SUMMARY OF OPERATIONS

MONTEREY PENINSULA ASR PROJECT

WATER YEAR 2013

Prepared for:

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

JUNE 2014

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June 30, 2014
Project No. 06-0028

Monterey Peninsula Water Management District
Post Office Box 85
Monterey, California 93942-0085

Attention: Mr. Joe Oliver, Water Resources Manager

Subject: Monterey Peninsula ASR Project; Water Year 2013 Summary of Operations Report

Dear Joe:

We are transmitting five copies and a digital image (PDF) of the subject report documenting operations of the Monterey Peninsula ASR Project during Water Year 2013 (WY 2013). WY 2013 was a Dry Water Year on the on the Monterey Peninsula, and as a result a commensurately modest volume totaling 295 acre-feet (af) of water was able to be diverted from the Carmel River system for recharge in the Seaside Groundwater Basin (SGB) via the SM ASR-2 and SMS ASR-3 wells. This contrasts with the over 1,100 af injected in both WY 2010 and WY 2011, which were Above Normal Water Years. To date, a total volume of approximately 4,175 af of excess Carmel River system water has been successfully injected, stored, and recovered in the SBG since the ASR project was initiated in 2001.

We appreciate the opportunity to provide ongoing assistance to the District on this important community water-supply project. Please contact us with any questions.

Sincerely,

PUEBLO WATER RESOURCES, INC.

Robert C. Marks, P.G., C.Hg.
Principal Hydrogeologist

Stephen P. Tanner, P.E.
Principal Engineer

Copies submitted: 5 hard
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INTRODUCTION

GENERAL STATEMENT

Presented in this report is a summary of operations of the Monterey Peninsula Aquifer Storage and Recovery (ASR) Project during Water Year 2013 (WY 2013)[1]. During WY 2013, approximately 295 acre-feet (af) of excess flows were diverted from the Carmel River system for recharge, storage, and subsequent recovery in the Seaside Groundwater Basin (SGB). This report presents a summary of the project operations during WY 2013, an assessment of ASR well performance, aquifer response and water-quality data, and provides recommendations for ongoing operation of the project.

BACKGROUND

The Monterey Peninsula ASR Project is cooperatively implemented by the Monterey Peninsula Water Management District (MPWMD or District) and California American Water (CAW) and involves the diversion of excess winter and spring time flows from the Carmel River system for recharge and storage in the Seaside Groundwater Basin (SGB). The excess water is captured by CAW wells in the Carmel Valley during periods when flows in the Carmel River exceed fisheries bypass flow requirements, treated to potable drinking water standards, and then conveyed through CAW's distribution system to ASR facilities in the SGB. Recharge is accomplished via injection of these excess flows into specially designed ASR wells drilled in the SGB. The locations of the ASR wells and associated project monitoring wells in the SGB are shown on **Figure 1**. The recharged water is temporarily stored underground utilizing the available storage space within the aquifer system. During periods of high demand, the same ASR wells and/or other existing CAW production wells in the SGB are used to recover the previously recharged water, which in turn allows for reduced extractions from the Carmel River system during seasonal dry periods.

The District and CAW have been cooperatively developing an ASR project on the Monterey Peninsula since 1996. These efforts have evolved over time, from the performance of various technical feasibility investigations, leading to the construction and testing of pilot- and then full-scale ASR test wells to demonstrate the viability and operational parameters for ASR wells in the SGB. Based on the success of the ASR demonstration testing program, MPWMD and CAW are in the process of implementing a full-scale permanent ASR Project.

The Phase 1 ASR Project includes two ASR wells (SM ASR-1 and SM ASR-2) located at the Santa Margarita ASR Facility at 1910 General Jim Moore Blvd. in Seaside. Water Project 1 is capable of recharging up to the State Water Resources Control Board (SWRCB) water right[2] maximum annual diversion limit of 2,426 acre-feet per year (afy) at a combined permitted injection rate of approximately 3,000 gallons per minute ([gpm] maximum diversion rate of 6.7

[1] Water Year 2013 is the period of October 1, 2012 through September 30, 2013.
[2] SWRCB water right 20808A for the Phase 1 ASR Project is held jointly by MPWMD and CAW.

cubic feet per second [cfs]), with an average annual yield of approximately 920 afy. SM ASR-1 is designed for an injection capacity of 1,000 to 1,250 gpm and SM ASR-2 is designed for an injection capacity of 1,500 to 1,750 gpm. As-built schematics of SM ASR-1 and SM ASR-2 are presented on **Figures 2 and 3**, respectively.

The Phase 2 ASR Project includes two ASR wells (SMS ASR-3 and SMS ASR-4) located at the Seaside Middle School ASR Facility at 2111 General Jim Moore Blvd. in Seaside. Water Project 2 is designed to be capable of recharging up to SWRCB water right[3] maximum annual diversion limit of 2,900 afy at a combined permitted injection rate of approximately 3,600 gpm (maximum diversion rate of 8.0 cfs), with an average annual yield of approximately 1,000 afy. SMS ASR-3 and SMS ASR-4 are both designed for injection capacities of 1,500 to 1,750 gpm. SMS ASR-3 was constructed in 2010, and WY 2012 was the first time injection occurred at this well. An as-built schematic of SMS ASR-3 is presented on **Figure 4**. SMS ASR-4 was recently constructed during the summer/fall of 2012 and is planned to be operational during the WY2015 injection season.

A graphical summary of historical ASR operations in the SGB is shown on **Figure 5**. Shown are the annual injection and recovery volumes since the inception of injection operations at the Santa Margarita ASR Facility in WY 2001 through the current period of WY 2013. Also presented is a delineation of the various phases of project implementation, starting with the Santa Margarita Test Injection Well (SMTIW) in 2001, which became SM ASR-1 as the project transitioned from a testing program to a permanent project in WY 2008 (Phase 1 ASR Project), through construction and operation of the second well (SM ASR-2) at the facility in 2010. As shown, having the Santa Margarita Facility in full operation with two ASR wells injecting simultaneously in since 2010 (combined with above normal rainfall and Carmel River flows during WY 2010 and WY 2011) resulted in significant increases in the volume injected annually. As the two additional Water Project 2 ASR wells come on line in full operation, commensurate increases in annual injection volumes are expected to occur (depending on hydrologic conditions in any given year).

PURPOSE AND SCOPE

The overall purpose of the ongoing ASR program is to recharge the SGB with excess treated Carmel River system water when it is available during wet periods for storage and later extraction (recovery) during dry periods. ASR benefits the resources of both systems by raising water levels in the SGB during the recharge and storage periods and reducing extractions from the Carmel River System during dry periods.

The scope of the ongoing data collection, analysis, and reporting program for the ASR program can be categorized into issues generally associated with:

1) ASR well hydraulics and performance;

[3] The SWRCB water right 20808C for the Phase 2 ASR Project is held jointly by MPWMD and CAW.

2) Aquifer response to injection, and;

3) Water-quality issues associated with geochemical interaction and mixing of injected and native groundwaters.

The ongoing data collection and reporting program is intended to monitor and track ASR well performance and aquifer response to injection (both hydraulic and water quality) and to comply with the requirements of the Central Coast Regional Water Quality Control Board (RWQCB) for submitting annual technical reports for the project pursuant to Section 13267 of the California Water Code[4] and the existing General Waiver for Specific Types of Discharges (Resolution R3-2008-0010).

FINDINGS

WY 2013 ASR OPERATIONS

Recharge operations were performed during WY 2013 during the period of December 4, 2012 through January 16, 2013. WY 2013 was classified as a Dry Water Year[5] on the Carmel River and a commensurately modest total volume of approximately 295 acre-feet (af) of excess Carmel River system water was diverted by CAW for recharge in the SGB. The recharge water was injected at both SM ASR-2 and SMS ASR-3 (no injection occurred at SM ASR-1 or SMS ASR-4) into the Santa Margarita Sandstone aquifer of the SGB at combined average injection rates ranging from approximately 1,660 to 2,615 gpm (approximately 7.3 to 11.6 acre-feet per day [afd]).

General Recharge Procedures

Recharge of the SGB occurs via injection of diverted flows from the CAW distribution system into ASR wells during periods of available excess Carmel River system flows. The ASR recharge source water is potable (treated) water provided from the CAW distribution system. The water is currently diverted by various production well sources in Carmel Valley and (after treatment and disinfection to potable standards) then conveyed through the Segunda-Crest pipeline network to the ASR Pipeline in General Jim Moore Blvd and then to the Santa Margarita and Seaside Middle School ASR facilities.

Injection water is introduced into the ASR wells via the pump columns. Injection rates are controlled primarily by downhole flow control valves (FCV) installed on the pump columns, and secondarily by valves on the ASR wellhead piping. Injection flow rates and total injected volumes are measured with rate and totalizing meters at each of the wellheads. Positive gauge pressures are maintained at the wellheads during injection to prevent cascading of water into the wells (which can lead to air-binding). Continuous water-level data in each of the ASR wells are collected with submersible pressure transducer data loggers.

[4] Letter from Roger W. Briggs, Executive Officer of the Central Coast RWQCB, to Joseph Oliver, Water Resources Manager for MPWMD, dated April 29, 2009.

[5] Based on 27,303 af of unimpaired Carmel River flow at the San Clemente Dam site in WY 2013.

Injection Operations Summary

Injection generally occurs at each of the ASR wells on a continuous basis when flows are available, interrupted only for periodic backflushing (discussed in a following section), which typically occurs on an approximate weekly basis. These periods of continuous injection followed by backflushing are termed in this report as numbered "injection periods" at each well. During WY 2013, a total of 6 injection periods occurred at both SM ASR-2 and SMS ASR-3. Summaries of pertinent injection period operations at SM ASR-2 and SMS ASR-3 are presented in **Tables 1 and 2** below, respectively. Field data sheets collected during injection operations are presented in **Appendix A** (not included in draft).

Table 1. WY 2013 Injection Operations Summary - SM ASR-2

Injection Period No.	Dates		Duration (days)	Average Injection Rate (gpm)	Total Volume (af)
	Start	End			
1	12/4/12	12/5/12	0.7	1,087	3.5
2	12/5/12	12/9/12	4.0	1,325	23.3
3	12/22/12	12/28/12	6.0	1,528	40.5
4	12/28/12	1/3/13	6.1	1,533	41.6
5	1/3/13	1/10/13	6.9	1,133	34.5
6	1/10/13	1/17/13	6.8	1,508	45.3
SM ASR-2 Totals			**30.5**	**1,352**	**188.7**

As shown in **Table 1**, the total duration of the 6 injection periods at SM ASR-2 during WY 2013 was approximately 30 days with a total volume of approximately 189 af injected. Injection rates ranged between approximately 1,090 and 1,530 gpm, averaging approximately 1,350 gpm.

Table 2. WY 2013 Injection Operations Summary - SMS ASR-3

Injection Period No.	Dates		Duration (days)	Average Injection Rate (gpm)	Total Volume (af)
	Start	End			
1	12/5/12	12/6/12	0.7	591	1.8
2	12/7/12	12/9/12	1.7	1,044	8.0
3	12/22/12	12/28/12	6.0	870	23.0
4	12/28/12	1/3/13	6.1	575	15.5
5	1/3/13	1/10/13	7.0	1,081	33.3
6	1/10/13	1/16/13	5.8	822	20.9
SMS ASR-3 Total			**27.2**	**830**	**102.5**

As shown in **Table 2**, the total duration of the 6 injection periods at SMS ASR-3 was approximately 27 days, with a total volume of approximately 103 af injected. Injection rates ranged between approximately 575 and 1,080 gpm, averaging approximately 830 gpm.

It is noted that the variability in injection rates at the ASR wells during the injection season is controlled by various factors, including the number of active sources to the CAW system, customer demands on the CAW system, and the ability of CAW's distribution system to maintain piping pressure at the ASR wellheads.

The combined total volume of injection at SM ASR-2 and SMS ASR-3 during WY 2013 was approximately 291 af[6].

Water-level data collected at SM ASR-1, SM ASR-2 and SMS ASR-3 during WY 2013 are presented in **Figures 6 through 8**, respectively. Water-level data collected at SM ASR-2 and SMS ASR-3 during the injection season are presented in **Figures 9 and 10**, respectively. The water-level data show the response of both SM ASR-2 and SMS ASR-3 to injection, with a maximum water-level drawup of approximately 72 feet at SM ASR-2 and approximately 135 feet at SMS ASR-3, which were well below the maximum recommended drawup levels of approximately 130 and 170 feet, respectively.

Backflushing

Most sources of injection water contain trace amounts of solids that slowly accumulate in the pore spaces in the well's gravel pack and adjacent aquifer materials, and the CAW source water is no exception. Periodic backflushing of ASR wells is therefore necessary to maintain well performance by removing materials deposited/accumulated around the well bore during injection. The procedure is similar to backwashing a media filter to remove accumulated material deposited during filtration.

The operational rule-of-thumb for ASR wells is to backflush at pumping rates that are at least two times the rate of injection in order to create pore-throat velocities sufficient to remove particles that cling to the surfaces of gravel pack and aquifer grains. The trigger for backflushing is when the amount of water-level drawup during injection equals the available drawdown (as measured from the static water level to the top of the pump bowls) in the well for backflushing. This helps to avoid over-pressurization and compression of plugging materials, thereby maximizing the efficiency of backflushing and limiting the amount of residual plugging. This factor is the basis for the maximum recommended drawup levels referenced in the previous section.

[6] The difference between this value and the 295 af value presented on page 3 is due to the relatively small volume of pipeline flushing (approximately 4 af, or 1.4% of the total diversion volume) required to clear particulates from the piping system prior to injection, which was routed to the Santa Margarita ASR Facility backflush pit and allowed to percolate into the groundwater basin.

A weekly backflushing frequency has been determined to be the best operational practice for the project ASR wells when operated at the design injection rates on a continuous basis. The general procedure consists of temporarily stopping injection and then pumping the wells at a rates of approximately 2,000 to 3,000 gpm (i.e., at least twice the rate of injection) for a period of approximately 15 to 20 minutes, and repeated as necessary to effectively remove particulates from the well screen / gravel pack / aquifer matrix. Backflush water is discharged to the Santa Margarita ASR Facility backflush pit, where it percolates back into the groundwater basin.

During backflushing, the initial backflush discharge is usually very turbid and of a deep orange-brown color, becoming cloudy after approximately 5 minutes and then generally clears within 15 to 20 minutes. These observations have been generally consistent throughout the period of operation of the project ASR wells, and were similarly observed during WY2013. Additional "incidental" backflushing was also conducted during the WY 2013 storage period, typically as part of water-quality sampling of the stored water. Following routine backflushing operations and brief periods of water-level recovery, controlled 10-minute specific-capacity tests are typically performed to track well production performance and residual plugging between injection periods (discussed in a following section).

Recovery Operations Summary

Recovery of the volume of water recharged during WY 2013 was performed via existing CAW production wells in the SGB (SM-ASR-1 was non-operational during WY 2013, and SM ASR-2, SMS ASR-3 and SMS ASR-4 have not yet been permitted for recovery into the CAW distribution system)[7]. As shown on **Figure 5**, a total of approximately 644 af of recharged water was recovered by CAW wells during WY 2013 - of this volume, approximately 295 af was from the WY 2013 injection, 131 af was from the WY 2012 injection, and approximately 218 af was previously unrecovered water that had been injected during the testing phase of the ASR project (i.e., water injected under temporary SWRCB water rights permits prior to WY 2008). The recovered water was offset by reduced pumping by CAW from the Carmel River system during this period. It is noted that in this context, ASR recovery is essentially an accounting / allocation of CAW's various water rights and pumping from the SGB, and does not represent a "molecule-for-molecule" recovery of the injected water. Rather, the volume recharged essentially increases the operational yield of the SGB by the same amount and can be "recovered" by any of CAW's wells in the SGB and / or the ASR wells themselves. It is anticipated, however, that recovery operations via the ASR wells will occur more extensively in the future, once the wells are fully permitted for production into the CAW distribution system.

[7] SM ASR-1 was permitted by California Department of Public Health in August 2011 to produce water into the CAW distribution system.

WELL PERFORMANCE

Well performance is generally measured by specific capacity (pumping) and / or specific injectivity (injection), which is the ratio of flow rate (pumping or injection) to water-level change in the well (drawdown or drawup) over a specific elapsed time. The value is typically expressed as gallons per minute per foot of water level change (gpm/ft). The value normalizes well performance by taking into account differing static water levels and flow rates. As such, specific capacity / injectivity data is useful for comparing well performance over time and at differing flow rates. Decreases in specific capacity / injectivity are indicative of decreases in the hydraulic efficiency of a well due to the effects of plugging and/or particle rearrangement.

Injection Performance

Injection performance has been tracked at SM ASR-1 since the inception of the ASR program in WY 2002 by measurement and comparison of 24-hour injection specific injectivities (a.k.a. injection specific capacity).

SM ASR-1. A summary of 24-hour specific injectivity for SM ASR-1 for WY 2002 through 2011 (no injection occurred at this well in WY 2012 or WY 2013) is presented in **Table 3** below.

Table 3. Injection Performance Summary - SM ASR-1

Water Year	Injection Rate (gpm)	24-hour DUP (feet)	Specific Injectivity (gpm/ft)	Water Year Change	Comments
WY2002					
Beginning Period	1,570	81.7	**19.2**		FCV not installed yet in WY2002. No recovery pumping performed.
Ending Period	1,164	199.8	**6.4**	**-67%**	
WY2003					
Beginning Period	1,070	70.0	**15.5**		Recovery pumping performed following WY2003 Injection
Ending Period	1,007	49.7	**20.3**	**+31%**	
WY2004					
Beginning Period	1,383	183.4	**7.5**		Recovery pumping performed following WY2004 Injection
Ending Period	1,072	67.4	**15.9**	**+112%**	
WY2005					
Beginning Period	1,045	46.6	**22.4**		Injectate dechlorinated in WY2005. No recovery pumping performed.
Ending Period	976	94.1	**10.4**	**-54%**	
WY2006					
Beginning Period	1,039	71.5	**15.0**		Injection procedures consistent and performance stable in WY2006. No recovery pumping performed.
Ending Period	1,008	62.2	**17.5**	**+17%**	

Water Year	Injection Rate (gpm)	24-hour DUP (feet)	Specific Injectivity (gpm/ft)	Water Year Change	Comments
WY2007					
Beginning Period	1,098	92.4	**11.9**		Only one injection period in WY2007. No recovery pumping performed.
Ending Period	--	--	**--**	**--**	
WY2008					
Beginning Period	979	25.5	**38.4**		Formal rehabilitation performed prior to WY2008 injection
Ending Period	1,063	33.4	**31.8**	**-17%**	
WY 2009					
Beginning Period	1,119	56.1	**19.9**		Beginning period low specific injectivity due to high plugging rate during initial injection period. No recovery pumping performed.
Ending Period	1,069	34.3	**31.1**	**+56%**	
WY 2010					
Beginning Period	1,080	35.6	**30.3**		Observed decline in performance due to residual plugging.
Ending Period	1,326	54.0	**24.6**	**-19%**	
WY 2011					
Beginning Period	1,367	53.0	**25.8**		Observed decline in performance due to residual plugging.
Ending Period	1,454	63.7	**22.8**	**-10%**	
WY 2012					
Beginning Period	NA	NA	NA		No injection at this well this year.
Ending Period	NA	NA	NA	**NA**	
WY 2013					
Beginning Period	NA	NA	NA		No injection at this well this year.
Ending Period	NA	NA	NA	**NA**	

As shown in **Table 3** and as noted previously, no injection occurred at SM ASR-1 during WY 2012 or WY 2013 because the pump was non-operational.

SM ASR-2. A summary of the beginning and ending injection performance at SM ASR-2 for WY 2010 through WY 2013 is presented in **Table 4** below.

Table 4. Injection Performance Summary - SM ASR-2

Water Year	Injection Rate (gpm)	24-hour DUP (feet)	Specific Injectivity (gpm/ft)	Water Year Change	Comments
WY 2010					
Beginning Period	1,017	156.5	**6.5**		Significant residual plugging.
Ending Period	237	85.0	**2.8**	**-57%**	
WY 2011					
Beginning Period	1,497	39.5	**37.9**		Significant improvement as a result of well rehabilitation. No residual plugging during year.
Ending Period	1,292	34.3	**37.7**	**-0.5%**	
WY 2012					
Beginning Period	1,830	56.1	**32.6**		Observed decline in performance due to residual plugging.
Ending Period	1,817	63.4	**28.7**	**-12%**	
WY 2013					
Beginning Period	1,087	32.7	**33.2**		See discussion below.
Ending Period	1,508	44.2	**34.1**	**+3%**	

As shown in **Table 4**, the 24-hour specific injectivity at the beginning of WY 2013 was 33.2 gpm/ft and at the end of WY 2013 it was 34.1 gpm/ft, representing a slight increase of approximately 3 percent, indicating that no residual plugging occurred at SM ASR-2 over the course of the WY 2013 injection season.

SM ASR-3. A summary of the beginning and ending injection performance at SM ASR-3 during WY 2013 is presented in **Table 5** below.

Table 5. Injection Performance Summary - SM ASR-3

Water Year	Injection Rate (gpm)	24-hour DUP (feet)	Specific Injectivity (gpm/ft)	Water Year Change	Comments
WY 2013					
Beginning Period	1,044	87.0	**12.0**		See discussion below.
Ending Period	822	99.6	**8.3**	**-31%**	

As shown in **Table 5**, the 24-hour specific injectivity at the beginning of WY 2013 was 12.0 gpm/ft and at the end of WY 2013 it was 8.3 gpm/ft, representing a decrease of approximately 31 percent, indicating that residual plugging occurred at SM ASR-3 over the course of the WY 2013 injection season.

Pumping Performance

Pumping performance has also been tracked at ASR-1 since the inception of the SMTIW testing program by measurement and comparison of specific capacity. Following routine backflushing operations and periods of water-level recovery, controlled 10-minute specific-capacity tests are typically performed to track well pumping performance, similar to the tracking of injection performance from 24-hour specific injectivity discussed above.

SM ASR-1. A summary of injection season beginning and ending 10-minute specific capacity at ASR-1 for WY 2002 through 2013 is presented below in **Table 6**.

Table 6. Pumping Performance Summary - SM ASR-1

Water Year	Pumping Rate (gpm)	10-min DDN (feet)	Specific Capacity (gpm/ft)	Water Year Change	Comments
WY2002					
Pre-Injection	2,825	45.1	**62.6**		FCV not installed yet in WY2002
Post- Injection	2,800	95.3	**29.4**	**-53%**	
WY2003					
Pre-Injection	2,775	81.9	**33.9**		Recovery pumping performed following WY2003 Injection
Post- Injection	2,600	91.7	**28.4**	**-16%**	
WY2004					
Pre-Injection	2,000	51.8	**38.6**		Recovery pumping performed following WY2004 Injection
Post- Injection	1,700	81.2	**20.9**	**-46%**	
WY2005					
Pre-Injection	1,900	49.8	**38.1**		Injectate dechlorinated in WY2005. No recovery pumping performed.
Post- Injection	1,500	87.1	**17.2**	**-55%**	
WY2006					
Pre-Injection	1,500	82.4	**18.2**		Injection procedures consistent and performance stable in WY2006. No recovery pumping performed.
Post- Injection	1,600	74.1	**21.6**	**+19%**	
WY2007					
Pre-Injection	1,500	81.7	**18.4**		Only one injection period in WY2007. No recovery pumping performed.
Post- Injection	1,500	79.4	**18.9**	**+3%**	
WY2008					
Pre-Injection	1,980	31.0	**63.8**		Formal rehabilitation performed prior to WY2008 injection. No recovery pumping performed.
Post- Injection	2,000	55.6	**36.0**	**-44%**	

Water Year	Pumping Rate (gpm)	10-min DDN (feet)	Specific Capacity (gpm/ft)	Water Year Change	Comments
WY 2009					
Pre-Injection	2,000	52.0	**38.5**		No recovery pumping performed.
Post- Injection	1,900	62.7	**30.3**	**-21%**	
WY 2010					
Pre-Injection	1,900	62.5	**30.4**		Performance essentially stable.
Post- Injection	2,000	64.2	**31.1**	**+2%**	
WY 2011					
Pre-Injection	2,000	64.2	**31.1**		Performance essentially stable.
Post- Injection	2,000	64.6	**30.1**	**-3%**	
WY 2012					
Pre-Injection	2,400	74.7	**32.1**		No injection during WY 2012. Datalogger damaged in June 2012.
Post-Injection	NA	NA	NA	NA	
WY 2013					
Pre-Injection	NA	NA	NA		No injection during WY 2013. Pump non-operational
Post- Injection	NA	NA	NA	NA	

As shown in **Table 6**, the production specific capacity at ASR-1 declined from approximately 63 to 18 gpm/ft over the course of the six-year period of WY 2002 through WY 2007, an overall decline of approximately 70 percent. In particular, a decline of over 50 percent occurred after the initial injection season at this well (this observation has relevance to the performance of SMS ASR-3, discussed below). Further review of **Table 6** shows that following rehabilitation in 2007, the production specific capacity increased to 63.8 gpm/ft, slightly greater than the WY 2002 pre-injection specific capacity. These results are comparable to the injection performance, which similarly indicated the efficacy of rehabilitation in restoring the well's hydraulic performance. These findings regarding the effectiveness of rehabilitation of SM ASR-1 in 2007 are comparable to the results recently observed at SM ASR-2.

SM ASR-2. A summary of injection season beginning and ending 10-minute specific capacity for SM ASR-2 is presented below in **Table 7**.

Table 7. Pumping Performance Summary - SM ASR-2

Water Year	Pumping Rate (gpm)	10-min DDN (feet)	Specific Capacity (gpm/ft)	Water Year Change	Comments
WY 2009					
Pre-Injection	3,200	72.3	**44.3**		Injection testing performed with source water from MCWD.
Post- Injection	2,200	117.7	**18.7**	**-58%**	

Water Year	Pumping Rate (gpm)	10-min DDN (feet)	Specific Capacity (gpm/ft)	Water Year Change	Comments
WY 2010					
Pre-Injection	2,200	117.7	**18.7**		Pre-injection is after MCWD testing (refer to WY 2009 Summary of Operation report)
Post- Injection	2,300	136.9	**16.8**	**-10%**	
WY 2011					
Pre-Injection	3,100	83.9	**36.9**		Formal rehabilitation performed prior to WY 2011 injection season. Relatively stable during season.
Post- Injection	3,100	93.5	**33.2**	**-10%**	
WY 2012					
Pre-Injection	2,800	84.5	**33.1**		Minor residual plugging occurred.
Post- Injection	2,700	92.3	**29.3**	**-11%**	
WY 2013					
Pre-Injection	2,700	92.3	**29.3**		See discussion below.
Post- Injection	3,000	87.7	**34.2**	**+17%**	

As shown in **Table 7**, the pumping performance of SM ASR-2 declined significantly following initial injection in WY 2009, similar to the initial decline experienced at SM ASR-1. SM ASR-2 performance improved significantly in WY 2011 compared to WY 2010 as a result of rehabilitation of the well prior to the WY 2011 injection season. During WY 2013, pumping performance improved approximately 17 percent. This compares with the injection performance results, which showed an approximate 3 percent improvement in performance over the course of WY 2013.

SMS ASR-3. A summary of injection season beginning and ending 10-minute specific capacity for SMS ASR-3 is presented below in **Table 8**.

Table 8. Pumping Performance Summary - SMS ASR-3

Water Year	Pumping Rate (gpm)	10-min DDN (feet)	Specific Capacity (gpm/ft)	Water Year Change	Comments
WY 2012					
Pre-Injection	3,200	107.1	**29.9**		Significant residual plugging occurred.
Post- Injection	2,400	186.4	**12.9**	**-57%**	
WY 2013					
Pre-Injection	2,400	186.4	**12.9**		See discussion below.
Post- Injection	2,000	174.3	**11.5**	**-11%**	

As shown in **Table 8**, the pumping performance of SMS ASR-3 declined significantly following initial injection in WY 2012, similar to the declines experienced at both SM ASR-1 and SM ASR-2 following initial injection. During WY 2013, performance was relatively stable, but did

decline slightly. With these results an ASR well performance pattern has emerged, with all three ASR wells having experienced comparably significant declines in performance following initial injection, followed by a period of relative performance stability. It is currently believed the observed loss in performance is due to particle rearrangement (mechanical jamming) and/or chemical precipitation, as opposed to the normal and relatively slow plugging caused by particulates. This phenomenon will be evaluated further during the upcoming baseline injection testing program at SMS ASR-4. It is noted that while SMS ASR-3 experienced a significant decline in performance following initial injection, it is expected that rehabilitation would result in significantly improved performance as has been observed at both SM ASR-1 and SM ASR-2.

Residual Plugging

Experience at injection well sites around the world shows that all injection wells are subject to some amount of plugging, because no water source is completely free of particulates, bionutrients, or oxidants, all of which can contribute to well plugging; the CAW source water is no exception. During injection, trace amounts of suspended solids are continually being deposited in the gravel pack and aquifer pore spaces, much as a media filter captures particulates in the filter bed. The effect of plugging is to impede the flow of water from the injection well into the aquifer, causing increased injection heads in the well to maintain a given injection rate, or reduced injection rates at a given head level. Well plugging reduces injection and extraction capacity, and consequently, well life.

Relative measurements of the particulate matter in the injectate have historically been made at the Santa Margarita site through silt density index (SDI) testing during injection. The SDI was originally developed to quantitatively assess particulate concentrations in reverse-osmosis feed waters. The SDI test involves pressure filtration of source water through a 0.45 micron membrane, and observation of the decrease in flow over time; the resulting value of SDI is dimensionless, and used as a comparative value for tracking relative well plugging rates during an injection season (i.e., plugging rates tend to vary with SDI). During WY 2013 injection operations, SDI values at the beginning of the injection season were slightly less than 5 and fell to less than 1 after the first week of injection.

Residual plugging is the plugging that remains following backflush pumping. Residual plugging increases drawdown during pumping and drawup during injection, and is manifested as declining specific capacity / injectivity. The presence of residual plugging is indicative of incomplete removal of plugging particulates during backflushing and has the cumulative effect of reducing well performance and capacity through time.

As discussed previously, routine 10-minute specific capacity tests were performed at SM ASR-2 and SMS ASR-3 following backflushing events during WY 2013. Presented in **Tables 9**

and 10 below are summaries of the residual plugging calculations for SM ASR-2 and SMS ASR-3[8], respectively, during WY 2013.

Table 9. Residual Plugging Summary - SM ASR-2

Test No.	Date	Pumping Rate (gpm)	10-min Drawdown (ft)	10-min Q/s[1] (gpm/ft)	Normalize-ation Ratio	Normalized Drawdown[2] (ft)	Residual Plugging (ft)	Cumulative Plugging (ft)
Pre-Injection	4/23/12	2,700	92.3	29.3	1.1	102.5	--	--
1	12/5/12	2,900	88.5	32.8	1.0	91.6	-11.0	-11.0
2	12/12/12	2,900	87.9	33.0	1.0	90.9	-0.6	-11.6
3	12/28/12	2,900	92.5	31.3	1.0	95.7	4.8	-6.8
4	1/3/13	3,000	91.3	32.9	1.0	91.3	-4.4	-11.3
5	1/10/13	3,000	90.2	33.3	1.0	90.2	-1.1	-12.4
6	1/23/13	3,000	87.7	34.2	1.0	87.7	-2.5	-14.9
	Averages	**2,914**	**90.1**	**32.4**	**1.0**	**92.8**	**-2.5**	--
							Water Year 2013 Cumulative	**-14.9**

Notes:

1 - Specific Capacity. Ratio of pumping rate to draw down.

2 - Normalized based on ratio of 3,000 gpm to actual test pumping rate.

Table 10. Residual Plugging Summary – SMS ASR-3

Test No.	Date	Pumping Rate (gpm)	10-min Drawdown (ft)	10-min Q/s[1] (gpm/ft)	Normalize-ation Ratio	Normalized Drawdown[2] (ft)	Residual Plugging (ft)	Cumulative Plugging (ft)
Pre-Injection	4/23/12	2,400	186.4	12.9	0.8	155.3	--	--
1	12/6/12	2,200	153.7	14.3	0.9	139.7	-15.6	-15.6
2	12/12/12	2,100	156.8	13.4	1.0	149.3	9.6	-6.0
3	12/28/12	2,000	177.3	11.3	1.0	177.3	27.9	21.9
4	1/3/13	2,100	173.0	12.1	1.0	164.8	-12.5	9.4
5	1/10/13	2,000	168.4	11.9	1.0	168.4	3.6	13.1
6	1/16/13	2,000	174.3	11.5	1.0	174.3	5.8	18.9
	Averages	**2,114**	**170.0**	**12.5**	**0.9**	**161.3**	**3.2**	--
							Water Year 2013 Cumulative	**18.9**

Notes:

1 - Specific Capacity. Ratio of pumping rate to draw down.

2 - Normalized based on ratio of 2,000 gpm to actual test pumping rate.

[8] Quantification of the amount of residual plugging (as measured in feet of drawdown) requires normalization of drawdown to a reference pumping rate, which allows for comparison of data that have different pumping rates. For SM ASR-2 and SMS ASR-3, a reference pumping rate of 3,000 gpm was utilized, as this was the typical maximum short-term pumping rate for each well.

As shown on **Figure 9**, the injection water level was maintained significantly below the recommended maximum available drawup at SM ASR-2 (130 feet) during WY 2013, and as shown in **Table 9**, residual plugging cumulatively decreased during WY 2013. These results indicate that backflushing was completely effective at removing residual plugging materials during WY 2013 and suggests that the injection rate can be increased slightly in WY 2014.

As shown on **Figure 10**, the injection water level was also maintained below the recommended maximum available drawup at SM ASR-3 (170 feet) during WY 2013, and as shown in **Table 10**, residual plugging was observed and was limited to 18.9 ft at the end of the season. The amount of residual plugging at SM ASR-3 during WY 2013 was manifested as measurable declines in the specific capacity and injectivity of the well over the course of the injection season (refer to **Tables 5 and 8**). It is noted that the amount of residual plugging that occurred during WY 2013 (18.9 ft) was significantly less than the cumulative amount of *apparent* residual plugging of 132.6 ft that occurred at SMS ASR-3 during WY 2012. As discussed in the Well Performance section, a similar loss of performance phenomena was also observed at both SM ASR-1 and SM ASR-2 following the initial injection trials at these wells.

AQUIFER RESPONSE TO INJECTION

The response of the regional aquifer system to injection has been monitored since the SMTIW project was initiated in WY 2002. Submersible water-level transducer/data logger units have been installed at seven offsite monitoring well locations in the SGB as well as three onsite monitoring wells. The locations of each offsite monitoring well are shown on **Figure 1**, and water-level hydrographs for the monitoring wells during WY 2013 are graphically presented on **Figures 11 through 19**. A summary of the regional water-level observations during the WY 2013 injection season is presented in **Table 11** below.

Table 11. WY 2013 Aquifer Response Summary

Well ID	Distance from Nearest Active ASR Well (feet)	Aquifer Monitored	Figure No.	Pre-Injection DTW (ft. btoc)	Shallowest Injection DTW (ft. btoc)	Maximum Drawup Response (ft.)
SMS (Shallow)	25 (SMS ASR-3)	QTp	**11**	No Data		
SMS (Deep)		Tsm		370.0	318.3	51.7
SM MW-1	190 (SM ASR-2)	Tsm	**12**	373.5	348.8	24.7
Paralta Test	650 (SM ASR-2)	QTp & Tsm	**13**	344.8	328.3	16.5
Ord Grove Test	1,820 (SM ASR-2)	QTp & Tsm	**14**	No Data		
Ord Terrace (Shallow)	2,550 (SM ASR-2)	Tsm	**15**	No Discernable Response		
FO-7 (Shallow)	3,700 (SMS ASR-3)	QTp	**16**	No Data		
FO-7 (Deep)		Tsm				
FO-9 (Deep)	6,130 (SMS ASR-3)	Tsm	**17**	No Data		

Well ID	Distance from Nearest Active ASR Well (feet)	Aquifer Monitored	Figure No.	Pre-Injection DTW (ft. btoc)	Shallowest Injection DTW (ft. btoc)	Maximum Drawup Response (ft.)
PCA East (Shallow)	6,200 (SMS ASR-3)	QTp	**18**	No Discernable Response		
PCA East (Deep)		Tsm		93.7	84.8	8.9
FO-8 (Deep)	6,450 (SMS ASR-3)	Tsm	**19**	400.4	392.2	8.2

Notes:
QTp – Quaternary / Tertiary-age Paso Robles Formation aquifer
Tsm – Tertiary-age Santa Margarita Sandstone aquifer
DTW – Depth to Water

As shown on the water-level hydrographs, water levels in the Santa Margarita Sandstone (Tsm) aquifer at the start of the WY 2013 recharge season ranged between approximately 10 to 40 feet below sea level. Positive response to injection during WY 2013 was observed at 5 of the 9 monitoring wells completed in the Santa Margarita Sandstone aquifer (3 Tsm dataloggers were non-operational for a variety of reasons during the water year). For the 5 monitoring wells with sufficient data (see **Table 11** above), apparent water-level responses ranged between approximately 8 to 52 feet, decreasing with distance from the ASR wells, as is the typical and expected aquifer response to hydraulic stresses (i.e., injection or pumping). These WY 2013 responses are comparable to those observed in previous water years.

The available water-level data also show that at the Tsm-only monitoring wells, water levels consistently remained below sea level throughout the injection season. Under these water-level conditions, little to no groundwater flow from the Tsm aquifer offshore would be expected to occur and any "losses" associated with ASR project operations from water potentially migrating offshore are highly unlikely.

The limited available data for wells completed in the Paso Robles Formation (QTp) show no discernible response to injection and water levels in this aquifer remained above the water levels in the underlying Tsm aquifer during WY 2013. Under these water-level conditions, little to no flow of water from the Tsm to the QTp aquifer would be expected to occur.

It is further noted that the Ord Terrace monitoring well (refer to **Figure 15**) continues to not show a discernible response to injection operations, as has been observed during previous injection seasons. Nor do many project monitoring wells show a discernable response to the pumping of CAW's Ord Grove production well. These observations suggest that the Ord Terrace Fault or a parallel branch of the fault may represent a hydraulic barrier in the Tsm aquifer.

WATER QUALITY

General

Source water for injection is supplied from the CAW municipal water system, primarily from Carmel River system wells which are treated at the CAW Begonia Iron Removal Plant

(BIRP) for iron and manganese removal. The BIRP water is also disinfected and maintains a free chlorine residual. A phosphate-based corrosion inhibitor is also added to the filtered water before entering the CAW distribution system. The finished product water meets all California Department of Public Health (CADPH) Primary and Secondary water quality standards.

As in previous years, water quality was routinely monitored at the ASR well sites during WY 2013 injection and aquifer storage operations. Far-field water quality was also monitored at the CAW Paralta production well and at the PCE-East Deep monitoring well (PCA-E Deep). Summaries of the collected water-quality data during WY 2013 are presented in **Tables 12 through 18** below[9], and are graphically presented in **Figures 20 through 24**. Analytic laboratory reports are presented in **Appendix B** (not included in draft). A discussion of the water-quality data collected during WY 2013 is presented below.

Mixing and Dilution

Because injection operations have occurred annually at SM ASR-1 over the past 11 Water Years (injection began at this well in WY 2002), the proximate groundwater quality has been altered from the natural subsurface conditions, making a clear distinction between "native" and "non-native" water quality both complex and somewhat subjective. In the past, the most illustrative basis for discussing water-quality changes for the ASR project was to consider groundwater conditions immediately prior to the injection season as a baseline; however, establishing baseline conditions is more complex now that injection is occurring at multiple wells, and is further complicated as a result of the significant volume of injection that occurred in WY 2010 and WY 2011 (approximately 1,111 and 1,117 af, respectively). Because the issue of precisely defining baseline water-quality conditions is increasingly difficult as injection occurs at multiple wells, the practice has been dropped in this report.

To track the general mixing, dilution, and interaction between injected and native groundwaters, chloride ion (Cl^-) has historically been used for the SGB ASR project as a natural tracer. Chloride ion is very stable, highly soluble and is present in both injected and native ground waters; albeit at a 400 percent concentration differential. The historical "native" Cl^- concentration of the groundwaters within the Tsm has averaged approximately 120 - 130 milligrams per liter (mg/L) in this area of the basin. Presented in **Table 12** below is a summary of the relative percentages of injection water at each of the monitored wells before WY 2013 injection operations and at the end of the WY 2013 storage period. Calculation of the injected versus native groundwater (NGW) contribution in a given sample is based on the historical NGW and injected water Cl^- concentrations.

[9] It is noted that both the Santa Margarita and Seaside Middle School ASR Facilities were undergoing various phases of facility construction during WY 2013. As a result, there were numerous service interruptions at the facilities that limited water-quality sampling such that the sampling frequency could not be performed at all wells in strict accordance with the Sampling and Analysis Plan for the project. Facility retrofit and construction is currently nearing completion at both sites and sampling interruptions should be reduced as construction activities at both sites approach completion over the next year.

Table 12. Percent Injectate at Wells during WY 2013
(based on 2001 Tsm NGW Cl content vs 2013 CAW Injectate Cl)

Well	Pre-Injection Conditions			End-Storage Conditions			WY 2013 Change (%)	Comments
	Sample Date	Cl (mg/l)	% Injectate in Water	Sample Date	Cl (mg/l)	% Injectate in Water		
SM ASR-1	10/31/12	110	11					No data. Pump out for repairs.
SM ASR-2	8/2/12	85	37	7/24/2013	72	51	14	188.7 af injected. No recovery.
SM MW-1	11/1/12	34	91	7/24/2013	30	96	4	Located between SM ASR-1 and SM ASR-2
SMS ASR-3	10/30/12	90	32	7/25/2013	67	56	24	102 af injected. No recovery.
SMS Deep	10/30/12	90	32	4/17/2013	30	96	64	25 ft. from SMS ASR-3.
Paralta	11/26/12	116	4	7/23/2013	101	20	16	
PCA-E Deep	10/31/12	92	30	7/30/2013	99	22	-7	

As **Table 12** above shows, only two (ASR-3 and SMS Deep) of the seven well locations had the same water quality prior to WY 2013 injection, and each represents a different percentage mix of injectate and native groundwater (NGW) and water from the multiple previous injection and recovery seasons. These results range from an estimated 91 percent injectate water at SM MW-1 to 4 percent injectate water at CAW's Paralta well prior to the WY 2013 injection season. By the end of the WY 2013 recovery period, the concentration of injected water at most wells increased, with the exception of PCA-E Deep, which declined slightly compared to pre-injection conditions.

Although in past years the calculation of a "normalized concentration" of water-quality parameters based on injected and NGW chloride ion concentrations has been used to correct for the dilution effects of this intermixing of waters in the past, the substantial and repeated dilution/intermixing that has occurred is now more error-prone due to the variation in CAW injectate water quality from year to year, and the significant spatially-non-uniform dilutions and intermixing and the variations in Cl^- concentrations around the ASR project sites. Normalized data are therefore not included in the current (nor in future) data presentations.

Injection Water Quality

Injection water quality from the CAW system during WY 2013 is presented in **Table 13** below; the data show injection water quality was typical of recent years. Levels of Trihalomethanes (THM) and Haloacetic Acid (HAA) compounds, as well as bionutrients (oxygen, nitrogen, phosphorous, and organic carbon), were all present at levels similar to previous years.

Water Quality During Aquifer Storage

Tables 14 through 16 present summaries of water-quality data collected at the three ASR wells (SM ASR-1, SM ASR-2 and SMS ASR-3, respectively). **Tables 17 and 18** present similar data collected at the on-site monitoring wells SM MW-1 and SMS Deep, respectively; and **Table 19** presents the water-quality data collected at the off-site monitoring wells (PCA-E Deep and Paralta). Data for the ASR wells include baseline water quality taken prior to WY 2013 injection (end of WY 2012 Storage) and stored water quality (WY 2013 Storage) collected periodically from the aquifer after WY 2013 injection operations were terminated.

Table 13. Summary of WY 2013 Water Quality Data - Injectate

Parameter	Unit	PQL	MCL	Results CAW Injectate 12/5/12
		Sample Description		Injectate
Major Cations				
Calcium	mg/L	*0.5*		47
Magnesium	mg/L	*0.5*		15
Potasium	mg/L	*0.5*		3.4
Sodium	mg/L	*0.5*		49
Major Anions				
Alkalinity, Total (as CaCO3)	mg/L	*2*		143
Chloride	mg/L	*1*	*250*	34
Sulfate	mg/L	*1*	*250*	81
Nitrate (as NO3)	mg/L	*1*	*45*	ND
Nitrite (as Nitrogen)	mg/L	*1*	*1*	ND
General Physical				
pH	Std Units			7.5
Specific Conductance (EC)	uS	*1*	*900*	558
Total Dissolved Solids	mg/L	*10*	*500*	340
Metals				
Arsenic (Total)	ug/L	*1*	*10*	ND
Barium (Total)	ug/L	*10*	*1000*	68
Iron (Dissolved)	ug/L	*10*		20
Iron (Total)	ug/L	*10*	*300*	133
Lithium	ug/L	*1*		7
Manganese (Dissolved)	ug/L	*10*		ND
Manganese (Total)	ug/L	*10*	*50*	ND
Molybdenum	ug/L	*1*	*1000*	2
Nickel	ug/L	*10*	*100*	ND
Selenium	ug/L	*2*	*50*	ND
Strontium (Total)	ug/L	*5*		241
Uranium (by ICP/MS)	ug/L	*1*	*30*	ND
Vanadium (Total)	ug/L	*1*	*1000*	1
Zinc (Total)	ug/L	*10*	*5000*	208
Miscellaneous				
Ammonia-N	mg/L	*0.05*		ND
Boron	mg/L	*0.05*		ND
Chloramines	mg/L	*0.05*		0.12
Gross Alpha	pCi/L		*15*	1.31 +/- 1.50
Kjehldahl Nitrogen (Total)	mg/L	*0.5*		ND
Methane	ug/L	*0.1*		1.1
Nitrogen (Total)	mg/L	*0.5*		ND
o-Phosphate-P	mg/L	*0.05*		0.35
Phosphorous (Total)	mg/L	*0.03*		0.52
Radium 226	pCi/L		*3*	0.050 +/- 0.257
Organic Analyses				
Haloacetic Acids (Total)	ug/L	*1.0*	*60.0*	13.2
Dibromoacetic Acid	*ug/L*	*1.0*		*3.7*
Dichloroacetic Acid	*ug/L*	*1.0*		*5.5*
Monobromoacetic Acid	*ug/L*	*1.0*		*ND*
Monochloroacetic Acid	*ug/L*	*2.0*		*ND*
Trichloroacetic Acid	*ug/L*	*1.0*		*4.0*
Organic Carbon (Dissolved)	mg/L	*0.2*		1.0
Organic Carbon (Total)	mg/L	*0.2*		1.2
Trihalomethanes (Total)	ug/L	*1.0*	*80.0*	26.5
Bromodichloromethane	*ug/L*	*0.5*		*8.9*
Bromoform	*ug/L*	*0.5*		*2.0*
Chloroform	*ug/L*	*0.5*		*7.9*
Dibromochloromethane	*ug/L*	*0.5*		*7.7*
Field Parameters				
Temperature	^{0}C	*0.1*		
Specific Conductance (EC)	uS	*1.0*	*900*	546
pH	Std Units	*0.1*	*6.5 - 8.5*	7.1
ORP	mV	*1.0*		
Free Chlorine Residual	mg/L	*0.1*	*2 - 5*	
Dissolved Oxygen	mg/L	*0.01*		
Silt Density Index	Std Units	*0.1*		
Gas Volume	mL	*2.0*		
H_2S	mg/L	*0.1*		

Notes:
Constituents exceeding MCLs denoted in **BOLD** type

Table 14. Summary of WY 2013 Water-Quality Data - SM ASR-1

Parameter	Unit	PQL	MCL	Results SM ASR-1 3/21/01	Results SM ASR-1 10/31/12
			Sample Description	NGW	WY 2012 Storage
Elapsed Storage Time	Days			--	**191**
Volume Purged at Sampling	1,000 gals			--	
Major Cations					
Calcium	mg/L	*0.5*		85	86
Magnesium	mg/L	*0.5*		19	22
Potasium	mg/L	*0.5*		5.3	5.2
Sodium	mg/L	*0.5*		88	93
Major Anions					
Alkalinity, Total (as CaCO3)	mg/L	*2*		224	223
Chloride	mg/L	*1*	*250*	120	110
Sulfate	mg/L	*1*	*250*	95	102
Nitrate (as NO3)	mg/L	*1*	*45*	ND	ND
Nitrite (as Nitrogen)	mg/L	*1*	*1*		ND
General Physical					
pH	Std Units			7.1	7.5
Specific Conductance (EC)	uS	*1*	*900*	**1015**	**987**
Total Dissolved Solids	mg/L	*10*	*500*	**618**	**614**
Metals					
Arsenic (Total)	ug/L	*1*	*10*	ND	1
Barium (Total)	ug/L	*10*	*1000*	52	81
Iron (Dissolved)	ug/L	*10*			27
Iron (Total)	ug/L	*10*	*300*	120	42
Lithium	ug/L	*1*			32
Manganese (Dissolved)	ug/L	*10*			23.0
Manganese (Total)	ug/L	*10*	*50*	40	24
Molybdenum	ug/L	*1*	*1000*		7
Nickel	ug/L	*10*	*100*		ND
Selenium	ug/L	*2*	*50*	ND	ND
Strontium (Total)	ug/L	*5*			402
Uranium (by ICP/MS)	ug/L	*1*	*30*		1
Vanadium (Total)	ug/L	*1*	*1000*		2
Zinc (Total)	ug/L	*10*	*5000*	10	181
Miscellaneous					
Ammonia-N	mg/L	*0.05*		0.33	0.12
Boron	mg/L	*0.05*		0.14	0.13
Chloramines	mg/L	*0.05*			ND
Gross Alpha	pCi/L		*15*		5.57 +/- 2.32
Kjehldahl Nitrogen (Total)	mg/L	*0.5*			ND
Methane	ug/L	*0.1*			3.2
Nitrogen (Total)	mg/L	*0.5*			ND
o-Phosphate-P	mg/L	*0.05*		0.46	ND
Phosphorous (Total)	mg/L	*0.03*			0.30
Radium 226	pCi/L		*3*		0.881 +/- 0.335
Organic Analyses					
Haloacetic Acids (Total)	ug/L	*1.0*	*60.0*		0.0
Dibromoacetic Acid	*ug/L*	*1.0*			*ND*
Dichloroacetic Acid	*ug/L*	*1.0*			*ND*
Monobromoacetic Acid	*ug/L*	*1.0*			*ND*
Monochloroacetic Acid	*ug/L*	*2.0*			*ND*
Trichloroacetic Acid	*ug/L*	*1.0*			*ND*
Organic Carbon (Dissolved)	mg/L	*0.2*			0.76
Organic Carbon (Total)	mg/L	*0.2*		6.3	0.99
Trihalomethanes (Total)	ug/L	*1.0*	*80.0*		9.8
Bromodichloromethane	*ug/L*	*0.5*			*2.4*
Bromoform	*ug/L*	*0.5*			*ND*
Chloroform	*ug/L*	*0.5*			*7.4*
Dibromochloromethane	*ug/L*	*0.5*			*ND*
Field Parameters					
Temperature	^{0} C	*0.1*			23.0
Specific Conductance (EC)	uS	*1.0*	*900*	1015	971
pH	Std Units	*0.1*	*6.5 - 8.5*	7.1	6.94
ORP	mV	*1.0*			-165
Free Chlorine Residual	mg/L	*0.1*	*2 - 5*		ND
Dissolved Oxygen	mg/L	*0.01*			--
Silt Density Index	Std Units	*0.1*			--
Gas Volume	mL	*2.0*			--
H_2S	mg/L	*0.1*		1.5	0.06

Notes:

Constituents exceeding MCLs denoted in **BOLD** type

Table 15. Summary of WY 2013 Water Quality Data – SM ASR-2

Parameter	Unit	PQL	MCL	Results SM ASR-2 12/4/12	4/17/13	7/24/13
		Sample Description		WY 2012 Storage	WY 2013 Storage	
Elapsed Storage Time	Days			**225**	**90**	**188**
Volume Purged at Sampling	1,000 gals					
Major Cations						
Calcium	mg/L	*0.5*		89	42	62
Magnesium	mg/L	*0.5*		24	13	21
Potasium	mg/L	*0.5*		5.4	3.0	3.7
Sodium	mg/L	*0.5*		88	46	63
Major Anions						
Alkalinity, Total (as CaCO3)	mg/L	*2*		227	136	183
Chloride	mg/L	*1*	*250*	118	35	72
Sulfate	mg/L	*1*	*250*	100	62	92
Nitrate (as NO3)	mg/L	*1*	*45*	ND	ND	1
Nitrite (as Nitrogen)	mg/L	*1*	*1*	ND	ND	ND
General Physical						
pH	Std Units			7.1	7.6	7.4
Specific Conductance (EC)	uS	*1*	*900*	1018	508	767
Total Dissolved Solids	mg/L	*10*	*500*	623	306	460
Metals						
Arsenic (Total)	ug/L	*1*	*10*	2	2	1
Barium (Total)	ug/L	*10*	*1000*	136	70	98
Iron (Dissolved)	ug/L	*10*		62	50	ND
Iron (Total)	ug/L	*10*	*300*	**1097**	**3101**	221
Lithium	ug/L	*1*		38	5	15
Manganese (Dissolved)	ug/L	*10*		31	23	ND
Manganese (Total)	ug/L	*10*	*50*	43	40	15
Molybdenum	ug/L	*1*	*1000*	11	6	6
Nickel	ug/L	*10*	*100*	4	ND	ND
Selenium	ug/L	*2*	*50*	2	8	2
Strontium (Total)	ug/L	*5*		448	220	352
Uranium (by ICP/MS)	ug/L	*1*	*30*	2	1	2
Vanadium (Total)	ug/L	*1*	*1000*	5	5	1
Zinc (Total)	ug/L	*10*	*5000*	348	248	350
Miscellaneous						
Ammonia-N	mg/L	*0.05*		0.1	ND	ND
Boron	mg/L	*0.05*		0.12	ND	0.06
Chloramines	mg/L	*0.05*		ND	ND	ND
Gross Alpha	pCi/L		*15*	3.48 +/- 2.82	0.627 +/- 1.23	2.52 +/- 1.50
Kjehldahl Nitrogen (Total)	mg/L	*0.5*		0.3	0.3	ND
Methane	ug/L	*0.1*		2.5	0.5	0.87
Nitrogen (Total)	mg/L	*0.5*		ND	ND	ND
o-Phosphate-P	mg/L	*0.05*		0.1	0.2	0.3
Phosphorous (Total)	mg/L	*0.03*		0.27	0.54	0.26
Radium 226	pCi/L		*3*	0.313 +/- 0.243	0.348 +/- 0.323	0.087 +/- 0.170
Organic Analyses						
Haloacetic Acids (Total)	ug/L	*1.0*	*60.0*	0.0	5.9	0.0
Dibromoacetic Acid	ug/L	*1.0*		*ND*	*ND*	*ND*
Dichloroacetic Acid	ug/L	*1.0*		*ND*	*1.9*	*ND*
Monobromoacetic Acid	ug/L	*1.0*		*ND*	*ND*	*ND*
Monochloroacetic Acid	ug/L	*2.0*		*ND*	*ND*	*ND*
Trichloroacetic Acid	ug/L	*1.0*		*ND*	4.0	*ND*
Organic Carbon (Dissolved)	mg/L	*0.2*		0.88	1.0	0.90
Organic Carbon (Total)	mg/L	*0.2*		0.83	1.5	0.71
Trihalomethanes (Total)	ug/L	*1.0*	*80.0*	7.3	67.4	47.7
Bromodichloromethane	ug/L	*0.5*		*1.7*	19.0	*13.0*
Bromoform	ug/L	*0.5*		*ND*	1.6	0.87
Chloroform	ug/L	*0.5*		*4.6*	37.0	27.0
Dibromochloromethane	ug/L	*0.5*		*1.0*	9.8	6.8
Field Parameters						
Temperature	^{0} C	*0.1*		21.9		
Specific Conductance (EC)	uS	*1.0*	*900*	1008		
pH	Std Units	*0.1*	*6.5 - 8.5*	6.8		
ORP	mV	*1.0*		-108		
Free Chlorine Residual	mg/L	*0.1*	*2 - 5*	ND		
Dissolved Oxygen	mg/L	*0.01*		1.37		
Silt Density Index	Std Units	*0.1*		4.6		
Gas Volume	mL	*2.0*		ND		
H_2S	mg/L	*0.1*		--		

Notes:

Constituents exceeding MCLs denoted in **BOLD** type

Table 16. Summary of WY 2013 Water Quality Data – SMS ASR-3

Parameter	Unit	PQL	MCL	Results SMS ASR-3 10/22/2010	10/30/12	4/17/13	7/25/13
		Sample Description		NGW	WY 2012 Storage	WY 2013 Storage	
Elapsed Storage Time	Days				**190**	**90**	**189**
Volume Purged at Sampling	1,000 gals						
Major Cations							
Calcium	mg/L	*0.5*		76	68	42	53
Magnesium	mg/L	*0.5*		18	18	13	17
Potasium	mg/L	*0.5*		4.5	4.8	3.1	3.8
Sodium	mg/L	*0.5*		102	87	47	60
Major Anions							
Alkalinity, Total (as CaCO3)	mg/L	*2*		304	223	140	190
Chloride	mg/L	*1*	*250*	107	90	31	67
Sulfate	mg/L	*1*	*250*	56	58	68	70
Nitrate (as NO3)	mg/L	*1*	*45*	1	ND	ND	2.0
Nitrite (as Nitrogen)	mg/L	*1*	*1*	ND	ND	ND	ND
General Physical							
pH	Std Units			7.7	7.3	7.7	7.3
Specific Conductance (EC)	uS	*1*	*900*	954	850	510	723
Total Dissolved Solids	mg/L	*10*	*500*	575	503	300	428
Metals							
Arsenic (Total)	ug/L	*1*	*10*	4	5	**13**	7
Barium (Total)	ug/L	*10*	*1000*	50	77	56	85
Iron (Dissolved)	ug/L	*10*		21	93	35	15
Iron (Total)	ug/L	*10*	*300*	21	156	150	219
Lithium	ug/L	*1*		36	32	6	21
Manganese (Dissolved)	ug/L	*10*		27	25	20	19
Manganese (Total)	ug/L	*10*	*50*	27	26	28	20
Molybdenum	ug/L	*1*	*1000*	--	8	46	20
Nickel	ug/L	*10*	*100*	ND	ND	ND	ND
Selenium	ug/L	*2*	*50*	ND	2	8	3
Strontium (Total)	ug/L	*5*		403	335	214	307
Uranium (by ICP/MS)	ug/L	*1*	*30*	--	2	2	5
Vanadium (Total)	ug/L	*1*	*1000*	--	4	ND	2
Zinc (Total)	ug/L	*10*	*5000*	--	72	118	152
Miscellaneous							
Ammonia-N	mg/L	*0.05*		249	ND	ND	ND
Boron	mg/L	*0.05*		ND	0.09	ND	0.06
Chloramines	mg/L	*0.05*		0.08	ND	ND	ND
Gross Alpha	pCi/L		*15*	--	4.12 +/- 1.97	2.74 +/- 1.32	3.83 +/- 1.71
Kjehldahl Nitrogen (Total)	mg/L	*0.5*		ND	ND	ND	ND
Methane	ug/L	*0.1*		ND	0.61	0.35	0.54
Nitrogen (Total)	mg/L	*0.5*		ND	ND	ND	ND
o-Phosphate-P	mg/L	*0.05*		ND	ND	0.1	0.2
Phosphorous (Total)	mg/L	*0.03*		0.03	0.22	0.38	0.18
Radium 226	pCi/L		*3*	--	0.426 +/- 0.256	0.000 +/- 0.194	0.306 +/- 0.257
Organic Analyses							
Haloacetic Acids (Total)	ug/L	*1.0*	*60.0*	ND	0.0	6.8	12.7
Dibromoacetic Acid	*ug/L*	*1.0*		*ND*	*ND*	*ND*	*ND*
Dichloroacetic Acid	*ug/L*	*1.0*		*ND*	*ND*	*3.5*	*4.3*
Monobromoacetic Acid	*ug/L*	*1.0*		*ND*	*ND*	*ND*	*ND*
Monochloroacetic Acid	*ug/L*	*2.0*		*ND*	*ND*	*ND*	*ND*
Trichloroacetic Acid	*ug/L*	*1.0*		*ND*	*ND*	*3.3*	*8.4*
Organic Carbon (Dissolved)	mg/L	*0.2*		0.71	0.66	1.0	0.86
Organic Carbon (Total)	mg/L	*0.2*		0.70	0.73	1.2	0.65
Trihalomethanes (Total)	ug/L	*1.0*	*80.0*	ND	6.3	**104.7**	50.0
Bromodichloromethane	*ug/L*	*0.5*		*ND*	*1.8*	*28.0*	*13.0*
Bromoform	*ug/L*	*0.5*		*ND*	*0.5*	*1.7*	*1.2*
Chloroform	*ug/L*	*0.5*		*ND*	*2.7*	*61.0*	*27.0*
Dibromochloromethane	*ug/L*	*0.5*		*ND*	*1.3*	*14.0*	*8.8*
Field Parameters							
Temperature	^{0} C	*0.1*		26.2	23.9		19.2
Specific Conductance (EC)	uS	*1.0*	*900*	991	829		715
pH	Std Units	*0.1*	*6.5 - 8.5*	7.0	7.1		7.28
ORP	mV	*1.0*		-82	-192		-155
Free Chlorine Residual	mg/L	*0.1*	*2 - 5*	ND	ND		ND
Dissolved Oxygen	mg/L	*0.01*		--	--		2.29
Silt Density Index	Std Units	*0.1*		--	--		--
Gas Volume	mL	*2.0*		--	--		--
H_2S	mg/L	*0.1*		0.60	0.05		ND

Notes:
Constituents exceeding MCLs denoted in **BOLD** type

Table 17. Summary of WY 2013 Water Quality Data – SM MW-1

Parameter	Unit	PQL	MCL	Results SM MW-1 11/1/12	4/17/13	7/24/13
		Sample Description		WY 2012 Storage	WY 2013 Storage	
Elapsed Storage Time	Days			**192**	**90**	**188**
Volume Purged at Sampling	1,000 gals					
Major Cations						
Calcium	mg/L	*0.5*		47	43	45
Magnesium	mg/L	*0.5*		12	11	10
Potasium	mg/L	*0.5*		2.9	3.3	2.8
Sodium	mg/L	*0.5*		47	46	42
Major Anions						
Alkalinity, Total (as CaCO3)	mg/L	*2*		144	135	140
Chloride	mg/L	*1*	*250*	34	31	30
Sulfate	mg/L	*1*	*250*	69	72	69
Nitrate (as NO3)	mg/L	*1*	*45*	ND	ND	1.0
Nitrite (as Nitrogen)	mg/L	*1*	*1*	ND	ND	ND
General Physical						
pH	Std Units			7.5	7.3	7.4
Specific Conductance (EC)	uS	*1*	*900*	540	507	515
Total Dissolved Solids	mg/L	*10*	*500*	340	306	323
Metals						
Arsenic (Total)	ug/L	*1*	*10*	2	2	2
Barium (Total)	ug/L	*10*	*1000*	21	27	23
Iron (Dissolved)	ug/L	*10*		ND	ND	ND
Iron (Total)	ug/L	*10*	*300*	ND	16	ND
Lithium	ug/L	*1*		8	7	8
Manganese (Dissolved)	ug/L	*10*		ND	68	ND
Manganese (Total)	ug/L	*10*	*50*	ND	**68**	ND
Molybdenum	ug/L	*1*	*1000*	4	6	6
Nickel	ug/L	*10*	*100*	ND	ND	ND
Selenium	ug/L	*2*	*50*	2	15	2
Strontium (Total)	ug/L	*5*		247	220	247
Uranium (by ICP/MS)	ug/L	*1*	*30*	1	1	1
Vanadium (Total)	ug/L	*1*	*1000*	2	1	2
Zinc (Total)	ug/L	*10*	*5000*	13	ND	ND
Miscellaneous						
Ammonia-N	mg/L	*0.05*		ND	ND	ND
Boron	mg/L	*0.05*		ND	ND	ND
Chloramines	mg/L	*0.05*		ND	ND	ND
Gross Alpha	pCi/L		*15*	2.95 +/- 1.44	3.21 +/- 1.39	2.81 +/- 1.34
Kjehldahl Nitrogen (Total)	mg/L	*0.5*		ND	ND	ND
Methane	ug/L	*0.1*		0.12	0.24	0.14
Nitrogen (Total)	mg/L	*0.5*		ND	ND	ND
o-Phosphate-P	mg/L	*0.05*		ND	0.1	ND
Phosphorous (Total)	mg/L	*0.03*		0.06	0.23	0.04
Radium 226	pCi/L		*3*	0.027 +/- 0.157	0.589 +/- 0.385	0.218 +/- 0.257
Organic Analyses						
Haloacetic Acids (Total)	ug/L	*1.0*	*60.0*	0.0	0.0	0.0
Dibromoacetic Acid	*ug/L*	*1.0*		*ND*	*ND*	*ND*
Dichloroacetic Acid	*ug/L*	*1.0*		*ND*	*ND*	*ND*
Monobromoacetic Acid	*ug/L*	*1.0*		*ND*	*ND*	*ND*
Monochloroacetic Acid	*ug/L*	*2.0*		*ND*	*ND*	*ND*
Trichloroacetic Acid	*ug/L*	*1.0*		ND	ND	ND
Organic Carbon (Dissolved)	mg/L	*0.2*		0.61	0.89	0.78
Organic Carbon (Total)	mg/L	*0.2*		0.7	1.00	0.59
Trihalomethanes (Total)	ug/L	*1.0*	*80.0*	58.7	28.7	26.7
Bromodichloromethane	*ug/L*	*0.5*		*12.0*	*9.0*	*4.4*
Bromoform	*ug/L*	*0.5*		*0.5*	*ND*	*ND*
Chloroform	*ug/L*	*0.5*		*42.0*	*17.0*	*21.0*
Dibromochloromethane	*ug/L*	*0.5*		*4.2*	*2.7*	*1.3*
Field Parameters						
Temperature	^{0} C	*0.1*		19.6		16.8
Specific Conductance (EC)	uS	*1.0*	*900*	530		769
pH	Std Units	*0.1*	*6.5 - 8.5*	7.47		7.4
ORP	mV	*1.0*		-84		-150
Free Chlorine Residual	mg/L	*0.1*	*2 - 5*	ND		--
Dissolved Oxygen	mg/L	*0.01*		--		1.58
Silt Density Index	Std Units	*0.1*		--		--
Gas Volume	mL	*2.0*		--		--
H_2S	mg/L	*0.1*		--		--

Notes:

Constituents exceeding MCLs denoted in **BOLD** type

Table 18. Summary of WY 2013 Water Quality Data – SMS Deep

Parameter	Unit	PQL	MCL	Results SMS Deep 10/30/12	Results SMS Deep 4/17/13
		Sample Description		WY 2012 Storage	WY 2013 Storage
Elapsed Storage Time	Days			**190**	**90**
Volume Purged at Sampling	1,000 gals				
Major Cations					
Calcium	mg/L	*0.5*		66	48
Magnesium	mg/L	*0.5*		11	10
Potasium	mg/L	*0.5*		4.1	2.8
Sodium	mg/L	*0.5*		90	47
Major Anions					
Alkalinity, Total (as CaCO3)	mg/L	*2*		203	141
Chloride	mg/L	*1*	*250*	90	30
Sulfate	mg/L	*1*	*250*	54	66
Nitrate (as NO3)	mg/L	*1*	*45*	ND	ND
Nitrite (as Nitrogen)	mg/L	*1*	*1*	ND	ND
General Physical					
pH	Std Units			7.4	7.6
Specific Conductance (EC)	uS	*1*	*900*	796	510
Total Dissolved Solids	mg/L	*10*	*500*	468	306
Metals					
Arsenic (Total)	ug/L	*1*	*10*	7	**20**
Barium (Total)	ug/L	*10*	*1000*	43	27
Iron (Dissolved)	ug/L	*10*		ND	ND
Iron (Total)	ug/L	*10*	*300*	ND	14
Lithium	ug/L	*1*		29	6
Manganese (Dissolved)	ug/L	*10*		11	ND
Manganese (Total)	ug/L	*10*	*50*	12	ND
Molybdenum	ug/L	*1*	*1000*	7	39
Nickel	ug/L	*10*	*100*	ND	ND
Selenium	ug/L	*2*	*50*	2	7
Strontium (Total)	ug/L	*5*		413	347
Uranium (by ICP/MS)	ug/L	*1*	*30*	3	3
Vanadium (Total)	ug/L	*1*	*1000*	6	3
Zinc (Total)	ug/L	*10*	*5000*	17	ND
Miscellaneous					
Ammonia-N	mg/L	*0.05*		0.06	ND
Boron	mg/L	*0.05*		0.08	ND
Chloramines	mg/L	*0.05*		ND	ND
Gross Alpha	pCi/L		*15*	3.34 +/- 2.58	5.58 +/- 1.80
Kjehldahl Nitrogen (Total)	mg/L	*0.5*		ND	ND
Methane	ug/L	*0.1*		0.6	0.30
Nitrogen (Total)	mg/L	*0.5*		ND	ND
o-Phosphate-P	mg/L	*0.05*		ND	ND
Phosphorous (Total)	mg/L	*0.03*		0.12	0.2
Radium 226	pCi/L		*3*	0.663 +/- 0.292	0.099 +/- 0.237
Organic Analyses					
Haloacetic Acids (Total)	ug/L	*1.0*	*60.0*	0.0	13.7
Dibromoacetic Acid	*ug/L*	*1.0*		*ND*	*ND*
Dichloroacetic Acid	*ug/L*	*1.0*		*ND*	*3.7*
Monobromoacetic Acid	*ug/L*	*1.0*		*ND*	*ND*
Monochloroacetic Acid	*ug/L*	*2.0*		*ND*	*ND*
Trichloroacetic Acid	*ug/L*	*1.0*		ND	10
Organic Carbon (Dissolved)	mg/L	*0.2*		0.55	0.93
Organic Carbon (Total)	mg/L	*0.2*		0.59	1.30
Trihalomethanes (Total)	ug/L	*1.0*	*80.0*	10.3	79.5
Bromodichloromethane	*ug/L*	*0.5*		*3.0*	*22.0*
Bromoform	*ug/L*	*0.5*		*0.7*	*1.5*
Chloroform	*ug/L*	*0.5*		*4.3*	*44.0*
Dibromochloromethane	*ug/L*	*0.5*		*2.3*	*12.0*
Field Parameters					
Temperature	^{0} C	*0.1*		25	
Specific Conductance (EC)	uS	*1.0*	*900*	777	
pH	Std Units	*0.1*	*6.5 - 8.5*	7.21	
ORP	mV	*1.0*		155.4	
Free Chlorine Residual	mg/L	*0.1*	*2 - 5*	ND	
Dissolved Oxygen	mg/L	*0.01*		--	
Silt Density Index	Std Units	*0.1*		--	
Gas Volume	mL	*2.0*		--	
H_2S	mg/L	*0.1*		0.05	

Notes:
Constituents exceeding MCLs denoted in **BOLD** type

Table 19. Summary of WY 2013 Water Quality Data – Off-Site Monitoring Wells

Parameter	Unit	PQL	MCL	Results			
				PCA-E Deep		Paralta	
				10/31/12	7/30/13	11/26/12	7/24/13
		Sample Description		WY 2012 Storage	WY 2013 Storage	WY 2012 Storage	WY 2013 Storage
Volume Pumped at Sampling	1,000 gals						
Major Cations							
Calcium	mg/L	*0.5*		51	49	73	69
Magnesium	mg/L	*0.5*		10	10	18	17
Potasium	mg/L	*0.5*		3.9	3.8	ND	ND
Sodium	mg/L	*0.5*		91	87	94	94
Major Anions							
Alkalinity, Total (as CaCO3)	mg/L	*2*		185	187	229	221
Chloride	mg/L	*1*	*250*	92	99	116	101
Sulfate	mg/L	*1*	*250*	32	31	68	67
Nitrate (as NO3)	mg/L	*1*	*45*	ND	ND	ND	ND
Nitrite (as Nitrogen)	mg/L	*1*	*1*	ND	ND		ND
General Physical							
pH	Std Units			7.5	7.6		
Specific Conductance (EC)	uS	*1*	*900*	737	740	**959**	826
Total Dissolved Solids	mg/L	*10*	*500*	440	434	**548**	**504**
Metals							
Arsenic (Total)	ug/L	*1*	*10*	8	6	2	3
Barium (Total)	ug/L	*10*	*1000*	68	67	ND	ND
Iron (Dissolved)	ug/L	*10*		35	ND	ND	ND
Iron (Total)	ug/L	*10*	*300*	44	27	ND	ND
Lithium	ug/L	*1*		23	25		
Manganese (Dissolved)	ug/L	*10*		99	119		26
Manganese (Total)	ug/L	*10*	*50*	**101**	**122**	24	25
Molybdenum	ug/L	*1*	*1000*	11	11	ND	ND
Nickel	ug/L	*10*	*100*	ND	ND	ND	ND
Selenium	ug/L	*2*	*50*	ND	ND	ND	ND
Strontium (Total)	ug/L	*5*		271	270	400	400
Uranium (by ICP/MS)	ug/L	*1*	*30*	ND	ND		
Vanadium (Total)	ug/L	*1*	*1000*	1	1	ND	ND
Zinc (Total)	ug/L	*10*	*5000*	ND	ND	ND	ND
Miscellaneous							
Ammonia-N	mg/L	*0.05*		ND	0.06	ND	0.17
Boron	mg/L	*0.05*		0.10	0.11	ND	109
Chloramines	mg/L	*0.05*		ND	ND		
Gross Alpha	pCi/L		*15*	0.236 +/- 1.52	0.783 +/- 1.38		
Kjehldahl Nitrogen (Total)	mg/L	*0.5*		ND	ND	ND	0.58
Methane	ug/L	*0.1*		0.64	0.79		
Nitrogen (Total)	mg/L	*0.5*		ND	ND		
o-Phosphate-P	mg/L	*0.05*		ND	ND	ND	ND
Phosphorous (Total)	mg/L	*0.03*		0.28	ND	ND	ND
Radium 226	pCi/L		*3*	0.080 +/- 0.173	0.180 +/- 0.306		
Organic Analyses							
Haloacetic Acids (Total)	ug/L	*1.0*	*60.0*	0.0	0.2	1.0	0.8
Dibromoacetic Acid	*ug/L*	*1.0*		*ND*	*ND*	*ND*	*ND*
Dichloroacetic Acid	*ug/L*	*1.0*		*ND*	*ND*	*ND*	*ND*
Monobromoacetic Acid	*ug/L*	*1.0*		*ND*	*ND*	*ND*	*ND*
Monochloroacetic Acid	*ug/L*	*2.0*		*ND*	*ND*	*ND*	*ND*
Trichloroacetic Acid	*ug/L*	*1.0*		*ND*	*ND*	*ND*	*ND*
Organic Carbon (Dissolved)	mg/L	*0.2*		ND	0.24	0.95	0.82
Organic Carbon (Total)	mg/L	*0.2*		0.29	ND	0.69	0.81
Trihalomethanes (Total)	ug/L	*1.0*	*80.0*	0.0	0.0	1.8	4.7
Bromodichloromethane	*ug/L*	*0.5*		*ND*	ND	*ND*	*1.2*
Bromoform	*ug/L*	*0.5*		*ND*	ND	*ND*	*ND*
Chloroform	*ug/L*	*0.5*		*ND*	ND	*1.8*	*3.5*
Dibromochloromethane	*ug/L*	*0.5*		*ND*	ND	*ND*	*ND*
Field Parameters							
Temperature	^{0} C	*0.1*		26.5		24.6	23.9
Specific Conductance (EC)	uS	*1.0*	*900*	719		910	930
pH	Std Units	*0.1*	*6.5 - 8.5*	7.3		6.9	7.1
ORP	mV	*1.0*		-165.2		-250	-238
Free Chlorine Residual	mg/L	*0.1*	*2 - 5*	ND		ND	ND
Dissolved Oxygen	mg/L	*0.01*		--		--	0.64
Silt Density Index	Std Units	*0.1*		--		--	--
Gas Volume	mL	*2.0*		--		--	--
H_2S	mg/L	*0.1*		ND		--	ND

Notes:

Constituents exceeding MCLs denoted in **BOLD** type

Review of water-quality parameters gathered at the active WY 2013 ASR injection wells (SM ASR-2 and SMS ASR-3), including major anions and cations, redox potential (ORP), and conductivity all showed similar effects of dilution / intermixing with native groundwaters during aquifer storage. This is unremarkable when compared to years prior to WY 2012 and WY 2013 due to the larger volume of water injected (i.e., over 1,000 af in both WY 2010 and WY 2011) in previous years.

Additional observations regarding the water quality data reported in **Tables 14 through 19** include the following:

- SM ASR-1 water quality (**Table 14**) has no WY2013 injection or storage/recovery period data, as the well pump was non-operational and out for repair / retrofit. This is why no injection or recovery was performed at this well during WY 2013.
- SM ASR-2 water quality, as reported in **Table 15** and **Figure 21**, is unremarkable, and as expected for its being in active injection service. The transition from 35 to 72 mg/L chloride between post injection and 188 days of storage is indicative of aquifer mixing and a subsurface gradient moving injected water away from the well. It should also be noted that arsenic was near non-detect levels (refer to SMS ASR-3 discussion below). THM's showed the expected ingrowth and decay, and HAA's were quickly and completely degraded to non-detect levels.
- Water quality at MW-1 at the SM site was dominated by injectate throughout the injection and storage period, which is unremarkable given its proximity and downgradient position to SM ASR-2. MW-1 also showed the typical ingrowth and decay of THM's and the completed degradation of HAA's.
- SMS ASR-3 saw active injection of approximately 102 af of water over 27 days, and although water quality issues were generally unremarkable, several issues were observed:
    1. Chloride levels during storage showed relative stability during the first few months of storage, but then showed significant dilution/mixing as the 90 day storage Cl level was 31 mg/L (i.e., 95+% injectate) but Day 188 showed Cl at 67 mg/L (i.e., 56% injectate).
    2. Concurrently with chloride variation, arsenic (As) was non-detect in the singular CAW injectate sample in December, yet on Day 90 of storage As was 13 ug/L, dropping to 7 ug/L by Day 188.
    3. Similarly, the nearby SMS Deep (only 25 feet north of ASR-3) showed As at 20 ug/L on Day 90 of storage. (No late-season sample was collected from SMS Deep).
- The above noted spikes and variation in As appears to be present only in the vicinity of SMS ASR-3 (and SMS Deep), and were not observed in the injectate, nor any ASR or MW's at the SM site, nor any of the off-site monitored wells. Although there is insufficient data to be conclusive, it appears that the spike in As decreased with time and mixing/dilution, suggesting that the spike is not associated with native

groundwater conditions. Further sampling and analysis is needed at SMS ASR-3, SMS Deep, and SMS ASR-4 (now in service) to better identify the conditions surrounding the As spike.

- Also noteworthy at SMS ASR-3 is the fact that it (and SMS Deep) are the only wells exhibiting a persistent presence of HAA's through injection and storage; historically HAA's have degraded completely in 90-100 days at the SM site. This phenomenon also warrants further sampling and analysis at SMS ASR-3 and SMS ASR-4 in WY 2014.

As found in previous ASR operations at the site, the most significant water-quality changes observed during aquifer storage other than simple dilution/mixing were redox-related (and likely biologically mediated) reactions; these were primarily evidenced by the degradation of HAA and THM compounds and absence of hydrogen sulfide even in mixed NGW and injected waters. Disinfection Byproducts (DBPs) parameters at the on-site wells during WY 2013 are graphically presented on **Figures 20 through 24**:

- THMs at the ASR wells showed their typical initial and significant ingrowth during the storage period, which results from the presence of free chlorine and trace levels of organic carbon in the injected water. THM ingrowth generally peaks in concentration approximately 60-90 days after the cessation of injection, followed by a gradual decline during the storage period. After approximately 90 to 150 days of storage, THMs typically degraded to below the initial injection levels. It is noted that THMs were below the Maximum Contaminant Level (MCL) of 80 ug/L throughout WY 2013, with the exception of a short-term spike of THM's to 104.7 ug/L at SMS ASR-3 during the peak in-growth period; this THM level dropped to 50 ug/L by the end of the storage season.
- There was insufficient data from the on-site monitoring wells to observe similar ingrowth and decay patterns as the ASR wells this year; additional data will be collected in WY 2014 to track this trend in comparison with previous years.

The decline in THMs observed at the ASR and on-site monitoring wells followed the characteristic process: rapid degradation of Bromoform and the highly brominated species with much slower decline in Chloroform.

Water Quality at Off-Site Monitor Wells

Water Quality data were collected from off-site wells in WY 2013 as in previous years – these data are presented in **Table 18** and discussed below.

Samples from PCA-E Deep were collected prior to and following the WY 2013 injection season. The samples were analyzed for DBP's and for trace minerals which might indicate influence from the operation of the ASR wells. As discussed previously and as shown in **Table 12**, evaluation of chloride ion concentrations indicate that some previously injected water had reached the off-site wells prior to the WY 2013 injection season. Data from PCA-East Deep show a slightly lower-than-historical chloride concentration; however the presence of dissolved

methane, manganese ion (at 101 and 122 ug/L - exceeding the MCL of 50 ug/L), and the absence of DBP's and hydrogen sulfide gas suggest that the influence of recharge operations is negligible to date at this site.

Data from the nearest CAW production well to the ASR wells (Paralta), also included pre- (11/26/2012) and post- (7/24/2013) injection season samples in WY 2013; these data show a slight influence of injected water from SM ASR-2 and/or SMS ASR-3 (Paralta located is between the two, at down- or cross-gradient), vis-à-vis slightly lowered chloride ion levels and the presence of trace levels of THM's at 4.7 ug/L post season. The slightly elevated levels of EC and TDS at Paralta are not unusual considering the normal variability of Tsm native ground waters; these levels were also reduced during the injection period, as the CAW injection source water is substantially lower in dissolved salts than native Tsm ground water. It is also important to note that EC and TDS are CADPH and USEPA Secondary Drinking Water Standards and are not related to public health and safety.

Water Quality Summary

Overall, water-quality data from WY 2013 showed no significant deviations from previous years; however, as noted in the WY 2011 and WY 2012 Summary of Operations Reports, the determination of precisely where the injected waters travel will become more challenging as multiple wells at different ASR sites are operational. The only deviation from the norm for the ASR program is the anomalous spikes in arsenic and the persistence of HAA's at the SMS ASR-3 / SMS Deep sites; additional investigation in WY 2014 will be needed to establish if these anomalies are simple sampling / analyses errors of if there is a hydraulic or geochemical mechanism associated with these observations.

The most important factors regarding ASR operations to date are that:

a) No evidence of adverse geochemical reactions have been observed during aquifer storage, and;

b) Injection is showing direct and measurable benefit to the basin water quality vis-à-vis reductions in salinity, dissolved solids, hardness, and aesthetic parameters such as manganese and sulfide ion, which impart color and odor to the consumers' drinking water.

These improvements are likely to continue as ASR operations continue and expand in the future.

CONCLUSIONS

Based on the findings developed from operation of Monterey Peninsula ASR Project during WY 2013, we conclude the following:

WY 2013 Recharge Operations

WY 2013 was classified as a Dry Water Year on the Monterey Peninsula and as a result, a commensurately modest total volume of 295 af of water was recharged into the Seaside Groundwater Basin at the Santa Margarita and Seaside Middle Schools ASR Facilities during the WY 2013 injection season.

ASR Well Performance

SM ASR-1. No injection or pumping occurred at this well during WY 2013 because the well pump was non-operational.

SM ASR-2. Pertinent well performance conclusions for SM ASR-2 during WY 2013 are summarized below:

- Injection Rates: Ranged between approximately 1,200 to 1,500 gpm, averaging approximately 1,350 gpm.
- Water Levels: Generally maintained greater than 300 ft. bgs with 50 ft. of available "freeboard" remaining below the maximum recommended drawup level.
- Specific Injectivity: Ranged between approximately 20 to 40 gpm/ft (depending on duration of injection) and overall trend in 24-hr specific injectivity was positive.
- Residual Plugging: No residual plugging was observed.
- General Conclusions: SM ASR-2 performed very well during WY 2013 with no evidence of residual plugging. The positive trend in performance and available "freeboard" at injection rates ranging between 1,200 to 1,500 gpm suggests the injection rate can be increased slightly in WY 2014 without adversely affecting the well's performance.

SMS ASR-3. Pertinent well performance conclusions for SM ASR-3 during WY 2013 are summarized below:

- Injection Rates: Ranged between approximately 500 to 1,200 gpm, averaging approximately 850 gpm.

- Water Levels: Generally maintained greater than 220 ft bgs with 40 ft of available "freeboard" remaining below the maximum recommended drawup level.

- Specific Injectivity: Ranged between approximately 8 to 13 gpm/ft (depending on duration of injection) and overall trend in 24-hr specific injectivity was slightly negative.

- Residual Plugging: A slight amount of residual plugging was observed, corresponding to the slight decline in specific capacity and injectivity.

- General Conclusions: SM ASR-3 performance was relatively stable compared to the significant declines observed in WY 2012. The pattern of relative performance stabilization followed by the initial significant decline in well performance observed at SMS ASR-3 is very similar to the pattern observed at both SM ASR-1 and SM ASR-2 when they were brought on-line. The slight declining trend in performance at injection rates ranging between 500 to 1,200 gpm suggests the injection rate should be slightly decreased in WY 2014 to avoid further residual plugging that may adversely affect the well's performance.

Water Quality

Significant conclusions regarding the water-quality investigation during WY 2013 include the following:

- Consistent with previous observations, no significant ion exchange, acid-base, or precipitation reactions were observed at the ASR sites.
- THMs at the ASR sites showed characteristic and significant initial "ingrowth" that peaked at approximately 30 to 90 days of storage, followed by a gradual decline over the next 90 to 150 days of storage.
- HAAs showed little "ingrowth" following the cessation of injection and degraded completely during aquifer storage.
- MCL exceedances observed in the April 2013 samples are considered anomalous and it is anticipated that water-quality conditions during WY 2014 will return to historical levels.

RECOMMENDATIONS

Based on the WY 2013 ASR program results and our experience with similar ASR projects, we offer the following recommendations for continued and future operations of the Monterey Peninsula ASR Project wells:

SM ASR-1 Well Operational Parameters (based on WY 2011 findings)

- Water-Level Drawup: Under the present local water-level conditions, the amount of water-level drawup should be limited to approximately 100 feet. This amount of water-level drawup during injection equals the typical available drawdown in the well for backflushing. This helps to avoid over-pressurization and compression of plugging materials, thereby maximizing the efficiency of backflushing and limiting the amount of residual plugging.
- Injection Rate: Based on the lack of overall residual plugging during WY 2011, SM ASR-1 can be operated at an injection rate up to approximately 1,500 gpm (6.6 afd) to avoid excessive plugging during injection. This represents a 50 percent increase in the design injection rate of 1,000 gpm.
- Backflushing Frequency: During the recharge season, routine backflushing should continue to be performed on an approximate weekly basis, or when the amount of water-level drawup in the casing reaches approximately 100 feet, whichever occurs first.

SM ASR-2 Well Operational Parameters

- Water-Level Drawup: Under the present local water-level conditions, the amount of water-level drawup should be limited to approximately 130 feet, which is equal to the typical amount of available drawdown in the well for backflushing. Again, this helps to avoid over-pressurization and compression of plugging materials and limiting the amount of residual plugging.
- Injection Rate: Based on the lack of residual plugging that occurred during WY 2013 with the well injecting up to 1,500 gpm, we recommend the injection rate be increased slightly but be limited to approximately 1,750 gpm in order to limit residual plugging and maintain long-term performance.
- Backflushing Frequency: During the recharge season, routine backflushing should continue to be performed on an approximate weekly basis, or when the amount of water-level drawup in the casing reaches approximately 130 feet, whichever occurs first.

SMS ASR-3 Well Operational Parameters

- The SMS ASR-3 baseline injection testing program should be completed in WY 2014. This includes the following steps:

1. 7-day constant rate injection test;
2. Backflushing between each injection test, and;
3. Post-injection production performance testing

- Based on the results of WY 2013, injection rates at this well should be limited to approximately 1,000 gpm until further testing can be performed.

- Following the completion of the baseline injections testing program, specific recommendations for long-term operation of SMS ASR-3 should be developed, including maximum recommend water-level drawup, injection rate, and backflushing frequency. Recommendations for formal rehabilitation of SMS ASR-3 to improve well performance and injection capacity, similar to that performed at SM ASR-1 and SM ASR-2, should also be developed.

SMS ASR-4 Well Startup Conditioning and Baseline Injection Testing

We recommend that SMS ASR-4 undergo injection "conditioning" at startup (currently planned for WY 2015) in an effort to limit the amount of apparent residual plugging that has historically been observed at all three of the existing ASR wells following their initial injection operations. This conditioning should consist of initial injection at relatively low rates and durations, being incrementally increased following thorough backflushing and only upon confirmation that well performance is successfully being maintained. It is envisioned that this conditioning will likely occur over the course of several days until the design injection rate is achieved.

Following successful completion of injection well conditioning, a baseline injection testing program should be implemented that includes the following tests:

1. 8-hr variable rate injection test (combined with downhole velocity surveys);
2. 24-hr constant rate injection test;
3. 7-day constant rate injection test;
4. Backflushing between each of the above injection tests, and;
5. Post-injection production performance testing.

At the conclusion of the baseline injection testing program, recommendations for the long-term injection operations during the remainder of the WY 2015 recharge season and beyond can then be provided.

CLOSURE

This report has been prepared exclusively for the Monterey Peninsula Water Management District for the specific application to the ASR Project on the Monterey Peninsula. The findings and conclusions presented herein were prepared in accordance with generally accepted hydrogeologic and engineering practices. No other warranty, express or implied, is made.

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FIGURES

June 2014
Project No. 06-0028

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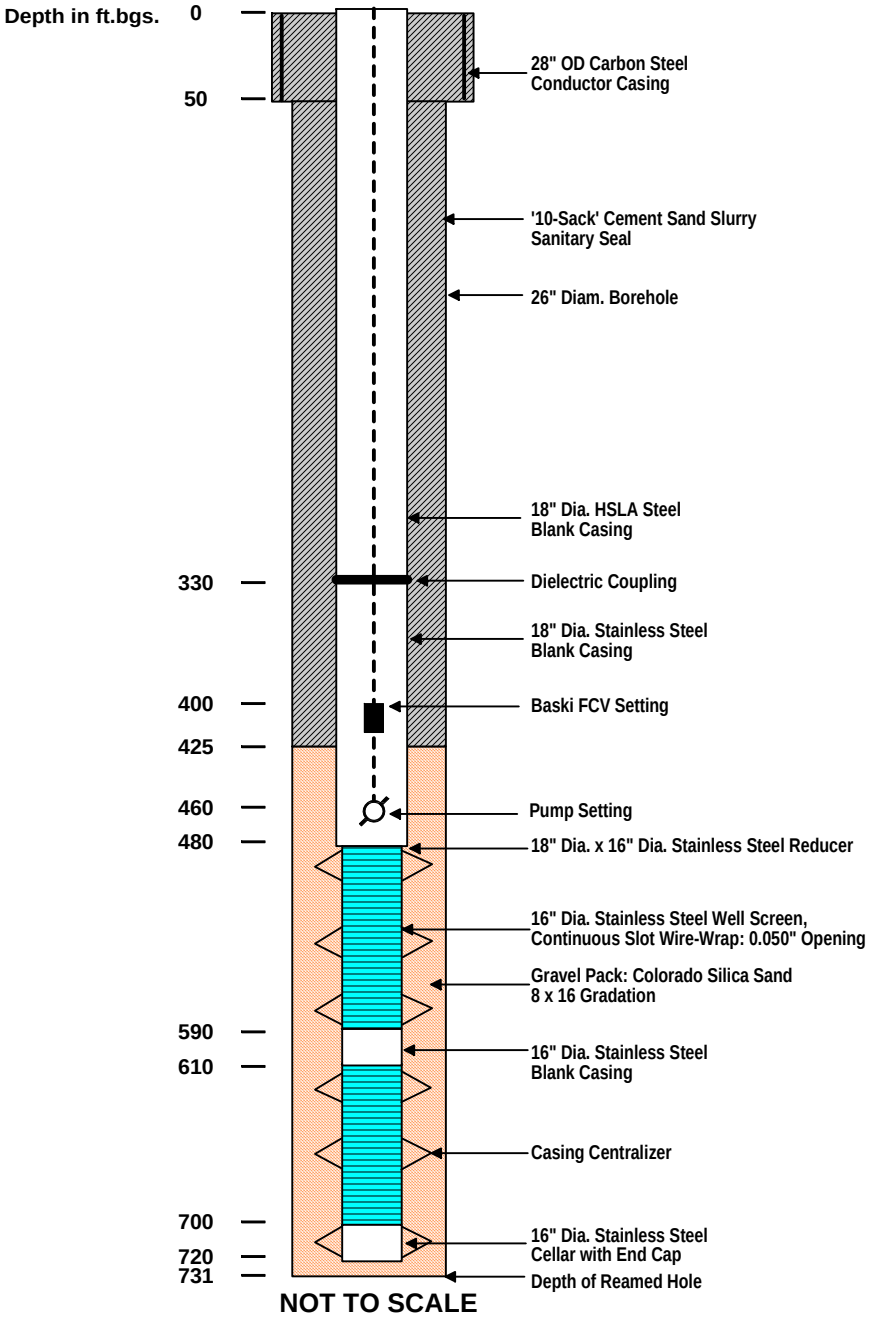
N
W E
S

Feet
0 1,000 2,000

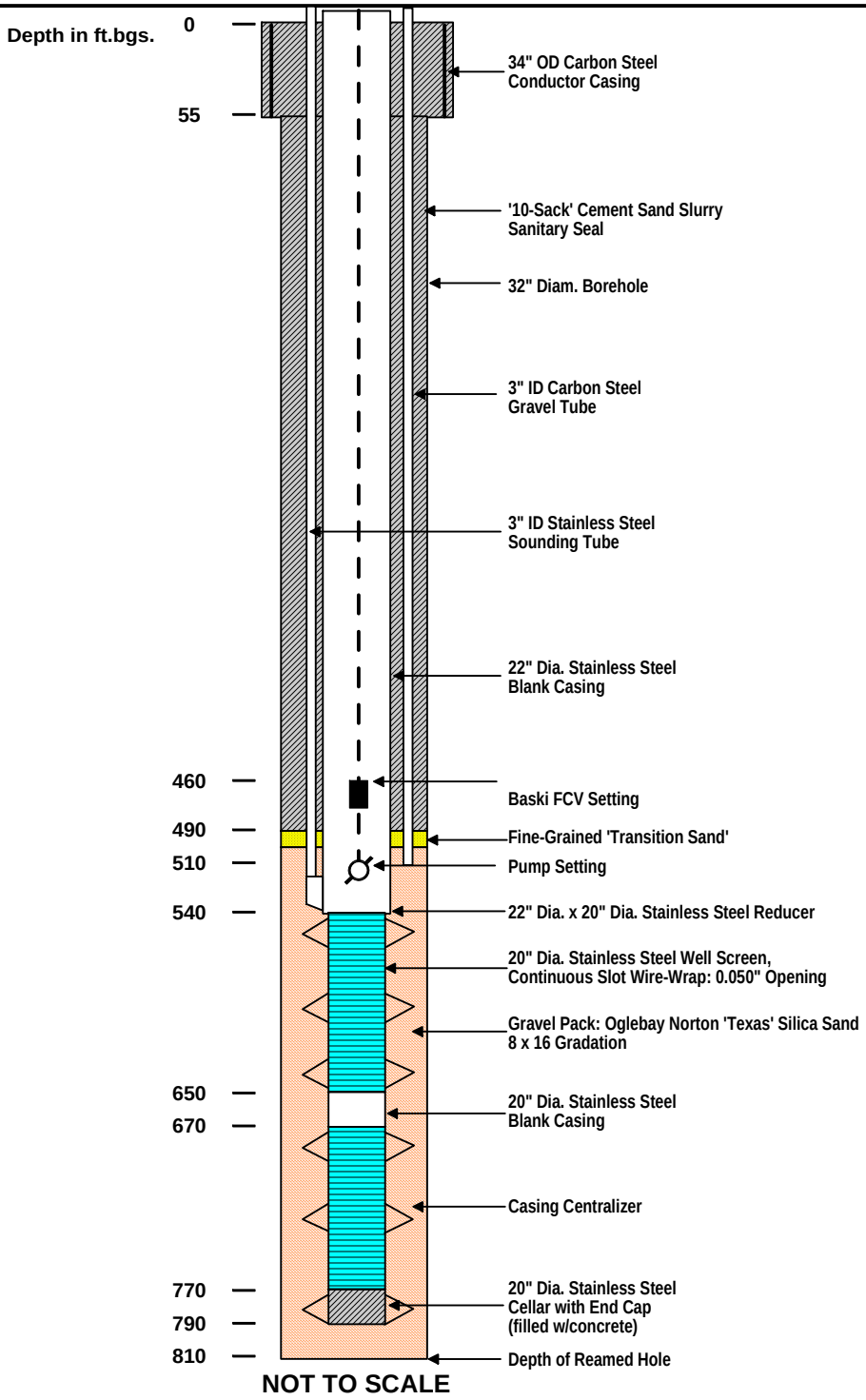
FIGURE 1. SITE LOCATION MAP
WY 2012 ASR Program
Monterey Peninsula Water Management District



Pump Assembly Notes:
Hp: 600
Bowls: 16ENL, 7 stage
Col. Pipe Dia: 12"
Col. Pipe Length: 20'
Assy. Type: Water Lube/Open Shaft
Baski FCV Setting: 400' - 410'
Top of Bowls: 460'
Bowl Length: 10.5'
Suction Length: 10'
Intake: 480.5'

PUEBLO water resources

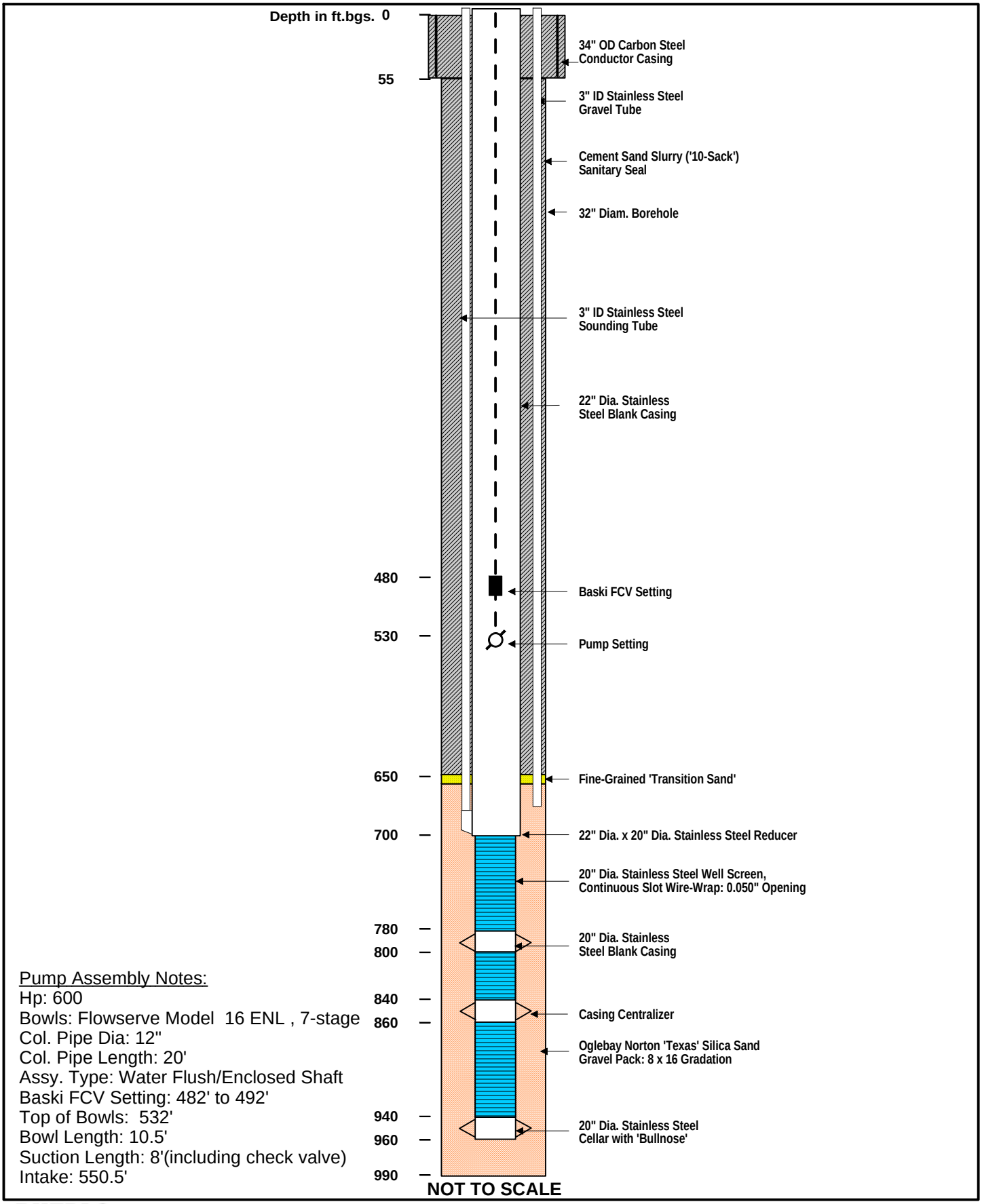
FIGURE 2. SM ASR-1 AS-BUILT SCHEMATIC
WY 2013 ASR Program
Monterey Peninsula Water Management District



Pump Assembly Notes:
Hp: 600
Bowls: 16ENL, 7 stage
Col. Pipe Dia: 12"
Col. Pipe Length: 20'
Assy. Type: Water Flush/Enclosed Shaft
Baski FCV Setting: 460' - 470'
Top of Bowls: 510'
Bowl Length: 10.5'
Suction Length: 10'
Intake: 530.5'

PUEBLO water resources

FIGURE 3. SM ASR-2 AS-BUILT SCHEMATIC
WY 2013 ASR Program
Monterey Peninsula Water Management District



Pump Assembly Notes:
Hp: 600
Bowls: Flowserve Model 16 ENL , 7-stage
Col. Pipe Dia: 12"
Col. Pipe Length: 20'
Assy. Type: Water Flush/Enclosed Shaft
Baski FCV Setting: 482' to 492'
Top of Bowls: 532'
Bowl Length: 10.5'
Suction Length: 8'(including check valve)
Intake: 550.5'

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FIGURE 4. SMS ASR-3 AS-BUILT SCHEMATIC
WY 2013 ASR Program
Monterey Peninsula Water Management District

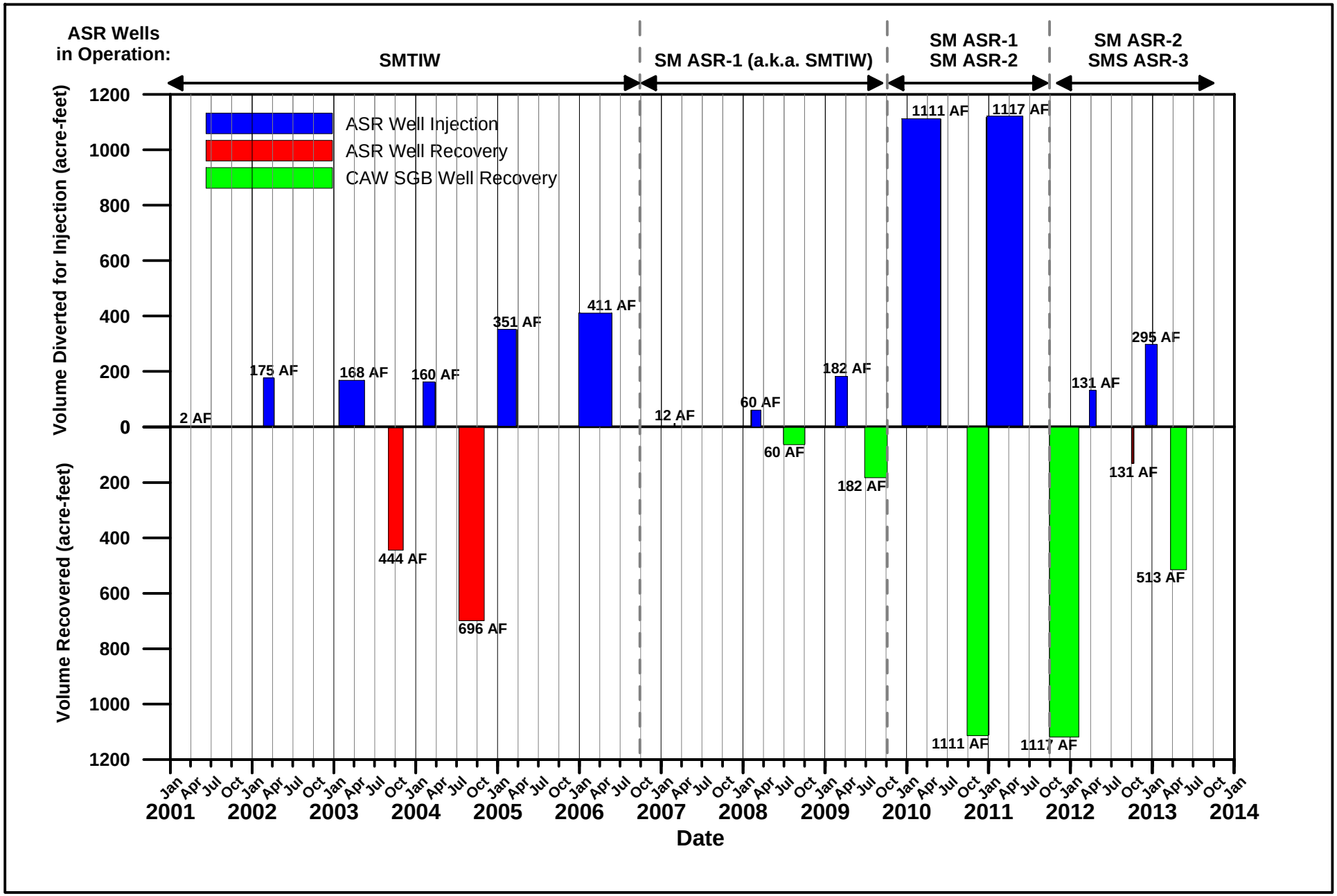

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FIGURE 5. SUMMARY OF ASR OPERATIONS (WY 2001 - WY 2013)
WY 2013 ASR Program
Monterey Peninsula Water Management District

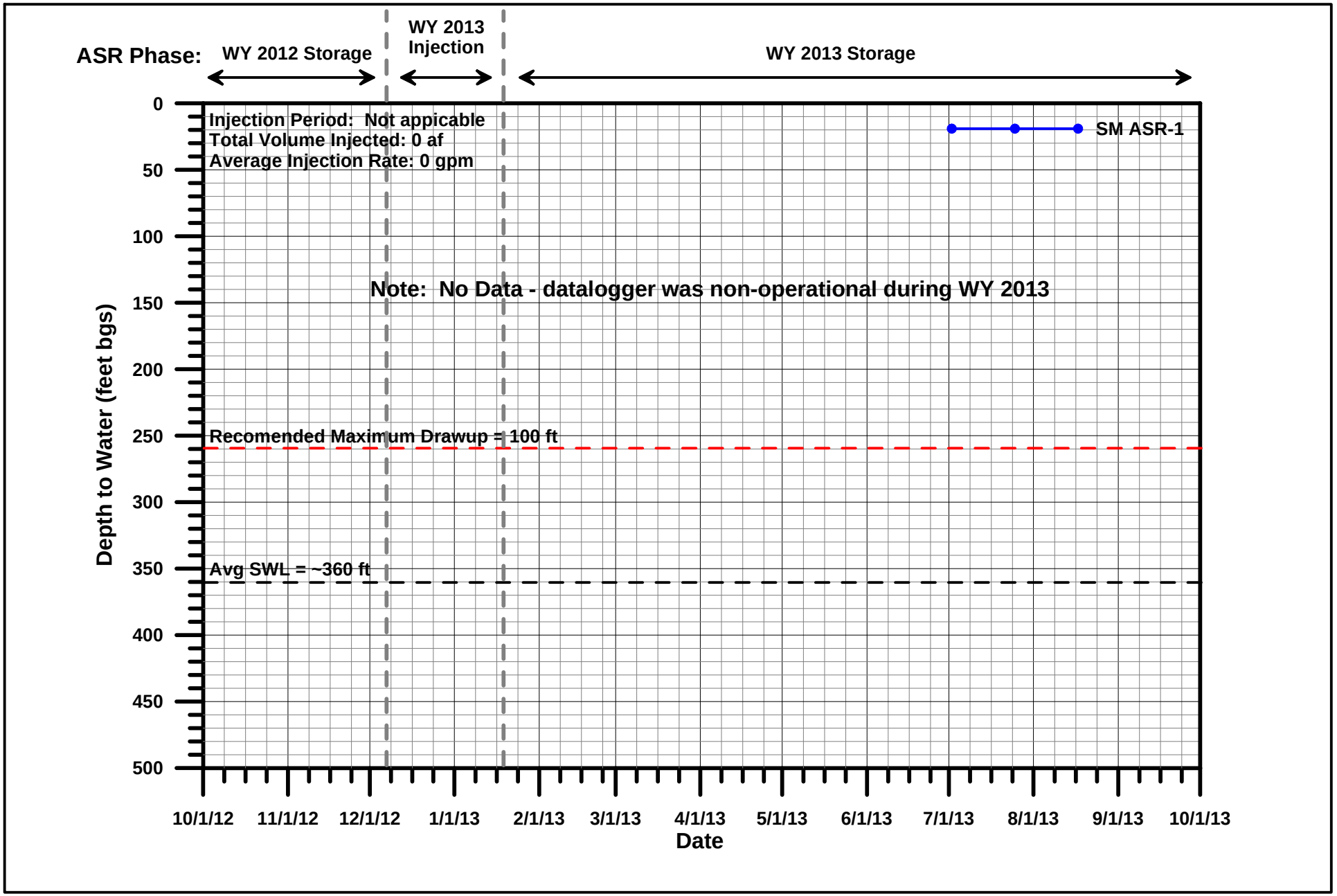

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FIGURE 6. SM ASR-1 WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District

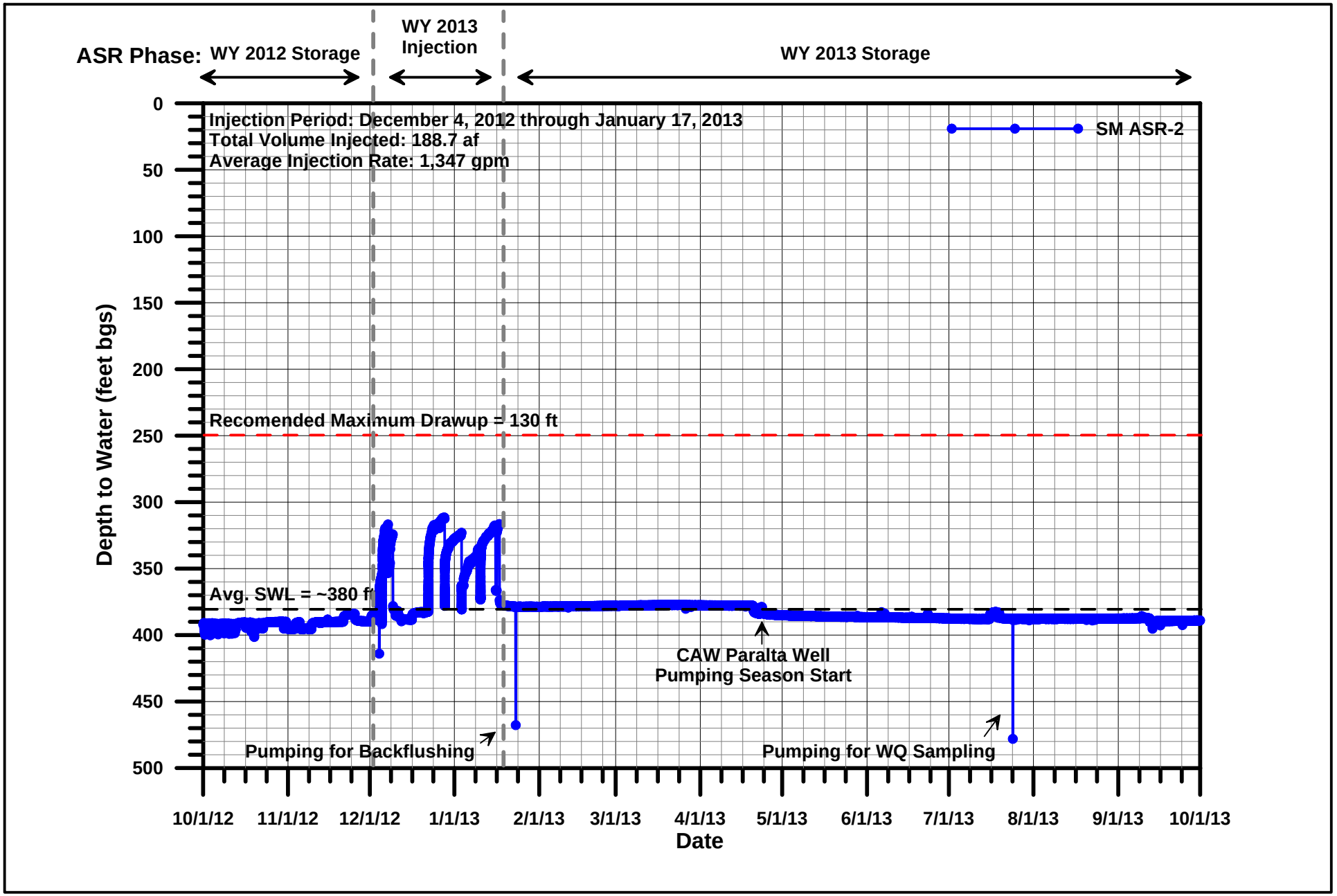

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FIGURE 7. SM ASR-2 WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District

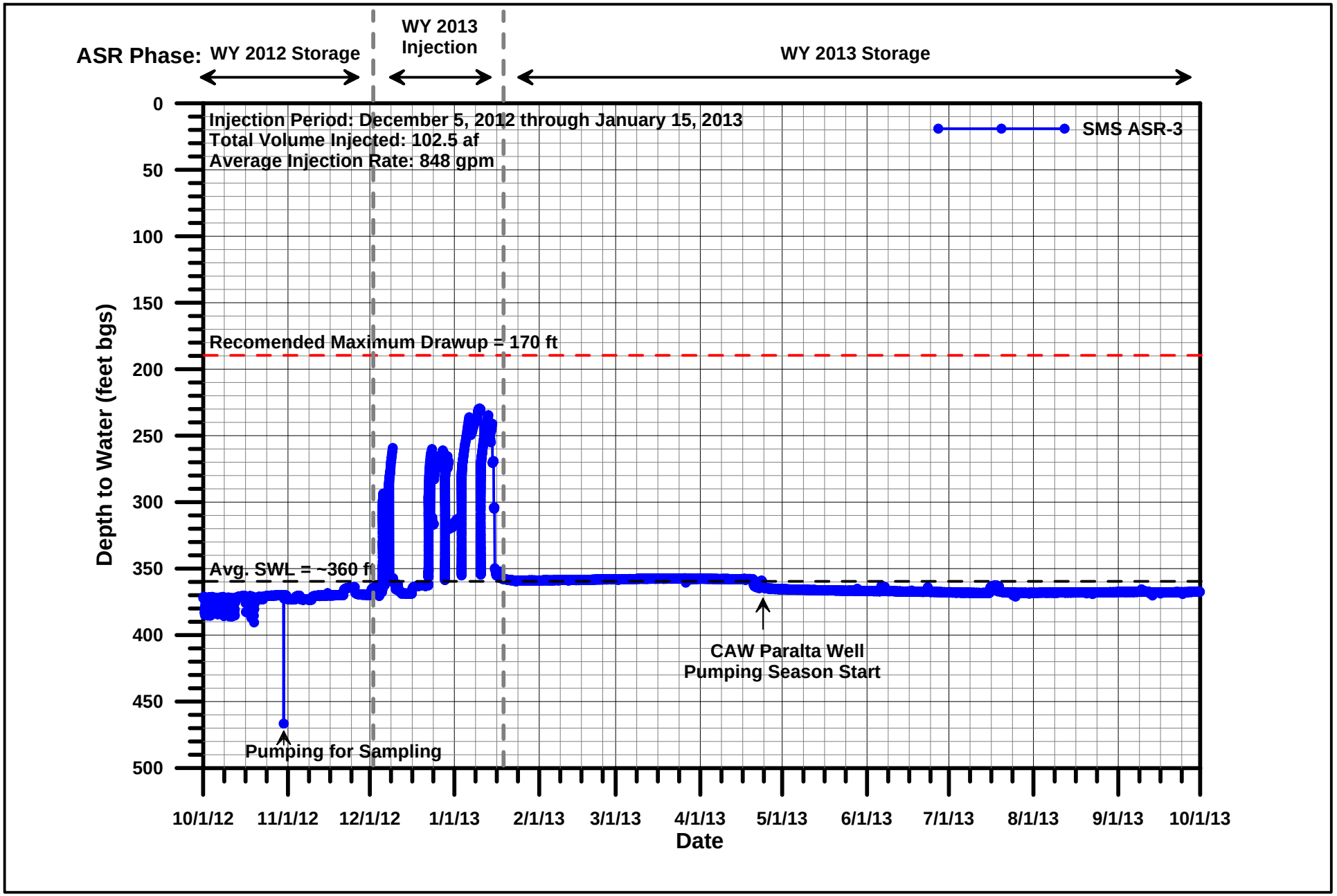

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FIGURE 8. SMS ASR-3 WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District

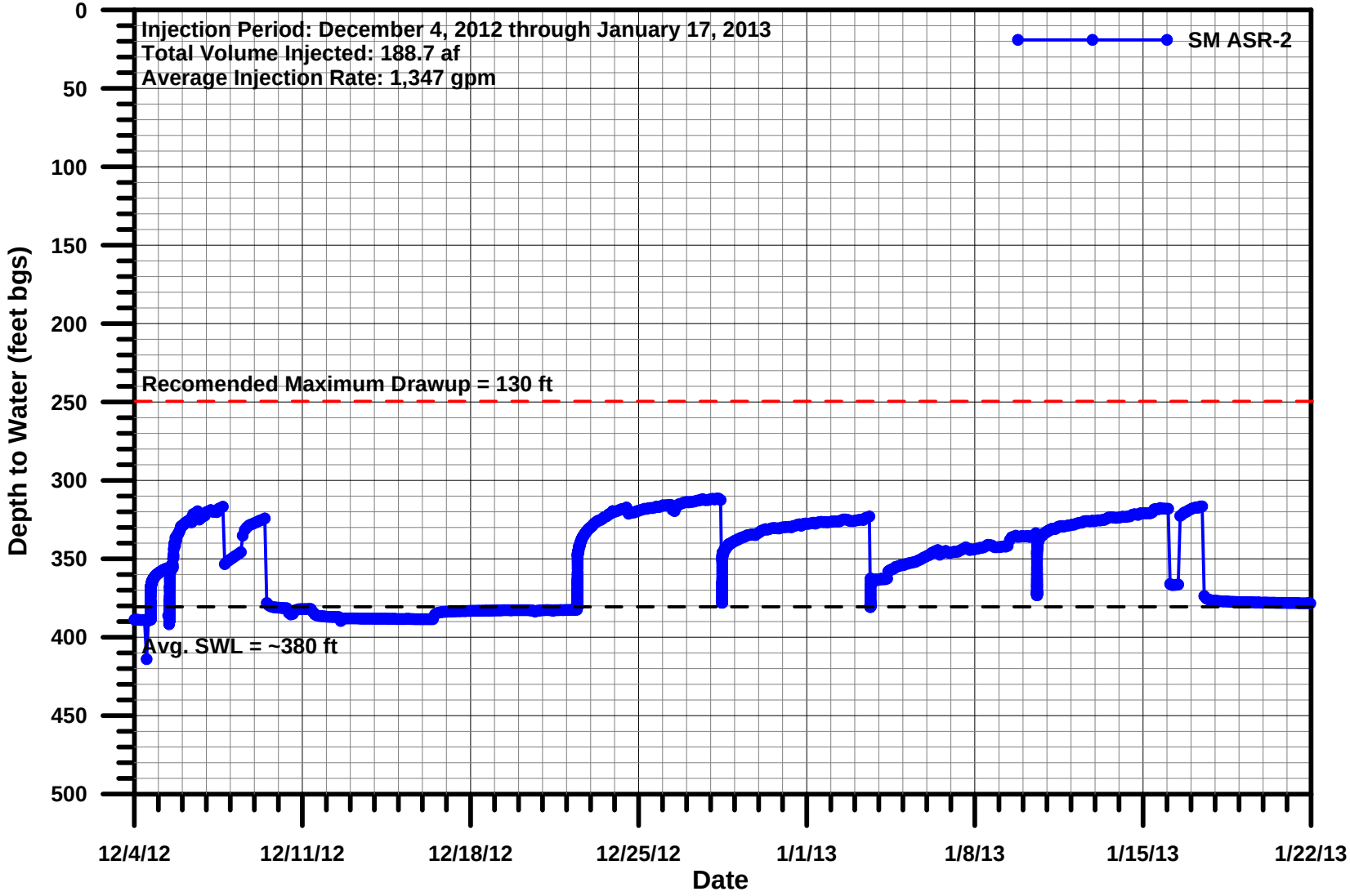

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FIGURE 9. SM ASR-2 WATER-LEVEL DATA - INJECTION SEASON
WY 2013 ASR Program
Monterey Peninsula Water Management District

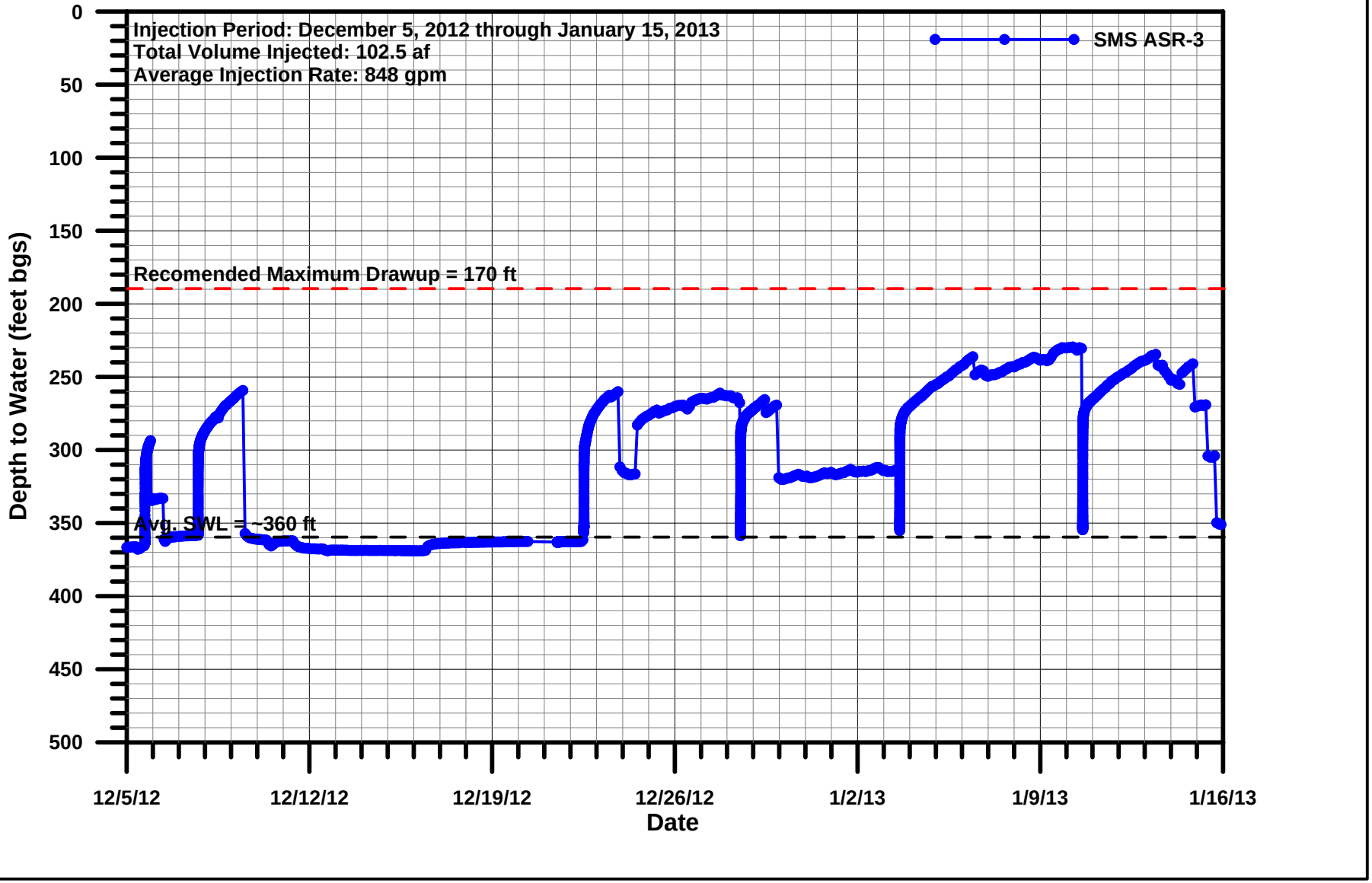

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FIGURE 10. SMS ASR-3 WATER-LEVEL DATA - INJECTION SEASON
WY 2013 ASR Program
Monterey Peninsula Water Management District

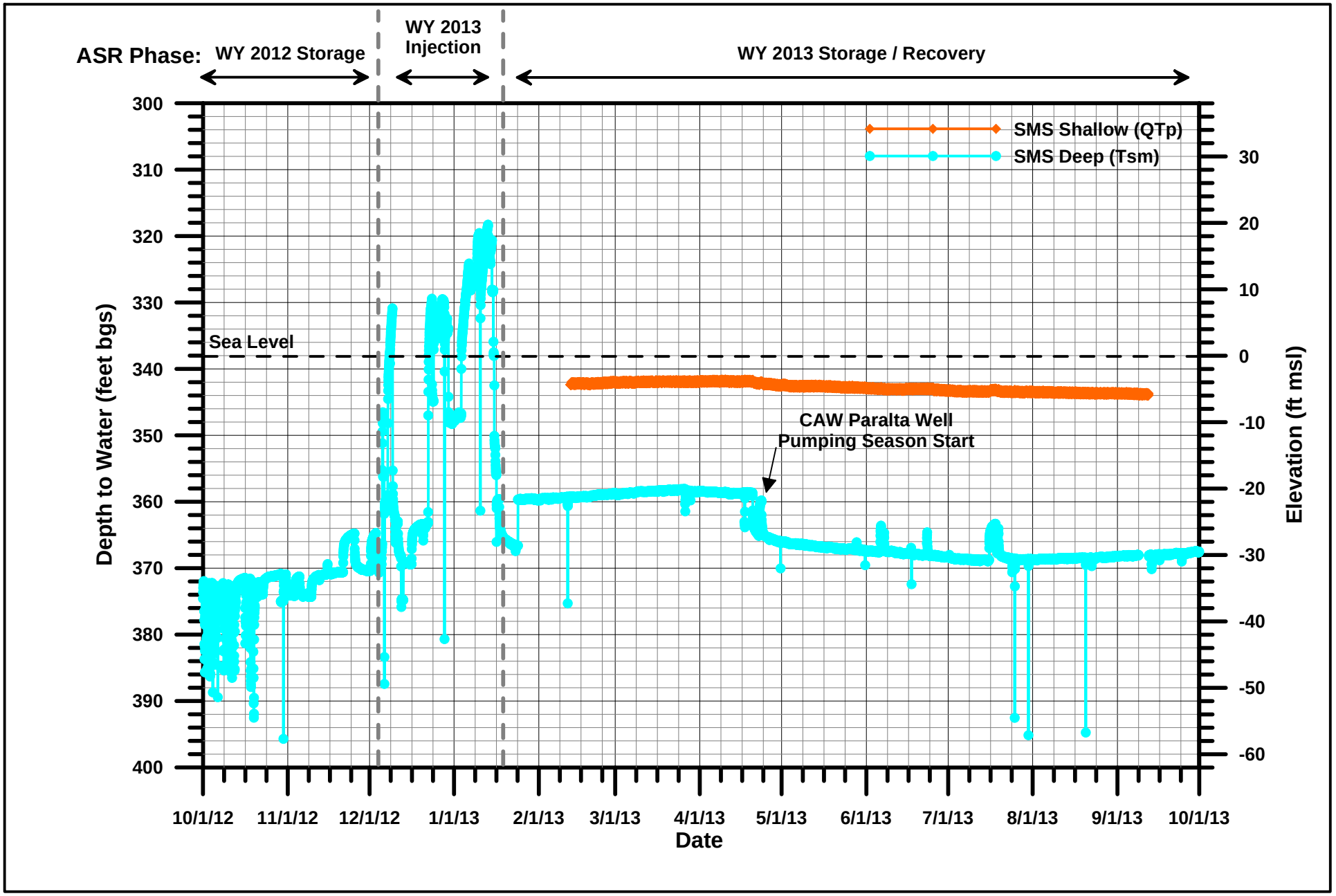

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FIGURE 11. SMS WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District

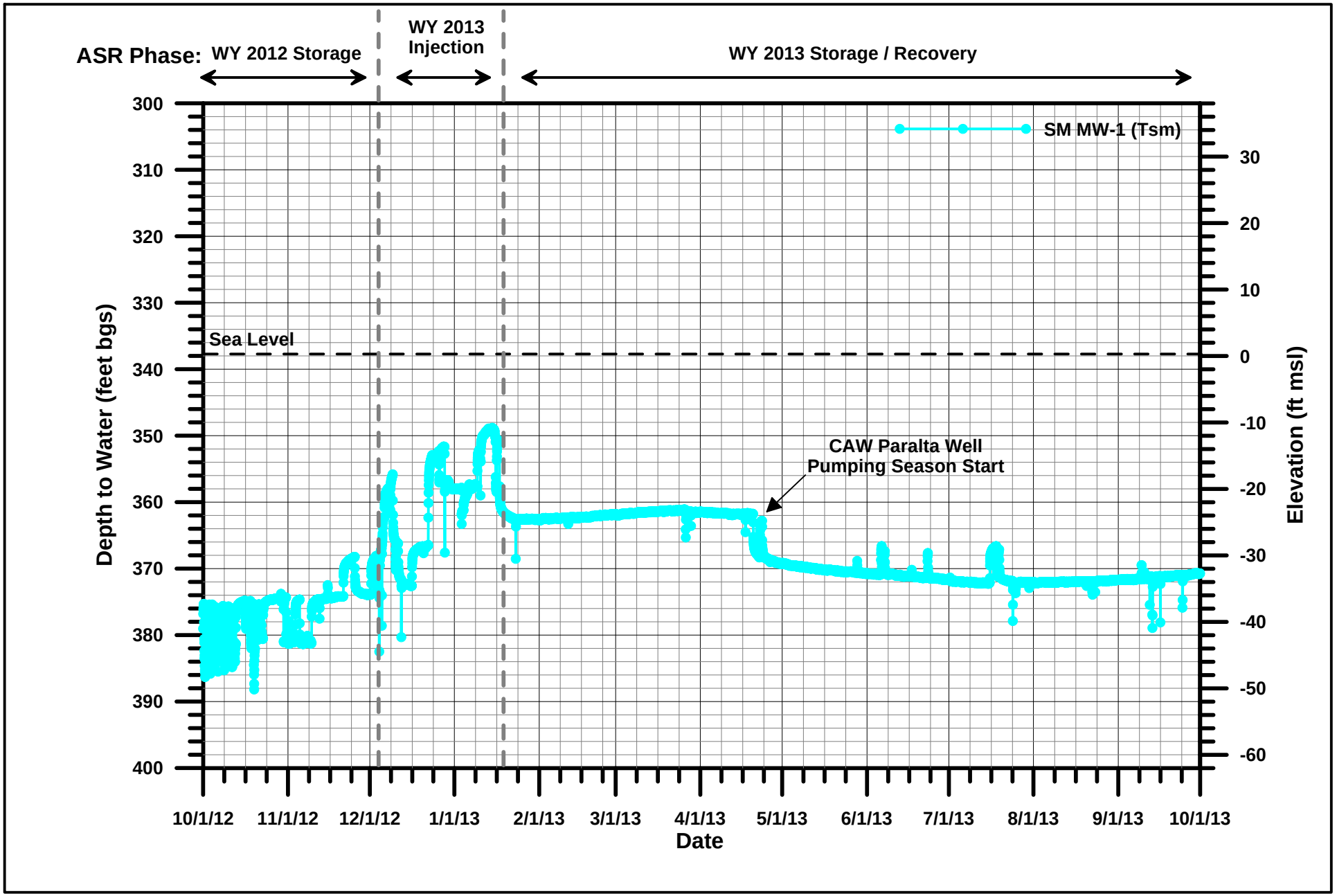

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FIGURE 12. SM MW-1 WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District

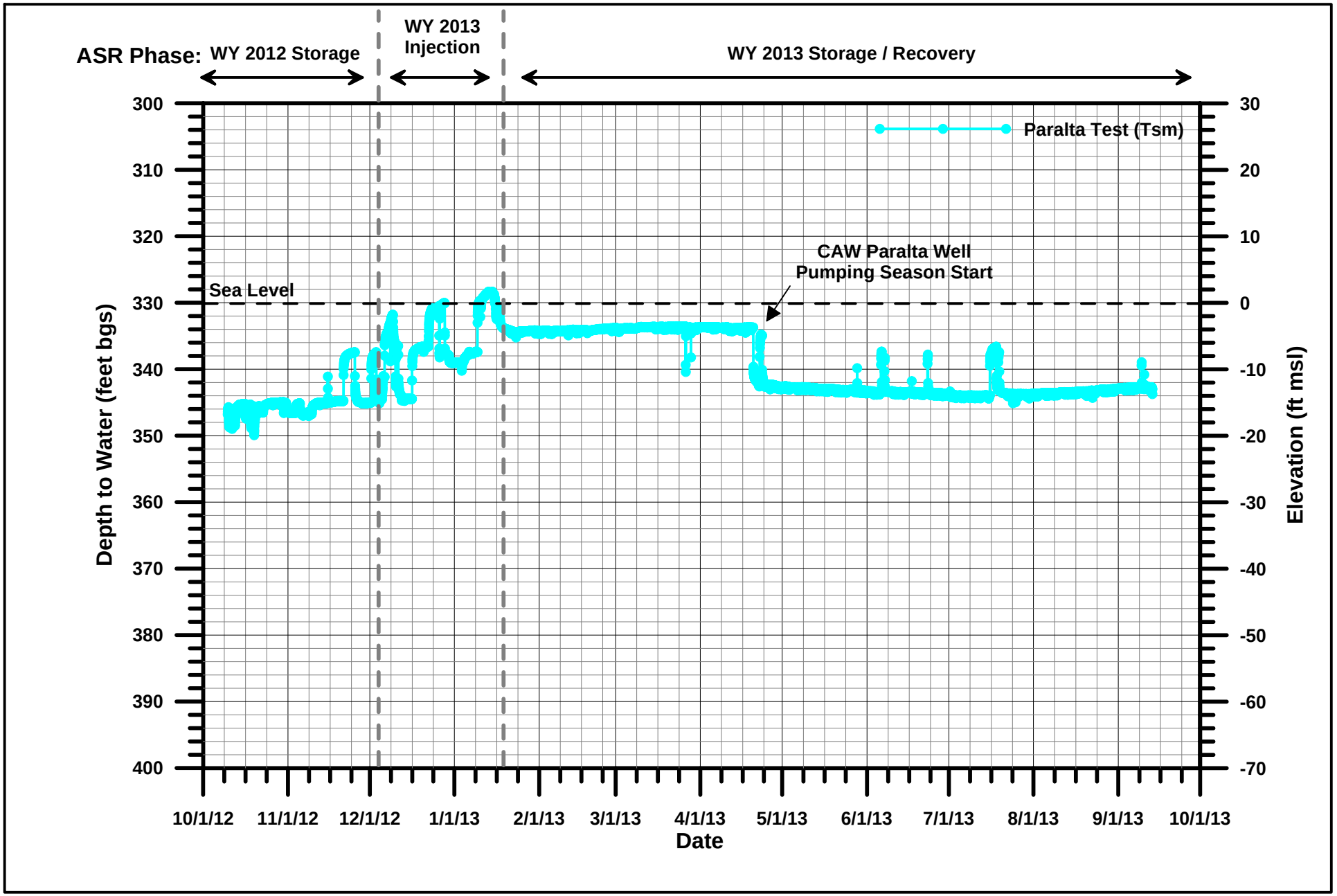

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FIGURE 13. PARALTA TEST WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District

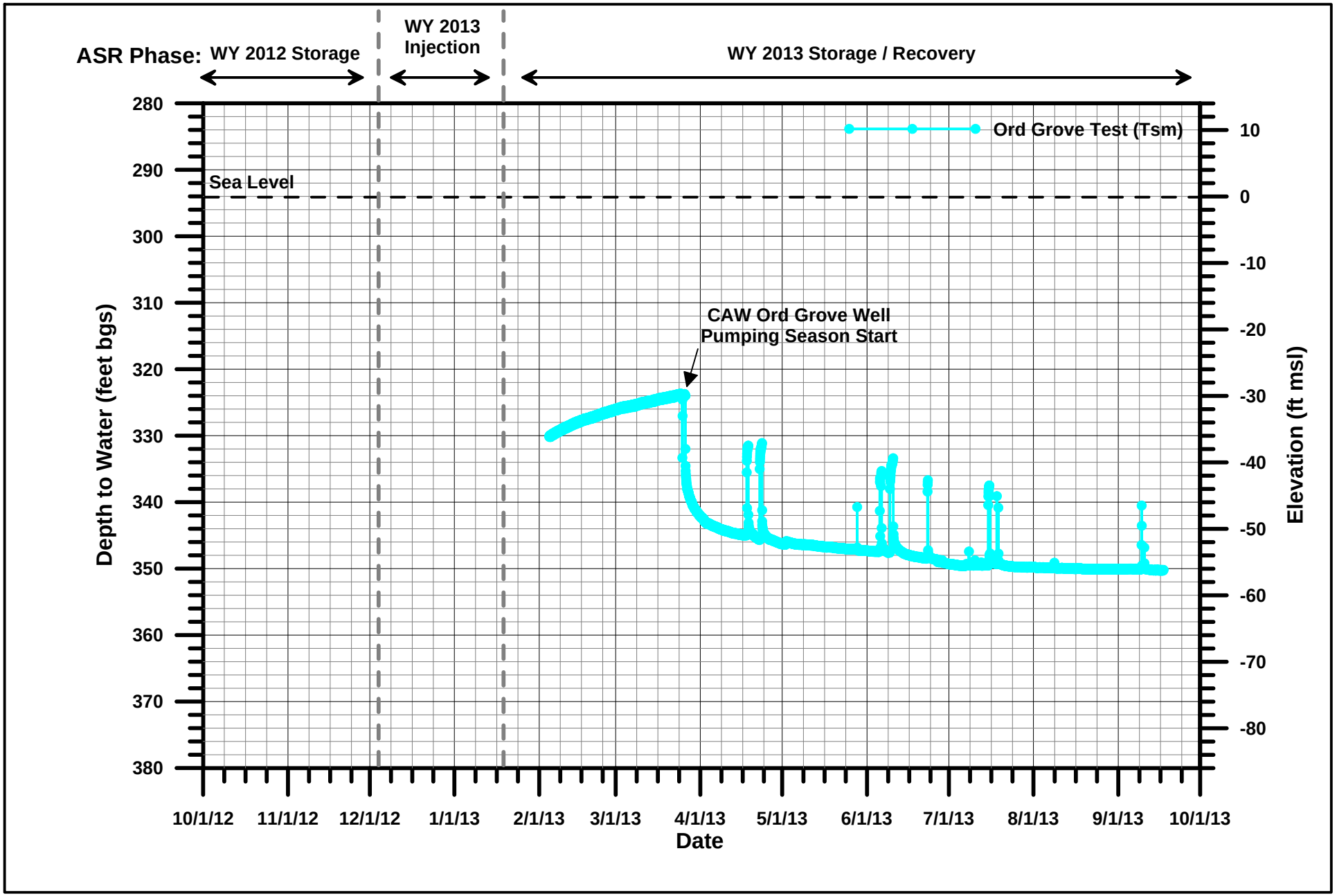

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FIGURE 14. ORD GROVE TEST WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District

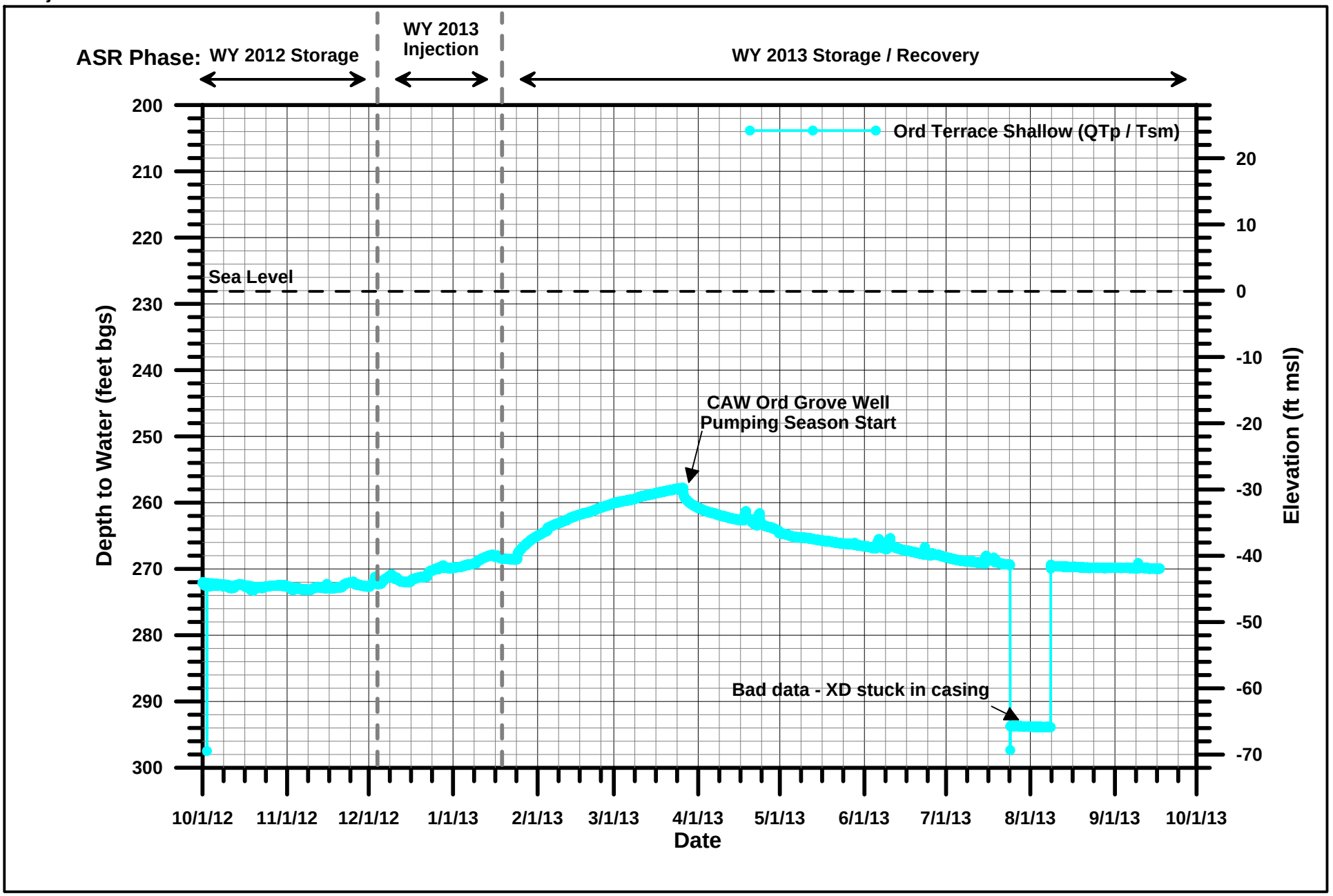

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FIGURE 15. ORD TERRACE WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District

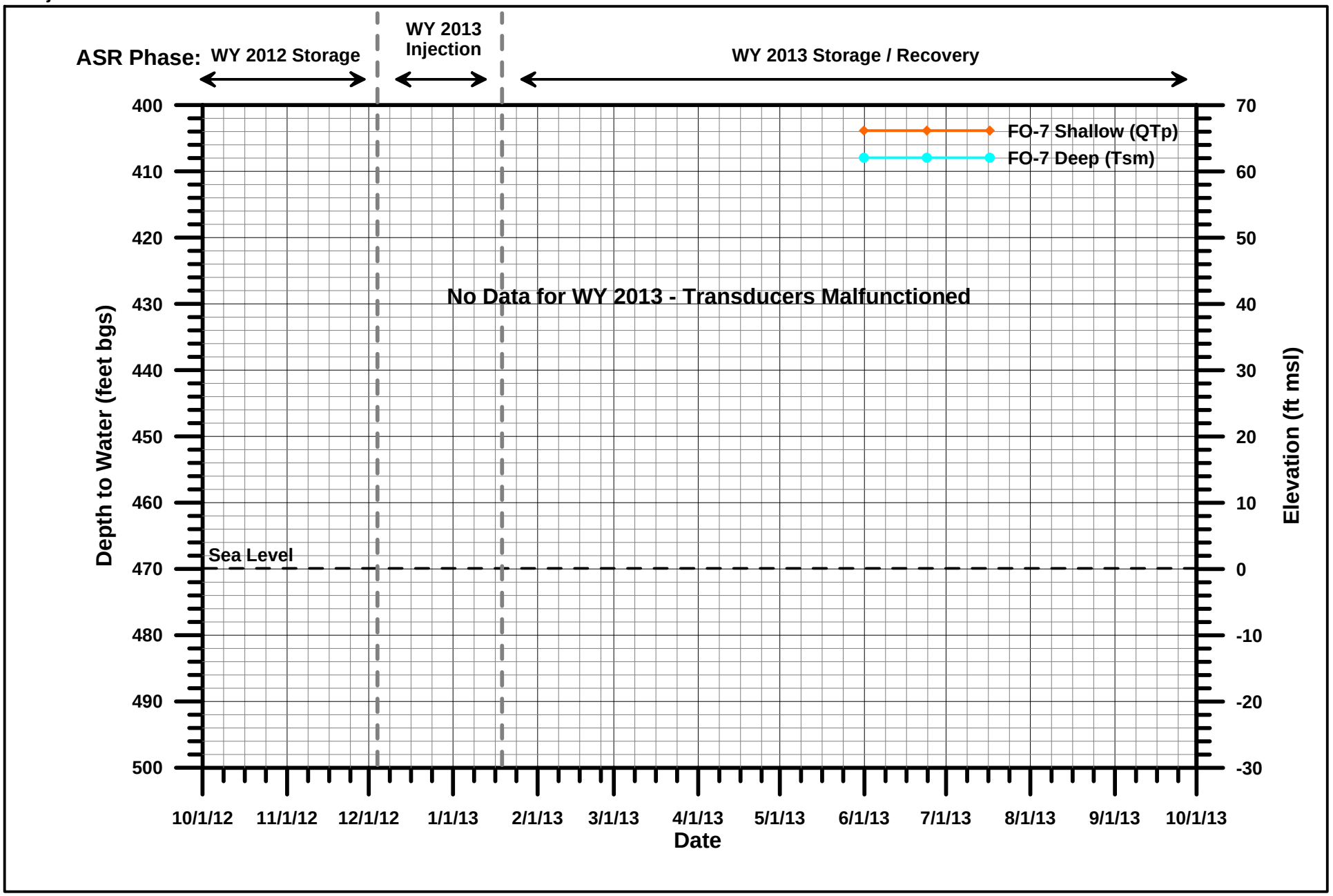

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FIGURE 16. FO-7 WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District

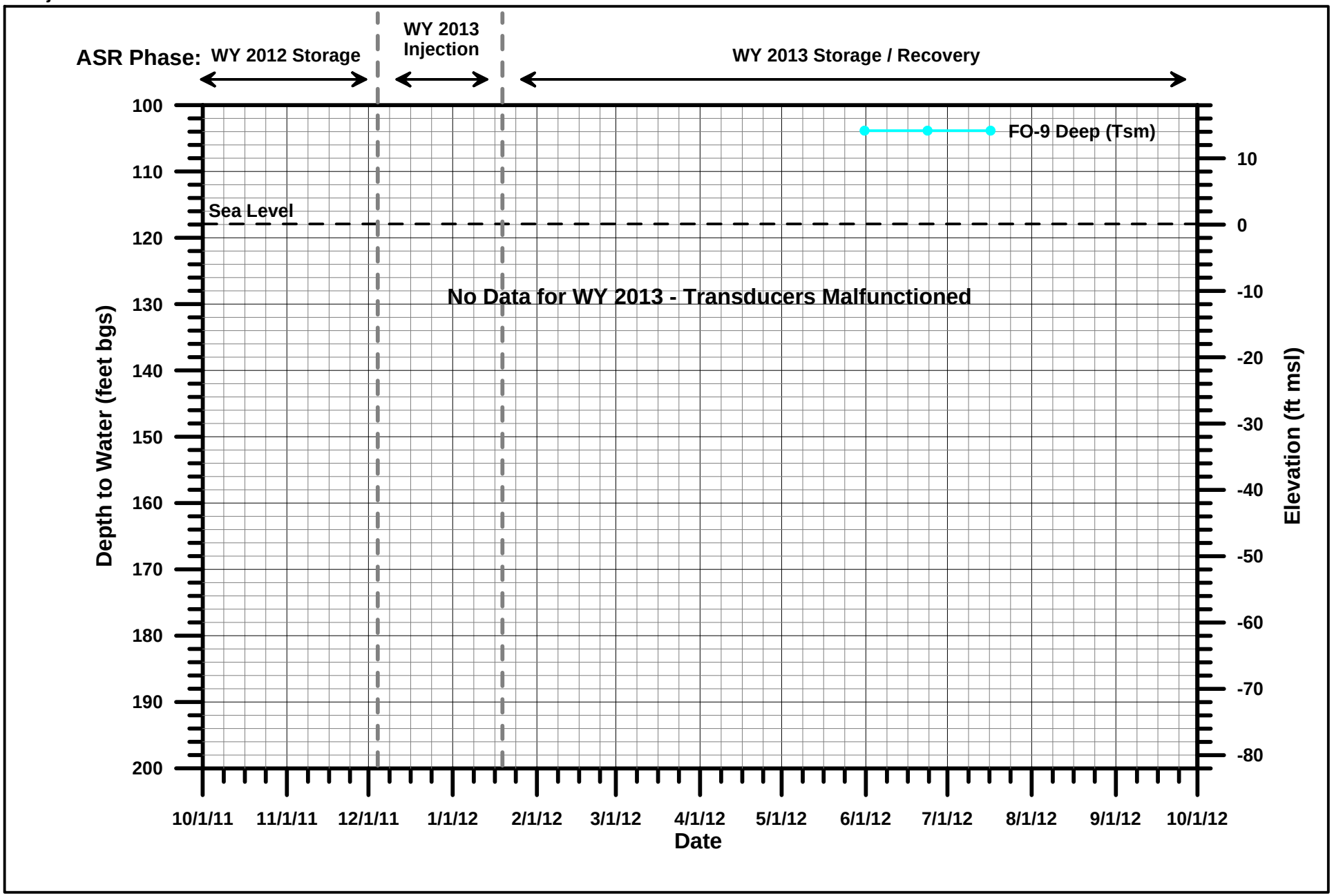

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FIGURE 17. FO-9 WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District

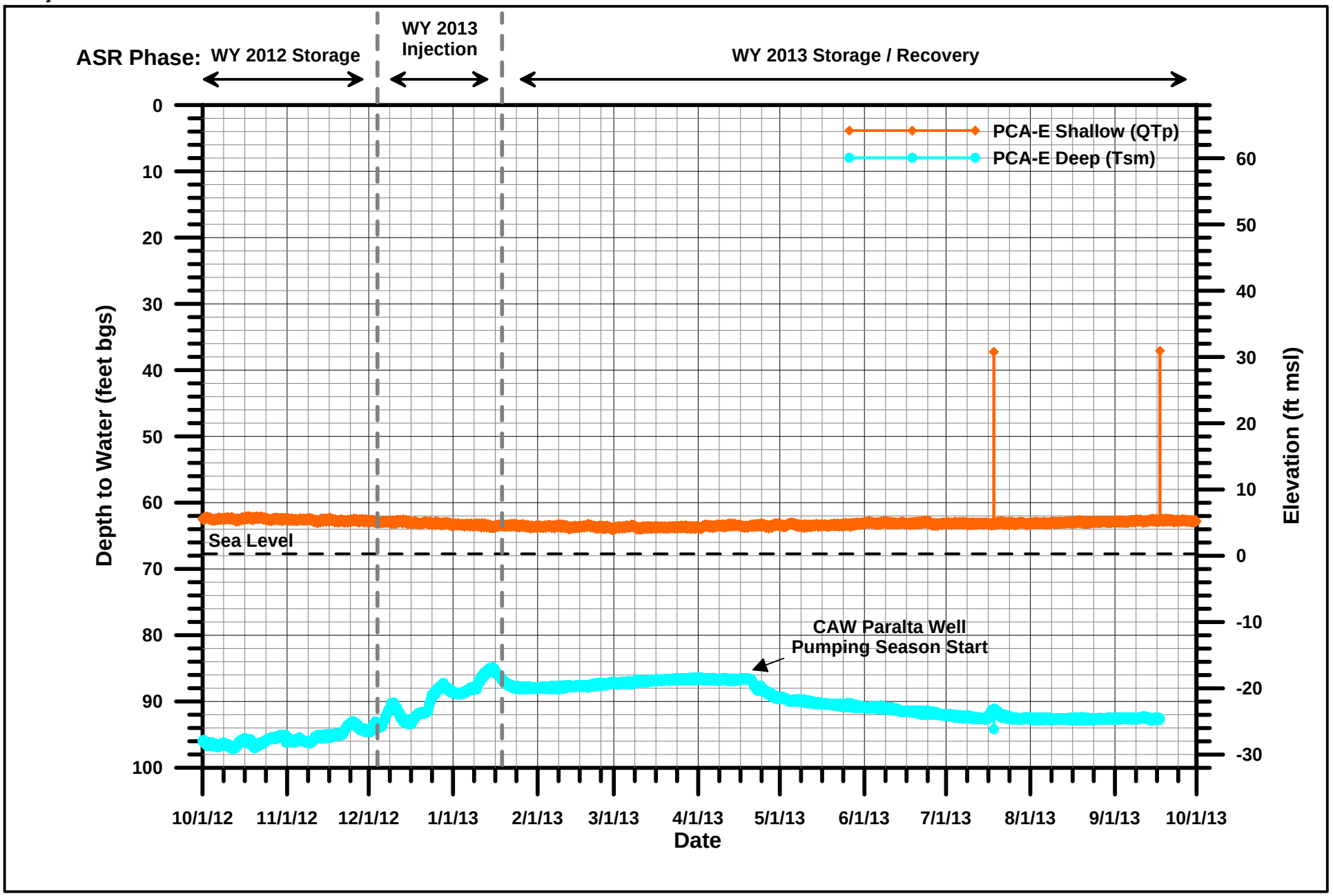

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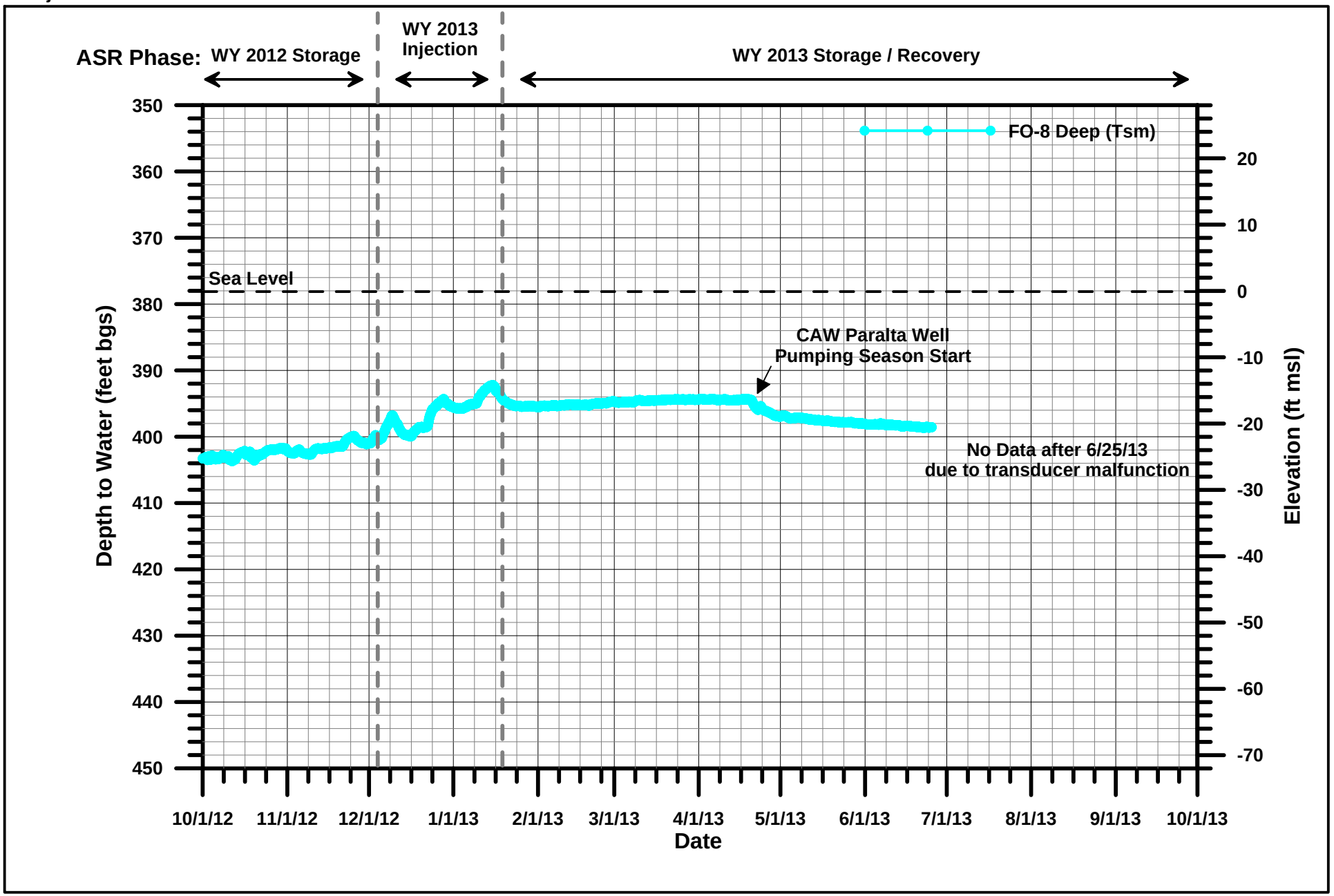
FIGURE 18. PCA-EAST WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District



PUEBLO water resources

FIGURE 19. FO-8 WATER-LEVEL DATA
WY 2013 ASR Program
Monterey Peninsula Water Management District

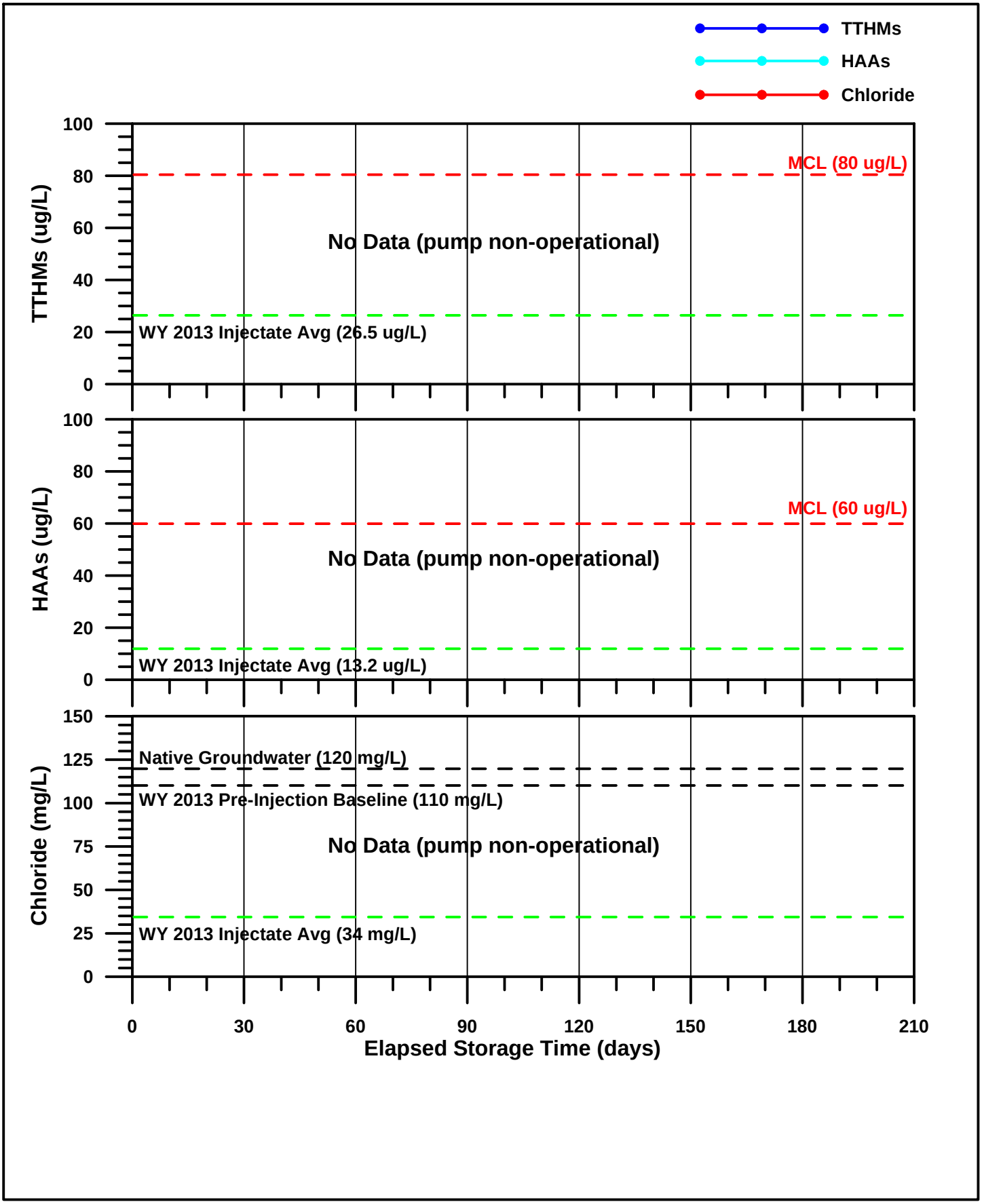


FIGURE 20. SM ASR-1 DISINFECTION BYPRODUCTS PARAMETERS
WY 2013 ASR Program
Monterey Peninsula Water Management District

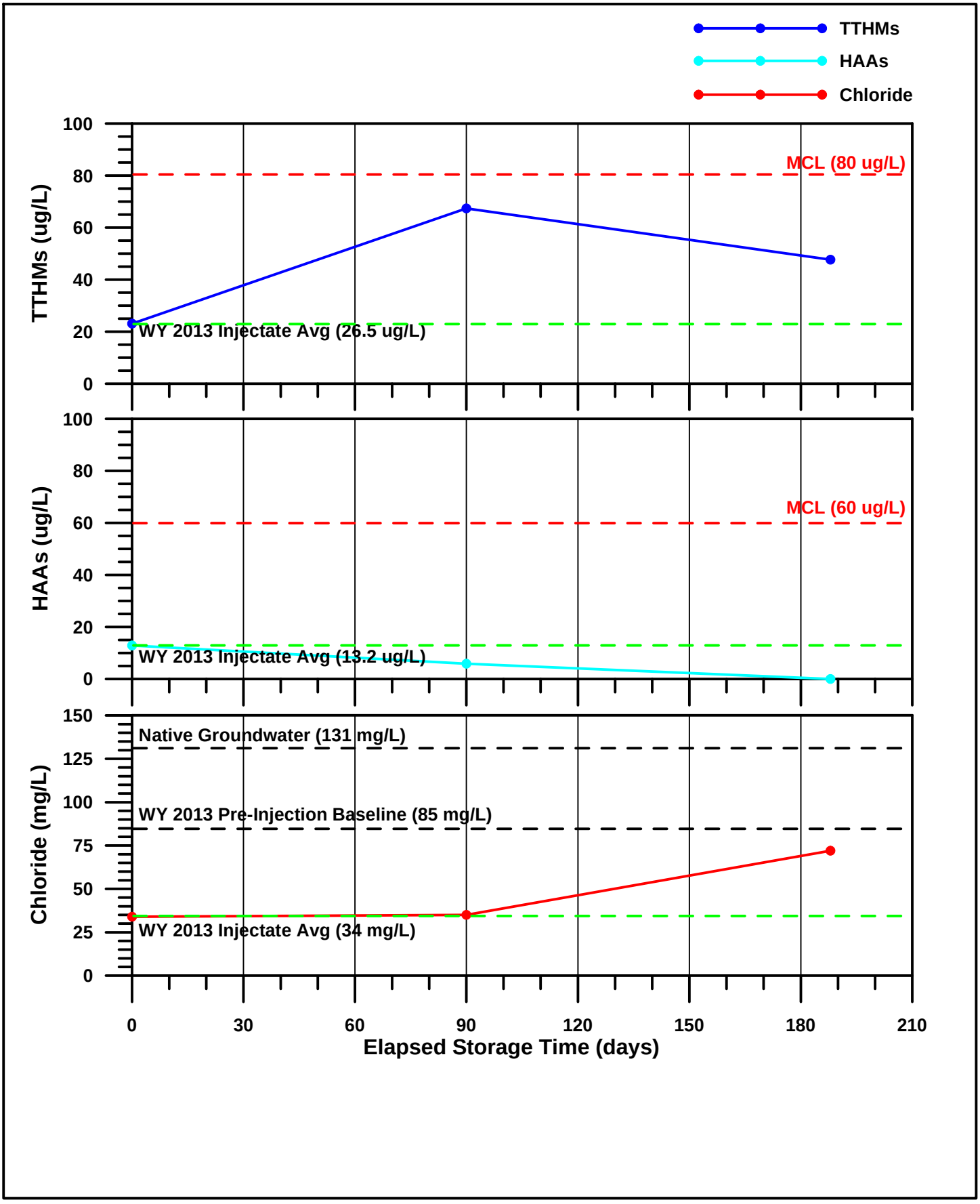
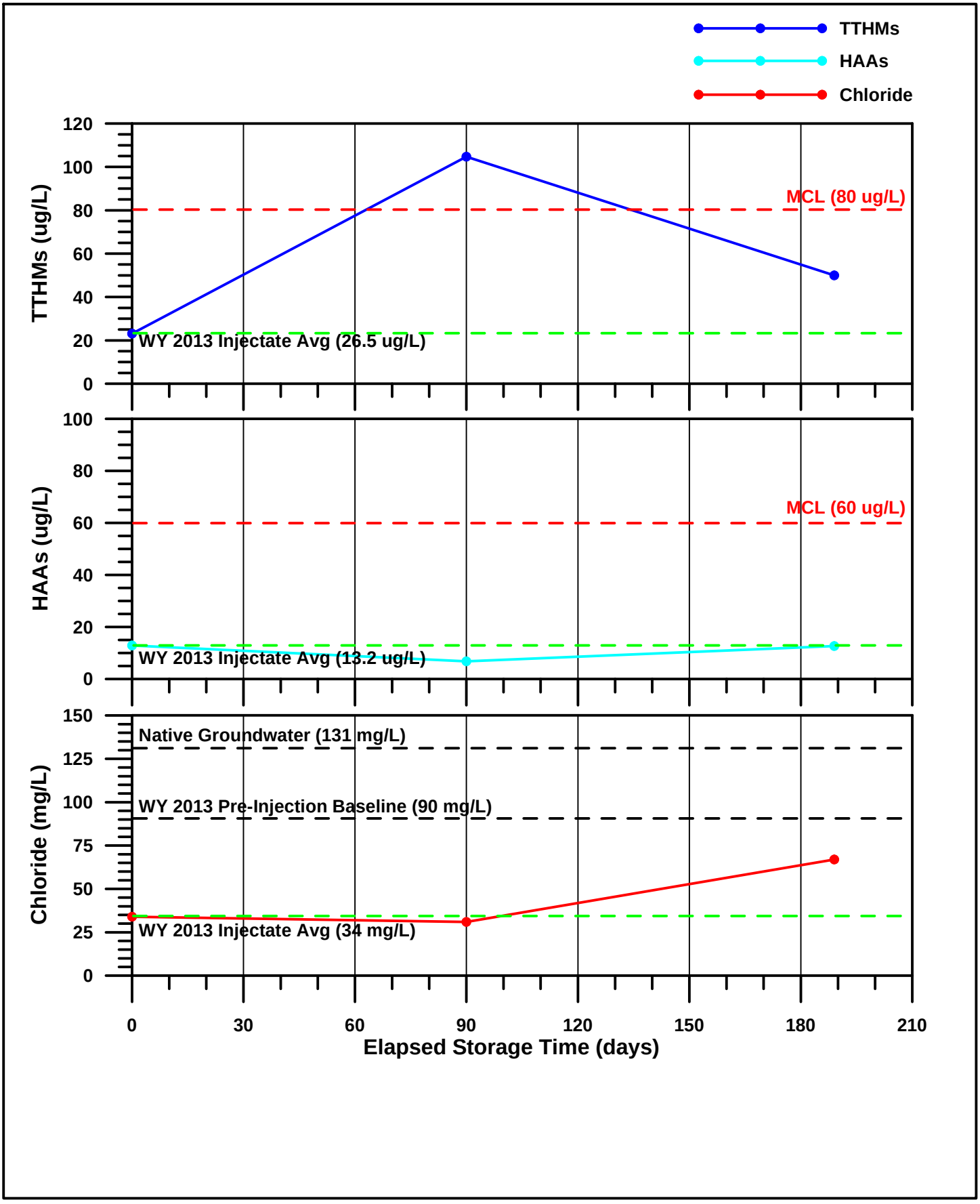


FIGURE 21. SM ASR-2 DISINFECTION BYPRODUCTS PARAMETERS
WY 2013 ASR Program
Monterey Peninsula Water Management District



PUEBLO water resources

FIGURE 22. SMS ASR-3 DISINFECTION BYPRODUCTS PARAMETERS
WY 2013 ASR Program
Monterey Peninsula Water Management District

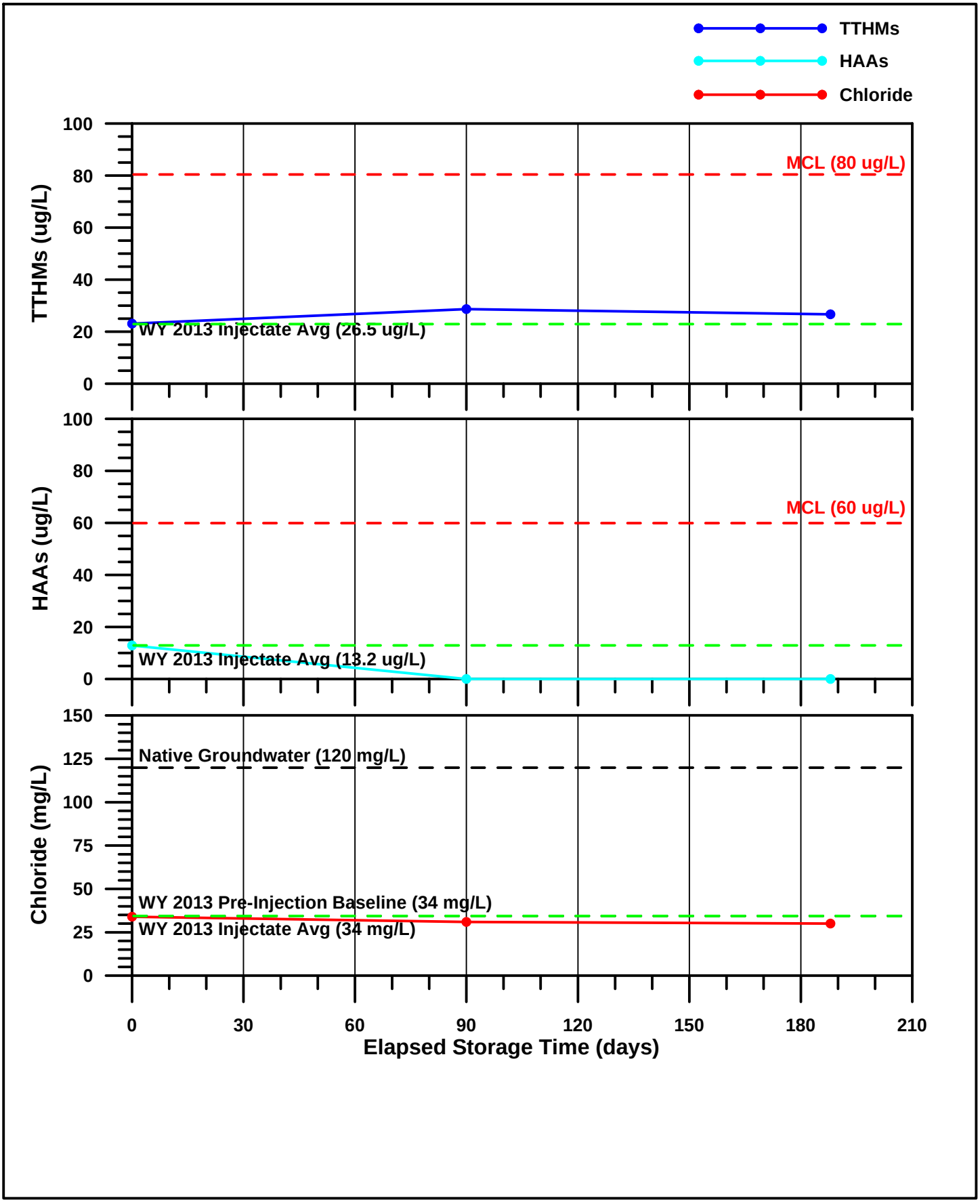


FIGURE 23. SM MW-1 DISINFECTION BYPRODUCTS PARAMETERS
WY 2013 ASR Program
Monterey Peninsula Water Management District

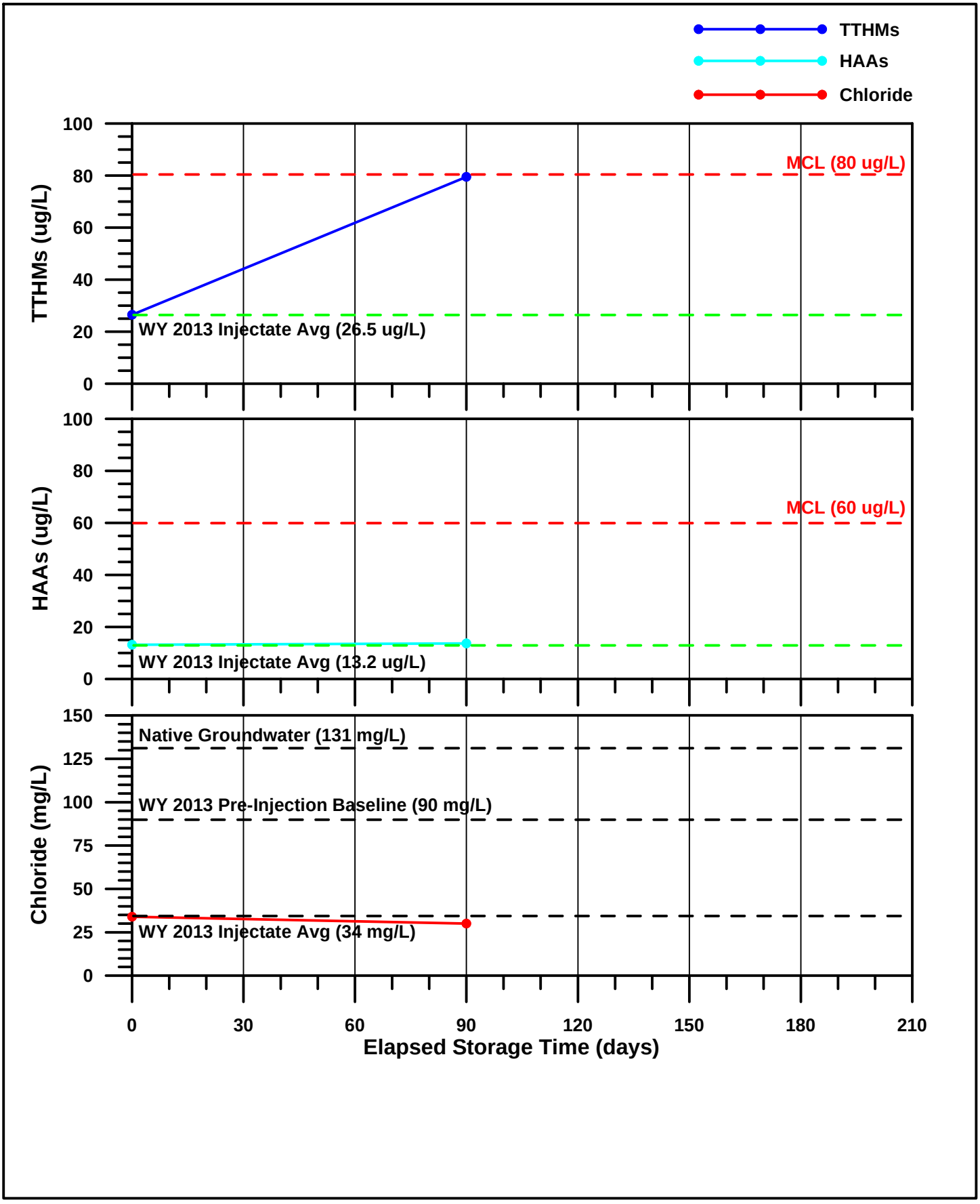


FIGURE 24. SMS DEEP DISINFECTION BYPRODUCTS PARAMETERS
WY 2013 ASR Program
Monterey Peninsula Water Management District

APPENDIX A - FIELD DATA

MPWMD

PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT

Well: SM ASR-1

Test: WY 2013 pre-ASR Tests – line flushing at ASR-1

Sheet No. ___ **of** ___

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi) Line	Head	FCV	DTW (ft btst)	Drawup (ft)	Comments/Other
12-3-12 ~1445 SU1 @ 1450									set up for SDI 0562546000 valve @ ASR-1 MAG R 1150184 x1000 F [redacted]195989 x1000 } ASR-1 FCV = 330 (ASR-1) TauK = 1350 Craig, Guillermo, Arzel, JimN, TL, JL, JO T_0 52" $1-\frac{52}{290}$ 0.82/t x100 T_5 3'42" =5.5 T_{10} 4'35" T_{15} 4'50 = 290 s @1775 gpm
								#2	T_0 = 32 T_5 170 T_{10} 3'44" T_{15} 4'20" 32/60 5.8
								#3	T_0 44 T_5 130 T_{10} [illegible] T_{15} [illegible] #4 @1630 T_0 24 T_5 135 T_{10} 180 T_{15} ~~235~~ 24/235 =5.99
									end reads @ 1653 BF = 0566666000 R = 1150339 x1000 F = 195989 x1000

MPWMD
PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT

Well: #2
Test: WI 2013 #1

Sheet No. 1 **of** 1

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi) Line	Head	FCV	DTW (ft btst)	Drawup (ft)	Comments/Other
12-4-12 16^{08}	0	0	34269(000)	88	0	340	389.5		F = 15544 x 1000 Tank = 1300
16^{10}	2	630					380.3		R = 34252 x 1000, Then fill Col. Pipe.
16^{18}	10	1002	34277[10]	68	32	215	370.4	19.1	BF = 277852[000]
16^{38}	30	1035		67	32	216	367.9		F = 15558[000] after filling Col Pipe
16^{58}	50	1030	34317[000]	66	32	216	366.4	23.1	R = 34269[000] " " " "
									16^{00} Tank = 1200 psi
12-5-12 09^{10}		1139	35379[000]	62	31	216	355.96	33.5	F = 15558[000] 09^{10} Tank = 1200 psi
									9^{15} Begin closing FCV
0925		0	35396[000]	86	35	300			9^{25} Flow stops BF mtr. = 277854[000]
									Backflushing
									9^{50} start pump.
									2900 / 3000 gpm
									(7m / Mc Mlotms)
									Res. Cl_2 = 1.06 mg/L
									10^{10} stop pump

ET	NTU
1	6.3
2	43.0
5	31.1
10	5.75
15	3.90
20	2.65

10-min Q/s
10^{30} start Pump

	Totalizer	DTW
ET_0	15617[000]	379.7
ET_{10}	15646[000]	478.2
Δ	29[000]	98.5

Q/s = 2900 / 98.5 = 32.7 gpm/ft

BF Meter = 277947[000]

Max DUP: SWL = 390
Pump = 530'
140'

MPWMD

PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT

Well: SM ASR-2

Test: WY2013 #2

Sheet No. 1 **of** ___

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons) MAG (R)	Pressure (psi) Line	Head	FCV	DTW (ft btst)	Drawup (ft)	Comments/Other
12/5/12 1115	0	0	35397(000)	88	35	345	389.7	0	BF Meter = 277947(000) Tank = 1200 psi
1120	5	775		78	33	215	377.2		Tig Mag F = 15649(000)
1125	10	920	35405(000)			216	371.8	17.9	
1140	25	1480		45	28	205	358.2	31.5	1150 leave site.
1530		1355	35572(000)	40	29	210	-		Take readings after turning on flow @ ASR-3 at 1000 gpm.
[illegible]		1550	35700(000)	31	27	202	-		Reset FCV to 202 psi. MAG (F) = 15649(000) BF = 277947(000)
1615		1550	35832(000)	40	30	[illegible]			Line press just jumped up from 35 psi
1725		1530	35939(000)	31	28	204	336.6	53.1	No adj. RCM
12/6/12 830		1645	37394(000)	30	28	201	324.8	64.9	No adj. RCM
1100		1675	37639(000)	33	29	204	-		No adj JWO
1415		1660	37971(000)	33	30	203	-	-	No adj. SDI: t_0 - 20 secs RCM
1620		1680	38176(000)	34	29	202	319.2	70.5	Reduce inj. rate/ increase FCV psi. t_5 - 22, t_{10} - 23, t_{15} - 25 [1.3]
1650		1510	38222(000)	42	33	209	325.3	64.4	RCM
12/7/12 855		1540	39725(000)	40	33	206	320.4	69.3	SDI: t_0 - 20 secs, t_5 - 21 Tank ≈ 1190 psi
1700		1620	40483(000)	36	33	205	316.1		Close FCV t_{10} - 22 [0.87] RCM, t_{15} - 23
1710		740	40495	78	34	221	352.5		slightly to reduce rate. RCM
12/8/12 1130		840	41359(000)	21	32	220			
1150		1,130		22	31	215	333.3	55.4	Tank = 1200 psi. Craig Evans Flushing Paralta to pit stopped by and talked awhile - I went to office to get key for building -
1030		1,205	42975(000)	48	32	216	324.5		Shut down, tank @ 1210 psi
12/9/12 1040		Ø	42982(000)	74	35	305	373.8		Flow stop 1039

MPWMD ASR DATA SHEET

Well: ASR2 Sheet 1

Test: BACKFLOSH + of

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

	Date	Time	Tiger [F] (gal) x1000	Tiger [R] (gal) x1000	BF (gal) x1000	FCV (psi)	Line (psi)	Well Head (psi)	N_2 (psi)	DTW (feet)	Draw Up (feet)	Inj Rate (GPM)	Comments JL/JO/TL
SPC	12.12.12	1320	15649	42982	277947	305	75	34	1200	387.4	DD 0	BF ~3000	BA LUBE METER 064126
SPC	12.12.12	1330	15679	42982	277976	305	75	34	1200	475.3	DD 87.9	BF ~3000	SPC => 2900/87.9 => 32.9 GPM/FT
BF	12.12.12	1340	15708	42982	278007	305	75	34	1200	387.4	0	Ø	T_1=190, T_2=25, T_5=33, T_{10}=6.4, T_{15}=3.7, T_{20}=2.8
	12.12.12	1530											TURNED ON MW1 47020 GAL JL
LINE FLUSH	12-22-12		15713	42982	278007	307	75	Ø	1150	382.7	Ø	LF RATE	LINE FLUSHING / HV20 CLOSED
													SD1 @ 1000 gpm
													0 27 sec
													5 30 1-27/45 = 0.4
													10 37 sec = 4.0
													15 45 sec
													SD1 @ 1700 gpm (highest w/in press)
													0 29 sec
													5 30 sec 1-29/31 = 0.04
													10 31 sec 0.41
	12-22-12	1025	15718	42982	278063								15 31 sec [Finish flush]
	12-22-12	1040	15720	42982	278063	307	85	36	1150	382.58	Ø	Ø	BEGEANING INJECTON
	12-22-12	1040	15720	42982	278063	209		35	1150	347.7	Ø 34.9	1502	TEST 3
	12-23-12	1115	15720	45194	278063	198	26	22	1100	325.05	57.53	1525	TL
	12-24-12	1150	15720	47551	278063	192	28	22	1100	317.51	65.07	1650	← Upon arrival
	12-24-12	1230				198						1545	← After adjustment JWO

382.58 @ DU = 0
I might have 382.58 (?) TL (correct!)

MPWMD ASR DATA SHEET

Well: ASR2 Sheet 2 of

Test: WY 2013 TEST 3

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

Date	Time	Tiger [F] (gal) x1000	Tiger [R] (gal) x1000	BF (gal) x1000	FCV (psi)	Line (psi)	Well Head (psi)	N_2 (psi)	DTW (feet)	Draw Up (feet)	Inj Rate (GPM)	Comments
12-25-12	0900	15720	49491	278063	200	30	28	1100	318.3	64.28	1520	no adj made (JO)
12-26-12	1045	15720	51841	278063	199	30	28	1,100	319.27	63.31	1520	NO ADJ, Cal Am bf Parallel to pit
12-27-12	1045	15720	54026	278063	198	30	28	1,100	313.12	69.46	1520	NO ADJ.
12-28-12	0910	15720	56057	278063	199	30	28	1090	311.50	71.08	1510	
SC 12-28-12	1048	15720	56192	278063	310	NA	NA	1096	372.25		BF 3000	Begin BF, 2900/92.53 = 31.3
12-28-12	1058	15720	56192	278092	310	NA	NA	1090	464.78	92.53		T_A=23, T_B=31, T_C=22, T_D=5, T_E=6, T_{20}=5
BF 122812	1108	15779	56192	278124	310	—	—	1090				
									DTW			
122812	1110	15779	56192	278124	310	72	0	1090	378.64	0	0	Lube off 06473 ft³ (JO, TL, JL)
12-28-12	1130	15779	56200	278128	204	40	30				1320	4,000 gal line flush
12-29-12	1640	15779	58189	278128	198	30	28	1,070	335.54	43.1	1490	No Adj Lew (TL) est. 2-400 gpm from CAW to pit
12-30-12	1150	15779	60496	278128	199	32	28	1,100	331.14	47.5	1565	NO ADJ, STILL Leaky From CAW - TL
12-31-12	1450	15779	63025	278128	199	32	29	1090	328.45	50.19	1570	No adj, & notify C. Evans about leak. JO
1-1-13	1130	15779	64961	278128	199	33	30	1090	327.21	51.43	1570	No adj. JO
1-2-13	0810	15779	66946	278128	201	33	31	1050	326.16	52.48	1545	No adj. (TL)
1-3-13	0900	15779	69223	278128	199	34	32	1040	325.21		1547	NO ADJ (JL) LEAK STOPPED PERALTA
BF 1-3-13	1500	15779	69761	278128	340	36	∅	1025	376.35	∅	BF 2990	3000/91.29 => 32.9 GPM/FT
1-3-13	10 min	15840		278158	340	36	∅	1025	467.64	91.29 DD	BF 2990	T_1(15.6) T_2(27) T_5(23) T_{10}(6) T_{15}(3) T_{20}(2)
	20 min		69761	278190								LUBE LINE => 6566 CF
				278194								4000 gal line flush

It is now 2013!

MPWMD ASR DATA SHEET

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

Well: ASR-2 4TH CYCLE

Test: WY 2013

Sheet 1 of

Date	Time	Tiger [F] (gal) x1000	Tiger [R] (gal) x1000	BF (gal) x1000	FCV (psi)	Line (psi)	Well Head (psi)	N_2 (psi)	DTW (feet)	Draw Up (feet)	Inj Rate (GPM)	Comments
1-3-13	1540	15840	69761	278194	340	38	35	1025	382.10	Ø	Ø	BEGIN NEW TEST @ 1000 GPM
DTW₀ 1-3-13	1541	15840	69761	278194	221	37	32	1025	382.10	Ø	970	RESTARTED LOG INTERVAL
1-4-13	0815	15840	70488	278194	226	63	33	1000	362.95	19.15	725	
1-4-13	0830				216	60	33				930	Adj FCV to increase rate (TL)
1-4-13	1620	15840	70945	278194	216	55	31	1,000	355.51	26.59	995	
1-5-13	0950	15840	72015	278194	214	52	31	1000	352.50	29.60	1055	NO ADJ (TL)
1-6-13	1100	15840	73765	278194	206	39	30	1000	344.77	37.33	1275	No adj (TL)
1-6-13	1215	–	–	–	210	–	–	–	–	–	1175	Minor FCV adj to decrease rate (JO)
1-7-13	0830	15840	75320	278194	210	44	31	950	345.20	36.90	1205	No adj (JO)
1-8-13	1000	15840	77199	278194	210	43	31	940	344.2	37.90	1260	NO ADJ (JL)
1-9-13	0900	15840	78923	278194	210	43	31	940	343.1		1225	NO ADJ (JL)
1-10-13	1315	15840	81017	278194	340	75	Ø	950	370.3	Ø	Ø	STOPPED 4 BACKFLUSH, LUBE 68.94 KF
↓	1325	15871	81017	278224	↓	↓	↓	↓	460.49	DD 90.19	BF 3000	SC = 3000/90.19 => 33.3 gpm/ft
↓	1335	15900	81017	278255	↓	↓	↓	↓	370.3	Ø		T_1(216) T_2(12) T_5(16) T_{10}(4) T_{15}(3) T_{20}(2)
DTW₀ 1-10-13	1400	15900	81017	278258	340	25	Ø	950	370.3	Ø	Ø	NEW TEST STARTED 5TH cycle
1-10-13	1401	15900	81017	278258	200	75	33	950	370.3	—	1405	3000 GAL LINE FLUSH
1-11-13	0835	15900	82685	278258	198	30	27	900	330.9	39.4	1515	No ADJ (TL)
1-12-13	1140	15900	85145	278258	196	28	25	975	326.6	43.7	1505	No Adj. (TL)
1-13-13	1150	15900	87319	278258	197	28	26	950	324.3	46.0	1510	No ADJ (TL)
1-14-13	0840	15900	89219	278258	198	30	28	900	323.5	46.8	1515	No ADJ (TL)

BACKFLUSH 18 MIN

MPWMD ASR DATA SHEET

Well: ASR 2

Test: BACKFLUSH & VALVE TESTING

Sheet 1 of 1

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

Date	Time	Tiger [F] (gal) X1000	Tiger [R] (gal) X1000	BF (gal) X1000	FCV (psi)	Line (psi)	Well Head (psi)	N_2 (psi)	DTW (feet)	Draw Up (feet)	Inj Rate (GPM)	Comments
1.23.13	1000	15965	95766	278258	330	—	-	800				TESTING CLA-VALS
1.23.13	1042	15967	95766	278270								ACCT 40 TOTS ON NEXT 12,000 GAL
1.23.13	1050	15967	95766	278270					378.57		BF 3000	F METER READ WAS AIR 2K -JL
1.23.13	1100	15967	95766	278300					466.23		2950	$T_1(35)T_2(26)T_5(21)T_{10}(3)T_{15}(4)T_{20}($)
1.23.13	1110	16826	95766	278329								$S_c = 3000/87.66 \Rightarrow$ 34.2 GPM/ft
												LUBE =>
												NO FLOW IN CR => NO NEW INJ
												DOWNLOADED TEST.
												$[Cl_2] = 0.34$ mg/L

BACKFLUSH 10

MPWMD / CAW
PHASE 2 AQUIFER STORAGE AND RECOVERY PROJECT

Well: ~~SM ASR-1~~ SMS ASR-3

Test: WY 2013 #2

Sheet No. 1 of ___

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi) Line	Head	FCV	DTW (ft btst)	Drawup (ft)	Comments/Other
12/7/12 17:38	0	0	722[000]	100+	40	350	358.8	0	BF Meter = 002698[000], Tank = 720[000]
17:43	5	975		84	40	218	313.9		prior to filling col/purging air.
17:48	10	980	730[000]	92	40	218	308.2	50.6	RCM/JL
12/8/12 11:20		1,040	1800[000]	~~90~~ 90	~~40~~ 40	220	--		Tank = 2400
12:45		1,050							← checked after increasing flow @ ASR #2
12/9/12 11:05		1,100	3323[000]	95	40	220	259.4		Tank = 2,475
11:10									begin shut down (river low) Flow stops 11:15
11:20		∅	3333[000]	97	42	305	350.1		~245 FCV

[illegible] WUP/DDN, 365 - [illegible] = 165', min DTW = [illegible] bgs

MPWMD / CAW

PHASE 2 AQUIFER STORAGE AND RECOVERY PROJECT (WATER PROJECT 2)

Well: SMS ASR-3

Test: WY2013 #1

Sheet No. 1 of ___

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft btst)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
12/5/12 1640	0	∅	119[000]	46	41	347	365.4	∅	1420 BF Meter = 002510[000] Tank ≈ 750 psi
	2	300				230			T.Mly Meter = 0[000]
	5	485				225	348.2		Start line flushing @ ~975 gpm.
1650	10	840				218	332.3	33.1	1610 SDI = 4.9, Stop flushing.
1700	20	990	134[000]	82	40	218	314.1		BF Meter = 002624[000]
1710	30	960		82	40	218	312.4	53.0	
									1715 Leave Site. RCM
12/6/12 815		415	698[000]	87	40	232	333.5	31.9	Note: CAW reduced rate last night due to system demand/Prod. inability to keep up. (@ ~2215)
12/6/12 935		∅	719[000]	93	NR	345	361.31	4.09	Shutdown for 1st BF; SWITCHED N2 TANK => 1700 psi

Backflushing meter = 2625[000]

1040 start pump, pinchback HU 305 to reduce Q to ~2000 gpm/90 psi. Collect Tu data (see WQ Field Book)

1100 stop pump.

10-min Q/s	Totalizer	DTW
ET_0	002676[000]	363.5
ET_{10}	002698[000]	517.2
Δ	22[000]	153.7

Q/s = 2200/153.7 = **14.3 gpm/ft** RCM

150

MPWMD ASR DATA SHEET

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

Well: ASR-3 352.85 Sheet ____

Test: WY 2013 of ____

Date	Time	Tiger [F] (gal) --	Tiger [R] (gal) x 1000	BF (gal) x 1000	FCV (psi)	Line (psi)	Well Head (psi)	N_2 (psi)	DTW (feet)	Draw Up (feet)	Inj Rate (GPM)	Comments
12-30-12	1205	NA	13246	2941	233	86	41	2300	318.34	34.51	455	CAL-AM reduced rate last night around 10 PM - NO ADJ NOW - TL
12-31-12	1500	NA	13966	2941	233	88	41	2270	316.60	36.25	455	I spoke with C Evans - system cannot support increase at this time - no adj - JO
1-1-13	1200	NA	14530	2941	232	86	41	2290	315.48	37.37	452	No adj. JO
1-2-13	0825	NA	15804 (FV)	2941	232	88	40	2200	--	--	445	JL TRANS PICKED No adj.
1-3-13	0900	NA	15746	2941	232	86	40	2200	--	--	448	NO ADJ (JL)
1-3-13	~1400	NA	15883	2941	232	86	40	2200	312.98		450	STOP FOR BF.
1-3-13		NA	15884	2941	340	97	30	2200	356.18	∅	∅ BF 2050	21000/173 = 121.1
BF (BARN)	10 min	NA	15884	2962	340	97	90		529.18			
↓		NA	15884	2983	340	97	90					T_1(67.3), T_2(43), T_5(72), T_{10}(87), T_{15}(8), T_{20}(6)
												LUBE LINE => 76810
1-3-13	1445	NA	15884	2983	219	80	40	2250	356.18	∅	1015	New test (TL/JO)
1-4-13	0805	NA	16974	2983	220	91	40	2200	--		1068	NO ADJ. (TL)
1-4-13	1635	NA	17523	2983	221	86	41	2300	259.65	*96.53	1093	NO ADJ. (TL)
1-5-13	0940	NA	18659	2983	220	83	41	2200	251.10	105.08	1,130	NO ADJ. despite creep (TL)
1-6-13	1130	NA	20469	2983	218	80	41	2210	235.68	120.50	1,200	
1-6-13	1135	-	-	-	223	-	-	-	248.18	108.00	1,085	Minor FCV adj to decrease rate (JO)
1-7-13	0820	NA	21783	2983	223	83	41	2200	247.98	108.20	1,025	No adj (JO)
1-8-13	930	NA	23381	2983	223	<83	41	2150	240.30	116.55	1070	NO ADJ (JL)
1-9-13	0830	NA	24875	2983	223	82	41	2150	238.20		1060	NO ADJ
1-10-13	0900	NA	26403	2983	222	81	40	2140	231.2		1041	NO ADJ
1-10-13	1315	NA	)	2983	222	80	40	2200	230.7		1050	
1-10-13	1430	NA	26732	2983	350	80	∅	2200	346	∅		BACKFLUSH
10	1440	NA	26732	3003 3023	350	80	∅	2200	514.4	*168.4	BF 2050 1850	*Be sure to turn power "OFF" on analog sounder! 2000/168.4 = 11.87

MPWMD ASR DATA SHEET

Well: ASR3 Sheet 1

Test: BACKFLUSH + of

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

Date	Time	Tiger [F] (gal) X1000	Tiger [R] (gal)	BF (gal) X1000	FCV (psi)	Line (psi)	Well Head (psi)	N_2 (psi)	DTW (feet)	Draw Up (feet)	Inj Rate (GPM)	Comments
12.12.12	1455	3333	NA	2697	302	97	40	2390	368.8	Ø	Ø	LUBE 69[840] FINAL 1515 69[920] JL
BF 12.12.12	1505	3333	NA	2718	340	97	40	2390	525.6	DD 156.8	BF 2000	SP => 2100/156.8 => 13.4 GAL/FT
12.12.12	1515	3333	NA	2738	340	97	40	2390	368.8	Ø	Ø	T_1(103), T_2(32.5), T_5(27.8), T_{10}(13"), T_{15}(6), T_{20}(4")
12.12.12	1520				340							STARTED SSMSD 112920 GAL JL

540 top of bowls
380 low DTW
160 ← keep DU < this amount

MPWMD ASR DATA SHEET

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

Well: ASR-3 Sheet 1

Test: WY 2013 Log#2 of

Date	Time	Tiger [F] (gal)	Tiger [R] (gal) x1000	BF (gal) x1000	FCV (psi)	Line (psi)	Well Head (psi)	N_2 (psi)	DTW (feet)	Draw Up (feet)	Inj Rate (GPM)	Comments
12-22-12	1130	NA	3335	002874	350	94	0	2350	361.60	0	1000 (LF)	Prepare to inject; LF first
12.22.12	1200	NA	3360	002898	350	98	40	2350	361.6	0	∅	STOPPED LF
12.22.12	1215	NA	3361	002898	350	98	40	2350	361.6	∅	∅	AFTER FILLING CASING
12.22.12		NA	3361	002898	218	81	40	2350	347.3		1005	BEGAN INJ.
12-23-12	1140	NA	4887.5	002898	220	80	40	2350	263.04	98.56	1105	Adj FCV~1230 to reduce DU+Q
12-24-12	1210	NA	5910	002898	232	79	40	2350	316.25	45.35	450	CE had overtrimmed FCV @ 12/23 2100h — JO
12-24-12	1225	—	—	—	222	—	—	—	286.16	75.44	798	← After adjustment to 800gpm per CE
12-25-12	0830	NA	6939	2898	222	79	40	2290	272.35	89.25	872	Make very minor adj to FCV; regulator
12-25-12	0850	—	—	—	224	—	—	—	274.70		850	reads 232psi when isolated; don't trust it JO
12-26-12	1030	NA	8276	2898	222	79	40	2300	271.56	90.04	870	
12-27-12	1100	NA	9565	2898	223	79	40	2300	263.80		875	NO ADJ
12-28-12	1000	NA	10758	2898	225	79	40	2270	278.5		845	
12-28-12	1143	NA	10846	2898	335	92	0	2250	[illegible]	--	0	stop inj for BF
12-28-12		NA	10846	2898					352.85	∅	∅	Begin BF 177.25/10 = 17.25
10 min				2921					530.10		∅	BF ~ 2000 gpm
			10846	2941	340	94	40	2250		∅	∅	T1 | T2 | T5 | T10 | T15 | T20
	1029	—	10851	2941	220	82	41	2270			990	200 | 56 | 70 | 15 | 5 | 3
12-29-12	1055	—	12235	2941	221	79	41	2280	266.0	86.85	1050	ASR2+3 = 2540, yesterday was 2310
	1130	—	12270	—	225	79	41		—	—	950	Tried slightly adjusting FCV, but when
												isolated, tank initially read only 212 psi.
												Repeated, varied from 212-245, but with
												Line open, still ~221 psi. Adj to ~225 psi

PSV ENERGIZED => OPEN

PRV ENERGIZED => OPEN

MPWMD ASR DATA SHEET

Well: ASR3

Test:

Sheet 1 of

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

	Date	Time	Tiger [F] (gal)	Tiger [R] (gal) x1000	BF (gal) x1000	FCV (psi)	Line (psi)	Well Head (psi)	N_2 (psi)	DTW (feet)	Draw Up (feet)	Inj Rate (GPM)	Comments
DTW.	1.10.13	1500	NA	26732	3023	221	92	41	2200	350.04	Ø	940	NEW TEST STARTED
	1-11-13	0825	NA	27738	3023	222	81	42	2150	260.10	89.94	980	T1 T2 T5 T10 T15 T20
	1-12-13	1130	NA	29383	3023	223	78	42	2200	242.82	107.22	11040	320 38 147 26 4.7 2.7
	1-13-13	1135	NA	30929	3023	222	77	42	2200	234.40	115.54	11095	Tried to slightly raise FCV psi but regulator went DOWN a bit.
	1-13-13	1140				224						11050	slight adj. (TL)
	1-14-13	0825	NA	32095	3023	225	77	42	2125	256.10	94.04	860	Adj. FCV to increase inj rate (TL)
						223						915	
DOWN IN	1.16.13	1231	NA	33536	3023	340	87	42	2100	384.29	—	Ø	BACKFLUSH
	1.16.13	1241	NA	33536	3043	340	87	[redacted]90	2100	528.54	*DD 174.25	BF ~2000	FORGOT TURBIDITY METER
													LEFT LUBE RUNNING FOR FREEZE
													2000/174.25 = 11.5 GPM/FT.
													118100 GAL SSMS(D)

Location ASR-3 Date 10/30/12

Project / Client Beginning Water year Sampling.

SMS Deep

Temp 25°C
cond 777 us/cm
orp 155.4 mV
DO --
Cl_2 ~~0.0~~ ND
pH 7.21
H_2S 0.05 mg/L

PCAE(D) 10/31/12

Temp 26.5°C
cond 719 us/cm
orp -165.2 mV
DO --
Cl_2 ND
pH 7.34
H_2S ND

JL & TL cemented irrigation control box to stop water ponding in well head.

Location ASR 3 Date 10.30.12

Project / Client ASR 3

BF 1 002451
BF 2

No rugged reader = no specific capicit

Temp 23.9°C
cond 829 us/cm
orp -191.8 mV
DO --
Cl_2 ND
pH 7.06
H_2S 0.05 mg/L

No battery for NTU meter

Zobel ✓ 237.7 mV

Location PHASE I ASR Date 10.31.12

Project / Client

CLOUDY & RAIN FORCASTED

ASR #1
~~MW #1~~

TEMP 23.0 °C
COND 971 µS/cm
PH 6.94
DO --
ORP -164.7 mV
Cl2 ND
H_2SO_4 ~~---~~ 0.06 mg/L

ZOBELL ✓ = 237.8 mV

★ CAL AM IS WORKING ON ASR1 AND IS NOT (JOE IS SWEEPING)
↳ Maintenance work is being completed on Parotta & Orad Grove, so SM#1 is the main source of water & we can not take it out of service to sample AR2.

Location PHASE I ASR Date 11.1.12

Project / Client

Raining.

MW#1

TEMP 19.6°C
COND 530 µs/cm
PH 7.47
DO NA
ORP -84.4 mV
Cl2 ND
H_2SO_4

ZOBEL CHECK -237.7 mV

⇒ JIM NEKLES "Cl_2 consumption has gone from 20-25 lbs/day to 80-85 mg/L/day in the last week.

Location PERALTA Date 11/26/12

Project / Client

JL, TL

COND	910 ms/cm
TEMP	24.6 °C
pH	6.92
DO	---
ORP	-249.8 mV
H_2S	
Cl_2	ND

ZOBELL ✓ => +237.6 mV

Location CRD GROVE Date 11/26/12

Project / Client

JL, TL

COND	842 ms/cm
TEMP	24.5 °C
pH	6.53
DO	---
ORP	-68.6 mV
H_2S	
Cl_2	ND

ZOBELL ✓ => 237.6 mV

Location ASR2 Date 12-4-12

Project / Client INITIAL SAMPLE & 1ST QUARTER SAMPLE

15544 x1000 FINAL

15464 x1000 TIGER MAG 1]=> 30,000

15494 x1000 TIGER MAG 2

FINAL 277622 x1000

277535 x1000 WS METER 1]=>

277567 x1000 WS METER 2

DTWT$_0$ 389.2]=>

DTWT$_{10}$ 467.02

DURABILITY

pH 6.81		1 MIN	162
ORP -108.1 mV		2 MIN	122
TEMP 21.9 oC		5 MIN	35
COND 1068 uS/cm		10 MIN	10.8
Cl_2 ND mg/L		15 MIN	8.7
H_2S ND mg/L		20 MIN	6.1
DO 1.37 mg/L			

ZOBELL ✓ => 276.8 mV

SAMPLED FULL SUITE S1, G1, DBP, F

28 MIN 30 sec RUNTIME

Location ASR2 FLUSH LINE Date 12-4-12

Project / Client

12-4-12

@ 1244 Flow to pit

ASR-2 1850 GPM pinch back to 1650 ~32 psi

SDI To 28 " " 1600 ~38 psi

T5 150

T10 220

T15 ABORTED SDI 8.7

1300 SDI To 14 secs

T5 150 sec

T10 210 SDI => 9.05

T15

1345 SDI To 27 sec

T5 160 sec TEST ABORTED

T10 TO CHECK FILTER

T15 PAPER FOR BUBBLES.

1445 SDI T10 28 sec 4.3 SDI

T5 41 sec

T10 59 sec

T15 79 sec

277852 x1000 WS

LINE FLUSH

Location _____ Date _____

Project / Client _____

SDI while injecting into ASR 2 @ pressure reducing valve 1610

To 125 sec

T5 43 sec 4.6 SDI

T10 66 sec

T15 82 sec

Location ASR 2 Date 12/5/12

Project / Client _____

Backflush after 1st day of injection

TURBIDITY TIGERMAG 1

1 MIN 6.31

2 MIN 43.0

5 MIN 31.1

10 MIN 5.75

15 MIN 2.80

20 MIN 2.65 TIGERMAG 2

Cl_2 @ 5 MIN 1.06 mg/L

H_2S => ND

TIGERMAG 1

2

WS 1

2

WL T_0 =>

WL T_{10} =>

Location ASR 2 Date 12/5/12

Project / Client

RESUMING INJECTION @ 1050

SDI @ 1000
T_0 = 18 sec
T_5 = 28 sec
T_{10} = 29 sec
T_{15} =

ASR-3 1000gpm LINEFLUSH
SDI 01415 T_0 = 15s
T_5 92s 8.8 SDI
T_{10} 135sec
T_{15} NA

1450 T_0 = 15s
T_5 = 130s 9.2 SDI
T_{10} = 195s
T_{15}

1520 @ 1000 gpm Cl_2 1.0mg/L
T_0 => 10s
T_5 = 41s
T_{10} = 63s.
T_{15}

Location Date

Project / Client

1600
T_0 15sec
T_5 30sec
T_{10} 46sec
T_{15} 57

INJECTATE FIELD SAMPLE

COND 546 µS/cm
ORP
pH 7.1
DO
Cl2
H2S

Location ASR3 Date 12/6/12

Project / Client

TURBIDITY ON BACKFLUSH @ 2000 GPM

T_1	38.5	
T_2	46.4	20 MIN
T_5	38.7	
T_{10}	12.7	
T_{15}	3.75	
T_{20}	3.99	

2ND BF DID NOT OCCUR

T_1
T_2
T_5
T_{10}
T_{15}
T_{20}

Location ASR3 Date 7-25-13

Project / Client

QUARTERLY SAMPLING

DO	2.29 mg/L
PH	7.28
COND	715 uS/cm
TEMP	19.2°C
ORP	-154.6 mV
$[Cl_2]$	ND
H_2S	ND

ZOBELL ✓ =>

COLLECTED S1, G1, DBP

ASR 2 7.24.13 TRANSCRIBED FROM TL NOTES

pH
COND
TEMP
ORP
$[Cl_2]$
H_2S
ZOBELL ✓ =>

COLLECTED S1, G1, DBP

→

Location MW1 Date 7-24-13

Project / Client TRANSCRIBED FROM TL NOTES

DO 1.58 mg/l
pH 7.4
COND 769
TEMP 16.8 °C
ORP 149.6
$[Cl_2]$
H_2S
ZoBELL V =>

COLLECTED S1, G1, DBP

- Calam is also sampling these wells Quarterly to get data together for DPH permit as serves to system.

ISR 2 1015 278358 x1000
MTR F 16055 "
R 95766 "
end 278498 x1000
F 16194 "
R NO Δ
Luke end = 09992 CF

Location ANNUAL FARFIELD SAMPLING Date 7-25-13

Project / Client

PERALTA
pH 7.12
COND 430 us/cm
ORP -237.5 mv
TEMP 23.9°C
H_2S ND
$[Cl_2]$ ND
ZoBELL V =>
DO 0.69 mg/L

ORD GROVE
pH 6.98
COND 418 us/cm
ORP -112.3 mv
TEMP 23.6°C
H_2S ND
$[Cl_2]$ ND
ZoBELL V =>
DO 9.61 mg/L

APPENDIX B – WATER-QUALITY LABORATORY REPORTS

MONTEREY BAY ANALYTICAL SERVICES
PRECISION • ACCURACY • DEPENDABILITY
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ELAP Certification Number: 2385

Thursday, December 06, 2012

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AA93860

Collection Date/Time: 10/30/2012 12:00 Sample Collector: LEAR J
Submittal Date/Time: 10/30/2012 14:16 Sample ID Coliform Designation:

Sample Description: ASR-3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	**223**		2		11/2/2012
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	11/1/2012
Ammonia-N	4500NH3 D	mg/L	**Not Detected**		0.05		11/6/2012
Arsenic, Total	EPA200.8	ug/L	**5**		1	10	11/1/2012
Barium, Total	EPA200.8	ug/L	**77**		10	1000	11/1/2012
Bicarbonate (as HCO3-)	2320B	mg/L	**272**		10		11/20/2012
Boron	EPA200.7	mg/L	**0.09**		0.05		11/6/2012
Bromide	EPA300.0	mg/L	**Not Detected**		0.10		10/31/2012
Calcium	EPA200.7	mg/L	**68**		0.5		11/6/2012
Carbonate as CaCO3	2320B	mg/L	**Not Detected**		10		11/2/2012
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		10/30/2012
Chloride	EPA300.0	mg/L	**90**		1	250	10/31/2012
Dissolved Organic Carbon	SM5310-C	mg/L	**0.66**	E	0.2		11/7/2012
Fluoride	EPA300.0	mg/L	**0.23**		0.10	2.0	10/31/2012
Gross Alpha	EPA900.0	pCi/L	**4.12 ± 1.97**	E		15	11/16/2012
Haloacetic Acids	EPA552	ug/L	**Not Detected**	E		60	11/7/2012
Iron	EPA200.7	ug/L	**156**		10	300	11/6/2012
Iron, Dissolved	EPA200.7	ug/L	**93**		10	300	11/6/2012
Kjehldahl Nitrogen	4500-NH3 B,C.E	mg/L	**Not Detected**		0.2		11/14/2012
Lithium	EPA200.8	ug/L	**32**		1		11/1/2012
Magnesium	EPA200.7	mg/L	**18**		0.5		11/6/2012
Manganese, Dissolved	EPA200.7	ug/L	**25**		10	50	11/6/2012
Manganese, Total	EPA200.7	ug/L	**26**		10	50	11/6/2012
Methane	EPA174/175	ug/L	**0.61**	E	0.1		11/9/2012
Molybdenum, Total	EPA200.8	ug/L	**8**		1	1000	11/1/2012
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	11/1/2012
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	11/2/2012

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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ELAP Certification Number: 2385

Thursday, December 06, 2012

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AA93860

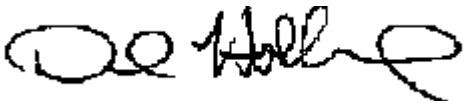
Collection Date/Time: 10/30/2012 12:00 Sample Collector: LEAR J
Submittal Date/Time: 10/30/2012 14:16 Sample ID Coliform Designation:

Sample Description: ASR-3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Nitrate as NO3-N	EPA300.0	mg/L	**0.10**		0.10	10	10/31/2012
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.10	1.00	10/31/2012
o-Phosphate-P	EPA300.0	mg/L	**Not Detected**		0.10		10/31/2012
pH (Laboratory)	4500-H+B	pH (H)	**7.3**				10/30/2012
Phosphorus, Total	HACH 8190	mg/L	**0.22**		0.03		11/8/2012
Potassium	EPA200.7	mg/L	**4.8**		0.1		11/6/2012
QC Anion Sum x 100	Calculation	%	**97%**				11/7/2012
QC Anion-Cation Balance	Calculation	%	**3**				11/15/2012
QC Cation Sum x 100	Calculation	%	**103%**				11/15/2012
QC Ratio TDS/SEC	Calculation		**0.59**				11/5/2012
Selenium, Total	EPA200.8	ug/L	**2**		2	50	11/1/2012
Silica as SiO2, Total	EPA200.7	mg/L	**41**		0.5		11/6/2012
Sodium	EPA200.7	mg/L	**87**		0.5		11/6/2012
Specific Conductance (E.C)	2510B	umhos/cm	**850**		1	900	10/30/2012
Strontium, Total	EPA200.8	ug/L	**335**		5		11/1/2012
Sulfate	EPA300.0	mg/L	**58**		1	250	10/31/2012
Total Diss. Solids	2540C	mg/L	**503**		10	500	10/31/2012
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		11/15/2012
Total Organic Carbon	SM5310C	mg/L	**0.73**	E	0.20		11/7/2012
Total Radium 226	EPA903.0	pCi/L	**0.426 ± 0.256**	E		3	11/26/2012
Trihalomethanes	EPA524.2	ug/L	**6.3**	E		80	11/5/2012
Uranium by ICP/MS	EPA200.8	ug/L	**2**		1	30	11/1/2012
Vanadium, Total	EPA200.8	ug/L	**4**		1	1000	11/1/2012
Zinc, Total	EPA200.8	ug/L	**72**		10	5000	11/1/2012

Sample Comments:

Report Approved by:



David Holland, Laboratory Director

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

MONTEREY BAY ANALYTICAL SERVICES
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Thursday, December 06, 2012

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AA93861

Collection Date/Time: 10/30/2012 11:00 Sample Collector: LEAR J
Submittal Date/Time: 10/30/2012 14:16 Sample ID Coliform Designation:

Sample Description: SSMS (D)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	**203**		2		11/2/2012
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	11/1/2012
Ammonia-N	4500NH3 D	mg/L	**0.06**		0.05		11/6/2012
Arsenic, Total	EPA200.8	ug/L	**7**		1	10	11/1/2012
Barium, Total	EPA200.8	ug/L	**43**		10	1000	11/1/2012
Bicarbonate (as HCO3-)	2320B	mg/L	**248**		10		11/20/2012
Boron	EPA200.7	mg/L	**0.08**		0.05		11/6/2012
Bromide	EPA300.0	mg/L	**Not Detected**		0.10		10/31/2012
Calcium	EPA200.7	mg/L	**66**		0.5		11/6/2012
Carbonate as CaCO3	2320B	mg/L	**Not Detected**		10		11/2/2012
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		10/30/2012
Chloride	EPA300.0	mg/L	**90**		1	250	10/31/2012
Dissolved Organic Carbon	SM5310-C	mg/L	**0.55**	E	0.2		11/7/2012
Fluoride	EPA300.0	mg/L	**0.15**		0.10	2.0	10/31/2012
Gross Alpha	EPA900.0	pCi/L	**3.34 ± 2.58**	E		15	11/16/2012
Haloacetic Acids	EPA552	ug/L	**Not Detected**	E		60	11/7/2012
Iron	EPA200.7	ug/L	**Not Detected**		10	300	11/6/2012
Iron, Dissolved	EPA200.7	ug/L	**Not Detected**		10	300	11/6/2012
Kjehldahl Nitrogen	4500-NH3 B,C.E	mg/L	**Not Detected**		0.2		11/14/2012
Lithium	EPA200.8	ug/L	**29**		1		11/1/2012
Magnesium	EPA200.7	mg/L	**11**		0.5		11/6/2012
Manganese, Dissolved	EPA200.7	ug/L	**11**		10	50	11/6/2012
Manganese, Total	EPA200.7	ug/L	**12**		10	50	11/6/2012
Methane	EPA174/175	ug/L	**0.62**	E	0.1		11/9/2012
Molybdenum, Total	EPA200.8	ug/L	**7**		1	1000	11/1/2012
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	11/1/2012
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	10/31/2012
Nitrate as NO3-N	EPA300.0	mg/L	**0.10**		0.10	10	10/31/2012
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.10	1.00	10/31/2012
o-Phosphate-P	EPA300.0	mg/L	**Not Detected**		0.10		10/31/2012
pH (Laboratory)	4500-H+B	pH (H)	**7.4**				10/30/2012

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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ELAP Certification Number: 2385

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Thursday, December 06, 2012

Lab Number: AA93861

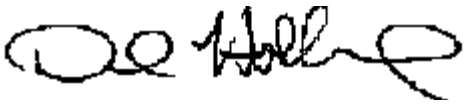
Collection Date/Time: 10/30/2012 11:00 Sample Collector: LEAR J
Submittal Date/Time: 10/30/2012 14:16 Sample ID Coliform Designation:

Sample Description: SSMS (D)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Phosphorus, Total	HACH 8190	mg/L	**0.12**		0.03		11/8/2012
Potassium	EPA200.7	mg/L	**4.1**		0.1		11/6/2012
QC Anion Sum x 100	Calculation	%	**97%**				11/7/2012
QC Anion-Cation Balance	Calculation	%	**3**				11/7/2012
QC Cation Sum x 100	Calculation	%	**103%**				11/7/2012
QC Ratio TDS/SEC	Calculation		**0.59**				11/5/2012
Selenium, Total	EPA200.8	ug/L	**2**		2	50	11/1/2012
Silica as SiO2, Total	EPA200.7	mg/L	**38**		0.5		11/6/2012
Sodium	EPA200.7	mg/L	**90**		0.5		11/6/2012
Specific Conductance (E.C)	2510B	umhos/cm	**796**		1	900	10/30/2012
Strontium, Total	EPA200.8	ug/L	**413**		5		11/1/2012
Sulfate	EPA300.0	mg/L	**54**		1	250	10/31/2012
Total Diss. Solids	2540C	mg/L	**468**		10	500	10/31/2012
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		11/7/2012
Total Organic Carbon	SM5310C	mg/L	**0.59**	E	0.20		11/7/2012
Total Radium 226	EPA903.0	pCi/L	**0.663 ± 0.292**	E		3	11/26/2012
Trihalomethanes	EPA524.2	ug/L	**10**	E		80	11/5/2012
Uranium by ICP/MS	EPA200.8	ug/L	**3**		1	30	11/1/2012
Vanadium, Total	EPA200.8	ug/L	**6**		1	1000	11/1/2012
Zinc, Total	EPA200.8	ug/L	**17**		10	5000	11/1/2012

Sample Comments:

Report Approved by:



David Holland, Laboratory Director

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

BSK Associates
Engineers & Laboratories

Certificate of Analysis

David Holland
Monterey Bay Analytical
4 Justin Court Suite D
Monterey, CA 93940

Report Issue Date: 11/13/2012 16:22
Received Date: 11/02/2012
Received Time: 09:20

Lab Sample ID: A2K0138-01
Sample Date: 10/30/2012 12:00
Sampled by: Lear, J.
Sample Type: Grab
Matrix: Water

Sample Description: ASR-3 // 93860

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**0.66**	0.20	mg/L	1	A212622	11/07/12	11/07/12	
Total Organic Carbon	SM 5310 C	**0.73**	0.20	mg/L	1	A212623	11/07/12	11/07/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**1.8**	0.50	ug/L	1	A212484	11/05/12	11/05/12	
Bromoform	EPA 524.2	**0.52**	0.50	ug/L	1	A212484	11/05/12	11/05/12	
Chloroform	EPA 524.2	**2.7**	0.50	ug/L	1	A212484	11/05/12	11/05/12	
Dibromochloromethane	EPA 524.2	**1.3**	0.50	ug/L	1	A212484	11/05/12	11/05/12	
Surrogate: Bromofluorobenzene	EPA 524.2	101 %		*Acceptable range: 70-130 %*					
***Total Trihalomethanes, EPA 524.2**		**6.3**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A212495	11/05/12	11/07/12	
Dichloroacetic Acid (DCAA)	EPA 552.3	ND	1.0	ug/L	1	A212495	11/05/12	11/07/12	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A212495	11/05/12	11/07/12	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A212495	11/05/12	11/07/12	
Trichloroacetic Acid (TCAA)	EPA 552.3	ND	1.0	ug/L	1	A212495	11/05/12	11/07/12	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	94 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		ND	2.0	ug/L					

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Certificate of Analysis

David Holland
Monterey Bay Analytical
4 Justin Court Suite D
Monterey, CA 93940

Report Issue Date: 11/13/2012 16:22
Received Date: 11/02/2012
Received Time: 09:20

Lab Sample ID: A2K0138-02
Sample Date: 10/30/2012 11:00
Sampled by: Lear, J.
Sample Type: Grab
Matrix: Water

Sample Description: SSMS (D) // 93861

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**0.55**	0.20	mg/L	1	A212622	11/07/12	11/07/12	
Total Organic Carbon	SM 5310 C	**0.59**	0.20	mg/L	1	A212623	11/07/12	11/07/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**3.0**	0.50	ug/L	1	A212484	11/05/12	11/05/12	
Bromoform	EPA 524.2	**0.72**	0.50	ug/L	1	A212484	11/05/12	11/05/12	
Chloroform	EPA 524.2	**4.3**	0.50	ug/L	1	A212484	11/05/12	11/05/12	
Dibromochloromethane	EPA 524.2	**2.3**	0.50	ug/L	1	A212484	11/05/12	11/05/12	
Surrogate: Bromofluorobenzene	EPA 524.2	99 %		*Acceptable range: 70-130 %*					
***Total Trihalomethanes, EPA 524.2**		**10**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A212495	11/05/12	11/07/12	
Dichloroacetic Acid (DCAA)	EPA 552.3	ND	1.0	ug/L	1	A212495	11/05/12	11/07/12	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A212495	11/05/12	11/07/12	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A212495	11/05/12	11/07/12	
Trichloroacetic Acid (TCAA)	EPA 552.3	ND	1.0	ug/L	1	A212495	11/05/12	11/07/12	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	101 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		ND	2.0	ug/L					

November 28, 2012

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Lab ID : SP 1211512-001
Customer ID : 2-19144

Sampled On : October 30, 2012-12:00
Sampled By : Lear, J
Received On : November 9, 2012-10:00
Matrix : Water

Description : ASR-3
Project : MPWMD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1'5]								
Gross Alpha	4.12 ± 1.97	1.76	pCi/L	15/5	900.0	11/12/12-18:00 2P1212565	900.0	11/16/12-09:00 2A1217232
Total Alpha Radium (226)	0.426 ± 0.256	0.439	pCi/L	3	903.0	11/21/12-10:00 2P1212703	903.0	11/26/12-16:00 2A1217395

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: HNO3 pH < 2 * 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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FAX: (559)734-8435

November 28, 2012

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Lab ID : SP 1211512-002
Customer ID : 2-19144

Sampled On : October 30, 2012-11:00
Sampled By : Lear, J
Received On : November 9, 2012-10:00
Matrix : Water

Description : SSMS (D)
Project : MPWMD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1'5]								
Gross Alpha	3.34 ± 2.58	2.35	pCi/L	15/5	900.0	11/12/12-18:00 2P1212565	900.0	11/16/12-09:00 2A1217230
Total Alpha Radium (226)	0.663 ± 0.292	0.439	pCi/L	3	903.0	11/21/12-10:00 2P1212703	903.0	11/27/12-07:00 2A1217395

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: HNO3 pH < 2 * 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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http://www.mccampbell.com / E-mail: main@mccampbell.com

Monterey Bay Analytical	Client Project ID: MPWMD	Date Sampled: 10/30/12
		Date Received: 11/02/12
4 Justin Court, Suite D	Client Contact: David Holland	Date Extracted 11/09/12
Monterey, CA 93940	Client P.O.:	Date Analyzed 11/09/12

Light Gases*

Extraction method: RSK175 Analytical methods: RSK175 Work Order: 1211045

Lab ID	Client ID	Matrix	Methane	DF	% SS	Comments
001A	ASR-3	W	0.61	1	N/A	
002A	SSMS (D)	W	0.62	1	N/A	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.1	µg/L
	S	NA	NA

* water samples are reported in µg/L.

%SS = Percent Recovery of Surrogate Standard

N/A = Not applicable to this analysis

DF = Dilution Factor

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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ELAP Certification Number: 2385

Wednesday, December 05, 2012

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AA93960

Collection Date/Time: 10/31/2012 16:00 Sample Collector: LINDBERG T
Submittal Date/Time: 11/1/2012 15:10 Sample ID Coliform Designation:

Sample Description: ASR-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	**223**		2		11/7/2012
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	11/9/2012
Ammonia-N	4500NH3 D	mg/L	**0.12**		0.05		11/6/2012
Arsenic, Total	EPA200.8	ug/L	**1**		1	10	11/9/2012
Barium, Total	EPA200.8	ug/L	**81**		10	1000	11/9/2012
Bicarbonate (as HCO3-)	2320B	mg/L	**272**		10		11/8/2012
Boron	EPA200.7	mg/L	**0.13**		0.05		11/6/2012
Bromide	EPA300.0	mg/L	**0.22**		0.10		11/2/2012
Calcium	EPA200.7	mg/L	**86**		0.5		11/6/2012
Carbonate as CaCO3	2320B	mg/L	**Not Detected**		10		11/1/2012
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		11/1/2012
Chloride	EPA300.0	mg/L	**110**		1	250	11/2/2012
Dissolved Organic Carbon	SM5310-C	mg/L	**0.76**	E	0.2		11/14/2012
Fluoride	EPA300.0	mg/L	**0.18**		0.10	2.0	11/2/2012
Gross Alpha	EPA900.0	pCi/L	**5.57 ± 2.32**	E		15	11/16/2012
Haloacetic Acids	EPA552	ug/L	**Not Detected**	E		60	11/14/2012
Iron	EPA200.7	ug/L	**42**		10	300	11/6/2012
Iron, Dissolved	EPA200.7	ug/L	**27**		10	300	11/6/2012
Kjehldahl Nitrogen	4500-NH3 B,C.E	mg/L	**Not Detected**		0.2		11/14/2012
Lithium	EPA200.8	ug/L	**32**		1		11/9/2012
Magnesium	EPA200.7	mg/L	**22**		0.5		11/6/2012
Manganese, Dissolved	EPA200.7	ug/L	**23**		10	50	11/6/2012
Manganese, Total	EPA200.7	ug/L	**24**		10	50	11/6/2012
Methane	EPA174/175	ug/L	**3.2**	E	0.1		11/14/2012
Molybdenum, Total	EPA200.8	ug/L	**7**		1	1000	11/9/2012

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
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ELAP Certification Number: 2385

Wednesday, December 05, 2012

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AA93960

Collection Date/Time: 10/31/2012 16:00 Sample Collector: LINDBERG T
Submittal Date/Time: 11/1/2012 15:10 Sample ID Coliform Designation:

Sample Description: ASR-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	11/9/2012
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	11/2/2012
Nitrate as NO3-N	EPA300.0	mg/L	**Not Detected**		0.10	10	11/2/2012
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.10	1.00	11/2/2012
o-Phosphate-P	EPA300.0	mg/L	**Not Detected**		0.10		11/2/2012
pH (Laboratory)	4500-H+B	pH (H)	**7.5**				11/1/2012
Phosphorus, Total	HACH 8190	mg/L	**0.30**		0.03		11/8/2012
Potassium	EPA200.7	mg/L	**5.2**		0.1		11/6/2012
QC Anion Sum x 100	Calculation	%	**98%**				11/8/2012
QC Anion-Cation Balance	Calculation	%	**3**				11/8/2012
QC Cation Sum x 100	Calculation	%	**104%**				11/8/2012
QC Ratio TDS/SEC	Calculation		**0.62**				11/9/2012
Selenium, Total	EPA200.8	ug/L	**Not Detected**		2	50	11/9/2012
Silica as SiO2, Total	EPA200.7	mg/L	**42**		0.5		11/6/2012
Sodium	EPA200.7	mg/L	**93**		0.5		11/6/2012
Specific Conductance (E.C)	2510B	umhos/cm	**987**		1	900	11/2/2012
Strontium, Total	EPA200.8	ug/L	**402**		5		11/9/2012
Sulfate	EPA300.0	mg/L	**102**		1	250	11/2/2012
Total Diss. Solids	2540C	mg/L	**614**		10	500	11/6/2012
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		11/15/2012
Total Organic Carbon	SM5310C	mg/L	**0.99**	E	0.20		11/14/2012
Total Radium 226	EPA903.0	pCi/L	**0.881 ± 0.335**	E		3	11/26/2012
Trihalomethanes	EPA524.2	ug/L	**9.8**	E		80	11/13/2012
Uranium by ICP/MS	EPA200.8	ug/L	**1**		1	30	11/9/2012
Vanadium, Total	EPA200.8	ug/L	**2**		1	1000	11/9/2012
Zinc, Total	EPA200.8	ug/L	**181**		10	5000	11/9/2012

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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Wednesday, December 05, 2012

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AA93960

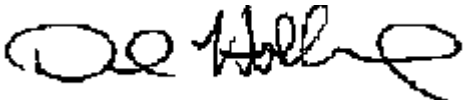
Collection Date/Time:	10/31/2012	16:00	Sample Collector:	LINDBERG T	
Submittal Date/Time:	11/1/2012	15:10	Sample ID		Coliform Designation:

Sample Description: ASR-1

Analyte	Method	Unit	**Result**	Qual	PQL	MCL	Date Analyzed

Sample Comments:

Report Approved by:



David Holland, Laboratory Director

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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MPWMD
Joe Oliver
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Wednesday, December 05, 2012

Lab Number: AA93961

Collection Date/Time: 11/1/2012 15:00 Sample Collector: LINDBERG T
Submittal Date/Time: 11/1/2012 15:10 Sample ID Coliform Designation:

Sample Description: MW-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	**144**		2		11/7/2012
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	11/9/2012
Ammonia-N	4500NH3 D	mg/L	**Not Detected**		0.05		11/6/2012
Arsenic, Total	EPA200.8	ug/L	**2**		1	10	11/9/2012
Barium, Total	EPA200.8	ug/L	**21**		10	1000	11/9/2012
Bicarbonate (as HCO3-)	2320B	mg/L	**176**		10		11/8/2012
Boron	EPA200.7	mg/L	**Not Detected**		0.05		11/6/2012
Bromide	EPA300.0	mg/L	**Not Detected**		0.10		11/2/2012
Calcium	EPA200.7	mg/L	**47**		0.5		11/6/2012
Carbonate as CaCO3	2320B	mg/L	**Not Detected**		10		11/1/2012
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		11/1/2012
Chloride	EPA300.0	mg/L	**34**		1	250	11/2/2012
Dissolved Organic Carbon	SM5310-C	mg/L	**0.61**	E	0.2		11/14/2012
Fluoride	EPA300.0	mg/L	**0.16**		0.10	2.0	11/2/2012
Gross Alpha	EPA900.0	pCi/L	**2.95 ± 1.44**	E		15	11/16/2012
Haloacetic Acids	EPA552	ug/L	**Not Detected**	E		60	11/14/2012
Iron	EPA200.7	ug/L	**Not Detected**		10	300	11/6/2012
Iron, Dissolved	EPA200.7	ug/L	**Not Detected**		10	300	11/6/2012
Kjehldahl Nitrogen	4500-NH3 B,C.E	mg/L	**Not Detected**		0.2		11/14/2012
Lithium	EPA200.8	ug/L	**8**		1		11/9/2012
Magnesium	EPA200.7	mg/L	**12**		0.5		11/6/2012
Manganese, Dissolved	EPA200.7	ug/L	**Not Detected**		10	50	11/6/2012
Manganese, Total	EPA200.7	ug/L	**Not Detected**		10	50	11/6/2012
Methane	EPA174/175	ug/L	**0.12**	E	0.1		11/14/2012
Molybdenum, Total	EPA200.8	ug/L	**4**		1	1000	11/9/2012
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	11/9/2012
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	11/2/2012
Nitrate as NO3-N	EPA300.0	mg/L	**Not Detected**		0.10	10	11/2/2012
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.10	1.00	11/2/2012

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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ELAP Certification Number: 2385

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Wednesday, December 05, 2012

Lab Number: AA93961

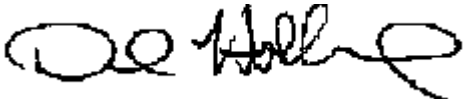
Collection Date/Time: 11/1/2012 15:00 Sample Collector: LINDBERG T
Submittal Date/Time: 11/1/2012 15:10 Sample ID Coliform Designation:

Sample Description: MW-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
o-Phosphate-P	EPA300.0	mg/L	**Not Detected**		0.10		11/2/2012
pH (Laboratory)	4500-H+B	pH (H)	**7.5**				11/1/2012
Phosphorus, Total	HACH 8190	mg/L	**0.06**		0.03		11/8/2012
Potassium	EPA200.7	mg/L	**2.9**		0.1		11/6/2012
QC Anion Sum x 100	Calculation	%	**98%**				11/8/2012
QC Anion-Cation Balance	Calculation	%	**2**				11/8/2012
QC Cation Sum x 100	Calculation	%	**101%**				11/8/2012
QC Ratio TDS/SEC	Calculation		**0.63**				11/9/2012
Selenium, Total	EPA200.8	ug/L	**2**		2	50	11/9/2012
Silica as SiO2, Total	EPA200.7	mg/L	**26**		0.5		11/6/2012
Sodium	EPA200.7	mg/L	**47**		0.5		11/6/2012
Specific Conductance (E.C)	2510B	umhos/cm	**540**		1	900	11/2/2012
Strontium, Total	EPA200.8	ug/L	**247**		5		11/9/2012
Sulfate	EPA300.0	mg/L	**69**		1	250	11/2/2012
Total Diss. Solids	2540C	mg/L	**340**		10	500	11/6/2012
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		11/15/2012
Total Organic Carbon	SM5310C	mg/L	**0.71**	E	0.20		11/14/2012
Total Radium 226	EPA903.0	pCi/L	**0.027 ± 0.157**	E		3	11/26/2012
Trihalomethanes	EPA524.2	ug/L	**59**	E		80	11/13/2012
Uranium by ICP/MS	EPA200.8	ug/L	**1**		1	30	11/9/2012
Vanadium, Total	EPA200.8	ug/L	**2**		1	1000	11/9/2012
Zinc, Total	EPA200.8	ug/L	**13**		10	5000	11/9/2012

Sample Comments:

Report Approved by:



David Holland, Laboratory Director

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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Certificate of Analysis

David Holland
Monterey Bay Analytical
4 Justin Court Suite D
Monterey, CA 93940

Report Issue Date: 11/20/2012 11:24
Received Date: 11/08/2012
Received Time: 09:36

Lab Sample ID: A2K0639-01
Sample Date: 10/31/2012 16:00
Sampled by: T. Lindberg
Sample Type: Grab
Matrix: Water

Sample Description: ASR-1 // 93960

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**0.76**	0.20	mg/L	1	A212881	11/14/12	11/14/12	
Total Organic Carbon	SM 5310 C	**0.99**	0.20	mg/L	1	A212882	11/14/12	11/14/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**2.4**	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Chloroform	EPA 524.2	**7.4**	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Surrogate: Bromofluorobenzene	EPA 524.2	112 %		*Acceptable range: 70-130 %*					
***Total Trihalomethanes, EPA 524.2**		**9.8**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Dichloroacetic Acid (DCAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A212818	11/13/12	11/14/12	
Trichloroacetic Acid (TCAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	103 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		ND	2.0	ug/L					

1414 Stanislaus Street **Fresno, CA 93706** **(559) 497-2888** **FAX (559) 485-6935** **www.bsklabs.com**

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Certificate of Analysis

David Holland
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Monterey, CA 93940

Report Issue Date: 11/20/2012 11:24
Received Date: 11/08/2012
Received Time: 09:36

Lab Sample ID: A2K0639-02
Sample Date: 11/01/2012 15:00
Sample Type: Grab
Sampled by: T. Lindberg
Matrix: Water

Sample Description: MW-1 // 93961

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**0.61**	0.20	mg/L	1	A212881	11/14/12	11/14/12	
Total Organic Carbon	SM 5310 C	**0.71**	0.20	mg/L	1	A212882	11/14/12	11/14/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**12**	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Bromoform	EPA 524.2	**0.51**	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Chloroform	EPA 524.2	**42**	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Dibromochloromethane	EPA 524.2	**4.2**	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Surrogate: Bromofluorobenzene	EPA 524.2	107 %		*Acceptable range: 70-130 %*					
***Total Trihalomethanes, EPA 524.2**		**59**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Dichloroacetic Acid (DCAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A212818	11/13/12	11/14/12	
Trichloroacetic Acid (TCAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	95 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		ND	2.0	ug/L					

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November 28, 2012

Lab ID : SP 1211510-001
Customer ID : 2-19144

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Sampled On : October 31, 2012-16:00
Sampled By : T.Lindberg
Received On : November 9, 2012-10:00
Matrix : Water

Description : ASR-1
Project : MPWMD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1'5]								
Gross Alpha	5.57 ± 2.32	1.79	pCi/L	15/5	900.0	11/12/12-18:00 2P1212565	900.0	11/16/12-08:00 2A1217230
Total Alpha Radium (226)	0.881 ± 0.335	0.439	pCi/L	3	903.0	11/21/12-10:00 2P1212703	903.0	11/26/12-15:00 2A1217395

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: HNO3 pH < 2 * 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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FAX: (559)734-8435

November 28, 2012

Lab ID : SP 1211510-002
Customer ID : 2-19144

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Sampled On : October 31, 2012-15:00
Sampled By : T.Lindberg
Received On : November 9, 2012-10:00
Matrix : Water

Description : MW-1
Project : MPWMD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1'5]								
Gross Alpha	2.95 ± 1.44	1.36	pCi/L	15/5	900.0	11/12/12-18:00 2P1212565	900.0	11/16/12-08:00 2A1217231
Total Alpha Radium (226)	0.027 ± 0.157	0.439	pCi/L	3	903.0	11/21/12-10:00 2P1212703	903.0	11/26/12-15:20 2A1217395

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: HNO3 pH < 2 * 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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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Monterey Bay Analytical	Client Project ID: MPWMD	Date Sampled: 10/31/12-11/01/12
		Date Received: 11/08/12
4 Justin Court, Suite D	Client Contact: David Holland	Date Extracted 11/14/12
Monterey, CA 93940	Client P.O.:	Date Analyzed 11/14/12

Light Gases*

Extraction method: RSK175 Analytical methods: RSK175 Work Order: 1211233

Lab ID	Client ID	Matrix	Methane	DF	% SS	Comments
001A	ASR-1	W	3.2	1	N/A	
002A	MW-1	W	0.12	1	N/A	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.1	µg/L
	S	NA	NA

* water samples are reported in µg/L.

%SS = Percent Recovery of Surrogate Standard

N/A = Not applicable to this analysis

DF = Dilution Factor

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

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ELAP Certification Number: 2385

 Wednesday, December 05, 2012

Lab Number: AA93959

Collection Date/Time: 10/31/2012 14:30 Sample Collector: LEAR J
Submittal Date/Time: 11/1/2012 15:10 Sample ID Coliform Designation:

Sample Description: PCA East (D)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	**185**		2		11/7/2012
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	11/9/2012
Ammonia-N	4500NH3 D	mg/L	**Not Detected**		0.05		11/6/2012
Arsenic, Total	EPA200.8	ug/L	**8**		1	10	11/9/2012
Barium, Total	EPA200.8	ug/L	**68**		10	1000	11/9/2012
Bicarbonate (as HCO3-)	2320B	mg/L	**226**		10		11/8/2012
Boron	EPA200.7	mg/L	**0.10**		0.05		11/6/2012
Bromide	EPA300.0	mg/L	**0.21**		0.10		11/2/2012
Calcium	EPA200.7	mg/L	**51**		0.5		11/6/2012
Carbonate as CaCO3	2320B	mg/L	**Not Detected**		10		11/1/2012
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		11/1/2012
Chloride	EPA300.0	mg/L	**92**		1	250	11/2/2012
Dissolved Organic Carbon	SM5310-C	mg/L	**Not Detected**	E	0.2		11/14/2012
Fluoride	EPA300.0	mg/L	**0.21**		0.10	2.0	11/2/2012
Gross Alpha	EPA900.0	pCi/L	**0.236 ± 1.52**	E		15	11/16/2012
Haloacetic Acids	EPA552	ug/L	**Not Detected**	E		60	11/14/2012
Iron	EPA200.7	ug/L	**44**		10	300	11/6/2012
Iron, Dissolved	EPA200.7	ug/L	**35**		10	300	11/6/2012
Kjehldahl Nitrogen	4500-NH3 B,C.E	mg/L	**Not Detected**		0.2		11/14/2012
Lithium	EPA200.8	ug/L	**23**		1		11/9/2012
Magnesium	EPA200.7	mg/L	**10**		0.5		11/6/2012
Manganese, Dissolved	EPA200.7	ug/L	**99**		10	50	11/6/2012
Manganese, Total	EPA200.7	ug/L	**101**		10	50	11/6/2012
Methane	EPA174/175	ug/L	**0.64**	E	0.1		11/14/2012
Molybdenum, Total	EPA200.8	ug/L	**11**		1	1000	11/9/2012
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	11/9/2012
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	11/2/2012
Nitrate as NO3-N	EPA300.0	mg/L	**Not Detected**		0.10	10	11/2/2012
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.10	1.00	11/2/2012

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

Lab Number: AA93959

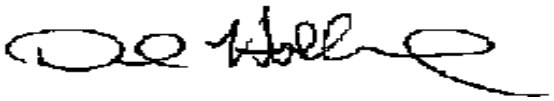
Collection Date/Time: 10/31/2012 14:30 Sample Collector: LEAR J
Submittal Date/Time: 11/1/2012 15:10 Sample ID Coliform Designation:

Sample Description: PCA East (D)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
o-Phosphate-P	EPA300.0	mg/L	**Not Detected**		0.10		11/2/2012
pH (Laboratory)	4500-H+B	pH (H)	**7.5**				11/1/2012
Phosphorus, Total	HACH 8190	mg/L	**0.28**		0.03		11/8/2012
Potassium	EPA200.7	mg/L	**3.9**		0.1		11/6/2012
QC Anion Sum x 100	Calculation	%	**94%**				11/8/2012
QC Anion-Cation Balance	Calculation	%	**3**				11/15/2012
QC Cation Sum x 100	Calculation	%	**101%**				11/8/2012
QC Ratio TDS/SEC	Calculation		**0.60**				11/9/2012
Selenium, Total	EPA200.8	ug/L	**Not Detected**		2	50	11/9/2012
Silica as SiO2, Total	EPA200.7	mg/L	**47**		0.5		11/6/2012
Sodium	EPA200.7	mg/L	**91**		0.5		11/6/2012
Specific Conductance (E.C)	2510B	umhos/cm	**737**		1	900	11/2/2012
Strontium, Total	EPA200.8	ug/L	**271**		5		11/9/2012
Sulfate	EPA300.0	mg/L	**32**		1	250	11/2/2012
Total Diss. Solids	2540C	mg/L	**440**		10	500	11/6/2012
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		11/15/2012
Total Organic Carbon	SM5310C	mg/L	**0.29**	E	0.20		11/14/2012
Total Radium 226	EPA903.0	pCi/L	**0.080 ± 0.173**	E		3	11/26/2012
Trihalomethanes	EPA524.2	ug/L	**Not Detected**	E		80	11/13/2012
Uranium by ICP/MS	EPA200.8	ug/L	**Not Detected**		1	30	11/9/2012
Vanadium, Total	EPA200.8	ug/L	**1**		1	1000	11/9/2012
Zinc, Total	EPA200.8	ug/L	**Not Detected**		10	5000	11/9/2012

Sample Comments:

Report Approved by:



David Holland, Laboratory Director

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

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Certificate of Analysis

David Holland
Monterey Bay Analytical
4 Justin Court Suite D
Monterey, CA 93940

Report Issue Date: 11/20/2012 11:32
Received Date: 11/08/2012
Received Time: 09:36

Lab Sample ID: A2K0640-01
Sample Date: 10/31/2012 14:30
Sampled by: Jonathan Lear
Sample Type: Grab
Matrix: Water

Sample Description: PCA East (D) // 93959

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	ND	0.20	mg/L	1	A212881	11/14/12	11/14/12	
Total Organic Carbon	SM 5310 C	**0.29**	0.20	mg/L	1	A212882	11/14/12	11/14/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A212806	11/13/12	11/13/12	
Surrogate: Bromofluorobenzene	EPA 524.2	108 %		*Acceptable range: 70-130 %*					
*Total Trihalomethanes, EPA 524.2		ND	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Dichloroacetic Acid (DCAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A212818	11/13/12	11/14/12	
Trichloroacetic Acid (TCAA)	EPA 552.3	ND	1.0	ug/L	1	A212818	11/13/12	11/14/12	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	95 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		ND	2.0	ug/L					

1414 Stanislaus Street **Fresno, CA 93706** **(559) 497-2888** **FAX (559) 485-6935** **www.bsklabs.com**

November 28, 2012

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Lab ID : SP 1211511-001
Customer ID : 2-19144

Sampled On : October 31, 2012-14:30
Sampled By : Jonathan Lear
Received On : November 9, 2012-10:00
Matrix : Water

Description : PCA East (D)
Project : MPWMD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1'5]								
Gross Alpha	0.236 ± 1.52	2.38	pCi/L	15/5	900.0	11/12/12-18:00 2P1212565	900.0	11/16/12-08:05 2A1217232
Total Alpha Radium (226)	0.080 ± 0.173	0.439	pCi/L	3	903.0	11/21/12-10:00 2P1212703	903.0	11/26/12-15:40 2A1217395

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: HNO3 pH < 2 * 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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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Monterey Bay Analytical	Client Project ID: MPWMD	Date Sampled: 10/31/12
		Date Received: 11/08/12
4 Justin Court, Suite D	Client Contact: David Holland	Date Extracted 11/14/12
Monterey, CA 93940	Client P.O.:	Date Analyzed 11/14/12

Light Gases*

Extraction method: RSK175 Analytical methods: RSK175 Work Order: 1211232

Lab ID	Client ID	Matrix	Methane	DF	% SS	Comments
001A	PCA East (D)	W	0.64	1	N/A	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.1	µg/L
	S	NA	NA

* water samples are reported in µg/L.

%SS = Percent Recovery of Surrogate Standard

N/A = Not applicable to this analysis

DF = Dilution Factor

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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montereybayanalytical@usa.net
ELAP Certification Number: 2385

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

 Wednesday, December 26, 2012

Lab Number: AA95296

Collection Date/Time: 12/4/2012 11:30 Sample Collector: LEAR, J
Submittal Date/Time: 12/4/2012 16:44 Sample ID

Sample Description: ASR - 2

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	**227**		2		12/11/2012
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	12/5/2012
Ammonia-N	4500NH3 D	mg/L	**0.10**		0.05		12/12/2012
Arsenic, Total	EPA200.8	ug/L	**2**		1	10	12/5/2012
Barium, Total	EPA200.8	ug/L	**136**		10	1000	12/5/2012
Bicarbonate (as HCO3-)	2320B	mg/L	**277**		10		12/12/2012
Boron	EPA200.7	mg/L	**0.12**		0.05		12/19/2012
Bromide	EPA300.0	mg/L	**0.2**		0.10		12/4/2012
Calcium	EPA200.7	mg/L	**89**		0.5		12/19/2012
Carbonate as CaCO3	2320B	mg/L	**Not Detected**		10		12/4/2012
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		12/4/2012
Chloride	EPA300.0	mg/L	**118**		1	250	12/4/2012
Dissolved Organic Carbon	SM5310-C	mg/L	**0.88**	E	0.2		12/13/2012
Fluoride	EPA300.0	mg/L	**0.3**		0.10	2.0	12/4/2012
Gross Alpha	EPA900.0	pCi/L	**3.48 ± 2.82**	E		15	12/12/2012
Haloacetic Acids	EPA552	ug/L	**Not Detected**	E		60	12/12/2012
Iron	EPA200.7	ug/L	**1097**		10	300	12/19/2012
Iron, Dissolved	EPA200.7	ug/L	**62**		10	300	12/19/2012
Kjehldahl Nitrogen	4500-NH3 B,C.E	mg/L	**0.3**		0.2		12/13/2012
Lithium	EPA200.8	ug/L	**38**		1		12/13/2012
Magnesium	EPA200.7	mg/L	**24**		0.5		12/19/2012
Manganese, Dissolved	EPA200.7	ug/L	**31**		10	50	12/19/2012
Manganese, Total	EPA200.7	ug/L	**43**		10	50	12/19/2012
Methane	EPA174/175	ug/L	**2.5**	E	0.1		12/6/2012
Molybdenum, Total	EPA200.8	ug/L	**11**		1	1000	12/5/2012
Nickel, Total	EPA200.8	ug/L	**4**		10	100	12/5/2012
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	12/4/2012
Nitrate as NO3-N	EPA300.0	mg/L	**0.1**		0.10	10	12/4/2012
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.10	1.00	12/4/2012
o-Phosphate-P	EPA300.0	mg/L	**0.10**		0.10		12/4/2012
pH (Laboratory)	4500-H+B	pH (H)	**7.1**				12/4/2012
Phosphorus, Total	HACH 8190	mg/L	**0.27**		0.03		12/17/2012
Potassium	EPA200.7	mg/L	**5.4**		0.1		12/19/2012
QC Anion Sum x 100	Calculation	%	**98%**				12/20/2012

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

Lab Number: AA95296

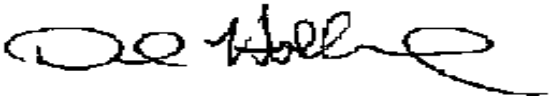
Collection Date/Time: 12/4/2012 11:30 Sample Collector: LEAR, J
Submittal Date/Time: 12/4/2012 16:44 Sample ID

Sample Description: ASR - 2

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
QC Anion-Cation Balance	Calculation	%	**2**				12/20/2012
QC Cation Sum x 100	Calculation	%	**102%**				12/20/2012
QC Ratio TDS/SEC	Calculation		**0.61**				12/10/2012
Selenium, Total	EPA200.8	ug/L	**2**		2	50	12/5/2012
Silica as SiO2, Total	EPA200.7	mg/L	**42**		0.5		12/19/2012
Sodium	EPA200.7	mg/L	**88**		0.5		12/19/2012
Specific Conductance (E.C)	2510B	umhos/cm	**1018**		1	900	12/7/2012
Strontium, Total	EPA200.8	ug/L	**448**		5		12/5/2012
Sulfate	EPA300.0	mg/L	**100**		1	250	12/4/2012
Total Diss. Solids	2540C	mg/L	**623**		10	500	12/7/2012
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		12/13/2012
Total Organic Carbon	SM5310C	mg/L	**0.83**	E	0.20		12/13/2012
Total Radium 226	EPA903.0	pCi/L	**0.313 ± 0.243**	E		3	12/14/2012
Trihalomethanes	EPA524.2	ug/L	**7.2**	E		80	12/13/2012
Uranium by ICP/MS	EPA200.8	ug/L	**2**		1	30	12/5/2012
Vanadium, Total	EPA200.8	ug/L	**5**		1	1000	12/5/2012
Zinc, Total	EPA200.8	ug/L	**348**		10	5000	12/5/2012

Sample Comments:

Report Approved by:



David Holland, Laboratory Director

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

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Certificate of Analysis

David Holland
Monterey Bay Analytical
4 Justin Court Suite D
Monterey, CA 93940

Report Issue Date: 12/17/2012 16:48
Received Date: 12/06/2012
Received Time: 10:25

Lab Sample ID: A2L0413-01
Sample Date: 12/04/2012 11:30
Sampled by: Lear, J.
Sample Type: Grab
Matrix: Water

Sample Description: ASR-2 // 95296

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**0.88**	0.20	mg/L	1	A214025	12/13/12	12/13/12	
Total Organic Carbon	SM 5310 C	**0.83**	0.20	mg/L	1	A214028	12/13/12	12/13/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**1.7**	0.50	ug/L	1	A214034	12/13/12	12/13/12	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A214034	12/13/12	12/13/12	
Chloroform	EPA 524.2	**4.6**	0.50	ug/L	1	A214034	12/13/12	12/13/12	
Dibromochloromethane	EPA 524.2	**0.95**	0.50	ug/L	1	A214034	12/13/12	12/13/12	
Surrogate: Bromofluorobenzene	EPA 524.2	98 %		*Acceptable range: 70-130 %*					
*__Total Trihalomethanes, EPA 524.2__		**7.2**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A213896	12/11/12	12/12/12	
Dichloroacetic Acid (DCAA)	EPA 552.3	ND	1.0	ug/L	1	A213896	12/11/12	12/12/12	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A213896	12/11/12	12/12/12	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A213896	12/11/12	12/12/12	
Trichloroacetic Acid (TCAA)	EPA 552.3	ND	1.0	ug/L	1	A213896	12/11/12	12/12/12	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	100 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		ND	2.0	ug/L					

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December 17, 2012

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Lab ID : SP 1212506-001
Customer ID : 2-19144

Sampled On : December 4, 2012-11:30
Sampled By : John Lear
Received On : December 7, 2012-10:30
Matrix : Drinking Water

Description : ASR-2
Project : MPWMD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1'5]								
Gross Alpha	3.48 ± 2.82	2.87	pCi/L	15/5	900.0	12/10/12-11:00 2P1213672	900.0	12/12/12-11:00 2A1218327
Total Alpha Radium (226)	0.313 ± 0.243	0.439	pCi/L	3	903.0	12/12/12-10:00 2P1213757	903.0	12/14/12-11:20 2A1218467

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: HNO3 pH < 2 * 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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http://www.mccampbell.com / E-mail: main@mccampbell.com

Monterey Bay Analytical	Client Project ID: MPWMD	Date Sampled: 12/04/12
		Date Received: 12/06/12
4 Justin Court, Suite D	Client Contact: David Holland	Date Extracted 12/06/12
Monterey, CA 93940	Client P.O.:	Date Analyzed 12/06/12

Light Gases*

Extraction method: RSK175 Analytical methods: RSK175 Work Order: 1212142

Lab ID	Client ID	Matrix	Methane	DF	% SS	Comments
001A	ASR-2	W	2.5	1	N/A	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.1	µg/L
	S	NA	NA

* water samples are reported in µg/L.

%SS = Percent Recovery of Surrogate Standard

N/A = Not applicable to this analysis

DF = Dilution Factor

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

 Sunday, February 03, 2013

Lab Number: AA95382

Collection Date/Time:	12/5/2012	14:30	Sample Collector:	LINDBERG T	
Submittal Date/Time:	12/6/2012	9:20	Sample ID		Coliform Designation:

Sample Description: ASR-3 Injectate

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Alkalinity, Total (as CaCO3)	SM2320B	mg/L	**143**		2		12/11/2012	DH
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	12/13/2012	SM
Ammonia-N	SM4500NH3 D	mg/L	**Not Detected**		0.05		12/12/2012	DH
Arsenic, Total	EPA200.8	ug/L	**Not Detected**		1	10	12/13/2012	SM
Barium, Total	EPA200.8	ug/L	**68**		10	1000	12/13/2012	SM
Boron	EPA200.7	mg/L	**Not Detected**		0.05		12/7/2012	HC
Bromide	EPA300.0	mg/L	**Not Detected**		0.10		12/7/2012	DH
Calcium	EPA200.7	mg/L	**47**		0.5		12/7/2012	HC
Chloramines	SM4500-Cl G	mg/L	**0.12**		0.05		12/6/2012	DH
Chloride	EPA300.0	mg/L	**34**		1	250	12/7/2012	DH
Dissolved Organic Carbon	SM5310-C	mg/L	**1.0**	E	0.2		12/26/2012	BSK
Fluoride	EPA300.0	mg/L	**0.33**		0.10	2.0	12/7/2012	DH
Gross Alpha	EPA900.0	pCi/L	**1.31 ± 1.50**	E		15	12/19/2012	FGL
Haloacetic Acids	EPA552	ug/L	**13**	E		60	12/18/2012	BSK
Iron	EPA200.7	ug/L	**133**		10	300	12/7/2012	HC
Iron, Dissolved	EPA200.7	ug/L	**20**		10	300	12/7/2012	HC
Kjehldahl Nitrogen	SM4500-NH3 B,	mg/L	**Not Detected**		0.2		12/10/2012	DC
Lithium	EPA200.8	ug/L	**7**		1		12/13/2012	SM
Magnesium	EPA200.7	mg/L	**15**		0.5		12/7/2012	HC
Manganese, Dissolved	EPA200.7	ug/L	**Not Detected**		10	50	12/7/2012	HC
Manganese, Total	EPA200.7	ug/L	**Not Detected**		10	50	12/7/2012	HC
Methane	EPA174/175	ug/L	**1.1**	E	0.1		12/19/2012	DH
Molybdenum, Total	EPA200.8	ug/L	**2**		1	1000	12/13/2012	SM
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	12/13/2012	SM
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	12/7/2012	DH
Nitrate as NO3-N	EPA300.0	mg/L	**Not Detected**		0.10	10	12/7/2012	DH
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.10	1.0	12/7/2012	DH
o-Phosphate-P	EPA300.0	mg/L	**0.35**		0.10		12/7/2012	DH
pH (Laboratory)	SM4500-H+B	pH (H)	**7.5**				12/6/2012	DH
Phosphorus, Total	HACH 8190	mg/L	**0.52**		0.03		12/17/2012	SM
Potassium	EPA200.7	mg/L	**3.4**		0.1		12/7/2012	HC
QC Anion Sum x 100	Calculation	%	**99%**				12/12/2012	DH
QC Anion-Cation Balance	Calculation	%	**3**				12/12/2012	DH
QC Cation Sum x 100	Calculation	%	**104%**				12/12/2012	DH
QC Ratio TDS/SEC	Calculation		**0.61**				12/10/2012	DH
Selenium, Total	EPA200.8	ug/L	**Not Detected**		2	50	12/13/2012	SM
Silica as SiO2, Total	EPA200.7	mg/L	**24**		0.5		12/7/2012	HC
Sodium	EPA200.7	mg/L	**49**		0.5		12/7/2012	HC

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

Lab Number: AA95382

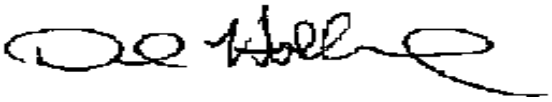
Collection Date/Time:	12/5/2012	14:30	Sample Collector:	LINDBERG T
Submittal Date/Time:	12/6/2012	9:20	Sample ID	Coliform Designation:

Sample Description: ASR-3 Injectate

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Specific Conductance (E.C)	SM2510B	umhos/cm	**558**		1	900	12/7/2012	DC
Strontium, Total	EPA200.8	ug/L	**241**		5		12/13/2012	SM
Sulfate	EPA300.0	mg/L	**81**		1	250	12/7/2012	DH
Total Diss. Solids	SM2540C	mg/L	**340**		10	500	12/7/2012	DH
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		12/13/2012	DH
Total Organic Carbon	SM5310C	mg/L	**1.2**	E	0.20		12/20/2012	BSK
Total Radium 226	EPA903.0	pCi/L	**0.050 ± 0.257**	E		3	12/20/2012	FGL
Trihalomethanes	EPA524.2	ug/L	**26**	E		80	12/19/2012	BSK
Uranium by ICP/MS	EPA200.8	ug/L	**Not Detected**		1	30	12/13/2012	SM
Vanadium, Total	EPA200.8	ug/L	**1**		1	1000	12/13/2012	SM
Zinc, Total	EPA200.8	ug/L	**208**		10	5000	12/13/2012	SM

Sample Comments:

Report Approved by:



David Holland, Laboratory Director

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level

H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

BSK Associates
Engineers & Laboratories

Certificate of Analysis

David Holland
Monterey Bay Analytical
4 Justin Court Suite D
Monterey, CA 93940

Report Issue Date: 12/28/2012 17:54
Received Date: 12/14/2012
Received Time: 09:30

Lab Sample ID: A2L1225-01
Sample Date: 12/05/2012 14:30
Sampled by: T Lindberg
Sample Type: Grab
Matrix: Water

Sample Description: ASR-3 Injectate // 95382

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**1.0**	0.20	mg/L	1	A214421	12/26/12	12/26/12	
Total Organic Carbon	SM 5310 C	**1.2**	0.20	mg/L	1	A214266	12/20/12	12/20/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**8.9**	0.50	ug/L	1	A214170	12/18/12	12/19/12	
Bromoform	EPA 524.2	**2.0**	0.50	ug/L	1	A214170	12/18/12	12/19/12	
Chloroform	EPA 524.2	**7.9**	0.50	ug/L	1	A214170	12/18/12	12/19/12	
Dibromochloromethane	EPA 524.2	**7.7**	0.50	ug/L	1	A214170	12/18/12	12/19/12	
Surrogate: Bromofluorobenzene	EPA 524.2	95 %		*Acceptable range: 70-130 %*					
*__Total Trihalomethanes, EPA 524.2__		**26**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	**3.7**	1.0	ug/L	1	A214125	12/17/12	12/18/12	
Dichloroacetic Acid (DCAA)	EPA 552.3	**5.5**	1.0	ug/L	1	A214125	12/17/12	12/18/12	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A214125	12/17/12	12/18/12	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A214125	12/17/12	12/18/12	
Trichloroacetic Acid (TCAA)	EPA 552.3	**4.0**	1.0	ug/L	1	A214125	12/17/12	12/18/12	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	105 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		**13**	2.0	ug/L					

December 20, 2012

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Lab ID : SP 1212846-001
Customer ID : 2-19144

Sampled On : December 5, 2012-14:30
Sampled By : T. Lindberg
Received On : December 17, 2012-09:45
Matrix : Water

Description : ASR-3 Injectate
Project : MPWMD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1]								
Gross Alpha	1.31 ± 1.50	1.65	pCi/L	15/5	900.0	12/17/12-08:16 2P1213969	900.0	12/19/12-13:00 2A1218681
Total Alpha Radium (226)	0.050 ± 0.257	0.439	pCi/L	3	903.0	12/19/12-10:00 2P1214049	903.0	12/20/12-11:40 2A1218727

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A * 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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"When Quality Counts"

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Monterey Bay Analytical	Client Project ID: MPWMD	Date Sampled: 12/05/12
		Date Received: 12/14/12
4 Justin Court, Suite D	Client Contact: David Holland	Date Extracted 12/19/12
Monterey, CA 93940	Client P.O.:	Date Analyzed 12/19/12

Light Gases*

Extraction method: RSK175 Analytical methods: RSK175 Work Order: 1212387

Lab ID	Client ID	Matrix	Methane	DF	% SS	Comments
001A	ASR-3	W	1.1	1	N/A	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.1	µg/L
	S	NA	NA

* water samples are reported in µg/L.

%SS = Percent Recovery of Surrogate Standard

N/A = Not applicable to this analysis

DF = Dilution Factor

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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ELAP Certification Number: 2385

Monday, May 06, 2013

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AB00040

Collection Date/Time: 4/17/2013 13:00 Sample Collector: LINDBERG T
Submittal Date/Time: 4/17/2013 14:15 Sample ID Coliform Designation:

Sample Description: ASR-2

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Alkalinity, Total (as CaCO3)	SM2320B	mg/L	**136**		2		4/19/2013	MW
Aluminum, Total	EPA200.8	ug/L	**33**		10	1000	4/25/2013	HC
Ammonia-N	SM4500NH3 D	mg/L	**Not Detected**		0.05		4/23/2013	DC
Arsenic, Total	EPA200.8	ug/L	**2**		1	10	4/25/2013	HC
Barium, Total	EPA200.8	ug/L	**70**		10	1000	4/25/2013	HC
Boron	EPA200.7	mg/L	**Not Detected**		0.05		4/26/2013	SM
Bromide	EPA300.0	mg/L	**Not Detected**		0.1		4/18/2013	RL
Calcium	EPA200.7	mg/L	**42**		0.5		4/26/2013	SM
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		4/17/2013	SM
Chloride	EPA300.0	mg/L	**35**		1	250	4/18/2013	RL
Dissolved Organic Carbon	SM5310-C	mg/L	**1.0**	E	0.2		4/25/2013	BSK
Fluoride	EPA300.0	mg/L	**0.3**		0.1	2.0	4/18/2013	RL
Gross Alpha	EPA900.0	pCi/L	**0.627 ± 1.23**	E		15	4/29/2013	FGL
Haloacetic Acids	EPA552	ug/L	**5.9**	E		60	4/27/2013	BSK
Iron	EPA200.7	ug/L	**3101**		10	300	4/26/2013	SM
Iron, Dissolved	EPA200.7	ug/L	**50**		10	300	4/26/2013	SM
Kjehldahl Nitrogen	SM4500-NH3 B,C.	mg/L	**0.30**		0.2		4/23/2013	DC
Lithium	EPA200.8	ug/L	**5**		1		4/25/2013	HC
Magnesium	EPA200.7	mg/L	**13**		0.5		4/26/2013	SM
Manganese, Dissolved	EPA200.7	ug/L	**23**		10	50	4/26/2013	SM
Manganese, Total	EPA200.7	ug/L	**40**		10	50	4/26/2013	SM
Methane	EPA174/175	ug/L	**0.50**	E	0.1		4/24/2013	MCCAM
Molybdenum, Total	EPA200.8	ug/L	**6**		1	1000	4/25/2013	HC
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	4/25/2013	HC
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	4/18/2013	RL
Nitrate as NO3-N	EPA300.0	mg/L	**Not Detected**		0.1	10	4/18/2013	RL
Nitrate+Nitrite as N	EPA300.0	mg/L	**Not Detected**		0.1		4/18/2013	DH

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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Monday, May 06, 2013

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AB00040

Collection Date/Time: 4/17/2013 13:00 Sample Collector: LINDBERG T
Submittal Date/Time: 4/17/2013 14:15 Sample ID Coliform Designation:

Sample Description: ASR-2

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.1	1.0	4/18/2013	RL
o-Phosphate-P	EPA300.0	mg/L	**0.2**		0.1		4/18/2013	RL
pH (Laboratory)	SM4500-H+B	pH (H)	**7.6**				4/17/2013	HC
Phosphorus, Total	HACH 8190	mg/L	**0.54**		0.03		4/29/2013	SM
Potassium	EPA200.7	mg/L	**3.0**		0.1		4/26/2013	SM
QC Anion Sum x 100	Calculation	%	**98%**				4/26/2013	DH
QC Anion-Cation Balance	Calculation	%	**2**				4/26/2013	DH
QC Cation Sum x 100	Calculation	%	**103%**				4/26/2013	DH
QC Ratio TDS/SEC	Calculation		**0.60**				4/25/2013	DH
Selenium, Total	EPA200.8	ug/L	**8**		2	50	4/25/2013	HC
Silica as SiO2, Total	EPA200.7	mg/L	**26**		0.5		4/26/2013	SM
Sodium	EPA200.7	mg/L	**46**		0.5		4/26/2013	SM
Specific Conductance (E.C)	SM2510B	umhos/cm	**508**		1	900	4/17/2013	HC
Strontium, Total	EPA200.8	ug/L	**220**		5		4/25/2013	HC
Sulfate	EPA300.0	mg/L	**62**		1	250	4/18/2013	RL
Total Diss. Solids	SM2540C	mg/L	**306**		10	500	4/22/2013	HC
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		4/24/2013	DH
Total Organic Carbon	SM5310C	mg/L	**1.5**	E	0.20		4/26/2013	BSK
Total Radium 226	EPA903.0	pCi/L	**0.348 ± 0.323**	E		3	4/30/2013	FGL
Trihalomethanes	EPA524.2	ug/L	**67**	E		80	4/23/2013	BSK
Uranium by ICP/MS	EPA200.8	ug/L	**1**		1	30	4/25/2013	HC
Vanadium, Total	EPA200.8	ug/L	**5**		1	1000	4/25/2013	HC
Zinc, Total	EPA200.8	ug/L	**248**		10	5000	4/25/2013	HC

Sample Comments:

Report Approved by:

David Holland, Laboratory Director

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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Monday, May 06, 2013

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AB00041

Collection Date/Time: 4/17/2013 14:00 Sample Collector: LINDBERG T
Submittal Date/Time: 4/17/2013 14:15 Sample ID Coliform Designation:

Sample Description: ASR-3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Alkalinity, Total (as CaCO3)	SM2320B	mg/L	**140**		2		4/19/2013	MW
Aluminum, Total	EPA200.8	ug/L	**63**		10	1000	5/3/2013	SM
Ammonia-N	SM4500NH3 D	mg/L	**Not Detected**		0.05		4/23/2013	DC
Arsenic, Total	EPA200.8	ug/L	**13**		1	10	4/25/2013	HC
Barium, Total	EPA200.8	ug/L	**56**		10	1000	4/25/2013	HC
Boron	EPA200.7	mg/L	**Not Detected**		0.05		4/26/2013	SM
Bromide	EPA300.0	mg/L	**Not Detected**		0.1		4/18/2013	RL
Calcium	EPA200.7	mg/L	**42**		0.5		4/26/2013	SM
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		4/17/2013	SM
Chloride	EPA300.0	mg/L	**31**		1	250	4/18/2013	RL
Dissolved Organic Carbon	SM5310-C	mg/L	**1.0**	E	0.2		4/25/2013	BSK
Fluoride	EPA300.0	mg/L	**0.2**		0.1	2.0	4/18/2013	RL
Gross Alpha	EPA900.0	pCi/L	**2.74 ± 1.32**	E		15	4/29/2013	FGL
Haloacetic Acids	EPA552	ug/L	**6.8**	E		60	4/27/2013	BSK
Iron	EPA200.7	ug/L	**150**		10	300	4/26/2013	SM
Iron, Dissolved	EPA200.7	ug/L	**35**		10	300	4/26/2013	SM
Kjehldahl Nitrogen	SM4500-NH3 B,C.	mg/L	**Not Detected**		0.2		4/23/2013	DC
Lithium	EPA200.8	ug/L	**6**		1		4/25/2013	HC
Magnesium	EPA200.7	mg/L	**13**		0.5		4/26/2013	SM
Manganese, Dissolved	EPA200.7	ug/L	**20**		10	50	4/26/2013	SM
Manganese, Total	EPA200.7	ug/L	**28**		10	50	4/26/2013	SM
Methane	EPA174/175	ug/L	**0.35**	E	0.1		4/24/2013	MCCAM
Molybdenum, Total	EPA200.8	ug/L	**46**		1	1000	4/25/2013	HC
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	4/25/2013	HC
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	4/18/2013	RL
Nitrate as NO3-N	EPA300.0	mg/L	**Not Detected**		0.1	10	4/18/2013	RL
Nitrate+Nitrite as N	EPA300.0	mg/L	**Not Detected**		0.1		4/18/2013	DH
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.1	1.0	4/18/2013	RL

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
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D = Method deviates from standard method due to insufficient sample for MS/MSD

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Monday, May 06, 2013

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AB00041

Collection Date/Time: 4/17/2013 14:00 Sample Collector: LINDBERG T
Submittal Date/Time: 4/17/2013 14:15 Sample ID Coliform Designation:

Sample Description: ASR-3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
o-Phosphate-P	EPA300.0	mg/L	**0.1**		0.1		4/18/2013	RL
pH (Laboratory)	SM4500-H+B	pH (H)	**7.7**				4/17/2013	HC
Phosphorus, Total	HACH 8190	mg/L	**0.38**		0.03		4/29/2013	SM
Potassium	EPA200.7	mg/L	**3.1**		0.1		4/26/2013	SM
QC Anion Sum x 100	Calculation	%	**100%**				5/1/2013	DH
QC Anion-Cation Balance	Calculation	%	**2**				5/1/2013	DH
QC Cation Sum x 100	Calculation	%	**104%**				4/26/2013	DH
QC Ratio TDS/SEC	Calculation		**0.59**				4/25/2013	DH
Selenium, Total	EPA200.8	ug/L	**8**		2	50	4/25/2013	HC
Silica as SiO2, Total	EPA200.7	mg/L	**25**		0.5		4/26/2013	SM
Sodium	EPA200.7	mg/L	**47**		0.5		4/26/2013	SM
Specific Conductance (E.C)	SM2510B	umhos/cm	**510**		1	900	4/17/2013	HC
Strontium, Total	EPA200.8	ug/L	**214**		5		4/25/2013	HC
Sulfate	EPA300.0	mg/L	**68**		1	250	4/18/2013	RL
Total Diss. Solids	SM2540C	mg/L	**300**		10	500	4/22/2013	HC
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		4/24/2013	DH
Total Organic Carbon	SM5310C	mg/L	**1.2**	E	0.20		4/26/2013	BSK
Total Radium 226	EPA903.0	pCi/L	**0.000 ± 0.194**	E		3	4/30/2013	FGL
Trihalomethanes	EPA524.2	ug/L	**100**	E		80	4/23/2013	BSK
Uranium by ICP/MS	EPA200.8	ug/L	**2**		1	30	4/25/2013	HC
Vanadium, Total	EPA200.8	ug/L	**Not Detected**		1	1000	4/25/2013	HC
Zinc, Total	EPA200.8	ug/L	**118**		10	5000	4/25/2013	HC

Sample Comments:

Report Approved by:

David Holland, Laboratory Director

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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Monday, May 06, 2013

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AB00042

Collection Date/Time: 4/17/2013 14:30 Sample Collector: LINDBERG T
Submittal Date/Time: 4/17/2013 14:15 Sample ID Coliform Designation:

Sample Description: SSMS (D)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Alkalinity, Total (as CaCO3)	SM2320B	mg/L	**141**		2		4/19/2013	MW
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	4/25/2013	HC
Ammonia-N	SM4500NH3 D	mg/L	**Not Detected**		0.05		4/23/2013	DC
Arsenic, Total	EPA200.8	ug/L	**20**		1	10	4/25/2013	HC
Barium, Total	EPA200.8	ug/L	**27**		10	1000	4/25/2013	HC
Boron	EPA200.7	mg/L	**Not Detected**		0.05		4/26/2013	SM
Bromide	EPA300.0	mg/L	**Not Detected**		0.1		4/18/2013	RL
Calcium	EPA200.7	mg/L	**48**		0.5		4/26/2013	SM
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		4/17/2013	SM
Chloride	EPA300.0	mg/L	**30**		1	250	4/18/2013	RL
Dissolved Organic Carbon	SM5310-C	mg/L	**0.93**	E	0.2		4/25/2013	BSK
Fluoride	EPA300.0	mg/L	**0.1**		0.1	2.0	4/18/2013	RL
Gross Alpha	EPA900.0	pCi/L	**5.58 ± 1.80**	E		15	4/29/2013	FGL
Haloacetic Acids	EPA552	ug/L	**14**	E		60	4/27/2013	BSK
Iron	EPA200.7	ug/L	**14**		10	300	4/26/2013	SM
Iron, Dissolved	EPA200.7	ug/L	**Not Detected**		10	300	4/26/2013	SM
Kjehldahl Nitrogen	SM4500-NH3 B,C.	mg/L	**Not Detected**		0.2		4/23/2013	DC
Lithium	EPA200.8	ug/L	**6**		1		4/25/2013	HC
Magnesium	EPA200.7	mg/L	**10**		0.5		4/26/2013	SM
Manganese, Dissolved	EPA200.7	ug/L	**Not Detected**		10	50	4/26/2013	SM
Manganese, Total	EPA200.7	ug/L	**Not Detected**		10	50	4/26/2013	SM
Methane	EPA174/175	ug/L	**0.30**	E	0.1		4/24/2013	MCCAM
Molybdenum, Total	EPA200.8	ug/L	**39**		1	1000	4/25/2013	HC
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	4/25/2013	HC
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	4/18/2013	RL
Nitrate as NO3-N	EPA300.0	mg/L	**Not Detected**		0.1	10	4/18/2013	RL
Nitrate+Nitrite as N	EPA300.0	mg/L	**Not Detected**		0.1		4/18/2013	DH
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.1	1.0	4/18/2013	RL

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

MONTEREY BAY ANALYTICAL SERVICES
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ELAP Certification Number: 2385

Monday, May 06, 2013

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AB00042

Collection Date/Time: 4/17/2013 14:30 Sample Collector: LINDBERG T
Submittal Date/Time: 4/17/2013 14:15 Sample ID Coliform Designation:

Sample Description: SSMS (D)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
o-Phosphate-P	EPA300.0	mg/L	**Not Detected**		0.1		4/18/2013	RL
pH (Laboratory)	SM4500-H+B	pH (H)	**7.6**				4/17/2013	HC
Phosphorus, Total	HACH 8190	mg/L	**0.20**		0.03		4/29/2013	SM
Potassium	EPA200.7	mg/L	**2.8**		0.1		4/26/2013	SM
QC Anion Sum x 100	Calculation	%	**99%**				5/1/2013	DH
QC Anion-Cation Balance	Calculation	%	**3**				5/1/2013	DH
QC Cation Sum x 100	Calculation	%	**105%**				4/26/2013	DH
QC Ratio TDS/SEC	Calculation		**0.60**				4/25/2013	DH
Selenium, Total	EPA200.8	ug/L	**7**		2	50	4/25/2013	HC
Silica as SiO2, Total	EPA200.7	mg/L	**24**		0.5		4/26/2013	SM
Sodium	EPA200.7	mg/L	**47**		0.5		4/26/2013	SM
Specific Conductance (E.C)	SM2510B	umhos/cm	**510**		1	900	4/17/2013	HC
Strontium, Total	EPA200.8	ug/L	**347**		5		4/25/2013	HC
Sulfate	EPA300.0	mg/L	**66**		1	250	4/18/2013	RL
Total Diss. Solids	SM2540C	mg/L	**306**		10	500	4/22/2013	HC
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		4/24/2013	DH
Total Organic Carbon	SM5310C	mg/L	**1.3**	E	0.20		4/26/2013	BSK
Total Radium 226	EPA903.0	pCi/L	**0.099 ± 0.237**	E		3	4/30/2013	FGL
Trihalomethanes	EPA524.2	ug/L	**80**	E		80	4/23/2013	BSK
Uranium by ICP/MS	EPA200.8	ug/L	**3**		1	30	4/25/2013	HC
Vanadium, Total	EPA200.8	ug/L	**3**		1	1000	4/25/2013	HC
Zinc, Total	EPA200.8	ug/L	**Not Detected**		10	5000	4/25/2013	HC

Sample Comments:

Report Approved by:

David Holland, Laboratory Director

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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ELAP Certification Number: 2385

Monday, May 06, 2013

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

Lab Number: AB00043

Collection Date/Time: 4/17/2013 13:00 Sample Collector: LINDBERG T
Submittal Date/Time: 4/17/2013 14:15 Sample ID Coliform Designation:

Sample Description: MW-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Alkalinity, Total (as CaCO3)	SM2320B	mg/L	**135**		2		4/19/2013	MW
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	4/25/2013	HC
Ammonia-N	SM4500NH3 D	mg/L	**Not Detected**		0.05		4/23/2013	DC
Arsenic, Total	EPA200.8	ug/L	**2**		1	10	4/25/2013	HC
Barium, Total	EPA200.8	ug/L	**27**		10	1000	4/25/2013	HC
Boron	EPA200.7	mg/L	**Not Detected**		0.05		4/26/2013	SM
Bromide	EPA300.0	mg/L	**Not Detected**		0.1		4/18/2013	RL
Calcium	EPA200.7	mg/L	**43**		0.5		4/26/2013	SM
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		4/17/2013	SM
Chloride	EPA300.0	mg/L	**31**		1	250	4/18/2013	RL
Dissolved Organic Carbon	SM5310-C	mg/L	**0.89**	E	0.2		4/25/2013	BSK
Fluoride	EPA300.0	mg/L	**0.2**		0.1	2.0	4/18/2013	RL
Gross Alpha	EPA900.0	pCi/L	**3.21 ± 1.39**	E		15	4/29/2013	FGL
Haloacetic Acids	EPA552	ug/L	**Not Detected**	E		60	4/27/2013	BSK
Iron	EPA200.7	ug/L	**16**		10	300	4/26/2013	SM
Iron, Dissolved	EPA200.7	ug/L	**Not Detected**		10	300	4/26/2013	SM
Kjehldahl Nitrogen	SM4500-NH3 B,C.	mg/L	**Not Detected**		0.2		4/23/2013	DC
Lithium	EPA200.8	ug/L	**7**		1		4/25/2013	HC
Magnesium	EPA200.7	mg/L	**11**		0.5		4/26/2013	SM
Manganese, Dissolved	EPA200.7	ug/L	**68**		10	50	4/26/2013	SM
Manganese, Total	EPA200.7	ug/L	**68**		10	50	4/26/2013	SM
Methane	EPA174/175	ug/L	**0.24**	E	0.1		4/24/2013	MCCAM
Molybdenum, Total	EPA200.8	ug/L	**6**		1	1000	4/25/2013	HC
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	4/25/2013	HC
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	4/18/2013	RL
Nitrate as NO3-N	EPA300.0	mg/L	**Not Detected**		0.1	10	4/18/2013	RL
Nitrate+Nitrite as N	EPA300.0	mg/L	**Not Detected**		0.1		4/18/2013	DH
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.1	1.0	4/18/2013	RL

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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Monday, May 06, 2013

MPWMD
Joe Oliver
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Lab Number: AB00043

Collection Date/Time: 4/17/2013 13:00 Sample Collector: LINDBERG T
Submittal Date/Time: 4/17/2013 14:15 Sample ID Coliform Designation:

Sample Description: MW-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
o-Phosphate-P	EPA300.0	mg/L	**0.1**		0.1		4/18/2013	RL
pH (Laboratory)	SM4500-H+B	pH (H)	**7.3**				4/17/2013	HC
Phosphorus, Total	HACH 8190	mg/L	**0.23**		0.03		4/29/2013	SM
Potassium	EPA200.7	mg/L	**3.3**		0.1		4/26/2013	SM
QC Anion Sum x 100	Calculation	%	**100%**				5/1/2013	DH
QC Anion-Cation Balance	Calculation	%	**1**				5/1/2013	DH
QC Cation Sum x 100	Calculation	%	**101%**				4/26/2013	DH
QC Ratio TDS/SEC	Calculation		**0.60**				4/25/2013	DH
Selenium, Total	EPA200.8	ug/L	**15**		2	50	4/25/2013	HC
Silica as SiO2, Total	EPA200.7	mg/L	**26**		0.5		4/26/2013	SM
Sodium	EPA200.7	mg/L	**46**		0.5		4/26/2013	SM
Specific Conductance (E.C)	SM2510B	umhos/cm	**507**		1	900	4/17/2013	HC
Strontium, Total	EPA200.8	ug/L	**220**		5		4/25/2013	HC
Sulfate	EPA300.0	mg/L	**72**		1	250	4/18/2013	RL
Total Diss. Solids	SM2540C	mg/L	**306**		10	500	4/22/2013	HC
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		4/24/2013	DH
Total Organic Carbon	SM5310C	mg/L	**1.0**	E	0.20		4/26/2013	BSK
Total Radium 226	EPA903.0	pCi/L	**0.589 ± 0.385**	E		3	4/30/2013	FGL
Trihalomethanes	EPA524.2	ug/L	**29**	E		80	4/23/2013	BSK
Uranium by ICP/MS	EPA200.8	ug/L	**1**		1	30	4/25/2013	HC
Vanadium, Total	EPA200.8	ug/L	**1**		1	1000	4/25/2013	HC
Zinc, Total	EPA200.8	ug/L	**Not Detected**		10	5000	4/25/2013	HC

Sample Comments:

Report Approved by:

David Holland, Laboratory Director

mg/L: Milligrams per liter (=ppm) ug/L : Micrograms per liter (=ppb) PQL : Practical Quantitation Limit
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.
D = Method deviates from standard method due to insufficient sample for MS/MSD

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Certificate of Analysis

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Report Issue Date: 05/01/2013 16:08
Received Date: 04/19/2013
Received Time: 09:25

Lab Sample ID: A3D1766-01
Sample Date: 04/17/2013 13:00
Sample Type: Grab
Sampled by: Tom Lindberg
Matrix: Water

Sample Description: ASR-2 // 00040

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**1.0**	0.20	mg/L	1	A304460	04/25/13	04/25/13	
Total Organic Carbon	SM 5310 C	**1.5**	0.20	mg/L	1	A304462	04/26/13	04/26/13	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**19**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Bromoform	EPA 524.2	**1.6**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Chloroform	EPA 524.2	**37**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Dibromochloromethane	EPA 524.2	**9.8**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Surrogate: Bromofluorobenzene	EPA 524.2	94 %		*Acceptable range: 70-130 %*					
*__Total Trihalomethanes, EPA 524.2__		**67**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Dichloroacetic Acid (DCAA)	EPA 552.3	**1.9**	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A304443	04/25/13	04/27/13	
Trichloroacetic Acid (TCAA)	EPA 552.3	**4.0**	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	106 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		**5.9**	2.0	ug/L					

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Certificate of Analysis

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Monterey Bay Analytical
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Monterey, CA 93940

Report Issue Date: 05/01/2013 16:08
Received Date: 04/19/2013
Received Time: 09:25

Lab Sample ID: A3D1766-02
Sample Date: 04/17/2013 14:00
Sampled by: Tom Lindberg
Sample Type: Grab
Matrix: Water

Sample Description: ASR-3 // 00041

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**1.0**	0.20	mg/L	1	A304460	04/25/13	04/25/13	
Total Organic Carbon	SM 5310 C	**1.2**	0.20	mg/L	1	A304462	04/26/13	04/26/13	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**28**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Bromoform	EPA 524.2	**1.7**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Chloroform	EPA 524.2	**61**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Dibromochloromethane	EPA 524.2	**14**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Surrogate: Bromofluorobenzene	EPA 524.2	95 %		*Acceptable range: 70-130 %*					
*__Total Trihalomethanes, EPA 524.2__		**100**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Dichloroacetic Acid (DCAA)	EPA 552.3	**3.5**	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A304443	04/25/13	04/27/13	
Trichloroacetic Acid (TCAA)	EPA 552.3	**3.3**	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	107 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		**6.8**	2.0	ug/L					

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Report Issue Date: 05/01/2013 16:08
Received Date: 04/19/2013
Received Time: 09:25

Lab Sample ID: A3D1766-03
Sample Date: 04/17/2013 14:30
Sampled by: Tom Lindberg
Sample Type: Grab
Matrix: Water

Sample Description: SSMS (D) // 00042

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**0.93**	0.20	mg/L	1	A304460	04/25/13	04/25/13	
Total Organic Carbon	SM 5310 C	**1.3**	0.20	mg/L	1	A304462	04/26/13	04/26/13	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**22**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Bromoform	EPA 524.2	**1.5**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Chloroform	EPA 524.2	**44**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Dibromochloromethane	EPA 524.2	**12**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Surrogate: Bromofluorobenzene	EPA 524.2	95 %		*Acceptable range: 70-130 %*					
*__Total Trihalomethanes, EPA 524.2__		**80**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Dichloroacetic Acid (DCAA)	EPA 552.3	**3.7**	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A304443	04/25/13	04/27/13	
Trichloroacetic Acid (TCAA)	EPA 552.3	**10**	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	105 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		**14**	2.0	ug/L					

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Report Issue Date: 05/01/2013 16:08
Received Date: 04/19/2013
Received Time: 09:25

Lab Sample ID: A3D1766-04
Sample Date: 04/17/2013 13:00
Sample Type: Grab
Sampled by: Tom Lindberg
Matrix: Water

Sample Description: MW-1 // 00043

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**0.89**	0.20	mg/L	1	A304460	04/25/13	04/25/13	
Total Organic Carbon	SM 5310 C	**1.0**	0.20	mg/L	1	A304462	04/26/13	04/26/13	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**9.0**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Chloroform	EPA 524.2	**17**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Dibromochloromethane	EPA 524.2	**2.7**	0.50	ug/L	1	A304249	04/19/13	04/23/13	
Surrogate: Bromofluorobenzene	EPA 524.2	94 %		*Acceptable range: 70-130 %*					
***Total Trihalomethanes, EPA 524.2**		**29**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Dichloroacetic Acid (DCAA)	EPA 552.3	ND	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A304443	04/25/13	04/27/13	
Trichloroacetic Acid (TCAA)	EPA 552.3	ND	1.0	ug/L	1	A304443	04/25/13	04/27/13	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	105 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		ND	2.0	ug/L					

May 2, 2013

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Lab ID : SP 1303985-001
Customer ID : 2-19144

Sampled On : April 17, 2013-13:00
Sampled By : Tom Lindberg
Received On : April 22, 2013-10:00
Matrix : Water

Description : ASR-2
Project : Radiological Monitoring

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1]								
Gross Alpha	0.627 ± 1.23	1.64	pCi/L	15/5	900.0	04/25/13-09:24 2P1304523	900.0	04/29/13-09:00 2A1306157
Total Alpha Radium (226)	0.348 ± 0.323	0.439	pCi/L	3	903.0	04/29/13-09:00 2P1304606	903.0	04/30/13-10:20 2A1306260

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A * 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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TEL: (559)734-9473
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FAX: (559)734-8435

May 2, 2013

Lab ID : SP 1303985-002
Customer ID : 2-19144

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Sampled On : April 17, 2013-14:00
Sampled By : Tom Lindberg
Received On : April 22, 2013-10:00
Matrix : Water

Description : ASR-3
Project : Radiological Monitoring

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1]								
Gross Alpha	2.74 ± 1.32	1.12	pCi/L	15/5	900.0	04/25/13-09:24 2P1304523	900.0	04/29/13-11:00 2A1306155
Total Alpha Radium (226)	0.000 ± 0.194	0.439	pCi/L	3	903.0	04/29/13-09:00 2P1304606	903.0	04/30/13-10:40 2A1306260

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A * 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.

Corporate Offices & Laboratory
853 Corporation Street
Santa Paula, CA 93060
TEL: (805)392-2000
Env FAX: (805)525-4172 / Ag FAX: (805)392-2063
CA NELAP Certification No. 01110CA

Office & Laboratory
2500 Stagecoach Road
Stockton, CA 95215
TEL: (209)942-0182
FAX: (209)942-0423
CA ELAP Certification No. 1563

Office & Laboratory
563 E. Lindo Avenue
Chico, CA 95926
TEL: (530)343-5818
FAX: (530)343-3807
CA ELAP Certification No. 2670

Office & Laboratory
3442 Empresa Drive, Suite D
San Luis Obispo, CA 93401
TEL: (805)783-2940
FAX: (805)525-4172
CA ELAP Certification No. 2775

Field Office
Visalia, California
TEL: (559)734-9473
Mobile: (559)737-2399
FAX: (559)734-8435

May 2, 2013

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Lab ID : SP 1303985-003
Customer ID : 2-19144

Sampled On : April 17, 2013-14:30
Sampled By : Tom Lindberg
Received On : April 22, 2013-10:00
Matrix : Water

Description : SSMS (D)
Project : Radiological Monitoring

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1]								
Gross Alpha	5.58 ± 1.80	1.33	pCi/L	15/5	900.0	04/25/13-09:24 2P1304523	900.0	04/29/13-11:00 2A1306156
Total Alpha Radium (226)	0.099 ± 0.237	0.439	pCi/L	3	903.0	04/29/13-09:00 2P1304606	903.0	04/30/13-11:00 2A1306260

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A * 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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FAX: (559)734-8435

May 2, 2013

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Lab ID : SP 1303985-004
Customer ID : 2-19144

Sampled On : April 17, 2013-13:00
Sampled By : Tom Lindberg
Received On : April 22, 2013-10:00
Matrix : Water

Description : MW-1
Project : Radiological Monitoring

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1]								
Gross Alpha	3.21 ± 1.39	1.17	pCi/L	15/5	900.0	04/25/13-09:24 2P1304523	900.0	04/29/13-10:00 2A1306157
Total Alpha Radium (226)	0.589 ± 0.385	0.439	pCi/L	3	903.0	04/29/13-09:00 2P1304606	903.0	04/30/13-11:20 2A1306260

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A * 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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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Monterey Bay Analytical	Client Project ID: MPWMD	Date Sampled: 04/17/13
		Date Received: 04/19/13
4 Justin Court, Suite D	Client Contact: David Holland	Date Extracted: 04/24/13
Monterey, CA 93940	Client P.O.:	Date Analyzed: 04/24/13

Light Gases*

Analytical Method: RSK175 Work Order: 1304600

Lab ID	Client ID	Matrix	Methane	DF	Comments
1304600-001A	ASR-2	W	0.50	1	
1304600-002A	ASR-3	W	0.35	1	
1304600-003A	SSMS (D)	W	0.30	1	
1304600-004A	MW-1	W	0.24	1	

Reporting Limit for DF = 1; ND means not detected at or above the reporting limit	W	0.1 µg/L	
	S	NA	

* water samples are reported in µg/L.

%SS = Percent Recovery of Surrogate Standard

N/A = Not applicable to this analysis

DF = Dilution Factor

DHS ELAP Certification 1644 BB Analyst's Initial Angela Rydelius, Lab Manager

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

MBAS
MONTEREY BAY ANALYTICAL SERVICES
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4 Justin Court Suite D, Monterey, CA 93940
831.375.MBAS
montereybayanalytical@usa.net
ELAP Certification Number: 2385

 Wednesday, August 21, 2013

Lab Number: **AB03653**

Collection Date/Time: 7/24/2013 10:00 Sample Collector: LINDBERG T
Submittal Date/Time: 7/24/2013 13:00 Sample ID Coliform Designation:

Sample Description: ASR-2

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Alkalinity, Total (as CaCO3)	SM2320B	mg/L	**183**		2		7/24/2013	DC
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	8/2/2013	SM
Ammonia-N	SM4500NH3 D	mg/L	**Not Detected**		0.05		7/30/2013	TC
Arsenic, Total	EPA200.8	ug/L	**1**		1	10	8/2/2013	SM
Barium, Total	EPA200.8	ug/L	**98**		10	1000	8/2/2013	SM
Bicarbonate (as HCO3-)	SM2320B	mg/L	**223**		10		7/25/2013	DH
Boron	EPA200.7	mg/L	**0.06**		0.05		7/31/2013	HC
Bromide	EPA300.0	mg/L	**0.2**		0.1		7/25/2013	DC
Calcium	EPA200.7	mg/L	**62**		0.5		7/31/2013	HC
Carbonate as CaCO3	SM2320B	mg/L	**Not Detected**		10		7/25/2013	DH
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		7/24/2013	DH
Chloride	EPA300.0	mg/L	**72**		1	250	7/25/2013	DC
Dissolved Organic Carbon	SM5310-C	mg/L	**0.90**	E			8/1/2013	BSK
Fluoride	EPA300.0	mg/L	**0.3**		0.1	2.0	7/25/2013	DC
Gross Alpha	EPA900.0	pCi/L	**2.52 ± 1.50**	E		15	8/5/2013	FGL
Haloacetic Acids	EPA552	ug/L	**Not Detected**	E		60	8/2/2013	BSK
Iron	EPA200.7	ug/L	**221**		10	300	7/31/2013	HC
Iron, Dissolved	EPA200.7	ug/L	**Not Detected**		10	300	7/31/2013	HC
Kjehldahl Nitrogen	SM4500-NH3 B,	mg/L	**Not Detected**		0.2		7/29/2013	TC
Lithium	EPA200.8	ug/L	**15**		1		8/2/2013	SM
Magnesium	EPA200.7	mg/L	**21**		0.5		7/31/2013	HC
Manganese, Dissolved	EPA200.7	ug/L	**Not Detected**		10	50	7/31/2013	HC
Manganese, Total	EPA200.7	ug/L	**15**		10	50	7/31/2013	HC
Methane	EPA174/175	ug/L	**0.87**	E	0.1		7/31/2013	MCCAM
Molybdenum, Total	EPA200.8	ug/L	**6**		1	1000	8/2/2013	SM
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	8/2/2013	SM
Nitrate as NO3	EPA300.0	mg/L	**1**		1	45	7/25/2013	DC
Nitrate as NO3-N	EPA300.0	mg/L	**0.3**		0.1	10	7/25/2013	DC
Nitrate+Nitrite as N	EPA300.0	mg/L	**0.3**		0.1		7/25/2013	DC
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.1	1.0	7/25/2013	DC
o-Phosphate-P	EPA300.0	mg/L	**0.3**		0.1		7/25/2013	DC
pH (Laboratory)	SM4500-H+B	pH (H)	**7.4**				7/24/2013	TC
Phosphorus, Total	HACH 8190	mg/L	**0.26**		0.03		8/20/2013	SM
Potassium	EPA200.7	mg/L	**3.7**		0.1		7/31/2013	HC
QC Anion Sum x 100	Calculation	%	**99%**				7/30/2013	DH
QC Anion-Cation Balance	Calculation	%	**0**				8/1/2013	DH
QC Cation Sum x 100	Calculation	%	**100%**				8/1/2013	DH
QC Ratio TDS/SEC	Calculation		**0.60**				7/30/2013	DH

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

Lab Number: **AB03653**

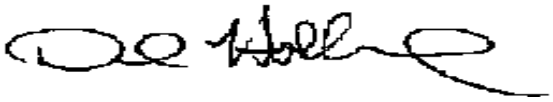
Collection Date/Time: 7/24/2013 10:00 Sample Collector: LINDBERG T
Submittal Date/Time: 7/24/2013 13:00 Sample ID Coliform Designation:

Sample Description: ASR-2

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Selenium, Total	EPA200.8	ug/L	**2**		2	50	8/2/2013	SM
Silica as SiO2, Total	EPA200.7	mg/L	**29**		0.5		7/31/2013	HC
Sodium	EPA200.7	mg/L	**63**		0.5		7/31/2013	HC
Specific Conductance (E.C)	SM2510B	umhos/cm	**767**		1	900	7/25/2013	DC
Strontium, Total	EPA200.8	ug/L	**352**		5		8/2/2013	SM
Sulfate	EPA300.0	mg/L	**92**		1	250	7/25/2013	DC
Total Diss. Solids	SM2540C	mg/L	**460**		10	500	7/27/2013	MW
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		7/30/2013	DH
Total Organic Carbon	SM5310C	mg/L	**0.71**	E	0.20		7/31/2013	BSK
Total Radium 226	EPA903.0	pCi/L	**0.087 ± 0.170**	E		3	8/7/2013	FGL
Trihalomethanes	EPA524.2	ug/L	**48**	E		80	7/31/2013	BSK
Uranium by ICP/MS	EPA200.8	ug/L	**2**		1	30	8/2/2013	SM
Vanadium, Total	EPA200.8	ug/L	**1**		1	1000	8/2/2013	SM
Zinc, Total	EPA200.8	ug/L	**350**		10	5000	8/2/2013	SM

Sample Comments:

Report Approved by:



David Holland, Laboratory Director

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

BSK Associates
Engineers & Laboratories

Certificate of Analysis

David Holland
Monterey Bay Analytical
4 Justin Court Suite D
Monterey, CA 93940

Report Issue Date: 08/08/2013 14:28
Received Date: 07/26/2013
Received Time: 10:15

Lab Sample ID: A3G2372-01
Sample Date: 07/24/2013 10:00
Sample Type: Grab
Sampled by: Lindberg, T
Matrix: Water

Sample Description: ASR-2 // 03653

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**0.90**	0.20	mg/L	1	A308556	08/01/13	08/01/13	
Total Organic Carbon	SM 5310 C	**0.71**	0.20	mg/L	1	A308555	07/31/13	07/31/13	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**13**	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Bromoform	EPA 524.2	**0.87**	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Chloroform	EPA 524.2	**27**	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Dibromochloromethane	EPA 524.2	**6.8**	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Surrogate: Bromofluorobenzene	EPA 524.2	101 %		*Acceptable range: 70-130 %*					
***Total Trihalomethanes, EPA 524.2**		**48**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Dichloroacetic Acid (DCAA)	EPA 552.3	ND	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A308624	08/01/13	08/02/13	
Trichloroacetic Acid (TCAA)	EPA 552.3	ND	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	95 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		ND	2.0	ug/L					

1414 Stanislaus Street **Fresno, CA 93706** **(559) 497-2888** **FAX (559) 485-6935** **www.bsklabs.com**

August 12, 2013

Lab ID : SP 1307717-001
Customer ID : 2-19144

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Sampled On : July 24, 2013-10:00
Sampled By : T. Lindberg
Received On : July 31, 2013-09:45
Matrix : Water

Description : ASR-2
Project : MPWMD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P]								
Gross Alpha	2.52 ± 1.50	1.55	pCi/L	15/5	900.0	08/01/13-08:00 2P1308691	900.0	08/05/13-09:00 2A1311392
Total Alpha Radium (226)	0.087 ± 0.170	0.324	pCi/L	3	903.0	08/06/13-16:00 2P1308912	903.0	08/07/13-14:20 2A1311595

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A * 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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http://www.mccampbell.com / E-mail: main@mccampbell.com

Monterey Bay Analytical	Client Project ID: MPWMD	Date Sampled: 07/24/13
		Date Received: 07/26/13
4 Justin Court, Suite D	Client Contact: David Holland	Date Extracted 07/31/13
Monterey, CA 93940	Client P.O.:	Date Analyzed 07/31/13

Light Gases*

Extraction method: RSK175 Analytical methods: RSK175 Work Order: 1307847

Lab ID	Client ID	Matrix	Methane	DF	% SS	Comments
001A	ASR-2	W	0.87	1	N/A	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.1	µg/L
	S	NA	NA

* water samples are reported in µg/L.

%SS = Percent Recovery of Surrogate Standard

N/A = Not applicable to this analysis

DF = Dilution Factor

CDPH ELAP 1644 ♦ NELAP 12283CA GM Analyst's Initial Angela Rydelius, Lab Manager

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

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831.375.MBAS
montereybayanalytical@usa.net
ELAP Certification Number: 2385

 Wednesday, August 21, 2013

Lab Number: **AB03715**

Collection Date/Time:	7/24/2013	16:00	Sample Collector:	LINDBERG T
Submittal Date/Time:	7/24/2013	16:25	Sample ID	Coliform Designation:

Sample Description: MW-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Alkalinity, Total (as CaCO3)	SM2320B	mg/L	**140**		2		7/24/2013	DC
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	8/2/2013	SM
Ammonia-N	SM4500NH3 D	mg/L	**Not Detected**		0.05		7/30/2013	TC
Arsenic, Total	EPA200.8	ug/L	**2**		1	10	8/2/2013	SM
Barium, Total	EPA200.8	ug/L	**23**		10	1000	8/2/2013	SM
Bicarbonate (as HCO3-)	SM2320B	mg/L	**171**		10		7/25/2013	DH
Boron	EPA200.7	mg/L	**Not Detected**		0.05		7/31/2013	HC
Bromide	EPA300.0	mg/L	**Not Detected**		0.1		7/26/2013	DC
Calcium	EPA200.7	mg/L	**45**		0.5		7/31/2013	HC
Carbonate as CaCO3	SM2320B	mg/L	**Not Detected**		10		7/25/2013	DH
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		7/24/2013	DH
Chloride	EPA300.0	mg/L	**30**		1	250	7/26/2013	DC
Dissolved Organic Carbon	SM5310-C	mg/L	**0.78**	E			7/31/2013	BSK
Fluoride	EPA300.0	mg/L	**0.3**		0.1	2.0	7/26/2013	DC
Gross Alpha	EPA900.0	pCi/L	**2.81 ± 1.34**			15	8/5/2013	FGL
Haloacetic Acids	EPA552	ug/L	**Not Detected**	E		60	8/2/2013	BSK
Iron	EPA200.7	ug/L	**Not Detected**		10	300	7/31/2013	HC
Iron, Dissolved	EPA200.7	ug/L	**Not Detected**		10	300	7/31/2013	HC
Kjehldahl Nitrogen	SM4500-NH3 B,	mg/L	**Not Detected**		0.2		7/29/2013	TC
Lithium	EPA200.8	ug/L	**8**		1		8/2/2013	SM
Magnesium	EPA200.7	mg/L	**10**		0.5		7/31/2013	HC
Manganese, Dissolved	EPA200.7	ug/L	**Not Detected**		10	50	7/31/2013	HC
Manganese, Total	EPA200.7	ug/L	**Not Detected**		10	50	7/31/2013	HC
Methane	EPA174/175	ug/L	**0.14**	E	0.1		7/31/2013	MCCAM
Molybdenum, Total	EPA200.8	ug/L	**6**		1	1000	8/2/2013	SM
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	8/2/2013	SM
Nitrate as NO3	EPA300.0	mg/L	**1**		1	45	7/26/2013	DC
Nitrate as NO3-N	EPA300.0	mg/L	**0.2**		0.1	10	7/26/2013	DC
Nitrate+Nitrite as N	EPA300.0	mg/L	**0.2**		0.1		7/26/2013	DC
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.1	1.0	7/26/2013	DC
o-Phosphate-P	EPA300.0	mg/L	**Not Detected**		0.1		7/26/2013	DC
pH (Laboratory)	SM4500-H+B	pH (H)	**7.4**				7/24/2013	TC
Phosphorus, Total	HACH 8190	mg/L	**0.04**		0.03		8/20/2013	SM
Potassium	EPA200.7	mg/L	**2.8**		0.1		7/31/2013	HC
QC Anion Sum x 100	Calculation	%	**99%**				7/30/2013	DH
QC Anion-Cation Balance	Calculation	%	**-1**				8/1/2013	DH
QC Cation Sum x 100	Calculation	%	**96%**				8/1/2013	DH
QC Ratio TDS/SEC	Calculation		**0.63**				7/30/2013	DH

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

Lab Number: **AB03715**

Collection Date/Time: 7/24/2013 16:00 Sample Collector: LINDBERG T

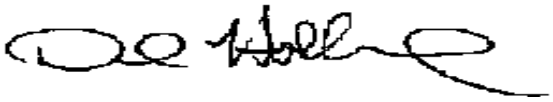
Submittal Date/Time: 7/24/2013 16:25 Sample ID Coliform Designation:

Sample Description: MW-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Selenium, Total	EPA200.8	ug/L	**2**		2	50	8/2/2013	SM
Silica as SiO2, Total	EPA200.7	mg/L	**25**		0.5		7/31/2013	HC
Sodium	EPA200.7	mg/L	**42**		0.5		7/31/2013	HC
Specific Conductance (E.C)	SM2510B	umhos/cm	**516**		1	900	7/25/2013	DC
Strontium, Total	EPA200.8	ug/L	**247**		5		8/2/2013	SM
Sulfate	EPA300.0	mg/L	**69**		1	250	7/26/2013	DC
Total Diss. Solids	SM2540C	mg/L	**323**		10	500	7/27/2013	MW
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		7/30/2013	DH
Total Organic Carbon	SM5310C	mg/L	**0.59**	E	0.20		7/31/2013	BSK
Total Radium 226	EPA903.0	pCi/L	**0.218 ± 0.226**	E		3	8/7/2013	FGL
Trihalomethanes	EPA524.2	ug/L	**27**	E		80	7/31/2013	BSK
Uranium by ICP/MS	EPA200.8	ug/L	**1**		1	30	8/2/2013	SM
Vanadium, Total	EPA200.8	ug/L	**2**		1	1000	8/2/2013	SM
Zinc, Total	EPA200.8	ug/L	**Not Detected**		10	5000	8/2/2013	SM

Sample Comments:

Report Approved by:



David Holland, Laboratory Director

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level

H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

BSK Associates Engineers & Laboratories

Certificate of Analysis

David Holland
Monterey Bay Analytical
4 Justin Court Suite D
Monterey, CA 93940

Report Issue Date: 08/08/2013 14:31
Received Date: 07/26/2013
Received Time: 10:15

Lab Sample ID: A3G2378-01
Sample Date: 07/24/2013 16:00
Sample Type: Grab
Sampled by: Lindberg, T
Matrix: Water

Sample Description: MW-1 // 03715

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**0.78**	0.20	mg/L	1	A308556	07/31/13	07/31/13	
Total Organic Carbon	SM 5310 C	**0.59**	0.20	mg/L	1	A308555	07/31/13	07/31/13	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**4.4**	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Chloroform	EPA 524.2	**21**	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Dibromochloromethane	EPA 524.2	**1.3**	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Surrogate: Bromofluorobenzene	EPA 524.2	97 %		*Acceptable range: 70-130 %*					
***Total Trihalomethanes, EPA 524.2**		**27**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Dichloroacetic Acid (DCAA)	EPA 552.3	ND	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A308624	08/01/13	08/02/13	
Trichloroacetic Acid (TCAA)	EPA 552.3	ND	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	92 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		ND	2.0	ug/L					

August 14, 2013

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Lab ID : SP 1307716-001
Customer ID : 2-19144

Sampled On : July 24, 2013-16:00
Sampled By : T. Lindberg
Received On : July 31, 2013-09:45
Matrix : Water

Description : MW-1
Project : MPWMD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P]								
Gross Alpha	2.81 ± 1.34	1.20	pCi/L	15/5	900.0	08/01/13-08:00 2P1308691	900.0	08/05/13-08:00 2A1311387
Total Alpha Radium (226)	0.218 ± 0.226	0.324	pCi/L	3	903.0	08/06/13-16:00 2P1308912	903.0	08/07/13-14:00 2A1311595

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A * 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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http://www.mccampbell.com / E-mail: main@mccampbell.com

Monterey Bay Analytical	Client Project ID: MPWMD	Date Sampled: 07/24/13
		Date Received: 07/26/13
4 Justin Court, Suite D	Client Contact: David Holland	Date Extracted 07/31/13
Monterey, CA 93940	Client P.O.:	Date Analyzed 07/31/13

Light Gases*

Extraction method: RSK175 Analytical methods: RSK175 Work Order: 1307849

Lab ID	Client ID	Matrix	Methane	DF	% SS	Comments
001A	MW-1	W	0.14	1	N/A	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.1	µg/L
	S	NA	NA

* water samples are reported in µg/L.

%SS = Percent Recovery of Surrogate Standard

N/A = Not applicable to this analysis

DF = Dilution Factor

CDPH ELAP 1644 ♦ NELAP 12283CA GM Analyst's Initial Angela Rydelius, Lab Manager

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

MBAS
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831.375.MBAS
montereybayanalytical@usa.net
ELAP Certification Number: 2385

 Wednesday, August 21, 2013

Lab Number: **AB03724**

Collection Date/Time:	7/25/2013	10:20	Sample Collector:	LEAR J
Submittal Date/Time:	7/25/2013	11:45	Sample ID	Coliform Designation:

Sample Description: ASR 3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Alkalinity, Total (as CaCO3)	SM2320B	mg/L	**190**		2		7/29/2013	DC
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		10	1000	8/2/2013	SM
Ammonia-N	SM4500NH3 D	mg/L	**Not Detected**		0.05		7/30/2013	TC
Arsenic, Total	EPA200.8	ug/L	**7**		1	10	8/2/2013	SM
Barium, Total	EPA200.8	ug/L	**85**		10	1000	8/2/2013	SM
Bicarbonate (as HCO3-)	SM2320B	mg/L	**232**		10		7/29/2013	DH
Boron	EPA200.7	mg/L	**0.06**		0.05		7/31/2013	HC
Bromide	EPA300.0	mg/L	**0.2**		0.1		7/26/2013	DC
Calcium	EPA200.7	mg/L	**53**		0.5		7/31/2013	HC
Carbonate as CaCO3	SM2320B	mg/L	**Not Detected**		10		7/29/2013	DH
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		7/25/2013	DH
Chloride	EPA300.0	mg/L	**67**		1	250	7/26/2013	DC
Dissolved Organic Carbon	SM5310-C	mg/L	**0.86**	E			7/31/2013	BSK
Fluoride	EPA300.0	mg/L	**0.4**		0.1	2.0	7/26/2013	DC
Gross Alpha	EPA900.0	pCi/L	**3.83 ± 1.71**	E		15	8/5/2013	FGL
Haloacetic Acids	EPA552	ug/L	**13**	E		60	8/2/2013	BSK
Iron	EPA200.7	ug/L	**219**		10	300	7/31/2013	HC
Iron, Dissolved	EPA200.7	ug/L	**15**		10	300	7/31/2013	HC
Kjehldahl Nitrogen	SM4500-NH3 B,	mg/L	**Not Detected**		0.2		7/29/2013	TC
Lithium	EPA200.8	ug/L	**21**		1		8/2/2013	SM
Magnesium	EPA200.7	mg/L	**17**		0.5		7/31/2013	HC
Manganese, Dissolved	EPA200.7	ug/L	**19**		10	50	7/31/2013	HC
Manganese, Total	EPA200.7	ug/L	**20**		10	50	7/31/2013	HC
Methane	EPA174/175	ug/L	**0.54**	E	0.1		7/31/2013	MCCAM
Molybdenum, Total	EPA200.8	ug/L	**20**		1	1000	8/2/2013	SM
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	8/2/2013	SM
Nitrate as NO3	EPA300.0	mg/L	**2**		1	45	7/26/2013	DC
Nitrate as NO3-N	EPA300.0	mg/L	**0.3**		0.1	10	7/26/2013	DC
Nitrate+Nitrite as N	EPA300.0	mg/L	**0.3**		0.1		7/26/2013	DC
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.1	1.0	7/26/2013	DC
o-Phosphate-P	EPA300.0	mg/L	**0.2**		0.1		7/26/2013	DC
pH (Laboratory)	SM4500-H+B	pH (H)	**7.3**				7/25/2013	DC
Phosphorus, Total	HACH 8190	mg/L	**0.18**		0.03		8/20/2013	SM
Potassium	EPA200.7	mg/L	**3.8**		0.1		7/31/2013	HC
QC Anion Sum x 100	Calculation	%	**99%**				7/30/2013	DH
QC Anion-Cation Balance	Calculation	%	**-3**				8/1/2013	DH
QC Cation Sum x 100	Calculation	%	**93%**				8/1/2013	DH
QC Ratio TDS/SEC	Calculation		**0.59**				7/30/2013	DH

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

Lab Number: **AB03724**

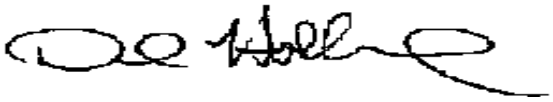
Collection Date/Time: 7/25/2013 10:20 Sample Collector: LEAR J
Submittal Date/Time: 7/25/2013 11:45 Sample ID Coliform Designation:

Sample Description: ASR 3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Selenium, Total	EPA200.8	ug/L	**3**		2	50	8/2/2013	SM
Silica as SiO2, Total	EPA200.7	mg/L	**31**		0.5		7/31/2013	HC
Sodium	EPA200.7	mg/L	**60**		0.5		7/31/2013	HC
Specific Conductance (E.C)	SM2510B	umhos/cm	**723**		1	900	7/25/2013	DC
Strontium, Total	EPA200.8	ug/L	**307**		5		8/2/2013	SM
Sulfate	EPA300.0	mg/L	**70**		1	250	7/26/2013	DC
Total Diss. Solids	SM2540C	mg/L	**428**		10	500	7/27/2013	MW
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		7/30/2013	DH
Total Organic Carbon	SM5310C	mg/L	**0.65**	E	0.20		7/31/2013	BSK
Total Radium 226	EPA903.0	pCi/L	**0.306 ± 0.257**	E		3	8/7/2013	FGL
Trihalomethanes	EPA524.2	ug/L	**50**	E		80	7/31/2013	BSK
Uranium by ICP/MS	EPA200.8	ug/L	**5**		1	30	8/2/2013	SM
Vanadium, Total	EPA200.8	ug/L	**2**		1	1000	8/2/2013	SM
Zinc, Total	EPA200.8	ug/L	**152**		10	5000	8/2/2013	SM

Sample Comments:

Report Approved by:



David Holland, Laboratory Director

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

BSK Associates
Engineers & Laboratories

Certificate of Analysis

David Holland
Monterey Bay Analytical
4 Justin Court Suite D
Monterey, CA 93940

Report Issue Date: 08/08/2013 14:25
Received Date: 07/26/2013
Received Time: 10:15

Lab Sample ID: A3G2371-01
Sample Date: 07/25/2013 10:20
Sample Type: Grab
Sampled by: Lear, J.
Matrix: Water

Sample Description: ASR 3 // 03724

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**0.86**	0.20	mg/L	1	A308556	07/31/13	07/31/13	
Total Organic Carbon	SM 5310 C	**0.65**	0.20	mg/L	1	A308555	07/31/13	07/31/13	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	**13**	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Bromoform	EPA 524.2	**1.2**	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Chloroform	EPA 524.2	**27**	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Dibromochloromethane	EPA 524.2	**8.8**	0.50	ug/L	1	A308531	07/31/13	07/31/13	
Surrogate: Bromofluorobenzene	EPA 524.2	107 %		*Acceptable range: 70-130 %*					
*__Total Trihalomethanes, EPA 524.2__		**50**	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Dichloroacetic Acid (DCAA)	EPA 552.3	**4.3**	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A308624	08/01/13	08/02/13	
Trichloroacetic Acid (TCAA)	EPA 552.3	**8.4**	1.0	ug/L	1	A308624	08/01/13	08/02/13	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	101 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		**13**	2.0	ug/L					

1414 Stanislaus Street **Fresno, CA 93706** **(559) 497-2888** **FAX (559) 485-6935** **www.bsklabs.com**

August 14, 2013

Lab ID : SP 1307715-001
Customer ID : 2-19144

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Sampled On : July 25, 2013-10:20
Sampled By : Jonathan Lear
Received On : July 31, 2013-09:45
Matrix : Water

Description : ASR3
Project : MPWMD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P]								
Gross Alpha	3.83 ± 1.71	1.38	pCi/L	15/5	900.0	08/01/13-08:00 2P1308691	900.0	08/05/13-12:00 2A1311389
Total Alpha Radium (226)	0.306 ± 0.257	0.324	pCi/L	3	903.0	08/06/13-16:00 2P1308912	903.0	08/07/13-13:40 2A1311595

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A * 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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http://www.mccampbell.com / E-mail: main@mccampbell.com

Monterey Bay Analytical	Client Project ID: MPWMD	Date Sampled: 07/24/13
4 Justin Court, Suite D		Date Received: 07/26/13
	Client Contact: David Holland	Date Extracted 07/31/13
Monterey, CA 93940	Client P.O.:	Date Analyzed 07/31/13

Light Gases*

Extraction method: RSK175 Analytical methods: RSK175 Work Order: 1307848

Lab ID	Client ID	Matrix	Methane	DF	% SS	Comments
001A	ASR-3	W	0.54	1	N/A	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.1	µg/L
	S	NA	NA

* water samples are reported in µg/L.

%SS = Percent Recovery of Surrogate Standard

N/A = Not applicable to this analysis

DF = Dilution Factor

CDPH ELAP 1644 ♦ NELAP 12283CA GM Analyst's Initial AR Angela Rydelius, Lab Manager

MPWMD
Joe Oliver
P.O. Box 85
Monterey, CA 93442-0085

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831.375.MBAS
montereybayanalytical@usa.net
ELAP Certification Number: 2385

 Friday, September 13, 2013

Lab Number: **AB03869**

Collection Date/Time:	7/30/2013	13:00	Sample Collector:	LEAR, J
Submittal Date/Time:	7/30/2013	13:37	Sample ID	Coliform Designation:

Sample Description: PCAE(D)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Alkalinity, Total (as CaCO3)	SM2320B	mg/L	**187**		2		8/2/2013	DC
Aluminum, Total	EPA200.8	ug/L	**Not Detected**		50	1000	8/2/2013	SM
Ammonia-N	SM4500NH3 D	mg/L	**0.06**		0.05		8/22/2013	DC
Arsenic, Total	EPA200.8	ug/L	**6**		1	10	8/2/2013	SM
Barium, Total	EPA200.8	ug/L	**67**		10	1000	8/2/2013	SM
Bicarbonate (as HCO3-)	SM2320B	mg/L	**228**		10		8/2/2013	DH
Boron	EPA200.7	mg/L	**0.11**		0.05		7/31/2013	HC
Bromide	EPA300.0	mg/L	**0.2**		0.1		8/6/2013	DC
Calcium	EPA200.7	mg/L	**49**		0.5		7/31/2013	HC
Carbonate as CaCO3	SM2320B	mg/L	**Not Detected**		10		8/2/2013	DH
Chloramines	SM4500-Cl G	mg/L	**Not Detected**		0.05		7/30/2013	TC
Chloride	EPA300.0	mg/L	**99**		1	250	8/6/2013	DC
Dissolved Organic Carbon	SM5310-C	mg/L	**0.24**	E			8/6/2013	BSK
Fluoride	EPA300.0	mg/L	**0.4**		0.1	2.0	8/6/2013	DC
Gross Alpha	EPA900.0	pCi/L	**0.783 ± 1.38**	E		15	8/16/2013	FGL
Haloacetic Acids	EPA552	ug/L	**Not Detected**	E		60	8/3/2013	BSK
Iron	EPA200.7	ug/L	**27**		10	300	7/31/2013	HC
Iron, Dissolved	EPA200.7	ug/L	**Not Detected**		10	300	7/31/2013	HC
Kjehldahl Nitrogen	SM4500-NH3 B,	mg/L	**Not Detected**		0.2		8/5/2013	TC
Lithium	EPA200.8	ug/L	**25**		1		8/2/2013	SM
Magnesium	EPA200.7	mg/L	**10**		0.5		7/31/2013	HC
Manganese, Dissolved	EPA200.7	ug/L	**119**		10	50	7/31/2013	HC
Manganese, Total	EPA200.7	ug/L	**122**		10	50	7/31/2013	HC
Methane	EPA174/175	ug/L	**0.79**	E	0.1		8/14/2013	BSK
Molybdenum, Total	EPA200.8	ug/L	**11**		1	1000	8/2/2013	SM
Nickel, Total	EPA200.8	ug/L	**Not Detected**		10	100	8/2/2013	SM
Nitrate as NO3	EPA300.0	mg/L	**Not Detected**		1	45	7/31/2013	DC
Nitrate as NO3-N	EPA300.0	mg/L	**Not Detected**		0.1	10	7/31/2013	DC
Nitrate+Nitrite as N	EPA300.0	mg/L	**Not Detected**		0.1		7/31/2013	DC
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.1	1.0	7/31/2013	DC
o-Phosphate-P	EPA300.0	mg/L	**Not Detected**		0.1		7/31/2013	DC
pH (Laboratory)	SM4500-H+B	pH (H)	**7.6**				7/30/2013	TC
Phosphorus, Total	HACH 8190	mg/L	**Not Detected**		0.03		8/20/2013	SM
Potassium	EPA200.7	mg/L	**3.8**		0.1		7/31/2013	HC
QC Anion Sum x 100	Calculation	%	**97%**				8/6/2013	DH
QC Anion-Cation Balance	Calculation	%	**0**				8/6/2013	DH
QC Cation Sum x 100	Calculation	%	**97%**				8/1/2013	DH
QC Ratio TDS/SEC	Calculation		**0.59**				8/4/2013	DH

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

Lab Number: **AB03869**

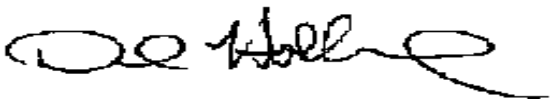
Collection Date/Time: 7/30/2013 13:00 Sample Collector: LEAR, J
Submittal Date/Time: 7/30/2013 13:37 Sample ID Coliform Designation:

Sample Description: PCAE(D)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed	Analyst:
Selenium, Total	EPA200.8	ug/L	**Not Detected**		2	50	8/2/2013	SM
Silica as SiO2, Total	EPA200.7	mg/L	**45**		0.5		7/31/2013	HC
Sodium	EPA200.7	mg/L	**87**		0.5		7/31/2013	HC
Specific Conductance (E.C)	SM2510B	umhos/cm	**740**		1	900	7/31/2013	TC
Strontium, Total	EPA200.8	ug/L	**270**		5		8/2/2013	SM
Sulfate	EPA300.0	mg/L	**31**		1	250	8/6/2013	DC
Total Diss. Solids	SM2540C	mg/L	**434**		10	500	7/31/2013	MW
Total Nitrogen	Calculation	mg/L	**Not Detected**		0.5		8/5/2013	DH
Total Organic Carbon	SM5310C	mg/L	**Not Detected**	E	0.20		8/6/2013	BSK
Total Radium 226	EPA903.0	pCi/L	**0.180 ± 0.306**	E		3	8/15/2013	FGL
Trihalomethanes	EPA524.2	ug/L	**Not Detected**	E		80	8/5/2013	BSK
Uranium by ICP/MS	EPA200.8	ug/L	**Not Detected**		1	30	8/2/2013	SM
Vanadium, Total	EPA200.8	ug/L	**1**		1	1000	8/2/2013	SM
Zinc, Total	EPA200.8	ug/L	**Not Detected**		50	5000	8/2/2013	SM

Sample Comments:

Report Approved by:



David Holland, Laboratory Director

mg/L: Milligrams per liter ug/L : Micrograms per liter PQL : Practical Quantitation Limit MCL: Maximum Contamination Level
H = Analyzed ouside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

BSK Associates
Engineers & Laboratories

Certificate of Analysis

David Holland
Monterey Bay Analytical
4 Justin Court Suite D
Monterey, CA 93940

Report Issue Date: 08/15/2013 12:39
Received Date: 08/02/2013
Received Time: 09:35

Lab Sample ID: A3H0111-01
Sample Date: 07/30/2013 13:00
Sample Type: Grab
Sampled by: Lear, J.
Matrix: Water

Sample Description: PCAE (D) // 03869

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	**0.24**	0.20	mg/L	1	A308835	08/06/13	08/06/13	
Total Organic Carbon	SM 5310 C	ND	0.20	mg/L	1	A308837	08/06/13	08/06/13	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A308734	08/05/13	08/05/13	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A308734	08/05/13	08/05/13	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A308734	08/05/13	08/05/13	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A308734	08/05/13	08/05/13	
Surrogate: Bromofluorobenzene	EPA 524.2	103 %		*Acceptable range: 70-130 %*					
*Total Trihalomethanes, EPA 524.2		ND	0.50	ug/L					
Haloacetic Acids by GC-ECD, GC-MS									
Dibromoacetic Acid (DBAA)	EPA 552.3	ND	1.0	ug/L	1	A308685	08/02/13	08/03/13	
Dichloroacetic Acid (DCAA)	EPA 552.3	ND	1.0	ug/L	1	A308685	08/02/13	08/03/13	
Monobromoacetic Acid (MBAA)	EPA 552.3	ND	1.0	ug/L	1	A308685	08/02/13	08/03/13	
Monochloroacetic Acid (MCAA)	EPA 552.3	ND	2.0	ug/L	1	A308685	08/02/13	08/03/13	
Trichloroacetic Acid (TCAA)	EPA 552.3	ND	1.0	ug/L	1	A308685	08/02/13	08/03/13	
Surrogate: 2-Bromobutanoic Acid	EPA 552.3	95 %		*Acceptable range: 70-130 %*					
Total Haloacetic Acids, EPA 552.3		ND	2.0	ug/L					

1414 Stanislaus Street **Fresno, CA 93706** **(559) 497-2888** **FAX (559) 485-6935** **www.bsklabs.com**

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http://www.mccampbell.com / E-mail: main@mccampbell.com

BSK Analytical Laboratories	Client Project ID: A3H0111	Date Sampled: 07/30/13
1414 Stanislaus Street		Date Received: 08/07/13
	Client Contact: John Montierth	Date Extracted: 08/14/13
Fresno, CA 93706	Client P.O.:	Date Analyzed: 08/14/13

Light Gases*

Extraction Method: RSK175 | Analytical Method: RSK175 | Work Order: 1308205

					Reporting Limit for DF =1	
Lab ID	1308205-001A					
Client ID	A3H0111-01					
Matrix	W					
DF	1				S	W
Compound	**Concentration**				ug/kg	µg/L
Ethane	ND				NA	0.2
Ethene	ND				NA	0.2
Methane	0.79				NA	0.1
Surrogate Recoveries (%)						
%SS:	N/A					
Comments						

* water samples are reported in µg/L.

%SS = Percent Recovery of Surrogate Standard

N/A = Not applicable to this analysis

DF = Dilution Factor

August 29, 2013

Lab ID : SP 1308228-001
Customer ID : 2-19144

Monterey Bay Analytical Services
4 Justin Court
Monterey, CA 93940

Sampled On : July 30, 2013-13:00
Sampled By : Jonathan Lear
Received On : August 9, 2013-11:00
Matrix : Potable Water

Description : PCAE (D)
Project : PCAE (D) MBAS#03869

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry[P:1'5]								
Gross Alpha	0.783 ± 1.38	1.83	pCi/L	15/5	900.0	08/15/13-09:00 2P1309291	900.0	08/16/13-16:30 2A1312578
Total Alpha Radium (226)	0.180 ± 0.306	0.405	pCi/L	3	903.0	08/13/13-17:00 2P1309220	903.0	08/15/13-08:00 2A1311893

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: HNO3 pH < 2 * 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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