WEST YOST ASSOCIATES
Consulting Engineers

February 28, 2017

Project No.: 484-13-14-02.002
SENT VIA: EMAIL

Mr. Drew Lerer
Regulatory Compliance Office
East Bay Municipal Utility District
375 11th Street
Oakland CA 94607

SUBJECT: EBMUD Bayside Groundwater Project, 2016 Annual Report, Waste Discharge Requirements Order No. R2-2007-0038

Dear Mr. Lerer:

West Yost Associates (West Yost) has prepared this 2016 Annual Report (Report) on behalf of the East Bay Municipal Utility District (EBMUD) for the Bayside Groundwater Project (Project) in Alameda County. West Yost has prepared this Report in accordance with the Self Monitoring and Reporting Program (SMRP) of Waste Discharge Requirements (Permit) Order No. R2-2007-0038, which was adopted by the San Francisco Regional Water Quality Control Board (Regional Board) on May 9, 2007 (Regional Board, 2007).

The Project consists of the Bayside Well and a number of monitoring wells constructed near and in the vicinity of the Bayside Well. Depth to groundwater was monitored in the Bayside Well and associated monitoring wells during 2016. Groundwater samples were collected December 7, 21, and 27, 2016, for analytical testing. Groundwater elevations and analytical results are provided in this Report, along with results from previous years, in accordance with the SMRP, for evaluation of long-term trends.

This Report addresses the following topics:

- Project Overview
- Regulatory Requirements
- Injection and Recovery Activities
- Monitoring and Sampling Activities
- Groundwater Elevations and Flow Directions
- Groundwater Quality Results
- Conclusions

PROJECT OVERVIEW

The Project is located in a predominantly industrial area within unincorporated portions of the City of San Lorenzo and the City of San Leandro. The Bayside Well is located at 2600 Grant Avenue in San Lorenzo. The Project area is bounded by residential communities to the north and east, and the San Francisco Bay about a half-mile to the west.

The Bayside Well is an Aquifer Storage and Recovery (ASR) well designed, constructed, and operated for injection of treated drinking water from EBMUD's distribution system into the South East Bay Plain Groundwater Basin (SEBPB) for aquifer storage during wet years and, later, for recovery as a source of supplemental drinking water supply for EBMUD during dry years. Injection has not occurred since 2011. EBMUD is planning to inject again in 2017.

The Bayside Well was constructed with 18-inch diameter stainless steel casing and is screened from 520 feet below ground surface (bgs) to 650 feet bgs. The monitoring well network consists of 17 monitoring wells constructed to various depths (Figure 1). Well construction details are summarized in Table 1. Additional background information on the Project is provided in the Permit.

REGULATORY REQUIREMENTS

The SMRP requires groundwater level monitoring in 13 of the Project monitoring wells (MW-1, MW-2S, MW-2I, MW-3, MW-4, MW-5S, MW-5I, MW-5D, MW-6, MW-7, MW-9D, MW-10I, and MW-10D).[1] After the first year of monitoring, groundwater level monitoring in 11 of the 13 wells listed above is required to be performed on an hourly basis. For wells MW-4 and MW-6, groundwater level monitoring is required to be performed quarterly only.

The SMRP also requires EBMUD to implement a phased approach for monitoring groundwater quality in a subset of the Project monitoring wells. Each phase is successive and depends on certain triggers, generally related to the location of the injected water front (i.e. leading edge of the injected water). The SMRP specifies the following phased approach consisting of four groups of monitoring wells:

- Initial monitoring in Group 1 wells (Bayside Well, MW-2S, MW-2I, MW-4, and MW-10D[2]) is required to start three months prior to the start of Project operations and to continue on an annual basis until Group 2 monitoring is triggered.
- Monitoring of Group 2 wells (Group 1 wells, excluding MW-10D, plus MW-6) would begin once the injected water front reaches MW-4 and would continue on an annual basis until Group 3 monitoring is triggered.

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[1] EBMUD uses slightly different well names than those used in the Permit. For example, "MW-2I" is used instead of "MW-2D" and "MW-9D" instead of "MW-9." EBMUD's well naming convention is used in this Report.

[2] Group 1 monitoring included limited monitoring at MW-10D. Specifically, the SMRP requires monitoring of MW-10D only once in the beginning of the Group 1 monitoring phase.

- Monitoring of Group 3 wells (Group 2 wells plus MW-5D and MW-7) would begin once the injected water front reaches MW-6 and would continue on an annual basis until Group 4 monitoring is triggered.
- Monitoring of Group 4 wells (Group 3 wells plus MW-10D) would begin with the detection of injected water at MW-5D or MW-7, or 15 years after initiating Project operations, whichever is earlier.

Water quality parameters, which are required to be measured annually, are listed in Table 4 of the SMRP and include pH, chlorine residual, Total Dissolved Solids (TDS), ammonia, nitrate, chloride, manganese, iron, total trihalomethanes and haloacetic acids (including the individual components), and various "standard minerals" (e.g. calcium and magnesium).[3]

The SMRP requires the submission of data from the Project's monitoring well network to the Regional Board in an annual report. Annual reports, due by March 1 of the following year, are required to include the following items, per Part A.4 of the SMRP:

- A table of water injection and groundwater recovery data, including the cumulative total volume injected and recovered since Project inception.
- Maps of well locations, groundwater elevation contours, extent of the injected water front, and extent of dissolved water quality parameters (isoconcentration maps).
- A table of location and construction details for the wells.
- A table of current groundwater depths, elevations, and horizontal and vertical gradients.
- A table of current and historical (past five years) water quality results for the wells.
- A discussion of field and laboratory results that includes conclusions, recommendations, and data anomalies.

INJECTION AND RECOVERY ACTIVITIES

No injection or recovery activities took place during 2016. Accordingly, the injection and recovery rates were in compliance with the permitted maximum rates – for both injection and recovery – of one million gallons per day. The cumulative volumes of injected and recovered water since Project inception (2009) are shown in Table 2.

MONITORING AND SAMPLING ACTIVITIES

The SMRP requires groundwater level monitoring on an hourly basis in the applicable monitoring wells listed above for each group. In early 2014, EBMUD installed new dedicated pressure transducers in these wells to collect hourly groundwater level data. Hourly groundwater level data were collected from January through December 2016, except in MW-7.

[3] Table 4 of the SMRP also requires monitoring for "Title 22" drinking water parameters under the following conditions that are not currently applicable: MW-10D once with Group 1 monitoring and MW-5D and MW-7 with Group 4 monitoring.

As noted in the previous annual reports, monitoring well MW-7 was damaged by a PG&E contractor in 2012. MW-7 was repaired in May 2015; however, groundwater level monitoring was not conducted at MW-7 in 2015 because EBMUD did not want to use the well before PG&E could review the repair work due to cost implications. In 2016, only limited groundwater level data was acquired (see Figure B-10 in Attachment B) due to an accidental setting of the recording software to one-minute intervals instead of one-hour intervals like the other sensors.

The SMRP also requires groundwater quality monitoring, as discussed above, following a phased approach. In 2013, EBMUD initiated monitoring of Group 2 wells, which added MW-6 to the annual monitoring well network. In 2015, EBMUD initiated monitoring of Group 3 wells, which added MW-5D and MW-7 to the annual monitoring well network, in response to the detection of chlorine residual and haloacetic acids (HAAs) at MW-6, as detailed in the 2013 Annual Report.

EBMUD staff collected the 2016 groundwater samples from the required monitoring wells with the exception of MW-7 and for the required water quality analyses on three separate days: December 7, 21, and 27. MW 7 was not sampled because the pump EBMUD owns was found to be incompatible with the repaired well when EBMUD staff went to sample the well. EBMUD is in the process of purchasing new equipment that is compatible, and monitoring of MW-7 in 2017 is expected.

A peristaltic pump with new tubing was used to purge and sample wells MW-2I, and MW-4. A submersible pump with new tubing was used to purge and sample MW-2S, MW-5D, and MW-6. The Bayside Well was purged using the dedicated downhole turbine pump with the sample collected from a spigot at the wellhead. Purge water was disposed of on permeable ground adjacent to wells MW-2S, MW-2I, MW-4, MW-5D, and MW-6. Purge water from the Bayside Well was pumped to an onsite holding tank and eventually discharged to Oro Loma Sanitary District under a separate discharge permit. No surface water discharges occurred.

Groundwater monitoring and sampling were completed using the following procedures:

1. Measured static water level within each well, and calculated three well casing volumes required for purging in accordance with USEPA groundwater sampling protocols.
2. Purged the well until three well casing volumes were removed.
3. Measured field water quality parameters (pH, specific conductance, and temperature) periodically during purging.
4. Collected samples in containers with appropriate preservatives in accordance with USEPA sampling protocols for individual constituents.
5. Measured residual chlorine immediately after sample collection.
6. Transported samples to EBMUD's state-certified laboratory in a cooler under chain of custody for analytical testing.

Attachment A provides well purge logs, including the static water level, purge volumes, and field parameter measurements.

GROUNDWATER ELEVATIONS AND FLOW DIRECTIONS

Static water levels measured prior to well purging and sampling in 2016 are summarized in Table 3, along with calculated groundwater elevations based on the reference elevations noted in Table 1. Table 3 also provides historical static water levels and groundwater elevations.

Groundwater elevations derived from the pressure transducers installed in May 2014 are plotted by well for January through December 2016 (Attachment B). Groundwater elevation contours for August 1, 2016, corresponding to a low tide in San Francisco Bay, are shown on Figure 2. Groundwater elevation contours for December 1, 2016, corresponding to a high tide in San Francisco Bay, are shown on Figure 3. As shown on Figures 2 and 3, the groundwater flow direction is primarily to the southwest at low tide (Figure 2) and southeasterly to westerly components at high tide (Figure 3). Horizontal hydraulic gradients are variable with lower gradients further from the bay and higher gradients closer to the bay.

Transducer values were provided by EBMUD, but transducer depths, which are used with the transducer values, were not available in time for this Report. Groundwater elevations were calculated assuming constant transducer depths, based on information from 2015. The transducer depths in 2015 were constant for many wells in 2015, and the same transducer depths were thus assumed for these wells in 2016. For wells in which the transducer depth was not constant, the last result from the 2015 data set was used (which included some early 2016 results). In addition, data from MW-7 was not available in previous years. Therefore, a transducer depth is not available for this well; for purposes of this report, 138 feet has been assumed, which was within the range of transducer depths assumed for the other deep monitoring wells. If subsequent information is provided following completion of this report that indicates these assumptions need to be adjusted, revised groundwater elevations will be provided in next year's annual report.

Groundwater elevations during low tide ranged from -4.74 feet above mean sea level (amsl) to -4.16 feet amsl for the five wells shown on Figure 2. Groundwater elevations during high tide ranged from -3.18 feet amsl to -2.38 feet amsl at the same wells (Figure 3).

Vertical hydraulic gradients were calculated based on groundwater elevations and well construction information for the nested wells MW-5S, MW-5I, and MW-5D. Specifically, vertical gradients were calculated for a low tide using groundwater elevation data from 5:08 AM on August 1, 2016, and for a high tide using data from 11:51 AM on December 1, 2016. The calculated vertical gradients for these dates, including supporting data for the calculations, are presented in Table 4. The overall vertical gradient under both conditions is downward at approximately 0.04 feet per foot. These results are consistent with the vertical gradients reported in the 2015 Annual Report.

GROUNDWATER QUALITY RESULTS

The 2016 analytical results are included in the following tables, along with historical water quality results for the last five years (2011 through 2015):

- Table 5 includes data for general water quality parameters (e.g., pH, chlorine residual, iron) and standard minerals (e.g., calcium, magnesium, potassium).
- Table 6 includes data for disinfection byproducts (HAAs and trihalomethanes [THMs]).

Copies of the analytical laboratory reports for the 2016 water quality data are provided in Attachment C.[4] The lab report for the Bayside Well includes data collected by EBMUD for additional constituents beyond those presented in Tables 5 and 6. These results are for "Title 22" parameters that would be of interest in a future water system permit application to the State.

For wells with pre-2016 data (Bayside Well, MW-2S, MW-2I, MW-4, MW-5D, and MW-6), the 2016 water quality results summarized in Table 5 are generally consistent. Concentrations of a number of parameters in MW-2S are significantly higher than in the other monitoring wells; however, MW-2S is a significantly shallower well.

For the 2016 groundwater quality results summarized in Table 5, TDS has been used as a representative constituent to evaluate overall groundwater quality conditions. The isoconcentration contours shown on Figure 4 are based on TDS concentrations for deep monitoring wells, including the Bayside Well, MW-4, MW-5D, and MW-6 (Table 1). The isoconcentration contours indicate the lowest concentration of 140 milligrams per liter (mg/L) occurs at the Bayside Well with increasing TDS concentrations in a northerly direction (i.e. further inland). The highest TDS concentration of 470 mg/L was detected at well MW-5D. Therefore, TDS concentrations increase with northerly through easterly distance away from the Bayside Well. The TDS concentration trend shown on Figure 4 is similar in shape to the northeasterly groundwater gradient measured at high-tide (Figure 3). Comparison of Figures 3 and 4 show that TDS concentrations increase hydraulically downgradient from the Bayside Well.

The disinfection byproducts data summarized in Table 6 are also consistent with previous results with all but two constituents below Method Detection Limits (MDLs). These exceptions are chloroform at 4.4 µg/L and bromodichloromethane at 0.19 µg/L, both in the Bayside Well. In addition, the combined parameters HAA(5), HAA(9), and total THMs (TTHMs) are within the range of historical results. These data also indicate no exceedances of the Permit's effluent water quality limits for HAAs and TTHMs.

CONCLUSIONS

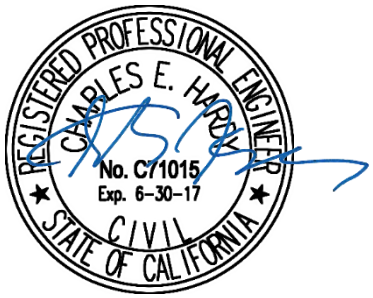
EBMUD conducted the 2016 groundwater monitoring for the Bayside Groundwater Project site in accordance with the Self Monitoring and Reporting Program of Waste Discharge Requirements Order No. R2-2007-0038 with minor exceptions, as noted above. In 2017, EBMUD will continue to implement groundwater monitoring for the Group 3 wells. The 2017 Annual Report will be submitted to the Regional Board by March 1, 2018.

Please call Charles Hardy at (925) 949-5814 or Ken Loy at (530) 792-3276 with any questions or comments on this Report.

[4] The laboratory reports in Attachment C include results for additional parameters beyond those required by the SMRP. EBMUD collected this information per drinking water regulations unrelated to the Permit and SMRP. These data are not discussed in this Report.

Sincerely,

WEST YOST ASSOCIATES



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Regional Board, 2007, Order No. R2-2007-0038 *Waste Discharge Requirements for East Bay Municipal Utility District, Bayside Groundwater Project, San Lorenzo, Alameda County*, Adopted May 9, 2007.

Table 1. Groundwater Monitoring Well Construction Details

Well ID	Latitude	Longitude	Address	City	Completion Date	Drilled Depth, feet bgs[a]	Casing Depth, feet bgs	Depth to Top of Perforation, feet bgs	Depth to Bottom of Perforation, feet bgs	Casing Diameter, inches	Reference Elevation, feet amsl[b]	Reference Location on Well
MW-1	37° 40' 4.8"	122° 9' 25.2"	2600 Grant Avenue	San Lorenzo		665	650	520	640	2	8.71	Top of steel casing
MW-2S						210	60	40	60	2	9.90	Top of steel casing
MW-2I[c]						210	200	160	190	2		
MW-3	37° 40' 4.8"	122° 9' 28.8"				665	660	520	650	2	8.12	Top of steel casing
MW-4	37° 40' 11.6"	122° 9' 28.8"	2575 Grant Avenue			705	650	520	650	2	8.96	Top of steel rim
MW-5S	37° 40' 34.4"	122° 9' 06.6"	2006 Via Barrett		Sep. 2008	460	210	200	210	2	13.88	Seal of vault lid at easterly edge
MW-5I	37° 40' 34.4"	122° 9' 06.6"	2005 Via Barrett		Sep. 2008	460	325	315	325	2		
MW-5D	37° 40' 34.4"	122° 9' 06.6"	2007 Via Barrett		Feb. 2001	1,025	640	500	630	4	13.76	Top of casing at northerly edge
MW-6	37° 40' 07"	122° 9' 04.5"	15600 Worthley		Nov. 2000	1,000	655	480	650	4	9.46	Top of casing at easterly edge
MW-7	37° 39' 56.5"	122° 8' 44.2"	Western tip of San Lorenzo Park		Nov. 2000	972	680	510	630	4	7.42	Top of casing at northerly edge
MW-8D	37° 43' 04"	122° 11' 50.3"	1970 Davis Street			910	490	420	480	2	14.76	Top of steel rim
MW-9S	37° 41' 11"	122° 6' 46"	589 E. Lewelling Avenue		Jan. 2008	460	120	110	120	2	54.39	Seal of vault lid at westerly edge
MW-9I					Jan. 2008	460	210	200	210	2		
MW-9D[d]					Jan. 2008	460	335	325	335	2		
MW-10S	37° 41' 19"	122° 9' 43"	15526 Wick Boulevard	San Leandro	Sep. 2008	680	120	100	120	2	11.76	Seal of vault lid at easterly edge
MW-10I					Sep. 2008	680	360	340	360	2		
MW-10D					Sep. 2008	680	610	590	610	2		

[a] bgs = below ground surface

[b] amsl = above Mean Sea Level

[c] Well MW-2I is referred to in the Permit as "MW-2D."

[d] Well MW-9D is referred to in the Permit as "MW-9."

Table 2. Historical Injected and Recovered Water Volumes		
Year	Injected Volume, gallons	Recovered Volume, gallons
2009	445,000	4,545,000
2010	0	113,000,000
2011	28,432,401	0
2012	0	0
2013	0	0
2014	0	0
2015	0	0
2016	0	0
Total	**28,877,401**	**117,545,000**

Table 3. Summary of Groundwater Elevation and Depth

Measurement Date	Groundwater Elevation, ft amsl								Depth to Groundwater, ft							
	Bayside	MW-1	MW-2S	MW-2I	MW-4	MW-6	MW-5D	MW-7	Bayside	MW-1	MW-2S	MW-2I	MW-4	MW-6	MW-5D	MW-7
12/8/08			0.99		-4.07	[a]					8.78[b]		12.68[b]			
12/9/08		-5.06		1.09						13.74[b]		8.73[b]				
12/14/09					-3.75								12.71			
12/15/09			0.95	1.44							8.95	8.46				
12/8/10	-7.22		1.71	0.25	-7.45				15.6		8.19	9.65	16.41			
12/21/11		-4.16	1.12	3.59	-4.17					12.87	8.78	6.31	13.13			
1/5/12		-3.94	1.04	6.24	-3.97					12.65	8.86	3.66	12.93			
12/13/12		-4.49	2.38	1.72	-4.16	-4.52				13.20	7.52	8.18	13.12	13.98		
12/18/13		-4.06	1.59	0.37	-6.68	-6.46				12.77	8.31	9.53	15.64	15.92		
12/12-12/17/14		-6.54	2.75	0.18	-6.01	-5.99	-5.76	[c]		15.25	7.15	9.72	14.97	15.45	19.52	[c]
11/16-12/15/15		-5.48	2.90	0.32	-4.94	[d]	-5.87	[c]		14.19[e]	7.00	9.58	13.9	[d]	19.63	[c]
12/21-12/27/16		-2.00	2.90	2.88	-1.95	-1.96	-1.96			10.71	7.00	7.02	10.91	11.42	15.72	[c]

[a] Gray shaded cells indicate that no monitoring was required for the well at that time period, reflecting the transition between monitoring groups.

[b] Applicable well reference elevations are different from those in Table 1.

[c] Well MW-7 was damaged in 2012, and accurate data collection was not feasible until 2016. In 2016, a sample was not collected because the pump EBMUD owns was found to be incompatible with the well.

[d] Well MW-6 was not monitored in late 2015 due to a pump equipment failure.

[e] Depth to Groundwater for MW-1 was incorrectly reported in the 2015 Annual Report as -13.56 ft.

Table 4. Calculated Vertical Hydraulic Gradients for Low Tide and High Tide in San Francisco Bay

Nested Well	Measurement Date and Time	Screened Interval, ft	Center of Screened Intervals, ft bgs	Groundwater Elevation, ft amsl	Shallow to Intermediate Vertical Gradient, ft/ft	Intermediate to Deep Vertical Gradient, ft/ft	Shallow to Deep Vertical Gradient, ft/ft	Vertical Gradient Direction
Low Tide								
MW-5S	8/1/2016 @ 05:08	200 - 210	205	11.06	0.049	--	0.042	downward
MW-5I	8/1/2016 @ 05:08	315 - 325	320	5.43		0.039		
MW-5D	8/1/2016 @ 05:08	500 - 630	575	-4.41	--			
High Tide								
MW-5S	12/1/2016 @ 11:51	200 - 210	205	11.89	0.054	--	0.041	downward
MW-5I	12/1/2016 @ 11:51	315 - 325	320	5.70		0.035		
MW-5D	12/1/2016 @ 11:51	500 - 630	575	-3.18	--			

Table 5. Current and Historical Groundwater Quality Results for General Water Quality Parameters and Standard Minerals[a]

Sample Date	General Water Quality Parameters								Standard Minerals									
															Alkalinity (as CaCO3)			
	pH	Chlorine Residual, mg/L	TDS, mg/L	Ammonia, mg/L	Nitrate as N, mg/L	Chloride, mg/L	Manganese, µg/L	Iron, µg/L	Calcium, mg/L	Magnesium, mg/L	Potassium, mg/L	Sodium, mg/L	Sulfate, mg/L	Hardness, mg/L	Total, mg/L	Hydroxide, mg/L	Carbonate, mg/L	Bicarbonate, mg/L
Bayside Well																		
12/21/2011	8.17	ND	89	<0.12	0.18	9	11.2	312	10.8	2.78	0.768	15.2	11	40	47	<0.1	0.64	46
1/5/2012	7.82	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/13/2012	7.98	ND	110	<0.3	0.0074	10	16.8	236	12.2	3.12	0.789	21.3	13	47	59	<0.1	0.53	59
12/18/2013	7.87	ND	120	0.56	<0.003	13	22.8	580	14.0	3.77	1.05	22.5	15	50	65	<0.1	0.45	64
12/17/2014	8.19	ND	130	0.42	<0.00090	15	23.0	52.3	14.7	3.88	1.07	28.0	15	70	69	<0.1	0.99	68
11/16/2015	7.68	0.10	75	<0.3	<0.00090	15	22.3	215	13.5	3.64	1.01	23.3	16	48	70	<0.1	<0.1	70
12/7/2016	8.09	0.10	140	0.112	<0.00090	17	16.2	70.2	16.4	4.15	1.13	27.1	18	55	68	<0.1	<0.1	68
MW-2S																		
12/21/2011	6.67	0.14	78,000	<0.12	<0.095	44,000	36,400	<26	1,250	2,780	509	22,200	5,700	16,000	420	<0.1	0.18	420
1/5/2012	6.83	0.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/13/2012	6.29	ND	83,000	0.42	E0.19	E52,000	36,700	<31.2	1,230	2,950	488	24,900	6,700	16,000	390	<0.1	<0.1	390
12/18/2013	6.67	0.08	85,000	0.7	<0.15	45,000	36,100	2,530	1,230	2,580	568	22,300	5,700	17,000	430	<0.1	0.19	420
12/13/2014	6.57	0.20	83,000	<0.3	23[b]	39,000	36,900	<31.2	1,230	2,680	462	22,000	6,100	17,000	380	<0.1	0.13	380
12/10/2015	6.85	ND	76,000	<0.3	27	41,000	21,900	76.8	1,250	3,040	401	20,500	5,200	16,000	390	<0.1	<0.1	390
12/27/2016	6.73	0.07	77,000	0.336	<0.65	42,000	38,100	<62.4	1,330	3,150	510	20,600	5,700	16,000	390	<0.1	<0.1	390
MW-2I																		
12/21/2011	7.86	ND	520	0.168	<0.095	79	102	151	13.9	12.6	5.20	153	32	94	310	<0.1	2.1	300
1/5/2012	7.82	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/13/2012	8.08	ND	520	<0.3	E0.0036	82	105	190	14.8	13.0	5.60	177	31	93	310	<0.1	3.5	310
12/18/2013	7.83	ND	500	<0.3	<0.003	75	115	606	14.8	13.4	6.76	153	32	89	310	<0.1	1.9	300
12/12/2014	7.90	ND	520	1.12	<0.0090	81	98.7	213	14.6	12.6	5.33	153	31	94	310	<0.1	2.3	310
12/15/2015	7.75	ND	490	0.56	0.044	59	105	177	14.4	12.5	6.73	156	34	90	300	<0.1	<0.1	300
12/27/2016	8.10	0.02	540	0.28	0.18	84	111	98.0	15.2	13.2	6.16	148	30	94	320	<0.1	<0.1	320
MW-4																		
12/21/2011	7.80	0.08	400	<0.12	0.026	56	260	281	27.8	10.5	2.41	103	41	120	230	<0.1	1.4	230
1/5/2012	7.42	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/13/2012	7.64	ND	420	<0.3	0.0071	57	232	84.2	28.9	11.2	2.49	119	40	120	250	<0.1	1.0	240
12/18/2013	7.78	ND	430	<0.3	<0.003	59	237	31.2	32.2	13.0	3.05	113	42	130	260	<0.1	1.5	260
12/16/2014	8.22	0.10	450	<0.3	0.028	56	239	33.7	32.2	12.8	2.72	113	39	130	270	<0.1	4.2	270
12/8/2015	7.98	ND	420	<0.3	0.039	56	215	32.5	28.8	11.7	3.08	106	41	130	250	<0.1	<0.1	250
12/27/2016	8.14	ND	440	0.336	0.098	59	222	31.6	31.4	12.6	2.76	108	42	120	260	<0.1	<0.1	260
MW-5D																		
12/16/2014	7.00	0.40	490	<0.3	<0.009	96	241	180	42.8	10.8	2.59	123	46	150	230	<0.1	0.22	230
11/18/2015	7.53	0.20	450	<0.3	<0.009	82	175	46.4	35.6	9.06	2.30	112	49	140	240	<0.1	<0.1	240
12/21/2016	7.68	0.02	470	<0.220	<0.013	84	195	34.6	39.0	9.74	2.34	130	49	130	230	<0.1	<0.1	230

Table 5. Current and Historical Groundwater Quality Results for General Water Quality Parameters and Standard Minerals[a]

Sample Date	General Water Quality Parameters								Standard Minerals									
															Alkalinity (as CaCO3)			
	pH	Chlorine Residual, mg/L	TDS, mg/L	Ammonia, mg/L	Nitrate as N, mg/L	Chloride, mg/L	Manganese, µg/L	Iron, µg/L	Calcium, mg/L	Magnesium, mg/L	Potassium, mg/L	Sodium, mg/L	Sulfate, mg/L	Hardness, mg/L	Total, mg/L	Hydroxide, mg/L	Carbonate, mg/L	Bicarbonate, mg/L
MW-6																		
12/13/2012	7.26	ND	420	<0.3	0.099	56	302	144	31.0	7.68	1.88	117	46	120	220	<0.1	0.38	220
12/18/2013	7.41	0.07	420	<0.3	0.017	120	223	60.4	32.4	8.58	2.14	110	95	110	230	<0.1	0.55	230
12/13/2014	7.92	0.10	430	<0.3	0.0042	58	209	25.4	34.1	8.89	2.39	110	56	120	230	<0.1	1.8	230
12/10/2015	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
12/27/2016	7.72	ND	400	0.336	0.17	68	192	21.0	35.6	8.25	3.00	87.7	40	120	210	<0.1	<0.1	210
MW-7																		
2016	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)	(d)

[a] Symbols and data qualifiers are described as follows:
"<" or "ND" indicates non-detect (ND) results, with the Method Detection Limit (MDL) shown as the value following "<".
"B" preceding a value indicates that the parameter was detected in the laboratory blank associated with the reported result.
"E" preceding a value indicates a detected results with a value reported as "estimated" between the MDL and the Reporting Limit.
"--" indicates that no result was reported for the analyte on the corresponding sample date.

[b] The analytical laboratory report notes that the analysis for nitrate exceeded the hold time for the MW-2S sample collected 12/13/2014.

[c] Well MW-6 was not sampled in 2015 due to pump equipment failure.

[d] Well MW-7 was not sampled in 2016 because the pump EBMUD owns was found to be incompatible with the well.

Table 6. Current and Historical Groundwater Quality Results for Disinfection Byproducts[a]

Sample Date	Haloacetic Acids											Trihalomethanes				
	HAA(5),[a] µg/L	HAA(9),[b] µg/L	Bromochloro-acetic Acid, µg/L	Bromodichloro-acetic Acid, µg/L	Chlorodibromo-acetic Acid, µg/L	Dibromo-acetic Acid, µg/L	Dichloro-acetic Acid, µg/L	Monobromo-acetic Acid, µg/L	Monochloro-acetic Acid, µg/L	Tribromo-acetic Acid, µg/L	Trichloro-acetic Acid, µg/L	TTHMs,[d] µg/L	Chloroform, µg/L	Bromodichloro-methane, µg/L	Dibromochloro-methane, µg/L	Bromoform, µg/L
Bayside Well																
12/21/2011	0.59	0.59	<0.55	<0.26	<0.54	<0.25	<0.99	<0.54	<0.78	<0.83	0.59	--	--	--	--	--
1/5/2012	--	--	--	--	--	--	--	--	--	--	--	<40.09	38	1.6	0.26	<0.23
12/13/2012	ND	ND	<0.14	<0.16	<0.19	<0.11	<0.23	<0.22	<0.68	<0.44	<0.21	<9.71	9.1	0.25	<0.13	<0.23
12/18/2013	0.35	1.6	I 1.3	<0.16	<0.19	I 0.35	<0.23	<0.22	<0.68	<0.44	<0.21	<2.94	2.5	<0.079	<0.13	<0.23
12/17/2014	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<0.89	0.45	<0.079	<0.13	<0.23
11/16/2015	<1.7	<3.2	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.36	<0.98	0.37	<0.145	<0.20	<0.27
12/7/2016	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<4.95	4.4	0.19	<0.13	<0.23
MW-2S																
12/21/2011	0.31	0.31	<0.55	<0.26	<0.54	0.31	<0.99	<0.54	<0.78	<0.83	<0.3	--	--	--	--	--
1/5/2012	--	--	--	--	--	--	--	--	--	--	--	<0.609	<0.17	<0.079	<0.13	<0.23
12/13/2012	ND	ND	<0.14	<0.16	<0.19	<0.11	<0.23	<0.22	<0.68	<0.44	<0.21	<0.609	<0.17	<0.079	<0.13	<0.23
12/18/2013	ND	ND	<0.14	<0.16	<0.19	<0.11	<0.23	<0.22	<0.68	<0.44	<0.21	<0.609	<0.17	<0.079	<0.13	<0.23
12/13/2014	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	N,J <0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23
12/10/2015	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23
12/27/2016	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23
MW-2I																
12/21/2011	<2.9	<5	<0.55	<0.26	<0.54	<0.25	<0.99	<0.54	<0.78	<0.83	<0.3	--	--	--	--	--
1/5/2012	--	--	--	--	--	--	--	--	--	--	--	<0.609	<0.17	<0.079	<0.13	<0.23
12/13/2012	ND	ND	<0.14	<0.16	<0.19	<0.11	<0.23	<0.22	<0.68	<0.44	<0.21	<0.609	<0.17	<0.079	<0.13	<0.23
12/18/2013	0.34	0.34	<0.14	<0.16	<0.19	I 0.34	<0.23	<0.22	<0.68	<0.44	<0.21	<0.609	<0.17	<0.079	<0.13	<0.23
12/12/2014	ND	<3.4	0.50	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	J <0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23
12/15/2015	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23
12/27/2016	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23
MW-4																
12/21/2011	<2.9	<5	<0.55	<0.26	<0.54	<0.25	<0.99	<0.54	<0.78	<0.83	<0.3	--	--	--	--	--
1/5/2012	--	--	--	--	--	--	--	--	--	--	--	<0.609	<0.17	<0.079	<0.13	<0.23
12/13/2012	ND	ND	<0.14	<0.16	<0.19	<0.11	<0.23	<0.22	<0.68	<0.44	<0.21	<0.609	<0.17	<0.079	<0.13	<0.23
12/18/2013	0.36	4.0	I 3.6	<0.16	<0.19	0.36	<0.23	<0.22	<0.68	<0.44	<0.21	<0.609	<0.17	<0.079	<0.13	<0.23
12/16/2014	<1.6	<3.1	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	0.72	<0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23
12/8/2015	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23
12/27/2016	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23
MW-5D																
12/16/2014	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23
11/18/2015	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<0.170	<0.17	<0.079	<0.13	<0.23
12/21/2016	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23

Table 6. Current and Historical Groundwater Quality Results for Disinfection Byproducts[a]

Sample Date	Haloacetic Acids											Trihalomethanes				
	HAA(5),[a] µg/L	HAA(9),[b] µg/L	Bromochloro-acetic Acid, µg/L	Bromodichloro-acetic Acid, µg/L	Chlorodibromo-acetic Acid, µg/L	Dibromo-acetic Acid, µg/L	Dichloro-acetic Acid, µg/L	Monobromo-acetic Acid, µg/L	Monochloro-acetic Acid, µg/L	Tribromo-acetic Acid, µg/L	Trichloro-acetic Acid, µg/L	TTHMs,[d] µg/L	Chloroform, µg/L	Bromodichloro-methane, µg/L	Dibromochloro-methane, µg/L	Bromoform, µg/L
MW-6																
12/13/2012	ND	ND	<0.14	<0.16	<0.19	<0.11	<0.23	<0.22	<0.68	<0.44	<0.21	<0.609	<0.17	<0.079	<0.13	<0.23
12/18/2013	0.34	3.9	I, N 3.6	<0.16	<0.19	0.34	<0.23	<0.22	<0.68	<0.44	<0.21	<0.609	<0.17	<0.079	<0.13	<0.23
12/13/2014	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	<0.609	<0.17	<0.079	<0.13	<0.23
12/10/2015	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)
12/27/2016	ND	ND	<0.15	<0.31	<0.31	<0.25	<0.18	<0.29	<0.65	<0.72	<0.17	<0.609	<0.17	<0.079	<0.13	<0.23
MW-7																
2016	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)	(g)

[a] Symbols and data qualifiers are described as follows:
"<" or "ND" indicates non-detect (ND) results, with the Method Detection Limit (MDL) shown as the value following "<", except for total haloacetic acids (HAA) and total trihalomethanes (TTHMs) as detailed below.
"I" preceding a value indicates a dual column quantitation difference greater than 40 percent Relative Percent Difference.
"J" preceding a value indicates that the quantitation of the result does not meet the laboratory's Standard Operating Procedure criteria.
"N" preceding a value indicates that the spike recovery for the result was outside the laboratory control limits.
"--" indicates that no result was reported for the analyte on the corresponding sample date.

[b] HAA5 value is calculated by adding values for dibromoacetic, dichloroacetic, monobromoacetic, monochloroacetic, and trichloroacetic acids, with "<" indicating that the total includes ND data (MDLs used). If all results are ND, then the total is indicated as ND.

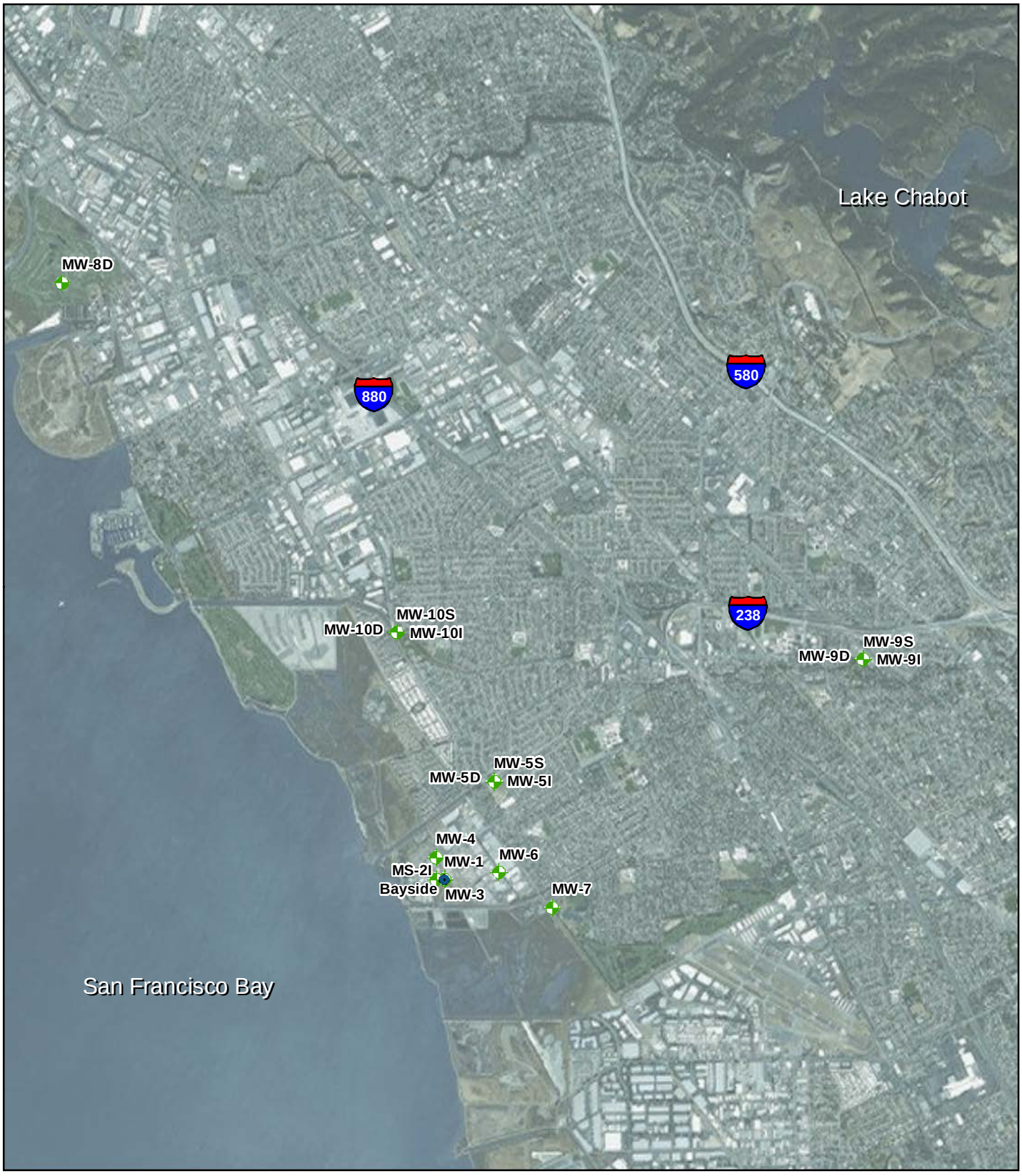
[c] HAA9 value is calculated by adding results for all individual haloacetic acids shown, with "<" indicating that the total includes ND data (MDLs used). If all results are ND, then the total is indicated as ND.

[d] TTHMs value is calculated by adding individual trihalomethane results (including MDLs for ND data). If ND data is included, "<" is indicated with the TTHMs result.

[e] Well MW-6 was not monitored for haloacetic acids in 2014.

[f] Well MW-6 was not monitored in 2015 due to pump equipment failure.

[g] Well MW-7 was not sampled in 2016 because the pump EBMUD owns was found to be incompatible with the well.



LEGEND

- Groundwater Monitoring Well
- ASR (Bayside) Well

N

0 0.5 1

Miles

FIGURE 1

East Bay Municipal Utility District
2016 Bayside Annual Report

Well Location Map

WEST YOST ASSOCIATES

LEGEND

- Groundwater monitoring well and elevation, feet above mean sea level (amsl)
- Groundwater elevation contour, feet amsl, dashed where approximate
- Approximate groundwater horizontal gradient direction and magnitude

N

0 300 600

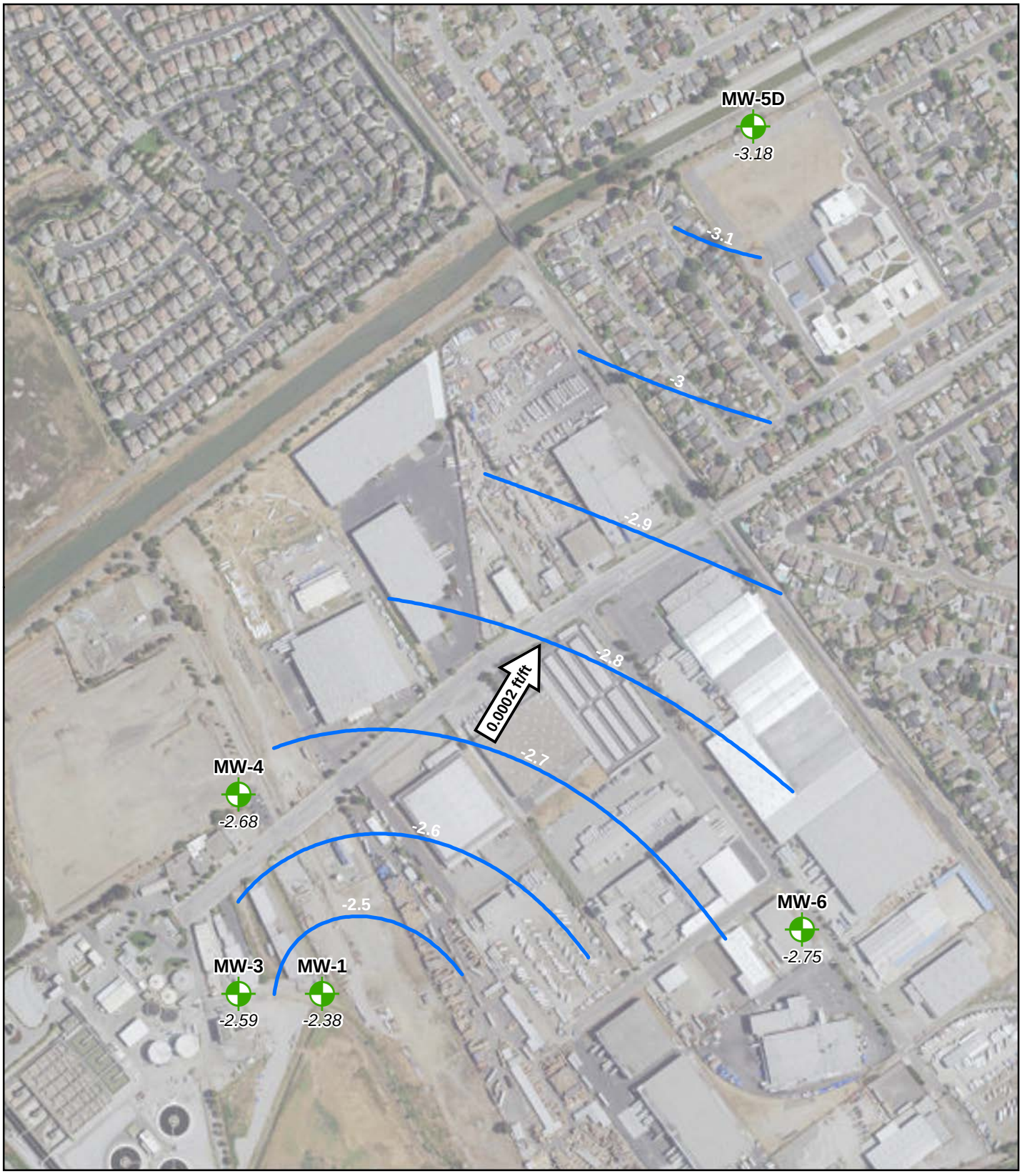
Scale in Feet

FIGURE 2

East Bay Municipal Utility District
2016 Bayside Annual Report

Groundwater Elevation Contours
Low Tide (August 1, 2016)

WEST YOST ASSOCIATES



LEGEND

- Groundwater monitoring well and elevation, feet above mean sea level (amsl)
- Groundwater elevation contour, feet amsl, dashed where approximate
- Approximate groundwater horizontal gradient direction and magnitude

N

0 300 600

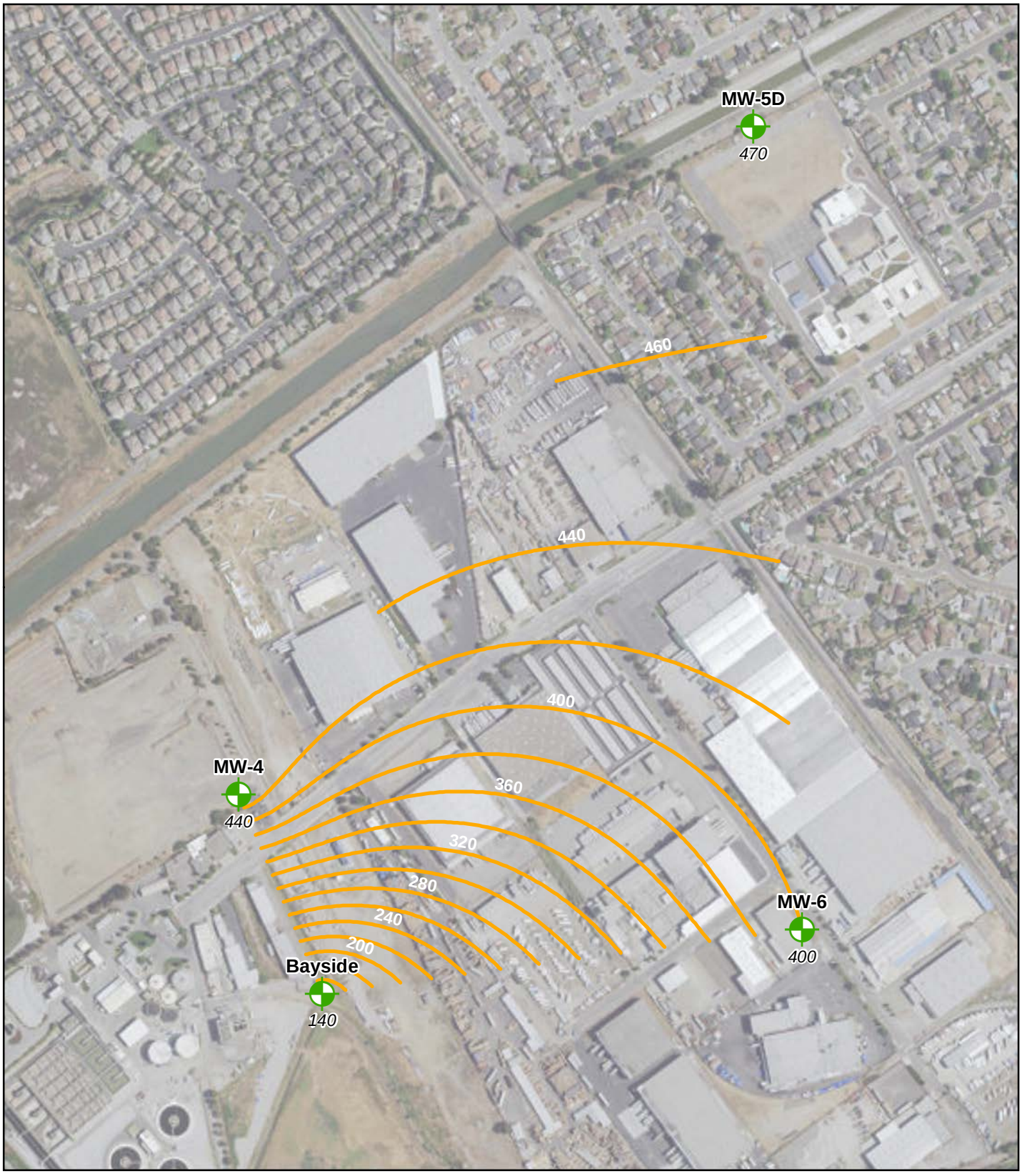
Scale in Feet

FIGURE 3

East Bay Municipal Utility District
2016 Bayside Annual Report

Groundwater Elevation Contours
High Tide (December 1, 2016)

WEST YOST ASSOCIATES



LEGEND

- Groundwater monitoring well and TDS concentration in mg/L.
- TDS concentration contour, dashed where approximate.

N

0 300 600

Scale in Feet

FIGURE 4

East Bay Municipal Utility District
2016 Bayside Annual Report

Groundwater TDS Contours
December 2016

WEST YOST ASSOCIATES

ATTACHMENT A

Groundwater Purging Logs

Site Name: BAYSIDE WELLS					
Well No. MW-5D		Inspector: RCB / JO		Date: 12-21-16	
Purging Data					
Well Diameter: 4"	Tubing Diameter (inches): 3/8"	Well Screen Interval Depth: 500' TO 630'	Static Depth to Water (feet) 15.72		Purge Pump Type: BALDOR GRUNDFOS 2"
Well Purge Volume: 1 well volume = (total well depth - static depth to water) x well capacity Show calculation here:					
Initial Pump or Tubing Depth in Well (Feet): 25'	Purging Initiated at: 11:14	Purging Ended at: 17:55	Total Volume Purged (gallons): 1200		Final Static Depth to Water (feet): 15.64

Time	Volume Purged (gallons)	Total Volume Purged (gallons)	pH (standard units)	Temp (°C)	mS/cm / mS/cm Conductivity (circle units) µmhos/cm or µS/cm	Notes
11:14	100	100	6.97	19.21	0.908 / 0.804	DO 2.31
12:00	150	250	7.34	18.99	0.908 / 0.804	DTW 15.77
12:55	150	400	7.59	20.41	0.927 / 0.845	
13:55	150	550	7.66	20.94	0.927 / 0.856	
14:55	150	700	7.73	21.16	0.926 / 0.858	
15:55	150	850	7.74	21.18	0.927 / 0.859	DTW 15.80
16:55	150	1000	7.71	21.11	0.927 / 0.858	~~DTW 15.64~~ RCB
17:55	200	1200	7.68	21.26	0.927 / 0.861	DTW 15.64

Purging Equipment Codes:
B = Bailer BP = Bladder Pump ESP = Electric Submersible Pump PP= Peristaltic Pump O = Other

Residual Chlorine = 0.02
Date = 12-21-16
Time = 1800

Site Name: BAYSIDE WELLS						
Well No. MW-2I		Inspector: RC BRUSH / RA			Date: 12-27-16	
Purging Data						
Well Diameter: 2"	Tubing Diameter (inches): 3/8"	Well Screen Interval Depth:		Static Depth to Water (feet) 7.02		Purge Pump Type: 12V WHALE
Well Purge Volume: 1 well volume = (total well depth - static depth to water) x well capacity Show calculation here:						
Initial Pump or Tubing Depth in Well (Feet): 25'	Purging Initiated at: 1645	Purging Ended at: 1715	Total Volume Purged (gallons): 105		Final Static Depth to Water (feet): 7.68	

Time	Volume Purged (gallons)	Total Volume Purged (gallons)	pH (standard units)	Temp (°C)	Conductivity (circle units) µmhos/cm or µS/cm	Notes
1650	5	5	8.16	17.27	1.293 / 1.102	DO ~~61.8~~ 63.2% ORP 61.8
1700	50	55	8.14	17.12	0.945 / 0.803	
1710	50	105	8.10	16.95	0.947 / 0.801	DO 57.4% ORP 19.7

Purging Equipment Codes:
B = Bailer BP = Bladder Pump ESP = Electric Submersible Pump PP= Peristaltic Pump O = Other

(HAD LOTS OF ANTS IN WELL)

Residual Chlorine = 0.02
Date = 12-27-16
Time = 1710

Site Name: BAYSIDE WELLS					
Well No. MW-6		Inspector: RCB / RA		Date: 12-27-16	

Purging Data

Well Diameter:	Tubing Diameter (inches):	Well Screen Interval Depth:	Static Depth to Water (feet)	Purge Pump Type:
4"	3/8"		11.42	12V WHALE

Well Purge Volume: 1 well volume = (total well depth - static depth to water) x well capacity
Show calculation here:

Initial Pump or Tubing Depth in Well (Feet):	Purging Initiated at:	Purging Ended at:	Total Volume Purged (gallons):	Final Static Depth to Water (feet):
20'	0820	1220	1255	11.04

Time	Volume Purged (gallons)	Total Volume Purged (gallons)	pH (standard units)	Temp (°C)	mS/cm / mS/cm Conductivity (circle units) µmhos/cm or µS/cm	Notes	
0820	25	25	7.15	19.10	0.253 / 0.225	GWL 11.42	DO 108.1%
0850	150	175	8.20	18.45	0.283 / 0.247	ORP 102.4	
0950	300	475	8.02	18.68	0.346 / 0.304	ORP 89.9	
1050	300	775	7.73	19.17	0.593 / 0.527	GWL 10.97	
1150	300	1075	7.70	19.57	0.766 / 0.687	ORP 53.2	DO 26.2%
1220	150	1225	7.72	19.68	0.776 / 0.698	ORP 28.0 / DO	26.0%

Purging Equipment Codes:
B = Bailer BP = Bladder Pump ESP = Electric Submersible Pump PP= Peristaltic Pump O = Other

Residual Chlorine = 0.00
Date = 12-27-16
Time = 12:25

Site Name: BAYSIDE WELLS				
Well No. MW-4	Inspector: RCB / RA		Date: 12-27-16	

Purging Data

Well Diameter:	Tubing Diameter (inches):	Well Screen Interval Depth:	Static Depth to Water (feet)	Purge Pump Type:
2"	3/8		10.91	12V WHALE

Well Purge Volume: 1 well volume = (total well depth - static depth to water) x well capacity
Show calculation here:

Initial Pump or Tubing Depth in Well (Feet):	Purging Initiated at:	Purging Ended at:	Total Volume Purged (gallons):	Final Static Depth to Water (feet):
20'	1400	1500	350	11.30

Time	Volume Purged (gallons)	Total Volume Purged (gallons)	pH (standard units)	Temp (°C)	Conductivity (circle units) μmhos/cm or μS/cm	Notes
14:10	50	50	7.39	18.23	0.816/0.710	DO 57.0 ORP 170.0
14:30	150	200	8.01	17.64	0.840/0.722	DTW 11.21
15:00	150	350	8.14	18.71	0.850/0.747	ORP 40.0 DO 54.5
						GWL 11.30

Purging Equipment Codes:
B = Bailer BP = Bladder Pump ESP = Electric Submersible Pump PP= Peristaltic Pump O = Other

Residual Chlorine = 0.00
Date = 12-27-16
Time = 15:00

Site Name:					
Well No. MW-2S		Inspector: RCBRUSH / RA		Date: 12-22-16	
Purging Data					
Well Diameter: 2"	Tubing Diameter (inches): 3/8"	Well Screen Interval Depth:	Static Depth to Water (feet) 7.00		Purge Pump Type: 12V WHALE
Well Purge Volume: 1 well volume = (total well depth - static depth to water) x well capacity Show calculation here:					
Initial Pump or Tubing Depth in Well (Feet): 15'	Purging Initiated at: 1600	Purging Ended at: 1615	Total Volume Purged (gallons): 45		Final Static Depth to Water (feet): 7.52

Time	Volume Purged (gallons)	Total Volume Purged (gallons)	pH (standard units)	Temp (°C)	Conductivity (circle units) µmhos/cm or µS/cm	Notes
1605	15	15	6.61	17.20	112.8 / 97.37	DO 72.3 % ORP 240.2
1610	15	30	6.65	17.30	114.2 / 97.39	
1615	15	45	6.73	17.26	114.4 / 97.35	

Purging Equipment Codes:
B = Bailer BP = Bladder Pump ESP = Electric Submersible Pump PP= Peristaltic Pump O = Other

Residual Chlorine = 0.07
Date = 12-27-16
Time = 16:15

GROUNDWATER PURGING LOG

SITE NAME: Bayside Well		
WELL NO: Bayside	INSPECTOR: NPK/WC/CP	DATE: 12/7/16

PURGING DATA

WELL DIAMETER (inches): 18	TUBING DIAMETER (inches): NA	WELL SCREEN INTERVAL DEPTH: NA	INITIAL TOTALIZER READING (gal): 5939097	PURGE PUMP TYPE: O – dedicated well pump

WELL VOLUME PURGE: 30,000 gal

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): NA	PURGING INITIATED AT: 0903	PURGING ENDED AT: 1000	TOTAL VOLUME PURGED (gallons): 30,000	FINAL TOTALIZER READING (gal): 5969097

TIME	VOLUME PURGED (gallons)	TOTAL VOLUME PURGED (gallons)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm
0917	5,000	5,000	7.44	16.8	300.3
0925	5,000	10,000	7.55	17.9	233.9
0934	5,000	15,000	7.73	18.0	230.1
0943	5,000	20,000	7.90	18.2	229.8
0952	5,000	25,000	8.0	18.2	229.8
1000	5,000	30,000	8.09	18.4	228.8

WELL CAPACITY (Gallons Per Foot): 2" = 0.16; 4" = 0.65

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

ATTACHMENT B

Groundwater Elevation Trends for Monitoring Wells

Figure B-1. 2016 MW-1 Groundwater Elevation Trend

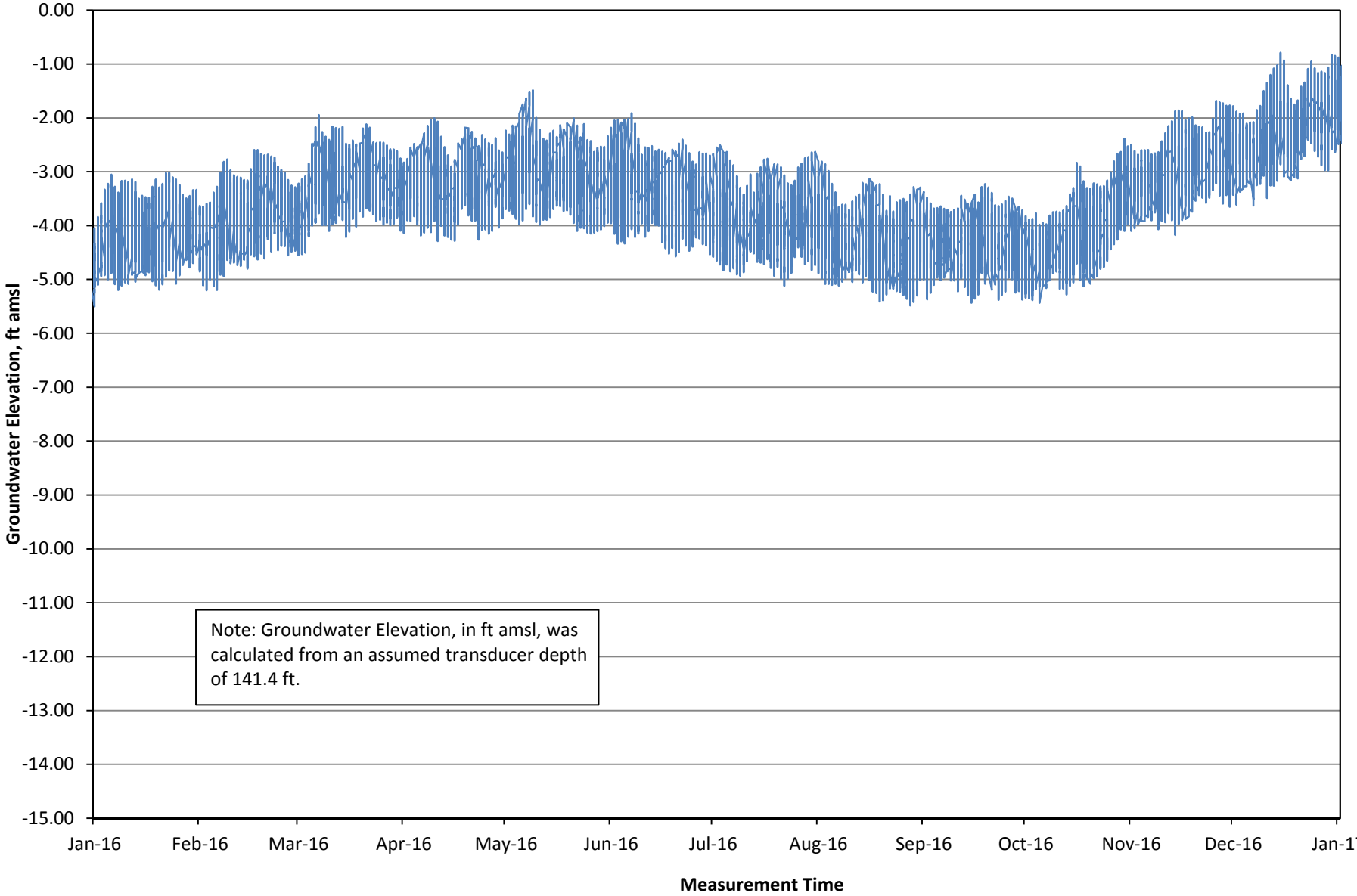


Figure B-2. 2016 MW-2S Groundwater Elevation Trend

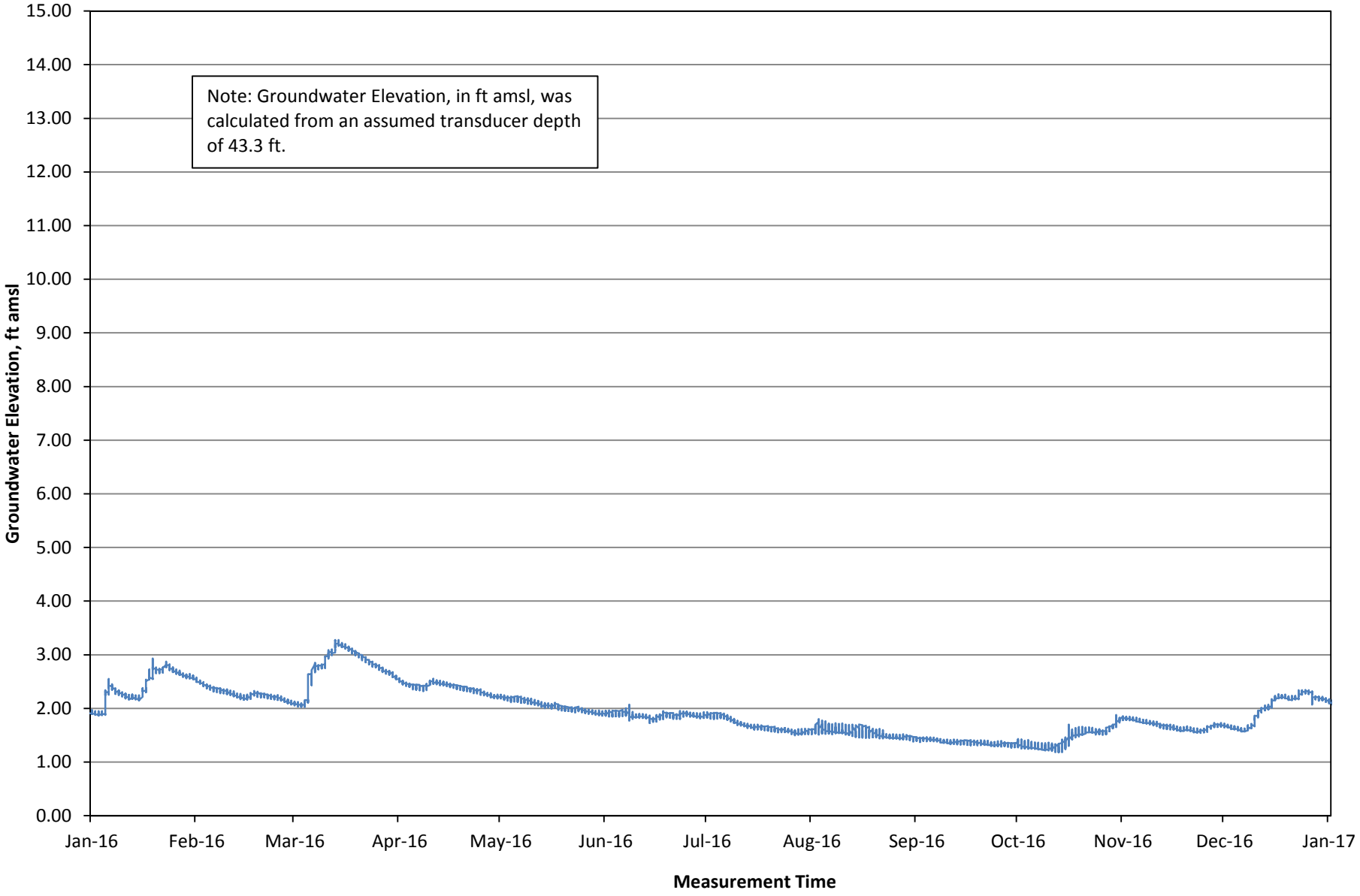


Figure B-3. 2016 MW-2I Groundwater Elevation Trend

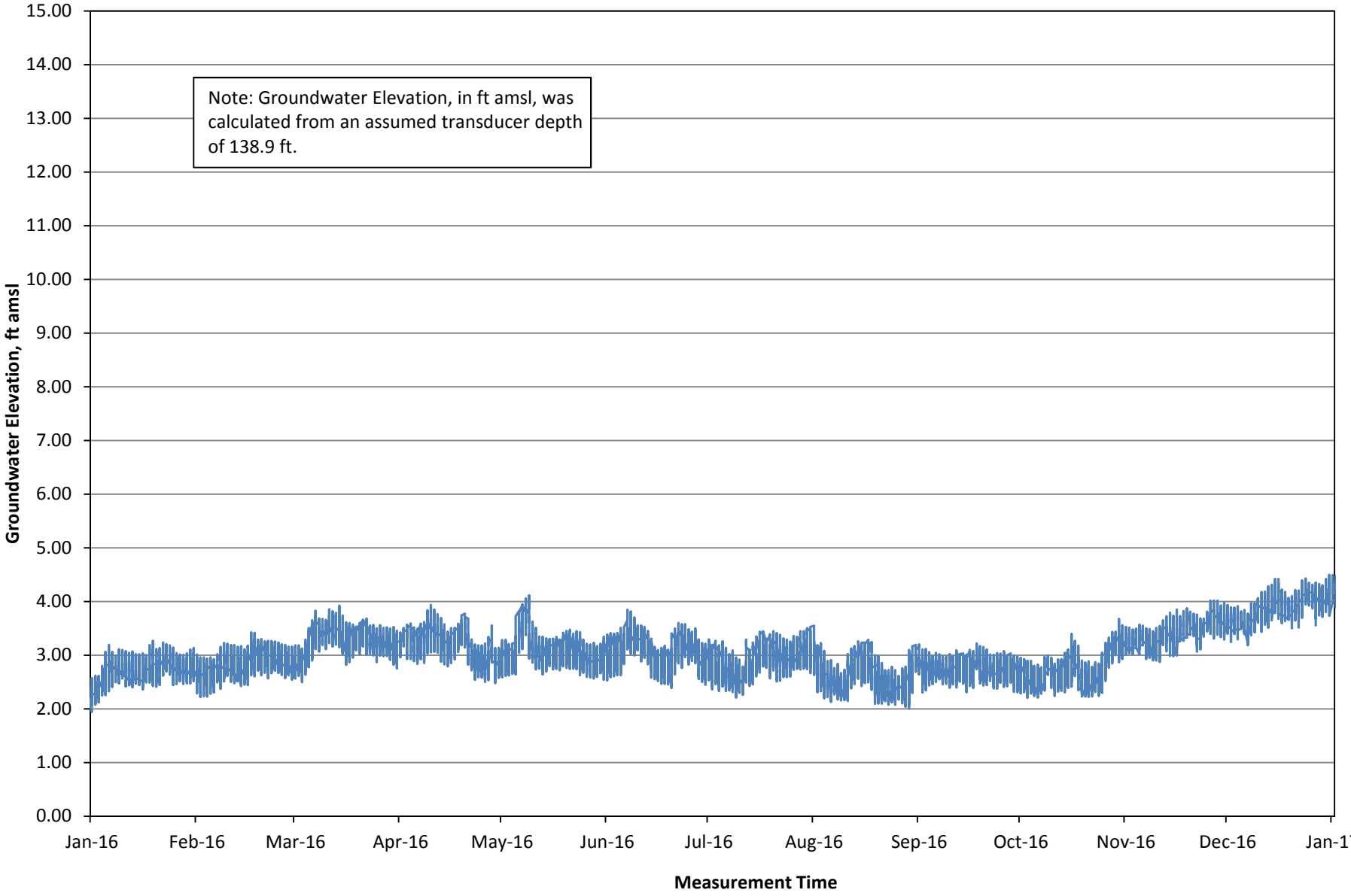


Figure B-4. 2016 MW-3 Groundwater Elevation Trend

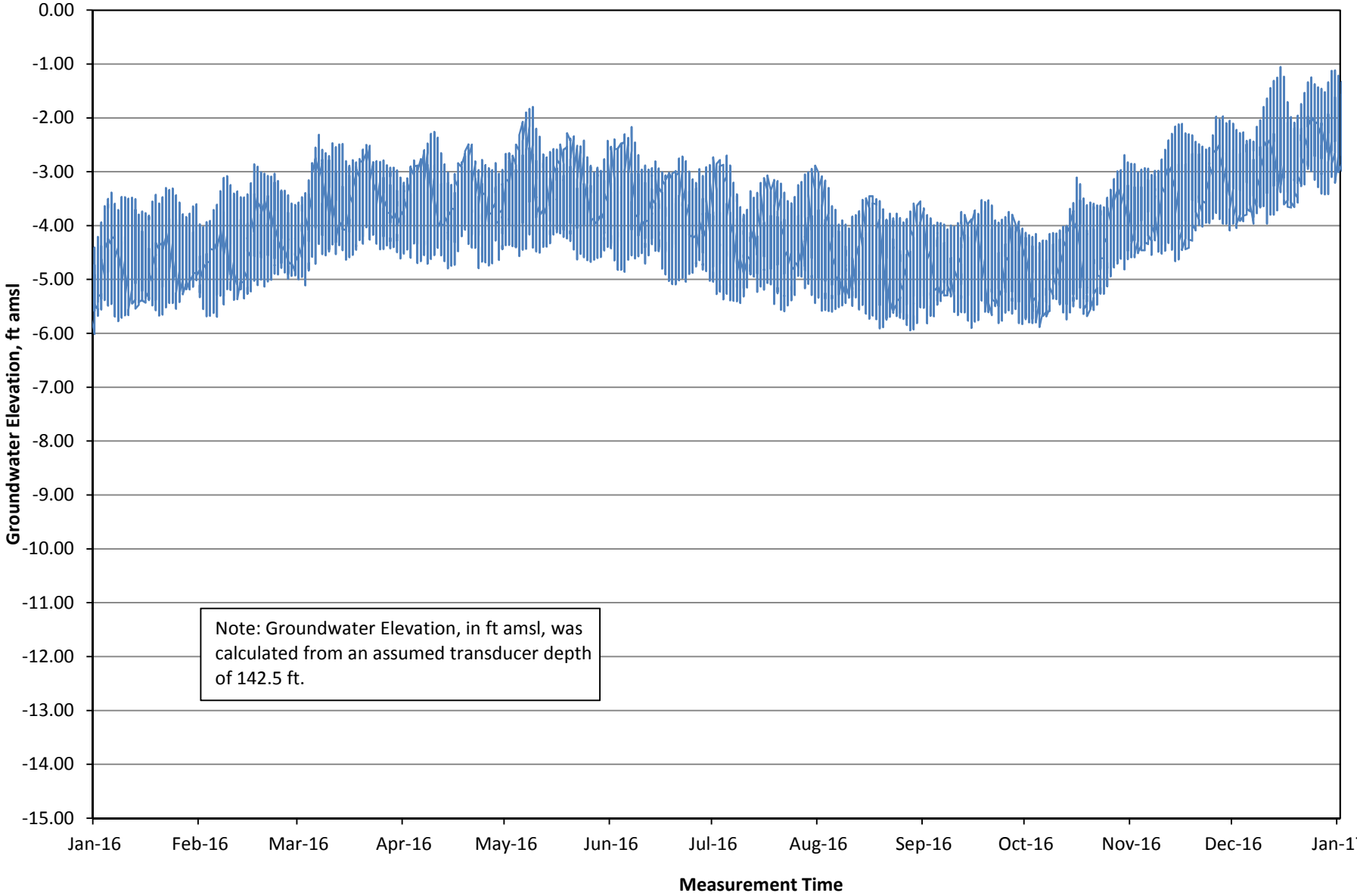


Figure B-5. 2016 MW-4 Groundwater Elevation Trend

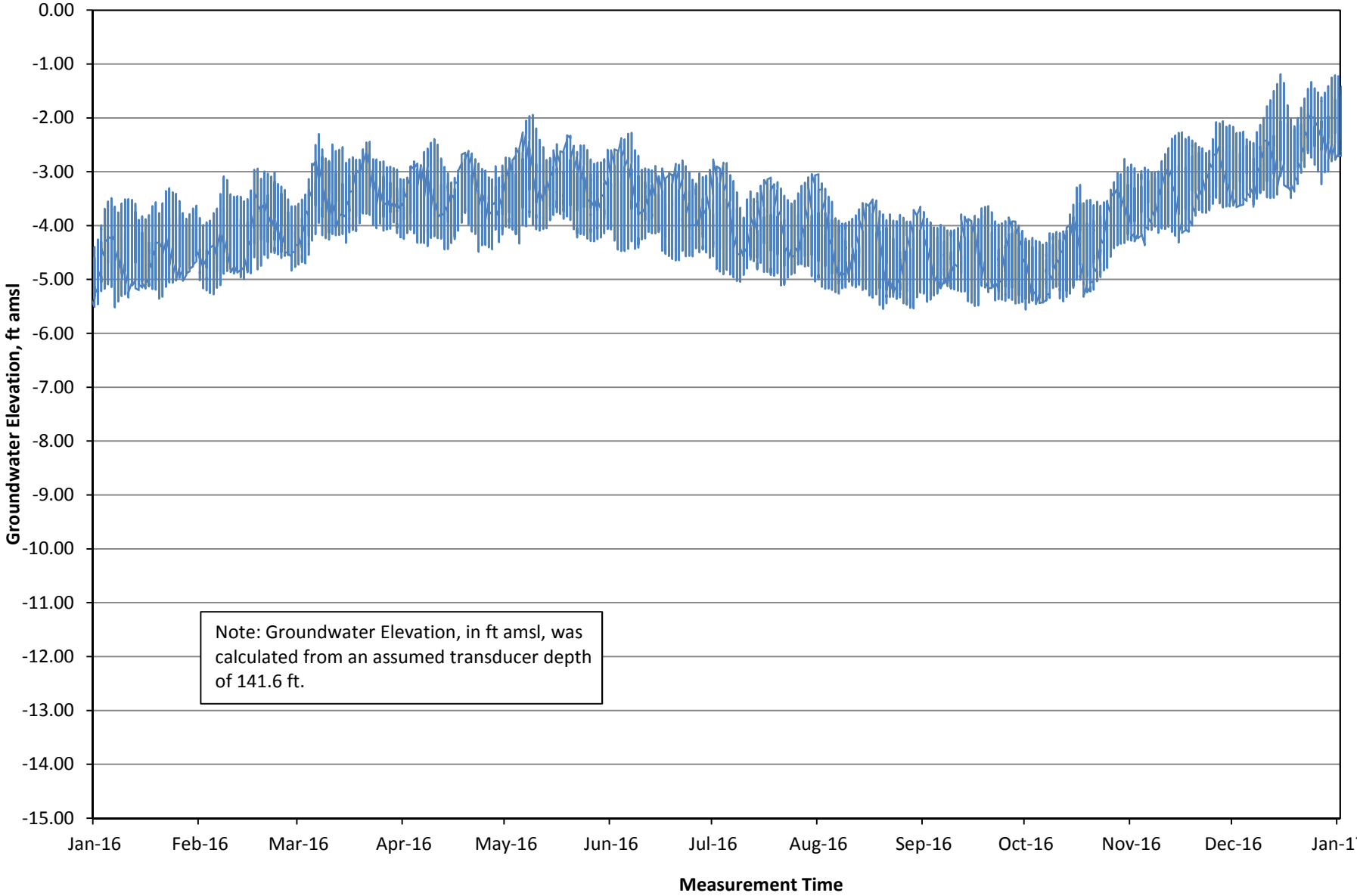


Figure B-6. 2016 MW-5S Groundwater Elevation Trend

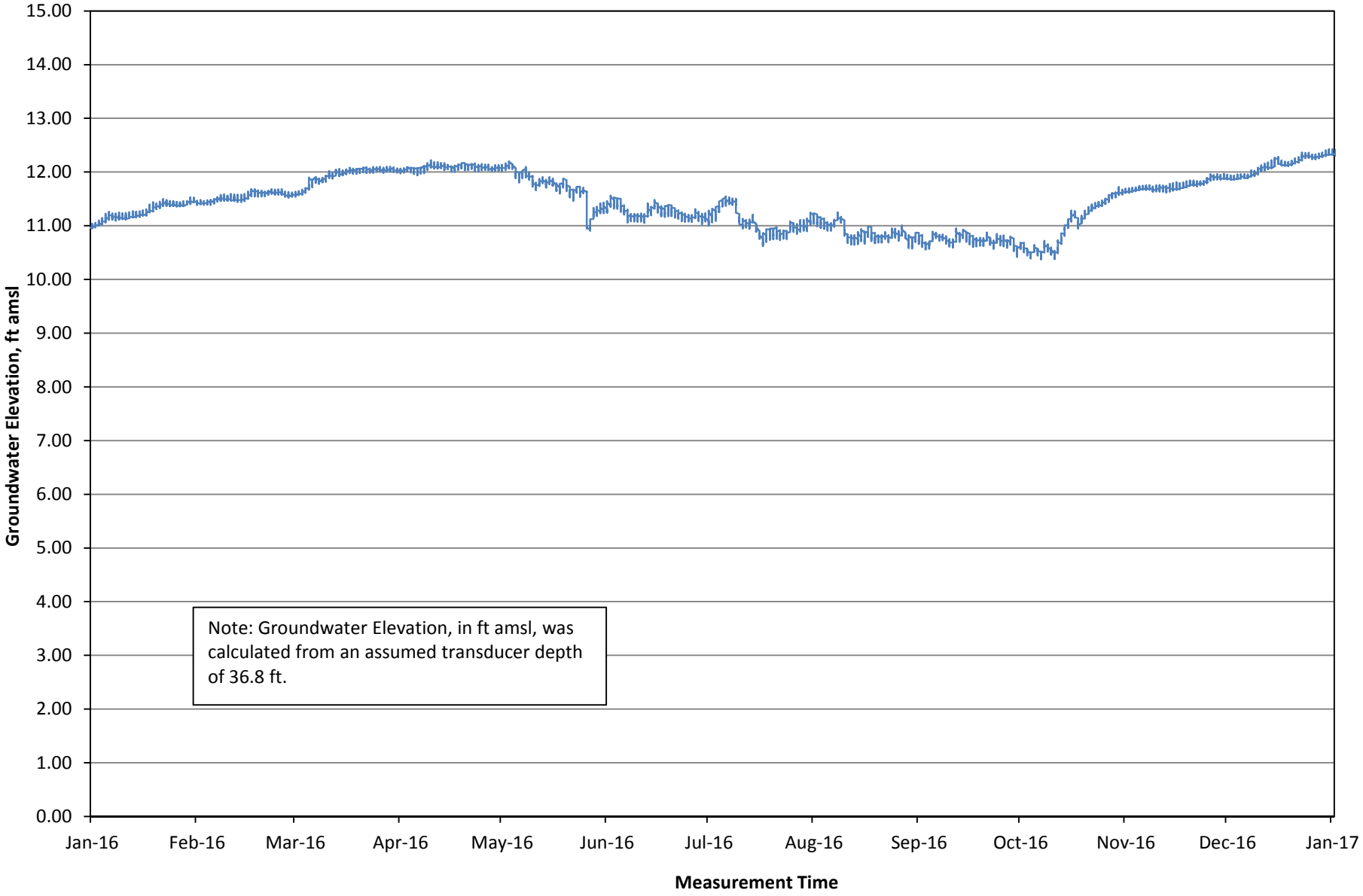


Figure B-7. 2016 MW-5I Groundwater Elevation Trend

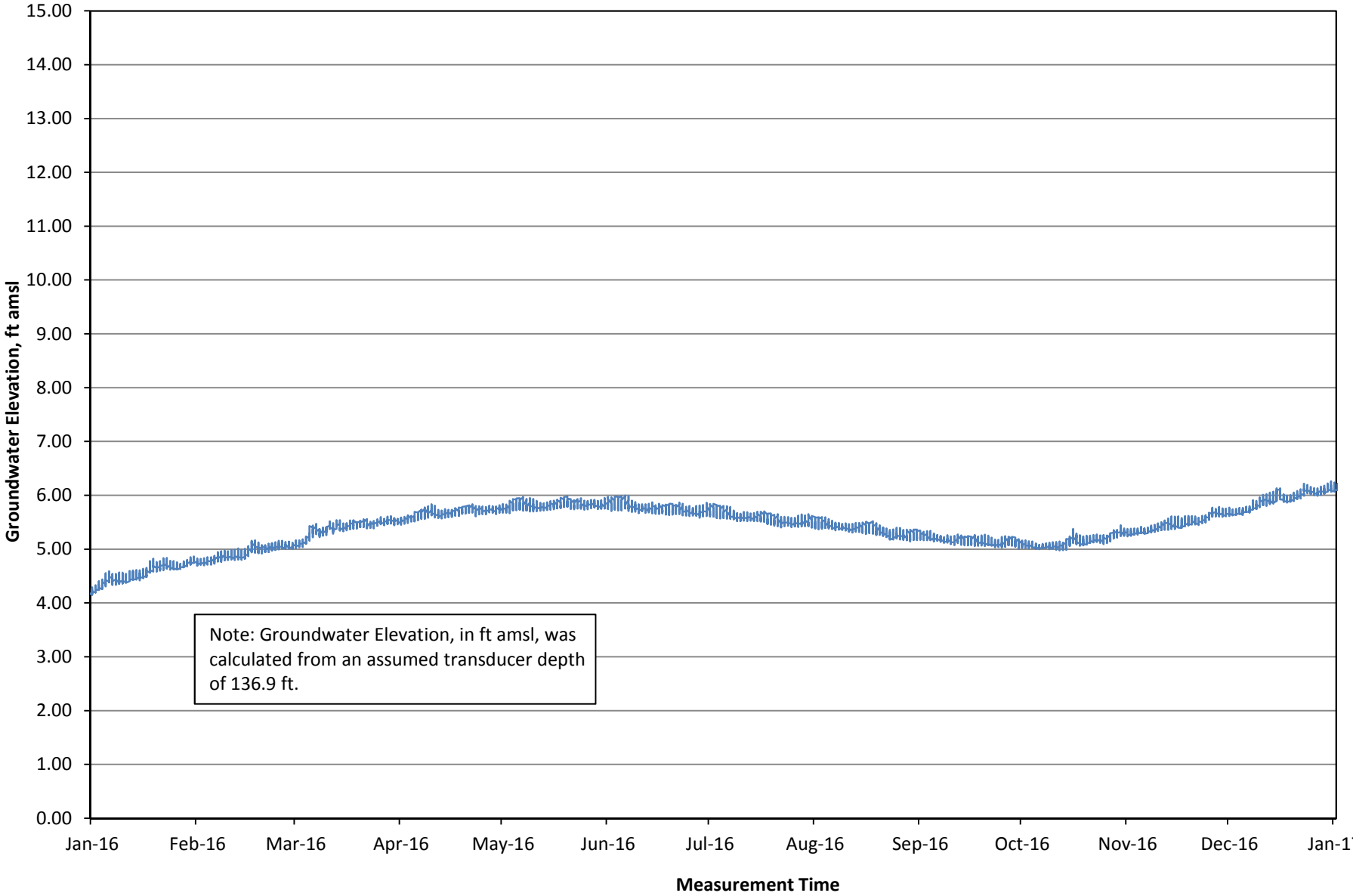


Figure B-8. 2016 MW-5D Groundwater Elevation Trend

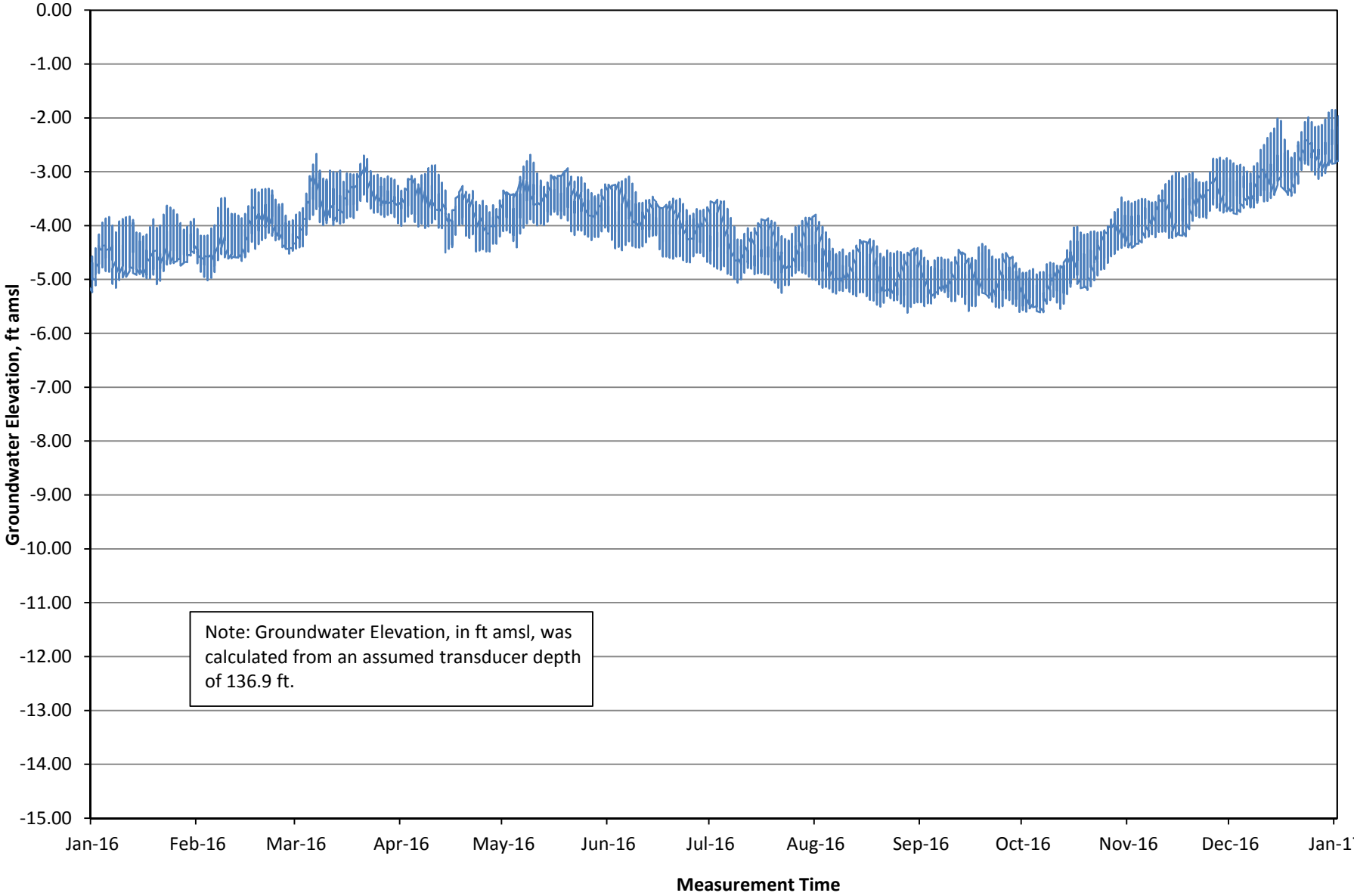


Figure B-9. 2016 MW-6 Groundwater Elevation Trend

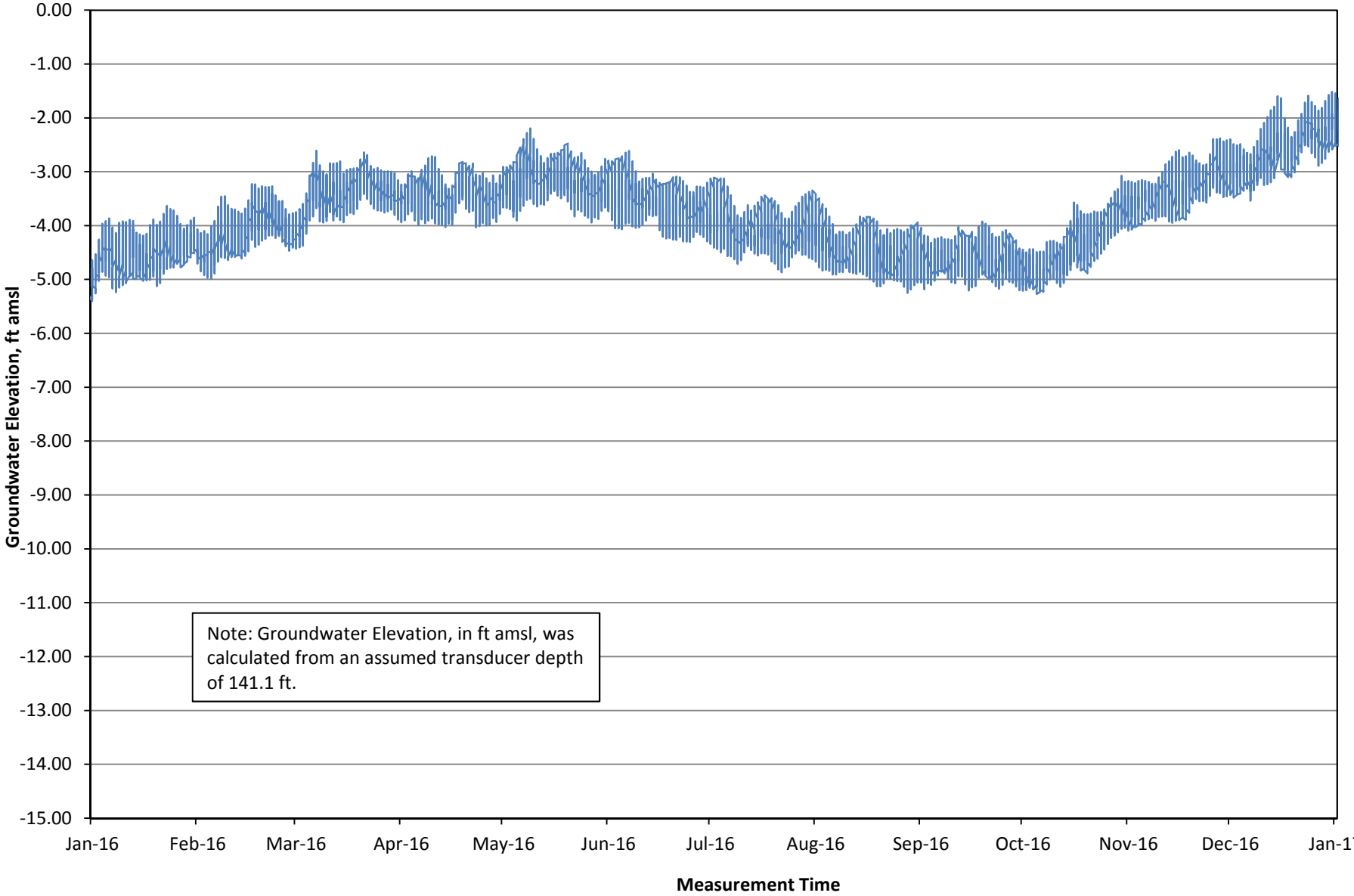


Figure B-10. 2016 MW-7 Groundwater Elevation Trend

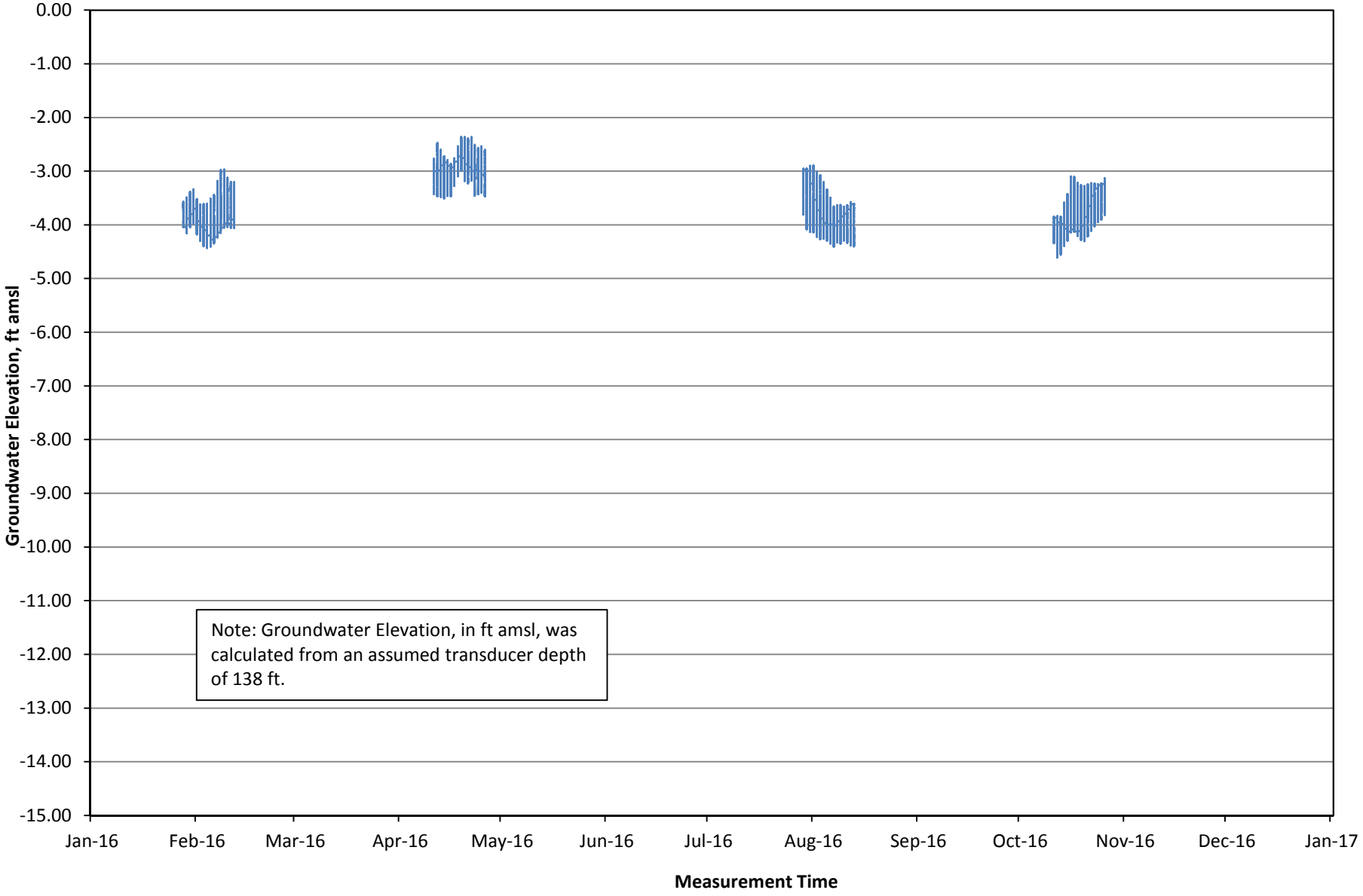


Figure B-11. 2016 MW-9D Groundwater Elevation Trend

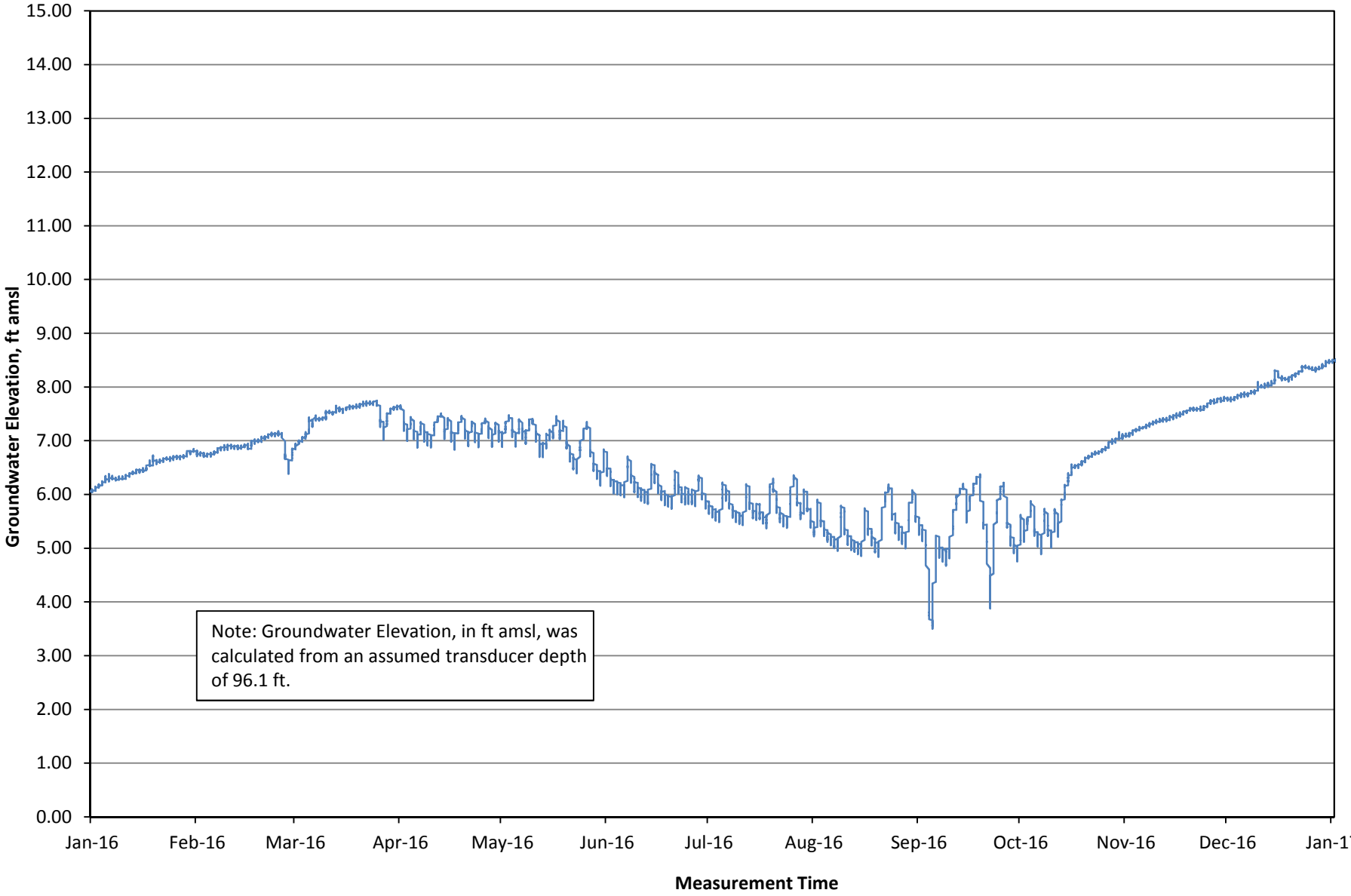


Figure B-12. 2016 MW-10I Groundwater Elevation Trend

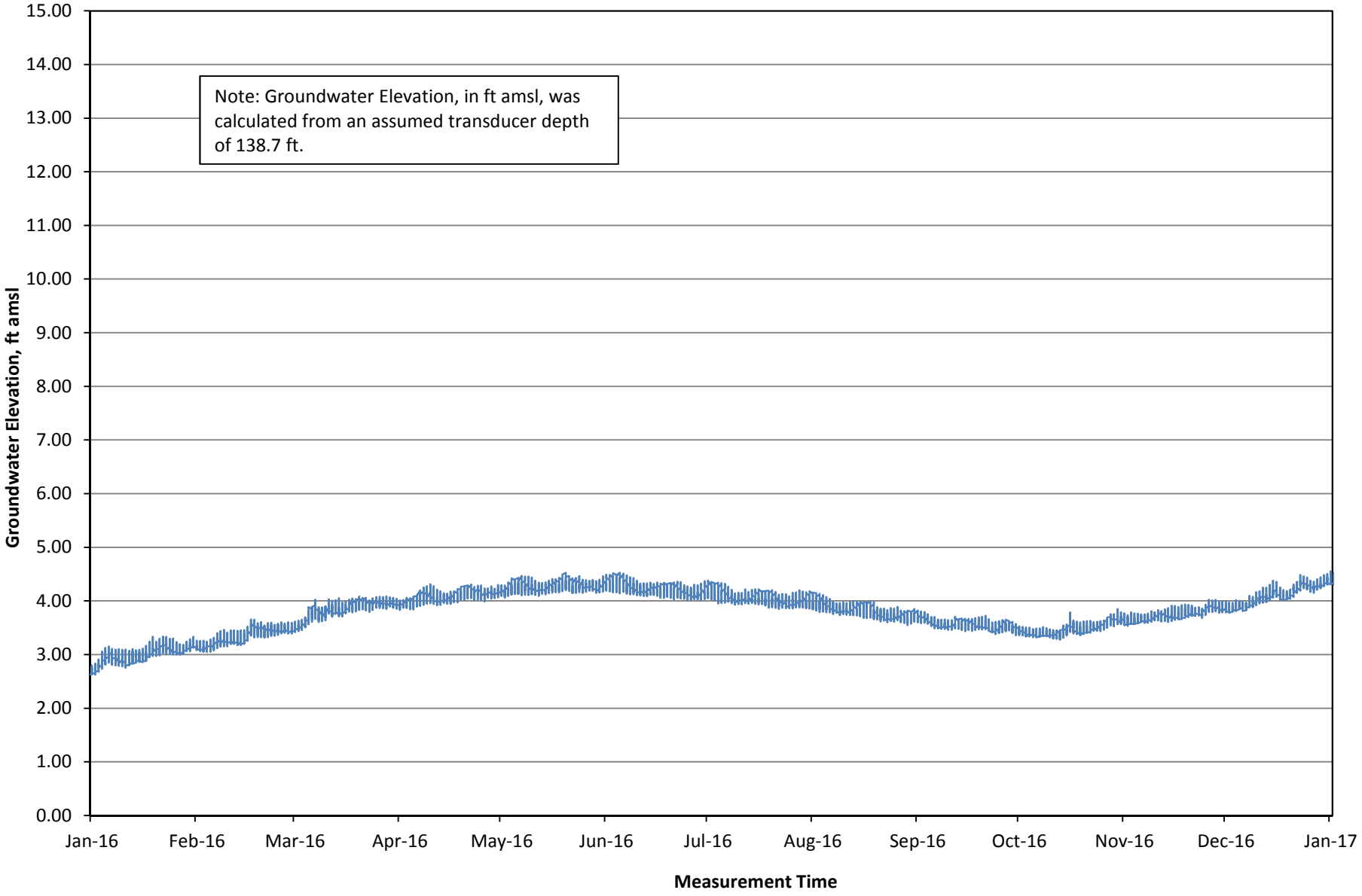
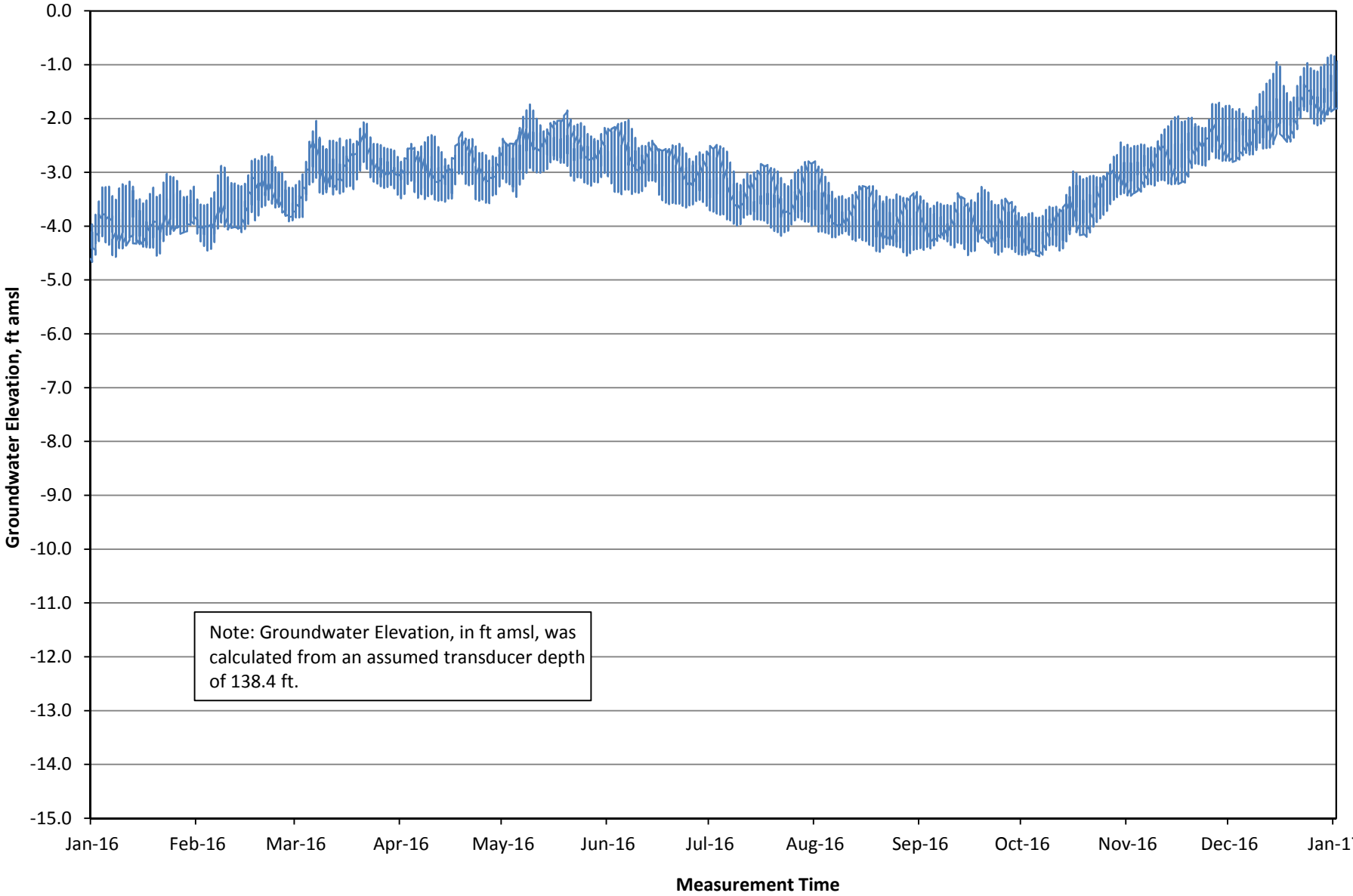


Figure B-13. 2016 MW-10D Groundwater Elevation Trend



ATTACHMENT C

Analytical Lab Reports for 2016 Water Quality Monitoring

EAST BAY MUNICIPAL UTILITY DISTRICT
Laboratory Services Division
Phone (510)287-1432 Fax (510)465-5462
PO Box 24055, MS 59, Oakland, CA 94623

Analytical Report Prepared for DREW LERER

Report generated on: Jan 23, 2017 06:56 am
Login No.: L210457

Reported by:

KRISTI LORENSON
Laboratory Program Manager

Approved by:

NIRMELA ARSEM
Laboratory Services Division Manager

LSR B455-0706-1
Project Title: BAYSIDE GROUND WATER PROJECT

Login Performance Summary
3 - Samples received by the lab on: Dec 07 2016, 11:55 am
0 - Lost Analyses
1 - Hold Time Exceedences
Turn-around-time not met

Samples included in this report:

Sample	Type	Collected	Site	Locator	ClientID
L210457-1	GRAB	07-Dec-2016 10:08	WTP BAYSIDE	BAY WELL HEAD	-
L210457-2	GRAB	07-Dec-2016 10:48	WTP BAYSIDE	BAY WELL HEAD	-
L210457-3	QCFB	07-Dec-2016 10:24	FIELD QC	COLLECTION QC	-

Legend to the laboratory qualifiers used in this report:
* - Duplicate value outside of control limits
< - Less than
D - Surrogate spike outside of control limits
H - Analyzed past hold time
J - Estimated value, quantitation does not meet SOP criteria
JB - Estimated value, method blank exceeds 10% of sample concentration
N - Spike recovery outside of control limits
U - Analyte not detected
Qualifiers for subcontract work - See textvalue for description

EAST BAY MUNICIPAL UTILITY DISTRICT
Laboratory Services Division
PO Box 24055, MS 59, Oakland, CA 94623
Phone (510)287-1432 Fax (510)465-5462

Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-1 (P218167-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:08am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Bayside Sampling per DDW T22 and WDR; +FLD DATA: pH =8.09 CL2R = 0.
1mg/L (MDL=0.02 mg/L); 524 & TOC acidified with 1+1 HCl? Y , Acid #1364181

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: SAMPLER PROVIDED FIELD MEASUREMENTS - DATA ENTRY LIST FOR FIELD DATA							RawH2O	
FIELD ANALYSIS/OBSERVATION DATA PARAMETERS								
PH		**8.09**	pH units	1				
CHLORINE RESIDUAL: TOTAL		**0.1**	mg/L	1	0.02			
Run ID: R273835 / Work Group No.: WG211340								
Prep Date1: 07-DEC-16 Analyzed 07-Dec-16 10:08								
Method: EPA 524.2 - Volatile Organics, GC/MS							RawH2O	
TARGET ANALYTES								
ACETONE	U	0.35	ug/L	1	0.35			
ACRYLONITRILE	U	0.45	ug/L	1	0.45			
ALLYL CHLORIDE	U	0.17	ug/L	1	0.17			
TERT-AMYL METHYL ETHER	U	0.17	ug/L	1	0.17	3		
BENZENE	U	0.14	ug/L	1	0.14	0.5		
BROMOBENZENE	U	0.16	ug/L	1	0.16			
BROMOCHLOROMETHANE	U	0.21	ug/L	1	0.21			
BROMODICHLOROMETHANE	U	0.21	ug/L	1	0.21			
BROMOFORM	U	0.31	ug/L	1	0.31			
BROMOMETHANE	U	0.55	ug/L	1	0.55			
TERT-BUTYL ALCOHOL	U	1.7	ug/L	1	1.7	2		
N-BUTYLBENZENE	U	0.25	ug/L	1	0.25			
SEC-BUTYLBENZENE	U	0.69	ug/L	1	0.69			
TERT-BUTYLBENZENE	U	0.18	ug/L	1	0.18			
CARBON DISULFIDE	U	0.44	ug/L	1	0.44			
CARBON TETRACHLORIDE	U	0.25	ug/L	1	0.25	0.5		
CHLOROACETONITRILE	U	0.23	ug/L	1	0.23			
CHLOROBENZENE	U	0.21	ug/L	1	0.21	0.5		
1-CHLOROBUTANE	U	0.21	ug/L	1	0.21			
CHLOROETHANE	U	0.38	ug/L	1	0.38			
CHLOROFORM		**4.3**	ug/L	1	0.15			
CHLOROMETHANE	U	0.15	ug/L	1	0.15			
O-CHLOROTOLUENE	U	0.19	ug/L	1	0.19			
P-CHLOROTOLUENE	U	0.19	ug/L	1	0.19			
DIBROMOCHLOROMETHANE	U	0.26	ug/L	1	0.26			
DIBROMOCHLOROPROPANE	U	0.28	ug/L	1	0.28			
DIBROMOMETHANE	U	0.28	ug/L	1	0.28			
1,2-DICHLOROBENZENE	U	0.23	ug/L	1	0.23	0.5		
1,3-DICHLOROBENZENE	U	0.23	ug/L	1	0.23			
1,4-DICHLOROBENZENE	U	0.18	ug/L	1	0.18	0.5		
TRANS-1,4-DICHLORO-2-BUTENE	U	0.20	ug/L	1	0.2			
DICHLORODIFLUOROMETHANE	U	0.17	ug/L	1	0.17	0.5		
1,1-DICHLOROETHANE	U	0.21	ug/L	1	0.21	0.5		
1,2-DICHLOROETHANE	U	0.14	ug/L	1	0.14	0.5		
1,1-DICHLOROETHENE	U	0.20	ug/L	1	0.2	0.5		
CIS-1,2-DICHLOROETHENE	U	0.25	ug/L	1	0.25	0.5		
TRANS-1,2-DICHLOROETHENE	U	0.19	ug/L	1	0.19	0.5		
1,2-DICHLOROPROPANE	U	0.15	ug/L	1	0.15	0.5		
1,3-DICHLOROPROPANE	U	0.22	ug/L	1	0.22			
SEC-DICHLOROPROPANE	U	0.24	ug/L	1	0.24			
1,1-DICHLOROPROPENE	U	0.26	ug/L	1	0.26			
1,1-DICHLORO-2-PROPANONE	U	0.21	ug/L	1	0.21			
CIS-1,3-DICHLOROPROPENE	U	0.23	ug/L	1	0.23	0.5		
TRANS-1,3-DICHLOROPROPENE	U	0.18	ug/L	1	0.18	0.5		

RL is either the client requested or regulatory mandated Reporting Limit. ML is the regulatory mandated Minimum Level

EAST BAY MUNICIPAL UTILITY DISTRICT
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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-1 (P218167-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:08am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Bayside Sampling per DDW T22 and WDR; +FLD DATA: pH =8.09 CL2R = 0.
1mg/L (MDL=0.02 mg/L); 524 & TOC acidified with 1+1 HCl? Y , Acid #1364181

Method Reference — Matrix — Tag

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML
DIISOPROPYL ETHER	U	0.29	ug/L	1	0.29	
ETHYL BENZENE	U	0.18	ug/L	1	0.18	0.5
ETHYL ETHER	U	0.20	ug/L	1	0.2	
ETHYLENE DIBROMIDE	U	0.19	ug/L	1	0.19	
ETHYLMETHACRYLATE	U	0.14	ug/L	1	0.14	
ETHYL-T-BUTYL ETHER	U	0.19	ug/L	1	0.19	3
FLUOROTRICHLOROMETHANE	U	0.22	ug/L	1	0.22	5
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	U	0.25	ug/L	1	0.25	10
HEXACHLOROBUTADIENE	U	0.20	ug/L	1	0.2	
HEXACHLOROETHANE	U	0.25	ug/L	1	0.25	
2-HEXANONE	U	0.25	ug/L	1	0.25	
IODOMETHANE	U	0.69	ug/L	1	0.69	
ISOPROPYLBENZENE	U	0.21	ug/L	1	0.21	
P-ISOPROPYLTOLUENE	U	0.22	ug/L	1	0.22	
METHYLACRYLONITRILE	U	0.20	ug/L	1	0.2	
METHYLACRYLATE	U	0.26	ug/L	1	0.26	
METHYLENE CHLORIDE	U	0.18	ug/L	1	0.18	0.5
2-BUTANONE	U	0.43	ug/L	1	0.43	
4-METHYL-2-PENTANONE	U	0.20	ug/L	1	0.2	
METHYLMETHACRYLATE	U	0.28	ug/L	1	0.28	
METHYL-T-BUTYL ETHER	U	0.39	ug/L	1	0.39	3
NAPHTHALENE	U	0.20	ug/L	1	0.2	
NITROBENZENE	U	1.0	ug/L	1	1	
2-NITROPROPANE	U	0.77	ug/L	1	0.77	
PENTACHLOROETHANE	U	0.17	ug/L	1	0.17	
N-PROPYLBENZENE	U	0.20	ug/L	1	0.2	
STYRENE	U	0.19	ug/L	1	0.19	0.5
1,1,1,2-TETRACHLOROETHANE	U	0.18	ug/L	1	0.18	
1,1,2,2-TETRACHLOROETHANE	U	0.20	ug/L	1	0.2	0.5
TETRACHLOROETHENE	U	0.20	ug/L	1	0.2	0.5
TETRAHYDROFURAN	U	0.54	ug/L	1	0.54	
TOLUENE	U	0.16	ug/L	1	0.16	0.5
1,2,3-TRICHLOROBENZENE	U	0.24	ug/L	1	0.24	
1,2,4-TRICHLOROBENZENE	U	0.19	ug/L	1	0.19	0.5
1,1,1-TRICHLOROETHANE	U	0.19	ug/L	1	0.19	0.5
1,1,2-TRICHLOROETHANE	U	0.21	ug/L	1	0.21	0.5
TRICHLOROETHENE	U	0.17	ug/L	1	0.17	0.5
1,2,3-TRICHLOROPROPANE	U	0.19	ug/L	1	0.19	
1,2,4-TRIMETHYLBENZENE	U	0.21	ug/L	1	0.21	
1,3,5-TRIMETHYLBENZENE	U	0.20	ug/L	1	0.2	
VINYL CHLORIDE	U	0.22	ug/L	1	0.22	0.5
O-XYLENE	U	0.18	ug/L	1	0.18	0.5
M+P XYLENES	U	0.37	ug/L	1	0.37	0.5
VALUE(S) USED TO CALCULATE OTHER VALUE(S)						
TOTAL 1,3-DICHLOROPROPENES	U	0.50	ug/L	1		0.5
TOTAL XYLENES	U	0.50	ug/L	1		0.5
INTERNAL STANDARD						
FLUOROBENZENE		117	% recovery	1		
SURROGATE						
4-BROMOFLUOROBENZENE		101	% recovery	1		
D4-1,2-DICHLOROBENZENE		101	% recovery	1		

Run ID: R274107 / Work Group No.: WG211574
Prep Date1: 19-DEC-16 Analyzed 19-Dec-16 11:26

RL is either the client requested or regulatory mandated Reporting Limit. ML is the regulatory mandated Minimum Level

EAST BAY MUNICIPAL UTILITY DISTRICT
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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
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Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Bayside Sampling per DDW T22 and WDR; +FLD DATA: pH =8.09 CL2R = 0.
1mg/L (MDL=0.02 mg/L); 524 & TOC acidified with 1+1 HCl? Y , Acid #1364181

Method Reference — Matrix: RawH2O — Tag:

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML
Method: EPA 525.2 - Semivolatile Organics, GC/MS						
TARGET ANALYTES						
ACENAPHTHYLENE	U	0.035	ug/L	.977	0.035	
ALACHLOR	U	0.021	ug/L	.977	0.021	1
ALDRIN	U	0.011	ug/L	.977	0.011	
ANTHRACENE	U,N	0.041	ug/L	.977	0.041	
ATRAZINE	U	0.025	ug/L	.977	0.025	0.5
BENZO(A)ANTHRACENE	U,N,*	0.017	ug/L	.977	0.017	
BENZO(B)FLUORANTHENE	U	0.014	ug/L	.977	0.014	
BENZO(K)FLUORANTHENE	U	0.013	ug/L	.977	0.013	
BENZO(A)PYRENE	U,N	0.011	ug/L	.977	0.011	0.1
BENZO(GHI)PERYLENE	U	0.016	ug/L	.977	0.016	
BIS(2-ETHYLHEXYL)ADIPATE	U	0.028	ug/L	.977	0.028	5
BIS(2-ETHYLHEXYL)PHTHALATE	**JB**	**0.29**	ug/L	.977	0.058	3
ALPHA BHC	U	0.012	ug/L	.977	0.012	
BETA BHC	U	0.020	ug/L	.977	0.02	
DELTA BHC	U	0.012	ug/L	.977	0.012	
GAMMA BHC	U	0.017	ug/L	.977	0.017	0.2
BROMACIL	U	0.018	ug/L	.977	0.018	
BUTACHLOR	U	0.025	ug/L	.977	0.025	
BUTYLBENZYL PHTHALATE	**JB**	**0.23**	ug/L	.977	0.025	
CHLORDANE	U	0.098	ug/L	.977	0.098	0.1
CHLORDANE-ALPHA	U	0.018	ug/L	.977	0.018	
CHLORDANE-GAMMA	U	0.018	ug/L	.977	0.018	
CHLOROBENZILATE	U	0.046	ug/L	.977	0.046	
CHLORONEB	U	0.051	ug/L	.977	0.051	
CHLOROTHALONIL	U	0.031	ug/L	.977	0.031	
CHRYSENE	U	0.012	ug/L	.977	0.012	
DCPA	U	0.027	ug/L	.977	0.027	
4,4'-DDD	U	0.021	ug/L	.977	0.021	
4,4'-DDE	U	0.024	ug/L	.977	0.024	
4,4'-DDT	U	0.022	ug/L	.977	0.022	
DIBENZO(A,H)ANTHRACENE	U	0.014	ug/L	.977	0.014	
DI-N-BUTYL PHTHALATE	U	0.027	ug/L	.977	0.027	
DIELDRIN	U	0.022	ug/L	.977	0.022	
DIETHYL PHTHALATE	U	0.014	ug/L	.977	0.014	
DIMETHOATE	U	0.037	ug/L	.977	0.037	
DIMETHYL PHTHALATE	U	0.0098	ug/L	.977	0.0098	
2,4-DINITROTOLUENE	U	0.024	ug/L	.977	0.024	
2,6-DINITROTOLUENE	U	0.019	ug/L	.977	0.019	
ALPHA ENDOSULFAN	U	0.012	ug/L	.977	0.012	
BETA ENDOSULFAN	U	0.019	ug/L	.977	0.019	
ENDOSULFAN SULFATE	U	0.034	ug/L	.977	0.034	
ENDRIN	U	0.030	ug/L	.977	0.03	0.1
ENDRIN ALDEHYDE	U	0.028	ug/L	.977	0.028	
EPTC	U	0.0098	ug/L	.977	0.0098	
ETRIDIAZOLE	U	0.0098	ug/L	.977	0.0098	
FLUORENE	U	0.021	ug/L	.977	0.021	
HEPTACHLOR	U	0.0059	ug/L	.977	0.0059	0.01
HEPTACHLOR EPOXIDE	U	0.0059	ug/L	.977	0.0059	0.01
HEXACHLOROBENZENE	U	0.018	ug/L	.977	0.018	0.5
HEXACHLOROCYCLOPENTADIENE	U	0.019	ug/L	.977	0.019	1
HEXAZINONE	U	0.034	ug/L	.977	0.034	

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-1 (P218167-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:08am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Bayside Sampling per DDW T22 and WDR; +FLD DATA: pH =8.09 CL2R = 0.
1mg/L (MDL=0.02 mg/L); 524 & TOC acidified with 1+1 HCl? Y , Acid #1364181

Method Reference						Matrix	Tag
Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	
INDENO(1,2,3-CD)PYRENE	U	0.013	ug/L	.977	0.013		
ISOPHORONE	U	0.011	ug/L	.977	0.011		
METHOXYCHLOR	U	0.011	ug/L	.977	0.011	10	
METOLACHLOR	U	0.022	ug/L	.977	0.022		
METRIBUZIN	U	0.024	ug/L	.977	0.024		
MOLINATE	U	0.025	ug/L	.977	0.025	2	
PENTACHLOROPHENOL	U	0.10	ug/L	.977	0.1		
CIS-PERMETHRIN	U	0.046	ug/L	.977	0.046		
TRANS-PERMETHRIN	U	0.020	ug/L	.977	0.02		
PHENANTHRENE	U	0.015	ug/L	.977	0.015		
PROMETRYN	U,J,N,*	0.021	ug/L	.977	0.021		
Poor QC recovery							
PROPACHLOR	U	0.014	ug/L	.977	0.014		
PYRENE	U	0.029	ug/L	.977	0.029		
SIMAZINE	U	0.027	ug/L	.977	0.027	1	
TERBACIL	U	0.031	ug/L	.977	0.031		
THIOBENCARB	U	0.018	ug/L	.977	0.018	1	
TRIFLURALIN	U	0.0098	ug/L	.977	0.0098		
INTERNAL STANDARD							
D10-ACENAPHTHENE		87.0	% recovery	1	1		
D10-PHENANTHRENE		95.0	% recovery	1	1		
D12-CHRYSENE		86.0	% recovery	1	1		
SURROGATE							
D12-PERYLENE	D	37	% recovery	1	1		
1,3-DIMETHYL-2-NITROBENZENE		100	% recovery	1	1		
TRIPHENYL PHOSPHATE		120	% recovery	1	1		

Run ID: R274218 / Work Group No.: WG211599
Prep Date1: 09-DEC-16 Prep Date2: 19-DEC-16 Analyzed 19-Dec-16 20:40

Method: EPA 548.1 - Endothall, GC/MS						RawH2O
TARGET ANALYTES						
ENDOTHALL	U,N	1.1	ug/L	1	1.1	45
INTERNAL STANDARD						
D10-ACENAPHTHENE		107	% recovery		1	

Run ID: R274038 / Work Group No.: WG211421
Prep Date1: 08-DEC-16 Prep Date2: 12-DEC-16 Analyzed 12-Dec-16 18:58

Method: EPA 8260B - Trihalomethanes, GC/MS						GroundH2O
TARGET ANALYTES						
CHLOROFORM		**4.4**	ug/L	1	0.17	
BROMODICHLOROMETHANE		**0.19**	ug/L	1	0.079	
DIBROMOCHLOROMETHANE	U	0.13	ug/L	1	0.13	
BROMOFORM	U	0.23	ug/L	1	0.23	
INTERNAL STANDARD						
FLUOROBENZENE		96.8	% recovery	1		
D5-CHLOROBENZENE		101	% recovery	1		
D4-1,4-DICHLOROBENZENE		97.6	% recovery	1		
SURROGATE						
D8-TOLUENE		99.4	% recovery	1		
4-BROMOFLUOROBENZENE		97.0	% recovery	1		

Run ID: R273911 / Work Group No.: WG211355
Prep Date1: 08-DEC-16 Analyzed 08-Dec-16 12:22

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-1 (P218167-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:08am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Bayside Sampling per DDW T22 and WDR; +FLD DATA: pH =8.09 CL2R = 0.
1mg/L (MDL=0.02 mg/L); 524 & TOC acidified with 1+1 HCl? Y , Acid #1364181

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	Matrix RL/ML	Tag
Method: EPA 300.1 - Ion Chromatography						RawH2O	
Instrument calibrated 01-DEC-16							
TARGET ANALYTES							
FLUORIDE		**0.51**	mg/L	1	0.0004	0.1	
CHLORIDE		**17**	mg/L	1	0.002		
NITRITE AS N	U	0.00050	mg/L	1	0.0005	0.4	
NITRATE AS N	U	0.00090	mg/L	1	0.0009	0.4	
SULFATE		**18**	mg/L	1	0.003	0.5	
SURROGATE							
DICHLOROACETATE		100	% recovery	1			
Run ID: R273860 / Work Group No.: WG211329							
Prep Date1: 07-DEC-16 Analyzed 07-Dec-16 20:06							
Method: EPA 314.0 - Ion Chromatography						RawH2O	
Instrument calibrated 27-DEC-16							
TARGET ANALYTES							
PERCHLORATE	U	0.500	ug/L	1	0.5	4	
Run ID: R274296 / Work Group No.: WG211771							
Prep Date1: 27-DEC-16 Analyzed 27-Dec-16 19:29							
Method: EPA 504.1 - EDB & DBCP, GC/ECD						RawH2O	
TARGET ANALYTES							
ETHYLENE DIBROMIDE	U	0.0030	ug/L	1	0.003	0.02	
DIBROMOCHLOROPROPANE	U	0.0060	ug/L	1	0.006	0.01	
Run ID: R274179 / Work Group No.: WG211535							
Prep Date1: 15-DEC-16 Prep Date2: 15-DEC-16 Analyzed 15-Dec-16 16:46							
Method: EPA 515.3 - Chlorinated Acids, GC/ECD						RawH2O	
TARGET ANALYTES							
ACIFLUORFEN	U	0.028	ug/L	1	0.028		
BENTAZON	U	0.14	ug/L	1	0.14	2	
CHLORAMBEN	U	0.012	ug/L	1	0.012		
(2,4-DICHLOROPHENOXY)ACETIC ACID	U	0.056	ug/L	1	0.056	10	
DALAPON	U	0.25	ug/L	1	0.25	10	
4-(2,4-DICHLOROPHENOXY)BUTANOIC ACID	U	0.26	ug/L	1	0.26		
DACTHAL (DCPA)	U,N	0.050	ug/L	1	0.05		
DICAMBA	U	0.036	ug/L	1	0.036	1.5	
3,5-DICHLOROBENZOIC ACID	U	0.025	ug/L	1	0.025		
DICHLORPROP	U	0.21	ug/L	1	0.21		
DINOSEB	U	0.057	ug/L	1	0.057	2	
4-NITROPHENOL	U,N,*	0.075	ug/L	1	0.075	5	
Qualitative result only. Diazomethane derivatization procedure does not provide accurate quantitation.							
PENTACHLOROPHENOL	U	0.014	ug/L	1	0.014	0.2	
PICLORAM	U	0.022	ug/L	1	0.022	1	
(2,4,5-TRICHLOROPHENOXY)ACETIC ACID	U	0.082	ug/L	1	0.082		
2-(2,4,5-TRICHLOROPHENOXY)PROPIONIC ACID	U	0.063	ug/L	1	0.063	1	
INTERNAL STANDARD							
4,4'-DIBROMOCTAFLUOROBENZENE		92	% recovery	1			
SURROGATE							
DICHLOROPHENYLACETIC ACID		100	% recovery	1			
Run ID: R274359 / Work Group No.: WG211849							
Prep Date1: 20-DEC-16 Prep Date2: 27-DEC-16 Analyzed 28-Dec-16 02:40							

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-1 (P218167-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:08am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Bayside Sampling per DDW T22 and WDR; +FLD DATA: pH =8.09 CL2R = 0.
1mg/L (MDL=0.02 mg/L); 524 & TOC acidified with 1+1 HCl? Y , Acid #1364181

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: EPA 552.2 - Haloacetic Acids & Dalapon							RawH2O	
TARGET ANALYTES								
BROMOCHLOROACETIC ACID	U	0.15	ug/L	1	0.15			
BROMODICHLOROACETIC ACID	U	0.31	ug/L	1	0.31			
CHLORODIBROMOACETIC ACID	U	0.31	ug/L	1	0.31			
DALAPON	U	0.53	ug/L	1	0.53			
DIBROMOACETIC ACID	U	0.25	ug/L	1	0.25	1		
DICHLOROACETIC ACID	U	0.18	ug/L	1	0.18	1		
MONOBROMOACETIC ACID	U	0.29	ug/L	1	0.29	1		
MONOCHLOROACETIC ACID	U	0.65	ug/L	1	0.65	2		
TRIBROMOACETIC ACID	U	0.72	ug/L	1	0.72			
TRICHLOROACETIC ACID	U	0.17	ug/L	1	0.17	1		
VALUE CALCULATED FROM OTHER RESULTS								
HAA(5)	U	1.0	ug/L	1				
HAA(9)	U	1.0	ug/L	1				
INTERNAL STANDARD								
1,2,3-TRICHLOROPROPANE		100	% recovery	1	1			
SURROGATE								
2,3-DIBROMOPROPIONIC ACID		100	% recovery	1	1			
Run ID: R274058 / Work Group No.: WG211435								
Prep Date1: Analyzed 13-Dec-16 16:56								
Method: SM5310C - 5310 C. Heated-Persulfate Oxidation Method							RawH2O	
TARGET ANALYTES								
TOTAL ORGANIC CARBON		**0.80**	mg/L	1	0.024			
Run ID: R273905 / Work Group No.: WG211343								
Prep Date1: 08-DEC-16 Analyzed 09-Dec-16 10:33								
Method: EPA 531.1 - Carbamates, HPLC							RawH2O	
TARGET ANALYTES								
ALDICARB SULFOXIDE	U	0.220	ug/L	1	0.22	3		
ALDICARB SULFONE	U	0.450	ug/L	1	0.45	4		
ALDICARB	U	0.410	ug/L	1	0.41	3		
OXAMYL	U	0.420	ug/L	1	0.42	20		
METHOMYL	U	0.280	ug/L	1	0.28	2		
3-HYDROXYCARBOFURAN	U	0.230	ug/L	1	0.23	3		
PROPOXUR	U	0.490	ug/L	1	0.49			
CARBOFURAN	U	0.390	ug/L	1	0.39	5		
CARBARYL	U	0.750	ug/L	1	0.75			
METHIOCARB	U	0.520	ug/L	1	0.52			
Run ID: R274061 / Work Group No.: WG211449								
Prep Date1: 13-DEC-16 Analyzed 13-Dec-16 16:48								
Method: EPA 547 - Glyphosate, HPLC							RawH2O	
TARGET ANALYTES								
GLYPHOSATE	U	2.1	ug/L	1	2.1	25		
Run ID: R274063 / Work Group No.: WG211492								
Prep Date1: 14-DEC-16 Analyzed 14-Dec-16 11:41								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-1 (P218167-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:08am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Bayside Sampling per DDW T22 and WDR; +FLD DATA: pH =8.09 CL2R = 0.
1mg/L (MDL=0.02 mg/L); 524 & TOC acidified with 1+1 HCl? Y , Acid #1364181

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method Reference								
Method: EPA 549.2 - Diquat & Paraquat, HPLC							RawH2O	
TARGET ANALYTES								
DIQUAT	U,H	0.51	ug/L	1	0.51	4		
PARAQUAT	U,H	0.55	ug/L	1	0.55	20		
Run ID: R274383 / Work Group No.: WG211554								
Prep Date1: 28-DEC-16 Prep Date2: 29-DEC-16 Analyzed 29-Dec-16 11:58								
Method: SM2120B - 2001, Visual Comparison							RawH2O	
TARGET ANALYTES								
COLOR		**2.0**	color unit	1	1			
pH=7.0								
Run ID: R273864 / Work Group No.: WG211372								
Prep Date1: 08-DEC-16 Analyzed 08-Dec-16 14:45								
Method: SM2130B - 2001, Nephelometric							RawH2O	
TARGET ANALYTES								
TURBIDITY		**0.13**	NTU	1	0.07			
Run ID: R273856 / Work Group No.: WG211370								
Prep Date1: 08-DEC-16 Analyzed 08-Dec-16 14:03								
Method: SM2320B - 1997, Titration							RawH2O	
TARGET ANALYTES								
ALKALINITY: TOTAL AS CACO3		**68**	mg/L	1	5			
Run ID: R273984 / Work Group No.: WG211495								
Prep Date1: 14-DEC-16 Analyzed 14-Dec-16 07:45								
Method: SM2340C - 1997, Titration: EDTA							RawH2O	
TARGET ANALYTES								
HARDNESS: TOTAL AS CACO3		**55**	mg/L	1	3			
Run ID: R274198 / Work Group No.: WG211687								
Prep Date1: 22-DEC-16 Analyzed 22-Dec-16 10:20								
Method: SM2510B - 1997, Meter: Platinum Electrode							RawH2O	
TARGET ANALYTES								
CONDUCTIVITY		**231**	umhos/cm	1	0.3			
Run ID: R274027 / Work Group No.: WG211553								
Prep Date1: 16-DEC-16 Analyzed 16-Dec-16 10:30								
Method: SM2540C - 1997, Dried at 180C							RawH2O	
TARGET ANALYTES								
TOTAL DISSOLVED SOLIDS		**140**	mg/L	1	11			
Run ID: R273936 / Work Group No.: WG211411								
Prep Date1: 12-DEC-16 Analyzed 12-Dec-16 10:50								
Method: SM4500-CN C, E - 1999, Distillation & Colorimetric							RawH2O	
TARGET ANALYTES								
CYANIDE: TOTAL	U	0.0039	mg/L	1	0.0039			
Run ID: R274166 / Work Group No.: WG211644								
Prep Date1: 21-DEC-16 Analyzed 21-Dec-16 08:00								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-1 (P218167-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:08am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Bayside Sampling per DDW T22 and WDR; +FLD DATA: pH =8.09 CL2R = 0.
1mg/L (MDL=0.02 mg/L); 524 & TOC acidified with 1+1 HCl? Y , Acid #1364181

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: SM4500-CO2 D - Calculation							RawH2O	
TARGET ANALYTES								
ALKALINITY: BICARBONATE		**68**	mg/L	1	5			
Run ID: R273961 / Work Group No.: WG211477								
Prep Date1: 14-DEC-16 Analyzed 14-Dec-16 09:43								
Method: SM4500-CO2 D - Calculation							RawH2O	
TARGET ANALYTES								
ALKALINITY: HYDROXIDE	U	0.10	mg/L	1	0.1			
Run ID: R273961 / Work Group No.: WG211477								
Prep Date1: 14-DEC-16 Analyzed 14-Dec-16 09:43								
Method: SM4500-CO2 D - Calculation							RawH2O	
TARGET ANALYTES								
ALKALINITY: CARBONATE	U	0.10	mg/L	1	0.1			
Run ID: R273961 / Work Group No.: WG211477								
Prep Date1: 14-DEC-16 Analyzed 14-Dec-16 09:43								
Method: SM4500-NH3 B, C - 1997, Distillation & Titration							GroundH2O	
TARGET ANALYTES								
AMMONIA AS N		**0.112**	mg/L	.4	0.088			
Run ID: R273854 / Work Group No.: WG211346								
Prep Date1: 08-DEC-16 Analyzed 08-Dec-16 08:00								
Method: EPA 200.7 - Rev. 4.4, ICP Scan							RawH2O	
TARGET ANALYTES								
ALUMINUM	U	9.26	ug/L	1.04	9.26	50		
CALCIUM		**16,400**	ug/L	1.04	18.1			
COPPER	U	4.68	ug/L	1.04	4.68	50		
IRON		**70.2**	ug/L	1.04	0.624	100		
POTASSIUM		**1,130**	ug/L	1.04	11.9			
MAGNESIUM		**4,150**	ug/L	1.04	1.14			
MANGANESE		**16.2**	ug/L	1.04	0.104	20		
SODIUM		**27,100**	ug/L	1.04	3.12			
ZINC		**7.88**	ug/L	1.04	1.04	50		
Run ID: R274015 / Work Group No.: WG211512								
Prep Date1: 15-DEC-16 Analyzed 15-Dec-16 12:13								
Method: EPA 245.1 - Cold Vapor AA							RawH2O	
TARGET ANALYTES								
MERCURY		**0.13**	ug/L	1	0.011			
Run ID: R274036 / Work Group No.: WG211530								
Prep Date1: 15-DEC-16 Analyzed 15-Dec-16 10:26								
Method: SM3114B - 2009, Gaseous Hydride AA							RawH2O	
TARGET ANALYTES								
ARSENIC		**0.43**	ug/L	1	0.28	2		
Run ID: R274160 / Work Group No.: WG211647								
Prep Date1: 19-DEC-16 Prep Date2: 21-DEC-16 Analyzed 21-Dec-16 09:00								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-1 (P218167-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:08am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Bayside Sampling per DDW T22 and WDR; +FLD DATA: pH =8.09 CL2R = 0.
1mg/L (MDL=0.02 mg/L); 524 & TOC acidified with 1+1 HCl? Y , Acid #1364181

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: SM3114B - 2009, Gaseous Hydride AA							RawH2O	
TARGET ANALYTES								
SELENIUM	U	0.170	ug/L	1	0.17			
Run ID: R274183 / Work Group No.: WG211683								
Prep Date1: 19-DEC-16 Prep Date2: 22-DEC-16 Analyzed 22-Dec-16 07:50								
Method: SM9221B - 2006, Multiple Tube Fermentation							RawH2O	
TARGET ANALYTES								
TOTAL COLIFORMS	<	1.8	MPN/100 mL		1.8			
Run ID: R273894 / Work Group No.: WG211336								
Prep Date1: 07-DEC-16 Analyzed 07-Dec-16 14:22								
Method: SM9221F - 2006, Multiple Tube Fermentation							RawH2O	
TARGET ANALYTES								
E. COLI	<	1.8	MPN/100 mL		1.8			
Run ID: R273894 / Work Group No.: WG211336								
Prep Date1: 07-DEC-16 Analyzed 07-Dec-16 14:22								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-2 (P218167-2)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:48am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Sampling per DDW T22 and WDR; SUBCONTRACT DATA; 1613 for 2,3,7,8-TCDD only

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: EPA 100.1: EPA 100.2 - Asbestos by Electron Microscopy							RawH2O	
Subcontract data from Forensic Analytical								
Comment: ND=None detected								
SUBCONTRACT LAB DATA								
ASBESTOS	<	0.2	MFL	1	0.2	0.2		
Run ID: R274136 / Work Group No.: WG211648								
Prep Date1: 07-DEC-16 Analyzed 15-Dec-16 00:00								
Method: EPA 1613 - DIOXIN 1613A TCDD							RawH2O	
Subcontract data from Frontier Analytical Laboratory								
Comment: ND=Analyte Not Detected at Detection Limit (DL) Level 0.880 pg/L.								
SUBCONTRACT LAB DATA								
2,3,7,8-TETRACHLORODIBENZO DIOXIN	**ND**	**0.161**	pg/L	1	0.161	5		
Run ID: R274327 / Work Group No.: WG211817								
Prep Date1: 14-DEC-16 Analyzed 16-Dec-16 00:00								
Method: EPA 200.8 - ICP/MS Scan							RawH2O	
Subcontract data from Alpha Analytical Lab								
Comment: U=Analyte included in analysis, but not detected at or above MDL.								
SUBCONTRACT LAB DATA								
CHROMIUM	U	0.08	ug/L	1	0.08	0.5		
Run ID: R274370 / Work Group No.: WG211818								
Prep Date1: 14-DEC-16 Analyzed 21-Dec-16 01:35								
Method: EPA 200.8 - Rev. 5.4, ICP-MS Scan							RawH2O	
Subcontract data from Alpha Analytical Lab								
Comment: J=Detected but below the Reporting Limit; therefore, result is an estimated concentration, detected but not quantified (DNQ).; U=Analyte included in analysis, but not detected at or above MDL.								
SUBCONTRACT LAB DATA								
SILVER	U	0.05	ug/L	1	0.05	0.1		
BARIUM		**28**	ug/L	1	0.05	0.5		
BERYLLIUM	U	0.02	ug/L	1	0.02	0.1		
CADMIUM	U	0.05	ug/L	1	0.05	0.1		
NICKEL	**J**	**0.27**	ug/L	1	0.06	0.5		
LEAD	U	0.02	ug/L	1	0.02	0.25		
ANTIMONY	U	0.02	ug/L	1	0.02	0.5		
THALLIUM	U	0.05	ug/L	1	0.05	0.1		
Run ID: R274370 / Work Group No.: WG211818								
Prep Date1: 14-DEC-16 Analyzed 21-Dec-16 01:35								
Method: EPA 218.6 - Hexavalent Chromium by IC							RawH2O	
Subcontract data from Alpha Analytical Lab								
Comment: U=Analyte included in analysis, but not detected at or above MDL.								
SUBCONTRACT LAB DATA								
HEXAVALENT CHROMIUM	U	0.05	ug/L	1	0.05	1		
Run ID: R274333 / Work Group No.: WG211823								
Prep Date1: 17-DEC-16 Analyzed 17-Dec-16 22:01								

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Laboratory Services Division
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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-2 (P218167-2)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:48am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Sampling per DDW T22 and WDR; SUBCONTRACT DATA; 1613 for 2,3,7,8-TCDD only

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: EPA 508 - PCBS by 508							RawH2O	
Subcontract data from Alpha Analytical Lab								
Comment: Total PCBs as DCB STORET # 39516;U=Analyte included in analysis, but not detected at or above MDL.; U=Analyte included in analysis, but not detected at or above MDL.								
SUBCONTRACT LAB DATA								
AROCLOR 1016	U	0.03	ug/L	1	0.03	0.5		
AROCLOR 1221	U	0.03	ug/L	1	0.03	0.5		
AROCLOR 1232	U	0.03	ug/L	1	0.03	0.5		
AROCLOR 1242	U	0.03	ug/L	1	0.03	0.5		
AROCLOR 1248	U	0.03	ug/L	1	0.03	0.5		
AROCLOR 1254	U	0.03	ug/L	1	0.03	0.5		
AROCLOR 1260	U	0.03	ug/L	1	0.03	0.5		
TOTAL PCB'S	U	0.3	ug/L	1	0.3	0.5		
Run ID: R274334 / Work Group No.: WG211822								
Prep Date1: 09-DEC-16 Analyzed 13-Dec-16 04:27								
Method: EPA 900.0 - NONE							RawH2O	
Subcontract data from FG Labs - Santa Paula								
Comment: MDL value is the MDA.								
SUBCONTRACT LAB DATA								
RADIONUCLIDES: ALPHA		**1.21**	pCi/L		0.639	3		
RADIONUCLIDES: BETA		**0.566**	pCi/L		0.887	4		
RADIONUCLIDES: ALPHA COUNTING ERROR	+/-	**0.709**	pCi/L					
RADIONUCLIDES: BETA COUNTING ERROR	+/-	**0.696**	pCi/L					
GROSS ALPHA MDA95		**0.639**	pCi/L					
GROSS BETA MDA95		**0.887**	pCi/L					
Run ID: R274559 / Work Group No.: WG212074								
Prep Date1: 14-DEC-16 Analyzed 15-Dec-16 18:00								
Method: EPA 903.0,903.1, 904.0 - Radium 226 by 903.0 or 903.1 and Radium 228 by 904.0							RawH2O	1
Subcontract data from FG Labs - Santa Paula								
Comment: MDL value is the MDA95.								
SUBCONTRACT LAB DATA								
RADIUM 228		**0**	pCi/L		0.192	1		
RADIUM 228 COUNTING ERROR	+/-	**0.52**	pCi/L					
RADIUM 228 MDA95		**0.192**	pCi/L					
Run ID: R274559 / Work Group No.: WG212074								
Prep Date1: 14-DEC-16 Analyzed 19-Dec-16 19:50								
Method: EPA 903.0,903.1, 904.0 - Radium 226 by 903.0 or 903.1 and Radium 228 by 904.0							RawH2O	
Subcontract data from FG Labs - Santa Paula								
Comment: MDL value is the MDA95.								
SUBCONTRACT LAB DATA								
RADIUM 226		**0**	pCi/L		0.363	1		
RADIUM 226 COUNTING ERROR	+/-	**0.059**	pCi/L					
RADIUM 226 MDA95		**0.363**	pCi/L					
Run ID: R274559 / Work Group No.: WG212074								
Prep Date1: 14-DEC-16 Analyzed 20-Dec-16 13:00								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-2 (P218167-2)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:48am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Sampling per DDW T22 and WDR; SUBCONTRACT DATA; 1613 for 2,3,7,8-TCDD only

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method Reference							RawH2O	
Method: EPA 905.0 -								
Subcontract data from FG Labs - Santa Paula								
Comment: MDL value is the MDA.								
SUBCONTRACT LAB DATA								
STRONTIUM 90		**0.424**	pCi/L		0.682	2		
STRONTIUM 90 COUNTING ERROR	+/-	**0.732**	pCi/L					
STRONTIUM 90 MDA95		**0.682**	pCi/L					
Run ID: R274559 / Work Group No.: WG212074								
Prep Date1: 12-DEC-16 Analyzed 15-Dec-16 10:20								
Method: EPA 906.0 -							RawH2O	
Subcontract data from FG Labs - Santa Paula								
Comment: MDL value is the MDA.								
SUBCONTRACT LAB DATA								
TRITIUM		**135**	pCi/L		434	1000		
TRITIUM COUNTING ERROR	+/-	**271**	pCi/L					
TRITIUM MDA95		**434**	pCi/L					
Run ID: R274559 / Work Group No.: WG212074								
Prep Date1: 12-DEC-16 Analyzed 12-Dec-16 21:00								
Method: EPA 908.0 -							RawH2O	
Subcontract data from FG Labs - Santa Paula								
Comment: MDL value is the MDA.								
SUBCONTRACT LAB DATA								
URANIUM		**0**	pCi/L		0.47	1		
URANIUM COUNTING ERROR	+/-	**0.636**	pCi/L					
URANIUM MDA95		**0.47**	pCi/L					
Run ID: R274559 / Work Group No.: WG212074								
Prep Date1: 14-DEC-16 Analyzed 21-Dec-16 14:20								
Method: EPA 913.0 - RADON: EPA 913.0							RawH2O	
Subcontract data from FG Labs - Santa Paula								
Comment: MDL value is the MDA.								
SUBCONTRACT LAB DATA								
RADON 222		**423**	pCi/L		21.6	100		
RADON 222 COUNTING ERROR	+/-	**32.1**	pCi/L					
RADON 222 MDA95	+/-	**21.6**	pCi/L					
Run ID: R274559 / Work Group No.: WG212074								
Prep Date1: 09-DEC-16 Analyzed 09-Dec-16 13:00								
Method: PER SUBCONTRACT LABORATORY REPORT - Subcontract data transmittal							RawH2O	
Subcontract data								
Comment: Original report transmitted to client. Copy of report archived with data packet.								
SUBCONTRACT LAB DATA								
DATA TRANSMITTAL								
Run ID: R274569 / Work Group No.: WG212080								
Prep Date1: 15-DEC-16 Analyzed 15-Dec-16 00:00								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: WTP BAYSIDE Bayside GW Project Extraction Wells at 2540 Grant Avenue, San Lorenzo
Locator: BAY WELL HEAD Sample tap at the well, as shown in Drawing No. 2097-C-002
Lab ID: L210457-2 (P218167-2)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 07 2016, 10:48am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: Annual Sampling per DDW T22 and WDR; SUBCONTRACT DATA; 1613 for 2,3,7,8-TCDD only

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: SM2150B - 1997, Ambient Temperature, one panelist							RawH2O	
Subcontract data from Caltest Analytical								
Comment: ND - Non detect - indicates analytical result has not been detected. Ambient @ 19.0 deg C; Sample was not dechlorinated per client's request.								
SUBCONTRACT LAB DATA								
THRESHOLD ODOR NUMBER	**ND**	**1**	TON	1		1		
NO ODOR OBSERVED		**1**	Panelists					
NUMBER ANALYZING SAMPLE		**1**	Panelists					
TEMPERATURE		**19**	deg C					
Run ID: R274568 / Work Group No.: WG212076								
Prep Date1: 07-DEC-16 Analyzed 07-Dec-16 15:19								
Method: SM5540C - 2000, Colorimetric							RawH2O	
Subcontract data from Alpha Analytical Lab								
Comment: U=Analyte included in analysis, but not detected at or above MDL.								
SUBCONTRACT LAB DATA								
MBAS	U	0.03	mg/L	1	0.03	0.05		
Run ID: R274334 / Work Group No.: WG211822								
Prep Date1: 09-DEC-16 Analyzed 09-Dec-16 15:00								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: FIELD QC Sample collection QC
Locator: COLLECTION QC Field QC Sample submitted for analysis
Lab ID: L210457-3 (P218167-3)
Sample Type: QCFB (Field Blank Grab)
Date Collected: Dec 07 2016, 10:24am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: QCFB for L210457-1,2; Prep'd on 12/1/16 by JA; 524 acidified with 1+1 HCL? Y Acid CONTAINER ID #1364181. Do not acidify 504 vials.

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: EPA 524.2 - Volatile Organics, GC/MS							DrinkH2O	
TARGET ANALYTES								
ACETONE	U	0.35	ug/L	1	0.35			
ACRYLONITRILE	U	0.45	ug/L	1	0.45			
ALLYL CHLORIDE	U	0.17	ug/L	1	0.17			
TERT-AMYL METHYL ETHER	U	0.17	ug/L	1	0.17	3		
BENZENE	U	0.14	ug/L	1	0.14	0.5		
BROMOBENZENE	U	0.16	ug/L	1	0.16			
BROMOCHLOROMETHANE	U	0.21	ug/L	1	0.21			
BROMODICHLOROMETHANE	U	0.21	ug/L	1	0.21			
BROMOFORM	U	0.31	ug/L	1	0.31			
BROMOMETHANE	U	0.55	ug/L	1	0.55			
TERT-BUTYL ALCOHOL	U	1.7	ug/L	1	1.7	2		
N-BUTYLBENZENE	U	0.25	ug/L	1	0.25			
SEC-BUTYLBENZENE	U	0.69	ug/L	1	0.69			
TERT-BUTYLBENZENE	U	0.18	ug/L	1	0.18			
CARBON DISULFIDE	U	0.44	ug/L	1	0.44			
CARBON TETRACHLORIDE	U	0.25	ug/L	1	0.25	0.5		
CHLOROACETONITRILE	U	0.23	ug/L	1	0.23			
CHLOROBENZENE	U	0.21	ug/L	1	0.21	0.5		
1-CHLOROBUTANE	U	0.21	ug/L	1	0.21			
CHLOROETHANE	U	0.38	ug/L	1	0.38			
CHLOROFORM	U	0.15	ug/L	1	0.15			
CHLOROMETHANE	U	0.15	ug/L	1	0.15			
O-CHLOROTOLUENE	U	0.19	ug/L	1	0.19			
P-CHLOROTOLUENE	U	0.19	ug/L	1	0.19			
DIBROMOCHLOROMETHANE	U	0.26	ug/L	1	0.26			
DIBROMOCHLOROPROPANE	U	0.28	ug/L	1	0.28			
DIBROMOMETHANE	U	0.28	ug/L	1	0.28			
1,2-DICHLOROBENZENE	U	0.23	ug/L	1	0.23	0.5		
1,3-DICHLOROBENZENE	U	0.23	ug/L	1	0.23			
1,4-DICHLOROBENZENE	U	0.18	ug/L	1	0.18	0.5		
TRANS-1,4-DICHLORO-2-BUTENE	U	0.20	ug/L	1	0.2			
DICHLORODIFLUOROMETHANE	U	0.17	ug/L	1	0.17	0.5		
1,1-DICHLOROETHANE	U	0.21	ug/L	1	0.21	0.5		
1,2-DICHLOROETHANE	U	0.14	ug/L	1	0.14	0.5		
1,1-DICHLOROETHENE	U	0.20	ug/L	1	0.2	0.5		
CIS-1,2-DICHLOROETHENE	U	0.25	ug/L	1	0.25	0.5		
TRANS-1,2-DICHLOROETHENE	U	0.19	ug/L	1	0.19	0.5		
1,2-DICHLOROPROPANE	U	0.15	ug/L	1	0.15	0.5		
1,3-DICHLOROPROPANE	U	0.22	ug/L	1	0.22			
SEC-DICHLOROPROPANE	U	0.24	ug/L	1	0.24			
1,1-DICHLOROPROPENE	U	0.26	ug/L	1	0.26			
1,1-DICHLORO-2-PROPANONE	U	0.21	ug/L	1	0.21			
CIS-1,3-DICHLOROPROPENE	U	0.23	ug/L	1	0.23	0.5		
TRANS-1,3-DICHLOROPROPENE	U	0.18	ug/L	1	0.18	0.5		
DIISOPROPYL ETHER	U	0.29	ug/L	1	0.29			
ETHYL BENZENE	U	0.18	ug/L	1	0.18	0.5		
ETHYL ETHER	U	0.20	ug/L	1	0.2			
ETHYLENE DIBROMIDE	U	0.19	ug/L	1	0.19			
ETHYLMETHACRYLATE	U	0.14	ug/L	1	0.14			
ETHYL-T-BUTYL ETHER	U	0.19	ug/L	1	0.19	3		
FLUOROTRICHLOROMETHANE	U	0.22	ug/L	1	0.22	5		

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: FIELD QC Sample collection QC
Locator: COLLECTION QC Field QC Sample submitted for analysis
Lab ID: L210457-3 (P218167-3)
Sample Type: QCFB (Field Blank Grab)
Date Collected: Dec 07 2016, 10:24am Sample collector: B CHAN/C PAGTAKHAN
Date Received: Dec 07 2016, 11:55am Sample receiver: MPATCHIN
Sample Comments: QCFB for L210457-1,2; Prep'd on 12/1/16 by JA; 524 acidified with 1+1 HCL?
Y Acid CONTAINER ID #1364181. Do not acidify 504 vials.

Method Reference — Matrix — Tag

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	U	0.25	ug/L	1	0.25	10
HEXACHLOROBUTADIENE	U	0.20	ug/L	1	0.2	
HEXACHLOROETHANE	U	0.25	ug/L	1	0.25	
2-HEXANONE	U	0.25	ug/L	1	0.25	
IODOMETHANE	U	0.69	ug/L	1	0.69	
ISOPROPYLBENZENE	U	0.21	ug/L	1	0.21	
P-ISOPROPYLTOLUENE	U	0.22	ug/L	1	0.22	
METHYLACRYLONITRILE	U	0.20	ug/L	1	0.2	
METHYLACRYLATE	U	0.26	ug/L	1	0.26	
METHYLENE CHLORIDE	U	0.18	ug/L	1	0.18	0.5
2-BUTANONE	U	0.43	ug/L	1	0.43	
4-METHYL-2-PENTANONE	U	0.20	ug/L	1	0.2	
METHYLMETHACRYLATE	U	0.28	ug/L	1	0.28	
METHYL-T-BUTYL ETHER	U	0.39	ug/L	1	0.39	3
NAPHTHALENE	U	0.20	ug/L	1	0.2	
NITROBENZENE	U	1.0	ug/L	1	1	
2-NITROPROPANE	U	0.77	ug/L	1	0.77	
PENTACHLOROETHANE	U	0.17	ug/L	1	0.17	
N-PROPYLBENZENE	U	0.20	ug/L	1	0.2	
STYRENE	U	0.19	ug/L	1	0.19	0.5
1,1,1,2-TETRACHLOROETHANE	U	0.18	ug/L	1	0.18	
1,1,2,2-TETRACHLOROETHANE	U	0.20	ug/L	1	0.2	0.5
TETRACHLOROETHENE	U	0.20	ug/L	1	0.2	0.5
TETRAHYDROFURAN	U	0.54	ug/L	1	0.54	
TOLUENE	U	0.16	ug/L	1	0.16	0.5
1,2,3-TRICHLOROBENZENE	U	0.24	ug/L	1	0.24	
1,2,4-TRICHLOROBENZENE	U	0.19	ug/L	1	0.19	0.5
1,1,1-TRICHLOROETHANE	U	0.19	ug/L	1	0.19	0.5
1,1,2-TRICHLOROETHANE	U	0.21	ug/L	1	0.21	0.5
TRICHLOROETHENE	U	0.17	ug/L	1	0.17	0.5
1,2,3-TRICHLOROPROPANE	U	0.19	ug/L	1	0.19	
1,2,4-TRIMETHYLBENZENE	U	0.21	ug/L	1	0.21	
1,3,5-TRIMETHYLBENZENE	U	0.20	ug/L	1	0.2	
VINYL CHLORIDE	U	0.22	ug/L	1	0.22	0.5
O-XYLENE	U	0.18	ug/L	1	0.18	0.5
M+P XYLENES	U	0.37	ug/L	1	0.37	0.5
VALUE(S) USED TO CALCULATE OTHER VALUE(S)						
TOTAL 1,3-DICHLOROPROPENES	U	0.50	ug/L	1		0.5
TOTAL XYLENES	U	0.50	ug/L	1		0.5
INTERNAL STANDARD						
FLUOROBENZENE		118	% recovery	1		
SURROGATE						
4-BROMOFLUOROBENZENE		98.0	% recovery	1		
D4-1,2-DICHLOROBENZENE		106	% recovery	1		

Run ID: R274107 / Work Group No.: WG211574
Prep Date1: 19-DEC-16 Analyzed 19-Dec-16 11:03

Method: EPA 504.1 - EDB & DBCP, GC/ECD — DrinkH2O

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML
TARGET ANALYTES						
ETHYLENE DIBROMIDE	U	0.0030	ug/L	1	0.003	0.02
DIBROMOCHLOROPROPANE	U	0.0060	ug/L	1	0.006	0.01

Run ID: R274179 / Work Group No.: WG211535
Prep Date1: 15-DEC-16 Prep Date2: 15-DEC-16 Analyzed 15-Dec-16 16:18

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Analytical Report Prepared for DREW LERER

Report generated on: Feb 16, 2017 04:14 pm
Login No.: L210792

Reported by:

KRISTI LORENSON
Laboratory Program Manager

Approved by:

NIRMELA ARSEM
Laboratory Services Division Manager

LSR B455-0706-1
Project Title: BAYSIDE GROUND WATER PROJECT

Login Performance Summary
1 - Sample received by the lab on: Dec 22 2016, 09:10 am
0 - Lost Analyses
0 - Hold Time Exceedences
Turn-around-time not met

Samples included in this report:

Sample	Type	Collected	Site	Locator	ClientID
L210792-1	GRAB	21-Dec-2016 18:10	GW BAYSIDE	BAY1-MW5D	MW-5D

Legend to the laboratory qualifiers used in this report:
U - Analyte not detected
Qualifiers for subcontract work - See textvalue for description

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW5D Q APN 411-0003-0083 Via Barrett, San Lorenzo; Formerly BAY-MW-BARETT
ClientID: MW-5D
Lab ID: L210792-1 (P217911-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 21 2016, 06:10pm Sample collector: R Brush/ ERRG
Date Received: Dec 22 2016, 09:10am Sample receiver: MPATCHIN
Sample Comments: MW-5D; +FLD DATA: pH = 7.68; Cl2R = 0.02mg/L; Depth to GW =15.64 feet; GW Elevation = feet(not provided by sampler); Labelled as RAW WATER for the program.

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Tag
Method Reference						Matrix	
Method: PER SUBCONTRACT LABORATORY REPORT - Subcontract data transmittal						GroundH2O	
Subcontract data							
Comment: Original report transmitted to client. Copy of report archived with data packet.							
SUBCONTRACT LAB DATA							
DATA TRANSMITTAL							
Run ID: R275393 / Work Group No.: WG212893							
Prep Date1: 30-JAN-17 Analyzed 30-Jan-17 00:00							
Method: PER SUBCONTRACT LABORATORY REPORT - Subcontract data transmittal for oxygen 18						GroundH2O	
Subcontract data from Alpha Analytical Lab							
Comment: Refer to sublab data report attached							
SUBCONTRACT LAB DATA							
DATA TRANSMITTAL							
Run ID: R275394 / Work Group No.: WG212894							
Prep Date1: 30-JAN-17 Analyzed 30-Jan-17 00:00							
Method: SAMPLER PROVIDED FIELD MEASUREMENTS - DATA ENTRY LIST FOR FIELD DATA						GroundH2O	
FIELD ANALYSIS/OBSERVATION DATA PARAMETERS							
PH		**7.68**	pH units	1			
DEPTH		**15.64**	feet	1			
CHLORINE RESIDUAL: TOTAL		**0.02**	mg/L	1	0.02		
Run ID: R274243 / Work Group No.: WG211745							
Prep Date1: 21-DEC-16 Analyzed 21-Dec-16 18:10							
Method: EPA 8260B - Trihalomethanes, GC/MS						GroundH2O	
TARGET ANALYTES							
CHLOROFORM	U	0.17	ug/L	1	0.17		
BROMODICHLOROMETHANE	U	0.079	ug/L	1	0.079		
DIBROMOCHLOROMETHANE	U	0.13	ug/L	1	0.13		
BROMOFORM	U	0.23	ug/L	1	0.23		
INTERNAL STANDARD							
FLUOROBENZENE		97.8	% recovery	1			
D5-CHLOROBENZENE		101	% recovery	1			
D4-1,4-DICHLOROBENZENE		99.4	% recovery	1			
SURROGATE							
D8-TOLUENE		101	% recovery	1			
4-BROMOFLUOROBENZENE		101	% recovery	1			
Run ID: R274374 / Work Group No.: WG211790							
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 12:08							
Method: EPA 300.1 - Ion Chromatography						GroundH2O	
Instrument calibrated 22-DEC-16							
TARGET ANALYTES							
CHLORIDE		**84**	mg/L	10	0.052		
NITRATE AS N	U	0.013	mg/L	10	0.013	0.4	
SULFATE		**49**	mg/L	10	0.066	0.5	
SURROGATE							
DICHLOROACETATE		100	% recovery	10			
Run ID: R274206 / Work Group No.: WG211697							
Prep Date1: 22-DEC-16 Analyzed 22-Dec-16 23:40							

RL is either the client requested or regulatory mandated Reporting Limit. ML is the regulatory mandated Minimum Level

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW5D Q APN 411-0003-0083 Via Barrett, San Lorenzo; Formerly BAY-MW-BARETT
ClientID: MW-5D
Lab ID: L210792-1 (P217911-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 21 2016, 06:10pm Sample collector: R Brush/ ERRG
Date Received: Dec 22 2016, 09:10am Sample receiver: MPATCHIN
Sample Comments: MW-5D; +FLD DATA: pH = 7.68; Cl2R = 0.02mg/L; Depth to GW =15.64 feet; GW Elevation = feet(not provided by sampler); Labelled as RAW WATER for the program.

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method Reference								
Method: EPA 552.2 - Haloacetic Acids & Dalapon							GroundH2O	
TARGET ANALYTES								
BROMOCHLOROACETIC ACID	U	0.15	ug/L	1	0.15			
BROMODICHLOROACETIC ACID	U	0.31	ug/L	1	0.31			
CHLORODIBROMOACETIC ACID	U	0.31	ug/L	1	0.31			
DALAPON	U	0.53	ug/L	1	0.53			
DIBROMOACETIC ACID	U	0.25	ug/L	1	0.25	1		
DICHLOROACETIC ACID	U	0.18	ug/L	1	0.18	1		
MONOBROMOACETIC ACID	U	0.29	ug/L	1	0.29	1		
MONOCHLOROACETIC ACID	U	0.65	ug/L	1	0.65	2		
TRIBROMOACETIC ACID	U	0.72	ug/L	1	0.72			
TRICHLOROACETIC ACID	U	0.17	ug/L	1	0.17	1		
VALUE CALCULATED FROM OTHER RESULTS								
HAA(5)	U	1.0	ug/L					
HAA(9)	U	1.0	ug/L					
INTERNAL STANDARD								
1,2,3-TRICHLOROPROPANE		100	% recovery		1			
SURROGATE								
2,3-DIBROMOPROPIONIC ACID		100	% recovery		1			
Run ID: R274499 / Work Group No.: WG211961								
Prep Date1: 29-DEC-16 Prep Date2: 05-JAN-17 Analyzed 05-Jan-17 17:25								
Method: SM2320B - 1997, Titration							GroundH2O	
TARGET ANALYTES								
ALKALINITY: TOTAL AS CACO3		**230**	mg/L	1	5			
Run ID: R274246 / Work Group No.: WG211748								
Prep Date1: 26-DEC-16 Analyzed 26-Dec-16 08:04								
Method: SM2340C - 1997, Titration: EDTA							GroundH2O	
TARGET ANALYTES								
HARDNESS: TOTAL AS CACO3		**130**	mg/L	1	3			
Run ID: R274363 / Work Group No.: WG211850								
Prep Date1: 29-DEC-16 Analyzed 29-Dec-16 10:50								
Method: SM2540C - 1997, Dried at 180C							GroundH2O	
TARGET ANALYTES								
TOTAL DISSOLVED SOLIDS		**470**	mg/L	1	11			
Run ID: R274269 / Work Group No.: WG211737								
Prep Date1: 26-DEC-16 Analyzed 26-Dec-16 08:30								
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: HYDROXIDE	U	0.10	mg/L	1	0.1			
Run ID: R274251 / Work Group No.: WG211756								
Prep Date1: 27-DEC-16 Analyzed 27-Dec-16 07:23								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW5D Q APN 411-0003-0083 Via Barrett, San Lorenzo; Formerly BAY-MW-BARETT
ClientID: MW-5D
Lab ID: L210792-1 (P217911-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 21 2016, 06:10pm Sample collector: R Brush/ ERRG
Date Received: Dec 22 2016, 09:10am Sample receiver: MPATCHIN
Sample Comments: MW-5D; +FLD DATA: pH = 7.68; Cl2R = 0.02mg/L; Depth to GW =15.64 feet; GW Elevation = feet(not provided by sampler); Labelled as RAW WATER for the program.

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	Matrix / RL/ML	Tag
Method: SM4500-CO2 D - Calculation						GroundH2O	
TARGET ANALYTES							
ALKALINITY: CARBONATE	U	0.10	mg/L	1	0.1		
Run ID: R274251 / Work Group No.: WG211756							
Prep Date1: 27-DEC-16 Analyzed 27-Dec-16 07:23							
Method: SM4500-CO2 D - Calculation						GroundH2O	
TARGET ANALYTES							
ALKALINITY: BICARBONATE		**230**	mg/L	1	5		
Run ID: R274251 / Work Group No.: WG211756							
Prep Date1: 27-DEC-16 Analyzed 27-Dec-16 07:23							
Method: SM4500-NH3 B, C - 1997, Distillation & Titration						GroundH2O	
TARGET ANALYTES							
AMMONIA AS N	U	0.220	mg/L	1	0.22		
Run ID: R274250 / Work Group No.: WG211739							
Prep Date1: 26-DEC-16 Analyzed 26-Dec-16 09:45							
Method: EPA 200.7 - Rev. 4.4, ICP Scan						RawH2O	
TARGET ANALYTES							
CALCIUM		**39,000**	ug/L	1.04	18.1		
IRON		**34.6**	ug/L	1.04	0.624	100	
POTASSIUM		**2,340**	ug/L	1.04	11.9		
MAGNESIUM		**9,740**	ug/L	1.04	1.14		
MANGANESE		**195**	ug/L	1.04	0.104	20	
SODIUM		**130,000**	ug/L	1.04	3.12		
Run ID: R274365 / Work Group No.: WG211829							
Prep Date1: 26-DEC-16 Prep Date2: 29-DEC-16 Analyzed 29-Dec-16 14:42							

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Analytical Report Prepared for DREW LERER

Report generated on: Feb 16, 2017 04:14 pm
Login No.: L210878

Reported by:

KRISTI LORENSON
Laboratory Program Manager

Approved by:

NIRMELA ARSEM
Laboratory Services Division Manager

LSR B455-0706-1
Project Title: BAYSIDE GROUND WATER PROJECT

Login Performance Summary
1 - Sample received by the lab on: Dec 28 2016, 07:15 am
0 - Lost Analyses
0 - Hold Time Exceedences
Turn-around-time not met

Samples included in this report:

Sample	Type	Collected	Site	Locator	ClientID
L210878-1	GRAB	27-Dec-2016 17:15	GW BAYSIDE	BAY1-MW2I	MW-2I

Legend to the laboratory qualifiers used in this report:
U - Analyte not detected
Qualifiers for subcontract work - See textvalue for description

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW2I OW-1 the same parcel as the Bayside Well on Oro Loma Property; aka BAY1-MW2D until 11-2009; formerly BAY1-MW2-190
ClientID: MW-2I
Lab ID: L210878-1 (P218165-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 05:15pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-2I; +FLD DATA: pH = 8.10; Cl2R = 0.02 mg/L; Depth to GW = 7.68 feet; GW Elevation = feet; Labelled as RAW WATER for the program.

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix / Tag
Method: PER SUBCONTRACT LABORATORY REPORT - Subcontract data transmittal							GroundH2O
Subcontract data							
Comment: Original report transmitted to client. Copy of report archived with data packet.							
SUBCONTRACT LAB DATA							
DATA TRANSMITTAL							
Run ID: R275391 / Work Group No.: WG212891							
Prep Date1: 03-FEB-17 Analyzed 03-Feb-17 00:00							
Method: PER SUBCONTRACT LABORATORY REPORT - Subcontract data transmittal for oxygen 18							GroundH2O
Subcontract data from Alpha Analytical Lab							
Comment: Refer to sublab data report attached							
SUBCONTRACT LAB DATA							
DATA TRANSMITTAL							
Run ID: R275392 / Work Group No.: WG212892							
Prep Date1: 03-FEB-17 Analyzed 03-Feb-17 00:00							
Method: SAMPLER PROVIDED FIELD MEASUREMENTS - DATA ENTRY LIST FOR FIELD DATA							GroundH2O
FIELD ANALYSIS/OBSERVATION DATA PARAMETERS							
PH		**8.1**	pH units	1			
DEPTH		**7.68**	feet	1			
CHLORINE RESIDUAL: TOTAL		**0.02**	mg/L	1	0.02		
Run ID: R274301 / Work Group No.: WG211791							
Prep Date1: 27-DEC-16 Analyzed 27-Dec-16 17:15							
Method: EPA 8260B - Trihalomethanes, GC/MS							GroundH2O
TARGET ANALYTES							
CHLOROFORM	U	0.17	ug/L	1	0.17		
BROMODICHLOROMETHANE	U	0.079	ug/L	1	0.079		
DIBROMOCHLOROMETHANE	U	0.13	ug/L	1	0.13		
BROMOFORM	U	0.23	ug/L	1	0.23		
INTERNAL STANDARD							
FLUOROBENZENE		94.4	% recovery	1			
D5-CHLOROBENZENE		99.2	% recovery	1			
D4-1,4-DICHLOROBENZENE		95.8	% recovery	1			
SURROGATE							
D8-TOLUENE		103	% recovery	1			
4-BROMOFLUOROBENZENE		97.6	% recovery	1			
Run ID: R274374 / Work Group No.: WG211790							
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 12:31							
Method: EPA 300.1 - Ion Chromatography							GroundH2O
Instrument calibrated 22-DEC-16							
TARGET ANALYTES							
CHLORIDE		**84**	mg/L	10	0.052		
NITRATE AS N		**0.18**	mg/L	10	0.013	0.4	
SULFATE		**30**	mg/L	10	0.066	0.5	
SURROGATE							
DICHLOROACETATE		110	% recovery	10			
Run ID: R274332 / Work Group No.: WG211799							
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 13:30							

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW2I OW-1 the same parcel as the Bayside Well on Oro Loma Property; aka BAY1-MW2D until 11-2009; formerly BAY1-MW2-190
ClientID: MW-2I
Lab ID: L210878-1 (P218165-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 05:15pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-2I; +FLD DATA: pH = 8.10; Cl2R = 0.02 mg/L; Depth to GW = 7.68 feet; GW Elevation = feet; Labelled as RAW WATER for the program.

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	Matrix RL/ML	Tag
Method: EPA 552.2 - Haloacetic Acids & Dalapon						GroundH2O	
TARGET ANALYTES							
BROMOCHLOROACETIC ACID	U	0.15	ug/L	1	0.15		
BROMODICHLOROACETIC ACID	U	0.31	ug/L	1	0.31		
CHLORODIBROMOACETIC ACID	U	0.31	ug/L	1	0.31		
DALAPON	U	0.53	ug/L	1	0.53		
DIBROMOACETIC ACID	U	0.25	ug/L	1	0.25	1	
DICHLOROACETIC ACID	U	0.18	ug/L	1	0.18	1	
MONOBROMOACETIC ACID	U	0.29	ug/L	1	0.29	1	
MONOCHLOROACETIC ACID	U	0.65	ug/L	1	0.65	2	
TRIBROMOACETIC ACID	U	0.72	ug/L	1	0.72		
TRICHLOROACETIC ACID	U	0.17	ug/L	1	0.17	1	
VALUE CALCULATED FROM OTHER RESULTS							
HAA(5)	U	1.0	ug/L				
HAA(9)	U	1.0	ug/L				
INTERNAL STANDARD							
1,2,3-TRICHLOROPROPANE		99	% recovery		1		
SURROGATE							
2,3-DIBROMOPROPIONIC ACID		100	% recovery		1		
Run ID: R274499 / Work Group No.: WG211961							
Prep Date1: 29-DEC-16 Prep Date2: 05-JAN-17 Analyzed 05-Jan-17 19:51							
Method: SM2320B - 1997, Titration						GroundH2O	
TARGET ANALYTES							
ALKALINITY: TOTAL AS CACO3		**320**	mg/L	1	5		
Run ID: R274304 / Work Group No.: WG211792							
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15							
Method: SM2340C - 1997, Titration: EDTA						GroundH2O	
TARGET ANALYTES							
HARDNESS: TOTAL AS CACO3		**94**	mg/L	1	3		
Run ID: R274363 / Work Group No.: WG211850							
Prep Date1: 29-DEC-16 Analyzed 29-Dec-16 10:50							
Method: SM2540C - 1997, Dried at 180C						GroundH2O	
TARGET ANALYTES							
TOTAL DISSOLVED SOLIDS		**540**	mg/L	1.33	15		
Run ID: R274388 / Work Group No.: WG211852							
Prep Date1: 29-DEC-16 Analyzed 29-Dec-16 11:05							
Method: SM4500-CO2 D - Calculation						GroundH2O	
TARGET ANALYTES							
ALKALINITY: HYDROXIDE	U	0.10	mg/L	1	0.1		
Run ID: R274309 / Work Group No.: WG211800							
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15							

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW2I OW-1 the same parcel as the Bayside Well on Oro Loma Property; aka BAY1-MW2D until 11-2009; formerly BAY1-MW2-190
ClientID: MW-2I
Lab ID: L210878-1 (P218165-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 05:15pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-2I; +FLD DATA: pH = 8.10; Cl2R = 0.02 mg/L; Depth to GW = 7.68 feet; GW Elevation = feet; Labelled as RAW WATER for the program.

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method Reference								
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: CARBONATE	U	0.10	mg/L	1	0.1			
Run ID: R274309 / Work Group No.: WG211800								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: BICARBONATE		**320**	mg/L	1	5			
Run ID: R274309 / Work Group No.: WG211800								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM4500-NH3 B, C - 1997, Distillation & Titration							GroundH2O	
TARGET ANALYTES								
AMMONIA AS N		**0.280**	mg/L	.4	0.088			
Run ID: R274410 / Work Group No.: WG211895								
Prep Date1: 03-JAN-17 Analyzed 03-Jan-17 08:30								
Method: EPA 200.7 - Rev. 4.4, ICP Scan							RawH2O	
TARGET ANALYTES								
CALCIUM		**15,200**	ug/L	1.04	18.1			
IRON		**98.0**	ug/L	1.04	0.624	100		
POTASSIUM		**6,160**	ug/L	1.04	11.9			
MAGNESIUM		**13,200**	ug/L	1.04	1.14			
MANGANESE		**111**	ug/L	1.04	0.104	20		
SODIUM		**148,000**	ug/L	1.04	3.12			
Run ID: R274405 / Work Group No.: WG211868								
Prep Date1: 29-DEC-16 Prep Date2: 30-DEC-16 Analyzed 30-Dec-16 10:13								

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Analytical Report Prepared for DREW LERER

Report generated on: Feb 16, 2017 04:14 pm
Login No.: L210879

Reported by:

KRISTI LORENSON
Laboratory Program Manager

Approved by:

NIRMELA ARSEM
Laboratory Services Division Manager

LSR B455-0706-1
Project Title: BAYSIDE GROUND WATER PROJECT

Login Performance Summary
1 - Sample received by the lab on: Dec 28 2016, 07:15 am
0 - Lost Analyses
0 - Hold Time Exceedences
Turn-around-time not met

Samples included in this report:

Sample	Type	Collected	Site	Locator	ClientID
L210879-1	GRAB	27-Dec-2016 16:15	GW BAYSIDE	BAY1-MW2S	MW-2S

Legend to the laboratory qualifiers used in this report:
U - Analyte not detected
Qualifiers for subcontract work - See textvalue for description

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW2S OW-1 the same parcel as the Bayside Well on Oro Loma Property; formerly BAY1-MW2-60
ClientID: MW-2S
Lab ID: L210879-1 (P218166-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 04:15pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-2S; +FLD DATA: pH = 6.73 ; Cl2R = 0.07 mg/L; Depth to GW = 7.52 feet; GW Elevation = feet; Labelled as RAW WATER for the program.
[Analyst Note: May need to dilute for ICP & IC due to salt water intrusion]

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: PER SUBCONTRACT LABORATORY REPORT - Subcontract data transmittal							GroundH2O	
Subcontract data								
Comment: Original report transmitted to client. Copy of report archived with data packet.								
SUBCONTRACT LAB DATA								
DATA TRANSMITTAL								
Run ID: R275391 / Work Group No.: WG212891								
Prep Date1: 03-FEB-17 Analyzed 03-Feb-17 00:00								
Method: PER SUBCONTRACT LABORATORY REPORT - Subcontract data transmittal for oxygen 18							GroundH2O	
Subcontract data from Alpha Analytical Lab								
Comment: Refer to sublab data report attached								
SUBCONTRACT LAB DATA								
DATA TRANSMITTAL								
Run ID: R275392 / Work Group No.: WG212892								
Prep Date1: 03-FEB-17 Analyzed 03-Feb-17 00:00								
Method: SAMPLER PROVIDED FIELD MEASUREMENTS - DATA ENTRY LIST FOR FIELD DATA							GroundH2O	
FIELD ANALYSIS/OBSERVATION DATA PARAMETERS								
PH		**6.73**	pH units	1				
DEPTH		**7.52**	feet	1				
CHLORINE RESIDUAL: TOTAL		**0.07**	mg/L	1	0.02			
Run ID: R274301 / Work Group No.: WG211791								
Prep Date1: 27-DEC-16 Analyzed 27-Dec-16 16:15								
Method: EPA 8260B - Trihalomethanes, GC/MS							GroundH2O	
TARGET ANALYTES								
CHLOROFORM	U	0.17	ug/L	1	0.17			
BROMODICHLOROMETHANE	U	0.079	ug/L	1	0.079			
DIBROMOCHLOROMETHANE	U	0.13	ug/L	1	0.13			
BROMOFORM	U	0.23	ug/L	1	0.23			
INTERNAL STANDARD								
FLUOROBENZENE		90.4	% recovery	1				
D5-CHLOROBENZENE		90.4	% recovery	1				
D4-1,4-DICHLOROBENZENE		91.4	% recovery	1				
SURROGATE								
D8-TOLUENE		102	% recovery	1				
4-BROMOFLUOROBENZENE		102	% recovery	1				
Run ID: R274374 / Work Group No.: WG211790								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 12:54								
Method: EPA 300.1 - Ion Chromatography							GroundH2O	1
Instrument calibrated 22-DEC-16								
TARGET ANALYTES								
NITRATE AS N	U	0.65	mg/L	500	0.65	0.4		
SULFATE		**5,700**	mg/L	500	3.3	0.5		
SURROGATE								
DICHLOROACETATE		110	% recovery	500				
Run ID: R274332 / Work Group No.: WG211799								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 14:46								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW2S OW-1 the same parcel as the Bayside Well on Oro Loma Property; formerly BAY1-MW2-60
ClientID: MW-2S
Lab ID: L210879-1 (P218166-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 04:15pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-2S; +FLD DATA: pH = 6.73 ; Cl2R = 0.07 mg/L; Depth to GW = 7.52 feet; GW Elevation = feet; Labelled as RAW WATER for the program.
[Analyst Note: May need to dilute for ICP & IC due to salt water intrusion]

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: EPA 300.1 - Ion Chromatography							GroundH2O	
Instrument calibrated 22-DEC-16								
TARGET ANALYTES								
CHLORIDE		**42,000**	mg/L	5000	26			
SURROGATE								
DICHLOROACETATE		100	% recovery	5000				
Run ID: R274332 / Work Group No.: WG211799								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 14:08								
Method: EPA 552.2 - Haloacetic Acids & Dalapon							GroundH2O	
TARGET ANALYTES								
BROMOCHLOROACETIC ACID	U	0.15	ug/L	1	0.15			
BROMODICHLOROACETIC ACID	U	0.31	ug/L	1	0.31			
CHLORODIBROMOACETIC ACID	U	0.31	ug/L	1	0.31			
DALAPON	U	0.53	ug/L	1	0.53			
DIBROMOACETIC ACID	U	0.25	ug/L	1	0.25	1		
DICHLOROACETIC ACID	U	0.18	ug/L	1	0.18	1		
MONOBROMOACETIC ACID	U	0.29	ug/L	1	0.29	1		
MONOCHLOROACETIC ACID	U	0.65	ug/L	1	0.65	2		
TRIBROMOACETIC ACID	U	0.72	ug/L	1	0.72			
TRICHLOROACETIC ACID	U	0.17	ug/L	1	0.17	1		
VALUE CALCULATED FROM OTHER RESULTS								
HAA(5)	U	1.0	ug/L					
HAA(9)	U	1.0	ug/L					
INTERNAL STANDARD								
1,2,3-TRICHLOROPROPANE		110	% recovery		1			
SURROGATE								
2,3-DIBROMOPROPIONIC ACID		97	% recovery		1			
Run ID: R274499 / Work Group No.: WG211961								
Prep Date1: 29-DEC-16 Prep Date2: 05-JAN-17 Analyzed 05-Jan-17 20:15								
Method: SM2320B - 1997, Titration							GroundH2O	
TARGET ANALYTES								
ALKALINITY: TOTAL AS CACO3		**390**	mg/L	1	5			
Run ID: R274304 / Work Group No.: WG211792								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM2340C - 1997, Titration: EDTA							GroundH2O	
TARGET ANALYTES								
HARDNESS: TOTAL AS CACO3		**16,000**	mg/L	100	300			
Run ID: R274363 / Work Group No.: WG211850								
Prep Date1: 29-DEC-16 Analyzed 29-Dec-16 10:50								
Method: SM2540C - 1997, Dried at 180C							GroundH2O	
TARGET ANALYTES								
TOTAL DISSOLVED SOLIDS		**77,000**	mg/L	25	280			
Run ID: R274388 / Work Group No.: WG211852								
Prep Date1: 29-DEC-16 Analyzed 29-Dec-16 11:05								

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Laboratory Services Division
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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW2S OW-1 the same parcel as the Bayside Well on Oro Loma Property; formerly BAY1-MW2-60
ClientID: MW-2S
Lab ID: L210879-1 (P218166-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 04:15pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-2S; +FLD DATA: pH = 6.73 ; Cl2R = 0.07 mg/L; Depth to GW = 7.52 feet; GW Elevation = feet; Labelled as RAW WATER for the program.
[Analyst Note: May need to dilute for ICP & IC due to salt water intrusion]

Method Reference / Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: HYDROXIDE	U	0.10	mg/L	1	0.1			
Run ID: R274309 / Work Group No.: WG211800								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: CARBONATE	U	0.10	mg/L	1	0.1			
Run ID: R274309 / Work Group No.: WG211800								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: BICARBONATE		**390**	mg/L	1	5			
Run ID: R274309 / Work Group No.: WG211800								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM4500-NH3 B, C - 1997, Distillation & Titration							GroundH2O	
TARGET ANALYTES								
AMMONIA AS N		**0.336**	mg/L	.4	0.088			
Run ID: R274410 / Work Group No.: WG211895								
Prep Date1: 03-JAN-17 Analyzed 03-Jan-17 08:30								
Method: EPA 200.7 - Rev. 4.4, ICP Scan							RawH2O	
TARGET ANALYTES								
CALCIUM		**1.33E+06**	ug/L	104	1810			
IRON	U	62.4	ug/L	104	62.4	100		
POTASSIUM		**510,000**	ug/L	104	1190			
MAGNESIUM		**3.15E+06**	ug/L	104	114			
MANGANESE		**38,100**	ug/L	104	10.4	20		
SODIUM		**2.06E+07**	ug/L	104	312			
Run ID: R274405 / Work Group No.: WG211868								
Prep Date1: 29-DEC-16 Prep Date2: 30-DEC-16 Analyzed 30-Dec-16 11:48								

Results with 6 figures or more are expressed in scientific notation.
RL is either the client requested or regulatory mandated Reporting Limit. ML is the regulatory mandated Minimum Level

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Analytical Report Prepared for DREW LERER

Report generated on: Feb 16, 2017 04:15 pm
Login No.: L210880

Reported by:

KRISTI LORENSON
Laboratory Program Manager

Approved by:

NIRMELA ARSEM
Laboratory Services Division Manager

LSR B455-0706-1
Project Title: BAYSIDE GROUND WATER PROJECT

Login Performance Summary
1 - Sample received by the lab on: Dec 28 2016, 07:15 am
0 - Lost Analyses
0 - Hold Time Exceedences
Turn-around-time not met

Samples included in this report:

Sample	Type	Collected	Site	Locator	ClientID
L210880-1	GRAB	27-Dec-2016 15:10	GW BAYSIDE	BAY1-MW4	MW-4

Legend to the laboratory qualifiers used in this report:
U - Analyte not detected
Qualifiers for subcontract work - See textvalue for description

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW4 OW-1 the same parcel as the Bayside Well on Oro Loma Property; formerly BAY1-MW5
ClientID: MW-4
Lab ID: L210880-1 (P218163-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 03:10pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-4; +FLD DATA: pH = 8.14 ; Cl2R = 0.00 mg/L; Depth to GW = 11.30 feet;
GW Elevation = feet; Labelled as RAW WATER for the program.

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method Reference								
Method: PER SUBCONTRACT LABORATORY REPORT - Subcontract data transmittal							GroundH2O	
Subcontract data								
Comment: Original report transmitted to client. Copy of report archived with data packet.								
SUBCONTRACT LAB DATA								
DATA TRANSMITTAL								
Run ID: R275391 / Work Group No.: WG212891								
Prep Date1: 03-FEB-17 Analyzed 03-Feb-17 00:00								
Method: PER SUBCONTRACT LABORATORY REPORT - Subcontract data transmittal for oxygen 18							GroundH2O	
Subcontract data from Alpha Analytical Lab								
Comment: Refer to sublab data report attached								
SUBCONTRACT LAB DATA								
DATA TRANSMITTAL								
Run ID: R275392 / Work Group No.: WG212892								
Prep Date1: 03-FEB-17 Analyzed 03-Feb-17 00:00								
Method: SAMPLER PROVIDED FIELD MEASUREMENTS - DATA ENTRY LIST FOR FIELD DATA							GroundH2O	
FIELD ANALYSIS/OBSERVATION DATA PARAMETERS								
PH		**8.14**	pH units	1				
DEPTH		**11.3**	feet	1				
CHLORINE RESIDUAL: TOTAL	U	0.02	mg/L	1	0.02			
Run ID: R274301 / Work Group No.: WG211791								
Prep Date1: 27-DEC-16 Analyzed 27-Dec-16 15:10								
Method: EPA 8260B - Trihalomethanes, GC/MS							GroundH2O	
TARGET ANALYTES								
CHLOROFORM	U	0.17	ug/L	1	0.17			
BROMODICHLOROMETHANE	U	0.079	ug/L	1	0.079			
DIBROMOCHLOROMETHANE	U	0.13	ug/L	1	0.13			
BROMOFORM	U	0.23	ug/L	1	0.23			
INTERNAL STANDARD								
FLUOROBENZENE		96.0	% recovery	1				
D5-CHLOROBENZENE		99.0	% recovery	1				
D4-1,4-DICHLOROBENZENE		96.2	% recovery	1				
SURROGATE								
D8-TOLUENE		103	% recovery	1				
4-BROMOFLUOROBENZENE		96.2	% recovery	1				
Run ID: R274374 / Work Group No.: WG211790								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 13:17								
Method: EPA 300.1 - Ion Chromatography							GroundH2O	
Instrument calibrated 22-DEC-16								
TARGET ANALYTES								
CHLORIDE		**59**	mg/L	5	0.026			
NITRATE AS N		**0.098**	mg/L	5	0.0065	0.4		
SULFATE		**42**	mg/L	5	0.033	0.5		
SURROGATE								
DICHLOROACETATE		110	% recovery	5				
Run ID: R274332 / Work Group No.: WG211799								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 15:23								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW4 OW-1 the same parcel as the Bayside Well on Oro Loma Property; formerly BAY1-MW5
ClientID: MW-4
Lab ID: L210880-1 (P218163-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 03:10pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-4; +FLD DATA: pH = 8.14 ; Cl2R = 0.00 mg/L; Depth to GW = 11.30 feet;
GW Elevation = feet; Labelled as RAW WATER for the program.

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method Reference								
Method: EPA 552.2 - Haloacetic Acids & Dalapon							GroundH2O	
TARGET ANALYTES								
BROMOCHLOROACETIC ACID	U	0.15	ug/L	1	0.15			
BROMODICHLOROACETIC ACID	U	0.31	ug/L	1	0.31			
CHLORODIBROMOACETIC ACID	U	0.31	ug/L	1	0.31			
DALAPON	U	0.53	ug/L	1	0.53			
DIBROMOACETIC ACID	U	0.25	ug/L	1	0.25	1		
DICHLOROACETIC ACID	U	0.18	ug/L	1	0.18	1		
MONOBROMOACETIC ACID	U	0.29	ug/L	1	0.29	1		
MONOCHLOROACETIC ACID	U	0.65	ug/L	1	0.65	2		
TRIBROMOACETIC ACID	U	0.72	ug/L	1	0.72			
TRICHLOROACETIC ACID	U	0.17	ug/L	1	0.17	1		
VALUE CALCULATED FROM OTHER RESULTS								
HAA(5)	U	1.0	ug/L					
HAA(9)	U	1.0	ug/L					
INTERNAL STANDARD								
1,2,3-TRICHLOROPROPANE		100	% recovery		1			
SURROGATE								
2,3-DIBROMOPROPIONIC ACID		100	% recovery		1			
Run ID: R274499 / Work Group No.: WG211961								
Prep Date1: 29-DEC-16 Prep Date2: 05-JAN-17 Analyzed 05-Jan-17 20:39								
Method: SM2320B - 1997, Titration							GroundH2O	
TARGET ANALYTES								
ALKALINITY: TOTAL AS CACO3		**260**	mg/L	1	5			
Run ID: R274304 / Work Group No.: WG211792								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM2340C - 1997, Titration: EDTA							GroundH2O	
TARGET ANALYTES								
HARDNESS: TOTAL AS CACO3		**120**	mg/L	1	3			
Run ID: R274363 / Work Group No.: WG211850								
Prep Date1: 29-DEC-16 Analyzed 29-Dec-16 10:50								
Method: SM2540C - 1997, Dried at 180C							GroundH2O	
TARGET ANALYTES								
TOTAL DISSOLVED SOLIDS		**440**	mg/L	1	11			
Run ID: R274388 / Work Group No.: WG211852								
Prep Date1: 29-DEC-16 Analyzed 29-Dec-16 11:05								
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: HYDROXIDE	U	0.10	mg/L	1	0.1			
Run ID: R274309 / Work Group No.: WG211800								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: CARBONATE	U	0.10	mg/L	1	0.1			
Run ID: R274309 / Work Group No.: WG211800								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW4 OW-1 the same parcel as the Bayside Well on Oro Loma Property; formerly BAY1-MW5
ClientID: MW-4
Lab ID: L210880-1 (P218163-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 03:10pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-4; +FLD DATA: pH = 8.14 ; Cl2R = 0.00 mg/L; Depth to GW = 11.30 feet;
GW Elevation = feet; Labelled as RAW WATER for the program.

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method Reference								
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: BICARBONATE		**260**	mg/L	1	5			
Run ID: R274309 / Work Group No.: WG211800								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM4500-NH3 B, C - 1997, Distillation & Titration							GroundH2O	
TARGET ANALYTES								
AMMONIA AS N		**0.336**	mg/L	.4	0.088			
Run ID: R274410 / Work Group No.: WG211895								
Prep Date1: 03-JAN-17 Analyzed 03-Jan-17 08:30								
Method: EPA 200.7 - Rev. 4.4, ICP Scan							RawH2O	
TARGET ANALYTES								
CALCIUM		**31,400**	ug/L	1.04	18.1			
IRON		**31.6**	ug/L	1.04	0.624	100		
POTASSIUM		**2,760**	ug/L	1.04	11.9			
MAGNESIUM		**12,600**	ug/L	1.04	1.14			
MANGANESE		**222**	ug/L	1.04	0.104	20		
SODIUM		**108,000**	ug/L	1.04	3.12			
Run ID: R274405 / Work Group No.: WG211868								
Prep Date1: 29-DEC-16 Prep Date2: 30-DEC-16 Analyzed 30-Dec-16 10:48								

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Analytical Report Prepared for DREW LERER

Report generated on: Feb 16, 2017 04:15 pm
Login No.: L210881

Reported by:

KRISTI LORENSON
Laboratory Program Manager

Approved by:

NIRMELA ARSEM
Laboratory Services Division Manager

LSR B455-0706-1
Project Title: BAYSIDE GROUND WATER PROJECT

Login Performance Summary
1 - Sample received by the lab on: Dec 28 2016, 07:15 am
0 - Lost Analyses
0 - Hold Time Exceedences
Turn-around-time not met

Samples included in this report:

Sample	Type	Collected	Site	Locator	ClientID
L210881-1	GRAB	27-Dec-2016 12:30	GW BAYSIDE	BAY1-MW6	MW-6

Legend to the laboratory qualifiers used in this report:
U - Analyte not detected
Qualifiers for subcontract work - See textvalue for description

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW6 R APN 438-0010-003 2364 Baumann Ave., San Lorenzo; formerly BAY-MW-WORTHLEY
ClientID: MW-6
Lab ID: L210881-1 (P218164-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 12:30pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-6; +FLD DATA: pH = 7.72; Cl2R = 0.00 mg/L; Depth to GW = 11.04 feet; GW Elevation = feet; Labelled as RAW WATER for the program.

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: PER SUBCONTRACT LABORATORY REPORT - Subcontract data transmittal							GroundH2O	
Subcontract data								
Comment: Original report transmitted to client. Copy of report archived with data packet.								
SUBCONTRACT LAB DATA								
DATA TRANSMITTAL								
Run ID: R275391 / Work Group No.: WG212891								
Prep Date1: 03-FEB-17 Analyzed 03-Feb-17 00:00								
Method: PER SUBCONTRACT LABORATORY REPORT - Subcontract data transmittal for oxygen 18							GroundH2O	
Subcontract data from Alpha Analytical Lab								
Comment: Refer to sublab data report attached								
SUBCONTRACT LAB DATA								
DATA TRANSMITTAL								
Run ID: R275392 / Work Group No.: WG212892								
Prep Date1: 03-FEB-17 Analyzed 03-Feb-17 00:00								
Method: SAMPLER PROVIDED FIELD MEASUREMENTS - DATA ENTRY LIST FOR FIELD DATA							GroundH2O	
FIELD ANALYSIS/OBSERVATION DATA PARAMETERS								
PH		**7.72**	pH units	1				
DEPTH		**11.04**	feet	1				
CHLORINE RESIDUAL: TOTAL	U	0.02	mg/L	1	0.02			
Run ID: R274301 / Work Group No.: WG211791								
Prep Date1: 27-DEC-16 Analyzed 27-Dec-16 12:30								
Method: EPA 8260B - Trihalomethanes, GC/MS							GroundH2O	
TARGET ANALYTES								
CHLOROFORM	U	0.17	ug/L	1	0.17			
BROMODICHLOROMETHANE	U	0.079	ug/L	1	0.079			
DIBROMOCHLOROMETHANE	U	0.13	ug/L	1	0.13			
BROMOFORM	U	0.23	ug/L	1	0.23			
INTERNAL STANDARD								
FLUOROBENZENE		94.6	% recovery	1				
D5-CHLOROBENZENE		98.6	% recovery	1				
D4-1,4-DICHLOROBENZENE		92.2	% recovery	1				
SURROGATE								
D8-TOLUENE		102	% recovery	1				
4-BROMOFLUOROBENZENE		99.0	% recovery	1				
Run ID: R274374 / Work Group No.: WG211790								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 13:40								
Method: EPA 300.1 - Ion Chromatography							GroundH2O	
Instrument calibrated 22-DEC-16								
TARGET ANALYTES								
CHLORIDE		**68**	mg/L	10	0.052			
NITRATE AS N		**0.17**	mg/L	10	0.013	0.4		
SULFATE		**40**	mg/L	10	0.066	0.5		
SURROGATE								
DICHLOROACETATE		110	% recovery	10				
Run ID: R274332 / Work Group No.: WG211799								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 17:17								

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Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW6 R APN 438-0010-003 2364 Baumann Ave., San Lorenzo; formerly BAY-MW-WORTHLEY
ClientID: MW-6
Lab ID: L210881-1 (P218164-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 12:30pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-6; +FLD DATA: pH = 7.72; Cl2R = 0.00 mg/L; Depth to GW = 11.04 feet; GW Elevation = feet; Labelled as RAW WATER for the program.

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method Reference								
Method: EPA 552.2 - Haloacetic Acids & Dalapon							GroundH2O	
TARGET ANALYTES								
BROMOCHLOROACETIC ACID	U	0.15	ug/L	1	0.15			
BROMODICHLOROACETIC ACID	U	0.31	ug/L	1	0.31			
CHLORODIBROMOACETIC ACID	U	0.31	ug/L	1	0.31			
DALAPON	U	0.53	ug/L	1	0.53			
DIBROMOACETIC ACID	U	0.25	ug/L	1	0.25	1		
DICHLOROACETIC ACID	U	0.18	ug/L	1	0.18	1		
MONOBROMOACETIC ACID	U	0.29	ug/L	1	0.29	1		
MONOCHLOROACETIC ACID	U	0.65	ug/L	1	0.65	2		
TRIBROMOACETIC ACID	U	0.72	ug/L	1	0.72			
TRICHLOROACETIC ACID	U	0.17	ug/L	1	0.17	1		
VALUE CALCULATED FROM OTHER RESULTS								
HAA(5)	U	1.0	ug/L					
HAA(9)	U	1.0	ug/L					
INTERNAL STANDARD								
1,2,3-TRICHLOROPROPANE		100	% recovery		1			
SURROGATE								
2,3-DIBROMOPROPIONIC ACID		91	% recovery		1			
Run ID: R274499 / Work Group No.: WG211961								
Prep Date1: 29-DEC-16 Prep Date2: 05-JAN-17 Analyzed 05-Jan-17 21:03								
Method: SM2320B - 1997, Titration							GroundH2O	
TARGET ANALYTES								
ALKALINITY: TOTAL AS CACO3		**210**	mg/L	1	5			
Run ID: R274304 / Work Group No.: WG211792								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM2340C - 1997, Titration: EDTA							GroundH2O	
TARGET ANALYTES								
HARDNESS: TOTAL AS CACO3		**120**	mg/L	1	3			
Run ID: R274363 / Work Group No.: WG211850								
Prep Date1: 29-DEC-16 Analyzed 29-Dec-16 10:50								
Method: SM2540C - 1997, Dried at 180C							GroundH2O	
TARGET ANALYTES								
TOTAL DISSOLVED SOLIDS		**400**	mg/L	1	11			
Run ID: R274388 / Work Group No.: WG211852								
Prep Date1: 29-DEC-16 Analyzed 29-Dec-16 11:05								
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: HYDROXIDE	U	0.10	mg/L	1	0.1			
Run ID: R274309 / Work Group No.: WG211800								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: CARBONATE	U	0.10	mg/L	1	0.1			
Run ID: R274309 / Work Group No.: WG211800								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								

RL is either the client requested or regulatory mandated Reporting Limit. ML is the regulatory mandated Minimum Level

EAST BAY MUNICIPAL UTILITY DISTRICT
Laboratory Services Division
PO Box 24055, MS 59, Oakland, CA 94623
Phone (510)287-1432 Fax (510)465-5462

Analytical Results Report

LSR B455-0706-1 BAYSIDE GROUND WATER PROJECT
Site: GW BAYSIDE East Bay Ground Water Injection/Extraction Project Bayside Groundwater
Locator: BAY1-MW6 R APN 438-0010-003 2364 Baumann Ave., San Lorenzo; formerly BAY-MW-WORTHLEY
ClientID: MW-6
Lab ID: L210881-1 (P218164-1)
Sample Type: GRAB (Instantaneous Grab)
Date Collected: Dec 27 2016, 12:30pm Sample collector: RBrush/ERG
Date Received: Dec 28 2016, 07:15am Sample receiver: CSOOHOO
Sample Comments: MW-6; +FLD DATA: pH = 7.72; Cl2R = 0.00 mg/L; Depth to GW = 11.04 feet; GW Elevation = feet; Labelled as RAW WATER for the program.

Parameter	Qualifier	Result	Units	Dilution	MDL	RL/ML	Matrix	Tag
Method: SM4500-CO2 D - Calculation							GroundH2O	
TARGET ANALYTES								
ALKALINITY: BICARBONATE		**210**	mg/L	1	5			
Run ID: R274309 / Work Group No.: WG211800								
Prep Date1: 28-DEC-16 Analyzed 28-Dec-16 07:15								
Method: SM4500-NH3 B, C - 1997, Distillation & Titration							GroundH2O	
TARGET ANALYTES								
AMMONIA AS N		**0.336**	mg/L	.4	0.088			
Run ID: R274410 / Work Group No.: WG211895								
Prep Date1: 03-JAN-17 Analyzed 03-Jan-17 08:30								
Method: EPA 200.7 - Rev. 4.4, ICP Scan							RawH2O	
TARGET ANALYTES								
CALCIUM		**35,600**	ug/L	1.04	18.1			
IRON		**21.0**	ug/L	1.04	0.624	100		
POTASSIUM		**3,000**	ug/L	1.04	11.9			
MAGNESIUM		**8,250**	ug/L	1.04	1.14			
MANGANESE		**192**	ug/L	1.04	0.104	20		
SODIUM		**87,700**	ug/L	1.04	3.12			
Run ID: R274405 / Work Group No.: WG211868								
Prep Date1: 29-DEC-16 Prep Date2: 30-DEC-16 Analyzed 30-Dec-16 10:54								

RL is either the client requested or regulatory mandated Reporting Limit. ML is the regulatory mandated Minimum Level

Laboratory Report Supplement
DOX & File as Data Approval Worksheet
WG 212080/R274569 AA 1/10/17
Approved By:
Approved On: 1/11/17

Forensic Analytical LABORATORIES

ANALYSIS REPORT
ASBESTOS IN DRINKING WATER
Transmission Electron Microscopy*

RECEIVED 12/21/16

Client:	EBMUD	Page:	1 of 1
Contact:	Kristi Lorenson	Client Number:	2674
Street:	PO Box 24055 M/S 59	Report Number:	T028198
City/state/zip:	Oakland CA 94623	Date/time Received:	12/7/16 1639

Project No.:	B455-0706-1	Date/time filtered:	12/7/16 1750
PO#:	933-30648-AX	Analyst(s):	SM
Date/time collected:	12/7/16 1048	Date Analyzed:	12/15/16
Hold time, hrs	<48	Date Reported:	12/20/16
Filter type:	25mm MCE		
Pore size	0.22 µm		

ANALYTICAL RESULTS	
Sample Number	L210457-2
Description	WTP Bayside/ Bay Well Head
System-Source	
Lab Sample Number	20113642
Volume Filtered, mL	30
Filter Area, mm2	190
Grid Opening Area, mm^2	0.0086
Number of GO's Analyzed	4
Area Analyzed, mm^2	0.034
# Asbestos Fibers ≥10 µm	0
Analytical Sensitivity, MFL	0.2
Asbestos Concentration, ≥10um in length, MFL	**<0.2**
Asbestos Type(s) Detected**	**ND**
95% Upper Conf. Limit, MFL	0.7
95% Lower Conf. Limit, MFL	0.0

Mark S. Floyd, Analytical Microscopy Supervisor

* Method 100.2 (EPA/600/R-94/134). Results are reported in Millions of Fibers per Liter (MFL) over 10 µm in length.

** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210457

Project Title: RAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0267
Lab PM: KRISTI LORENSON

Sampled by: B Chan/C Pagtakhan
Rcvd: 07-DEC-16 11:55
Sample Date: 07-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	Duedate Initials
L210457-2	GRAB	10:40	WTP RAYSIDE	BAY WELL HEAD	RawH2O	ASBESTOS EPA (EPA 100.1 - EPA 100.2)	1369924	PLSTL		~~07-DEC-16~~

ClientID:
Sample Comments: Annual Sampling per DDW T22 and WDR; SUBCONTRACT DATA: 1613 for 2,3,7,8 TCDD only Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		CYNTHIA SOTTO	1255	07-DEC-16
Received by		LOUIS WATTERS	1255	07-DEC-16
Relinquished by		LOUIS WATTERS	16:38	07-DEC-16
Received by				
Relinquished by				
Received by				

4:39 pm
RECEIVED
DEC 07 2016

Sample Type Descriptions:
GRAB - Instantaneous Grab
QCFB - Field Blank Grab

Container Type Descriptions:
A250 - Glass, amber, NM, PTFE line cap, 250 mL
A250T - Glass, amber, NM, PTFE line cap, Na2S2O3, 250
CLAB - Contract lab supplied container, see COC.
BPLS - Plastic, NM brown, single use, 250 mL
VOA4T - Glass, amber, septa top, Na2S2O3, 40 mL
A500T - Glass, amber, NM, PTFE line cap, Na2S2O3, 1000
PLSTS - Plastic, NM, 125 mL
VOCT3 - Glass, clear, septa top, 3 mg Na2S2O3, 40 mL
A250Z - Glass, amber, NM, septa top, ZHS, 250 mL
ANORS - Glass, amber, PTFE line cap, Na2SO3, 1000 mL
PLSTM - Plastic, NM, 500 mL
VOC4N - Glass, clear, septa top, MCAA, 40 mL
A125T - Glass, amber, NM, PTFE line cap, Na2S2O3, 125
VOA6T - Glass, amber, septa top, Na2S2O3, 60 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, NM, 1000 mL
CHPLT - Plasti, NM, PTFE line cap, Na2S2O3, 500 mL
VOC4A - Glass, clear, septa top, Ascorbic acid, 40 mL
VOC4 - Glass, clear, septa top, no preserv, 40 mL
SWBCT - Plastic, sterile, Na2S2O3, SWTR sample, 250 mL

Email results to:
KRISTI LORENSON (klorenson@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Forensic Analytical
FORENSIC ANALYTICAL
1777 Depot Road B409
Hayward CA 94545
(510)887-8828
PO# 933 30648-AX Expires: 30-JUN-17

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client

Chain of Custody Attachment
(page 2 of 2)

Submitted To: Forensic Analytical Laboratories, Inc.
3777 Depot Road, Suite 409
Hayward, CA 94545
Phone: (510) 266-8130
Fax: (510) 887-4218
Attn: Mark Floyd
Email: msf@forensica.com

EBMUD P.O.: 933-18171-AX expires 06/30/17

Date sample submitted: December 7, 2016

Method of shipment: STAT Courier

Login Number	Site/Locator	Collect Date and Time
L210457-2	WTP BAYSIDE / BAY WELL HEAD	07-DEC-16 10:48

Analysis: ASBESTOS EPA (EPA 100.2) - Drinking water
NO EDT (Write-ON) reporting

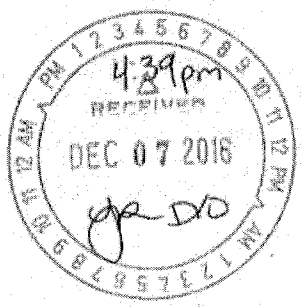
Samples should be received and filtered in the laboratory within 48 hours of collection.

TAT: Standard (10 days)

Please comply with method requirement to have sample filtered within 48 hours of collection.

NOTES: Please notify the Submitter by phone if, UPON filtering, the filter with optimal loading for analysis will take more than 10 grid openings to reach a DLR < **0.2 MFL.** EBMUD will then determine how analysis is to proceed.

Please email results to: Kristi Lorenson
EBMUD Laboratory
P.O. Box 24055 MS # 59
Oakland, California. 94623
Tel No: (510) 287-1696
Fax No: (510) 465-5462
Email: klorenso@ebmud.com



FRONTIER
ANALYTICAL LABORATORY

NELAP ACCREDITED TNI LABORATORY

December 22, 2016

tory Report Supplement
& File as Data Approval Worksheet
WG
Approved By:
Approved On:

FAL Project ID: 10318

Ms. Kristi Lorenson
EBMUD Laboratory
P.O. Box 24055 MS #59
Oakland, CA 94623

RECEIVED
12/28/16

Dear Ms. Lorenson,

The following results are associated with Frontier Analytical Laboratory project **10318.** This corresponds to your project **B455-0706-1**. One aqueous sample was received on 12/8/2016 in good condition. This sample was extracted and analyzed by EPA Method 1613 for 2,3,7,8-TCDD only. EBMUD requested a turnaround time of fifteen business days for project **10318.**

The following Level I report consists of an Analytical Data section and a Sample Receipt section. The Analytical Data section contains our sample tracking log and the analytical results. The Sample Receipt section contains your chain of custody, your chain of custody attachment, our sample login form and a sample photo. The enclosed results are specifically for the sample referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041**. Our State of California ELAP certificate number is **2934**. This report has been emailed to you as a portable document format (PDF) file. A hard copy of the report will not be sent unless specifically requested.

If you have any questions regarding project **10318**, please contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

Thomas C. Crabtree

Thomas C. Crabtree
Director

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: **10318**

Received on: **12/08/2016** Project Due: **01/03/2017** Storage: **R2**

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
10318-001-SA	0	B455-0706-1	L210457-2	EPA 1613 TCDD	Aqueous	12/07/2016	10:48 am	12/07/2017

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

EPA Method 1613
TCDD

FRONTIER ANALYTICAL LABORATORY

FAL ID: 10318-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X3952

Date Extracted: 12-14-2016
Date Received: NA
Amount: 1.000 L

ICal: pcddfal3-7-20-16
GC Column: DB5
Units: pg/L

Acquired: 12-16-2016
WHO TEQ: NA

Compound	Conc	DL	Qual	MDL
2,3,7,8-TCDD	ND	0.725		0.161

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	84.1	31.0 - 137	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	108	42.0 - 164	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: JC

Date: 12/16/2016

Reviewed By: DPV

Date: 12/22/2016

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EPA Method 1613
TCDD

FRONTIER ANALYTICAL LABORATORY

FAL ID: 10318-001-OPR
Client ID: OPR
Matrix: Aqueous
Batch No: X3952

Date Extracted: 12-14-2016
Date Received: NA
Amount: 1.000 L

ICal: pcddfal3-7-20-16
GC Column: DB5
Units: ng/ml

Acquired: 12-15-2016
WHO TEQ: NA

Compound	Conc	QC Limits
2,3,7,8-TCDD	12.6	7.30 - 14.6

Internal Standards	% Rec	QC Limits
13C-2,3,7,8-TCDD	86.4	25.0 - 141

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	110	37.0 - 158

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 12/16/2016

Reviewed By: DPV

Date: 12/22/2016

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

EPA Method 1613
TCDD

FRONTIER ANALYTICAL LABORATORY

FAL ID: 10318-001-SA
Client ID: L210457-2
Matrix: Aqueous
Batch No: X3952

Date Extracted: 12-14-2016
Date Received: 12-08-2016
Amount: 1.010 L

ICal: pcddfal3-7-20-16
GC Column: DB5
Units: pg/L

Acquired: 12-16-2016
WHO TEQ: NA

Compound	Conc	DL	Qual	MDL
2,3,7,8-TCDD	ND	0.880		0.161

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	88.2	31.0 - 137	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	109	42.0 - 164	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: JC
Date: 12/16/2016

Reviewed By: DPV
Date: 12/22/2016

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East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Page 1 of 1 / 2

Prelog or Login No.: L210457

Project Title: BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: B Chan/C Pagtakhan
Rcvd: 07-DEC-16 11:55
Sample Date: 07-DEC-16

10318
0°C

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210457-2	GRAB	10:48	WTP BAYSIDE	BAY WELL HEAD	RawH2O	1613 (EPA 1613B)	1369925 ANORT	Y		28-DEC-16
					RawH2O	1613 (EPA 1613B)	~~1369926 ANORT~~	~~Y~~		

ClientID:

Sample Comments: Annual Sampling per DDW T22 and WDR; SUBCONTRACT DATA; 1613 for 2,3,7,8-TCDD only Pricing: STD

Total containers received: 2

	Signature	Print Name	Time	Date
Relinquished by		Michael A Patchin	0745 / 11:55	12/8/16 / 07-DEC-16
Received by		Louis Walker	7:40	8-DEC-16
Relinquished by		Louis Walker	10:30	12-8-16
Received by		K. Zipp	1030	12-8-16
Relinquished by				
Received by				

Sample Type Descriptions:
GRAB - Instantaneous Grab
QCFB - Field Blank Grab

Container Type Descriptions:
A250 - Glass, amber, WM, PTFE line cap, 250 mL
A250T - Glass, amber, WM, PTFE line cap, Na2S2O3, 250
CLAB - Contract lab supplied container, see COC,
BPLS - Plastic, WM brown, single use, 250 mL
VOA4T - Glass, amber, septa top, Na2S2O3, 40 mL
ANORT - Glass, amber, NM, PTFE line cap, Na2S2O3, 1000
PLSTS - Plastic, NM, 125 mL
VOCT3 - Glass, clear, septa top, 3 mg Na2S2O3, 40 mL
A250Z - Glass, amber, NM, septa top, ZHS, 250 mL
ANORS - Glass, amber, PTFE line cap, Na2SO3, 1000 mL
PLSTM - Plastic, WM, 500 mL
VOC4M - Glass, clear, septa top, MCAA, 40 mL
A125T - Glass, amber, NM, PTFE line cap, Na2S2O3, 125
VOA6T - Glass, amber, septa top, Na2S2O3, 60 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL
CNPLT - Plasti, WM, PTFE line cap, Na2S2O3, 500 mL
VOC4A - Glass, clear, septa top, Ascorbic acid, 40 mL
VOC4 - Glass, clear, septa top, no preserv, 40 mL
SWBCT - Plastic, sterile, Na2S2O3, SWTR sample, 290 mL

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT: Please advise EBMUD laboratory if Due Date will be missed
FRONTIER ANALYTICAL LABORATORY
Frontier Analytical Laboratory
5172 HILLSDALE CIR
EL DORADO HILLS CA 95762
(916)934-0900
PO# 931 23862-AX Expires: 30-JUN-17

Samples will be retained beyond the approval process only if requested by the client.

Chain of Custody Attachment

(page 2 of 2)

Samples submitted to: Frontier Analytical Laboratory
5172 Hillsdale Circle
El Dorado Hills, CA 95762
+1-916-934-0900
info@frontieranalytical.com
PO# 933-27797-AX Exp. 30-JUN-17

Method of shipment: STAT Delivery courier

Date sample shipped: December 8th, 2016

Sample Information:

Sample ID	Site / Locator	Collect Date & Time
L210457-2	WTP BAYSIDE / BAY WELL HEAD	07-DEC-16 10:48

Analysis: EPA 1613B for 2,3,7,8-TCDD only

Reporting: Please meet the California DLR of 5 pg/L.
Include the MDL on the report.
No EDT reporting to DDW required.

Report TAT: Standard

Please send results to: Kristi Lorenson
EBMUD Laboratory
P.O. Box 24055 MS # 59
Oakland, California. 94623
Tel No: (510) 287-1696
Fax No: (510) 465-5462
kristi.lorenson@ebmud.com

Please return cooler to: Sample Receiving, 2020 Wake Ave, Oakland, CA 94607

Frontier Analytical Laboratory

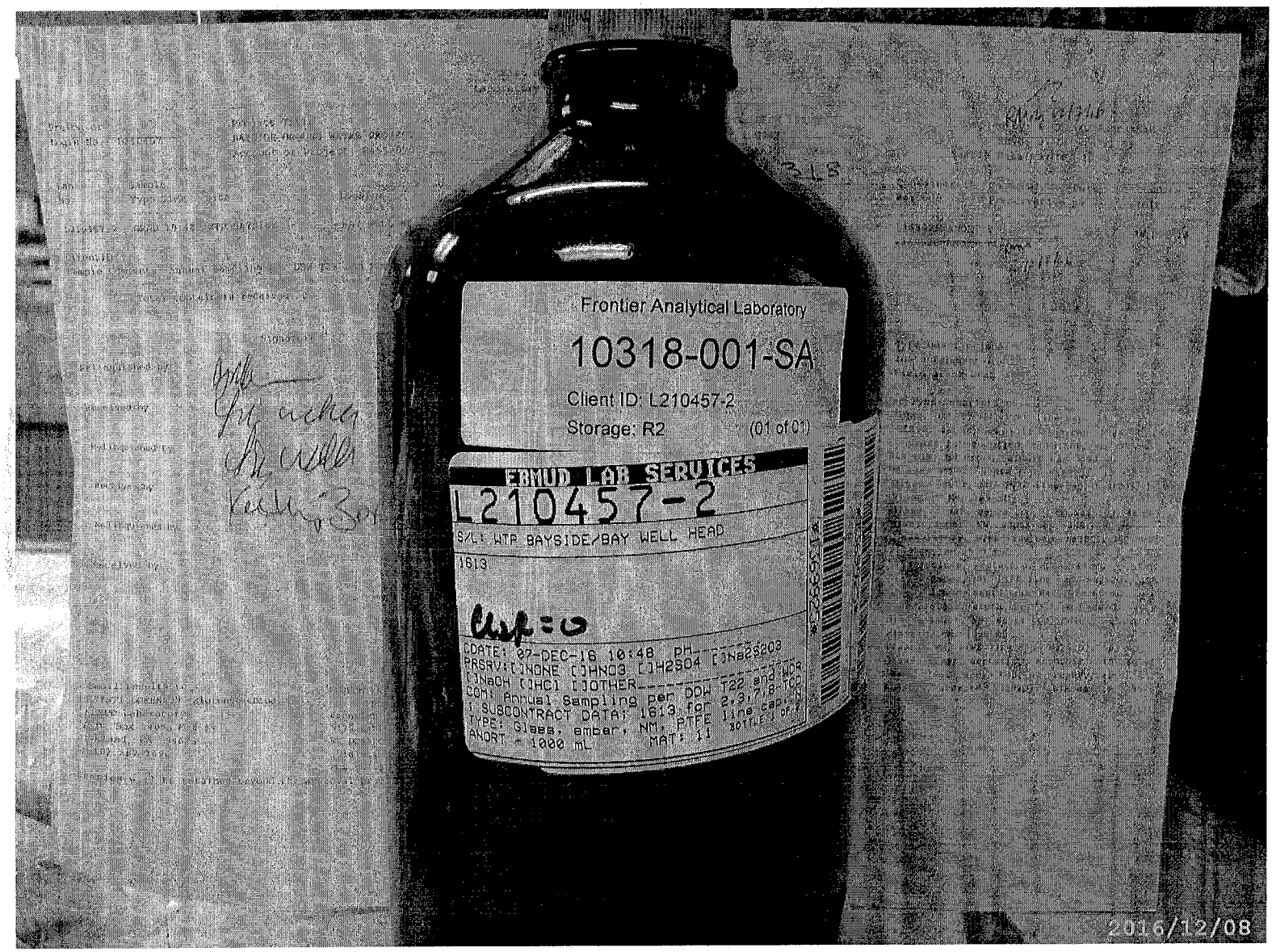
Sample Login Form

FAL Project ID: **10318**

Client:	East Bay Municipal Utility District
Client Project ID:	B455-0706-1
Date Received:	12/08/2016
Time Received:	10:30 am
Received By:	KZ
Logged In By:	KZ
# of Samples Received:	1
Duplicates:	0
Storage Location:	R2

Method of Delivery:	Courier
Tracking Number:	NA
Shipping Container Received Intact	Yes
Custody seals(s) present?	No
Custody seals(s) intact?	No
Sample Arrival Temperature (C)	0
Cooling Method	Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	Yes
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	Yes
pH Range of Aqueous Sample	Between 4 and 9
Anomalies or additional comments:	

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com



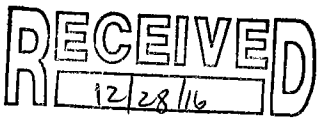
5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

Alpha Analytical Laboratories Inc.
e-mail: clientservices@alpha-labs.com
Corporate: 208 Mason St., Ukiah, CA 95482 • Phone: (707) 468-0401 • Fax: (707) 468-5267
Bay Area: 6398 Dougherty Rd., Suite 35, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309
Central Valley: 9090 Union Park Way, Suite 113, Elk Grove, CA 95624 • Phone: (916) 686-5190 • Fax: (916) 686-5192

ELAP Certificates 1551, 2728, and 2922

Laboratory Report Supplement
DOX & File as Data Approval Worksheet
WG_____
Approved By:_____
Approved On:_____

27 December 2016



EBMUD
Attn: Kristi Lorenson
PO Box 24055
Oakland, CA 94607
RE: Bayside Ground Water Project WDR
Work Order: 16L0699

Enclosed are the results of analyses for samples received by the laboratory on 12/07/16 21:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeanette Poplin

Jeanette L. Poplin For Robbie C. Phillips
Project Manager

Alpha Analytical Laboratories Inc. e-mail: clientservices@alpha-labs.com
Corporate: 208 Mason St., Ukiah, CA 95482 • Phone: (707) 468-0401 • Fax: (707) 468-5267
Bay Area: 6398 Dougherty Rd., Suite 35, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309
Central Valley: 9090 Union Park Way, Suite 113, Elk Grove, CA 95624 • Phone: (916) 686-5190 • Fax: (916) 686-5192

EBMUD	Project Manager: Kristi Lorenson	
PO Box 24055	Project: Bayside Ground Water Project WDR	Reported:
Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
L210457-2 WTP BAYSIDE / BAY WELL HEAD	16L0699-01	Water	12/07/16 10:48	12/07/16 21:40

Alpha Analytical Laboratories Inc. e-mail: clientservices@alpha-labs.com
Corporate: 208 Mason St., Ukiah, CA 95482 • Phone: (707) 468-0401 • Fax: (707) 468-5267
Bay Area: 6398 Dougherty Rd., Suite 35, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309
Central Valley: 9090 Union Park Way, Suite 113, Elk Grove, CA 95624 • Phone: (916) 686-5190 • Fax: (916) 686-5192

EBMUD	Project Manager: Kristi Lorenson	
PO Box 24055	Project: Bayside Ground Water Project WDR	Reported:
Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
L210457-2 WTP BAYSIDE / BAY WELL HEAD (16L0699-01) Water Sampled: 12/07/16 10:48 Received: 12/07/16 21:40											
Chromium, hexavalent	ND	0.050	1.0	ug/L	1	AL63669	12/17/16 22:01	12/17/16 22:01	EPA 218.6	SMP	U

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EBMUD	Project Manager: Kristi Lorenson	
PO Box 24055	Project: Bayside Ground Water Project WDR	Reported:
Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

Metals by EPA Method 200.8 ICP/MS

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
L210457-2 WTP BAYSIDE / BAY WELL HEAD (16L0699-01) Water Sampled: 12/07/16 10:48 Received: 12/07/16 21:40											**P-02**
Antimony	ND	0.020	0.50	ug/L	1	AL63391	12/14/16 11:50	12/21/16 01:35	EPA 200.8	MMY	U
Barium	**28**	**0.050**	**0.50**	**ug/L**	1	AL63391	12/14/16 11:50	12/21/16 01:35	EPA 200.8	MMY	
Beryllium	ND	0.020	0.10	ug/L	1	AL63391	12/14/16 11:50	12/21/16 01:35	EPA 200.8	MMY	U
Cadmium	ND	0.050	0.10	ug/L	1	AL63391	12/14/16 11:50	12/21/16 01:35	EPA 200.8	MMY	U
Chromium	ND	0.080	0.50	ug/L	1	AL63391	12/14/16 11:50	12/21/16 01:35	EPA 200.8	MMY	U
Lead	ND	0.020	0.25	ug/L	1	AL63391	12/14/16 11:50	12/21/16 01:35	EPA 200.8	MMY	U
Nickel	**0.27**	**0.060**	**0.50**	**ug/L**	1	AL63391	12/14/16 11:50	12/21/16 01:35	EPA 200.8	MMY	J
Silver	ND	0.050	0.10	ug/L	1	AL63391	12/14/16 11:50	12/21/16 01:35	EPA 200.8	MMY	U
Thallium	ND	0.050	0.10	ug/L	1	AL63391	12/14/16 11:50	12/21/16 01:35	EPA 200.8	MMY	U

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EBMUD	Project Manager: Kristi Lorenson	
PO Box 24055	Project: Bayside Ground Water Project WDR	Reported:
Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
L210457-2 WTP BAYSIDE / BAY WELL HEAD (16L0699-01) Water Sampled: 12/07/16 10:48 Received: 12/07/16 21:40											
MBAS, calculated as LAS, mw 340	ND	0.030	0.050	mg/L	1	AL63224	12/09/16 08:00	12/09/16 15:00	SM5540C	RLG	U

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EBMUD	Project Manager: Kristi Lorenson	
PO Box 24055	Project: Bayside Ground Water Project WDR	Reported:
Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

Chlorinated Pesticides and PCBs by EPA Method 508

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Analyst	Notes
L210457-2 WTP BAYSIDE / BAY WELL HEAD (16L0699-01) Water Sampled: 12/07/16 10:48 Received: 12/07/16 21:40											
Endrin	ND	0.030	0.10	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
HCH-gamma (Lindane)	ND	0.010	0.20	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
Heptachlor	ND	0.010	0.010	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
Heptachlor epoxide	ND	0.010	0.010	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
Hexachlorobenzene	ND	0.010	0.50	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
Hexachlorocyclopentadiene	ND	0.040	1.0	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
Methoxychlor	ND	0.020	10	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
PCB-1016	ND	0.030	0.50	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
PCB-1221	ND	0.030	0.50	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
PCB-1232	ND	0.030	0.50	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
PCB-1242	ND	0.030	0.50	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
PCB-1248	ND	0.030	0.50	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
PCB-1254	ND	0.030	0.50	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
PCB-1260	ND	0.030	0.50	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
Total PCBs	ND	0.30	0.50	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
Toxaphene	ND	0.40	1.0	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
Chlordane (tech)	ND	0.030	0.10	ug/L	1	AL63281	12/09/16 00:00	12/13/16 04:27	EPA 508	MCB	U
Surrogate: Dibutylchlorendate		*75.7 %*	*70-130*			*AL63281*	*12/09/16 00:00*	*12/13/16 04:27*	*EPA 508*	*MCB*	

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EBMUD	Project Manager: Kristi Lorenson	
PO Box 24055	Project: Bayside Ground Water Project WDR	Reported:
Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch AL63669 - General Preparation											
Blank (AL63669-BLK1)					Prepared & Analyzed: 12/17/16						
Chromium, hexavalent	ND	0.050	1.0	ug/L							U
LCS (AL63669-BS1)					Prepared & Analyzed: 12/17/16						
Chromium, hexavalent	9.56	0.050	1.0	ug/L	10.0		95.6	90-110			
Duplicate (AL63669-DUP1)		**Source: 16L0405-01**			Prepared & Analyzed: 12/17/16						
Chromium, hexavalent	ND	0.050	1.0	ug/L		ND				20	U
Matrix Spike (AL63669-MS1)		**Source: 16L0405-01**			Prepared & Analyzed: 12/17/16						
Chromium, hexavalent	9.69	0.050	1.0	ug/L	10.0	ND	96.9	90-110			
Matrix Spike (AL63669-MS2)		**Source: 16L1695-01**			Prepared & Analyzed: 12/19/16						
Chromium, hexavalent	10.4	0.050	1.0	ug/L	10.0	0.991	94.5	90-110			
Matrix Spike Dup (AL63669-MSD1)		**Source: 16L0405-01**			Prepared & Analyzed: 12/17/16						
Chromium, hexavalent	9.71	0.050	1.0	ug/L	10.0	ND	97.1	90-110	0.206	20	

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EBMUD	Project Manager: Kristi Lorenson	
PO Box 24055	Project: Bayside Ground Water Project WDR	Reported:
Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

Metals by EPA Method 200.8 ICP/MS - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch AL63391 - EPA 200.8											
Blank (AL63391-BLK1)					Prepared: 12/14/16 Analyzed: 12/21/16						
Antimony	ND	0.020	0.50	ug/L							U
Barium	ND	0.050	0.50	ug/L							U
Beryllium	ND	0.020	0.10	ug/L							U
Cadmium	ND	0.050	0.10	ug/L							U
Chromium	ND	0.080	0.50	ug/L							U
Lead	ND	0.020	0.25	ug/L							U
Nickel	ND	0.060	0.50	ug/L							U
Silver	ND	0.050	0.10	ug/L							U
Thallium	ND	0.050	0.10	ug/L							U
LCS (AL63391-BS1)					Prepared: 12/14/16 Analyzed: 12/21/16						
Antimony	21.0	0.020	0.50	ug/L	20.0		105	85-115			
Barium	20.9	0.050	0.50	ug/L	20.0		105	85-115			
Beryllium	21.2	0.020	0.10	ug/L	20.0		106	85-115			
Cadmium	21.2	0.050	0.10	ug/L	20.0		106	85-115			
Chromium	20.9	0.080	0.50	ug/L	20.0		105	85-115			
Lead	20.3	0.020	0.25	ug/L	20.0		101	85-115			
Nickel	20.6	0.060	0.50	ug/L	20.0		103	85-115			
Silver	20.9	0.050	0.10	ug/L	20.0		105	85-115			
Thallium	20.4	0.050	0.10	ug/L	20.0		102	85-115			
Duplicate (AL63391-DUP1)		**Source: 16L0699-01**			Prepared: 12/14/16 Analyzed: 12/21/16						
Antimony	ND	0.020	0.50	ug/L		ND				20	U
Barium	28.7	0.050	0.50	ug/L		28.5			1.03	20	
Beryllium	ND	0.020	0.10	ug/L		ND				20	U
Cadmium	ND	0.050	0.10	ug/L		ND				20	U
Chromium	ND	0.080	0.50	ug/L		ND				20	U
Lead	ND	0.020	0.25	ug/L		ND				20	U
Nickel	0.122	0.060	0.50	ug/L		0.271			76.0	20	J
Silver	ND	0.050	0.10	ug/L		ND				20	U
Thallium	ND	0.050	0.10	ug/L		ND				20	U

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EBMUD	Project Manager: Kristi Lorenson	
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Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

Metals by EPA Method 200.8 ICP/MS - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch AL63391 - EPA 200.8											
Matrix Spike (AL63391-MS1)		**Source: 16L0699-01**			Prepared: 12/14/16 Analyzed: 12/21/16						
Antimony	21.7	0.020	0.50	ug/L	20.0	ND	108	70-130			
Barium	51.1	0.050	0.50	ug/L	20.0	28.5	113	70-130			
Beryllium	21.6	0.020	0.10	ug/L	20.0	ND	108	70-130			
Cadmium	21.1	0.050	0.10	ug/L	20.0	ND	106	70-130			
Chromium	20.2	0.080	0.50	ug/L	20.0	ND	101	70-130			
Lead	20.6	0.020	0.25	ug/L	20.0	ND	103	70-130			
Nickel	20.5	0.060	0.50	ug/L	20.0	0.271	101	70-130			
Silver	20.6	0.050	0.10	ug/L	20.0	ND	103	70-130			
Thallium	20.6	0.050	0.10	ug/L	20.0	ND	103	70-130			
Matrix Spike Dup (AL63391-MSD1)		**Source: 16L0699-01**			Prepared: 12/14/16 Analyzed: 12/21/16						
Antimony	21.5	0.020	0.50	ug/L	20.0	ND	108	70-130	0.495	20	
Barium	50.1	0.050	0.50	ug/L	20.0	28.5	108	70-130	2.02	20	
Beryllium	21.5	0.020	0.10	ug/L	20.0	ND	108	70-130	0.461	20	
Cadmium	21.2	0.050	0.10	ug/L	20.0	ND	106	70-130	0.365	20	
Chromium	20.2	0.080	0.50	ug/L	20.0	ND	101	70-130	0.112	20	
Lead	20.7	0.020	0.25	ug/L	20.0	ND	103	70-130	0.253	20	
Nickel	19.9	0.060	0.50	ug/L	20.0	0.271	98.1	70-130	2.91	20	
Silver	20.7	0.050	0.10	ug/L	20.0	ND	104	70-130	0.516	20	
Thallium	20.7	0.050	0.10	ug/L	20.0	ND	103	70-130	0.382	20	

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EBMUD	Project Manager: Kristi Lorenson	
PO Box 24055	Project: Bayside Ground Water Project WDR	Reported:
Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch AL63224 - General Preparation											
Blank (AL63224-BLK1)					Prepared: 12/07/16 Analyzed: 12/09/16						
MBAS, calculated as LAS, mw 340	ND	0.030	0.050	mg/L							U
LCS (AL63224-BS1)					Prepared: 12/07/16 Analyzed: 12/09/16						
MBAS, calculated as LAS, mw 340	0.203	0.030	0.050	mg/L	0.200		101	80-120			
LCS Dup (AL63224-BSD1)					Prepared: 12/07/16 Analyzed: 12/09/16						
MBAS, calculated as LAS, mw 340	0.198	0.030	0.050	mg/L	0.200		99.0	80-120	2.38	20	
Duplicate (AL63224-DUP1)		**Source: 16L0492-02**			Prepared: 12/07/16 Analyzed: 12/09/16						
MBAS, calculated as LAS, mw 340	ND	0.030	0.050	mg/L		ND				20	U
Matrix Spike (AL63224-MS1)		**Source: 16L0492-02**			Prepared: 12/07/16 Analyzed: 12/09/16						
MBAS, calculated as LAS, mw 340	0.217	0.030	0.050	mg/L	0.200	ND	109	80-120			
Matrix Spike Dup (AL63224-MSD1)		**Source: 16L0492-02**			Prepared: 12/07/16 Analyzed: 12/09/16						
MBAS, calculated as LAS, mw 340	0.222	0.030	0.050	mg/L	0.200	ND	111	80-120	2.17	20	

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EBMUD	Project Manager: Kristi Lorenson	
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Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

Chlorinated Pesticides and PCBs by EPA Method 508 - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch AL63281 - SVOAs in Water GC											
Blank (AL63281-BLK1)					Prepared: 12/09/16 Analyzed: 12/13/16						
Endrin	ND	0.030	0.10	ug/L							U
HCH-gamma (Lindane)	ND	0.010	0.20	ug/L							U
Heptachlor	ND	0.010	0.010	ug/L							U
Heptachlor epoxide	ND	0.010	0.010	ug/L							U
Hexachlorobenzene	ND	0.010	0.50	ug/L							U
Hexachlorocyclopentadiene	ND	0.040	1.0	ug/L							U
Methoxychlor	ND	0.020	10	ug/L							U
PCB-1016	ND	0.030	0.50	ug/L							U
PCB-1221	ND	0.030	0.50	ug/L							U
PCB-1232	ND	0.030	0.50	ug/L							U
PCB-1242	ND	0.030	0.50	ug/L							U
PCB-1248	ND	0.030	0.50	ug/L							U
PCB-1254	ND	0.030	0.50	ug/L							U
PCB-1260	ND	0.030	0.50	ug/L							U
Total PCBs	ND	0.30	0.50	ug/L							U
Toxaphene	ND	0.40	1.0	ug/L							U
Chlordane (tech)	ND	0.030	0.10	ug/L							U
Surrogate: Dibutylchlorendate	*0.756*			*ug/L*	*1.06*		*71.3*	*70-130*			
LCS (AL63281-BS1)					Prepared: 12/09/16 Analyzed: 12/13/16						
Endrin	0.272	0.030	0.10	ug/L	0.280		97.1	70-130			
HCH-gamma (Lindane)	0.230	0.010	0.20	ug/L	0.280		82.1	70-130			
Heptachlor	0.220	0.010	0.010	ug/L	0.280		78.7	70-130			
Heptachlor epoxide	0.242	0.010	0.010	ug/L	0.280		86.4	70-130			
Hexachlorocyclopentadiene	0.208	0.040	1.0	ug/L	0.560		37.1	15-90			J
Hexachlorobenzene	0.258	0.010	0.50	ug/L	0.280		92.0	70-130			J
Methoxychlor	0.268	0.020	10	ug/L	0.280		95.7	70-130			J
Surrogate: Dibutylchlorendate	*0.951*			*ug/L*	*1.06*		*89.7*	*70-130*			

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EBMUD	Project Manager: Kristi Lorenson	
PO Box 24055	Project: Bayside Ground Water Project WDR	Reported:
Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

Chlorinated Pesticides and PCBs by EPA Method 508 - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch AL63281 - SVOAs in Water GC											
LCS Dup (AL63281-BSD1)					Prepared: 12/09/16 Analyzed: 12/13/16						
Endrin	0.273	0.030	0.10	ug/L	0.280		97.5	70-130	0.352	25	
HCH-gamma (Lindane)	0.240	0.010	0.20	ug/L	0.280		85.5	70-130	4.15	25	
Heptachlor	0.231	0.010	0.010	ug/L	0.280		82.6	70-130	4.80	25	
Heptachlor epoxide	0.247	0.010	0.010	ug/L	0.280		88.2	70-130	2.11	25	
Hexachlorocyclopentadiene	0.289	0.040	1.0	ug/L	0.560		51.6	15-90	32.7	50	J
Hexachlorobenzene	0.217	0.010	0.50	ug/L	0.280		77.6	70-130	17.0	25	J
Methoxychlor	0.273	0.020	10	ug/L	0.280		97.4	70-130	1.84	25	J
Surrogate: Dibutylchlorendate	*0.876*			*ug/L*	*1.06*		*82.6*	*70-130*			

Alpha Analytical Laboratories Inc. e-mail: clientservices@alpha-labs.com
Corporate: 208 Mason St., Ukiah, CA 95482 • Phone: (707) 468-0401 • Fax: (707) 468-5267
Bay Area: 6398 Dougherty Rd., Suite 35, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309
Central Valley: 9090 Union Park Way, Suite 113, Elk Grove, CA 95624 • Phone: (916) 686-5190 • Fax: (916) 686-5192

EBMUD	Project Manager: Kristi Lorenson	
PO Box 24055	Project: Bayside Ground Water Project WDR	Reported:
Oakland CA, 94607	Project Number: B455-0706-1 / L210457	12/27/16 16:51

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration, detected but not quantified (DNQ).
P-02	Sample was received with insufficient preservative. Sample was preserved and allowed to sit 24 hours before further processing.
U	Analyte included in analysis, but not detected at or above MDL.
ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
MDL	Method detection limit
Rec	Recovery
RPD	Relative Percent Difference

16L0699

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

RMM-12/7/16

Prelog or Login No.: L210457

Project Title
BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: B Chan/C Pagtakhan
Rcvd: 07-DEC-16 11:55
Sample Date: 07-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210457-2	GRAB	10:48	WTP BAYSIDE	BAY WELL HEAD	RawH2O	508 - PCBS (EPA 508)	1369907 ANORT			28-DEC-16
					RawH2O	508 - PCBS (EPA 508)	1369908 ANORT			
					RawH2O	508 - PCBS (EPA 508)	1369909 ANORT			
					RawH2O	508 - PCBS (EPA 508)	1369910 ANORT			
					RawH2O	MBAS (SM(20)5540 C)	1369915 PLSTL			
					RawH2O	CHROMIUM+6: IC (EPA 218.6)	1369927 CLAB	Y		
					RawH2O	*ICPMS EPA 200.8;AG EPA 200.8 (EPA 200.8);BA EPA	1369934 PLSTL	Y		
					RawH2O	200.8 (EPA 200.8);BE EPA 200.8 (EPA 200.8);CD EPA				
					RawH2O	200.8 (EPA 200.8);CR EPA 200.8 (EPA 200.8);NI EPA				
					RawH2O	200.8 (EPA 200.8);PB EPA 200.8 (EPA 200.8);SB EPA				
					RawH2O	200.8 (EPA 200.8);TL EPA 200.8 (EPA 200.8)				

ClientID:
Sample-Comments:—Annual-Sampling-per-DDW-T22 and-WDR; SUBCONTRACT DATA;—1613 for-2,3,7,8=TCDD only—Pricing: STD

Total containers received: 7

	Signature	Print Name	Time	Date
Relinquished by	Robert Molina	Robert Molina	1415	
		~~Michael A Patchin~~ RMM 12/7/16	~~11:55~~	07-DEC-16
Received by		RAN ANDERSON	1415	12/7/16
Relinquished by		RAN ANDERSON	1515	12/7/16
Received by			1730	12/7
Relinquished by			2140	12/7
Received by			2140	12/7

Sample Type Descriptions: 3.5
GRAB - Instantaneous Grab
QCFB - Field Blank Grab

Container Type Descriptions:
A250 - Glass, amber, WM, PTFE line cap, 250 mL
A250T - Glass, amber, WM, PTFE line cap, Na2S2O3, 250
CLAB - Contract lab supplied container, see COC,
BPLS - Plastic, WM brown, single use, 250 mL
VOA4T - Glass, amber, septa top, Na2S2O3, 40 mL
ANORT - Glass, amber, NM, PTFE line cap, Na2S2O3, 1000
PLSTS - Plastic, NM, 125 mL
VOCT3 - Glass, clear, septa top, 3 mg Na2S2O3, 40 mL
A250Z - Glass, amber, NM, septa top, ZHS, 250 mL
ANORS - Glass, amber, PTFE line cap, Na2SO3, 1000 mL
PLSTM - Plastic, WM, 500 mL
VOC4M - Glass, clear, septa top, MCAA, 40 mL
A125T - Glass, amber, NM, PTFE line cap, Na2S2O3, 125
VOA6T - Glass, amber, septa top, Na2S2O3, 60 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL
CNPLT - Plasti, WM, PTFE line cap, Na2S2O3, 500 mL
VOC4A - Glass, clear, septa top, Ascorbic acid, 40 mL
VOC4 - Glass, clear, septa top, no preserv, 40 mL
SWBCT - Plastic, sterile, Na2S2O3, SWTR sample, 290 mL

1610699

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

ANALYSIS

Prelog or Login No.: L210457	Project Title: BAYSIDE GROUND WATER PROJECT Account or Project: B455-0706-1	Client PM: DREW LERER Tel No.: 0247 Lab PM: KRISTI LORENSON	Sampled by: B Chan/C Pagtakhan Rcvd: 07-DEC-16 11:55 Sample Date: 07-DEC-16

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

16L0699

Chain of Custody Attachment

(page 3 of 3)

Samples submitted to: Alpha Analytical Labs
208 Mason Street
Ukiah, CA 95482
707-468-0401
Billing to: Visa card on file

Method of shipment: Alpha Laboratory Courier

Date submitted: December 7th, 2016

Sample Information:

Login Number	Site / Locator	Collect Date & Time
L210457-2	WTP BAYSIDE / BAY WELL HEAD	07-DEC-16 10:48

Analyses: 508-PCBS (508 DDW Regulatory in Water)
MBAS- SM (20) 5540 C
HEXAVALENT CHROMIUM by IC (EPA 218.6)

200.8 METALS (Ag, Ba, Be, Cd, Cr, Ni, Pb, Sb, Tl)
Acidified 12/7/16 @ 13:40

TAT: STANDARD

MBAS: Please comply with 48 hour hold time. Sampled on 07-DEC-16 @ 10:48, expires 09-DEC-16 @ 10:48.

Comments: Please report only the following parameters for 508-PCBS:

Parameter	STORET No.
AROCLOR 1016	34671
AROCLOR 1221	39488
AROCLOR 1232	39492
AROCLOR 1242	39496
AROCLOR 1248	39500
AROCLOR 1254	39504
AROCLOR 1260	39508
TOTAL PCB'S	39516

No EDT reporting to DDW required

Please send results to:

Kristi Lorenson
EBMUD Laboratory Services Division
P.O. Box 24055 MS # 59
Oakland, California. 94623
Tel No: (510) 287-1696
Fax No: (510) 465-5462
kristi.lorenson@ebmud.com

December 29, 2016

East Bay Municipal Utility Dist.
Nirmela Arsem, Laboratory Manager
Post Office Box 24055, MS #59
Oakland, CA 94623

Lab ID : SP 1614658
Customer : 2-14973

Laboratory Report

Introduction: This report package contains total of 5 pages divided into 3 sections:

Case Narrative	(2 pages)	: An overview of the work performed at FGL.
Sample Results	(1 page)	: Results for each sample submitted.
Quality Control	(2 pages)	: Supporting Quality Control (QC) results.

Laboratory Report Supplement
DOX & File as Data Approval Worksheet
WG_____
Approved By:_____
Approved On:_____

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
L210457-2	12/07/2016	12/08/2016	SP 1614658-001	W

Sampling and Receipt Information: All samples were received in acceptable condition and within temperature requirements, unless noted on the Condition Upon Receipt (CUR) form. All samples arrived at room temperature. All samples were prepared and analyzed within the method specified hold time. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

RECEIVED 1/5/17

Quality Control: All samples were prepared and analyzed according to the following tables:

Radio QC

900.0	12/15/2016:218432 All analysis quality controls are within established criteria.
	12/14/2016:214945 All preparation quality controls are within established criteria, except: The following note applies to Gross Beta: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.
903.0	12/20/2016:218458 All analysis quality controls are within established criteria.
	12/14/2016:214981 All preparation quality controls are within established criteria.
905.0	12/15/2016:218285 All analysis quality controls are within established criteria.
	12/12/2016:214873 All preparation quality controls are within established criteria.

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FAX: (559)734-8435
CA ELAP Certification No. 2810

December 29, 2016 Lab ID : SP 1614658
East Bay Municipal Utility Dist. Customer : 2-14973

Radio QC

906.0	12/12/2016:218151 All analysis quality controls are within established criteria.
	12/12/2016:214821 All preparation quality controls are within established criteria.
908.0	12/21/2016:218534 All analysis quality controls are within established criteria.
	12/14/2016:214926 All preparation quality controls are within established criteria.
Ra - 05	12/19/2016:218406 All analysis quality controls are within established criteria.
	12/14/2016:214872 All preparation quality controls are within established criteria.
SM7500Rn	12/09/2016:218026 All analysis quality controls are within established criteria.
	12/09/2016:214764 All preparation quality controls are within established criteria.

Certification:: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2016-12-29

December 29, 2016

Lab ID : SP 1614658-001
Customer ID : 2-14973

East Bay Municipal Utility Dist.
Nirmela Arsem, Laboratory Manager
Post Office Box 24055, MS #59
Oakland, CA 94623

Sampled On : December 7, 2016-10:48
Sampled By : B Chan/C Pagtakhan
Received On : December 8, 2016-11:24
Matrix : Water

Description : L210457-2
Project : BAYSIDE GROUND WATER PROJECT

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Radio Chemistry								
Gross Alpha	1.21 ± 0.709	0.639	pCi/L	15/5	900.0	12/14/16-09:47 2P1614945	900.0	12/15/16-18:00 2A1618432
Gross Beta	0.566 ± 0.696	0.887	pCi/L	50	900.0	12/14/16-09:47 2P1614945	900.0	12/15/16-18:00 2A1618432
Radon	423 ± 32.1	21.6	pCi/L		SM7500Rn	12/09/16-09:30 2P1614764	SM7500Rn	12/09/16-13:00 2A1618026
Strontium 90	0.424 ± 0.732	0.682	pCi/L	8	905.0	12/12/16-19:00 2P1614873	905.0	12/15/16-10:20 2A1618285
Total Alpha Radium (226)	0.000 ± 0.059	0.363	pCi/L	3	903.0	12/14/16-19:15 2P1614981	903.0	12/20/16-13:00 2A1618458
Tritium	135 ± 271	434	pCi/L	20000	906.0	12/12/16-09:30 2P1614821	906.0	12/12/16-21:00 2A1618151
Uranium	0.000 ± 0.636	0.470	pCi/L	20	908.0	12/14/16-08:00 2P1614926	908.0	12/21/16-14:20 2A1618534
Ra 228	0.000 ± 0.520	0.192	pCi/L	2	Ra - 05	12/14/16-18:30 2P1614872	Ra - 05	12/19/16-19:50 2A1618406

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.
MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).
AV = Assigned Value(Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following
If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:
Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L
Uranium is less than or equal to 20 pCi/L
Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

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December 29, 2016 Lab ID : SP 1614658
East Bay Municipal Utility Dist. Customer : 2-14973

Quality Control - Radio

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Radio								
Alpha	900.0	12/15/16:218432caa	CCV	cpm	8516	43.8 %	44 - 53	
			CCB	cpm		0.0800	0.19	
Beta	900.0	12/15/16:218432caa	CCV	cpm	8516	95.4 %	93 - 114	
			CCB	cpm		0.3800	0.49	
Gross Alpha	900.0	12/14/16:214945RMM	Blank	pCi/L		0.66	3	
			LCS	pCi/L	107.4	107 %	75-125	
			MS	pCi/L	107.4	102 %	60-140	
		(SP 1614505-003)	MSD	pCi/L	107.4	123 %	60-140	
			MSRPD	pCi/L	107.4	17.8%	≤30	
Gross Beta	900.0	12/14/16:214945RMM	Blank	pCi/L		-0.07	4	
			LCS	pCi/L	73.92	95.9 %	75-125	
			MS	pCi/L	73.92	75.8 %	80-130	435
		(SP 1614505-003)	MSD	pCi/L	73.92	76.6 %	80-130	435
			MSRPD	pCi/L	107.4	1.0%	≤30	
Alpha	903.0	12/20/16:218458caa	CCV	cpm	8512	42.1 %	39 - 47	
			CCB	cpm		0.100	0.16	
Total Alpha Radium (226)	903.0	12/14/16:214981emv	RgBlk	pCi/L		-0.009	2	
			LCS	pCi/L	21.86	59.3 %	52-107	
			BS	pCi/L	21.86	48.7 %	43-111	
			BSD	pCi/L	21.86	50.4 %	43-111	
			BSRPD	pCi/L	21.86	3.4%	≤35.5	
Beta	905.0	12/15/16:218285caa	CCV	cpm	8898	99.0 %	89 - 109	
			CCB	cpm		0.4400	0.55	
Total Strontium	905.0	12/12/16:214873emv	RgBlk	pCi/L		0.26	2	
			LRS	pCi/L	40.37	59.2 %	53-133	
			BS	pCi/L	40.36	82.7 %	75-125	
			BSD	pCi/L	40.36	84.4 %	75-125	
			BSRPD	pCi/L	40.36	2.1%	≤20	
Tritium	906.0	12/12/16:214821caa	Blank	pCi/L		123	<300	
			LCS	pCi/L	1723	101 %	75-125	
			BS	pCi/L	1723	95.6 %	75-125	
			BSD	pCi/L	1723	97.7 %	75-125	
			BSRPD	pCi/L	1723	2.1%	≤25	
	906.0	12/12/16:218151caa	CCV	pCi/L	29690	109 %	90-110	
			CCB	pCi/L		172	500	
Alpha	908.0	12/21/16:218534caa	CCV	cpm	8511	41.1 %	39 - 47	
			CCB	cpm		0.100	0.19	
Uranium	908.0	12/14/16:214926caa	RgBlk	pCi/L		0.34	1	
			LRS	pCi/L	20.97	64.5 %	54-105	
			BS	pCi/L	20.97	113 %	75-125	
			BSD	pCi/L	20.97	114 %	75-125	
			BSRPD	pCi/L	20.97	0.4%	≤20	
Beta	Ra - 05	12/19/16:218406caa	CCV	cpm	8895	99.2 %	90 - 110	
			CCB	cpm		0.4000	0.52	
Ra 228	Ra - 05	12/14/16:214872emv	RgBlk	pCi/L		0.17	3	
			LRS	pCi/L	75.87	51.1 %	27-59	
			BS	pCi/L	75.87	105 %	75-125	
			BSD	pCi/L	75.87	102 %	75-125	
			BSRPD	pCi/L	75.87	2.4%	≤25	
Radon	SM7500Rn	(SP 1614658-001)	Dup	pCi/L		16.0%	25	
	SM7500Rn	12/09/16:218026caa	CCV	pCi/L	2585	99.1 %	90-110	
			CCB	pCi/L		-4.2	20	

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FAX: (559)734-8435
CA ELAP Certification No. 2810

December 29, 2016 Lab ID : SP 1614658

East Bay Municipal Utility Dist. Customer : 2-14973

Quality Control - Radio

Definition	
CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.
CCB	: Continuing Calibration Blank - Analyzed to verify the instrument baseline is within criteria.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
RgBlk	: Method Reagent Blank - Prepared to correct for any reagent contributions to sample result.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
LRS	: Laboratory Recovery Standard - Prepared to establish the batch recovery factor used in result calculations.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
BS	: Blank Spikes - A blank is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
BSD	: Blank Spike Duplicate of BS/BSD pair - A blank duplicate is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.
Dup	: Duplicate Sample - A random sample with each batch is prepared and analyzed in duplicate. The relative percent difference is an indication of precision for the preparation and analysis.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
BSRPD	: BS/BSD Relative Percent Difference (RPD) - The BS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.
Explanation	
435	: Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

 10146058

Prelog or Login No.: L210457

Project Title: BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: B Chan/C Pagtakhan
Rcvd: 07-DEC-16 11:55
Sample Date: 07-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210457-2	GRAB	10:48	WTP BAYSIDE	BAY WELL HEAD	RawH2O	GROSS ALPHA/BETA (EPA 900.0)	1369911 PLSTL	Y HNO3	pH<2 12/7/16	28-DEC-16
					RawH2O	GROSS ALPHA/BETA (EPA 900.0)	1369912 PLSTL	Y		
					~~RawH2O~~	~~GROSS ALPHA/BETA (EPA 900.0)~~	~~1369913 PLSTL~~	~~Y~~		
					RawH2O	RADIUM (EPA 903.0, 903.1, 904.0)	1369916 PLSTL	Y HNO3	pH<2 12/7/16	
					RawH2O	RADIUM (EPA 903.0, 903.1, 904.0)	1369917 PLSTL	Y		
					RawH2O	RADIUM (EPA 903.0, 903.1, 904.0)	1369918 PLSTL	Y		
					~~RawH2O~~	~~RADIUM (EPA 903.0, 903.1, 904.0)~~	~~1369919 PLSTL~~	~~Y~~		
					RawH2O	URANIUM (EPA 908.0)	1369920 PLSTL	Y HNO3	pH<2 12/7/16	
					RawH2O	STRONTIUM-90 (EPA 905.0)	1369921 PLSTL	Y		
					RawH2O	TRITIUM (EPA 906.0)	1369922 A250			
					RawH2O	TRITIUM (EPA 906.0)	1369923 A250			
					RawH2O	RADON (SM7500Rn)	1369928 VOC4			
					RawH2O	RADON (SM7500Rn)	1369929 VOC4			

ClientID:
Sample Comments: Annual Sampling per DDW T22 and WDR; SUBCONTRACT DATA; 1613 for 2,3,7,8-TCDD only Pricing: STD

Total containers received: 13

	Signature	Print Name	Time	Date
Relinquished by		~~Michael A Patchin~~	1330 ~~11:55~~	07-DEC-16
Received by				
Relinquished by	Fed Ex			
Received by				
Relinquished by				
Received by				

ERT/1779 0139 0559

Sample Type Descriptions:
GRAB - Instantaneous Grab
QCFB - Field Blank Grab

Container Type Descriptions:
A250 - Glass, amber, WM, PTFE line cap, 250 mL
A250T - Glass, amber, WM, PTFE line cap, Na2S2O3, 250
CLAB - Contract lab supplied container, see COC,
BPLS - Plastic, WM brown, single use, 250 mL
VOA4T - Glass, amber, septa top, Na2S2O3, 40 mL
ANORT - Glass, amber, NM, PTFE line cap, Na2S2O3, 1000
PLSTS - Plastic, NM, 125 mL
VOCT3 - Glass, clear, septa top, 3 mg Na2S2O3, 40 mL
A250Z - Glass, amber, NM, septa top, ZHS, 250 mL
ANORS - Glass, amber, PTFE line cap, Na2SO3, 1000 mL
PLSTM - Plastic, WM, 500 mL
VOC4M - Glass, clear, septa top, MCAA, 40 mL
A125T - Glass, amber, NM, PTFE line cap, Na2S2O3, 125
VOA6T - Glass, amber, septa top, Na2S2O3, 60 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL
CNPLT - Plasti, WM, PTFE line cap, Na2S2O3, 500 mL
VOC4A - Glass, clear, septa top, Ascorbic acid, 40 mL
VOC4 - Glass, clear, septa top, no preserv, 40 mL
SWBCT - Plastic, sterile, Na2S2O3, SWTR sample, 290 mL

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59

SUBCONTRACT:
Michel Franco
FGL Santa Paula
853 Corporation Street

Please advise EBMUD laboratory if Due Date will be missed

Samples submitted to: FGL Environmental – Santa Paula
853 Corporation St
Santa Paula, CA 93060
pH: (805) 659-0910
PO# 933-22629-AX Exp 6/30/17
Attn: Michel Franco

Method of shipment: FedEx
Date sample shipped: December 7th, 2016

Sample Information:

Login #	Site/Locator	Sampler	Collect Date & Time
L210457-2	WTP BAYSIDE / BAY WELL HEAD	N. Klumpp	07-DEC-16 @ 10:48

Please report the following analytes:

Analyte	Storet Code	Method
GROSS ALPHA	01501	EPA 900.0
GROSS ALPHA COUNTING ERROR	01502	
GROSS ALPHA MDA95	A-072	
GROSS BETA	03501	EPA 900.0
GROSS BETA COUNTING ERROR	03502	
GROSS BETA MDA95	A-077	
RADIUM 226	09501	EPA 903.0
RADIUM 226 COUNTING ERROR	09502	
RADIUM 226 MDA95	A-074	
RADIUM 228	11501	EPA RA-05
RADIUM 228 COUNTING ERROR	11502	
RADIUM 228 MDA95	A-075	
URANIUM	28012	EPA 908.0
URANIUM COUNTING ERROR	A-028	
URANIUM MDA95	A-073	
TRITIUM	07000	EPA 906.0
TRITIUM COUNTING ERROR	07001	
TRITIUM MDA95	A-079	
STRONTIUM-90	13501	EPA 905.0
STRONTIUM-90 COUNTING ERROR	13502	
STRONTIUM-90 MDA	A-078	
RADON	82303	SM7500-Rn

Methods: **EPA 900.0, 903.0 (if >3, use EPA 903.1), Ra-05, 908.0, 906.0, 905.0 and SM7500-Rn**
Co-precipitation SM 7110C may be used for Gross Alpha if TDS is high.

Comments:

- Monitoring and analysis for compliance with CCR Title 22, Sections 64442 and 64443.
- System is classified as a Community Water System (CWS).
- Please provide EBMUD with extended report (including preparation and analysis dates and times).

TAT: Standard

Write-on Reporting:

None required for this sampling set

Please send report to:

Kristi Lorenson
EBMUD Laboratory
P.O. Box 24055 MS # 59
Oakland, California. 94623
Tel No: 510-287-1696
Fax No: 510-465-5462
Email: Kristi.Lorenson@ebmud.com

Please return cooler to EBMUD laboratory- 2020 Wake Ave, Oakland CA 94607

Condition Upon Receipt (Attach to COC)

Sample Receipt at SP:

1. Number of ice chests/packages received: 1
2. Shipper tracking numbers _____
3. Were samples received in a chilled condition?
   Temps: RRT / _____ / _____ / _____ / _____ / _____ / _____
4. Surface water (SWTR) bact samples: A sample that has a temperature upon receipt of >10C, whether iced or not, should be flagged unless the time since sample collection has been less than two hours.
5. Do the number of bottles received agree with the COC? **Yes** No N/A
6. Verify sample date, time, sampler **Yes** No N/A
7. Were the samples received intact? (i.e. no broken bottles, leaks, etc.) **Yes** No
8. Were sample custody seals intact? Yes No **N/A**

Sample Verification, Labeling and Distribution:

1. Were all requested analyses understood and acceptable? **Yes** No
2. Did bottle labels correspond with the client's ID's? **Yes** No
3. Were all bottles requiring sample preservation properly preserved? Yes No **N/A** FGL
   [Exception: Oil & Grease, VOA and CrVI verified in lab]
4. VOAs checked for Headspace? Yes No **N/A**
5. Were all analyses within holding times at time of receipt? **Yes** No
6. Have rush or project due dates been checked and accepted? Yes No **N/A**

Include a copy of the COC for lab delivery. (Bacti. Inorganics and Radio)

Sample Receipt, Login and Verification completed by: Reviewed and Approved By **Alyssa P. Bavero** Digitally signed by Alyssa P. Bavero Title: Sample Receiving Date: 12/08/2016-12:24:13

Discrepency Documentation:

Any items above which are "No" or do not meet specifications (i.e. temps) must be resolved.

1. Person Contacted: _____ Phone Number: _____
   Initiated By: _____ Date: _____
   Problem:

   Resolution:

2. Person Contacted: _____ Phone Number: _____
   Initiated By: _____ Date: _____
   Problem:

   Resolution:

(2014973)
East Bay Municipal Utility Dist.
SP 1614658
APB-12/08/2016-12:24:13

Caltest
ANALYTICAL LABORATORY
ENVIRONMENTAL ANALYSES

Wednesday, January 04, 2017

Jack Lim
EBMUD Laboratory
P.O. Box 24055
Oakland, CA 94623

Re Lab Order: R120319 Collected By: B. CHAN/ C. PAGTAKHAN
Project ID: BAYSIDE G.W.|B455-07061 PO/Contract #:

Dear Jack Lim:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, December 07, 2016. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Enclosures

Project Manager: Melinda F. Kelley

RECEIVED

1885 North Kelly Road • Napa, California 94558
(707) 258-4000 • Fax (707) 226-1001 • e-mail: info@caltestlabs.com

SAMPLE SUMMARY

Lab Order: R120319
Project ID: BAYSIDE G.W.|B455-07061

Lab ID	Sample ID	Matrix	Date Collected	Date Received
R120319001	**WTP BAYSIDE/WELL|L210457-2**	Drinking Water	12/07/2016 10:48	12/07/2016 14:22

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(707) 258-4000 • Fax (707) 226-1001 • e-mail: info@caltestlabs.com

NARRATIVE

Lab Order: R120319
Project ID: BAYSIDE G.W.|B455-07061

General Qualifiers and Notes

Caltest authorizes this report to be reproduced only in its entirety. Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

Caltest certifies that all test results for wastewater and hazardous waste analyses meet all applicable NELAC requirements; all microbiology and drinking water testing meet applicable ELAP requirements, unless stated otherwise.

All analyses performed by EPA Methods or Standard Methods (SM) 20th Edition except where noted (SMOL=online edition).

Caltest collects samples in compliance with 40 CFR, EPA Methods, Cal. Title 22, and Standard Methods.

Dilution Factors (DF) reported greater than '1' have been used to adjust the result, Reporting Limit (RL), and Method Detection Limit (MDL).

All Solid, sludge, and/or biosolids data is reported in Wet Weight, unless otherwise specified.

Filtrations performed at Caltest for dissolved metals (excluding mercury) and/or pH analysis are not performed within the 15 minute holding time as specified by 40CFR 136.3 table II.

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

ND - Non Detect - indicates analytical result has not been detected.

RL - Reporting Limit is the quantitation limit at which the laboratory is able to detect an analyte. An analyte not detected at or above the RL is reported as ND unless otherwise noted or qualified. For analyses pertaining to the State Implementation Plan of the California Toxics Rule, the Caltest Reporting Limit (RL) is equivalent to the Minimum Level (ML). A standard is always run at or below the ML. Where Reporting Limits are elevated due to dilution, the ML calibration criteria has been met.

J - reflects estimated analytical result value detected below the Reporting Limit (RL) and above the Method Detection Limit (MDL). The 'J' flag is equivalent to the DNQ Estimated Concentration flag.

E - indicates an estimated analytical result value.

B - indicates the analyte has been detected in the blank associated with the sample.

NC - means not able to be calculated for RPD or Spike Recoveries.

SS - compound is a Surrogate Spike used per laboratory quality assurance manual.

NOTE: This document represents a complete Analytical Report for the samples referenced herein and should be retained as a permanent record thereof.

Qualifiers and Compound Notes

1	The sample was analyzed at ambient temperature at Client's request. Ambient temperature at the time of analysis was 19.0 deg C.
2	Sample was not dechlorinated per client request.

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(707) 258-4000 • Fax (707) 226-1001 • e-mail: info@caltestlabs.com

ANALYTICAL RESULTS

Lab Order: R120319
Project ID: BAYSIDE G.W.|B455-07061

Lab ID	**R120319001**	Date Collected	12/7/2016 10:48	Matrix	Drinking Water
Sample ID	**WTP BAYSIDE/WELL|L210457-2**	Date Received	12/7/2016 14:22		

Parameters	Result	Units	R. L.	DF	Prepared	Batch	Analyzed	Batch	Qual
Odor Threshold Analysis	**Analytical Method:**		SM 2150 B-97				**Analyzed by:**	MYS	
Odor	ND	TON	1	1			12/07/16 15:19	WET 8842	1,2

1885 North Kelly Road • Napa, California 94558
(707) 258-4000 • Fax (707) 226-1001 • e-mail: info@caltestlabs.com

QUALITY CONTROL DATA

Lab Order: R120319
Project ID: BAYSIDE G.W.|B455-07061

Analysis Description:	Odor Threshold Analysis	**QC Batch:**	WET/8842
Analysis Method:	SM 2150 B-97	**QC Batch Method:**	SM 2150 B-97

METHOD BLANK: 730688

Parameter	Blank Result	Reporting Limit	Units	Qualifiers
Odor	ND	1	TON	

SAMPLE DUPLICATE: 730689

Parameter	Units	R120319001 Result	DUP Result	RPD	Max RPD	Qualifiers
Odor	TON	0	0	0	20	1,2

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(707) 258-4000 • Fax (707) 226-1001 • e-mail: info@caltestlabs.com

QUALITY CONTROL DATA QUALIFIERS

Lab Order: R120319
Project ID: BAYSIDE G.W.|B455-07061

QUALITY CONTROL PARAMETER QUALIFIERS

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

NS - means not spiked and will not have recoveries reported for Analyte Spike Amounts

QC Codes Keys: These descriptors are used to help identify the specific QC samples and clarify the report.

MB - Method Blank

Method Blanks are reported to the same Method Detection Limits (MDLs) or Reporting Limits (RLs) as the analytical samples in the corresponding QC batch.

LCS/LCSD - Laboratory Control Spike / Laboratory Control Spike Duplicate

DUP - Duplicate of Original Sample Matrix

MS/MSD - Matrix Spike / Matrix Spike Duplicate

RPD - Relative Percent Difference

%Recovery - Spike Recovery stated as a percentage

1 The sample was analyzed at ambient temperature at Client's request. Ambient temperature at the time of analysis was 19.0 deg C.

2 Sample was not dechlorinated per client request.

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(707) 258-4000 • Fax (707) 226-1001 • e-mail: info@caltestlabs.com

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab Order: R120319
Project ID: BAYSIDE G.W.|B455-07061

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
R120319001	**WTP**	SM 2150 B-97	WET/8842		

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(707) 258-4000 • Fax (707) 226-1001 • e-mail: info@caltestlabs.com

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

 R120319

Prelog or Login No.: L210457

Project Title: BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: B Chan/C Pagtakhan
Rcvd: 07-DEC-16 11:55
Sample Date: 07-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210457-2	GRAB	10:48	WTP BAYSIDE	BAY WELL HEAD	RawH2O	TON AMBIENT (SM 2510 (1997))	1369914 CLAB			~~28-DEC-16~~

ClientID:

Sample Comments: Annual Sampling per DDW T22 and WDR; SUBCONTRACT DATA; 1613 for 2,3,7,8-TCDD only Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		~~Michael A Patchin~~	~~11:55~~ 1255	07-DEC-16
Received by			1255	07DEC16
Relinquished by			1422	07DEC16
Received by		L. Gaeta	1422	12/7/16
Relinquished by				
Received by				

Sample Type Descriptions:
GRAB - Instantaneous Grab
QCFB - Field Blank Grab

Container Type Descriptions:
A250 - Glass, amber, WM, PTFE line cap, 250 mL
A250T - Glass, amber, WM, PTFE line cap, Na2S2O3, 250
CLAB - Contract lab supplied container, see COC,
BPLS - Plastic, WM brown, single use, 250 mL
VOA4T - Glass, amber, septa top, Na2S2O3, 40 mL
ANORT - Glass, amber, NM, PTFE line cap, Na2S2O3, 1000
PLSTS - Plastic, NM, 125 mL
VOCT3 - Glass, clear, septa top, 3 mg Na2S2O3, 40 mL
A250Z - Glass, amber, NM, septa top, ZHS, 250 mL
ANORS - Glass, amber, PTFE line cap, Na2SO3, 1000 mL
PLSTM - Plastic, WM, 500 mL
VOC4M - Glass, clear, septa top, MCAA, 40 mL
A125T - Glass, amber, NM, PTFE line cap, Na2S2O3, 125
VOA6T - Glass, amber, septa top, Na2S2O3, 60 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL
CNPLT - Plasti, WM, PTFE line cap, Na2S2O3, 500 mL
VOC4A - Glass, clear, septa top, Ascorbic acid, 40 mL
VOC4 - Glass, clear, septa top, no preserv, 40 mL
SWBCT - Plastic, sterile, Na2S2O3, SWTR sample, 290 mL

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Todd Albertson
Caltest Analytical
1885 N. Kelly Road
Napa CA 94558
(707)258-4000
PO# 933-18143-AX Expires: 30-JUN-17

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

Chain of Custody Attachment R1203A

(page 2 of 2)

Samples submitted to: Caltest Analytical
1885 N. Kelly Rd.
Napa, CA 94558
P.O.# 933-18143 AX
Exp. 06/30/17

Method of shipment: STAT Delivery courier

Date submitted: December 7, 2016

Sample Information:

Login Number	Site / Locator	Collect Date & Time
L210457-2	WTP BAYSIDE / BAY WELL HEAD	07-DEC-16 10:48

Analysis: **TON via SM2150. Analyze at AMBIENT (Room Temperature)**

Comments:

- Sample should be analyzed as is (no dechlorination)
- Analyze at ambient temperature. Please include the analysis temperature on the final report.
- Single panelist
- If odor is detected, please include the odor characterization on the final report.
- No custom state form (EDT) reporting is required for this sample.

TAT: Standard

Please send results to: Kristi Lorenson
EBMUD Laboratory Services Division
P.O. Box 24055 MS # 59
Oakland, California. 94623
Tel No: (510) 287-1696
Fax No: (510) 465-5462
kristi.lorenson@ebmud.com

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

February 7, 2017

Robbie C. Phillips
Alpha Analytical Laboratories, Inc.
208 Mason St.
Ukiah, CA 95482

Laboratory Report Supplement
DOX & File as Data Approval Worksheet
WG 212893 R275393 2/13/17
Approved By:
Approved On: 2/15/2017

RECEIVED
2/9/17

RE: **16L2399**
Pace Workorder: *21417*

Dear Robbie Phillips:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, December 28, 2016. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ruth Welsh

Ruth Welsh 02/07/2017
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 9

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 21417 16L2399

Lab ID	Sample ID	Matrix	Date Collected	Date Received
214170001	16L2399-01	Water	12/21/2016 18:10	12/28/2016 10:10

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21417 16L2399

Lab ID: **214170001** Date Received: 12/28/2016 10:10 Matrix: Water
Sample ID: **16L2399-01** Date Collected: 12/21/2016 18:10

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	1/30/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	1/30/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 21417 16L2399

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 21417 16L2399

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
214170001	16L2399-01			D18O	CSIA/1536

Pace Analytical®

Client	Alpha Analytical Laboratories, Inc. 208 Mason Street Ukiah, CA 95482	CSIA Center of Excellence Pace Analytical Energy Services 220 William Pitt Way Pittsburgh Pennsylvania 15238 United States
Project	16L2399	CSIA Work Order # 21417
Project #		Tel: 412.826.5245
Report to	Robbie Phillips	
Tel:	707-468-0401	
Email:	rphillips@alpha.com	

REPORT OF ENVIRONMENTAL FORENSICS ISOTOPE ANALYSES

Date Received: 12/28/2016
Date Reported: 02/06/2017

Water samples submitted for ^{18}O and ^{2}H (‰ VSMOW) stable isotope analysis

Pace CSIA ID	Sample ID	δD_{H2O}	$\delta^{18}O_{H2O}$
21417-1	16L2399-01	-47.74	-7.00

VSMOW: Vienna Standard Mean Ocean Water (Hydrogen and Oxygen Isotope Standard)
D: Deuterium, Hydrogen-2

Lab ID	δD_{H2O}	$\delta^{18}O_{H2O}$
QC-01	-40.55	-5.95
QC-02	-40.66	-5.89
Mean	-40.61	-5.92
Analytical precision (1σ)	0.08	0.05

The $\delta^{18}O_{H2O}$ and δD_{H2O} isotopes were subcontracted to Colorado Plateau Stable Laboratory (CPSIL).

SUBCONTRACT ORDER

Alpha Analytical Laboratories, Inc.

16L2399

21417

SENDING LABORATORY:

Alpha Analytical Laboratories, Inc.
208 Mason St.
Ukiah, CA 95482
Phone: (707)468-0401
Fax: (707)468-5267
Project Manager: Robbie C. Phillips

RECEIVING LABORATORY:

Zymax / Pace Lab
220 William Pitt Way
Pittsburgh, PA 15238
Phone :(412) 826-5245
Fax: (412) 660-0256
Terms: Net 30

Analysis	Due	Expires	Comments
16L2399-01 L210792-1 GW Bayside / BAY1-MW5D [Water] Sampled 12/21/16 18:10			
Oxygen 18 - Isotope / Hydrogen - 2	01/10/17 12:00	06/19/17 18:10	

Containers Supplied:
250 mL Poly Unpres (A)

☐ *Report to State*

System Name: _____ Employed by: _____

User ID: _____ Sampler: _____

System Number: _____

+QC
+MDL

Released By	Date	Received By	Date
	122316	PMS	12 28 16 10:10
Released By	Date	Received By	Date

Cooler Receipt Form

Client Name: Apex Project: 16L2399 Lab Work Order: 21417

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx (UPS) USPS Client Other:_____ Air bill Present: (Yes) No

Tracking Number: 1Z894-2520-5568-3723

Custody Seal on Cooler/Box Present: Yes (No) Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam (Other:_____

Type of Ice: (Wet) (Blue) None Ice Intact: (Yes) Melted

Cooler Temperature: 4°C Radiation Screened: Yes (No) Chain of Custody Present: (Yes) No

Comments:_____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC			✓	
Containers intact	✓			
Were samples in separate bags			✓	
Sample container labels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used			✓	
Are containers properly preserved for the requested testing? (as labeled)			✓	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments:_____

Cooler contents examined/received by: LY Date: 12.28.16

Project Manager Review: RW Date: 12-28-16

16L2399

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210792

Project Title
BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: R Brush/ ERRG
Rcvd: 22-DEC-16 09:10
Sample Date: 21-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210792-1	GRAB	18:10	GW BAYSIDE	BAY1-MW5D	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1368426 PLSTS			~~12-JAN-17~~

ClientID: MW-5D
Sample Comments: MW-5D; +FLD DATA: pH = 7.68; Cl2R = 0.02mg/L; Depth to GW =15.64 feet; GW Elevation = feet(not provided by sampler); Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by	[signature]	CYNTHIA SOTTILO ~~Michael A Fotchin~~	1423 ~~09:10~~	22-DEC-16
Received by	[signature]	David Trapp	1423	12/22/16
Relinquished by	[signature]			
Received by	[signature]		1720	12/22
Relinquished by	[signature]		2110	12/22
Received by	[signature]		2110	12/22

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg $Na_2S_2O_3$, 40 mL
A125N - Glass, amber, NM, septa top, NH_4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

3.5

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

1612399

Chain of Custody Attachment

(page 2 of 2)

Submitted to: Pace CSIA
220 William Pitt Way
Pittsburgh, PA 15238
Attn: Dr. Wang Yi
(412)-826-5245

Through: Robbie Phillips
Alpha Analytical Laboratories
6398 Dougherty Road, Suite 3
Dublin, CA 94568
(925) 828-6226
Billing: Visa Card on File

Date samples submitted: December 22, 2016

Login#	Site/Locator	Sample Date / Time
L210792-1	GW BAYSIDE / BAY1-MW5D	21-DEC-16 18:10

Analyses : Hydrogen-2 and Oxygen-18 isotopes

Comments: Please comply with hold time (3 months).

TAT: Standard

Results to: Alpha and East BayMUD (Kristi Lorenson)
EBMUD Laboratory
P.O. Box 24055 MS # 59
Oakland, California. 94623
Tel No: 510-287-1696
Fax No: 510-465-5462
kristi.lorenson@ebmud.com

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

February 7, 2017

Robbie C. Phillips
Alpha Analytical Laboratories, Inc.
208 Mason St.
Ukiah, CA 95482

Laboratory Report Supplement
DOX & File as Data Approval Worksheet
WG 212891 R27539 2/13/17 cm
Approved By:
Approved On: 2/15/2017

RECEIVED
2/9/17

RE: **16L2700**
Pace Workorder: *21440*

Dear Robbie Phillips:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, January 04, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ruth Welsh 02/07/2017
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 12

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 21440 16L2700

Lab ID	Sample ID	Matrix	Date Collected	Date Received
214400001	16L2700-01	Water	12/27/2016 16:15	1/4/2017 11:30
214400002	16L2700-02	Water	12/27/2016 17:15	1/4/2017 11:30
214400003	16L2700-03	Water	12/27/2016 15:10	1/4/2017 11:30
214400004	16L2700-04	Water	12/27/2016 12:30	1/4/2017 11:30

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400001** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-01** Date Collected: 12/27/2016 16:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400002** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-02** Date Collected: 12/27/2016 17:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O			Analytical Method: D18O					
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400003** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-03** Date Collected: 12/27/2016 15:10

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400004** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-04** Date Collected: 12/27/2016 12:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 21440 16L2700

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 21440 16L2700

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
214400001	16L2700-01			D18O	CSIA/1536
214400002	16L2700-02			D18O	CSIA/1536
214400003	16L2700-03			D18O	CSIA/1536
214400004	16L2700-04			D18O	CSIA/1536

Pace Analytical®

Client	Alpha Analytical Laboratories, Inc. 208 Mason Street Ukiah, CA 95482	CSIA Center of Excellence Pace Analytical Energy Services 220 William Pitt Way Pittsburgh Pennsylvania 15238 United States
Project	16L2700	
Project #		
Report to	Robbie Phillips	
Tel:	707-468-0401	CSIA Work Order # 21440
Email:	rphillips@alpha.com	Tel: 412.826.5245

REPORT OF ENVIRONMENTAL FORENSICS ISOTOPE ANALYSES

Date Received: 01/04/2017
Date Reported: 02/06/2017

Water samples submitted for ^{18}O and ^{2}H (‰ VSMOW) stable isotope analysis

Pace CSIA ID	Sample ID	δD_{H2O}	$\delta^{18}O_{H2O}$
21440-1	16L2700-01	-26.54	-3.88
21440-2	16L2700-02	-40.89	-6.99
21440-3	16L2700-03	-45.75	-7.51
21440-4	16L2700-04	-45.16	-7.38

VSMOW: Vienna Standard Mean Ocean Water (Hydrogen and Oxygen Isotope Standard)
D: Deuterium, Hydrogen-2

Lab ID	δD_{H2O}	$\delta^{18}O_{H2O}$
QC-01	-40.55	-5.95
QC-02	-40.66	-5.89
Mean	-40.61	-5.92
Analytical precision (1σ)	0.08	0.05

The $\delta^{18}O_{H2O}$ and δD_{H2O} isotopes were subcontracted to Colorado Plateau Stable Laboratory (CPSIL).

SUBCONTRACT ORDER

Alpha Analytical Laboratories, Inc. 21440

16L2700

SENDING LABORATORY:

Alpha Analytical Laboratories, Inc.
208 Mason St.
Ukiah, CA 95482
Phone: (707)468-0401
Fax: (707)468-5267
Project Manager: Robbie C. Phillips

RECEIVING LABORATORY:

Zymax / Pace Lab
220 William Pitt Way
Pittsburgh, PA 15238
Phone :(412) 826-5245
Fax: (412) 660-0256
Terms: Net 30

Analysis	Due	Expires	Comments
16L2700-01 L210879-1 GW Bayside / BAY1-MW2S [Water] Sampled 12/27/16 16:15			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 16:15	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-02 L210878-1 GW Bayside / BAY1-MW2I [Water] Sampled 12/27/16 17:15			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 17:15	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-03 L210880-1 GW Bayside / BAY1-MW4 [Water] Sampled 12/27/16 15:10			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 15:10	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-04 L210881-1 GW Bayside / BAY1-MW6 [Water] Sampled 12/27/16 12:30			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 12:30	
Containers Supplied:			
250 mL Poly Unpres (A)			

☐ *Report to State*

System Name: _____ **Employed by:** _____

User ID: _____ **Sampler:** _____

System Number: _____

+QC
+MDL

Released By	Date	Received By	Date
[signature]	12.29.16	[signature] PACE	1417 1130
Released By	Date	Received By	Date

Cooler Receipt Form

Client Name: _____ Project: 16L2700 Lab Work Order: 21440

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx (UPS) USPS Client Other:_____ Air bill Present: (Yes) No

Tracking Number: [illegible]

Custody Seal on Cooler/Box Present: Yes (No) Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam (Other:_____

Type of Ice: (Wet) Blue None Ice Intact: (Yes) Melted

Cooler Temperature: 1.2°C Radiation Screened: Yes (No) Chain of Custody Present: (Yes) No

Comments:_____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC			✓	
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used			✓	
Are containers properly preserved for the requested testing? (as labeled)			✓	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments:_____

Cooler contents examined/received by: [illegible] Date: 1.4.17

Project Manager Review: [illegible] Date: 1-5-17

16L2700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210879

Project Title
BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210879-1	GRAB	16:15	GW BAYSIDE	BAY1-MW2S	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369850 PLSTS			~~16-JAN-17~~

ClientID: MW-2I
Sample Comments: MW-2I; +FLD DATA: pH = 6.73 ; Cl2R = 0.07 mg/L; Depth to GW = 7.52 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0955 ~~07:15~~	28-DEC-16
Received by	C B	C. Bartolotti	09 55	12.28.16
Relinquished by	C B	C Bartolotti		
Received by			17-20	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

3.5

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

1612700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210878

Project Title: BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210878-1	GRAB	17:15	GW BAYSIDE	BAY1-MW2I	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369839 PLSTS			~~18 JAN 17~~

ClientID: MW-2S

Sample Comments: MW-2S; +FLD DATA: pH = 8.10; Cl2R = 0.02 mg/L; Depth to GW = 7.68 feet; GW Elevation = feet; Labelled as RAW WATER for the program. [Analyst Note: May need to dilute for ICP & IC due to salt water intrusion] Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0955	28-DEC-16
Received by	C.B	C. Bartolotti	09 55	12.28.16
Relinquished by	C.B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

35

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

1612700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210880

Project Title
BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210880-1	GRAB	15:10	GW BAYSIDE	BAY1-MW4	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369817 PLSTS			~~18-JAN-17~~

ClientID: MW-4

Sample Comments: MW-4; +FLD DATA: pH = 8.14 ; Cl2R = 0.00 mg/L; Depth to GW = 11.30 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Scohoo	0915 ~~09-15~~	28-DEC-16
Received by	C B	C. Bartolotti	09:55	12-28-16
Relinquished by	C B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			7050	12/29

3.5

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

16L2700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210881

Project Title: BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210881-1	GRAB	12:30	GW BAYSIDE	BAY1-MW6	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369828 PLSTS			18-JAN-17

ClientID: MW-6

Sample Comments: MW-6; +FLD DATA: pH = 7.72; Cl2R = 0.00 mg/L; Depth to GW = 11.04 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0935 ~~07:15~~	28-DEC-16
Received by	CB	C. Bartolotti	09:55	12.28.16
Relinquished by	C.B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

3.5

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

16L2700

Chain of Custody Attachment

(page 5 of 5)

Submitted to: Pace CSIA
220 William Pitt Way
Pittsburgh, PA 15238
Attn: Dr. Wang Yi
(412)-826-5245

Through: Robbie Phillips
Alpha Analytical Laboratories
6398 Dougherty Road, Suite 3
Dublin, CA 94568
(925) 828-6226
Billing: Visa Card on File

Date samples submitted: December 28, 2016

Login#	Site/Locator	Sample Date / Time
L210879-1	GW BAYSIDE / BAY1-MW2S	27-DEC-16 16:15
L210878-1	GW BAYSIDE / BAY1-MW2I	27-DEC-16 17:15
L210880-1	GW BAYSIDE / BAY1-MW4	27-DEC-16 15:10
L210881-1	GW BAYSIDE / BAY1-MW6	27-DEC-16 12:30

Analyses : Hydrogen-2 and Oxygen-18 isotopes

Comments: Please comply with hold time (3 months).

TAT: Standard

Results to: Alpha and East Bay MUD (Kristi Lorenson)
EBMUD Laboratory
P.O. Box 24055 MS # 59
Oakland, California. 94623
Tel No: 510-287-1696
Fax No: 510-465-5462
kristi.lorenson@ebmud.com

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

February 7, 2017

Robbie C. Phillips
Alpha Analytical Laboratories, Inc.
208 Mason St.
Ukiah, CA 95482

Laboratory Report Supplement
DOX & File as Data Approval Worksheet
WG 212891 R27539 2/13/17 cm
Approved By:
Approved On: 2/15/2017

RECEIVED
2/9/17

RE: **16L2700**
Pace Workorder: *21440*

Dear Robbie Phillips:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, January 04, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ruth Welsh 02/07/2017
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 12

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 21440 16L2700

Lab ID	Sample ID	Matrix	Date Collected	Date Received
214400001	16L2700-01	Water	12/27/2016 16:15	1/4/2017 11:30
214400002	16L2700-02	Water	12/27/2016 17:15	1/4/2017 11:30
214400003	16L2700-03	Water	12/27/2016 15:10	1/4/2017 11:30
214400004	16L2700-04	Water	12/27/2016 12:30	1/4/2017 11:30

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Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400001** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-01** Date Collected: 12/27/2016 16:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

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ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400002** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-02** Date Collected: 12/27/2016 17:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O			Analytical Method: D18O					
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

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ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400003** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-03** Date Collected: 12/27/2016 15:10

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

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ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400004** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-04** Date Collected: 12/27/2016 12:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

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ANALYTICAL RESULTS QUALIFIERS

Workorder: 21440 16L2700

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 21440 16L2700

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
214400001	16L2700-01			D18O	CSIA/1536
214400002	16L2700-02			D18O	CSIA/1536
214400003	16L2700-03			D18O	CSIA/1536
214400004	16L2700-04			D18O	CSIA/1536

Pace Analytical®

Client	Alpha Analytical Laboratories, Inc. 208 Mason Street Ukiah, CA 95482	CSIA Center of Excellence Pace Analytical Energy Services 220 William Pitt Way Pittsburgh Pennsylvania 15238 United States
Project	16L2700	
Project #		
Report to	Robbie Phillips	
Tel:	707-468-0401	CSIA Work Order # 21440
Email:	rphillips@alpha.com	Tel: 412.826.5245

REPORT OF ENVIRONMENTAL FORENSICS ISOTOPE ANALYSES

Date Received: 01/04/2017
Date Reported: 02/06/2017

Water samples submitted for ^{18}O and ^{2}H (‰ VSMOW) stable isotope analysis

Pace CSIA ID	Sample ID	δD_{H2O}	$\delta^{18}O_{H2O}$
21440-1	16L2700-01	-26.54	-3.88
21440-2	16L2700-02	-40.89	-6.99
21440-3	16L2700-03	-45.75	-7.51
21440-4	16L2700-04	-45.16	-7.38

VSMOW: Vienna Standard Mean Ocean Water (Hydrogen and Oxygen Isotope Standard)
D: Deuterium, Hydrogen-2

Lab ID	δD_{H2O}	$\delta^{18}O_{H2O}$
QC-01	-40.55	-5.95
QC-02	-40.66	-5.89
Mean	-40.61	-5.92
Analytical precision (1σ)	0.08	0.05

The $\delta^{18}O_{H2O}$ and δD_{H2O} isotopes were subcontracted to Colorado Plateau Stable Laboratory (CPSIL).

SUBCONTRACT ORDER

Alpha Analytical Laboratories, Inc. 21440

16L2700

SENDING LABORATORY:

Alpha Analytical Laboratories, Inc.
208 Mason St.
Ukiah, CA 95482
Phone: (707)468-0401
Fax: (707)468-5267
Project Manager: Robbie C. Phillips

RECEIVING LABORATORY:

Zymax / Pace Lab
220 William Pitt Way
Pittsburgh, PA 15238
Phone :(412) 826-5245
Fax: (412) 660-0256
Terms: Net 30

Analysis	Due	Expires	Comments
16L2700-01 L210879-1 GW Bayside / BAY1-MW2S [Water] Sampled 12/27/16 16:15			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 16:15	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-02 L210878-1 GW Bayside / BAY1-MW2I [Water] Sampled 12/27/16 17:15			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 17:15	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-03 L210880-1 GW Bayside / BAY1-MW4 [Water] Sampled 12/27/16 15:10			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 15:10	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-04 L210881-1 GW Bayside / BAY1-MW6 [Water] Sampled 12/27/16 12:30			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 12:30	
Containers Supplied:			
250 mL Poly Unpres (A)			

☐ *Report to State*

System Name: _____ **Employed by:** _____

User ID: _____ **Sampler:** _____

System Number: _____

+QC
+MDL

Released By	Date	Received By	Date
[signature]	12.29.16	[signature] PACE	1417 1130
Released By	Date	Received By	Date

Cooler Receipt Form

Client Name: _____ Project: 16L2700 Lab Work Order: 21440

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx (UPS) USPS Client Other:_____ Air bill Present: (Yes) No

Tracking Number: [illegible]

Custody Seal on Cooler/Box Present: Yes (No) Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam (Other:_____

Type of Ice: (Wet) Blue None Ice Intact: (Yes) Melted

Cooler Temperature: 1.2°C Radiation Screened: Yes (No) Chain of Custody Present: (Yes) No

Comments:_____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC			✓	
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used			✓	
Are containers properly preserved for the requested testing? (as labeled)			✓	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments:_____

Cooler contents examined/received by: [illegible] Date: 1.4.17

Project Manager Review: [illegible] Date: 1-5-17

16L2700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210879

Project Title
BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210879-1	GRAB	16:15	GW BAYSIDE	BAY1-MW2S	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369850 PLSTS			~~16-JAN-17~~

ClientID: MW-2I
Sample Comments: MW-2I; +FLD DATA: pH = 6.73 ; Cl2R = 0.07 mg/L; Depth to GW = 7.52 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0955 ~~07:15~~	28-DEC-16
Received by	C B	C. Bartolotti	09 55	12.28.16
Relinquished by	C B	C Bartolotti		
Received by			17-20	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

3.5

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

1612700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210878

Project Title: BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210878-1	GRAB	17:15	GW BAYSIDE	BAY1-MW2I	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369839 PLSTS			~~18 JAN 17~~

ClientID: MW-2S

Sample Comments: MW-2S; +FLD DATA: pH = 8.10; Cl2R = 0.02 mg/L; Depth to GW = 7.68 feet; GW Elevation = feet; Labelled as RAW WATER for the program. [Analyst Note: May need to dilute for ICP & IC due to salt water intrusion] Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0955	28-DEC-16
Received by	C.B	C. Bartolotti	09 55	12.28.16
Relinquished by	C.B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

35

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

1612700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210880

Project Title
BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210880-1	GRAB	15:10	GW BAYSIDE	BAY1-MW4	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369817 PLSTS			~~18-JAN-17~~

ClientID: MW-4

Sample Comments: MW-4; +FLD DATA: pH = 8.14 ; Cl2R = 0.00 mg/L; Depth to GW = 11.30 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Scohoo	0915 ~~09-15~~	28-DEC-16
Received by	C B	C. Bartolotti	09:55	12-28-16
Relinquished by	C B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			7050	12/29

3.5

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
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(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

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16L2700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210881

Project Title: BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210881-1	GRAB	12:30	GW BAYSIDE	BAY1-MW6	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369828 PLSTS			18-JAN-17

ClientID: MW-6

Sample Comments: MW-6; +FLD DATA: pH = 7.72; Cl2R = 0.00 mg/L; Depth to GW = 11.04 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0935 ~~07:15~~	28-DEC-16
Received by	CB	C. Bartolotti	09:55	12.28.16
Relinquished by	C.B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

3.5

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

16L2700

Chain of Custody Attachment

(page 5 of 5)

Submitted to: Pace CSIA
220 William Pitt Way
Pittsburgh, PA 15238
Attn: Dr. Wang Yi
(412)-826-5245

Through: Robbie Phillips
Alpha Analytical Laboratories
6398 Dougherty Road, Suite 3
Dublin, CA 94568
(925) 828-6226
Billing: Visa Card on File

Date samples submitted: December 28, 2016

Login#	Site/Locator	Sample Date / Time
L210879-1	GW BAYSIDE / BAY1-MW2S	27-DEC-16 16:15
L210878-1	GW BAYSIDE / BAY1-MW2I	27-DEC-16 17:15
L210880-1	GW BAYSIDE / BAY1-MW4	27-DEC-16 15:10
L210881-1	GW BAYSIDE / BAY1-MW6	27-DEC-16 12:30

Analyses : Hydrogen-2 and Oxygen-18 isotopes

Comments: Please comply with hold time (3 months).

TAT: Standard

Results to: Alpha and East Bay MUD (Kristi Lorenson)
EBMUD Laboratory
P.O. Box 24055 MS # 59
Oakland, California. 94623
Tel No: 510-287-1696
Fax No: 510-465-5462
kristi.lorenson@ebmud.com

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

February 7, 2017

Robbie C. Phillips
Alpha Analytical Laboratories, Inc.
208 Mason St.
Ukiah, CA 95482

Laboratory Report Supplement
DOX & File as Data Approval Worksheet
WG 212891 R27539 2/13/17 cm
Approved By:
Approved On: 2/15/2017

RECEIVED
2/9/17

RE: **16L2700**
Pace Workorder: *21440*

Dear Robbie Phillips:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, January 04, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ruth Welsh 02/07/2017
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 12

CERTIFICATE OF ANALYSIS

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Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
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Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
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Workorder: 21440 16L2700

Lab ID	Sample ID	Matrix	Date Collected	Date Received
214400001	16L2700-01	Water	12/27/2016 16:15	1/4/2017 11:30
214400002	16L2700-02	Water	12/27/2016 17:15	1/4/2017 11:30
214400003	16L2700-03	Water	12/27/2016 15:10	1/4/2017 11:30
214400004	16L2700-04	Water	12/27/2016 12:30	1/4/2017 11:30

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Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400001** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-01** Date Collected: 12/27/2016 16:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400002** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-02** Date Collected: 12/27/2016 17:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O			Analytical Method: D18O					
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400003** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-03** Date Collected: 12/27/2016 15:10

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

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Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400004** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-04** Date Collected: 12/27/2016 12:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 21440 16L2700

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 21440 16L2700

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
214400001	16L2700-01			D18O	CSIA/1536
214400002	16L2700-02			D18O	CSIA/1536
214400003	16L2700-03			D18O	CSIA/1536
214400004	16L2700-04			D18O	CSIA/1536

Pace Analytical®

Client	Alpha Analytical Laboratories, Inc. 208 Mason Street Ukiah, CA 95482	CSIA Center of Excellence Pace Analytical Energy Services 220 William Pitt Way Pittsburgh Pennsylvania 15238 United States
Project	16L2700	
Project #		
Report to	Robbie Phillips	
Tel:	707-468-0401	CSIA Work Order # 21440
Email:	rphillips@alpha.com	Tel: 412.826.5245

REPORT OF ENVIRONMENTAL FORENSICS ISOTOPE ANALYSES

Date Received: 01/04/2017
Date Reported: 02/06/2017

Water samples submitted for ^{18}O and ^{2}H (‰ VSMOW) stable isotope analysis

Pace CSIA ID	Sample ID	δD_{H2O}	$\delta^{18}O_{H2O}$
21440-1	16L2700-01	-26.54	-3.88
21440-2	16L2700-02	-40.89	-6.99
21440-3	16L2700-03	-45.75	-7.51
21440-4	16L2700-04	-45.16	-7.38

VSMOW: Vienna Standard Mean Ocean Water (Hydrogen and Oxygen Isotope Standard)
D: Deuterium, Hydrogen-2

Lab ID	δD_{H2O}	$\delta^{18}O_{H2O}$
QC-01	-40.55	-5.95
QC-02	-40.66	-5.89
Mean	-40.61	-5.92
Analytical precision (1σ)	0.08	0.05

The $\delta^{18}O_{H2O}$ and δD_{H2O} isotopes were subcontracted to Colorado Plateau Stable Laboratory (CPSIL).

SUBCONTRACT ORDER

Alpha Analytical Laboratories, Inc. 21440

16L2700

SENDING LABORATORY:

Alpha Analytical Laboratories, Inc.
208 Mason St.
Ukiah, CA 95482
Phone: (707)468-0401
Fax: (707)468-5267
Project Manager: Robbie C. Phillips

RECEIVING LABORATORY:

Zymax / Pace Lab
220 William Pitt Way
Pittsburgh, PA 15238
Phone :(412) 826-5245
Fax: (412) 660-0256
Terms: Net 30

Analysis	Due	Expires	Comments
16L2700-01 L210879-1 GW Bayside / BAY1-MW2S [Water] Sampled 12/27/16 16:15			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 16:15	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-02 L210878-1 GW Bayside / BAY1-MW2I [Water] Sampled 12/27/16 17:15			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 17:15	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-03 L210880-1 GW Bayside / BAY1-MW4 [Water] Sampled 12/27/16 15:10			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 15:10	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-04 L210881-1 GW Bayside / BAY1-MW6 [Water] Sampled 12/27/16 12:30			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 12:30	
Containers Supplied:			
250 mL Poly Unpres (A)			

☐ *Report to State*

System Name: _____ **Employed by:** _____

User ID: _____ **Sampler:** _____

System Number: _____

+QC
+MDL

Released By	Date	Received By	Date
[signature]	12.29.16	[signature] PACE	1417 1130
Released By	Date	Received By	Date

Cooler Receipt Form

Client Name: _____ Project: 16L2700 Lab Work Order: 21440

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx (UPS) USPS Client Other:_____ Air bill Present: (Yes) No

Tracking Number: [illegible]

Custody Seal on Cooler/Box Present: Yes (No) Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam (Other:_____

Type of Ice: (Wet) Blue None Ice Intact: (Yes) Melted

Cooler Temperature: 1.2°C Radiation Screened: Yes (No) Chain of Custody Present: (Yes) No

Comments:_____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC			✓	
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used			✓	
Are containers properly preserved for the requested testing? (as labeled)			✓	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments:_____

Cooler contents examined/received by: [illegible] Date: 1.4.17

Project Manager Review: [illegible] Date: 1-5-17

16L2700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210879

Project Title
BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210879-1	GRAB	16:15	GW BAYSIDE	BAY1-MW2S	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369850 PLSTS			~~16-JAN-17~~

ClientID: MW-2I
Sample Comments: MW-2I; +FLD DATA: pH = 6.73 ; Cl2R = 0.07 mg/L; Depth to GW = 7.52 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0955 ~~07:15~~	28-DEC-16
Received by	C B	C. Bartolotti	09 55	12.28.16
Relinquished by	C B	C Bartolotti		
Received by			17-20	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

3.5

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

1612700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210878

Project Title: BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210878-1	GRAB	17:15	GW BAYSIDE	BAY1-MW2I	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369839 PLSTS			~~18 JAN 17~~

ClientID: MW-2S

Sample Comments: MW-2S; +FLD DATA: pH = 8.10; Cl2R = 0.02 mg/L; Depth to GW = 7.68 feet; GW Elevation = feet; Labelled as RAW WATER for the program. [Analyst Note: May need to dilute for ICP & IC due to salt water intrusion] Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0955	28-DEC-16
Received by	C.B	C. Bartolotti	09 55	12.28.16
Relinquished by	C.B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

35

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

1612700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210880

Project Title
BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210880-1	GRAB	15:10	GW BAYSIDE	BAY1-MW4	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369817 PLSTS			~~18-JAN-17~~

ClientID: MW-4

Sample Comments: MW-4; +FLD DATA: pH = 8.14 ; Cl2R = 0.00 mg/L; Depth to GW = 11.30 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Scohoo	0915 ~~09-15~~	28-DEC-16
Received by	C B	C. Bartolotti	09:55	12-28-16
Relinquished by	C B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			7050	12/29

3.5

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

16L2700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210881

Project Title: BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210881-1	GRAB	12:30	GW BAYSIDE	BAY1-MW6	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369828 PLSTS			18-JAN-17

ClientID: MW-6

Sample Comments: MW-6; +FLD DATA: pH = 7.72; Cl2R = 0.00 mg/L; Depth to GW = 11.04 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0935 ~~07:15~~	28-DEC-16
Received by	CB	C. Bartolotti	09:55	12.28.16
Relinquished by	C.B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

3.5

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

16L2700

Chain of Custody Attachment

(page 5 of 5)

Submitted to: Pace CSIA
220 William Pitt Way
Pittsburgh, PA 15238
Attn: Dr. Wang Yi
(412)-826-5245

Through: Robbie Phillips
Alpha Analytical Laboratories
6398 Dougherty Road, Suite 3
Dublin, CA 94568
(925) 828-6226
Billing: Visa Card on File

Date samples submitted: December 28, 2016

Login#	Site/Locator	Sample Date / Time
L210879-1	GW BAYSIDE / BAY1-MW2S	27-DEC-16 16:15
L210878-1	GW BAYSIDE / BAY1-MW2I	27-DEC-16 17:15
L210880-1	GW BAYSIDE / BAY1-MW4	27-DEC-16 15:10
L210881-1	GW BAYSIDE / BAY1-MW6	27-DEC-16 12:30

Analyses : Hydrogen-2 and Oxygen-18 isotopes

Comments: Please comply with hold time (3 months).

TAT: Standard

Results to: Alpha and East Bay MUD (Kristi Lorenson)
EBMUD Laboratory
P.O. Box 24055 MS # 59
Oakland, California. 94623
Tel No: 510-287-1696
Fax No: 510-465-5462
kristi.lorenson@ebmud.com

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

February 7, 2017

Robbie C. Phillips
Alpha Analytical Laboratories, Inc.
208 Mason St.
Ukiah, CA 95482

Laboratory Report Supplement
DOX & File as Data Approval Worksheet
WG 212891 R27539 2/13/17 cm
Approved By:
Approved On: 2/15/2017

RECEIVED
2/9/17

RE: **16L2700**
Pace Workorder: *21440*

Dear Robbie Phillips:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, January 04, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ruth Welsh 02/07/2017
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 12

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 21440 16L2700

Lab ID	Sample ID	Matrix	Date Collected	Date Received
214400001	16L2700-01	Water	12/27/2016 16:15	1/4/2017 11:30
214400002	16L2700-02	Water	12/27/2016 17:15	1/4/2017 11:30
214400003	16L2700-03	Water	12/27/2016 15:10	1/4/2017 11:30
214400004	16L2700-04	Water	12/27/2016 12:30	1/4/2017 11:30

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400001** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-01** Date Collected: 12/27/2016 16:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400002** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-02** Date Collected: 12/27/2016 17:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O			Analytical Method: D18O					
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400003** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-03** Date Collected: 12/27/2016 15:10

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 21440 16L2700

Lab ID: **214400004** Date Received: 1/4/2017 11:30 Matrix: Water

Sample ID: **16L2700-04** Date Collected: 12/27/2016 12:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: D18O		Analytical Method: D18O						
Hydrogen 2 (Deuterium) Isotope	**Complete**				1	2/3/2017 00:00	NAU	
Oxygen 18 Isotope	**Complete**				1	2/3/2017 00:00	NAU	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 21440 16L2700

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 21440 16L2700

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
214400001	16L2700-01			D18O	CSIA/1536
214400002	16L2700-02			D18O	CSIA/1536
214400003	16L2700-03			D18O	CSIA/1536
214400004	16L2700-04			D18O	CSIA/1536

Pace Analytical®

Client	Alpha Analytical Laboratories, Inc. 208 Mason Street Ukiah, CA 95482	CSIA Center of Excellence Pace Analytical Energy Services 220 William Pitt Way Pittsburgh Pennsylvania 15238 United States
Project	16L2700	
Project #		
Report to	Robbie Phillips	
Tel:	707-468-0401	CSIA Work Order # 21440
Email:	rphillips@alpha.com	Tel: 412.826.5245

REPORT OF ENVIRONMENTAL FORENSICS ISOTOPE ANALYSES

Date Received: 01/04/2017
Date Reported: 02/06/2017

Water samples submitted for ^{18}O and ^{2}H (‰ VSMOW) stable isotope analysis

Pace CSIA ID	Sample ID	δD_{H2O}	$\delta^{18}O_{H2O}$
21440-1	16L2700-01	-26.54	-3.88
21440-2	16L2700-02	-40.89	-6.99
21440-3	16L2700-03	-45.75	-7.51
21440-4	16L2700-04	-45.16	-7.38

VSMOW: Vienna Standard Mean Ocean Water (Hydrogen and Oxygen Isotope Standard)
D: Deuterium, Hydrogen-2

Lab ID	δD_{H2O}	$\delta^{18}O_{H2O}$
QC-01	-40.55	-5.95
QC-02	-40.66	-5.89
Mean	-40.61	-5.92
Analytical precision (1σ)	0.08	0.05

The $\delta^{18}O_{H2O}$ and δD_{H2O} isotopes were subcontracted to Colorado Plateau Stable Laboratory (CPSIL).

SUBCONTRACT ORDER

Alpha Analytical Laboratories, Inc. 21440

16L2700

SENDING LABORATORY:

Alpha Analytical Laboratories, Inc.
208 Mason St.
Ukiah, CA 95482
Phone: (707)468-0401
Fax: (707)468-5267
Project Manager: Robbie C. Phillips

RECEIVING LABORATORY:

Zymax / Pace Lab
220 William Pitt Way
Pittsburgh, PA 15238
Phone :(412) 826-5245
Fax: (412) 660-0256
Terms: Net 30

Analysis	Due	Expires	Comments
16L2700-01 L210879-1 GW Bayside / BAY1-MW2S [Water] Sampled 12/27/16 16:15			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 16:15	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-02 L210878-1 GW Bayside / BAY1-MW2I [Water] Sampled 12/27/16 17:15			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 17:15	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-03 L210880-1 GW Bayside / BAY1-MW4 [Water] Sampled 12/27/16 15:10			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 15:10	
Containers Supplied:			
250 mL Poly Unpres (A)			
16L2700-04 L210881-1 GW Bayside / BAY1-MW6 [Water] Sampled 12/27/16 12:30			
Oxygen 18 - Isotope / Hydrogen - 2	01/13/17 12:00	06/25/17 12:30	
Containers Supplied:			
250 mL Poly Unpres (A)			

☐ *Report to State*

System Name: _____ **Employed by:** _____

User ID: _____ **Sampler:** _____

System Number: _____

+QC
+MDL

Released By	Date	Received By	Date
[signature]	12.29.16	[signature] PACE	1417 1130
Released By	Date	Received By	Date

Cooler Receipt Form

Client Name: _____ Project: 16L2700 Lab Work Order: 21440

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx (UPS) USPS Client Other:_____ Air bill Present: (Yes) No

Tracking Number: [illegible]

Custody Seal on Cooler/Box Present: Yes (No) Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam (Other:_____

Type of Ice: (Wet) Blue None Ice Intact: (Yes) Melted

Cooler Temperature: 1.2°C Radiation Screened: Yes (No) Chain of Custody Present: (Yes) No

Comments:_____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC			✓	
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used			✓	
Are containers properly preserved for the requested testing? (as labeled)			✓	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments:_____

Cooler contents examined/received by: [illegible] Date: 1.4.17

Project Manager Review: [illegible] Date: 1-5-17

16L2700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210879

Project Title
BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210879-1	GRAB	16:15	GW BAYSIDE	BAY1-MW2S	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369850 PLSTS			~~16-JAN-17~~

ClientID: MW-2I
Sample Comments: MW-2I; +FLD DATA: pH = 6.73 ; Cl2R = 0.07 mg/L; Depth to GW = 7.52 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0955 ~~07:15~~	28-DEC-16
Received by	C B	C. Bartolotti	09 55	12.28.16
Relinquished by	C B	C Bartolotti		
Received by			17-20	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

3.5

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

1612700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210878

Project Title: BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210878-1	GRAB	17:15	GW BAYSIDE	BAY1-MW2I	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369839 PLSTS			~~18 JAN 17~~

ClientID: MW-2S

Sample Comments: MW-2S; +FLD DATA: pH = 8.10; Cl2R = 0.02 mg/L; Depth to GW = 7.68 feet; GW Elevation = feet; Labelled as RAW WATER for the program. [Analyst Note: May need to dilute for ICP & IC due to salt water intrusion] Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0955	28-DEC-16
Received by	C.B	C. Bartolotti	09 55	12.28.16
Relinquished by	C.B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

35

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

1612700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210880

Project Title
BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210880-1	GRAB	15:10	GW BAYSIDE	BAY1-MW4	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369817 PLSTS			~~18-JAN-17~~

ClientID: MW-4

Sample Comments: MW-4; +FLD DATA: pH = 8.14 ; Cl2R = 0.00 mg/L; Depth to GW = 11.30 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Scohoo	0915 ~~09-15~~	28-DEC-16
Received by	C B	C. Bartolotti	09:55	12-28-16
Relinquished by	C B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			7050	12/29

3.5

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

16L2700

East Bay Municipal Utility District
Laboratory Services Chain of Custody Record

Prelog or Login No.: L210881

Project Title: BAYSIDE GROUND WATER PROJECT
Account or Project: B455-0706-1

Client PM: DREW LERER
Tel No.: 0247
Lab PM: KRISTI LORENSON

Sampled by: RBrush/ERG
Rcvd: 28-DEC-16 07:15
Sample Date: 27-DEC-16

Lab No.	Sample Type	Time	Site	Locator	Sample Matrix	Tests Required	Container ID Barcode	Chemical Preservative	Date pH	DueDate Initials
L210881-1	GRAB	12:30	GW BAYSIDE	BAY1-MW6	GroundH2O	OXYGEN 18 (USGS - as (VSMOW).)	1369828 PLSTS			18-JAN-17

ClientID: MW-6

Sample Comments: MW-6; +FLD DATA: pH = 7.72; Cl2R = 0.00 mg/L; Depth to GW = 11.04 feet; GW Elevation = feet; Labelled as RAW WATER for the program. Pricing: STD

Total containers received: 1

	Signature	Print Name	Time	Date
Relinquished by		Cynthia L Soohoo	0935 ~~07:15~~	28-DEC-16
Received by	CB	C. Bartolotti	09:55	12.28.16
Relinquished by	C.B	C. Bartolotti		
Received by			1720	12/28
Relinquished by			2050	12/28
Received by			2050	12/28

3.5

Sample Type Descriptions:
GRAB - Instantaneous Grab

Container Type Descriptions:
PLSTS - Plastic, NM, 125 mL
PLSTM - Plastic, WM, 500 mL
VOC4T - Glass, clear, septa top, 3.5 mg Na2S2O3, 40 mL
A125N - Glass, amber, NM, septa top, NH4Cl, 125 mL
PLSTL - Plastic, WM, 1000 mL

Email results to:
KRISTI LORENSON (klorenso@ebmud.com)
EBMUD Laboratory
P.O. Box 24055 MS# 59
Oakland, CA 94623
(510) 287-1696

SUBCONTRACT:
Robbie Phillips
Alpha Analytical Laboratories
6398 Doughherty Road, Suite 3
Dublin CA 94568
(925)828-6226
PO# BRD-14208-CX Expires: 31-JUL-13

Please advise EBMUD laboratory if Due Date will be missed

Samples will be retained beyond the approval process only if requested by the client.

16L2700

Chain of Custody Attachment

(page 5 of 5)

Submitted to: Pace CSIA
220 William Pitt Way
Pittsburgh, PA 15238
Attn: Dr. Wang Yi
(412)-826-5245

Through: Robbie Phillips
Alpha Analytical Laboratories
6398 Dougherty Road, Suite 3
Dublin, CA 94568
(925) 828-6226
Billing: Visa Card on File

Date samples submitted: December 28, 2016

Login#	Site/Locator	Sample Date / Time
L210879-1	GW BAYSIDE / BAY1-MW2S	27-DEC-16 16:15
L210878-1	GW BAYSIDE / BAY1-MW2I	27-DEC-16 17:15
L210880-1	GW BAYSIDE / BAY1-MW4	27-DEC-16 15:10
L210881-1	GW BAYSIDE / BAY1-MW6	27-DEC-16 12:30

Analyses : Hydrogen-2 and Oxygen-18 isotopes

Comments: Please comply with hold time (3 months).

TAT: Standard

Results to: Alpha and East Bay MUD (Kristi Lorenson)
EBMUD Laboratory
P.O. Box 24055 MS # 59
Oakland, California. 94623
Tel No: 510-287-1696
Fax No: 510-465-5462
kristi.lorenson@ebmud.com