Attachment 4 Project Description

Background

The Aquifer Storage and Recovery (ASR) Project concept entails diverting excess winter flows from the Carmel River Basin during high flow periods using existing California American Water (Cal-Am) wells in the lower stretches of the river. Diverted water is treated to potable drinking water standards and pumped approximately six miles through the Cal-Am distribution system to the hydrologically-separate Seaside Groundwater Basin, where the water is injected into specially-constructed ASR wells for later recovery during dry periods. Available storage capacity in the coastal areas of the Seaside Basin serves as an underground reservoir for the diverted water. This "conjunctive use" management more efficiently utilizes local water resources to improve the reliability of the community's water supply while reducing the environmental impacts to both the Carmel River and Seaside Basins.

Since 1996, MPWMD has implemented an ASR Program in the Seaside Groundwater Basin. Efforts have included hydrogeologic testing and construction of pilot and full-scale test ASR wells in the coastal area of the Seaside Groundwater Basin The Seaside Basin ASR Program is designed to be developed in project phases, subject to available funding and staff resources. Each project phase includes two ASR wells at a single site to minimize costs associated with appurtenant piping, electrical and treatment facilities. Design, engineering and construction are nearly complete for the Phase 1 Project, and MPWMD has operated the Phase 1 a permanent facility since 2008. The Phase 2 ASR Project is under construction and scheduled for completion in 2014. Currently, MPWMD has constructed three fully-equipped and functioning ASR wells with the ability to bank an average of 1,500 AF of water diverted from the Carmel River Basin per year (i.e., two wells at the Phase 1 site and one well at the Phase 2 site). With planned improvements to the delivery capacity of Cal Am's system, three more wells equaling an additional 1,500 AF on average per year are anticipated (i.e., second well at the Phase 2 site and two wells at the planned Phase 3 site). With all three phases of ASR operational, MPWMD would be able to inject an average of 3,000 AF per year.

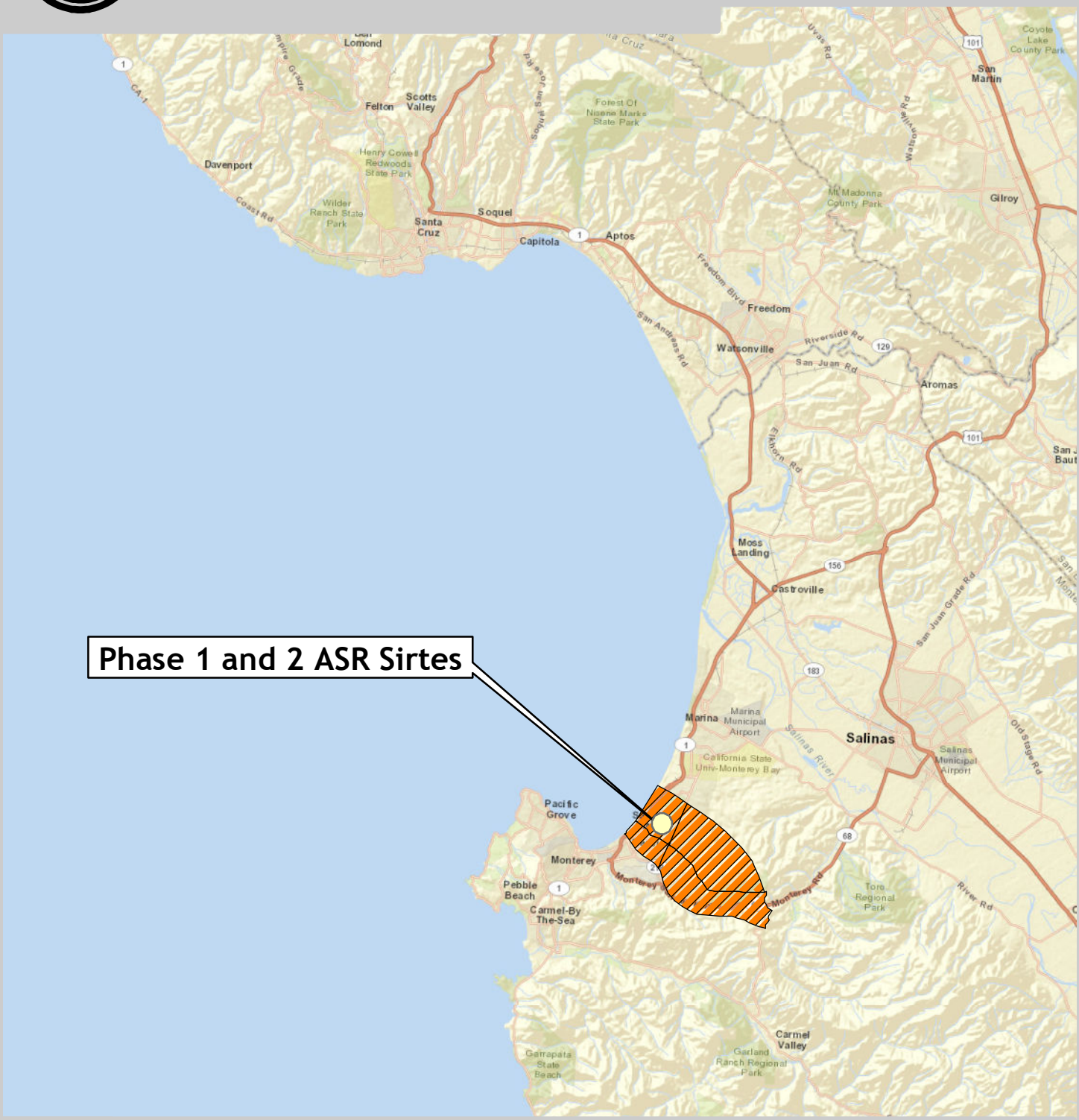
ASR Program Development

The pilot-scale test well was installed in Mission Memorial Park in 1998 under City of Seaside Conditional Use Permit No. UP-97-25 issued in 1997. The testing results indicated that the Basin can be successfully used to store water for future use in the Cal Am system. Following groundwater investigations, exploratory drilling, and injection testing, MPWMD identified a feasible location for Phase 1 of the ASR Program. A joint draft environmental impact report/environmental assessment (EIR/EA), dated March 2006, was prepared in compliance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA), respectively. The EIR/EA discloses the environmental impacts of the proposed ASR project, identifies ways to reduce or avoid adverse environmental impacts resulting from the project, identifies and assesses alternatives to the proposed project, and assesses cumulative impacts. Phase 1 and 2 ASR sites are located in the Northern Coastal portion of the Seaside Basin. (**Figure 4.1**). Three relatively distinct aquifer units occur in this area of the Seaside

Monterey Peninsula Water Management District

Legend

Seaside Groundwater Basin



N
W E
S

0 5 10 20 Miles

Figure 4.1. Location of Aquifer Storage and Recovery Phase 1 and 2 sites, Seaside, CA

Datasources: Parcels - Monterey County
Wells - MPWMD
District Boundaty - MPWMD
Photobase - AMBAG 2008

U:\jlear\ASR Site 2 Fitch School Monitoring well\Fitch_20090707.mxd

Locations are approximate based on MPWMD files.

Basin. From shallow to deep, these aquifer units consist of yellow-brown sand within the Older Dune Sands-Aromas Sand Formations, interbedded brown, yellow and gray sand, silt and clay of the underlying Paso Robles Formation, and white to gray sand members of the Santa Margarita Sandstone. The Santa Margarita Sandstone is the intended aquifer zone for well perforations. The Santa Margarita Sandstone is underlain by dark green to black shale of the Monterey Formation. Groundwater is encountered at a depth of approximately 330 to 350 feet under the Phase 1 and 2 sites. As such, the Older Dune Sands-Aromas Sand Formation is unsaturated, and because the Paso Robles formation is separated from the Santa Margarita Sandstone by an unconformable clay layer, it has a separate unconfined water table from the Santa Margarita Sandstone, which is the targeted geological formation for storage of the injected water.

Water is extracted from the Carmel River Basin during the wet season when excess river flows are available from December through May. The currently permitted maximum annual extraction is 5,326 AF and the maximum instantaneous diversion rate is 14.7 cubic feet per second, in accordance with State Water Resources Control Board Water Right Permits 20808B and C (**Exhibit 4.1**). Timing of these diversions is consistent with National Marine Fisheries Service (NOAA Fisheries) recommendations for maintenance of flows in the river to protect steelhead, a native fish in the Carmel River. According to the permits, diversions will occur only when flow in the Carmel River below River Mile (RM) 5.5 exceeds the recommended minimum bypass flow criteria. The recommended bypass flow ranges from 40 to 200 cfs depending on the season, current flow condition, and expected water year type. Annual diversions vary from year to year, based on the levels of precipitation and subsequent runoff in the Carmel River watershed. Since the ASR Program began, annual diversions have ranged from 12 AF in Water Year 2007 (a "Critically Dry" hydrologic year) to 1,117 AF in Water Year 2011 (an "Above Normal" hydrologic year).

ASR Operations

The ASR facilities are operated in injection mode during the December–May period (up to 183 days), subject to sufficient excess Carmel River flow conditions. The wells are idle during the intervening storage period, likely at least 30 days and typically during the month of June. Pumping for recovery typically occurs during the July through November period (up to 153 days). Upon recovery, water is pumped from the well, treated on site for disinfection and transported through the Cal-Am system for delivery to customers. Currently, there are approximately 40,000 connections to the Cal-Am system.

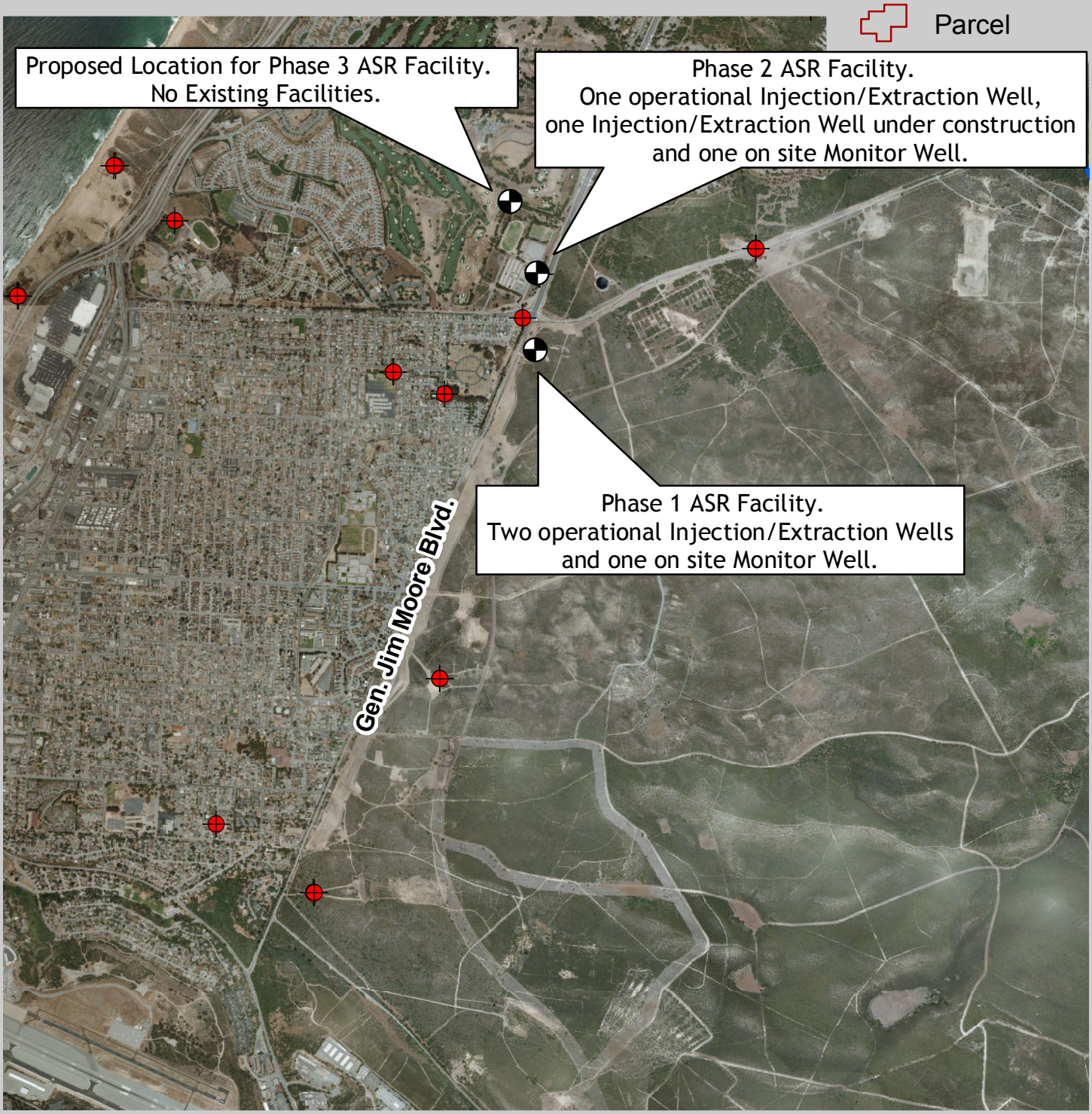
Figure 4.2 shows the locations and status of the three ASR sites and their various stages of construction. Each site is designed to have 2 injection/extraction wells and an onsite monitor well (a requirement from the Regional Water Quality Control Board [RWQCB] Sampling and Analysis Plan). As illustrated in **Figure 4.2**, MPWMD maintains and operates Phase 1, a completed site, and Phase 2, a site containing one injection/extraction well. The second well at the Phase 2 site is currently under construction (July 2012).

Monterey Peninsula Water Management District

Legend

Monitor Well

Parcel



N
W E
S

0 2,500 5,000 10,000 Feet

Figure 4.2. Location of MPWMD ASR Facilities and Monitor Wells, Seaside, CA

Datasources: Parcels - Monterey County
Wells - MPWMD
District Boundaty - MPWMD
Photobase - AMBAG 2008

U:\jlear\ASR Site 2 Fitch School Monitoring well\Fitch_20090707.mxd

Locations are approximate based on MPWMD files.

Local Hydrogeologic Setting

These sites are grouped closely together because the aquifer properties of the Santa Margarita Sandstone are conducive to injection wells. Pumping tests have revealed hydraulic conductivities approaching 10 ft/day and it is not uncommon for wells to have specific capacities over 30 gpm/ft. **Figures 4.3 and 4.4** show the location of a geologic cross-section and the cross-section, respectively. Moving from south to north in the cross-section, there are a number of normal faults that step the granitic basement down and increase the thickness of unconsolidated sediments. The region of the Santa Margarita Sandstone utilized for storage and recovery is located within an anticlinal structure which is juxtaposed against the Monterey Shale to the south by displacement along the Ord Terrace Fault, and the Santa Margarita Sandstone undergoes a facies change with the Purissima Formation to the north. The Santa Margarita Sandstone extends offshore to the west and outcrops to the east on the former Fort Ord Army Base. The Santa Margarita Sandstone is a near-shore deposit lain down during a transgressive sequence of sea-level rise. Due to the relatively small thickness of the Santa Margarita Sandstone and the facies change moving north, it is necessary to drill exploratory boreholes to investigate the feasibility of using the Santa Margarita Sandstone on a site by site basis.

Fitch Middle School Monitor Well, now called Seaside Middle School Monitor Well (the school was recently renamed), was drilled in October 2009 as the exploratory borehole for the Phase 2 site. It was determined through geophysical logging and analysis of the mineralogy of the cuttings that the occurrence of the Santa Margarita was sufficient to support the construction of the Phase 2 site. **Figure 4.5** is the as-built construction, geophysical log, lithology, and hydrostratigraphy associated with the Seaside Middle School Monitor well. As illustrated by the plate, the Santa Margarita Sandstone was encountered at a depth of 710 to 1,060 feet below surface.

Groundwater modeling of the Santa Margarita was performed as a task of the 2006 CEQA/NEPA process to assess the storage capacity of the aquifer. Through this modeling, it was learned the optimal spacing for Phases of ASR sites is approximately 300 feet. To keep costs of interconnecting the sites to the Cal-Am system to a minimum, MPWMD has attempted to locate the next potential sites for ASR within this minimum spacing. The modeling effort also shows the Santa Margarita has the storage capacity to handle more than three ASR sites (six wells), but the delivery capacity of the Cal Am system cannot support more than six wells without additional improvements beyond what is currently planned.

ASR Monitoring Plan

As a requirement for operation, MPWMD is required to sample on and offsite monitoring wells while injecting water. The Sampling and Analysis Plan authorized by the RWQCB is included as **Exhibit 4.2**. A letter from the RWQCB requesting MPWMD to install an offsite

Monterey Peninsula Water Management District

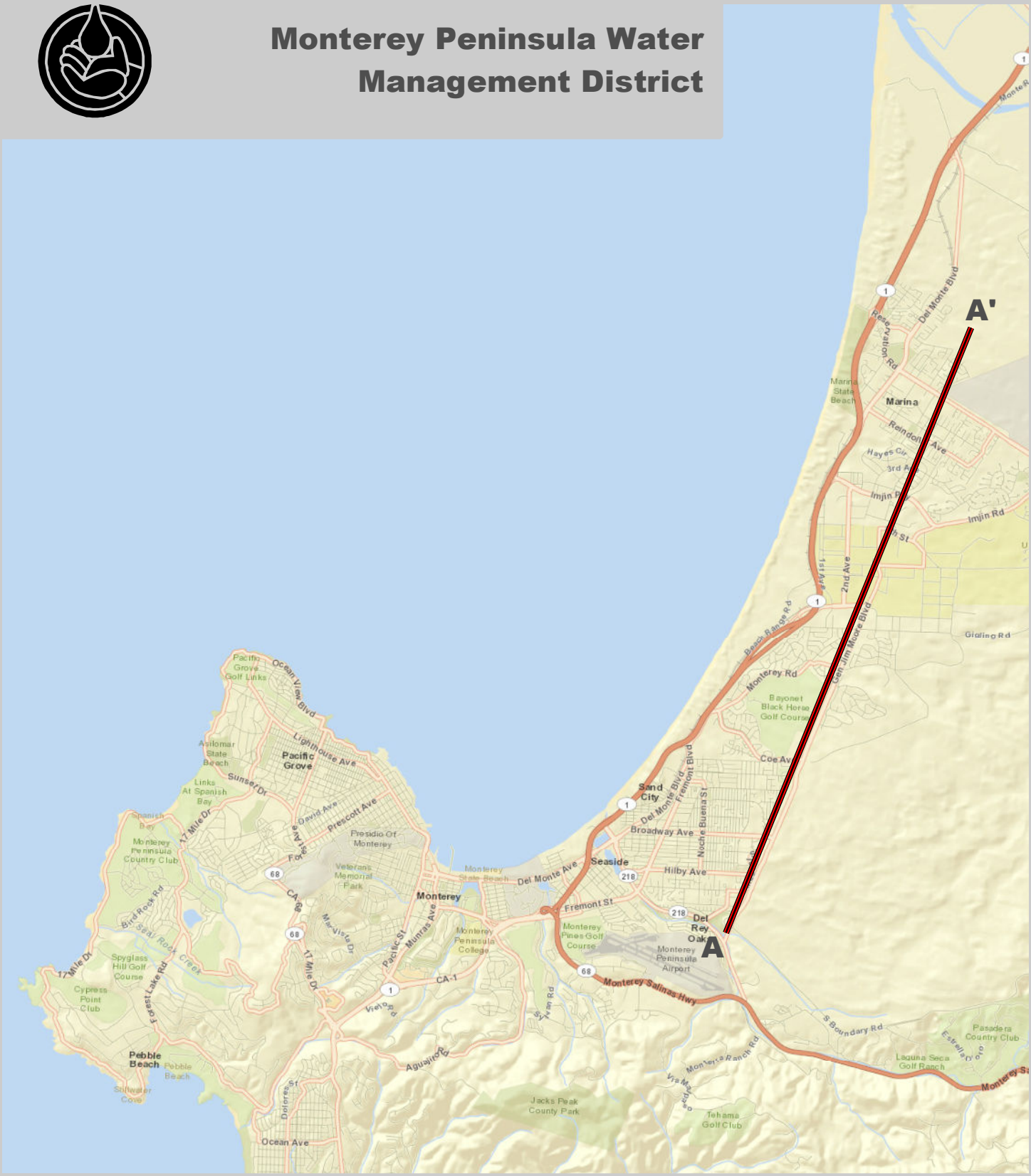


Figure 4.3 Location of Geologic Cross Section, Seaside, CA

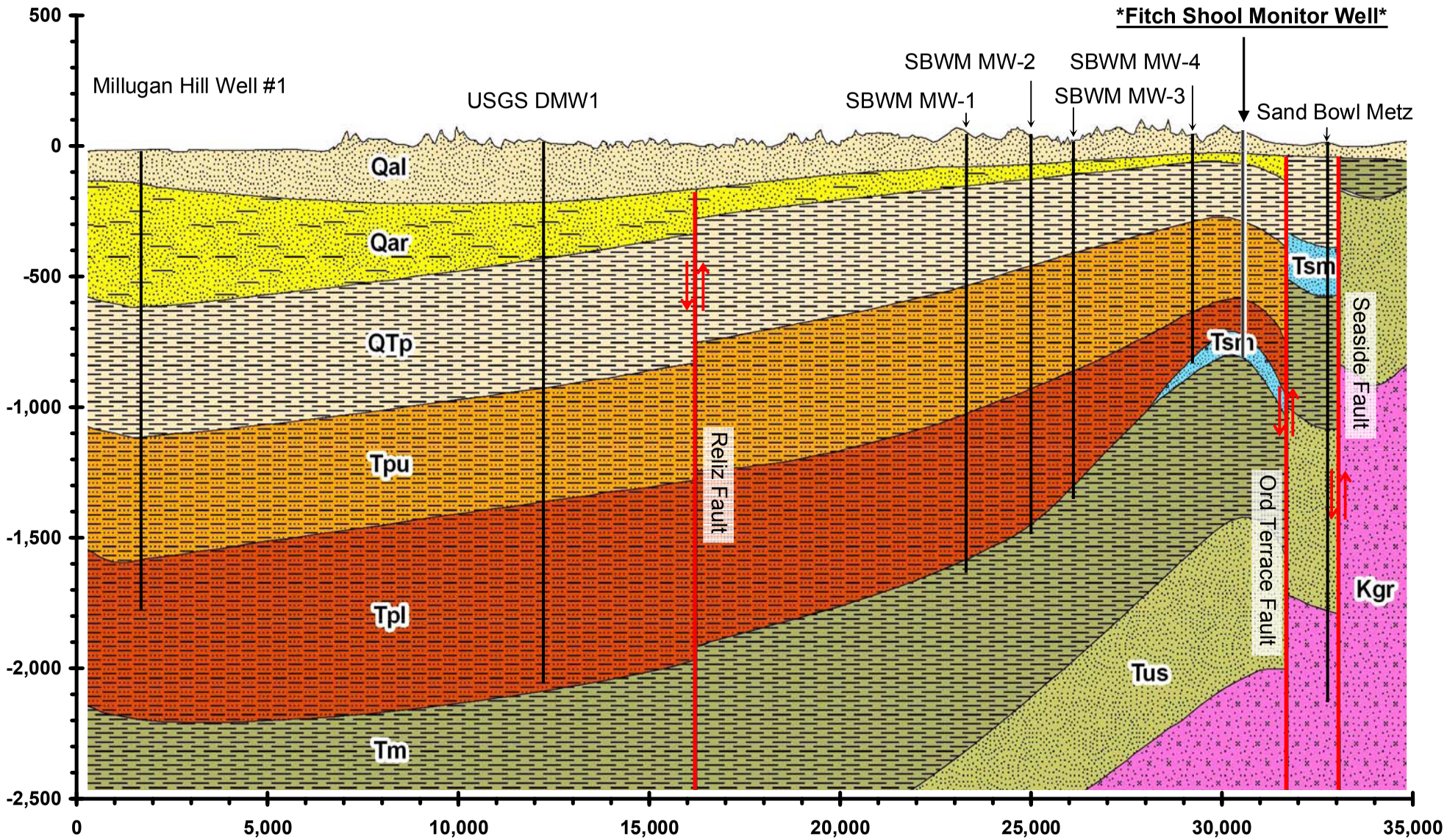
N
W E
S

0 0.5 1 2 3 4 5
Miles

Datasources: Parcels - Monterey County
Wells - MPWMD
District Boundaty - MPWMD
Photobase - AMBAG 2008

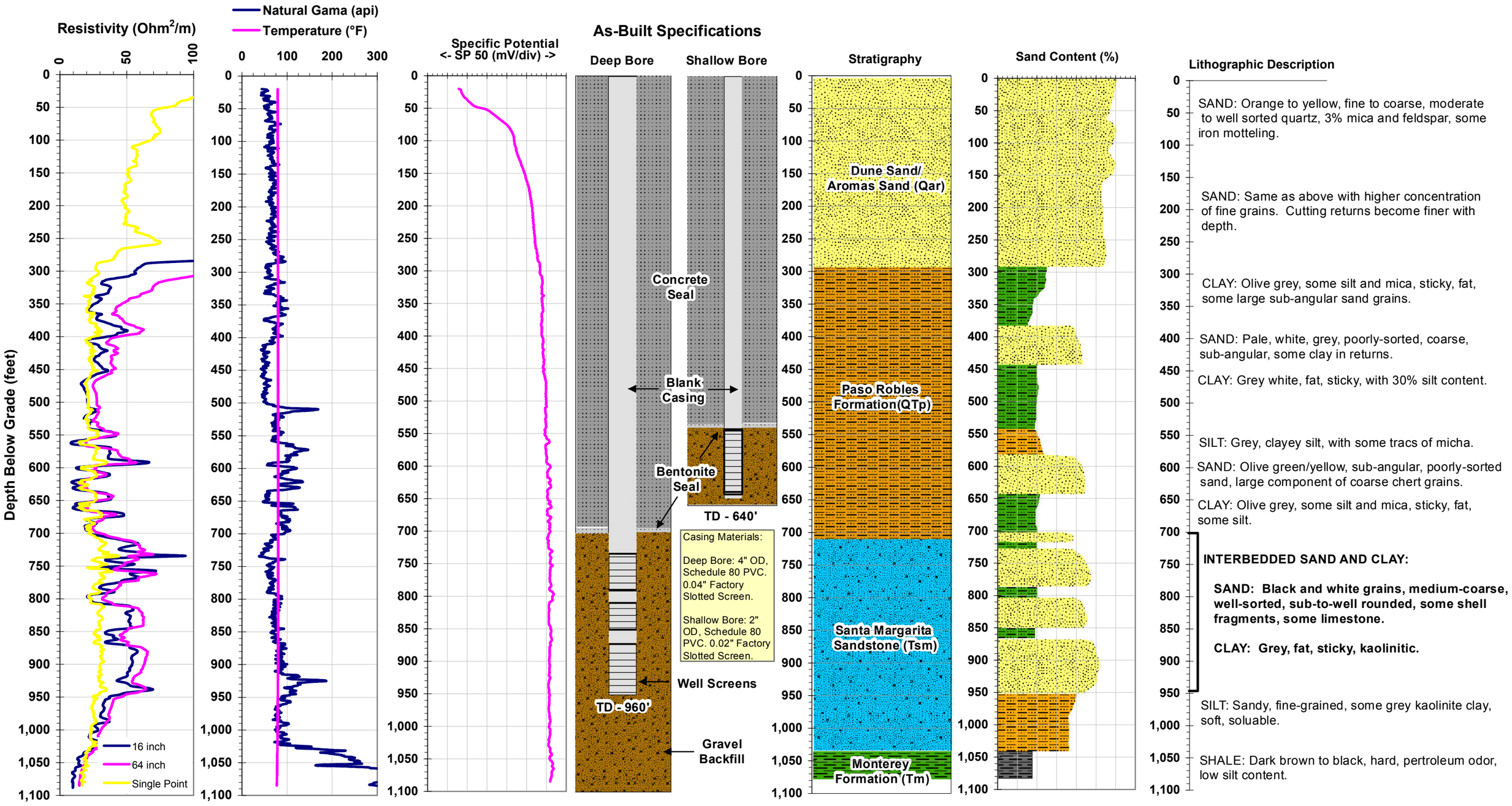
U:\jlear\ASR Site 2 Fitch School Monitoring well\Fitch_20090707.mxd

Locations are approximate based on MPWMD files.



Monterey Peninsula Water Management District

Figure 4.4 Cross Section of the Seaside Groundwater Basin Adapted from Yates 2005, Seaside, Ca



Monterey Peninsula Water Management District

Figure 4.5 Graphic Logs and As-Built Specifications for Fitch School Monitor Well, Seaside, Monterey County, California

Drill Date: 10/11 - 10/16/2009 Driller: Bradley and Sons Inc.
Coordinates: Owner: MPWMD
Geologist: J. Lear

monitor well outside of the zone of influence of the injection wells is included with this application as **Exhibit 4.3**.

ASR Expansion – Next Steps

Construction of the second well at the Phase 2 ASR Site is underway (July 2012). Completion of the second well will mark the completion of Phase 2. MPWMD has identified the next potential site for ASR expansion. **Figure 4.6** shows the location chosen by MPWMD to investigate as the next potentially viable ASR site.

This site was chosen for a number of reasons, including:

1) It is greater than the minimum required distance from Phase 2,
2) MPWMD and Cal Am already have agreements with the City of Seaside and Monterey Peninsula Unified School District to operate a water project on this parcel,
3) Because of the proximity to the previous phases, CEQA will require only an addendum to the previous EIR,
4) Based on the understanding of the Seaside Basin hydrogeologic framework, it is believed there is an occurrence of Santa Margarita Sandstone that would support the third phase, andA water project fits into the uses outlined by the City of Seaside and Monterey County's General Plan.

Proposed Project

MPWMD has been actively pursuing Aquifer Storage and Recovery (ASR) in the Seaside Groundwater Basin as a local water supply augmentation effort since 1996. The Seaside Basin ASR Program was designed to be developed in project phases, subject to available funding and staff resources. Design, engineering and construction are nearly complete for the Phase 1 Project, and the Phase 1 site has been operating as a permanent facility since 2008. The Phase 2 ASR Project is currently under construction and scheduled for completion in 2014. MPWMD is applying for LGA grant funds to drill an exploratory borehole and install a cluster of monitor wells at the site referred to as the potential Phase 3 ASR Project site (Figure 4.6). MPWMD would use the cuttings and geophysical logs to determine if the occurrence of targeted Santa Margarita Sandstone is sufficient to move forward with the third phase at this location. The wells would be instrumented with Level Troll 700 pressure transducers and a submersible pump would be installed in the deep completion. Regardless of the feasibility determination as a viable future ASR expansion site, MPWMD will receive value from this monitor well installation in one of two ways: (1) if the site is viable, MPWMD can proceed with permitting, design, bonding, and construction of ASR Phase 3, or (2) if it is not viable, the monitor well installation will be used as the off-site monitor well required by the RWQCB as part of the ongoing monitoring program in the basin associated with the ASR Program.

Monterey Peninsula Water Management District

Legend

- Active Well
- Monitoring Well
- Parcel

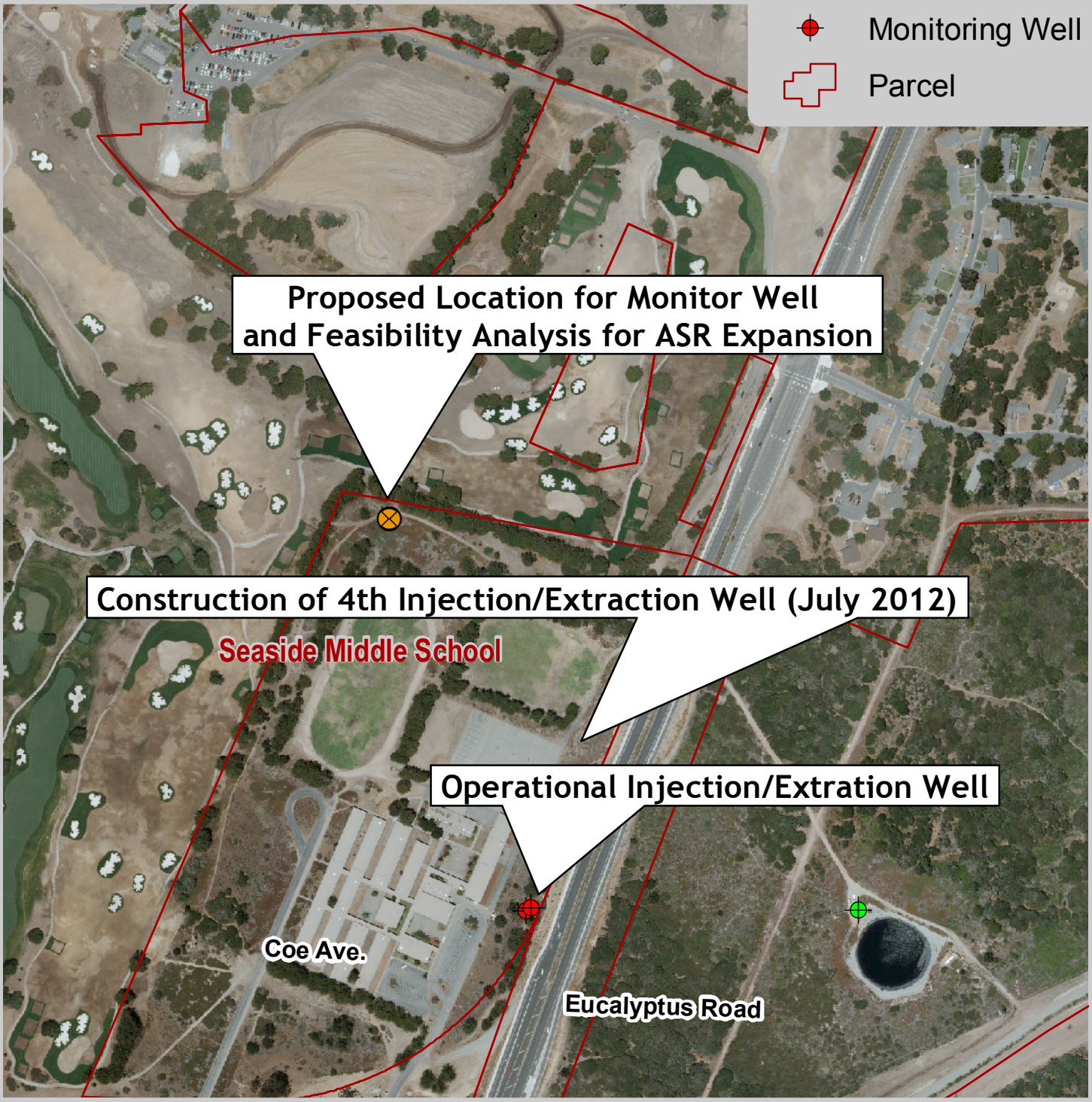


Figure 4.6 Location of Proposed Monitor Well, Seaside, CA

N
W E
S

0 500 1,000 2,000 Feet

Datasources: Parcels - Monterey County
Wells - MPWMD
District Boundaty - MPWMD
Photobase - AMBAG 2008

U:\jlear\ASR Site 2 Fitch School Monitoring well\Fitch_20090707.mxd

Locations are approximate based on MPWMD files.

- Project goals – Installation of a monitoring well at the proposed location will allow MPWMD to better understand the hydrostratigraphy of the Seaside Groundwater Basin, determine if the selected site is viable for expansion of the ASR program, and either fulfill the requirement for an off-site monitoring well for ASR Phases 1 and 2 or an onsite monitoring well for ASR Phase 3. The goals of this project are to improve the groundwater management, knowledge of basin hydrostratigraphy, provide ongoing water level and water quality monitoring, and aid the management of the basin in the following categories;
    - Collect and Evaluate data related to groundwater management – Siting of the next phase of ASR depends on these data,
    - Evaluate the potential for artificial recharge and conjunctive use opportunities – siting of the next phase of ASR, operation of current phases, and regulatory compliance will be gained,
    - Perform aquifer tests – MPWMD and Cal Am coordinate on the pumping schedule of wells when they are in recovery mode. This provides the opportunity to perform distance vs. drawdown and distance vs. time aquifer testing to measure the long term effects of injection and extraction on the Santa Margarita Sandstone. Data from these tests are presented in Exhibit 4.3, an operations and monitoring report for WY 2010, presents examples of this monitoring.
    - Gather information for improving groundwater management – As MPWMD expands its ASR program, each CEQA addendum requires additional groundwater modeling of the Santa Margarita Sandstone. With each iteration of modeling, MPWMD better refines the estimate of the maximum storage capacity of the sandstone.
    - Install monitoring well – The installation of this monitor well will either serve the purpose of an on-site or off site monitoring well required by the RWQCB for operation of the ASR Program,
    - Evaluate alternatives to improve water supply reliability or improve water quality – If the borehole shows expansion of ASR at this site is feasible, the data allows MPWMD to move forward with the third phase of ASR which will bring an additional 1,000 AF per year average of water supply to the Peninsula.
    - Integrate groundwater management with other water management strategies – Because both of the sources of water, the Seaside Groundwater Basin and the Carmel Valley Alluvial Aquifer, the Monterey Peninsula utilizes for water supply are threatened by overdraft, expansion or better management of ASR provides the ability to supply relief to the most threatened resource on a water year by water basis. On

wetter water years the Carmel River Alluvial Aquifer is not in danger of loss of riparian corridor and habitat, so excess water can be injected into the Seaside Groundwater Basin and counted as replenishment with the Seaside Watermaster. During drier years, the Carmel River Aquifer is threatened by overproduction and recovery of injected water can be pumped in lieu of pumping the Carmel Alluvial Aquifer leaving more water for environmental purposes.

- Facilities and equipment – MPWMD proposes to contract with a licensed C-57 contractor to install a cluster of shallow and deep monitor wells at the proposed site. Based on the understanding of the hydrostratigraphy, MPWMD proposes to drill a deep bore to ~ 1150 feet below grade and obtain a geophysical log. If the geology encountered is as expected MPWMD will install a 4" schedule 80 PVC casing with a screened interval from ~700 to ~900 feet below surface in the Santa Margarita Sandstone. MPWMD will also install a shallow bore and construct a monitor well with 2"schedule 40 PVC casing with a screened interval of ~ to . A submersible pump will be installed in the deep completion to allow for collection of groundwater samples. Level Troll 700s, rugged cables, and a rugged reader to interface with the Level Trolls will be purchased from Insitu Inc. and installed in the shallow and deep completion. The site access agreement and conditional use permit will be amended to include continuous monitoring of the new monitor well.

- Benefits of project to GWMP – As previously discussed in attachment 3 of this application, the Seaside Groundwater Basin does not have an adopted AB 303 groundwater management plan because it is an adjudicated basin. This project does help to meet the goals lain down by this decision. The monitor well will either lead to the expansion of the ASR Program or provide regulatory compliance and better groundwater management operations of ASR Phase 1 and 2. Higher efficiency of operations will lead to assigning larger volumes of injected water as replenishment water to satisfy Cal Am's current deficit. Greater recovery volumes of injected water offset pumping of native Seaside Groundwater Basin water and help to bring overall pumping closer to the natural safe yield identified in the adjudication decision.

- Quality of information and methods of data collection – Installation of this monitoring well will allow MPWMD to obtain geophysical, water quality, and continuous water level data. Methods and quality of information are outlined below;

- Geophysical – A geophysical log will be run in the deep borehole to collect resistivity (16 and 64 inch), temperature, natural gamma, and spontaneous potential. Data from this log will be compared to logs collected from nearby wells constructed in the corresponding strata. The same geophysical methods used in the previous logs will be repeated so that the tolerances for all measurements are comparable as the resistivity, gamma, and spontaneous potential logs will be the metric used to evaluate the viability of this site for ASR expansion.
- Water level – Water level data will be collected using Level Troll 700 pressure transducers hung on rugged cables. Using rugged cabling allows MPWMD staff to download the data files without removing the logger from the well. This will reduce errors associated with the logger not returning to exactly the same depth after downloading data files. Manual water level measurements will be taken with an electric wire sounder graduated to 0.01 inches. Manual measurements will be compared to downloaded data files and used to eliminate any drift in water levels reported by the data logger. Because the Level troll 700 allows for log cycle time series water level logging, MPWMD staff will be able to use the well for pump testing and derive aquifer parameters from the water level data. MPWMD tracks any changes in aquifer parameters as a component of the monitoring plan associated with ASR operations. Water level data will also be used to better calibrate future model runs associated with subsequent ASR phases and environmental compliance (CEQA). Regardless of if the next stage of ASR is constructed at this site, water level data will be reported to RWQCB to satisfy the requirement of reporting for an on-site or off site monitor well. This well will be added to the CASGEM monitoring well network for the Seaside Groundwater Basin and the data reported to DWR accordingly.

- Water quality – This monitor well will be added to SAP previously referenced in the application and water quality data will be collected from the well as prescribed from the SAP. All samples will be sent to a registered laboratory under chain of custody control and all hold times will be honored as some of the constituents analyzed for as disinfection byproducts and have short hold times. If it is determined this site is not feasible for ASR expansion, the well will be samples as an off-site monitor well. Water quality analysis performed will be evaluated to determine the migration of injected water in the Santa Margarita Sandstone. Particularly, TDS and ORP (oxidation reduction potential) will be evaluated because of the wide variance between native

groundwater and injectate in these parameters. Ratios of native groundwater to injectate will be calculated using these data. If the well is an on-site monitor well, the data will be used to watch the decay of disinfection byproducts in the aquifer. California Department of Health Services requires two sequential samples collected within a week having negative results for disinfection byproducts prior to producing water for delivery to Cal Am's system. Chloride concentrations and ORP are used in conjunction to track the degradation of chlorine and disinfection byproducts of injected water. Through operation of the Phase 1 site, MPWMD has learned that this degradation process takes approximately 45 days.

- Collaboration and reporting stakeholders and regulators - Monitoring of well will be performed by MPWMD staff. Water quality sampling will be completed as the SAP outlines and water levels will be collected by the pressure transducers installed in the well. These data will be collated and reported to the RWQCB annually. Quarterly meetings are held with Cal Am, NOAA Fisheries, and California Department of Fish and Game to discuss water production, regulatory limits, and operations of ASR.. Exhibit 4.3 is the agenda for the most recent Quarterly Water Budget Committee meeting. This is the forum where all stakeholders decide to use the injected water for either the benefit of the River (recover the water) or the Seaside Groundwater Basin (replenishment). MPWMD is a voting member of the Seaside Watermaster TAC. Exhibit 4.4 is the most recent agenda from this meeting. At these meetings ASR operations and replenishment of groundwater are discussed in great detail. These meetings are held monthly.

- Funding after grant funds are expended – MPWMD budgets annually for operation and environmental compliance of the ASR program. Monitoring of this well will be included in those costs. The costs will be staff time to monitor the well, laboratory fees, and gasoline to run an electric generator to obtain a water sample. All data, water level and water quality, are input to MPWMD database which is a SQL based database system. This database is used to generate reports which are included in reporting to the RWQCB, Cal Am, and the Seaside Watermaster. Staff time is used for this task and it is quality controlled by a California Certified Hydrogeologist.

Exhibit 4.1

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

AMENDED PERMIT FOR DIVERSION AND USE OF WATER

APPLICATION 27614C PERMIT 20808C

of: Monterey Peninsula Water Management District and
California American Water
c/o Monterey Peninsula Water Management District
P.O. Box 85
Monterey, CA 93942-0085

The amended permit is being issued in accordance with the redelegations of authority (Resolution No. 2007-0057.) Therefore, an amended permit on **Application 27614C** filed on **December 16, 1982** has been approved by the State Water Board SUBJECT TO PRIOR RIGHTS and to the limitations and conditions of this amended permit

Permittees are hereby authorized to divert and use water as follows:

1. Source of water

Source:	Tributary to:
(1) Carmel River	**Pacific Ocean**
(5-32) Carmel River Subterranean Stream	**Pacific Ocean**

within the County of **Monterey.**

2. Location of points of diversion, points of injection and points of recovery.

Points of Diversion to Offstream Storage (By California Coordinate System of 1983-Zone 4)	40-acre subdivision of public land survey or projection thereof	Section (Projected)	Township	Range	Base and Meridian
(1) San Clemente Dam: North 2,053,010 feet and East 5,765,040 feet	**NW¼ of SW¼**	**24**	**17S**	**2E**	**MD**
(5) Canada Well: North 2,092,010 feet and East 5,715,190 feet	**NE¼ of SW¼**	**17**	**16S**	**1E**	**MD**
(6) San Carlos Well: North 2,091,660 feet and East 5,717,990 feet	**NE¼ of SE¼**	**17**	**16S**	**1E**	**MD**
(7) Cypress Well: North 2,087,610 feet and East 5,724,640 feet	**SW¼ of NW¼**	**22**	**16S**	**1E**	**MD**

(8) Pearce Well: North 2,087,360 feet and East 5,726,140 feet	SE¼ of NW¼	22	16S	1E	MD
(9) Schulte Well: North 2,087,410 feet and East 5,729,240 feet	SW¼ of NW¼	23	16S	1E	MD
(10) Manor #2 Well: North 2,086,460 feet and East 5,731,340 feet	NE¼ of SW¼	23	16S	1E	MD
(11) Begonia #2 Well: North 2,085,510 feet and East 5,734,740 feet	NW¼ of SW¼	24	16S	1E	MD
(12) Berwick #7 Well: North 2,084,460 feet and East 5,735,290 feet	SW¼ of SW¼	24	16S	1E	MD
(13) Berwick #8 Well: North 2,084,510 feet and East 5,736,090 feet	SE¼ of SW¼	24	16S	1E	MD
(15) Scarlett #8 Well: North 2,084,510 feet and East 5,740,590 feet	SW¼ of SW¼	19	16S	2E	MD
(17) Los Laureles #5 Well: North 2,080,310 feet and East 5,748,590 feet	NW¼ of SE¼	29	16S	2E	MD
(18) Los Laureles #6 Well: North 2,079,510 feet and East 5,749,440 feet	SE¼ of SE¼	29	16S	2E	MD
(19) West Garzas #4 Well: North 2,075,260 feet and East 5,752,190 feet	NE¼ of SW¼	33	16S	2E	MD
(20) Garzas Creek #3: North 2,073,610 feet and East 5,753,040 feet	SW¼ of SE¼	33	16S	2E	MD
(21) Panetta #2 Well: North 2,072,110 feet and East 5,754,740 feet	NW¼ of NW¼	3	17S	2E	MD
(22) Panetta #1 Well: North 2,071,960 feet and East 5,754,640 feet	NW¼ of NW¼	3	17S	2E	MD
(17) Robles #3 Well: North 2,067,110 feet and East 5759,490 feet	NE¼ of NE¼	10	17S	2E	MD
(24) Russell #4 Well: North 2,061,810 feet and East 5,764,040 feet	SW¼ of SE¼	14	17S	2E	MD
(25) Russell #2 Well: North 2,061,410 feet and East 5,764,040 feet	SE¼ of SE¼	14	17S	2E	MD
(26) A Well: North 2,091,070 feet and East 5,706,020 feet	SE ¼ of SE ¼	13	16S	1W	MD

(27) B Well: North 2,091,970 feet and East 5,709,420 feet	**NE ¼ of SW ¼**	**18**	**16S**	**1E**	**MD**
(28) C Well: North 2,087,220 feet and East 5,724,470 feet	**SW ¼ of NW ¼**	**22**	**16S**	**1E**	**MD**
(29) D Well: North 2,087,370 feet and East 5,7729,270 feet	**SW ¼ of NW ¼**	**23**	**16S**	**1E**	**MD**
(30) E Well: North 2,084,920 feet and East 5,737,320 feet	**SW ¼ of SE ¼**	**24**	**16S**	**1E**	**MD**
(31) F Well: North 2,072,120 feet and East 5,754,670 feet	**NW ¼ of NW ¼**	**3**	**17S**	**2E**	**MD**
(32) G Well: North 2,070,270 feet and East 5,755,270 feet	**SW ¼ of NW ¼**	**3**	**17S**	**2E**	**MD**

Points of Injection and Recovery (By California Coordinate System of 1983-Zone 4)	40-acre subdivision of public land survey or projection thereof	Section (Projected)	Township	Range	Base and Meridian
Seaside Middle School #1 Injection & Recovery Well North 2,122,180 feet and East 5,735,150 feet	**SE¼ of SE¼**	**13**	**15S**	**1E**	**MD**
Seaside Middle School #2 Injection & Recovery Well North 2,122,530 feet and East 5,735,250 feet	**SE¼ of SE¼**	**13**	**15S**	**1E**	**MD**
ASR-1 Injection & Recovery Well North 2,120,840 feet and East 5,734,970 feet	**NE¼ of NE¼**	**23**	**15S**	**1E**	**MD**
ASR-2 Injection & Recovery Well North 2,121,080 feet and East 5,735,250 feet	**SE¼ of SE¼**	**14**	**15S**	**1E**	**MC**

3. Purpose of use	4. Place of use	Section (Projected)	Township	Range	Base and Meridian	Acres
Municipal	**Within the boundaries of Monterey Peninsula Water Management District**					**110,000**

The points of diversion and place of use are shown on maps dated June 2008 and filed with the State Water Board.

The following acronyms are used in this permit:

Monterey Peninsula Water Management District – MPWMD or Permittee
National Marine Fisheries Service – NMFS
California Department of Fish and Game – DFG
California American Water – Cal-Am

5. The water appropriated shall be limited to the quantity which can be beneficially used and shall not exceed **two thousand nine hundred (2,900) acre-feet per an**num to be collected to underground storage in Seaside Groundwater Basin at a maximum instantaneous rate of **eight (8.0) cubic feet per second** from December 1 of each year to May 31 of the succeeding year.

(0000005H)

6. Permittees' rights under this permit are junior to the rights of persons diverting water for reasonable beneficial use under valid and properly exercised riparian, overlying, and pre- and post-1914 appropriative claims of right which have a priority which is superior to the priority of Application 27614C.

(050T001)

7. Complete application of the water to the authorized use shall be made by December 1, 2020.

(0000009)

8. This permit shall not be construed as conferring upon the permittees right of access to the points of diversion.

(0000022)

9. Cal-Am shall consult with the Division of Water Rights and, within one year from the date of this permit, shall submit to the State Water Board its Urban Water Management Plan as prepared and adopted in conformance with Section 10610, et seq. of the California Water Code, supplemented by any additional information that may be required by the Board.

   All cost-effective measures identified in the Urban Water Management Plan and any supplements thereto shall be implemented in accordance with the schedule for implementation found therein.

(0000029A)

10. If it is determined after permit issuance that the as-built conditions of the project are not correctly represented by the map(s) prepared to accompany the application, permittees shall, at their expense, have the subject map(s) updated or replaced with equivalent as-built maps(s). Said revision(s) or new map(s) shall be prepared by a civil engineer or land surveyor registered or licensed in the State of California and shall meet the requirements prescribed in section 715 and sections 717 through 723 of the California Code of Regulations, Title 23. Said revision(s) or map(s) shall be furnished upon request of the Deputy Director for Water Rights.

(0000030)

11. Permittees shall (1) install devices to measure the instantaneous rate and cumulative quantity of water diverted from the Carmel River and placed into underground storage and (2) install devices to measure the cumulative quantity of Carmel River water recovered from underground storage and placed to beneficial use. All measuring devices and the method of determining the quantity of water recovered from underground storage shall be approved by the State Water Board. All measuring devices shall be properly maintained.

(0060900) (0080900)

12. Permittees shall calibrate and maintain, a continuous flow measurement device, satisfactory to the State Water Board, at Carmel River at Highway 1 Bridge (River Mile 1.1)

    If any measuring device is rendered inoperative for any reason, all diversions under this permit shall cease until such time as the device is restored to service.

    These requirements shall remain in force as long as water is diverted by permittees (or successors-in-interest) under any permit or license issued pursuant to Application 27614C.

    (0060062BP) (0000204)

13. Within six months of the issuance of this permit, the permittees shall submit a Compliance Plan for approval by the Deputy Director for Water Rights that will demonstrate compliance with the flow bypass terms specified in this permit. The Compliance Plan shall include the following:

    a. A description of the gages and monitoring devices that will be installed or have been installed to measure stream flow and diversion to underground storage.
    b. A time schedule for installation of these facilities.
    c. A description of the frequency of data collection and the methods for recording diversions, bypass flows and storage levels.
    d. An operation and maintenance plan that will be used to maintain gages and monitoring devices in good condition.

    The permittees shall be responsible for all costs associated with developing the Compliance Plan, and installing and maintaining all monitoring facilities described in the Compliance Plan.

    The monitoring data shall be maintained by the permittees for ten years from the date of collection and made available to the Deputy Director for Water Rights, upon request. Any non-compliance with the terms of the permit shall be reported by the permittees promptly to the Deputy Director for Water Rights.

    (0000070)

14. The priority of this permit shall be junior to any permit issued on the applications set forth in Table 13 of Decision 1632 or for the persons named in Table 13 of Decision 1632 for an amount of water not to exceed the quantity set forth in the column titled *"Quantity Reserved by SWRCB for Future Appropriations,"* or as modified in accordance with the procedures set forth in Decision 1632, Permit Condition 10.

    (0500800)

15. Permittees shall implement the Riparian Corridor Management Program outlined in the MPWMD's November 1990 Water Allocation Mitigation Program until Application 27614C is licensed. Survey data and analysis of results shall be submitted annually to DFG for review and comment.

    (0490500)

16. For the protection of fisheries, wildlife, and other instream uses in the Carmel River, diversions under this permit shall be subject to maintenance of minimum mean daily instream flows as specified in Table A, Minimum Mean Daily Instream Flow Requirements. No water shall be diverted under this permit if the instream flows would be reduced by such diversion below the minimum mean daily flows specified in Table A. To ensure compliance with these conditions, by September 30 of each year, Permittees shall file a report with the Deputy Director for Water Rights, DFG and NMFS containing the following information:

    a. Dates during the previous period of December 1 to May 31 of the succeeding year when water was diverted under this permit; and
    b. Mean daily flows recorded at the Carmel River at Highway 1 Bridge gage.

TABLE A	
MINIMUM MEAN DAILY INSTREAM FLOW REQUIREMENTS	
December 1-April 15	**April 16-May 31**
Prior to Carmel River lagoon opening to the ocean [1]: May divert with minimum bypass of **40 cfs** at the Carmel River at Highway 1 Bridge gage. **Following Carmel River lagoon opening to the ocean:** May divert with minimum bypass of **120 cfs** at the Carmel River at Highway 1 Bridge gage.	May divert with minimum bypass of **80 cfs** at the Carmel River at Highway 1 Bridge gage.

[1] On December 1, if water in the lagoon is flowing to the ocean, the lagoon shall be deemed to be open to the ocean. If on December 1 water in the lagoon is not flowing to the ocean, the lagoon shall be deemed to be open to the ocean when the lagoon level drops rapidly from a stable elevation to a lower elevation as evidenced by the water surface elevation gage located at the Carmel Area Wastewater District effluent pipeline across the south arm of the lagoon. This elevation gage is operated by Monterey Peninsula Water Management District.

(0400500)

17. Until the project authorized by this permit becomes fully operational, permittees shall continue to negotiate with DFG to maintain, insofar as possible, a minimum 5 cubic feet per second bypass flow below San Clemente Dam as measured at the Sleepy Hollow weir.

(0400500)

18. To prevent stranding of spring and fall steelhead juveniles and smolts during critically dry conditions, permittees shall continue to implement Fisheries Mitigation Measure 3 as outlined in the MPWMD's November 1990 Water Allocation Mitigation Program ("Rescue juveniles downstream of Robles del Rio in summer").

(0400500)

19. Permittees shall, in consultation with DFG, conduct studies to determine the effectiveness of fish rescue operations specified in the MPWMD's November 1990 Water Allocation Mitigation Program. The results shall be submitted to the Deputy Director for Water Rights, for review and approval.

(0400500)

20. Permittees shall implement the Lagoon Mitigation Program outlined in the MPWMD's November 1990 Water Allocation Mitigation Program. Annual reports shall be submitted to the Department of Parks and Recreation, DFG, and the Deputy Director for Water Rights for review.

(0400500)

21. Permittees shall maintain in good working order all riparian irrigation systems owned or operated by permittees under the MPWMD's November 1990 Water Allocation Mitigation Program for use as needed during dry and critically dry water years.

(0400500)

22. Recovery of Stored Water: Not later than June 1 of each year, the amount of water to be recovered from groundwater storage during that year's June 1 through November 30 period shall be determined by permittees, in consultation with DFG and NMFS, using the following procedures.

    a. The maximum amount for recovery each year (pumping of water previously diverted from the Carmel River and injected in the Seaside Groundwater Basin) was determined to be 1,500 acre-feet, using the logic developed for the computer simulation made by MPWMD's Carmel Valley Simulation (CVSIM) model. In any year, an alternative recovery amount may be agreed upon by permittees, DFG, and NMFS. The selected recovery amount shall be deemed the "Determined Recovery Amount."

    b. To the maximum extent operationally feasible, during each recovery season, permittees shall use their best efforts to recover the Determined Recovery Amount.

    c. Each year at the end of the injection season, the amount of water injected into the Seaside Basin during the current injection season shall be calculated. If this amount equals or exceeds the Determined Recovery Amount, then the Determined Recovery Amount shall be recovered. Any water injected during the current injection season that is in excess of the Determined Recovery Amount shall be added to "Carryover Storage."

    d. If the total amount of water injected during the current injection season is less than the Determined Recovery Amount, and the Carryover Storage from previous injection seasons is sufficient to make up the difference, then the Determined Recovery Amount shall be recovered. In this case, water from Carryover Storage shall be produced to supplement water injected during the current injection season to meet the Determined Recovery Amount. Any water that is produced from Carryover Storage to meet the Determined Recovery Amount shall be subtracted from Carryover Storage.

    e. If the total amount of water injected during the current injection season is less than the Determined Recovery Amount, and the Carryover Storage from previous injection seasons is insufficient to make up the difference, then the Determined Recovery Amount cannot be met. Instead, the amount of water recovered that year will be the total amount injected during the current injection season plus the total amount of Carryover Storage, if any, from previous injection seasons.

    f. Following the above decisions, if the amount of water stored by injection in the Seaside Groundwater Basin exceeds 7,200 acre-feet on June 1, the amount in excess of 7,200 acre-feet shall be added to the amount available for recovery that year.

    g. The actual amount of water produced from storage for recovery each year shall be uniformly distributed over the recovery season, unless modified and agreed upon by permittees, DFG, and NMFS.

    h. The water produced by permittees from the Aquifer Storage and Recovery (ASR) wells will be used to offset production from the Carmel River that would otherwise occur during the low-flow season. In any year that ASR water is recovered and delivered to the California American Water Company (Cal-Am) distribution system, Cal-Am shall, to the maximum extent operationally feasible, reduce water diversion from its Carmel River sources. The amount of ASR water that is recovered each year shall be subtracted from Cal-Am's total annual diversion allowance from its Carmel River sources in excess of Cal-Am's recognized rights. This condition shall sunset when the Deputy Director of Water Rights concurs in writing that Cal-Am has obtained a permanent supply of water that has been substituted for water diverted in excess of Cal-Am's recognized rights pursuant to Condition No. 11 of Order WR 2009-0060.

i. The following procedures will be implemented to facilitate cooperative compliance monitoring of the reductions in dry season (June-November) diversions from the Carmel River Aquifer that will be offset by utilizing water recovered from the ASR wells:

1) Cal-Am will provide copies by e-mail of its weekly "Carmel Valley & Seaside Production Report" to one designated contact each for DFG and NMFS.
2) This e-mail report will show daily values in acre-feet of the water produced from each source, vs. daily targets. These daily targets are derived from the monthly production targets developed as part of the Cal-Am/MPWMD Quarterly Water Budget process.
3) If the amount of water produced differs significantly from daily targets for more than two weeks, the designated DFG or NMFS contact can choose to call for the four parties to meet and confer on ongoing Cal-Am operations during the first five business days of the succeeding month.

In any case, these production numbers are and will continue to be reviewed as part of the Cal-Am/MPWMD Quarterly Water Budget process, which includes two regularly scheduled quarterly meetings during the dry season between permittees, DFG, and NMFS. DFG's and NMFS' ability to call for a monthly meeting to review Cal-Am's patterns of production for compliance with the intended offset of Carmel River Aquifer diversions by production from the ASR wells, will be in addition to the regularly-scheduled Quarterly Water Budget Meetings.

(0080900)

ALL PERMITS ISSUED BY THE STATE WATER BOARD ARE SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

A. The amount authorized for appropriation may be reduced in the license if investigation warrants.

(0000006)

B. Progress reports shall be submitted promptly by permittees when requested by the State Water Board until a license is issued.

(0000010)

C. Permittees shall allow representatives of the State Water Board and other parties, as may be authorized from time to time by said State Water Board, reasonable access to project works to determine compliance with the terms of this permit.

(0000011)

D. Pursuant to California Water Code sections 100 and 275, and the common law public trust doctrine, all rights and privileges under this permit and under any license issued pursuant thereto, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of State Water Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the State Water Board may be exercised by imposing specific requirements over and above those contained in this permit with a view to eliminating waste of water and to meeting the reasonable water requirements of permittees without unreasonable draft on the source. Permittees may be required to implement a water conservation plan, features of which may include but not necessarily be limited to (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this permit and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this

paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the State Water Board also may be exercised by imposing further limitations on the diversion and use of water by the permittees in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the State Water Board determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution Article X, Section 2; is consistent with the public interest; and is necessary to preserve or restore the uses protected by the public trust.

(0000012)

E. The quantity of water diverted under this permit and under any license issued pursuant thereto is subject to modification by the State Water Board if, after notice to the permittees and an opportunity for hearing, the State Water Board finds that such modification is necessary to meet water quality objectives in water quality control plans which have been or hereafter may be established or modified pursuant to Division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the State Water Board finds that (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges.

(0000013)

F. This permit does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, §§ 2050 - 2097) or the federal Endangered Species Act (16 U.S.C.A. §§ 1531 - 1544). If a "take" will result from any act authorized under this water right, the permittees shall obtain authorization for an incidental take prior to construction or operation of the project. Permittees shall be responsible for meeting all requirements of the applicable Endangered Species Act for the project authorized under this permit.

(0000014)

G. Permittees shall maintain records of the amount of water diverted and used to enable the State Water Board to determine the amount of water that has been applied to beneficial use pursuant to Water Code Section 1605.

(0000015)

H. No work shall commence and no water shall be diverted, stored or used under this permit until a copy of a stream or lake alteration agreement between the State Department of Fish and Game and the permittees is filed with the Division of Water Rights. Compliance with the terms and conditions of the agreement is the responsibility of the permittees. If a stream or lake agreement is not necessary for this permitted project, the permittees shall provide the Division of Water Rights a copy of a waiver signed by the State Department of Fish and Game.

(0000063)

This permit is issued and permittees take it subject to the following provisions of the Water Code:

Section 1390. A permit shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code), but no longer.

Section 1391. Every permit shall include the enumeration of conditions therein which in substance shall include all of the provisions of this article and the statement that any appropriator of water to whom a permit is issued takes it subject to the conditions therein expressed.

Section 1392. Every permittee, if he accepts a permit, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor shall at any time be assigned to or claimed for any permit granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any permittee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any permittee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

STATE WATER RESOURCES CONTROL BOARD

James W. Kassel

for *Barbara Evoy, Deputy Director*
Division of Water Rights

Dated: NOV 30 2011

Exhibit 4.2

MONTEREY PENINSULA
AQUIFER STORAGE AND RECOVERY PROJECT

SAMPLING AND ANALYSIS PLAN

Prepared for:

June 2012

MONTEREY PENINSULA
AQUIFER STORAGE AND RECOVERY PROJECT

GROUNDWATER SAMPLING AND ANALYSIS PLAN

INTRODUCTION

This Groundwater Sampling and Analysis Plan (SAP) has been developed for the Monterey Peninsula Aquifer Storage and Recovery (ASR) Project. The project is cooperatively implemented by the Monterey Peninsula Water Management District (MPWMD or District) and California American Water (CAW), and generally involves the diversion of excess winter/spring flows from the Carmel River system for recharge, storage and subsequent recovery in the Seaside Groundwater Basin (SGB). Treated (potable) drinking water from the CAW distribution system is injected into the Santa Margarita Sandstone aquifer in the SGB via three existing ASR wells located at two ASR facilities in the SGB. The injected water is stored within the aquifer and subsequently recovered into the CAW distribution system during dry periods. The overall objective of the project is to facilitate the conjunctive use of water supplies in the Carmel River system and SGB that will benefit the resources of both systems.

ASR operations generally consist of three components or phases: (1) injection of drinking-quality water into the aquifer through the ASR wells; (2) storage of the injected water within the aquifer; and, (3) recovery of the stored water by pumping at one or more of the ASR wells. Periodic samples of the injected, stored, and recovered waters are to be collected from the ASR wells and associated monitoring wells and analyzed for a variety of water-quality constituents pursuant to requirements of the Central Coast Regional Water Quality Control Board (RWQCB) for the project. The purpose of this SAP is to identify the locations, sample collection frequency, and parameters to be monitored as part of the project's ongoing water-quality data collection program. The project location and associated wells in the SGB are shown on **Figure 1** – Project Location Map.

GROUNDWATER MONITORING

Groundwater Monitoring Wells

<u>ASR Project On-Site Wells.</u> There are two ASR facilities located in the SGB; the Santa Margarita and Seaside Middle School ASR Facilities. Groundwater monitoring wells for collection of on-site water-quality samples include three ASR wells and two associated monitoring wells that have been constructed at the two ASR facilities. Two of the ASR wells are located at the Santa Margarita (SM) ASR Facility and are designated as SM ASR-1 and SM ASR-2. This facility is also referred to as the Phase 1 ASR Project. The third existing ASR well is located at the Seaside Middle School (SMS) ASR Facility and is designated as SMS ASR-3.

This facility is also referred to as the Phase 2 ASR Project[1]. All three existing ASR wells are completed solely within the Santa Margarita Sandstone (Tsm) aquifer.

In addition to the ASR wells, there are two on-site monitoring wells (one located at each ASR facility) that are also completed solely within the Tsm aquifer. SM MW-1 is located at the SM ASR Facility and is located in between SM ASR-1 and SM ASR-2, at distances of approximately 90 and 190 feet, respectively. SMS Deep MW is located at the SMS ASR Facility at a distance of approximately 20 feet from SMS ASR-3. An additional monitoring well is also located at the SMS ASR Facility that is completed within the overlying Paso Robles aquifer, designated as SMS Shallow MW. This well is instrumented with a submersible water-level transducer/data logger unit to observe the water-level response of this aquifer to ASR operations (it is not designed or equipped for collection of water-quality samples). The locations of the ASR wells and on-site monitoring wells are shown on **Figure 2** – Site Location Map. A summary of the on-site wells is presented in **Table 1** below:

Table 1. On-Site Wells Summary

Well ID	Distance from ASR Well (feet)			Aquifer Completed
	SM ASR-1	SM ASR-2	SMS ASR-3	
SM ASR-1	--	280	1,380	Tsm
SM ASR-2	280	--	1,235	Tsm
SM MW-1	90	190	1,325	Tsm
SMS ASR-3	1,380	1,235	--	Tsm
SMS Deep MW	1,380	1,240	20	Tsm
SMS Shallow MW	1,415	1,265	25	QTp

Table 1 Notes:

Tsm – Santa Margarita Sandstone aquifer
QTp – Paso Robles aquifer

Off-Site SGB Wells In addition to the on-site wells at the two ASR facility sites, submersible water-level transducer/data logger units have been installed at seven off-site District monitoring well sites in the SGB to observe the water-level response of the aquifer system to ASR operations. The locations of the off-site monitoring wells are shown on **Figure 1**. The distances from each of the project sites and aquifers monitored by the off-site wells are summarized in **Table 2** below:

[1] The Phase 2 ASR Project will consist of two ASR wells and associated facilities at the SMS ASR Facility. SMS ASR-4 is currently planned to be installed during summer/fall of 2012 and will be added to the SAP when completed and equipped for operation.

Table 2. Off-site Monitoring Wells Summary

Well ID	Distance from ASR Site (feet)		Aquifer Monitored
	SM	SMS	
Paralta Test	680	740	QTp & Tsm
Ord Grove Test	1,540	2,535	QTp & Tsm
Ord Terrace (Deep)	2,275	2,910	Tsm
FO-7 (Deep)	4,265	3,700	Tsm
FO-7 (Shallow)			QTp
PCA East (Deep)	6,390	6,200	Tsm
PCA East (Shallow)			QTp
FO-9 (Deep)	7,290	6,125	Tsm
FO-8 (Deep)	7,585	6,450	Tsm

Table 2 Notes:

Monitoring well distances are measured to centroid of each ASR site.
Tsm – Santa Margarita Sandstone aquifer
QTp – Paso Robles aquifer

In addition to water-level monitoring at the above off-site monitoring wells, CAW's Paralta well and PCA East Deep have been designated as off-site monitoring wells for periodic water-quality sampling as part of this SAP (refer to **Table 4**).

Groundwater Monitoring Equipment

The equipment required to perform the groundwater monitoring as prescribed in the SAP includes:

- Sampling Pumps
- Pressure Transducers/Data Loggers
- Electric Water Level Sounder
- Field Water Quality Monitoring Devices
- Flow-Thru Cell Device(s)
- Sample Containers
- Coolers and Ice

Each of the on-site wells is equipped with a dedicated pump. The ASR wells are equipped with water-lubricated, vertical line-shaft turbine pumps. SM MW-1, SMS Deep MW, and PCA East Deep are equipped with submersible sampling pumps. The flow rates for each monitored wells are measured using in-line flow meters. Sampling ports on the well-head piping at each well allow for the collection of grab samples during injection and pumping operations.

Field water-quality monitoring is to be performed using various instruments that allow for the field analysis of a variety of constituents, including but not limited to: chlorine residual, conductivity, dissolved oxygen, pH, temperature, redox/ORP, and Silt Density Index (SDI). The field water-quality monitoring devices are to be routinely calibrated as prescribed in the operating procedures manual for each device.

All of the ASR and monitoring wells are instrumented with dedicated pressure/level transducers and dataloggers. Reference-point elevations have been established by surveying on each of the monitored wells. Static water-levels in each of the wells are to be measured with an electric sounder on a quarterly basis (minimum) and the transducers calibrated accordingly. The transducers are to be programmed with the reference static water-level and the data-collection interval, which will measure and record the water level in each of the wells a minimum of four times per day.

Purging and Sampling

During injection periods, samples of the injectate are to be collected directly at one of the ASR wellheads while active injection is occurring. During storage periods, each of the ASR wells that has been utilized for injection during the season will be periodically purged and sampled. During recovery periods, one or more of the ASR well pumps will be operating and purging is continuous and sustained. Groundwater samples are also to be collected routinely during all three ASR periods (i.e., injection, storage and recovery) from both the on-site monitoring wells (SM MW-1 and SMS Deep MW) and periodically from the far-field off-site monitoring wells (Paralta and PCA-E Deep).

The existing pumps will be used to purge a volume equivalent to a minimum of three (3) casing volumes from the well prior to sampling. Purge water from the ASR wells during backflushing and sampling is to be discharged to the backflush pit at the SM ASR Facility and percolated back into the SGB. Water produced by the ASR well(s) during recovery period operations is to be discharged to the CAW potable water supply system (in accordance with Department of Public Health approvals). Purge water from the monitoring wells will be directed to either the SM backflush pit or to the ground away from the wellheads and percolated back into the SGB.

During purging and prior to sampling, field water-quality parameters of temperature, pH and specific conductance are to be monitored. Stabilization of these water-quality parameters will indicate when collection of a representative sample is obtainable.

Chain-of-Custody, Sample Handling, and Transport

All samples collected will be labeled in a clear and precise way for proper identification in the field and for tracking in the laboratory. All sample shipments for analyses will be accompanied by a chain-of-custody record. Forms will be completed and sent with the samples for each shipment. The chain-of-custody form will identify the contents of each shipment and

maintain the custodial integrity of the samples. Samples will be placed in a cooler for delivery to the laboratory.

Documentation Procedures

Field data will be recorded by field personnel on the attached Field Sampling Log Form and routinely submitted to the Project Manager for review and QA/QC. Field data will include the completed field sampling-log form and chain-of-custody records. At a minimum, documentation of each monitoring and sampling event will include the following information:

- Sample location and description
- Sampler's name(s)
- Date and time of sample collection
- Type of sampling equipment used
- Field instrument calibration procedures and results
- Field instrument readings
- Field observations and details related to analysis or integrity of samples (e.g., weather conditions, noticeable odors, colors, etc.)
- Sample preservation
- Shipping arrangements
- Name(s) of recipient laboratory
- Any deviations from SAP procedures

Project information will be filed by Water Year. The project file will contain project field data, correspondence, survey reports, laboratory reports, charts, tables, permits, and other project-related information. This information will be utilized in the preparation of the annual Summary of Operations Reports for the project.

LABORATORY PROGRAM

A complete list of constituents and constituent “groups” to be monitored as part of the ASR Project for injected, stored, and recovered waters is presented in **Table 3** below. **Table 4** summarizes the planned sample constituent group frequencies for each source for the injection, storage, and recovery periods.

Table 3. Analytic Testing Program Constituent Summary

Constituent	PQL	General Parameters	Disinfection Byproducts	Supple-mental	Field[1]
Group ID		**G-1**	**DBP**	**S-1**	**F-1**
Major Cations					
Calcium (Ca)	1 mg/L	✓			
Magnesium (Mg)	1 mg/L	✓			
Sodium (Na)	1 mg/L	✓			
Potassium (K)	0.5 mg/L	✓			
Major Anions					
Total Alkalinity (as $CaCO_3$)	10 mg/L	✓			
Sulfate (SO_4)	1 mg/L	✓			
Chloride	1 mg/L	✓	✓		
Nitrate as (NO3)	1 mg/L	✓			
Nitrite as (Nitrogen)	0.1 mg/L	✓			
General Physical					
pH	0.1 units	✓			✓
Temperature	0.5 ^{0}C				✓
Specific Conductance (EC)	10 uS	✓			✓
ORP (redox potential / Eh)[2]	10 mV				✓
Total Dissolved Solids (TDS)	10 mg/L	✓			
Metals					
Arsenic (As)	1 ug/L			✓	
Barium (Ba)	0.5 mg/L			✓	
Iron (Fe) (Total and Dissolved)	50 ug/L	✓			
Lithium (Li)	5 ug/L			✓	
Manganese (Mn) (Total and Dissolved)	10 ug/L	✓			
Molybdenum (Mo)	5 ug/L			✓	
Nickel (Ni)	10 ug/L			✓	
Selenium (Se)	5 ug/L			✓	
Strontium (Sr)	5 ug/L			✓	
Uranium (U)	1 pCi/L			✓	
Vanadium (V)	5 ug/L			✓	
Zinc (Zn)	0.5 ug/L			✓	
Miscellaneous					
Ammonia (as N)	0.05 mg/L	✓			
Boron (B)	0.05 mg/L	✓			
Chlorine residual (free)	0.1 mg/L				✓

Constituent	PQL	General Parameters	Disinfection Byproducts	Supple-mental	Field[1]
Group ID		**G-1**	**DBP**	**S-1**	**F-1**
Chloramines	50 ug/L		✓		
Dissolved Methane	0.5 ug/L			✓	
Dissolved Oxygen (DO)[2]	0.025 mg/L				✓
Gross Alpha	1 pCi/L			✓	
Hydrogen Sulfide (H_2S)	0.05 mg/L				✓
Total Nitrogen (N)	0.2 mg/L	✓			
Total Phosphorous	0.05 mg/L	✓			
Orthophosphate as P	0.05 mg/L	✓			
Radium 226	1 pCi/L			✓	
Silt Density Index (SDI)	0.1 units				✓
Total Kjehldahl N (TKN)	0.2 mg/L	✓			
Organic Analyses					
Total trihalomethanes	1 ug/L		✓		
Bromodichloromethane	1 ug/L		✓		
Bromoform	1 ug/L		✓		
Chloroform	1 ug/L		✓		
Dibromochloromethane	1 ug/L		✓		
Haloacetic Acids (HAA)	1 ug/L		✓		
Monobromoacetic Acid	1 ug/L		✓		
Monochloroacetic Acid	1 ug/L		✓		
Dibromoacetic Acid	1 ug/L		✓		
Dichloroacetic Acid	1 ug/L		✓		
Trichloroacetic Acid	1 ug/L		✓		
Total organic carbon (TOC)	0.1 mg/L	✓			
Dissolved organic carbon (DOC)	0.1 mg/L	✓			

Table 3 Notes:

1 – Field Parameters (Group F-1) must be taken concurrently with collection of all laboratory samples.
2 – ORP and DO must be analyzed utilizing a flow-thru cell device.

Table 4. Analytic Testing Program Schedule

INJECTION PERIOD (active injection)							
Analyte Group	**Injectate**			**SM MW-1**	**SMS Deep MW**	**PCA East (deep)**	
F-1	Weekly			Weekly	Weekly	Quarterly	
DBP	Bi-Weekly			Monthly	Monthly	Quarterly	
G-1	Monthly			Quarterly	Quarterly	Quarterly	
S-1	Monthly			Quarterly	Quarterly	Quarterly	
STORAGE PERIOD (one month duration or longer)							
Analyte Group	**SM ASR-1**	**SM ASR-2**	**SMS ASR-3**	**SM MW-1**	**SMS Deep MW**	**PCA East (deep)**	
F-1	Monthly	Monthly	Monthly	Monthly	Monthly	Quarterly	
DBP	Monthly	Monthly	Monthly	Monthly	Monthly	Quarterly	
G-1	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	
S-1	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	
RECOVERY PERIOD							
Analyte Group	**SM ASR-1[1]**	**SM ASR-2**	**SMS ASR-3**	**SM MW-1**	**SMS Deep MW)**	**Paralta**	**PCA East (deep)**
F-1	Weekly	Monthly	Monthly	Monthly	Monthly	Semiannually[2]	Quarterly
DBP	Bi-Weekly	Monthly	Monthly	Monthly	Monthly	Semiannually[2]	Quarterly
G-1	Monthly	Quarterly	Quarterly	Quarterly	Quarterly	Semiannually[2]	Quarterly
S-1	Monthly	Quarterly	Quarterly	Quarterly	Quarterly	Semiannually[2]	Quarterly

Table 4 Notes:

1 – ASR-1 is currently the only ASR well authorized by DPH to recover into the CAW distribution system.
2 – Near the beginning and end of the SGB production/recovery season, e.g., in May and November.

June 2012
Project No. 06-0025

PUEBLO water resources

FIGURE 1. PROJECT LOCATION MAP
Monterey Peninsula ASR Project
Sampling and Analysis Plan

PUEBLO water resources

FIGURE 2. SITE LOCATION MAP
Monterey Peninsula ASR Project
Sampling and Analysis Plan

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

PUEBLO water resources

Monterey Peninsula ASR Project
Field Sampling Log Form

Water Year: _____

Well ID: _____
Observer: _____
Date: _____
Observation Period: Start: _____ Stop: _____
Weather:

Purging & Water-Level Data

		Notes:
ASR Period (injection, storage, recovery)		
Well Status (injecting, idle, pumping)		
Purge Rate (gpm)		
Totalizer Reading Start (gals)		
Totalizer Reading at Sampling (gals)		
Purge Volume (gals)		
Totalizer Reading End (gals)		
Static Water Level (ft btoc)[1]		
Datalogger Water Level (ft btoc)		

Field Water-Quality Parameter Data

Time:						
Elapsed Time:						
Temperature (^{o}C)						
Conductivity (umhos/cm)						
pH						
ORP (mV)[2]						
Free Chlorine Residual (mg/L)						
Dissolved Oxygen (mg/L)[2]						
Silt Density Index						
Gas Volume (mL)						
H2S (mg/L)						
Visual Observations						

Sampling and Laboratory Data

Collection Time	Laboratory	Laboratory Analyses Requested (analyte group or other constituents)

Additional Information and Observations

Notes:
1 - Pump must be off a minimum of 10 minutes prior to measuring.
2 - ORP and Dissolved Oxygen must be analyzed utilizing a flow-thru cell device

California Regional Water Quality Control Board
Central Coast Region

Linda S. Adams
Secretary for Environmental Protection

Internet Address: http://www.waterboards.ca.gov/centralcoast
895 Aerovista Place, Suite 101, San Luis Obispo, California 93401-7906
Phone (805) 549-3147 • FAX (805) 543-0397

Arnold Schwarzenegger
Governor

RECEIVED
MAY - 5 2009
MPWMD

April 29, 2009 Exhibit 4.3

Joseph Oliver
Monterey Peninsula Water Management District
5 Harris Court, Bldg. G
P.O. Box 85
Monterey, CA 93942-0085

Dear Mr. Oliver:

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT AND CALIFORNIA AMERICAN WATER; AQUIFER STORAGE RECOVERY PROJECT, SEASIDE, MONTEREY COUNTY; WATER CODE SECTION 13267 ORDER

Staff of the Regional Water Quality Control Board. Central Coast Region (Water Board) reviewed your February 2, 2009 letter regarding *Phase I Aquifer Storage and Recovery Project in the Seaside Basin*, and attached documents[1]. I requested these documents in our April 14, 2008 letter addressed to you and Leslie Jordan of California American Water (CAW).

Based on our review of these documents I am requiring the following modifications to the proposed sampling and analysis plan:

1. Add nickel to the metals constituent list and include it on the supplemental monitoring program as part of analyte group (S-1) contained within Table 2 of the proposed water year 2009 sampling and analysis plan.

2. Specify and use a flow-thru cell device for analyzing dissolved oxygen (DO) and redox potential/Eh (ORP) parameters.

3. Include the Peralta and Ord Grove CAW production wells as far-field monitoring wells for semiannual monitoring of analyte groups F-1, S-1 and DBP within Table 2 of the sampling and analysis plan.

Regarding item number three above, we understand efforts are underway to site and install project-specific far-field monitoring wells screened within the Santa Margarita Sandstone given that the two CAW production wells are screened within the both the

[1] General Information for ASR Discharge (per RWQCB Form 200) (Enclosure 1); August 2008 Ecoengineers report titled Assessment of Geochemical Effects, MPWMD Phase 1 ASR Project and associated October 7, 2008 Pueblo Water Resources cover letter (Enclosures 2 and 3); Summary of Operations, Phase 1 ASR Project, Water Year 2008 draft report (Enclosure 4), and; proposed Groundwater Sampling and Analysis Plan for Water Year 2009 (Enclosure 5).

Santa Margarita Sandstone and Paso Robles Formation. These wells shall act a far-field monitoring wells until new monitoring wells are added to the sampling and analysis plan subject to my approval as noted below.

Consistent with our April 14, 2008 letter to you and Leslie Jordan, my staff and I are in full support of the Monterey Peninsula Water Management District (MPWMD) Phase I Aquifer Storage and Recovery (ASR) project given its potential benefits in restoring the Carmel River and Lagoon habitats due to decreased diversions during the dry season, offsetting overdraft conditions within and decreasing the resultant seawater intrusion into the Seaside Groundwater Basin (SGB), and augmenting a sustainable water supply for the Monterey Peninsula area. Although staff's review of the hydrogeologic, geochemical and water quality data you provided indicates the proposed project does not pose a significant threat to water quality within the SGB, ongoing monitoring and reporting are warranted to document water quantity and quality conditions to ensure the project is protective of water quality. Consequently, I am requiring implementation of the annual ASR sampling and analysis plan and submittal of annual water year summary of operations reports to this office and the Monterey County Water Resources Agency for the life of the project.

Contrary to statements in our April 14, 2008 letter that the Water Board will formally require monitoring and reporting via a project-specific resolution or general ASR waiver resolution (for a waiver of waste discharge requirements), we will regulate your and other ASR projects under our existing General Waiver for Specific Types of Discharges and through requirements for technical reports pursuant to Section 13267 of the California Water Code. Therefore, implementation of the MPWMD Phase 1 ASR Project and CAW [proposed] ASR Coastal Water Project are still subject to my July 11, 2007, and June 1, 2007 authorization letters, respectively, pursuant to the Water Board's General Waiver for Specific Types of Discharges, Resolution R3-2008-0010 (formerly Resolution R3-2002-0115) in addition to the requirements specified within this letter. I anticipate that the subsequent renewal of Resolution R3-2008-0010, to be developed some time in 2013, will contain provisions specific to ASR projects similar to the requirements imposed on your project.

You are required to submit annual water year summary of operations reports [technical reports] to our office by **July 1 of each year** following the water year. You shall also submit copies of these reports to the Monterey County Water Resources Agency[2]. These technical reports shall be consistent with previous summary of operations reports prepared by Pueblo Water Resources containing injection and extraction (production) summaries and with your proposed water year 2009 sampling and analysis plan including the above required modifications. Any changes in the sampling and analysis plan are subject to my review and approval prior to any water year for which the changes are proposed. In addition, please note that the implementation of the proposed CAW ASR project will be subject to our review of site specific hydrogeologic,

[2] To the attention of Robert Johnson, Water Resources Planning and Management, MCWRA

geochemical and water quality investigation reports and the implementation of an approved sampling and analysis plan.

The Water Board's requirement that you submit technical reports is made pursuant to Section 13267 of the California Water Code. Failure to provide the complete technical reports by the date specified above may subject you to admihistrative civil liability and is considered a misdemeanor. Pursuant to Section 13268 of the Water Code, a violation of Water Code Section 13267 requirement may subject you to administrative civil liability of up to $1,000 per day for each day in which the violation occurs.

The Water Board needs the required information in order to evaluate the long-term stability and water quality of the Santa Margarita aquifer as a result of the SGB Phase I ASR project. You are required to submit this information because of the potential for the ASR project to result in water quality impacts as a result of constituents contained within the injected water such as disinfection byproducts or changes in the geochemistry of the Santa Margarita aquifer in a manner that may result in the leaching of metals from minerals within the aquifer formational material.

Any person aggrieved by this action of the Central Coast Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of the order, except that if the thirtieth day following the date of the order falls on a Saturday, Sunday, or state holiday, the petition must be received by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the internet at http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

If you have questions regarding this matter, please contact **Matthew Keeling at (805) 549-3685, or mkeeling@waterboards.ca.gov**, or Burton Chadwick at (805) 542-4786.

Sincerely,

Roger W. Briggs
Executive Officer

e-file: S:\WDR\Waived Discharges\Monterey Co\MPWMD ASR\ASR requirements 041609.doc
paper file: Discharger files, Seaside Groundwater Basin ASR Project.
task code: 126-01
CIWQS Place ID No. 654817 and 654821

cc:

Leslie Jordan
California American Water
P.O. Box 951
Monterey, CA 93942

Jan Sweigert
Department of Health Services
Drinking Water Field Operations Branch
1 Lower Ragsdale, Building 1, Suite 120
Monterey, CA 93940

Robert Johnson
Monterey County Water Resources Agency
P.O. Box 930
Salinas, CA 93902

Exhibit 4.4

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

Suggested Agenda

Quarterly Water Supply Strategy and Budget Meeting: July - September 2012
California American Water Distribution Systems
&
2012 Memorandum of Agreement (MOA) Among California American Water,
California Department of Fish and Game, and Monterey Peninsula Water Management District

1-866-528-2256 / Access Code "7980801#"
June 7, 2012, 09:30 A.M., Cal-Am Office, 511 Forest Lodge Road, Suite 100
Pacific Grove, CA 93950

I. Status Reports

A. Rainfall, Runoff and Storage

B. Cal-Am Storage, Production, and Distribution Facilities
1. Carmel Valley Wells
2. Seaside Wells
3. Sand City Desalination Plant

C. River Flows

D. Carmel River Steelhead Population Status & Mitigation Measures
1. Adult Counts: SCD, LPD, & Redd Counts below SCD
2. 2012 Rescue and Rearing Plans & Start Dates

II. Budgeted CAW Production by Source

A. Seaside Groundwater Basin
B. Carmel River Basin
C. Phase 1 ASR Recovery
D. Sand City Desalination Plant

III. 2012 MOA--Topics for Discussion

A. Inflows for June - December 2012 period

B. Municipal Supply Requirements and Operational Criteria
1. DWR-DSOD Drawdown Project at SCD
2. Maintenance-pumping schedule (incl. Garzas No. 3)
3. Operations at Los Padres Dam to meet water temperature goals

C. Diversion and Release Schedule for Los Padres and San Clemente Dams

IV. 2nd Discussion of Irrigation Water Needs for the SCD Reroute Project

---

5 Harris Court, Building G, Monterey, CA 93940 • P.O. Box 85, Monterey, CA 93942-0085
831-658-5600 • Fax 831-644-9560 • http://www.mpwmd.dst.ca.us

V. Future Meetings

Proposed 1st Quarterly Water Supply Strategy and Budget Meeting of WY 2013 for October – December 2012: *Thursday, September 6, 2012*, 10:00 AM, at CAW's Office in Pacific Grove. [Alternatives are Wednesday the 5th or Friday the 7th of the same week]

U:\kevan\Flows\QWB\Agenda_07Jun12.doc
Wednesday, June 06, 2012

EXHIBIT 7-A

California American Water Main Distribution System
Quarterly Water Supply Strategy and Budget: July - September 2012

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Jul-12	Aug-12	Sep-12	Oct-11 - May-12	% YTD	% of Annual
Source						
Carmel Valley Aquifer						
Upper Subunits	0	0	0	**421**	N/A	N/A
Lower Subunits (95-10)	850	826	752	**4,702**	100.3%	52.9%
Lower Subunits (ASR)	0	0	0	**132**	11.4%	11.4%
Total	**850**	**826**	**752**	**5,255**		
Seaside Groundwater Basin						
Coastal Subareas	520	525	500	**706**	43.8%	26.1%
Phase 1 ASR Recovery	0	0	0	**1,117**	100.0%	100.0%
Sand City Desalination	25	25	25	**181**	90.5%	60.3%
Total	**1,395**	**1,376**	**1,277**	**2,004**		
Use						
Customer Service	1,395	1,376	1,277	**7,127**	93.6%	54.8%
Phase 1 ASR Injection	0	0	0	**132**	11.4%	11.4%
Total	**1,395**	**1,376**	**1,277**	**7,259**		

Notes:
1. The budget reflects "Dry" inflow conditions and assumes that the monthly unimpaired inflows at the San Clemente Dam site during the July-September 2012 period will equal flows occurring during the period in WY 1991, i.e., 145, 94, and 100 AF, respectively.
2. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
3. Total monthly production for "Customer Service" in CAW's main system was calculated by multiplying total annual production (13,009 AF) times the average percentage of annual production for July, August, and September (10.7%, 10.7%, and 9.8%, respectively). The annual production total was based on the assumption that production from the Coastal Subareas of the Seaside Groundwater Basin would not exceed 2,701 AF and production from Carmel River sources would not exceed 10,308 AF in WY 2012. The average production percentages were based on monthly data for customer service from WY 1998 to 2011.
4. No surface water diversions from San Clemente Reservoir are assumed for this period based on concerns regarding water quality (elevated turbidity) and lowered water levels in June required by the Division of Dam Safety as part of the San Clemente Reservoir Drawdown Project.
5. The production targets for CAW's wells in the Upper Carmel Valley are set to zero for each month, consistent with CAW's goal to avoid use of these wells during this period.
6. The production targets for CAW's wells in the Coastal Subareas of the Seaside Basin are based on the need for CAW to pump its full Standard Production Allocation during the remainder of WY 2012, as required under SWRCB Order 95-10, i.e., 450 AF in June and 1,545 AF in the July-September quarter.
7. Seaside Coastal Subarea prescribed production for the month of June includes 32 AF of native groundwater carryover from WY 2011.

California American Water Laguna Seca Subarea Distribution Systems
Quarterly Water Supply Strategy and Budget: July - September 2012

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Jul-12	Aug-12	Sep-12	Oct-11 - May-12	% YTD	% of Annual Budget
Source						
Seaside Groundwater Basin						
Laguna Seca Subarea	18	18	17	**224**	284.8%	152.4%
Other	0	0	0	**0**	0.0%	0.0%
Use						
Customer Service	18	18	17			
Total	**18**	**18**	**17**	**224**		

Notes:
1. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
2. Total monthly production for "Customer Service" in CAW's Laguna Seca Subarea systems was calculated by multiplying total annual production (147AF) times the average percentage of annual production for July, August, and September (12.2%, 12.0%, and 11.4%, respectively). The annual production total was based on the assumption that production from the Laguna Seca Subarea of the Seaside Groundwater Basin would not exceed 147 AF. The average production percentages were based on monthly data for customer service from WY 2000 to 2011. The 147 AF annual production limit is specified in the Seaside Basin Adjudication Decision and is subject to change.
3. It should be noted that, based on recent historical use, actual monthly use will likely exceed the proposed monthly production target. In this context, the production targets represent the maximum monthly production that should occur so that CAW remains within its Standard Production Allocation for the Laguna Seca Subarea specified in the Seaside Decision. However, because the Seaside Decision allows CAW to combine its production in the Coastal Subareas with its production in the Laguna Seca Subarea in determining compliance, CAW can use production savings in the Coastal Subareas to offset overproduction in the Laguna Seca Subarea.
4. "Other" production sources refer to supplies transferred to Laguna Seca Subarea customers from CAW's Carmel River sources or water rights acquired from other producers in the Seaside Basin to produce additional water. For example, under emergency conditions, water can be transferred from sources that serve customers in CAW's main system, via an existing interconnection, to customers in CAW's Ryan Ranch system.

Exhibit 4.5

MEETING NOTICE AND AGENDA

TECHNICAL ADVISORY COMMITTEE OF THE SEASIDE BASIN WATER MASTER

DATE: Wednesday, May 9, 2012
MEETING TIME: 1:30 p.m.
Monterey Regional Water Pollution Control Agency Offices
5 Harris Court, Building D (Ryan Ranch)
Monterey, CA 93940

If you wish to participate in the meeting from a remote location, please call in on the Watermaster Conference Line by dialing (877)810-9415. Use the Access Code of 4560043. Please note that if no telephone attendees have joined the meeting by 10 minutes after its start, the conference call will be ended.

OFFICERS
Chairperson: Diana Ingersoll, City of Seaside
1st Vice-Chairperson: Eric Sabolsice, California American Water Company
2nd Vice-Chairperson: Rob Johnson, MCWRA

MEMBERS
California American Water Company **City of Del Rey Oaks** **City of Monterey**
City of Sand City **City of Seaside** **Coastal Subarea Landowners**
Laguna Seca Property Owners **Monterey County Water Resources Agency**
Monterey Peninsula Water Management District

Agenda Item	Page No.
1. Public Comments	
2. Administrative Matters:	
A. **Approve Minutes from April 11, 2012 Meeting**	2
B. **Sentinel Well Induction Logging Results from January 2012**	7
3. Update on Resampling of Sand City Public Works Well (Joe Oliver)	10
4. Presentation on the Salt and Nutrient Management Plan for the Seaside Groundwater Basin (Georgina King)	12
5. Report on Investigation into Potential for Aquifer Cross-Contamination in the Coastal Wells (Jon Lear)	15
6. Discussion of Lake El Estero Stormwater as a Potential Water Source for MPWMD Proposed Desalination Plant on Former Monterey Wastewater Treatment Plant Site (Bob Jaques)	16
7. Consider Recommendation for Modifications to the Monitoring and Management Plan Operations Budget (Bob Jaques)	17
8. Continued Discussion in Regard to Submitting an Application for a Grant Under the Local Groundwater Assistance Grant Program (Bob Jaques)	20
9. Schedule (Bob Jaques)	23
10. Other Business	28
11. Set Next Meeting Date:	
The next regular meeting will be held on Wednesday June 13, 2012 at 1:30 p.m. at the MRWPCA Board Room	

`

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 9, 2012
AGENDA ITEM:	2.A
AGENDA TITLE:	Approve Minutes from April 11, 2012
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

Draft Minutes from this meeting were emailed to all TAC members. Any changes requested by TAC members have been included in the attached version.

ATTACHMENTS:	Minutes from this meeting
RECOMMENDED ACTION:	Approve the minutes

D-R-A-F-T
MINUTES

Seaside Groundwater Basin Watermaster
Technical Advisory Committee Meeting
April 11, 2012

Attendees: TAC Members

City of Seaside – No Representative
California American Water – Eric Sabolsice
City of Monterey – Norm Green
Laguna Seca Property Owners – Bob Costa
MPWMD – Joe Oliver
MCWRA – Kathy Thomasberg
City of Del Rey Oaks – Richard Simonitch
City of Sand City – Richard Simonitch
Coastal Subarea Landowners – No Representative

Watermaster
Technical Program Manager - Robert Jaques
Chief Executive Officer – Dewey Evans

Consultants
HydroMetrics – Georgina King (via telephone)

Others:
MRWPCA – Bob Holden
MPWMD – Jon Lear

The meeting was called to order at 1:39 p.m. (Mr. Costa was delayed in arriving and arrived at 1:42 p.m., at the start of Agenda Item 3.)

1. **Public Comments**

There were no public comments.

2. **Administrative Matters:**

Approve Minutes from March 14, 2012 Meeting

Mr. Oliver pointed out that there was an error in the date listed under item 2.A in the minutes from the January 11 meeting. The year should have been 2012, not 2011. With that correction made, on a motion by Mr. Simonitch, seconded by Mr. Green, the Minutes were unanimously approved.

3. **Discussion of a Proposed Request to be Made to the Court Seeking a Temporary Suspension of Triennial Pumping Reductions**

Mr. Jaques summarized the agenda packet materials for this item.

Mr. Sabolsice suggested going back to the allowed Operating Yield that was in existence prior to the last 10 percent pumping cutback which went into effect on October 1, 2011, and to maintain pumping allowances at that level until approximately October 1, 2017, and to evaluate the impact on Basin water levels of doing this. This would alleviate approximately 2 x 560 = 1,120 AFY of cutbacks, including the cutback scheduled to occur in 2014.

Ms. Thomasberg asked how the judge would likely relate to such a request, and how this would relate to the Cease and Desist order requiring reductions in water diversions from the Carmel River Basin. Mr. Oliver responded that the judge in the Seaside Basin adjudication is only concerned with the Seaside Basin.

Mr. Costa asked Mr. Jaques what conditions needed to be achieved in order to avoid having to impose the 10 percent pumping reductions. In the discussion that ensued the following criteria to be met to avoid a reduction, as set forth in the Adjudication Decision, were described: (1) the Watermaster has obtained an adequate amount of non-native water and is adding it into the Basin on an annual basis, (2) the Watermaster has secured reclaimed water and producers are in the process of utilizing that water in lieu of their production allocations in an amount equal to or greater than the 10 percent reduction quantities, (3) any combination of 1 and 2 that achieves the equivalent of the 10 percent reductions, or (4) the Watermaster has determined that water levels within the aquifers are high enough to prevent seawater intrusion.

Mr. Jaques went on to say that unless the Natural Safe Yield level is reached, water levels will continue to fall, even if replenishment water and/or reduced pumping occurs. Ms. King concurred with this assessment and noted that water levels would typically take years to rise to protective levels.

There was discussion with regard to pumping impacts on water levels and how to distribute the pumping within the Basin when running the groundwater model.

Ms. Thomasberg asked Mr. Sabolsice if CAW could redistribute its pumping. He responded that he would have to check with his Operations Supervisor, but that any redistribution would be limited. Mr. Oliver said that with the ASR wells there could be some ability to redistribute. Mr. Lear noted that retirement of wells is gradually causing pumping to move further inland and into deeper strata.

Mr. Oliver said that modeling would help improve our understanding of what Basin impacts would result from pumping redistribution.

There was discussion as to whether it would be better to first ask the judge if he would consider a temporary suspension of the 10 percent pumping reductions, if modeling showed little to no impact, rather than doing the modeling first and then approaching the judge, or whether modeling should be done before making a request to the judge. Mr. Oliver suggested two approaches be presented to the Board for their consideration, one approach would be to do the modeling first and then make a request to the judge, and the other approach would be to first ask the judge if he would consider a temporary suspension if modeling demonstrated that there would be little to no adverse impact on the Basin.

It was noted that if modeling shows adverse water level impacts from temporarily suspending the reductions, then it probably would not be appropriate to pursue a request to the judge. However, if the modeling showed only minor impacts, it could be desirable to pursue this as a way of lessening the impacts of the Carmel River Cease and Desist Order. Mr. Sabolsice stressed that he did not want anyone in the public to get the wrong impression with regard to such a request potentially being made.

Ms. Thomasberg asked what safeguards could be provided in conjunction with making such a request. Mr. Oliver said that the judge had been very precise and very regimented in his prior dealings on adjudication matters, and felt that there were four things that should be covered: (1) having a time certain to end the suspension, (2) having a schedule for payback of overpumping that has occurred since the adjudication was put into effect, (3) safeguards in terms of modeling and additional monitoring that could be done.

Mr. Lear suggested looking at how the suspension would affect protective water levels and also seeing what steps in the Seawater Intrusion Response Plan could be implemented as safeguards.

Mr. Simonitch asked if the groundwater replenishment project water could be injected to help raise water levels. Mr. Jaques responded that the groundwater replenishment project water probably would not be available until almost the same time as when the proposed temporary suspension would end.

There was also discussion with regard to:

- Sand City's desalination project and what impacts it might have on Basin water levels
- How ASR water from the Carmel River Basin is accounted for when it is stored and then recovered from the Seaside Basin. It was noted that all ASR water that is taken from the Carmel Basin and put into the Seaside Basin has to be taken out and used to meet demands, and not left stored in the Seaside Basin.
- How best to involve legal counsel if a request were to be made to the judge.

Mr. Evans noted that any such recommendation would need to go through the budget and finance committee before it goes to the Board.

Ms. King said that the model will show that the rate of decline in water levels will be greater without the 10 percent cutbacks than it would be if the cutbacks were imposed.

Ms. Thomasberg asked whether it would be beneficial to pay to have the model recalibrated before doing the proposed modeling.

Mr. Simonitch asked what MPWMD's Board would think of making a request. Mr. Oliver responded that MPWMD is represented on the Watermaster Board and would thus have the opportunity to provide input on this matter at such time as it is discussed by the Watermaster Board.

Mr. Jaques asked the TAC to determine, by vote, if they wished to pursue making a request to the judge. The vote was 5 in favor of making a request and 2 opposed to making a request. Mr. Jaques then asked the TAC to determine, by vote, whether they felt modeling should be done first or done after an initial request is made to the judge. The vote was unanimous in favor of initially requesting the judge's reaction to granting a temporary suspension if modeling subsequently supported the request, before performing any modeling.

Mr. Jaques said he would draft language regarding the TAC's recommendation to the Board and email it to TAC members for their review and editing before he incorporates the language into his Agenda Transmittal for the Board's consideration of this matter.

4. Consider Request for Service (RFS) No. 2012-03 with HydroMetrics to Perform Groundwater Modeling

Mr. Jaques summarized the agenda packet materials for this item.

Ms. King said that many assumptions will need to be made with regard to performing the modeling. She said she wanted to insure these are all made in accordance with the TAC's desires. Mr. Simonitch asked if the model was calibrated to reflect actual pumping and hydrologic conditions, and Ms. King responded that it was.

The TAC unanimously approved the scope and cost for HydroMetrics RFS No. 2012-03 to perform modeling work to support the temporary suspension of the 10 percent pumping cutbacks, if the Board determines to pursue making a request to the judge for a temporary suspension in the 10% pumping reductions.

5. **Consider Submitting an Application for a Grant Under the Local Groundwater Assistance Grant Program**

Mr. Jaques summarized the agenda packet materials on this item.

Mr. Oliver said MPWMD was supportive of making an application for a grant, but will likely be making its own application for a grant for another project, so he did not feel that they could also serve as the applying agency for a Watermaster project. He noted, however, that a city could potentially serve in that role.

Ms. Thomasberg and Mr. Simonitch said that the same situations existed with MCWRA and the city of Sand City, in that their respective entities were also considering submitting grant applications for their own projects.

Mr. Holden said that MRWPCA is pursuing a monitoring well for its groundwater replenishment project, but is not an eligible applicant under the grant program requirements, and would therefore have to get a partner to submit an application on its behalf.

There was discussion of monitoring wells, groundwater monitoring, storm water recharge, and other potential projects for which to seek grant funding.

Ms. King said that adding monitoring wells in the areas of the Seaside Basin where the greatest impact on water levels is occurring would seem to be the most beneficial projects from her perspective.

Mr. Oliver said MPWMD is pursuing a grant for a monitoring well to support their ASR project.

There was discussion of other issues pertaining to applying for a grant. Mr. Lear said that his experience has been that the most highly ranked applications were those that could show clear benefit from the projects that were being proposed.

Mr. Sabolsice noted that the Seaside representative was not present at today's meeting, and recommended that the matter be continued to the next TAC meeting for discussion so his input could be included.

6. **Schedule**

Mr. Jaques briefly summarized the agenda packet materials on this item and noted that there had been no appreciable changes from the schedule in the previous TAC meeting agenda packet.

7. **Other Business**

Mr. Oliver reported that he was still waiting for sufficient rain to occur to perform ASR this winter season. He said that currently predicted near future rainfall may reach the trigger point to allow ASR to be done.

Mr. Sabolsice reported that CAW will be submitting its proposed project documents to the Public Utilities Commission by the April 23rd deadline.

8. **Set Next Meeting Date**

The next meeting date was set for Wednesday May 9, 2012 at 1:30 p.m. at the MRWPCA Board Room

The meeting was adjourned by Chair Sabolsice at 3:31 p.m.

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 9, 2012
AGENDA ITEM:	2.A
AGENDA TITLE:	Sentinel Well Induction Logging Results from January 2012
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

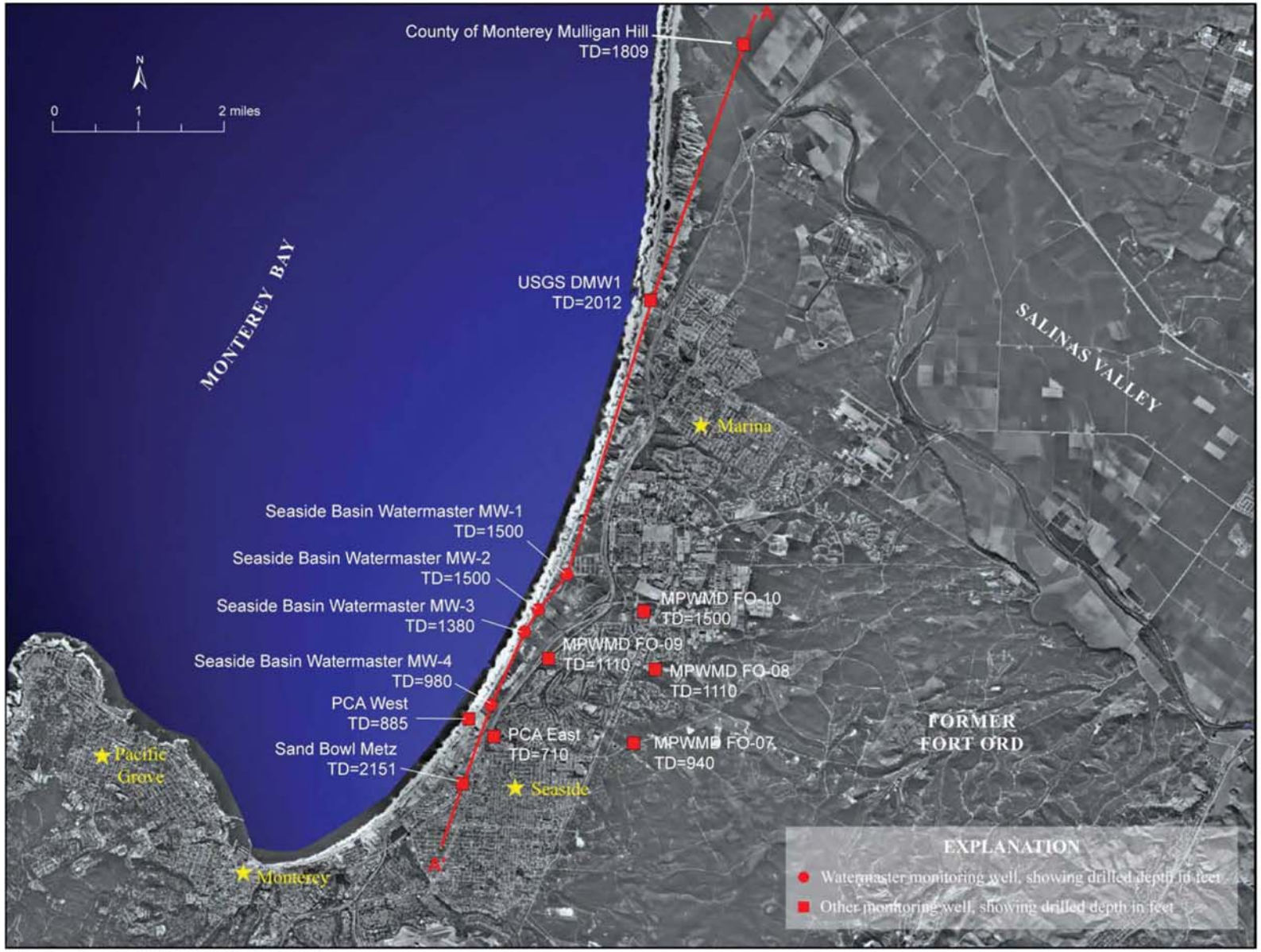
Induction logging is performed semi-annually on the four Watermaster Sentinel Wells that are located near the coast line from near the southern boundary of the former Fort Ord to slightly north of the Main Gate entrance from Highway 1 to the former Fort Ord. These four wells are identified as Seaside Basin Watermaster MW-1 through MW-4 in the attached map.

The purpose of the induction logging is to look for signs of seawater intrusion by comparing the conductivity in these wells from the date they were installed in 2007 to their conductivity during the ensuing years up until the present time.

Martin Feeney performs this work as a subcontractor to MPWMD, whose scope of services for the Watermaster includes induction logging of these wells as well as sampling and analyzing samples from other wells within the Seaside Basin.

As the plotted data that is attached shows, there has been virtually no change in the conductivity in any of these four wells since they were first installed. Thus, the induction logging does not show any evidence of seawater intrusion occurring. This data is one source of information that is evaluated by HydroMetrics in the Seawater Intrusion Analysis Report which it prepares for the Watermaster each year.

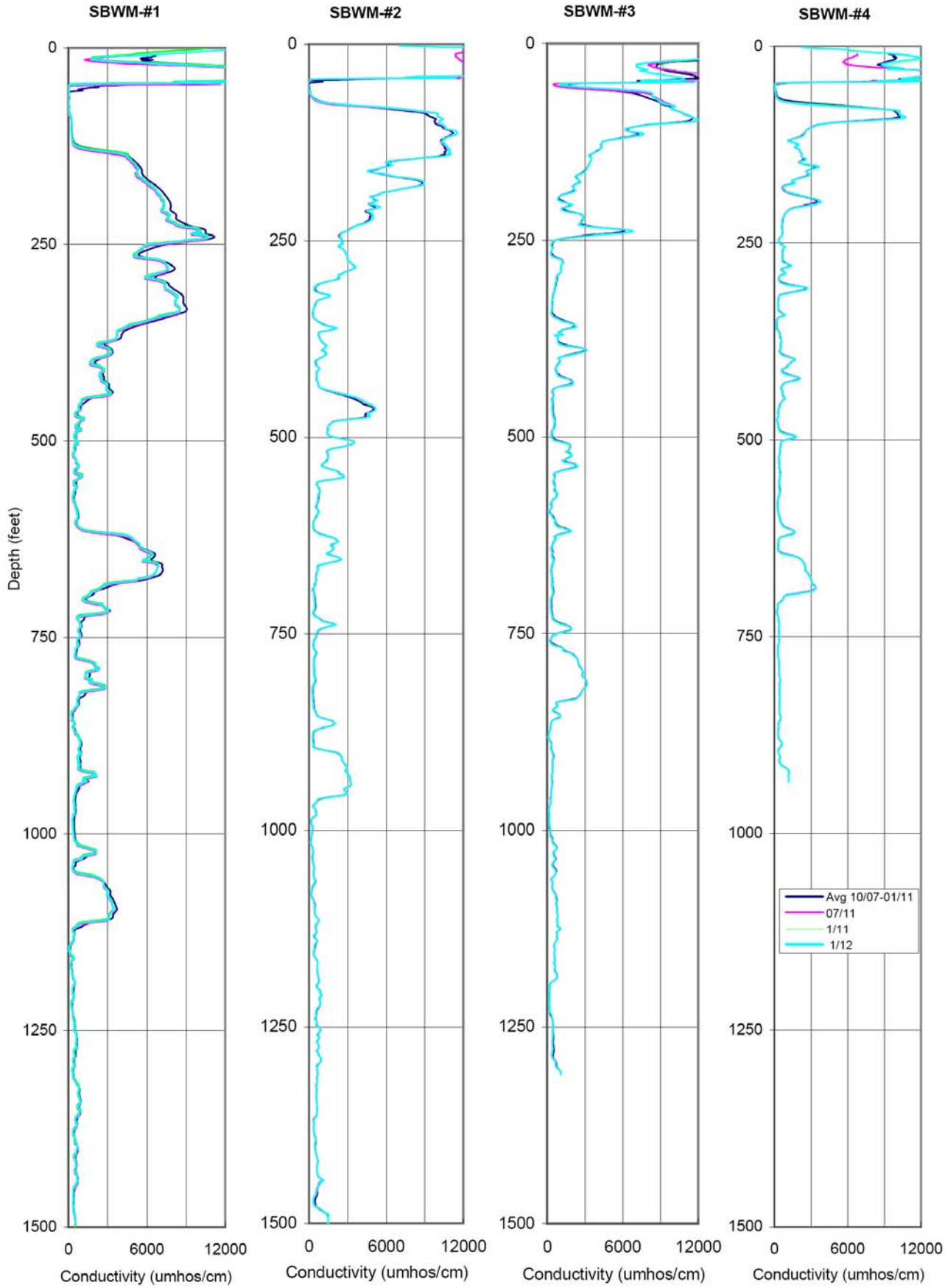
ATTACHMENTS:	1. Map showing location of Sentinel Wells 2. Plot of induction logging results from these wells for the period July 2011 through January 12
RECOMMENDED ACTION:	No action required – information only



Orthophoto base from HJW (1999), 1:36,000 scale imagery

FIGURE 1

Seaside Groundwater Basin Watermaster
Sentinel Wells
Induction Logs
2007-2012



SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 9, 2012
AGENDA ITEM:	3
AGENDA TITLE:	Update on Resampling of Sand City Public Works Well
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

Joe Oliver will provide an oral update on the resampling work that has been done on the Sand City Public Works well. This well had an unusually high chloride level when it was sampled in mid-2011, so it was resampled later in 2011. This well is located in an area where wells in the past have also reportedly seen higher chloride levels than other wells in the Basin.

Attached is the most recent water quality analysis for the Sand City Public Works well (sample date 4/3/12). The most recent results show that the chloride concentration was 291 mg/L, which is down slightly from the 7/26/11 330 mg/L value (previous water quality sample results for this well, Well No. 165, are available on the Watermaster's website under the "DATA" tab).

As was discussed, this well's water quality has exhibited somewhat unique water quality characteristics relative to other coastal Seaside Basin wells. Since the first sample was analyzed under the Watermaster M&MP in 2008, both sodium and chloride levels have been elevated relative to other coastal wells in the basin. In addition, the water quality from this well has shown elevated levels of other constituents, including nitrate and fluoride, relative to other coastal wells. MPWMD and Cal-Am staff are continuing to search historical water quality records to determine if any similar conditions had been recorded from other now abandoned wells that were in this area of the Basin.

More recent water quality fluctuations and historical WQ data from this area (if available) will continue to be tracked.

ATTACHMENTS:	Water quality analysis for the Sand City Public Works well
RECOMMENDED ACTION:	None required – information only

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

MBAS
MONTEREY BAY ANALYTICAL SERVICES
PRECISION ● ACCURACY ● DEPENDABILITY
4 Justin Court Suite D, Monterey, CA 93940
831.375.MBAS
montereybayanalytical@usa.net

ELAP Certification Number: 2385

Wednesday, April 25, 2012

Lab Number: **AA86360**

Collection Date/Time:	4/3/2012	15:00	Sample Collector:	LINDBERG, T
Submittal Date/Time:	4/3/2012	15:40	Sample ID	

Sample Description: Sand City Corp. Yard

Analyte	Method	Unit	**Result**	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	**131**		2		4/12/2012
Ammonia-N	4500NH3 D	mg/L	**1.25**		0.05		4/9/2012
Boron	EPA200.7	mg/L	**1.08**		0.05		4/11/2012
Bromide	EPA300.0	mg/L	**0.68**		0.10		4/5/2012
Calcium	EPA200.7	mg/L	**38**		0.5		4/11/2012
Chloride	EPA300.0	mg/L	**291**		1	250	4/5/2012
Fluoride	EPA300.0	mg/L	**3.54**		0.10	2.0	4/5/2012
Hardness (as CaCO3)	2340B	mg/L	**136**		10		4/20/2012
Iron	EPA200.7	ug/L	**Not Detected**		10	300	4/11/2012
Magnesium	EPA200.7	mg/L	**10**		0.5		4/11/2012
Manganese, Total	EPA 200.7	ug/L	**19**		10	50	4/11/2012
Nitrate as NO3	EPA300.0	mg/L	**30**		1	45	4/5/2012
Nitrite as NO2-N	EPA300.0	mg/L	**Not Detected**		0.10	1.00	4/5/2012
o-Phosphate-P	EPA300.0	mg/L	**Not Detected**		0.10		4/5/2012
pH (Laboratory)	4500-H+B	STD. Units	**7.3**				4/3/2012
Potassium	EPA200.7	mg/L	**5.3**		0.1		4/11/2012
QC Anion Sum x 100	Calculaltion	%	**95%**				4/16/2012
QC Anion-Cation Balance	Calculaltion	%	**-2**				4/20/2012
QC Cation Sum x 100	Calculaltion	%	**90%**				4/20/2012
QC Ratio TDS/SEC	Calculation		**0.59**				4/10/2012
Sodium	EPA200.7	mg/L	**251**		0.5		4/11/2012
Specific Conductance (E.C)	2510B	umhos/cm	**1532**		1	900	4/5/2012
Sulfate	EPA300.0	mg/L	**152**		1	250	4/5/2012
Total Diss. Solids	2540C	mg/L	**897**		10	500	4/5/2012
Total Organic Carbon	SM5310C	mg/L	**0.70**	E	0.20		4/12/2012

Sample Comments:

Report Approved by:

David Holland, Laboratory Director

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

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 9, 2012
AGENDA ITEM:	4
AGENDA TITLE:	Presentation on the Salt and Nutrient Management Plan for the Seaside Groundwater Basin
PREPARED BY:	Georgina King, HydroMetrics

On February 3, 2009, the California State Water Resources Control Board adopted a Recycled Water Policy as part of Resolution No. 2009-0011. The goals of the Recycled Water Policy are to promote and increase the use of recycled water, to streamline water recycling project permitting, and to provide direction to the Regional Boards regarding recycled water project permitting. This resolution included the requirement for all groundwater basins to prepare and adopt a Salt and Nutrient Management Plan (S&NMP). All basins are required to adopt such a plan by May 14, 2014.

The intention of the S&NMP is to involve all surface and groundwater users and wastewater dischargers in the Basin to participate in efforts to protect the Basin's water from accumulating concentrations of salt and nutrients that would degrade the quality of water supplies in the Basin to the extent that it may limit their use.

Activities such as irrigation using imported water, or recycled water can potentially add salts and nutrients to the Basin. Other sources of salts/nutrients include natural soil conditions, atmospheric deposition, discharges of waste, soil amendments, and water supply augmentation using surface water or recycled water.

The general scope for developing the S&NMP will include the following tasks:

Task 1. Stakeholder Outreach
Task 2. Establish Basin Characteristics
Task 3. Identify Existing and Foreseeable Salt and Nutrient Sources
Task 4. Salt and Nutrient Evaluation
Task 5. Monitoring Programs and Database
Task 6. Prepare Salt and Nutrient Management Plan

Data from recent Basin studies will be integrated into the S&NMP wherever possible. The existing groundwater monitoring network and associated database will also be included in the S&NMP's Task 5.

During the project, stakeholder participation will include attending several stakeholder meetings, assisting in identifying current and future salt and nutrient sources, providing water quality data that may not be included in the already established databases, providing data on salt and nutrient loading, and review of the S&NMP.

AGENDA ITEM:	4 (Cont'd)

Discussion of the Salt and Nutrient Management Plan at today's TAC meeting is an initial step in Task 1. Discussion points in the meeting will include:

- Addressing questions on the purpose and process of the plan, and
- Identifying other potential stakeholders,

The overall scope of the Stakeholder Outreach task is provided below.

Task 1. Stakeholder Outreach

The recycled water policy adopted by Resolution No. 2009-0011 states in part that the plans should be a, "…locally driven and controlled, collaborative processes open to all stakeholders…" Stakeholder outreach ensures integration between all regional water users and water producers. To ensure broad stakeholder involvement, all agencies and private individuals who use or influence groundwater, or have the potential to, will be identified. Each of these stakeholders will be contacted and invited to participate in the process of developing the S&NMP. The Seaside Groundwater Basin Watermaster (Watermaster) will be a starting point for this outreach, as all the main stakeholders are already represented on the Watermaster's Board. The Regional Board will be an important and necessary stakeholder in this process who will help guide the project's direction. In addition, we anticipate contacting agencies or individuals that may be significant sources of salt or nutrients including the Monterey Regional Water Pollution Control Agency (MRWPCA) and the owners of golf courses or other intensely irrigated areas. Once the stakeholders have been identified and have chosen to commit to participating in development of the plan, specific roles and responsibilities can be assigned.

ATTACHMENTS:	None
RECOMMENDED ACTION:	None Required – Information Only

SEASIDE BASIN WATER MASTER TECHNICAL ADVISORY COMMITTEE

** * * AGENDA TRANSMITTAL FORM * * **

MEETING DATE:	May 9, 2012
AGENDA ITEM:	5
AGENDA TITLE:	Report on Investigation into Potential for Aquifer Cross-Contamination in the Coastal Wells
PREPARED BY:	Robert Jaques, Technical Program Manager

Under Task I.3.d of MPWMD's RFS No. 2011-01 they are to perform the following initial work to further evaluate coastal wells for their potential risk of causing cross-aquifer contamination:

1. **Field verify selected older steel cased wells** – Wells older than 30 years that were constructed with steel casings have been identified. Under this task PROFESSIONAL will contact land owners and conduct interviews, conduct site investigations using a metal detector (if appropriate), document the condition of the well head, determine total available well depth, and collect a water level (if possible).

2. **Inspect well logs to assess proper seal placement to isolate aquifers** – Wells that penetrate multiple aquifers but are screened in one can be conduits for cross-aquifer contamination if well seals were not placed adjacent to confining layers between the aquifer units. Under this Task PROFESSIONAL will review well logs to determine if surface and/or transition seals are installed, and assessed as to the risk associated with those that do not contain sufficient seals.

3. **Add wells to Watermaster database** – Adding wells identified during the first phase of this investigation will provide the Watermaster with a more complete list of wells known to exist in the basin. If the current well status can be verified (e.g., inactive, destroyed, etc.) they can then be tracked by the database, with the correct current well status. Under this Task PROFESSIONAL will add these additional wells to the Watermaster's database.

4. **Investigate the Santa Margarita – Purisima interface** – Wells constructed with PVC provide the opportunity to collect resistivity information via an induction log. This is of interest because the transition between the Santa Margarita Sandstone and the Purisima Formation is not well understood. Locating PVC constructed wells in the region of the Seaside Basin where the transition between the units is thought to occur and collecting resistivity data will help to better define this boundary, and will provide additional information about current, depth-specific water quality conditions. Under this Task PROFESSIONAL will identify and field verify wells that are candidates for induction logging and prepare a list of wells to bring back to the Watermaster.

5. **Investigate video logging of selected wells suspected to be conduits for cross-contamination** – Video logs verify if the well has been compromised and is allowing groundwater flow between aquifer units. Following field verification of wells, under this Task MPWMD will provide a list of wells recommended for video logging. Criteria for selection will be age of well, condition of well head, proximity of well to potential contamination sources (e.g., coastline), and aquifer units penetrated by well.

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

**** * * AGENDA TRANSMITTAL FORM * * ****

AGENDA ITEM:	5 (Cont'd)

6. **Identify abandoned wells that are screened in the Santa Margarita –** The Santa Margarita Sandstone is the primary production aquifer for drinking water in the Seaside Basin and is also the target aquifer currently used for Aquifer Storage and Recovery and potential future aquifer replenishment projects. While properly-sealed wells screened solely in the Santa Margarita are not candidates for cross-aquifer contamination, such abandoned wells could provide a direct conduit for pollutants. MPWMD staff believes that to best protect the water resource system these wells should also be identified. Under this Task MPWMD would prepare a list of any such abandoned wells that are identified, and a course of action to conduct any additional work if warranted.

Pertinent information from the above tasks will be prepared in summary tables and figures, along with a brief report.

Task I.3.d in MPWMD's RFS No. 2012-01 states that if the work started in 2011 under RFS No. 2011-01 for this Task identifies further work which WATERMASTER wishes to perform under this Task in 2012, WATERMASTER will issue a separate RFS to PROFESSIONAL to perform that work. No work on this Task is authorized under this RFS No. 2012-01.

- - - 0 - - -

This analysis has compiled data from multiple sources into a single database allowing MPWMD staff to identify wells that might pose contamination risk based on screened intervals, age, construction material, and status. The TAC previously received a presentation summarizing results from this study, and as a follow-up instructed MPWMD to field verify wells identified during the analysis and wells identified as abandoned or destroyed. MPWMD has conducted field investigations into the locations of wells with unknown locations or status and the results of this investigation will be summarized in a PowerPoint presentation to the TAC by Mr. Lear at today's meeting.

ATTACHMENTS:	None
RECOMMENDED ACTION:	Determine Whether or Not Further Action on this Matter Should be Taken

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 9, 2012
AGENDA ITEM:	6
AGENDA TITLE:	Discussion of Lake El Estero Stormwater as a Potential Water Source for MPWMD Proposed Desalination Plant on Former Monterey Wastewater Treatment Plant Site
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

During the discussion of issues pertaining to obtaining water to help replenish the Seaside Basin at the March 14, 2012 TAC meeting, there was discussion regarding the MPWMD's proposed desalination plant at the Naval Postgraduate School site in Monterey. Mr. Oliver responded that this project was only in the early planning stages at this point.

Following up on that discussion Mr. Green suggested that another concept that could be considered would be to treat water from Lake El Estero to help reduce stormwater discharges from the city of Monterey, while also providing an additional water source for a desalination plant and potential benefit to the Seaside Basin.

There was consensus to have Mr. Green make a presentation on this at a future TAC meeting, and he will make that presentation at today's meeting.

ATTACHMENTS:	None
RECOMMENDED ACTION:	Determine whether the Watermaster should take any action or further evaluate this concept

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

** * * AGENDA TRANSMITTAL FORM * * **

MEETING DATE:	May 9, 2012
AGENDA ITEM:	7
AGENDA TITLE:	Consider Recommendation for Modifications to the Monitoring and Management Plan Operations Budget
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

At its meeting of May 2, 2012 the Board considered the TAC's recommendation to seek a temporary suspension of the triennial 10% pumping cutbacks required by the Adjudication Decision. The Board is continuing discussion of this matter to its next meeting, and asked in the meantime that the Monitoring and Management Program (M&MP) Operations Budget be examined to see if there were any line items in it which are expected to be completed below the budgeted amounts, and/or if there were any line items that may not need to be performed during the current Fiscal Year.

The purpose of this Budget evaluation would be to identify funds that could be used to perform the groundwater modeling work to support making this request to the Court, so that nearly the entire Contingency line item would not have to be expended to perform that unbudgeted work.

Attached is a copy of the approved FY 2012 M&MP Operations Budget. Those items shaded in grey are those that I feel will either be completed below the budgeted amount, or which could be deferred to a future FY. Deferring these items to a future FY would free up $80,000 from the FY 2012 M&MP Operations Budget.

The TAC is asked to either concur with this assessment, or to modify it, so that the Technical Program Manager can provide to the Board the information it has requested.

ATTACHMENTS:	Copy of the FY 2012 M&MP Operations Budget
RECOMMENDED ACTION:	Accept or modify the Technical Program Manager's assessment of the Budget with regard to items that could be deferred to a future FY

Management and Monitoring Plan Operations Budget
For Tasks to be Undertaken in 2012

Task	Subtask	Sub-Subtask	Cost Description	CONSULTANTS & CONTRACTORS[3]			Total
				MPWMD	Private Consultants	Contractors	
Labor							
			Technical Project Manager	$0	$60,000	$0	$60,000
M.1 Program Administration							
	M.1.a		Project Budget and Controls	$0	$0	$0	$0
	M.1.b		Assist with Board and TAC Agendas	$0	$0	$0	$0
	M.1.c & M.1.d		Preparation for and Attendance at Meetings[8]	$0	$5,150	$0	$5,150
	M.1.e		Peer Review of Documents and Reports[8]	$0	$3,100	$0	$3,100
	M.1.f		QA/QC	$0	$0	$0	$0
I.1 Initial Phase 1 Monitoring Well Construction (Task Completed in Phase 1)							
I.2 Production, Water Level and Quality Monitoring							
	I. 2. a.		Database Management				
		I. 2. a. 1.	Conduct Ongoing Data Entry/ Database Maintenance/Enhancement	$9,900	$2,400	$0	$12,300
		I. 2. a. 2.	Verify Accuracy of Production Well Meters	$0	$0	$0	$0
	I. 2. b.		Data Collection Program				
		I. 2. b. 1.	Site Representation and Selection[7]	$0	$0	$0	$0
		I. 2. b. 2.	Collect Monthly Water Levels[6]	$3,450	$0	$0	$3,450
		I. 2. b. 3.	Collect Quarterly Water Quality Samples[1][5][6]	$38,300	$0	$17,220	$55,520
		I. 2. b. 4.	Update Program Schedule and Standard Operating Procedures.	$0	$0	$0	$0
		I. 2. b. 5.	Monitor Well Construction[7]	$0	$0	$0	$0
		I. 2. b. 6.	Reports	$5,850	$1,050	$0	$6,900
I.3 Basin Management							
	I. 3. a.		Enhanced Seaside Basin Groundwater Model	(Costs Shown in Subtasks Below)			
		I. 3. a. 1	Update the Existing Model	$0	$0	$0	$0
		I. 3. a. 2	Develop Protective Water Levels [11]	$0	$25,000	$0	$25,000

		I. 3. a. 3	Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions	$0	$25,000	$0	$25,000
	I. 3. b.		Complete Preparation of Basin Management Action Plan	$0	$0	$0	$0
	I. 3. c.		Refine and/or Update the Basin Management Action Plan (11)	$0	$25,000	$0	$25,000
	I. 3. d		Evaluate Coastal Wells for Cross-Aquifer Contamination Potential	$5,000	$0	$0	$5,000
I.4 Seawater Intrusion Contingency Plan							
	I. 4. a.		Oversight of Seawater Intrusion Detection and Tracking	$3,700	$2,050	$0	$5,750
	I. 4. b.		Analyze and Map Water Quality from Coastal Monitoring Wells	(Costs Included Under I.4.a)			
	I. 4. c.		Annual Report- Seawater Intrusion Analysis	$0	$25,750	$0	$25,750
	I. 4. d.		Complete Preparation of Seawater Intrusion Response Plan(2)	$0	$0	$0	$0
	I. 4. e.		Refine and/or Update the Seawater Intrusion Response Plan(2) (9)	$0	$0	$0	$0
	I. 4. f.		If Seawater Intrusion is Determined to be Occurring, Implement Contingency Response Plan(2)	(No Costs are Included for This Task, as This Task Will Likely Not be Necessary During 2012. If it Does Become Necessary, Use of Contingency Funds or a Budget Modification Will Likely be Necessary)			
			TOTALS CONSULTANTS & CONTRACTORS	**$66,200**	**$174,500**	**$17,220**	
						SUBTOTAL not including Technical Program Manager =	$197,920
						Contingency (not including Technical Program Manager) @ 20%(4)=	$39,584
						Technical Program Manager =	$60,000
						TOTAL=	**$297,504**

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 9, 2012
AGENDA ITEM:	8
AGENDA TITLE:	Continued Discussion in Regard to Submitting an Application for a Grant Under the Local Groundwater Assistance Grant Program
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

At the TAC's April 11, 2012 meeting one of the Agenda topics pertained to consideration of submitting an application for a Grant under the State's Local Groundwater Assistance Grant Program. The Chair continued this topic to today's meeting, so that any TAC members who were unable to attend the April 11th meeting could participate in these discussions.

To provide background information for today's discussion, I have included the attached "Description of the Local Groundwater Assistance Grant Program" which was included in the April 11th Agenda packet. The items highlighted with gray shading in the attachment are those which I felt might be topics of interest for the TAC to consider. I have also attached an excerpt pertaining to this topic from the Minutes of that TAC meeting.

ATTACHMENTS:	1. Description of the Local Groundwater Assistance Grant Program 2. Except from Minutes of April 11, 2012 TAC Meeting
RECOMMENDED ACTION:	Provide direction to Technical Program Manager regarding submitting an application for a grant under this Program

Description of the Local Groundwater Assistance Grant Program

Overview. This program in intended to provide financial assistance for projects designed to improve groundwater management and knowledge of various groundwater basins throughout the state. The maximum amount of any single grant is $250,000, and there is no local cost share requirement, unless the cost of the project exceeds the $250,000 amount. The table below provides examples of eligible project topics. The examples on this list are not inclusive and other projects will be considered provided they fall into the scope of CWC Section 10795.4, which is to perform groundwater studies, monitoring, or management activities. Pure research and major construction projects, such as a water supply well, typically do not directly fall into the scope of work for this program. Shaded in gray are a number of types of projects that the Seaside Basin Watermaster has been, or may be, involved with.

	Example Topics
Groundwater Studies	• Collect and evaluate data related to groundwater management • Evaluate the potential for natural or artificial recharge or evaluate conjunctive use opportunities • Develop and calibrate a groundwater model to assist in managing groundwater resources • Examine alternative methods of reducing the impact of high water tables • Evaluate the potential to deliver untreated water or treated wastewater for groundwater recharge • Perform aquifer tests • Gather information or perform studies for developing or improving groundwater management
Groundwater Monitoring, Mapping, and Data Reporting	• Develop groundwater level monitoring and reporting program to support participation in the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. • Develop and implement monitoring programs to measure water quality and subsidence • Install monitoring wells, extensometers, or other monitoring devices • Install data loggers in wells at strategic locations • Mapping of groundwater recharge areas
Groundwater Management	• Plan variations in amount and locations of pumping to better utilize the basin storage capacity • Develop or expand a local or regional GWMP • Evaluate alternatives to improve water supply reliability or to protect and improve water quality • Develop local or regional groundwater basin management objectives • Integrate groundwater management with other water management strategies • Well destruction to eliminate potential contaminant conduits

Eligibility requirements. An applicant for an LGA grant must be a local public agency, as defined in CWC 10701(a). Examples of local public agencies include cities, counties, special districts, Joint Powers Authorities (JPA), boards, commissions, other political subdivisions of the State, or local agencies administering a court ordered adjudication of water rights in a subject groundwater basin. Some entities, including some court-appointed water masters, associations, and entities formed under a Memorandum of Agreement (MOA) or Memorandum of Understanding (MOU) may not be considered to be local public agencies.

Groundwater Management Program. All applicants must submit information regarding the status of the GWMP that covers the area in which the proposed project is located. The GWMP need not have been adopted at the time of the application, but a draft of the proposed GWMP, along with the date the GWMP is expected to be adopted, must be provided. An application can even be made to develop a GWMP, if one has not been developed.

Schedule. Projects should be completed within a two year period from the date of grant award. DWR anticipates finalizing its application requirements and making the application package available in May, with applications due probably by mid-summer.

More Information: The DWR website at http://www.water.ca.gov/lgagrant/index.cfm provides more details on the LGA Grant Program.

Excerpt from Minutes of April 11, 2012 TAC Meeting

5. Consider Submitting an Application for a Grant Under the Local Groundwater Assistance Grant Program

Mr. Jaques summarized the agenda packet materials on this item.

Mr. Oliver said MPWMD was supportive of making an application for a grant, but will likely be making its own application for a grant for another project, so he did not feel that they could also serve as the applying agency for a Watermaster project. He noted, however, that a city could potentially serve in that role.

Ms. Thomasberg and Mr. Simonitch said that the same situations existed with MCWRA and the city of Sand City, in that their respective entities were also considering submitting grant applications for their own projects.

Mr. Holden said that MRWPCA is pursuing a monitoring well for its groundwater replenishment project, but is not an eligible applicant under the grant program requirements, and would therefore have to get a partner to submit an application on its behalf.

There was discussion of monitoring wells, groundwater monitoring, storm water recharge, and other potential projects for which to seek grant funding.

Ms. King said that adding monitoring wells in the areas of the Seaside Basin where the greatest impact on water levels is occurring would seem to be the most beneficial projects from her perspective.

Mr. Oliver said MPWMD is pursuing a grant for a monitoring well to support their ASR project.

There was discussion of other issues pertaining to applying for a grant. Mr. Lear said that his experience has been that the most highly ranked applications were those that could show clear benefit from the projects that were being proposed.

Mr. Sabolsice noted that the Seaside representative was not present at today's meeting, and recommended that the matter be continued to the next TAC meeting for discussion so his input could be included.

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 9, 2012
AGENDA ITEM:	9
AGENDA TITLE:	Schedule
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

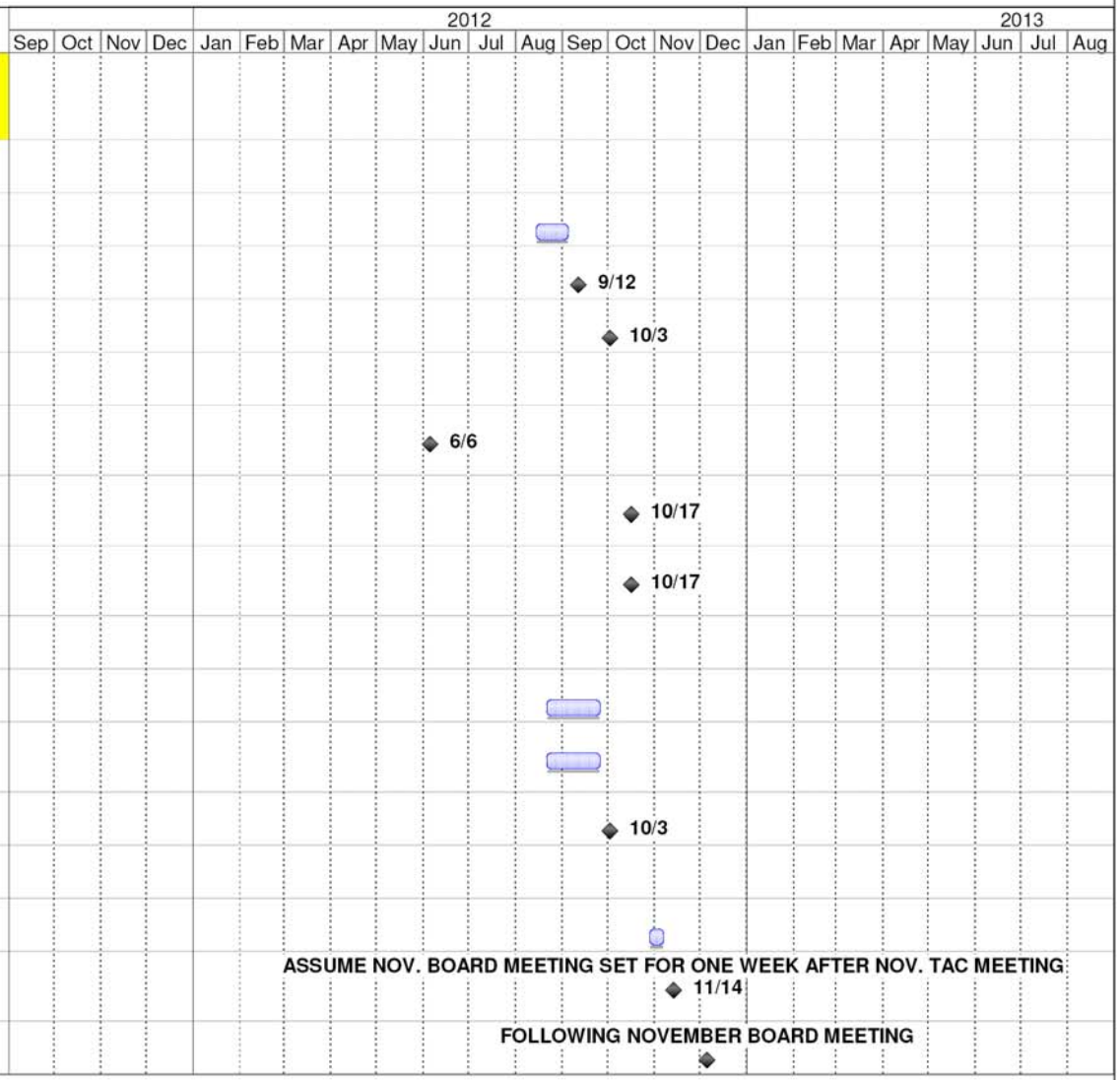
As a regular part of each monthly TAC meeting, I will provide the TAC with an updated Consultants Work Schedule of the activities being performed by the Watermaster's consultants and the public entity, MPWMD, which is performing certain portions of the work, and of the Critical Program Milestones Schedule.

Attached is the Consultants Work Schedule for FY 2012. The only changes to the Schedule since the April 11 TAC meeting were to reschedule MPWMD's completion of its Quarterly Water Quality and Water Level reports for the first and second quarters of WY 2012 from early April to early June, 2012.

ATTACHMENTS:	Schedule of Work Activities for FY 2012
RECOMMENDED ACTION:	Provide Input to Technical Program Manager Regarding Any Corrections or Additions to this Schedule

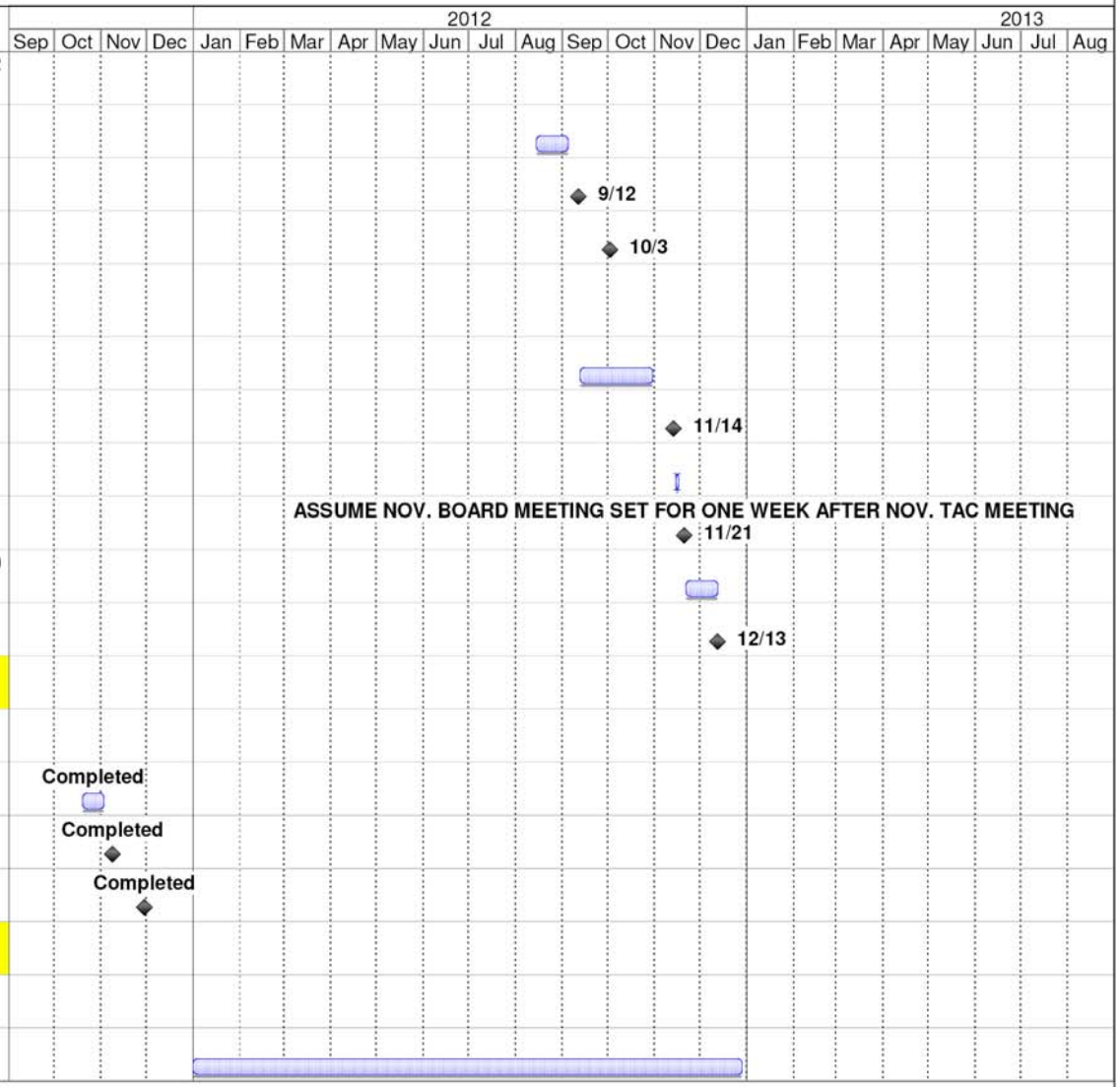
Seaside Basin Watermaster
Monitoring and Management Program
2012 Work Schedule

ID	Task Name
1	***CRITICAL PROJECT MILESTONES ASSOCIATED WITH TAC, BOARD, AND/OR CONSULTANT WORK***
2	**2011 Administration, Operations and Replenishment Budgets**
3	Prepare M&MP Draft Budgets (Same as Task 19)
4	TAC Approves M&MP Budgets (Same as Task 20)
5	Board Approves M&MP Budgets (Same as Task 21)
6	**Watermaster Prepares Quarterly Water Production, Water Level, and Water Quality Reports**
7	Watermaster Prepares Combined Quarterly Water Production, Water Level, and Water Quality Reports for 1st & 2nd Quarters (Same as Task 41)
8	Watermaster Prepares Quarterly Water Production, Water Level, and Water Quality Reports for 3rd and 4th Quarters (Same as Task 42)
9	Watermaster Prepares Annual Water Production, Water Level, and Water Quality Report for 2012 (Same as Task 43)
10	**Replenishment Assessment Unit Costs for Water Year 2012**
11	B&F Committee Develops Replenishment Assessment Unit Cost for 2013 Water Year
12	If Requested, TAC Provides Assistance to B&F Committee in Development of 2013 Water Year Replenishment Assessment Unit Cost
13	Board Adopts and Declares 2013 Water Year Replenishment Assessment Unit Cost
14	**Replenishment Assessments for Water Year 2012**
15	Watermaster Prepares Replenishment Assessments for Water Year 2012
16	Watermaster Board Approves Replenishment Assessments for Water Year 2012 (At November Meeting)
17	Watermaster Levies Replenishment Assessment for 2012



Seaside Basin Watermaster
Monitoring and Management Program
2012 Work Schedule

ID	Task Name
18	**Monitoring & Management Program (M&MP) Budgets for 2012**
19	Prepare Draft 2013 and 2014 M&MP O&M and Capital Budgets
20	TAC approves Draft 2013 and 2014 M&MP O&M and Capital Budgets
21	Board approves 2013 and 2014 M&MP O&M and Capital Budgets
22	**2012 Annual Report (Note: Schedule Reflects Court Approval of Later Submittal Date for Annual Report)**
23	Prepare Preliminary Draft 2012 Annual Report
24	TAC Provides Input on Draft 2012 Annual Report
25	Prepare Revised Draft 2012 Annual Report (Incorporating TAC Input)
26	Board Provides Input on Revised Draft 2012 Annual Report (At November Board Meeting)
27	Prepare Final 2012 Annual Report (Incorporating Board Input)
28	Watermaster Submits Final 2012 Annual Report to Judge
29	***MANAGEMENT***
30	**M.1 PROGRAM ADMINISTRATION (All Work Performed by Watermaster Staff)**
31	Prepare Initial Consultant Contracts for 2012
32	TAC Approval of Initial Consultant Contracts for 2012
33	Board Approval of Initial Consultant Contracts for 2012 (At November Board Meeting)
34	***IMPLEMENTATION***
35	**I.2.a DATABASE MANAGEMENT**
36	**I.2.a.1 Conduct Ongoing Data Entry/Database Maintenance**



Seaside Basin Watermaster
Monitoring and Management Program
2012 Work Schedule

ID	Task Name	2012																2013							
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
37	**I.2.b DATA COLLECTION PROGRAM**																								
38	**I.2.b.2 Collect Monthly Water Levels (MPWMD)**																								
39	**I.2.b.3 Collect Quarterly Water Quality Samples (MPWMD)**																								
40	**I.2.b.6 Reports (from MPWMD)**																								
41	Watermaster Prepares Combined Quarterly Water Production, Water Level, and Water Quality Reports for 1st & 2nd Quarters										6/6														
42	Watermaster Prepares Quarterly Water Production, Water Level, and Water Quality Reports for 3rd and 4th Quarters														10/17										
43	Watermaster Prepares Annual Water Production, Water Level, and Water Quality Report for 2012														10/17										
44	**I.3.a ENHANCED SEASIDE BASIN GROUNDWATER MODEL**																								
45	**I.3.a.2 Develop Protective Water Levels**		NO WORK SCHEDULED UNTIL TAC DIRECTION PROVIDED TO RESUME DISCUSSION																						
46	**I.3.a.3 Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions**		NO WORK SCHEDULED UNTIL TAC DIRECTION PROVIDED TO RESUME DISCUSSION																						
47	**I.3.c Refine and/or Update the BMAP**		NO WORK SCHEDULED UNTIL TAC DIRECTION PROVIDED TO RESUME DISCUSSION																						
48	**I.3.d Evaluate Coastal Wells for Cross-Aquifer Contamination Potential**																								
49	TAC Receives Initial Report from MPWMD on its Evaluations									5/9															
50	TAC Approves Scope of Work for MPWMD to Perform Further Evaluations of these Wells in 2012						ONLY IF FURTHER WORK IS NECESSARY																		
51	Board Approves Well Evaluation Work to be Done in 2012							ONLY IF FURTHER WORK IS NECESSARY																	
52	MPWMD Performs Further Evaluations of these Wells								ONLY IF FURTHER WORK IS NECESSARY																
53	MPWMD Makes Report on Well Evaluations to TAC										ONLY IF FURTHER WORK IS NECESSARY				10/10										
54	Presentation of Well Evaluations to Board											ONLY IF FURTHER WORK IS NECESSARY				11/7									

Seaside Basin Watermaster
Monitoring and Management Program
2012 Work Schedule

ID	Task Name	2012																2013							
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
55	**I.4.a HydroMetrics & MPWMD Provide Oversight of Seawater Intrusion Detection and Tracking**																								
56	**I.4.b HydroMetrics Analyzes and Maps Water Quality from Coastal Monitoring Wells**																								
57	**I.4.c Annual Seawater Intrusion Analysis Report (SIAR)**																								
58	HydroMetrics Provides Draft SIAR to Watermaster															**11/8**									
59	TAC Approves Annual Seawater Intrusion Analysis Report (SIAR)															**11/14**									
60	Board Approves Annual Seawater Intrusion Analysis Report (SIAR)							**ASSUME NOV. BOARD MEETING SET FOR ONE WEEK AFTER NOV. TAC MEETING**								**11/21**									
61	**I.4.d Complete Preparation of Seawater Intrusion Response Plan (SIRP)**					**WORK COMPLETED - NO FURTHER WORK PLANNED IN 2012**																			
62	**I.4.e Refine and/or Update the SIRP**						**NOT NECESSARY**																		

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE

**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 9, 2012
AGENDA ITEM:	10
AGENDA TITLE:	Other Business
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:
The "Other Business" agenda item is intended to provide an opportunity for TAC members or others present at the meeting to discuss items not on the agenda that may be of interest to the TAC.

ATTACHMENTS:	None
RECOMMENDED ACTION:	None required – information only

Exhibit 5.1

welenco

5201 Woodmere Drive, Bakersfield, CA 93313-- www.welenco.com--(800) 445-9914
California Contractor's License No. 722373

ELECTRIC - GAMMA RAY - TEMPERATURE LOG

FILING NO.

COMPANY Bradley & Sons Drilling

WELL Fitch School Monitor Well--Deep

FIELD Ft. Ord

STATE California COUNTY Monterey

LOCATION:
Gen. Jim Moore Road @ Fi9tch School

OTHER SERVICES:
None

JOB NO.
12231

SEC: 14 TWP: 15S RGE: 1E LAT.: 36° 37' 24.5" LONG.: 121° 49' 1.4" MERIDIAN.: Mt. Diablo

Permanent Datum: Ground Level, Elev. 340 Ft. Elev.: K.B. ____ Ft.
Log Measured From: Ground Level, 0 Ft. Above Perm. Datum D.F. ____ Ft.
Drilling Measured From: Ground Level G.L. 340 Ft.

Run	One			
Date	Oct. 14, 2009			
Depth-Driller	1080 Ft	Ft	Ft	Ft
Depth-Logger	1080 Ft	Ft	Ft	Ft
Top Logged Interval	5 Ft	Ft	Ft	Ft
Btm. Logged Interval	1080 Ft	Ft	Ft	Ft
Casing-Driller	14 In @ 20 Ft	In @ Ft	In @ Ft	In @ Ft
Casing-Logger	14 In @ 20 Ft	In @ Ft	In @ Ft	In @ Ft
Bit Size	10 5/8 In	In	In	In
Time On Bottom	10:45			
Type Fluid In Hole	Bentonite			
Density / Viscosity	n/a / n/a			
pH / Fluid Loss	n/a / n/a ml	ml	ml	ml
Source of Sample	Circ			
Rm @ Measured Temp.	9.1 @ 68 °F	@ °F	@ °F	@ °F
Rmf @ Measured Temp.	7.3 @ 75 °F	@ °F	@ °F	@ °F
Rmc @ Measured Temp.	n/a @ °F	@ °F	@ °F	@ °F
Source Rmf / Rmc	Meas			
Rm @ BHT	n/a @ °F	@ °F	@ °F	@ °F
Time Since Circulation	1 hr Hr	Hr	Hr	Hr
Max. Rec. Temp.	80 °F	°F	°F	°F
Van No. / Location	LV-2 / Sac			
Recorded By	M. Sharpless			
Witnessed By	R. Marks	J. Lear		