

MEETING NOTICE AND AGENDA
TECHNICAL ADVISORY COMMITTEE
OF THE
SEASIDE BASIN WATER MASTER

DATE: Wednesday, August 10, 2016

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 (712) 432-1212. Use the Meeting ID 355890617. 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: Roger Hulbert, California American Water Company

Vice-Chairperson: Joe Oliver, MPWMD

MEMBERS

**California American Water Company
Monterey**

**City of Del Rey Oaks
City of Sand City
Coastal Subarea Landowners**

**City of
Seaside**

**Laguna Seca Property Owners
Agency**

**Monterey County Water Resources
Monterey Peninsula Water Management District**

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The next regular meeting will be held on Wednesday September 14, 2016 at 1:30 p.m. at the MRWPCA Board Room.

***SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE***
*** * * AGENDA TRANSMITTAL FORM * * ***

MEETING DATE:	August 10, 2016
AGENDA ITEM:	2.A
AGENDA TITLE:	Approve Minutes from the July 13, 2016 Meeting
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

Draft Minutes from this meeting was 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
July 13, 2016**

Attendees: TAC Members

City of Seaside – Scott Ottmar (via telephone)
California American Water – Roger Hulbert
City of Monterey – Laurie Williamson (via telephone)
Laguna Seca Property Owners – No Representative
MPWMD – Joe Oliver
MCWRA – German Criollo (via telephone)
City of Del Rey Oaks – No Representative
City of Sand City – Leon Gomez (via telephone)
Coastal Subarea Landowners – No Representative

Watermaster

Technical Program Manager - Robert Jaques

Consultants

HydroMetrics – Georgina King (via telephone)

Others

None

The meeting was convened at 1:34 p.m. after a quorum had been established.

1. Public Comments

There were no public comments.

2. Administrative Matters:

B. Approve Minutes from the June 8, 2016 Meeting

Ms. Williamson requested that the wording in the Minutes on page 4 of the Agenda packet, for Item 3 of that meeting, be revised to clarify that Mr. Hulbert asked Ms. King if she would leave the meeting and the TAC would then continue discussion on that item, and that Ms. King agreed to do so. With this revision made, on a motion by Mr. Oliver, seconded by Ms. Williamson the minutes from this meeting were unanimously approved.

C. Sustainable Groundwater Management Act (SGMA) Update

Mr. Jaques summarized the agenda packet materials for this item. There was no other discussion of the item.

3. Amendment to MPWMD RFS No. 2016-01

Mr. Jaques summarized the agenda packet materials for this item and responded to questions from Ms. Williamson. On a motion by Mr. Criollo, seconded by Mr. Gomez Amendment No. 1 to MPWMD RFS No. 2016-01 was unanimously approved as presented.

4. Continued Discussion of Request from HydroMetrics LLC for Additional Compensation for RFS No. 2015-04

Mr. Jaques summarized the agenda packet materials for this item, and Mr. Hulbert opened the item for discussion.

Mr. Oliver asked if the work described in item 2 on page 18 of the agenda packet (the HydroMetrics' letter) was included in the scope of work of their contract. Mr. Jaques responded that the scope of work does not list all of the specifics of what the consultant will need to do to carry out the work assignment. He went on to say that in his opinion the contract language was broad enough with regard to the issues raised in that item of the HydroMetrics' letter that those issues were within their authorized scope of work.

Mr. Criollo commented that as an Alternate member of the TAC he was not involved in the previous discussions of this topic. He went on to say that in working with consultant contracts he would want a written approved authorization in advance of the consultant performing work that would result in costs being incurred that would exceed the originally authorized amount. Mr. Hulbert said he concurred with this.

Mr. Hulbert asked Ms. King why a request for additional compensation was not made before performing the work their letter described as being beyond the scope of their contract. Ms. King responded that HydroMetrics spent additional time to respond to questions and to make clarifications that were requested, and that they had not originally intended to prepare a comparison to the Safe Yield Study. She said they felt their work needed to be completed rapidly, and that they did not identify the cost overrun until after it had already occurred.

Mr. Hulbert described these options for the TAC to consider: (1) approve the Technical Program Manager's recommendation as set forth in the Agenda packet, or (2) provide other direction on what the Technical Program Manager should do. Mr. Ottmar made a motion recommending approval of the Technical Program Manager's recommendation and Ms. Williamson seconded the motion. On a vote of 5 to 1 the motion passed, with Mr. Oliver dissenting. Mr. Oliver commented that he could consider the preparation of a comparison to the Safe Yield Study as being out-of-scope work.

5. Schedule

There was discussion of several topics described on page 20 of the Agenda packet:

- Due to Mr. Oliver's upcoming retirement, MPWMD will be temporarily short-staffed. With regard to preparing the Monitoring Well Report under Task I.2.b.6 of MPWMD's RFS No. 2016-01 Mr. Oliver felt there were two options: (1) See if HydroMetrics could prepare this report instead of having MPWMD prepare it, or (2) defer having the report prepared until MPWMD was able to fill its staffing vacancies, either later this year or in 2017. Mr. Oliver went on to say that he did not feel preparing the report was a time-critical activity, and that it could be deferred until there was adequate MPWMD staff to prepare it. He said that if the decision was made to ask HydroMetrics to prepare the report, it would take MPWMD some time to compile and send to HydroMetrics the data and information that would be needed to prepare the report. Mr. Jaques recommended having MPWMD prepare the report as soon as they had adequate staff

to do so, but said he understood it was unlikely the report would be ready in time to be included in the Watermaster's 2016 Annual Report. He said he anticipated that the Monitoring Well Report would be included in the 2017 Annual Report, not the 2016 Annual Report.

- Also due to MPWMD being short-staffed, Mr. Oliver reported that preparation of the Q1/Q2 water level and water quality report would likely be delayed to the point that it would make sense to forgo it this year and just have the full Water Year water level and water quality report included in the Annual Report.
- Mr. Jaques summarized the items on page 20 of the Agenda packet which he envisioned being included as revisions in the 2017 Management and Monitoring Program (M&MP), and asked TAC members to notify him if they had any other revisions they would like to have considered when the topic comes to the TAC for discussion at the August 10 TAC meeting.

Mr. Oliver provided a brief oral update on the issues that had delayed MPWMD's submittal of the Watermaster's Voluntary Well data to the CASGEM system. He said that those issues had been resolved and that this data will likely be submitted in August.

6. Other Business

There was no Other Business to discuss.

7. Set Next Meeting Date

The next regular meeting will be held on Wednesday August 10, 2016 at 1:30 p.m. at the MRWPCA Board Room.

The meeting adjourned at 2:15 p.m.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**
*** * * AGENDA TRANSMITTAL FORM * * ***

MEETING DATE:	August 10, 2016
AGENDA ITEM:	3
AGENDA TITLE:	MRWPCA's Engineering Report for the Pure Water Monterey Groundwater Replenishment Project
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY: MRWPCA has completed drafting the Engineering Report for its Pure Water Monterey Groundwater Replenishment Project, as required by the State's Title 22 Groundwater Replenishment regulations. A copy of the notice announcing their public hearing on the Report is attached. The notice shows that the full Report, which consists of two volumes (1) the body and (2) the Appendices, is available online at www.purewatermonterey.org. Volume one is 325 pages in length. I reviewed the sections of Volume one that I felt pertained to the issues of greatest interest or concern to the Watermaster, and have provided excerpts from those section of the Report in the attached "Background Information and Issues of Interest or Concern to the Watermaster."

The one area of concern that I identified has to do with the reasonableness of the Response Reporting Time (RRT). The one area of interest I identified was in having the Watermaster be added to the distribution list of the reports that the Project will be submitting to the State, so the Watermaster can stay abreast of impacts and activities associated with the Project. These issues are both discussed at the end of the attachment. If any additional issues or concerns arise from the TAC at today's meeting, I will include them with my submittal to MRWPCA.

Mr. Bob Holden of MRWPCA will make a presentation on the Report at today's meeting and will be available to answer questions.

The Public Hearing will be held in the MRWPCA offices on Monday August 22, 2016 at 2:00 p.m.

ATTACHMENTS:	<ol style="list-style-type: none"> Notice of Public Hearing on the Pure Water Monterey Groundwater Replenishment Project General Information and Issues of Interest or Concern to the Watermaster
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SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
**** * * AGENDA TRANSMITTAL FORM * * ****

RECOMMENDED ACTION:	Provide input to the Technical Program Manager on additional issues or concerns so they can be included in the Watermaster's submittal of comments to MRWPCA
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Monterey Regional Water Pollution Control Agency

"Dedicated to meeting the wastewater and reclamation needs of our member agencies, while protecting the environment."

Administration Office:
5 Harris Court, Bldg. D, Monterey, CA 93940-5756
(831) 372-3367 or 422-1001, FAX: (831) 372-8178
Website: www.mrwPCA.org

Pure Water Monterey Groundwater Replenishment Project Public Hearing

The public is invited to attend a public hearing on the Pure Water Monterey Groundwater Replenishment (PWM) Project. The hearing is being held in accordance with Title 22, Division 4, Chapter 3, section 60320.202 of the California Code of Regulations (Title 22).

Project: The PWM Project would create a reliable source of water supply from 1) 3,500 acre-feet per year of advanced treated recycled water for recharge of the Seaside Groundwater Basin, and 2) up to approximately 4,500 acre-feet per year of "disinfected tertiary recycled water" to augment the existing Castroville Seawater Intrusion Project's agricultural irrigation supply. Water supplies proposed to be recycled and reused by PWM Project include municipal wastewater, agricultural wash water, urban stormwater runoff and surface water diversions. After primary and secondary treatment at the MRWPCA's Regional Wastewater Treatment Plant, the water for groundwater recharge would be recycled using a new state-of-the-art advanced water treatment plant, including four-stages of treatment: ozone pre-treatment, membrane filtration, reverse osmosis and UV disinfection & hydrogen peroxide. The final product water would be stabilized to prevent pipeline corrosion and mineral mobilization prior to distribution and injection into the Seaside Groundwater Basin. The additional water for agricultural irrigation would be treated with existing facilities at the Regional Wastewater Treatment Plant, including primary, secondary, and tertiary (Salinas Valley Reclamation Plant) processes prior to distribution for agricultural irrigation. The PWM Project would be located within northern Monterey County and would include new facilities located within unincorporated areas of the Salinas Valley and the Cities of Salinas, Marina, and Seaside.

Available Information: A copy of the Pure Water Monterey Project Title 22 Engineering Report may be viewed online at the Pure Water Monterey website www.purewatermonterey.org. In addition, a hardcopy is available for viewing at the MRWPCA Administration office in Ryan Ranch (5 Harris Court building D, Monterey, CA 93940) through August 22, 2016. Hours at the Ryan Ranch Administration Office are Monday – Friday, 7:30 a.m. – 5:30 p.m. Any questions regarding this project may be directed to Bob Holden at (831) 645-4634 or bobh@mrwPCA.com.

Public Hearing: The State Water Resources Control Board, Division of Drinking Water (DDW) and MRWPCA will conduct the public hearing as part of the Title 22 approval process. The hearing will begin with a brief presentation about the project, followed by opportunity for public comments and questions.

Location: MRWPCA Administration Building
Board Room (2nd Floor)
5 Harris Court Building D, Monterey, CA 93940

Date: August 22, 2016
Time: 2:00 – 3:30 p.m.

Specific language translators can be made available at the hearing. For individuals with disabilities, assistive services such as sign-language interpretation, real-time captioning, note-takes, reading or writing assistance, training/meeting materials in Braille, large print, audio cassette, or computer disk will be provided. To obtain services or copies in one of these alternate formats, please contact Yohana Vargas at (831) 645-4605 or Yohana@mrwPCA.com no later than (10) working days prior to the hearing.

Public Comments: All public comments on the Pure Water Monterey Groundwater Replenishment Project must be submitted in writing and received no later than 5:00 p.m. on September 1, 2016 {10 calendar days after the hearing}, via mail, fax, or email to:

Yohana Vargas, Contracts Administrator
5 Harris Court, Building D
Monterey, CA 93940
Fax Number: (831) 372-6178
Email: Yohana@mrwPCA.com

Joint Powers Authority Member Entities:
Boronda County Sanitation District, Castroville Community Services District, County of Monterey, Del Rey Oaks, Fort Ord, Marina Coast Water District, Monterey, Moss Landing County Sanitation District, Pacific Grove, Salinas, Sand City, and Seaside.

General Project Information and Issues of Interest or Concern to the Watermaster

General Project Information

- The goals of the Project are to enable CalAm to reduce its diversions from the Carmel River system by up to 3,500 AFY by injecting the same amount of product water produced by the AWT Facility into the Seaside Basin. CalAm is under a SWRCB Cease and Desist Order (SWRCB Order No. 2009-0060) to secure replacement water supplies and cease over-pumping of the Carmel River by January 2017.
- The product water will be produced at a new Advanced Water Treatment (AWT) Facility at the Monterey Regional Water Pollution Control Agency's (MRWPCA's) Regional Wastewater Treatment Plant (RTP) and will be conveyed to and injected into the Seaside Basin via a new pipeline and new well facilities. The injected water will then mix with the existing groundwater and be stored for future urban use (including use as a potable source of supply) by CalAm.
- The Project will also include a drought reserve component to support greater use of the new supply for crop irrigation during dry years. The Project will provide an additional 200 AFY of product water that will be injected in the Seaside Basin in wet and normal years for up to five consecutive years. This will result in a “banked” drought reserve totaling up to 1,000 acre-feet (AF). During dry years, the Project will provide less than 3,500 AF of water to the Seaside Basin; however, CalAm will be able to extract the banked water to make up the difference to its supplies, such that its extractions and deliveries will not fall below 3,500 AFY.
- Construction of the Project is anticipated to require approximately 18 months, plus at least three months of testing and start-up.
- The new source waters that will supplement the existing incoming wastewater flows are the following: (1) water from the City of Salinas industrial waste water system which is mostly referred to as the agricultural wash water system, (2) storm water flows from the southern part of Salinas, (3) surface water and agricultural tile drain water that is captured in the Reclamation Ditch, and (4) surface water and agricultural tile drain water that flows in the Blanco Drain. Most of these new source waters will be combined within the existing wastewater collection system before arriving at the RTP; water from Blanco Drain will be conveyed directly to the RTP. As part of the California Environmental Quality Act (CEQA) adopted Environmental Impact Report (EIR) for the Project, the assessment included these new sources as well as agricultural drainage water from Tembladero Slough and storm water diversions from the Lake El Estero facility in Monterey. Currently, grant/loan financing, design, engineering or permitting are not being pursued for Tembladero Slough, but may be reconsidered in the future. The Lake El Estero source is not planned for diversion for the Project, but may be reassessed in the future.
- The AWT Facility will consist of ozone pre-treatment, low-pressure membrane filtration, reverse osmosis treatment, advanced oxidation, and product water stabilization. There will also be modifications to the existing SVRP to optimize and enhance the delivery of recycled water to growers.
- A new pipeline, pump station and appurtenant facilities will be constructed to transport the product water from the RTP to the Seaside Groundwater Basin for injection.
- The injection facilities will include new injection and monitoring wells (in the shallow and deep aquifers), back-flush facilities, pipelines, electricity/power distribution facilities, and electrical/motor control buildings.
- CalAm water distribution system improvements will be needed to deliver the full yield of extracted groundwater to CalAm customers.
- A small pilot AWT plant was installed in the fall of 2013 at the RTP to collect data on the quality of product water and information for design of the full-scale AWT Facility.

- In the fall of 2015, MRWPCA completed the installation of an AWT Demonstration Facility. This new permanent facility features all of the treatment technologies that will be included in the full-scale AWT Facility. It has been set up to facilitate tours and allow visitors to taste the product water.
- MRWPCA contracted with the National Water Research Institute (NWRI) to form and coordinate the activities of an Independent Advisory Panel (IAP) to provide expert peer review of the technical, scientific, regulatory, policy, and outreach aspects of the Project. The IAP is comprised of four experts in disciplines relevant to groundwater replenishment projects: engineering, regulatory criteria, public health, hydrogeology, risk assessment, and other relevant fields. The IAP members are: George Tchobanoglous, Ph.D., P.E., NAE; University of California, Davis (Davis, California), Jean-François Debroux, Ph.D., Kennedy/Jenks Consultants (San Francisco, California), Martin B. Feeney, P.G. CHG, Consulting Hydrogeologist (Santa Barbara, California), and Michael P. Wehner, MPA, REHS, OCWD (Fountain Valley, California).
- The IAP was tasked with providing specific input on:
 - The proposed treatment technologies and operations, including the design and testing protocol for the pilot system.
 - Review of the performance and operations of the pilot system.
 - Feedback on the anticipated water quality of the full-scale AWT Facility based on pilot system results.
 - Feedback on hydrodynamics, hydrology, and the fate and transport of constituents in the product water after subsurface application.
 - Feedback on protection of public health and groundwater quality.
 - Feedback on project planning, permitting, and public outreach.
- MRWPCA plans to extend the contract with NWRI for future IAP involvement with the Project, including review and advice regarding finalizing the Engineering Report, any issues that may arise as part of design and construction of the AWT Facility, and review of full-scale operations.
- Title 22 requires the use of full advanced treatment (reverse osmosis [RO] and an advanced oxidation treatment process [AOP]) for groundwater replenishment, and the advanced treated recycled water must also meet drinking water maximum contaminant levels (MCLs).
- With regard to pathogenic microorganism control, Title 22 requires the treatment system to achieve a 12-log enteric virus reduction, a 10-log Giardia cyst reduction, and a 10-log Cryptosporidium oocyst reduction using at least 3 treatment barriers. For each pathogen, a separate treatment process can only be credited up to a 6-log reduction and at least 3 processes must each achieve no less than a 1.0-log reduction. For each month retained underground as validated by a tracer test, the recycled water will be credited with a 1-log virus reduction. To validate underground retention time, a tracer study must be conducted prior to the end of the third month of operation. The retention time represents the difference from when the water with the tracer is applied at the GRRP to when either 2% of the initially introduced tracer concentration has reached the downgradient monitoring point, or 10% of the peak tracer unit value is observed at the downgradient monitoring point. With Department of Drinking Water (DDW) approval, an intrinsic tracer may be used in lieu of an added tracer with a credit of no more than 0.67-log per month provided. If the effectiveness of a treatment train's ability to reduce enteric virus is less than 10-logs, or Giardia cyst or Cryptosporidium oocyst reduction is less than 8-logs, the Project Sponsor must immediately notify DDW and the RWQCB, and discontinue application of recycled water unless directed otherwise by DDW or the RWQCB.

- There are also control requirements for nitrogen compounds, regulated contaminants, physical characteristics, total organic carbon, Priority Pollutants, and other chemicals that will be specified by DDW based on the Engineering Report.
- The proposed project will inject 100% advance treated product water into the Basin. No dilution water will be used.
- An Operation Optimization Plan (OOP) must be submitted to DDW and the RWQCB for review and approval. At a minimum, the OOP must identify the operations, maintenance, analytical methods, and monitoring necessary for the GRRP to meet regulatory requirements, as well as the reporting of monitoring results to DDW and the RWQCB. The OOP must be representative of current operations and updated as appropriate.
- Recycled water must be retained underground for a period of time necessary to allow a Project Sponsor sufficient response time to identify treatment failures and implement actions, including the plan to provide an alternative water supply or wellhead treatment. The minimum allowable RRT is two months. To demonstrate that the actual retention time underground is no less than the required RRT, an added tracer or a DDW approved intrinsic tracer may be used. For each month of retention time estimated utilizing the approved intrinsic tracer, a project sponsor shall receive no more than 0.67 months credit. The actual retention time is the time representing the difference between when the water containing the tracer is applied at the GRRP and when either 2% of the initially introduced tracer concentration has reached the downgradient monitoring point, or 10% of the peak tracer unit value arrives at the downgradient monitoring point.
- At least two monitoring wells must be constructed downgradient of the project. One monitoring well must be located between two weeks to six months travel time and at least 30 days upgradient of the nearest drinking water well, and one monitoring well must be located between the GRRP and the nearest downgradient drinking water well. The monitoring wells must allow for samples to be obtained independently from each aquifer. Two samples must be collected prior to GRRP operation and at least one sample each quarter after operations begin. Each sample must be analyzed for nitrogen, nitrate, nitrite, secondary MCLs, Priority Pollutants, contaminants specified by DDW or the RWQCB taking into consideration the groundwater basin quality, the source control inventory, and the results of the recycled water monitoring. If a quarterly monitoring result exceeds 80% of a nitrate, nitrite, or nitrate plus nitrite MCL, the Project Sponsor must collect another sample within 48 hours of being notified of the result and have it analyzed. If the average of the initial and confirmation sample exceeds an MCL, the Project Sponsor must notify DDW and the RWQCB within 24 hours of being advised by the laboratory of the result and discontinue application of recycled water until corrective actions are taken or evidence is provided to DDW and RWQCB that the contamination is not the result of the GRRP.
- No later than six months after the end of each calendar year, a report must be to DDW and the RWQCB that provides information including the project compliance status, any corrective actions or suspensions of recycled water applications, monitoring data, the location of the recharged recycled water, changes in operations or treatment, and predictions of RWCs for the next calendar year.
- The Injection Facilities will be constructed along a strip of land on the eastern boundary of the City of Seaside, about 1.5 miles inland from Monterey Bay. The area is located within the Northern Inland Subarea of the Seaside Basin. Facilities will be located within an approximate 150-foot-wide corridor of land about 3,000 feet long. This corridor is referred to herein as the Injection Facilities area or site. The southwestern edge of the Injection Facilities area is approximately east 500 feet of General Jim Moore Boulevard, near the intersection with San Pablo Avenue. From that point, the area curves northeastward and upslope approximately 3,000 feet along two parcel boundaries, generally following existing unimproved roads of former Fort

Ord lands. The northeastern edge of the site is approximately 2,200 feet east of General Jim Moore Boulevard and 1,200 feet south of Eucalyptus Road. The Injection Facilities area covers a narrow strip of land within two larger parcels that are currently under the control of FORA. These parcels are scheduled to be conveyed to the City of Seaside for redevelopment upon completion of all remedial activities. Injection facilities have been located along parcel boundaries to minimize interference with future land use plans. Planned Injection Facilities include the following components:

- Up to four deep injection wells
- Up to four vadose zone injection wells.
- Up to six monitoring well clusters.
- A shallow basin for discharge of well back-flushing water.
- Water supply lines, electrical facilities, and other supporting appurtenances.
- The number of wells required for Project operation is uncertain until well construction and testing begins
- The Injection Facilities area was selected using the following hydrogeologic criteria for injection into Seaside Basin aquifers:
 - Upgradient of existing CalAm production wells for efficient recovery of recharged product water that has comingled with both native groundwater and Monterey Peninsula Aquifer Storage Recovery (ASR)-injected water from the Carmel River system.
 - Within areas of favorable aquifer properties for replenishment and groundwater production, such as relatively high transmissivity and sufficient aquifer thickness.
 - Sufficiently deep water table to provide a large local storage volume.
 - Close to pumping depressions²⁸ to provide replenishment water to areas of declining water levels.
- The Project proposes to inject an annual average of 3,500 AFY into two aquifers, the shallower Paso Robles Aquifer and the deeper Santa Margarita Aquifer. Vadose zone wells will be used for injection into the Paso Robles Aquifer. Deep injection wells will be used for injection into the Santa Margarita Aquifer. The average annual injection amount of 3,500 AFY will be allocated between the two aquifers in a manner consistent with the estimated amount of local extraction from each aquifer. The target allocation includes approximately 10% (350 AFY) into the Paso Robles Aquifer and approximately 90% (3,150 AFY) into the Santa Margarita Aquifer.
- Key considerations for the design of the deep injection wells include:
 - Adequate well spacing to minimize hydraulic mounding interference with adjacent deep injection wells or nearby ASR wells.
 - Located close enough to existing production wells to allow for the efficient recovery of injected water.
 - Located ample distance from downgradient production wells to comply with regulatory requirements regarding underground retention times for pathogen removal credit and response retention time.
- The project must inactivate or remove pathogenic microorganisms from the product water.
- Removal credits being sought for the Project:
 - No pathogen LRV credit is being pursued for the ozone process at this time.
 - 4-log removal credit for Giardia cysts and 4-log removal credit for Cryptosporidium oocysts are being sought, but no virus removal credit is being sought even though some particulate-associated viruses would be removed through microfiltration.
 - Additional pathogen removal credits for virus, Giardia cysts and Cryptosporidium oocysts are being sought through the reverse osmosis membranes.

- Pathogen inactivation credit being pursued through the ultraviolet/advanced oxidation system are 6-logs each for Cryptosporidium oocysts, Giardia cysts and virus.
 - No pathogen inactivation credit for final disinfection (by chlorination) is being pursued since chloramines are planned for maintaining a disinfectant residual at the well head.
 - The Project qualifies for a pathogen (virus) reduction credit associated with the time that product water remains underground (from injection to extraction). The Title 22 Criteria allows for a 1-log virus reduction credit for each month underground. This allowance applies only when underground retention times are confirmed with an added tracer study. Preliminary analytical estimates of local groundwater velocity suggest that product water injected into the Santa Margarita Aquifer will remain underground for at least one year prior to extraction. Product water injected into the Paso Robles Aquifer will remain underground even longer. In order to evaluate the underground retention time under the full range of dynamic hydraulic conditions at the Injection Facilities area, a groundwater flow model using the Watermaster's Model was applied to the analysis. When a numerical model is used to demonstrate the underground retention time, the reduction credit must be reduced to only 0.5 log per month to account for uncertainty in the method of analysis. For example, the model would need to demonstrate a travel time of one year to allow for a 6-log virus reduction credit. The results of the modeling analysis confirmed that a travel time of at least one year from injection to extraction occurred for almost all of the wells during almost all of the 25-year simulation period.
- It appears that injected water will remain in the groundwater system for at least six months, which will meet the requirements for a 6-log virus reduction credit if demonstrated by added tracer testing. But because the demonstration of underground retention time with groundwater modeling requires a one-year travel time for conditional approval of the a 6-log reduction credit, only a 5.4-log virus reduction credit is being proposed. The fastest travel time of 327 days represents approximately 10.8 months. With a virus reduction credit of 0.5-log per month, a 5.4-log reduction credit is derived. The analysis that supports the 5.4-log virus reduction credit is highly conservative. In order to validate a 6-log virus reduction credit, a tracer test, rather than modeling alone, will be needed. Within the first three months after Project start-up, the underground retention time will be confirmed through tracer testing. If tracer testing is successful, a 6-log reduction credit may be requested at that time.
- The project is required to have a Response Retention Time (RRT) plan. The RRT can be no less than two months. The intent of the RRT is to allow ample time to identify any treatment failure so that inadequately treated recycled water does not enter a potable water system. The RRT also allows time, if necessary, to provide an alternative water supply or well head treatment in the event that the project impacts a well, preventing it from being used as a potable water supply. This is accomplished by retaining recycled water underground while the issue is diagnosed and a resolution is implemented. For planning purposes, a numerical model was used to predict the fastest travel times from recharge wells to downgradient production wells using the applicable safety factors in Title 22 to account for uncertainty in the method of analysis. This analysis demonstrated that an underground retention time of at least 5.4 months can be documented (10.8 month travel time corrected by the safety factor of 0.5 for modeling). To demonstrate the actual retention time underground an added tracer or a DDW approved intrinsic tracer with a safety factor (0.67 month credit per month of time estimated using the intrinsic tracer) can be used. The tracer testing must be conducted prior to the third month of operation. The response measure components of the proposed RRT (5.25 months) are presented and justified. The proposed RRT is based on the following hypothetical worst-case scenario: immediately after a routine sample is taken for acutely toxic constituents, “off-specification” product water from the AWT Facility is

inadvertently injected into the groundwater system. The proposed RRT of 5.25 months is composed of the following response measure components:

- Time to Identify Water Quality Problem and Complete Confirmation Sampling (estimated to be 19 weeks by the project sponsor)
- Time to Assess Results with DDW and RWQCB (estimated to be 1 week by the project sponsor)
- Time to Procure Safe Interim Drinking Water Supply (estimated to be 1 week by the project sponsor)
- The proposed RRT is based on microbial pathogens (using total coliform organisms as the indicator organism), nitrogen compounds, and perchlorate, because they represent acute risks that require immediate attention. These contaminants posing acute risks are similar to RRTs derived for other groundwater replenishment projects. If any of these constituents are measured above acceptable levels in product water, the RRT plan will be initiated.
- The closest drinking water well to each of the Project's proposed injection wells (and producing from the target aquifers) are ASR-2 well at a distance of 1,023' in the Santa Margarita aquifer, and City of Seaside Well #4 at a distance of 963 feet in the Paso Robles aquifer.
- Title 22 requires that a zone of controlled well construction (control zone) be delineated around the Project injection wells based on the longest of the travel times for pathogen control or RRT:
 - The proposed underground retention time for pathogenic microorganism control is 5.4 months.
 - The proposed RRT is 5.6 months

The Report states that MRWPCA will work with the City of Seaside and the Monterey County Health Department, and FORA, if appropriate, to ensure that no production wells are constructed within the two control zones in the Paso Robles and Santa Margarita aquifers.

- The State's Anti-degradation Policy was adopted to maintain high quality water resources to the maximum extent possible. A recent groundwater quality analysis indicates that current groundwater quality in the Seaside Basin meets Basin Plan objectives, but the groundwater quality does not meet the qualifications of high quality water as described in the Anti-degradation Policy. Therefore, no anti-degradation assessment is needed. The product water will also meet Basin Plan objectives and is expected to contain much lower TDS and chloride concentrations than in ambient groundwater. Therefore, none of the Seaside Basin's assimilative capacity will be required by the Project.
- The area where the Injection Facilities will be located is under FORA control, and has been cleared of munitions and explosives of concern. Analyses of vadose zone core and groundwater indicated that local groundwater adjacent to the Injection Facilities area had not been impacted by Fort Ord legacy constituents, and there is no known groundwater contamination beneath the Injection Facilities area.
- The Report presents these conclusions:
 - No significant impacts to groundwater levels or quality are anticipated from the Project.
 - The project water injection will result in both higher and lower water levels in wells throughout the basin at various times. The difference is generally small and judged insignificant.
 - The Project will not lower water levels below protective levels in coastal wells and will not exacerbate seawater intrusion.
 - Product water will meet Title 22 Criteria for groundwater replenishment projects and Basin Plan groundwater quality standards, including drinking water MCLs. A monitoring program will document project performance.

- No adverse groundwater quality impacts are expected from leaching or other geochemical reactions.
- No groundwater contamination or contaminant plumes have been identified in the Injection Facilities area or downgradient from them. Therefore, injection associated with the Project will not exacerbate existing groundwater contamination or cause plumes of contaminants to migrate.
- The lower concentrations of TDS and chloride in the product water than in the ambient groundwater will provide a localized benefit to groundwater quality. Such a benefit will expand over time with continuous injection from the Project wells.
- A monitoring and reporting program (MRP) will be used to demonstrate compliance with Title 22 Criteria and other regulations that apply to the use of product water for groundwater replenishment. The proposed MRP includes the following monitoring locations:
 - AWT Facility influent (RTP secondary effluent)
 - MF system
 - RO feed
 - RO permeate
 - AOP feed
 - AOP effluent
 - AWT Facility effluent (product water) prior to injection
 - Receiving groundwater
- Product water will be monitored for the following parameters for compliance purposes to ensure protection of public health and beneficial uses of groundwater:
 - Coliform bacteria
 - Total nitrogen
 - Regulated contaminants and physical characteristics
 - TOC
 - Additional monitoring requirements
 - Priority Pollutants
 - DDW-specified chemicals based on review of Engineering Report, affected groundwater basin, and source control assessments
 - DDW- and RWQCB-specified indicator compounds
 - Recycled Water Policy health-based CECs - Basin Plan water quality objectives
 - Acutely toxic parameters monitored as a part of RRT response process (these are a subset of the regulated contaminants)
- New monitoring wells and a monitoring well program will be used to demonstrate ongoing project performance and to comply with the Title 22 Criteria. The program will include:
 - One downgradient well with groundwater travel times (underground retention time) no less than two weeks and no more than six months from the injection wells (well also has to be greater than 30 days travel time from the nearest drinking water source).
 - An additional downgradient well between the Injection Facilities and the nearest downgradient potable water supply (in addition to the downgradient monitoring well used to demonstrate retention time).
 - Monitoring groundwater levels and water quality in each aquifer receiving recycled water.
 - Collecting baseline water quality samples prior to startup of the Project.
 - Monitoring wells will also be used to collect data as part of the tracer study (or studies) to demonstrate underground retention time for application to the pathogen reduction credit and the recommended RRT for the Project.

- A tracer test will be conducted to validate underground retention time after Project startup. An examination of the groundwater chemistry compared to a bench-scale pilot water sample indicates that there is sufficient distinction between the waters to allow for differentiation based on the intrinsic water chemistry. Conservative anions such as chloride and sulfate are expected to be significantly lower in the product water and will provide good indicators of injectate transport to monitoring wells. Therefore, the intrinsic tracer testing program for the Project will likely focus on chloride, sulfate, and geochemical and isotopic signatures. This program will be further evaluated with analysis of the Project's monitoring wells, when installed.

Issues of Concern to the Watermaster

The proposed RRT plan may be overoptimistic in terms of the time that will be required to (1) assess results with DDW and RWQCB (only 1 week is provided for this process), and (2) procure a safe interim drinking water supply (only 1 week is provided for this process).

- The Report states that the time required for MRWPACA, DDW, and RWQCB to assess the sample results and make decisions regarding the appropriate response(s) is estimated to be 1 week. It seems unlikely that those two regulatory agencies could meet with project staff, review the findings, and reach agreement on decisions to address the findings in such a short time.
- The Report states that the time required for MRWPACA to collaborate and coordinate with regulatory agencies and stakeholders to suspend replenishment operations and, if necessary, to provide relief measures or an alternative water supply is estimated to be one week. The Report describes the steps that would be carried out in this process as:
 - Notify Well Owner and Coordinate Appropriate Actions
 - Confirmation Sampling in Monitoring Wells Adjacent to Injection Well Field
 - Initiate Accelerated Groundwater Quality Sampling in Downgradient Monitoring Wells and Water Supply Wells; Anticipate Downgradient Water Supply Wells that may be Impacted
 - Suspend Operation of the Drinking Water Well if Impacted
 - Consider Blending Options
 - Shift Production from Impacted Well to other Existing Wells
 - Initiate Wellhead Treatment Planning and Secure Wellhead Treatment as Appropriate
 - Continue Well Suspension, Provide Bottled Water, and/or Consider Additional Wells

It is difficult to believe that all of these steps could be carried out in a one week period. In particular, initiating and procuring wellhead treatment systems and putting them into operation, installing additional wells, and blending water sources. The Report uses the term "...replace the potable water supply in some other manner..." but does not identify what those might be. This suggests that no other manner(s) could be identified by the authors of the Report.

It would be good for the Project sponsor to reexamine these issues and to revise its RRT analysis accordingly to reflect more realistic timelines for certain of the actions.

Issues of Interest to the Watermaster

The Report notes that routine groundwater monitoring reports and other types of Project reports will be submitted to the State. It would be good to have the Watermaster included in this distribution so we can stay abreast of impacts and actions associated with the Project and its compliance with applicable regulatory requirements.

***SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE***
**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	August 10, 2016
AGENDA ITEM:	4
AGENDA TITLE:	Initial Discussion Regarding Scope of Work for Monitoring and Management Program (M&MP) for FY 2017
PREPARED BY:	Robert Jaques

The Schedule calls for the TAC to approve an FY 2017 Work Plan and Budget for the 2017 Management and Monitoring Program (M&MP) at its September 2016 meeting. This will then go on to the Board for approval at its October 2016 meeting.

In order to obtain TAC input and direction regarding these items, I have reviewed the FY 2016 M&MP and have edited it to reflect those work items that I anticipate being performed in FY 2017. A copy of this Proposed Work Plan is attached.

Items highlighted in yellow are costs for the various tasks that I will evaluate and update as necessary, based on the TAC's input at today's meeting and discussions with our consultants.

Items highlighted in red are Track-Changes revisions from the 2016 M&MP for the TAC to consider in preparing the 2017 M&MP. Most of the proposed revisions are minor, but there are three that are significant:

Task I.2.b.3 (Collect Quarterly Water Quality Samples) previously had all of the work of this task carried out by MPWMD, who in turn hired Martin Feeney to perform the portion of this work involving the induction logging and reporting on the Sentinel Wells. Mr. Oliver has suggested that rather than having that portion of the work performed under MPWMD's contract, the Watermaster could instead contract directly with Mr. Feeney to perform that work. This would result in a cost savings at no loss in the quality of the work that is performed. Mr. Feeney has indicated that he would be amenable to this approach, and is obtaining updated quotes from his subcontractors so he can submit a cost proposal to provide these services in 2017.

Task I.2.b.6 (Reports) is proposed with streamlined reporting that would eliminate having Q1/Q2 and Q3/Q4 reports on water quality and water levels, and would instead have all of that data summarized, analyzed, and reported on in a single annual report that would be provided to the Watermaster by MPWMD in November. As discussed at the July 13, 2016 TAC meeting, comprehensive review and evaluation of this data is now being incorporated into the annual Seawater Intrusion Analysis Reports prepared by HydroMetrics. To minimize duplication of effort and expense associated with analysis and interpretation of the collected data by MPWMD, MPWMD would instead only notify the Watermaster if its review of the quarterly data identified any issues of concern. In its annual report MPWMD would include summaries of all of the data and a brief cover letter report describing any missing data or data collection irregularities that are encountered during the reporting period. These data summaries would be in a format suitable for posting to the Watermaster's website for the public's access, similar to the previous reports. By making this change from multiple formal memorandum reports to one annual data summary report, the preparation time and the associated costs would be significantly reduced.

AGENDA ITEM:	4 (Continued)
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Task I.2.b.7 (CASGEM Data Submittal) is a new task that was discussed at the July 13, 2016 TAC meeting. Under this task MPWMD would compile and submit data on the Watermaster's Voluntary Wells to the State's CASGEM data management system, as required by SGMA.

If there are other revisions the TAC would like to make to prepare the M&MP for 2017 they can be brought up at today's meeting. The final M&MP for 2017, which will reflect any revisions or additions/deletions that come up at today's meeting, will be on the TAC's September 14, 2016 Agenda for approval.

ATTACHMENTS:	Seaside Groundwater Basin Monitoring and Management Program - Proposed FY 2017 Work Plan
RECOMMENDED ACTION:	Approve Proposed Work Plan or Recommend Edits to It

Seaside Groundwater Basin Management and Monitoring Program

Proposed FY 2017 Work Plan

- The tasks outlined below are those that are anticipated to be performed during 2017. Some Tasks listed below are specific to 2017, while others Tasks recur throughout the program, such as data collection and database entry, and Program Administration Tasks.
 - Within the context of this document the term “Consultant” refers either to a firm providing professional engineering or other types of technical services, or to the Monterey Peninsula Water Management District (MPWMD). The term “Contractor” refers to a firm providing construction or field services such as well drilling, induction logging, or meter calibration.
-

M.1 Program Administration

M. 1. a Project Budget and Controls (\$0)

- Consultants will provide monthly or bimonthly invoices to the Watermaster for work performed under their contracts with the Watermaster. Consultants will perform maintenance of their internal budgets and schedules, and management of their subconsultants. The Watermaster will perform management of its Consultants.
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M. 1. b Assist with Board and TAC Agendas (\$0)

- Watermaster staff will prepare Board and TAC meeting agenda materials. No assistance from Consultants is expected to be necessary to accomplish this Task.
-

M. 1. c. & M. 1. d Preparation for and Attendance at Meetings (\$7,000)

- The Consultants’ work will require internal meetings and possibly meetings with outside governmental agencies and the public. For meetings with outside agencies, other Consultants, or any other parties which are necessary for the conduct of the work of their contracts, the Consultants will set up the meetings and prepare agendas and meeting minutes to facilitate the meetings. These may include planning and review meetings with Watermaster staff. The costs for these meetings will be included in their contracts, under the specific Tasks and/or subtasks to which the meetings relate. The only meeting costs that will be incurred under Tasks M.1.c and M.1.d will be:
 - Those associated with attendance at TAC meetings (either in person or by teleconference connection), including providing periodic progress reports to the Watermaster for inclusion in the agenda packets for the TAC meetings, when requested by the Watermaster to do so. These progress reports will typically include project progress that has been made, problem identification and resolution, and planned upcoming work. and
 - From time-to-time when Watermaster staff asks Consultants to make special presentations to the Watermaster Board and/or the TAC, and which are not included in the Consultant’s contracts for other tasks.
 - Appropriate Consultant representatives will attend TAC meetings when requested to do so by Watermaster Staff (either in person or by teleconference connection), but will not be asked to prepare agendas or meeting minutes. As necessary, Consultants may provide oral updates to their progress reports (prepared under Task M.1.d) at the TAC meetings.
-

M. 1. e Peer Review of Documents and Reports (\$2,500)

- When requested by the Watermaster staff, Consultants may be asked to assist the TAC and the Watermaster staff with peer reviews of documents and reports prepared by various other Watermaster Consultants and/or entities.
-

M. 1. f QA/QC (\$0)	<ul style="list-style-type: none"> • A Consultant (MPWMD) will provide general QA/QC support over the Seaside Basin Monitoring and Management Program. These costs are included in the other tasks. •
M.1.g Prepare Documents for SGMA Reporting (\$1,900)	<ul style="list-style-type: none"> • Section 10720.8 of the Sustainable Groundwater Management Act (SGMA) requires adjudicated basins to submit annual reports. Most of the documentation that needs to be reported is already generated by the Watermaster in conjunction with preparing its own Annual Reports. However, some information such as changes in basin storage is not currently generated and will require consultant assistance to do so. This task will be used to obtain this consultant assistance, as needed.

I. 2 *Comprehensive Basin Production, Water Level and Water Quality Monitoring Program*

I. 2. a. Database Management

I. 2. a. 1 Conduct Ongoing Data Entry and Database Maintenance/ Enhancement (\$11,052)	<ul style="list-style-type: none"> • The database will be maintained by a Consultant (MPWMD) performing this work for the Watermaster. MPWMD will enter new data into the consolidated database, including water production volumes, water quality and water level data, and such other data as may be appropriate. Another Consultant will periodically post database information to the Watermaster's website, so it will be accessible to the public and other interested parties. No enhancements to the database are anticipated during 2017.
I. 2. a. 2 Verify Accuracy of Production Well Meters (\$0)	<ul style="list-style-type: none"> • To ensure that water production data is accurate, the well meters of the major producers were verified for accuracy during 2009 and again during 2015. No additional work of this type is anticipated during 2017.

I. 2. b. Data Collection Program

I. 2. b. 1 Site Representation and Selection (\$0)	<ul style="list-style-type: none"> • The monitoring well network review that was started in 2008 has been completed, and sites have been identified where future monitoring well(s) could be installed, if it is deemed necessary to do so in order to fill in data gaps. No further work of this type is anticipated in 2017.
I. 2. b. 2 Collect Monthly Manual Water Levels (\$5,872)	<ul style="list-style-type: none"> • Each of the monitoring wells will be visited on a monthly basis. Water levels will be determined by either taking manual water levels using an electric sounder, or by dataloggers. All wells where the use of dataloggers is feasible or appropriate have been equipped with dataloggers. It is anticipated that no additional dataloggers will need to be purchased in 2017. It is anticipated that installed dataloggers will periodically fail and need replacement. Accordingly, the cost for two replacement dataloggers at \$750 apiece and \$100 for installation parts has been included in this Task for budgeting purposes.

I. 2. b. 3
Collect Quarterly Water Quality Samples.
(\$54,906)

- Water quality data will be collected quarterly from certain of the monitoring wells. In 2012 water quality analyses were expanded to include barium and iodide ions, to determine the potential benefit of performing these additional analyses. These two parameters have been useful in analyzing seawater intrusion potential in other vulnerable coastal groundwater basins, and are briefly mentioned in the Watermaster's annual Seawater Intrusion Analysis Reports. These parameters were added to the annual water quality sampling list for the four Watermaster Sentinel wells (SBWM-1, SBWM-2, SBWM-3, and SBWM-4), and also for the 3 most coastal MPWMD monitoring wells (MSC, PCA, and FO-09). Barium and iodide analyses will continue being performed in 2017.
- Water quality data may come from water quality samples that are taken from these wells and submitted to a State Certified analytic laboratory for general mineral and physical suite of analyses, or the data may come from induction logging of these wells and/or other data gathering techniques. The Consultant or Contractor selected to perform this work will make this judgment based on consideration of costs and other factors.
- Under this Task in 2013 retrofitting to use the low-flow purge approach for getting water quality samples was completed on all of the wells that are sampled. This sampling equipment sits in the water column and may periodically need to be replaced or repaired. Accordingly, an allowance to perform maintenance on previously installed equipment has been included in this Task. ~~Also, the Laguna Seca Driving Range sampling pump is no longer adequate due to declining groundwater levels, so \$2,000 to purchase a replacement sampling pump has been included in this Task.~~
~~[Note: MPWMD to advise if any other sample pumps will need to be replaced in 2017.]~~

\$1,000 has been included in this Task to perform additional semi-annual water quality sampling at Sentinel Well SBMW-1 as recommended in the 2014 SIAR.
~~[Note: MPWMD to advise if this amount is appropriate for this year.]~~

I. 2. b. 4
Update Program Schedule and Standard Operating Procedures.
(\$0)

- All recommendations from prior reviews of the data collection program have been implemented. No additional work of this type is anticipated in 2017.

I. 2. b. 5.
Monitor Well Construction (\$0)

- An additional monitoring well was installed in 2009. No further work of this type is anticipated in 2017.

**I. 2. b.6
Reports (\$7,392)**

- The groundwater level and quality monitoring will be conducted on a monthly, quarterly, and annual basis, as described in the Consultant's Scope of Work. Reports summarizing data collected and analyzed will be submitted to the Watermaster on a schedule to be established during the year, and will consist of:
- One annual report summarizing and analyzing the water quality and water level data from the all four Quarters of the Water Year, and containing tables and a narrative summarization of the findings, conclusions, and recommendations from this data. This annual report may include, as attachments, the quarterly data.
- One report containing a compilation of the available water level records for monitor wells that are part of the Seaside Basin Monitoring & Management Plan (M&MP) in a format to allow assessment of the long-term trends in water levels in each of the wells. This report will contain a table showing pertinent well construction data, existing average annual water level changes, and projected future water level changes. This will be accompanied by a brief description and recommendations regarding those monitor wells for which future monitoring complications may arise due to falling water levels.

**I.2.b.7
CASGEM Data Submittal
(\$1,792)**

- Compile and submit data on the Watermaster's "Voluntary Wells" into the State's CASGEM groundwater management database. The term "Voluntary Well" refers to a well that is not currently having its data reported into the CASGEM system, but for which the Watermaster obtains data. This will be done in the format and on the schedule required by the Department of Water Resources under the Sustainable Groundwater Management Act.

I. 3 Basin Management

**I. 3. a.
Enhanced Seaside Basin
Groundwater Model
(Costs listed in subtasks below)**

- The Watermaster and its consultants use a Groundwater Model for basin management purposes.

I.3.a.1**Update the Existing Model
(\$0)**

- The existing Model, described in the report titled “Groundwater Flow and Transport Model” dated October 1, 2007, was updated in 2009 in order to develop protective water levels, and to evaluate replenishment scenarios and develop answers to Basin management questions (Tasks I.3.a.2 and I.3.a.3). The scope and budget in 2014 for again updating the Model included the following:
 - Step1: Update the model and check its accuracy - \$10,000
 - Step 2: Recalibrate the model - \$15,000
 - Step 3: Prepare report describing the work that was done - \$5,000
 -
 - Step 1 was completed in 2014 by incorporating recent pumping data, groundwater level data, and rainfall data, and then checking to see if the recently simulated groundwater levels match the recently measured groundwater levels. These are the principle findings and conclusions of this Step 1 work:
 - The model still provides reliable results in the Laguna Seca Subarea.
 - Although the performance of the model during the updated period is worsening, the calibration of the model remains within acceptable standards.
 - The northern boundary condition needs to be updated to reflect real groundwater elevation variations for the model period of 2005-2013. The behavior of the northern boundary will impact flows and the ability to calibrate the model for the area of the model that is adjacent to the northern boundary. An alternative method for defining this boundary condition will have to be developed that does not rely upon simulations from the Salinas Valley Integrated Groundwater Surface Water Model (SVIGSM).
 - The groundwater model should be updated in a maximum of five years and its calibration reevaluated at that time. However, if groundwater related projects are implemented in the Basin before that time, the update and calibration reevaluation may need to be performed sooner.
 -
 - Modeling of the Laguna Seca Subarea was performed in 2014 and a peer review of that work was performed in 2015. The peer review concluded that the model is a reasonable representation of the Seaside Basin groundwater flow system. No major errors in assumptions, data or results were identified during this peer review, and the simulated water levels generally matched observed water levels for the historical calibration simulation. The peer review recommended some aspects of the model should be explored to try to determine some differences between field-measured conditions and model-predicted conditions in some parts of the Basin, but stated that the model should be used for estimating the operational safe yield of the basin and subareas, and for simulating the effects of possible management measures. It also recommended that some additional simulations should be completed for management measures likely to be implemented. Therefore, Steps 2 and 3 will not be needed and no further work of this type is anticipated in 2017.
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I. 3. a. 2**Develop Protective Water
Levels (\$0)**

- A series of cross-sectional models was created in 2009 in order to develop protective water levels for selected production wells, as well as for the Basin as a whole. This work is discussed in Hydrometrics’ “Seaside Groundwater Basin Protective Water Elevations Technical Memorandum.” In 2013 further work was started to refine these protective water levels, but it was found that the previously developed protective water levels were reasonable. Therefore, no further work of this type is anticipated.
-

**I. 3. a. 3
Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions (\$40,000)**

- In 2009 the updated Model was used to evaluate different scenarios to determine such things as the most effective methods of using supplemental water sources to replenish the Basin and/or to assess the impacts of pumping redistribution. This work is described in HydroMetrics' "Seaside Groundwater Basin Groundwater Model Report." In 2010, and again in 2013, HydroMetrics used the updated Model to develop answers to some questions associated with Basin management. Modeling performed in 2014, 2015, and 2016 led to the conclusion that groundwater levels in parts of the Laguna Seca Subarea will continue to fall even if all pumping within that subarea is discontinued, because of the influence of pumping from areas near to, but outside of, the Basin boundary. Additional modeling work may be performed in 2017 to further examine this situation.

**I. 3. b.
Complete Preparation of Basin Management Action Plan (\$0)**

- The Watermaster's Consultant completed preparation of the Basin Management Action Plan (BMAP) in February 2009. The BMAP serves as the Watermaster's long-term seawater intrusion prevention plan. The Sections that are included in the BMAP are:
 - Executive Summary
 - Section 1 – Background and Purpose
 - Section 2 – State of the Seaside Groundwater Basin
 - Section 3 – Supplemental Water Supplies
 - Section 4 –Groundwater Management Actions
 - Section 5 – Recommended Management Strategies
 - Section 6 – References
- The only work which may be performed on the BMAP in 2016 is discussed under Task I. 3. c.

**I. 3. c.
Refine and/or Update the Basin Management Action Plan (\$27,300)**

- During 2017 it may be beneficial to update the BMAP based on new data, and/or knowledge that is gained from the work described under Task I. 3. a. 3. Such work might involve issues pertaining to Operational and Natural Safe Yields or pumping redistribution strategies. Updating the BMAP has been scheduled and budgeted in several of the preceding years, but was not deemed to be necessary. This task is included primarily for budgeting purposes in the event such work is deemed necessary during 2017.

**I. 3. d.
Evaluate Coastal Wells for Cross-Aquifer Contamination Potential (\$0)**

- If seawater intrusion were to reach any of the coastal wells in any aquifer, and if a well was constructed without proper seals to prevent cross-aquifer communication, or if deterioration of the well had compromised these seals, it would be possible for the intrusion to flow from one aquifer to another. An evaluation of this was completed in 2012 and is described in MPWMD's Memorandum titled "Summary of Seaside Groundwater Basin Cross-Aquifer Contamination Wells Investigation Process and Conclusions" dated August 8, 2012. This Memorandum did not recommend performing any further work on this matter at this time, other than to incorporate into the Watermaster's Database data from wells that were newly identified by the work performed in 2012. That data has now been incorporated into the Database, and no further work on this matter is anticipated.

I. 4 Seawater Intrusion Response Plan (formerly referred to as the Seawater Intrusion Contingency Plan)

**I. 4. a.
Oversight of Seawater Intrusion Detection and Tracking (\$0)**

- Consultants will provide general oversight over the Seawater Intrusion detection program.

**I. 4. b.
Focused Hydrogeologic
Evaluation (\$0)**

- MPWMD attempted to compile historical and current water quality data in the coastal area to provide more in-depth evaluation of conditions in the shallow Dune Sand/Aromas Sand aquifer in the vicinity of the Sand City Public Works well, where unique water quality conditions and variability have recently been observed as discussed at TAC meetings. However, it was found that no historical water quality data from Cal Am's now-abandoned wells existed, and consequently it was not possible to answer the question of why water quality in the Sand City Public Works well differs from water quality in other wells in the Basin. The Sand City desalination plant could be affecting water quality in this area, but without the prior water quality data from now-abandoned wells, this could not be determined. The results of this work were summarized in 2013 in a brief Technical Memorandum prepared by MPWMD with conclusions and recommendations, and no further work on this matter is planned.

**I. 4. c.
Annual Report- Seawater
Intrusion Analysis
(\$23,318)**

- At the end of each water year, a Consultant will reanalyze all water quality data. Semi-annual chloride concentration maps will be produced for each aquifer in the basin. Time series graphs, trilinear graphs, and stiff diagram comparisons will be updated with new data. The annual EM logs will be analyzed to identify changes in seawater wedge locations. All analyses will be incorporated into an annual report that follows the format of the initial, historical data report. Potential seawater intrusion will be highlighted in the report, and if necessary, recommendations will be included. The annual report will be submitted for review by the TAC and the Board. Modifications to the report will be incorporated based on input from these bodies, as well as Watermaster staff.

**I. 4. d
Complete Preparation of
Seawater Intrusion Response
Plan (\$0)**

- The Watermaster's Consultant (HydroMetrics) completed preparation of the long-term Seawater Intrusion Response Plans (SIRP) in February 2009. The Sections that are included in the SIRP are:
 - Section 1 – Background and Purpose
 - Section 2 – Consistency with Other Documents
 - Section 3 – Seawater Intrusion Indicators and Triggers
 - Section 4 –Seawater Intrusion Contingency Actions
 - Section 5 - References
 - No further work on the SIRP is anticipated in 2017.

**I. 4. e.
Refine and/or Update the
Seawater Intrusion Response
Plan (\$0)**

- At the beginning of 2009 it was thought that it might be beneficial or necessary to perform work to refine the SIRP and/or to update it based on new data or knowledge that was gained subsequent to the preparation of the SIRP. However, this did not prove to be necessary, and no further work of this type is anticipated in 2017.

**I. 4. f.
If Seawater Intrusion is
Determined to be Occurring,
Implement Contingency
Response Plan (\$0)**

- The SIRP will be implemented if seawater intrusion, as defined in the Plan, is determined by the Watermaster to be occurring.

***SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE***
*** * * AGENDA TRANSMITTAL FORM * * ***

MEETING DATE:	August 10, 2016
AGENDA ITEM:	5
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 Schedule of the activities being performed by the Watermaster, its consultants, and the public entity, MPWMD, which is performing certain portions of the work.

Attached is the most recent update of the Work Schedule for FY 2016.

1

We do not normally have an October meeting since our consultants will still be preparing their annual report items that will go into the Watermaster's Annual Report. The November TAC meeting date may be pushed back until later in the month to allow sufficient time for the consultants to complete their work and for me to draft the Annual Report so it can be reviewed by the TAC at the November TAC meeting. The schedule of meetings for October and November will be discussed at the September TAC meeting.

ATTACHMENTS:	Schedule of Work Activities for FY 2016
RECOMMENDED ACTION:	Provide Input to Technical Program Manager Regarding Any Corrections or Additions to the Schedule

Seaside Basin Watermaster Monitoring and Management Program 2016 Work Schedule

ID	Task Name	2016												2017									
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	CRITICAL PROJECT MILESTONES ASSOCIATED WITH TAC, BOARD, AND/OR CONSULTANT WORK																						
2	2016 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 Annual Water Production, Water Level, and Water Quality Report for 2016 (Same as Task 42)																						
9	Replenishment Assessment Unit Costs for Water Year 2017																						
10	B&F Committee Develops Replenishment Assessment Unit Cost for 2017 Water Year																						
11	If Requested, TAC Provides Assistance to B&F Committee in Development of 2017 Water Year Replenishment Assessment Unit Cost																						
12	Board Adopts and Declares 2017 Water Year Replenishment Assessment Unit Cost																						
13	Replenishment Assessments for Water Year 2016																						
14	Watermaster Prepares Replenishment Assessments for Water Year 2016																						
15	Watermaster Board Approves Replenishment Assessments for Water Year 2016 (At December Meeting)																						
16	Watermaster Levies Replenishment Assessment for 2016																						
17	Monitoring & Management Program (M&MP) Budgets for 2017 and 2018																						

2016 Consultants Work Schedule for FY 2016 8-10-16

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**Seaside Basin Watermaster
Monitoring and Management Program
2016 Work Schedule**

ID	Task Name	2016												2017									
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
18	Preliminary Discussion of Potential Scope of Work for 2017 M&MP												◆ 8/10										
19	Prepare Draft 2017 M&MP Work Plan and 2017 and 2018 O&M and Capital Budgets												■ 8/11										
20	TAC approves Draft 2017 M&MP Work Plan and 2017 and 2018 O&M and Capital Budgets												◆ 9/14										
21	Board approves 2017 M&MP O&M and Capital Budgets												◆ 10/5										
22	2015 Annual Report (Note: Schedule Reflects Court Approval of Later Submittal Date for Annual Report)																						
23	Prepare Preliminary Draft 2016 Annual Report																						
24	TAC Provides Input on Preliminary Draft 2016 Annual Report																						
25	Prepare Draft 2016 Annual Report (Incorporating TAC Input)																						
26	Board Provides Input on Draft 2016 Annual Report (At December Board Meeting)																						
27	Prepare Final 2016 Annual Report (Incorporating Board Input)																						
28	Watermaster Submits Final 2016 Annual Report to Judge																						
29	MANAGEMENT																						
30	M.1 PROGRAM ADMINISTRATION																						
31	Prepare Initial Consultant Contracts for 2017																						
32	TAC Approval of Initial Consultant Contracts for 2017																						
33	Board Approval of Initial Consultant Contracts for 2017																						
34	M.1.g – Sustainable Groundwater Management Act Reporting Requirements													COMPLETE									
35	HydroMetrics Prepares Draft Groundwater Storage Analysis													COMPLETE									
36	TAC Reviews HydroMetrics Draft Storage Analysis													◆									

2016 Consultants Work Schedule for FY 2016 8-10-16

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Seaside Basin Watermaster Monitoring and Management Program 2016 Work Schedule

ID	Task Name	2016												2017										
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
37	HydroMetrics Revises Draft Storage Analysis if Necessary													COMPLETE										
38	Submit SGMA Documentation to DWR													COMPLETE										
39	IMPLEMENTATION																							
40	I.2.a DATABASE MANAGEMENT																							
41	I.2.a.1 Conduct Ongoing Data Entry/Database Maintenance																							
42	I.2.b DATA COLLECTION PROGRAM																							
43	I.2.b.2 Collect Monthly Water Levels (MPWMD)																							
44	I.2.b.3 Collect Quarterly Water Quality Samples (MPWMD)																							
45	I.2.b.6 Reports (from MPWMD)																							
46	Watermaster Prepares Combined Quarterly Water Production, Water Level, and Water Quality Reports for 1st & 2nd Quarters														These will not be provided									
47	Watermaster Prepares Annual Water Production, Water Level, and Water Quality Report for 2016																							◆ 10/31
48	Watermaster Prepares Report Regarding Long-Term Trends in Water Levels in Monitoring Wells															Delayed until 2017								
49	I.3.a ENHANCED SEASIDE BASIN GROUNDWATER MODEL																							
50	TAC Assists Board in Developing Work Plan to Address LSSA Modeling Results													COMPLETE										
51	Develop and Schedule Additional Tasks as Directed by Board													IF REQUESTED BY THE BOARD										
52	I.3.c Refine and/or Update the BMAP														NO WORK SCHEDULED UNTIL TAC DIRECTION PROVIDED TO RESUME DISCUSSION									
53	I.4.c Annual Seawater Intrusion Analysis Report (SIAR)																							
54	HydroMetrics Provides Draft SIAR to Watermaster																							◆ 11/9
55	TAC Approves Annual Seawater Intrusion Analysis Report (SIAR)																							◆ 11/16

2016 Consultants Work Schedule for FY 2016 8-10-16

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**Seaside Basin Watermaster
Monitoring and Management Program
2016 Work Schedule**

ID	Task Name	2016												2017											
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun		
56	Board Approves Annual Seawater Intrusion Analysis Report (SIAR)																								
57	I.4.d Complete Preparation of Seawater Intrusion Response Plan (SIRP)													WORK COMPLETED - NO FURTHER WORK PLANNED IN 2016											
58	I.4.e Refine and/or Update the SIRP													ONLY IF FOUND TO BE NECESSARY											

2016 Consultants Work Schedule for FY 2016 8-10-16

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***SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
* * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	August 10, 2016
AGENDA ITEM:	6
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