SEASIDE GROUNDWATER BASIN WATERMASTER
REGULAR MEETING OF THE BOARD OF DIRECTORS

VIRTUAL

Wednesday, September 7, 2022 – 2:00pm Draft Agenda

IN KEEPING WITH GOVERNOR NEWSOM'S EXECUTIVE ORDERS N-29-20 AND N-35-20, THE WATERMASTER REGULAR BOARD MEETING WILL NOT BE HELD IN PERSON. YOU MAY ATTEND AND PARTICIPATE IN THE MEETING BY JOINING 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) AT THIS WEB ADDRESS:
https://us02web.zoom.us/j/81494488430?pwd=c1ZSdkNRK2F1TkRnZms0U0kvMFJGQT09
If joining the meeting by phone, dial either: +1 408 638 0968 (San Jose) or **+1 669 900 6833 (San Jose)**
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Meeting ID: 814 9448 8430 **Passcode:** 183291

Watermaster Board
Coastal Subarea Landowner – Director Paul Bruno, Chair
City of Seaside – Mayor Ian Oglesby
California American Water – Director Christopher Cook
City of Sand City – Mayor Mary Ann Carbone
Monterey Peninsula Water Management District – Director George Riley
Laguna Seca Subarea Landowner – Director Wesley Leith
City of Monterey – Councilmember Dan Albert, Vice Chair
City of Del Rey Oaks – Councilmember John Gaglioti
Monterey County/Monterey County Water Resources Agency – Supervisor Mary Adams, District 5 (Alternate)

I. CALL TO ORDER

II. ROLL CALL

III. PUBLIC COMMUNICATIONS
Oral communications are on each meeting agenda in order to provide members of the public an opportunity to address the Watermaster on matters within its jurisdiction. Matters not appearing on the agenda will not receive action at this meeting but may be referred to the Watermaster Administrator or may be set for a future meeting. Presentations will be limited to three minutes or as otherwise established by the Watermaster. In order that the speaker may be identified in the minutes of the meeting, it is helpful if speakers state their names.

IV. REVIEW OF AGENDA
A vote may be taken to add to the agenda an item that arose after the 72-hour posting deadline pursuant to the requirements of Government Code Section 54954.2(b). (A 2/3-majority vote is required).

V. CONSENT CALENDAR
A. Consider Adopting Watermaster Resolution 22-03 finding that continuing Covid pandemic state of emergency declared by Governor Newsom directly impacts ability of board to meet safely in person 3
B. Consider Approving Minutes of Regular Board meeting held June 1, 2022 5

VI. ORAL PRESENTATION – None

VII. OLD BUSINESS

A. TECHNICAL ADVISORY COMMITTEE (TAC)

i. Results of Additional Analyses of the Replenishment Water Modeling Work 9

ii. Flow Velocity/Flow Direction Modeling Work Performed and Recommendation to Perform Additional Analyses 27

iii. Consider Approval of Montgomery & Associates (M&A) Request for Service (RFS) No. 2022-05 to Provide Consulting Services for Replacement of Monitoring Well FO-9 Shallow 35

VIII. NEW BUSINESS

A. Monterey County Board of Supervisors - Invitation to Speak at Regional Water Forum, September 20, 2022, 1:30pm 49

IX. INFORMATIONAL REPORTS (No Action Required)

A. Technical Advisory Committee (TAC) meeting minutes July 27 (review on website at https://www.seasidebasinwatermaster.org/sbwmARC.html) and Draft August 10, 2022..... 51

B. Watermaster Report of Production third quarter Water Year 2022 (April 1, 2022 – June 30, 2022) 59

C. Watermaster Correspondence to MPWMD/PWM/CAW regarding Well ASR-01 Issues..... 61

D. Informational - Salinas Valley Basin Groundwater Sustainability Agency Budget & Finance Committee Staff Report regarding SGMA $7.6 Million Round 1 Implementation Grant 67

X. DIRECTOR'S REPORTS

XI. STAFF COMMENTS

XII. NEXT REGULAR MEETING DATE

A. Consider setting the next regular meeting date for **October 5, 2022 - 2:00 P.M.**

XIII. ADJOURNMENT

This agenda was forwarded via e-mail to the City Clerks of Seaside, Monterey, Sand City and Del Rey Oaks; the Clerk of the Monterey Board of Supervisors, the Clerk to the Monterey Peninsula Water Management District; the Clerk at the Monterey County Water Resources Agency, Monterey One Water and the California American Water Company for posting on September 1, 2022 per the Ralph M. Brown Act, Government Code Section 54954.2(a).

SEASIDE GROUNDWATER BASIN WATERMASTER

ATTACHMENT A

DRAFT RESOLUTION NO. 2022-03

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE SEASIDE GROUNDWATER BASIN WATERMASTER PROCLAIMING A LOCAL EMERGENCY, RATIFYING THE STATE OF EMERGENCY PROCLAIMED ON MARCH 4, 2020, AND AUTHORIZING REMOTE TELECONFERENCE MEETINGS OF ALL WATERMASTER LEGISLATIVE BODIES FOR THE FOLLOWING 30 DAYS IN ACCORD WITH THE RALPH M. BROWN ACT AND AB 361 (RIVAS)

FACTS

1. The Seaside Groundwater Basin Watermaster (Watermaster) is public entity established under the laws of the State of California.
2. The Watermaster is committed to preserving and nurturing public access and participation in meetings of the Watermaster Board and Committees; and
3. All meetings of Watermaster legislative bodies are open and public, as required by the Ralph M. Brown Act (Cal. Gov. Code sections 54950 – 54963), so that any member of the public may attend, observe, and participate when Watermaster legislative bodies conduct business; and
4. The Brown Act, Government Code section 54953(e), enables remote teleconferencing participation in meetings by members of a legislative body, without strict compliance with requirements of Government Code section 54953(b)(3), subject to the existence of certain conditions; and
5. One required condition is that a state of emergency has been declared by the Governor of the State of California pursuant to Government Code section 8625, proclaiming the existence of conditions of disaster or of extreme peril to the safety of persons and property within the state caused by conditions as described in Government Code section 8558; and
6. A proclamation is made that there is an actual incident, threat of disaster, or extreme peril to the safety of persons and property within the Watermaster's jurisdiction, caused by natural, technological, or human-caused disasters; and
7. State or local officials have imposed or recommended measures to promote social distancing, or having the legislative body meet in person would present imminent risks to the health and safety of attendees; and
8. The Watermaster Board affirms these conditions now exist. Specifically, on March 4, 2020, the Governor proclaimed a State of Emergency to exist as a result of the threat of COVID-19. That Proclamation has not been terminated by either the Governor or the Legislature pursuant to Government Code section 8629; and
9. Despite sustained efforts to remedy this circumstance, the Watermaster Board determines that meeting in person poses an imminent risk to health and safety of attendees due to the COVID-19 virus and its variants; and
10. The Watermaster Board finds the emergency created by the COVID-19 virus and its variants has caused, and will continue to cause, conditions of peril to the safety of persons that are likely to be beyond the control of services, personnel, equipment, and facilities of an agency hosting the Watermaster board meetings and desires to proclaim a local emergency and ratify the proclamation of state of emergency by the Governor and similar local health orders that require social distancing; and
11. As a consequence of the local emergency, the Watermaster Board determines that all legislative bodies of the Watermaster are required to conduct their meetings without full compliance with paragraph (3) of subdivision (b) of Government Code section 54953, as authorized by subdivision (e) of section

54953, and that those Watermaster legislative bodies shall comply with the requirements to provide public access to the meetings remotely as prescribed in paragraph (2) of subdivision (e) of section 54953; and

12. Each Watermaster legislative body shall continue to conduct meetings with public access available via call-in or internet-based service options and the public shall be allowed to address the legislative body directly in real time; and
13. This Resolution shall authorize the Administrative Officer to establish and maintain platforms necessary for each Watermaster legislative body to hold teleconference meetings and provide an avenue for real-time public comments for such meetings; and
14. The Watermaster Board finds the introduction and adoption of this resolution is not subject to the California Environmental Quality Act (CEQA) as the activity is not a project as defined in Section 15378) of the CEQA Guidelines.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS THE SEASIDE GROUNDWATER BASIN WATERMASTER:

SECTION 1. RECITALS. The foregoing findings are true and correct and are adopted by the Watermaster Board as though set forth in full.

SECTION 2. PROCLAMATION OF LOCAL EMERGENCY. The Board hereby proclaims that a local emergency now exists and meeting in person would present imminent risk as a result of the COVID-19 virus and its variants.

SECTION 3. RATIFICATION OF PROCLAMATION OF A STATE OF EMERGENCY. The Board hereby ratifies the Governor of the State of California's Proclamation of State of Emergency, effective as of its issuance date of March 4, 2020.

SECTION 4. REMOTE TELECONFERENCE MEETINGS. The Administrative Officer and legislative bodies of the Seaside Groundwater Basin Watermaster are hereby authorized and directed to take all actions necessary to carry out the intent and purpose of this Resolution including, conducting open and public meetings in accordance with Government Code section 54953(e) and other applicable provisions of the Brown Act.

SECTION 5. EFFECTIVE DATE OF RESOLUTION. This Resolution shall take effect immediately upon its adoption and shall be remain in effect for a period of 30 days, or until such time the Watermaster Board adopts a subsequent resolution in accordance with Government Code section 54953(e)(3) to extend the time during which Watermaster legislative bodies may continue to teleconference without compliance with paragraph (3) of subdivision (b) of section 54953.

PASSED AND ADOPTED on this 7th day of September, 2022 on a motion by Director _____ and second by Director _____ by the following vote, to wit:

AYES: NOES: ABSENT:

I, Laura J. Paxton, Secretary to the Board of Directors of the Seaside Groundwater Basin Watermaster, hereby certify the foregoing is a resolution adopted on 7th day of September, 2022.

_____
Laura J. Paxton, Secretary to the Board

SEASIDE GROUNDWATER BASIN WATERMASTER
REGULAR MEETING MINUTES
Wednesday, June 1, 2022 Via Zoom Teleconference

I. CALL TO ORDER – Director Bruno called the meeting to order at 2:00pm

II. ROLL CALL

Coastal Subarea Landowner – Director Paul Bruno – Chair
Laguna Seca Subarea Landowner – Director Wesley Leith
City of Sand City – Mayor Mary Ann Carbone
California American Water (CAW) – Director Christopher Cook
Monterey Peninsula Water Management District (MPWMD) – Director George Riley
City of Del Rey Oaks – Council Member John Gaglioti

Absent: City of Monterey – Council Member Dan Albert – Vice Chair
Monterey County/Monterey County Water Resources Agency – Supervisor Wendy Root-Askew
City of Seaside – Mayor Ian Oglesby

Others Present:

Robert Jaques, Watermaster Technical Program Manager (TPM)
Laura Paxton, Watermaster Administrative Officer (AO)
Michael Paxton, Assistant AO
Alvin Edwards, Chair, MPWMD Board of Directors
David Stoldt, MPWMD
Jonathan Lear, MPWMD
Maureen Hamilton, MPWMD
Tim O'Halloran, Engineering Manager, CAW
Aiko Yamakawa, Attorney, CAW
Josh Stratton, External Affairs, CAW
Susan Schiavone, Seaside resident
Melodie Chrislock, Public Water Now
Yuri Anderson, Chief of Staff, District 4

III. PUBLIC COMMUNICATIONS – None

IV. REVIEW OF AGENDA

A vote may be taken to add to the agenda an item that arose after the 72-hour posting deadline pursuant to the requirements of Government Code Section 54954.2(b). (A 2/3-majority vote is required).

V. CONSENT CALENDAR

A. Consider Approving Minutes of Regular Board meeting held May 4, 2022
B. Consider Approving Summary of Payments made April 2022 in the amount of $13,813.10
C. Consider Approving Fiscal Year 2022 Financial Reports through April 30, 2022
D. TAC Recommendation to the Board Regarding Preparing a Sustainable Yield Analysis
E. Results from March 2022 Induction Logging of the Sentinel Wells and Recommendation to Reduce Frequency of Induction Logging

Director Riley requested Item D be pulled.

It was moved by Director Riley and seconded by Councilmember Gaglioti to approve consent calendar Items A, B, C, and E as presented. Director Bruno – Aye; Director Cook – Aye; Councilmember Gaglioti – Aye; Mayor Carbone – Aye; Director Riley – Aye; Director Leith – Aye. Motion carried.

Director Riley was satisfied with clarification on Item D that a Sustainable Yield Analysis was not being recommended at this time.

It was moved by Director Riley and seconded by Councilmember Gaglioti to approve consent calendar Item D as presented. Director Bruno – Aye; Director Cook – Aye; Councilmember Gaglioti – Aye; Mayor Carbone – Aye; Director Riley – Aye; Director Leith – Aye. Motion carried.

VI. ORAL PRESENTATION – None

VII. OLD BUSINESS

A. TECHNICAL ADVISORY COMMITTEE (TAC)

i. Initial Findings from Replenishment Water Modeling Work and Recommendation to Perform Additional Replenishment Water Analyses

TPM Jaques gave highlights from his transmittal, and referenced the recently received correspondence dated May 25, 2022, from Mr. Stoldt of MPWMD challenging the revised modeling assumption that proposes a reduction of Pure Water Monterey's (PWM) delivery amount to 4,600 acre-feet per year (AFY). According to Mr. Jaques, the revised assumption transpired as follows: at the January 2022 TAC meeting, Mr. Lear reported that the latest Water Purchase Agreement contained water supply guarantees from Monterey One Water (M1W) including terms for delivery of a minimum allotment of 4,600AFY to CAW; there was no mention made at the TAC meeting that failure to deliver 5,750AFY would constitute an event of default of that Agreement. Mr. Stoldt also sent correspondence by email on May 27, 2022, that Mr. Jaques felt contained a misstatement regarding CAW's Urban Water Management Plan (UWMP), that such a plan is merely a regulatory filing with no review or comment by the State, and seldom does the public or MPWMD have sufficient time to review and comment on it before it is filed. Mr. Jaques' research on the Department of Water Resources website contradicts Mr. Stoldt's statement. He found that the plans are required by the State's Water Code to be prepared by large urban water suppliers to support their resource planning to ensure that adequate water supplies are available to meet existing and future water needs. The Water Code requires that development of UWMPs be coordinated with water management agencies prior to and during preparation, and requires a 60-day minimum public review period during development of the UWMP to solicit input on the plan. Cal Am fulfilled this requirement and adopted its plan in June of 2021.

Director Bruno inquired of TPM Jaques if the assumptions were agreed upon by the TAC members and whether any TAC members expressed concern that numbers in the assumptions might not be accurate. Jaques recalled that members felt the information that would be provided by performing the additional analysis would serve to "book end" the likely range of the Basin's replenishment water needs, i.e., the amounts needed under both optimistic (MPWMD supply/demand) and potentially more realistic (CAW) sets of future conditions. The proposed additional work was discussed over several TAC meetings and was passed unanimously by the TAC at its May meeting. Jaques noted that Jon Lear, the TAC chair, was not present at that meeting and gave no advanced notification he would not be attending. Councilmember Gaglioti, who is on the TAC, stated that MPWMD was intimately involved in the crafting of the

additional work over the course of TAC meeting discussions. He felt the revised assumptions better indicated likely conditions.

Director Riley questioned the feasibility of the coastal desalination plant being operational by 2030. Councilmember Gaglioti felt the urgent need for an additional source of replenishment water at the current rate of pumping could quickly force feasibility. Director Riley felt Watermaster had ample information on the issue without conducting further analyses. Staff responded to Director Riley's inquiry on Seaside Basin outflow or "leakage" stating the amount is influenced by conditions in adjacent basins and is estimated to be ~1,300AFY. Director Cook expressed his support for updating and defining replenishment water needs, and felt the assumptions that considered potential drier years ahead were realistic.

Susan Schiavone of Seaside questioned why additional replenishment water needs analyses would be performed based on what she felt were false assumptions with inaccuracies that would result in false data. She disputed CAW supply and demand figures and 2030 desalination plant startup, and felt the money to perform the proposed analyses would be better spent in purchasing an increased amount of PWM water injected into the Basin derived from what she claimed to be yet unused wastewater in the area, or by implementing CAW's 700AFY in-lieu replenishment now and not waiting for desalination plant startup.

Melodie Chrislock, Public Water Now, felt Watermaster already knows the Basin is over drafted and questioned the expenditure for further analyses instead of pursuing a solution. She was not convinced that the CAW desalination plant would be producing by 2030, and encouraged buying more PWM water injected into the Basin.

David Stoldt, MPWMD General Manager, stated the failure of the PWM project to deliver 5,750AFY would be an event of default under the proposed water purchase agreement and felt it nonsensical in the proposed analyses to reduce the yield to 4,600AFY. His recalling of the timeline of public review of the CAW Urban Water Management Plan was there were 7 days in June 2021 from public notice to approval of the plan with no public comment brought into the approved plan. He disagreed with some of the assumptions in the CAW UWMP.

Director Riley inquired as to the demand figure that would be used in the analyses – Director Cook recalled in its UWMP the amount of 14,000AFY in 2045 but would need to confirm. Mayor Carbone, who sits on the M1W Board and is involved with the Association of Monterey Bay Area Governments (AMBAG), has realized that recycled water will be part of the overdraft solution but not all of it. The State is mandating area cities to add 33,000 housing units that equates to an additional 6,000AFY of water—solutions need to be found very soon, irrespective of from where or whom. Director Riley felt the Watermaster is not in any position to solve the problem on its own. The study may give bounds of replenishment need however it will not provide a solution. Watermaster could join in efforts beyond its boundaries such as with the Salinas Valley Basin and Marina Coast Water District GSAs that have proposed projects, or the MPWMD effort to modify the Section 2 rule that forbids allocation for affordable housing. He felt these are ways to support solutions instead of performing more analyses. Director Leith stated as a member of the TAC he had reservations on supporting the analyses due to modeling skepticism—the need, assumptions made, and lack of contribution to the solution—and felt he would abstain or vote no due to wanting to discuss it further at the board level.

It was moved by Councilmember Gaglioti and seconded by Mayor Carbone to approve the TAC recommendation to 1. Approve Montgomery & Associates RFS No. 2022-04 to perform additional replenishment water analyses; and 2. Fund the costs of this work from Task I.3.a.3, Task I.3.e, and the Contingency line-item in the Watermaster's 2022 Monitoring and Management Program Operations Budget. Director Bruno – Aye; Director Cook – Aye; Councilmember Gaglioti – Aye; Mayor Carbone – Aye; Director Riley – Nay; Director Leith – Nay. Motion carried.

VIII. NEW BUSINESS

IX. INFORMATIONAL REPORTS (No Action Required)

- **A.** Technical Advisory Committee (TAC) meeting minutes April 27 (review on website at https://www.seasidebasinwatermaster.org/sbwmARC.html) and Draft May 11, 2022
- **B.** Watermaster Report of Production second quarter Water Year 2022 (Jan 1, 2022 – Mar 31, 2022)
- **C.** Correspondence from Watermaster to Department of Water Resources re: Final Draft Groundwater Sustainability Plan for the Monterey Subbasin of the Salinas Valley Groundwater Basin
- **D.** Correspondence Between CAW, Pure Water Monterey and MPWMD regarding ASR-01
- **E.** Mission Memorial Park Replenishment Assessment Update

X. DIRECTOR'S REPORTS – Director Bruno reported on the meeting he attended May 27th with discussion between CAW, M1W, and MPWMD of the ASR-01 well. Watermaster has a Storage and Recovery Agreement with the parties. No action or resolution resulted from the meeting and talks are ongoing. Director Riley thanked Director Bruno and TPM Jaques for the well-done letter sent to the Department of Water Resources.

XI. STAFF COMMENTS – Ms. Paxton gave an update on the status of Mission Memorial Park's replenishment assessment, reporting that they opted to pay the $25,000 fee in one lump sum.

XII. NEXT REGULAR MEETING DATE - July 6, 2022 - 2:00 P.M.

XIII. ADJOURNMENT – There being no further business, the meeting was adjourned at 3:07pm

ITEM VII.A.i.
SEASIDE GROUNDWATER BASIN WATERMASTER **9/7/22**

TO: Board of Directors
FROM: Robert S. Jaques, Technical Program Manager
DATE: September 7, 2022
SUBJECT: Results of Additional Analyses of the Replenishment Water Modeling Work

- -

RECOMMENDATIONS:
Accept the Consolidated Technical Memorandum for information and for use in management of the Seaside Basin.

BACKGROUND:
At its June 1, 2022 meeting the Board approved a contract with Montgomery & Associates to perform additional replenishment water evaluations using different assumptions than those that had been used in the January 2022 replenishment water modeling work. The revised assumptions principally consisted of:

- Using the water supply and demand figures, and the schedule for implementation of the desalination plant, as contained in Cal Am's Urban Water Management Plan
- Using reduced ASR injection quantities
- Using updated golf course irrigation information from the City of Seaside,

The Technical Memorandum describing the January 2022 work is posted on the Watermaster's website at this link:
http://www.seasidebasinwatermaster.org/Other/Updated%20Modeling%20of%20Seaside%20Basin%20Replenishment%20Options.pdf

DISCUSSION:
The additional work authorized in June was completed in early August and is described in the Technical Memorandum posted on the Watermaster's website at this link:
http://www.seasidebasinwatermaster.org/Other/Montgomery%20&%20Associates%20Tech%20Memo_Replenishment_WaterBudget_and_AlternateScenario_Analysis_DRAFT_A%20%208-5-22.pdf

The document posted at this link is marked as a Draft, because it was felt that a better way of presenting the January and August work would be in the form of a single Technical Memorandum that consolidates that work.

The Consolidated Technical Memorandum is too large for inclusion in this agenda packet, so it will be posted on the Watermaster's website at this link:
https://www.seasidebasinwatermaster.org/Other/ExcecSummary_and%20TMs_Replenishment_Modeling_WaterBudget_and_AlternateScenario_Analysis%20_BOARD_DRAFT_20220901pdf.pdf

Attached is the Executive Summary from the Consolidated Technical Memorandum.

At today's meeting Montgomery & Associates will make a comprehensive PowerPoint presentation describing this work and will respond to questions and comments from the Board.

ATTACHMENTS: The Executive Summary from the Consolidated Replenishment Water Technical Memorandum

MONTGOMERY & ASSOCIATES

TECHNICAL MEMORANDUM EXECUTIVE SUMMARY

DATE: September 7, 2022 **PROJECT #:** 9150.0507

TO: Bob Jaques, Technical Program Manager, Seaside Basin Watermaster

FROM: Pascual Benito, Ph.D.

PROJECT: Seaside Basin Watermaster

SUBJECT: Executive Summary of Replenishment Modeling & Analysis of Alternate Supply & Demand Assumptions

INTRODUCTION

Background

In April 2013, HydroMetrics Water Resources Inc. (now acquired by Montgomery & Associates) completed a groundwater modeling study that evaluated 3 potential future 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 acre-feet per year (AFY) is not enough replenishment to raise groundwater levels to protective elevations at coastal wells, therefore this option was not included as part of this updated modeling of replenishment options.

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 groundwater levels at the coast. Since Scenario 2 is not a practical solution because Standard and Alternative producers do not have access to supplemental sources of water, it was not included as part of this updated modeling of replenishment options.

The results of Scenario 3 showed that when combined with Cal-Am's 25-year repayment schedule of 700 AFY, protective groundwater elevations can be achieved by injecting an additional 1,000 AFY of water into existing Aquifer Storage & Recovery (ASR) wells. Recharged water is left in the basin to replenish the over drafted aquifers and is not pumped by Standard or Alternative producers. This approach requires less supplemental water to implement than the pumping reduction approach for Scenario 2.

The predictive simulation for the 2013 scenarios only considered historical Carmel River ASR by Monterey Peninsula Water Management District (MPWMD) and not Pure Water Monterey (PWM), since in early 2013 PWM was only in the beginning planning stages.

Updated Analysis

This executive summary provides an overview of the findings of groundwater modeling and water budget analysis of replenishment options documented in two technical memorandums (TM's) prepared this year:

1. Replenishment modeling documented in the Technical Memorandum titled "Updated Modeling of Seaside Basin Replenishment Options", dated January 28, 2022 (M&A, 2022a). This study used the Seaside Watermaster groundwater model to estimate how much replenishment water would be needed to achieve protective elevations in the Watermaster's coastal protective elevation wells. Modeling included a revised and updated baseline simulation of future conditions with no additional replenishment, future projections of pumping and incorporating currently planned projects in the basin and projected sea level rise.

2. The second TM, titled "Hybrid Water Budget Analyses of Basin Replenishment Options & Alternate Assumptions", dated August 5, 2022 (M&A 2022b), extends the work done in the January TM by adding:

    a. A detailed water budget analysis of the January 2022 Baseline and 1,000- AFY Replenishment scenario simulations.

    b. Development of an alternative set of baseline supply and demand assumptions based primarily on Cal-Am's Urban Water Management Plan (UWMP), with some additional assumptions provided by Cal-Am and the City of Seaside. This alternate baseline is referred to Alternative Scenario 1.

3. Development and results of a hybrid water-budget approach to evaluate the impact the alternate set of future supply and demand assumptions has on the volume of replenishment water that would be needed to reach protective elevations in the coastal monitoring wells.

The two TM's are included as attachments to this document.

BASELINE SIMULATION ASSUMPTIONS

In this TM the term "Baseline simulation" refers to the simulation of future conditions assuming only operation of currently planned projects with no additional replenishment added. Baseline simulation represents recent conditions from water year (WY) 2018 through 2021 based on actual measured pumping, injection, and hydrology; and projected potential future conditions from WY 2022 through WY 2050 based on MPWMD's projected pumping, currently planned projects, and a repeated historical hydrology record. The Baseline simulation hydrology (rainfall, recharge, and streamflow) is illustrated on Figure 1.

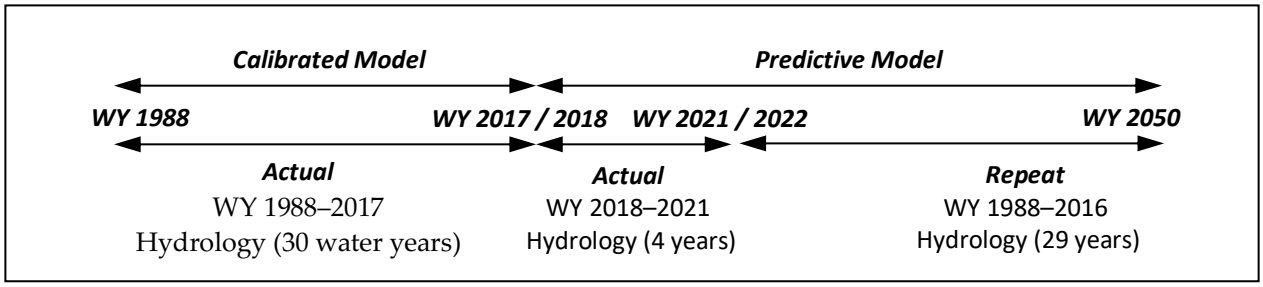

Figure 1: Repetition of Hydrology for Predictive Model

The Baseline simulation includes:

- A new extended hydrology period with 2 multi-year drought periods
- Projected mean sea level rise of up to 1.3 feet by 2050
- Seaside Aquifer Storage and Recovery (ASR) injection of Carmel River water with monthly volumes based on the cycled hydrology and a 20 acre-feet per day (AFD) diversion rate that assumes the proposed upgrades to the Cal-Am Carmel Valley wellfield[1], are completed by WY 2024
- Cal-Am's 25 year 700 AFY overpumping payback replenishment program begins in WY 2024
- Pure Water Monterey (PWM) Expansion project (tied to the new hydrology) begins deliveries in WY 2024 and delivers an annual average of 5,750 AFY

[1]A 20 AFD diversion rate is based on assumption that needed improvements to the Carmel Valley well field are made (J. Lear, personal communication 1/21/2022). Else it would be somewhere between 12-15 AFD based on historical diversion data. Plans to improve and expand the Carmel Valley well field, including a new well on the former Rancho Canada Golf Course are outlined the California American Water 2021, 2022, and 2023 General Rate Case submitted to CPUC: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M425/K808/425808218.PDF

- Other planned projects including the City of Seaside's replacement of groundwater with recycled water for golf course irrigation and the construction of the Security National Guaranty (SNG) and Campus Town developments in the City of Seaside
- No other sources of replenishment water are provided to the basin
- The assumption that no proposed Groundwater Sustainability Plan (GSP) projects are implemented in the neighboring Monterey and 180/400 Foot Subbasins, and that groundwater levels along the northern boundary of the Model (located close to the boundary between those two subbasins) remain unchanged as currently represented in the Model boundary conditions

ALTERNATIVE SCENARIO 1 BASED ON CAL-AM URBAN WATER MANAGEMENT PLAN SUPPLY & DEMAND ASSUMPTIONS AND UPDATED CITY OF SEASIDE ASSUMPTIONS

Alternative Scenario 1 evaluates the impact of an alternate set of future supply and demand assumptions on the volume of replenishment water needed to achieve protective groundwater levels at the coastal monitoring wells. The alternate demand and supply assumptions are based primarily on Cal-Am's 2020 Urban Water Management Plan (UWMP) (WSC, 2021), and additional assumptions provided by Cal-Am and the City of Seaside. The set of assumptions is referred to as Alternative Scenario 1 in this Technical Memorandum.

Updated Assumptions for City of Seaside Golf Course use of Recycled Water & New Well Location

The City of Seaside requested that the following revised assumptions be used:

1. Assume City of Seaside golf courses use 491.4 AFY of recycled water.
2. Assume City pumps an in-lieu amount of 491.4 AFY from the deep aquifer from a new well located at Latitude = 36.615304°, Longitude = 121.826278° (Which is generally in the location of the Lincoln-Cunningham Park in Seaside).
3. Convert 26 AFY of golf course allocation from Alternate Producers (APA) to Standard Producers (SPA). New golf course APA allocation = 540 – 26 = 514 AFY.
4. The remaining unused balance of 514 – 491.4 = 22.6 AFY would be held as a reserve and/or for flushing of greens and tee boxes.

The current Baseline simulation already incorporates the assumptions that the City of Seaside golf courses switch to using recycled water in WY 2023 and stops pumping from their two Paso Robles (Shallow Aquifer) irrigation wells at that time. However, the Baseline simulation accounted only for 301.1 AFY of the 514 AFY golf course allocation to be re-allocated to supply the planned Campus Town Development project, in addition to the existing City of Seaside's municipal pumping SPA allocation currently supplied by pumping of Seaside Muni Well #4. So conservatively if the full 514 AFY of APA allocation is pumped from the new well, this leaves 514-301.1 = 212 AFY of additional pumping that is not currently included in the Baseline simulation and will need to be accounted for in the Alternative Scenario 1 water budget analysis.

Assumptions Requested by Cal-Am

Cal-Am requested that the following assumptions be used:

1. 15 AFD will be used as the average daily amount of ASR diversion, not the 20 AFD that was used in the January 2022 modeling. [*In keeping the current cycled Carmel River hydrology record this assumption results in a 25 percent reduction in the projected annual ASR diversion volumes but does not alter the temporal pattern of when ASR injection occurs during the simulation.*]
2. Cal Am's Urban Water Management Plan (UWMP) demand figures rather than MPWMD's demand figures will be used for Cal Am's projected water demands.
3. The MPWSP Desalination Plant will begin operation in 2030 in accordance with the UWMP. *[The UWMP assumes the Desal plant will produce 6,252 AFY for the Monterey Peninsula].*
4. Cal Am's in-lieu repayment of 700 AFY will not begin until its desalination plant begins operation in 2030, in accordance with the UWMP. *[For comparison, the original baseline assumes the repayment period starts in 2024, concurrent with the PWM Expansion project.]*

5. The Pure Water Monterey Expansion Project will begin operation in 2024, the same as previously simulated in the January 2022 replenishment modeling.
6. To provide a factor of safety, the amount of water that the Pure Water Monterey Expansion Project will deliver will be reduced from 5,700 acre-feet to the *"Minimum Allotment"* of 4,600 acre-feet per year as set forth in the "*Amended and Restated Water Purchase Agreement"* executed between Cal Am, MPWMD, and M1W in late 2021.
7. Cal-Am will make-up any shortfall between supply and demand by over pumping its Seaside Basin allocation of 1,474 AFY. *[If the Desal Plant is built in 2030, even though PWM Expansion is assumed to have reduced deliveries per Cal Am assumption 6 above, there will be no supply shortfall after 2030 because the UWMP indicates that the expected capacity of the Desal plant is sufficient to make up for the reduced PWM Expansion deliveries.]*

Alternative Scenario 1 assumptions were incorporated into the monthly supply-demand spreadsheet model developed by MPWMD that is used to assign and distribute simulated monthly Cal-Am pumping and ASR injection in the groundwater model. The supply-demand model incorporates the cycled Carmel River historical hydrology used for the determination of the monthly ASR diversions. Projected ASR injection and Seaside pumping data was then aggregated on a water year basis for comparison and integration with the water budget analysis from the existing Baseline replenishment model run.

MONTGOMERY & ASSOCIATES

CONCLUSIONS

Baseline and 1,000 AFY Replenishment Scenarios:

1. Under the 1,000 AFY replenishment scenario, protective groundwater elevations are reached, at least initially, in all protective elevation wells within 11 years. Average annual groundwater levels remain above protective elevations for over 50% of the water years during the 25-year replenishment period, except at monitoring well MSC Shallow, at which the protective elevation is reached only once, in WY 2035. After this year, groundwater levels stop increasing and slowly decline due to the drought years in the projected hydrologic cycles that reduces the availability of water for ASR and PWM injection and increases recovery of ASR and PWM water in storage.

2. A water budget analysis of the net inflow of water from offshore areas into the basin indicates the 1,000 AFY scenario maintains and enhances the reversal of flow from a net inflow of water from offshore to a net outflow of water to offshore, even when protective elevations are not being met at all protective elevation wells. The additional replenishment water adds an additional buffer to maintain strong net offshore outflows even in drought years.

3. Increasing replenishment to 1,500 AFY results in only slight improvement at MSC Shallow, and only marginal increases in protective elevation metrics at the other protective elevation wells. Because both the other shallow aquifer protective elevation monitoring wells, (PCA-W Shallow and CDM MW-4), start off already meeting protective elevations, suggesting that there is limited benefit in continuing to raise groundwater levels at MSC Shallow by increasing injection in the deeper Santa Margarita Formation. Rather, as illustrated by the results of Scenario 4, other alternatives could be considered and evaluated such as redistributing pumping from wells screened completely or partially in the Paso Robles aquifer, increased use of recycled water for irrigation purposes, such as at Mission Memorial Park, and simulating additional recharge directly to the Paso Robles aquifer.

4. The original 2013 replenishment modeling (Hydrometrics WRI, 2013) did not explicitly account for impacts of drought on the availability of Carmel River water for ASR injection and other Cal-Am use. Instead, it used a constant average injection and recovery rate each year rather having it fluctuate with hydrologic cycles. The results of the updated model scenarios that couple ASR and PWM operations to the hydrology illustrate the significant impact that multi-year droughts, and even just below normal periods, can have on the availability of water for ASR and PWM recharge and on the timing of reaching and maintaining protective elevations.

5. Simulated groundwater levels rise quickly in response to replenishment during periods of Normal and Above Normal water years following the prolonged drought at the start of the simulated replenishment period, suggesting that levels would rebound again after the drought at the end of the simulation period. However, the rapid rebound is also a function of the assumption that Cal-Am will extract ASR water as its last source of supply, after exhausting available water from its native groundwater rights and PWM water. This assumption has the consequence that a very large portion of the injected ASR water is left in storage in the Basin.

6. The 2009 modeling that established the protective elevations assumed steady-state conditions that have no time component to them, and essentially assumes that sufficient time has passed that conditions have equilibrated to fixed state. The modeling did not directly consider and does not inform or suggest for how long a period groundwater levels can stay below protective elevations without greatly increasing the risk of sea water intrusion. This is something that could be evaluated with additional modeling.

7. In addition to the constant 1,000 AFY replenishment, additional "booster" injections could be considered following protracted drought periods to make up the lost water.

8. The modeling simulation period ends just as Cal-Am's 25-year repayment period ends. It is likely that additional replenishment water would be needed to offset the resumption of extraction at Cal-Am's full native groundwater allocation.

9. The increased frequency and duration of extreme weather events associated with climate change will have an impact on the ability to maintain protective elevations. Additional modeling of projected future climate scenarios could be used to evaluate this.

Water Budget Analysis

1. An important finding from the water budget analysis of the Baseline Scenario on an aquifer-by-aquifer basis is that Shallow Aquifer recharge from percolation of rainfall and irrigation return flows during periods of higher-than-normal rainfall plays a large role in driving the large steady increases in groundwater levels simulated in the Shallow Aquifer in the first 15 years of the simulation period. The temporal pattern and magnitudes of inflow from deep percolation in the Shallow Aquifer is highly correlated with the temporal pattern of total annual rainfall in the basin. Recharge from percolation in the Shallow Aquifer thus plays a role analogous to that of ASR injection in the Deep Aquifer because the simulated Carmel River hydrology record drives the rapid increase in water levels in the Deep Aquifer during this period.

2. Net injection of ASR and PWM water to the Deep Aquifer itself does not appear to be a significant driver for simulated increases in groundwater levels in the Shallow Aquifer

observed during the Baseline Scenario. Rather the increase appears to be driven by the following.

- The reduction by more than half of pumping from wells screened in the Paso Robles aquifer (Shallow Aquifer), due to the City of Seaside's switch to recycled water for golf course irrigation in WY 2023 and Cal-Am's switch to new higher capacity, Deep Aquifer production wells as part of the PWM Expansion project, in combination with:
    - a multi-year period of normal or higher than normal annual rainfall, and
    - the ongoing recharge of PWM water through the shallow vadose zone wells and backflush percolation ponds.

4. A net annual volume of between 200 to 500 AFY flows out from the Shallow Aquifer to the Monterey Subbasin once water levels in the Shallow Aquifers begin to rise, driven by the increasing relative gradients between the groundwater levels in the Northern Coastal Subarea and the lower groundwater levels in the Monterey Subbasin. A similar magnitude of net outflow occurs to the offshore portions of the Shallow Aquifer.

5. The water budget analysis of the Deep Aquifer shows a larger magnitude of net outflows to the Monterey Subbasin (600-1,700 AFY) as groundwater levels rise, and surprisingly, even a small amount of net out flow to the overlying Shallow Aquifer as Deep Aquifer during peak periods when Deep Aquifer groundwater levels rise above the levels in the Shallow Aquifer. The contribution of flow from the Deep Aquifer to the Shallow Aquifer increases in the 1,000-AFY Replenishment Scenario, though is still relatively small contribution compared with the inflows to the Shallow Aquifer from percolation of rainfall during wet years.

6. Under the assumption that groundwater levels in the Monterey Subbasin do not rise, the analysis shows that outflows to the Monterey Subbasin will increase in all aquifers as groundwater levels in the Seaside Subbasin rise. An initial net inflow of water from the offshore region into the Seaside subbasin reverses to a net outflow in all aquifers as groundwater levels increase, with the largest net outflows occurring in the Aromas Sands and Older Dune Deposits, and the next largest net outflows to offshore region being in the Shallow Aquifer. Projected sea level rise is not a significant driver of inland flows relative to the larger changes in water levels associated with changes in injection and extraction in the subbasin.

7. The implications of the strong dependence on recharge from percolation of rainfall for raising the Shallow Aquifer levels are two-fold:

    a. First it may be advisable to consider and evaluate options for direct recharge of the Shallow Aquifer, rather than relying only on replenishment to the Deep Aquifer via

injection wells in the Santa Margarita Formation, in addition to considering other reductions to pumping in the Shallow Aquifer, such as constructing replacement wells only in the Deep Aquifer and switching other irrigation operations to use recycled water (e.g., Mission Memorial).

b. Secondly, this strong dependence on direct percolation from rainfall for increasing Shallow Aquifer water levels suggests that simply assuming a lower Carmel River ASR diversion rate while maintaining the same cycled hydrology record is not a substitute for more a comprehensive evaluation on the impact of climate change on hydrologic inputs to the subbasin. The complex interplay and alternating cross-flows seen through the water budget analysis suggests that there are limits to the type of alternate scenarios that could be evaluated using the hybrid water budget approach and that this approach is better suited to evaluating changes in net supply and demand, rather than on evaluating alternate climate conditions.

8. The results of the water budget analysis highlight that assumptions regarding groundwater conditions in the adjacent Monterey Subbasin have a big effect on the amount of replenishment water needed. For the simulated conditions, outflow to the Monterey Subbasin is the single largest net outflow from the Seaside Subbasin in most years. The boundary conditions for the Baseline Scenario assumed water levels along the boundary between the Monterey Subbasin and the 180-400 Foot Aquifer subbasin stay fixed at recent levels and does not assume any management actions are taken to increase groundwater levels in these neighboring subbasins during the simulation period. As groundwater levels in the Seaside subbasin begin to rise in response to increased recharge, steeper gradients develop towards the Monterey Subbasin, producing increased outflows to the Monterey Subbasin. A fraction of the injected water that would otherwise go towards raising groundwater levels and increasing outflows to the Offshore region, instead flows out to increase groundwater levels along the boundary the Monterey Subbasin. This reduces the effectiveness of replenishment activities and necessitates greater volumes of injection to reach protective elevations than would be needed if water levels in the Monterey Subbasin were also increasing over time. In this regard, the estimated volumes of needed replenishment water are therefore conservative if future water levels in the Monterey Subbasin do not continue to drop.

9. The results of the water budget analysis also indicate that there is likely a spatial and temporal component to maximizing the efficiency of injection for the purpose of achieving protective elevations. As groundwater levels rise, the increased water levels drive flow out laterally towards surrounding areas with lower groundwater levels. The water that flows out does not disappear however, rather it begins to raise the groundwater levels in the portion of the Monterey Subbasin adjacent to the Seaside recharge wells, as part of a growing groundwater mound around centered on the recharge facilities. Continuing to grow this groundwater mound is analogous to the process of building up a mound of dry sand by

pouring sand onto the tip of the mound. Not all the sand we pour at the tip goes to increasing the height of the mound, rather a portion flows down along the slopes of the mound to build up the base and sides of the mound. In our analogy, the pile of sand is sitting on an inclined platform with some flows towards the downgradient production wells and the offshore region and some flows towards the Monterey Subbasin. Increasing the replenishment rate while keeping the recharge focused in a narrow strip of the Seaside subbasin likely results in very steep localized mound that quickly starts spilling over, so to speak, into the Monterey Subbasin. It may be that spreading the increased replenishment volume out spatially over a broader area further from the subbasin boundary could deliver the same volume of water while reducing the rate of loss.

Hybrid Water Budget Analysis of Alternative Scenario 1

1. The hybrid water budget analysis suggests that the large and rapid increases in Deep Aquifer groundwater levels simulated from WY 2024 to WY 2035 under the Baseline Simulation assumptions would not occur under the supply and demand assumptions of Alternative Scenario 1 without very large quantities of additional replenishment water injected to the basin during this period of the simulation (ranging between 1,200 and 3,700 AFY). Despite using the same hydrology, the reduced ASR diversion rate and lower PWM Expansion yield coupled with higher demand assumptions requires an average annual injection of 2,600 AFY of additional replenishment injection to have the equivalent net recharge as in the Baseline scenario.

2. It is unclear exactly what would happen to groundwater levels in the Shallow Aquifer under the Alternative Scenario 1 with no additional replenishment water injected given the new understanding that the initial rapid increases in Shallow Aquifer groundwater levels observed in the Baseline Simulation are largely driven by percolation of rainfall during wet years, rather than exclusively because of injection to the Deep Aquifer. On the one hand, simulated recharge from rainfall would stay the same, which could result in similar Shallow Aquifer groundwater level increases, but on the other hand, there would likely be net leakage downward to the Deep Aquifer because deep groundwater levels would stay below the Shallow Aquifer levels, potentially offsetting inflows from percolation. This would require additional analysis and/or modeling to confirm. The results, however, do emphasize the large role that the assumptions on future climate conditions have on predicting how quickly groundwater levels can be raised, and how much additional replenishment water would be needed.

3. The amounts of replenishment water needed to achieve protective elevations under the Alternative Scenario 1 assumptions is significantly greater than under the Baseline Scenario assumptions. An annual average replenishment rate of 3,700 AFY, ranging from 2,200 to 4,700 AFY is needed, compared to the 1,000 AFY of replenishment needed under the

Baseline assumptions. This highlights the sensitivity of predicted groundwater conditions in the Seaside basin to the assumptions that are made about future water demands, future rainfall patterns, and the availability of water supplied from outside the subbasin, including Carmel River ASR diversion, the expanded Pure Water Monterey Project, and the MPWSP Desalination Plant.

4. The effects of climate change are already visible in the changing frequency of hydrologic flows in the region. The last 100 years of Carmel River stream flow data show a marked shift in the last 50 years towards more frequent occurrence of Critically Dry and Extremely Wet water years, and fewer Normal water years, as compared to the previous 50 years. This shift will see a greater volume of water become available for ASR diversion during extreme high flow events as opposed to spread out over longer periods. The impact of a reduced ASR diversion rate in the Alternative Scenario 1 analysis makes it clear that the necessary infrastructure in terms of facilities for increased diversion capacity in the Carmel River and ideally for increased recharge capacity in the Seaside Subbasin would need to be in place to be able to capture and store these high flows when they occur.

References

Montgomery & Associates, Inc., 2022a. Technical Memorandum, Updated Modeling of Seaside Basin Replenishment Options, January 2022.

Montgomery & Associates, Inc., 2022b. Technical Memorandum, Hybrid Water Budget Analyses of Basin Replenishment Options & Alternate Assumptions, August 2022.

Water Systems Consulting, Inc. (WSC), 2021. California American Water Central Division – Monterey County District, 2020 Urban Water Management Plan, June 2020.

10. Increasing replenishment to 1,500 AFY results in only slight improvement at MSC Shallow, and only marginal increases in protective elevation metrics at the other protective elevation wells. Because both the other shallow aquifer protective elevation monitoring wells, (PCA-W Shallow and CDM MW-4), start off already meeting protective elevations, this suggests that there is limited benefit in trying to continue to raise the groundwater levels at MSC Shallow by increasing injection in the deeper Santa Margarita Formation. Rather, as illustrated by the results of Scenario 4, other alternatives could be considered and evaluated such as redistributing pumping from wells screened completely or partially in the Paso Robles, increased use of recycled water for irrigation purposes, such as at Mission Memorial Park, and simulating additional recharge directly to the Paso Robles aquifer.
11. The original 2013 replenishment modeling (Hydrometrics WRI, 2013) did not explicitly account for impacts of drought on the availability of Carmel River water for ASR injection and other Cal-Am use. Instead, it used a constant average injection and recovery rate each year rather having it fluctuate with hydrologic cycles. The results of the updated model scenarios that couple ASR and PWM operations to the hydrology illustrate the significant impact that multi-year droughts, and even just below normal periods, can have on the

availability of water for ASR and PWM recharge and on the timing of reaching and maintaining protective elevations.

12. Simulated groundwater levels rose quickly in response to replenishment during periods of Normal and Above Normal water years following the prolonged drought at the start of the simulated replenishment period, suggesting that levels would rebound again after the drought at the end of the simulation period. However, this rapid rebound is also a function of the assumption that Cal-Am will extract ASR water as its last source of supply, after exhausting available water from their native groundwater rights and PWM water. This assumption has the consequence that a very large portion of the injected ASR water is left in storage in the Basin.
13. The 2009 modeling that established the protective elevations assumed steady-state conditions that have no time component to them, and essentially assumes that sufficient time has passed that conditions have equilibrated to a fixed state. That modeling did not directly consider and does not inform or suggest for how long a period groundwater levels can stay below protective elevations without greatly increasing the risk of sea water intrusion. This is something that could be evaluated with additional modeling.
14. In addition to the constant 1,000 AFY replenishment, additional "booster" injections could be considered following protracted drought periods to make up the lost water.
15. The modeling simulation period ends just as Cal-Am's 25-year repayment period ends. It is likely that additional replenishment water would be needed to offset the resumption of extraction at Cal-Am's full native groundwater allocation.
16. The increased frequency and duration of extreme weather events associated with climate change will have an impact on the ability to maintain protective elevations. Additional modeling of projected future climate scenarios could be used to evaluate this.

Water Budget Analysis

2. An important finding from the water budget analysis of the Baseline Scenario on an aquifer-by-aquifer basis is that Shallow Aquifer recharge from percolation of rainfall and irrigation return flows during periods of higher-than-normal rainfall plays a large role in driving the large steady increases in groundwater levels simulated in the Shallow Aquifer in the first 15 years of the simulation period. The temporal pattern and magnitudes of inflow from percolation in the Shallow Aquifer is highly correlated with the temporal pattern of total annual rainfall in the basin. Recharge from percolation in the Shallow Aquifer thus plays a role analogous to that of ASR injection in the Deep Aquifer because the simulated Carmel River hydrology record drives the rapid increase in water levels in the Deep Aquifer during this period.
3. Net injection of ASR and PWM water to the Deep Aquifer itself does not appear to be a significant driver for simulated increases in groundwater levels in the Shallow Aquifer. Rather, the increase appears to be driven by the following.
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        - A multi-year period of normal or higher than normal annual rainfall, and
        - The ongoing recharge of PWM water through the shallow vadose zone wells and backflush percolation ponds.

4. A net annual volume of between 200 to 500 AFY flows out from the Shallow Aquifer to the Monterey Subbasin once water levels in the Shallow Aquifers begin to rise, driven by the increasing relative gradients between the groundwater levels in the Northern Coastal Subarea and the lower groundwater levels in the Monterey Subbasin. A similar magnitude of net outflow occurs to the offshore portions of the Shallow Aquifer.
5. The water budget analysis of the Deep Aquifer shows a similar magnitude of net outflows to the Monterey Subbasin (600-1,700 AFY) as groundwater levels rise, and surprisingly, even a small amount of net out flow (upward) to the overlying Shallow Aquifer during periods when Deep Aquifer groundwater levels rise above the levels in the Shallow Aquifer.
6. Under the assumption that groundwater levels in the Monterey Subbasin do not rise, the analysis shows that outflows to the Monterey Subbasin will increase in all aquifers as groundwater levels in the Seaside Subbasin rise. An initial net inflow of water from the offshore region into the Seaside subbasin reverses to a net outflow in all aquifers as groundwater levels increase, with the largest net outflows occurring in the Aromas Sands and Older Dune Deposits, and the next largest net outflows to offshore region being in the Shallow Aquifer. Projected sea level rise is not a significant driver of inland flows relative to the larger changes in water levels associated with changes in injection and extraction in the subbasin.
7. The implications of the strong dependence on rainfall for raising the Shallow Aquifer levels is that it may be advisable to consider and evaluate options for direct recharge of the Shallow Aquifer, rather than relying only on replenishment to the Deep Aquifer via injection wells in the Santa Margarita Formation, in addition to considering other reductions to pumping in the Shallow Aquifer, such as constructing replacement wells only in the Deep Aquifer, and switching other irrigation operations to use recycled water (e.g., Mission Memorial). Additionally, this strong dependence on direct percolation from rainfall for increasing Shallow Aquifer water levels suggests that simply assuming a lower Carmel River ASR diversion rate while maintaining the same cycled hydrology record is not a substitute for more comprehensive evaluation on the uncertainty due to climate change. The complex interplay and alternating cross-flows seen through the water budget analysis suggests that there are limits to the type of alternate scenarios that could be evaluated in this way and that this approach is better suited to evaluating changes in net supply and demand, rather than on evaluating alternate climate conditions.
8. The results of the water budget analysis highlight that assumptions regarding groundwater conditions in the adjacent Monterey Subbasin also have a big effect on the amount of replenishment water needed. For the simulated conditions, outflow to the Monterey Subbasin is the single largest net outflow from the Seaside Subbasin in most years. The Baseline Scenario assumed water levels along the boundary between the Monterey Subbasin and the 180-400 Foot Aquifer subbasin stay fixed at recent levels and does not assume any management actions are taken to increase groundwater levels in these neighboring subbasins during the simulation period. As groundwater levels in the Seaside subbasin begin to rise in response to increased recharge, steeper gradients develop towards the Monterey Subbasin, producing increased outflows to the Monterey Subbasin. A fraction of the injected water that would otherwise go towards raising groundwater levels and increasing outflows to the Offshore region, instead flows out to increase groundwater levels along the boundary of the Monterey Subbasin. This reduces the effectiveness of replenishment activities and necessitates greater volumes of injection to reach protective elevations than would be needed

if water levels in the Monterey Subbasin were also increasing over time. In this regard, the estimated volumes of needed replenishment water are therefore conservative if future water levels in the Monterey Subbasin do not continue to drop.

9. The results of the water budget analysis also indicate that there is likely a spatial and temporal component to maximizing the efficiency of injection for the purpose of achieving protective elevations. As groundwater levels rise, the increased water levels drive flow out laterally towards surrounding areas that have lower groundwater levels. The water that flows out does not disappear however, rather it begins to raise the groundwater levels in the portion of the Monterey Subbasin adjacent to the Seaside recharge wells, as part of a growing groundwater mound centered around the recharge facilities. Continuing to grow this groundwater mound is analogous to the process of building up a mound of dry sand by pouring sand onto the tip of the mound. Not all the sand we pour at the tip goes to increasing the height of the mound, rather a portion flows down along the slopes of the mound to build up the base and sides of the mound. In this analogy, the pile of sand is sitting on an inclined platform with some flows towards the downgradient production wells and the offshore region and some flows towards the Monterey Subbasin. Increasing the replenishment rate while keeping the recharge focused in narrow strip of the Seaside subbasin likely results in a very steep localized mound that quickly starts spilling over, so to speak, into the Monterey Subbasin. It may be that spreading the increased replenishment volume out spatially over a broader area further from the subbasin boundary could deliver the same volume of water while reducing the rate of loss.

Hybrid Water Budget Analysis of Alternative Scenario 1

1. The hybrid water budget analysis suggests that the large and rapid increases in Deep Aquifer groundwater levels simulated from WY 2024 to WY 2035 under the Baseline Simulation assumptions would not occur under the supply and demand assumptions of Alternative Scenario 1 without very large quantities of additional replenishment water injected to the basin during this period of the simulation (ranging between 1,200 and 3,700 AFY). Despite using the same hydrology, the reduced ASR diversion rate and lower PWM Expansion yield coupled with higher demand assumptions requires an average annual injection of 2,600 AFY of additional replenishment injection to have the equivalent net recharge as in the Baseline scenario.
2. The amounts of replenishment water needed to achieve protective elevations under the Alternative Scenario 1 assumptions is significantly greater than under the Baseline Scenario assumptions. An annual average replenishment rate of 3,700 AFY, ranging from 2,200 to 4,700 AFY is needed, compared to the 1,000 AFY of replenishment needed under the Baseline assumptions. This highlights the sensitivity of predicted groundwater conditions in the Seaside basin to the assumptions that are made about future water demands, future rainfall patterns, and the availability of water supplied from outside the subbasin, including Carmel River ASR diversion, the expanded Pure Water Monterey Project, and the MPWSP Desalination Plant.
3. The effects of climate change are already visible in the changing frequency of hydrologic flows in the region. The last 100 years of Carmel River stream flow data show a marked shift in the last 50 years towards more frequent occurrence of Critically Dry and Extremely Wet water years, and fewer Normal water years, as compared to the previous 50 years. This shift will see a greater volume of water become available for ASR diversion during extreme high

flow events as opposed to spread out over longer periods. The impact of a reduced ASR diversion rate in the Alternative Scenario 1 analysis makes it clear that the necessary infrastructure in terms of facilities for increased diversion capacity in the Carmel River and ideally for increased recharge capacity in the Seaside Subbasin would need to be in place to be able to capture and store these high flows when they occur.

ITEM VII.A.ii
9/7/22

SEASIDE GROUNDWATER BASIN
WATERMASTER

TO: Board of Directors

FROM: Robert S. Jaques, Technical Program Manager

DATE: September 7, 2022

SUBJECT: Results from Flow Direction/Flow Velocity Modeling and Recommendation to Perform Additional Analysis

- -

RECOMMENDATIONS:

1. Accept the flow direction/flow velocity Technical Memorandum of February 25, 2022 as a preliminary evaluation of how potential seawater intrusion would move in the Seaside Basin
2. Perform additional analyses of this topic in the 2023 Monitoring and Management Program using somewhat different assumptions than those used in the February 2022 work

BACKGROUND:
At its September 1, 2021 meeting the Board approved a contract with Montgomery & Associates to perform flow direction/flow velocity modeling. The objective of this work was to estimate the velocities, travel times, and directions of the potential movement of seawater intrusion inland from the coast into the Northern Coastal Subarea of the Seaside basin, where the majority of the production wells are located. The analysis considered both current conditions and projected potential future conditions.

This work has been completed and consisted of these Tasks:

- Developing Groundwater Elevation Surface Map Snapshots of the Shallow Aquifer
- Performing Particle Tracking and a Travel Time Analysis on the Developed Water Elevation Maps
- Preparing a Technical Memorandum
- Making a presentation to the TAC

Attached is information and graphics excerpted from the Flow Direction/Flow Velocity Modeling Technical Memorandum that describe its findings and conclusions. The full document is 30 pages in length, and is posted on the Watermaster's website at this link
http://www.seasidebasinwatermaster.org/Other/Flow%20Direction-Flow%20Velocity%20Tech%20Memo%20Final%20Version%202-25-22.pdf

DISCUSSION:
The TAC received a full presentation on this work at its March 9, 2022 meeting.

Key assumptions that were used in the groundwater model to perform this work included:

- Hydrology (rainfall, recharge, and streamflow) for Water Years (WY) 2018-2021 based on actual records, and hydrology for WY 2022-2050 based on repeating the recorded hydrology from WY 1988 through 2016
- Pure Water Monterey (PWM) Base Project (3,500 AFY) beginning in 2020

- California American Water discontinuing its pumping in the Laguna Seca Subarea in 2021
- PWM Base Project ramping up to 4,100 AFY in 2022
- Seaside Golf Courses shifting to use of recycled water for irrigation and discontinuing pumping groundwater in 2023
- PWM Expansion Project (5,750 AFY) beginning in 2024
- Cal Am begins its 700 AFY overpumping repayment program in 2024

The Technical Memorandum points out that the sequence of projected hydrologic conditions that were used is based on the repetition of historical hydrologic data, and that a different sequence of wet and dry years, for example a greater number of dry years early on, would change the picture and could show much more rapid inland penetration of seawater intrusion. This highlights the fact that velocities and travel distances are sensitive to changes in hydrologic conditions that impact the amount of water available for both PWM and ASR injection into the basin. Periods of prolonged drought will increase potential inland travel velocities and increase the seawater intrusion risk. The sequence of projected hydrologic conditions in the baseline simulation represents only a single realization of many possible future hydrology scenarios. Other future climatic conditions could also be evaluated if desired.

Some of the key issues raised by the TAC at its March 9 meeting were:

- The hydrologic conditions that are assumed in the modeling have a significant impact on travel times.
- The modeling is based on repeating historical hydrology patterns which may be overly optimistic. Future years may be drier than the historical patterns. The Mid-Coast Basin in Santa Cruz County is using more conservative (drier) future hydrology projections for purposes of managing its basin.
- The amount of water injected via ASR has a strong impact on the projected rates of movement of seawater intrusion. If ASR amounts are less than those that were used in this modeling, the rates of movement would be greater than projected.
- The assumptions used in the modeling work may be reflective of a best-case scenario. Concern was expressed that there may be a delay in when Cal Am can begin its projected 700 AFY overpumping payback program.
- The time-series graphics in the Technical Memorandum should be recognized as being very climate dependent. These graphics could give the reader a misleading impression, because they are based on assuming that the climate pattern will repeat itself and that everything will be fine with the Pure Water Monterey Expansion and Cal Am's payback program taking place starting in 2024.

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At the March 9 meeting there was discussion about potentially performing additional analyses to determine what the impacts would be of using different assumptions. Specifically, the issues pertaining to assumptions that were discussed included:

- Whether using a repeat of historical hydrology might underestimate the effects of climate change, and that in future years there might be less than the historical pattern of rainfall. This could result in:
    - Less water available for ASR injection into the Basin
    - An increase in water demands for irrigation within the Castroville Seawater Intrusion Project and Cal Am service areas and other urban water suppliers
    - A reduction in the amount of Pure Water Monterey water that could be supplied to the Basin due to that project having to provide more water to the Castroville Seawater Intrusion Project because of increased irrigation demands there

- The timing of the start of using recycled water on the Seaside golf courses
- The timing of the start of Cal Am's overpumping payback program of 700 AFY

At its July 13, 2022 meeting the TAC revisited this topic and passed a motion recommending that in the 2023 Monitoring and Management Program Operations Budget (which will come to the Board for consideration at its October 2022 meeting) money be included for performing additional flow direction/flow velocity analytical work.

ATTACHMENT: Information and Graphics Excerpted from the Technical Memorandum

Methodology Used

The modeling analyzed the movement of seawater by simulating the release of "particles" along the coastline of the Seaside Subbasin and portions of the neighboring Monterey Subbasin. The movement of these particles was then tracked to see how flow velocities and flow directions vary along the coastline under different conditions. Groundwater travel velocity is very sensitive to the effective porosity of the aquifer. Upper and lower estimates of the travel times were developed based on a reasonable range of assumed aquifer effective porosities to provide a range of possible inland travel velocities.

Inland flow velocities

A view of the area of fastest inland seawater intrusion movement in the lower portion of the Paso Robles aquifer is shown in the figure below. The map on the left of the figure shows seawater intrusion movement starting from a series of locations along the coast. The location of the fastest rate of movement is highlighted in the rectangular box drawn around the particle track trace in that map. In the graph on the right of the figure, values greater than zero represent the velocity of travel when seawater is traveling inland from the coastline, and negative values represent the velocity of travel when it is moving toward the coastline. The numbered points on the map and the graph represent time periods with different operational and hydrologic conditions in the basin as described below:

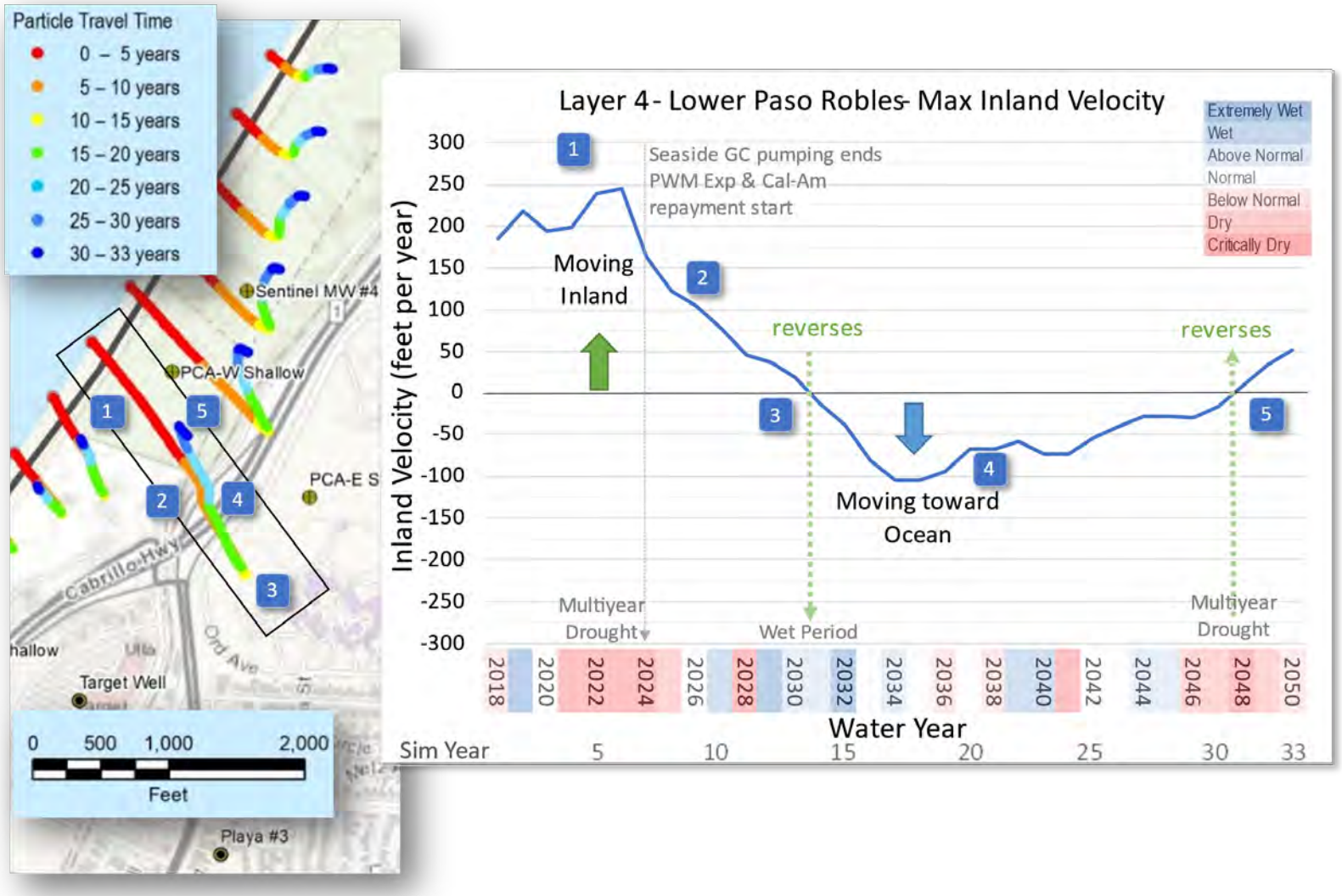
Period 1: This first period represents current conditions in the basin before the simulated planned projects begin in WY 2024. It reflects the impact of the recently experienced prolonged multi-year drought which limited natural and ASR recharge. Inland groundwater levels are at their lowest, creating conditions of maximum seawater intrusion potential with the highest inland flow velocity (as high as 250 feet inland per year). On the map this period is shown as the red color-coded portion of the particle paths.

Period 2: This period represents when the projects come online in WY 2024 and after the multi-year drought period ends. The particles are still moving inland from the coast, but at increasingly slower velocity as groundwater levels in the basin rise reducing the inland hydraulic gradients. This is shown as the orange and yellow segments on the particle path map.

Period 3: This period represents the transition period when the gradient reverses from a condition of inflow from the offshore area to one of outflow toward the ocean. During this period the groundwater levels reach their highest simulated points, buoyed by five back-to-back extremely wet and above-normal wet years that allow for large amounts of ASR recharge. The particles no longer move any further inland and begin moving back toward the ocean.

Period 4: This period represents conditions when flow gradients are still in the offshore direction, and the particles move back toward the ocean at a generally steady rate that fluctuates with the hydrology and begins to decrease after a critically dry year in WY 2041 (shown in the green, cyan, and light blue particle colors on the map).

Period 5: This final period represents the effects of a new multi-year drought that significantly reduces ASR and PWM recharge and allows groundwater levels to drop to the point that the flow gradient reverses again. The particles begin to move inland again, though at a much slower rate than during the earlier inland flow period, ending at rate of 50 feet of inland travel per year in WY 2050.



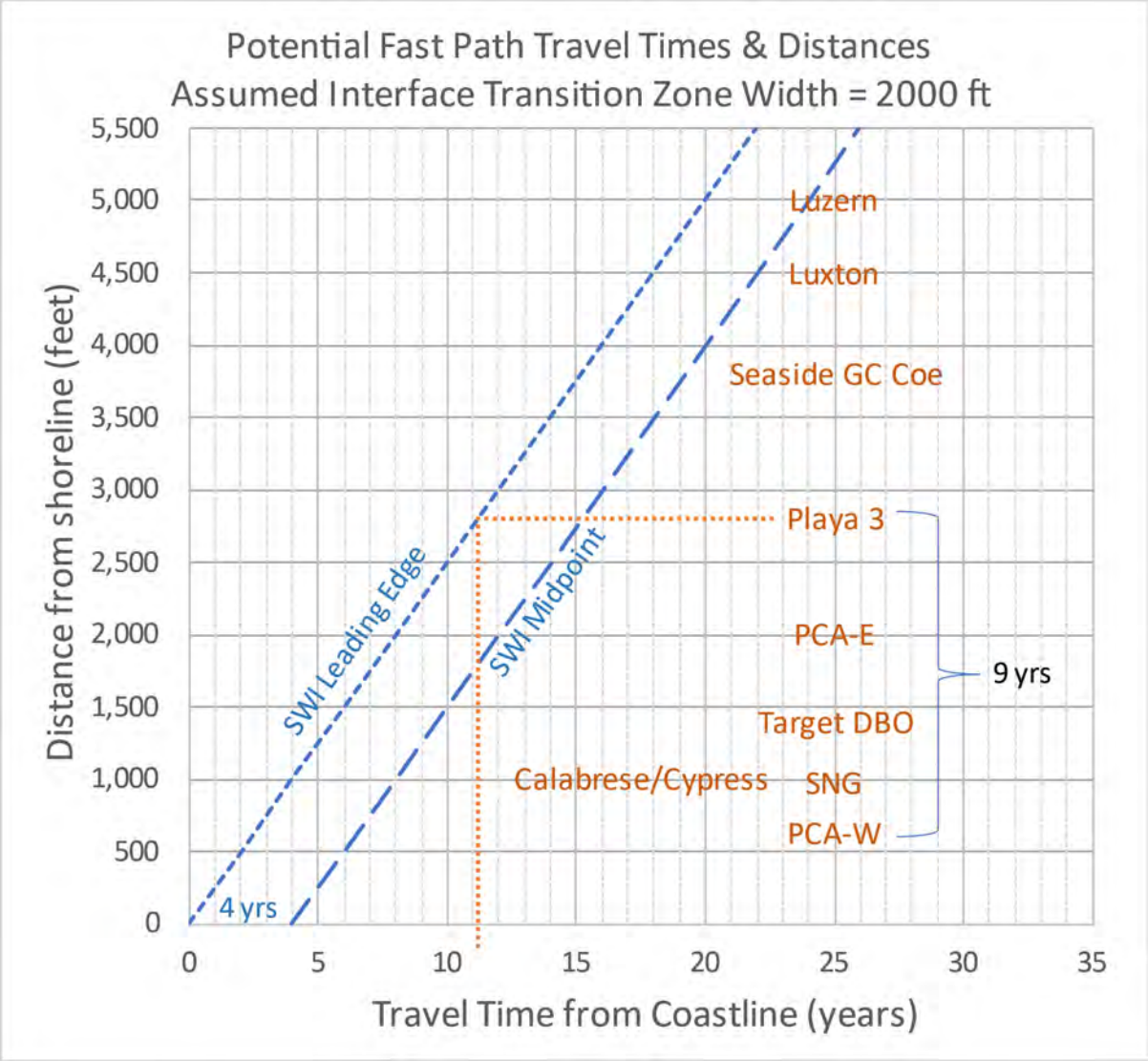
Particle Flow Paths and the Flow Velocities Along the Pathway of Fastest Movement

Potential Inland Travel Times of Seawater Intrusion Interface Along a Preferential Flow Path

From the perspective of the threat posed by potential seawater intrusion, the history of movement of seawater intrusion in the Salinas Valley suggests that seawater intrusion occurs not as a uniform front moving inland across the entire coastline at one rate, but rather occurs and advances largely as localized fingers or lobes where the combination of both inland gradients and aquifer properties create preferential pathways for inland intrusion. For this reason this analysis focused on evaluating how quickly and how far seawater intrusion could move inland from the coastline along one such fast pathway under conservative worst-case conditions.

The seawater intrusion interface moves not as a sharp interface, but rather as a diffuse transition zone between freshwater and full-strength seawater. The seawater intrusion interface transition zone is the distance between the leading edge at some threshold salinity level that is much lower than full strength seawater, but above the native groundwater salinity, and a midpoint between the leading edge and full-strength seawater. The midpoint would represent a very high salinity concentration that is much greater than groundwater quality objectives for the basin.

The figure below is based on assuming that the basin conditions that resulted in the fastest simulated pre-WY 2024 travel rates were held constant, and that the seawater intrusion interface moved inland from the coast at that same maximum rate of 250 feet per year. It should be noted that the analysis did not account for the fact that the travel velocity will accelerate closer to an active production well because of the exponential steepening of the hydraulic gradients around the cone of depression that forms around a pumping well. The figure shows a graph of distance traveled inland from the coastline versus travel time. For a given distance inland on the vertical axis, one can read off the estimated travel time from the coastline on the horizontal axis. For reference, the names of several production and monitoring wells are shown, placed vertically at their respective distances inland from the coastline. In this scenario it could take as little as one year between when the leading edge of seawater interface is observed at a coastal monitoring well located very near the shoreline, such as PCA-W, and when the seawater interface would reach other wells located slightly further inland, such as the small SNG or Calabrese/Cypress wells located only 1,000 feet from the coastline. For a well a bit further inland, such as Cal Am's Playa 3 production well at a distance of 3,800 feet from the coastline, it could take on the order of nine years of travel time to arrive after detection of the leading edge at a coastal monitoring well. If it were assumed that the seawater intrusion interface transition zone had a width of 2,000 feet, and that the midpoint of the interface moved at the same rate as the leading edge, it would take as little as four years between when the leading edge of the interface would be observed at a well and when the very high concentration of the midpoint would arrive at that well.



Potential Maximum Inland Travel Times and Distances Along a Preferential Flow Path

Conclusions & Considerations

- In the shallow Aromas Sands & Older Dune Deposits and the upper and middle portions of the Paso Robles aquifer, flow in the basin is predominantly in the offshore direction during the time period that was modeled.

- Offshore flow rates increase and accelerate as recharge operations in the basin increase after WY 2024 because of planned project operations and periods of wetter simulated hydrologic conditions that allow for increased net recharge.

- The most significant inland flows (in terms of both rates and distance) occur in the lower portion of the Paso Robles aquifer in the Northern Coastal Subarea. The fastest travel times are concentrated in line with the main pumping depression where production wells are screened in the lower Paso Robles and where model calibration also has resulted in higher hydraulic conductivity values.

- Maximum inland flow velocities of up to 250 feet per year are simulated under current and near-term basin conditions (e.g., pre-WY 2024), and are shown to decrease as basin groundwater levels rise. The movement of the seawater intrusion interface can reverse direction as gradients change from an inland to an offshore direction due to rising water levels in the basin. Faster travel rates are possible depending on the nature of preferential flow paths, and future hydrology.

- The inland velocities and travel distances are sensitive to changes in hydrologic conditions that impact the amount of water available for net ASR recharge in the basin. Periods of prolonged drought will increase potential inland travel rates and increase the seawater intrusion risk. The sequence of projected hydrologic conditions in the baseline simulation represents only a single realization of many possible future hydrology scenarios. If desired, other future climatic conditions could be considered for future modeling.

- Inland flow in the Monterey Subbasin and cross-boundary flows between the Seaside and Monterey Subbasins is dependent on assumptions on the groundwater levels assigned to the model in the Marina/Ord area. The assumptions that these remain unchanged should be reviewed and the impact evaluated.

- More work and data would be needed to develop an understanding of where the seawater interface is currently located offshore of the basin, and to better characterize potential preferential flow paths along which seawater intrusion could move quickly inland.

ITEM VII.A.iii
9/7/22

SEASIDE GROUNDWATER BASIN
WATERMASTER

TO: Board of Directors

FROM: Robert S. Jaques, Technical Program Manager

DATE: September 7, 2022

SUBJECT: Consider Approval of Montgomery & Associates (M&A) Request for Service (RFS) No. 2022-05 to Provide Consulting Services for Replacement of Well FO-9 Shallow

- -

RECOMMENDATIONS:
Approve Montgomery & Associates RFS No. 2022-05 to Provide Consulting Services for Replacement of Monitoring Well FO-9 Shallow.

BACKGROUND:
In 2021 Monitoring Well FO-9 Shallow, which is perforated in the Paso Robles aquifer, was found to have a casing leak that allowed water from the shallower Aromas Sands to flow downward and into the Paso Robles aquifer. For this reason the well was destroyed. As Attachment A shows, while there are numerous monitoring and production wells in and near the Seaside Basin, with the loss of FO-9 Shallow there are no monitoring wells in the Paso Robles aquifer in that part of the Northern Coastal Subarea of the Basin.

At its September 1, 2021 meeting the Board approved the 2022 Monitoring and Management Program (M&MP) Capital Budget which included $66,667 for work to replace Monitoring Well FO-9 Shallow. That was the Watermaster's estimated cost-share based on a preliminary rough cost estimate for the work, and an assumed equal 3-way sharing of costs between the Watermaster, MPWMD, and the Marina Coast Water District (MCWD).

DISCUSSION:
Because there will be a considerable cost (approximately $250,000 as detailed in Attachment C) involved with installing a well to replace FO-9 Shallow, I polled our hydrogeologists and others for their opinions on whether the benefit of doing that would justify the costs. It was the unanimous opinion of those parties that a replacement well should be installed. The TAC reviewed the consultants' input at its August 10, 2022 meeting and also unanimously agreed that a replacement well should be installed.

At the August 10th TAC meeting there was a brief discussion as to whether the existing FO-9 Well is still on U.S. Army property, or whether that land had been transferred to the City of Seaside. Nisha Patel, the City's Public Works Director, researched this and found that it is still on U.S. Army property. If a well to replace FO-9 Shallow is to be installed, it may be easier (and less costly) to put the replacement well in the northerly part of the City of Seaside's Bayonet and Black Horse Golf Courses property. This would be reasonably close to the location of FO-9 Shallow. The current location of FO-9 Shallow is near a housing area and has some access and other limitations which would be avoided if the replacement well were installed in a more open area without nearby housing. It would also avoid having to get permission and associated terms and conditions from the U.S. Army for installing the replacement well, which would likely add time and cost to the process. Attachment B shows the location of the existing FO-9 well, and a

possible location where a replacement well could be installed on the City of Seaside's golf course property. Nisha Patel, the City's Public Works Director, is looking into whether or not the City would authorize this.

Martin Feeney, who managed construction of the Watermaster's Sentinel Wells and more recently the Watermaster's monitoring well at the Camp Huffman location on Bureau of Land Management property, was able to subcontract with well drillers to have those wells installed. However, he reports that his Errors and Omissions Insurance no longer enables him to do that. Consequently, I contacted Montgomery & Associates who has a field group that does well installations, and they are able to directly subcontract with drillers. I requested a Scope and Cost Proposal from them to install a replacement for well FO-9 Shallow, and used it to prepare RFS No. 2022-05 for Montgomery & Associates which is contained in Attachment C. The Montgomery Proposal includes a price quote from Maggiora Brothers Drilling Inc. which updates the prior rough estimate of the well drilling cost.

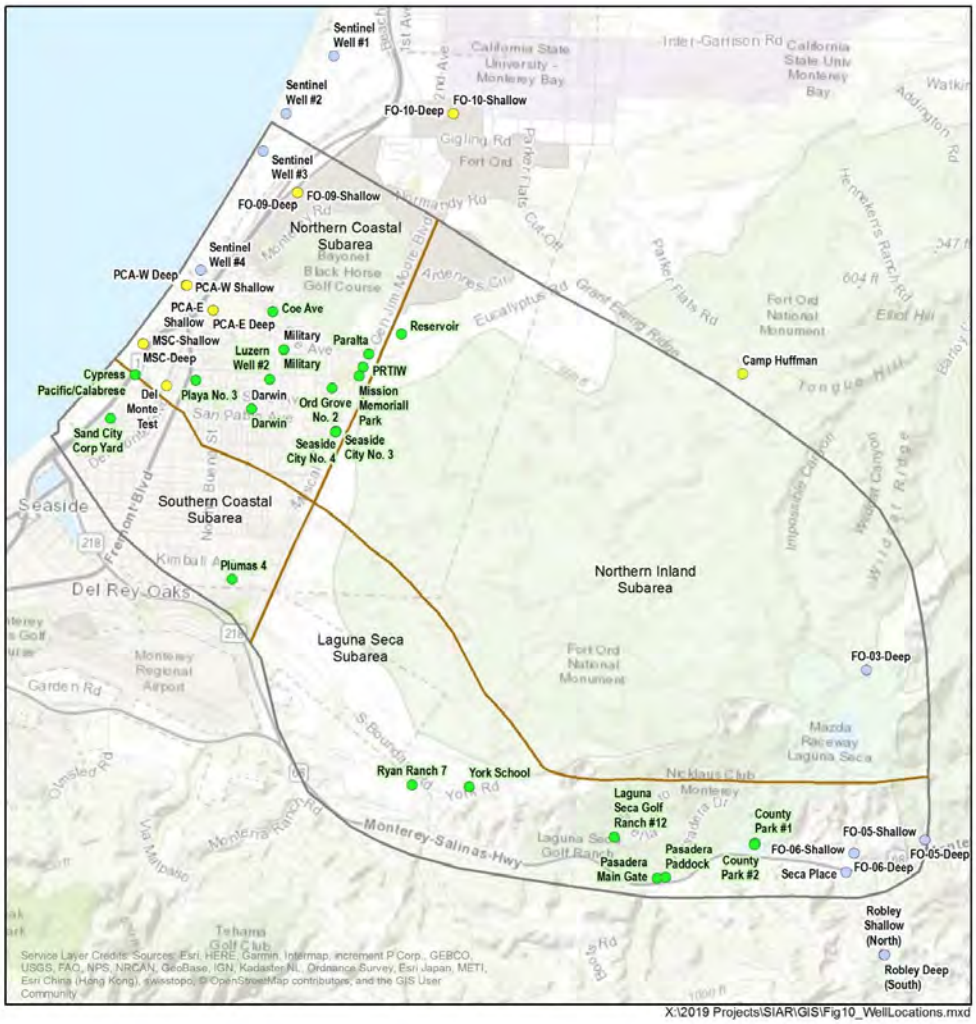
In order to continue moving ahead with replacing FO-9 Shallow, the TAC recommended that the Board approve RFS No. 2022-05. That RFS only authorizes performing the first two Tasks of the M&A Proposal. This will allow the planning (including site selection, permitting, and approvals) and design work to be done and paid for out of the 2022 M&MP Capital Budget. The actual well installation work (under Tasks 3 and 4 of the Proposal) could then be authorized under a subsequent RFS in calendar year 2023 and paid for out of the 2023 M&MP Capital Budget.

I contacted both MPWMD and MCWD to inquire about their willingness to share in the cost of replacing Well FO-9 Shallow. Both entities indicated a willingness to share the cost. In his September 1, 2021 letter to the Watermaster, Mr. Stoldt of MPWMD stated that MPWMD would be willing to share in the cost at approximately the 15% level. The percentage of the cost MCWD would be willing to share is yet to be determined. Since it is unlikely that either of those entities would be willing to pay 1/3 of the cost, the Watermaster will likely have to pay the largest share of the cost. I will be drafting up a cost-sharing agreement to begin that negotiation with them. I hope to complete that later this year so it can be brought to the Board for approval before Tasks 3 and 4 are authorized.

ATTACHMENTS:

- **A.** Map Showing Locations of Wells in the Seaside Basin
- **B.** Map Showing Location of Existing Monitoring Well FO-9 Shallow and Possible Location Where a Replacement Well Could be Installed
- **C.** Montgomery & Associates RFS No. 2022-05

ATTACHMENT A



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EXPLANATION

- Monitoring Wells used for Groundwater Levels
- Monitoring Well with Water Level and Quality Data
- Production Well with Water Level and Quality Data

Adjudicated Seaside Groundwater Basin Boundary

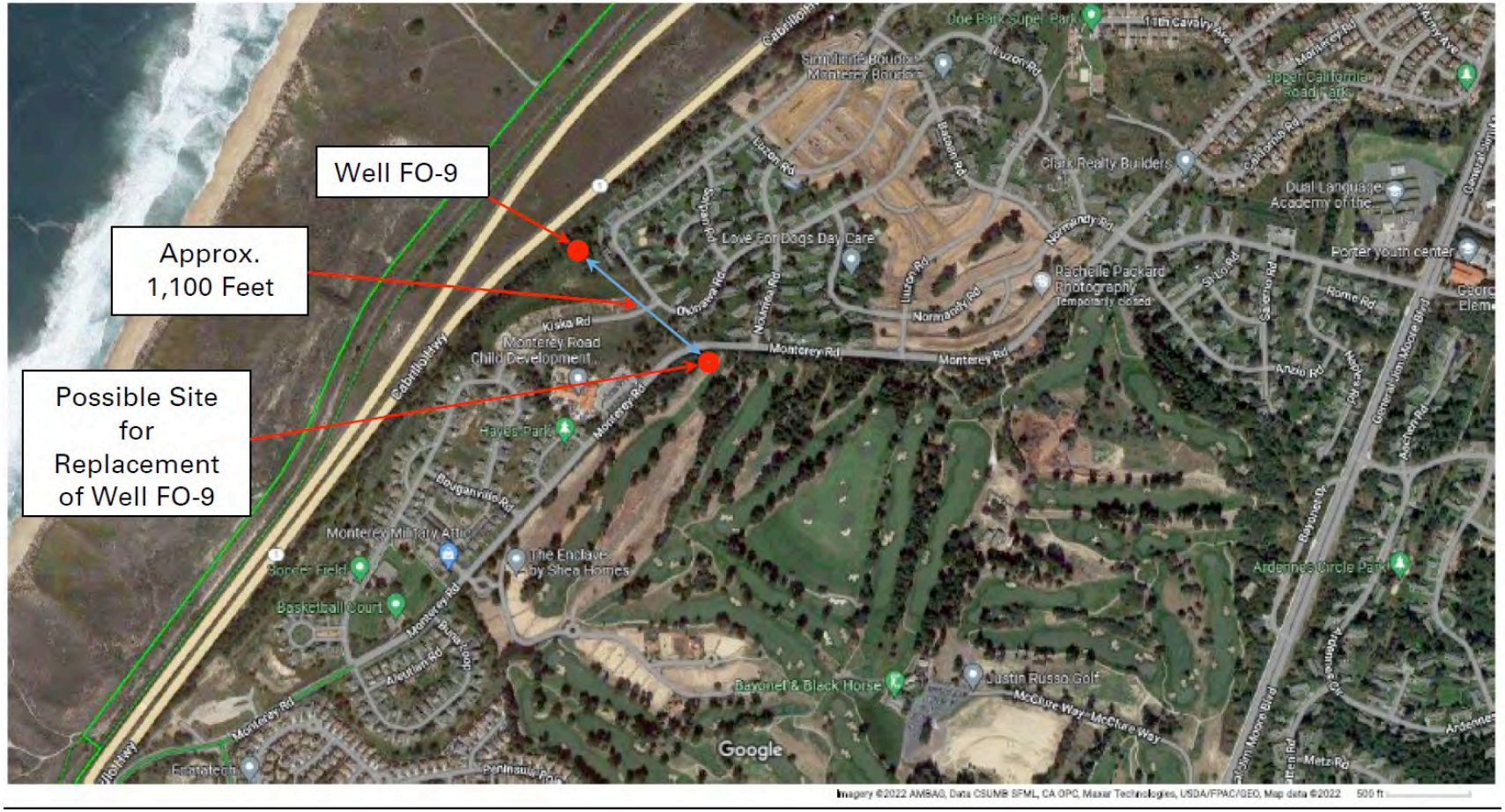
- Basin Boundary
- Subarea Boundary

N

0 0.5 1 1.5 2

Miles

ATTACHMENT B



ATTACHMENT C

SEASIDE BASIN WATERMASTER
REQUEST FOR SERVICE

DATE: September 8, 2022

RFS NO. 2022-05
(To be filled in by WATERMASTER)

TO: Cameron Tana
Montgomery & Associates
PROFESSIONAL

FROM: Robert Jaques
WATERMASTER

Services Needed and Purpose: Plan and design a replacement groundwater monitoring well for existing Monitoring Well FO-9 Shallow (now destroyed and abandoned). This RFS No. 2022-05 only authorizes the first two Tasks described in the Scope of Work in Attachment 1. It is intended to authorize the subsequent Tasks in 2023 via a separate RFS.

Completion Date: All work authorized by this RFS shall be completed not later than December 31, 2022, and shall be performed in accordance with the Schedule described in Attachment 1.

Method of Compensation: Time and Materials (As defined in Section V of Agreement.)

Total Price Authorized by this RFS: $ 23,600.00 (Cost is authorized only when evidenced by signature below.) (See Attachment 1 for Estimated Costs).

Total Price may not be exceeded without prior written authorization by WATERMASTER in accordance with Section V. COMPENSATION.

Requested by: _____ Date:_____.
WATERMASTER Technical Program Manager

Agreed to by: _____ Date:_____.
PROFESSIONAL

ATTACHMENT 1

SCOPE OF WORK

This RFS No. 2022-05 authorizes PROFESSIONAL to perform the work of Tasks 1 and 2 described in the attached Proposal dated August 3, 2022 titled "Scope and Fee for Replacement Monitoring Well FO-9 Shallow." It is understood that only a portion of the hours associated with Task 1 will be needed to perform Task 2, and that the remaining hours associated with Task 1 will be needed to perform Tasks 3 and 4.

Watermaster intends to authorize Tasks 3 and 4 in the Proposal via a separate RFS in 2023.

August 3, 2022

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

SUBJECT: SCOPE AND FEE FOR REPLACEMENT MONITORING WELL FO-9 SHALLOW

Dear Mr. Jaques,

Montgomery & Associates (M&A) is pleased to submit this scope, fee, and schedule proposal to the Seaside Groundwater Basin Watermaster (Watermaster) to provide hydrogeological support and construction management services for a replacement monitoring well for FO-9 shallow. The current FO-9 shallow monitoring well is constructed of 2-inch diameter PVC well casing with a screen intake from 610 to 650-feet below ground surface. This proposal assumes a borehole depth of 660-feet below ground surface (bgs), total well depth of 650-feet bgs, and proposes 2.5-inch Schedule 80 PVC well casing and screen. The deeper depth assumed is because the replacement well may not be located at the location of the original FO-9 shallow monitoring well. The actual location of the well will be determined during Task 2. Schedule 80 PVC is proposed to increase the lifespan of the replacement well.

M&A currently anticipates retaining the support of Maggiora Brothers Drilling (Maggiora) of Watsonville, CA, for well installation and development services. The drilling contractor is subject to change based on project requirements and with prior approval from Watermaster. Martin Feeney will additionally be retained to provide hydrogeological review and monitoring well design recommendations based on his history with Watermaster, as requested.

SCOPE OF WORK

The scope of work includes technical specifications, bidding and contract support, construction management, and reporting. M&A proposes the following tasks to complete the project:

- Task 1 – Project Management
- Task 2 – Technical Specifications
- Task 3 – Construction Management
- Task 4 – Reporting

These tasks are described individually below.

Estimated Drilling Costs
Estimated costs for the construction and development of monitoring well FO-9 shallow are included for budgetary purposes. These costs will be revised based on the selection of the well site and the final details of the technical specifications under Task 2. Costs included herein represent good-faith estimates based on current project understanding and/or assumptions, but may be revised to account for adjustments based on site conditions, well construction details and/or logistics, project duration, changes in labor or material rates, and other such factors. The technical specifications prepared under Task 2 will include a detailed bid schedule and timeline which will be used to refine M&A and Maggiora cost estimates. M&A will

provide revised costs for Task 3 and negotiate any required contract changes prior to beginning well construction activities.

Task 1: Project Management

M&A will provide administrative and budgetary management duties throughout the duration of the project; including but not limited to coordination with Watermaster, attendance at project meetings, assistance with site selection, permitting and providing information needed for Watermaster to obtain approvals from the landowner, budget management, and schedule management.

This task assumes a contract completion date of December 31, 2023. Progress reports will be included with invoice submittals.

Task 2: Technical Specifications

M&A will prepare technical specifications for the FO-9 shallow monitoring well to describe well design features, construction logistics, and installation and development procedures. Technical specifications will be used to gain agreement on the well design, construction logistics, and construction approach. Key components of the well design include borehole drilling, borehole geophysics, well installation, well development, and surface completion.

Task 2 includes preparation of draft technical specifications, one round of comments from Watermaster on the draft, and finalization. Draft and final technical specifications will be transmitted electronically. This task includes costs for one visit to the proposed well site with Watermaster and Maggiora to assess access and other site logistics.

M&A will assist the Watermaster with site selection for the well, including assistance in providing the information needed for Watermaster to obtain any necessary permits and approvals from the landowner. Watermaster is ultimately responsible for obtaining necessary permits.

Task 3: Construction Management

M&A will retain Maggiora to complete well installation and development, and will provide construction management during these activities. M&A will observe and document construction activities, including development of a lithologic log and determination of the final well design based on observations during drilling.

ASSUMPTIONS

- M&A can reasonably rely on the accuracy, timeliness, and completeness of information provided by Watermaster.
- M&A is responsible for tracking, cataloging, and approving submittals. M&A will provide Watermaster copies of all approved contractor submittals.
- Fieldwork will generally be conducted during 12-hour workdays on a standard 5-day workweek.
- Equipment rentals and fieldwork consumable purchases may be required. These may include but are not limited to field notebooks, chip trays and other miscellaneous project supplies. Costs for these items are included herein.
- M&A will assist the Watermaster in coordinating property access with the property owner.

- Prior to the start of drilling activities, M&A will coordinate and oversee subsurface utility locating by a Subtronic Corporation or equally qualified subsurface utility locating company. M&A is specifically not responsible for damages to buried utilities not identified by the property owner, Watermaster, Underground Service Alert of Northern California or the private utility locator.
- M&A and Maggiora will pay for and secure the Monterey County well permit.
- Costs for wellhead surveying (latitude, longitude, and elevation), groundwater sampling and well equipping (datalogger, sample pump, etc.) are not included in this proposal. Costs for these services can be provided upon request.

Construction management costs provided herein are estimated based on anticipated durations for each activity. The following durations are assumed for cost estimating purposes, for a total of approximately 24 field days:

- Utility clearance – 1 day
- Mobilization – 2 days
- Borehole drilling – 13 days
- Well installation – 3 days
- Well development – 3 days
- Well completion and demobilization – 2 days

Actual durations are subject to site conditions, drilling progress, weather and other factors not controlled by M&A. As such, actual costs are subject to increase or decrease based on actual durations. Field oversight costs are based on the Scientist 2 hourly rate, but efforts will be made to use the most cost-efficient, responsible staff level where feasible.

Task 3: Reporting

M&A will prepare a Well Installation Report following completion of site activities. The report will include a description of the work completed, description of the methods and procedures used, results and discussion of drilling and testing activities, conclusions and relevant appendices. A draft well installation report will be prepared in Microsoft Word format for Watermaster comment. Final submittal of this report will include one hardcopy and one PDF copy. The hardcopy report will additionally include long-form print outs of downhole logging (geophysical, caliper, alignment, spinner), a copy of the complete video survey in MP4 format (provided on DVD or flash drive), and one set of drill cutting chip trays.

Maggiora will file the Well Installation Report with the appropriate agency(s) including Monterey County Department of Health.

COSTS

The estimated costs by task are summarized below and detailed in Attachment 1.

		Labor Costs	Expenses	Sub Contractors	M&A 10% Markup	TOTAL
Task 1	Project Management	$7,296	$0	$0	$0	$7,296
Task 2	Technical Specifications	$14,324	$300	$1,500	$180	$16,304
Task 3	Construction Management	$43,572	$5,950	$153,210	$15,916	$218,648
Task 4	Reporting	$8,940	$0	$500	$50	$9,490
	TOTAL COST	**$74,132**	**$6,250**	**$155,210**	**$16,146**	**$251,738**

M&A hourly rates are subject to increases on January 1, 2023.

SCHEDULE

M&A assumes Task 2 will be completed by the end of calendar year 2022, provided the contract is executed by mid-October 2022 and that site selection is also completed during this time period. Well construction would occur in 2023 according to driller availability. The Well Installation Report will be completed within approximately 45 days following the completion of field activities.

If you have any questions, do not hesitate to contact me.

Sincerely,

Bill DeBoer, P.G., C.Hg.
Senior Hydrogeologist

MONTGOMERY & ASSOCIATES
Water Resource Consultants

Attachment 1: Cost Estimate for FO-9 Shallow Replacement Monitoring Well

		Bill DeBoer	Field/Staff Hydrogeologist	Editing	Labor	Expenses	Subcontractors			M&A	TOTAL
		Scientist 6	Scientist 2	Technical Editor			Martin Feeney	Maggiora Bros. Drilling	Subtronic Locating	10% Markup	
	$/hr	$228	$138	$80	Costs						
1	**Project Management**										
	Progress tracking, coordination, meeting and invoicing	32	-	-	$7,296	$0	-	-	-	-	$7,296
	Task 1 Subtotals	**32**	**0**	**0**	**$7,296**	**$0**	**$0**	**$0**	**$0**	**$0**	**$7,296**
2	**Technical Specifications**										
	Site Visit	14	10	-	$4,572	$300	-	-	-	$30	$4,902
	Draft Technical Specifications	18	32	4	$8,840	$0	$1,000	-	-	$100	$9,940
	Final Technical Specifications	-	-	-	$0	$0	$500	-	-	$50	$550
	Construction Management cost revisions	4	-	-	$912	$0	-	-	-	$0	$912
	Task 2 Subtotals	**36**	**42**	**4**	**$14,324**	**$300**	**$1,500**	**$0**	**$0**	**$180**	**$16,304**
3	**Construction Management**										
	Subsurface Utility Locating	2	10	-	$1,836	$200	-	-	$1,600	$180	$3,816
	Mobilization, Drilling, Well Installation	12	216	-	$32,544	$4,500	$500	$132,030	-	$13,703	$183,277
	Well Development	2	36	-	$5,424	$750	-	$7,080	-	$783	$14,037
	Wellhead Completion, Demobilization, Waste Management	2	24	-	$3,768	$500	-	$12,000	-	$1,250	$17,518
	Task 3 Subtotals	**18**	**286**	**0**	**$43,572**	**$5,950**	**$500**	**$151,110**	**$1,600**	**$15,916**	**$218,648**
4	**Reporting**										
	Draft Well Installation Report	16	24	2	$7,120	$0	$500	-	-	$50	$7,670
	Final Well Installation Report	4	6	1	$1,820	$0	-	-	-	$0	$1,820
	Task 4 Subtotals	**20**	**30**	**3**	**$8,940**	**$0**	**$500**	**$0**	**$0**	**$50**	**$9,490**
	TOTAL HOURS	**106**	**358**	**7**							
	TOTAL COST	**$24,168**	**$49,404**	**$560**	**$74,132**	**$6,250**	**$2,500**	**$151,110**	**$1,600**	**$16,146**	**$251,736**

MAGGIORA BROS. DRILLING, INC.

DRILLING CONTRACTORS - PUMP SALES & SERVICE

CALIFORNIA CONTRACTOR'S LICENSE NO. 249957

Corporate Office
595 Airport Blvd.
Watsonville, CA 95076

Tel: (831) 724-1338
Tel: (800) 728-1480
Fax: (831) 724-3228

Contractor Bid - 08/01/2022

Montgomery & Associates
1970 Broadway, Suite 225
Oakland, Ca 94612
Attn. Bill DeBoer P.G., C.Hg.

Re: Construction of 2.5" Dia. x 660', PVC cased, monitoring well in Seaside, Ca.

The following is Maggiora Bros. Drilling, Inc. proposal:

1	Mobilization, includes permit	LS	1	$10,000.00	$10,000.00
2	Drill 10.75" bore hole	LF	660	$92.00	$60,720.00
3	E-log	LS	1	$4,500.00	$4,500.00
4	Caliper Log	LS	1	$3,500.00	$3,500.00
5	2.5" Sch 80 FT Blank Casing F&I	LF	620	$25.00	$15,500.00
6	2.5", Sch80 FT .030" screen F&I	LF	40	$35.00	$1,400.00
7	F & I Gravel Pack	LF	110	$56.00	$6,160.00
8	F & I sanitary seal	LF	550	$55.00	$30,250.00
9	Well Development	HR	8	$500.00	$4,000.00
10	test pump install & remove	LS	1	$1,500.00	$1,500.00
11	Pump development	HR	4	$395.00	$1,580.00
12	disposal of fluids & cuttings	LS	1	$12,000.00	$12,000.00
13	Standby time	HR	0	$500.00	$0.00

Price: includes labor, equipment, material, taxes, & freight: $151,110.00

1. Customer is to provide access to site and to mark location of well.
2. Drilling Contractor will USA for drilling. We recommend that the customer have a private locator verify utilities at well location if needed.
3. Customer to provide a source of water for drilling at site and provide a level site for the well drilling equipment.
4. ~~Cuttings and drill fluids to remain on site and are the responsibility of the Customer, unless other provisions have been made.~~
5. Temp fencing, sound-walls, traffic control, or other BMP's are not included. These can be provided at an additional cost.
6. Drilling Contractor will provide a drilling permit from the County. All other permits are excluded.
7. Test hole destruction, if required, will be $75/ft. If drilling slows to < 8' in two hours, drilling converts to hourly at $550.00

8. Bonding is not included in this proposal, but can be provided on a cost/plus basis.
9. Maggiora Bros. Drilling, Inc. current backlog is such that we may not be able to start the project for 4 to 5 months.
10. Proposal is valid for 30 days.
11. Due to the volatility of material & fuel costs in the current market, Maggiora Bros. Drilling, Inc. reserves the right to adjust pricing based on the actual cost of materials at the time of order.

Maggiora Bros. Drilling, Inc is a Union company; Operating Engineers, Local #3, as well as, a Certified Small Business. (34073)

If you have any questions, feel free to contact us!

Sincerely,

Michael F. Maggiora

August 23, 2022

Bob Jacques, Technical Program Manager
Seaside Groundwater Basin Watermaster
PO Box 51502
Pacific Grove CA 93950

Re: Invitation to Speak at Regional Water Forum, September 20, 2022, 1:30pm

Dear Mr. Jacques:

On September 20, 2022 at 1:30pm, the Board of Supervisors will hold its second Regional Water Forum to address water supply issues facing Monterey County.

The purpose of the regional water forum is to provide an overview of current efforts regarding water management and sustainability, and to initiate a comprehensive discussion on regional water supplies and solutions. The goal is to look broadly at what is needed to ensure water security in Monterey County. An understanding of the larger regional water picture is important to forge a consensus approach for water agencies and County leaders.

The first regional water forum, held in March, provided an overview of how the regional water picture is now influenced by the Sustainable Groundwater Management Act's required outcomes, particularly in over drafted subbasins. The second forum will provide an overview of the portfolio of potential regional management actions and projects to address our water supply needs, followed by input from key stakeholders, including our federal and state elected representatives, special district water agency and regulated utility representatives and the public.

As part of the forum agenda, I would like to invite you, or your designated representative to make brief remarks (up to five minutes) on these issues. In particular, the Board of Supervisors would benefit from hearing your perspective on the following questions:

- What are the water supply needs and conditions facing your agency?
- What role do you see for your agency in implementing regional projects or management actions?
- Where do you foresee progress towards regional solutions in the next five years?
- What are the biggest challenges to getting there?
- What do you recommend as next steps?

This invitation to speak is being sent to the following water agencies and the regulated utilities in Monterey County:

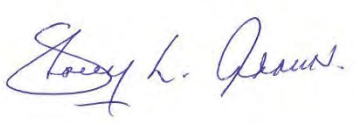
- Monterey County Water Resources Agency
- Salinas Valley Groundwater Sustainability Agency
- Monterey One Water
- Monterey Peninsula Water Management District
- Marina Coast Water District/MCWD Groundwater Sustainability Agency
- Castroville Community Services District
- Seaside Groundwater Basin Watermaster
- Arroyo Seco Groundwater Sustainability Agency
- California Water Service
- California American Water
- Alco Water Service

We are planning for the water agencies' portion of the agenda to occur shortly after 2:30pm, following a presentation by the General Managers from the Monterey County Water Resources Agency and the Salinas Valley Basin Groundwater Sustainability Agency and remarks from our Federal and State representatives.

If you, or your designated representative, are able to participate on September 20th, please have your staff confirm with my office by email to my Chief of Staff, Sarah Hardgrave at hardgraves@co.monterey.ca.us or by phone at 831-647-7755. Sarah will be following up with you in early September to answer any questions you may have about this invitation.

I look forward to working with you and other stakeholders to identify a path forward to ensure water security for Monterey County in the 21st century and beyond.

Sincerely,



Mary L. Adams, Chair
Monterey County Board of Supervisor
Fifth District

cc: Seaside Groundwater Basin Watermaster Board of Directors

D-R-A-F-T
MINUTES

Seaside Groundwater Basin Watermaster
Technical Advisory Committee Meeting
August 10, 2022
(Meeting Held Using Zoom Conferencing)

Attendees: **TAC Members**
City of Seaside – Nisha Patel
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 Assistant – Michael Paxton

Consultants
Montgomery & Associates – Pascual Benito, Bill DeBoer
Wallace Group – Rick Riedl

Others
Cal Am – Josh Stranton
MPWMD – Maureen Hamilton

The meeting was convened at 1:34 p.m.

1. Public Comments and Roll Call

There were no public comments. Ms. Voss conducted the roll call with the members listed above being in attendance.

2. Administrative Matters:

A. Make Findings Required Under AB 361 Regarding Holding Meetings Via Teleconference

Mr. Jaques briefly summarized the agenda packet materials for this item. A motion was made by Mr. O'Halloran, seconded by Mr. Gaglioti, to adopt the findings contained in the agenda packet. The motion passed with Mr. Leith voting no.

B. Approve Minutes from the July13, 2022 Meeting

On a motion by Mr. O'Halloran, seconded by Mr. Gomez, the minutes were unanimously approved as presented, with Mr. Lear abstaining.

C. Sustainable Groundwater Management Act (SGMA) Update
Mr. Jaques summarized the agenda packet materials for this item. There was no other discussion.

D. Update on Issues Concerning Well ASR-1
Mr. Jaques summarized the agenda packet materials for this item. Mr. Gaglioti thanked Mr. Jaques for providing this information. There was no other discussion.

3. Presentation on Additional Replenishment Water Evaluations Using Different Assumptions

Mr. Jaques introduced this item.

Mr. Gaglioti had joined the meeting by phone and was concerned that he might lose the connection due to the location he was in. He said that if there is a vote on this issue he would vote in favor of sending the material to the Board for their information at the September Board meeting.

Using the attached PowerPoint slides Mr. Benito presented the work done on the additional replenishment water evaluations using different assumptions. He noted that the new work compares the Baseline and 1,000 AFY replenishment water scenarios that were evaluated in the January 2022 work, to the amount of replenishment water needed under the revised assumptions that are described in the August Technical Memorandum.

Mr. Benito reported that water levels rise or fall depending on whether the inflow is greater than or less than the outflow. This work focused on the water budget for the Northern Coastal Subarea, plus the Pure Water Monterey Expansion area to the east. In this subarea, inflows include injected water, and outflows include pumping, both of which are controllable activities. Flows to or from adjacent areas are head -dependent and not directly controllable.

As deep aquifer water levels rise, more water is lost to the Monterey Subbasin and to the offshore area. During prolonged drought periods, larger amounts of net outflow occur because the amounts of water that are injected are reduced and the amount of water pumped generally increases. This lowers groundwater levels, but it also reduces outflows to adjacent areas that are down gradient, and increases inflows from those that are up-gradient.

In this Technical Memorandum the shallow aquifer includes all the unconfined aquifers including the Aromas, Dunes Sands, and Paso Robles.

Some of the principal conclusions from this work include:

- On average about 3,200 acre-feet per year of <u>additional</u> recharge water above the amount in the 1,000 AFY scenario would be needed under the revised assumptions to achieve protective water levels.
- Shallow Aquifer:
    - Factors having significant impact include rainfall and reduction in shallow aquifer pumping.

    - Pure Water Monterey vadose zone wells provide the biggest increase in groundwater levels. Outflows to the Monterey Subbasin and the offshore area increase as groundwater levels rise.
- Deep Aquifer:
    - Outflows to the Monterey Subbasin increase as groundwater levels rise in the deep aquifer.

Mr. O'Halloran and Mr. Gaglioti thanked Mr. Benito for an excellent presentation on a very complex set of conditions. Mr. Gaglioti said he would be submitting some questions of his own in writing to Mr. Benito at a later date.

A motion was made by Mr. Gaglioti, seconded by Mr. O'Halloran to send the information contained in this Technical Memorandum forward to the Board along with the January 2022 work. Mr. Lear reported that MPWMD feels that assumptions 2, 3, and 6 on page 25 of the agenda packet are not accurate.

The motion passed on the following vote:

Yes-Mr. O'Halloran, Ms. Patel, Mr. Hennings, Ms. Voss, Mr. Gaglioti, and Mr. Gomez
No - Mr. Lear, and Mr. Leith

4. Approve the Monitoring and Management Program (M&MP) for FY 2023

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

Mr. Lear and Ms. Voss recommended that if other parameters start to indicate possible seawater intrusion, sampling and analysis for barium and iodide be resumed.

A motion was made by Ms. Voss, seconded by Mr. O'Halloran, to approve the Monitoring and Management Program for FY 2023. The motion passed unanimously.

5. Approve the FY 2023 Monitoring and Management Program (M&MP) Operations and Capital Budgets

A motion was made by Mr. Lear, seconded by Ms. Voss, to approve the Monitoring and Management Program Operations and Capital Budgets for FY 2023. The motion passed unanimously.

6. Update on Monitoring Wells FO-9 and FO-10 and Approval of RFS No. 2022-05 with Montgomery & Associate Regarding Replacement of Well FO-9 Shallow

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

Mr. O'Halloran questioned whether or not well FO-9 Shallow was located on Army property. He said he thought the property had been transferred to the City of Seaside. Mr. Lear responded that as far as he knew it was still on Army property. In order to perform the destruction work at well FO-9 Shallow he had to get an easement and permission to access the site from the Army to do the work. Ms. Patel said that she would research the ownership of the property at this location.

With regard to potentially locating the replacement well on the City of Seaside golf course property, Ms. Patel said that she will talk with her upper management next week to see if this

will be acceptable to the City. She will also see if the existing well FO-9 Shallow is still on Army property or whether it is now on City of Seaside property.

With regard to the replacement well for well FO-9 Shallow, Ms. Voss said she felt that locating the replacement well on the City of Seaside golf course property would be satisfactory, as it is reasonably close to the location of the former FO-9 Shallow well and this would make it easier to get the necessary permissions to do that work.

Mr. Lear said he was not sure how reliable the FO-9 Shallow well monitoring data has been in recent years, because we do not know how long the casing leakage has been occurring which would compromise the analytical data.

On a motion by Ms. Voss, seconded by Mr. O'Halloran, RFS 2022 – 05 with Montgomery and Associates was unanimously approved, with Tasks 1 and 2 to be authorized at this time. There was brief discussion about determining whether or not the existing well FO-9 Shallow is on Army property. If it is no longer on Army property, and it is now on City of Seaside property, the replacement well could potentially be located closer to the existing well. If the property is still owned by the Army, the well could more readily be located on the City of Seaside golf course property.

7. Schedule

Mr. Jaques highlighted his expectation that there would not be a need for TAC meetings in either September or October. Therefore, unless there is a change, the next TAC meeting would be on the 3rd Wednesday of November, i.e. November 16, 2022.

8. Other Business

There was no other business.

The meeting adjourned at 3:23 PM.

REPLENISHMENT MODELING

WATER BUDGET ANALYSIS & ALTERNATIVE SUPPLY & DEMAND SCENARIO

MONTGOMERY & ASSOCIATES

Presented to the Seaside Basin TAC August 10th, 2022

Pascual Benito Ph.D.

OUTLINE

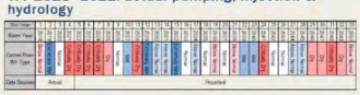
- Objectives
- Recap of Previous Modeling
- Water Budget Analysis of Baseline Scenario and 1,000-AFY Replenishment Scenario
- Alternative Scenario 1:
  - Alternate Supply & Demand Assumptions
  - Additional Replenishment Needed
- Conclusions
- What is the new Normal Water Year?

OBJECTIVES

- Aquifer-by-Aquifer Water Budget Analysis to understand trends and changes in net flows to/from the Basin
  - How much water is flowing to Offshore Region? To Monterey Subbasin?
- Develop alternative Supply & Demand scenario based on Cal-Am UWMP and updated City of Seaside assumptions (referred to as Alternative Scenario 1)
- Use water budget approach to estimate effects of different demand/supply assumptions on volume of replenishment needed

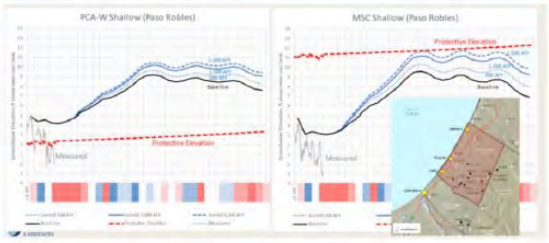
UPDATED BASELINE SIMULATION RECAP

- WY 2018–2021: actual pumping, injection & hydrology

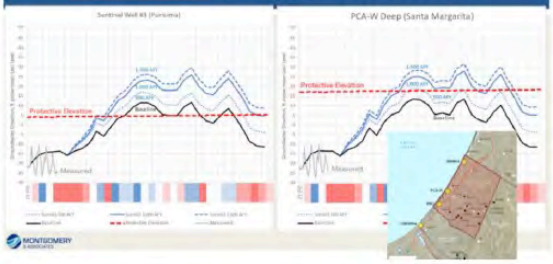


- WY 2022–2050: projected pumping, all planned projects, PWM & ASR injection tied to cycled historical hydrology
- Mean Sea Level rise of 1.3 ft by 2050
- No GSP projects in neighboring subbasins (e.g. assume no rise in water levels in Monterey Subbasin)

BASELINE + 1,000 AFY SIMULATION WATER LEVELS



SIMULATED DEEP GROUNDWATER LEVELS



YEARS TO REACH PROTECTIVE ELEVATION

- Number of Years (from WY2024) for Average Water Level to Reach Protective Elevation

Scenario	Sentinel 3 (Deep)	PCA-W (Deep)	MSC (Deep)	PCA-W (Shallow)	MSC (Shallow)	CDM MW-4 (Shallow)
Baseline	7	not reached	not reached	already reached	not reached	already reached
1) 500 AFY	6	9	9	already reached	not reached	already reached
2) 1,000 AFY	5	7	8	already reached	11*	already reached
3) 1,500 AFY	3	6	6	already reached	10	already reached
4) 1,500 AFY + Q Redist.	3	7	7	already reached	9	already reached

*within 3/4 foot

MONTGOMERY & ASSOCIATES

PERCENT OF TIME PROTECTIVE ELEVATIONS MAINTAINED

- Percent of years (WY2024-2048) that average water level achieves protective elevation

Scenario	Sentinel 3 (Deep)	PCA-W (Deep)	MSC (Deep)	PCA-W (Shallow)	MSC (Shallow)	CDM MW-4 (Shallow)
Baseline	52%	not reached	not reached	100%	not reached	100%
1) 500 AFY	72%	12%	8%	100%	not reached	100%
2) 1,000 AFY	88%	56%	52%	100%	4%*	100%
3) 1,500 AFY	88%	72%	68%	100%	20%	100%
4) 1,500 AFY + Q Redist.	84%	84%	84%	100%	40%	100%

*within 3/4 foot

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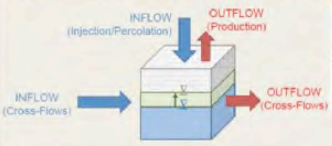
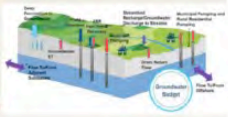
WATER BUDGET ANALYSIS

- INFLOWS – OUTFLOWS = CHANGE IN STORAGE
- A Change in Storage represent a change in groundwater levels
- Net Inflows > Net Outflows for water levels to rise





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WATER BUDGET ZONES

Focus on Northern Coastal Subarea extended to include PWM Expansion Project Area

DEEP AQUIFER FLOW COMPONENTS

- NET PUMPING = PWM_{Inj} + ASR_{Inj} + $Replenishment_{Inj}$ - Total Production
- Head Dependent Cross-Flows To/From:
  - Monterey Subbasin
  - Offshore Region
  - Flow to/from Northern Inland Subarea
  - Shallow Aquifer
  - Southern Coastal Subarea

For each flow component:
NET IFLOW = TOTAL INFLOW – TOTAL OUTFLOW
(Positive = a net inflow, Negative = a net outflow)

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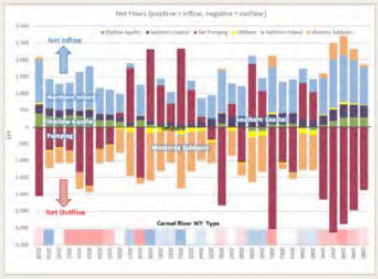
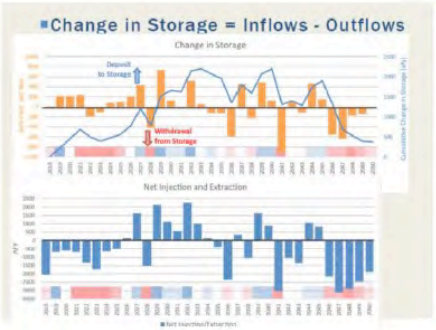


DEEP AQUIFER BASELINE NET FLOWS



DEEP AQUIFER BASELINE NET FLOWS

Net Pumping is the driver for changes in water levels in the Deep Aquifer

UNCONFINED AQUIFERS FLOW COMPONENTS

- Deep Percolation
  - Infiltration of rainfall, irrigation return flow & system losses
- PWM Vadose Zone Recharge (VZW Wells + Perc Ponds)
- Pumping from Extraction Wells
- Head Dependent Cross-Flows To/From:
  - Monterey Subbasin
  - Offshore Region
  - Flow to/from Northern Inland Subarea
  - Shallow Aquifer
  - Southern Coastal Subarea

For each flow component
NET FLOW = TOTAL INFLOW – TOTAL OUTFLOW
(Positive = a net inflow, Negative = a net outflow)

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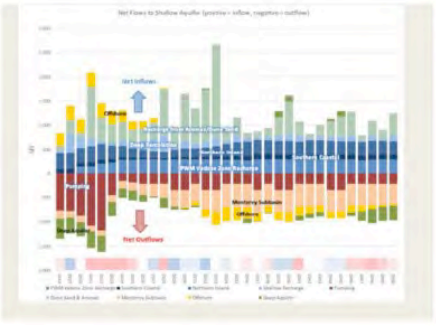
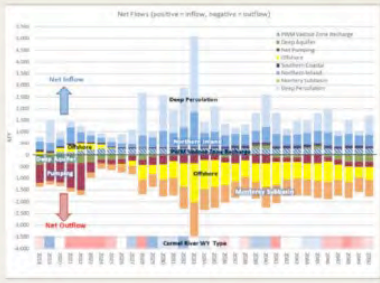
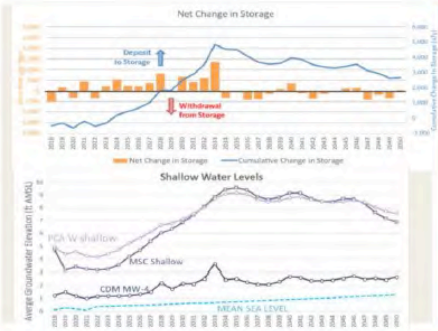


BASELINE NET FLOWS: SHALLOW AQUIFER
(Paso Robles Only)

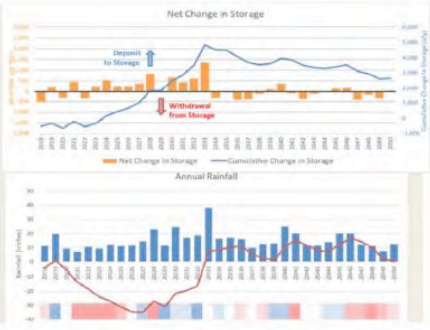


BASELINE NET FLOWS: UNCONFINED AQUIFERS*

*Aromas + Dune Sands and Paso Robles Combined



SHALLOW AQUIFER BASELINE NET FLOWS



BASELINE SHALLOW AQUIFER CHANGE IN STORAGE

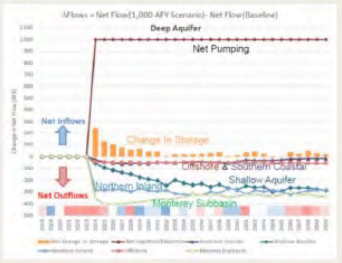
Percolation from Rainfall (direct and via the Aromas Sands and Older Dune Deposits) is the primary driver for the increase in shallow water level

1,000-AFY Replenishment Scenario

CHANGE IN NET FLOW FROM BASELINE SCENARIO

Unconfined Aquifers Combined (Paso Robles + overlying Aromas + Dune Sands)

1,000-AFY Replenishment Scenario



CHANGE IN NET FLOW FROM BASELINE SCENARIO

Deep Aquifer

ALTERNATIVE SCENARIO 1: CAL-AM ASSUMPTIONS

1. 15 AF per day will be used as the average daily amount of ASR diversion, not the 20 acre-feet per day that was used in the January 2022 modeling (but will keep same cycled hydrology)
2. 2020 Urban Water Management Plan (UWMP) demand figures rather than MPWMD's demand figures will be used projected water demands
3. MPWSP Desalination Plant begins operation in 2030 in accordance with the UWMP. (The UWMP assumes the Desal plant will produce 6,252 AFY for the Monterey Peninsula).
4. Cal Am's in-lieu repayment of 700 AFY will begins operation in 2030, in accordance with the UWMP. (For comparison, the original baseline assumes the repayment period starts in 2024, concurrent with the PWM Expansion project.)
5. Pure Water Monterey Expansion Project will begin operation in 2024, the same as previously simulated
6. To provide a factor of safety, the amount of water that the PWM Expansion Project will deliver will be reduced from 5,700 acre-feet to the "Minimum Allotment" of 4,600 acre-feet per year as set forth in the "Amended and Restated Water Purchase Agreement" executed between Cal Am, MPWMD, and M1W in late 2021.
7. Cal-Am will make-up any shortfall between supply and demand by over pumping its Seaside Basin allocation of 1,474 AFY. (If the Desal Plant is built in 2030, even though PWM Expansion is assumed to have reduced deliveries per Cal Am assumption 6 above, there will be no supply shortfall after 2030 because the UWMP indicates that the expected capacity of the Desal plant is sufficient to make up for the reduced PWM Expansion deliveries.)

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ALTERNATIVE SCENARIO 1

- City of Seaside
  1. Assume City of Seaside golf courses use 491.4 AFY of recycled water
  2. Assume City pumps an in-lieu amount of 491.4 AFY from the deep aquifer from a new well located generally in the location of the Lincoln-Cunningham Park in Seaside
  3. Convert 26 AFY of golf course allocation from Alternate Producers (APA) to Standard Producers (SPA). New golf course APA allocation = 540 – 26 = 514 AFY
  4. Remaining unused balance of 514 – 491.4 = 22.6 AFY would be held as a reserve and/or for flushing of greens and tee boxes
- Baseline accounts for conversion to recycled water, but only re-allocated 301.1 AFY to supply Campus Town Development via Seaside Muni#4
- So assume full APA allocation is now pumped, this leaves 514 – 301.1 = 212 AFY of additional pumping that needs to be included

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REDUCED ASR AND PWM INJECTION

- 25% Reduction in ASR Injection Volumes and 20% Reduction in PWM Expansion

Carmel River Water Year Type	Average Number Diversion Days per Year	Average ASR Diversions w/20 AFD Capacity (AFY)	Average ASR Diversions w/15 AFD Capacity (AFY)
Extremely Wet	142	2,840	2,130
Wet	125	2,500	1,875
Above Normal	105	2,100	1,575
Normal	64	1,280	960
Below Normal	33	660	495
Dry	19	380	285
Critically Dry	3	60	45

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ASR & PWM INJECTION

Baseline

Alternative Scenario 1

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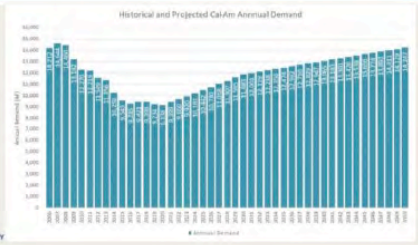
HISTORICAL & PROJECTED SYSTEM DEMAND



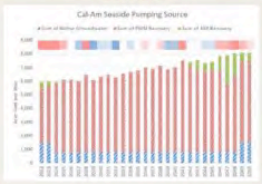
PROJECTED SYSTEM DEMAND AND SUPPLY SOURCE

Baseline

Alternative Scenario 1

SEASIDE PUMPING BY WATER SOURCE

Baseline



Alternative Scenario 1

NET PWM & ASR INJECTION = INJECTION–RECOVERY)

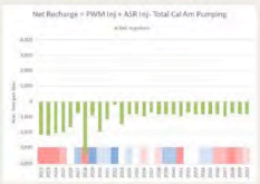
Baseline

Alternative Scenario 1

NET PUMPING = PWM_{INJ} + ASR_{INJ} – TOTAL PUMPING

Baseline

Alternative Scenario 1



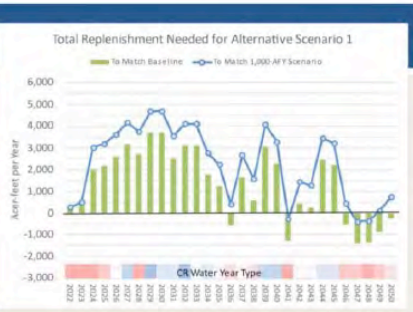
HYBRID WATER BUDGET APPROACH

Net Recharge = PWM_{Inj} + ASR_{Inj} + $Replenishment_{Inj}$ - Total Production

- As Supply (ASR + PWM) & Demand (Cal-Am + Seaside) assumptions are changed, varying amounts of Replenishment water will be needed to achieve the same groundwater level rise as in the Baseline or 1,000-AFY Replenishment Scenario

HYBRID WATER BUDGET APPROACH

Additional Replenishment Water Needed = Net Recharge (Baseline Scenario) − Net Recharge (Alternative Scenario 1)



CONCLUSIONS

Water Budget Analysis

- Shallow Aquifer
  - Biggest Drivers for Increasing Groundwater Levels in the Shallow Aquifer
    - Recharge from percolation of rainfall & irrigation return flows
    - Reduction in Shallow Aquifer pumping
    - PWM vadose zone recharge
    - Net ASR and PWM Deep Injection not significant drivers
- Unconfined Aquifers and Deep Aquifer
  - Outflows to Monterey Subbasin will increase as water levels in Seaside Basin rise (assuming levels in Monterey Subbasin do not also rise)
- Net inflow from the offshore region reverses to a net outflow in all aquifers as water levels increase, with largest net outflows occurring in Aromas Sands and Dune Deposits

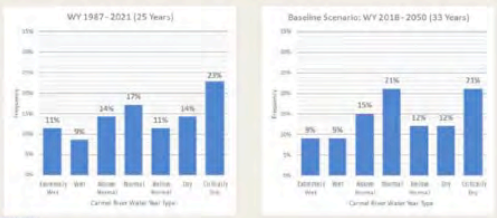
CONCLUSIONS

Alternative Scenario 1

- Without additional replenishment (~2,800 AFY), the water level increases seen in the Baseline Scenario would not occur under Alternative Scenario 1
- An average of approximately 3,800 AFY of additional replenishment needed from 2024-2035 to achieve same level of protective elevations as in the January 2022 1,000-AFY Replenishment Scenario that used Baseline assumptions.
- After 2030, during drought periods the MPWSP Desal supply is offsetting what would have otherwise been pumping of groundwater to recover banked ASR or PWM water in the Baseline Scenario

WHAT IS THE NEW NORMAL?

WHAT IS THE NEW NORMAL?



QUESTIONS & DISCUSSION

SEASIDE GROUNDWATER BASIN WATERMASTER

Reported Quarterly and Annual Water Production From the Seaside Groundwater Basin
For All Producers Included in the Seaside Basin Adjudication -- Water Year 2022
(All Values in Acre-Feet [AF])

	Type	Oct	Nov	Dec	Oct-Dec	Jan	Feb	Mar	Jan-Mar	Apr	May	Jun	Apr-Jun	Jul	Aug	Sep	Jul-Sep	Reported Total	Yield Allocation	from WY 2021	for WY 2022
Coastal Subareas																					
CAW - Coastal Subareas	SPA	373.37	267.89	196.91	**838.17**	336.11	456.67	483.60	**1,276.38**	474.44	527.94	526.22	**1,528.60**	0.00	0.00	0.00	**0.00**	**3,643.15**	1,466.02	165.15	1,631.18
Luzern		26.16	0.33	0.00	**26.49**	0.00	50.18	53.88	**104.06**	51.27	52.25	50.06	**153.58**				**0.00**	**284.13**			
Ord Grove		109.59	48.86	38.68	**197.13**	72.51	95.23	106.91	**274.65**	102.12	104.55	96.53	**303.20**				**0.00**	**774.97**			
Paralta		75.83	92.49	107.42	**275.73**	113.66	111.53	96.00	**321.19**	103.07	132.66	131.90	**367.64**				**0.00**	**964.57**			
Playa		0.00	0.00	0.00	**0.00**	0.00	0.00	0.14	**0.14**	0.00	13.98	32.33	**46.32**				**0.00**	**46.46**			
Plumas		18.98	0.00	0.00	**18.98**	0.00	14.47	29.35	**43.82**	28.04	28.88	27.46	**84.39**				**0.00**	**147.19**			
Santa Margarita		142.81	126.22	50.81	**319.84**	149.94	185.27	197.33	**532.53**	189.93	195.61	187.93	**573.47**				**0.00**	**1,425.84**			
ASR Recovery		0.00																			
City of Seaside (Municipal)	SPA	14.61	13.21	12.59	**40.41**	11.66	13.07	15.87	**40.61**	14.19	16.66	14.78	**45.63**	0.15			**0.15**	**126.79**	120.28	0.00	120.28
Granite Rock Company	SPA	- -	- -	- -	**0.00**	- -	- -	- -	**0.00**	- -	- -	- -	**0.00**				**0.00**	**0.00**	11.35	236.07	247.42
DBO Development No. 30	SPA	- -	- -	- -	**0.00**	- -	- -	- -	**0.00**	- -	- -	- -	**0.00**				**0.00**	**0.00**	20.59	424.88	445.47
Calabrese (Cypress Pacific Inv.)	SPA	- -	- -	- -	**0.00**	- -	- -	- -	**0.00**	- -	- -	- -	**0.00**				**0.00**	**0.00**	2.76	13.57	16.33
City of Seaside (Golf Courses)	APA	27.41	7.17	5.14	**39.72**	5.45	30.92	43.83	**80.20**	44.89	74.47	88.67	**208.04**	57.13			**57.13**	**385.08**	540.00		540.00
Sand City	APA	0.12	0.03	0.11	**0.26**	0.09	0.10	0.20	**0.39**	0.14	0.19	0.17	**0.50**				**0.00**	**1.16**	9.00		9.00
SNG (Security National Guaranty)	APA	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	**0.00**	0.00	0.00		**0.00**				**0.00**	**0.00**	149.00		149.00
Calabrese (Cypress Pacific Inv.)	APA	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	**0.00**				**0.00**	**0.00**	6.00		6.00
Mission Memorial (Alderwoods)	APA	4.45	3.94	1.78	**10.16**	1.58	1.43	3.52	**6.53**	3.16	2.98	2.47	**8.61**				**0.00**	**25.30**	31.00		31.00
Coastal Subareas Totals					**928.72**				**1,404.11**				**1,791.38**				**57.28**	**4,181.49**	**2,356.00**	**839.68**	**3,195.67**
Laguna Seca Subarea																					
CAW - Laguna Seca Subarea	SPA	10.58	9.56	9.11	**29.24**	8.85	9.67	9.94	**28.46**	10.82	12.90	15.38	**39.10**	0.00	0.00	0.00	**0.00**	**96.81**	0.00		0.00
Ryan Ranch Unit		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**				0.00	0.00			
Hidden Hills Unit		10.58	9.56	9.11	29.24	8.85	9.67	9.94	28.46	10.82	12.90	15.38	**39.10**				0.00	96.81			
Bishop Unit 3		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**				0.00	0.00			
Bishop Unit 1		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**				0.00	0.00			
The Club at Pasadera	APA	32.00	7.00	8.00	**47.00**	0.00	26.00	12.00	**38.00**	27.00	41.00	36.00	**104.00**	28.00			**28.00**	**217.00**	251.00		251.00
Laguna Seca Golf Resort (Bishop)	APA	17.51	5.83	0.00	**23.34**	0.00	7.07	9.69	**16.76**	14.87	32.55	36.24	**83.66**				**0.00**	**123.76**	320.00		320.00
York School	APA	1.13	0.29	0.04	**1.46**	0.18	0.62	1.52	**2.32**	2.14	2.88	1.81	**6.83**				**0.00**	**10.61**	32.00		32.00
Laguna Seca County Park	APA	1.55	1.73	1.41	**4.68**	1.04	1.28	1.02	**3.34**	2.40	1.87	1.99	**6.26**				**0.00**	**14.28**	41.00		41.00
Laguna Seca Subarea Totals					**105.72**				**88.89**				**239.85**				**28.00**	**462.46**	**644.00**	**0.00**	**644.00**
Total Production by WM Producers					**1,034.45**				**1,492.99**				**2,031.23**				**85.28**	**4,643.95**	**3,000.00**	**839.68**	**3,839.67**
									Annual Production from APA Producers									777.19	1,379.00		
									Annual Production from SPA Producers									3,866.76	2,460.67		

CAW / MPWMD ASR (Carmel River Basin source water)																***Previous Balance***	***Total***
Injection	0.00	0.00	61.69	**61.69**	8.86	0.00	0.00	**8.86**	0.00	0.00	0.00	**0.00**			0.00	**70.55**	
(Recovery)	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	**0.00**			**0.00**	**0.00**	
Net ASR	0.00	0.00	61.69	**61.69**	8.86	0.00	0.00	**8.86**	0.00	0.00	0.00	**0.00**			**0.00**	**70.55**	**801.55**	**872.10**
Pure Water Monterey (PWM) Injection and Cal-Am Recovery																	
Injection Operating Reserve	0.00	0.00	0.00	**0.00**				**0.00**				**0.00**			**0.00**	**0.00**	**1,200.48**	**1200.48**
Injection Drought Reserve	0.00	0.00	0.00	**0.00**				**0.00**				**0.00**			**0.00**	**0.00**	**0.0**	**0.00**
Delivery to Basin	298.20	289.97	312.27	**900.44**	320.51	282.22	341.92	**944.65**	362.09	295.58	264.55	**922.22**	273.96		**273.96**	**3041.27**	**0.0**	**3041.27**
CAW	(343.61)	(233.66)	(162.10)	**(739.37)**	(301.21)	(418.82)	(400.00)	**(1120.03)**	(400.00)	(350.00)	(249.07)	**(999.07)**	(273.96)		**(273.96)**	**(3132.43)**	**0.0**	**(3132.43)**

Notes:
1. The Water Year (WY) begins October 1 and ends September 30 of the following calendar year. For example, WY 2022 begins on October 1, 2021, and ends on September 30, 2022.
2. "Type" refers to water right as described in Seaside Basin Adjudication decision as amended, signed February 9, 2007 (Monterey County Superior Court Case No. M66343).
3. Values shown in the table are based on reports to the Watermaster received by April 15, 2022.
4. All values are rounded to the nearest hundredth of an acre-foot. Where required, reported data were converted to acre-feet utilizing the relationships: 325,851 gallons = 43,560 cubic feet = 1 acre-foot.
5. "Base Operating Yield Allocation" values are based on Seaside Basin Adjudication decision. These values are consistent with the *Watermaster Producer Allocations Water Year 2022* (see Item VIII.B. in 1/5/2022 Board packet).
6. Any minor discrepancies in totals are attributable to rounding.
7. APA = Alternative Producer Allocation; SPA = Standard Producer Allocation; CAW = California American Water.
8. It should be noted that CAW/MPWMD ASR "Injection" and "Recovery" amounts are not expected to "balance" within each Water Year. This is due to the injection recovery "rules" that are part of SWRCB water rights permits and/or separate agreements with state and federal resources agencies that are associated with the water rights permits.

Seaside Basin Watermaster
P.O. Box 51502, Pacific Grove, CA 93950
(831) 595-0996

June 9, 2022

Mr. David Stoldt
General Manager
Monterey Peninsula Water Management District
5 Harris Court, Building G
Monterey, CA 93940

Mr. Paul Sciuto
General Manager
Monterey One Water
5 Harris Court, Building D
Monterey, CA 93940

Mr. Chris Cook
Operations Manager, Monterey District
California American Water
511 Forest Lodge Road, No. 100
Pacific Grove, CA 93950

Subject: Well ASR-1 Issues

Gentlemen:

In the May 27, 2022 video conference, and in related email correspondence, discussion regarding the RWQCB's redesignation of Well ASR-1 as no longer being authorized as a drinking water source was focused on the Water Purchase Agreement between Cal Am, MPWMD, and M1W, and the Agreement for Storage and Recovery of Non-Native Water from the Seaside Groundwater Basin ("Storage and Recovery Agreement"), between the Watermaster, Cal Am, and MPWMD. This letter is intended to provide additional information that is pertinent to this issue.

We note that there was discussion of well ownership and the MPWMD's right to modify its historic use. The District's position does not change the fact that, but for the injection of stored water, this well could be used as production well for the benefit of the public. From the perspective of the Watermaster, the injection of stored water was not supposed to jeopardize the use of any well, active or inactive. Determining whether or not limiting the potential use of an existing well is a material injury is within the purview of the Watermaster.

In the paragraphs below, emphasis added is shown in boldface

The SWRCB's Division of Drinking Water September 14, 2021 letter to Cal Am states in part:

> *On July 9, 2021,* ***Monterey One Water submitted a letter to the Division of Drinking Water*** *(Division)* ***providing written notice that the results of the intrinsic tracer study conducted for the Pure Water Monterey (PWM) groundwater recharge project showed the estimated underground retention time of the injected recycled water to the Santa Margarita ASR Wells 01 and 02 (ASR Wells 01 and 02) was much shorter than predicted by a 2019 model used to estimate the***

underground retention time to the nearest drinking water well. The intrinsic tracer study confirmed that the estimated underground retention time to the ASR Wells 01 and 02 was insufficient and would not meet the minimum underground retention time required by California Code of Regulations (CCR), Tittle 22, Article 5.2, Sections 60320.224(a) and (b). In addition, the recycled water that reached the Santa Margarita ASR Well 01 during the 2020 extraction period potentially did not meet the 12-log virus reduction required *by CCR, Tittle 22, Article 5.2, Section 60320.208(a).*

The Pure Water Monterey letter to Cal Am dated April 18, 2022 states in part:

On September 14, 2021 the State Division of Drinking Water (DDW) issued a letter to Cal-Am informing you that "the drinking water source designation of ASR Well 01 (ASR-1) has been changed from active to inactive." The inactive status remains in effect today and can only be removed if available data clearly demonstrates that the recycled water reaching ASR-1 when the well is in extraction mode meets at least 12-log virus reduction, the minimum underground retention time required by the recycled water regulations of 2 months, and all other applicable recycled water regulations.

Based on recent conversations with DDW, we do not believe that DDW will review and accept the data and analysis by the M1W team to demonstrate minimum underground retention time without significant reduction of Pure Water Monterey (PWM) injection capacity.

As the public agency sponsors of the Pure Water Monterey wholesale water project, including ownership of ASR-1 by MPWMD, we find no substantial rationale for changing the source designation of ASR-1 to active at this time or the foreseeable future.

The application for the Storage and Recovery Agreement, which was approved by the Watermaster Board at its October 3, 2018 meeting, states in part:

The AWT water that MPWMD will inject into the Seaside Basin will not exceed the water quality limits contained in the Waste Discharge Requirements and Water Recycling Requirements issued for the Pure Water Monterey Project issued by the Central Coast RWQCB in Order No. R3-2017-0003. *These limits are summarized in Attachment B, which is excerpted from the document titled Final Engineering Report, Volume I: Engineering Report Pure Water Monterey Groundwater Replenishment Project, Revised November 2017.*

The RWQCB's Waste Discharge Requirements and Water Recycling Requirements (RWQCB Order No. R3-2017-0003) for the PWM Project that were included in Attachment B, states in part:

Recycled Water Retention Time - The SWRCB Division of Drinking Water (DDW - formerly the California Department of Public Health) has adopted groundwater replenishment regulations (June 2014) for the recharge of recycled water. Recycled water must be retained underground for a sufficient period of time to identify and respond to any treatment failure so that inadequately treated recycled water does not enter a potable water system (referred to as the response retention time). ***The response retention time must be at least two months. The 1,000-ft distance between proposed project wells and the closest downgradient production wells is expected to***

> ***result in a travel time of approximately one year.*** *MRWPCA will propose a tracer study to DDW and the Central Coast Water Board and when approved, will conduct the study to confirm the underground retention time.*

The RWQCB's Monitoring and Reporting Program (MRP NO. R3-2017-0003) for the PWM Project, which was also included in Attachment B, contains this reporting requirement:

> ***Revised estimates, if applicable, on hydrogeologic conditions including the retention time and the amount of the recycled water in the aquifers and at the production well field at the end of that calendar year. The revised estimates shall be based upon actual data collected during that year*** *on recharge rates (including recycled water and native water), hydrostatic head values, groundwater production rates, basin storage changes,* ***and any other data needed to revise the estimates of the retention time and the amount of the recycled water in the aquifers and at the production well field.***

The Watermaster's approval of the Storage and Recovery Agreement was based on the information provided in the application, which included assurance that the minimum response retention time of at least two months would be met.

The paragraphs below refer to the Amended Decision, issued by the Superior Court of the County of Monterey, which established the Watermaster.

Section III.A.15 defines "Material Injury" as a substantial adverse physical impact to the Seaside Basin **or any particular Producer(s),** including but not limited to: seawater intrusion, land subsidence, excessive pump lifts, **and water quality degradation**. Pursuant to a request by any Producer, or on its own initiative, **Watermaster shall determine whether a Material Injury has occurred**, subject to review by the Court as provided for in Section M.N.

Section III.H.6 states that each Producer operating under the Standard Production Allocation, and the Watermaster, and **certain public agencies, shall have the right to Store Water by Direct Injection, Spreading, or other artificial means so long as such Storage does not cause Material Injury to any other Party.**

Section III.j provides the Watermaster with duties, powers, and responsibilities pertaining to the administration and enforcement of the provisions of the Decision.

Section III.j.xx states that applications for Storage in the Seaside Basin shall be approved **absent the issuance of findings that a Material Injury to the Seaside Basin or Producers will or is likely to occur as a result of the proposed Storage program** and no reasonable conditions could be imposed to eliminate such risk. It also states that **the Storage and Recovery Agreement may include conditions to avoid Material Injury, including water quality characteristics of the water that is to be stored pursuant to the Storage and Recovery Agreement.**

Several important things are clear from the citations above:

1. The assurance in the application for Storage and Recovery that the Pure Water Monterey Project's water will meet the retention requirements established by the Division of Drinking Water is not being fulfilled.
2. The water being injected into the Basin for storage does not comply with the requirement in the Storage and Recovery Agreement that the quality of that water meets the water quality limits contained in the Waste Discharge Requirements and Water Recycling Requirements issued for the Pure Water Monterey Project.
3. Material injury is being caused by the injection of PWM Project water into the Basin because it is rendering ASR-1, historically used by a Producer (Cal Am) for production, no longer available as a source of domestic water supply.
4. One of the responsibilities of the Watermaster is to take actions to prevent material injury from occurring. Such an action could include retracting the Storage and Recovery Agreement for the Pure Water Monterey Project until the material injury being caused to Well ASR-1 has been remedied.

Sincerely,

Paul Bruno
Chair, Seaside Basin Watermaster

Salinas Valley Basin
Groundwater Sustainability Agency

BUDGET & FINANCE COMMITTEE
STAFF REPORT

MEETING DATE: September 7, 2022

AGENDA ITEM: IX.D

SUBJECT: Supplemental Appropriation for SGMA $7.6 Million Round 1 Implementation Grant

RECOMMENDATION:

Staff recommends that the Budget & Finance Committee review the $7.6 million supplemental appropriation for the SGMA Round 1 Implementation Grant and recommend approval to the Board of Directors.

BACKGROUND:

DWR has approved the $7.6 million Round 1 Implementation Grant for implementation of the 180/400-foot Aquifer GSP. The purpose of the grant is to assist in the financing of the 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan Phase 1 Implementation (2022-2024) Project. Seven Components will be completed with the Grant funds. The Board of Directors approved submittal of the SGMA Round 1 Implementation Grant on February 10, 2022.

DISCUSSION:

The proposed appropriations for the $7.6 million Round 1 Implementation Grant budget will cover expenses through June 30, 2025. Any unspent appropriations of a fiscal year will carryover to the next fiscal year until the project is completed. This grant has no cost share requirements. Therefore, all costs associated with the grant are fully covered by the grant. The grant includes $400,000 for grant administration.

Attached is a copy of the grant agreement. Exhibit A - Work Plan describes the work to be accomplished with the grant and the amount provided for each component. Exhibit B – Budget itemizes the grant amount by component. Exhibit C – Schedule shows the start and end dates for every component.

Attached also is the budget appropriations as they will appear in the accounting system.

Below is a summary of the entire grant:

			$ 7,600,000
Categories	**Start Date**	**End Date**	**Budget**
Component 1: Grant Agreement Administration	**December 17, 2021**	**March 31, 2025**	**$ 400,000**
(a) Grant Agreement Administration	17-Dec-21	31-Mar-25	$ 400,000
Component 2: Dry Chlorine Scrubber Upgrade at Monterey One Water Recycled Water Plant	**July 1, 2022**	**November 30, 2023**	**$ 1,185,000**
(c) Implementation / Construction	1-Jul-22	30-Nov-23	$ 1,185,000
Component 3: Castroville Seawater Intrusion Project Distribution System Upgrades	**17-Dec-21**	**31-Dec-24**	**$ 2,150,000**
(a) Component Administration	17-Dec-21	December 31.2023	$ 5,000
(b) Environmental / Engineering / Design	17-Dec-21	31-May-23	$ 520,000
(c) Implementation / Construction	1-Jul-22	30-Nov-23	$ 1,622,000
(d) Monitoring / Assessment	1-Sep-23	31-Dec-24	$ 3,000
Component 4: Interested Party Outreach and Engagement	**17-Dec-21**	**30-Jan-25**	**$ 279,500**
(a) Component Administration	17-Dec-21	30-Jan-25	$ 2,500
(e) Engagement / Outreach	17-Dec-21	30-Jan-25	$ 277,000
Component 5: Conduct Feasibility Study on Aquifer Storage and Recovery	**Earliest Start Date**	**Latest End Date**	**$ 300,000**
(a) Component Administration	17-Dec-21	30-Jun-24	$ 20,000
(b) Feasibility Study	17-Dec-21	30-Jun-24	$ 280,000
Component 6: Demand Management Feasibility	**Earliest Start Date**	**Latest End Date**	**$ 200,000**
(a) Component Administration	17-Dec-21	December 31,2023	$ 10,000
(b) Feasibility Study	17-Dec-21	December 31,2023	$ 190,000
Component 7: Compliance Reporting and Data Expansion	**Earliest Start Date**	**Latest End Date**	**$ 1,850,500**
(a) Component Administration	17-Dec-21	31-Dec-24	$ 5,000
(b) Reporting and Data Expansion	17-Dec-21	30-Jun-24	$ 1,845,500
Component 8: Implement Deep Aquifer Study Recommendations	**Earliest Start Date**	**Latest End Date**	**$ 40,000**
(a) Component Administration	17-Dec-21	30-Jun-24	$ 5,000
(b) Study and Data Collection	17-Dec-21	30-Jun-24	$ 35,000
Component 9: Seawater Intrusion Feasibility Study	**Earliest Start Date**	**Latest End Date**	**$ 1,195,000**
(a) Component Administration	17-Dec-21	30-Jan-25	$ 10,000
(b) Feasibility Study	17-Dec-21	30-Jan-25	$ 1,185,000

FISCAL IMPACT:

This appropriation will have no fiscal impact since all the expenditures will be fully reimbursed by the grant. The only impact is that the Agency has to pay the expenses for the quarter while waiting for reimbursement.

ATTACHMENT(S):

SGMA Round 1 Implementation Grant Agreement
SGMA Fund Statement of Revenues and Expenditures.

PREPARED BY:

Roberto Moreno, RGS Senior Advisor
Donna Meyers, General Manager