	0.6	20	
Silver	0.551	0.010	mg/l	0.500	ND	110	75-125	0.7	20	
Sodium	517	0.50	mg/l	10.0	516	7	75-125	0.7	20	MHA
Thallium	0.983	0.010	mg/l	1.00	ND	98	75-125	0.9	20	
Tin	0.979	0.10	mg/l	1.00	ND	98	75-125	0.9	20	
Vanadium	1.05	0.010	mg/l	1.00	ND	105	75-125	2	20	
Zinc	1.08	0.020	mg/l	1.00	0.104	98	75-125	1	20	

TestAmerica Irvine

Patty Mata
Project Manager

AECOM Inc - San Diego
7807 Convoy Court, Suite 200
San Diego, CA 92111
Attention: Rob Schumann

Project ID: Otay Hills/60222529.1
Report Number: IUI1620

Sampled: 09/15/11
Received: 09/16/11

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11I1882 Extracted: 09/16/11										
Blank Analyzed: 09/16/2011 (11I1882-BLK1)										
Nitrate-N	ND	0.11	mg/l							
Orthophosphate - PO4	ND	0.50	mg/l							
Sulfate	ND	0.50	mg/l							
LCS Analyzed: 09/16/2011 (11I1882-BS1)										
Nitrate-N	1.13	0.11	mg/l	1.13		100	90-110			
Orthophosphate - PO4	5.36	0.50	mg/l	5.00		107	90-110			
Sulfate	9.94	0.50	mg/l	10.0		99	90-110			
Matrix Spike Analyzed: 09/16/2011 (11I1882-MS1) Source: IUI1535-15										
Nitrate-N	1.16	0.11	mg/l	1.13	0.0813	95	80-120			
Orthophosphate - PO4	5.04	0.50	mg/l	5.00	ND	101	80-120			
Sulfate	31.6	0.50	mg/l	10.0	21.7	99	80-120			
Matrix Spike Analyzed: 09/16/2011 (11I1882-MS2) Source: IUI1535-33										
Nitrate-N	1.17	0.11	mg/l	1.13	0.111	94	80-120			
Orthophosphate - PO4	5.07	0.50	mg/l	5.00	ND	101	80-120			
Sulfate	32.0	0.50	mg/l	10.0	20.8	112	80-120			
Matrix Spike Dup Analyzed: 09/16/2011 (11I1882-MSD1) Source: IUI1535-15										
Nitrate-N	1.16	0.11	mg/l	1.13	0.0813	96	80-120	0.4	20	
Orthophosphate - PO4	5.35	0.50	mg/l	5.00	ND	107	80-120	6	20	
Sulfate	33.0	0.50	mg/l	10.0	21.7	113	80-120	4	20	
Matrix Spike Dup Analyzed: 09/16/2011 (11I1882-MSD2) Source: IUI1535-33										
Nitrate-N	1.19	0.11	mg/l	1.13	0.111	96	80-120	2	20	
Orthophosphate - PO4	5.47	0.50	mg/l	5.00	ND	109	80-120	8	20	
Sulfate	32.4	0.50	mg/l	10.0	20.8	116	80-120	1	20	

TestAmerica Irvine

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Project Manager

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Attention: Rob Schumann

Project ID: Otay Hills/60222529.1
Report Number: IUI1620

Sampled: 09/15/11
Received: 09/16/11

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11I2055 Extracted: 09/19/11										
Blank Analyzed: 09/19/2011 (11I2055-BLK1)										
Total Dissolved Solids	ND	10	mg/l							
LCS Analyzed: 09/19/2011 (11I2055-BS1)										
Total Dissolved Solids	1010	10	mg/l	1000		101	90-110			
Duplicate Analyzed: 09/19/2011 (11I2055-DUP1)										
Total Dissolved Solids	407	10	mg/l		415			2	10	
					Source: IUI1660-05					
Batch: 11I2117 Extracted: 09/19/11										
Blank Analyzed: 09/19/2011 (11I2117-BLK1)										
Chemical Oxygen Demand	ND	20	mg/l							
LCS Analyzed: 09/19/2011 (11I2117-BS1)										
Chemical Oxygen Demand	200	20	mg/l	200		100	90-110			
Duplicate Analyzed: 09/19/2011 (11I2117-DUP1)										
Chemical Oxygen Demand	87.6	20	mg/l		91.2			4	15	
					Source: IUI1646-01					
Matrix Spike Analyzed: 09/19/2011 (11I2117-MS1)										
Chemical Oxygen Demand	288	20	mg/l	200	91.2	99	70-120			
					Source: IUI1646-01					
Matrix Spike Dup Analyzed: 09/19/2011 (11I2117-MSD1)										
Chemical Oxygen Demand	271	20	mg/l	200	91.2	90	70-120	6	15	
					Source: IUI1646-01					
Batch: 11I2123 Extracted: 09/19/11										
Blank Analyzed: 09/19/2011 (11I2123-BLK1)										
Alkalinity as CaCO ₃	ND	2.0	mg/l							
Bicarbonate	ND	2.4	mg/l							
Carbonate	ND	1.2	mg/l							
Hydroxide	ND	0.70	mg/l							

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Report Number: IUI1620

Sampled: 09/15/11
Received: 09/16/11

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 11I2123 Extracted: 09/19/11										
LCS Analyzed: 09/19/2011 (11I2123-BS1)										
Alkalinity as CaCO3	244	2.0	mg/l	252		97	90-110			
Duplicate Analyzed: 09/19/2011 (11I2123-DUP1)										
					Source: IUI1535-28					
Alkalinity as CaCO3	162	2.0	mg/l		160			1	20	
Bicarbonate	198	2.4	mg/l		195			1	20	
Carbonate	ND	1.2	mg/l		ND				20	
Hydroxide	ND	0.70	mg/l		ND				20	
Batch: 11I2126 Extracted: 09/19/11										
Blank Analyzed: 09/19/2011 (11I2126-BLK1)										
Chloride	ND	0.50	mg/l							
LCS Analyzed: 09/19/2011 (11I2126-BS1)										
Chloride	4.70	0.50	mg/l	5.00		94	90-110			M-3
Matrix Spike Analyzed: 09/19/2011 (11I2126-MS1)										
					Source: IUI1639-01					
Chloride	81.7	5.0	mg/l	50.0	34.9	94	80-120			
Matrix Spike Analyzed: 09/19/2011 (11I2126-MS2)										
					Source: IUI1683-04					
Chloride	275	25	mg/l	50.0	248	54	80-120			MHA
Matrix Spike Dup Analyzed: 09/19/2011 (11I2126-MSD1)										
					Source: IUI1639-01					
Chloride	83.1	5.0	mg/l	50.0	34.9	97	80-120	2	20	
Batch: 11I2336 Extracted: 09/20/11										
Blank Analyzed: 09/20/2011 (11I2336-BLK1)										
Sulfide	ND	0.10	mg/l							

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Report Number: IUI1620

Sampled: 09/15/11
Received: 09/16/11

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<u>Batch: 11I2336 Extracted: 09/20/11</u>										
LCS Analyzed: 09/20/2011 (11I2336-BS1)										
Sulfide	0.681	0.10	mg/l	0.700		97	80-120			
Matrix Spike Analyzed: 09/20/2011 (11I2336-MS1)										
Sulfide	1.22	0.10	mg/l	0.700	0.500	104	70-130			
Matrix Spike Dup Analyzed: 09/20/2011 (11I2336-MSD1)										
Sulfide	1.18	0.10	mg/l	0.700	0.500	97	70-130	4	30	
<u>Batch: 11I3066 Extracted: 09/26/11</u>										
Blank Analyzed: 09/26/2011 (11I3066-BLK1)										
Total Cyanide	ND	0.0050	mg/l							
LCS Analyzed: 09/26/2011 (11I3066-BS1)										
Total Cyanide	0.0987	0.0050	mg/l	0.100		99	90-110			
Matrix Spike Analyzed: 09/26/2011 (11I3066-MS1)										
Total Cyanide	0.102	0.0050	mg/l	0.100	ND	102	70-115			
Matrix Spike Dup Analyzed: 09/26/2011 (11I3066-MSD1)										
Total Cyanide	0.101	0.0050	mg/l	0.100	ND	101	70-115	2	15	

TestAmerica Irvine

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Report Number: IUI1620

Sampled: 09/15/11
Received: 09/16/11

DATA QUALIFIERS AND DEFINITIONS

- M1** The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- MHA** Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

TestAmerica Irvine

Patty Mata
Project Manager

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IUI1620 <Page 12 of 13>

AECOM Inc - San Diego
7807 Convoy Court, Suite 200
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Attention: Rob Schumann

Project ID: Otay Hills/60222529.1

Report Number: IUI1620

Sampled: 09/15/11
Received: 09/16/11

Certification Summary

TestAmerica Irvine

Method	Matrix	Nelac	California
EPA 300.0	Water	X	N/A
EPA 6010B-Diss	Water	X	X
EPA 7470A-Diss	Water	X	X
Filtration	Water	N/A	N/A
SM2320B	Water	X	N/A
SM2540C	Water	X	N/A
SM4500CN-E	Water	X	N/A
SM4500-S C, D	Water	X	
SM5220D	Water	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for TestAmerica may be obtained by contacting the laboratory or visiting our website at www.testamericainc.com

TestAmerica Irvine

Patty Mata
Project Manager

CHAIN OF CUSTODY

EV1620

Page 1 of 1

Client Name/Address: AECOM 7807 Carrey Ct San Diego, CA 92111		Project / PO Number: 60222529.1		ANALYSIS REQUIRED				
Project Manager: Rob Schumann		Phone Number: 858-268-8080		Alkalinity, Chloride, Nitrate-N Phosphate, Sulfate, TDS	COD	Cyanide	Sulfide	Dissolved Metals: Ca, K, Mg Na, Pb, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Ni ₂ , Se, Ag, Tl, Sn, V, Zn
Sampler: Brian Zanco		Fax Number:						

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date	Sampling Time	Preservatives	Alkalinity, Chloride, Nitrate-N, Phosphate, Sulfate, TDS	COD	Cyanide	Sulfide	Dissolved Metals: Ca, K, Mg, Na, Pb, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Ni ₂ , Se, Ag, Tl, Sn, V, Zn	Special Instructions
07ay-091511	GW	1L Poly	1	9/15/11	1940	—/ice	X					Bicarbonate + carbonate alkalinity
↓	↓	500ml Poly	1	↓	↓	—/ice				X	X	Lab Filter
↓	↓	500ml Poly	1	↓	↓	H ₂ SO ₄ /ice	X					
↓	↓	500ml Poly	1	↓	↓	NaOH/ice		X				
↓	↓	250ml Poly	1	↓	↓	NaOH/ice			X			

Relinquished By: Brian Zanco	Date/Time: 9/16/11 1100	Received by: Rick Sherwin	Date/Time: 9-16-11 1100	Turnaround Time: (check) Same Day _____ 72 Hours _____ 24 Hours _____ 5 days _____ 48 hours _____ normal <input checked="" type="checkbox"/> Sample integrity: (Check) Intact <input checked="" type="checkbox"/> On Ice: <input checked="" type="checkbox"/> Custody Seal: _____
Relinquished By: Rick Sherwin	Date/Time: 9-16-11 1620	Received by:	Date/Time:	
Relinquished By:	Date/Time:	Received in Lab by: Vu Bank	Date/Time: 9/16/11 16:20	

Note: By relinquishing samples to TestAmerica, client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 30 days.

KM 9/16/11
1740



Proposed Quarry Groundwater Letter Report
Otay Hills Quarry San Diego County, California

Land Use Analysis

(Inserted by EnviroMINE)

Land Use Analysis Otay Hills Groundwater Basin

Groundwater Study Area

The groundwater basin uphill from the the Otay Hills pit area is approximately 32.2 acres. This basin occurs east (upslope) of the proposed extraction footprint, to an elevation of approximately 1,024 feet AMSL. An area of approximately 214.9 acres of land surrounding and including the proposed pit has been selected for study (See attached map). This area could reasonably be expected to contribute groundwater to the pit at its maximum depth (100 feet above mean sea level). This 214.9-acre study area is the subject of the Land Use Analysis provided herein.

Significance Criteria for Groundwater Resources

The County's Guidelines for Determining Significance for Groundwater Resources states that by reducing groundwater storage to a level of 50% or less as a result of a project's groundwater extraction, a significant impact to groundwater resources occurs. There is potential for this to occur as a result of the Otay Hills project. However, the project proposes to preserve natural habitat on adjacent lands within the project's watershed area.

Land Use Within Groundwater Study Area

The County of San Diego General Plan, and the East Otay Mesa Specific Plan (EOMSP), govern allowable land uses within the subject groundwater study area. A majority of the study area is within the EOMSP and is designated Mixed Industrial, Rural Residential, Heavy Industrial, and State Route Right-of-Ways (2010 EOMSP). A relatively small portion of the study area is within a Landfill Initiative area of the County's General Plan. The Otay Hills project includes an application for a Specific Plan Amendment to address the land use concerns associated with long-term use of the project site following the end of mining operations. The Specific Plan Amendment would change the designation of approximately 36.3 acres of Mixed Industrial land to Rural Residential. These lands are found to the north and east of the proposed quarry site. In addition, approximately 85.7 acres of land currently designated Rural Residential would be designated as Mixed Industrial (See attached map).

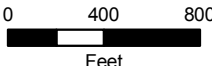
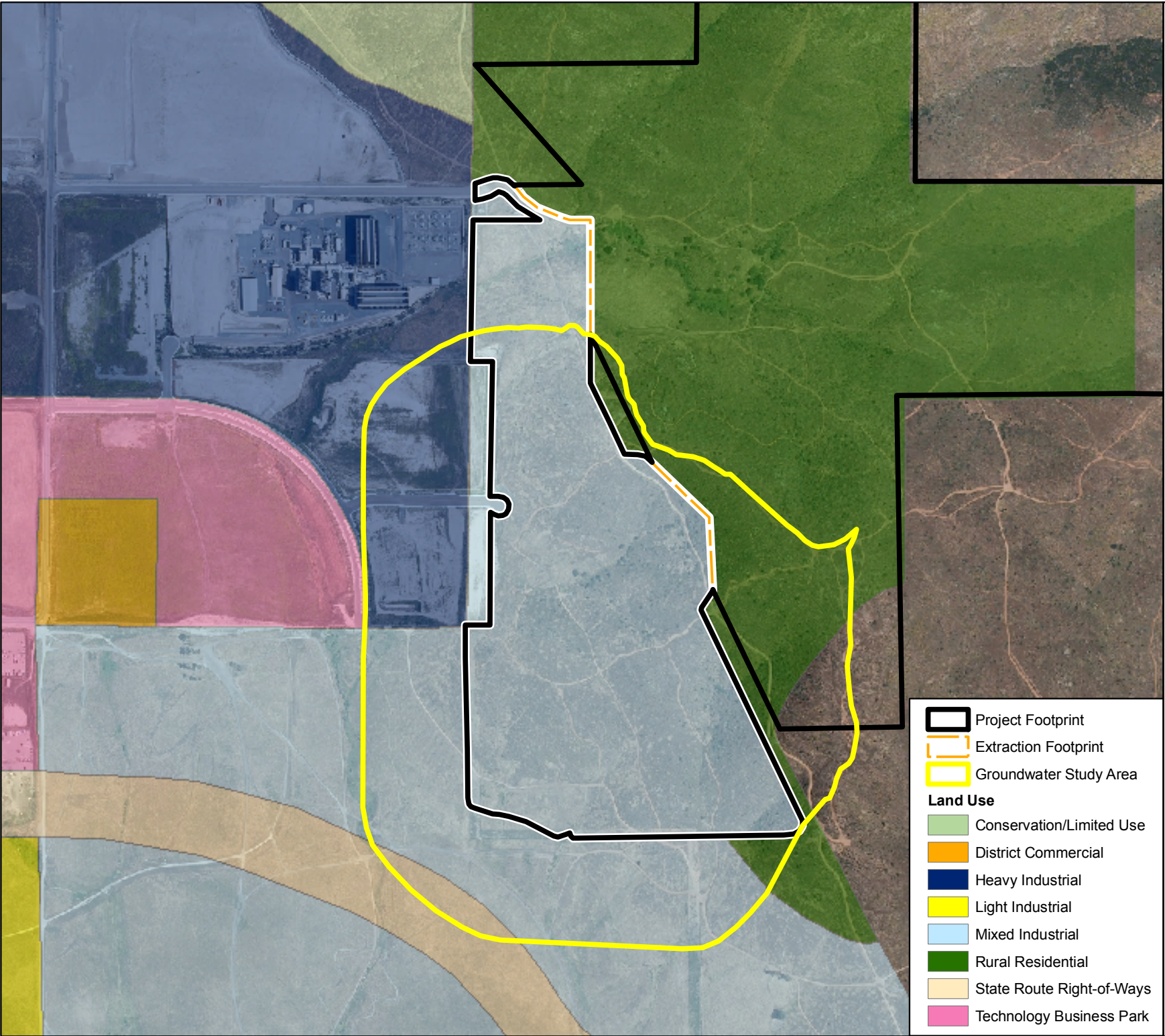
Rural Residential allows low density residential development (1 du/20 acres) due to the occurrence of steep slopes and sensitive biological resources. Development in the residential designated areas may only proceed following detailed environmental review, approval of a resource conservation plan (as required by the EOMSP), and site plan review. With the exception of a 1.8-acre area, all of the Rural Residential land, within the study area, is owned by Superior Ready Mix. The Superior ownership will be placed into open space conservation. The adjacent property owner's 1.8-acre area consists of steep slopes and is located between the quarry project and a Landfill Initiative area. Therefore, approval of the Otay Hills project would likely prevent additional development within the Rural Residential areas.

Lands within the study area that are designated Industrial (Heavy and Mixed), and are outside the Otay Hills project footprint, occur west and south of the site. An

asphalt/ready-mix concrete plant facility was recently approved by the County for one of the two industrial pads located west of the site. These pads were constructed to include connections to water infrastructure from the Otay Water District and therefore will not utilize groundwater. The Otay Crossings project was also recently approved for the industrial property located south of the site. This development will not utilize groundwater.

For the reasons listed above, an exception to the groundwater storage Significance Criteria may be granted for the Otay Hills project.

Otay Hills Groundwater Study Area & Proposed SPA Land Use Designations



- Project Footprint
- Extraction Footprint
- Groundwater Study Area
- Land Use**
- Conservation/Limited Use
- District Commercial
- Heavy Industrial
- Light Industrial
- Mixed Industrial
- Rural Residential
- State Route Right-of-Ways
- Technology Business Park