



SUMMARY OF OPERATIONS

MONTEREY PENINSULA ASR PROJECT

WATER YEAR 2012

Prepared for:



SEPTEMBER 2013



September 13, 2013
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 2012 Summary of Operations Report

Dear Joe:

We are transmitting five copies and one digital image (PDF) of the subject report documenting operations of the Monterey Peninsula ASR Project during Water Year 2012 (WY 2012). As you are aware, WY 2012 was a Dry Water Year on the on the Monterey Peninsula. WY 2012 was also the first year that the Seaside Middle School ASR-3 (SMS ASR-3) was operational and injection occurred under SWRCB Permit 20808C (Phase 2 ASR Project). Due to the dry hydrologic conditions during WY 2012, a relatively limited volume of 131 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 each of the previous two water years. To date, a total of approximately 3,880 af have been injected into the SGB 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.

A handwritten signature in black ink, appearing to read "R. Marks", written over a white background.

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

A handwritten signature in black ink, appearing to read "Stephen P. Tanner", written over a white background.

Stephen P. Tanner, P.E.
Principal Engineer

Copies submitted: 5 hard
1 digital (PDF)



TABLE OF CONTENTS

	Page
INTRODUCTION	1
GENERAL STATEMENT	1
BACKGROUND	1
PURPOSE AND SCOPE	2
FINDINGS.....	3
WY 2012 ASR OPERATIONS	3
General Recharge Procedures.....	3
Injection Operations Summary	4
Backflushing	6
Recovery Operations Summary	7
WELL PERFORMANCE	8
Injection Performance	8
Pumping Performance.....	10
Plugging	14
AQUIFER RESPONSE TO INJECTION	16
WATER QUALITY.....	18
General.....	18
Mixing and Dilution	18
Injection Water Quality	27
Water Quality During Aquifer Storage	27
Water Quality at Off-Site Monitor Wells.....	28
Water Quality Summary	28
CONCLUSIONS.....	29
RECOMMENDATIONS.....	30
CLOSURE	32
REFERENCES	33

TABLES

1	WY 2012 Injection Operations Summary - SM ASR-2	4
2	WY 2012 Injection Operations Summary - SMS ASR-3	4
3	Variable Rate Injection Test Results - SMS ASR-3	6
4	Injection Performance Summary - SM ASR-1.....	8
5	Injection Performance Summary - SM ASR-2.....	10
6	Pumping Performance Summary - SM ASR-1	11
7	Pumping Performance Summary - SM ASR-2	12
8	Pumping Performance Summary - SMS ASR-3	13



TABLE OF CONTENTS (Continued)

9	Residual Plugging Summary - SM ASR-2	15
10	Residual Plugging Summary - SMS ASR-3	15
11	WY 2012 Aquifer Response Summary	17
12	Percent Injectate at Monitor Wells During WY 2012	19
13	Summary of WY 2012 Water-Quality Data - Injectate	20
14	Summary of WY 2012 Water-Quality Data - SM ASR-1	21
15	Summary of WY 2012 Water-Quality Data - SM ASR-2	22
16	Summary of WY 2012 Water-Quality Data - SMS ASR-3	23
17	Summary of WY 2012 Water-Quality Data - SM MW-1	24
18	Summary of WY 2012 Water-Quality Data – SMS Deep	25
19	Summary of WY 2012 Water-Quality Data - Off-Site MWs	26

FIGURES

Site Location Map	1
SM ASR-1 As-Built Schematic.....	2
SM ASR-2 As-Built Schematic.....	3
SMS ASR-3 As-Built Schematic	4
Summary of ASR Operations (WY 2001 – WY 2012).....	5
SM ASR-1 Water-Level Data	6
SM ASR-2 Water-Level Data	7
SMS ASR-3 Water-Level Data	8
SM ASR-2 Water-Level Data – Injection Season	9
SMS ASR-3 Water-Level Data – Injection Season	10
SMS ASR-3 Water-Level Data – Variable Rate Injection Test	11
SMS Water-Level Data	12
SM MW-1 Water-Level Data	13
Paralta Test Water-Level Data.....	14
Ord Terrace Water-Level Data.....	15
FO-7 Water Level-Data.....	16
PCA-East Water-Level Data	17
FO-8 Water Level-Data.....	18
SM ASR-1 Disinfection By-Products Parameters	19
SM ASR-2 Disinfection By-Products Parameters	20
SMS ASR-3 Disinfection By-Products Parameters.....	21
SM MW-1 Disinfection By-Products Parameters	22
SMS Deep Disinfection By-Products Parameters.....	23

APPENDICES

Field Data Sheets	A
Water Quality Laboratory Reports	B



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 2012 (WY 2012)¹. During WY 2012, approximately 131 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 2012, an assessment of ASR well performance, aquifer response and water-quality data, and provides recommendations for future 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 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.

Water Project 1 (a.k.a. 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 right² maximum annual diversion limit of 2,426 acre-feet per year (afy) at a combined injection rate of approximately 3,000 gallons per minute ([gpm] maximum diversion

¹ Water Year 2012 is the period of October 1, 2011 through September 30, 2012.

² SWRCB water right 20808A for the Phase 1 ASR Project is held jointly by MPWMD and CAW.



rate of 6.7 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.

Water Project 2 (Phase 2 ASR Project) includes two ASR wells (SMS ASR-3 and SMS ASR-4) located at the Seaside Middle School ASR Facility. Water Project 2 is designed to be capable of recharging up to SWRCB water right³ maximum annual diversion limit of 2,900 afy at a combined 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 designed for injection capacities of 1,500 to 1,750 gpm each. 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 WY 2013.

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 2012. 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 2006 (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, 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;
- 2) Aquifer response to injection;

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



- 3) Movement and dispersion of injected waters within the aquifer, and;
- 4) 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 Code⁴ and the existing General Waiver for Specific Types of Discharges (Resolution R3-2008-0010). A summary of the findings developed from the operation of the Monterey Peninsula ASR Project during WY 2012 is presented below.

FINDINGS

WY 2012 ASR OPERATIONS

Recharge operations were performed during WY 2012 during the period of March 28 through April 23, 2012. WY 2012 was classified as a Dry Water Year⁵ on the Carmel River and a relatively limited total volume of approximately 131 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) into the Santa Margarita Sandstone aquifer of the SGB at combined average injection rates ranging from approximately 1,650 to 3,050 gpm (approximately 7.3 to 13.5 acre-feet per day [afd]).

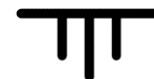
General Recharge Procedures

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. Recharge of the SGB occurs via injection of diverted flows into ASR wells during periods of available excess Carmel River system flows from the CAW distribution.

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). Water levels in each of the ASR wells are measured and collected with pressure transducers coupled to 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 20,025 af of unimpaired Carmel River flow at the San Clemente Dam site in WY 2012.



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 2012, a total of 5 and 6 injection periods occurred at SM ASR-2 and SMS ASR-3, respectively. 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**. It is noted that SMS ASR-3 underwent the initial steps of its baseline injection testing program during WY 2012 (discussed in further detail below); therefore, the “injection period” definition above does not strictly apply to this well this year.

Table 1. WY 2012 Injection Operations Summary - SM ASR-2

Injection Period No.	Dates		Duration (days)	Average Injection Rate (gpm)	Total Volume (af)
	Start	End			
1	3/28/12	3/29/12	1.0	1,765	7.6
2	3/29/12	3/30/12	0.9	1,875	7.7
3	4/1/12	4/2/12	1.0	1,344	6.1
4	4/13/12	4/17/12	4.0	1,765	30.9
5	4/17/12	4/23/12	6.0	1,962	52.4
SM ASR-2 Totals			12.9	1,742	104.7

As shown in **Table 1**, the total duration of the 5 injection periods at SM ASR-2 during WY 2012 was approximately 13 days, with a total volume of 104.7 af injected at an average injection rate of approximately 1,740 gpm.

Table 2. WY 2012 Injection Operations Summary - SMS ASR-3

Injection Period No.	Dates		Duration (days)	Average Injection Rate (gpm)	Total Volume (af)
	Start	End			
1	3/29/12	3/29/12	0.1	1,188	0.3
2	4/14/12	4/14/12	0.3	1,303	1.6
3	4/16/12	4/17/12	0.5	1,089	2.2
4	4/17/12	4/18/12	0.9	906	3.6
5	4/18/12	4/19/12	0.7	1,040	3.2
6	4/19/12	4/23/12	4.0	548	9.7
SMS ASR-3 Total			6.4	1,013	20.6



As shown in **Table 2**, the total duration of the 6 injection periods at SMS ASR-3 was approximately 6 days, with a total volume of 20.6 af injected at an average rate of approximately 1,010 gpm. As noted above, the injection operations at SMS ASR-3 were focused on initial performing the initial baseline testing operations and were conducted at various rates during the period. The combined total volume of injection during WY 2012 was 125.3 af⁶.

Water-level data collected at SM ASR-1, SM ASR-2 and SMS ASR-3 during WY 2012 are presented in **Figures 6 through 8**, respectively. Water-level 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 increase of approximately 85 feet at SM ASR-2 and approximately 211 feet at SMS ASR-3. Water-level increases due to injection at SM ASR-2 were well below the maximum recommended drawup level of approximately 140 feet. Water-level increases due to injection at SMS ASR-3 were generally maintained well below the recommended maximum drawup level at this well of approximately 175 feet (discussion of the basis for the recommended maximum drawup levels is presented in the Backflushing section below). The water-level data also show fluctuations in response to varying injection rates resulting from pressure fluctuations in the CAW distribution system (at times the pressure was observed to fluctuate between 30 and 100 psi within several minutes), as well as the drawdown response to routine backflush pumping during the injection season (discussed below).

SMS ASR-3 Baseline Injection Testing. As mentioned previously, injection operations at SMS ASR-3 during WY 2012 were focused on implementing the baseline injection testing program at this well. The baseline injection testing program consists of the following steps:

1. Startup testing of injection piping hydraulics, instrumentation, metering, valving, etc.;
2. 400-minute variable rate injection testing combined with downhole velocity surveys;
3. 24-hr constant rate injection test;
4. 7-day constant rate injection test;
5. Backflushing between each injection test, and;
6. Post-injection production performance testing

Steps 1 and 2 (and 5) above were able to be performed within the relatively short WY 2012 injection season. The remaining steps could not be performed in WY 2013 due to the lack of rainfall and low river flows, are therefore planned to be performed during WY 2013. Following completion of the baseline injection testing program for SMS ASR-3, a detailed analysis of SMS ASR-3 injection performance and parameters will be provided in the WY 2013 SOR.

⁶ The slight difference between this value and the 131 af value presented on page 3 is due to the relatively small volume of pipeline flushing (approximately 6 af, or 4.5% 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 variable rate injection test was performed on April 12, 2012. The primary purpose of the test was to assess variations in well specific injectivity (the converse of specific capacity) at differing injection rates and to determine a suitable rate for long-term injection testing. The test consisted of four steps, each at a successively higher rate. The duration of each step was approximately 100-minutes. The four test rates were approximately 763, 1133, 1489, and 1839 gpm. The static water level in the well prior to the test was 349.6 feet below top of casing (btoc). The resulting water-level drawup and specific injectivities associated with each of these steps are shown on **Figure 11** and are summarized below in **Table 3**.

Table 3. Variable Rate Injection Test Results - SMS ASR-3

Test	Duration	Rate (gpm)	Drawup (feet)	Q/s (gpm/ft)
Step 1	100 min	763	44.9	17.0
Step 2	100 min	1133	79.2	14.3
Step 3	100 min	1489	129.2	11.5
Step 4	100 min	1839	210.5	8.7

As presented in **Table 3** and shown on **Figure 11**, the specific injectivity of SMS ASR-3 ranged between approximately 8.7 and 17.0 gpm/ft, depending on the injection rate. It is important to note that according to well hydraulic theory, specific injectivity is expected to generally decrease with increasing injection rate; therefore, it is important to consider the injection rate when comparing specific injectivity values. It is also noted that at 1,839 gpm, the water-level drawup exceeded the recommended maximum of 175 feet; therefore, for planning purposes, injection rates at this well should be maintained at approximately 1,500 gpm or less until further testing can be performed.

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 / injection 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 general 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. A typical and prudent 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.



It is important to note that water-level drawup during injection is a function of several factors, including specific injectivity, injection rate, plugging rates, and duration of continuous injection. Therefore, establishing a maximum drawup level is a useful guide for triggering backflushing of the ASR wells under variable conditions. For example, injecting at lower injection rates and / or with an injection source water with lower plugging potential (as measured by SDI), the amount of water level drawup per unit time will be lower and the duration of continuous injection between backflushing may be extended before the drawup limitation is reached. Conversely, injecting at a higher rate and / or with injection source water having a higher plugging potential, the rate of drawup will increase and the duration between backflushing would need to be shortened.

Based on the several years of testing conducted as part of the Santa Margarita Test Injection Well (SMTIW) project, a weekly backflushing frequency has been determined to be the best operational practice for the ASR wells when operated at the design rates of injection. 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 10 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 years of operating ASR wells at the Santa Margarita ASR Facility and were similarly observed at SMS ASR-3 during WY2012. Additional "incidental" backflushing was also conducted during the WY 2012 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 the following section).

Recovery Operations Summary

Recovery of the volume of water recharged during WY 2012 was performed via SM ASR-1 (SM ASR-2 and SMS ASR-3 have not yet been permitted for recovery into the CAW distribution system). As shown on **Figure 5**, a total of 131 af were recovered by SM ASR-1 during the month of October 2012. 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 necessarily 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 SM ASR-1



and / or SM ASR-2 will occur more extensively in the future, once both wells are fully permitted for production into the CAW distribution system⁷.

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 expressed as gpm 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. Both injection and production well performance was tracked at SM ASR-2 and SMS ASR-3 during WY 2012, as discussed below.

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). Specific injectivity is the ratio of injection rate to water-level rise (drawup) in the well casing.

SM ASR-1. A summary of 24-hour specific injectivity for SM ASR-1 for WY 2002 through 2011 is presented in **Table 4** below.

Table 4. 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	-67%	FCV not installed yet in WY2002. No recovery pumping performed.
Ending Period	1,164	199.8	6.4		
WY2003					
Beginning Period	1,070	70.0	15.5	+31%	Recovery pumping performed following WY2003 Injection
Ending Period	1,007	49.7	20.3		
WY2004					
Beginning Period	1,383	183.4	7.5	+112%	Recovery pumping performed following WY2004 Injection
Ending Period	1,072	67.4	15.9		

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



Water Year	Injection Rate (gpm)	24-hour DUP (feet)	Specific Injectivity (gpm/ft)	Water Year Change	Comments
WY2005					
Beginning Period	1,045	46.6	22.4	-54%	Injectate dechlorinated in WY2005. No recovery pumping performed.
Ending Period	976	94.1	10.4		
WY2006					
Beginning Period	1,039	71.5	15.0	+17%	Injection procedures consistent and performance stable in WY2006. No recovery pumping performed.
Ending Period	1,008	62.2	17.5		
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	-17%	Formal rehabilitation performed prior to WY2008 injection
Ending Period	1,063	33.4	31.8		
WY 2009					
Beginning Period	1,119	56.1	19.9	+56%	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		
WY 2010					
Beginning Period	1,080	35.6	30.3	-19%	Observed decline in performance due to residual plugging.
Ending Period	1,326	54.0	24.6		
WY 2011					
Beginning Period	1,367	53.0	25.8	-10%	Minor residual plugging occurred.
Ending Period	1,454	63.7	22.8		
WY 2012					
Beginning Period	NA	NA	NA	NA	No injection at this well this year.
Ending Period	NA	NA	NA		

As shown in **Table 4** and as noted previously, no injection occurred at SM ASR-1 during WY 2012. In reviewing the data in **Table 4** and comparing it to the other ASR wells, it should also be noted that there have been differences in the injection methodologies that affected SM ASR-1 well performance. The differences in methodologies are due to various tests that have been conducted over the years to determine the best operational parameters for the ASR well. As examples: in WY 2002 the FCV had not yet been installed to control gas binding; recovery pumping was conducted only in WY 2003 and WY 2004; during WY 2005 the injectate was dechlorinated; and, ASR-1 underwent formal rehabilitation as part of the WY 2007 program (refer to the Summary of Operations Reports for those Water Years for additional details).



Based on the above discussion, the well performance values and trends at SM ASR-1 need to be viewed carefully within this context.

SM ASR-2. A summary of the beginning and ending injection performance at SM ASR-2 for WY 2010 and WY 2012 is presented in **Table 5** below.

Table 5. 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	-57%	Significant residual plugging.
Ending Period	237	85.0	2.8		
WY 2011					
Beginning Period	1,497	39.5	37.9	-0.5%	Significant improvement as a result of well rehabilitation. No residual plugging during year.
Ending Period	1,292	34.3	37.7		
WY 2012					
Beginning Period	1,830	56.1	32.6	-12%	See discussion below.
Ending Period	1,817	63.4	28.7		

As shown in **Table 5**, the 24-hour specific injectivity at the beginning of WY 2012 was 32.6 gpm/ft and at the end of WY 2012, the 24-hr specific injectivity was 28.7 gpm/ft, representing a decline of approximately 12 percent, indicating that minor residual plugging occurred at SM ASR-2 (discussed in a following section) over the course of the WY 2012 injection season.

As previously noted, no continuous 24-hour periods of constant rate injection occurred at SMS ASR-3 during WY 2012 to compare changes in 24-hour specific injectivity; however, SMS ASR-3 pumping performance was tracked during WY 2012 and is discussed in the next section.

Pumping Performance

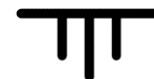
Pumping performance has also been tracked at ASR-1 since the inception of the SMTIW testing program by measurement and comparison of specific capacity. Specific capacity is the ratio of pumping rate to water-level drawdown in the well casing. Following routine backflushing operations and periods of water-level 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.

SM ASR-1. A summary of injection season beginning and ending 10-minute specific capacity at ASR-1 for WY 2002 through 2012 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	-53%	FCV not installed yet in WY2002
Post- Injection	2,800	95.3	29.4		
WY2003					
Pre-Injection	2,775	81.9	33.9	-16%	Recovery pumping performed following WY2003 Injection
Post- Injection	2,600	91.7	28.4		
WY2004					
Pre-Injection	2,000	51.8	38.6	-46%	Recovery pumping performed following WY2004 Injection
Post- Injection	1,700	81.2	20.9		
WY2005					
Pre-Injection	1,900	49.8	38.1	-55%	Injectate dechlorinated in WY2005. No recovery pumping performed.
Post- Injection	1,500	87.1	17.2		
WY2006					
Pre-Injection	1,500	82.4	18.2	+19%	Injection procedures consistent and performance stable in WY2006. No recovery pumping performed.
Post- Injection	1,600	74.1	21.6		
WY2007					
Pre-Injection	1,500	81.7	18.4	+3%	Only one injection period in WY2007. No recovery pumping performed.
Post- Injection	1,500	79.4	18.9		
WY2008					
Pre-Injection	1,980	31.0	63.8	-44%	Formal rehabilitation performed prior to WY2008 injection. No recovery pumping performed.
Post- Injection	2,000	55.6	36.0		
WY 2009					
Pre-Injection	2,000	52.0	38.5	-21%	No recovery pumping performed.
Post- Injection	1,900	62.7	30.3		
WY 2010					
Pre-Injection	1,900	62.5	30.4	+2%	Performance essentially stable.
Post- Injection	2,000	64.2	31.1		
WY 2011					
Pre-Injection	2,000	64.2	31.1	-3%	Performance essentially stable.
Post- Injection	2,000	64.6	30.1		



Water Year	Pumping Rate (gpm)	10-min DDN (feet)	Specific Capacity (gpm/ft)	Water Year Change	Comments
WY 2012					
February 2012	2,400	74.7	32.1	NA	No injection during WY 2012. Datalogger damaged in June 2012.
NA	NA	NA	NA		

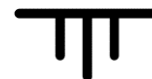
As shown in **Table 6**, the production specific capacity at ASR-1 declined from approximately 63 to 18 gpm/ft over the course of the six-year period of WY 2002 through WY 2007, an overall decline of approximately 70 percent. In particular, a decline of over 50 percent occurred after the initial injection 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	-58%	Injection testing performed with source water from MCWD.
Post- Injection	2,200	117.7	18.7		
WY 2010					
Pre-Injection	2,200	117.7	18.7	-10%	Pre-injection is after MCWD testing (refer to WY 2009 Summary of Operation report)
Post- Injection	2,300	136.9	16.8		
WY 2011					
Pre-Injection	3,100	83.9	36.9	-10%	Formal rehabilitation performed prior to WY 2011 injection season. Relatively stable during season.
Post- Injection	3,100	93.5	33.2		
WY 2012					
Pre-Injection	2,800	84.5	33.1	-11%	See discussion below.
Post- Injection	2,700	92.3	29.3		

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, with the



production specific capacity nearly doubling. The improved performance is a result of rehabilitation of the well prior to the WY 2011 injection season. During WY 2012, pumping performance declined approximately 11 percent. This compares with the injection performance results, which showed an approximate 12 percent decline in performance over the course of WY 2012.

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	-57	See discussion below.
Post- Injection	2,400	186.4	12.9		

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. A pattern has emerged, with all three ASR wells having experienced comparable declines in performance following initial injection. It is 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 following the completion of the baseline injection testing program at SMS ASR-3. It is noted, however, that while SMS ASR-3 experienced a significant decline in performance in WY 2012, it is expected that rehabilitation would result in significantly improved performance, as has been observed at both SM ASR-1 and SM ASR-2.

It is also noted that SM ASR-1 (and now SM ASR-2 and SMS ASR-3) has been operated largely as an injection-only well since its construction in 2001, with significant recovery pumping taking place thus far in only 2003 and 2004 (refer to Figure 2 and the WY 2003 and WY 2004 Summary of Operations Reports for details), with a relatively minor amount of recovery occurring during WY 2012. As shown in **Tables 4 and 6**, following recovery pumping events the performance of SM ASR-1 improved prior to the onset of the following year's injection season. The improved well performance is attributable to the additional removal of fine particulates from the well and near-bore aquifer matrix as a result of the extended pumping. As such, it is anticipated that once SM ASR-1, SM ASR-2 and SMS ASR-3 are operated as true ASR wells as planned (with seasonal recovery pumping following each injection season), the amount of residual plugging between injection seasons and the attendant frequency of rehabilitation will be reduced.



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 2012 injection operations, SDI measurements ranged between approximately 0.5 to 3.4 and averaged 1.9.

Rates of plugging (measured in feet of head increase per day) during injection have historically been estimated at the Santa Margarita Facility ASR wells; however, most analytic methods for determining the rate of plugging are predicated on the injection rates at the subject well(s) being held constant. As discussed in detail in the WY 2010 Summary of Operations Report, injection rates at both SM ASR-1 and SM ASR-2 have varied significantly since the installation of the ASR Pipeline in Gen. Jim Moore Blvd. as a result of pressure fluctuations in the CAW system. As shown on **Figure 9**, these pressure fluctuations persisted (although to a lesser extent) throughout most of WY 2012 as well, and as a result, plugging rates during the WY 2012 injection season cannot be reliably calculated.

Residual plugging, however, can be measured from the WY 2012 data. 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 2012. Presented in **Tables 9**



and 10 below are summaries of the residual plugging calculations for SM ASR-2 and SMS ASR-3⁸, respectively, during WY 2012.

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)	Normalized Drawdown ² (ft)	Residual Plugging (ft)	Cumulative Plugging (ft)	Comments
Pre-Injection	5/24/11	3,100	93.5	33.2	90.5	--	--	End of WY 2011
1	3/29/12	2,900	97.1	29.9	100.4	10.0	10.0	After initial WY 2012 24-hr injection
2	3/30/12	2,800	92.2	30.4	98.8	-1.7	8.3	
3	4/3/12	2,800	90.4	31.0	96.8	-2.0	6.4	
4	4/17/12	2,700	94.2	28.7	104.7	7.8	14.2	
5	4/23/12	2,700	92.3	29.3	102.5	-2.1	12.1	End of WY 2012
Averages		2,833	93.3	30.4	99.0	2.4	--	
Cumulative							12.1	

Notes:

- 1 - Specific Capacity. Ratio of pumping rate to draw down n.
- 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)	Normalized Drawdown ² (ft)	Residual Plugging (ft)	Cumulative Plugging (ft)	Comments
Pre-Injection	1/17/12	3,200	107.1	29.9	100.4	--	--	Prior to WY 2012 Injection Season
1	3/30/12	3,100	167.3	18.5	161.9	61.5	61.5	After preliminary injection hydraulics testing
2	4/10/12	3,100	165.6	18.7	160.3	-1.6	59.9	Prior to variable rate injection test
3	4/16/12	2,800	187.6	14.9	201.0	40.7	100.6	After variable rate injection test
4	4/17/12	2,500	188.1	13.3	225.7	24.7	125.3	After initial "constant" rate injection
5	4/18/12	2,700	188.4	14.3	209.3	-16.3	108.9	
6	4/19/12	2,400	189.5	12.7	236.9	27.5	136.5	
7	4/20/12	2,600	192.0	13.5	221.5	-15.3	121.1	
8	4/23/12	2,400	186.4	12.9	233.0	11.5	132.6	End of WY 2012
Averages		2,900	167.3	18.3	176.4	21.8	--	
Cumulative							132.6	

Notes:

- 1 - Specific Capacity. Ratio of pumping rate to draw down n.
- 2 - Normalized based on ratio of 3,000 gpm to actual test pumping rate.

As discussed in the WY 2011 Summary of Operations Report, there appears to be a general positive corollary relationship between maximum water-level drawup during injection and the amount of residual plugging, in that residual plugging tends to increase with increased drawup during injection. Water-level drawup during injection is a function of the injection rate, the duration of injection, and the rate of plugging. Identifying the amount of available draw-up for any given injection well and period is a useful guide to avoid over-pressurization and compression of plugging materials while balancing both the rate and duration of injection between backflushing events. As discussed in the Backflushing section of this report, the amount of water-level drawup during injection should not exceed the available drawdown in the

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 pumping rate for each well.



well for backflushing in order to maximize the efficacy of backflushing and limit the amount of residual plugging.

As shown on **Figures 6 and 9**, the injection water level was maintained at or below the recommended maximum available drawup at SM ASR-2 (140 feet) during WY 2012, and as shown in **Table 9**, the cumulative residual plugging was limited to 12.1 ft at the end of the season. The slight amount of residual plugging at SM ASR-2 during WY 2012 was manifested as slight declines in the specific capacity and injectivity of the well over the course of the injection season (refer to **Tables 5 and 7**).

As shown in **Table 10**, a significant amount of *apparent* residual plugging occurred at SMS ASR-3 during WY 2012, with cumulative residual plugging of 132.6 ft. at the end of the season. As discussed in the Well Performance section, a similar loss of performance phenomena has been observed at both SM ASR-1 and SM ASR-2 following the initial injection trials at these wells. This phenomenon has now been repeated at SMS ASR-3 as a result of the initial injection during WY 2012. It is believed that this phenomenon is likely due to relatively rapid particle rearrangement (mechanical jamming) and/or chemical precipitation that occurs during the initial stages of injection at a new ASR well in the Tsm, as opposed to the normal slow accumulation of particulate plugging that is typically observed over the course of an injection season. It is also likely that, similar to the experiences at SM ASR-1 and SM ASR-2, performance can be significantly restored by rehabilitation. The performance issues associated with SMS ASR-3 will be more fully evaluated following completion of the remaining portion of the baseline injection test program for this well in WY 2013.

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 eight existing offsite District monitoring well locations in the SGB. In addition, the recently constructed Seaside Middle School (SMS) monitoring wells (SMS Deep and Shallow) have been similarly instrumented. The locations of each offsite monitoring well are shown on **Figure 1**, and water-level hydrographs for the monitoring wells during WY 2012 are graphically presented on **Figures 12 through 18**. A summary of the regional water-level observations during the WY 2012 injection season is presented in **Table 11** below.



Table 11. WY 2012 Aquifer Response Summary

Well ID	Distance from Neatest 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	12	341.2	No Data	
SMS (Deep)		Tsm		357.2	303.8	53.4
SM MW-1	190 (SM ASR-2)	Tsm	13	360.5	340.6	19.9
Paralta Test	650 (SM ASR-2)	QTp & Tsm	14	331.8	323.8	8.0
Ord Grove Test	1,820 (SM ASR-2)	QTp & Tsm	No Data			
Ord Terrace (Shallow)	2,550 (SM ASR-2)	Tsm	15	No Discernible Response		
FO-7 (Shallow)	3,700 (SMS ASR-3)	QTp	16	453.9	453.9	0.0
FO-7 (Deep)		Tsm		488.3	482.4	5.9
FO-9 (Deep)	6,130 (SMS ASR-3)	Tsm	No Data			
PCA East (Shallow)	6,200 (SMS ASR-3)	QTp	17	62.1	61.9	0.2
PCA East (Deep)		Tsm		85.5	80.9	4.6
FO-8 (Deep)	6,450 (SMS ASR-3)	Tsm	18	394.1	389.2	4.9

Notes:

QTp – Paso Robles aquifer
 Tsm – 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 2012 recharge season ranged between approximately 10 to 30 feet below sea level. Positive response to injection during WY 2012 was observed at 6 of the 9 monitoring wells completed in the Santa Margarita Sandstone aquifer; however, it is noted that several dataloggers were non-operational for a variety of reasons during the water year, making evaluation of the basin water-level response to WY 2012 injection difficult. For the 6 monitoring wells with sufficient data (see **Table 11** above), water-level responses ranged between approximately 5 to 53 feet, decreasing with distance from the ASR wells, as is the typical and expected aquifer response to hydraulic stresses (i.e., injection or pumping).

The available water-level data also show that at the Tsm-only monitoring wells, water levels 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



level in the underlying Tsm aquifer during WY 2012. 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 continues to not show a discernible response to injection operations, as has been observed during previous injection seasons. These observations suggest that the Ord Terrace fault represents a hydraulic barrier in the Tsm aquifer.

WATER QUALITY

General

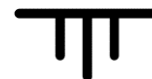
Source water for injection is supplied from the CAW municipal water system, primarily from Carmel River system wells which are treated at the CAW Begonia Iron Removal Plant (BIRP) for iron and manganese removal. The BIRP water is also disinfected and maintains a free chlorine residual. A phosphate-based corrosion inhibitor is also added to the filtered water before entering the CAW distribution system.

As in previous years, water quality was routinely monitored at the ASR well sites during WY 2012 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 2012 are presented in **Tables 12 through 19** below⁹. Analytic laboratory reports are presented in **Appendix B**. A discussion of the water-quality data collected during WY 2012 is presented below.

Mixing and Dilution

Because injection operations have occurred annually at SM ASR-1 over the past 10 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). The issue of precisely defining baseline water-quality conditions is increasingly difficult as injection occurs at multiple wells, and the practice has been dropped in this report.

⁹ It is noted that both the Santa Margarita and Seaside Middle School ASR Facilities were undergoing various phases of facility construction during WY 2012. As a result, there were numerous power 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 construction is currently nearing completion and sampling interruptions are anticipated to be reduced as construction activities at both sites approach completion over the next year.



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 Cl⁻ concentration of the native groundwaters within the Tsm has averaged approximately 120 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 2012 injection operations and at the end of the WY 2012 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.

Table 12. Percent Injectate at Wells During WY 2012

Well	Pre-Injection Conditions			End-Storage Conditions			WY 2012 Change (%)	Comments
	Sample Date	Cl (mg/l)	% Injectate in Water	Sample Date	Cl (mg/l)	% Injectate in Water		
SM ASR-1	2/2/12	67	56	10/31/12	110	11	-46	No injection. Used for recovery.
SM ASR-2	1/26/12	129	0	8/2/12	85	37	37	104.7 af injected. No recovery.
SM MW-1	1/25/12	82	40	11/1/12	34	91	51	Located between SM ASR-1 and SM ASR-2
SMS ASR-3	10/22/10	107	14	10/30/12	90	32	18	20.6 af injected. No recovery.
SMS Deep	3/27/12	120	0	10/30/12	90	32	32	25 ft. from SMS ASR-3.
Paralta	11/17/11	87	35	7/24/12	107	14	-21	
PCA-E Deep	3/26/12	104	17	10/31/12	92	30	13	

As **Table 12** shows, none of the seven well locations had the same water quality prior to WY 2012 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 56 percent injectate water at SM ASR-1 to 0 percent injectate water at SM ASR-2 and SMS Deep prior to the WY 2012 injection season. By the end of the WY 2012 recovery period, the concentration of injectate water at most wells increased, with the exception of SM ASR-1, which declined significantly compared to pre-injection conditions. The observations at SM ASR-1 are the expected result of no injection occurring at this well combined with its utilization for recovery pumping during WY 2012.

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; however, the substantial and repeated dilution/intermixing that has occurred now is more error prone due to the significant dilutions and the spatial variations of Cl⁻ concentrations around the ASR project sites now extant. Normalized data are therefore not included in the current data presentations.



Table 13. Summary of WY 2012 Water Quality Data - Injectate

Parameter	Unit	PQL	MCL	Results	
				CAW Injectate	3/28/12
Sample Description				Injectate	
Major Cations					
Calcium	mg/L	0.5			42
Magnesium	mg/L	0.5			14
Potassium	mg/L	0.5			2.8
Sodium	mg/L	0.5			45
Major Anions					
Alkalinity, Total (as CaCO3)	mg/L	2			141
Chloride	mg/L	1	250		37
Sulfate	mg/L	1	250		78
Nitrate (as NO3)	mg/L	1	45		ND
Nitrite (as Nitrogen)	mg/L	1	1		ND
General Physical					
pH	Std Units				7.6
Specific Conductance (EC)	uS	1	900		520
Total Dissolved Solids	mg/L	10	500		
Metals					
Arsenic (Total)	ug/L	1	10		1
Barium (Total)	ug/L	10	1000		53
Iron (Dissolved)	ug/L	10			ND
Iron (Total)	ug/L	10	300		ND
Lithium	ug/L	1			6
Manganese (Dissolved)	ug/L	10			ND
Manganese (Total)	ug/L	10	50		ND
Molybdenum	ug/L	1	1000		2
Nickel	ug/L	10	100		
Selenium	ug/L	2	50		3
Strontium (Total)	ug/L	5			243
Uranium (by ICP/MS)	ug/L	1	30		ND
Vanadium (Total)	ug/L	1	1000		ND
Zinc (Total)	ug/L	10	5000		216
Miscellaneous					
Ammonia-N	mg/L	0.05			ND
Boron	mg/L	0.05			ND
Chloramines	mg/L	0.05			0.08
Gross Alpha	pCi/L		15	0.000 +/-	1.16
Kjeldahl Nitrogen (Total)	mg/L	0.5			ND
Methane	ug/L	0.1			ND
Nitrogen (Total)	mg/L	0.5			ND
o-Phosphate-P	mg/L	0.05			0.27
Phosphorous (Total)	mg/L	0.03			0.32
Radium 226	pCi/L		3	0.056 +/-	0.190
Organic Analyses					
Haloacetic Acids (Total)	ug/L	1.0	60.0		12.9
<i>Dibromoacetic Acid</i>	ug/L	1.0			3.0
<i>Dichloroacetic Acid</i>	ug/L	1.0			5.7
<i>Monobromoacetic Acid</i>	ug/L	1.0			ND
<i>Monochloroacetic Acid</i>	ug/L	2.0			ND
<i>Trichloroacetic Acid</i>	ug/L	1.0			4.2
Organic Carbon (Dissolved)	mg/L	0.2			1.2
Organic Carbon (Total)	mg/L	0.2			1.0
Trihalomethanes (Total)	ug/L	1.0	80.0		23.1
<i>Bromodichloromethane</i>	ug/L	0.5			7.9
<i>Bromoform</i>	ug/L	0.5			1.1
<i>Chloroform</i>	ug/L	0.5			8.0
<i>Dibromochloromethane</i>	ug/L	0.5			6.1
Field Parameters					
Temperature	° C	0.1			
Specific Conductance (EC)	uS	1.0	900		
pH	Std Units	0.1	6.5 - 8.5		
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 ₂ S	mg/L	0.1			

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



Table 14. Summary of WY 2012 Water-Quality Data - SM ASR-1

Parameter	Unit	PQL	MCL	SM ASR-1						
				3/21/01	11/18/11	2/2/12	5/16/12	6/21/12	7/6/12	10/31/12
Sample Description				NGW	WY 2011 Storage		WY 2012 Storage			
Elapsed Storage Time	Days			--	178	254	23	59	74	191
Volume Purged at Sampling	1,000 gals			--						
Major Cations										
Calcium	mg/L	0.5		85	43	61			60	86
Magnesium	mg/L	0.5		19	14	19			18	22
Potassium	mg/L	0.5		5.3	3	3.7			3.8	5.2
Sodium	mg/L	0.5		88	46	62			63	93
Major Anions										
Alkalinity, Total (as CaCO3)	mg/L	2		224	142	177			171	223
Chloride	mg/L	1	250	120	40	67		49	66	110
Sulfate	mg/L	1	250	95	74	83			88	102
Nitrate (as NO3)	mg/L	1	45	ND	ND	ND			ND	ND
Nitrite (as Nitrogen)	mg/L	1	1						ND	ND
General Physical										
pH	Std Units			7.1	7.4	7.1			7.3	7.5
Specific Conductance (EC)	uS	1	900	1015	537	724			704	987
Total Dissolved Solids	mg/L	10	500	618					428	614
Metals										
Arsenic (Total)	ug/L	1	10	ND	ND	1			1	1
Barium (Total)	ug/L	10	1000	52	64	83			73	81
Iron (Dissolved)	ug/L	10			ND	ND			37	27
Iron (Total)	ug/L	10	300	120	ND	185			24	42
Lithium	ug/L	1			6	143			16	32
Manganese (Dissolved)	ug/L	10			ND	22			ND	23.0
Manganese (Total)	ug/L	10	50	40	ND	23			ND	24
Molybdenum	ug/L	1	1000		7	7			6	7
Nickel	ug/L	10	100						ND	ND
Selenium	ug/L	2	50	ND	2	ND			3	ND
Strontium (Total)	ug/L	5			254	316			312	402
Uranium (by ICP/MS)	ug/L	1	30		1	1			1	1
Vanadium (Total)	ug/L	1	1000		ND	2			1	2
Zinc (Total)	ug/L	10	5000	10	205	294			134	181
Miscellaneous										
Ammonia-N	mg/L	0.05		0.33	ND	ND			ND	0.12
Boron	mg/L	0.05		0.14	ND	0.06			0.06	0.13
Chloramines	mg/L	0.05			ND	ND		ND	ND	ND
Gross Alpha	pCi/L		15		2.17 +/- 1.81	2.96 +/- 1.27			2.84 +/- 1.49	5.57 +/- 2.32
Kjeldahl Nitrogen (Total)	mg/L	0.5			ND	ND			1.7	ND
Methane	ug/L	0.1			ND	0.4			0.39	3.2
Nitrogen (Total)	mg/L	0.5			ND	ND			1.7	ND
o-Phosphate-P	mg/L	0.05		0.46	0.16	0.12			ND	ND
Phosphorous (Total)	mg/L	0.03			0.20	0.26			0.22	0.30
Radium 226	pCi/L		3		0.000 +/- 0.193	0.033 +/- 0.171			0.000 +/- 0.099	0.881 +/- 0.335
Organic Analyses										
Haloacetic Acids (Total)	ug/L	1.0	60.0		0.0	0.0	0.0	0.0	0.0	0.0
<i>Dibromoacetic Acid</i>	ug/L	1.0			ND	ND	ND	ND	ND	ND
<i>Dichloroacetic Acid</i>	ug/L	1.0			ND	ND	ND	ND	ND	ND
<i>Monobromoacetic Acid</i>	ug/L	1.0			ND	ND	ND	ND	ND	ND
<i>Monochloroacetic Acid</i>	ug/L	2.0			ND	ND	ND	ND	ND	ND
<i>Trichloroacetic Acid</i>	ug/L	1.0			ND	ND	ND	ND	ND	ND
Organic Carbon (Dissolved)	mg/L	0.2			0.98	0.94			0.77	0.76
Organic Carbon (Total)	mg/L	0.2		6.3	0.95	1.1			0.78	0.99
Trihalomethanes (Total)	ug/L	1.0	80.0		31.0	3.5	23.6	41.5	29.3	9.8
<i>Bromodichloromethane</i>	ug/L	0.5			8.2	0.8	5.9	12.0	8.0	2.4
<i>Bromoform</i>	ug/L	0.5			ND	ND	ND	ND	0.6	ND
<i>Chloroform</i>	ug/L	0.5			20.0	2.7	15.5	25.0	18.0	7.4
<i>Dibromochloromethane</i>	ug/L	0.5			2.8	ND	2.2	4.5	2.7	ND
Field Parameters										
Temperature	°C	0.1			16.9	18.3			22.5	23.0
Specific Conductance (EC)	uS	1.0	900	1015	544	716			932	971
pH	Std Units	0.1	6.5 - 8.5	7.1	7.3	--			--	6.94
ORP	mV	1.0			+81	-167			-172	-165
Free Chlorine Residual	mg/L	0.1	2 - 5		ND	ND			ND	ND
Dissolved Oxygen	mg/L	0.01			1.35	0.07			--	--
Silt Density Index	Std Units	0.1			--	--			--	--
Gas Volume	mL	2.0			--	--			--	--
F ₂ S	mg/L	0.1		1.5	ND	ND			--	0.06

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



Table 15. Summary of WY 2012 Water Quality Data – SM ASR-2

Parameter	Unit	PQL	MCL	Results		
				SM ASR-2		
				1/26/12	7/3/12	8/2/12
Sample Description				WY 2011 Storage	WY 2012 Storage	
Elapsed Storage Time	Days			247	71	101
Volume Purged at Sampling	1,000 gals					
Major Cations						
Calcium	mg/L	0.5		91	47	
Magnesium	mg/L	0.5		28	14	
Potassium	mg/L	0.5		4.8	3.2	
Sodium	mg/L	0.5		85	48	
Major Anions						
Alkalinity, Total (as CaCO3)	mg/L	2		243	142	
Chloride	mg/L	1	250	129	36	85
Sulfate	mg/L	1	250	115	77	
Nitrate (as NO3)	mg/L	1	45	ND	ND	
Nitrite (as Nitrogen)	mg/L	1	1		ND	
General Physical						
pH	Std Units			7.2	7.4	
Specific Conductance (EC)	uS	1	900	1030	543	
Total Dissolved Solids	mg/L	10	500		302	
Metals						
Arsenic (Total)	ug/L	1	10	2	2	
Barium (Total)	ug/L	10	1000	126	64	
Iron (Dissolved)	ug/L	10		44	52	
Iron (Total)	ug/L	10	300	139	63	
Lithium	ug/L	1		37	7	
Manganese (Dissolved)	ug/L	10		45	ND	
Manganese (Total)	ug/L	10	50	51	ND	
Molybdenum	ug/L	1	1000	11	6	
Nickel	ug/L	10	100		ND	
Selenium	ug/L	2	50	2	4	
Strontium (Total)	ug/L	5		482	248	
Uranium (by ICP/MS)	ug/L	1	30	5	1	
Vanadium (Total)	ug/L	1	1000	ND	2	
Zinc (Total)	ug/L	10	5000	434	219	
Miscellaneous						
Ammonia-N	mg/L	0.05		0.06	ND	
Boron	mg/L	0.05		0.11	ND	
Chloramines	mg/L	0.05		ND	ND	ND
Gross Alpha	pCi/L		15	6.05 +/- 1.61	2.60 +/- 1.34	
Kjehdahi Nitrogen (Total)	mg/L	0.5		ND	0.4	
Methane	ug/L	0.1		0.68	0.18	
Nitrogen (Total)	mg/L	0.5		ND	ND	
o-Phosphate-P	mg/L	0.05		0.16	0.18	
Phosphorous (Total)	mg/L	0.03		0.22	0.37	
Radium 226	pCi/L		3	0.775 +/- .536	0.294 +/- 0.203	
Organic Analyses						
Haloacetic Acids (Total)	ug/L	1.0	60.0	0.0	3.2	0.0
<i>Dibromoacetic Acid</i>	ug/L	1.0		ND	ND	ND
<i>Dichloroacetic Acid</i>	ug/L	1.0		ND	ND	ND
<i>Monobromoacetic Acid</i>	ug/L	1.0		ND	ND	ND
<i>Monochloroacetic Acid</i>	ug/L	2.0		ND	ND	ND
<i>Trichloroacetic Acid</i>	ug/L	1.0		ND	3.2	ND
Organic Carbon (Dissolved)	mg/L	0.2		0.87	0.86	
Organic Carbon (Total)	mg/L	0.2		0.91	0.93	
Trihalomethanes (Total)	ug/L	1.0	80.0	6.7	52.7	42.1
<i>Bromodichloromethane</i>	ug/L	0.5		1.2	15.0	11.0
<i>Bromoform</i>	ug/L	0.5		ND	1.5	0.9
<i>Chloroform</i>	ug/L	0.5		4.8	28.0	25.0
<i>Dibromochloromethane</i>	ug/L	0.5		0.7	8.2	5.2
Field Parameters						
Temperature	° C	0.1		18.3	18.4	
Specific Conductance (EC)	uS	1.0	900	997	930	
pH	Std Units	0.1	6.5 - 8.5	7.0	7.1	
ORP	mV	1.0		-96	-94	
Free Chlorine Residual	mg/L	0.1	2 - 5	ND	ND	
Dissolved Oxygen	mg/L	0.01		0.13	0.21	
Silt Density Index	Std Units	0.1		--	--	
Gas Volume	mL	2.0		--	--	
H ₂ S	mg/L	0.1		ND	--	

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



Table 16. Summary of WY 2012 Water Quality Data – SMS ASR-3

Parameter	Unit	PQL	MCL	Results				
				SMS ASR-3				
				10/22/2010	5/22/12	6/21/12	7/3/12	10/30/12
Sample Description				NGW	WY 2012 Storage			
Elapsed Storage Time	Days				29	59	71	190
Volume Purged at Sampling	1,000 gals							
Major Cations								
Calcium	mg/L	0.5		76	44		50	68
Magnesium	mg/L	0.5		18	14		13	18
Potassium	mg/L	0.5		4.5	3.0		3.4	4.8
Sodium	mg/L	0.5		102	44		56	87
Major Anions								
Alkalinity, Total (as CaCO3)	mg/L	2		304	141		157	223
Chloride	mg/L	1	250	107	33	34	44	90
Sulfate	mg/L	1	250	56	71		68	58
Nitrate (as NO3)	mg/L	1	45	1	ND		ND	ND
Nitrite (as Nitrogen)	mg/L	1	1	ND	ND		ND	ND
General Physical								
pH	Std Units			7.7	7.5		7.5	7.3
Specific Conductance (EC)	uS	1	900	954	521		583	850
Total Dissolved Solids	mg/L	10	500	575	317		342	503
Metals								
Arsenic (Total)	ug/L	1	10	4	39		4	5
Barium (Total)	ug/L	10	1000	50	55		66	77
Iron (Dissolved)	ug/L	10		21	20		32	93
Iron (Total)	ug/L	10	300	21	88		193	156
Lithium	ug/L	1		36	7		10	32
Manganese (Dissolved)	ug/L	10		27	16		18	25
Manganese (Total)	ug/L	10	50	27	16		24	26
Molybdenum	ug/L	1	1000	--	97		35	8
Nickel	ug/L	10	100	ND	ND		ND	ND
Selenium	ug/L	2	50	ND	8		5	2
Strontium (Total)	ug/L	5		403	231		262	335
Uranium (by ICP/MS)	ug/L	1	30	--	5		4	2
Vanadium (Total)	ug/L	1	1000	--	2		ND	4
Zinc (Total)	ug/L	10	5000	--	129		96	72
Miscellaneous								
Ammonia-N	mg/L	0.05		249	0.06		ND	ND
Boron	mg/L	0.05		ND	ND		ND	0.09
Chloramines	mg/L	0.05		0.08	ND	ND	ND	ND
Gross Alpha	pCi/L		15	--	4.43 +/- 1.59		9.15 +/- 2.26	4.12 +/- 1.97
Kjeldahl Nitrogen (Total)	mg/L	0.5		ND	ND		ND	ND
Methane	ug/L	0.1		ND	ND		0.17	0.61
Nitrogen (Total)	mg/L	0.5		ND	ND		ND	ND
o-Phosphate-P	mg/L	0.05		ND	0.10		ND	ND
Phosphorous (Total)	mg/L	0.03		0.03	0.22		0.18	0.22
Radium 226	pCi/L		3	--	0.356 +/- 0.183		0.160 +/- 0.165	0.426 +/- 0.256
Organic Analyses								
Haloacetic Acids (Total)	ug/L	1.0	60.0	ND	16.4	23.2	9.3	0.0
<i>Dibromoacetic Acid</i>	ug/L	1.0		ND	ND	2.3	ND	ND
<i>Dichloroacetic Acid</i>	ug/L	1.0		ND	3.4	12.0	2.7	ND
<i>Monobromoacetic Acid</i>	ug/L	1.0		ND	ND	ND	ND	ND
<i>Monochloroacetic Acid</i>	ug/L	2.0		ND	ND	2.3	ND	ND
<i>Trichloroacetic Acid</i>	ug/L	1.0		ND	13.0	6.6	6.6	ND
Organic Carbon (Dissolved)	mg/L	0.2		0.71	0.87		0.78	0.66
Organic Carbon (Total)	mg/L	0.2		0.70	1.20		0.98	0.73
Trihalomethanes (Total)	ug/L	1.0	80.0	ND	79.0	57.7	46.5	6.3
<i>Bromodichloromethane</i>	ug/L	0.5		ND	23.0	17.0	14.0	1.8
<i>Bromoform</i>	ug/L	0.5		ND	2.0	1.7	1.7	0.5
<i>Chloroform</i>	ug/L	0.5		ND	39.0	26.0	21.0	2.7
<i>Dibromochloromethane</i>	ug/L	0.5		ND	15.0	13.0	9.8	1.3
Field Parameters								
Temperature	° C	0.1		26.2	17.3		18.4	23.9
Specific Conductance (EC)	uS	1.0	900	991	517		589	829
pH	Std Units	0.1	6.5 - 8.5	7.0	7.8		7.3	7.1
ORP	mV	1.0		-82	-38		-126	-192
Free Chlorine Residual	mg/L	0.1	2 - 5	ND	0.05		ND	ND
Dissolved Oxygen	mg/L	0.01		--	5.83		--	--
Silt Density Index	Std Units	0.1		--	--		--	--
Gas Volume	mL	2.0		--	--		--	--
H ₂ S	mg/L	0.1		0.60	ND		0.1	0.05

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



Table 17. Summary of WY 2012 Water Quality Data – SM MW-1

Parameter	Unit	PQL	MCL	Results				
				SM MW-1				
				1/25/12	5/30/12	7/3/12	8/2/12	11/1/12
Sample Description	WY 2011 Storage	WY 2012 Storage						
Elapsed Storage Time	Days			246	37	71	101	192
Volume Purged at Sampling	1,000 gals							
Major Cations								
Calcium	mg/L	0.5		72	47	48		47
Magnesium	mg/L	0.5		22	14	11		12
Potassium	mg/L	0.5		3.9	3.1	3.1		2.9
Sodium	mg/L	0.5		61	48	47		47
Major Anions								
Alkalinity, Total (as CaCO3)	mg/L	2		203	151	139		144
Chloride	mg/L	1	250	82	35	32	59	34
Sulfate	mg/L	1	250	92	70	70		69
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			7.4	7.6	7.4		7.5
Specific Conductance (EC)	uS	1	900	790	563	528		540
Total Dissolved Solids	mg/L	10	500		363	322		340
Metals								
Arsenic (Total)	ug/L	1	10	2		2		2
Barium (Total)	ug/L	10	1000	52		25		21
Iron (Dissolved)	ug/L	10		ND	ND	ND		ND
Iron (Total)	ug/L	10	300	ND	21	ND		ND
Lithium	ug/L	1		21		6		8
Manganese (Dissolved)	ug/L	10		13	ND	ND		ND
Manganese (Total)	ug/L	10	50	13	ND	ND		ND
Molybdenum	ug/L	1	1000	7		4		4
Nickel	ug/L	10	100			ND		ND
Selenium	ug/L	2	50	4		6		2
Strontium (Total)	ug/L	5		383		227		247
Uranium (by ICP/MS)	ug/L	1	30	5		2		1
Vanadium (Total)	ug/L	1	1000	ND		2		2
Zinc (Total)	ug/L	10	5000	61		ND		13
Miscellaneous								
Ammonia-N	mg/L	0.05		ND	ND	ND		ND
Boron	mg/L	0.05		0.07	ND	ND		ND
Chloramines	mg/L	0.05		ND	ND	ND	ND	ND
Gross Alpha	pCi/L		15	8.09 +/- 2.3		2.62 +/- 1.34		2.95 +/- 1.44
Kjehidahl Nitrogen (Total)	mg/L	0.5		ND	0.5	ND		ND
Methane	ug/L	0.1		0.6		0.14		0.12
Nitrogen (Total)	mg/L	0.5		ND	0.6	ND		ND
o-Phosphate-P	mg/L	0.05		ND	ND	ND		ND
Phosphorous (Total)	mg/L	0.03		0.07	0.22	0.15		0.06
Radium 226	pCi/L		3	0.180 +/- 0.390		0.561 +/- 0.262		0.027 +/- 0.157
Organic Analyses								
Haloacetic Acids (Total)	ug/L	1.0	60.0	0.0	0.0	4.0	0.0	0.0
<i>Dibromoacetic Acid</i>	ug/L	1.0		ND	ND	ND	ND	ND
<i>Dichloroacetic Acid</i>	ug/L	1.0		ND	ND	ND	ND	ND
<i>Monobromoacetic Acid</i>	ug/L	1.0		ND	ND	ND	ND	ND
<i>Monochloroacetic Acid</i>	ug/L	2.0		ND	ND	ND	ND	ND
<i>Trichloroacetic Acid</i>	ug/L	1.0		ND	ND	4.0	ND	ND
Organic Carbon (Dissolved)	mg/L	0.2		1.1	0.9	1.1		0.61
Organic Carbon (Total)	mg/L	0.2		1.0	0.85	0.95		0.71
Trihalomethanes (Total)	ug/L	1.0	80.0	6.1	30.9	61.9	27.6	58.7
<i>Bromodichloromethane</i>	ug/L	0.5		1.0	9.4	17.0	7.2	12.0
<i>Bromoform</i>	ug/L	0.5		ND	1.2	1.2	0.6	0.5
<i>Chloroform</i>	ug/L	0.5		4.4	14.0	36.0	16.0	42.0
<i>Dibromochloromethane</i>	ug/L	0.5		0.7	6.3	7.7	3.8	4.2
Field Parameters								
Temperature	° C	0.1		18.9	18.5	18.5		19.6
Specific Conductance (EC)	uS	1.0	900	761	470	516		530
pH	Std Units	0.1	6.5 - 8.5	6.99	7.0	7.1		7.5
ORP	mV	1.0		-219	-135	-64		-84
Free Chlorine Residual	mg/L	0.1	2 - 5	ND	ND	ND		ND
Dissolved Oxygen	mg/L	0.01		0.26	1.04	--		--
Silt Density Index	Std Units	0.1		--	--	--		--
Gas Volume	mL	2.0		--	--	--		--
H ₂ S	mg/L	0.1		ND	ND	ND		--

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



Table 18. Summary of WY 2012 Water Quality Data – SMS Deep

Parameter	Unit	PQL	MCL	Results				
				SMS Deep				
				3/27/12	5/30/12	7/3/12	8/2/12	10/30/12
Sample Description	WY 2011 Storage	WY 2012 Storage						
Elapsed Storage Time	Days			308	37	71	101	190
Volume Purged at Sampling	1,000 gals							
Major Cations								
Calcium	mg/L	0.5		70	48	55		66
Magnesium	mg/L	0.5		14	9	10		11
Potassium	mg/L	0.5		4.1	2.8	3.2		4.1
Sodium	mg/L	0.5		91	50	66		90
Major Anions								
Alkalinity, Total (as CaCO3)	mg/L	2		229	148	167		203
Chloride	mg/L	1	250	120	32	54	80	90
Sulfate	mg/L	1	250	53	65	60		54
Nitrate (as NO3)	mg/L	1	45	ND	ND	ND		ND
Nitrite (as Nitrogen)	mg/L	1	1	ND	ND	ND		ND
General Physical								
pH	Std Units			7.3	7.7	7.6		7.4
Specific Conductance (EC)	uS	1	900	904	533	627		796
Total Dissolved Solids	mg/L	10	500	534	351	345		468
Metals								
Arsenic (Total)	ug/L	1	10	6		6		7
Barium (Total)	ug/L	10	1000	54		36		43
Iron (Dissolved)	ug/L	10			ND	ND		ND
Iron (Total)	ug/L	10	300	56	14	14		ND
Lithium	ug/L	1		25		13		29
Manganese (Dissolved)	ug/L	10			ND	ND		11
Manganese (Total)	ug/L	10	50	79	ND	ND		12
Molybdenum	ug/L	1	1000	7		44		7
Nickel	ug/L	10	100			ND		ND
Selenium	ug/L	2	50	2		7		2
Strontium (Total)	ug/L	5		457		351		413
Uranium (by ICP/MS)	ug/L	1	30	2		5		3
Vanadium (Total)	ug/L	1	1000	1		4		6
Zinc (Total)	ug/L	10	5000	10		ND		17
Miscellaneous								
Ammonia-N	mg/L	0.05		0.09	0.06	ND		0.06
Boron	mg/L	0.05		0.09	ND	0.05		0.08
Chloramines	mg/L	0.05		ND	ND	ND	ND	ND
Gross Alpha	pCi/L		15	5.20 +/- 2.30		6.21 +/- 1.96		3.34 +/- 2.58
Kjehidahl Nitrogen (Total)	mg/L	0.5			ND	ND		ND
Methane	ug/L	0.1		1.4		0.15		0.62
Nitrogen (Total)	mg/L	0.5			ND	ND		ND
o-Phosphate-P	mg/L	0.05		ND	ND	ND		ND
Phosphorous (Total)	mg/L	0.03			0.09	0.09		0.12
Radium 226	pCi/L		3	0.408 +/- 0.204		0.025 +/- 0.111		0.663 +/- 0.292
Organic Analyses								
Haloacetic Acids (Total)	ug/L	1.0	60.0	0.0	14.8	7.8	1.7	0.0
<i>Dibromoacetic Acid</i>	ug/L	1.0		ND	ND	ND	ND	ND
<i>Dichloroacetic Acid</i>	ug/L	1.0		ND	4.8	2.1	ND	ND
<i>Monobromoacetic Acid</i>	ug/L	1.0		ND	ND	ND	ND	ND
<i>Monochloroacetic Acid</i>	ug/L	2.0		ND	ND	ND	ND	ND
<i>Trichloroacetic Acid</i>	ug/L	1.0		ND	10	5.7	1.7	ND
Organic Carbon (Dissolved)	mg/L	0.2			0.89	0.66		0.55
Organic Carbon (Total)	mg/L	0.2		0.98	0.85	0.71		0.59
Trihalomethanes (Total)	ug/L	1.0	80.0	0.0	46.9	33.3	18.8	10.3
<i>Bromodichloromethane</i>	ug/L	0.5		ND	14.0	10.0	5.2	3.0
<i>Bromoform</i>	ug/L	0.5		ND	1.9	1.6	0.9	0.7
<i>Chloroform</i>	ug/L	0.5		ND	20.0	14.0	8.8	4.3
<i>Dibromochloromethane</i>	ug/L	0.5		ND	11.0	7.7	3.9	2.3
Field Parameters								
Temperature	° C	0.1		26.1	19.9	26.5		25
Specific Conductance (EC)	uS	1.0	900	--	526	830		777
pH	Std Units	0.1	6.5 - 8.5	7.1	7.4	--		7.21
ORP	mV	1.0		-165	-178.2	-161		155
Free Chlorine Residual	mg/L	0.1	2 - 5	--	ND	ND		ND
Dissolved Oxygen	mg/L	0.01		2.11	2.37	--		--
Silt Density Index	Std Units	0.1		--	--	--		--
Gas Volume	mL	2.0		--	--	--		--
H ₂ S	mg/L	0.1		0.07	0.17	--		0.05

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



Table 19. Summary of WY 2012 Water Quality Data – Off-Site Monitoring Wells

Parameter	Unit	PQL	MCL	Results				
				PCA-E Deep			Paralta	
				3/26/12	6/19/12	10/31/12	11/17/11	7/24/12
Sample Description				WY 2011 Storage	WY 2012 Storage	WY 2012 Storage	WY 2011 Storage	WY 2012 Storage
Volume Pumped at Sampling	1,000 gals							
Major Cations								
Calcium	mg/L	0.5		53	42	51	37	63
Magnesium	mg/L	0.5		10	8	10	10	16
Potassium	mg/L	0.5		3.8	3.5	3.9	ND	ND
Sodium	mg/L	0.5		84	80	91	65	81
Major Anions								
Alkalinity, Total (as CaCO3)	mg/L	2		192	160	185	136	225
Chloride	mg/L	1	250	104	76	92	87	107
Sulfate	mg/L	1	250	31	28	32	43	67
Nitrate (as NO3)	mg/L	1	45	ND	ND	ND	1	0.7
Nitrite (as Nitrogen)	mg/L	1	1	ND	ND	ND	ND	ND
General Physical								
pH	Std Units			7.4	7.7	7.5	--	--
Specific Conductance (EC)	uS	1	900	754	613	737	722	932
Total Dissolved Solids	mg/L	10	500	437	403	440	352	522
Metals								
Arsenic (Total)	ug/L	1	10	8	--	8	3	2
Barium (Total)	ug/L	10	1000	63	--	68	ND	ND
Iron (Dissolved)	ug/L	10		--	--	35	ND	ND
Iron (Total)	ug/L	10	300	45	ND	44	ND	ND
Lithium	ug/L	1		23	--	23	7	--
Manganese (Dissolved)	ug/L	10		--	--	99	11	--
Manganese (Total)	ug/L	10	50	104	36	101	ND	20
Molybdenum	ug/L	1	1000	10	--	11	ND	ND
Nickel	ug/L	10	100	--	--	ND	ND	ND
Selenium	ug/L	2	50	ND	--	ND	4	2
Strontium (Total)	ug/L	5		305	--	271	200	300
Uranium (by ICP/MS)	ug/L	1	30	ND	--	ND	ND	--
Vanadium (Total)	ug/L	1	1000	ND	--	1	ND	ND
Zinc (Total)	ug/L	10	5000	ND	--	ND	ND	ND
Miscellaneous								
Ammonia-N	mg/L	0.05		0.06	0.05	ND	ND	ND
Boron	mg/L	0.05		0.09	0.09	0.10	0.06	0.12
Chloramines	mg/L	0.05		ND	--	ND	ND	--
Gross Alpha	pCi/L		15	0.302 +/- 1.56	--	0.236 +/- 1.52	5.73 +/- 0.400	--
Kjeldahl Nitrogen (Total)	mg/L	0.5		--	--	ND	ND	ND
Methane	ug/L	0.1		0.33	--	0.64	ND	--
Nitrogen (Total)	mg/L	0.5		--	--	ND	--	--
o-Phosphate-P	mg/L	0.05		ND	ND	ND	ND	ND
Phosphorous (Total)	mg/L	0.03		--	--	0.28	ND	ND
Radium 226	pCi/L		3	0.278 +/- 0.288	--	0.080 +/- 0.173	1.40 +/- 0.673	--
Organic Analyses								
Haloacetic Acids (Total)	ug/L	1.0	60.0	0.0	--	0.0	0.0	--
<i>Dibromoacetic Acid</i>	ug/L	1.0		ND	--	ND	ND	--
<i>Dichloroacetic Acid</i>	ug/L	1.0		ND	--	ND	ND	--
<i>Monobromoacetic Acid</i>	ug/L	1.0		ND	--	ND	ND	--
<i>Monochloroacetic Acid</i>	ug/L	2.0		ND	--	ND	ND	--
<i>Trichloroacetic Acid</i>	ug/L	1.0		ND	--	ND	ND	--
Organic Carbon (Dissolved)	mg/L	0.2		--	--	ND	0.71	0.71
Organic Carbon (Total)	mg/L	0.2		0.52	0.27	0.29	0.79	0.68
Trihalomethanes (Total)	ug/L	1.0	80.0	0.0	--	0.0	2.6	3.6
<i>Bromodichloromethane</i>	ug/L	0.5		ND	--	ND	ND	0.9
<i>Bromoform</i>	ug/L	0.5		ND	--	ND	ND	ND
<i>Chloroform</i>	ug/L	0.5		ND	--	ND	2.6	2.7
<i>Dibromochloromethane</i>	ug/L	0.5		ND	--	ND	ND	ND
Field Parameters								
Temperature	°C	0.1		23.8	25.2	26.5	--	20.2
Specific Conductance (EC)	uS	1.0	900	728	344	719	--	893
pH	Std Units	0.1	6.5 - 8.5	7.0	7.2	7.3	--	7.2
ORP	mV	1.0		-271	-96	-165	--	--
Free Chlorine Residual	mg/L	0.1	2 - 5	ND	ND	ND	--	ND
Dissolved Oxygen	mg/L	0.01		0.19	--	--	--	--
Silt Density Index	Std Units	0.1		--	--	--	--	--
Gas Volume	mL	2.0		--	--	--	--	--
H ₂ S	mg/L	0.1		ND	ND	ND	--	0.013

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



Injection Water Quality

Injection water quality from the CAW system during WY 2012 is presented in **Table 13** below. The data in **Table 13** show injection water quality was typical of recent years. Levels of Trihalomethane (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 2012 injection (end of WY 2011 Storage) and stored water quality (WY 2012 Storage) collected periodically from the aquifer after WY 2012 injection operations were terminated.

Review of water-quality parameters gathered at the active WY 2012 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 significant dilution / intermixing with native groundwaters during aquifer storage. This is unremarkable when compared to years prior to WY 2012 due to the larger volume of water injected those years (i.e., over 1,000 af in both WY 2010 and WY 2011).

As found in previous ASR operations at the site, the most significant water-quality changes observed during aquifer storage 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 2012 are graphically presented on **Figures 19 through 23**:

- 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 peaked in concentration approximately 60 days after the cessation of injection, followed by a gradual decline during the storage period. After approximately 90 to 150 days of storage, THMs had 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 2012.
- THMs at the on-site monitoring wells showed similar ingrowth and decay patterns as the ASR wells, with the exception that SM MW-1 showed an uncharacteristic increase in THMs at the end of the storage period.
- HAAs showed the typical limited amount of ingrowth after the cessation of injection and they degraded completely during storage within a period of approximately 90 days at all wells.



Decline in THMs 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. The slower than historically-observed degradation of THM's at SM MW-1 may be a result of the large volume of water injected in WY 2010 and WY 2011 and the more thorough displacement of native groundwaters; this phenomenon will need to be observed closely in subsequent operations to further assess any change in degradation rates.

Water Quality at Off-Site Monitor Wells

Samples from the closest CAW SGB production well (Paralta) and from PCA-E Deep were collected prior to the WY 2012 injection season and following the 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 2012 injection season. The presence of low levels of THM compounds at the Paralta well further confirms the presence of CAW Injectate at the site, with THM levels of 2.6 to 3.6 micrograms per liter (ug/L) prior to and after the WY 2012 injection season, respectively. It is important to note, however, that the Paralta well penetrates both the QTp and Tsm formations; therefore, the precise quantification of injectate capture is not possible due to the significant and variable contribution of QTp water in the Paralta production. As related to potable water-quality standards, the THM levels detected at the Paralta Well are less than 5 percent of the MCL of 80 ug/L.

Water Quality Summary

Overall, water-quality data from WY 2012 showed no significant deviations from previous years; however, as noted in the 2011 Summary of Operations Report, the determination of precisely where the injected waters travel will likely be more challenging as multiple wells become operational and injection and recovery quantities increase. The most important factors are that: a) no evidence of adverse geochemical reactions have been observed during aquifer storage, and; b) that 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 from operation of Monterey Peninsula ASR Project during WY 2012, we conclude the following:

WY 2012 Recharge Operations

WY 2012 was Dry Water Year hydrologic year and relatively limited total volume of 131 af of water recharged into the Seaside Groundwater Basin at the Santa Margarita and Seaside Middle Schools ASR Facilities. The volume injected during WY 2012 was significantly less than that injected during WY 2011 (1,117 af). The total volumes injected each year reflect the relative availability of excess Carmel River flows, as well as the number of ASR wells in operation and conveyance capacity of the CAW system. A graphical presentation showing a summary of annual injection and recovery volumes since operations began at the Santa Margarita ASR Facility site is shown on **Figure 5**.

Well Performance

SM ASR-1. No injection occurred at this well during WY 2012. As a result, the well performance remained stable.

SM ASR-2. SM ASR-2 was operated at average injection rates ranging between approximately 1,340 to 1,960 gpm (5.9 to 8.7 afd), averaging approximately 1,740 gpm (7.7 afd). The 24-hour specific injectivity at ASR-2 the beginning and end of WY 2012 was approximately 33 gpm/ft and 29 gpm/ft, respectively, indicating that a minor amount of residual plugging occurred at this well over the course of the WY 2012 injection season. The pumping specific capacity similarly declined slightly over the course of WY 2012, from approximately 33 gpm/ft prior to injection to 29 gpm/ft at the end of the injection season, suggesting that backflushing did not completely remove the accumulated residual plugging during WY 2012. These results indicate that the injection rate should be reduced slightly in order to limit plugging and maintain long-term well performance.

SMS ASR-3. SMS ASR-3 underwent the initial step of baseline injection testing, consisting of a variable rate injection test, followed by limited short periods of injection for the remainder of the WY 2012 injection season. The well was tested at injection rates ranging between approximately 760 to 1,840 gpm (3.4 to 8.1 afd) and displayed specific injectivities of 17 to 9 gpm/ft at the lower and higher injection rates, respectively. It is noted that at 1,840 gpm, the water-level drawup exceeded the recommended maximum of 175 feet; therefore, for planning purposes, injection rates at this well should be maintained at approximately 1,500 gpm or less until further testing can be performed.

The pumping specific capacity of SMS ASR-3 declined significantly over the course of WY 2012, from approximately 30 gpm/ft prior to injection to 13 gpm/ft at the end of the injection season, a decline of approximately 57 percent. The significant decline in SMS ASR-3 performance following initial injection is similar to that experienced at both SM ASR-1 and SM ASR-2, each of which observed declines on the order of 60 percent. The consistent pattern of



performance loss following initial injection at all three ASR wells is indicative of particle rearrangement and/or chemical precipitation during the initial phases of injection. This phenomenon will be evaluated in further detail following completion of the baseline injection testing program during WY 2013. It is noted that rehabilitation of both SM ASR-1 and SM ASR-2 was very successful in restoring the initial loss of performance and subsequent declines in performance at these wells has been limited. It is anticipated that similar results can be achieved at SMS ASR-3.

Water Quality

Significant conclusions regarding the water-quality investigation during WY 2012 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.

RECOMMENDATIONS

Based on the WY 2012 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 140 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 slight amount of residual plugging that occurred during WY 2012 with the well injecting up to 1,960 gpm, we recommend the injection rate be limited to the design injection rate of 1,500 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 140 feet, whichever occurs first.

SMS ASR-3 Well Operational Parameters

- The SMS ASR-3 baseline injection testing program should be completed in WY 2013. This includes the following steps:
 1. 24-hr constant rate injection test;
 2. 7-day constant rate injection test;
 3. Backflushing between each injection test, and;
 4. Post-injection production performance testing
- Based on the results of the variable rate injection test, injection rates at this well should be maintained at approximately 1,500 gpm or less 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.



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.



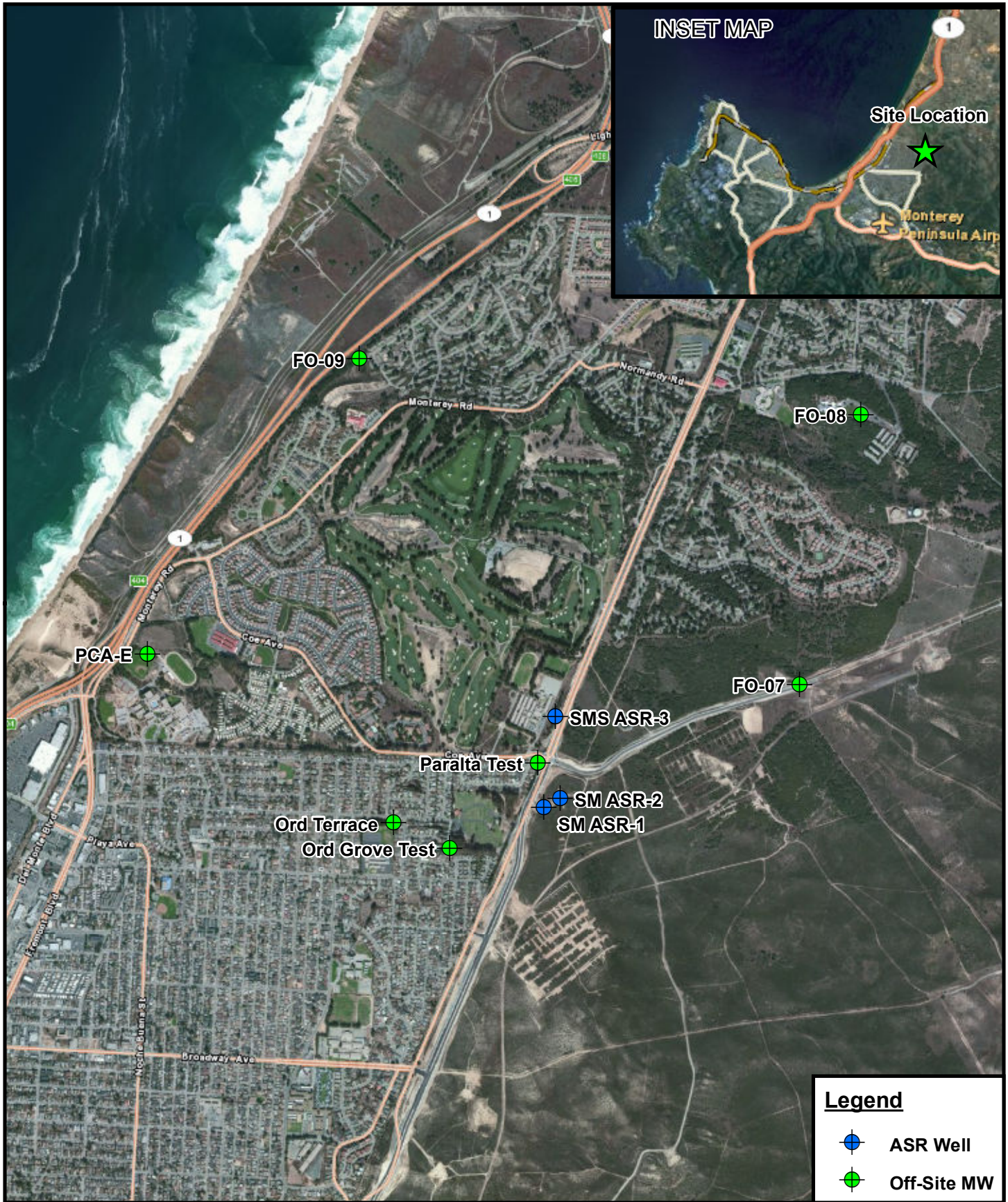
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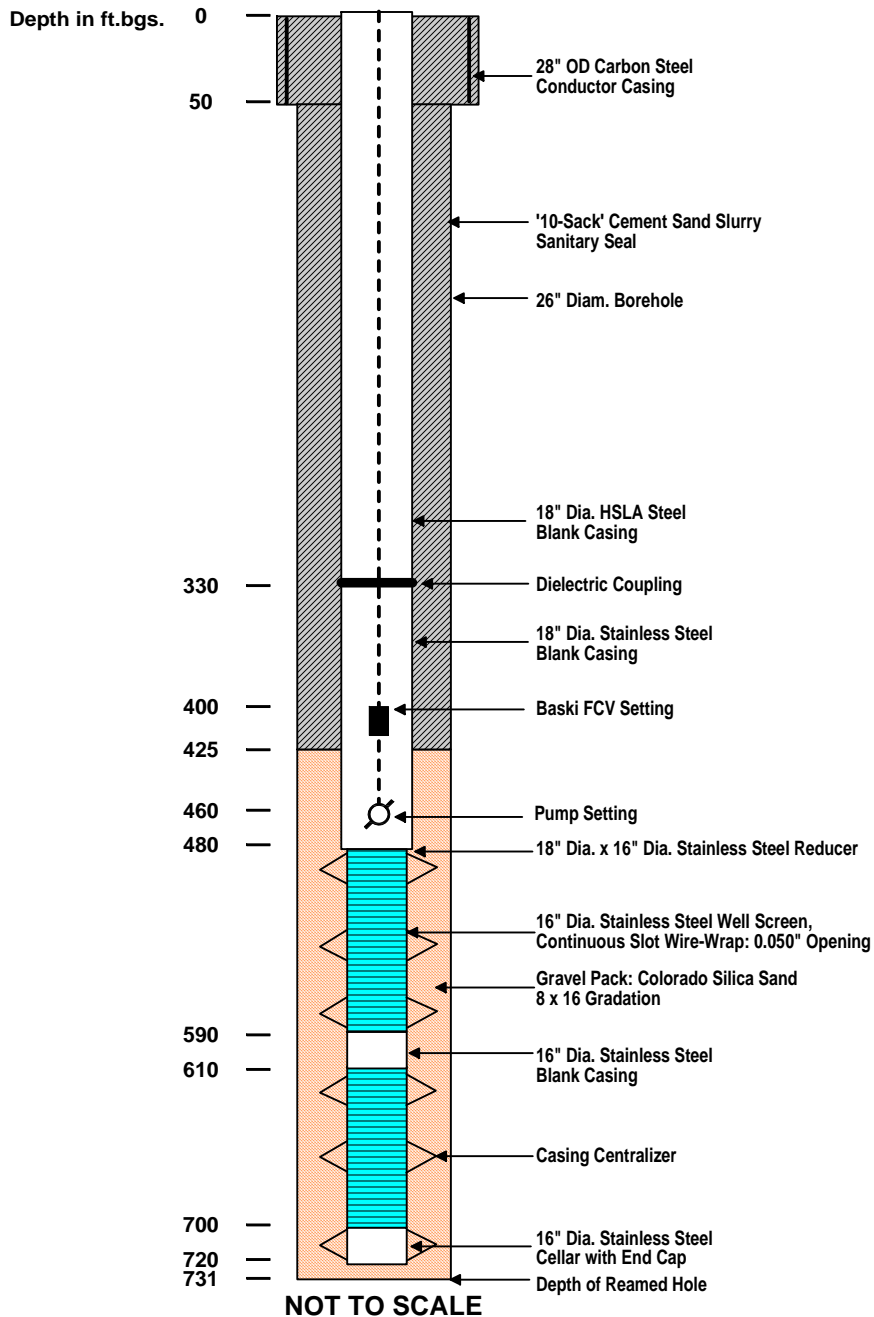
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FIGURES



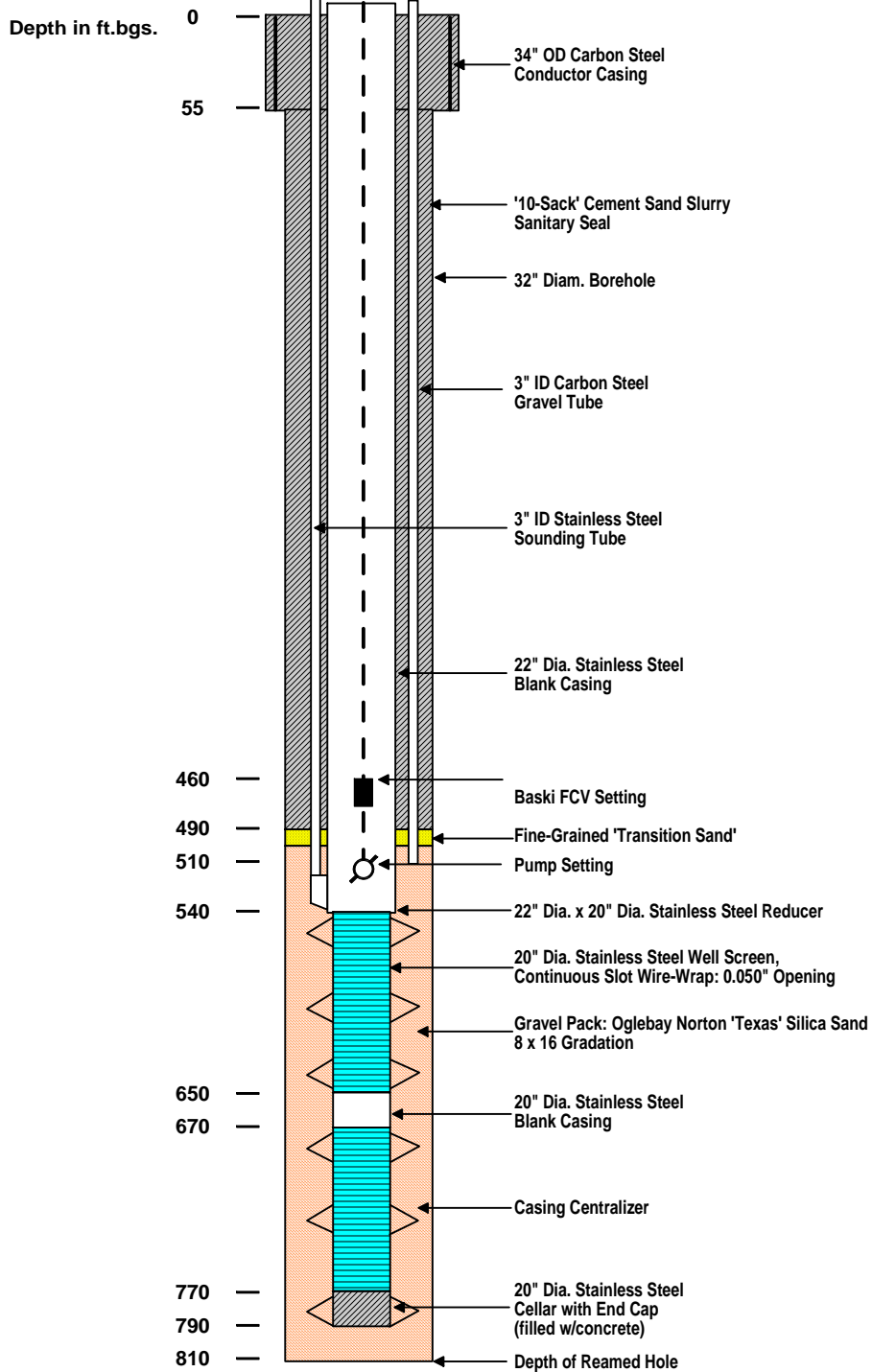


Pump Assembly Notes:

Hp: 400
 Bowls: 14ENL, 8 stage
 Col. Pipe Dia: 10"
 Col. Pipe Length: 10'
 Assy. Type: Water Lube/Open Shaft
 Baski FCV Setting: 400' - 410'
 Top of Bowls: 460'
 Bowl Length: 11.5'
 Suction Length: 10'
 Intake: 481.5'



FIGURE 2. SM ASR-1 AS-BUILT SCHEMATIC
 WY 2012 ASR Program
 Monterey Peninsula Water Management District



NOT TO SCALE

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: 540.5'



**FIGURE 3. SM ASR-2 AS-BUILT SCHEMATIC
 WY 2012 ASR Program
 Monterey Peninsula Water Management District**

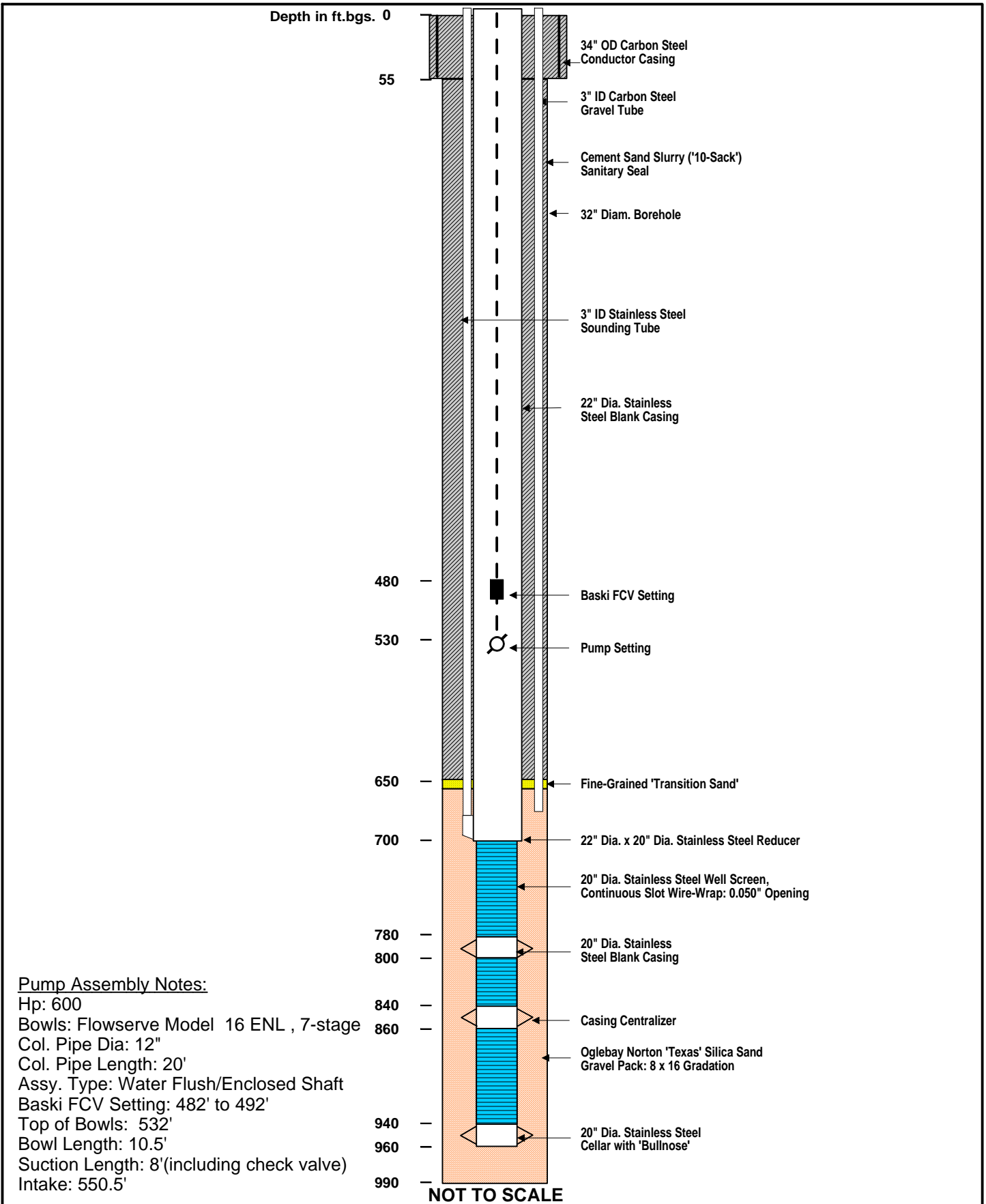


FIGURE 4. SMS ASR-3 AS-BUILT SCHEMATIC
 WY 2012 ASR Program
 Monterey Peninsula Water Management District

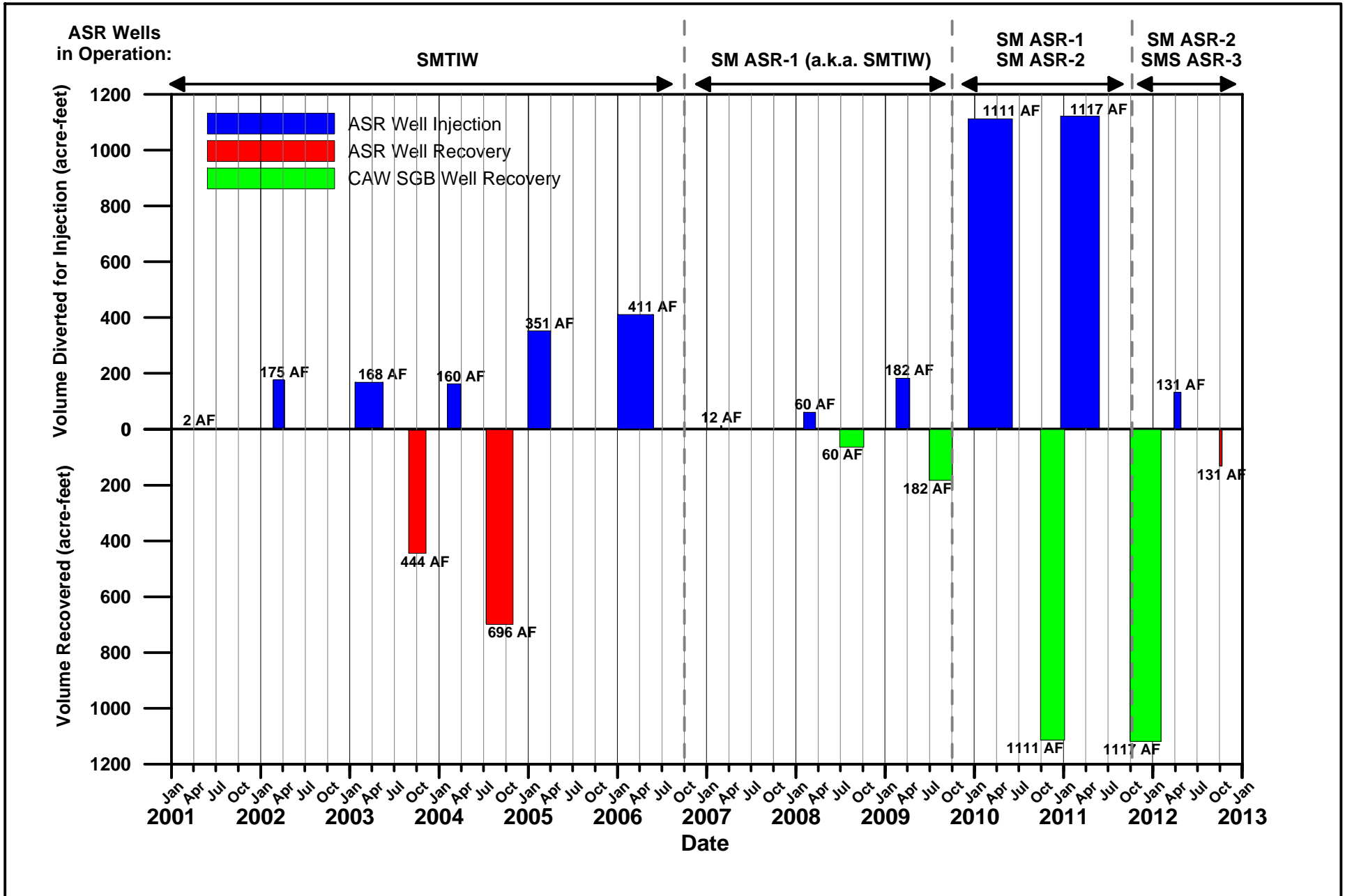


FIGURE 5. SUMMARY OF ASR OPERATIONS (WY 2001 - 2012)
 WY 2012 ASR Program
 Monterey Peninsula Water Management District

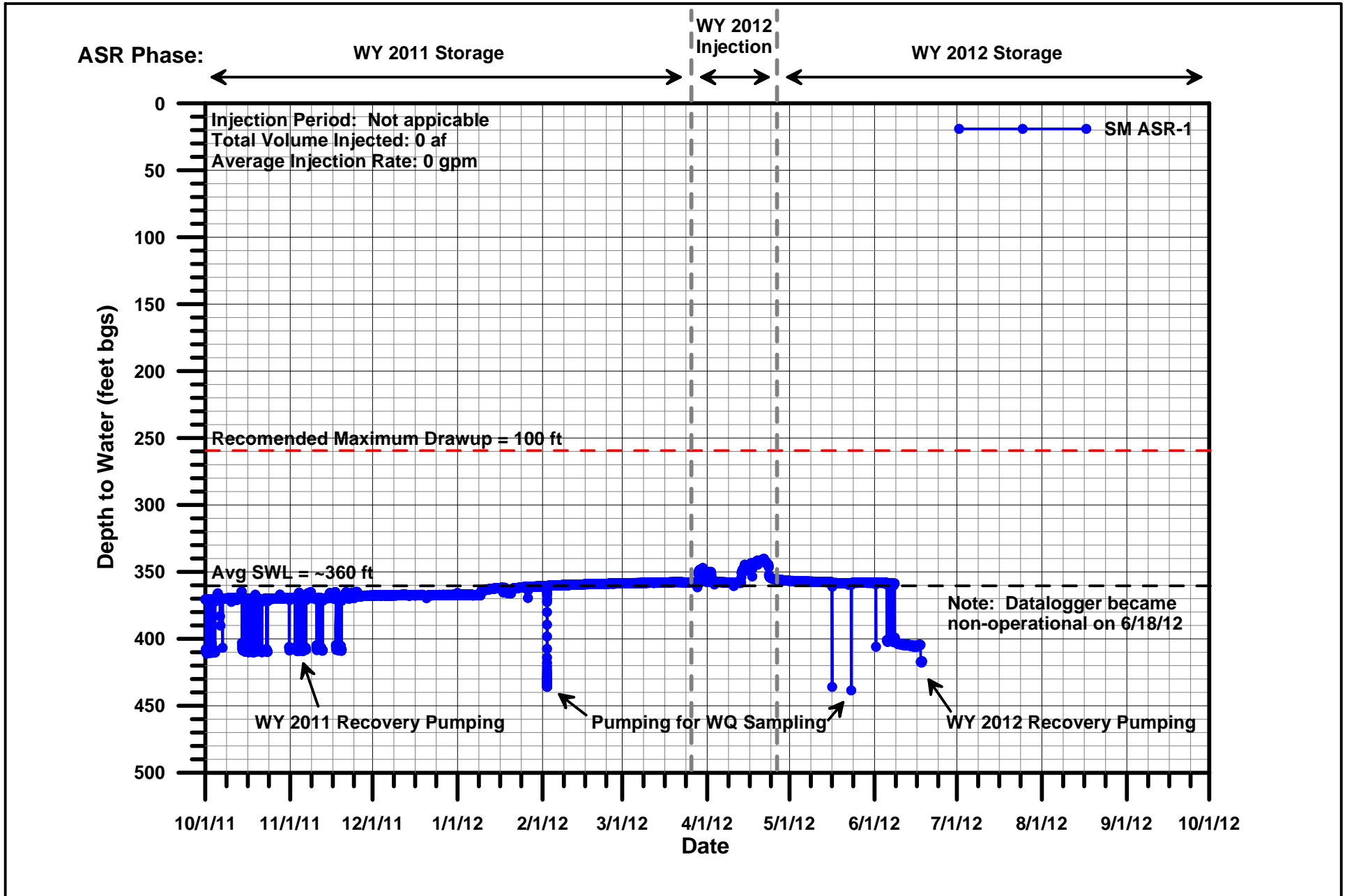


FIGURE 6. SM ASR-1 WATER-LEVEL DATA
WY 2012 ASR Program
Monterey Peninsula Water Management District

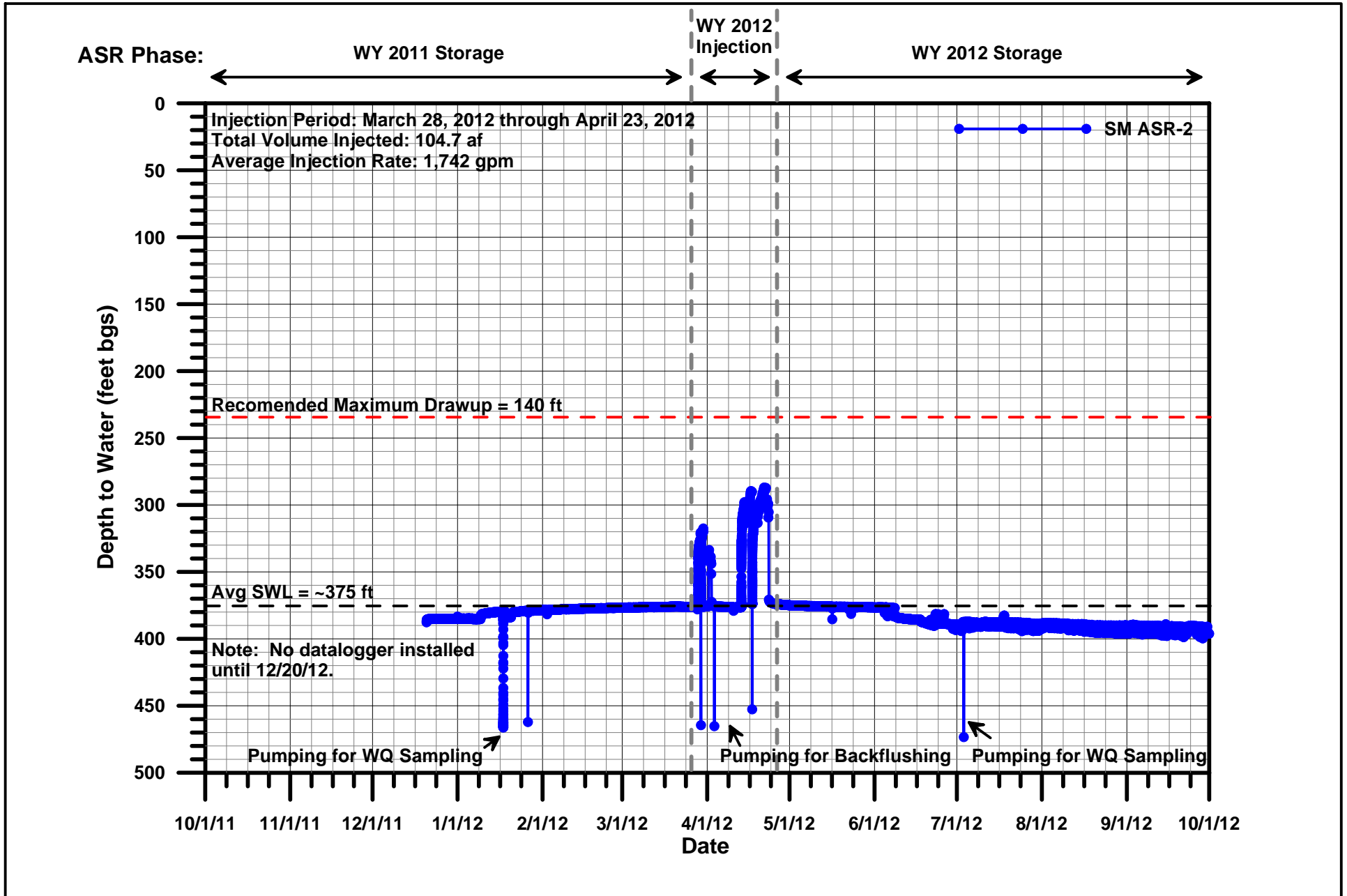
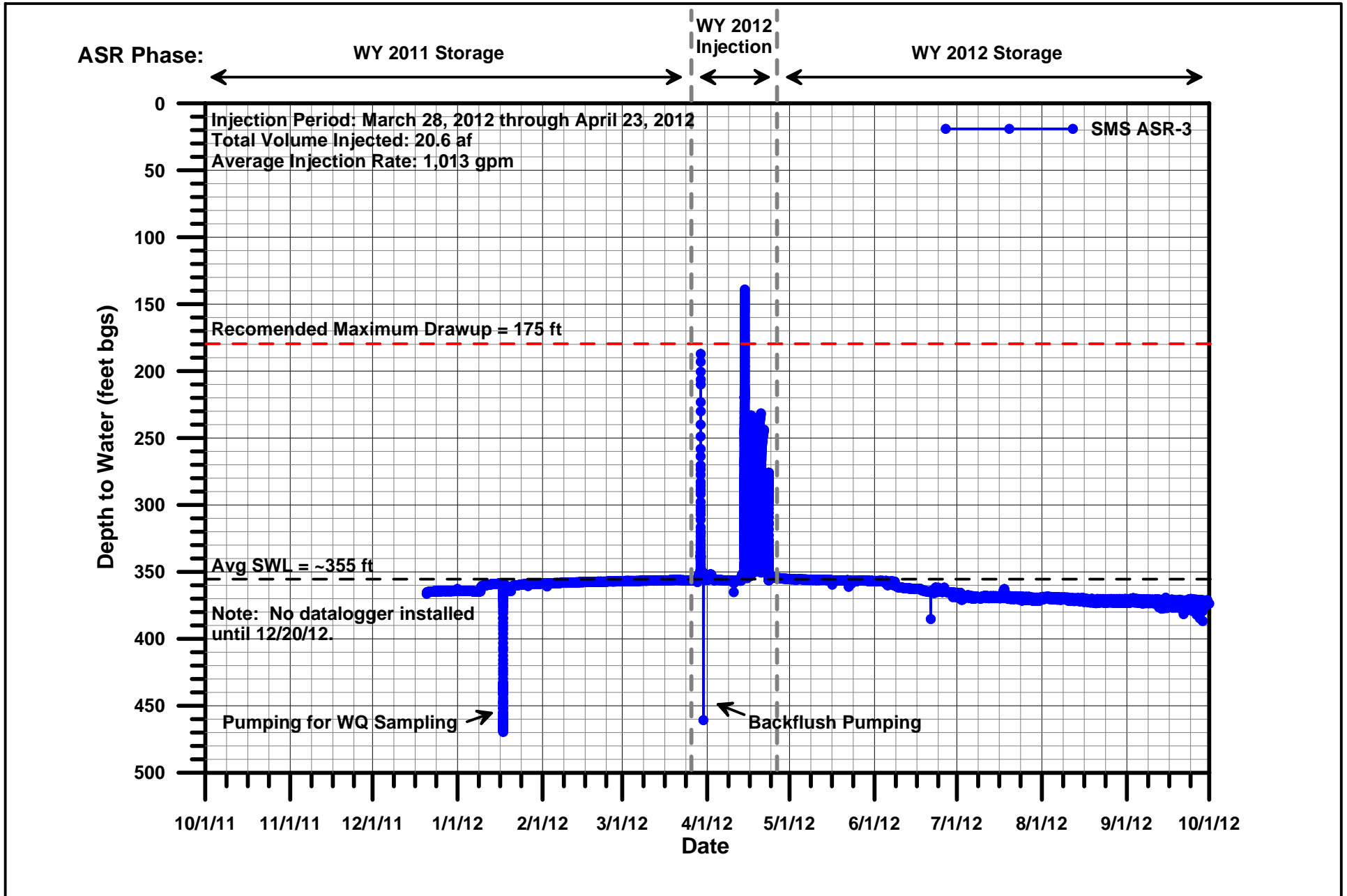


FIGURE 7. SM ASR-2 WATER-LEVEL DATA
WY 2012 ASR Program
Monterey Peninsula Water Management District



**FIGURE 8. SMS ASR-3 WATER-LEVEL DATA
WY 2012 ASR Program
Monterey Peninsula Water Management District**

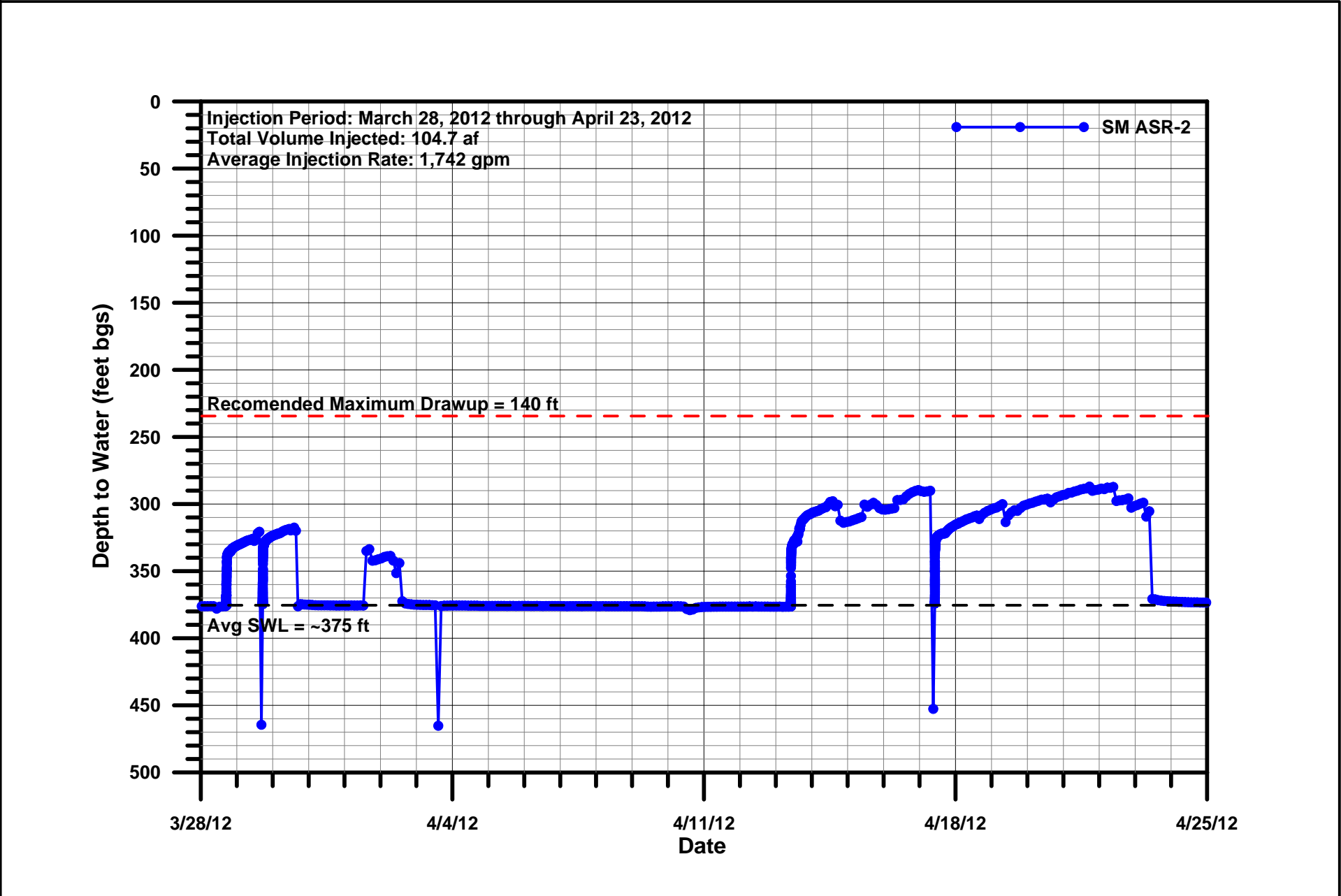


FIGURE 9. SM ASR-2 WATER-LEVEL DATA - INJECTION SEASON
WY 2012 ASR Program
Monterey Peninsula Water Management District

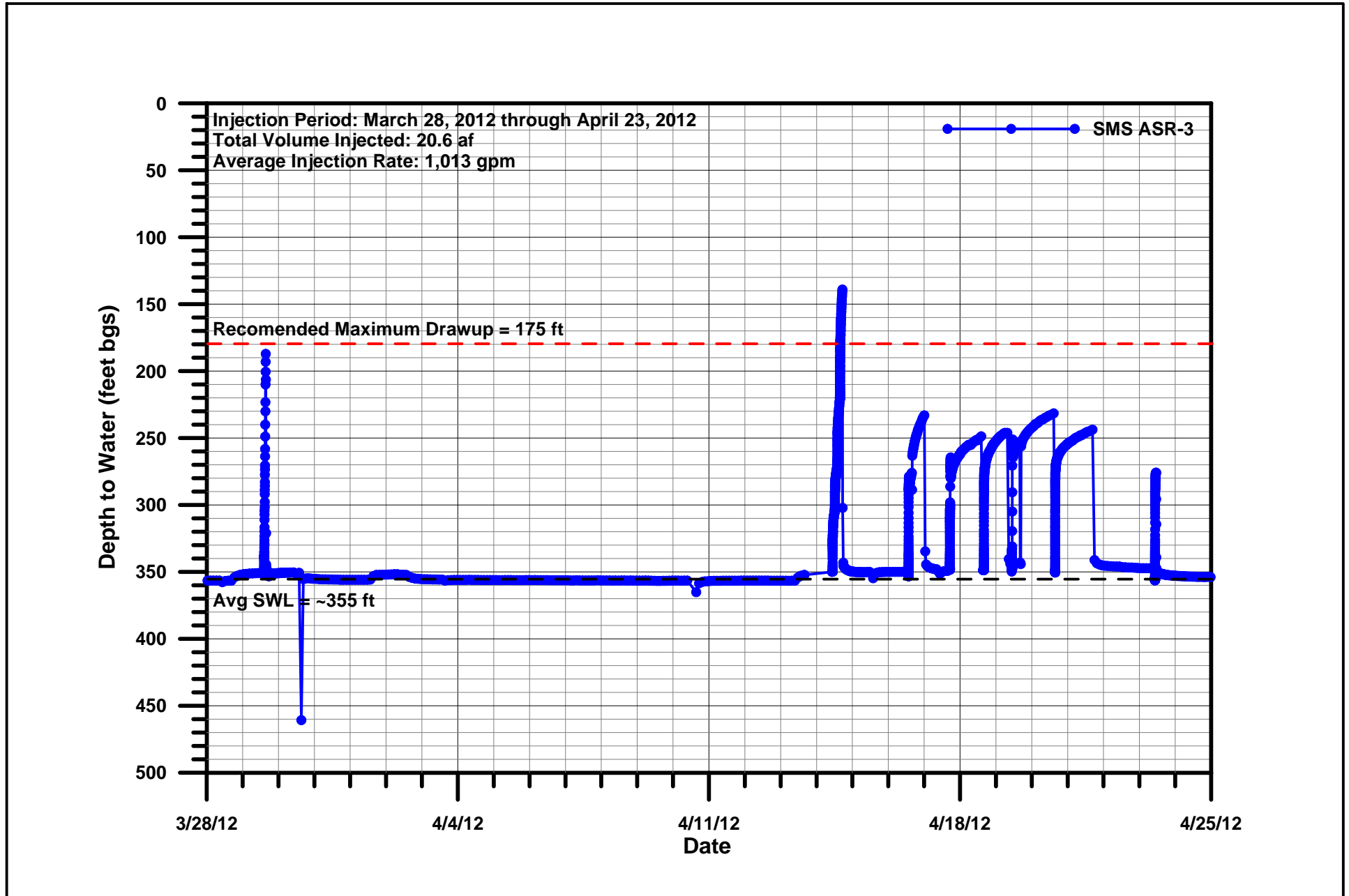


FIGURE 10. SMS ASR-3 WATER-LEVEL DATA - INJECTION SEASON
WY 2012 ASR Program
Monterey Peninsula Water Management District

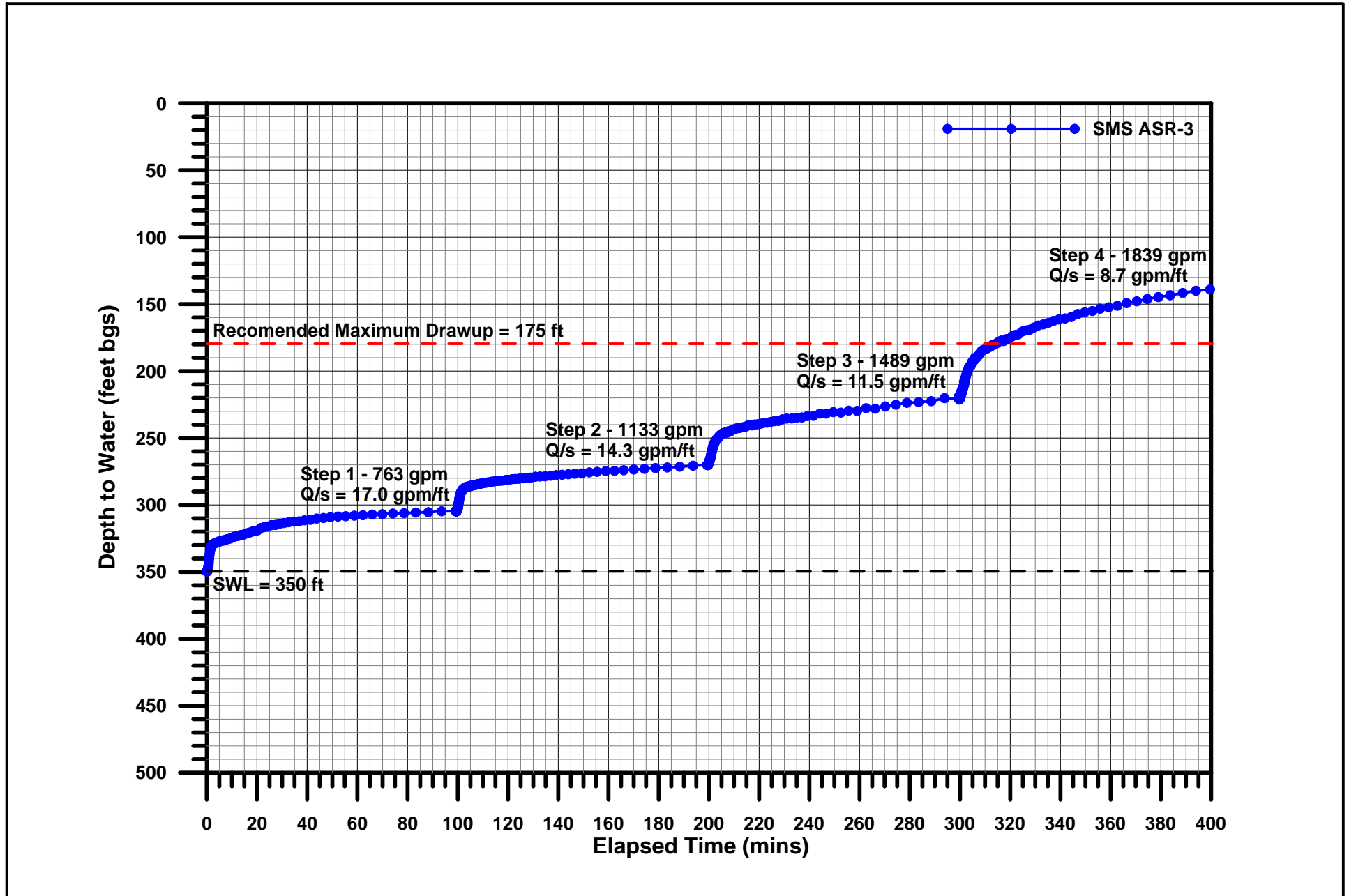


FIGURE 11. SMS ASR-3 WATER-LEVEL DATA - VARIABLE RATE INJECTION TEST
WY 2012 ASR Program
Monterey Peninsula Water Management District

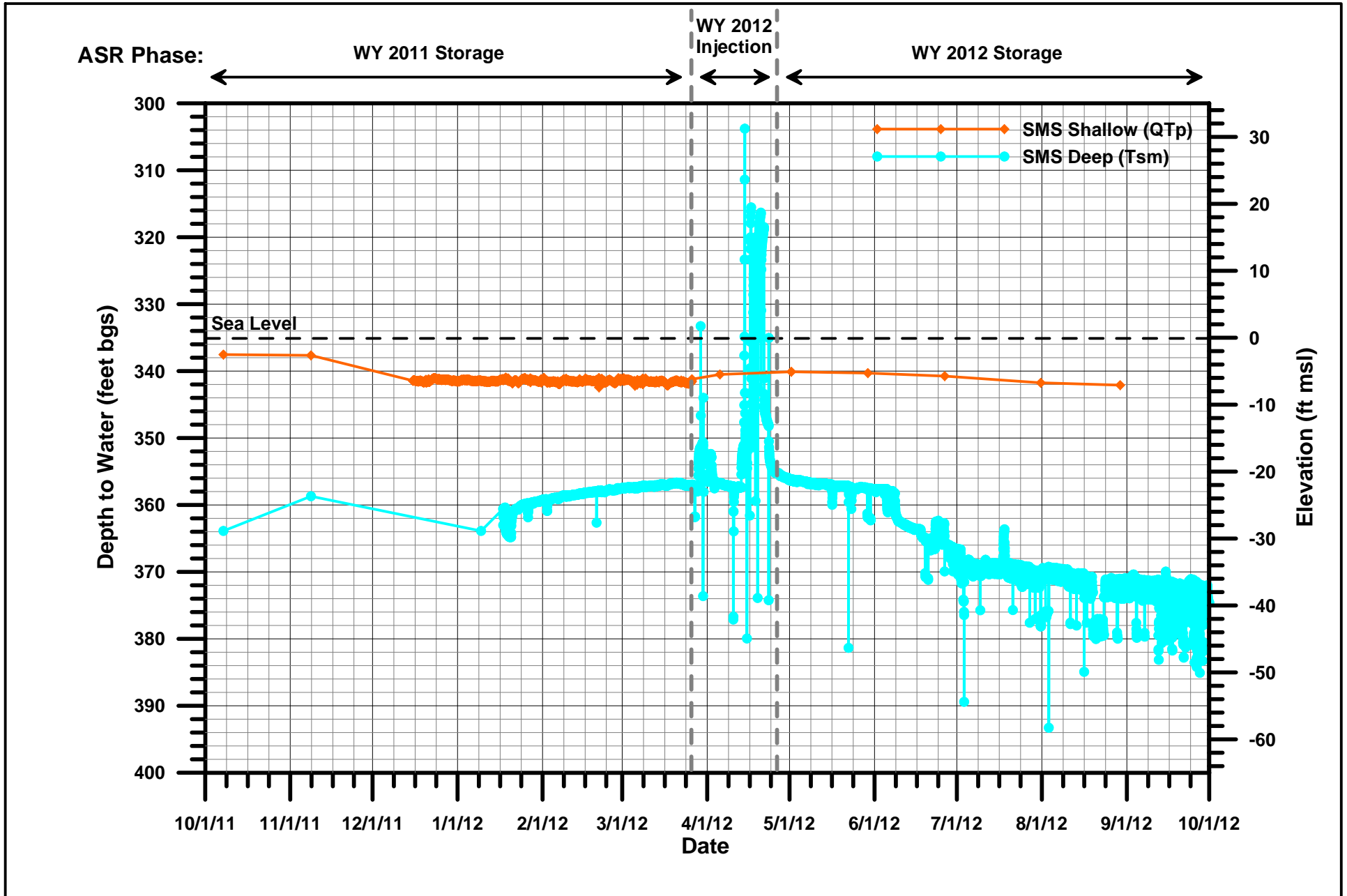


FIGURE 12. SMS WATER-LEVEL DATA
WY 2012 ASR Program
Monterey Peninsula Water Management District

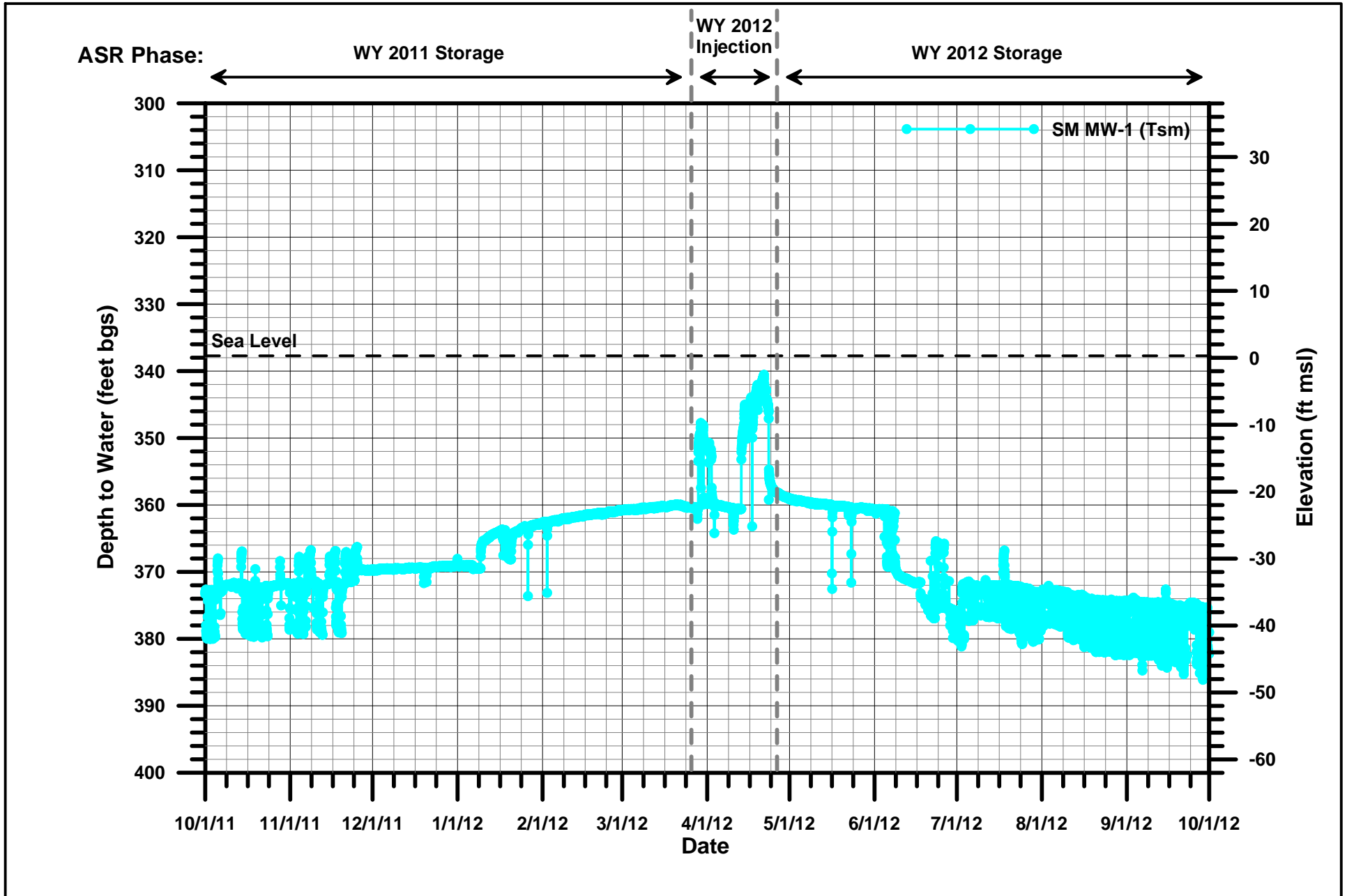


FIGURE 13. SM MW-1 WATER-LEVEL DATA
WY 2012 ASR Program
Monterey Peninsula Water Management District

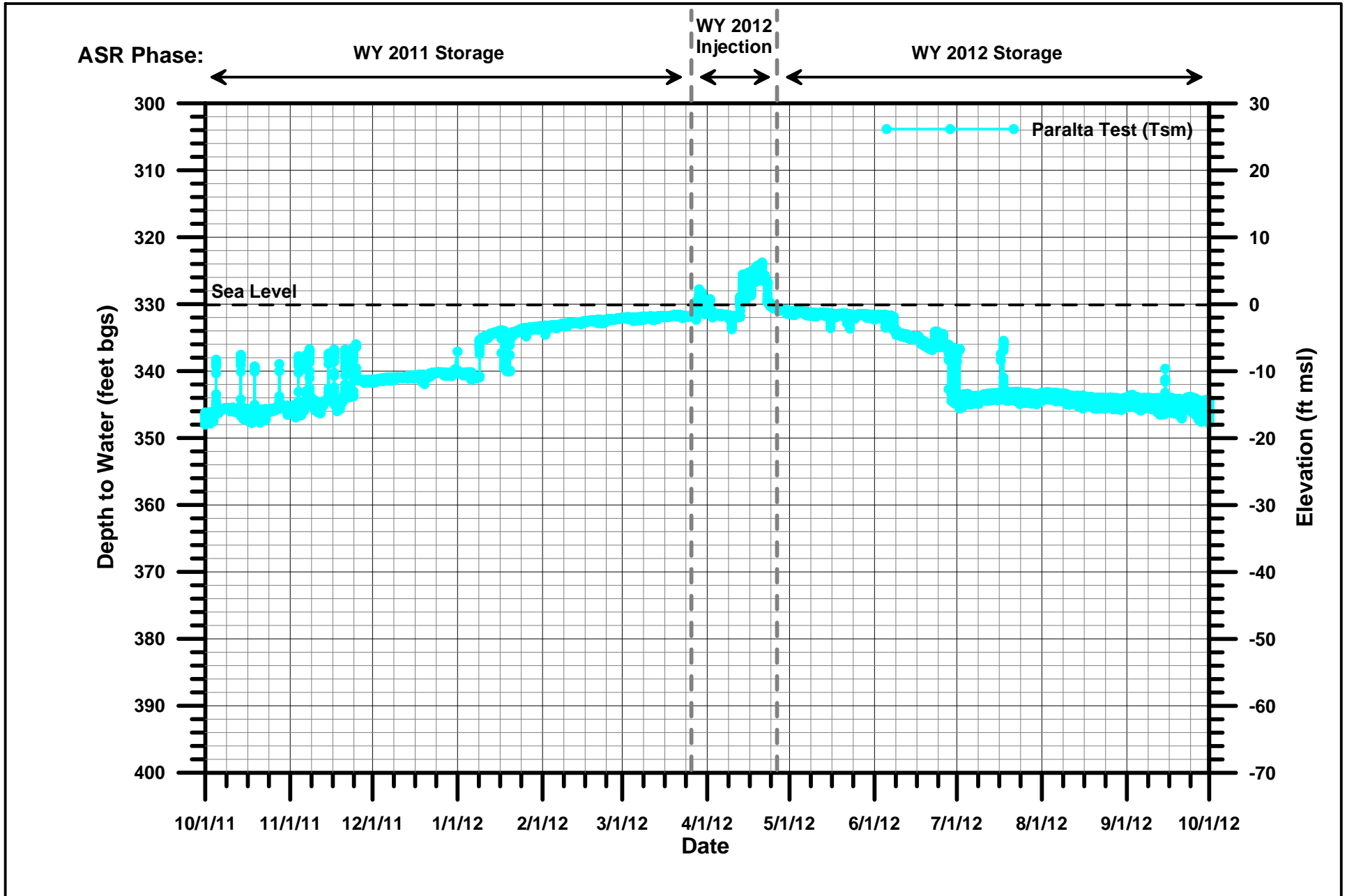


FIGURE 14. PARALTA TEST WATER-LEVEL DATA
WY 2012 ASR Program
Monterey Peninsula Water Management District

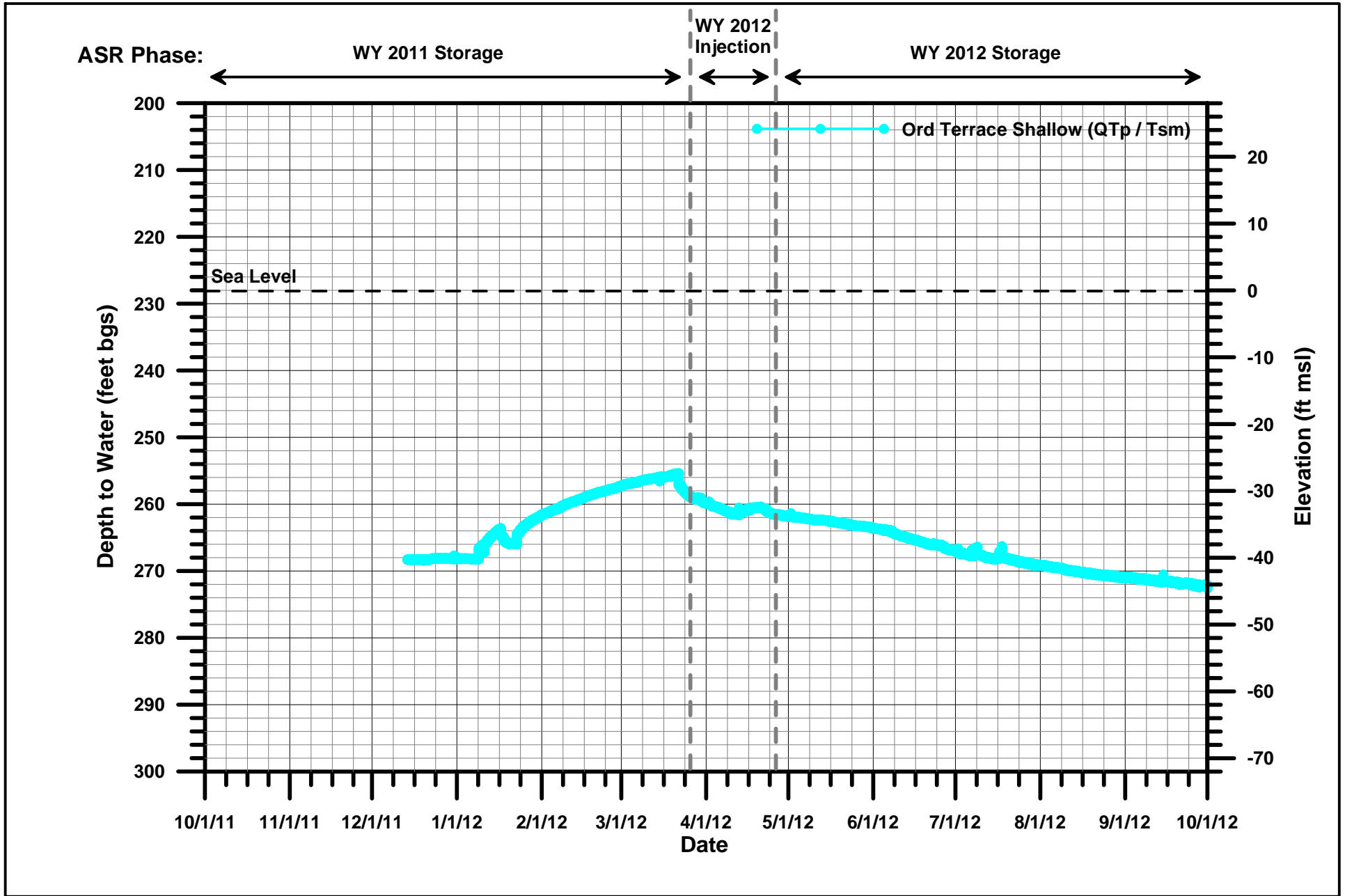


FIGURE 15. ORD TERRACE WATER-LEVEL DATA
WY 2012 ASR Program
Monterey Peninsula Water Management District

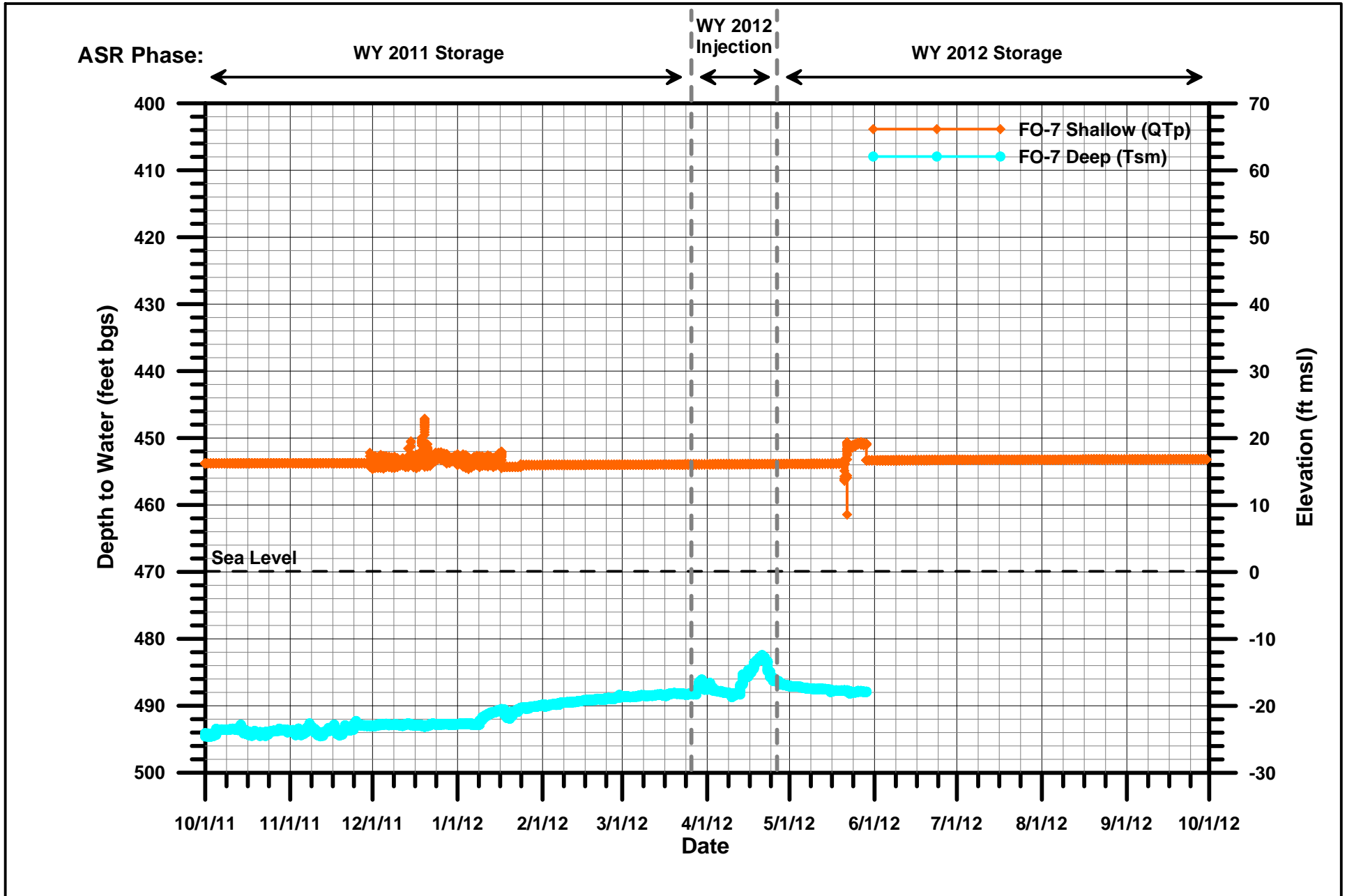


FIGURE 16. FO-7 WATER-LEVEL DATA
WY 2012 ASR Program
Monterey Peninsula Water Management District

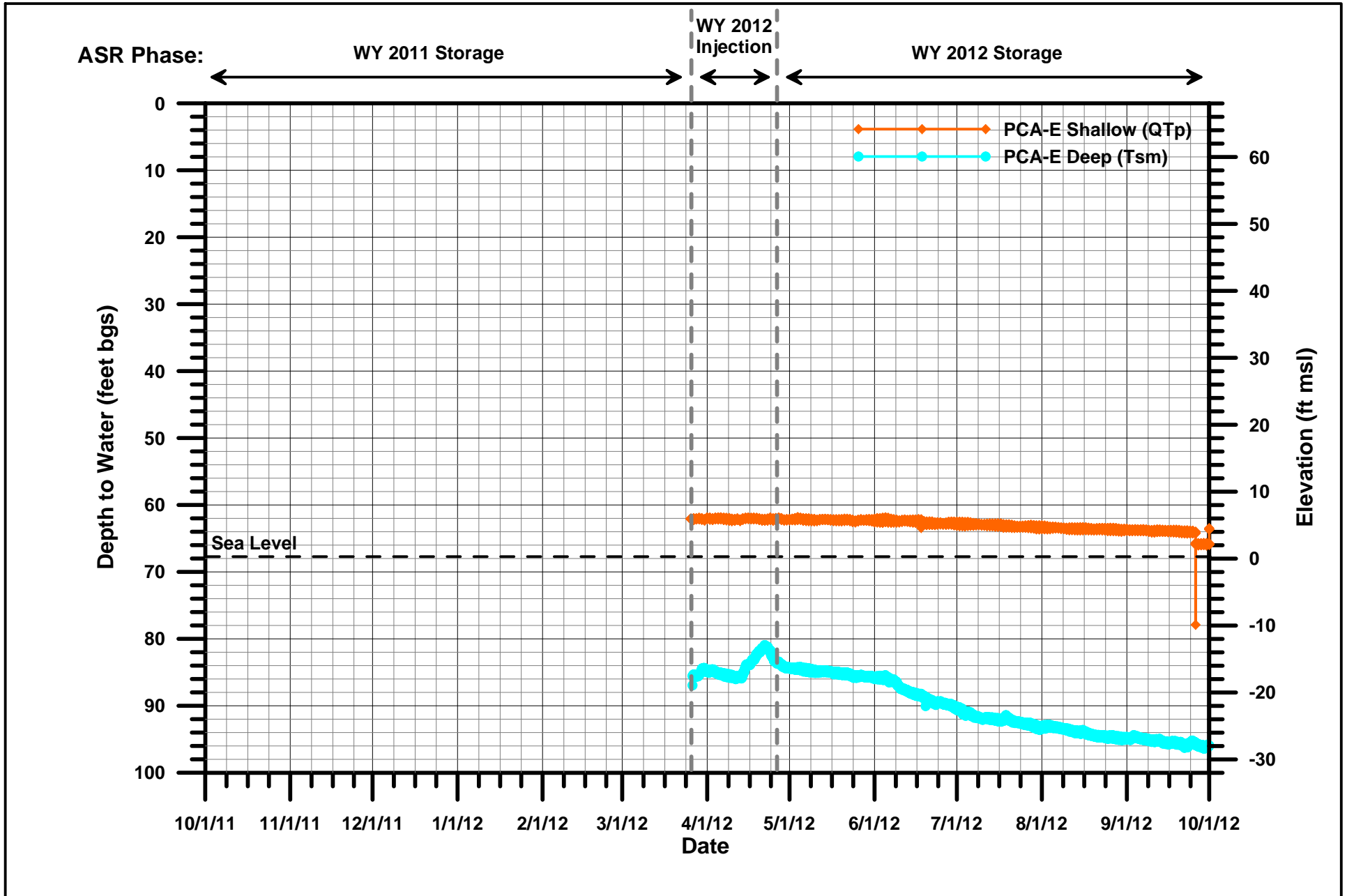


FIGURE 17. PCA-EAST WATER-LEVEL DATA
WY 2012 ASR Program
Monterey Peninsula Water Management District

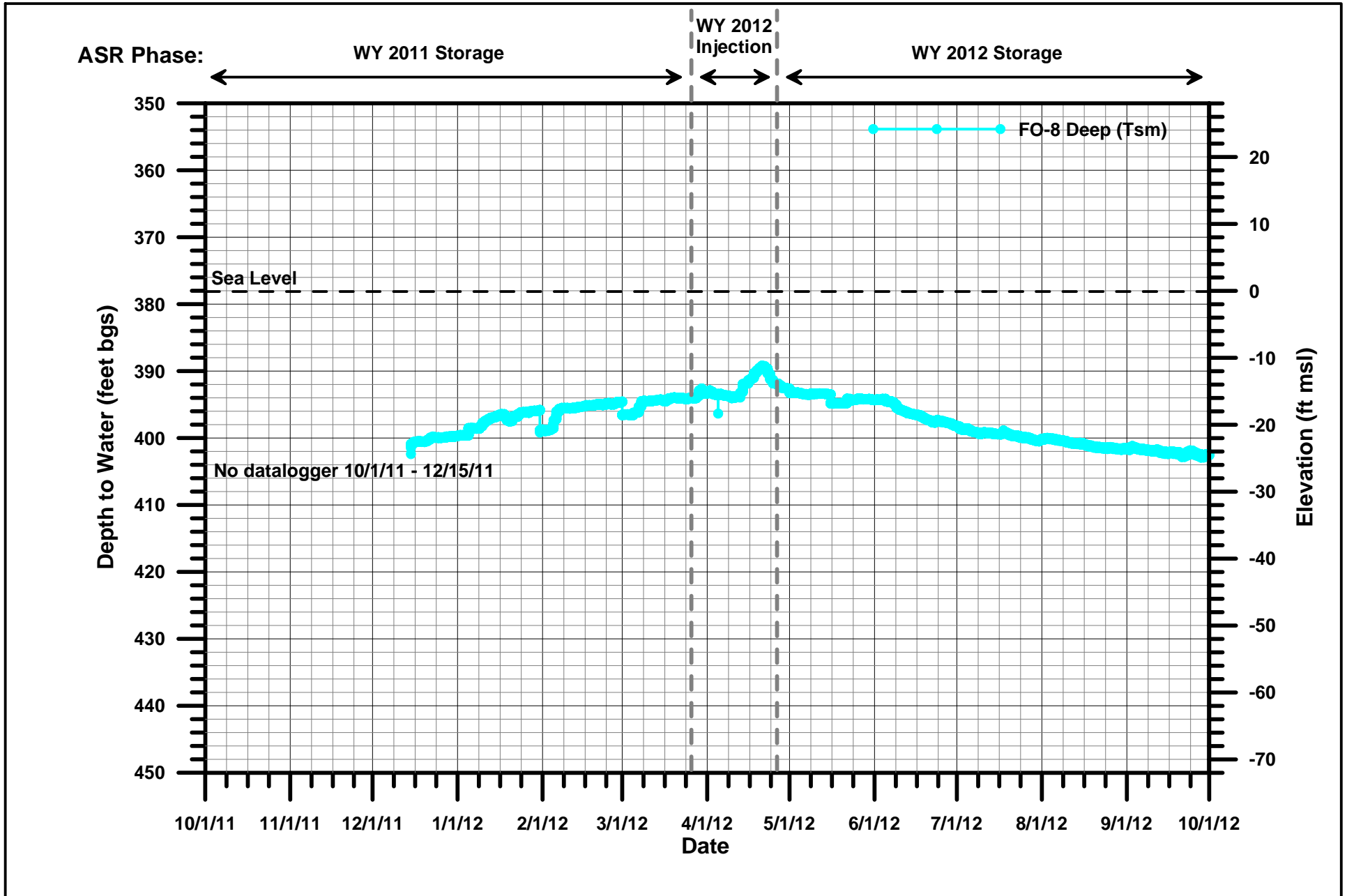


FIGURE 18. FO-8 WATER-LEVEL DATA
WY 2012 ASR Program
Monterey Peninsula Water Management District

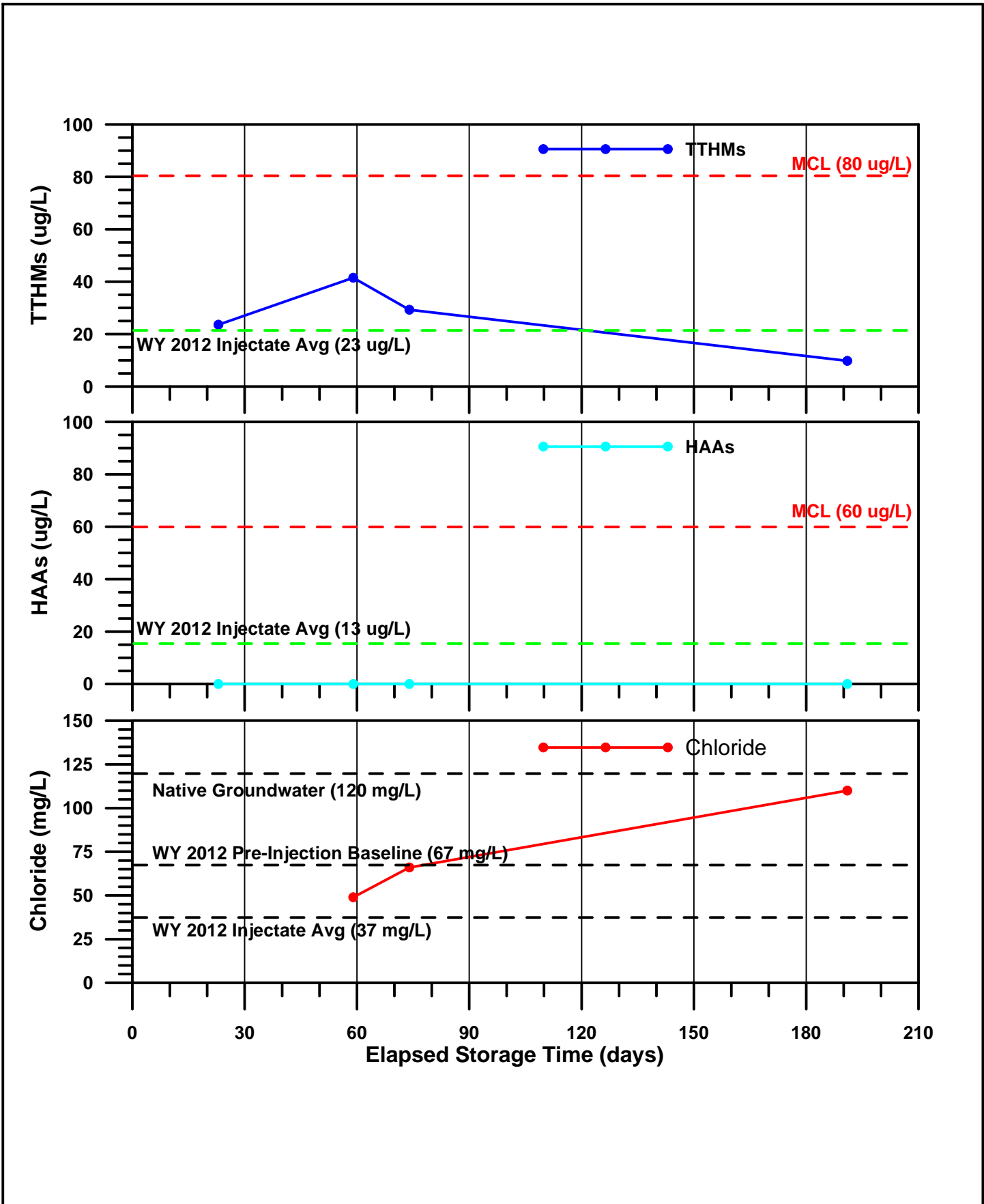


FIGURE 19. SM ASR-1 DISINFECTION BYPRODUCTS PARAMETERS
 WY 2012 ASR Program
 Monterey Peninsula Water Management District

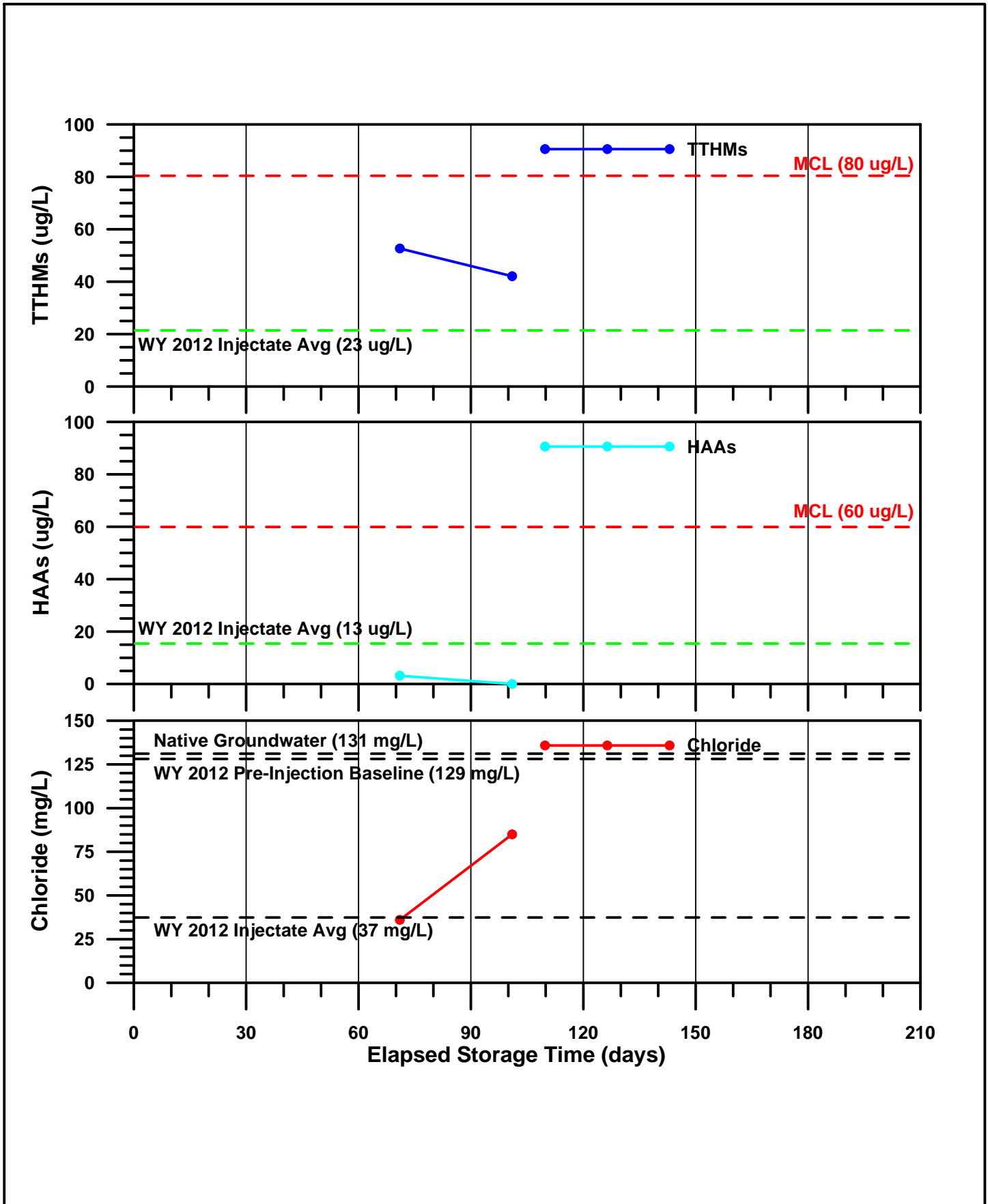


FIGURE 20. SM ASR-2 DISINFECTION BYPRODUCTS PARAMETERS
 WY 2012 ASR Program
 Monterey Peninsula Water Management District

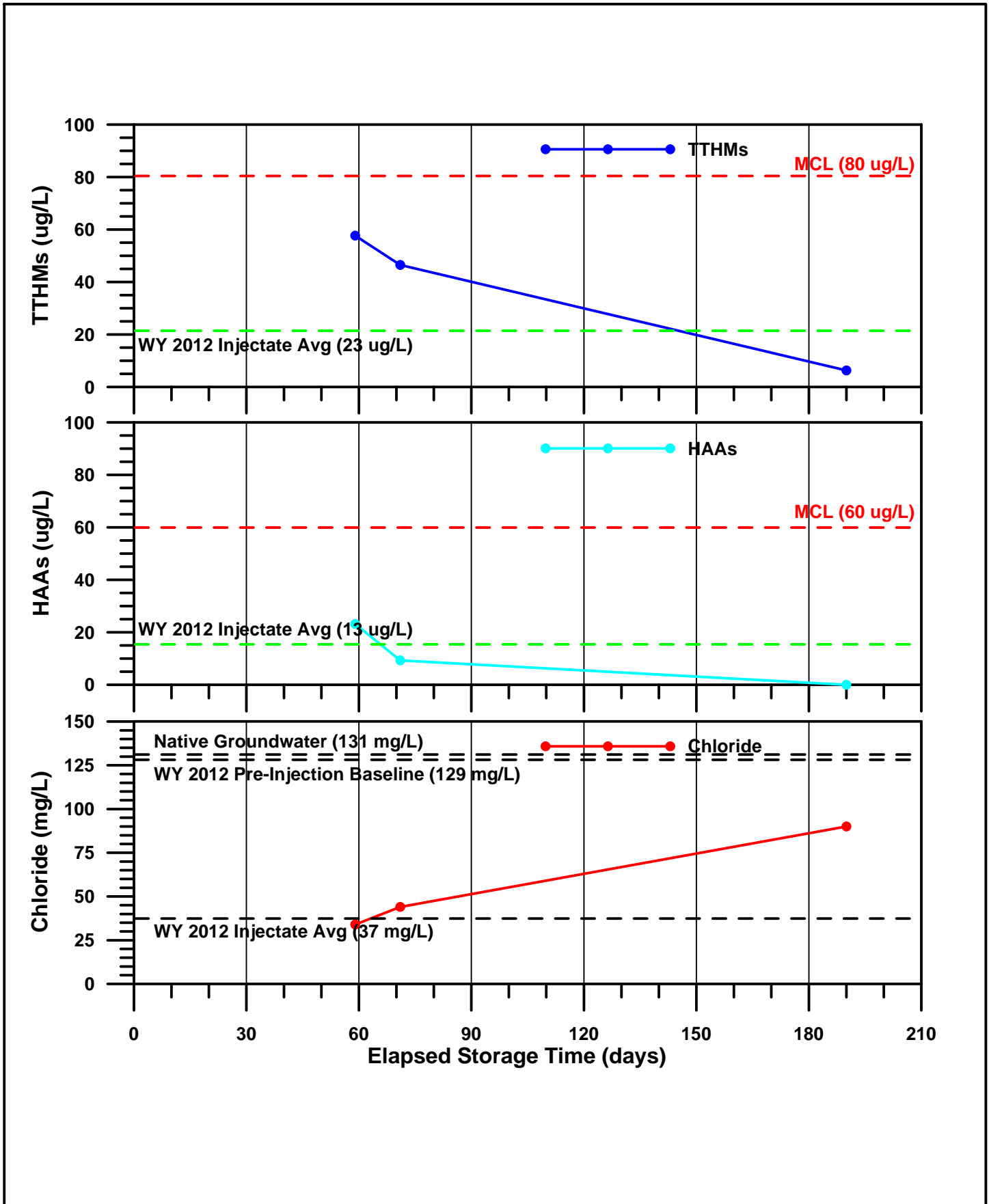


FIGURE 21. SMS ASR-3 DISINFECTION BYPRODUCTS PARAMETERS
 WY 2012 ASR Program
 Monterey Peninsula Water Management District

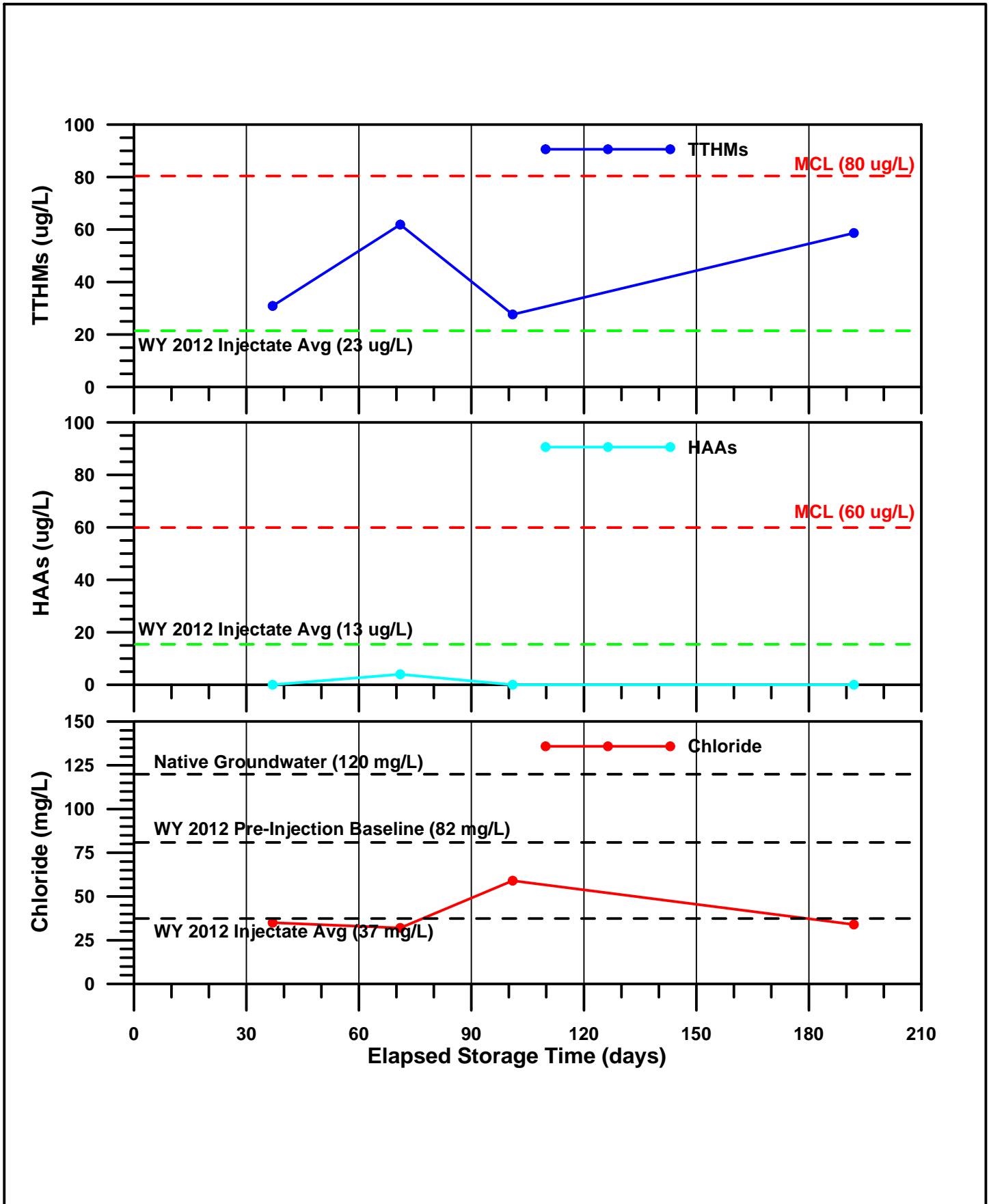


FIGURE 22. SM MW-1 DISINFECTION BYPRODUCTS PARAMETERS
 WY 2012 ASR Program
 Monterey Peninsula Water Management District

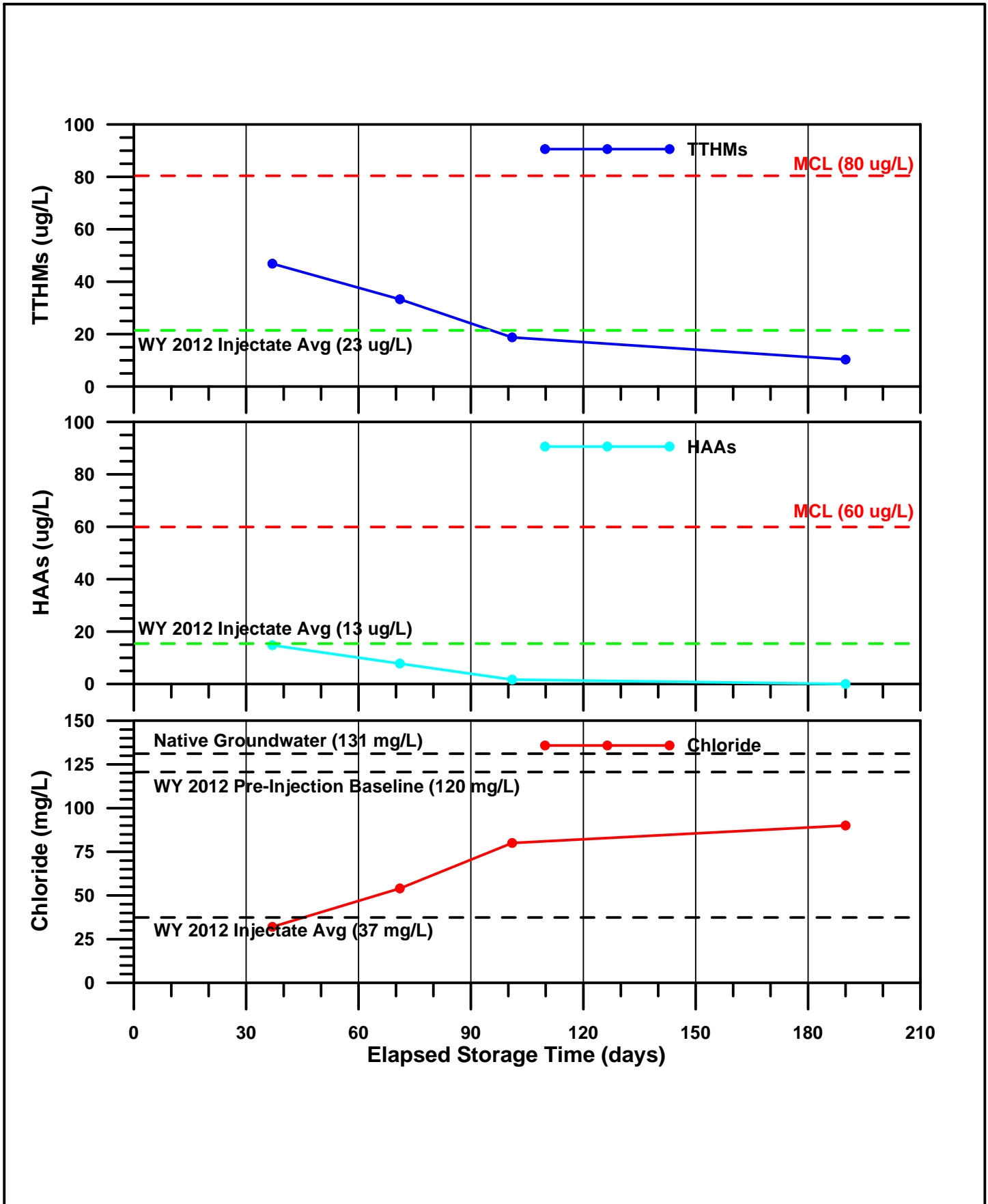


FIGURE 23. SMS DEEP DISINFECTION BYPRODUCTS PARAMETERS
 WY 2012 ASR Program
 Monterey Peninsula Water Management District

APPENDIX A - FIELD DATA

MPWMD / CAW
 PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT

Well: SM ASR-2

Test: 6/28/2012 - Pre-Injection Line Flushing

Sheet No. 1 of 1

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft blst)	Drawup (ft)	Comments/Other
				Line	Head	GV			
6/28/12 14	0	=	276791000	89	0	350	376.45	=	Meter is Backflush (F01-203) SDF: $T_0 = 18$ secs $T_5 = 43$ $T_{10} = 78$ $T_{15} = 101$ $SDF = [(1 - T_0/T_5) \times 100] \div t$ $= [(1 - 18/101) \times 100] \div 15$ $= 5.46$
15 ¹⁵	30	2000							SDF: $T_0 = 20$ secs $T_5 = 30$ $T_{10} =$ $T_{17} = 63$ $SDF = 4.06$
15 ⁴⁵	60	2000							SDF: $T_0 = 20$ secs $T_5 =$ $T_{10} = 27$ $T_{15} = 31$ $SDF = 2.37$
16 ⁴⁵	120		276932000*						STOP Flushing. Prepare to inject

MPWMD / CAW
PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT

Well: SM ASR-2

Test: WY2012 #1

Sheet No. 1 of 2

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft)	Drawdown (ft)	Comments/Other
				Line	Head	FCV			
3/28/12 17 ⁰⁰	0	—	000000	89	48	350	376.35	FEU Tank = 1400 psi * Meter is FAIT-201 (T.Mag) NOTE: In first 3 min of injection, Tiger meter did not record - until C. Evans adjusted "dampening" setting on meter. Estimate 2,000 gal was not recorded. JWO	
	1	250			47	245			
	2	435		89		232			
	3								
	4								
	5	575		89	46	227			
	6								
	7	910				226			
	8	1060			46	230	361.4		
	9								
	10	1150				227	368.4		
	12								
5 min	15	1315			45	224	353.4		
	20	1615				217	348.4		
	25								
	30	1800	038000	72	45	213	339.95		
17 ³⁰	35						338.89		
	40						337.73		
	45						337.69		
	50						337.23		
	55						337.40		
	60						337.29		
	70						337.04		
	80						336.42		
	90						336.27		
	100						335.82		
	20 min	120						335.57	
		140						335.55	
160							335.84		
180							334.30		
30 min	210						334.12		
	240						333.22		
	270						332.88		
22 ⁰⁰	300						332.67		
	330						331.86		
	360						331.71		
23 ⁰⁰	390						331.33		
	420						331.15		
	450						330.67		
3/29	0 ⁰⁰						330.67		
	1 ⁰⁰						330.67		

$38,000 \text{ gals} \div 30 \text{ min} = 1267 \text{ gpm}$
 $Q/s = 1267 \div 36.4 = 34.8 \text{ gpm/ft}$

MPWMD / CAW
 PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT

Well: SM ASR-2

Test: WY 2012 #1

Sheet No. 2 of 2

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft bsl)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
3/29/12 8:45	9:45	1810	01663 <u>0000</u>	72	45	214	326.85	49.5	Avg Q = 1760 gpm Q/s = 35.6 gpm/ft 9:00 EC = 515.00/cm T = 14.6°C PH = 7.94 DO = 4.6 mg/l ORP = 652 mv Cl ₂ = 1.10 mg/L SDI: T ₀ = 23 sec, T ₁₅ = 27 = 0.88 → Q/s = (2449000 gals + 1345) / 56.1 = 32.5 gpm/ft 16:15 Begin closing FCV 16:15 Fug. stops 16:20 start BF (276934 <u>0000</u> gals) ~ 3000 gpm (collect T _u samples) 16:35 Q begins to have color 16:40 STOP BF (276993 <u>0000</u> gals) 17:03 10-min Q/s DTW ₀ = 373.45 Meter = 276993 <u>0000</u> DTW ₁₀ = 470.56 Meter = 277022 <u>0000</u> Q/s = 2200 gpm = 97.1 = 29.9 gpm/ft T _u Measurements during BF Flushing: ET NTU 2 0.96 5 29.3 10 4.01 15 - 20 1.25
3/29 16:15 16:15	13:45	1820 8	02449 <u>0000</u> 02762 <u>0000</u>	72 85	45 49	213 340	318.45	56.1	

**MPWMD / CAW
PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT**

Well: SM ASR-2

Test: WY2012 #2

Sheet No. 1 of 2

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psf)			DTW (ft)	Drawup (ft)	Comments/Other
				Line	Head	EGV			
3/29 17 ⁰⁰	0	0	02463(20)				374.54		
	1								
	2	1100		72	45	225			
	3								
	4	1830		72	45	213			
	5								
	6								
	7								
	8								
	9								
17 ³⁵	10	1830	02480(200)	74	45	212	335.16	39.34	1700 gpm + 30.4 = 43.1 gpm/ft
5 min	12								
	15								
	20								
	25								
	30								
10 min	35								
	40								
	45								
	50								
	55								
20 min	60								
	70								
	80								
	90								
	100								
30 min	120								
	140								
	160								
	180								
	210								
21 ²⁵	240								
22 ²⁵	270								
22 ³⁵	300								
23 ²⁵	330								
23 ³⁵	360								
0 ³⁵	390								
1 ³⁵	420								
	450								
	480								

**MPWMD / CAW
PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT**

Well: **SM ASR-2**

Test: WY2012 #2

Sheet No. 2 of 2

376.45

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft stat)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
3/30	2 ³⁵	510							
		540							
		570							
	3 ³⁵	600							
		630							
	4 ³⁵	660							
		690							
	5 ³⁵	720							
		750							
	6 ³⁵	780							
		810							
	7 ³⁵	840							
		870							
40 min	8 ³⁵	~ 1900	04155 <u>000</u>	70	45	211	319.44	55.1	04155 <u>000</u> - 02463 <u>000</u> = 1692 <u>000</u> gals = 1880 gpm
		900							
1-hr		1000							
		1060							
		1120							
		1180							
		1240							
	15 ⁰⁵	1300							
	15 ⁴⁰	~ 1900	04973 <u>000</u>	73	44	212	319.94	56.51	1545 shut down injection due to declining river flow (below 120 cfs @ HWY 1)
		1360	04975 <u>000</u>						
		1420							
		1480							
2 hr		1600							
		1720							
		1840							
		1960							
		2080							
		2200							
		2320							
		2440							
		2560							
		2680							
		2800							
		2920							
		3040							
		3160							
		3280							
		3400							

BE#1 turbidity readings

T₅ = 18.5

T₁₀ = 5.5

T₁₅ = 2.5

BF meter prior to pumping 277028 000

1555 Begin BE#1; 1610 Stop BE#1

BF meter after BE#1 277069 000

1620 Begin 10-min SPC test

start WL 376.10

10-min WL 468.30

BF meter @ 10 min 277097 000

SPC @ min = 2800/92.2

= 30.4 gpm/ft

Shut off; read final BF meter 277104 000

ASR-2 off until RR flow increases. JWB

MPWMD
SANTA MARGARITA AQUIFER STORAGE AND RECOVERY PROJECT

Well: ASR-2

Test: WY 2012 #3

Sheet No. 1 of 2

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft btst)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
4-1-12 1315	0	0	5025 <u>000</u>	92	0	321			Start inj. - did not start new test on rugged reader 277104 <u>000</u> waste meter prior to act PRV 202 and Re-actuating PRV-205 and opening HV-202 (242 <u>000</u> F count)
1320	5	1,740		78	42	215			277106 <u>000</u> waste - ~2000 gal went through PRV-205 when 1st changed to inj. mode
4-2-12 0800		1,220	6625 <u>000</u>	22	22	212			
0803		1,305		54	44	226			277107 <u>000</u> waste - incoming pressure u.s. of PRV 202 fluctuating between 22 and over 100 every 5 minutes or so.
0820		1,367		22	29	212			ADJ FCV back to 212
0830		1,120		60	45	231			
0837		1,410		52	43	220			- Tried to adj. FCV while head pressure was between 40 and 45 psi.
1015		935		36	35	230			- While on site, pressure in CAW line fluctuating wildly, from ~30 to 100+ psi. Talk to Mike Magretto - "DRO valve issue?"
1110		1200	6824 <u>000</u>	80	44	231			- Still fluctuating - another call to M. Magretto
4-2-12 1400		1,110		55	47	220			Reached out like PSI as I approached began closing FCV - closed to 350 psi - still registering -30 gpm - raised it 355 psi and closed HV-202 - still read -30 gpm.
1405		0	7028 <u>000</u>	50	0	7100			277108 <u>000</u> waste meter

4-5-12 @ 255
 4-6-12 @ 240

7127 000 -7 to -16 gpm
 7127 000 8 gpm

TL does followup TIGER MAG meter reads to
 check on meter operation. JWO

MPWMD
PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT

Well: SM ASR-2

Test: WY 2012 #4 & #5

Sheet No. 1 of 3

TIGERMAG

TEST
START

TEST #4 Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft bst)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
4/13/12 0900		0	7127 000	90	0	355	376.54	0	• Reading prior to inj start. BF meter = 277173 [000] TIGERMAG (E) = 665 000
1000	0	200		80	47	250			• Start inj - restart HERMIT
1010	10	1815	7145 000	75	44	214	340.54	36.00	BF meter = 277175 [000]
1025	25	1833	7170 000	75	44	214	334.66	41.88	∴ 2,000 gal to waste prior to inj. Must be added to inj total volume.
1345		1725		--	--	--			
1700		1815	7855 000	74	46	216			• Flow from ASR-3 to pit (21900 GPM) is now OFF. TIGERMAG (E) = 665 000
4/14/12 0925	1405	1912	9697 000	73	46	216	302.54	74.00	• 24 hr inj SpC = 1830 (ave)/74 = 24.7 gpm/ft
1110	1510	1945	9893 000	62	47	216	--		• ASR-3 step injection test started at 1040 (1st step) 750 gpm TIGERMAG (E) = 665 000 BF meter = 277175 [000]
1420	1700	1890	10268 000	51	43	212	--		• ASR-3 step test now on 3rd step (1500 gpm)
1440		1790		51	34	208			• Adjust inj cl-val set screw press down to 34 psi in anticipation of press drop with 4th step @ ASR-3.
1530		1800	10396 000	52	34	206	--		
1610		1845	10464 000	45	36	207	--		• ASR-3 step test now on 4th step (1875 gpm) Set FCV to 208 -- (lowered flow to 1725).
4/15/12 1030		1390	12160 000	74	34	214	317.23	59.31	• ASR-3 is OFF at this time. Adjust FCV to increase flow.
		1805		72	34	205	300.65		
4-16 0835		11670	14436 000	77	33	208	303.26	73.28	ASR-3 still off Adjust FCV to increase flow
		11810				205	297.20		F-count = 665 [000] W = 277169 [000]

1620

11860

~~15288 000~~
15289 000

58

34

204

293.5

JWO

JWO

JWO

JWO

MPWMD
PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT

Well: ASR-2

Test: WY 2012 #4 + #5

Sheet No. 2 of 3

TEST # Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft bst)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
4-17-12 0820		1924	17116000	73	33	204	290.08	86.46	ASR-3 off - though it was injecting yesterday - message from Tim indicates (cal. Am. shut off) ASR-3 last night - likely by closing the gate valve - leave off till further notice. Shut off well
0900		∅	17189000	96	36	327	364.45		277166000 waste prior to BF 277190000 10 min 460.0 10 min Δ 95.5 24,000 = Δ / 95.5 = 25.1 gpm/ft rest 20 min 10 min test DTW @ 371.89 with 10 = 277250000 DTW @ = 466.08 meter = 277223000 Δ 94.19 27000 / 94.2 = 28.7 gpm/ft
<hr/>									
TEST #5									277261000 after power down to resub. inj 96734 (on valve line) off 277269000 on BF meter after PSV-205 closes ∴ 8000 gal went to waste & will be added to injection volume. JWB
4-17-12 1015	0	∅	17189000	90	∅	330	374.48		
1020	5	1810				203	333.40		
1030	15	1805	17215000	76	32	204	309.65		
4/18/12 0800		1936	(R) 19615000	59	36	205			(E) MAG = 00759000 gal
0835							311.16	63.32	(E) MAG = 00759000 gal 277266000 on BF meter (NOTE: 3000 gal less than yesterday! JWB
4/19/12 0815		2092	(R) 22524000	53	37	205			
0900		1790	(R) 22597000	73	33	206	310.41	64.03	MAG (E) 759000
4/20/12 0830		2000	(R) 25297000	54	38	207	299.26	77.22	277261000 - waste (E) 759000
1605		1980	26205000	58	35	204	298.70	75.78	
4/21/1410		2145	28963000	53	39	206	288.87	85.61	277259000 waste

**MPWMD
PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT**

Well: ASR #2

Test: WY 2012 #4 & 5

Sheet No. 3 of 3

TEST #S (cont'd) Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft btst)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
4-22-12 1035		2190	21600600	69	36	202	287.32	87.16	⊖ = 759000 cavitation through PSV-202 very loud waste = 277253000 - slight bubble on a little leakage past PSV-205, needle slowly dripping into pit 45gpm cushion on waste making total of 96734 cf on Lube - on @ 1050 waste Adj. FCV to 206 FCV still coming up w/ regulator adjustment Lube line 56/53 psi, 0.33 cfm
1105	1925		21664000	69	36	206	297.81	76.67	
4-23-12 1042 1045		1410	34248000	65	35	214	317.75 365.36 460.15	10 min	closed FCV, waste = 2772501000 1st BF @ 1050 700k min NTU @ 1.30 sec because flow is no flow to the pump, PSV began to yelp 1 2 5 10 15 20 3.7 1.95 38.6 11.2 2.63 2.22 = 200/42.24 29.6 gpm/ft shut down, <80 cfm in line. 277307000 - waste
1110	⊘	⊘	34252000	75	✓	240			

MPWMD / CAW
 PHASE 2 AQUIFER STORAGE AND RECOVERY PROJECT

Well: SMS ASR-3

Test: WY 2012 - Line Flushing

Sheet No. 1 of 1

Date/Time	Flow (gpm)	Flow (gpm)	Totalized (gallons)	Pressure			OTW (ft/psi)	Drawup (ft)	Comments/Other
				Line	Head	FOV			
3/29/12 11:00	0	-	000234000	90	88	332	350.95	-	*FAI-305 (Back flush)
11:20	10	405		83	45				FAIT-301 (Inj/Mag) = 4510900 gals
11:25	15	1270		78	44				Adjust PRV-302 to reduce down stream psi to 45 (same as ASR-2)
11:30	20	1580		77	45				
11:45	35	2000		54	45				
									SDE: $T_0 = 27$ secs $T_5 = -$ $T_{10} = -$ $T_{15} = 205$ SDE = 5.8
12:20	70	2010		54	47				SDE $T_0 = 29$ secs, $T_{15} = 117$ SDE = 5.0
12:40	90	2010		54	46				SDE $T_0 = 26$ secs, $T_{15} = 121$ SDE = 3.1
13:20									Begin to stop flushing
13:50			000493000*						*STOP FLUSHING: *FAI FATT = 4774100 gals

MPWMD / CAW
 PHASE 2 AQUIFER STORAGE AND RECOVERY PROJECT

Well: SMS ASR-3

Test: WY2012 - Backflushing (Post Injection Hydraulics Testin) #1

Sheet No. 1 of 1

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft bstat)	Drawdown (ft)	Comments/Other
				Line	Head	FOV			
3/30/12 10 ⁰⁰	0	-	000493(000) (BF meter)	28	0	350	350.51	-	F&E-305 (BF Meter) Water Lube: Totalizer = 001403(0) gals Up = 59 psi, Dn = 58 psi, 2.1 gpm
11 ¹⁰	0								11 ¹⁰ start Pump. Collect TW Samples @ ET 2, 5, 10, 15, 20
11 ¹²	2	3100		48	23	352			
11 ²⁰	10	3100			20		532.1	131.6	~3100 gpm via dial Q/s = 17.1 gpm/ft
11 ³⁰	20	3100					532.7		STOP Pump
		φ	000554(000) (BF meter)						Q = 3050 gpm
									10-min Q/s (11 ⁵⁰)
									ET ₀ Meter = 000554(000) DTW = 352.9 ET ₁₀ " = 000585(000) " = 524.3 31,000 171.4
									12 ⁰⁰ STOP Pump.
									Q/s = 3100 gpm / 171.4 = 18.1 gpm/ft
									14 ³⁰ - 15 ⁴⁰ Perform Backflush/Backwash cycle (see PWR/RCM Field Ops Report)
									16 ⁰⁰ start pump for 10-min Q/s
									Meter DTW
									ET ₀ 000741(000) 353.9
									10 000772(000) 521.2
									31000 167.3
									16 ⁰⁰ STOP Pump.
									10 min Q/s = 3100 gpm / 167.3 = 18.5 gpm/ft
									Meter Totalizer (gals)
									F&E-305 (BF) 000772(000)
									F&E-301 (Flowing) 049319(000)

**MPWMD / CAW
PHASE 2 AQUIFER STORAGE AND RECOVERY PROJECT**

Well: SMS ASR-3

Test: Backflushing

Sheet No. 1 of 2

Time	Flow (gpm)	Pressure (psi)	DTW (ft)	DTW (ft)	DTW (ft)	DTW (ft)	DTW (ft)	DTW (ft)	Comments/Other
4/10/12 10 ⁰⁰	-	-	000772(000)	0	0	350	356.7	0	* FAI-305 (BF flush meter) Tank = 1900 psi FAIT-301 (Tiger Mag) = 049319(00) gals
			(BF meter)						
									11 ¹⁵ start pump ET NTU - 3100 gpm, 23 psi 2 1.7 Detectable odor of H ₂ S 5 1.4 10 1.3 15 0.8
									11 ²⁵ Pwh = 521.5' b ₁ st 11 ³⁵ stop pump 20 0.7
									11 ⁵⁵ Restart Pump ET NTU 2 1.5 5 0.9 10 0.7 15 0.5 20 0.5
									12 ⁰⁵ Pwh = 523.7 12 ¹⁵ stop Pump Totalizer = 000893(000)
									12 ⁵⁰ Restart Pump ET NTU 2 0.6 5 0.7 10 0.6 15 - 20 -
									13 ⁰⁰ Pwh = 524.7 stop pump Totalizer = 000924(000) = 31,000
									"Surging" 13 ¹⁷ Deflate FCV to 200 psi over 1 min ↳ DTW = 359.9 13 ¹⁹ DTW = 356.9 30 ft of rise Re-plate FCV to 350 psi
									13 ²⁰ Restart Pump ET NTU 2 0.6 5 1.3 10 0.7 15 0.5 20 1.3
									13 ⁴⁰ stop pump

10-min Q/s
3100 gpm / 161.8'
= 18.8 gpm/ft

10-min Q/s
3100 gpm / (359.2 - 524.7)
= 18.7 gpm/ft

**MPWMD / CAW
PHASE 2 AQUIFER STORAGE AND RECOVERY PROJECT**

Well: **SMS ASR-3**

Test: **Line Flushing**

Sheet No. 1 of 1

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft bsl)	Drawup (ft)	Comments/Other
				Line	Head	FGV			
4/13/12 14 ⁰⁰	-	-	04952100	92	0	350	352.8	-	FOET-301 (Tiger Mng) FGI-305 (BF Meter) = 001145 [gals]
14 ⁰⁰	0	2300	04932100						14 ⁰⁰ open PRV-302 + HV-302. Flow initially ~ 2300 gpm Throttle HV-305 to reduce flow to - 1900 gpm
14 ³⁰	10	1910		58	45	350	352.8	∅	14 ⁴⁵ SDI $T_0 = 30$ secs $T_5 = 36$ $T_{10} = 46$ SDI = 3.0 $T_{15} = 55$
15 ²⁰	60		05041300	58	43				15 ¹⁵ SDI $T_0 = 27$ secs $T_5 = 28$ $T_{10} = 35$ SDI = 2.5 $T_{15} = 43$
16 ⁵⁰			05215900	90	0	350			15 ⁴⁵ SDI $T_0 = 27$ secs $T_5 = 28$ $T_{10} = -$ SDI = 2.2 $T_{15} = 40$
									16 ¹⁵ SDI $T_0 = 25$ secs $T_5 = 26$ SDI = 1.8 $T_{10} =$ $T_{15} = 38$ secs
									16 ⁵⁰ stop Flushing FGI-305 Totalizer = 001426 [gals]

SWL =
349.6

MPWMD / CAW
PHASE 2 AQUIFER STORAGE AND RECOVERY PROJECT

Well: SMS ASR-3

Test: Step Injection - Step 2 (wy 2012 #2)

Sheet No. 3 of 4

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psf)			D/W (ft. hrs)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
4/14 12 ⁰⁰	0		05296300				304.7	44.9	Restart Log Cycle on XD datalogger
	1						300.1		
	2	1115				225	291.0		
	3			70	41	225	287.9		
	4	1120					286.6		
	5								
	6								
	7								
	8	1125		70	41	225	285.3		
	9								
	10	1125	05307500	70	41	225	284.2	65.4	1120 gpm Avg.
	12								
5 min	15								
	20	1130		69	41	226	281.5	68.1	
	25								
	30	1135					279.6		SDE T ₀ = 20 sec
	35								T ₅ = 21
	40								T ₁₀ = 22
	45								T ₁₅ = 23
	50								SDE = 0.9
	55	1135		70	41	226	275.7	73.9	
10 min	60								
	70	1140		70	41	226	273.8	75.8	
	80								
	90								
	100	1140	05409600				270.4	79.2	1133 gpm Avg
20 min	120								
	140								
	160								
	180								
30 min	210								
	240								
	270								
	300								
	330								
	360								
	390								
	420								
	450								
	480								

$Q/S = 1133 \text{ gpm} \div 79.2 = 14.3 \text{ gpm/ft}$

SWL = 349.6
 Bwls @ 530
 MAX DUP = 180
 MIN DTW = 170

MPWMD / CAW
 PHASE 2 AQUIFER STORAGE AND RECOVERY PROJECT

Well: SMS ASR-3

Test: Step Injection - Step 3 (WY 2012 #2)

Sheet No. 3 of 4

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft)	Drawdown (ft)	Comments/Other
				Line	Head	FGV			
4/14/12 14 ⁰⁰	0		05409600				270.4		Restart Log Cycle on rd datalogger
	1								
	2								
	3	1450							
	4	1470		63	41	218	260.9		
	5								
	6	1500				218	247.3		
	7								
	8								
	9								
	10	1500	05424000	63	41	218	244.4	105.2	1470 gpm Avg.
	12								
5 min	15								
	20	1500		63	41	218	239.7		
	25								
	30	1500					236.3		
	35								
	40								
	45								
	50								
	55								
10 min	60	1490		65	41	218	229.1		SDF $T_0 = 21$ sec
	70								$T_3 = 23$
	80	1500		64	41	218	223.7		$T_0 = 25$
	90								$T_3 = 27$
	100	1500	05558500				220.4	129.2	1489 gpm Avg
20 min	120								
	140								
	160								
	180								
30 min	210								
	240								
	270								
	300								
	330								
	360								
	390								
	420								
	450								
	480								

SDF $T_0 = 21$ sec
 $T_3 = 23$
 $T_0 = 25$
 $T_3 = 27$
SDF = 1.5

$Q/s = 1489 \text{ gpm} \div 129.2' = 11.5 \text{ gpm/ft}$

MPWMD / CAW

PHASE 2 AQUIFER STORAGE AND RECOVERY PROJECT

Well: SMS ASR-3

TIGERMAC

Test: Backflushing
0920

05747900

Sheet No. 1 of 1

Date/Time	ET (min)	Rate (gpm)	Total Use (gallons)	Pressure (psi)			DTW (ft total)	Drawup (ft)	Comments/Other												
				Line	Static	Flow															
4/15/12	-	-	05876900	90	0	356	360.1	-	BF Meter = 001525(000) gals Water Lobe = 002133(0) 60 psi / 68 psi 1145 Turn on Pump 1155 PWL = 537.2+ <table border="1"><tr><th>ET</th><th>NTU</th></tr><tr><td>2</td><td>24.5</td></tr><tr><td>5</td><td>27.1</td></tr><tr><td>10</td><td>13.7</td></tr><tr><td>15</td><td>6.4</td></tr><tr><td>20</td><td>4.5</td></tr></table> 10-min Q/s = 2650/187.1 = 14.2 gpm/ft 1205 Turn off Pump Totalizer = 001578(00) = 2650 gpm Avg	ET	NTU	2	24.5	5	27.1	10	13.7	15	6.4	20	4.5
ET	NTU																				
2	24.5																				
5	27.1																				
10	13.7																				
15	6.4																				
20	4.5																				
									12 ²⁵ Turn on Pump <table border="1"><tr><th>ET</th><th>NTU</th></tr><tr><td>2</td><td>3.5</td></tr><tr><td>5</td><td>4.9</td></tr><tr><td>10</td><td>5.7</td></tr><tr><td>15</td><td>2.8</td></tr><tr><td>20</td><td>2.0</td></tr></table> 12 ³⁵ PWL = 537.2+ Q/s = 2700/187 = 14.4 gpm/ft 1245 Turn off Pump Totalizer = 001632(000) = 2700 gpm Avg	ET	NTU	2	3.5	5	4.9	10	5.7	15	2.8	20	2.0
ET	NTU																				
2	3.5																				
5	4.9																				
10	5.7																				
15	2.8																				
20	2.0																				
									13 ¹⁵ Turn Pump on <table border="1"><tr><th>ET</th><th>NTU</th></tr><tr><td>2</td><td>2.2</td></tr><tr><td>5</td><td>3.4</td></tr><tr><td>10</td><td>2.5</td></tr><tr><td>15</td><td>2.0</td></tr><tr><td>20</td><td>1.8</td></tr></table> 13 ²⁵ PWL = 537.2+ Q/s = 2650/187.1 = 14.2 13 ³⁵ Turn Pump off Totalizer = 001685(000) = 2650 gpm Avg	ET	NTU	2	2.2	5	3.4	10	2.5	15	2.0	20	1.8
ET	NTU																				
2	2.2																				
5	3.4																				
10	2.5																				
15	2.0																				
20	1.8																				
									Pit Full, stop Backflushing ops												

**MPWMD
PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT**

Well: ASR-3

Test: WY 2012 #3

Sheet No. 1 of 2

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft btst)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
4-16-12 1200	∅	∅	58469.00	88	∅				BF ∅∅1685000 Deep MW = 0048240 gal Prior to BF 1200 → Turn on MW to collect WG: SAMPLED MW PRIOR TO INJECTION [1224] nmt ORP = 245 mv; 743% COND; 25.1°C TEMP 7.29 PH; 0.11(O ₂) mg/L; H ₂ S = 0.02 001689 [200] BE meter prior to BF 1 min Turbidity 2" 5" 10" 15" 20"
1300							349.55		
1301							473.55		
1305							537.22		
1310									
1312	[stop BFing]		58550.00						@ 10 min 001717 [000] SpC = 14.9 BF meter = 001743 [000] prior to opening CAW line
1315	[start line flush]								
1320	[stop line flush]								
1335	[start injection]		58660.00	-	-	-	350.0		
1340	5	1290		70	67	253	--		
1350	15	2150		70	67	255	279.17		
1355	20	970	58924.00	74	72	260			
1520	105	960	59745.00	73	72	259	277.84		Steel T. greets to Paul Gastg, adjusts 8" (ca. val), adjustments to FCV Diaphragm apparently stuck after 414 hammer episode -154 ORP @ 1520 TL
1605		1125	60191.00	72	42	230	262.65	88.35	
4-17-12 0810	∅	∅	65903.00	86	∅	227 325			Cell was shut off last night b/c closing gate valve Tripped FCV up.

**MPWMD
PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT**

Well: ASR-3
Test: WY 2012 #3

Sheet No. 2 of 2

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft btst)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
4/12/12 16 ⁰⁵									Prepare to BF prior to startup of new inj. test
16 ¹⁰			000006590300	89	0	325	347.25		BF meter = 001758 [000] 2500 / 188.06 = 13.3 (-0.123 [000])
16 ²⁰							537.41		Note that there is 40 psi on gauge upstream of PSV - 305; not certain if this valve is all the way open.
4/12/12 16 ⁴⁰			6570300				352.08		BF meter = 001785 [000]
17 ¹⁰	0	0	6570300						Start injection test @ 17 ¹⁰ jwo
17 ¹⁵	5	765		92	35				
17 ²⁵	25	1145					267.32	84.72	
17 ⁴⁵	35	425							
4/18/12 13 ¹⁵		905	77379000	77	72		251.00	98.0 TL	001785 [000] on BF meter (no change). jwo
14 ⁰⁰		905	77379000	76	72	263	249.2	102.9	001785 [000] waste Lube line on = 003047 [000] @ 1420 60 psi w.s. / 59 psi d.s. of filter Q = 6.8 g/min on lube line @ 1425 began closing FCV @ 1427 injection shut down Closed HV because 8" PRV is not working right open 12" PSV - 305
14 ²⁵									
14 ²⁷									
1st BI 14 ³⁵		Ø	7754100	86	Ø	358	340.90		BF = 001785 [000] Pump to BF 14 ³⁵ start pump ET L 2 5 10 NTU 970.5 19.4 78.6 001811 [000] 10 min Δ = 26000 / 196 = 13.3 g/mil!
							537.26*		
2nd BI 15 ⁰⁰							346.70		* shut down @ 15 min due to surging. bit at bowls, below transducer.
15 ¹⁰							537.30		001811 [000] 26000 / 196.6 001831 [000]
									ET NTU 1 19.7 2 14.0 5 7.9 10 2.4

MPWMD
PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT

Well: ASR-3

Test: W4 2012 #4

Sheet No. 1 of 1

MAG

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft bst)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
4-18-12 2 nd of							348.7		15 ⁰⁰ start pump 0018371000 ET NTU 1 8.1 2 6.8 5 4.8
							537.1		15 ³⁵ stop pump 10 5.2 Totalizer = 001864000 Q/S $2700 \div 188.4 = 14.3 \text{ gpm/ft}$ (RCM)
4/18/12 15 ⁵⁵ 15 ⁵⁷	0 2	0 450	077541100	89	0	356 272	348.8	0	start opening FCV
10 ⁰⁰	5	1000		79	70	254	296.4		
16 ¹⁰	15	1010	07767200	78	70	255	277.5	71.3	
17 ⁰⁵	70	1010	07822500	72	68	255	268.9	79.9	17 ⁰⁰ SDI: $T_0 = 22 \text{ secs}$ $Q_X = 977 \text{ gpm}$ $T_S = -$ $Q/S = 12.2 \text{ gpm/ft}$ $T_{10} = 24 \text{ SDI} = 0.8$ $T_{15} = 25$ (RCM)
4/19/12 09 ⁰⁰		980	08712800	68	66	254	245.6	103.20	Shut off @ 0.5% of record at least or CUMUL 100% of record at least
4/19/12 09 ⁵⁰ 10 ⁰⁰	prepare for BF#1 start BF → 3000+		08783800	86	0		344.51 537.26		BF meter = 001910000 @ start BF meter = 001936500 @ 10 min 10 min SpC = $2650 / 192.75 = 13.7$ ET NTU $\frac{1}{59.0}$ $\frac{2}{3.4}$ $\frac{5}{13.4}$ $\frac{10}{20.2}$ NOTE: After 2 min, press + flow are surging due to pumping from bowls. Air in water could be influencing turb readings.
10 ¹⁵	start BF #2		08783800	88	0		347.80 537.30		BF meter = 001938000 @ start 10 MIN = 001971000 24000 / 189.5 = 12.7 gpm/ft ET NTU $\frac{1}{27.8}$ $\frac{2}{7.9}$ $\frac{5}{6.5}$ $\frac{10}{7.1}$

MPWMD

PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT

Well: ASR-3
 Test: wy 2012 #5

Sheet No. 1 of 2

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft btst)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
4/19/12 11:00		0	88265.00	72	70		347.80		BF meter = 001965[000] prior to PRV opening
11:20		1000	88565.00	72	72	261	264.26	88.54	BF meter = 002002[009] after PSV closed
15:45		982							Shut in temporarily while cla-val rep works on PRV.
16:40		1008		73	36		255.80		JWO
4/20 08:15		1010	100869.00	66	35	227.5	253.53	94.3	PSI @ PSV-305 = 40 002025[002] - waste - fair amount of water on ground, dripping from SIC vent on EAST side maybe 8.03/min
14:50		1005	104844.00	69	37	227	231.84 338.77 537.4		002025[002] - waste; 1st BF 10min 002030[022] 10 min breaks suction intermittently at rev 2" 1 2 5 10 22.6 5.0 43.1 37.0 waste 002076[000] 10 537 2nd BF 10min 002050[000] 345 1 2 5 10 192 21.3 12.0 9.7 10.9
15:16 15:11 15:36		0 950	104829.00	73 75	43 43	228			Residual Logging
4/21/12 14:25		945	117817.00	67	43	229	245.02	111.83	
17:15-17:30		945-0	119529.00	85	45	350			shut FCV and PRV-302 + HV-302 should shut at request of Cal-Aqua 002076[000] waste
4-21-12 11:20				13	0	25.0			002076[000] waste 002076[000] waste 002076[000] waste 002076[000] waste

**MPWMD
PHASE 1 AQUIFER STORAGE AND RECOVERY PROJECT**

Well: ASR3

Test: WY 2012 #5

Sheet No. 2 of 2

Date/Time	ET (min)	Rate (gpm)	Totalizer (gallons)	Pressure (psi)			DTW (ft btst)	Drawup (ft)	Comments/Other
				Line	Head	FCV			
			119532.5						2012 BF 10:10 DTW 1000 11:00 1000 11:30 1000 12:00 1000
restart									
11:00	30	30							
11:30	20	20	119532.5						stop test - get new flow meter, check out did new flow meter and it was will start file after some work up. DTW meter = 002136.000

APPENDIX B – WATER-QUALITY LABORATORY REPORTS



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

4 Justin Court Suite D, Monterey, CA 93940
 831.375.MBAS
 montereybayanalytical@usa.net

ELAP Certification Number: 2385

Lab Number: AA86209

Collection Date/Time: 3/28/2012 16:00 Sample Collector: LEAR J
 Submittal Date/Time: 3/29/2012 10:00 Sample ID

Sample Description: Injectate

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	141		2		3/29/2012
Ammonia-N	4500NH3 D	mg/L	Not Detected		0.05		3/30/2012
Arsenic, Total	EPA200.8	ug/L	1		1	10	3/30/2012
Barium, Total	EPA200.8	ug/L	53		10	1000	3/30/2012
Boron	EPA200.7	mg/L	Not Detected		0.05		4/2/2012
Calcium	EPA200.7	mg/L	42		0.5		4/2/2012
Chloramines	SM4500-Cl G	mg/L	0.08		0.05		3/29/2012
Chloride	EPA300.0	mg/L	37		1	250	3/29/2012
Chlorine Residual, Free (Field)	4500-Cl G	mg/L	1.08		0.05	2.00	3/28/2012
Chlorine Residual, Total (Field)	4500-Cl G	mg/L	1.20		0.05	2.00	3/28/2012
Copper, Total	EPA200.8	ug/L	9		4	1300	3/30/2012
Dissolved Organic Carbon	SM5310-C	mg/L	1.2	E	0.2		4/6/2012
Gross Alpha	EPA900.0	pCi/L	0.000 ± 1.16	E		15	4/12/2012
Haloacetic Acids	EPA552	ug/L	13	E		60	4/9/2012
Iron	EPA200.7	ug/L	Not Detected		10	300	4/2/2012
Iron, Dissolved	EPA 200.7	ug/L	Not Detected		10	300	4/2/2012
Kjehldahl Nitrogen	4500-NH3 B,C,E	mg/L	Not Detected		0.5		3/30/2012
Lithium	EPA200.8	ug/L	6		1		3/30/2012
Magnesium	EPA200.7	mg/L	14		0.5		4/2/2012
Manganese, Dissolved	EPA 200.7	ug/L	Not Detected		10	50	4/2/2012
Manganese, Total	EPA 200.7	ug/L	Not Detected		10	50	4/2/2012
Methane	EPA174/175	ug/L	Not Detected	E	5		4/6/2012
Molybdenum, Total	EPA200.8	ug/L	2		1	1000	3/30/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	3/29/2012
Nitrate as NO3-N	EPA300.0	mg/L	Not Detected		0.10	10	3/29/2012
Nitrite as NO2-N	EPA300.0	mg/L	Not Detected		0.10	1.00	3/29/2012
o-Phosphate-P	EPA300.0	mg/L	0.27		0.10		3/29/2012
pH (Laboratory)	4500-H+B	STD. Units	7.6				3/29/2012
Phosphorus, Total	HACH 8190	mg/L	0.32		0.03		4/6/2012

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

Lab Number: AA86209

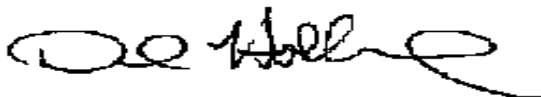
Collection Date/Time: 3/28/2012 16:00 Sample Collector: LEAR J
 Submittal Date/Time: 3/29/2012 10:00 Sample ID

Sample Description: Injectate

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Potassium	EPA200.7	mg/L	2.8		0.1		4/2/2012
QC Anion Sum x 100	Calculation	%	106%				4/25/2012
QC Anion-Cation Balance	Calculation	%	-2				4/25/2012
QC Cation Sum x 100	Calculation	%	101%				4/5/2012
Selenium, Total	EPA200.8	ug/L	3		2	50	3/30/2012
Sodium	EPA200.7	mg/L	45		0.5		4/2/2012
Specific Conductance (E.C)	2510B	umhos/cm	520		1	900	3/29/2012
Strontium, Total	EPA200.8	ug/L	243		5		3/30/2012
Sulfate	EPA300.0	mg/L	78		1	250	3/29/2012
Total Nitrogen	Calculation	mg/L	Not Detected		0.5		4/20/2012
Total Organic Carbon	SM5310C	mg/L	0.95	E	0.20		4/6/2012
Total Radium 226	EPA903.0	pCi/L	0.056 ± 0.190	E		3	4/10/2012
Trihalomethanes	EPA524.2	ug/L	23	E		80	4/3/2012
Uranium by ICP/MS	EPA200.8	ug/L	Not Detected		1	30	3/30/2012
Vanadium, Total	EPA200.8	ug/L	Not Detected		1	1000	3/30/2012
Zinc, Total	EPA200.8	ug/L	216		10	5000	3/30/2012

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 outside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.



Certificate of Analysis

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

Report Issue Date: 04/11/2012 15:57
Received Date: 04/03/2012
Received Time: 07:30

Lab Sample ID: A2D0111-01
Sample Date: 03/28/2012 16:00
Sample Type: Grab

Sampled by: J Lear
Matrix: Drinking Water

Sample Description: Injectate // 86209

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	1.2	0.20	mg/L	1	A203567	04/06/12	04/06/12	
Total Organic Carbon	SM 5310 C	0.95	0.20	mg/L	1	A203569	04/06/12	04/06/12	X01

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	7.9	0.50	ug/L	1	A203332	04/03/12	04/03/12	
Bromoform	EPA 524.2	1.1	0.50	ug/L	1	A203332	04/03/12	04/03/12	
Chloroform	EPA 524.2	8.0	0.50	ug/L	1	A203332	04/03/12	04/03/12	
Dibromochloromethane	EPA 524.2	6.1	0.50	ug/L	1	A203332	04/03/12	04/03/12	
<i>Surrogate: Bromofluorobenzene</i>									
	EPA 524.2	111 %							<i>Acceptable range: 70-130 %</i>
*Total Trihalomethanes, EPA 524.2		23	0.50	ug/L					
Haloacetic Acids by GC-ECD									
Dibromoacetic Acid (DBAA)	EPA 552.2	3.0	1.0	ug/L	1	A203543	04/06/12	04/09/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	5.7	1.0	ug/L	1	A203543	04/06/12	04/09/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A203543	04/06/12	04/09/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A203543	04/06/12	04/09/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	4.2	1.0	ug/L	1	A203543	04/06/12	04/09/12	
<i>Surrogate: 2,3-Dibromopropionic Acid</i>									
	EPA 552.2	105 %							<i>Acceptable range: 70-130 %</i>
*Total Haloacetic Acids, EPA 552.2		13	2.0	ug/L					



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 montereybayanalytical@usa.net
 ELAP Certification Number: 2385

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

Lab Number: AA82568

Collection Date/Time: 11/18/2011 15:15 Sample Collector: LINDBERG T
 Submittal Date/Time: 11/18/2011 15:25 Sample ID

Sample Description: ASR 1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	142		2		11/22/2011
Ammonia-N	4500NH3 D	mg/L	Not Detected		0.05		11/23/2011
Arsenic, Total	EPA200.8	ug/L	Not Detected		1	10	12/2/2011
Barium, Total	EPA200.8	ug/L	64		10	1000	12/2/2011
Boron	EPA200.7	mg/L	Not Detected		0.05		11/18/2011
Calcium	EPA200.7	mg/L	43		0.5		11/18/2011
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		11/18/2011
Chloride	EPA300.0	mg/L	40		1	250	11/18/2011
Copper, Total	EPA200.8	ug/L	5		4	1300	12/2/2011
Dissolved Organic Carbon	SM5310-C	mg/L	0.98	E	0.2		11/28/2011
Gross Alpha	EPA900.0	pCi/L	2.17 ± 1.81	E		15	12/16/2011
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	11/30/2011
Iron	EPA200.7	ug/L	Not Detected		10	300	11/18/2011
Iron, Dissolved	EPA 200.7	ug/L	Not Detected		10	300	11/18/2011
Kjeldahl Nitrogen	4500-NH3 B,C,E	mg/L	Not Detected		0.2		11/23/2011
Lithium	EPA200.8	ug/L	6		1		12/2/2011
Magnesium	EPA200.7	mg/L	14		0.5		11/18/2011
Manganese, Dissolved	EPA 200.7	ug/L	Not Detected		10	50	11/18/2011
Manganese, Total	EPA 200.7	ug/L	Not Detected		10	50	11/18/2011
Methane	EPA174/175	ug/L	Not Detected	E	5		11/28/2011
Molybdenum, Total	EPA200.8	ug/L	7		1	1000	12/2/2011
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	11/18/2011
o-Phosphate-P	EPA300.0	mg/L	0.16		0.05		11/18/2011
pH (Laboratory)	4500-H+B	STD. Units	7.4				11/18/2011
Phosphorus, Total	HACH 8190	mg/L	0.20		0.03		11/21/2011
Potassium	EPA200.7	mg/L	3.0		0.1		11/18/2011
QC Anion Sum x 100	Calculation	%	103%				11/23/2011
QC Anion-Cation Balance	Calculation	%	-1				11/23/2011
QC Cation Sum x 100	Calculation	%	100%				11/23/2011

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

Lab Number: AA82568

Collection Date/Time: 11/18/2011 15:15

Sample Collector: LINDBERG T

Submittal Date/Time: 11/18/2011 15:25

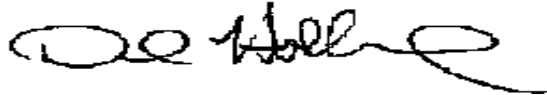
Sample ID

Sample Description: ASR 1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Selenium, Total	EPA200.8	ug/L	2		2	50	12/2/2011
Sodium	EPA200.7	mg/L	46		0.5		11/18/2011
Specific Conductance (E.C)	2510B	umhos/cm	537		1	900	11/21/2011
Strontium, Total	EPA200.8	ug/L	254		5		12/2/2011
Sulfate	EPA300.0	mg/L	74		1	250	11/18/2011
Total Nitrogen	Calculation	mg/L	Not Detected		0.2		11/23/2011
Total Organic Carbon	SM5310C	mg/L	0.95	E	0.20		11/28/2011
Total Radium 226	EPA903.0	pCi/L	0.000 ± 0.193	E		3	12/7/2011
Trihalomethanes	EPA524.2	ug/L	31	E		80	11/30/2011
Uranium by ICP/MS	EPA200.8	ug/L	1		1	30	12/2/2011
Vanadium, Total	EPA200.8	ug/L	Not Detected		1	1000	12/2/2011
Zinc, Total	EPA200.8	ug/L	205		10	5000	12/2/2011

Sample Comments:

Report Approved by:



David Holland, Laboratory Director



Certificate of Analysis

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

Report Issue Date: 12/02/2011 10:44
Received Date: 11/23/2011
Received Time: 07:40

Lab Sample ID: A1K1711-01
Sample Date: 11/18/2011 15:15
Sample Type: Grab

Sampled by: T Lindberg
Matrix: Drinking Water

Sample Description: ASR-1 // 82568

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	0.98	0.20	mg/L	1	A114001	11/28/11	11/28/11	
Total Organic Carbon	SM 5310 C	0.95	0.20	mg/L	1	A114002	11/28/11	11/28/11	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	8.2	0.50	ug/L	1	A114043	11/29/11	11/30/11	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A114043	11/29/11	11/30/11	
Chloroform	EPA 524.2	20	0.50	ug/L	1	A114043	11/29/11	11/30/11	
Dibromochloromethane	EPA 524.2	2.8	0.50	ug/L	1	A114043	11/29/11	11/30/11	

Surrogate: Bromofluorobenzene EPA 524.2 93 % *Acceptable range: 70-130 %*

*Total Trihalomethanes, EPA 524.2 **31** 0.50 ug/L

Haloacetic Acids by GC-ECD

Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A114067	11/29/11	11/30/11	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A114067	11/29/11	11/30/11	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A114067	11/29/11	11/30/11	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A114067	11/29/11	11/30/11	
Trichloroacetic Acid (TCAA)	EPA 552.2	ND	1.0	ug/L	1	A114067	11/29/11	11/30/11	

Surrogate: 2,3-Dibromopropionic Acid EPA 552.2 95 % *Acceptable range: 70-130 %*

*Total Haloacetic Acids, EPA 552.2 ND 2.0 ug/L



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 ELAP Certification Number: 2385

Lab Number: AA84670

Collection Date/Time: 2/2/2012 14:30 Sample Collector: LEAR, J
 Submittal Date/Time: 2/2/2012 15:40 Sample ID

Sample Description: ASR-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	177		2		2/3/2012
Ammonia-N	4500NH3 D	mg/L	Not Detected		0.05		2/3/2012
Arsenic, Total	EPA200.8	ug/L	1		1	10	2/9/2012
Barium, Total	EPA200.8	ug/L	83		10	1000	2/9/2012
Boron	EPA200.7	mg/L	0.06		0.05		2/6/2012
Calcium	EPA200.7	mg/L	61		0.5		2/6/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		2/2/2012
Chloride	EPA300.0	mg/L	67		1	250	2/3/2012
Copper, Total	EPA200.8	ug/L	4		4	1300	2/9/2012
Dissolved Organic Carbon	SM5310-C	mg/L	0.94	E	0.2		2/9/2012
Gross Alpha	EPA900.0	pCi/L	2.96 ± 1.27	E		15	2/15/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	2/14/2012
Iron	EPA200.7	ug/L	185		10	300	2/6/2012
Iron, Dissolved	EPA 200.7	ug/L	143		10	300	2/6/2012
Kjehldahl Nitrogen	4500-NH3 B,C,E	mg/L	Not Detected		0.5		2/3/2012
Lithium	EPA200.8	ug/L	22		1		2/9/2012
Magnesium	EPA200.7	mg/L	19		0.5		2/6/2012
Manganese, Dissolved	EPA 200.7	ug/L	22		10	50	2/6/2012
Manganese, Total	EPA 200.7	ug/L	23		10	50	2/6/2012
Methane	EPA174/175	ug/L	0.40	E	5		3/6/2012
Molybdenum, Total	EPA200.8	ug/L	7		1	1000	2/9/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	2/3/2012
Nitrate as NO3-N	EPA300.0	mg/L	Not Detected			10	2/3/2012
Nitrite as NO2-N	EPA300.0	mg/L	Not Detected			1.00	2/3/2012
o-Phosphate-P	EPA300.0	mg/L	0.12		0.05		2/3/2012
pH (Laboratory)	4500-H+B	STD. Units	7.1				2/2/2012
Phosphorus, Total	HACH 8190	mg/L	0.26		0.03		2/10/2012
Potassium	EPA200.7	mg/L	3.7		0.1		2/6/2012
QC Anion Sum x 100	Calculation	%	99%				2/8/2012
QC Anion-Cation Balance	Calculation	%	2				2/8/2012
QC Cation Sum x 100	Calculation	%	102%				2/8/2012

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

Lab Number: AA84670

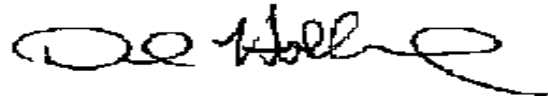
Collection Date/Time: 2/2/2012 14:30 Sample Collector: LEAR, J
 Submittal Date/Time: 2/2/2012 15:40 Sample ID

Sample Description: ASR-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Selenium, Total	EPA200.8	ug/L	Not Detected		2	50	2/9/2012
Sodium	EPA200.7	mg/L	62		0.5		2/6/2012
Specific Conductance (E.C)	2510B	umhos/cm	724		1	900	2/3/2012
Strontium, Total	EPA200.8	ug/L	316		5		2/9/2012
Sulfate	EPA300.0	mg/L	83		1	250	2/3/2012
Total Nitrogen	Calculation	mg/L	Not Detected		0.5		2/3/2012
Total Organic Carbon	SM5310C	mg/L	1.1	E	0.20		2/14/2012
Total Radium 226	EPA903.0	pCi/L	0.033 ± 0.171	E		3	2/20/2012
Trihalomethanes	EPA524.2	ug/L	3.5	E		80	2/9/2012
Uranium by ICP/MS	EPA200.8	ug/L	1		1	30	2/9/2012
Vanadium, Total	EPA200.8	ug/L	2		1	1000	2/9/2012
Zinc, Total	EPA200.8	ug/L	294		10	5000	2/9/2012

Sample Comments:

Report Approved by:



David Holland, Laboratory Director



Certificate of Analysis

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

Report Issue Date: 02/16/2012 9:33
Received Date: 02/07/2012
Received Time: 10:15

Lab Sample ID: A2B0394-01
Sample Date: 02/02/2012 14:30
Sample Type: Grab

Sampled by: Lear, J.
Matrix: Water

Sample Description: ASR-1 // 84670

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	0.94	0.20	mg/L	1	A201397	02/09/12	02/09/12	
Total Organic Carbon	SM 5310 C	1.1	0.20	mg/L	1	A201549	02/14/12	02/14/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	0.76	0.50	ug/L	1	A201388	02/09/12	02/09/12	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A201388	02/09/12	02/09/12	
Chloroform	EPA 524.2	2.7	0.50	ug/L	1	A201388	02/09/12	02/09/12	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A201388	02/09/12	02/09/12	

Surrogate: Bromofluorobenzene EPA 524.2 101 % *Acceptable range: 70-130 %*
 *Total Trihalomethanes, EPA 524.2 **3.5** 0.50 ug/L

Haloacetic Acids by GC-ECD

Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A201494	02/13/12	02/14/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A201494	02/13/12	02/14/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A201494	02/13/12	02/14/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A201494	02/13/12	02/14/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	ND	1.0	ug/L	1	A201494	02/13/12	02/14/12	

Surrogate: 2,3-Dibromopropionic Acid EPA 552.2 97 % *Acceptable range: 70-130 %*
 *Total Haloacetic Acids, EPA 552.2 ND 2.0 ug/L



American Water
1115 South Illinois Street
Belleville, IL 62220-3102
Phone: (618) 235-3600
Fax: (618) 235-6349

May 29, 2012

Travis Peterson
California American Water
511 Forrest Lodge Road
Suite 100
Pacific Grove, CA 93950

RE: Workorder: 165284 Santa Margarita Well SM DBP 1

Dear Travis Peterson:

Enclosed are the analytical results for sample(s) received by the laboratory on Thursday, May 17, 2012. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Linda Henry (Digitally Signed)

CERTIFICATE OF ANALYSIS

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SAMPLE SUMMARY

Profile 254 Monterey District

Workorder: 165284 Santa Margarita Well SM DBP 1

Lab ID	Sample ID		Matrix	
PWSID	Facility ID	Site ID	Site Sample Type	Certified Lab ID
16528401	Santa Margarita Well		Drinking Water	
CA2710004			RAW	1225

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PROJECT SUMMARY

Profile

Workorder: 165284 Santa Margarita Well SM DBP 1

Sample Analysis Comments

Lab ID 22607 Client ID Subway Hckry - ...(17577901MS)

Analyte/Monochloroacetic Acid

N = Spiked analyte recovery in sample matrix is outside control limits.

Lab ID 22700 Client ID CCCL7 for HBN 11899 [GC/1373]

Analyte/Dibromoacetic Acid

A = Spiked analyte recovery is outside control limits.

Hits Summary

Sample ID	Compound Name	Results	Units	RDL	DF	Qual	MCL (S/P)
16528401	Bromodichloromethane	5.9	ug/L	0.5	1		
16528401	Chloroform	15.5	ug/L	0.5	1		
16528401	Dibromochloromethane	2.2	ug/L	0.5	1		
16528401	Total Trihalomethanes	23.6	ug/L	0.5	1		80

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ANALYTICAL RESULTS

Profile

Workorder: 165284 Santa Margarita Well SM DBP 1

FOR COMPLIANCE

Lab ID: **16528401** Date Received: 5/17/2012 07:00 Matrix: Drinking Water
 Sample ID: **Santa Margarita Well** Date Collected: 5/16/2012 13:30

Parameters	Results	Units	RDL	DF	Prepared	By	Analyzed	By	Qual	MCL S/P
HALOACETIC ACIDS (HAAs)										
EPA 552.3		Preparation Method: EPA 552.3 Prep								
		Analytical Method:								
Bromochloroacetic Acid	ND	ug/L	1.0	1	5/21/2012 18:00	LT	5/22/2012 18:17	LT		
Dibromoacetic Acid	ND	ug/L	1.0	1	5/21/2012 18:00	LT	5/22/2012 18:17	LT		
Dichloroacetic Acid	ND	ug/L	1.0	1	5/21/2012 18:00	LT	5/22/2012 18:17	LT		
Monobromoacetic Acid	ND	ug/L	1.0	1	5/21/2012 18:00	LT	5/22/2012 18:17	LT		
Monochloroacetic Acid	ND	ug/L	2.0	1	5/21/2012 18:00	LT	5/22/2012 18:17	LT		
Total Haloacetic Acids	ND	ug/L	1.0	1	5/21/2012 18:00	LT	5/22/2012 18:17	LT		60
Trichloroacetic acid	ND	ug/L	1.0	1	5/21/2012 18:00	LT	5/22/2012 18:17	LT		
TRIHALOMETHANES (THMs)										
EPA 524.2		Analytical Method:								
Bromodichloromethane	5.9	ug/L	0.5	1			5/18/2012 17:35	ALJ		
Bromoform	ND	ug/L	0.5	1			5/18/2012 17:35	ALJ		
Chloroform	15.5	ug/L	0.5	1			5/18/2012 17:35	ALJ		
Dibromochloromethane	2.2	ug/L	0.5	1			5/18/2012 17:35	ALJ		
Total Trihalomethanes	23.6	ug/L	0.5	1			5/18/2012 17:35	ALJ		80
Field pH										
Field pH		Analytical Method:								
Field Chlorine Residual	0.00	mg/L		1			5/16/2012 13:30	FLD		

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MONTEREY BAY ANALYTICAL SERVICES

PRECISION • ACCURACY • DEPENDABILITY

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831.375.MBAS

montereybayanalytical@usa.net

ELAP Certification Number: 2385

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

Page 1 of 1

Monday, July 09, 2012

Lab Number: AA89184

Collection Date/Time: 6/21/2012 13:20 Sample Collector: LINDBERG T
Submittal Date/Time: 6/21/2012 14:15 Sample ID

Sample Description: ASR-1 Backflush

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		6/21/2012
Chloride	EPA300.0	mg/L	49		1	250	6/22/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	7/1/2012
Trihalomethanes	EPA524.2	ug/L	42	E		80	6/27/2012

Sample Comments:

Report Approved by:

David Holland, Laboratory Director



Certificate of Analysis

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

Report Issue Date: 07/06/2012 15:28
Received Date: 06/26/2012
Received Time: 10:00

Lab Sample ID: A2F2128-01
Sample Date: 06/21/2012 13:20
Sample Type: Grab

Sampled by: T. Lindberg
Matrix: Water

Sample Description: ASR-1 Backflush // 89184

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
<u>Trihalomethanes by GC-MS</u>									
Bromodichloromethane	EPA 524.2	12	0.50	ug/L	1	A206808	06/27/12	06/27/12	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A206808	06/27/12	06/27/12	
Chloroform	EPA 524.2	25	0.50	ug/L	1	A206808	06/27/12	06/27/12	
Dibromochloromethane	EPA 524.2	4.5	0.50	ug/L	1	A206808	06/27/12	06/27/12	
<hr/>									
<i>Surrogate: Bromofluorobenzene</i>	EPA 524.2	101 %							<i>Acceptable range: 70-130 %</i>
*Total Trihalomethanes, EPA 524.2		42	0.50	ug/L					
<u>Haloacetic Acids by GC-ECD</u>									
Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A206948	06/29/12	07/01/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A206948	06/29/12	07/01/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A206948	06/29/12	07/01/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A206948	06/29/12	07/01/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	ND	1.0	ug/L	1	A206948	06/29/12	07/01/12	
<hr/>									
<i>Surrogate: 2,3-Dibromopropionic Acid</i>	EPA 552.2	100 %							<i>Acceptable range: 70-130 %</i>
*Total Haloacetic Acids, EPA 552.2		ND	2.0	ug/L					



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4 Justin Court Suite D, Monterey, CA 93940
 831.375.MBAS
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ELAP Certification Number: 2385

Lab Number: AA89597

Collection Date/Time: 7/6/2012 14:00 Sample Collector: LINDBERG T
 Submittal Date/Time: 7/6/2012 15:30 Sample ID

Sample Description: ASR-1 Backflush

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	171		2		7/11/2012
Ammonia-N	4500NH3 D	mg/L	Not Detected		0.05		7/10/2012
Arsenic, Total	EPA200.8	ug/L	1		1	10	7/13/2012
Barium, Total	EPA200.8	ug/L	73		10	1000	7/13/2012
Boron	EPA200.7	mg/L	0.06		0.05		7/10/2012
Calcium	EPA200.7	mg/L	60		0.5		7/10/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		7/6/2012
Chloride	EPA300.0	mg/L	66		1	250	7/6/2012
Dissolved Organic Carbon	SM5310-C	mg/L	0.77	E	0.2		7/23/2012
Gross Alpha	EPA900.0	pCi/L	2.84 ± 1.49	E		15	7/20/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	7/26/2012
Iron	EPA200.7	ug/L	37		10	300	7/10/2012
Iron, Dissolved	EPA 200.7	ug/L	24		10	300	7/10/2012
Kjehldahl Nitrogen	4500-NH3 B,C,E	mg/L	1.7		0.2		7/11/2012
Lithium	EPA200.8	ug/L	16		1		7/13/2012
Magnesium	EPA200.7	mg/L	18		0.5		7/10/2012
Manganese, Dissolved	EPA 200.7	ug/L	Not Detected		10	50	7/10/2012
Manganese, Total	EPA 200.7	ug/L	Not Detected		10	50	7/10/2012
Methane	EPA174/175	ug/L	0.39	E	0.1		7/13/2012
Molybdenum, Total	EPA200.8	ug/L	6		1	1000	7/13/2012
Nickel, Total	EPA200.8	ug/L	Not Detected		10	100	7/13/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	7/6/2012
Nitrate as NO3-N	EPA300.0	mg/L	Not Detected		0.10	10	7/6/2012
Nitrite as NO2-N	EPA300.0	mg/L	Not Detected		0.10	1.00	7/6/2012
o-Phosphate-P	EPA300.0	mg/L	Not Detected		0.10		7/6/2012
pH (Laboratory)	4500-H+B	pH (H)	7.3				7/6/2012
Phosphorus, Total	HACH 8190	mg/L	0.22		0.03		7/9/2012
Potassium	EPA200.7	mg/L	3.8		0.1		7/10/2012
QC Anion Sum x 100	Calculation	%	101%				7/12/2012

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

Lab Number: AA89597

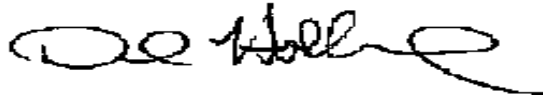
Collection Date/Time: 7/6/2012 14:00 Sample Collector: LINDBERG T
 Submittal Date/Time: 7/6/2012 15:30 Sample ID

Sample Description: ASR-1 Backflush

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
QC Anion-Cation Balance	Calculation	%	1				7/12/2012
QC Cation Sum x 100	Calculation	%	104%				7/12/2012
QC Ratio TDS/SEC	Calculation		0.61				7/11/2012
Selenium, Total	EPA200.8	ug/L	3		2	50	7/13/2012
Sodium	EPA200.7	mg/L	63		0.5		7/10/2012
Specific Conductance (E.C)	2510B	umhos/cm	704		1	900	7/10/2012
Strontium, Total	EPA200.8	ug/L	312		5		7/13/2012
Sulfate	EPA300.0	mg/L	88		1	250	7/6/2012
Total Diss. Solids	2540C	mg/L	428		10	500	7/9/2012
Total Nitrogen	Calculation	mg/L	1.7		0.5		7/12/2012
Total Organic Carbon	SM5310C	mg/L	0.78	E	0.20		7/23/2012
Total Radium 226	EPA903.0	pCi/L	0.000 ± 0.099	E		3	7/24/2012
Trihalomethanes	EPA524.2	ug/L	29	E		80	7/19/2012
Uranium by ICP/MS	EPA200.8	ug/L	1		1	30	7/13/2012
Vanadium, Total	EPA200.8	ug/L	1		1	1000	7/13/2012
Zinc, Total	EPA200.8	ug/L	134		10	5000	7/13/2012

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 outside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.



Certificate of Analysis

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

Report Issue Date: 07/30/2012 14:23
Received Date: 07/17/2012
Received Time: 17:07

Lab Sample ID: A2G1476-01
Sample Date: 07/12/2012 14:00
Sample Type: Grab

Sampled by: T Lindberg
Matrix: Ground Water

Sample Description: ASR-1 Backflush // 89597

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	0.77	0.20	mg/L	1	A207921	07/23/12	07/23/12	
Total Organic Carbon	SM 5310 C	0.78	0.20	mg/L	1	A207922	07/23/12	07/23/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	8.0	0.50	ug/L	1	A207753	07/19/12	07/19/12	
Bromoform	EPA 524.2	0.62	0.50	ug/L	1	A207753	07/19/12	07/19/12	
Chloroform	EPA 524.2	18	0.50	ug/L	1	A207753	07/19/12	07/19/12	
Dibromochloromethane	EPA 524.2	2.7	0.50	ug/L	1	A207753	07/19/12	07/19/12	

Surrogate: Bromofluorobenzene	EPA 524.2	96 %						Acceptable range: 70-130 %	
*Total Trihalomethanes, EPA 524.2		29	0.50	ug/L					
Haloacetic Acids by GC-ECD									
Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A207901	07/24/12	07/26/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A207901	07/24/12	07/26/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A207901	07/24/12	07/26/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A207901	07/24/12	07/26/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	ND	1.0	ug/L	1	A207901	07/24/12	07/26/12	

Surrogate: 2,3-Dibromopropionic Acid	EPA 552.2	112 %						Acceptable range: 70-130 %	
*Total Haloacetic Acids, EPA 552.2		ND	2.0	ug/L					



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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
Submittal Date/Time: 11/1/2012 15:10

Sample Collector: LINDBERG T
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
Kjeldahl 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

H = Analyzed outside 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

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
 Submittal Date/Time: 11/1/2012 15:10

Sample Collector: LINDBERG T
 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 outside 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

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
Submittal Date/Time: 11/1/2012 15:10

Sample Collector: LINDBERG T
Sample ID

Coliform Designation:

Sample Description: ASR-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
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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 outside 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



Certificate of Analysis

David Holland
 Monterey Bay Analytical
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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: A2K0639-01
Sample Date: 10/31/2012 16:00
Sample Type: Grab

Sampled by: T. Lindberg
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



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Tuesday, February 14, 2012

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

Lab Number: AA84503

Collection Date/Time: 1/26/2012 15:15 Sample Collector: LINDBERG T
Submittal Date/Time: 1/26/2012 16:45 Sample ID

Sample Description: ASR-2

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO ₃)	2320B	mg/L	243		2		1/31/2012
Ammonia-N	4500NH3 D	mg/L	0.06		0.05		2/3/2012
Arsenic, Total	EPA200.8	ug/L	2		1	10	1/31/2012
Barium, Total	EPA200.8	ug/L	126		10	1000	1/31/2012
Boron	EPA200.7	mg/L	0.11		0.05		2/6/2012
Calcium	EPA200.7	mg/L	91		0.5		2/6/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		1/26/2012
Chloride	EPA300.0	mg/L	129		1	250	1/26/2012
Copper, Total	EPA200.8	ug/L	7		4	1300	1/31/2012
Dissolved Organic Carbon	SM5310-C	mg/L	0.87	E	0.2		2/9/2012
Gross Alpha	EPA900.0	pCi/L	6.05 ± 1.61	E		15	2/6/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	2/4/2012
Iron	EPA200.7	ug/L	139		10	300	2/6/2012
Iron, Dissolved	EPA 200.7	ug/L	44		10	300	2/6/2012
Kjehldahl Nitrogen	4500-NH3 B,C,E	mg/L	Not Detected		0.5		2/3/2012
Lithium	EPA200.8	ug/L	37		1		1/31/2012
Magnesium	EPA200.7	mg/L	28		0.5		2/6/2012
Manganese, Dissolved	EPA 200.7	ug/L	45		10	50	2/6/2012
Manganese, Total	EPA 200.7	ug/L	51		10	50	2/6/2012
Methane	EPA174/175	ug/L	0.68	E	5		2/7/2012
Molybdenum, Total	EPA200.8	ug/L	11		1	1000	1/31/2012
Nitrate as NO ₃	EPA300.0	mg/L	Not Detected		1	45	1/26/2012
o-Phosphate-P	EPA300.0	mg/L	0.16		0.05		1/26/2012
pH (Laboratory)	4500-H+B	STD. Units	7.2				1/26/2012
Phosphorus, Total	HACH 8190	mg/L	0.22		0.03		2/10/2012
Potassium	EPA200.7	mg/L	4.8		0.1		2/6/2012
QC Anion Sum x 100	Calculaltion	%	106%				2/7/2012
QC Anion-Cation Balance	Calculaltion	%	-1				2/7/2012
QC Cation Sum x 100	Calculaltion	%	104%				2/7/2012
Selenium, Total	EPA200.8	ug/L	2		2	50	1/31/2012

mg/L: Milligrams per liter (=ppm)

ug/L : Micrograms per liter (=ppb)

PQL : Practical Quantitation Limit

H = Analyzed outside 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

Tuesday, February 14, 2012

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

Lab Number: AA84503

Collection Date/Time: 1/26/2012 15:15 Sample Collector: LINDBERG T
Submittal Date/Time: 1/26/2012 16:45 Sample ID

Sample Description: ASR-2

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Sodium	EPA200.7	mg/L	85		0.5		2/6/2012
Specific Conductance (E.C)	2510B	umhos/cm	1030		1	900	1/26/2012
Strontium, Total	EPA200.8	ug/L	482		5		1/31/2012
Sulfate	EPA300.0	mg/L	115		1	250	1/26/2012
Total Nitrogen	Calculation	mg/L	Not Detected		0.5		2/3/2012
Total Organic Carbon	SM5310C	mg/L	0.91	E	0.20		2/6/2012
Total Radium 226	EPA903.0	pCi/L	0.775 ± 0.536	E		3	2/7/2012
Trihalomethanes	EPA524.2	ug/L	6.7	E		80	2/3/2012
Uranium by ICP/MS	EPA200.8	ug/L	5		1	30	1/31/2012
Vanadium, Total	EPA200.8	ug/L	Not Detected		1	1000	1/31/2012
Zinc, Total	EPA200.8	ug/L	434		10	5000	1/31/2012

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 outside 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



Certificate of Analysis

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

Report Issue Date: 02/10/2012 14:32
Received Date: 02/01/2012
Received Time: 09:00

Lab Sample ID: A2B0028-02
Sample Date: 01/26/2012 15:15
Sample Type: Grab

Sampled by: T. Lindberg
Matrix: Water

Sample Description: ASR-2 // 84503

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	0.87	0.20	mg/L	1	A201397	02/09/12	02/09/12	
Total Organic Carbon	SM 5310 C	0.91	0.20	mg/L	1	A201235	02/06/12	02/06/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	1.2	0.50	ug/L	1	A201115	02/02/12	02/03/12	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A201115	02/02/12	02/03/12	
Chloroform	EPA 524.2	4.8	0.50	ug/L	1	A201115	02/02/12	02/03/12	
Dibromochloromethane	EPA 524.2	0.66	0.50	ug/L	1	A201115	02/02/12	02/03/12	

Surrogate: Bromofluorobenzene EPA 524.2 103 % *Acceptable range: 70-130 %*

*Total Trihalomethanes, EPA 524.2 6.7 0.50 ug/L

Haloacetic Acids by GC-ECD

Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A201108	02/01/12	02/04/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A201108	02/01/12	02/04/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A201108	02/01/12	02/04/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A201108	02/01/12	02/04/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	ND	1.0	ug/L	1	A201108	02/01/12	02/04/12	

Surrogate: 2,3-Dibromopropionic Acid EPA 552.2 94 % *Acceptable range: 70-130 %*

*Total Haloacetic Acids, EPA 552.2 ND 2.0 ug/L



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ELAP Certification Number: 2385

Wednesday, August 01, 2012

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

Lab Number: AA89545

Collection Date/Time: 7/3/2012 13:45 Sample Collector: LEAR, J
Submittal Date/Time: 7/3/2012 16:05 Sample ID

Sample Description: ASR 2

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	142		2		7/11/2012
Ammonia-N	4500NH3 D	mg/L	Not Detected		0.05		7/10/2012
Arsenic, Total	EPA200.8	ug/L	2		1	10	7/5/2012
Barium, Total	EPA200.8	ug/L	64		10	1000	7/5/2012
Boron	EPA200.7	mg/L	Not Detected		0.05		7/10/2012
Calcium	EPA200.7	mg/L	47		0.5		7/10/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		7/3/2012
Chloride	EPA300.0	mg/L	36		1	250	7/3/2012
Dissolved Organic Carbon	SM5310-C	mg/L	0.86	E	0.2		7/9/2012
Gross Alpha	EPA900.0	pCi/L	2.60 ± 1.34	E		15	7/13/2012
Haloacetic Acids	EPA552	ug/L	3.2	E		60	7/14/2012
Iron	EPA200.7	ug/L	63		10	300	7/10/2012
Iron, Dissolved	EPA 200.7	ug/L	52		10	300	7/10/2012
Kjehldahl Nitrogen	4500-NH3 B,C,E	mg/L	0.4		0.2		7/11/2012
Lithium	EPA200.8	ug/L	7		1		7/5/2012
Magnesium	EPA200.7	mg/L	14		0.5		7/10/2012
Manganese, Dissolved	EPA 200.7	ug/L	Not Detected		10	50	7/10/2012
Manganese, Total	EPA 200.7	ug/L	Not Detected		10	50	7/10/2012
Methane	EPA174/175	ug/L	0.18	E	5		7/10/2012
Molybdenum, Total	EPA200.8	ug/L	6		1	1000	7/5/2012
Nickel, Total	EPA200.8	ug/L	Not Detected		10	100	7/5/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	7/3/2012
Nitrate as NO3-N	EPA300.0	mg/L	Not Detected		0.10	10	7/3/2012

mg/L: Milligrams per liter (=ppm)

ug/L : Micrograms per liter (=ppb)

PQL : Practical Quantitation Limit

H = Analyzed outside 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, August 01, 2012

MPWMD
 Joe Oliver
 P.O. Box 85
 Monterey, CA 93442-0085
Lab Number: AA89545

Collection Date/Time: 7/3/2012 13:45 Sample Collector: LEAR, J
 Submittal Date/Time: 7/3/2012 16:05 Sample ID

Sample Description: ASR 2

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Nitrite as NO ₂ -N	EPA300.0	mg/L	Not Detected		0.10	1.00	7/3/2012
o-Phosphate-P	EPA300.0	mg/L	0.18		0.10		7/3/2012
pH (Laboratory)	4500-H+B	pH (H)	7.4				7/3/2012
Phosphorus, Total	HACH 8190	mg/L	0.37		0.03		7/9/2012
Potassium	EPA200.7	mg/L	3.2		0.1		7/10/2012
QC Anion Sum x 100	Calculation	%	101%				7/12/2012
QC Anion-Cation Balance	Calculation	%	2				7/12/2012
QC Cation Sum x 100	Calculation	%	104%				7/12/2012
QC Ratio TDS/SEC	Calculation		0.56				7/9/2012
Selenium, Total	EPA200.8	ug/L	4		2	50	7/5/2012
Sodium	EPA200.7	mg/L	48		0.5		7/10/2012
Specific Conductance (E.C)	2510B	umhos/cm	543		1	900	7/3/2012
Strontium, Total	EPA200.8	ug/L	248		5		7/5/2012
Sulfate	EPA300.0	mg/L	77		1	250	7/3/2012
Total Diss. Solids	2540C	mg/L	302		10	500	7/5/2012
Total Nitrogen	Calculation	mg/L	Not Detected		0.5		7/12/2012
Total Organic Carbon	SM5310C	mg/L	0.93	E	0.20		7/11/2012
Total Radium 226	EPA903.0	pCi/L	0.294 ± 0.203	E		3	7/23/2012
Trihalomethanes	EPA524.2	ug/L	53	E		80	7/9/2012
Uranium by ICP/MS	EPA200.8	ug/L	1		1	30	7/5/2012
Vanadium, Total	EPA200.8	ug/L	2		1	1000	7/5/2012
Zinc, Total	EPA200.8	ug/L	219		10	5000	7/5/2012

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 outside 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



Certificate of Analysis

David Holland
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Report Issue Date: 07/18/2012 16:20
Received Date: 07/06/2012
Received Time: 08:30

Lab Sample ID: A2G0476-01
Sample Date: 07/03/2012 13:45
Sample Type: Grab

Sampled by: Jonathan Lear
Matrix: Water

Sample Description: ASR 2 // 89545

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	A207230	07/09/12	07/09/12	
Total Organic Carbon	SM 5310 C	0.93	0.20	mg/L	1	A207360	07/11/12	07/11/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	15	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Bromoform	EPA 524.2	1.5	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Chloroform	EPA 524.2	28	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Dibromochloromethane	EPA 524.2	8.2	0.50	ug/L	1	A207204	07/09/12	07/09/12	

Surrogate: Bromofluorobenzene EPA 524.2 100 % *Acceptable range: 70-130 %*
 *Total Trihalomethanes, EPA 524.2 **53** 0.50 ug/L

Haloacetic Acids by GC-ECD

Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A207442	07/12/12	07/14/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A207442	07/12/12	07/14/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A207442	07/12/12	07/14/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A207442	07/12/12	07/14/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	3.2	1.0	ug/L	1	A207442	07/12/12	07/14/12	

Surrogate: 2,3-Dibromopropionic Acid EPA 552.2 110 % *Acceptable range: 70-130 %*
 *Total Haloacetic Acids, EPA 552.2 **3.2** 2.0 ug/L



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Thursday, August 30, 2012

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

Lab Number: AA90582

Collection Date/Time: 8/2/2012 14:30 Sample Collector: LEAR J
Submittal Date/Time: 8/2/2012 16:41 Sample ID

Sample Description: ASR 2

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		8/2/2012
Chloride	EPA300.0	mg/L	85		1	250	8/2/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	8/14/2012
Trihalomethanes	EPA524.2	ug/L	42	E		80	8/9/2012

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 outside 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



Certificate of Analysis

David Holland
 Monterey Bay Analytical
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Report Issue Date: 08/15/2012 16:29
Received Date: 08/08/2012
Received Time: 09:30

Lab Sample ID: A2H0678-02
Sample Date: 08/02/2012 14:30
Sample Type: Grab

Sampled by: Jonathan Lear
Matrix: Water

Sample Description: ASR 2 // 90582

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
<u>Trihalomethanes by GC-MS</u>									
Bromodichloromethane	EPA 524.2	11	0.50	ug/L	1	A208743	08/09/12	08/09/12	
Bromoform	EPA 524.2	0.88	0.50	ug/L	1	A208743	08/09/12	08/09/12	
Chloroform	EPA 524.2	25	0.50	ug/L	1	A208743	08/09/12	08/09/12	
Dibromochloromethane	EPA 524.2	5.2	0.50	ug/L	1	A208743	08/09/12	08/09/12	
<hr/>									
<i>Surrogate: Bromofluorobenzene</i>	EPA 524.2	111 %							<i>Acceptable range: 70-130 %</i>
*Total Trihalomethanes, EPA 524.2		42	0.50	ug/L					
<u>Haloacetic Acids by GC-ECD</u>									
Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A208842	08/10/12	08/14/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A208842	08/10/12	08/14/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A208842	08/10/12	08/14/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A208842	08/10/12	08/14/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	ND	1.0	ug/L	1	A208842	08/10/12	08/14/12	
<hr/>									
<i>Surrogate: 2,3-Dibromopropionic Acid</i>	EPA 552.2	107 %							<i>Acceptable range: 70-130 %</i>
*Total Haloacetic Acids, EPA 552.2		ND	2.0	ug/L					



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ELAP Certification Number: 2385

Lab Number: AA88252

Collection Date/Time: 5/22/2012 13:30 Sample Collector: LINDBERG T
 Submittal Date/Time: 5/22/2012 13:50 Sample ID

Sample Description: ASR-3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	141		2		5/22/2012
Ammonia-N	4500NH3 D	mg/L	0.06		0.05		5/25/2012
Arsenic, Total	EPA200.8	ug/L	39		1	10	5/25/2012
Barium, Total	EPA200.8	ug/L	55		10	1000	5/25/2012
Bicarbonate (as HCO3-)	2320B	mg/L	172		10		5/22/2012
Boron	EPA200.7	mg/L	Not Detected		0.05		5/23/2012
Calcium	EPA200.7	mg/L	44		0.5		5/23/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		5/22/2012
Chloride	EPA300.0	mg/L	33		1	250	5/22/2012
Dissolved Organic Carbon	SM5310-C	mg/L	0.87	E	0.2		5/31/2012
Gross Alpha	EPA900.0	pCi/L	4.43 ± 1.59	E		15	6/2/2012
Haloacetic Acids	EPA552	ug/L	16	E		60	5/31/2012
Iron	EPA200.7	ug/L	88		10	300	5/23/2012
Iron, Dissolved	EPA 200.7	ug/L	20		10	300	5/23/2012
Kjehldahl Nitrogen	4500-NH3 B,C,E	mg/L	Not Detected		0.2		5/23/2012
Lithium	EPA200.8	ug/L	7		1		5/25/2012
Magnesium	EPA200.7	mg/L	14		0.5		5/23/2012
Manganese, Dissolved	EPA 200.7	ug/L	16		10	50	5/23/2012
Manganese, Total	EPA 200.7	ug/L	16		10	50	5/23/2012
Methane	EPA174/175	ug/L	Not Detected	E	5		5/25/2012
Molybdenum, Total	EPA200.8	ug/L	97		1	1000	5/25/2012
Nickel, Total	EPA200.8	ug/L	Not Detected		10	100	5/25/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	5/22/2012
Nitrate as NO3-N	EPA300.0	mg/L	Not Detected		0.10	10	5/22/2012
Nitrite as NO2-N	EPA300.0	mg/L	Not Detected		0.10	1.00	5/22/2012
o-Phosphate-P	EPA300.0	mg/L	0.10		0.10		5/22/2012
pH (Laboratory)	4500-H+B	STD. Units (7.5				5/22/2012
Phosphorus, Total	HACH 8190	mg/L	0.22		0.03		5/25/2012
Potassium	EPA200.7	mg/L	3.0		0.1		5/23/2012

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

Lab Number: AA88252

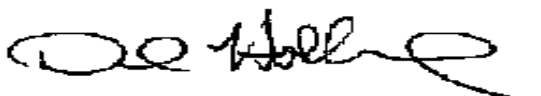
Collection Date/Time: 5/22/2012 13:30 Sample Collector: LINDBERG T
 Submittal Date/Time: 5/22/2012 13:50 Sample ID

Sample Description: ASR-3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
QC Anion Sum x 100	Calculation	%	100%				5/24/2012
QC Anion-Cation Balance	Calculation	%	1				5/24/2012
QC Cation Sum x 100	Calculation	%	102%				5/24/2012
QC Ratio TDS/SEC	Calculation		0.60				5/25/2012
Selenium, Total	EPA200.8	ug/L	8		2	50	5/25/2012
Sodium	EPA200.7	mg/L	44		0.5		5/23/2012
Specific Conductance (E.C)	2510B	umhos/cm	524		1	900	5/22/2012
Strontium, Total	EPA200.8	ug/L	231		5		5/25/2012
Sulfate	EPA300.0	mg/L	71		1	250	5/22/2012
Total Diss. Solids	2540C	mg/L	317		10	500	5/22/2012
Total Nitrogen	Calculation	mg/L	Not Detected		0.5		5/25/2012
Total Organic Carbon	SM5310C	mg/L	1.2	E	0.20		5/31/2012
Total Radium 226	EPA903.0	pCi/L	0.356 ± 0.183	E		3	6/13/2012
Trihalomethanes	EPA524.2	ug/L	79	E		80	5/31/2012
Uranium by ICP/MS	EPA200.8	ug/L	5		1	30	5/25/2012
Vanadium, Total	EPA200.8	ug/L	2		1	1000	5/25/2012
Zinc, Total	EPA200.8	ug/L	129		10	5000	5/25/2012

Sample Comments: Uranium 3 pCi/L

Report Approved by:



David Holland, Laboratory Director



Certificate of Analysis

David Holland
 Monterey Bay Analytical
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 Monterey, CA 93940

Report Issue Date: 06/05/2012 15:30
Received Date: 05/24/2012
Received Time: 09:00

Lab Sample ID: A2E2040-01
Sample Date: 05/22/2012 13:30
Sample Type: Grab

Sampled by: Tom Lindberg
Matrix: Water

Sample Description: ASR-3 // 88252

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	0.87	0.20	mg/L	1	A205698	05/31/12	05/31/12	
Total Organic Carbon	SM 5310 C	1.2	0.20	mg/L	1	A205699	05/31/12	05/31/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	23	0.50	ug/L	1	A205608	05/29/12	05/31/12	
Bromoform	EPA 524.2	2.0	0.50	ug/L	1	A205608	05/29/12	05/31/12	
Chloroform	EPA 524.2	39	0.50	ug/L	1	A205608	05/29/12	05/31/12	
Dibromochloromethane	EPA 524.2	15	0.50	ug/L	1	A205608	05/29/12	05/31/12	

Surrogate: Bromofluorobenzene EPA 524.2 116 % *Acceptable range: 70-130 %*
 *Total Trihalomethanes, EPA 524.2 79 0.50 ug/L

Haloacetic Acids by GC-ECD

Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A205562	05/29/12	05/31/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	3.4	1.0	ug/L	1	A205562	05/29/12	05/31/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A205562	05/29/12	05/31/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A205562	05/29/12	05/31/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	13	1.0	ug/L	1	A205562	05/29/12	05/31/12	

Surrogate: 2,3-Dibromopropionic Acid EPA 552.2 91 % *Acceptable range: 70-130 %*
 *Total Haloacetic Acids, EPA 552.2 16 2.0 ug/L



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ELAP Certification Number: 2385

Monday, July 09, 2012

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

Lab Number: AA89179

Collection Date/Time: 6/21/2012 11:40 Sample Collector: LEAR J
Submittal Date/Time: 6/21/2012 11:50 Sample ID

Sample Description: ASR-3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		6/21/2012
Chloride	EPA300.0	mg/L	34		1	250	6/22/2012
Haloacetic Acids	EPA552	ug/L	23	E		60	7/1/2012
Trihalomethanes	EPA524.2	ug/L	58	E		80	6/27/2012

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 outside 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



Certificate of Analysis

David Holland
 Monterey Bay Analytical
 4 Justin Court Suite D
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Report Issue Date: 07/06/2012 16:51
Received Date: 06/26/2012
Received Time: 10:00

Lab Sample ID: A2F2143-01
Sample Date: 06/21/2012 11:40
Sample Type: Grab

Sampled by: J. Lear
Matrix: Water

Sample Description: ASR-3 // 89179

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
<u>Trihalomethanes by GC-MS</u>									
Bromodichloromethane	EPA 524.2	17	0.50	ug/L	1	A206808	06/27/12	06/27/12	
Bromoform	EPA 524.2	1.7	0.50	ug/L	1	A206808	06/27/12	06/27/12	
Chloroform	EPA 524.2	26	0.50	ug/L	1	A206808	06/27/12	06/27/12	
Dibromochloromethane	EPA 524.2	13	0.50	ug/L	1	A206808	06/27/12	06/27/12	
<hr/>									
<i>Surrogate: Bromofluorobenzene</i>	EPA 524.2	101 %							<i>Acceptable range: 70-130 %</i>
*Total Trihalomethanes, EPA 524.2		58	0.50	ug/L					
<u>Haloacetic Acids by GC-ECD</u>									
Dibromoacetic Acid (DBAA)	EPA 552.2	2.3	1.0	ug/L	1	A206948	06/29/12	07/01/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	12	1.0	ug/L	1	A206948	06/29/12	07/01/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A206948	06/29/12	07/01/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	2.3	2.0	ug/L	1	A206948	06/29/12	07/01/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	6.6	1.0	ug/L	1	A206948	06/29/12	07/01/12	
<hr/>									
<i>Surrogate: 2,3-Dibromopropionic Acid</i>	EPA 552.2	99 %							<i>Acceptable range: 70-130 %</i>
*Total Haloacetic Acids, EPA 552.2		23	2.0	ug/L					



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ELAP Certification Number: 2385

Wednesday, August 01, 2012

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

Lab Number: AA89547

Collection Date/Time: 7/3/2012 15:30 Sample Collector: LEAR, J
 Submittal Date/Time: 7/3/2012 16:05 Sample ID

Sample Description: ASR 3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	157		2		7/11/2012
Ammonia-N	4500NH3 D	mg/L	Not Detected		0.05		7/10/2012
Arsenic, Total	EPA200.8	ug/L	4		1	10	7/5/2012
Barium, Total	EPA200.8	ug/L	66		10	1000	7/5/2012
Boron	EPA200.7	mg/L	Not Detected		0.05		7/10/2012
Calcium	EPA200.7	mg/L	50		0.5		7/10/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		7/3/2012
Chloride	EPA300.0	mg/L	44		1	250	7/3/2012
Dissolved Organic Carbon	SM5310-C	mg/L	0.78	E	0.2		7/9/2012
Gross Alpha	EPA900.0	pCi/L	9.15 ± 2.26	E		15	7/13/2012
Haloacetic Acids	EPA552	ug/L	9.3	E		60	7/17/2012
Iron	EPA200.7	ug/L	193		10	300	7/10/2012
Iron, Dissolved	EPA 200.7	ug/L	32		10	300	7/10/2012
Kjehldahl Nitrogen	4500-NH3 B,C,E	mg/L	Not Detected		0.2		7/11/2012
Lithium	EPA200.8	ug/L	10		1		7/5/2012
Magnesium	EPA200.7	mg/L	13		0.5		7/10/2012
Manganese, Dissolved	EPA 200.7	ug/L	18		10	50	7/10/2012
Manganese, Total	EPA 200.7	ug/L	24		10	50	7/10/2012
Methane	EPA174/175	ug/L	0.17	E	5		7/10/2012
Molybdenum, Total	EPA200.8	ug/L	35		1	1000	7/5/2012
Nickel, Total	EPA200.8	ug/L	Not Detected		10	100	7/5/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	7/3/2012
Nitrate as NO3-N	EPA300.0	mg/L	Not Detected		0.10	10	7/3/2012
Nitrite as NO2-N	EPA300.0	mg/L	Not Detected		0.10	1.00	7/3/2012
o-Phosphate-P	EPA300.0	mg/L	Not Detected		0.10		7/3/2012
pH (Laboratory)	4500-H+B	pH (H)	7.5				7/3/2012

mg/L: Milligrams per liter (=ppm)

ug/L : Micrograms per liter (=ppb)

PQL : Practical Quantitation Limit

H = Analyzed outside 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

Wednesday, August 01, 2012

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

Lab Number: AA89547

Collection Date/Time: 7/3/2012 15:30 Sample Collector: LEAR, J
 Submittal Date/Time: 7/3/2012 16:05 Sample ID

Sample Description: ASR 3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Phosphorus, Total	HACH 8190	mg/L	0.18		0.03		7/9/2012
Potassium	EPA200.7	mg/L	3.4		0.1		7/10/2012
QC Anion Sum x 100	Calculation	%	99%				7/12/2012
QC Anion-Cation Balance	Calculation	%	2				7/31/2012
QC Cation Sum x 100	Calculation	%	104%				7/31/2012
QC Ratio TDS/SEC	Calculation		0.59				7/9/2012
Selenium, Total	EPA200.8	ug/L	5		2	50	7/5/2012
Sodium	EPA200.7	mg/L	56		0.5		7/10/2012
Specific Conductance (E.C)	2510B	umhos/cm	583		1	900	7/3/2012
Strontium, Total	EPA200.8	ug/L	262		5		7/5/2012
Sulfate	EPA300.0	mg/L	68		1	250	7/3/2012
Total Diss. Solids	2540C	mg/L	342		10	500	7/5/2012
Total Nitrogen	Calculation	mg/L	Not Detected		0.5		7/12/2012
Total Organic Carbon	SM5310C	mg/L	0.98	E	0.20		7/11/2012
Total Radium 226	EPA903.0	pCi/L	0.160 ± 0.165	E		3	7/23/2012
Trihalomethanes	EPA524.2	ug/L	46	E		80	7/9/2012
Uranium by ICP/MS	EPA200.8	ug/L	4		1	30	7/5/2012
Vanadium, Total	EPA200.8	ug/L	Not Detected		1	1000	7/5/2012
Zinc, Total	EPA200.8	ug/L	96		10	5000	7/5/2012

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 outside 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



Certificate of Analysis

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

Report Issue Date: 07/18/2012 16:20
Received Date: 07/06/2012
Received Time: 08:30

Lab Sample ID: A2G0476-03
Sample Date: 07/03/2012 15:30
Sample Type: Grab

Sampled by: Jonathan Lear
Matrix: Water

Sample Description: ASR 3 // 89547

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	A207230	07/09/12	07/09/12	
Total Organic Carbon	SM 5310 C	0.98	0.20	mg/L	1	A207360	07/11/12	07/11/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	14	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Bromoform	EPA 524.2	1.7	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Chloroform	EPA 524.2	21	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Dibromochloromethane	EPA 524.2	9.8	0.50	ug/L	1	A207204	07/09/12	07/09/12	

Surrogate: Bromofluorobenzene EPA 524.2 101 % *Acceptable range: 70-130 %*
 *Total Trihalomethanes, EPA 524.2 46 0.50 ug/L

Haloacetic Acids by GC-ECD									
Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A207499	07/13/12	07/17/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	2.7	1.0	ug/L	1	A207499	07/13/12	07/17/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A207499	07/13/12	07/17/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A207499	07/13/12	07/17/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	6.6	1.0	ug/L	1	A207499	07/13/12	07/17/12	

Surrogate: 2,3-Dibromopropionic Acid EPA 552.2 101 % *Acceptable range: 70-130 %*
 *Total Haloacetic Acids, EPA 552.2 9.3 2.0 ug/L



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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
Submittal Date/Time: 10/30/2012 14:16

Sample Collector: LEAR J
Sample ID

Coliform Designation:

Sample Description: ASR-3

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO ₃)	2320B	mg/L	223		2		11/2/2012
Aluminum, Total	EPA200.8	ug/L	Not Detected		10	1000	11/1/2012
Ammonia-N	4500NH ₃ 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 HCO ₃ ⁻)	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 CaCO ₃	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
Kjeldahl Nitrogen	4500-NH ₃ 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 NO ₃	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 outside 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
Submittal Date/Time: 10/30/2012 14:16

Sample Collector: LEAR J
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 outside 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



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
Sample Type: Grab

Sampled by: Lear, J.
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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ELAP Certification Number: 2385

Tuesday, February 14, 2012

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

Lab Number: AA84502

Collection Date/Time: 1/26/2012 14:20 Sample Collector: LINDBERG T
Submittal Date/Time: 1/26/2012 16:45 Sample ID

Sample Description: MW-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO ₃)	2320B	mg/L	203		2		1/31/2012
Ammonia-N	4500NH3 D	mg/L	Not Detected		0.05		2/3/2012
Arsenic, Total	EPA200.8	ug/L	2		1	10	1/31/2012
Barium, Total	EPA200.8	ug/L	52		10	1000	1/31/2012
Boron	EPA200.7	mg/L	0.07		0.05		2/6/2012
Calcium	EPA200.7	mg/L	72		0.5		2/6/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		1/26/2012
Chloride	EPA300.0	mg/L	82		1	250	1/26/2012
Copper, Total	EPA200.8	ug/L	Not Detected		4	1300	1/31/2012
Dissolved Organic Carbon	SM5310-C	mg/L	1.1	E	0.2		2/9/2012
Gross Alpha	EPA900.0	pCi/L	8.09 ± 2.30	E		15	2/6/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	2/4/2012
Iron	EPA200.7	ug/L	Not Detected		10	300	2/6/2012
Iron, Dissolved	EPA 200.7	ug/L	Not Detected		10	300	2/6/2012
Kjehldahl Nitrogen	4500-NH3 B,C,E	mg/L	Not Detected		0.5		2/3/2012
Lithium	EPA200.8	ug/L	21		1		1/31/2012
Magnesium	EPA200.7	mg/L	22		0.5		2/6/2012
Manganese, Dissolved	EPA 200.7	ug/L	13		10	50	2/6/2012
Manganese, Total	EPA 200.7	ug/L	13		10	50	2/6/2012
Methane	EPA174/175	ug/L	0.63	E	5		2/7/2012
Molybdenum, Total	EPA200.8	ug/L	7		1	1000	1/31/2012
Nitrate as NO ₃	EPA300.0	mg/L	Not Detected		1	45	1/26/2012
o-Phosphate-P	EPA300.0	mg/L	Not Detected		0.05		1/26/2012
pH (Laboratory)	4500-H+B	STD. Units	7.4				1/26/2012
Phosphorus, Total	HACH 8190	mg/L	0.07		0.03		2/10/2012
Potassium	EPA200.7	mg/L	3.9		0.1		2/6/2012

mg/L: Milligrams per liter (=ppm)

ug/L : Micrograms per liter (=ppb)

PQL : Practical Quantitation Limit

H = Analyzed outside 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

Tuesday, February 14, 2012

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

Lab Number: AA84502

Collection Date/Time: 1/26/2012 14:20 Sample Collector: LINDBERG T
Submittal Date/Time: 1/26/2012 16:45 Sample ID

Sample Description: MW-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
QC Anion Sum x 100	Calculation	%	105%				2/7/2012
QC Anion-Cation Balance	Calculation	%	-1				2/7/2012
QC Cation Sum x 100	Calculation	%	103%				2/7/2012
Selenium, Total	EPA200.8	ug/L	4		2	50	1/31/2012
Sodium	EPA200.7	mg/L	61		0.5		2/6/2012
Specific Conductance (E.C)	2510B	umhos/cm	790		1	900	1/26/2012
Strontium, Total	EPA200.8	ug/L	383		5		1/31/2012
Sulfate	EPA300.0	mg/L	92		1	250	1/26/2012
Total Nitrogen	Calculation	mg/L	Not Detected		0.5		2/3/2012
Total Organic Carbon	SM5310C	mg/L	1.0	E	0.20		2/6/2012
Total Radium 226	EPA903.0	pCi/L	0.180 ± 0.390	E		3	2/7/2012
Trihalomethanes	EPA524.2	ug/L	6.1	E		80	2/3/2012
Uranium by ICP/MS	EPA200.8	ug/L	5		1	30	1/31/2012
Vanadium, Total	EPA200.8	ug/L	Not Detected		1	1000	1/31/2012
Zinc, Total	EPA200.8	ug/L	61		10	5000	1/31/2012

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 outside 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



Certificate of Analysis

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

Report Issue Date: 02/10/2012 14:32
Received Date: 02/01/2012
Received Time: 09:00

Lab Sample ID: A2B0028-01
Sample Date: 01/26/2012 14:20
Sample Type: Grab

Sampled by: T. Lindberg
Matrix: Water

Sample Description: MW-1 // 84502

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	1.1	0.20	mg/L	1	A201397	02/09/12	02/09/12	
Total Organic Carbon	SM 5310 C	1.0	0.20	mg/L	1	A201235	02/06/12	02/06/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	1.0	0.50	ug/L	1	A201115	02/02/12	02/03/12	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A201115	02/02/12	02/03/12	
Chloroform	EPA 524.2	4.4	0.50	ug/L	1	A201115	02/02/12	02/03/12	
Dibromochloromethane	EPA 524.2	0.70	0.50	ug/L	1	A201115	02/02/12	02/03/12	

Surrogate: Bromofluorobenzene EPA 524.2 126 % *Acceptable range: 70-130 %*
 *Total Trihalomethanes, EPA 524.2 6.1 0.50 ug/L

Haloacetic Acids by GC-ECD

Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A201108	02/01/12	02/04/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A201108	02/01/12	02/04/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A201108	02/01/12	02/04/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A201108	02/01/12	02/04/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	ND	1.0	ug/L	1	A201108	02/01/12	02/04/12	

Surrogate: 2,3-Dibromopropionic Acid EPA 552.2 99 % *Acceptable range: 70-130 %*
 *Total Haloacetic Acids, EPA 552.2 ND 2.0 ug/L



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ELAP Certification Number: 2385

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

Thursday, June 14, 2012

Lab Number: AA88487

Collection Date/Time: 5/30/2012 13:40 Sample Collector: LEAR, J
 Submittal Date/Time: 5/30/2012 14:45 Sample ID

Sample Description: MW 1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	151		2		6/1/2012
Ammonia-N	4500NH3 D	mg/L	Not Detected		0.05		5/31/2012
Boron	EPA200.7	mg/L	Not Detected		0.05		5/31/2012
Calcium	EPA200.7	mg/L	47		0.5		5/31/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		5/30/2012
Chloride	EPA300.0	mg/L	35		1	250	5/30/2012
Dissolved Organic Carbon	SM5310-C	mg/L	0.94	E	0.2		6/7/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	6/12/2012
Iron	EPA200.7	ug/L	21		10	300	5/31/2012
Iron, Dissolved	EPA 200.7	ug/L	Not Detected		10	300	5/31/2012
Kjehldahl Nitrogen	4500-NH3 B,C,E	mg/L	0.5		0.5		6/8/2012
Magnesium	EPA200.7	mg/L	14		0.5		5/31/2012
Manganese, Dissolved	EPA 200.7	ug/L	Not Detected		10	50	5/31/2012
Manganese, Total	EPA 200.7	ug/L	Not Detected		10	50	5/31/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	5/30/2012
Nitrate as NO3-N	EPA300.0	mg/L	0.10		0.10	10	5/30/2012
Nitrite as NO2-N	EPA300.0	mg/L	Not Detected		0.10	1.00	5/30/2012
o-Phosphate-P	EPA300.0	mg/L	Not Detected		0.10		5/30/2012
pH (Laboratory)	4500-H+B	Units (H)	7.6				5/30/2012
Phosphorus, Total	HACH 8190	mg/L	0.22		0.03		6/12/2012
Potassium	EPA200.7	mg/L	3.1		0.1		5/31/2012
QC Anion Sum x 100	Calculation	%	97%				6/1/2012
QC Anion-Cation Balance	Calculation	%	2				6/1/2012
QC Cation Sum x 100	Calculation	%	101%				6/1/2012
QC Ratio TDS/SEC	Calculation		0.64				6/13/2012
Sodium	EPA200.7	mg/L	48		0.5		5/31/2012

mg/L: Milligrams per liter (=ppm)

ug/L : Micrograms per liter (=ppb)

PQL : Practical Quantitation Limit

H = Analyzed outside 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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Thursday, June 14, 2012

MPWMD
 Joe Oliver
 P.O. Box 85
 Monterey, CA 93442-0085
Lab Number: AA88487

Collection Date/Time: 5/30/2012 13:40 Sample Collector: LEAR, J
 Submittal Date/Time: 5/30/2012 14:45 Sample ID

Sample Description: MW 1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Specific Conductance (E.C)	2510B	umhos/cm	563		1	900	6/1/2012
Sulfate	EPA300.0	mg/L	70		1	250	5/30/2012
Total Diss. Solids	2540C	mg/L	363		10	500	6/5/2012
Total Nitrogen	Calculation	mg/L	0.6		0.5		6/8/2012
Total Organic Carbon	SM5310C	mg/L	0.85	E	0.20		6/6/2012
Trihalomethanes	EPA524.2	ug/L	31	E		80	6/2/2012

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 outside 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



Certificate of Analysis

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

Report Issue Date: 06/13/2012 14:39
Received Date: 06/01/2012
Received Time: 08:15

Lab Sample ID: A2F0002-02
Sample Date: 05/30/2012 13:40
Sample Type: Grab

Sampled by: Jonathan Lear
Matrix: Water

Sample Description: MW-1 // 88487

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	0.94	0.20	mg/L	1	A205988	06/07/12	06/07/12	
Total Organic Carbon	SM 5310 C	0.85	0.20	mg/L	1	A205911	06/06/12	06/06/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	9.4	0.50	ug/L	1	A205749	06/01/12	06/02/12	
Bromoform	EPA 524.2	1.2	0.50	ug/L	1	A205749	06/01/12	06/02/12	
Chloroform	EPA 524.2	14	0.50	ug/L	1	A205749	06/01/12	06/02/12	
Dibromochloromethane	EPA 524.2	6.3	0.50	ug/L	1	A205749	06/01/12	06/02/12	

Surrogate: Bromofluorobenzene EPA 524.2 113 % *Acceptable range: 70-130 %*

*Total Trihalomethanes, EPA 524.2 **31** 0.50 ug/L

Haloacetic Acids by GC-ECD

Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A205995	06/07/12	06/12/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A205995	06/07/12	06/12/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A205995	06/07/12	06/12/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A205995	06/07/12	06/12/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	ND	1.0	ug/L	1	A205995	06/07/12	06/12/12	

Surrogate: 2,3-Dibromopropionic Acid EPA 552.2 93 % *Acceptable range: 70-130 %*

*Total Haloacetic Acids, EPA 552.2 ND 2.0 ug/L



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ELAP Certification Number: 2385

Wednesday, August 01, 2012

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

Lab Number: AA89546

Collection Date/Time: 7/3/2012 12:30 Sample Collector: LEAR, J
 Submittal Date/Time: 7/3/2012 16:05 Sample ID

Sample Description: MW 1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	139		2		7/11/2012
Ammonia-N	4500NH3 D	mg/L	Not Detected		0.05		7/10/2012
Arsenic, Total	EPA200.8	ug/L	2		1	10	7/5/2012
Barium, Total	EPA200.8	ug/L	25		10	1000	7/5/2012
Boron	EPA200.7	mg/L	Not Detected		0.05		7/10/2012
Calcium	EPA200.7	mg/L	48		0.5		7/10/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		7/3/2012
Chloride	EPA300.0	mg/L	32		1	250	7/3/2012
Dissolved Organic Carbon	SM5310-C	mg/L	1.1	E	0.2		7/9/2012
Gross Alpha	EPA900.0	pCi/L	2.62 ± 1.34	E		15	7/13/2012
Haloacetic Acids	EPA552	ug/L	4.0	E		60	7/14/2012
Iron	EPA200.7	ug/L	Not Detected		10	300	7/10/2012
Iron, Dissolved	EPA 200.7	ug/L	Not Detected		10	300	7/10/2012
Kjehldahl Nitrogen	4500-NH3 B,C,E	mg/L	Not Detected		0.2		7/11/2012
Lithium	EPA200.8	ug/L	6		1		7/5/2012
Magnesium	EPA200.7	mg/L	11		0.5		7/10/2012
Manganese, Dissolved	EPA 200.7	ug/L	Not Detected		10	50	7/10/2012
Manganese, Total	EPA 200.7	ug/L	Not Detected		10	50	7/10/2012
Methane	EPA174/175	ug/L	0.14	E	5		7/10/2012
Molybdenum, Total	EPA200.8	ug/L	4		1	1000	7/5/2012
Nickel, Total	EPA200.8	ug/L	Not Detected		10	100	7/5/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	7/3/2012
Nitrate as NO3-N	EPA300.0	mg/L	Not Detected		0.10	10	7/3/2012
Nitrite as NO2-N	EPA300.0	mg/L	Not Detected		0.10	1.00	7/3/2012
o-Phosphate-P	EPA300.0	mg/L	Not Detected		0.10		7/3/2012
pH (Laboratory)	4500-H+B	pH (H)	7.4				7/3/2012

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, August 01, 2012

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

Lab Number: AA89546

Collection Date/Time: 7/3/2012 12:30 Sample Collector: LEAR, J
 Submittal Date/Time: 7/3/2012 16:05 Sample ID

Sample Description: MW 1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Phosphorus, Total	HACH 8190	mg/L	0.15		0.03		7/9/2012
Potassium	EPA200.7	mg/L	3.1		0.1		7/10/2012
QC Anion Sum x 100	Calculation	%	97%				7/31/2012
QC Anion-Cation Balance	Calculation	%	3				7/31/2012
QC Cation Sum x 100	Calculation	%	103%				7/31/2012
QC Ratio TDS/SEC	Calculation		0.61				7/9/2012
Selenium, Total	EPA200.8	ug/L	6		2	50	7/5/2012
Sodium	EPA200.7	mg/L	47		0.5		7/10/2012
Specific Conductance (E.C)	2510B	umhos/cm	528		1	900	7/3/2012
Strontium, Total	EPA200.8	ug/L	227		5		7/5/2012
Sulfate	EPA300.0	mg/L	70		1	250	7/3/2012
Total Diss. Solids	2540C	mg/L	322		10	500	7/5/2012
Total Nitrogen	Calculation	mg/L	Not Detected		0.5		7/12/2012
Total Organic Carbon	SM5310C	mg/L	0.95	E	0.20		7/11/2012
Total Radium 226	EPA903.0	pCi/L	0.561 ± 0.262	E		3	7/23/2012
Trihalomethanes	EPA524.2	ug/L	62	E		80	7/9/2012
Uranium by ICP/MS	EPA200.8	ug/L	2		1	30	7/5/2012
Vanadium, Total	EPA200.8	ug/L	2		1	1000	7/5/2012
Zinc, Total	EPA200.8	ug/L	Not Detected		10	5000	7/5/2012

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 outside of hold time

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Certificate of Analysis

David Holland
 Monterey Bay Analytical
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 Monterey, CA 93940

Report Issue Date: 07/18/2012 16:20
Received Date: 07/06/2012
Received Time: 08:30

Lab Sample ID: A2G0476-02
Sample Date: 07/03/2012 12:30
Sample Type: Grab

Sampled by: Jonathan Lear
Matrix: Water

Sample Description: MW 1 // 89546

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310 C	1.1	0.20	mg/L	1	A207230	07/09/12	07/09/12	
Total Organic Carbon	SM 5310 C	0.95	0.20	mg/L	1	A207360	07/11/12	07/11/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	17	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Bromoform	EPA 524.2	1.2	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Chloroform	EPA 524.2	36	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Dibromochloromethane	EPA 524.2	7.7	0.50	ug/L	1	A207204	07/09/12	07/09/12	

Surrogate: Bromofluorobenzene EPA 524.2 100 % *Acceptable range: 70-130 %*
 *Total Trihalomethanes, EPA 524.2 62 0.50 ug/L

Haloacetic Acids by GC-ECD

Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A207442	07/12/12	07/14/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A207442	07/12/12	07/14/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A207442	07/12/12	07/14/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A207442	07/12/12	07/14/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	4.0	1.0	ug/L	1	A207442	07/12/12	07/14/12	

Surrogate: 2,3-Dibromopropionic Acid EPA 552.2 103 % *Acceptable range: 70-130 %*
 *Total Haloacetic Acids, EPA 552.2 4.0 2.0 ug/L



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ELAP Certification Number: 2385

Thursday, August 30, 2012

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

Lab Number: AA90583

Collection Date/Time: 8/2/2012 15:00 Sample Collector: LEAR J
Submittal Date/Time: 8/2/2012 16:41 Sample ID

Sample Description: MW-1

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		8/2/2012
Chloride	EPA300.0	mg/L	59		1	250	8/2/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	8/14/2012
Trihalomethanes	EPA524.2	ug/L	28	E		80	8/9/2012

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 outside 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



Certificate of Analysis

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

Report Issue Date: 08/15/2012 16:29
Received Date: 08/08/2012
Received Time: 09:30

Lab Sample ID: A2H0678-03
Sample Date: 08/02/2012 15:00
Sample Type: Grab

Sampled by: Jonathan Lear
Matrix: Water

Sample Description: MW 1 // 90583

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
<u>Trihalomethanes by GC-MS</u>									
Bromodichloromethane	EPA 524.2	7.2	0.50	ug/L	1	A208743	08/09/12	08/09/12	
Bromoform	EPA 524.2	0.63	0.50	ug/L	1	A208743	08/09/12	08/09/12	
Chloroform	EPA 524.2	16	0.50	ug/L	1	A208743	08/09/12	08/09/12	
Dibromochloromethane	EPA 524.2	3.8	0.50	ug/L	1	A208743	08/09/12	08/09/12	
<hr/>									
<i>Surrogate: Bromofluorobenzene</i>	EPA 524.2	111 %							<i>Acceptable range: 70-130 %</i>
*Total Trihalomethanes, EPA 524.2		28	0.50	ug/L					
<u>Haloacetic Acids by GC-ECD</u>									
Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A208842	08/10/12	08/14/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A208842	08/10/12	08/14/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A208842	08/10/12	08/14/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A208842	08/10/12	08/14/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	ND	1.0	ug/L	1	A208842	08/10/12	08/14/12	
<hr/>									
<i>Surrogate: 2,3-Dibromopropionic Acid</i>	EPA 552.2	100 %							<i>Acceptable range: 70-130 %</i>
*Total Haloacetic Acids, EPA 552.2		ND	2.0	ug/L					



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Wednesday, December 05, 2012

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

Lab Number: AA93961

Collection Date/Time: 11/1/2012 15:00
 Submittal Date/Time: 11/1/2012 15:10

Sample Collector: LINDBERG T
 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
Kjeldahl 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)

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H = Analyzed outside 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

Wednesday, December 05, 2012

MPWMD
 Joe Oliver
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 Monterey, CA 93442-0085

Lab Number: AA93961

Collection Date/Time: 11/1/2012 15:00
 Submittal Date/Time: 11/1/2012 15:10

Sample Collector: LINDBERG T
 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 SiO ₂ , 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 outside 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 11:24
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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ELAP Certification Number: 2385

MPWMD
Joe Oliver
P.O. Box 85
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Page 1 of 2

Thursday, May 10, 2012

Lab Number: AA86133

Collection Date/Time: 3/27/2012 14:00 Sample Collector: LEAR, J
Submittal Date/Time: 3/27/2012 15:00 Sample ID

Sample Description: SSMS (D)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	229		2		3/29/2012
Ammonia-N	4500NH3 D	mg/L	0.09		0.05		3/30/2012
Arsenic, Total	EPA200.8	ug/L	6		1	10	4/13/2012
Barium, Total	EPA200.8	ug/L	54		10	1000	4/13/2012
Boron	EPA200.7	mg/L	0.09		0.05		3/28/2012
Bromide	EPA300.0	mg/L	0.21		0.10		3/28/2012
Calcium	EPA200.7	mg/L	70		0.5		3/28/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		3/27/2012
Chloride	EPA300.0	mg/L	120		1	250	3/28/2012
Fluoride	EPA300.0	mg/L	0.20		0.10	2.0	3/28/2012
Gross Alpha	EPA900.0	pCi/L	5.20 ± 2.30	E		15	5/2/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	4/5/2012
Hardness (as CaCO3)	2340B	mg/L	232		10		3/29/2012
Iron	EPA200.7	ug/L	56		10	300	3/28/2012
Lithium	EPA200.8	ug/L	25		1		4/13/2012
Magnesium	EPA200.7	mg/L	14		0.5		3/28/2012
Manganese, Total	EPA 200.7	ug/L	79		10	50	3/28/2012
Methane	EPA174/175	ug/L	1.4	E	5		4/2/2012
Molybdenum, Total	EPA200.8	ug/L	7		1	1000	4/13/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	3/28/2012
Nitrite as NO2-N	EPA300.0	mg/L	Not Detected		0.10	1.00	3/28/2012
o-Phosphate-P	EPA300.0	mg/L	Not Detected		0.10		3/28/2012
pH (Laboratory)	4500-H+B	STD. Units	7.3				3/27/2012
Potassium	EPA200.7	mg/L	4.1		0.1		3/28/2012
QC Anion Sum x 100	Calculation	%	100%				4/20/2012
QC Anion-Cation Balance	Calculation	%	-2				4/20/2012
QC Cation Sum x 100	Calculation	%	96%				4/20/2012
QC Ratio TDS/SEC	Calculation		0.59				4/10/2012
Selenium, Total	EPA200.8	ug/L	2		2	50	4/13/2012

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

Lab Number: AA86133

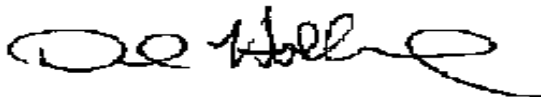
Collection Date/Time: 3/27/2012 14:00 Sample Collector: LEAR, J
 Submittal Date/Time: 3/27/2012 15:00 Sample ID

Sample Description: SSMS (D)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Sodium	EPA200.7	mg/L	91		0.5		3/28/2012
Specific Conductance (E.C)	2510B	umhos/cm	904		1	900	3/27/2012
Strontium, Total	EPA200.8	ug/L	457		5		4/13/2012
Sulfate	EPA300.0	mg/L	53		1	250	3/28/2012
Total Diss. Solids	2540C	mg/L	534		10	500	4/5/2012
Total Organic Carbon	SM5310C	mg/L	0.98	E	0.20		4/4/2012
Total Radium 226	EPA903.0	pCi/L	0.408 ± 0.204	E		3	5/9/2012
Trihalomethanes	EPA524.2	ug/L	Not Detected	E		80	3/30/2012
Uranium by ICP/MS	EPA200.8	ug/L	2		1	30	4/13/2012
Vanadium, Total	EPA200.8	ug/L	1		1	1000	4/13/2012
Zinc, Total	EPA200.8	ug/L	10		10	5000	4/13/2012

Sample Comments:

Report Approved by:



David Holland, Laboratory Director



Certificate of Analysis

David Holland
 Monterey Bay Analytical
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 Monterey, CA 93940

Report Issue Date: 04/09/2012 14:57
Received Date: 03/28/2012
Received Time: 08:00

Lab Sample ID: A2C1984-01
Sample Date: 03/27/2012 14:00
Sample Type: Grab

Sampled by: J. Lear
Matrix: Water

Sample Description: SSMS (D) // 86133

General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Total Organic Carbon	SM 5310 C	0.98	0.40	mg/L	2	A203380	04/04/12	04/04/12	

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	A203229	03/30/12	03/30/12	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A203229	03/30/12	03/30/12	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A203229	03/30/12	03/30/12	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A203229	03/30/12	03/30/12	

Surrogate: Bromofluorobenzene EPA 524.2 97 % *Acceptable range: 70-130 %*
 *Total Trihalomethanes, EPA 524.2 ND 0.50 ug/L

Haloacetic Acids by GC-ECD

Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A203279	04/02/12	04/05/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A203279	04/02/12	04/05/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A203279	04/02/12	04/05/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A203279	04/02/12	04/05/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	ND	1.0	ug/L	1	A203279	04/02/12	04/05/12	

Surrogate: 2,3-Dibromopropionic Acid EPA 552.2 102 % *Acceptable range: 70-130 %*
 *Total Haloacetic Acids, EPA 552.2 ND 2.0 ug/L



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Thursday, June 14, 2012

MPWMD
Joe Oliver
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Monterey, CA 93442-0085

Lab Number: AA88486

Collection Date/Time: 5/30/2012 14:10 Sample Collector: LEAR, J
Submittal Date/Time: 5/30/2012 14:45 Sample ID

Sample Description: SMS (Deep)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO ₃)	2320B	mg/L	148		2		6/1/2012
Ammonia-N	4500NH3 D	mg/L	0.06		0.05		5/31/2012
Boron	EPA200.7	mg/L	Not Detected		0.05		5/31/2012
Calcium	EPA200.7	mg/L	48		0.5		5/31/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		5/30/2012
Chloride	EPA300.0	mg/L	32		1	250	5/30/2012
Dissolved Organic Carbon	SM5310-C	mg/L	0.89	E	0.2		6/7/2012
Haloacetic Acids	EPA552	ug/L	15	E		60	6/12/2012
Iron	EPA200.7	ug/L	14		10	300	5/31/2012
Iron, Dissolved	EPA 200.7	ug/L	Not Detected		10	300	5/31/2012
Kjeldahl Nitrogen	4500-NH3 B,C,E	mg/L	Not Detected		0.5		6/8/2012
Magnesium	EPA200.7	mg/L	9		0.5		5/31/2012
Manganese, Dissolved	EPA 200.7	ug/L	Not Detected		10	50	5/31/2012
Manganese, Total	EPA 200.7	ug/L	Not Detected		10	50	5/31/2012
Nitrate as NO ₃	EPA300.0	mg/L	Not Detected		1	45	5/30/2012
Nitrate as NO ₃ -N	EPA300.0	mg/L	Not Detected		0.10	10	5/30/2012
Nitrite as NO ₂ -N	EPA300.0	mg/L	Not Detected		0.10	1.00	5/30/2012
o-Phosphate-P	EPA300.0	mg/L	Not Detected		0.10		5/30/2012
pH (Laboratory)	4500-H+B	Units (H)	7.7				5/30/2012
Phosphorus, Total	HACH 8190	mg/L	0.09		0.03		6/12/2012
Potassium	EPA200.7	mg/L	2.8		0.1		5/31/2012
QC Anion Sum x 100	Calculation	%	98%				6/1/2012
QC Anion-Cation Balance	Calculation	%	2				6/1/2012

mg/L: Milligrams per liter (=ppm)

ug/L : Micrograms per liter (=ppb)

PQL : Practical Quantitation Limit

H = Analyzed outside 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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Thursday, June 14, 2012

MPWMD
 Joe Oliver
 P.O. Box 85
 Monterey, CA 93442-0085
Lab Number: AA88486

Collection Date/Time: 5/30/2012 14:10 Sample Collector: LEAR, J
 Submittal Date/Time: 5/30/2012 14:45 Sample ID

Sample Description: SMS (Deep)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
QC Cation Sum x 100	Calculation	%	101%				6/1/2012
QC Ratio TDS/SEC	Calculation		0.66				6/13/2012
Sodium	EPA200.7	mg/L	50		0.5		5/31/2012
Specific Conductance (E.C)	2510B	umhos/cm	533		1	900	6/1/2012
Sulfate	EPA300.0	mg/L	65		1	250	5/30/2012
Total Diss. Solids	2540C	mg/L	351		10	500	6/5/2012
Total Nitrogen	Calculation	mg/L	Not Detected		0.5		6/8/2012
Total Organic Carbon	SM5310C	mg/L	0.85	E	0.20		6/6/2012
Trihalomethanes	EPA524.2	ug/L	47	E		80	6/2/2012

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 outside 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



Certificate of Analysis

David Holland
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Report Issue Date: 06/13/2012 14:39
Received Date: 06/01/2012
Received Time: 08:15

Lab Sample ID: A2F0002-01
Sample Date: 05/30/2012 14:10
Sample Type: Grab

Sampled by: Jonathan Lear
Matrix: Water

Sample Description: SMS (Deep) // 88486

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	A205988	06/07/12	06/07/12	
Total Organic Carbon	SM 5310 C	0.85	0.20	mg/L	1	A205911	06/06/12	06/06/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	14	0.50	ug/L	1	A205749	06/01/12	06/02/12	
Bromoform	EPA 524.2	1.9	0.50	ug/L	1	A205749	06/01/12	06/02/12	
Chloroform	EPA 524.2	20	0.50	ug/L	1	A205749	06/01/12	06/02/12	
Dibromochloromethane	EPA 524.2	11	0.50	ug/L	1	A205749	06/01/12	06/02/12	

Surrogate: Bromofluorobenzene	EPA 524.2	100 %						Acceptable range: 70-130 %	
*Total Trihalomethanes, EPA 524.2		47	0.50	ug/L					
Haloacetic Acids by GC-ECD									
Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A205995	06/07/12	06/12/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	4.8	1.0	ug/L	1	A205995	06/07/12	06/12/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A205995	06/07/12	06/12/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A205995	06/07/12	06/12/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	10	1.0	ug/L	1	A205995	06/07/12	06/12/12	

Surrogate: 2,3-Dibromopropionic Acid	EPA 552.2	92 %						Acceptable range: 70-130 %	
*Total Haloacetic Acids, EPA 552.2		15	2.0	ug/L					



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ELAP Certification Number: 2385

Wednesday, August 01, 2012

MPWMD
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Lab Number: AA89548

Collection Date/Time: 7/3/2012 14:35 Sample Collector: LEAR, J
 Submittal Date/Time: 7/3/2012 16:05 Sample ID

Sample Description: SSMS Deep

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	167		2		7/11/2012
Ammonia-N	4500NH3 D	mg/L	Not Detected		0.05		7/10/2012
Arsenic, Total	EPA200.8	ug/L	6		1	10	7/5/2012
Barium, Total	EPA200.8	ug/L	36		10	1000	7/5/2012
Boron	EPA200.7	mg/L	0.05		0.05		7/10/2012
Calcium	EPA200.7	mg/L	55		0.5		7/10/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		7/3/2012
Chloride	EPA300.0	mg/L	54		1	250	7/3/2012
Dissolved Organic Carbon	SM5310-C	mg/L	0.71	E	0.2		7/11/2012
Gross Alpha	EPA900.0	pCi/L	6.21 ± 1.96	E		15	7/16/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	7/17/2012
Iron	EPA200.7	ug/L	14		10	300	7/10/2012
Iron, Dissolved	EPA 200.7	ug/L	Not Detected		10	300	7/10/2012
Kjehldahl Nitrogen	4500-NH3 B,C,E	mg/L	Not Detected		0.2		7/11/2012
Lithium	EPA200.8	ug/L	13		1		7/5/2012
Magnesium	EPA200.7	mg/L	10		0.5		7/10/2012
Manganese, Dissolved	EPA 200.7	ug/L	Not Detected		10	50	7/10/2012
Manganese, Total	EPA 200.7	ug/L	Not Detected		10	50	7/10/2012
Methane	EPA174/175	ug/L	0.15	E	5		7/10/2012
Molybdenum, Total	EPA200.8	ug/L	44		1	1000	7/5/2012
Nickel, Total	EPA200.8	ug/L	Not Detected		10	100	7/5/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	7/3/2012
Nitrate as NO3-N	EPA300.0	mg/L	Not Detected		0.10	10	7/3/2012
Nitrite as NO2-N	EPA300.0	mg/L	Not Detected		0.10	1.00	7/3/2012
o-Phosphate-P	EPA300.0	mg/L	Not Detected		0.10		7/3/2012
pH (Laboratory)	4500-H+B	pH (H)	7.6				7/3/2012

mg/L: Milligrams per liter (=ppm)

ug/L : Micrograms per liter (=ppb)

PQL : Practical Quantitation Limit

H = Analyzed outside 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

Wednesday, August 01, 2012

MPWMD
 Joe Oliver
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 Monterey, CA 93442-0085

Lab Number: AA89548

Collection Date/Time: 7/3/2012 14:35 Sample Collector: LEAR, J
 Submittal Date/Time: 7/3/2012 16:05 Sample ID

Sample Description: SSMS Deep

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Phosphorus, Total	HACH 8190	mg/L	0.09		0.03		7/9/2012
Potassium	EPA200.7	mg/L	3.2		0.1		7/10/2012
QC Anion Sum x 100	Calculation	%	97%				7/12/2012
QC Anion-Cation Balance	Calculation	%	3				7/31/2012
QC Cation Sum x 100	Calculation	%	104%				7/31/2012
QC Ratio TDS/SEC	Calculation		0.55				7/9/2012
Selenium, Total	EPA200.8	ug/L	7		2	50	7/5/2012
Sodium	EPA200.7	mg/L	66		0.5		7/10/2012
Specific Conductance (E.C)	2510B	umhos/cm	627		1	900	7/3/2012
Strontium, Total	EPA200.8	ug/L	351		5		7/5/2012
Sulfate	EPA300.0	mg/L	60		1	250	7/3/2012
Total Diss. Solids	2540C	mg/L	345		10	500	7/5/2012
Total Nitrogen	Calculation	mg/L	Not Detected		0.5		7/12/2012
Total Organic Carbon	SM5310C	mg/L	0.66	E	0.20		7/9/2012
Total Radium 226	EPA903.0	pCi/L	0.025 ± 0.111	E		3	7/24/2012
Trihalomethanes	EPA524.2	ug/L	33	E		80	7/9/2012
Uranium by ICP/MS	EPA200.8	ug/L	5		1	30	7/5/2012
Vanadium, Total	EPA200.8	ug/L	4		1	1000	7/5/2012
Zinc, Total	EPA200.8	ug/L	Not Detected		10	5000	7/5/2012

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 outside 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



Certificate of Analysis

David Holland
 Monterey Bay Analytical
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Report Issue Date: 07/18/2012 16:20
Received Date: 07/06/2012
Received Time: 08:30

Lab Sample ID: A2G0476-04
Sample Date: 07/03/2012 14:35
Sample Type: Grab

Sampled by: Jonathan Lear
Matrix: Water

Sample Description: SSMS Deep // 89548

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	A207230	07/09/12	07/09/12	
Total Organic Carbon	SM 5310 C	0.71	0.20	mg/L	1	A207360	07/11/12	07/11/12	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Trihalomethanes by GC-MS									
Bromodichloromethane	EPA 524.2	10	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Bromoform	EPA 524.2	1.6	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Chloroform	EPA 524.2	14	0.50	ug/L	1	A207204	07/09/12	07/09/12	
Dibromochloromethane	EPA 524.2	7.7	0.50	ug/L	1	A207204	07/09/12	07/09/12	

Surrogate: Bromofluorobenzene EPA 524.2 101 % *Acceptable range: 70-130 %*
 *Total Trihalomethanes, EPA 524.2 33 0.50 ug/L

Haloacetic Acids by GC-ECD

Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A207499	07/13/12	07/17/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	2.1	1.0	ug/L	1	A207499	07/13/12	07/17/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A207499	07/13/12	07/17/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A207499	07/13/12	07/17/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	5.7	1.0	ug/L	1	A207499	07/13/12	07/17/12	

Surrogate: 2,3-Dibromopropionic Acid EPA 552.2 99 % *Acceptable range: 70-130 %*
 *Total Haloacetic Acids, EPA 552.2 ND 2.0 ug/L



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Thursday, August 30, 2012

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

Lab Number: AA90581

Collection Date/Time: 8/2/2012 13:50 Sample Collector: LEAR J
Submittal Date/Time: 8/2/2012 16:40 Sample ID

Sample Description: SSMS (D)

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		8/2/2012
Chloride	EPA300.0	mg/L	80		1	250	8/2/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	8/14/2012
Trihalomethanes	EPA524.2	ug/L	19	E		80	8/9/2012

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 outside 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



Certificate of Analysis

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

Report Issue Date: 08/15/2012 16:29
Received Date: 08/08/2012
Received Time: 09:30

Lab Sample ID: A2H0678-01
Sample Date: 08/02/2012 13:50
Sample Type: Grab

Sampled by: Jonathan Lear
Matrix: Water

Sample Description: SSMS (D) // 90581

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
<u>Trihalomethanes by GC-MS</u>									
Bromodichloromethane	EPA 524.2	5.2	0.50	ug/L	1	A208743	08/09/12	08/09/12	
Bromoform	EPA 524.2	0.86	0.50	ug/L	1	A208743	08/09/12	08/09/12	
Chloroform	EPA 524.2	8.8	0.50	ug/L	1	A208743	08/09/12	08/09/12	
Dibromochloromethane	EPA 524.2	3.9	0.50	ug/L	1	A208743	08/09/12	08/09/12	
<hr/>									
<i>Surrogate: Bromofluorobenzene</i>	EPA 524.2	110 %							<i>Acceptable range: 70-130 %</i>
*Total Trihalomethanes, EPA 524.2		19	0.50	ug/L					
<u>Haloacetic Acids by GC-ECD</u>									
Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A208842	08/10/12	08/14/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A208842	08/10/12	08/14/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A208842	08/10/12	08/14/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A208842	08/10/12	08/14/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	1.7	1.0	ug/L	1	A208842	08/10/12	08/14/12	
<hr/>									
<i>Surrogate: 2,3-Dibromopropionic Acid</i>	EPA 552.2	103 %							<i>Acceptable range: 70-130 %</i>
*Total Haloacetic Acids, EPA 552.2		ND	2.0	ug/L					



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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: AA93861

Collection Date/Time: 10/30/2012 11:00
Submittal Date/Time: 10/30/2012 14:16

Sample Collector: LEAR J
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
Kjeldahl 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 outside 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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Thursday, December 06, 2012

MPWMD
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Lab Number: AA93861

Collection Date/Time: 10/30/2012 11:00
Submittal Date/Time: 10/30/2012 14:16

Sample Collector: LEAR J
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 SiO ₂ , 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 outside 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



Certificate of Analysis

David Holland
 Monterey Bay Analytical
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 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
Sample Type: Grab

Sampled by: Lear, J.
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



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Wednesday, April 25, 2012

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

Lab Number: AA86104

Collection Date/Time: 3/26/2012 15:30 Sample Collector: LEAR, J
Submittal Date/Time: 3/26/2012 17:00 Sample ID

Sample Description: PCA East Deep

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Arsenic, Total	EPA200.8	ug/L	8		1	10	3/30/2012
Barium, Total	EPA200.8	ug/L	63		10	1000	3/30/2012
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		3/26/2012
Chloride	EPA300.0	mg/L	104		1	250	3/28/2012
Copper, Total	EPA200.8	ug/L	Not Detected		4	1300	3/30/2012
Gross Alpha	EPA900.0	pCi/L	0.302 ± 1.56	E		15	4/18/2012
Haloacetic Acids	EPA552	ug/L	Not Detected	E		60	3/30/2012
Lithium	EPA200.8	ug/L	23		1		3/30/2012
Methane	EPA174/175	ug/L	0.33	E	5		4/2/2012
Molybdenum, Total	EPA200.8	ug/L	10		1	1000	3/30/2012
pH (Laboratory)	4500-H+B	STD. Units	7.4				3/26/2012
Selenium, Total	EPA200.8	ug/L	Not Detected		2	50	3/30/2012
Strontium, Total	EPA200.8	ug/L	305		5		3/30/2012
Total Radium 226	EPA903.0	pCi/L	0.278 ± 0.288	E		3	4/10/2012
Trihalomethanes	EPA524.2	ug/L	Not Detected	E		80	3/30/2012
Uranium by ICP/MS	EPA200.8	ug/L	Not Detected		1	30	3/30/2012
Vanadium, Total	EPA200.8	ug/L	Not Detected		1	1000	3/30/2012
Zinc, Total	EPA200.8	ug/L	Not Detected		10	5000	3/30/2012

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 outside 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

Wednesday, April 25, 2012

MPWMD
Joe Oliver
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Monterey, CA 93442-0085

Lab Number: AA86105

Collection Date/Time: 3/26/2012 15:30 Sample Collector: LEAR, J
Submittal Date/Time: 3/26/2012 17:00 Sample ID

Sample Description: PCA East Deep

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	192		2		3/27/2012
Ammonia-N	4500NH3 D	mg/L	0.06		0.05		3/30/2012
Boron	EPA200.7	mg/L	0.09		0.05		3/28/2012
Bromide	EPA300.0	mg/L	Not Detected		0.10		3/28/2012
Calcium	EPA200.7	mg/L	53		0.5		3/28/2012
Chloride	EPA300.0	mg/L	104		1	250	3/28/2012
Fluoride	EPA300.0	mg/L	0.29		0.10	2.0	3/28/2012
Hardness (as CaCO3)	2340B	mg/L	174		10		3/29/2012
Iron	EPA200.7	ug/L	45		10	300	3/28/2012
Magnesium	EPA200.7	mg/L	10		0.5		3/28/2012
Manganese, Total	EPA 200.7	ug/L	104		10	50	3/28/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	3/28/2012
Nitrite as NO2-N	EPA300.0	mg/L	Not Detected		0.10	1.00	3/28/2012
o-Phosphate-P	EPA300.0	mg/L	Not Detected		0.10		3/28/2012
pH (Laboratory)	4500-H+B	STD. Units	7.4				3/26/2012
Potassium	EPA200.7	mg/L	3.8		0.1		3/28/2012
QC Anion Sum x 100	Calculation	%	98%				4/11/2012
QC Anion-Cation Balance	Calculation	%	-1				4/11/2012
QC Cation Sum x 100	Calculation	%	96%				3/29/2012
QC Ratio TDS/SEC	Calculation		0.58				4/10/2012
Sodium	EPA200.7	mg/L	84		0.5		3/28/2012
Specific Conductance (E.C)	2510B	umhos/cm	754		1	900	3/26/2012
Sulfate	EPA300.0	mg/L	31		1	250	3/28/2012
Total Diss. Solids	2540C	mg/L	437		10	500	4/5/2012
Total Organic Carbon	SM5310C	mg/L	0.52	E	0.20		4/4/2012

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 outside 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



Certificate of Analysis

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

Report Issue Date: 04/09/2012 9:33
Received Date: 03/28/2012
Received Time: 08:00

Lab Sample ID: A2C1985-01
Sample Date: 03/26/2012 15:30
Sample Type: Grab

Sampled by: J. Lear
Matrix: Water

Sample Description: PCA East (Deep) // 86104

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
<u>Trihalomethanes by GC-MS</u>									
Bromodichloromethane	EPA 524.2	ND	0.50	ug/L	1	A203229	03/30/12	03/30/12	
Bromoform	EPA 524.2	ND	0.50	ug/L	1	A203229	03/30/12	03/30/12	
Chloroform	EPA 524.2	ND	0.50	ug/L	1	A203229	03/30/12	03/30/12	
Dibromochloromethane	EPA 524.2	ND	0.50	ug/L	1	A203229	03/30/12	03/30/12	
<hr/>									
<i>Surrogate: Bromofluorobenzene</i>	EPA 524.2	98 %							<i>Acceptable range: 70-130 %</i>
*Total Trihalomethanes, EPA 524.2		ND	0.50	ug/L					
<u>Haloacetic Acids by GC-ECD</u>									
Dibromoacetic Acid (DBAA)	EPA 552.2	ND	1.0	ug/L	1	A203136	03/27/12	03/30/12	
Dichloroacetic Acid (DCAA)	EPA 552.2	ND	1.0	ug/L	1	A203136	03/27/12	03/30/12	
Monobromoacetic Acid (MBAA)	EPA 552.2	ND	1.0	ug/L	1	A203136	03/27/12	03/30/12	
Monochloroacetic Acid (MCAA)	EPA 552.2	ND	2.0	ug/L	1	A203136	03/27/12	03/30/12	
Trichloroacetic Acid (TCAA)	EPA 552.2	ND	1.0	ug/L	1	A203136	03/27/12	03/30/12	
<hr/>									
<i>Surrogate: 2,3-Dibromopropionic Acid</i>	EPA 552.2	72 %							<i>Acceptable range: 70-130 %</i>
*Total Haloacetic Acids, EPA 552.2		ND	2.0	ug/L					



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Thursday, July 05, 2012

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

Lab Number: AA89127

Collection Date/Time: 6/19/2012 15:30 Sample Collector: LINDBERG T
Submittal Date/Time: 6/19/2012 15:55 Sample ID

Sample Description: PCA East Deep

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	160		2		6/19/2012
Ammonia-N	4500NH3 D	mg/L	0.05		0.05		6/22/2012
Boron	EPA200.7	mg/L	0.09		0.05		6/22/2012
Bromide	EPA300.0	mg/L	0.11		0.10		6/21/2012
Calcium	EPA200.7	mg/L	42		0.5		6/22/2012
Chloride	EPA300.0	mg/L	76		1	250	6/21/2012
Fluoride	EPA300.0	mg/L	0.27		0.10	2.0	6/21/2012
Hardness (as CaCO3)	2340B	mg/L	138		10		7/5/2012
Iron	EPA200.7	ug/L	Not Detected		10	300	6/22/2012
Magnesium	EPA200.7	mg/L	8		0.5		6/22/2012
Manganese, Total	EPA 200.7	ug/L	36		10	50	6/22/2012
Nitrate as NO3	EPA300.0	mg/L	Not Detected		1	45	6/21/2012
Nitrite as NO2-N	EPA300.0	mg/L	Not Detected		0.10	1.00	6/21/2012
o-Phosphate-P	EPA300.0	mg/L	Not Detected		0.10		6/21/2012
pH (Laboratory)	4500-H+B	pH (H)	7.7				6/19/2012
Potassium	EPA200.7	mg/L	3.5		0.1		6/22/2012
QC Anion Sum x 100	Calculation	%	97%				7/5/2012
QC Anion-Cation Balance	Calculation	%	3				7/5/2012
QC Cation Sum x 100	Calculation	%	103%				7/5/2012
QC Ratio TDS/SEC	Calculation		0.66				6/25/2012
Sodium	EPA200.7	mg/L	80		0.5		6/22/2012
Specific Conductance (E.C)	2510B	umhos/cm	613		1	900	6/20/2012
Sulfate	EPA300.0	mg/L	28		1	250	6/21/2012
Total Diss. Solids	2540C	mg/L	403		10	500	6/20/2012
Total Organic Carbon	SM5310C	mg/L	0.27	E	0.20		6/27/2012

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 outside 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

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Page 1 of 2

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 outside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

Lab Number: AA93959Collection Date/Time: 10/31/2012 14:30
Submittal Date/Time: 11/1/2012 15:10Sample Collector: LEAR J
Sample ID

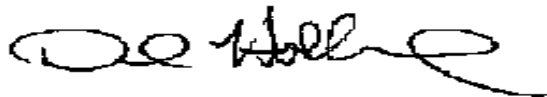
Coliform Designation:

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 SiO ₂ , 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 outside of hold time E = Analysis performed by External Laboratory; See External Laboratory Report attachments.



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
Sample Type: Grab

Sampled by: Jonathan Lear
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
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



AMERICAN WATER

AMERICAN WATER WORKS SERVICE COMPANY, INC.

Central Laboratory - 1115 South Illinois Street Belleville, IL 62220-3102

Phone: (618)235-3600 - Fax: (618)235-6349



Inorganic Chemical (IOC) Analysis Report

CALIFORNIA-AMERICAN WATER CO
MONTEREY DISTRICT
LESLIE JORDAN
PO BOX 951
MONTEREY CA 93942-0951

PWS ID: CA2710004
County: MONTEREY
Facility:
Site ID: 2710004-048

Date of Report: 11/23/11
Lab Certification No.: 01161CA
Federal Lab ID No.: IL00028

Report Summary

Location: PARALTA WELL	Collection Date: 11/17/11	Received Date: 11/18/11
Sample Type: RAW	Collection Time: 12:45	Received Time: 07:30
	SDG: 111811-22	Received Temp: 2 °C

Case Narrative:

Results are at or above the reporting limit for the following analytes:

- | | |
|-----------|-----------|
| ARSENIC | SELENIUM |
| BORON | STRONTIUM |
| MAGNESIUM | CALCIUM |
| SODIUM | |

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Technical Director or Designee



CA	703
11090925	
COC and Report Number	

Starting Sample: CS96244

Report Details

Sample Number: CS96244

ICP Metals	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
IRON		200.7R4.4	01045	0.3(s)	0.10	ND	mg/L	LKR	11/22/11 15:12
CALCIUM		200.7R4.4	00916		1	37	mg/L	LKR	11/22/11 15:12
MAGNESIUM		200.7R4.4	00927		1	10	mg/L	LKR	11/22/11 15:12
POTASSIUM		200.7R4.4	00937		5	ND	mg/L	LKR	11/22/11 15:12
SODIUM		200.7R4.4			0.2	64.7	mg/L	LKR	11/22/11 15:12
STRONTIUM		200.7R4.4			0.1	0.2	mg/L	LKR	11/22/11 15:12

Sample Number: CS96244

ICP/MS Metals	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
ARSENIC		200.8R5.4	01002	0.010	0.001	0.003	mg/L	LG	11/22/11 15:33
BARIUM		200.8R5.4	01007	1	0.1	ND	mg/L	LG	11/22/11 15:33
MANGANESE		200.8R5.4	01055	0.05(s)	0.010	ND	mg/L	LG	11/22/11 15:33
NICKEL		200.8R5.4	01067	0.1	0.005	ND	mg/L	LG	11/22/11 15:33
SELENIUM		200.8R5.4	01147	0.05	0.002	0.004	mg/L	LG	11/22/11 15:33
ZINC		200.8R5.4	01092	5.0(s)	0.050	ND	mg/L	LG	11/22/11 15:33
BORON		200.8R5.4	01020		0.050	0.056	mg/L	LG	11/22/11 15:33
MOLYBDENUM		200.8R5.4	01062		0.1	ND	mg/L	LG	11/22/11 15:33
VANADIUM		200.8R5.4	01087		0.050	ND	mg/L	LG	11/22/11 15:33

CA 703

11090925

COC and Report Number

Starting Sample: CS96244

Page 2 of 2



Report Details

Sample Number: CT12952

ICP Metals	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
IRON		200.7R4.4	01045	0.3(s)	0.10	ND	mg/L	LKR	11/22/11 15:48
CALCIUM		200.7R4.4	00916		1	49	mg/L	LKR	11/22/11 15:48
MAGNESIUM		200.7R4.4	00927		1	13	mg/L	LKR	11/22/11 15:48
POTASSIUM		200.7R4.4	00937		5	ND	mg/L	LKR	11/22/11 15:48
SODIUM		200.7R4.4			0.2	72.6	mg/L	LKR	11/22/11 15:48
STRONTIUM		200.7R4.4			0.1	0.3	mg/L	LKR	11/22/11 15:48

Sample Number: CT12952

ICP/MS Metals	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
ARSENIC		200.8R5.4	01002	0.010	0.001	0.002	mg/L	LG	11/22/11 15:41
BARIUM		200.8R5.4	01007	1	0.1	ND	mg/L	LG	11/22/11 15:41
MANGANESE		200.8R5.4	01055	0.05(s)	0.010	0.012	mg/L	LG	11/22/11 15:41
NICKEL		200.8R5.4	01087	0.1	0.005	ND	mg/L	LG	11/22/11 15:41
SELENIUM		200.8R5.4	01147	0.05	0.002	0.003	mg/L	LG	11/22/11 15:41
ZINC		200.8R5.4	01092	5.0(s)	0.050	ND	mg/L	LG	11/22/11 15:41
BORON		200.8R5.4	01020		0.050	0.067	mg/L	LG	11/22/11 15:41
MOLYBDENUM		200.8R5.4	01082		0.1	ND	mg/L	LG	11/22/11 15:41
VANADIUM		200.8R5.4	01087		0.050	ND	mg/L	LG	11/22/11 15:41

CA 703

11110236

COC and Report Number

Starting Sample: CT12952

Page 2 of 2





AMERICAN WATER

AMERICAN WATER WORKS SERVICE COMPANY, INC.

Central Laboratory - 1115 South Illinois Street Belleville, IL 62220-3102
Phone: (618)235-3600 - Fax: (618)235-6349



Organic Carbon Analysis Report
PROCESS

CALIFORNIA-AMERICAN WATER CO
MONTEREY DISTRICT
LESLIE JORDAN
PO BOX 951
MONTEREY CA 93942-0951

PWS ID: CA2710004
County: MONTEREY
Facility:
Site ID: 2710004-048

Date of Report: 11/29/11
Lab Certification No.: 01161CA
Federal Lab ID No.: IL00028

Report Summary

Location	PARALTA WELL	Collection Date:	11/17/11	Received Date:	11/18/11
Sample Type	RAW	Collection Time:	12:45	Received Time:	07:30
		SDG:	111811-22	Received Temp:	2 °C

Case Narrative:

Results are at or above the reporting limit for the following analytes:
TOC

Process Sample - Analyte(s) is(are) not acceptable for compliance purposes.

Report Details

Sample Number: CT12957

	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
TOC		SM5310C	CA	703	0.25	0.79	mg/L	RS	11/22/11 21:54

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Technical Director or Designee



CA	703
11110240	
COC and Report Number	

Starting Sample: CT12957
Page 1 of 1



AMERICAN WATER

AMERICAN WATER WORKS SERVICE COMPANY, INC.

Central Laboratory - 1115 South Illinois Street Belleville, IL 62220-3102
Phone: (618)235-3600 - Fax: (618)235-6349



DBP Analysis Report

CALIFORNIA-AMERICAN WATER CO
MONTEREY DISTRICT
LESLIE JORDAN
PO BOX 951
MONTEREY CA 93942-0951

PWS ID: CA2710004
County: MONTEREY
Facility ID: ASR
Site ID: 2710004-048

Date of Report: 11/29/11
Drinking Water Certification No.: 01161CA
Federal Lab ID No.: IL00028

Report Summary

Location	PARALTA WELL	Collection Date:	11/17/11	Received Date:	11/18/11
Sample Type	RAW	Collection Time:	12:45	Received Time:	07:30
		SDG:	111811-22	Received Temp:	2 °C

Case Narrative:

Results are at or above the reporting limit for the following analytes:

CHLOROFORM

TOTAL HAA (5) Result: 0

TOTAL THM Result: 2.6

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Technical Director or Designee



CA	703
11090875	
COC and Report Number	

Starting Sample: CS96122

Report Details

Sample Number: CS96122

Regulated Haloacetic Acids	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time	
DIBROMOACETIC ACID		552.3R1.0	82721		1.0	ND	ug/L	BC	11/22/11	23:21
DICHLOROACETIC ACID		552.3R1.0	77288		1.0	ND	ug/L	BC	11/22/11	23:21
MONOBROMOACETIC ACID		552.3R1.0	A-041		1.0	ND	ug/L	BC	11/22/11	23:21
MONOCHLOROACETIC ACID		552.3R1.0			2.0	ND	ug/L	BC	11/22/11	23:21
TRICHLOROACETIC ACID		552.3R1.0			1.0	ND	ug/L	BC	11/22/11	23:21
HAA5 TOTAL		552.3R1.0	A-049	60	1.0	ND	ug/L	BC	11/22/11	23:21

Sample Number: CS96122

Unregulated Haloacetic Acids	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time	
BROMOCHLOROACETIC ACID		552.3R1.0	A-038		1.0	ND	ug/L	BC	11/22/11	23:21

Sample Number: CS96124

Trihalomethanes	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time	
BROMOFORM		524.2R4.1	32104		0.5	ND	ug/L	ALJ	11/23/11	21:16
BROMODICHLOROMETHANE		524.2R4.1	32101		0.5	ND	ug/L	ALJ	11/23/11	21:16
DIBROMOCHLOROMETHANE		524.2R4.1	32105		0.5	ND	ug/L	ALJ	11/23/11	21:16
CHLOROFORM		524.2R4.1	32106		0.5	2.6	ug/L	ALJ	11/23/11	21:16
TOTAL TRIHALOMETHANES		524.2R4.1	82080	80	0.5	2.6	ug/L	ALJ	11/23/11	21:16



CA	703
11090875	
COC and Report Number	

Starting Sample: CS96122

Report Details

Sample Number: CT12953

	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
ALKALINITY (as CaCO3)		SM2320B	00410		7	136	mg/L	AJA	11/22/11 02:12
DOC		SM5310C			0.25	0.71	mg/L	RS	11/21/11 20:05
Total Dissolved Solids (TDS)		SM2540C	70300	500 (s)	50	352	mg/L	AJA	11/21/11 15:15

Sample Number: CT12953

	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
Minerals									
NITRATE-N		300.0R2.1		10	0.1	0.8	mg/L	RE	11/18/11 21:48
NITRITE-N		300.0R2.1		1	0.1	ND	mg/L	RE	11/18/11 21:48

Sample Number: CT12953

	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
Other									
CONDUCTIVITY		SM2510B	00095		1	722	umhos/cm	AJA	11/21/11 13:21

Sample Number: CT12953

	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
Minerals									
CHLORIDE		300.0R2.1A		250(s)	1.0	86.7	mg/L	RE	11/21/11 16:38
ORTHO-PHOSPHATE-PO4		300.0R2.1	00660		0.77	ND	mg/L	RE	11/18/11 21:48
SULFATE		300.0R2.1A		250(s)	0.5	43.0	mg/L	RE	11/21/11 16:38

Sample Number: CT12953

	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
ICP Metals									
IRON - Dissolved		200.7R4.4		0.3(s)	0.10	ND	mg/L	LKR	11/22/11 16:15

Sample Number: CT12953

	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
ICP/MS Metals									
MANGANESE - Dissolved		200.8R5.4		0.05(s)	0.010	0.011	mg/L	LG	11/22/11 16:30



CA 703
11110237
 COC and Report Number

Starting Sample: CT12953

Report Details

Sample Number: CT12954

	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
TOTAL KJELDAHL NITROGEN (TKN)		351.2R2.0			0.25	ND	mg/L	RE	12/01/11 17:26

Sample Number: CT12954

	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
Minerals TOTAL PHOSPHORUS		365.4			0.1	ND	mg/L	RE	12/01/11 16:16



CA 703

11110238

COC and Report Number

Starting Sample: CT12954

Page 2 of 2

Report Details

Sample Number: CT12955

	Qualifier Code	Analysis Method	State Code	MCL	Reporting Limit	Result	Unit	Analyst	Analysis Date / Time
AMMONIA AS N		350.1R2.0MOD			0.05	ND	mg/L	AJA	12/07/11 12:34



CA 703
11110239
COC and Report Number

Certificate of Analysis

Travis Peterson
 California American Water
 836 Carmel Ave.
 Monterey, CA 93940

Report Issue Date: 2/3/2012 15:39
Received Date: 12/09/2011
Received Time: 08:30

Lab Sample ID: A1L0660-02
Sample Date: 11/17/2011 12:45
Sample Type: Grab

Client Project: ASR Bi-Annual/Radiologicals
Sampled by: Susy Jacobson
Matrix: Ground Water

Sample Description: Paralta Well // 2710004-048

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
*Uranium	EPA 200.8	ND	1.0	ug/L	1	A114512	12/13/11	12/21/11	
*Uranium, Radiological		< 0.67		pCi/L					

Radiological

Analyte	Method	Result	Units	MDA	Batch	Prepared	Analyzed	Qual
*Gross Alpha	EPA 00-02	5.73	pCi/L	1.09	A114663	12/15/11	12/19/11	
*1.65 Sigma Uncertainty		0.400	±					



Pace Analytical Services, Inc.
1636 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5603

ANALYTICAL RESULTS

Project: A1L0660
Pace Project No.: 3059739

*Old
Grave
Well*

Sample: A1L0660-01		Lab ID: 3059739001	Collected: 11/17/11 11:40	Received: 12/19/11 10:30	Matrix: Drinking Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.551 ± 0.433 (0.568)	pCi/L	01/18/12 15:13	13982-63-3	

*Paralta
Well*

Sample: A1L0660-02		Lab ID: 3059739002	Collected: 11/17/11 12:45	Received: 12/19/11 10:30	Matrix: Drinking Water	
PWS:		Site ID:	Sample Type:			
Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.40 ± 0.673 (0.650)	pCi/L	01/18/12 15:47	13982-63-3	

Date: 01/25/2012 11:41 AM

REPORT OF LABORATORY ANALYSIS

Page 5 of 7

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Cal Am Water Company
 Susy Jacobson / Leslie Jordan
 511 Pacific Lodge Road, Suite 100
 Pacific Grove, CA 93950

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

Lab Number: AA82550

Collection Date/Time: 11/17/2011 11:40 Sample Collector: JACOBSON S
 Submittal Date/Time: 11/17/2011 14:16 Sample ID

Sample Description: Ord Grove Well 02

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		11/17/2011
Lithium	EPA200.8	ug/L	21		1		12/2/2011
Methane	EPA174/175	ug/L	0.42	E	5		11/28/2011

Sample Comments:

Lab Number: AA82551

Collection Date/Time: 11/17/2011 12:45 Sample Collector: JACOBSON S
 Submittal Date/Time: 11/17/2011 14:16 Sample ID

Sample Description: Paralta Well

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Chloramines	SM4500-Cl G	mg/L	Not Detected		0.05		11/17/2011
Lithium	EPA200.8	ug/L	7		1		12/2/2011
Methane	EPA174/175	ug/L	Not Detected	E	5		11/28/2011

Sample Comments:

Report Approved by:

David Holland, Laboratory Director