

MEETING NOTICE AND AGENDA

***TECHNICAL ADVISORY COMMITTEE OF THE
SEASIDE BASIN WATER MASTER***

DATE: Wednesday, October 20, 2021

MEETING TIME: 1:00 p.m.

IN KEEPING WITH GOVERNOR NEWSOMS EXECUTIVE ORDERS N-29-20 AND N-35-20, THE TECHNICAL ADVISORY COMMITTEE MEETING WILL BE CONDUCTED BY TELECONFERENCE AND WILL NOT BE HELD IN THE MONTEREY ONE WATER OFFICES.

**YOU MAY ATTEND AND PARTICIPATE IN THE MEETING AS FOLLOWS:
JOIN FROM A PC, MAC, IPAD, IPHONE OR ANDROID DEVICE (NOTE: ZOOM APP MAY NEED TO BE DOWNLOADED FOR SAFARI OR OTHER BROWSERS PRIOR TO LINKING) BY GOING TO THIS WEB ADDRESS:**

<https://us02web.zoom.us/j/81804836060?pwd=L09RdE96ai9yV1VGTitJWTQ3ajNIUT09>

If joining the meeting by phone, dial either of these numbers:

+1 408 638 0968 US (San Jose)

+1 669 900 6833 US (San Jose)

If you encounter problems joining the meeting using the link above, you may join from your Zoom screen using the following information:

Meeting ID: 818 0483 6060

Passcode: 598551

OFFICERS

Chairperson: Jon Lear, MPWMD

Vice-Chairperson: Tamara Voss, MCWRA

MEMBERS

**California American Water Company
Monterey**

City of Del Rey Oaks

City of

City of Sand City

City of Seaside

Coastal Subarea Landowners

**Laguna Seca Property Owners
Agency**

Monterey County Water Resources

Monterey Peninsula Water Management District

Agenda Item

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NOTE: THIS IS THE SAME AGENDA PACKET THAT WAS SENT OUT EARLIER FOR THE OCTOBER 13, 2021 TAC MEETING, WHICH HAS BEEN RESCHEDULED TO OCTOBER 20, 2021, EXCEPT THAT THE ZOOM LOG-IN INFORMATION HAS BEEN CHANGED TO THAT WHICH IS SHOWN ABOVE.
ALSO NOTE THAT THIS MEETING WILL START AT 1:00 P.M., NOT THE USUAL 1:30 P.M. TIME, IN ORDER TO AVOID CONFLICTING WITH ANOTHER MEETING LATER THAT DAY.

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The next regular meeting is tentatively planned for Wednesday November 17, 2021 at 1:30 p.m. Note: This will be the 3rd Wednesday of November, not the normal 2nd Wednesday of the month.

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

MEETING DATE:	October 20, 2021
AGENDA ITEM:	2.A
AGENDA TITLE:	Approve Minutes from the August 11, 2021 Meeting
PREPARED BY:	Robert Jaques, Technical Program Manager

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

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
August 11, 2021
(Meeting Held Using Zoom Conferencing)**

Attendees: TAC Members

City of Seaside – Scott Ottmar
California American Water – Tim O’Halloran
City of Monterey – Cody Hennings
Laguna Seca Property Owners – Wes Leith
MPWMD – Jon Lear
MCWRA – Tamara Voss
City of Del Rey Oaks – John Gaglioti
City of Sand City – Leon Gomez
Coastal Subarea Landowners – No Representative

Watermaster

Technical Program Manager - Robert Jaques
Administrative Officer – Laura Paxton

Consultants

None

Others

None

The meeting was convened at 1:33 p.m.

Note: Because Jon Lear had to attend to a bid opening at MPWMD, Tamara Voss chaired this meeting.

1. Public Comments

There were no public comments.

2. Administrative Matters:

A.Approve Minutes from the June 9, 2021 Meeting

On a motion by Mr. Gaglioti, seconded by Mr. O’Halloran, the minutes were unanimously approved as presented.

B.Sustainable Groundwater Management Act (SGMA) Update

Mr. Jaques briefly presented this item and asked for input on whether TAC members wished to continue receiving the monthly meeting summaries.

Mr. Gaglioti, Ms. Voss, and Mr. O’Halloran all said they would like to continue getting the monthly meeting summaries, and Mr. Jaques said he would continue including them in the TAC meeting agenda packets.

C.Information from MPWMD on the Pure Water Monterey Expansion Project Schedule

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

D.Geologic Reports from MCWRA

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

3. Discuss Recommendation to the Board Regarding Preparing a Sustainable Yield Analysis

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

Mr. Gaglioti commented that the ultimate goal is to protect the basin by replenishing it to achieve protective water levels. He went on to say that the TAC needs to get something to the Board in order to get the Board started on taking action to protect the basin. He said he agreed that performing a sustainable yield analysis would not result in protecting the basin, because projects such as expansion of the Pure Water Monterey Project, or ASR, will not by themselves be able to replenish the basin.

Mr. O'Halloran said he agreed with Mr. Gaglioti's comments. He went on to say that the Board needs to get started working on plans to replenish the basin, both physical and financial plans. He commented that a continued drought will intensify the problem.

Mr. Lear said he felt the TAC and conclude that the sustainable yield approach was the technically most desirable approach for basin management.

In response to a question from Mr. Gaglioti, Mr. Jaques said his intent was to provide all 3 of the attachments from this agenda item to the Board when he prepares his transmittal to the Board with regard to performing a sustainable yield analysis.

Mr. Ottmar said he was comfortable with Mr. Jaques' recommendation and background information being provided to the Board.

Mr. Lear said that achieving protective water levels could be included within the definition of "sustainability" in the preparation of a sustainable yield analysis.

Ms. Voss commented that once protecting water levels are achieved, the sustainable yield would tell you how much you could pump on an ongoing basis without causing damage to the basin.

Mr. Leith said he agreed with Mr. Jaques, and that the sustainable yield analysis should be revisited at a future time when progress in implementing the proposed water supply projects is better known.

Following further discussion a motion was made by Mr. Gaglioti, seconded by Mr. O'Halloran, that Mr. Jaques' provide to the Board the following TAC recommendation:

Sustainable Yield (SY) is a technically superior Basin management approach compared to the Natural Safe Yield (NSY) approach used in the Decision, and an SY analysis should be performed either now or at some point in the future.

Because of the historical over pumping from the Basin, regardless of the approach that is used for Basin management, be it NSY or SY, even reducing pumping levels to match either the NSY or SY

pumping levels will not achieve protective groundwater elevations. This is because these approaches only seek to stabilize groundwater levels and do not take into account that the Basin would still be at risk of seawater intrusion at some time in the future. An additional source(s) of water (replenishment water) that can be injected into the Basin to raise groundwater levels, and to maintain them at protective water levels, will be necessary regardless of which approach is used for Basin management.

The motion also directed Mr. Jaques to place the agenda item asking the Board to approve having Montgomery & Associates perform the updated replenishment water modeling (covered in Agenda Item 4 of today's meeting) ahead of the SY recommendation in the Board's upcoming meeting agenda packet.

The motion passed on a vote of 7 to 1, with Mr. Leith voting no.

4. Approve Montgomery & Associates RFS No. 2021-01, Amendment No. 2 for Replenishment Water Modeling

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

Mr. Gaglioti and Ms. Voss said they concurred with moving forward with this work. Ms. Voss commented that the work should include the climate change optional task.

On a motion by Mr. O'Halloran, seconded by Mr. Gaglioti, Montgomery and Associates RFS No. 2021-01, Amendment No. 2, including the optional climate change task, was approved on a vote of 7 to 1, with Mr. Leith voting no.

5. Approve Monitoring and Management Program (M&MP) for FY 2022

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

On a motion by Mr. Gaglioti, seconded by Mr. O'Halloran, the 2022 Monitoring and Management Program was approved.

6. Approve the FY 2022 Monitoring and Management Program (M&MP) Operations and Capital Budgets

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

Mr. Ottmar asked if the 2022 assessments to fund the Monitoring and Management Program would be lower, if the replenishment water modeling update work is performed in 2021. Mr. Jaques responded that the assessments would be lower if that work was performed this year rather than in 2022.

On a motion by Mr. Gaglioti, seconded by Mr. Ottmar, the Monitoring and Management Program Operations and Capital Budgets for 2022 were unanimously approved.

Ms. Voss asked Mr. Lear for an update on Monitoring Well FO-9 Shallow. Mr. Lear responded that he had just opened a bid for \$25,000 from Maggiora Brothers to destroy the existing well, and that only one bid had been received. With regard to installing a new well to replace the existing one, he said that the Water Supply Planning Committee did not take any action on that item at its recent meeting.

7. Approve Initial RFSs for Montgomery & Associates, MPWMD, Martin Feeney, and Todd Groundwater for 2022

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

On a motion by Mr. O'Halloran, seconded by Mr. Gaglioti, these contracts were approved with Mr. Lear abstaining.

8. Schedule

Mr. Jaques reported that there does not appear to be any need to have a TAC meeting in either September or October, and that the next TAC meeting would likely be held on the third Wednesday, not the second Wednesday, in November, which will be November 17. He went on to say that he would send out an email to confirm this, or to update this, prior to the normal September and October meeting dates.

9. Other Business

There was no other business.

The meeting adjourned at 2:38 PM.

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

MEETING DATE:	October 20, 2021
AGENDA ITEM:	2.B
AGENDA TITLE:	Sustainable Groundwater Management Act (SGMA) Update
PREPARED BY:	Robert Jaques, Technical Program Manager

At the State level:

Since my last update I have not received anything from the State that impacts the Watermaster.

At the Monterey County level:

Attached are summaries of meetings held in September 2021.

ATTACHMENTS:	Meeting Summaries
RECOMMENDED ACTION:	None required – information only

SUMMARY OF
PURE WATER MONTEREY,
SALINAS VALLEY GROUNDWATER SUSTAINABILITY, AND
MARINA COAST WATER DISTRICT GROUNDWATER SUSTAINABILITY
ZOOM MEETINGS
IN SEPTEMBER 2021

Note: This is a synopsis of information from these meetings that may be of interest to the Seaside Basin Watermaster

SVBGSA Monterey Subbasin GSP Committee Special Meeting September 8, 2021:

There was significant discussion of issues affecting the Seaside Basin at this meeting. Topics discussed included:

- On September 9 the complete Draft Monterey Subbasin GSP will go to the SVBGSA Board of Directors for approval to release the draft document for public review. That will start a 90-day comment period. In December the completed revised Draft will be available for review and finalization before submitting it to DWR by the submittal deadline which is the end of January 2022.
- Another meeting of the subbasin GSP committee will be held in either late October or early November so that edits that are being made to the draft GSP can be reviewed and discussed by the committee.
- The Paso Robles and Santa Margarita aquifers operate as a single aquifer within the Corral de Tierra area because there is no aquiclude in that area that separates them.
- Some months ago it was estimated that the corral de Tierra subarea is overdrafted by about 1000 acre-feet per year. That analysis was done before the Monterey subbasin model had been completed. Using the model, the overdraft is now found to be much greater, approximate 2803 acre-feet per year. This figure is considered by Derrick Williams to be more reliable because it is based on a more complete basin analysis. However, work is still in progress to refine this figure. More data is needed to understand why groundwater levels are declining so much, 27 feet since 2000.
- The current modeling indicates that even if all Corral de Tierra pumping was stopped, sustainability in that subarea could not be achieved. This is largely because a lot of water flows out of that subarea and into adjacent subareas and subbasins.
- The Monterey Subbasin GSP has turned out to be a very difficult and complex one to develop. This has resulted in a hurried time schedule in late 2021 to get it completed in time for submittal by the January 2022 deadline.
- In order to achieve sustainability in the Corral de Tierra subarea it may be necessary to provide replenishment water to the subarea in addition to reducing pumping and implementing other projects and management actions.
- Much of the previously provided information is being revised as the new Monterey Subbasin Groundwater Model is being applied to the subbasin by EKI.
- Sarah Hardgrave feels a regional supplemental water supply project will be necessary to help achieve sustainability within the greater Salinas Valley Groundwater Basin, including the Monterey Subbasin.
- Abby Ostovar of Montgomery and Associates, in response to a question I asked, said that the figures in the draft GSP that show interim milestone groundwater levels is not based on specific projects and management actions being implemented. Rather, it is a hypothetical depiction of the

rate of change in groundwater levels that would be needed to achieve the desired groundwater levels within the 20-year time period allowed under SGMA. I said that it was not clear to the reader that this was the case, and asked that this be clarified in the chapter where those figures appear.

- Prior to this meeting I submitted written comments on Draft Chapters 6 and 10. There was no detailed discussion of those chapters at this meeting, only an overview presentation on the entire GSP with some questions and answers on it.

SVBGSA Advisory Committee Meeting September 16, 2021:

Topics discussed at this meeting which are of interest to the watermaster included:

- The draft of the entire Monterey Subbasin GSP was presented to the Advisory Committee for review and discussion.
- Some concerns were expressed about whether the 2008 groundwater level Sustainable Management Criteria for the Corral de Tierra subarea could be met.
- The hydrogeologic connection between the Seaside Subbasin and the Monterey Subbasin is still being evaluated. The EKI model shows about 400 acre-feet per year of water is flowing from the Corral de Tierra subarea into the Laguna Seca Subarea, and about 3,000 acre-feet per year is flowing out of the Northern Inland Subarea of the Seaside Subbasin and into the Marina-Ord Subarea of the Monterey Subbasin.
- Historically there has been about 2,800 acre-feet per year of loss in storage in the Corral de Tierra subarea, and currently the annual loss in storage is about 1,800 acre-feet per year.
- The Corral de Tierra Subarea groundwater levels are projected to be about 30 feet below the 2008 historical groundwater levels at the end of the 20 year GSP implementation period.
- All of the representative monitoring system wells in the Corral de Tierra Subarea are currently below the Minimum Threshold levels in the GSP.
- Naturally occurring arsenic exceeds Drinking Water Standards in about 39% of the 33 sampled wells in the Corral de Tierra Subarea.
- The corral de Tierra groundwater levels continue to decline, and a decline 27 feet since 2000. It is not clear why groundwater levels are falling so much.
- A lack of extraction (pumping) data makes it difficult to model sustainable yield for this Subarea.
- It is estimated that a large regional desalination plant would produce water at about \$2,900 per acre-feet for a plant size to produce 15,000 acre-feet per year. The feedwater for the desalination plant would be water taken from the proposed extraction barrier wells along the coastline of the 180/400-foot Subbasin.
- The Request for Qualification Statements for the Deep Aquifer Study has been released. The SVBGSA hopes to select the consultant team by the first of the year.

Pure Water Monterey Water Quality and Operations Committee Meeting September 22, 2021:

Topics discussed at this meeting which are of interest to the watermaster included:

- Deep injection wells 3 and 4 are both scheduled to begin operation with their first injection in December 2021.
- The extrinsic tracer study has been submitted to the Division of Drinking Water and their comments have been received. M1W plans to respond to those comments on September 23. If they are satisfactory to the Division of Drinking Water, M1W plans to start the extrinsic tracer study early in the week of September 27.
- New log reduction credits are being pursued for chlorine contact time and chloramines. Several meetings have been held with the Division of Drinking Water on this topic already. They hope to

begin bench testing to generate data to submit to the Division of Drinking Water, and hope to get approval for these additional log reduction credits by the end of this year.

- All water quality parameters currently are being met, but a few parameters are showing a gradual increase.
- With regard to the ASR project, MPWMD is getting ready to submit a technical report to allow the newest ASR wells to be used for drinking water injection. Also, a new pipeline that will allow simultaneous ASR extraction and Pure Water Monterey injection is about to start construction.
- The next meeting will be held on November 17, and will probably be the last meeting of this committee in 2021.

Seawater Intrusion Work Group (SWIG) Meeting September 27, 2021:

This meeting was primarily devoted to an informational presentation on the seawater extraction barrier that is a proposed project in the GSP for the 180/400-foot Aquifer Subbasin. It would consist of a number of wells near the coast and paralleling it. They would extract groundwater, thus creating a groundwater elevation depression and a flow-divide that would keep seawater from moving inland. As a consequence of this pumping, some water (fresh water) from within the inland portion of the subbasin would also be extracted. Several options were presented including disposing of the extracted water to the ocean, or reusing it following desalination and either injecting it into the aquifer for recharge or delivering it as a water supply source.

There was general support for this project as a seawater intrusion mitigation measure, but there were major concerns about the high cost and how it could ever be funded.

Other projects will be discussed in upcoming meetings. At this point the group is focusing on getting a feel for what types of projects seem the most beneficial to pursue. Concurrently, a seawater intrusion model is under development, and an RFQ for a study of the Deep Aquifers has been sent out.

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

MEETING DATE:	October 20, 2021
AGENDA ITEM:	3
AGENDA TITLE:	Discuss Assumptions and Answers to Questions for Montgomery & Associates to Use When Performing Replenishment Water Modeling
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

At its August and September meetings the TAC and the Board, respectively, approved a contract with Montgomery & Associates to perform modeling of the Basin to update earlier modeling work to determine the quantity of replenishment water that will need to be added to the Basin to achieve protective groundwater elevations.

In conjunction with performing this updated modeling, Montgomery & Associates needs to make certain assumptions. In order to ensure that the TAC finds these assumptions to be reasonable and appropriate, Pascual Benito, the Montgomery & Associates staff member who will be performing this modeling, will make a presentation and invite questions/comments from the TAC at today's meeting.

Attached is a background paper prepared by Mr. Benito that describes the work to be performed. Within that document there are several yellow-highlighted sections describing assumptions to be used in the modeling, as well as questions that need to be answered. These are the assumptions he wishes to obtain TAC confirmation of, and the answers to questions he would like the TAC to provide, before moving forward with the work.

Mr. Benito will be making his presentation by PowerPoint, and a copy of that presentation will be provided by a separate email to TAC members prior to the meeting. His presentation will focus on the assumptions and questions themselves, whereas the attached paper includes both assumptions and the modeling methodology that will be used.

Following any revisions to the assumptions that result from today's discussion, and answers to questions that are provided, the TAC will be requested to approve the assumptions and answers so that Montgomery & Associates can proceed with this work.

ATTACHMENTS:	Paper from Montgomery & Associates describing the replenishment water modeling work, with assumptions and questions highlighted in yellow
RECOMMENDED ACTION:	Approve, or provide revisions to, these assumptions and provide answers to these questions

October 6, 2021

Mr. Bob Jaques
Seaside Watermaster Technical Program Manager
83 Via Encanto
Monterey, CA 93940

**SUBJECT: PROPOSED ASSUMPTIONS FOR UPDATING PREDICTIVE MODELING OF
BASIN REPLENISHMENT OPTIONS TO ACHIEVE PROTECTIVE ELEVATIONS**

Dear Mr. Jaques

This letter contains an overview of the proposed assumptions to be used to update the previous replenishment study using the basin groundwater model to estimate how much replenishment injection would be needed to achieve protective elevations in Watermaster coastal protective elevation wells. These assumptions are to be discussed at the October 13, 2021 TAC meeting to get agreement on what assumptions to implement in predictive modeling of basin replenishment options.

BACKGROUND

In April 2013, HydroMetrics Water Resources Inc. (now acquired by Montgomery & Associates) completed a groundwater modeling study that evaluated 3 scenarios:

- **Scenario 1:** A 25-year groundwater overpumping replenishment program proposed by California American Water (Cal-Am) which replenishes their overpumping by in-lieu recharge through reducing pumping from their Seaside Basin wells production wells.
- **Scenario 2:** A set of pumping reductions by Standard and Alternative Producers to achieve protective groundwater levels over a 25-year period
- **Scenario 3:** Cal-Am's replenishment plan coupled with additional injection into the Santa Margarita aquifer to achieve protective elevations in 25 years.

Scenario 1 did not achieve protective elevations as 700 AFY is too little to raise groundwater levels. This scenario will not be updated as part of the update.

Under Scenario 2, a pumping reduction by Standard and Alternative Producers of just over 2,000 AFY (including Cal Am's 700 AFY reduction) was needed to achieve protective water levels. Scenario 2 is not a practical solution as Standard and Alternative producers do not have access to supplemental sources of water. This scenario will not be updated as part of the update.

The results of Scenario 3 show that when combined with Cal-Am's 25-year repayment schedule of 700 acre-feet per year, protective elevations can be achieved by injecting an additional 1,000 acre-feet per year of water into existing ASR wells. Recharged water is left in the basin, and not pumped by Standard or Alternative producers. This approach requires less water to implement than the pumping reduction approach for Scenario 2.

The predictive simulation for the 2013 scenarios only took into account historical Carmel River ASR by MPWMD and not Pure Water Monterey (PWM), since in early 2013 PWM was only in the very early planning stages.

TASK 1. DEVELOP BASELINE SCENARIO

Extend Historical Hydrology Baseline Scenario

Since 2009, all predictive model simulations using the model have been based on repeating the historical hydrology from the 22-year model calibration period of 1987 – 2008. The previous predictive simulations runs from 2009 through 2042. While maintaining this approach allows for direct comparison between new simulations and previous simulations, it does not take advantage of the additional nine 9 years of hydrologic and climatic data that have been incorporated into the historical model. The historical model was updated in 2014 and 2018, and now includes a continuous 31-year hydrologic record from January, 1987 through December 2017. Significantly, this 31-year hydrologic record includes the recent 2012-2015 drought. We propose that this full 31-year historical hydrology and climate dataset be used as basis for all predictive modeling, as this it incorporates a broader range of potential climate variability. The extended hydrology would repeat the 31-year hydrology from 1987 – 2017, so that the baseline scenario is extended out 31-years from 2018 to 2048.

The previous replenishment modeling effort assumed protective elevations must be reached in 25 years from the time supplemental water is available to offset pumping (assumed at that time to be in 2016) thereby resulting in protective elevations being reached in 2041. Per the TACs direction, the update will determine how much replenishment water is needed to achieve protective coastal elevations in 20 years. Extending the hydrology to 2048 covers the 20-year target to be used for evaluating replenishment volumes that achieve protective elevations.

Actual hydrology and measured pumping and injection rates will be used for January, 2018 through September, 2021, with the following simulation periods using projected production and injection rates as described in the following sections.

The estimated shallow groundwater recharge from percolation of precipitation, irrigation return flow, ponds, system losses, and septic systems will be based on the previously modeled estimates for cycled hydrology period.

Incorporate all Existing and Approved/Planned Projects into Baseline Model

The Baseline scenario will include the following:

1. PWM injection of 3,500 AFY based on hydrology and planned amount extracted each year
2. Carmel River ASR current planned operations based on cycled historical Carmel River hydrology
3. Cal-Am's 700 AFY reduction in pumping of native groundwater as part of its 25-year groundwater overpumping replenishment program, assumed to begin in 2024
4. Cal-Am's cessation of pumping from the Ryan Ranch and Bishop Units in the Laguna Seca subarea starting in WY2021. Laguna Seca demand will be supplied via the recently completed Laguna Seca Interconnection pipeline from a combination of Cal-Am's other Seaside water rights (e.g. native groundwater, ASR recovery, PWM water). Pumping will continue from the Hidden Hills Unit which is located just outside the Laguna Seca subarea.
5. Do we want to include the additional 600 AF/year of injection currently in the process of being permitted for the PWM base project, which would give the PWM base project a permitted annual average injection capacity of 4,100 AFY?
6. What about the Proposed PWM Expansion project that would increase PWM injection up to 5,750 AF/year?

PWM Injection

Monthly PWM injection rates have some dependence on hydrology because injection is reduced during drought years to send some recycled water to CSIP in Salinas Valley, and they also have a drought reserve that needs to be managed. Similarly, Cal-Am extraction of ASR water also depends on hydrology. All these operating requirements need to be considered when developing the monthly injection and extraction rates to be simulated.

PWM water will be simulated as being recharged through the existing four deep injection wells (DIWs) and two vadose zone wells (VZWs). The Project recharges variable volumes of water each year, with an average of 3,500 acre-feet recharged per year. Of this, 95% of the PWM water will be delivered to the Santa Margarita aquifer through the deep injection wells, and the remaining 5% will be delivered to the Paso Robles aquifer through the vadose zone wells. The amount of water recharged each year depends on whether the predicted hydrology is in a drought or non-drought year, and on the rules for banking and delivering water to the Castroville

Seawater Intrusion Project (CSIP) for irrigation use in the Salinas Valley. The actual monthly injection rates for WY2020 and WY2021 will be used, followed by a projected injection schedule for the remainder of the simulation, using an injection delivery spreadsheet previously developed for the PWM modeling updated for the simulated future hydrology.

Pumping Demands

It will be assumed that all Standard Producers are meeting their safe yield allocations of native Seaside basin groundwater from WY2021 forward. Predicted Standard and Alternative Producer pumping will be set at measured WY 2021 volumes from WY 2021 onwards (or capped at 2021 SPA or APA allocations), with some specific exceptions detailed in the following sections.

Cal-Am Demand and Pumping Assumptions

It is necessary to revise the assumptions on Cal-Am annual demand and well pumping to meet this demand since the assumptions used in the 2013 replenishment modeling have changed. We propose to update the new demand forecast spreadsheet model that MPWMD (Jon Lear) developed for the PWM expansion modeling for the expanded hydrology period, and also to incorporate the meeting of Laguna Seca demand via Cal-Am wells in the Coastal subarea. The demand forecast has a uniform increase in demand over time and is tied to the hydrology cycle and takes into account all the water rights and allocations and demand/supply sources (native, ASR, PWM) which are then distributed to Cal-Am extraction wells to meet the monthly estimated demand. The demand model takes into account Cal-Am's 700 acre-feet replenishment payment and also the Cease-and-Desist Order (CDO) restricting Cal-Am's diversion of Carmel River water through December 2021. We will assume that the 700 acre-feet replenishment begins in WY2021, and that the CDO is lifted from January 2022 onward.

For the 2019 PWM Expansion SEIR modeling Cal-Am's annual water demand started off at 10,400 acre-feet (AF) and increased linearly to 11,325 AF (through the end WY2045). The monthly distribution of Cal-Am's annual deliveries, provided by MPWMD, was used to estimate future monthly demand, and were based on monthly averages of deliveries from 2007 to 2017. It was also assumed that roughly two-thirds of the total Cal-Am demand would be satisfied by extraction from the Seaside Basin of native groundwater, injected Carmel River water (ASR water), and injected PWM water. Extraction from the Carmel Valley, Cal-Am's Carmel River Table 13 diversion, and the Sand City Desalination plant would satisfy the remainder of the total Cal-Am demand. Monthly Seaside Basin pumping rates were set to meet monthly Cal-Am demand.

Questions for TAC:

1. Do any changes need to be made to the assumptions in the MPWMD demand forecast model (e.g. in terms of total Cal-Am demand)? Will there be a supply shortfall if we are not

simulating the PWM Expansion project (5,750 acre-feet per year)? If so, do we assume this short fall is being met from some other water source outside the basin?

2. How should the SNG development be simulated?

a. Previous PWM models have assumed that SNG, which is an Alternative Producer, would be supplied from Cal-Am wells under an agreement with Cal-Am. When the SNG site is developed they will be supplied with water by Cal-Am, who will use SNG's native groundwater water right of 149.7 acre-feet/year. For the PWM modeling, SNG project construction was originally simulated as starting in 2013 with usage estimated to be 25 AF/year in 2013, 30 AF/year in 2014, 50 AF/year in 2015, and 70 AF/year from 2016 onwards.

b. Current records show there is no (or *de minimis*) production from the SNG well. What is status of the SNG development project, and what assumptions should be made about future pumping for the project?

3. What assumptions should be made for the Laguna Seca Cal-Am demand that is now being met by Cal Am pumping from its Coastal sub-area wells and supplied to these Laguna Seca customers via the new interconnection to Cal Am's Main System? (e.g. most recent annual pumping for Bishop and Ryan Ranch Units?)

REPLENISHMENT INJECTION

As per direction from the TAC, replenishment injection will be simulated at the four existing PWM injection wells regardless of injection capacity. The replenishment injection will be distributed equally between the four DIW wells and spread out uniformly throughout the year. It is noted that actual existing injection capacity may be insufficient, in which case additional infrastructure to increase injection capacity would be needed to implement this.

INCORPATING SEA LEVEL RISE AT OCEAN BOUNDARIES

We will incorporate estimates of projected sea level rise (SLR) into the predictive model simulation by adjusting the general head boundary conditions specified along the ocean boundary. Generally speaking, sea level rise is expected to increase seawater intrusion and/or the risk of sea water intrusion in coastal aquifers, though the magnitude of the effects due to sea level rise alone are highly dependent on local conditions. The sea level rise estimates will be based on the projected levels for Monterey Bay tidal station from the 2018 update of the State of California Sea-Level Rise Guidance document recently released by the California Ocean

Protection Council (OPC, 2018). The adjustments to the sea level elevations will also entail simple equivalent adjustments to the protective head elevations as they are tied to sea level.

Below is Table 16 from the OPC guidance document showing the projected SLR for the Monterey tidal station. The OPC document presents a range of possible SLR scenarios and recommends that agencies choose a scenario based on their level of risk aversion (e.g. low risk aversion would consist of choosing the most probable scenario that has a moderate SLR projection of up to 1.1 feet by 2050, a Medium to High Risk Aversion scenario with an SLR of 1.9 feet by 2050, or an Extreme Risk Aversion scenario of a very significant SLR of 2.7 feet by 2050 (as well as a few other scenarios in-between).

TABLE 16: Projected Sea-Level Rise (In feet) for Monterey

Probabilistic projections for the height of sea-level rise shown below, along with the H++ scenario (depicted in blue in the far right column), as seen in the Rising Seas Report. The H++ projection is a single scenario and does not have an associated likelihood of occurrence as do the probabilistic projections. Probabilistic projections are with respect to a baseline of the year 2000, or more specifically the average relative sea level over 1991 - 2009. High emissions represents RCP 8.5; low emissions represents RCP 2.6. Recommended projections for use in low, medium-high and extreme risk aversion decisions are outlined in blue boxes below.

		Probabilistic Projections (in feet) (based on Kopp et al. 2014)				H++ scenario (Sweet et al. 2017) *Single scenario	
		MEDIAN <i>50% probability sea-level rise meets or exceeds...</i>	LIKELY RANGE <i>66% probability sea-level rise is between...</i>	1-IN-20 CHANCE <i>5% probability sea-level rise meets or exceeds...</i>	1-IN-200 CHANCE <i>0.5% probability sea-level rise meets or exceeds...</i>		
				Low Risk Aversion		Medium - High Risk Aversion	Extreme Risk Aversion
High emissions	2030	0.4	0.3 - 0.5	0.6	0.8	1.0	
	2040	0.6	0.4 - 0.8	0.9	1.2	1.7	
	2050	0.8	0.5 - 1.1	1.3	1.9	2.7	
Low emissions	2060	0.9	0.5 - 1.2	1.5	2.3		
High emissions	2060	1.0	0.7 - 1.4	1.8	2.6	3.8	
Low emissions	2070	1.0	0.6 - 1.4	1.9	3.0		
High emissions	2070	1.3	0.9 - 1.8	2.3	3.4	5.1	

Question for TAC:

What is level of risk aversion level we would like to consider?

CONDITIONS OUTSIDE OF THE SEASIDE BASIN

Initial assumption is that no changes will be made to the northern constant head boundary condition of the model located close to the boundary between the Monterey Subbasin and the 180/400 Foot Subbasin. Similarly, it is assumed that pumping in the Corral de Tierra and Toro areas located within the model domain, but just east of the Seaside Basin boundary, will remain fixed at the actual rates from most recently available data that have been compiled as part of the Monterey Subbasin GSP data collection and synthesis.

Questions for TAC:

- As part of the Monterey Subbasin GSP there is ongoing modeling of potential future conditions based on meeting proposed SGMA sustainable management criteria. These would potentially change the future water levels and cross-basin boundary flows. Do we want/need to try to incorporate any of this at this stage? Or do we wait on this until the neighboring GSP's are finalized and approved?

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

MEETING DATE:	October 20, 2021
AGENDA ITEM:	4
AGENDA TITLE:	Schedule
PREPARED BY:	Robert Jaques, Technical Program Manager
<p>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 are performing certain portions of the work.</p> <p>Attached is the updated schedule for 2021 activities.</p> <p>The next TAC meeting will be on the 3rd, not the 2nd, Wednesday of November – November 17, 2021.</p>	
ATTACHMENTS:	Schedule of Work Activities for FY 2021
RECOMMENDED ACTION:	Provide Input to Technical Program Manager Regarding Any Corrections or Additions to the Schedules

Seaside Basin Watermaster 2021 Monitoring and Management Program Work Schedule

ID	Task Name	Dec '20	Jan '21	Feb '21	Mar '21	Apr '21	May '21	Jun '21	Jul '21	Aug '21	Sep '21	Oct '21	Nov '21	Dec '21	Jan '22	Feb '22
1	Replenishment Assessment Unit Costs for Water Year 2022															
2	B&F Committee Develops Replenishment Assessment Unit Cost for 2022 Water Year									COMPLETED						
3	If Requested, TAC Provides Assistance to B&F Committee in Development of 2022 Water Year Replenishment Assessment Unit Cost									NO ASSISTANCE WAS REQUESTED						
4	Board Adopts and Declares 2022 Water Year Replenishment Assessment Unit Cost									COMPLETED						
5	Replenishment Assessments for Water Year 2021															
6	Watermaster Prepares Replenishment Assessments for Water Year 2021															
7	Watermaster Board Approves Replenishment Assessments for Water Year 2021 (At December Meeting)													12/1		
8	Watermaster Levies Replenishment Assessment for 2021													12/7		
9	Monitoring & Management Program (M&MP) Budgets for 2022 and 2023															
10	Preliminary Discussion of Potential Scope of Work for 2022 M&MP								COMPLETED							
11	Prepare 2022 M&MP								COMPLETED							
12	TAC approves 2022 M&MP								COMPLETED							
13	Prepare 2022 and 2023 O&M and Capital Budgets								COMPLETED							
14	TAC approves 2022 and 2023 O&M and Capital Budgets								COMPLETED							
15	Budget & Finance Committee Approves 2022 M&MP and 2022 O&M and Capital Budgets								COMPLETED							
16	Board approves 2022 M&MP and 2022 M&MP O&M and Capital Budgets								COMPLETED							
17	2021 Annual Report															
18	Prepare Preliminary Draft 2021 Annual Report															
19	TAC Provides Input on Preliminary Draft 2021 Annual Report															
20	Prepare Draft 2021 Annual Report (Incorporating TAC Input)													11/17		
21	Board Provides Input on Draft 2021 Annual Report (At December Board Meeting)													12/1		
22	Prepare Final 2021 Annual Report (Incorporating Board Input)															
23	Watermaster Submits Final 2021 Annual Report to Judge														12/9	
24	MANAGEMENT															
25	M.1 PROGRAM ADMINISTRATION															
26	Prepare Initial Consultant Contracts for 2022								COMPLETED							
27	TAC Approval of Initial Consultant Contracts for 2022								COMPLETED							
28	Board Approval of Initial Consultant Contracts for 2022								COMPLETED							

Seaside Basin Watermaster 2021 Monitoring and Management Program Work Schedule

ID	Task Name	Dec 20	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22
29	M.1.g – Sustainable Groundwater Management Act Reporting Requirements	29	6	13	20	27	3	10	17	24	31	7	14	21	28	4
30	Montgomery & Associates Prepares Draft Groundwater Storage Analysis															
31	Submit SGMA Documentation to DWR															
32	IMPLEMENTATION															
33	I.2.a DATABASE MANAGEMENT															
34	I.2.a.1 Conduct Ongoing Data Entry/Database Maintenance															
35	I.2.b DATA COLLECTION PROGRAM															
36	I.2.b.2 Collect Monthly Water Levels (MPWMD)															
37	I.2.b.3 Collect Quarterly Water Quality Samples (MPWMD)															
38	I.2.b.6 MPWMD provides annual water quality and water level data to Montgomery & Associates for inclusion in the 2021 SIAR															
39	I.3. a. 3 Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions															
40	TAC Approves Contract with Montgomery & Associates to Perform Flow Direction and Flow Velocity Modeling															
41	Board Approves Contract with Montgomery & Associates to Perform Flow Direction and Flow Velocity Modeling															
42	Montgomery & Associates Performs Flow Direction and Flow Velocity Modeling															
43	Montgomery & Associates Presents Flow Direction and Flow Velocity Modeling Report to the TAC															
44	Montgomery & Associates Presents Flow Direction and Flow Velocity Modeling Report to the Board															
45	TAC Discusses Scope of Work for Replenishment Water Modeling															
46	Prepare Contract with Montgomery & Associates to Perform Replenishment Water Modeling															
47	TAC Approves Contract with Montgomery & Associates to Perform Replenishment Water Modeling															
48	Board Approves Contract with Montgomery & Associates to Perform Replenishment Water Modeling															
49	Montgomery & Associates Performs Replenishment Water Modeling															
50	Montgomery & Associates Presents Replenishment Water Modeling Report to the TAC															
51	Montgomery & Associates Presents Replenishment Water Modeling Report to the Board															
52	I.4.c Annual Seawater Intrusion Analysis Report (SIAR)															
53	Montgomery & Associates Provides Draft SIAR to Watermaster															
54	TAC Approves Annual Seawater Intrusion Analysis Report (SIAR)															
55	Board Approves Annual Seawater Intrusion Analysis Report (SIAR)															
56	I.4.f If Seawater Intrusion is Determined to be Occurring, Implement Seawater Intrusion Response Plan															
57	Work on Evaluating Increased Chloride Levels at Monitoring Well FO-9 Shallow															

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

MEETING DATE:	October 20, 2021
AGENDA ITEM:	5
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