Groundwater Sustainability Plan
for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

City of Marina
Groundwater Sustainability Agency
Marina, CA

JANUARY
2020

VOLUME II

VOLUME II – TABLE OF CONTENTS AND INTRODUCTION
Groundwater Sustainability Plan
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VOLUME II: TABLE OF CONTENTS

INTRODUCTION

During the 45-day public comment period that ended on November 25, 2019, the Marina Groundwater Sustainability Agency (MGSA) received written comments from five entities on its Draft Groundwater Sustainability Plan (GSP). The commenters were RMC Pacific Materials, LLC (CEMEX)**,** California-American Water Company, Monterey County Water Resources Agency, Salinas Valley Basin Groundwater Sustainability Agency, and four individuals who call themselves the Hydrogeologic Working Group. Interested parties provided comments at public meetings/workshops convened by the MGSA on August 7, October 8th, and October 29, 2019, during which a limited number of individuals provided oral testimony.

MGSA has annotated the comment letters with consecutive numbers to correspond to each individual general or specific comment within each of the letters. Copies of the annotated letters are included in Section 1.0. MGSA responds to each of those numbered comments in two ways: (1) through an individual response and any associated changes to the Draft GSP in the enclosed matrix included in Section 2.0; and (2) through a set of numbered Master Responses that cover common concerns or questions raised most often by the commenters included in Section 3.0. These Master Responses are incorporated as appropriate into the individual comment responses in the matrix. All of these responses are intended to provide clarification and refinement of information presented in the Draft GSP.

In the Final GSP, MGSA has made changes to the text of the Draft GSP that are described in the "Changes to GSP" column in the matrix or set forth in Attachments A, B, and C. Since the oral comments at the public hearing did not provide any further or different comments than contained in the letters, or any additional substantive comments that required a response**,** the responses to the oral testimony are encompassed within the written comments and responses. Please note that some of the text changes are not provided verbatim in the comment matrix – rather, they are set forth in full in the Final GSP or attachments.

It is important to note that MGSA only agrees with a comment in the comment matrix if it specifically so states in an individual Response to Comments. No inference should be made that, because MGSA does not specifically disagree with or rebut a particular comment, it believes the comment is accurate, applicable, or appropriate. For example, a statement that "a comment is noted" or that the reader should see another comment response or master response does not explicitly or implicitly indicate agreement with the content of the comment.

VOLUME II: SECTION 1.0 – ANNOTATED COMMENT LETTERS

CALIFORNIA AMERICAN WATER

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November 22, 2019

Brian McMinn
Public Works Director
City of Marina GSA
211 Hillcrest Avenue, Marina CA 93933
bmcminn@cityofmarina.org

Re: City of Marina's Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Dear Mr. McMinn

These comments are submitted on behalf of the California American Water Company ("CalAm") and address the City of Marina's ("City") Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin ("MGSA GSP").

CalAm 1

The City made it abundantly clear during its groundwater sustainability agency ("GSA") formation hearing (and since) that its sole objective in exercising authority under the Sustainable Groundwater Management Act ("SGMA") is to stop CalAm's Monterey Peninsula Water Supply Project ("MPWSP" or "Project"). CalAm previously expressed its concern that the City will leave no stone unturned in acting on its bias against the Project. (See, CalAm April 25, 2019 letter attached hereto as **Attachment A**.) Comments from the City at the recent Coastal Commission hearing regarding the MPWSP further confirmed the City's bias against the Project. (See, Latham & Watkins November 21, 2019 Memorandum attached hereto as **Attachment B**.) The content of and significant deficiencies in the MGSA GSP, which the City hurriedly cobbled together at the eleventh hour, are further evidence of the City's myopic and misguided efforts to thwart the MPWSP, a project that science demonstrates will be beneficial to the Salinas Valley Groundwater Basin ("SVGB").[1] As detailed in comments on the MGSA GSP submitted by the Hydrogeologic Working Group ("HWG"),[2] which are attached hereto as **Attachment**

[1] The Project's impact on seawater intrusion is well documented in the California Public Utilities Commission's ("CPUC") and Monterey Bay National Marine Sanctuary's Final Environmental Impact Report/Environmental Impact Statement ("EIR/EIS") for the Project. (See, e.g., Final EIR/EIS, pp. 4.4-91 to 4.4-92 [explaining that "the MPWSP would not exacerbate seawater intrusion, and groundwater extraction from the coast, as part of project operations, would be expected to retard future inland migration of the seawater intrusion front. The proposed project would facilitate the reduction of seawater intrusion in the long term"].)

[2] The HWG arose out of a settlement agreement related to the MPWSP that the CPUC approved as part of its review of the Project. The parties to the settlement agreement agreed that hydrologists and technical teams representing CalAm and the Salinas Valley Water Coalition would collaborate with other experts to develop a joint workplan for the MPWSP's proposed source water intake sites. The HWG, which was developed to serve as an internal peer review group, reviewed data and analyses and prepared investigation documents related to the MPWSP.

C, the MGSA GSP suffers from numerous and significant technical deficiencies. Further, the MGSA GSP suffers from the broader deficiencies discussed below.

CalAm 2

- As detailed in CalAm's August 12, 2019 comment letter on the City's initial groundwater sustainability plan ("GSP") preparation notification, the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") is the exclusive GSA for the 180/400 Foot Aquifer Subbasin ("180/400 Subbasin"), including the area covered by the MGSA GSP ("MGSA Area"). Thus, the City is not a GSA and does not have the authority to adopt a GSP.

CalAm 3

- The SVBGSA's Salinas Valley 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan ("SVBGSA GSP") already covers the 180/400 Subbasin, including the MGSA Area. Thus, the MGSA GSP is unnecessary, suggests GSP overlap in the 180/400 Subbasin, and given its deficiencies, increases the likelihood of State intervention in the 180/400 Subbasin.

CalAm 4

- The MGSA GSP incorrectly asserts that the City is an exclusive GSA for the MGSA Area. As noted above, the SVBGSA is the exclusive GSA for the MGSA Area (and beyond). Further, to the extent overlap is deemed to exist in the 180/400 Subbasin because of the City's improper SGMA efforts in the MGSA Area, CalAm understands that the County of Monterey plans to exercise its authority pursuant to Water Code section 10724 to become the exclusive GSA for the MGSA Area. As such, the City will not have authority to adopt a GSP for or take any SGMA related actions in the MGSA Area.

CalAm 5

- The MGSA GSP conflicts with SVBGSA GSP in significant ways relating to the hydrogeologic conditions in the 180/400 Subbasin, sustainable management criteria for the 180/400 Subbasin, and the potential management projects and actions. For example, the MGSA GSP does not include a seawater intrusion barrier project, one of the SVBGSA's most important management projects. These significant conflicts, as well as the lack of coordination between the two GSAs and their GSPs, prevent MGSA GSP and SVBGSA GSP coordination as required by SGMA. (See, Wat. Code §§ 10727(b)(3), 10727.6, 10733(b); 23 Cal. Code Regs. § 357.4.) The MGSA GSP does not make any attempt to address these significant conflicts or lack of coordination with the SVBGSA GSP

CalAm 6

- The MGSA GSP is based on the flawed premise that groundwater potentially subject to use by the MPWSP can be beneficially used (without desalination) by other groundwater users and that CalAm's extraction of that groundwater as part of the MPWSP will adversely impact the 180/400 Subbasin. The MGSA GSP disregards sound science, data and information relating to the MGSA Area, including information relating to the hydrogeologic setting and the MPWSP (i.e., its operations and impacts). Instead, the MGSA GSP improperly describes the MPWSP and its impacts, as well as the hydrogeologic conditions in the MGSA Area and elsewhere, and relies on incorrect and invalid hydrogeologic studies and/or interpretations that have been rejected by various peer reviewers, regulatory agencies, and the courts. As a result, the MGSA GSP includes inappropriate and unsupported sustainable management criteria and otherwise does not comply with SGMA.

CalAm 7

- The MGSA GSP improperly, and without an adequate scientific basis, attempts to link purported groundwater-related issues occurring outside of the MGSA Area with activities within the MGSA Area in an attempt to justify SGMA implementation actions in the MGSA Area.

CalAm 8

- The MGSA GSP does not adequately describe management actions and objectives, as required by SGMA, and improperly identifies "measurable objectives" as triggers for action rather than as goals for maintaining or improving groundwater conditions, and fails to establish interim milestones for the sustainability indicators. (See, Wat. Code § 10727.2 (b); 23 Cal. Code Regs. §§ 351(q) and (s), 354.30, 354.44(a).)

CalAm 9

- Despite the fact that the Deep Aquifer is the only aquifer in the MGSA Area that is not severely seawater-intruded, and that groundwater pumping (by Marina Coast Water District) is expected to increase therein, the MGSA GSP largely does not address the Deep Aquifer to ensure sustainable groundwater management therein (e.g., set minimum thresholds and measurable objectives in an attempt to protect the aquifer). Instead, the MGSA GSP focuses entirely on the seawater-intruded aquifers from which the MPWSP may draw water, and is not focused on improving groundwater conditions in the MGSA Area.

Based on the above, it is clear that the MGSA GSP is part of the City's continuing biased efforts to stop the MPWSP by any means necessary. As discussed herein and detailed in the HWG's comment letter, the MGSA GSP suffers from significant deficiencies that cannot be remedied. Therefore, the City should cease all GSP development efforts, withdraw its GSA notice for the MGSA Area, and allow the SVBGSA to manage the 180/400 Subbasin pursuant to the SVBGSA GSP.

Respectfully,

Ian C. Crooks
Vice President, Engineering
California American Water

cc: Taryn Ravazzini, Department of Water Resources
Eileen Sobeck, State Water Resources Control Board
Kathryn Horning, California American Water Company
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ATTACHMENT A

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April 25, 2019

VIA EMAIL AND FEDEX

Mayor Delgado and Honorable Councilmembers
City of Marina City Council
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Re: April 30, 2019, Special Meeting of Marina City Council, Appeal of Planning Commission Resolution 2019-06 (Denying Coastal Development Permit for Monterey Peninsula Water Supply Project): Request for Recusal of Mayor Bruce Delgado, Councilmember Lisa Berkley, and Councilmember Gail Morton

Dear Mayor Delgado, Honorable Councilmembers, and Ms. Mall:

On behalf of California-American Water Company ("Cal-Am"), we request that Mayor Bruce Delgado, Councilmember Lisa Berkley, and Councilmember Gail Morton recuse themselves from consideration of Cal-Am's appeal of the Marina Planning Commission's denial of a local coastal development permit ("CDP") application for those portions of the Monterey Peninsula Water Supply Project ("MPWSP" or "Project") within the City of Marina's Coastal Zone.

Unfortunately, Mayor Delgado and Councilmembers Morton and Berkley have demonstrated resounding and ongoing bias toward the MPWSP that confirms they cannot act as impartial decisionmakers and necessitates their recusal from this matter. It is well understood that constitutionally mandated principles of fairness and due process prohibit biased decisionmakers from participating in matters in which they are unable to be impartial. Having directly opposed the MPWSP in many forums, as evidenced below, Mayor Delgado and

Councilmembers Morton and Berkley have displayed a long and indisputable record of bias that precludes them from considering Cal-Am's CDP application for the MPWSP.[1]

In the interests of fairness and good government, we therefore insist that Mayor Delgado, and Councilmembers Morton and Berkley, take absolutely no part in the City Council's consideration of Cal-Am's appeal of the Planning Commission's denial of the CDP application. We recognize that the recusal of these three Councilmembers means that the City Council will not be able to maintain a quorum to consider the appeal. Accordingly, as described further herein, the City must treat the Planning Commission's denial of the CDP application as the City's final action and send a final local action notice ("FLAN") to the Coastal Commission.

I. BACKGROUND

On September 13, 2018, after years of comprehensive environmental review under the California Environmental Quality Act ("CEQA"), the California Public Utilities Commission ("CPUC") approved the MPWSP as a 6.4 million gallons per day facility, which is a reduced capacity alternative in the CPUC's Environmental Impact Report/Environmental Impact Statement ("EIR/EIS"). The CPUC determined that the MPWSP is critically needed to replace water supplies for Cal-Am's Monterey District in response to a Cease and Desist Order ("CDO") issued by the State Water Resource Control Board requiring Cal-Am to cease unauthorized diversions from the Carmel River by December 31, 2021.[2] The CPUC arrived at its decision to approve the MPWSP after "actively engag[ing] with the City of Marina" and numerous other stakeholders.[3]

Cal-Am proposes to locate the MPWSP's subsurface intake slant wells in a retired portion of the CEMEX sand mining site in northern Marina. To comply with the California Coastal Act and the City's Local Coastal Program ("LCP"), in June 2018, Cal-Am filed with the City its application for a local CDP for the construction and operation of those subsurface slant wells and other Project components located in the City's Coastal Zone, including associated infrastructure and water conveyance pipelines. The environmental impacts of each of these Project components were comprehensively analyzed in the EIR/EIS, that the CPUC certified as lead agency on September 13, 2018.

Under the LCP and the City's Coastal Zoning Ordinance, the Planning Commission is responsible for issuing CDPs for development within the City's Coastal Zone, such as the

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1 The issue of City of Marina officials' bias against Cal-Am and the MPWSP is well documented. On February 8, 2019, we sent a similar letter on behalf of Cal-Am to the Planning Commission requesting that Commissioner Biala and Chair Burnett recuse themselves from consideration of the CDP application. Prior the February 14, 2019, Planning Commission hearing, Commissioner Biala and Chair Burnett recused themselves in the Commission's consideration of the MPWSP, but both provided commentary on the Project during the hearing.

2 See CPUC, Decision (D.) 18-09-017, Decision Approving a Modified Monterey Peninsula Water Supply Project, Adopting Settlement Agreements, Issuing Certificate of Public Convenience and Necessity and Certifying Combined Environmental Report, pp. 165–193 (Sept. 20, 2018). On February 5, 2019, the CPUC issued Decision (D.) 19-01-051, modifying D.18-09-017 and denying two applications for rehearing filed with the CPUC. D.19-01-051 is available at: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M262/K004/262004679.PDF.

3 CPUC, D.18-09-017, Appendix J.

LATHAM&WATKINS LLP

Project.[4] Further, the City is a responsible agency under CEQA regarding the Project's certified EIR/EIS.[5] On February 14, 2019, the Planning Commission voted to deny Cal-Am's CDP application and directed City staff to return to the Commission on March 7, 2019, with a resolution denying the CDP containing findings. On March 7, at a special meeting, the Planning Commission adopted Resolution 2019-06, denying the CDP.[6] On March 13, 2019, Cal-Am timely appealed that denial to the City Council. Cal-Am is concerned that the substantial bias demonstrated by multiple members of the City Council, which is evidenced in more detail below, will interfere with Cal-Am's due process rights and its ability to receive an impartial hearing by the City Council on its appeal.

II. CAL-AM'S DUE PROCESS RIGHTS DEMAND A FAIR TRIBUNAL

When the City Council performs quasi-judicial functions, such as by considering a CDP application on appeal, the Federal and California Constitutions guarantee due process of law and obligate the City Council to provide a fair tribunal to the applicant.[7] "[T]he undeniable public interest in fair hearings in the administrative adjudication arena, militate in favor of assuring that such hearings are fair."[8]

To that end, procedural due process requires that the City Council's hearing on Cal-Am's appeal be conducted "before a reasonably impartial, noninvolved reviewer."[9] If there are "concrete facts" establishing "an unacceptable probability of actual bias on the part of those who have actual decisionmaking power over [the] claims," the law is unambiguous that ***those decisionmakers must recuse themselves from participating in the decisionmaking process***.[10] An unacceptable probability of actual bias is present where decisionmakers are "personally

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[4] Marina Municipal Code, section 17.41.090.B.1; Marina Local Coastal Implementation Plan ("LCIP") , pp. 9–11, https://www.ci.marina.ca.us/DocumentCenter/View/4491.

[5] CEQA Guidelines, § 15381.

[6] On March 12, 2019, pursuant to the LCIP and the Marina Municipal Code, the City sent Cal-Am, the Coastal Commission, and interested parties a memorandum notifying the recipients of the Planning Commission's denial of the CDP and attaching Resolution 2019-06.

[7] *Morongo Band of Mission Indians v. State Water Resources Control Bd.* (2009) 45 Cal.4th 731, 737 (citing *Withrow v. Larkin* (1975) 421 U.S. 35, 46); see also U.S. Const., 14th Amend.; Cal. Const., art. I, § 7, subd. (a). The Planning Commission actions on Cal-Am's local CDP application is quasi-judicial in nature, because the matter involves the determination of facts specific to an individual case—the MPWSP—rather than the adoption of rules of general application on the basis of broad public policy. *Nasha v. City of Los Angeles* (2004) 125 Cal.App.4th 470, 482 (quoting *Beck Development Co. v. Southern Pacific Transportation Co.* (1996) 44 Cal.App.4th 1160, 1188). Marina's procedures for issuing a CDP include the review of specific facts and a hearing. See LCIP, pp. 9–11, Flow Chart 2.

[8] See *Nasha, supra,* 125 Cal.App.4th at 483 (quoting *Nightlife Partners, Ltd. v. City of Beverly Hills* (2003) 108 Cal.App.4th 81, 90).

[9] *Burrell v. City of L.A.* (1989) 209 Cal.App.3d 568, 582; *Woody's Group, Inc. v. City of Newport Beach* (2015) 233 Cal.App.4th 1012, 1022–1023; *Nasha*, *supra*, 125 Cal.App.4th at 483 (quoting *Gai v. City of Selma* (1998) 68 Cal.App.4th 213, 219).

[10] *Today's Fresh Start, Inc. v. Los Angeles County Office of Education* (2013) 57 Cal.4th 197, 219 (quoting *Morongo Band of Mission Indians*, *supra*, 45 Cal.4th at 737).

embroiled"[11] in a particular matter or have become involved in dispute such that they would be impermissibly reviewing their own case if they were to participate in the decisionmaking process.[12] By analogy, it would be improper for a judge, while a case was pending before the court, to write an article favoring one side, let alone judge a case in which he or she was a party. In essence, an "unacceptable probability of actual bias . . . sufficient to preclude [a decisionmaker]" is present any time the decisionmaker would be unable to serve as a "reasonably impartial, noninvolved reviewer[.]"[13] Courts reverse agency decisions when biased decisionmakers participate in those decisions.[14]

Importantly here, in *Mennig v. City Council* (1978) 86 Cal.App.3d 341, the Court of Appeal used this same rubric to invalidate a city council's decision to reject a lower administrative body's disciplinary recommendation and terminate a police chief, when the record made clear that the councilmembers were biased against the police chief.[15] Under *Mennig*, where a city council hears an appeal or recommendation from a lower administrative body with decisionmaking authority acting in a quasi-judicial capacity, and where the majority of the councilmembers are unable to be impartial due to evidence of actual bias, the councilmembers cannot render a valid decision on the lower body's action.[16] The result is that the lower administrative body's decision must be deemed final.[17]

As described below, the same approach must apply here, where the overwhelming evidence shows that in advocating against Cal-Am and the MPWSP, a majority of Councilmembers—Mayor Delgado, Councilmember Berkley, and Councilmember Morton—bear actual bias in opposing Cal-Am's local CDP application. Therefore, they must recuse themselves in this matter, and the Planning Commission's decision must stand because the City Council is unable to act.

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[11] *Mennig v. City Council* (1978) 86 Cal.App.3d 341, 350; see also *Applebaum v. Bd. of Directors* (1980) 104 Cal.App.3d 648, 657.

[12] See *Woody's Group, Inc.*, *supra*, 233 Cal.App.4th at 1016.

[13] *Today's Fresh Start, Inc.*, *supra*, 57 Cal.4th at 219.

[14] See, e.g., *Woody's Group, Inc.*, *supra*, 233 Cal.App.4th at 1022; *Nasha, supra*, 125 Cal.App.4th at 484.

[15] *Mennig*, *supra*, 86 Cal.App.3d at 350–351 (reversing a city council decision where the entire Council was personally embroiled in a conflict with the Chief of Police); see also *Cohan v. City of Thousand Oaks* (1994) 30 Cal.App.4th 547, 558–559 (reversing a city council decision where the city council, acting as a whole, acted in a biased manner).

[16] *Mennig*, *supra*, 86 Cal.App.3d at 351–352; see also *Cohan*, *supra*, 30 Cal.App.4th at 561.

[17] *Mennig*, *supra*, 86 Cal.App.3d at 351–352; see also *Sabey v. City of Pomona* (2013) 215 Cal.App.4th 489, 498 (holding that if a decisionmaker is personally embroiled in the controversy to be decided, the decisionmaker must be disqualified from the matter, and that "[i]n that situation, ***it is appropriate to allow the recommendation of an inferior decision maker to stand as the final decision***.") (emphasis added, citing *Mennig*).

III. THE CITY COUNCIL IS INCAPABLE OF IMPARTIALLY HEARING CAL-AM'S APPEAL BECAUSE A MAJORITY OF COUNCILMEMBERS MUST BE RECUSED

As set forth herein and demonstrated in the evidence attached as exhibits to this letter and included in electronic format on a disc accompanying this letter, a majority of the City Council is incapable of impartially hearing Cal-Am's appeal of the Planning Commission's CDP denial. Specifically, Mayor Delgado and Councilmembers Morton and Berkley are openly biased against the MPWSP and Cal-Am will be denied its rights to due process and ability to receive an impartial hearing if they are permitted to participate in any way in the City Council's consideration of the pending appeal.

Such bias is blatantly obvious and of public knowledge, as Mayor Delgado and Councilmembers Berkley and Morton are members of Citizens for Just Water ("Just Water").[18] Just Water is a local group that seeks to prevent the MPWSP from being constructed despite the significant benefits that will accrue from the Project to communities in the Monterey Peninsula.[19] Among other things, Just Water's website alleges that MPWSP will illegally take Marina's water and harm Marina, and encourages the public to vigorously protest the Project.[20] In opposition to the MPWSP, Just Water has filed briefs challenging the CPUC's EIR/EIS, actively opposed the Project in CPUC hearings, submitted opposition letters to the CPUC, and organized public forums to criticize the Project.[21]

For example, in filings with the CPUC, Just Water alleged that the CPUC's decision to approve the MPWSP was "a violation of both Marina's Local Coastal Plan and its community values,"[22] "[t]he project is neither just nor reasonable"[23] and that Cal-Am's operations would be "unjust and unlawful."[24] Just Water also has sponsored a petition on change.org noting that "[k]ey permit applications are fast approaching" and that decisionmakers must "STOP THIS ENVIRONMENTALLY HARMFUL, ILLEGAL, AND COSTLY PROJECT!"[25] In addition,

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[18] Monterey County Weekly, *Marina residents gather in opposition to Cal Am's proposed desal project* (April 18, 2018) (*Opposition to Desal Project*), http://www.montereycountyweekly.com/blogs/news_blog/marina-residents-gather-in-opposition-to-cal-am-s-proposed/article_d269c294-435d-11e8-932e-87158f342af9.html, attached hereto as Exhibit A; see also https://www.facebook.com/justice4water/.

[19] See Citizens for Just Water website, https://www.c4justwater.org/, relevant excerpts attached hereto as Exhibit B; Citizens for Just Water Motion for Party Status (filed with CPUC on Nov. 11, 2016), attached hereto as Exhibit C.

[20] See Exhibit D attached hereto.

[21] See https://www.c4justwater.org/what-has-citizens-for-just-water-done.html (summarizing Just Water's extensive opposition efforts), attached hereto as Exhibit E.

[22] Citizens for Just Water, Response to the Application for Rehearing of Decision 18-09-017, pp. 6–7 (filed with CPUC on October 29, 2018), attached hereto as Exhibit F.

[23] *Id.*

[24] Comments of Citizens for Just Water to Joint Statement of Issues, p. 3 (filed with CPUC on July 10, 2017), attached hereto as Exhibit G; see also Citizens for Just Water, Opening Brief Regarding Monterey Peninsula Water Supply Project Final Environmental Impact Report/Final Environmental Impact Statement, pp. 13–14 (filed with CPUC on April 19, 2018) (stating that "[t]here is NO industrial project that would be in alignment with [the Local Coastal Plan or dune habitat restoration goals]"), attached hereto as Exhibit H.

[25] See https://www.change.org/p/stop-cal-am-s-flawed-desal-project, attached hereto as Exhibit I.

most recently, on January 30, 2019, Just Water co-hosted an event entitled "Can CalAm STEAL Marina's Groundwater?," during which the organization grossly mischaracterized Cal-Am's actions and the MPWSP's proposed operations.[26] Moreover, on at least two occasions, the City also opened its City Council chambers for Just Water to hold public forums in which Councilmembers openly participated as speakers.[27]

A. Mayor Delgado's Bias Against Cal-Am and the MPWSP

For many years, Mayor Delgado has been a vocal leader of the opposition against Cal-Am and the MPWSP and has spoken and presented at many events in direct opposition to the Project.[28] As a member of Just Water and in his personal capacity, Mayor Delgado has presented public comments in opposition to the MPWSP at Coastal Commission meetings, CPUC hearings, Regional Water Quality Control Board ("RWQCB") meetings, and privately to members of state and Federal legislatures. Documents obtained through Public Records Act requests show that Mayor Delgado has been in frequent contact and met regularly with members of Just Water, KP Public Affairs (the public relations firm hired by the City to advocate against the MPWSP on behalf of the City),[29] and Marina Coast Water District ("MCWD") officials in conference rooms at City Hall to discuss strategy for opposing the MPWSP.[30] In one email,

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[26] See https://www.c4justwater.org/ (last accessed Feb. 4, 2019) (flyer for Just Water event), attached hereto as Exhibit J.

[27] See Citizens for Just Water, Marina/Fort Ord water: CODE RED ("Code Red Video") (April 17, 2018), 27m55s, https://www.youtube.com/watch?v=C_FtUvkkeCw; Flyer for Just Water meeting (Nov. 27, 2018), attached hereto as Exhibit K.

[28] See, e.g., CODE RED, *supra* note 27, 27m55s; Marina v. Cal Am Video, How the Outcome Will Impact Your Cal Am Bill ("Marina v. Cal Am Video") (June 21, 2018) 1hr2m5s, https://www.youtube.com/watch?v=UIDSoQYv5Os; Agenda for April 2018 Just Water Public Forums (April 11, 17, 2018), attached hereto as Exhibit L.

[29] On June 6, 2017, the City Council approved a resolution authorizing the City Manager to execute a contract for $80,000 with KP Public Affairs "to assist in the advocacy, public relations services, collaboration with partners, coalition building, grassroots outreach and transparency of the Project to citizens" regarding the City's position that "the Draft EIR/EIS for the Project . . . is legally inadequate in many critical subject areas and fails to meet the requirements of CEQA AND NEPA[.]" (City of Marina City Council Resolution No. 2017-56, A Resolution of the City Council of the City of Marina Authorizing the City Manager to Execute a Contract with KP Public Affairs for Public Relations and Advocacy Services (June 6, 2017) ("Resolution No. 2017-56"), attached hereto as Exhibit M.) In an email to Mayor Delgado, KP described its work as:

> [C]ontinuing to push on the Cal Am issue through a variety of avenues. . . As you know we're setting up meetings with key influencers, we've put together recommendations for social media and digital advertising, sent out information and prepared new letters for decision-makers, we're pursuing new opportunities with the [environmental justice] issues including the Attorney General's office and other third parties, and are seeking out new media opportunities.

(Email between KP Public Affairs, Mayor Bruce Delgado, Councilmember Gail Morton, City Manager Layne Long, and other KP employees (Nov. 26, 2018), attached hereto as Exhibit N.)

[30] See, e.g., Emails between KP Public Affairs, Mayor Delgado, City Manager Long, and Just Water Founder Kathy Biala (Nov. 29, 2018), attached hereto as Exhibit O. On the City's behalf, as directed by the City Council, KP has prepared opposition flyers bearing the City's seal for circulation at public meetings as well as a wealth of other opposition material. (See Exhibit P; transmittal email from KP Public Affairs to MCWD and City of Marina

Mayor Delgado wrote, "I think the synergy between C4JW, City, and KP(public relations firm) could be much more effective," before planning to meet collectively on December 13, 2018.[31]

Additionally, Mayor Delgado has authored numerous articles in the Monterey Herald, San Francisco Chronicle, and Capitol Weekly, all unambiguously stating his opposition to the MPWSP. Mayor Delgado also uses social media to advertise his attacks on the MPWSP.[32] Some examples of Mayor Delgado's biased statements include:

- In a December 4, 2017, San Francisco Chronicle article, Mayor Delgado wrote, "[the MPWSP] would ignore the groundwater act's environmental protections, deplete scarce water resources, and allow further seawater intrusion into the aquifer. . . . [T]he proposed project would set a horrible precedent on many levels."[33]

- In a February 2, 2018, Monterey Herald opinion column entitled "Cal Am's proposed desal plant bad idea and bad for Marina," Mayor Delgado wrote, "This project poses a substantial threat to our local groundwater supply and the coastal ecosystem, not just in Marina, but across much of the Monterey Peninsula."[34]

- At a March 20, 2018, Marina City Council Meeting, Mayor Delgado, speaking in his official capacity stated, "I will admit, that what I do understand is that Marina has been on the short end of the stick when it's come to the whole proposal for Slant

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attaching flyer (July 6, 2018), attached hereto as Exhibit Q; Email from KP Public Affairs to Mayor Delgado transmitting opposition materials (Nov. 27, 2018), attached hereto as Exhibit R.) One of the documents makes a wide range of allegations regarding the MPWSP including, but not limited to, claiming that the MPWSP is a "threat to [the] coastal ecosystem" and "would jeopardize Marina's drinking water," and that "Marina will suffer long term environmental harm from the project, with no benefit or strategy to mitigate the impacts." (Opposition flyers attached hereto as Exhibit P.) KP has also allegedly organized meetings between Mayor Delgado, City Manager Long, and various state and Federal leaders. (Emails between KP Public Affairs, Mayor Delgado and City Manager Long (Dec. 21, 2018), attached hereto as Exhibit S.) In addition, KP is responsible for authoring Just Water's standard form letters opposing the Project, which are posted on Just Water's website. (See https://www.c4justwater.org/code-red-what-can-we-do.html (last accessed Feb. 4, 2019), attached hereto as Exhibit D.) The metadata from two of these form opposition letters show Tom van der List, a KP employee, as their primary author, a fact which is openly discussed in City emails. (See Exhibit T [the Word documents are also available on the disc enclosed with this letter. By viewing the file properties of these documents, the name of the author—Tom van der List in two instances—is visible]; email from KP Public Affairs to City Manager Long and Mayor Delgado (April 5, 2018), attached hereto as Exhibit U.)

[31] See, e.g., Emails between KP Public Affairs, Mayor Delgado, City Manager Long, and Just Water Founder Biala (Nov. 29, 2018), attached hereto as Exhibit V.

[32] See, e.g., Mayor Delgado Facebook Posts, attached hereto as Exhibit W.

[33] Bruce Delgado, *A test of California's commitment to groundwater sustainability*, San Francisco Chronicle (Dec. 4, 2017) https://www.sfchronicle.com/opinion/openforum/article/A-test-of-California-s-commitment-to-12405228.php, attached hereto as Exhibit X.

[34] Bruce Delgado, *Cal Am's proposed desal plant bad idea and bad for Marina*, Monterey Herald (Feb. 2, 2018) http://www.montereyherald.com/opinion/20180202/bruce-delgado-cal-ams-proposed-desal-plant-bad-idea-and-bad-for-marina, attached hereto as Exhibit Y.

Wells that will hurt us but not help us" and that Marina would "not leave any stone unturned . . . to protect our sacred water that others are dipping their straws into."[35]

- On April 11, 2018, at a Just Water public forum held in the City Council chambers, Mayor Delgado stated that "[o]ur overall goal is to protect the sacred water for the City of Marina," that the MPWSP "is a classic environmental injustice," and that "Cal-Am will not make us whole, Cal-Am refuses to make us whole." He asked "what kind of future, what kind of reputation, what kind of quality of life would that be, in the City of Marina and the Ord Community" if the MPWSP were to be constructed. He then asked that those gathered be the voice of opposition against the MPWSP.[36]

- In an April 16, 2018, Monterey Herald opinion column, Mayor Delgado catalogued alleged failures of the MPWSP's environmental review process, maintaining in the face of CPUC's thorough analysis that, "the [EIR] fails to adequately evaluate the harmful impacts to Marina—it disregards our serious concerns related to groundwater depletion, saltwater intrusion, damage to the coastal ecosystem and more."[37]

- At an April 17, 2018, public forum organized by Just Water, Mayor Delgado stated that fighting against the MPWSP was "fighting for justice," and that "we're doing all we can to fight for our sacred water." Mayor Delgado went on to say that Marina would plan to "oppose this project, in any way we can."[38]

- On June 21, 2018, Mayor Delgado presented at another public forum in opposition to the MPWSP saying that, "the insult to injury that Cal-Am's industrial facilities would add to Marina is a poster child for environmental injustice," "Cal-Am's science is wrong," and that "we are doing what we can to challenge them."[39]

- At a July 13, 2018 Coastal Commission meeting, Mayor Delgado claimed that the MPWSP "would violate Marina's local coastal plan" and "reduce the quality of life and community values of Marina[.]" He stated that the Commission should not allow Marina to be "serve[d] up for Cal-Am to degrade[.]"[40]

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[35] Marina City Council Meeting (March 20, 2018) 37m20s https://videoplayer.telvue.com/player/m_3HX6961GRMsvkqSCdwmGeJ8rwpRZrR/media/337345?autostart=true&showtabssearch=true.

[36] Citizens for Just Water Public Forum in City Council Chambers (April 11, 2018), https://www.youtube.com/watch?v=xN-sFEzuzjc.

[37] Bruce Delgado, *When it comes to water, be a good neighbor*, Monterey Herald (April 16, 2018) (Be a good neighbor), https://www.montereyherald.com/2018/04/16/marina-mayor-bruce-delgado-when-it-comes-to-water-be-a-good-neighbor/, attached hereto as Exhibit Z.

[38] Code Red Video, *supra* note 27.

[39] Marina v. Cal Am Video, *supra* note 28.

[40] California Coastal Commission Meeting (July 13, 2018) 7m55s, http://cal-span.org/unipage/?site=cal-span&owner=CCC&date=2018-07-13.

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- On September 14, 2018, in a televised interview on KSBW Action News 8, Mayor Delgado stated that the CPUC's decision to approve the MPWSP was "the wrong decision," that "our water will be contaminated and our water will be reduced [by the MWPSP]," and that Cal-Am was "victimizing the Marina residents."[41]

- In an October 2, 2018, Capitol Weekly article Mayor Delgado wrote, "the project ignores important environmental protections, tramples on the rights of Marina residents, and allows further seawater intrusion into the local water supply." In the same article, Mayor Delgado analogizes the MPWSP's impact on Marina to the water contamination crisis in Flint, Michigan.[42]

- Mayor Delgado, who is also a Board member with the Central Coast RWQCB, recused himself from hearing public comments at a December 6, 2018 Central Coast RWQCB meeting where members of Just Water presented. Nevertheless, Mayor Delgado spoke during public comment as the capstone to Just Water's presentation, again calling the MPWSP a "classic example of environmental injustice."[43]

- At a April 11, 2019 Coastal Commission meeting, Mayor Delgado spoke during public comment, stating that the MPWSP would damage public access to the coast and environmental sensitive habitat areas, damage local groundwater, and create greenhouse gas emissions. Mayor Delgado concluded by stating that the Coastal Commission would be "on the right side of history" by voting against the MPWSP.[44]

In sum, ***Mayor Delgado has made no secret of his public opposition to Cal-Am and the MPWSP and his inability to consider Cal-Am's local CDP application appeal with legally required impartiality could not be more evident***. The overwhelming evidence detailed above demonstrates that Mayor Delgado is far from "reasonably impartial."[45] Rather, the evidence demonstrates that he is a vocal Project opponent and a leader within one of the primary groups seeking to prevent the development of the MPWSP. Accordingly, Mayor Delgado must be recused from participating in the City Council's consideration of Cal-Am's appeal of the Planning Commission's CDP denial.

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[41] KSBW Action News 8, Marina city leaders not happy over Cal-Am water desal plant on its shores (Sept. 14, 2018), 31s, 1m15s, 1m52s, https://www.youtube.com/watch?v=Ql8WDe6MKUg.

[42] Bruce Delgado, *Marina bears heavy burden in desalination dispute*, Capitol Weekly (Oct. 2, 2018), http://capitolweekly.net/divisions-desalination-monterey-peninsula/, attached hereto as Exhibit AA.

[43] Public Forum Audio of Central Coast Regional Water Quality Board (December 6, 2018) 1m37s, 32m40s (Water Quality Board Audio), https://www.waterboards.ca.gov/centralcoast/board_info/agendas/2018/december/audio/item7_audio.mp3.

[44] California Coastal Commission Meeting (April 11, 2019) 30m50s, http://cal-span.org/unipage/?site=cal-span&owner=CCC&date=2019-04-11.

[45] *Nasha*, *supra*, 125 Cal.App.4th at 483; *see also Today's Fresh Start, Inc.*, *supra*, 57 Cal.4th at 215–216.

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B. Councilmember Berkley's Bias Against Cal-Am and the MPWSP

Councilmember Berkley is also biased and must be recused. Like Mayor Delgado, Councilmember Berkley is a member of Just Water and has an extensive record of openly opposing the MPWSP. Until December 2018, Councilmember Berkley was Just Water's official representative before the CPUC. In that capacity, she cross-examined Eric Sabolsice, Pacific Grove Mayor Bill Kampe, John Narigi, and Ian Crooks at CPUC evidentiary hearings on October 26, 2017 and October 30, 2017, during which the administrative law judges repeatedly sustained objections to her mischaracterization of witness testimony and argumentative lines of questioning.[46] Moreover, Councilmember Berkley has appeared at numerous public forums to voice her opposition to the MPWSP.[47] Examples of her biased statements include:

- At July 14, 2017, Coastal Commission meeting, Councilmember Berkley stated that "Cal-Am has no water rights," and implored the Commission to prevent the MPWSP from being possible: "[D]o not allow Cal-Am to seek appeals or support from the Coastal Commission for this enormously flawed project."[48]

- Nearly a year later, at a July 11, 2018 Coastal Commission meeting, Councilmember Berkley demonstrated her continuing bias by stating that the MPWSP would result in "illegal pumping of Marina's groundwater" and that "this project makes no sense at all, yet government agencies are continuing to turn a blind eye to the fact that it's basically illegal, [and] the science that says it's dangerous to the environment[.]" She concluded, by once again asking the Commission to "not grant [Cal-Am] permits."[49]

- Councilmember Berkley also prepared testimony to present at a September 20, 2018, Central Coast RWQCB meeting, stating that "Cal-Am ignored thousands of public comments"—misconstruing Cal-Am's role in the environmental review process—and asking the RWQCB to "[p]lease help us protect and responsibly manage our own water resource by challenging the science of Cal-Am's limited understanding of our basin and the gross illegitimacy of this project in the face of SGMA mandates."[50]

- At a November 7, 2018 Coastal Commission meeting, Councilmember Berkley discussed the environmental justice impacts that would allegedly accrue to Marina should the MPWSP be built, asking "why prepare an EIR at all" if the impacts to Marina were going to be ignored.

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[46] Excerpts of CPUC Evidentiary Hearing Transcript, A1204019_102617_EH22, pp. 3684–3692, 3777–3778 (Oct. 26, 2017), attached hereto as Exhibit BB; Excerpts of CPUC Evidentiary Hearing Transcript, A.1204019, October 30, 2017, Volume 23, pp. 3877–3878, 3910–3911, 4052–4069 (Oct. 30, 2017), attached hereto as Exhibit CC.

[47] See, e.g., Code Red Forum Agenda (Nov. 27, 2018), attached hereto as Exhibit DD.

[48] California Coastal Commission Meeting (July 12, 2017) 56m24s, http://cal-span.org/unipage/?site=cal-span&owner=CCC&date=2017-07-12.

[49] California Coastal Commission Meeting (July 11, 2018) 11m15s, http://cal-span.org/unipage/?site=cal-span&owner=CCC&date=2018-07-11.

[50] Prepared Comments to RWQCB (Sept. 20, 2018), attached hereto as Exhibit EE.

In sum, these statements demonstrate that Councilmember Berkley's position on Cal-Am's local CDP application is a foregone conclusion and as a result of her clear bias, she must be recused.

C. Councilmember Morton's Bias Against Cal-Am and the MPWSP

Councilmember Morton also bears significant bias against the MPWSP and must be recused. Councilmember Morton has a long history of participating in Just Water forums opposing the MPWSP.[51] Her participation has earned praise from Just Water's founder Kathy Biala, who wrote in an April 18, 2018 email to Councilmember Morton, "[O]ur collective efforts and ability to reach out to the public in our entire region has been an amazing feet of commitment! Only by all of us pooling our efforts and seeing ourselves as invested in this common goal do we have this chance to prevail. I am so appreciative of our ability work together like this! Thank you, thank you! The two [Just Water] forums had great attendance and we collected many signed letters."[52]

Commenting on one of Mayor Delgado's anti-MPWSP opinion pieces, Councilmember Morton offered the following advice in an email to City Manager Long, "WE NEED the public to hear and understand the threat to their property is no water, or water at an unreasonably high cost in the future. The taking of water by CalAM threatens MDWD [sic] ability to continue to provide a long-term sustainable water supply for Marina and all of the Fort Ord developments at a REASONABLE PRICE. So much of the material is talking over the heads of the public audience."[53]

During an April 11, 2018, public forum in the City Council Chambers – before Cal-Am had even applied for a CDP from the City – Councilmember Morton even went so far as to engage in coaching members of the public on how they can better advocate against the MPWSP.[54] Councilmember Morton instructed the audience, point-by-point what they should write to the CPUC. For example, Councilmember Morton stated that "each and every one of us need to be saying" that "Cal-Am has no water rights in the Salinas Valley Groundwater Basin" and that "approval of the project will inflict unmitigated harm on our city."[55] She went on to say that:

> the key point I want all of you to write in your letters to the CPUC is that the Rosemary Knight study may not be the silver bullet to

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[51] See, e.g., Email from Just Water Founder Biala to Keith Van Der Maaten (Jan. 1, 2017) (listing as moderator "Marina city councilmember Gail Morton"), attached hereto as Exhibit FF; David Schmalz, *Marina residents unite against Cal Am desal project*, Monterey County Weekly (Feb. 2, 2017), http://www.montereycountyweekly.com/news/local_news/marina-residents-unite-against-cal-am-desal-project/article_bc71d538-e8d4-11e6-8426-bb4a4aa40ed8.html, attached hereto as Exhibit GG.

[52] Email from Just Water Founder Biala to Councilmember Morton (April 18, 2018), attached hereto as Exhibit HH.

[53] Email from Councilmember Morton to City Manager Long (April 8, 2018), attached hereto as Exhibit II.

[54] Citizens for Just Water Public Forum in City Council Chambers (April 11, 2018) 2m25s, https://www.youtube.com/watch?v=xJ3YrkG-CoE.

[55] *Ibid*.

> stop this but I want you to let them know that the hydrogeologist studies that were done by Cal-Am and the proponents is not conclusive, it is controversial as well, there is conflicting evidence, conflicting interpretations, and that conflict when you're dealing with water, and long-term water supply that you are going to sacrifice [should consider all sides].[56]

Councilmember Morton's presentation demonstrates her unmistakable bias against the MPWSP, rendering incapable of providing impartial review of Cal-Am's local CDP application. As a result, she must be recused.

D. The City is Institutionally Biased Against Cal-Am and the MPWSP

In addition to the bias of the three above-referenced City Councilmembers, the evidence is also clear that the City as a whole continues to maintain an institutional bias against the MPWSP and Cal-Am's efforts to develop it.[57] As described in detail above, this bias is obvious and of public knowledge, as City officials, including Mayor Delgado and City Manager Layne Long, have worked closely with KP to coordinate on opposition strategy to the MPWSP and produce opposition materials, among other outreach efforts.[58]

Moreover, Marina opposed the MPWSP as a party in the CPUC proceedings, including with testimony, briefs, and other filings. Marina submitted – and engaged outside counsel and consultants to submit – extensive comments criticizing the Draft and Final EIR/EIS. Finally, Marina has filed a Petition for Writ of Review with the California Supreme Court challenging the CPUC's approval of the MPWSP.

Just yesterday, at a public hearing before the Monterey County Planning Commission regarding proposed permits for the desalination plant component of the MPWSP, the City submitted a letter opposing that Commission's potential approval of Use Permits for the Project, which Marina City Planner David Mack read into the Planning Commission's record.[59] Among other things, the letter states that "the City of Marina does not believe that the desalination plant meets the Use Permit standards [in the County Code] because of its potential serious impacts on the social, economic, cultural and environmental values of the City's residents, many of who reside or work in close proximity to the plant."[60] At the hearing Mr. Mack also specifically requested that the County Planning Commission continue their consideration of the desalination plant until after the City's separate process on the CDP is complete.[61] Mr. Mack provided no

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[56] *Ibid.*

[57] See footnote 29 *supra*.

[58] See footnote 30 *supra*.

[59] See Letter from City Manager Layne Long, on behalf of the City, to Monterey County Planning Commission (April 23, 2019), attached hereto as Exhibit JJ.

[60] *Id.* at p. 3.

[61] Mr. Mack stated, "the City of Marina is not outright requesting a denial of this application, but is merely desiring a continuance until the appeal through the City of Marina and additional administrative remedies have been exhausted with the City coastal development permit process." See Monterey County Planning Commission Hearing

legal basis for such a continuance, and indeed it would only subject MPWSP to further delay. The City's letter also tries to assert that its pending Petition challenging the CPUC's approval of the EIR/EIS should be considered by the County, despite CEQA's requirement that the County treat the EIR/EIS as valid.[62]

In sum, based on all of the evidence provided herein, Marina has demonstrated itself to be institutionally biased against Cal-Am and the MPWSP. The law requires that decisionmaking bodies that show "an unacceptable probability of actual bias" such that they will be unable to act as "reasonably impartial, noninvolved reviewer[s]" recuse themselves and treat a lower body's decision as final.[63]

IV. THE CITY MUST TREAT THE PLANNING COMMISSION'S DENIAL AS ITS FINAL ACTION

Irrefutable and abundant evidence makes clear that a majority of the City Council is biased against Cal-Am and the MPWSP. Accordingly, the City Council is incapable of having a quorum that could provide Cal-Am with a fair tribunal for its appeal of the Planning Commission's CDP denial. Given these factual circumstances, the appropriate action is for the City to treat the Planning Commission's resolution denying the CDP application as the City's final action on the CDP. As discussed above, the Planning Commission is authorized by the City Code and the LCP to decide CDP applications.[64] While Cal-Am appealed the Planning Commission's decision to the City Council, this was in order to exhaust its administrative remedies and to comply with the LCP's general requirements.[65]

However, given the bias that has been demonstrated by a majority of the City Council as well as the City as a whole, Cal-Am has no choice but to protect its constitutional rights and ensure that such bias is addressed on the record. Similar to the circumstances in *Mennig*, where the court treated the city's civil service commission's decision as final in light of the city council's bias against the police chief, here the City must treat the Planning Commission's denial as final because the City Council cannot act due to its inability to maintain a quorum over the

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(April 24, 2019) 1hr32m32s at http://monterey.granicus.com/player/clip/3759?view_id=14. The County Planning Commission approved the desalination plant at its April 24 hearing and did not continue the item.

[62] Pub. Resources Code, § 21167.3, subd. (b).

[63] *Mennig*, *supra*, 86 Cal.App.3d at 351–352; see also *Sabey, supra*, 215 Cal.App.4th at 498.

[64] See Marina Municipal Code, § 17.41.090.B.1.; LCIP, pp. 9–11.

[65] *Ibid*.

appeal.[66] Accordingly, the City also must issue a FLAN to the Coastal Commission recognizing the Planning Commission's denial as the City's final action.[67]

V. CONCLUSION

The Federal and California Constitutions require that the City Council provide Cal-Am with a fair and impartial appeal of its CDP application. Because a majority of Councilmembers are actually biased against the MPWSP And Cal-Am, if the City Council hears that appeal, Cal-Am will be deprived of due process and the City Council will be unable to meet its constitutional obligations. As a result, the City should follow the same rationale as in *Mennig* and (1) require Mayor Delgado and Councilmembers Berkeley and Morton to recuse themselves, and (2) treat the Planning Commission's decision as the City's final action.

We hope the City takes seriously the concerns set forth in this letter.

Very truly yours,

Winston P. Stromberg
of LATHAM & WATKINS LLP

Attachments and Enclosure

cc: Christy Hopper, Planning Services Manager, City of Marina (w/o enclosure)
David Mack, Senior Planner, City of Marina (w/o enclosure)
Tom Luster, California Coastal Commission (w/o enclosure)
Mike Watson, California Coastal Commission (w/o enclosure)
Erin Chalmers, California Coastal Commission (w/o enclosure)
Richard Svindland, California-American Water Company (w/o enclosure)
Ian Crooks, California-American Water Company (w/o enclosure)
Sarah Leeper, California-American Water Company (w/o enclosure)
Kathryn Horning, California-American Water Company (w/o enclosure)
DJ Moore, Latham & Watkins LLP (w/o enclosure)
Anthony Lombardo, Anthony Lombardo & Associates, Inc. (w/o enclosure)
Jerae Carlson, CEMEX (w/o enclosure)

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[66] *Mennig*, *supra*, 86 Cal.App.3d at 351–352; see also *Sabey, supra*, 215 Cal.App.4th at 498. In addition, any claim by the City that the "rule of necessity" applies to the City Council's consideration of the appeal and allows one or more biased Councilmembers to consider the appeal is entirely without merit. "The rule of necessity permits a government body to act to carry out its essential functions *if no other entity is competent to do so*." (*Lexin v. Superior Court* (2010) 47 Cal.4th 1050, 1097 [emphasis added].) However, as in *Mennig*, the rule of necessity is not pertinent here. (*Mennig, supra*, 86 Cal.App.3d at 351.) That is because the City Council is not the only decisionmaker capable of acting on Cal-Am's CDP application. (See *id.* at 351–352.)

[67] *Mennig*, *supra*, 86 Cal.App.3d at 351–352; see also Cal. Code Regs., tit. 14, § 13571.

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Index of Exhibits

Exhibit No.	Description
A.	Monterey County Weekly, *Marina residents gather in opposition to Cal Am's proposed desal project* (dated April 18, 2018)
B.	Citizens for Just Water Website, *Code Red . . . Please Read* (dated September 24, 2018)
C.	Citizens for Just Water Motion for Party Status (filed Nov. 11, 2016)
D.	Citizens for Just Water Website, *What can we do! Code Red Alert! We Need Your Voice!*
E.	Citizens for Just Water Website, *Citizens for Just Water highlights for 2017*
F.	Citizens for Just Water, Response to the Application for Rehearing of Decision 18-09-017, (filed October 29, 2018)
G.	Comments of Citizens for Just Water to Joint Statement of Issues (filed July 10, 2017)
H.	Citizens for Just Water, Opening Brief Regarding Monterey Peninsula Water Supply Project Final Environmental Impact Report/Final Environmental Impact Statement, (filed April 19, 2018)
I.	ChangeOrg Petition, *Stop CalAm's FLAWED desalination project!*
J.	Citizens for Just Water Website, *The CalAm Desalination Project: Can CalAm STEAL Marina's Groundwater?*
K.	Citizens for Just Water meeting flyer, (Nov. 27, 2018)
L.	Agenda for April 2018 Citizens for Just Water public forum, (April 17, 2018)
M.	City of Marina City Council Resolution No. 2017-56, A Resolution of the City Council of the City of Marina Authorizing the City Manager to Execute a Contract with KP Public Affairs for Public Relations and Advocacy Services, (June 6, 2017)
N.	Email between KP Public Affairs, Bruce Delgado, Gail Morton, and Layne Long (Nov. 26, 2018)
O.	Emails between KP Public Affairs, Bruce Delgado, Layne Long, and Kathy Biala (Nov. 29, 2018)
P.	Flyers opposing MPWSP, prepared by KP Public Affairs on behalf of the City
Q.	Email from KP Public Affairs transmitting flyers opposing MPWSP (July 6, 2018)
R.	Email from KP Public Affairs transmitting multimedia materials and strategy memoranda (Nov. 27, 2018)
S.	Email between KP Public Affairs, Bruce Delgado, Layne Long (Dec. 21, 2018)
T.	Metadata from Form Opposition Letters Authored by Kathy Biala. (Word Versions of letters included on enclosed disc; authorship viewable in metadata through checking file properties.)
U.	Email from Alison MacLeod to Layne Long and Mayor Delgado (April 5, 2018)

V.	Emails between KP Public Affairs, Mayor Bruce Delgado, City Manager Layne Long, and Just Water (Nov. 29, 2018) (discussing synergy)
W.	Mayor Delgado Facebook Posts
X.	San Francisco Chronicle, *A test of California's commitment to groundwater sustainability* (Dec. 4, 2017)
Y.	Monterey Herald, *CalAm's proposed desal plant bad idea and bad for Marina* (Feb. 2, 2018)
Z.	Monterey Herald, *When it comes to water, be a good neighbor* (April 16, 2018)
AA.	Capitol Weekly, *Marina bears heavy burden in desalination dispute* (Oct. 2, 2018)
BB.	A.12-04-019, CPUC Evidentiary Hearing Transcript (dated Oct. 26, 2017)
CC.	A.12-04-019, CPUC Evidentiary Hearing Transcript (dated Oct. 30, 2017)
DD.	Citizens for Just Water, Code Red Forum Agenda (Nov. 27, 2018)
EE.	Lisa Berkley, Prepared Comments to Regional Water Quality Control Board (Sept. 20, 2018)
FF.	Email from Kathy Biala to Keith Van Der Maaten (Jan. 1, 2017) (listing Gail Morton as a moderator)
GG.	Monterey County Weekly, *Marina residents unite against Cal Am desal project* (Feb. 2, 2017
HH.	Email from Kathy Biala to Gail Morton (April 18, 2018)
II.	Email from Gail Morton to Layne Long (April 8, 2018)
JJ.	Letter from Layne Long to Monterey County Planning Commission (April 23, 2019)

EXHIBIT
A

http://www.montereycountyweekly.com/blogs/news_blog/marina-residents-gather-in-opposition-to-cal-am-s-proposed/article_d269c294-435d-11e8-932e-87158f342af9.html

Marina residents gather in opposition to Cal Am's proposed desal project.

David Schmalz Apr 18, 2018

Marina resident and Citizens for Just Water co-founder Kathy Biala has been a key player in raising awareness

about the potential impacts of Cal Am's desal project.
Nic Coury

About 40 residents gathered at the Marina Public Library April 17 for a forum put on by Citizens for Just Water, a Marina activist group that was formed last year to oppose Cal Am's proposed desal project.

The event was titled "Marina/Fort Ord water: CODE RED."

The deadline for comments the project's final environmental impact report is April 19, and Just Water had two different form letters for attendees to send off to the California Public Utilities Commission and the Monterey Bay National Marine Sanctuary, the state and federal lead agencies on the project.

But before Just Water co-founder Kathy Biala made a pitch for attendees to sign them, four speakers, starting with Biala, spoke about their concerns over Cal Am's proposed project.

Biala went first, and spoke to her social justice concerns, arguing Cal Am doesn't have a clear water right to pump the brackish source water under the beach in Marina, and that the matter should be considered before any approvals are considered.

Under Cal Am's proposal, they will return whatever percentage of freshwater they pump back into the Salinas Valley Groundwater Basin—per state law—but it will go to Castroville, not Marina.

Biala likened that proposal to someone stealing your car from your garage, and promising to park it in your neighbor's garage.

"The train is heading for a brick wall, and it really needs to be slowed down before it’s too late," she said.

Marina Mayor Bruce Delgado, who popped in briefly as a City Council meeting was taking place, came next, and said the final EIR is "just as inadequate as draft EIR."

He argued that not only would Marina's near-term water supply be affected by the project, but that it would prevent Marina Coast Water District from being able to comply with the state's 2014 Sustainable Groundwater Management Act, which requires MCWD to ensure a "sustainable yield" to its groundwater supply by 2040.

"Nothing is more important to us here in Marina than the air and water we need to live," Delgado said.

MCWD General Manager Keith Van Der Maaten came next, and gave a detailed presentation as to how the project, in the the view of Marina Coast Water District, would harm the district's water supply by both taking its freshwater and exacerbating seawater intrusion.

"The project, today, is not a feasible project," he said.

Van Der Maaten says MCWD has been trying to negotiate solutions, but that so far, there have been no offers from Cal Am that have been acceptable to Marina Coast.

Litigation if the project is approved—which has been widely anticipated for many months—would a likely possibility if all other options are exhausted.

George Riley is co-founder of Public Water Now, the Peninsula activist group that put forth a proposed ballot measure that would force a feasibility study for a public buyout of Cal Am. He spoke last.

Riley praised the fact that, in all his 20 years living locally, he said he'd never seen such great leadership in public water officials, a nod to Van Der Maaten, Monterey Peninsula Water Management District General Manager Dave Stoldt, and Monterey One Water General Manager Paul Sciuto.

"They're smart, energetic, and they work together, they work together," Riley said.

"The more we stay together, stand together and stay on same agenda, we're gong to get there," he added. "We don't need Cal Am's desal, and we don't need it [in Marina]."

David Schmalz

EXHIBIT
B

Current Updates!

Code Red… Please Read

9/24/2018

A local Marina resident made sending a notice to the commissioners regarding the unfair CalAm desalination plant that threatens our ground water so much easier!

You can click on the link below and visit the site to let the commissioners know what you think about this project. **The Public Utilities Commission is planning to approve by September 13 so don't delay.**

Sign the petition

Citizens for Just Water

Information posted here reflects current issues found in the public domain and serve to inform about the complex issues of water on the Monterey Peninsula

PLEASE NOTE THIS PETITION IS NOW CLOSED AS THE CPUC HAS APPROVED THE PROJECT

Many thanks for the residents who responded to the community sponsored petition

Tweet

Public Forum on expansion of Pure Water

9/24/2018

August 14, Public Water Now held a very important forum at MIIS with Monterey One Water, Paul Scuito, and Jonas Minton, Planning and Conservation League who talked about an expansion of a regional recycled water project that can serve as a more affordable, equitable, and viable “Plan B” to the Cal-Am Slant Well Desalination Project. Remember that the Peninsula ratepayers, under CalAm, are paying the highest rate of water in the COUNTRY, even without the $300M plus for the proposed Desalination Project!

The issue of environmental injustice to Marina of Cal-Am’s Project was discussed as litigation will likely occur should the project be approved. Although, the CPUC's “proposed decision” has been to advance the Project for a vote at a CPUC regular meeting in S.F. (possibly Sept. 13), ***the Project has NOT been issued a building “permit” (CPCN) yet***.

On Aug. 22, all official "parties to the proceeding", including the City of Marina, Marina Coast Water District, Citizens for Just Water, and Public Water Now and several others, will get their first opportunity to be heard before the CPUC in S.F. This is very late in a process that will be possibly approved in mid September.

At the August 14 Forum, individuals were urged to exercise their right to contact the CPUC Commissioners regarding the Cal-Am Slant Well Project. The CPUC has many barriers to public participation and comment, so this is perhaps the last opportunity to speak up before the final decision is made.

If ever there was a more urgent time for Marina and Ord communities to write a comment, it is NOW.

Here are the email addresses:

CPUC President Michael Picker
mp6@cpuc.ca.gov

Commissioner Carla Peterman
cap@cpuc.ca.gov

Commissioner Liane Randolph
liane.randolph@cpuc.ca.gov

Commissioner Martha Guzman Aceves
mga@cpuc.ca.gov

Commissioner Cliff Rechtschaffen
cr6@cpuc.ca.gov

Tweet

California Coastal Commission still needs to hear from you!

9/24/2018

Recently, the Coastal Commission held its July 11 through 13th meeting in Scotts Valley.

Several car pools of persons from Marina, Seaside, Monterey and

Carmel Valley presented on each day of the public comment portion to educate the Commissioners about environmental issues associated with the CalAm Slant Well Desalination Project in Marina, CA.

Talking points included:

- Protection of the Western Snowy Plover (a threatened species), our ground water, and the sensitive coastal natural habitats.
- Encourging the CCC to apply good science in their decision making and permitting process along with incorporating new information such as the Stanford AEM study, instead of relying entirely on old studies that are no longer relevant.

CalAm had 2 pro-slant well project speakers on July 11th that both receive direct monetary benefit from the approval of this project, but not one unaffiliated citizen speaking in favor. What does this tell you?

Now is the time to speak out against this project! The Coastal Commission will be responsible for issuing permits to build the slant wells on the CEMEX property that will take up our groundwater reserves.

See letter writing campaign for addresses and sample letters.

Tweet

Updates on the CPUC

9/24/2018

CItizens for Just Water attended last weeks hearing as one of the 27 parties to the proceeding. We were able to voice our concerns about the narrow review of feasibility about this ill-conceived project for 3 minutes to the 5 commissioners. Although this is a miserly amount of time to address all of the complexity of the project, we focused on the omission of a fair evaluation of our community values and needs, and the inherent environmental injustice of siting this project in our water supply. We asked that they deny the Certificate of Convenience and Public

Necessity (CPCN) because the CPUC has failed to protect the water supply of a diverse, low-income community. We added our support to expansion of the Pure Water Monterey recycled water project by Monterey One Water.

Here are some agreements that were stated by several of the parties that oppose approval of this project:

1. Postpone approving the Certificate of Public Convenience and Necessity (CPCN) for Cal Am's proposed desal plant.
2. Expand Pure Water Monterey to provide water sooner and at a lower cost than the Desal plant to peninsula users.

Further, MCWD wants the CPUC to:

3. Order a complete review of groundwater rights by the California State Water Resources Control Board regarding the take of water from the Salinas Valley by CalAm's project where it has no water rights.
4. Include the geophysical information developed by Stanford University in the current EIR.
5. Order the proposed Cal Am desalination project to find a different source of feedwater.

Tweet

Marina vs. Cal Am - How the Outcome Will Impact YOUR Cal Am Bill

6/15/2018

Presented by Bruce Delgado, Kathy Biala and Tom Moore

Thursday, June 21 at 7:00pm
MIIS, Irvine Auditorium
499 Pierce St., Monterey

If you thought Cal Am's proposed desal project would take water from the ocean, you may be surprised. Instead Cal Am plans to draw brackish water from Marina's groundwater. Marina has a big problem with this. They claim Cal Am's desal feeder wells will damage their groundwater and produce further seawater intrusion. Marina's claim is backed by science from Stanford University.

Cal Am has no water rights to Marina's groundwater. Marina will not likely be bullied into submission on this issue. Litigation looks inevitable. This is a David and Goliath battle. The threat to Marina's water supply and its future are serious. What are they supposed to do?

But here's why you should care if you are a Cal Am customer on the Peninsula. You are already paying for the most expensive water in the country. Desal water is expensive to begin with, but Cal Am's scheme to pump water from Marina's groundwater will lead to extreme costs, far beyond typical desal water costs. Litigation will likely cause further delays and once again Cal Am customers on the Peninsula will face the ongoing problem of no new water supply.

Get the whole story from presenters Bruce Delgado, Mayor of Marina, Kathy Biala, Just Water (Marina citizens advocacy group for water justice) and Tom Moore, President, Marina Coast Water District Board of Directors.

Cal Am is spending millions of YOUR dollars on this desalination project. Know what you are paying for. Join us to hear what the future consequences for all of us will be.

PWN Forums are Free and Open to the Public.

Do RSVP

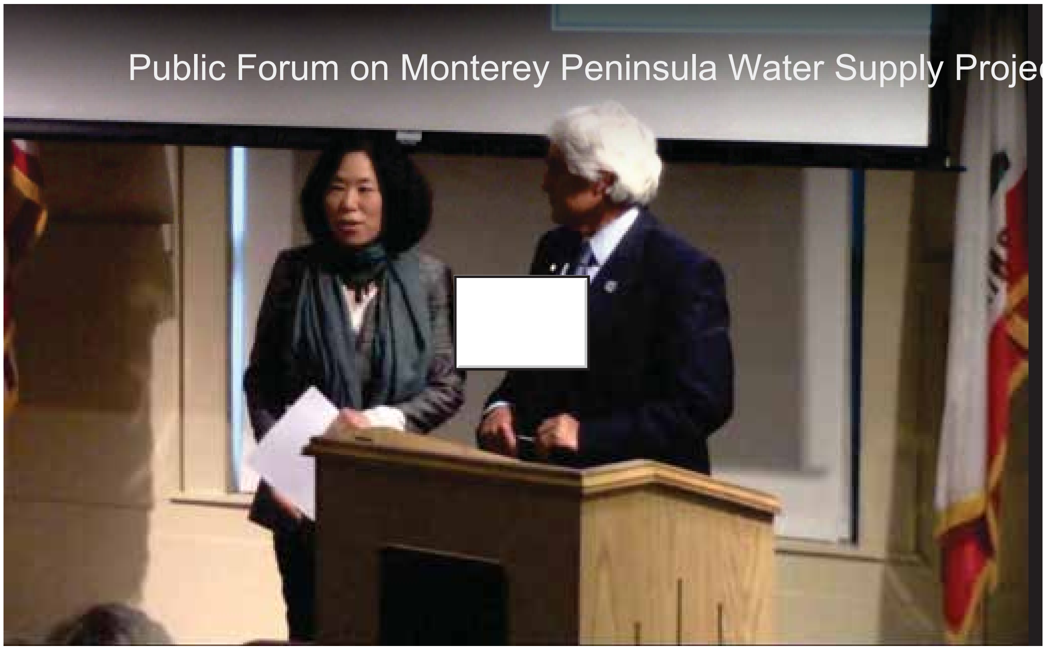
www.publicwaternow.org/marina_v_cal_am?utm_campaign=marina_v_calam_outcome_impct_p&utm_medium=email&utm_source=publicwaternow

Tweet

Public Forum April 17 Recap

4/29/2018

If you missed our last forum - you can get a recap of the event on YouTube. Folks can still send comments to the CPUC and the MBNMS about this project - the agencies just won't be required to respond during the review period.



Tweet

Public Forums April 11 & 17

3/30/2018

Mark Your Calendar for a discussion on the MPWSP

Announcing Two FREE Public Forums about Cal-Am's Slant Well project on the CEMEX Property

Join us for a discussion on the MPWSP EIR

• Flaws of the Cal-Am Slant Well Project at CEMEX site

• Dr. Knight’s final groundwater survey results

• How Marina and MCWD will challenge this project

Wednesday, April 11

6:30-8:30 pm

Marina City Hall at 211 Hillcrest Ave

Tuesday, April 17

6:30-8:30 pm

Marina Library at 190 Seaside Circle

The Slant Well Desalination project on the CEMEX property is closing in on approvals. It will unfairly harm ground water resources and the public water agency in Marina, and raise water rates for all.

The Public Comment period ends April 19!

Come find out What You Can Do!

justwater_april11_17_flyer_web.pdf
Download File

Tweet

March 29th, 2018

3/29/2018

Final EIR/EIS has been released

Just a heads up that the joint "Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed Monterey Peninsula Water Supply Project" has been released.

Many have received a mailer recently on this very same subject. This is the last chance that the public can comment on a very flawed project. Public comments close on April 19th - this is a very short window.

Why is it important to comment? From here, should this project get the green light, any public comments become part of the public record. Our voices need to be heard; that it is an injustice to allow a for profit company to take our water, that this project has no cost ceiling or accountability for salt water intrusion damages to the aquifer, that there are other solutions that will provide water sooner and at a lower cost.

Water "at any cost" is not a regional solution.

Link to Final EIR/EIS and Appendices for online review
http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/comms_n_docs.html

CD's can be requested by emailing MPWSP-EIR@esassoc.com

Lead agencies have hard copies in their offices for review.

Paul Michel, Superintendent & NEPA Lead
Monterey Bay National Marina Sanctuary
Pacific Street, Bldg 455a
Monterey, CA 93940
montereybay@noaa.gov

John Forsythe, Sr. Environmental Planner & CEQA Lead
California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Steet, Suite 800
San Francisco, CA 94108
MPWSP-EIR@esassoc.com

Your City Council in action! Holding the line on water!

3/21/2018

Everyone, tonight I just witnessed our City Council in a courageous and surprise move to protect Marina's water! They voted unanimously to submit an application to become a Groundwater Sustainability Agency (GSA) for the 180/400 foot aquifer that lies beneath the Cemex plant where the proposed Cal-Am slant wells are to be built (areas not within MCWD's water jurisdiction). The agricultural interests expressed strong opposition to the City's motion, but Bruce Delgado so articulately said that Marina was not part of the decision-making that would take our water and give it all to the Peninsula. He said if the reverse were true, i.e. that Marina decided to take Carmel's water, this would never be permitted! Marina is left with all the harms while Cal-Am reaps all the benefits and we have to do however much it takes to save our water supply. Gail Morton's incisive comments deflated the attempt to position the City's action as not collaborative; the offer for the City to be on the Salinas Valley Groundwater GSA's "advisory committee" is hardly a genuine gesture to rectify the city's lack of true representation! We should all be proud that our local city government is standing up to forces that clearly intend to take advantage of us!

If you would like to view the Council Meeting AMP has posted the entirety here. Discussion of the GSA begins at 16.43.

Click Here

EXHIBIT
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BEFORE THE
PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates	Application 12-04-019 (Filed April 23, 2012)

MOTION FOR PARTY STATUS OF CITIZENS FOR JUST WATER ("JUST WATER")

November 15, 2016

Dr. Margaret-Anne Coppernoll

Citizens for Just Water ("Just Water")

3012 Crescent Street

Marina, California 93933

(831) 578-7877

mcopperma@aol.com

BEFORE THE
PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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MOTION FOR PARTY STATUS OF CITIZENS FOR JUST WATER ("JUST WATER")

I. Introduction

Citizens for Just Water ("Just Water") respectfully moves for party status in the proceeding for Application 12-04-019 in accordance with Section I.4 of the California Public Utilities Commission ("Commission") Rules of Practice and Procedure.

II. Interest in this Proceeding

A. Citizens for Just Water ("Just Water") consists of citizens of the Monterey Bay region who have a common interest to preserve and to protect an affordable and long-term water supply for the Marina and the Fort Ord communities with equity among competing interests.

CalAm's responses to the CEQA statutory sections of Chapter 9, Sections 9.1 (Significant Unavoidable Environmental Effects) and 9.2 (Significant Irreversible Changes) failed to identify additional serious unavoidable environmental effects that the project will have on coastal subsurface ground water system aquifers by causing more seawater intrusion into the freshwater aquifers, which in turn, will bring about quality of water deterioration and risk future loss of precious resources for potable water and water for agricultural irrigation.

We, as individual citizens, have participated widely in many meetings locally, including public participation hearings held by the CPUC about the Monterey Peninsula Water Supply Project (MPWSP, A1204019). We have individually delivered oral and written comments to local agencies, to the CPUC, and during the EIR comment period managed by the CPUC contractor, Environmental Science Associates. We have recently organized into a new group entitled Citizens for Just Water ("Just Water") to help focus our message for various agencies. We designed Citizens for Just Water ("Just Water") as a grass roots community organization to explore solutions for just and equitable use of regional water resources.

Citizens for Just Water ("Just Water") has been working with Stanford University's Dr. Rosemary Knight and her research team to bring forth the scientific findings that assess the Monterey Bay subsurface topography. The technique of Electrical Resistivity Tomography (ERT) is an effective tool to assess both the sustainability and viability of our ground water basins and aquifers; Electrical Resistivity Tomography (ERT) produces MRI-like images that have been shown to reveal specific and accurate details beyond the mere data obtained from sporadic sentinel wells. This technology exists; has met scientific scrutiny; is cost efficient; and is capable of reducing uncertainty as to the impacts of the MPWSP project on the Salinas Valley Groundwater Basin.

Citizens for Just Water ("Just Water") seeks to prevent the unintended inequities implicit in the current plans for Cal-Am's proposed project within the area of the Cemex property and the 180 foot aquifer of the Salinas Valley Groundwater Basin.

The MCWD serves approximately 30,000 regional customers and is dependent upon the 180, 400 and 900 foot aquifers with minimization of salt water intrusion for the continued delivery of fresh water now and in the future. This water source is also the same water source that the agricultural lands in the Salinas Valley are dependent upon. Critical verification must be made that there will be no negative impact of the MPWSP upon the communities of Fort Ord and Marina's water source, or, at the very least, the clear defining of the scientific levels of uncertainty associated with such water extraction. The high stakes of potentially jeopardizing another district's water source demands this. Best practices of the Electrical Resistivity Tomography (ERT) mapping have ***not*** been considered in the EIR modeling, or in evaluating the test slant well data, or in establishing an accurate baseline of hydro-geologic subsurface features to predict potential impacts of salt water intrusion, especially as it relates to any fissures in the clay aquitards which function as an impermeable geologic control against sea water intrusion. Current ERT data reveal existing fissures in the clay aquitard, and dipping of the horizontal continuous clay aquitard line, demonstrating that the integrity of the clay aquitard has already been compromised in some places, permitting seawater intrusion.

Citizens for Just Water ("Just Water") respects the legal water rights of local jurisdictions, and supports their fair and appropriate use.

Citizens for Just Water ("Just Water") serves to provide information to help educate the Marina and the Fort Ord communities regarding evidenced based scientific management of the area's groundwater supplies through scientific hydrogeological research and adequate, statistically valid data.

B. Citizens for Just Water ("Just Water") promotes just, equitable use and development of sustainable ground water without adverse consequences to the needs and rights of others on the Monterey Bay. All citizens residing and/or working on the Monterey Bay are entitled to potable water now and in the long-term future; equitable water means one group's interests and rights are not sacrificed for another's, but rather science should dictate the safety of any site for procuring water. Current scientific findings irrefutably link the presence of fissures in aquitards with accelerated saltwater intrusion along the Monterey Bay through the use of a geo-physiologic method called the Electrical Resistivity Tomography (ERT). The inference from this mapping suggests that similar conditions exist along the proposed MPWSP site area due to the presence of known detected faults along the Monterey Bay. Furthermore, desalination project options must be expanded beyond the MPWSP, after inclusion and analysis of additional subsurface Electrical Resistivity Tomography (ERT) imaging. As a result of such studies, further exploration of more equitable and just regional solutions may be indicated beyond the MPWSP.

Citizens for Just Water ("Just Water") intends to provide: a) compelling evidence for utilizing additional scientific state-of-the-art subsurface mapping techniques, i.e. Electrical Resistivity Tomography (ERT); and b) documentation of relevant regional water rights; and c) comparative analysis of alternative desalination projects that create less adverse impacts upon another region's water sources, and do not compromise jurisdictional water rights. Citizens for Just Water ("Just Water") will submit this information in a filing once party status is granted.

III. **Notice**

Services of notices, orders, and other correspondence in this proceeding should be directed to Citizens for Just Water ("Just Water") at the address set forth below:

Dr. Margaret-Anne Coppernoll

Citizens for Just Water ("Just Water")
3012 Crescent Street
Marina, California 93933
(831) 578-7877
mcopperma@aol.com

IV. Conclusion

Citizens for Just Water ("Just Water")'s participation in this proceeding will not prejudice any party and will not delay the schedule or broaden the scope of the issues in the proceeding. For the reasons stated above, Citizens for Just Water ("Just Water:)" respectfully requests that the CPUC grant this Motion for Party Status filing.

Dated: November 15, 2016

Respectfully submitted,

/s/ Margaret-Anne Coppernoll

Margaret-Anne Coppernoll, Ph.D.

Representative

Citizens for Just Water ("Just Water")

Tel: (831) 578-7877

mcopperma@aol.com

EXHIBIT

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JUST WATER
A CITIZENS ACTION GROUP

What can we do!

CODE RED ALERT! WE NEED YOUR VOICE!

Your voice Could Make the Difference

Letter Writing Campaign to the Coastal Commission

Written Public Comment:

The California Coastal Commission approved three key permits that allowed the illicit Cal-Am Slant Well Desalination Project in Marina, CA to advance. We anticipate further permitting actions by the CCC in the near future. We wish to communicate the following points:

- Good Science has been overlooked and not applied in the issues of:
- Dramatic decline of Western Snowy Plover at closest sites to the Cal-Am test slant wells at the Cemex site!
- Harm to the Salinas Valley Groundwater Basin from which Cal-Am plans to illegally take water!
- Violates Marina’s Local Coastal Plan to protect and preserve wildlife habitats along our shores!

get our message front and center!

Copy and paste into an email or fax to:

- **CA Coastal Commission**
  45 Fremont St. #2000, San Francisco, CA 94105
  FAX: 415-904-5400
  (415)-904-5202
  John.Ainsworth@coastal.ca.gov (mailto:John.Ainsworth@coastal.ca.gov)

If you can't make the Coastal Commission meeting use current letter below to tell the California Coastal Commission they have failed to protect our coastline from the proposed Cal Am slant well project.
We need to get our message front and center!

Email, fax or send to:

- **CA Coastal Commission**
  45 Fremont St. #2000, San Francisco, CA 94105
  FAX: 415-904-5400
  (415)-904-5202
  John.Ainsworth@coastal.ca.gov (mailto:John.Ainsworth@coastal.ca.gov)

Copy and paste into an email or use the downloadable Word format below

To: California Coastal Commission Date: ____________________

RE: The environmental impacts of the Cal-Am Slant Well Desalination Project in Marina, CA

...d to the proposed Cal-Am slant well desalination project in Marina, CA for the following reasons:

1. **COMMUNITY VALUES:** Placing an industrial facility of a 10 slant well desalination project on the Cemex property which, last year, the CA Coastal Commission hailed a big victory over the sandmining operations at this very site is inconsistent with regional community values. The CCC with a cease and desist order to stop the sandmining operations, designated this property to be transferred to a public agency (agencies) for conservation purposes in perpetuity. This was with the collective voices of residents all across the Monterey Bay who value our natural beauty and the sensitive habitats of our coastline.
2. **ENVIRONMENTAL INJUSTICE:** Community values of equity and fairness to the residents in Marina and Ord communities must be addressed as this section of the Monterey Bay will be subjected to significant damaging environmental impacts. This project is the clearest kind of environmental injustice as it gives precedence to a private, for-profit corporation privatizing water resources at the expense of a small socio-economically challenged community of Marina and forces further rate increases to the Peninsula and Seaside customers who already pay the highest water rates in the country.
3. **SNOWY PLOVER WILL NOT BE PROTECTED:** The Final Environmental Impact Report states: “The impacts to the Western Snowy plover and habitat from construction of the nine subsurface slants wells and the test well may have lasting effects on snowy plover behavior and would be significant” and “Maintenance of the subsurface slant wells every five years would result in the permanent loss of approximately 6 acres of potential western snowy plover habitat.” This is unacceptable at the very site that has been designated by the CA Coastal Commission for conservation in perpetuity after the cessation of the sand mining operations in 2020. WSP populations on 3 Marina sites have plummeted since the construction and operation of the one test slant well three

s ago! Furthermore, Cal-Am's desalination project is unnecessary in ing the Carmel River Cease & Desist Order; other viable recycled water sources are currently available that will provide the Peninsula with water for the next 10 years!

4. **USE BEST SCIENCE AVAILABLE:** CalAm falsely asserts that the AEM (Airborne electro-magnetics) subsurface imaging data by Stanford University provides no significant additional information to the evaluation of "no harm". In choosing a technology with grossly limited data as the preferred methodology to evaluate the risk to an entire basin, while refusing data from an already available and completed state-of-the-art AEM study, the public has been denied assurance that a robust scientific investigation has been used to evaluate this project's risk to the Salinas Valley Groundwater Basin.
5. **UNACCOUNTED COSTS:** The "feasibility" of the project is not only the issue of physical harm to a region's water supply, but also includes harm to ratepayers who must pay for the exorbitant costs of a for-profit corporation that stands to reap significant financial benefits of owning a new experimental technology, yet having paid nothing for its research and development. Additionally, there has been no mandates to mitigate future OR even the current damage to the environment and the already visible harm to the Western Snowy Plover. This factual data should not be minimized and excused while further damage will be allowed to occur in the future should this project be approved.
6. **VIOLATIONS OF THE MARINA LOCAL COASTAL PLAN:** Although Cal-Am acknowledges that their project would be "inconsistent with the City of Marina LCLUP policies governing protection of Primary and Secondary Habitats, a significant and unavoidable impact", Cal-Am is counting on the CCC to make exceptions for secondary circumstances outlined in the CA Coastal Act. However, the main concerns of environmental protection are from:

- CA Coastal Act: *"it is necessary to protect the ecological balance of the coastal zone and prevent its deterioration and destruction"* (Section 30000).
- The CA Coastal Commission mission: "protecting and enhancing California's coast and ocean for present and future generations. It does so through careful planning and regulation of environmentally-sustainable development, ***rigorous use of science***, strong public participation, education, and effective intergovernmental coordination".
- The City of Marina's Local Coastal Plan: "Primary habitat areas shall be protected and preserved against any significant disruption of habitat values and only uses dependent on those resources shall be allowed within those areas."

Print name:___________________________________ Signed: _______________________________

Address: ____

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ccc_sample_letter_for_website.docx
Download File (/uploads/9/9/6/7/99678170/ccc_sample_letter_for_website.docx)

Continuing Letter Writing Campaign for the FEIR

There is also still time to comment on the Final Environmental Impact Report to other decision makers before September 2018!

Three letter forms are provided below.
The first letter goes to:

ornia Public Utilities Commission (CPUC)
'SP-EIR@esassoc.com (mailto:MPWSP-EIR@esassoc.com)

- **The Monterey Bay National Marine Sanctuary (MBNMS)**
  montereybay@noaa.gov (mailto:montereybay@noaa.gov)

We need to get our message front and center!

Copy and paste into an email or use the downloadable Word file format below

To: California Public Utilities Commission (CPUC) MPWSP-EIR@esassoc.com (mailto:MPWSP-EIR@esassoc.com)
The Monterey Bay National Marine Sanctuary (MBNMS) montereybay@noaa.gov (mailto:montereybay@noaa.gov)
RE: Response to the Final Environmental Impact Report for the MPWSP
Date: ______________________

Many valid concerns were voiced by the public regarding the Cal-Am slant well desalination project proposed in Marina, CA in the DEIR/EIR in 2017. The CPUC and the MPMNS have concluded that our concerns will not require any changes of significance to the 2018 FEIR/EIS. I am registering my complaints here.

I agree with all the content of the Citizens for Just Water response that includes these criticisms of the FEIR:

1. **COMMUNITY VALUES:** The FEIR fails to address community values of equity and fairness to the residents in Marina and Ord communities that will be subjected to the most damaging environmental impacts and risks of this project. At every opportunity, Cal-Am has sought to deemphasize the location and its impact on Marina water users and has failed in public outreach to the communities most affected by the slant wells.

JUST WATER A CITIZENS ACTION GROUP

e are currently alternative regional solutions already available and dable!

2. **ENVIRONMENTAL INJUSTICE:** This project is the clearest kind of environmental injustice as it gives precedent to a private, for-profit corporation privatizing water resources at the expense of a small socio-economically challenged community of Marina and forces further rate increases to Peninsula and Seaside customers already paying the highest water rates in the country. This project is *not* a regional water solution.
3. **BRACKISH WATER IS GROUNDWATER:** This project has been changed from its original permit obligation of a "subsurface ocean intake" to an illegal groundwater take from another water jurisdiction. Now the false claim is that brackish water is "useless" and can therefore be taken by Cal-Am, disregarding the fact that brackish water is still groundwater to which Cal-Am has no legal water rights.
4. **SNOWY PLOVER WILL NOT BE PROTECTED:** As stated in the FEIR: "The impacts to the plover and habitat from construction of the nine subsurface slants wells and the test well may *have lasting effects on snowy plover behavior and would be significant*" and "Maintenance of the subsurface slant wells every five years would result in the *permanent loss of approximately 6 acres of potential western snowy plover habitat*." This is unacceptable as this very same site has been designated by the CA Coastal Commission for conservation in perpetuity after the cessation of the sand mining operations in 2020.
5. **SEAWATER INTRUSION:** The FEIR concludes that this project will "reverse" seawater intrusion yet no scientific proof has been offered for this opinion that goes contrary to all accepted science of seawater intrusion and mitigation strategies. This large experimental project has the potential for devastating impacts in the region, and as such, requires rigorous academic third party research to prove that there will be *absolutely "no harm"*. No mitigation measure will make Marina whole again.

BEST SCIENCE AVAILABLE: The FEIR falsely asserts that the AEM surface ground imaging data by Stanford University provides no significant additional information to the evaluation of "no harm". By choosing a technology with limited data as a preferred methodology in the face of an already available and completed state-of-the-art science study, the CPUC has denied public reassurance that the a robust investigation has been used to evaluate this project.

7. **UNACCOUNTED COSTS:** The "feasibility" of the project is not only the issue of *physical* harm to a region's water supply, but also includes harm to ratepayers who must pay for the exorbitant costs of a for-profit corporation that will reap financial benefits of advancing a new technology. Additionally, costs for mitigation must be figured in which means identifying upfront money for proactive ***protection against harm*** NOT merely paying to rectify harm done in the future!

Further, as a resident of Marina, Ord communities, the Peninsula or Seaside, I will be affected by Cal-Am's MPWSP, I support the efforts of the City of Marina, Marina Coast Water District, Public Water Now, and Water Plus and thereby incorporate, by reference, every comment, criticism, and deficiency related to the FEIR identified by these entities. I am opposed to the Cal-Am slant well desalination project (MPWSP).

Print Name:____ Signed:

____

Email:____ Address:

____

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JUST WATER A CITIZENS ACTION GROUP

s to send to the Monterey Bay National Marine Sanctuary and the

- **Paul E. Mitchell, Superintendent**
  Monterey Bay National Marine Sanctuary
  montereybay@noaa.gov (mailto:montereybay@noaa.gov)

- **John Forsythe, Senior Environmental Planner**
  California Public Utilities Commission
  MPWSP-EIR@esassoc.com (mailto:MPWSP-EIR@esassoc.com)

Copy and paste into an email or use the downloadable Word file format below

Paul E. Michel John Forsythe
Superintendent; NEPA Lead Senior Environmental
Planner; CEQA Lead
Monterey Bay National Marine Sanctuary California Public Utilities
Commission
Pacific Street, Bldg 455a c/o Environmental Science
Associates
Monterey, CA 93940 550 Kearny Street, Suite 800
montereybay@noaa.gov (mailto:montereybay@noaa.gov)
San Francisco, CA 94108
MPWSP-EIR@esassoc.com (mailto:MPWSP-EIR@esassoc.com)

Date:
____

Dear Mr. Michel and Mr. Forsythe,

I am writing as a concerned resident of the City of Marina regarding the release of the Environmental Impact Report for the Monterey Peninsula Water Supply Project; I hope you take my comments into consideration.

The residents of Marina have expressed a number of serious concerns with this icularly the use of the slant wells, and how it will disproportionately ommunity and way of life. And yet the Final EIR fails to provide adequate discussion of these harmful impacts or appropriate mitigations. Marina is already home to the regional landfill as well as the regional sewage treatment plant. This proposed desalination project would saddle our community with another operation that only benefits the interests surrounding us, while posing extreme threat to our groundwater and coastal ecosystem. The following outlines my most serious concerns, among the many others.

1. The Salinas Valley Groundwater Basin (SVGB), from which the project seeks to draw its water, is the same source that Marina residents rely on as our sole source of drinking water. Installing up to 10 slant wells into the basin will further deplete this source, cause saltwater intrusion, and leave Marina residents without a reliable drinking source.
2. The Marina community worked for years to end the CEMEX sand mining operation that was destroying this area’s coastal habitat. Allowing Cal Am to now drill water wells in this exact same location furthers industrial use in an area that should be protected, and undermines local sustainability efforts.
3. Cal Am has no water rights to draw from this source. Allowing this project to move forward based on speculation that water rights will ‘likely’ be established is irresponsible. This project is also shockingly inconsistent with the intent of California’s Sustainable Groundwater Management Act, which aims to finally put in place protections for critically overdrafted groundwater basins like this one.
4. Other options are available to meet the true water supply needs of the region. Expansion of the Pure Water Monterey recycled water project as well as other collaborative solutions could adequately address regional water demand while ensuring that Marina isn’t left behind with long-term harm.

The EIR disregards or trivializes this project’s clear environmental injustice, lack of water rights, violation of the Sustainable Groundwater Management Act, and

Marina’s sole source of drinking water. I encourage the Public Commission to provide a more fair analysis of the project’s harm to the city of Marina and potential mitigations or alternatives that could avoid this.

As a resident of the area potentially impacted by Cal-Am’s MPWSP, I support the efforts of the City of Marina, Marina Coast Water District, Citizens for Just Water, Public Water Now, and Water Plus and thereby incorporate, by reference, every comment, criticism, and identified deficiencies related to the FEIR identified by these entities.

Print Name:______________________________ Signed: __________________________________

Email:__________________________________ Address: __________________________________

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This form may be filled out with any comments that you may have. Please send to the Monterey Bay National Marine Sanctuary and the CPUC

- **Paul E. Mitchell, Superintendent**
  Monterey Bay National Marine Sanctuary
  montereybay@noaa.gov (mailto:montereybay@noaa.gov)

- **John Forsythe, Senior Environmental Planner**
  California Public Utilities Commission
  MPWSP-EIR@esassoc.com (mailto:MPWSP-EIR@esassoc.com)

Print out the pdf and fill out your comments or use the downloadable Word file format below

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We thank you for your citizen involvement!

Please send us your contact info (/sign-up-for-updates.html) **through our web page for critical updates.**

Write a comment to other deciding Agency Contacts

1. California State Water Board, District 3:

- **Eileen Sobeck, Executive Director**
  eileen.sobeck@waterboards.ca.gov (mailto:eileen.sobeck@waterboards.ca.gov)
- **Felicia Marcus, Chairperson of the Board**
  felicia.marcus@waterboards.ca.gov (mailto:felicia.marcus@waterboards.ca.gov)

2. California State 17th Senate District

- Senator Bill Monning
  senator.monning@senate.ca.gov (mailto:senator.monning@senate.ca.gov)

3. Monterey Bay National Marine Sanctuary (one of two lead agencies for the approval of the Final Environmental Impact Report):

- **Karen Grimmer**
  karen.grimmer@noaa.gov (mailto:karen.grimmer@noaa.gov)
- **Bridget Hoover**
  bridget.hoover@noaa.gov (mailto:bridget.hoover@noaa.gov)

4. California 29th Assembly District

Stone, Assemblymember

Stone's office (mailto:erica.parker@asm.ca.gov)

5. California Public Utilities Commission

- CPUC Comissioners

  public.advisor@cpuc.ca.gov (mailto:public.advisor@cpuc.ca.gov)

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6. California Coastal Commissioners

- Jack Ainsworth, Executive Director:

  john.ainsworth@coastal.ca.gov (mailto:john.ainsworth@coastal.ca.gov)

- Carole Groom, Commissioner:

  carole.groom@coastal.ca.gov (mailto:carole.groom@coastal.ca.gov)

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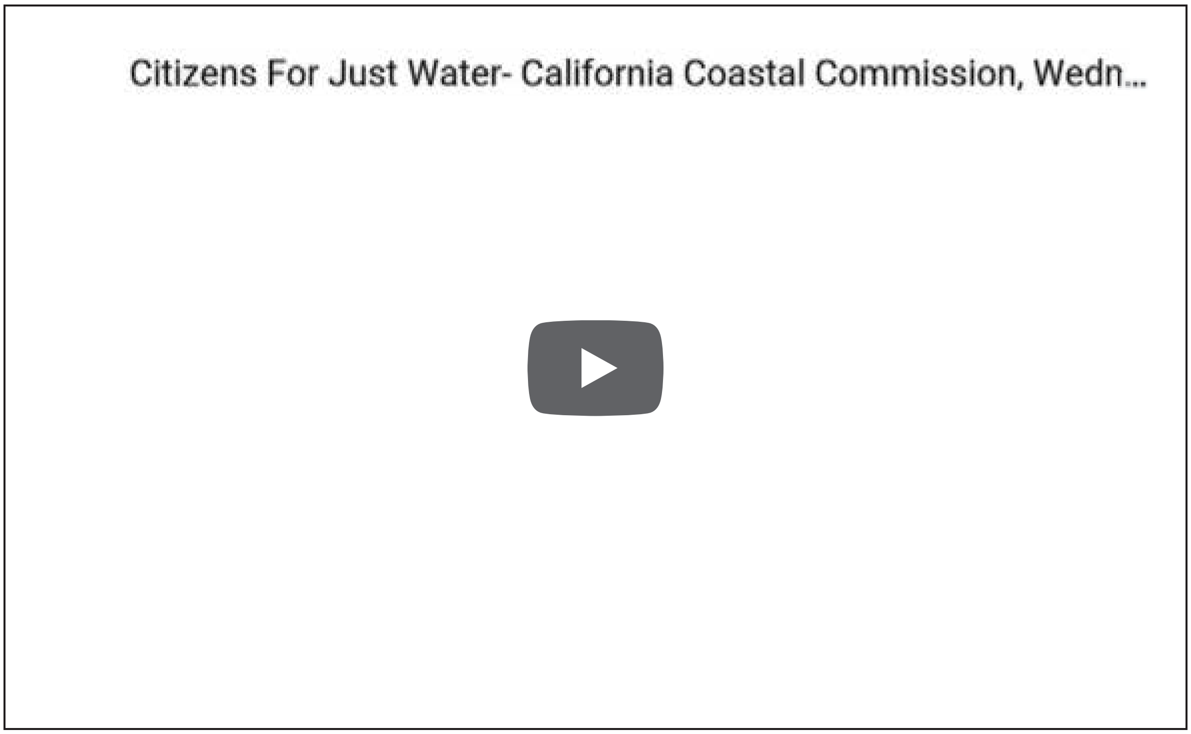

(//fa(mailto:c4justwater@gmail.com)

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JUST WATER
A CITIZENS ACTION GROUP

Citizens for Just Water highlights for 2017

Public Education: 1,600+ signatures

Citizens for Just Water held 4 public forums in Marina with several area experts speaking to educate the public on the current state of our local water resources. Topics included:

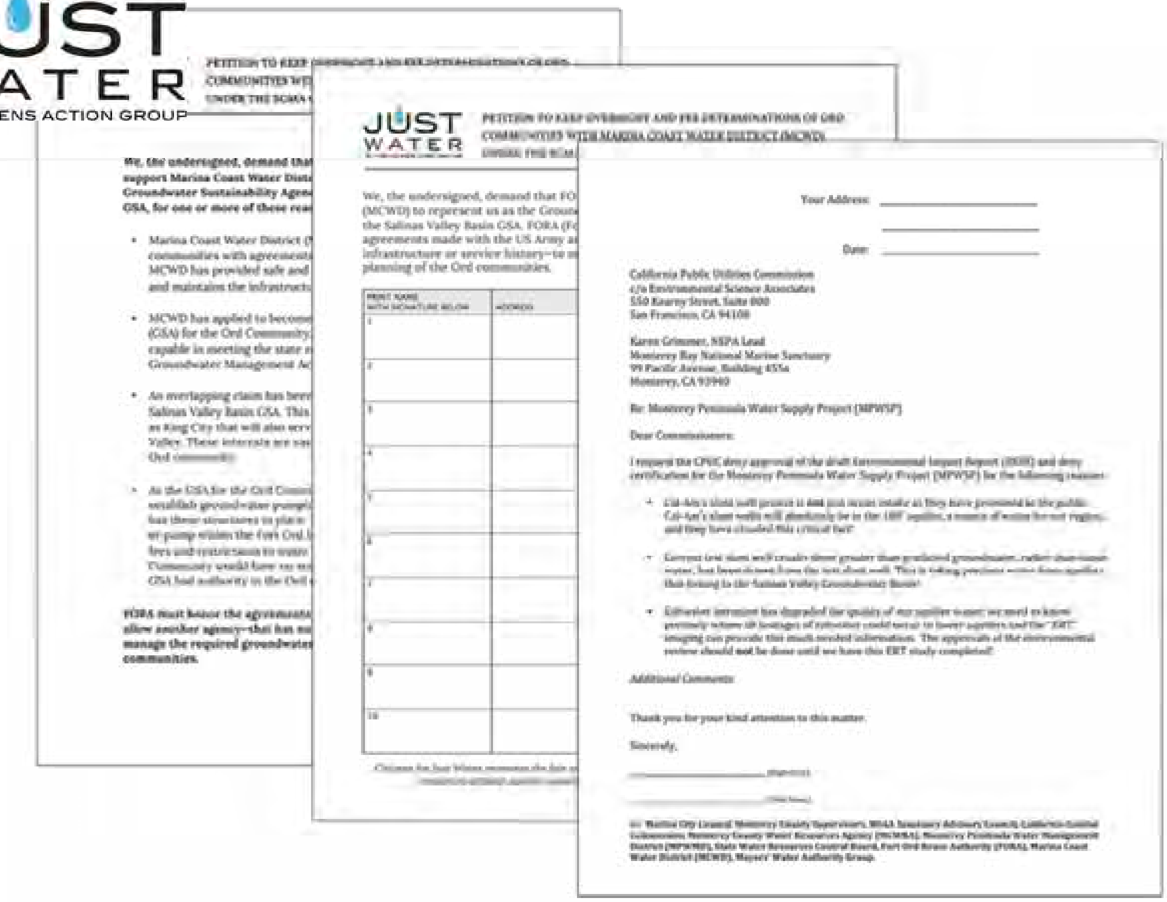
- California American Water (Cal-Am)'s progress in establishing a test slant-well for a potential desalination plant at Marina's coastline, despite not having any water rights there;
- trends in sea water intrusion to Marina Coast Water District's and other local wells;
- how the water decisions being made now could impact our future water supply and property values.

JUST WATER
A CITIZENS ACTION GROUP

nal forums, canvassing door-to-door, petition signing at local Just Water was able to gather over 1600 signatures in letters and petitions, as a public response to the second Monterey Peninsula Water Supply Project (MPWSP) Draft Environmental Impact Report (DEIR).

These petitions and letters were forwarded to the following nine public agencies who have decision making or political influences on the Cal-Am Slant Well Project:

1. **Marina City Council**
2. **Monterey County Supervisors**
3. **NOAA Sanctuary Advisory Council**
4. **California Coastal Commission**
5. **Monterey County Water Resources Agency (MCWRA)**
6. **Monterey Peninsula Water Management District (MPWMD)**
7. **State Water Resources Control Board**
8. **Fort Ord Reuse Authority (FORA)**
9. **Marina Coast Water District (MCWD)**



Your Address:

Date:

California Public Utilities Commission
c/o Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Karen Grimmer, NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Avenue, Building 455a
Monterey, CA 93940

Re: Monterey Peninsula Water Supply Project (MPWSP)

Dear Commissioners:

Additional Comments:

Thank you for your kind attention to this matter.

Sincerely,

Collected signatures have been received by the CPUC, Parties the Proceeding, Bill Monning's office and the Coastal Commission.

Public Education: Films

We held showings of the National Geographic 2017 documentary ***Water & Power: A California Heist*** in Marina and East Garrison -- providing context to our local water issues through seeing the historical and very complex water law and water transmission issues in California. Each session entailed a panel of local experts on water.

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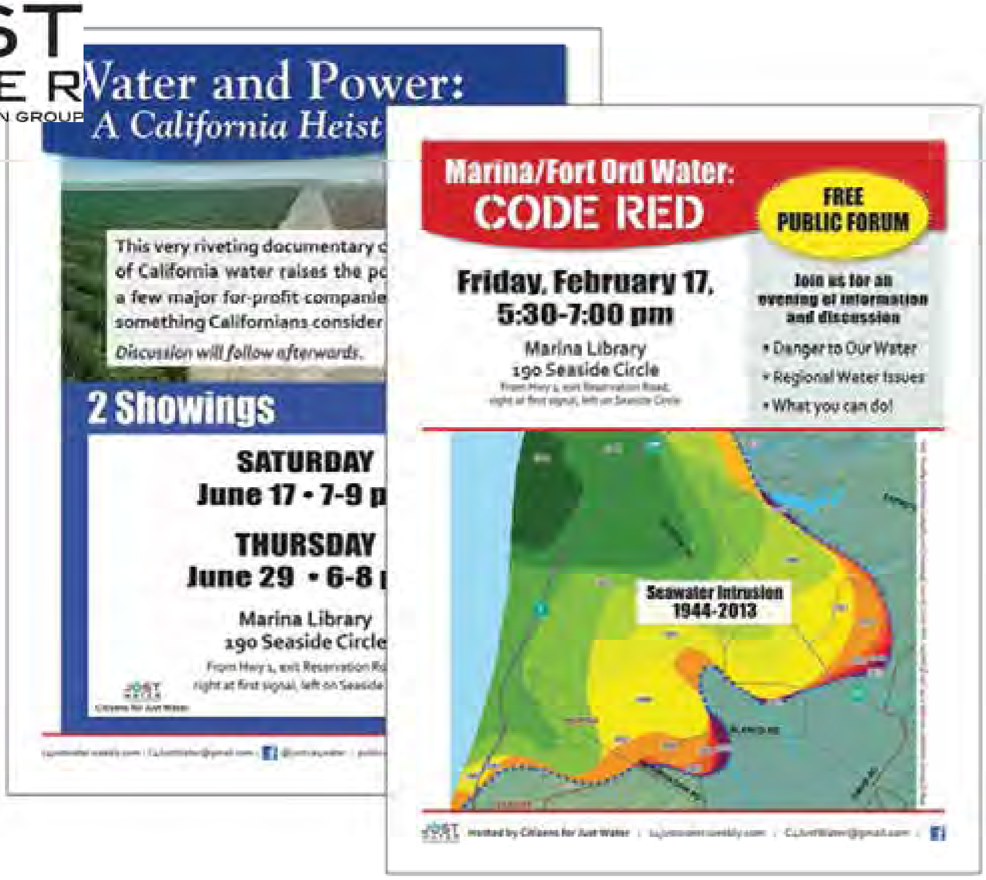

Party to the Proceedings.

In November, 2016, Citizens for Just Water was granted Party to the Proceeding by the Administrative Law Judge's ruling for the Application of Cal-Am Water Company Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates. Three of our members gave Prepared Testimony before the California Public Utilities Commission (CPUC) at the evidentiary hearings held in San Francisco in Fall of 2017. This testimony presented our concerns from many perspectives, including community values of environmental justice and ethics. As an official party to the proceeding, Just Water representatives are participating in a mediated regional Settlement Negotiations group.

NextDoor

Conversations on the MPWSP, CEMEX, Cal Am slant wells and Community Values have been presented on Next Door to get the message out to inform our hese issues affect each and everyone and needs to be part of a rsation in our community.

> **Community Values of Marina**
> *Our awesome city of Marina, with it's rich history and incredibly diverse population seems to be in a stage of redefining itself. Between such things as protecting our water and land from Cal Am's proposed desal plant, to the work being done in the adhoc committee for our downtown vitalization project, it is crucial that today and tomorrow's city of Marina reflect our diverse richness, unique character, and what we consider valuable. What do you think? How do you envision the future of our city? What are our community values? What reflects the values of our city?*
>
> 21 Jan · 8 neighborhoods in General

Ground Water Management

Just Water raised public awareness about the 2014 California Sustainable Groundwater Management Act (SGMA) and recent formation of Groundwater Sustainability Agencies (GSAs). Locally, the overlapping application of the Marina Coast Water District GSA and the Salinas Valley Basin GSA was in play during the summer of 2017. Marina Coast Water district has historically been the manager of the aquifer/groundwater in question and having Salinas Valley interests and influences may not be in the best interests of MCWD and the greater Monterey Peninsula water needs going forward. We are the only location with such a GSA conflict/overlap on the Monterey Peninsula.

FORA

Just Water members offered public comment at multiple FORA meetings (Fort Ord Reuse Authority), including presenting a petition signed by residents of East Garrison, asking FORA to formally communicate to the State of California

...orsement of Marina Coast Water District's Groundwater ...y Agency Application as submitted. Since Fort Ord communities receive their water service from MCWD but are not officially annexed into MCWD, those customers have only FORA as their official representation in water related matters - Ord community customers cannot vote for the Board of Directors of MCWD.

FORA's subsequent decision to NOT support MCWD's bid for a status as the exclusive Groundwater Sustainability Agency (GSA) for the Fort Ord Communities was disappointing, but also a point to consider in moving forward in citizen based actions.

Valuable Science

The Stanford University ERT (Electrical Resistivity Tomography-precursor to AEM) and AEM (Airborne Electro-magnetic) imaging groundwater study done by Rosemary Knight and team, has added valuable new data which we would like to see included in the formal scientific analysis/assessment of the test slant well project. Three Just Water representatives traveled to Stanford to discuss the ERT and AEM studies when these subjects became critical to understand for the issues of harm to our groundwater basin. Just Water coordinated and hosted a public viewing of the AEM helicopter lift-off at the Marina Airport in May of 2017 with an educational session immediately following by a Ph.D. hydrogeologist associated with the AEM!

California Coastal Commission Public Comments

Public Comments were made by three of our members at the December California Coastal Commission in Dana Point, requesting a formal agendized public discussion at a future CCC meeting regarding the approval of Cal-Am's extended permit for the test slant well de-salinization project. Again the CCC did not change its action upon hearing from us, another data point as we realize the David vs. Goliath aspect of the challenges that lay ahead.

JUST WATER
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entatives of Just Water traveled to Cambria for a CA Coastal meeting to present slide presentations on the illegal nature of the CA-Am Slant Well Project and the significant impacts of the test Slant Well upon Marina's population of the Western Snowy Plover, a threatened species listed under the federal Endangered Species Act.

Engaging with Public Officials and Non-Profits

Just Water held multiple direct meetings with various non-profits, state agencies, and local and state politicians regarding Cal-Am's test Slant well desal plant on Marina's coast, and protecting our local water resources and water rights.

Labor Day Community Engagement

We sought to educate and include the public in our outreach efforts at the Marina Labor Day Parade/Festival by having people star in short videos about our water situation.

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Solving Regional Water Issues

We are part of the recently organized mediation group seeking to air and resolve regional water issues with the parties that have been part of the October 2017 proceeding with the CPUC. Current mediations have resulted in cooperative efforts of the public water agencies to increase ground water replenishment and recycled water project capacities that will provide water affordably, sustainably and sooner than the Cal Am desal project.

EXHIBIT

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BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

In the matter of the Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates.	Application No. 12-04-019 (Filed April 23, 2012)

CITIZENS FOR JUST WATER ("JUST WATER") RESPONSE TO

THE APPLICATION FOR REHEARING OF DECISION 18-09-017

Juli Hofmann
Representative
Citizens for Just Water ("Just Water")
3201 Martin Circle
Marina, California 93933
Tel: (831) 883-1957
E-mail: jhofmann@redshift.com

Dated: October 29, 2018

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

In the matter of the Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates.	Application No. 12-04-019 (Filed April 23, 2012)

CITIZENS FOR JUST WATER ("JUST WATER") RESPONSE TO

THE APPLICATION FOR REHEARING OF DECISION 18-09-017

This reply is consistent with CPUC rules, and is submitted within the deadline.

INTRODUCTION

Citizens for Just Water is comprised of groups and individuals who receive potable water from the Marina Coast Water District (MCWD) and CalAm and who share a common interest in preserving and protecting a long-term water supply with equity among competing interests. Just Water promotes the fair and equitable use and development of sustainable groundwater without adverse consequences to the needs and rights of any party. Its mission is to educate the community on water issues and to advocate for regional water justice.

COMMUNITY VALUES

Citizens for Just Water supports for the City of Marina for Rehearing of Decision 18-09-017 in whole and in particular, Section III "THE COMMISSION HAS NOT REGULARLY PURUSED ITS AUTHORITY BECAUSE IT HAS FAILED TO COMPLY WITH APPLICABLE LAW.

> *A. The Commissions' Grant of a CPCN for the Project Violates Sections 1001 and 1002 That Serve as the Authority for the Commission of Review and Grant CPCNs. A. D.18-09-017 Wrongly Ignores and Fails to Follow the Express Terms and Applicable Statutory Construction of Sections 1001 and 1002 (a). a. D.18-09-017 Fails to Identify or Properly Apply the Law Governing Application of Sections 1001 and 1002 (a).*

Public Utilities Code Section 1002 (a) reads:

> *"(a) The commission, as a basis for granting any certificate pursuant to Section 1001 shall give consideration to the following factors: (1) Community values (2) Recreational and park areas."*

The Proposed Decision unfairly applies differing standards for community values—between the communities that the project intends to serve (the Monterey Peninsula) and the community where the project will be built (Marina).

Marina is a small city of 21,000 people. It is one of the most ethnically diverse communities in California for a city of this size. More than 55% of our residents are minorities and 10% claim two or more races. Some 15.3% live below the poverty level, exceeding the state average of 14.3%. The CalEPA analytical tool identifies large portions of Marina in the category of 81-90% level of a disadvantaged community. Our community is the site of two major regional industrial plants that serve the ***entire*** region including Marina: the solid waste landfill and the regional sewage treatment facility. Although the CalAm project is yet another industrial facility siting in Marina, this incursive project unfairly imposes an industrial plant that uses our ground water to exclusively serve only the ***Monterey Peninsula*** water needs while subjecting Marina to all the harm and risks of a lost water supply. This exclusion of our communities needs and values demonstrates the typical disparities that occurs to marginalized communities by well funded corporate interests, as the CalAm Desalination project is not collaborative, nor provides any benefits at all for Marina. The CPUC denied due process of the clear environmental injustice inequities of this project in the course of the evidentiary hearings to favor CalAm.

The right to clean, affordable water *for all* IS a community value, contrary to the ALJs opinion that parties presented "arguments over water resources *as opposed* to community values" in their arguments for the MPWSP. In fact, water is so fundamentally a human right for all communities that state agencies create and refine environmental justice policies to protect disadvantaged communities to ensure "that all communities equitably share environmental benefits and burdens." (California State Lands Commission Draft Environmental Justice Policy August 2018). The access to clean, affordable water is so essentially a part of this that is hard to imagine that '**arguing for one's own water source" is not regarded by the ALJs as advancing environmental justice as a community value**.

The CPUC found that in CalAm Director of Engineering, Ian Crook's Testimony, a secure water supply was a "Community Value," but did not apply this same value to the city of Marina.

Q48. Can you address community values with respect to the project?

A48. Yes. Water supply is a critical issue for the Monterey community because water supply constraints in one form or another have affected the Monterey county district since at least the 1970's.[1]

[1] A1204019 Direct Testimony of Ian Crooks. September 15, 2017, pg. 31

A supporting argument by the ALJs that became the basis for the CPCN approval stated the following regarding community values: **Others opposed to the project did not present *credible evidence or arguments to persuade us that the project is not needed*.** This statement is highly remiss since the water extraction and damages will NOT be to the Cal-Am's water district who purportedly "need" water from this project. The more appropriate and relevant query is whether *Marina does not need its own water*. With such an inquiry, the CPUC approval of this project could never be given.

Further, in clear bias of the eventual approval of the CPCN, the ALJs opined: "**We agree with Cal-Am and find the MPWSP consistent with the values of the community that the project will serve." This statement completely misrepresents how the issue of community values must be applied.** The critical distinctions are who does this project serve and who does it NOT serve. The project is intended to serve Cal-Am's jurisdiction and so the community values of the benefactors would be served. The community that will bear all the risks and harm of this project must be the PRIMARY evaluation of community values. Marina, as opposed to the Monterey Peninsula, is the jurisdiction *in which community values will be violated*. This violation forms the basis of environmental injustice everywhere where disadvantaged communities are exploited.

The justification for approval of this project is focused only upon whether the Monterey Peninsula has water needs, rather than focused equally on whether Marina has water needs. The approval does not fairly examine the mass extraction of groundwater from Marina's aquifers. In the FEIR and Evidentiary hearings associated with the project, volumes are written analyzing the water demand needs of the CalAm customer jurisdiction, but no like analysis has ever been presented about Marina's current and future water demand needs. It is completely negligent to bypass analysis of water needs equally from where the water is to be taken.

Given that the Salinas Valley Groundwater Basin is among the 21 critically over drafted Basins in California, water is of major importance to all communities in the area. The Monterey County Supervisors declared a recent moratorium for pumping voted by the on June 26, 2018 (Agenda No. 17). Yet, the intrusion of Cal-Am into the Salinas Valley Groundwater Basin, without any current water rights, presents an existential threat to an already seawater intruded region that is struggling to meet agricultural and potable water needs. It is egregious that the CPUC elected to not independently review the Stanford University Aerial Electromagnetic groundwater study to understand the specific harms of the CalAm project to the groundwater.

Water from Marina Coast Water District is affordable to Marina residents today. No adequate compensations to Marina have been identified when harms to the water source result from the project and no study has been conducted as to what impact Cal-Am's project will have upon the cost of Marina's water now and in the future for its residents. The disparity of concerns for Marina's welfare over the wealthier communities of the Monterey Peninsula has been repeatedly evidenced in the entire Evidentiary Hearing and proceedings.

Additionally, the PD failed to explore viable options that will satisfy the Monterey Peninsula water needs without the harm to the City of Marina and MCWD that this proposed water extraction will entail. The CPUC failed in its responsibility to give support for regional community based solutions that would have provided water to the peninsula economically, cooperatively, and sooner than the experimental slant well project.

Cal-Am has counted on Marina's ignorance, its inability to organize and to travel to meetings in distant locations. Many of Marina's residents' face everyday challenges with limited incomes and, language barriers both in speaking and in writing. Complex legal proceedings are daunting when a population lacks education and experience with community activism, and feels powerless to impact governmental processes. And therefore, Cal-Am could propose and advance an unthinkable and unjust water grab in Marina. This violation, by omission, of a fair evaluation of our community values and needs, forms the basis of environmental injustice where marginalized communities are victimized. This is precisely the impetus for state agencies to adopt environmental justice policies.

FAILURE TO PROTECT SENSITIVE HABITATS AND ECOSYSTEMS, RECREATIONAL AND PARK AREAS

Citizens for Just Water agrees with the City of Marina Application of the City of Marina for Rehearing of Decision 18-09-017,

> *C. The Decision Unlawfully Adopted The Final EIR's Wholly Inadequate Significance, Mitigation Measures And Other Determinations In Subject Areas Including Habitats And Sensitive Ecosystems, Land Use Plans and Policies, Terrestrial Species, Groundwater Resources, Marine Biological Resources, Cultural and Paleontological Resources, Growth-Inducing Impacts, Air Quality Impacts, Impacts From GHG Emissions, And Socioeconomic And Environmental Justice Impacts. (pg. 60).*

Marina has long embraced an environmental commitment to conservation, preservation and protection of sensitive habitats and its wildlife. The shoreline of Marina is home to several threatened species, including the Western Snowy Plover. The City has adopted the WSP as an official city symbol, seasonal downtown banners display images of the WSP, ads for new homes in Marina feature this bird in recognition of the pristine nature of Marina's beaches, and the local environment group has the WSP as its mascot.

The FEIR predicted permanent loss of approximately *seven acres of ESHA and the temporary loss of approximately two acres of ESHA* and does assert that this, indeed, is a significant impact[2]. The decision to approve a CPCN and FEIR despite acknowledgement of permanent damage is a violation of both Marina's Local Coastal Plan and its community values. Additionally, the one test slant well in operation since January, 2015, has not been subjected to any review in terms of impact on the populations of Western Snowy Plovers at the CEMEX site. A severe decline in Marina's WSP populations is documented by Point Blue in its annual reports during the test period from 2015, 2016 and 2017. This data was NOT utilized in the FEIR when such data has been available at the time of the FEIR and CPCN approvals. Adding seven more slant wells without this analysis spells disaster for long-term conservation of this species.

Again, the bias of this CPUC project approval allows damage to occur on the sensitive habitats of Marina in favor of the needs of the Monterey Peninsula. Marina citizens see this damage to our environment as completely inconsistent with our community values. The approval of this project has denied our community autonomy to implement existing Land Use Planning and engage city policies for the closure of the CEMEX site where the CalAm project has been chosen to be sited despite our objections. Our community efforts to cultivate this parcel for "conservation in perpetuity" has now been completely undermined and dismissed in favor of the incompatible CalAm industrial desalination/groundwater intake pipes.

It is noteworthy that the permanent loss of a threatened species and its habitat is acceptable to the CPUC because the harm is **not to Monterey Peninsula, a wealthier, politically connected area**. Marina's beaches are public and affordable recreational open spaces shared by visitors and peninsula residents alike. Our beaches are pristine compared to many peninsula beaches and

[2] Final EIR/EIS, Chapter 4, Section 4.6 Terrestrial Biological Resources, p. 4.6-197

should be protected as unique coastal zones for conservation. Federally protected plants and animals on the proposed site are irreplaceable yet this loss is found “acceptable”. This is a disturbing pattern of bias regarding permanent impacts to Marina’s park and recreation areas that are deemed irrelevant in the approvals for this project.

CONCLUSION

To paraphrase the CPUC Code 1001: “If there are complaints from a public agency that may be injuriously affected by another agency’s interference or construction plans, it is the DUTY of the commission to arrive at terms and conditions that are just and reasonable”.

This project is neither just nor reasonable. We feel a request for a rehearing is justified and must be administered promptly. A rehearing is imperative to correct the fundamental biases of the project approval that included no groundwater rights, inequitable distribution of environmental impacts, employed differing standards for community values, ignored AEM science that showed harm to a critically over-drafted basin, and sets precedence for corporate interference into a public water agency’s ability to manage groundwater for its community.

Respectively submitted

/s/ Juli Hofmann

Juli Hofmann
Representative
Citizens for Just Water (“Just Water”)
3201 Martin Circle
Marina, California 93933

Dated: October 29, 2018

EXHIBIT
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**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates.	Application No. 12-04-019 (Filed April 23, 2012)

**COMMENTS OF CITIZENS FOR JUST WATER ("JUST WATER")
TO JOINT STATEMENT OF ISSUES**

Margaret-Anne Coppernoll, Ph.D.
Representative
Citizens for Just Water ("Just Water")
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Tel: (831) 578-7877
E-mail: mcopperma@aol.com

July 10, 2017

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates.	Application No. 12-04-019 (Filed April 23, 2012)

COMMENTS OF CITIZENS FOR JUST WATER ("JUST WATER")
TO JOINT STATEMENT OF ISSUES

I. Introduction

Pursuant to the Administrative Law Judge's Ruling of June 9, 2017, Requesting Parties to Identify Issues for further Evidentiary Hearing (the "Ruling"), and in accordance with Rule 6.2 of the California Public Utilities Commission ("Commission") Rules of Practice and Procedure ("Rules"), the Citizens for Just Water ("Just Water") submits comments to the Joint Statement of Issues ("Joint Statement") in compliance with the comment period ending July 11, 2017.

II. Comments

Specificity of references to the "Joint Statement", Exhibit A:

5A

California American Water (Cal-Am) Statement of Issues: "The feasibility and costs of the desalination plant being constructed in modular increments, with the potential for the Commission to authorize a smaller plant now".

Citizens for Just Water ("Just Water") Comment/Objection to 5A:

Although Just Water appreciates the necessity of exploring the actual costs of the original slant well project as proposed, securing an agreement or issuing a Certification of Public Convenience and Necessity, at this juncture, would bypass due process of the DEIR to complete an evaluation of feasibility. If the DEIR cannot prove "no harm" with a high degree of certainty then any sized slant well would logically be determined "infeasible."

Similarly, the burden of proof falls to Cal-Am to prove it can acquire any groundwater rights to the critically over drafted Salinas Valley Groundwater Basin, whose protection and preservation have been assured through the California Sustainability Groundwater Management Act introduced into law in 2014, as well as through other pertinent federal and state laws and agreements, such as the Agency Act and the California Constitution. These laws and agreements must be honored to protect, conserve, and preserve the groundwater that sustains the community of Marina and the Ord Communities.

Per the DEIR, the question of project feasibility is tied to Cal-Am's ability to prove it has groundwater rights to the Salinas Valley Groundwater Basin. According to the DEIR, Chapter 2.6, Water Rights:

> "…if Cal-Am did not possess legal rights to use feedwater for the MPWSP desalination plant, then the desalination plant simply could not operate and the project would not go forward. That is why water rights factor in as a key project feasibility issue."

Normally, water rights is not a DEIR issue, but it was included, according to the CPUC's ESA consultants, due to the question of feasibility of the project. The substantial significance of this issue relates to the Cal-Am public deception that the slant well feedwater is taken from the sub-surface ocean water. In actuality, the slant well feedwater comes directly from the Perched Dune Sand Aquifer and the 180-Foot Aquifer. This water rights aspect of the project must be resolved before any project approval or certification takes place: Citizens for Just Water ("Just Water") (**Joint Statement of Issues, 7A, 8A and 9A).** The Evidentiary Hearings should allow truthful discussion and testimony on this Cal-Am misrepresentation to the public as it affects every aspect of the project.

52A

Monterey Peninsula Regional Water Authority (MPRWA) Statement of Issues: "MPRWA President and City of Pacific Grove Mayor, Bill Kampe, may submit testimony on the subject of demand forecast and the relation to project sizing."

Citizens for Just Water ("Just Water") Comment/Objection to 52A:

Although Just Water recognizes the necessity of analyzing the actual demand need and sizing of the slant well project by MPRWA, any changes to the slant well project design as currently proposed in size, capacity, or construction should bring the project back to the DEIR review process. The essential concerns brought up in response to the current DEIR need to be addressed first. To parallel track agreements or issue a Certificate of Public Convenience and Necessity within the Evidentiary Hearing process without a full DEIR review would be inexcusable and unjust. To ensure regional justice and to protect the public trust, the CPUC has a fiduciary responsibility to make sure CEQA requirements and DEIR approval are met prior to any certification of the project.

14A-22A

Citizens for Just Water ("Just Water") Comment/Agreement to 14A-22A:

Citizens for Just Water is in agreement with the City of Marina's Statement of Issues.

24A-51A

Citizens for Just Water ("Just Water") Comment/Agreement to 24A-51A:

Citizens for Just Water is in agreement with the Marina Coast Water District's Statement of Issues.

67A

Citizens for Just Water ("Just Water") Comment/Agreement to 67A:

Public Water Now (PWN) Statement of Issues: "Community Values: Regional Justice. Evidentiary testimony should be allowed to discuss Cal-Am invasion, uninvited, to take water from a neighboring water jurisdiction."

Citizens for Just Water is in agreement with Pubic Water Now's Statement of Issue 67A. The Cal-Am taking of the City of Marina's only water supply source, with the intention of exporting that water to the Monterey Peninsula, without regard for the water needs and demands of the local citizenry of Marina and the Ord Communities, is unjust and unlawful. The Evidentiary Hearing should allow for testimony and discussion of this issue.

62A

Citizens for Just Water ("Just Water") Comment/Agreement to 62A:

Public Water Now (PWN) Statement of Issues: "Water rights. AgLandTrust has federal contract rights that have not been acknowledged in prior hearings."

Citizens for Just Water ("Just Water") agrees with the Public Water Now's Statement of Issue 62A. The AgLandTrust has overlying water rights to the Salinas Valley Groundwater Basin, and holds federal and military contracts to preserve, to protect and to conserve the percolated potable water and agriculture irrigation water per its water rights. It would be to the advantage of all parties to acknowledge the existence of these federal water rights contracts, and include them in discussion and testimony during the upcoming Evidentiary Hearings. To ignore this important factor in the CPUC process constitutes regional injustice; to ignore this important factor is a disregard of the public good.

III. Conclusion

Citizens for Just Water ("Just Water") finds that several critical and fundamental issues of social and economic injustice identified in both the Evidentiary Hearing Joint Statement of

Issues, and in the DEIR, must be addressed before any consideration of a down-sized or incremental modular component slant well/desalination project takes place. No agreements should be made through the Evidentiary Hearing process before the approval and certification of the DEIR, as this would be unjust, and would circumvent a fair and full evaluation of a seriously flawed project. Most significantly, Citizens for Just Water respectfully asserts that to do otherwise becomes an unjust regional water solution favoring the proponents of the MPWSP over the community that bears all the risks to quality of life, while receiving no benefits. It is vital that the CPUC conduct a fair and thorough review of the project's impacts on the most adversely affected communities, namely the City of Marina and the Ord Communities, which was glaringly absent from the DEIR.

For the reasons presented herein, Citizens for Just Water sincerely and respectfully requests the CPUC ALJ include for the Evidentiary Hearings, the Exhibit A: Joint Statement of Issues, Citizens for Just Water Statement of Issues 6A-13A, which are in compliance with the Ruling's stipulations that parties may submit issues on subject matter that parties consider necessary for the Commission to make an informed decision.

Respectfully submitted,

/s/ Margaret-Anne Coppernoll

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Dated: July 10, 2017

EXHIBIT
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**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates.	Application No. 12-04-019 (Filed April 23, 2012)

OPENING BRIEF REGARDING
MONTEREY PENINSULA WATER SUPPLY PROJECT
FINAL ENVIRONMENTAL IMPACT REPORT/
FINAL ENVIRONMENTAL IMPACT STATEMENT

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Dated: April 19, 2018

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates.	Application No. 12-04-019 (Filed April 23, 2012)

OPENING BRIEF REGARDING
MONTEREY PENINSULA WATER SUPPLY PROJECT
FINAL ENVIRONMENTAL IMPACT REPORT/
FINAL ENVIRONMENTAL IMPACT STATEMENT

Administrative Law Judges Weatherford, Haga and Houck ruling dated March 28, 2018 called for opening briefs by April 19, 2018, and replies by May 3, 2018. In accordance with CPUC rules, this opening brief is submitted by Citizens for Just Water, consistent with the prescribed outline.

1. Introduction

Citizens for Just Water appeals to the CPUC to re-evaluate the statement in section ES.4.5 that states “Public and agency comments on the Draft EIR/EIS did not require changes in the conclusions of the Draft EIR/EIS that resulted in any new or substantially more severe impacts for the proposed project”. Many response comments of substantial and compelling issues were dismissed, insufficiently explained or relegated to approving bodies’ “preferences” to omit important information.

Just Water makes the following comments to the FEIR and supports the efforts of the City of Marina, Marina Coast Water District, Public Water Now, and Water Plus and thereby incorporate, by reference, every comment, criticism, and deficiencies related to the FEIR identified by these entities.

II. FEIR/FEIS Issues

A. Water Demand, Supply and Water Rights

Citizens for Just water objects to the siting, building and operation of the proposed desalination plant. This project FEIR has neglected to fairly review the harm and damages to a community that will be imposed on by a project that will be sited outside of CalAm’s service area.

In the FEIR 8.6 Organizations Comments and Responses, page 8.6-604 it is stated:

> *MCWD is not in CalAm’s service area and therefore, not included in either the future water forecast, or the analysis of growth policies.*

But the MPWSP clearly impacts the area and jurisdiction. This is a major omission. The current and future needs of the region in which the MPWSP will draw groundwater have not been fairly reviewed. By this omission, any mitigation and/or costs are entirely excluded and not accounted for in the project.

The CPUC has stated (2.6 Water Rights) it will not decide the water rights issue, but will leave this for the courts to decide. By approving this project without *first* obtaining a determination of legal water rights, the CPUC has forced the spending of unnecessary dollars by the City of Marina to to defend its own water source. This project imposition will affect residents of Marina, the Ord communities, Marina Coast Water District and the ratepayers of the Peninsula and Seaside.

Granting approval of this project creates a precedent that places an undue economic burden on small communities. By allowing the “appropriative” or “developed” take of incorrectly defined “brackish water” outside of Cal-Am’s service area, the CPUC and the MBNMS open a path to use appropriative take in ANY coastal community where a large corporation desires to privatize water resources. The parent company of CalAm, American Water, has published public information regarding their tuck-in strategies to buy up small community owned water districts.

For a small community like Marina, it is an undue burden to sustain legal challenges to protect one’s own water resources against a major corporation. This project and all of the unfair consequences forced upon the community—is the very definition of environmental injustice. Lawsuits drain limited public agency resources while CalAm can easily sustain multiple and lengthy lawsuits against smaller entities.

The FEIR in 2-20 *CH 2. Water Demand, Supplies, and Water Rights* concludes that water rights are not required because: 1) No Harm will occur; 2) Brackish water is unusable; 3) Incidental fresh water will be returned to basin; 4) Project will put water to a higher use; 5) No active groundwater use by MCWD

No Harm:

The argument has been made that water rights depends upon the proof of “no harm” as outlined in a communication to Cal-Am by the SWRCB (CalAm Monterey Peninsula Water Supply Project 8.2-18). The very narrow focus of data modeling utilized for the project, cannot be considered objective in considering the question of ‘no harm” which will have devastating consequences to Marina and the Ord communities. The AEM (airborne electro-magnetics) groundwater imaging that is currently completed and available contradicts the report conclusions regarding “no harm” to the hydrology of the area impacted. The issue of harm obviates any other criteria for obtaining appropriative rights. The deciding agencies must also evaluate AEM data to balance the critical information missing in Cal-Am’s limited pilot well data model.

> *As discussed above, in developing a new water source Cal-Am must establish no other legal user of water is injured in the process.* SWRCB FInal Review 2013 pg. 38

> Therefore, Figure 4.4-17 illustrates the MPWSP's contribution to redirecting or reversing the inland advance of seawater intrusion. Because there are many stresses in the basin, the MPWSP project **would not necessarily draw the leading edge of the seawater intrusion line back towards the coast to the extent shown by the particle-tracking output,** but it does indicate that the MPWSP provides a benefit for the basin. FEIR 4.4-91

Assurances are given that this project will reverse seawater intrusion. Yet the above passage explains that “many stresses in the basin”, might not draw to the predicted extent shown. By only using 8 monitoring wells, not including effects of users in the region, and excluding AEM findings there is biased and inaccurate prediction of regional effects. Seawater intrusion is a regional effect.

To date, there are decades of substantiation that show that increased pumping from aquifers results in further seawater intrusion. The most effective and proven mitigation measure is the curtailing of pumping and replenishment of the aquifers. But this report, based on a limited scope of data collection from eight vertical wells, refutes all historical foundations, claiming that this new technology is the solution to regional seawater intrusion by pumping greater volumes of aquifer water at the shore.

Without the inclusion of the far superior AEM data, FEIR concludes:

> 2.6.2 Project Water Rights. Applying the thresholds stated above, the analysis concludes that the MPWSP would not result in a significant impact to groundwater resources. It would not reduce, or affect at all, the availability of fresh water (only brackish water) from the Basin projected to be drawn into the MPWSP supply.

The chosen modeling used in the conclusion of this project does not include data from other users in the region, historical pumping, use an established regional baseline, or, cover a focus of MCWD or FORA use and therefore is insufficient in explaining impacts of a regional nature.

The AEM study confirms freshwater in the Marina area in a layer called the Dune Sand aquifer and a far greater presence of freshwater in the 180' aquifer that was completely overlooked by Cal-Am's science in its assessment of our groundwater Basin.

The Dune Sand fresh aquifer also provides a valuable function of keeping seawater intrusion at bay by replenishing the next underlying water layer (called the 180' aquifer) and also pushing back on the ocean movement landward, thereby slowing saltwater intrusion into the Basin. Any CPUC decision must take a cautionary stance as the FEIR conclusions are based on a flawed super model and does not adequately prove "No Harm."

Brackish Water

The FEIR outlines definitions of fresh, ocean and brackish water:

"Fresh water: water that originated in a groundwater basin through precipitation or rivers and streams; in the context of the MPWSP, fresh water is water that originated within the Salinas Valley Groundwater Basin, identified as containing total dissolved solids (TDS) concentrations of less than 500 milligrams per liter (mg/L), consistent with the secondary drinking water standards established by the SWRCB in Title 22 California Code of Regulations,

section 64449, as recommended levels of TDS.1 TDS is the quantity of dissolved materials in a water sample and is used to quantify the amount of salts in a sample (it is a test for salinity)."

Brackish water: water that is a combination of seawater and fresh water, and thus contains TDS levels between 500 mg/L and 33,500 mg/L. CalAm Monterey Peninsula Water Supply Project 8.2-2 ESA / 205335.01 Final EIR/EIS March 2018

As defined in the FEIR, this leaves the definition of brackish water that Cal-Am labels as "useless" to a huge margin of tds levels of between 500mg/L and 33,500 mg/L. Yet, the federal standards state that below 1,000 mg/L is potable water, and, between 1,000-3,000 mg/L is "useful" water for irrigation and other uses. This is a HUGE inaccuracy applied to the most critical definition of water usability. Using the state standards for potability increases the percentage of freshwater that is actually being drawn into the slant wells as "source water." The FEIR also uses the term "source water" yet no definition is given to describe what this constitute in terms of TDS levels. The MPWSP cannot be approved based on a differing standard of groundwater.

Return Water

A component of the MPWSP will "return" a portion of water back to the "basin" but the area of return is in Castroville, a part of the Salinas Valley Groundwater Basin nine miles from Marina. The FEIR relies heavily on the 2014 State Water Resources Control Board document that IF there is no harm to the SVGB basin, it allows an "appropriative" take of the groundwater.

Furthermore, as discussed in EIR/EIS Section 2.6.3 and included as EIR/EIS Appendix B2, <u>the SWRCB opined</u> on page 40 of its Final Review of California American Water Company's Monterey Peninsula Water Supply Project ("Report") that because <u>"the Project as proposed would return any incidentally extracted usable groundwater to the Basin …</u> , it does not appear that the Agency Act or the Ordinance [3709] operate to prohibit the Project. (8.2.3.3 Authority and Expertise of SWRCB to Opine on Water Rights pg. 8.2-7)

The key word here is "opined" as the SWRCB letter as above was not a legal ruling on the use of any groundwater for this project. There is no "conclusion" in the document that this project meets all the listed criteria. In that letter the SWRCB used such language as: "*CalAm must establish no other legal user of water is injured in the process* (SWRCB FInal Review 2013 pg 38).

Furthermore, Marina Coast Water District has determined that the return water proposed is grossly underestimated and there is no proof that return water to the basin nine miles away, on the north side of the Salinas River, will have any restorative effect on the MCWD service area. These two factors support the concern that both the volume of extracted water and the return water represent harm to Marina and MCWD.

B. Project Description

Subsurface Open Intake - Misrepresentation of the project

In the previous DEIR/EIS the project was described subsurface ocean intake. DEIR/EIS 2017 pg. 2-30 stated that the MPWSP is "**designed to take supply water from the ocean via underground slant wells that draw water from the earth underneath the ocean".**

In the DEIR/EIS p. 3-15 stated that the "source water" is from "**the submerged lands of the Monterey Bay National Marine Sanctuary**"

In response to the many citizen comments that this was not a true 100% subocean intake as described in the DEIR, the report has been simply altered to read:

3.2.1.1 Subsurface Slant Wells Pg. 3-17

The source water intake system would include 10 subsurface slant wells at the coast (eight active and two on standby at any given time) **that would draw water from aquifers that extend beneath the ocean floor**, for treatment at the MPWSP Desalination Plant.

This a significant change in the original project description and violates public trust that a fair evaluation will be given by the lead agencies. This is water that is legally defined by the SWRB as "groundwater" not ocean water. This change creates a project with significant legal issues and conflicts that will require more time and money to resolve.

The MPWSP states that the project will draw "mostly seawater" i.e. 92% seawater versus an 8% take of groundwater. ***This 8% groundwater intake*** *(based on the downsized project of 6.4 mgd)* ***represents more than half of the entire year's take of groundwater by MCWD that currently serves 33,000 people***. This anticipated additional volume of water withdrawn from the area requires exhaustive analysis–more than has been provided in the FEIR regarding the long term impact to the ENTIRE interconnected groundwater resources that MCWD is required to manage in the region.

As early as 2014, Cal-Am promoted the MPWSP concept of a safe "subsurface ocean intake" to influence the environmentalist support that is concerned about sea life entrainment with deep ocean intake desalination. The DEIR (exhibit 1) chart below represents that deception to the MBNMS that positions the slant well pipe as mostly under the ocean.

In the DEIR and FEIR the actual positioning of the slant wells illustrates that the vast majority of the slant well pipe falls beneath the ground (groundwater) and NOT under the ocean floor:

Figure 4. Slant Test Well – Representative Illustration (Not to Scale)

exhibit 1

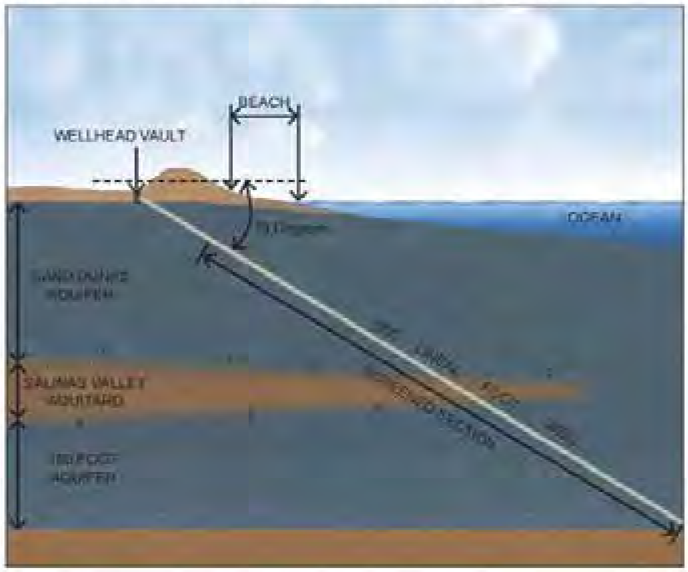


exhibit 2

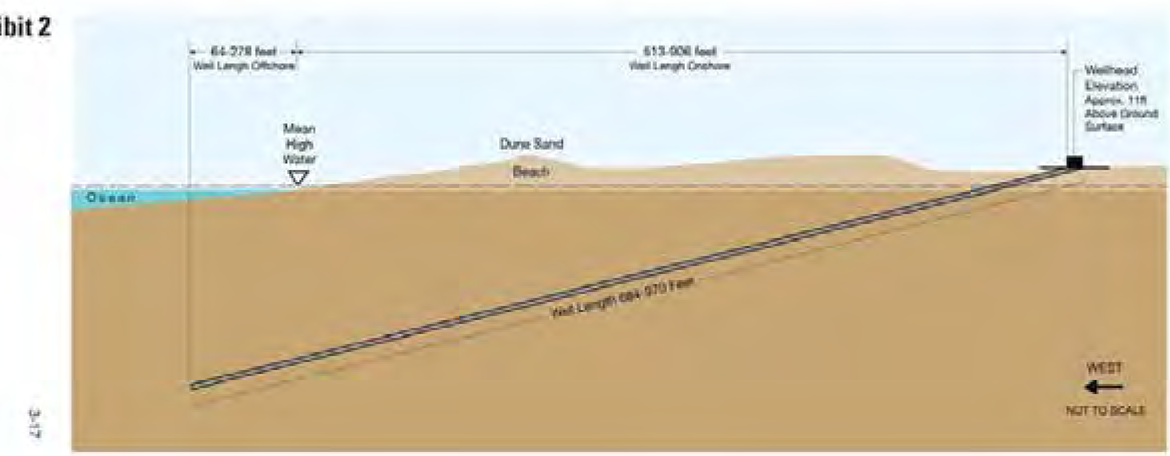
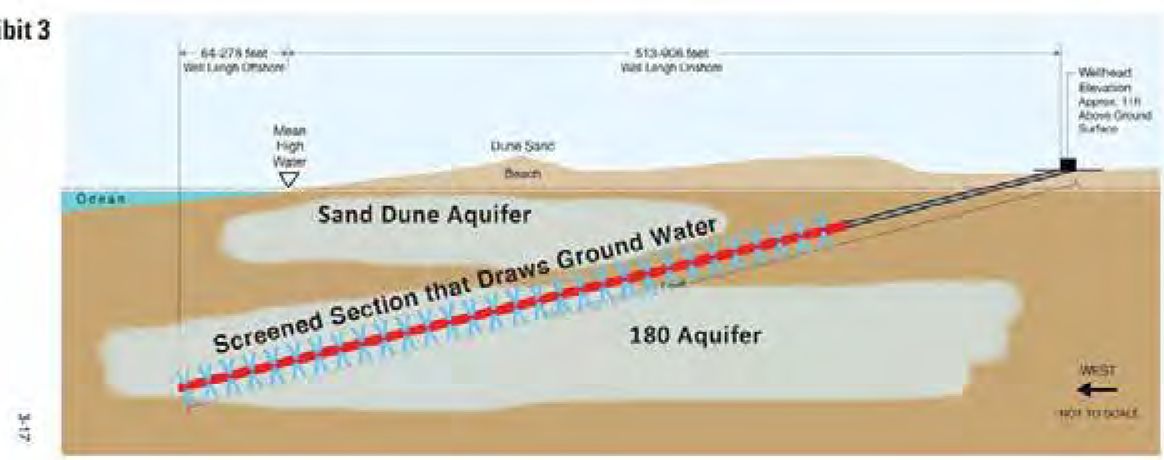


exhibit 3



Also, (in exhibit 2) the chart is deceptive and does not show how the screened intake along the vast majority (970 feet as shown) of the pipe lies ***under the land surfaces***. Viewing this graphic, most would assume that the intake is like a straw and this creates the notion of a safe intake at the pipe end that is located *under the ocean*. A further flaw of the graphic for the layperson is that there is no representation of the the groundwater resources in relation to the slant well.

Citizens for Just water has modified the DEIR/FEIR graphic (exhibit 3) to show where the groundwater is and how the slant well takes up groundwater. The truth is that the slant wells are more economically efficient when a portion of the "source water" contains groundwater. The screened slant well is designed to pull up water from groundwater aquifers under the land subsurface - not from under the ocean and this will be without legal rights to do so.

Of further concern, in the evaluation of this project, is the omission of information regarding the costly problems encountered during installation of the slant well. The current test well does not match the original permit parameters of location on the dune or the final length of the pipe. There were issues with removing the well casing that have permanently occluded a portion of the screen and interferes with the uptake of groundwater - the same well from which data provides the foundation for feasibility for this project. The passage below was taken from the MPWMD TAC Meeting, 7/6/2015, item No. 2, Item Page 26, Packet Page 32.

> *Due to concerns about coastal margin erosion and sea level rise, the test slant well at then CEMEX facility starts nearly 600 ft inland from coastline. Consequently it barely reaches coastline where it is at a depth of approximately 200 feet (Figure 1b). Drilling and construction of the test slant well was challenging and the drill rig was unable to retract a portion of temporary casing, which remains in the ground and limits flow into a 150-ft-length of the nearly 600-ft-long well screen (Figure 1c). However based on more than one month of test pumping at 2000 gpm (e.g. Figure 2-10, Geoscience, 16 June 2015), the test slant appears to be capable of producing the design flow rate of ~2100 gpm.* Review of Subsurface Intakes Monterey Peninsula Water Supply Project DEIR 24 June 2015 Page 2

Because the slant wells are experimental and do not have any historical facts on feasibility of long term operation, there is a high probability that other problems will be encountered during construction. There must be a more comprehensive accountability to the rate payer for the likelihood of further unanticipated costs due to the untested nature of the slant wells.

C. Environmental, Setting, Impacts and Mitigation Measures

The City of Marina should be a main focus in this section of Operations and Facility Siting Impacts of the FEIR and is notably absent. Areas of lesser impacts are considered under this section while the area of greatest direct impacts is ommitted.

> 4.10.1 Setting/Affected Environment, that states the "proposed project would be located *along the northern coast of Monterey County*" … and '**although the cities of Castroville and Marina are outside of the Monterey District, these cities could be affected by construction activities".**
>
> 4.20-18: Operational and Facility Siting Impacts: "development and operation of the proposed project would result in higher water rates for most ratepayers within CalAm's Monterey District, which includes the identified low-income populations in Sand City, Seaside, and downtown Monterey"
>
> 4.20.2.3: Several programs that "would reduce the burden of increased prices on low-income households in the Monterey District" and further describes CalAm's return water at discounted rates to the Castroville Community Services District (CCSD) as beneficial "because it (CCSD) would receive higher-quality water for the same price that pumping degraded water otherwise would cost. ".

Impacts to Snowy Plover

> ***CalAm Monterey Peninsula Water Supply Project 8.2-18*** *MBNMS is awaiting a Biological Opinion from USFWS regarding the proposed project and its effects on subject listed species and designated critical habitats under Section 7(a)(2) of the Federal Endangered Species Act.*

The 400-acre area that makes up the CEMEX sand mining operations includes some of the best preserved dune habitats in the state. Animals found on-site include the federally threatened western snowy plover, the federally endangered Smith's blue butterfly and black legless lizard. Several threatened or endangered species include Yadon's wallflower, sand gilia, and Monterey spineflower (LandWatch, Monterey County 2001). As the original dune system has been reduced and fragmented from various impacts, the risk of extinction has increased for some of these species. For this reason, evaluation of potential impacts to these fragmented population remnants needs to be considered at the site specific to long-term impacts before issuing approvals for this project.

The FEIR reports benign acceptance of the damage that will be done to the sensitive habitat and to the WSP populations on the City of Marina jurisdiction. The project was not supported nor welcomed into Marina's jurisdiction and this special feature of the City is being jeopardized by the insertion of this industrial project. Mitigation measures that discount the impact to Marina, in favor of other areas where the birds may nest, hatch and fledge because of unfavorable or destroyed habitats in the Marina area is yet another example of environmental injustice.

> *The impact to plover habitat and behavior from construction of the nine subsurface slant wells and conversion of the test well to a permanent well may have lasting effects on snowy plover behavior and would be significant.* (4.6.5-136)
>
> Construction during the snowy plover wintering season (October 1 through February 28) could directly or indirectly adversely impact individual birds if present within or

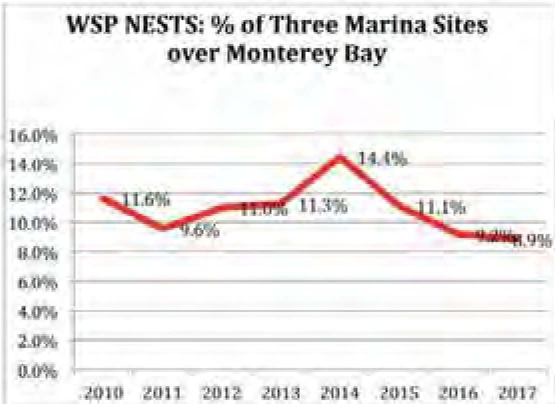
adjacent to the construction area. Human presence and construction noise and activities can cause roosting plovers to fly and disturb resting or foraging activities. This would be significant. (4.6.5-136)

Construction work within the western end of the proposed Source Water Pipeline would result in temporary habitat impacts (since the construction area would be returned to pre-construction conditions) to approximately 0.2 acre of potential habitat (some of this area may overlap with the impact area for the subsurface slant wells as described above), which would be a significant impact. (4.6.5-142)

Although birds may be initially disturbed and temporarily displaced during construction, and there is some potential for nest abandonment and failure, the site would be returned to pre-construction conditions and birds would be able to utilize the site following construction. However, the net impact on the western snowy plover is anticipated to be significant. (4.6.5-143)

In an informal, citizen review of the status of the WSP, specifically related to the three Marina sites closest to the project site, the sites have been impacted since 2014. The CalAm test slant well was approved in Dec. 2014, construction began Jan. 2015 and was completed March, 2015 and continued operating until Feb. 2018. The CCC issued a permit extension in Dec. 2017 to allow the slant well to not be dismantled per the original permit and to continue to operate at a maintenance mode.

Source of data: Preliminary Reports NESTING OF THE SNOWY PLOVER (Charadrius nivosus) IN THE MONTEREY BAY AREA, CALIFORNIA IN 2010, 2011, 2012, 2103, 2014, 2015, 2016; Point Blue Conservation Science Publication, Point Blue Conservation Science; pending release of final reports.



Additionally, the City of Marina's Local Coastal Plan recognizes the importance of protecting and preserving Federally listed threatened and endangered species. The City as a whole has used the WSP in its downtown banner as part of the City's unique identity, that currently lines the city streets: Further, The Dunes a large residential development community, currently selling homes, has depicted this important draw of pristine beaches with wildlife habitats in their marketing.

The Marina Local Coastal Plan is dismissed as irrelevant

"Much of the Marina Coastal Zone either is environmentally sensitive because of the presence of rare and endangered species or has the potential for supporting a rare and endangered species". (City of Marina, Local Coastal Plan, Vol. II, pg. 5)

Current agreements are in place to close the CEMEX sand mining operation, and, include plans to restore dunes habitat. There is NO industrial project that would be in alignment with this goal. Yet, the FEIR outlines that there will be permanent damage four acres of habitat, and, 15 acres of habitat would be "temporarily impacted" over an 18-20 month period of construction time. The chart from the FEIR 5.6-12, 4.4-6 indicates "substantial adverse effects" but concludes this would be "Less than Significant Impact with Mitigation." The FEIR is lacking an itemized mitigation plan along with how the specific goals will be met and must be developed by *The Biological Opinion from USFWS.* There must be protections in place for special status species before issuing approval of this project with considerations of the impacts to the City of Marina that has an active interest,concern and economic investment in preserving this special species and its habitat.

AEM (Airborne Electro-magnetic imaging) Stanford University Study

The cautionary relevancy of any scientific groundwater modeling is documented in the DEIR statement: "The applicability or usefulness of the model depends <u>on how closely the mathematical equations approximate the physical system being modeled</u>." (Section 4.4.4.2 Groundwater Modeling, 2017, MPWSP DEIR). Thus we see that Cal-Am's conclusion of "no harm" to the Salinas Valley Groundwater Basin was generated from applying a "super model" that was based upon data from 8 random vertical wells. AEM surveying to 1,000 feet in depth, generates enormous information far beyond a small vertical well sampling. AEM is indisputably a superior "approximation of the physical system being modeled".

Because of the the seriousness of the "no harm" determination, the report should apply two scientific methodologies to establish <u>duplication</u> that are both inclusive of all necessary information to determine "no harm".

This new evidence, shows that the project would be clear violation of State Water Resources Board mandates to protect groundwater resources. Removing fresh water that provides a protective barrier for seawater intrusion and acts to replenish deeper water stores constitutes real and measurable 'harm." No approval of this project should be provided until this critical AEM discovery is fairly reviewed to ensure no damage to the integrity of the groundwater resources.

D. Alternatives

There is an interesting complication of the MPWSP seeking approvals of this FEIR when other options that do not entail a desalination plant at this time, have not been fully vetted. If the approval is sought among options that only include desalination plants, then final approval must therefore approve a desalination project whether they are necessary or not. However, three major public agencies in our region are planning for a water solution that would meet the milestones of the CDO, without all the complications of the MPWSP, and will avoid litigation. Litigation can delay any project and will increase costs. This three-party strategy will require delay of a CPCN so that a plan that involves MCWD, MOW and MPWMD can be finalized, reviewed, approved and implemented. The CPUC Administrative Law Judges had requested alternative local planning efforts. As a result, a specific local proposal for a regional solution has emerged. The plan involves further expansion of the recycled water, MCWD provision of reclaimed water and a "water loan" arrangement, all in combination to sustain the Peninsula/Seaside with enough water for 10-15 years, all at less cost than a rushed desal project. This would avoid harm to the Salinas Valley Groundwater Basin, remove the likelihood of litigation, assist affordability, and obviate the speculative and unknown path for prescriptive water rights.

This regional effort demonstrates the kind of collaboration that is hard to come by and is resulting in a viable plan for the availability of affordable water for the Peninsula and Seaside with the cooperation of three public agencies and within a reasonable amount of time. Citizens for Just Water strongly suggests that these local initiatives should be supported and enabled by the decisions of the CPUC.

E. Other

Community Values

The very vexing matter of this project is that a large commercial plant is being proposed in the City of Marina jurisdiction but only the "service territory" of CalAm customers have been included in public outreach. It is incredulous that Marina and Ord communities received one CPUC public presentation regarding the scope of this project! In such absence of public outreach, impermissible bias exists in the approval process.

Federal Regulations *Executive Order 12898: Environmental Justice:* Specifically, EO 12898 requires that: Each Federal agency shall conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have ***the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities, because of their race, color, or national origin.*** (FEIR 4.20.2.1)

*For evaluation criteria for Environmental Justice, the California Environmental Quality Act states (*4.20-11)*:* **Economic or social effects of a project may be used to determine *the significance of physical changes caused by the project*.** [...] Where an EIR uses economic or social effects to determine that a physical change is significant, the EIR shall explain the reason for determining that the effect is significant.

The impacts to the shoreline habitat constitute "physical changes". As the necessary biological plan by the Fish & Wildlife permanent impacts to four acres of WSP sensitive habitat and15 acres of temporary Services has not been developed, this FEIR is absent such critical planning and mitigation measures for the WSP and other endangered or threatened species. Mitigation measures must be conceptualized as proactive <u>prevention</u> of harm not conciliatory measures once the harm is done.

Furthermore, the physical change in groundwater quality with increased seawater intrusion that will adversely and assuredly impact the accessibility and affordability to potable water for 33,000 persons is a physical change that constitutes environmental injustice to a disadvantaged community who have not requested, invited or approved such intrusions by a private, for profit corporation to illegally take the sole source of potable water.

In determining the socio-economically disadvantaged communities to be affected by the MPWSP, Seaside, a disadvantaged community is factored into the "Monterey district" with three of the most wealthy communities i.e. Carmel, Pacific Grove and Monterey. The project is for the benefit of *these* communities and adding Seaside demographics will minimize Marina's unique demographics of socio-economic disadvantage… the community that will receive NO benefits but will be the area harmed by this project. Other than rates, insignificant physical harm will be done to Peninsula communities compared to the massive construction and operation of this industrial plant in the shoreline and coastal areas of Marina. This kind of awkward statistical distortion again, takes the focus off Marina as the sole disadvantaged community that will suffer the harms.

According to the PUC's own codes, the very idea of the "wrongness" of doing another public entity harm and attempting to provide for a sense of "just" actions is clearly documented in California Legislative Information, Public Utilities Code-PUC.

Division 1. Regulation of Public Utilities [201-3260]20:

If any public utility, in constructing or extending its line, plant, or system, interferes or is about to interfere with the operation of the line, plant, or system of any other public utility or of the water system of a public agency, already constructed, the commission, on complaint of the public utility or public agency claiming to be injuriously affected, may, after hearing, make such order and prescribe such terms and conditions for the location of the lines, plants, or systems affected as to it may seem just and reasonable. (Amended by Stats 1982, Ch. 573, Sec 2.)

California Legislative Information, Public Utilities Code---PUC. Division 1. Regulation of Public Utilities [201---3260](Division 1 enacted by Stats, Ch. 764) Part I. Public Utilities Act [201---2120] (Part1 enacted by Stats.1951, Ch. 764) Chapter 5. Certificates of Public Convenience and Necessity [1001---1102] (Chapter 5 enacted by Stats. 1951. Ch. 764) Article 1. Specified Utilities [1001---1013] (Article 1 Enacted By Stats. 1951, Ch. 764).

MCWD as the exclusive GSA to the region is responsible under the SGMA law to protect and restore the groundwater basin. The public agency has cooperatively participated in regional water projects such as the Pure Water Monterey recycled water project. The Cal Am slant well project is not a regional water solution. There can be no cooperation with a project that necessitates a campaign of proscriptive water take to provide expensive water to the peninsula. The project interferes with MCWD's ability to manage groundwater resources and plan for future water needs within its own service district.

As a public utility, Cal Am has a poor record of environmental sustainability, as it has overpumped the Carmel RIver and the Seaside basin that it manages. Confidence in Cal Am to provide a long term water solution has never been lower and its own ratepayers want to oust them after years of unpopular Cal Am policies. A poor record of environmental sustainability is the root cause of the Peninsula water problems today. Cal Am should not be granted approval for a large, costly, unvetted, harmful project that is not a true regional water solution.

III. Present and Future Public Convenience and Necessity of Project – Environmental Factors

A. Public Utilities Code Section 1002(a)(4) and Other Law

Until all issues as outlined above and as identified by MCWD, City of Marina, Public Now, and Water Plus have been adequately addressed, the CPCN should not be issued.

B. Other

No Comment

IV. Conclusion

A review by Citizens for Just water concludes that FEIR does not offer a regional water solution that should be supported by the CPUC or the MBNMS agencies. The FEIR omits Marina and the Ord Residents from any considerations to water needs and future growth. It does not prove "no harm" with its limited data modeling and did not use "Best Practices" science with an established baseline that included all relevant water dynamics in the region. There are no water rights that can be appropriated where harm will result. The project will unfairly impact the community and the extensive foreseeable damages from this project is a clear case for environmental injustice. Approving a project based on appropriative water take sets a dangerous state precedent that favors private corporation over small community control of water resources. The significant impacts to threatened species have not had full evaluations for protection, a completed mitigation report or itemized reparations should harm occur from the full buildout and operation of this project. This project does meet the requirements of SGMA and CEQA. The preferred utilization of an experimental slant well design is ill-advised for the lack of accountable costs to the ratepayers and the great likelihood there will be many unaccounted costs for a technology that has no history of reliability or function in providing desalinated water to consumers anywhere in the world.

DATED: April 19, 2018

Respectfully submitted,

Juli Hofmann

/s/ Juli Hofmann

Citizens for Just Water

EXHIBIT

I

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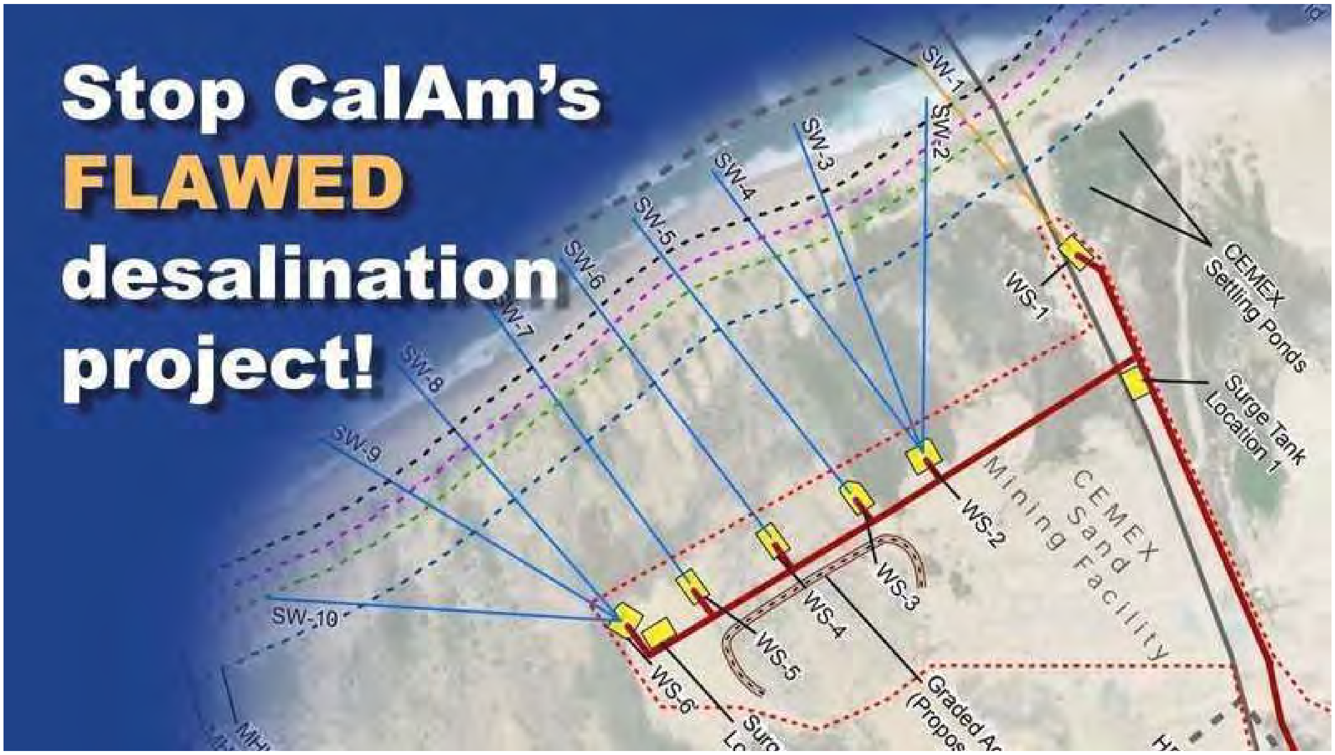
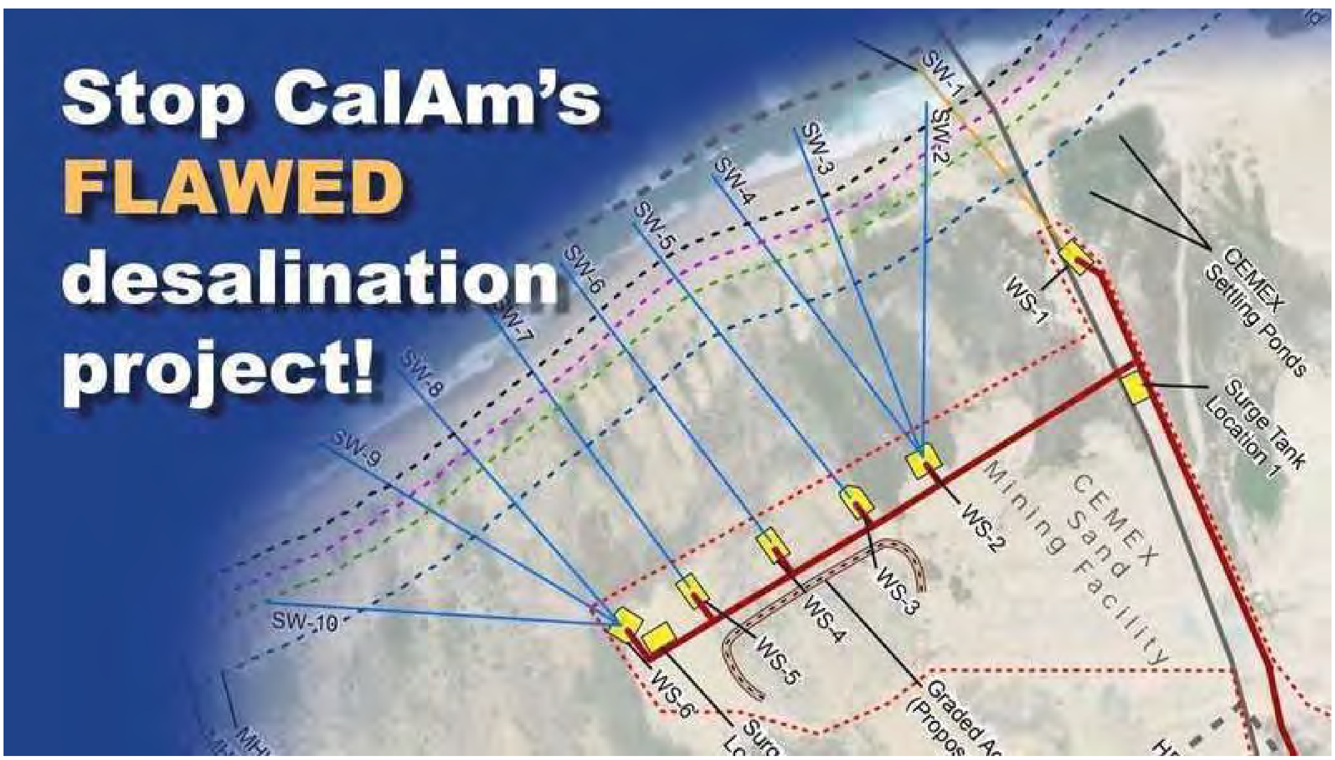


STOP Cal Am's FLAWED desalination project!



0 have signed. Let's get to 500!

Hans Ongchua started this petition to Representative Jimmy Panetta and 32 others

Cal Am is moving forward to build its **FLAWED** slant-well desalination plant in the City of Marina. ***Key permit applications are fast approaching!***

Tell decision-makers to **STOP THIS ENVIRONMENTALLY HARMFUL, ILLEGAL, AND COSTLY PROJECT!**

A FASTER AND MUCH MORE AFFORDABLE WATER SUPPLY ALTERNATIVE EXISTS!

PROBLEMS WITH CAL AM'S DESAL PLANT

- **Steals from Marina's groundwater** to supply the Monterey Peninsula and benefit Cal Am and its shareholders
- **Has no legal water rights** to Marina's water
- **Increases seawater intrusion** into one of Monterey County's **critically over-drafted basins**
- **Costs far more** than other options

RECYCLED WATER FROM THE MONTEREY ONE WATER'S EXPANSION IS A SUPERIOR ALTERNATIVE

- Water would **cost less than a third** that of Cal Am's desal
- Can be **brought online faster** than Cal Am
- Can **remove the Cease-and-Desist Order imposed by the State Water Board** and **prevent rationing** for the Peninsula
- Is a **public non-profit** project unlike Cal Am's for-profit desal

ASK OUR LEADERS AND DECISION MAKERS TO ...

- **Support the Monterey One Water recycled water expansion**
- Convene a public workshop to **hear community input**
- Explore **a PUBLICLY-OWNED regional desalination project** that benefits **ALL** Monterey Bay communities

We, the people of the Monterey Peninsula, the City of Marina, and the Ord communities, ask our officials and decision makers to do the right thing!

Don't allow private interests and profits to block the public interest!

Signing this petition will send your message to over 30 elected officials.

Sponsored by Public Water Now and Citizens For Just Water

Start a petition of your own
This petition starter stood up and took action. Will you do the same?
Start a petition

Start a petition of your own

This petition starter stood up and took action. Will you do the same?

Report a policy violation

Complete your signature

0 have signed. Let’s get to 500!

First name
Last name
Emai
San Diego, 92130

United States

United States

San Diego

CA

92130

☑ Display my name and comment on this petition

Sign this petition

By signing, you accept Change.org’s Terms of Service and Privacy Policy, and agree to receive occasional emails about campaigns on Change.org. You can unsubscribe at any time.

Trending petitions

Sign this petition

Today: Hans is counting on you

Hans Ongchua needs your help with “**STOP Cal Am's FLAWED desal project!**”. Join Hans and 294 supporters today.

Sign this petition

Today: Hans is counting on you

Hans Ongchua needs your help with “**STOP Cal Am's FLAWED desal project!**”. Join Hans and 294 supporters today.

Sign this petition

English (United States)

English (United States)

EXHIBIT

J

The CalAm Desalination Project:

Can CalAm STEAL Marina's Groundwater?

January 30, 2019
6:00-7:30 pm

Marina Public Library
188 Seaside Court in Marina

speakers:

Marc Del Piero, Attorney at Law
Expert on groundwater rights

How groundwater law impacts CalAm's Desalination Project

Keith Van Der Maaten, General Manager
Marina Coast Water District

Stanford Study shows CalAm's Desal will harm Marina's groundwater

Steve Zmak Photography

PUBLIC WATER NOW

JUST WATER

Sponsored by Citizens for Just Water and Public Water Now

c4justwater.org | @justice4water | publicwaternow.org | @PublicWaterNow

EXHIBIT
K

Marina/Fort Ord Water: CODE RED

FREE PUBLIC FORUM

The California Public Utilities Commission has approved CalAm's slant well desalination project *without reviewing water rights, AEM science or less costly viable alternatives!*

Don't miss this meeting!

Tuesday, November 27
6:00-8:30 pm

NEW LOCATION:
Marina City Council Chambers at 211 Hillcrest Avenue

How can Marina residents and Peninsula ratepayers fight for a true regional solution?

What does this flawed project mean for the peninsula rate payers and Marina's groundwater? Come discuss possible actions that citizens can take to inform the decision makers why this is NOT a regional water solution.

EXHIBIT

L

DRAFT: Speaker Agenda For Just Water Public Forum

Wednesday April 11, 2018 6:30-8:00 pm, City Hall
and Tuesday April 17, 2018 6:30-8:00 pm, Marina Library

I. 6:05-6:10 pm Welcome: **Kathy 5"**

(Note: on April 17, due to unavoidable scheduling of Forum at library to have before the April 19 FEIR response deadline, Bruce will come at start of program so we will have him speak first and be a bit late for Council meeting, can Layne be a speaker for that topic on April 17?)

II. 6:10-6:25 pm Quick over view of the Cal-Am Slant Well Project **Juli/Lisa 10 "**

III. 6:25-Looking into the future and precedent setting. What could happen to Marina and the Peninsula if this project is approved and built? **George 5"**

IV. Issues in the FEIR not adequately addressed or omitted **Gail/Others 15"**

V. Why was AEM not used in the evaluation? How can the AEM help us? **Keith 10"**

VI. Update from the City; what we plan to do. **Bruce 10"**

VII. Update from MCWD; what we plan to do. **Keith 10"**

VIII. Update from PWN; how the Peninsula/Seaside/Marina/Ord communities have mutually supportive objectives. **George 5"**

IX. What can you do today? Just Water. **Kathy 5"**

X. Q & A **Kathy 10"**

EXHIBIT

M

RESOLUTION NO. 2017-56

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MARINA AUTHORIZING THE CITY MANAGER TO EXECUTE A CONTRACT WITH KP PUBLIC AFFAIRS FOR PUBLIC RELATIONS AND ADVOCACY SERVICES

WHEREAS, one of the most important issues facing the City of Marina is the protection and preservation of the City's water resources, and;

WHEREAS, the Monterey Peninsula Water Supply Project proposed by California American Water Company is a project to develop a desalination plant and associated facilities to supply water to areas that CalAm serves on the Monterey Peninsula, and;

WHEREAS, the City of Marina is increasingly concerned about the potentially significant and irreversible impacts of the Monterey Peninsula Water Supply Project on Marina's water supply, water quality, sensitive coastal environment and citizens, and;

WHEREAS, the City of Marina's comments to the Draft EIR/EIS for the Project set forth that the Draft EIR/EIS is legally inadequate in many critical subject areas and fails to meet the requirements of CEQA AND NEPA, and;

WHEREAS, there is a need to engage a public relations firm to assist in the advocacy, public relations services, collaboration with partners, coalition building, grassroots outreach and transparency of the Project to citizens, and;

WHEREAS, KP Public Affairs has the expertise needed to assist in these areas.

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Marina does hereby authorize the City Manager to execute a contract with KP Public Affairs for $80,000 subject to approval by the City Attorney.

PASSED AND ADOPTED by the City Council of the City of Marina at a regular meeting duly held on the 6th day of June 2017, by the following vote:

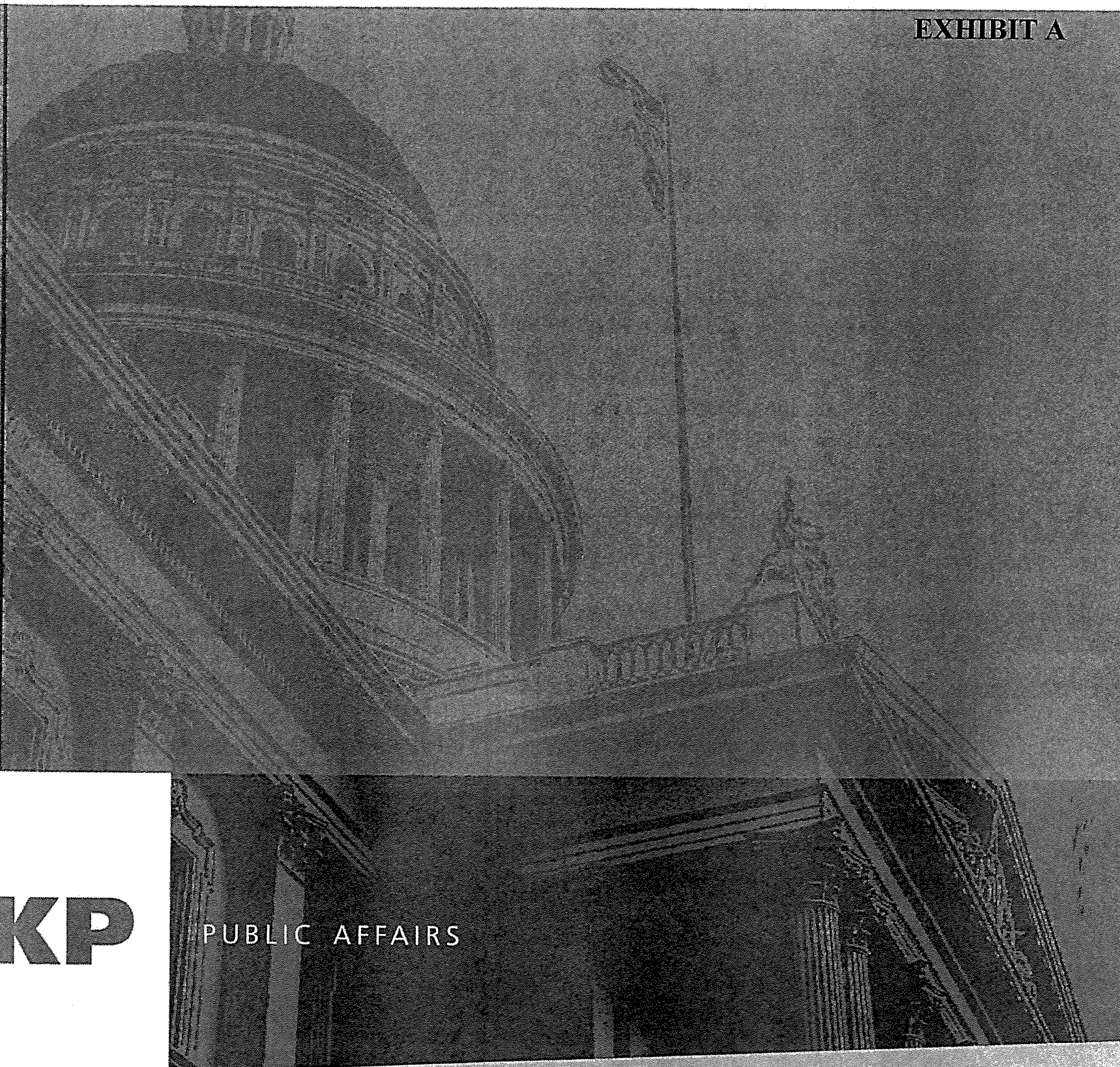
AYES, COUNCIL MEMBERS: Amadeo, Morton, O'Connell, Brown, Delgado
NOES, COUNCIL MEMBERS: None
ABSENT, COUNCIL MEMBERS: None
ABSTAIN, COUNCIL MEMBERS: None

Bruce C. Delgado, Mayor

ATTEST:

Anita Sharp, Deputy City Clerk

EXHIBIT A



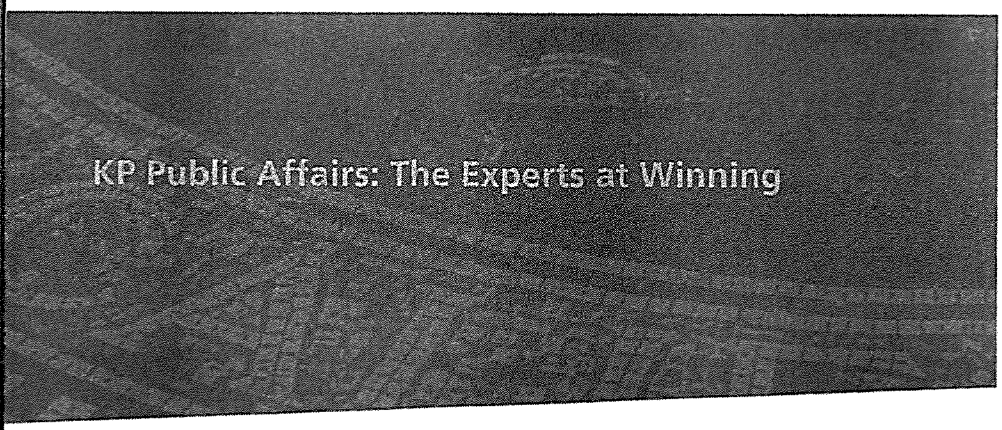
KP PUBLIC AFFAIRS

THE KP DIFFERENCE

KP Public Affairs offers all of the essential elements for developing a winning public affairs strategy – Policy-Oriented Advocacy, Comprehensive Public Relations, Knowledge-Based Analysis, Broad Expertise, Experienced Professionals, and the respect that is earned with a long History of Success.

The process of policy making is constantly changing in California. Term limits, changing demographics, technologically sophisticated interest groups, a savvy, activist-oriented population, and an economy large enough to influence markets and public policy decisions around the globe – all play a role. To succeed here, you need to recognize that California is not just a special place – it is a serious one. New business initiatives receive a more thorough review here than anywhere else. New ideas find more opportunities to take root and flourish.

KP Public Affairs is uniquely positioned to meet your needs. Our approach is based on a deep understanding of the law, the political environment and our clients' specific business goals and objectives. Our success and the quality of



service we deliver do not rise or fall with a change in political leadership. And with our emphasis on substantive analysis, KP is often called upon to lead negotiations on the major public policy issues facing the state each year.

We invite you to learn more about the combination of services and resources that KP offers. Let us help you design and execute a winning public affairs strategy.

POLICY-ORIENTED ADVOCACY

A successful advocacy program has three key elements: 1) political strategy, 2) policy knowledge and expertise, and 3) aggressive management and implementation.

Our approach is simple. We learn as much as possible about a client's issue, apply our resources to develop a comprehensive political strategy, bring our policy expertise and experience to bear and work tirelessly to achieve our clients' goals. To assist our clients, we use the following methods:

- Issue Management: KP conducts background research to understand the client's business so that we can effectively manage the issue at all levels and deliver winning message development, testimony preparation and presentations.

- Legislative and Regulatory Issue Tracking: Tracking issues is critical to identifying when and where legislation or regulation may emerge that could affect a client's business.

- Ally Recruitment and Coalition Building: When tackling an issue in the state government, it is often beneficial to enable many voices to carry the same message. KP successfully builds lobbying coalitions while managing public affairs and grassroots efforts.

- Bill Drafting and Bill Analysis: KP analyzes legislation to better understand how a proposed bill will affect a client's bottom line. We draft legislation to advance the specific goals and objectives that will serve our clients' interests most effectively.

- Budget Advocacy: KP follows the state budget throughout its various steps and advises clients on the business impact of proposed budget items and related funding issues. KP understands how funding is allocated, the ways budget bill language is shaped, and the impact that fees and public spending can have on our clients' interests.

COMPREHENSIVE PUBLIC RELATIONS

Creating a successful communications plan involves a lot more than media releases and news clips. It requires an understanding of the client's business, research and insight into the obstacles that have to be overcome, experience in shaping public opinion, a well-designed messaging program and the discipline to stick to it as well as the flexibility and creativity to respond quickly to an evolving situation.

At KP, effective communications are an integral part of everything we do. Our team of professionals has managed internal and external communications for some of the largest corporations in the world. We've helped to open multi-million-dollar casinos and major industrial plants, arranged for the preservation of thousands of acres of environmentally-sensitive lands, launched new products, and assisted with complex labor relations negotiations. A winning strategy often requires specific support in the following areas:

- Strategic Counsel: KP puts primary emphasis on initially developing a comprehensive strategy that accurately reflects our client's values and interests and that will accomplish their objectives. We continue to provide our clients with ongoing strategic counsel, recognizing that circumstances change and tactics often need to be revised.

- Crisis Management: In a competitive political environment, anyone can become a target – not always because of what you do but sometimes just because of who you are. Whether it involves politics, a natural disaster or an industrial accident, we have the resources, the experience, the agility and the commitment to tireless service to help our clients meet a crisis.

- Reputation Management: KP provides public relations services for corporations of all sizes. We understand the needs of both national and international firms, and can create a public relations program based on the unique needs of an individual company.

- Media Relations: KP has the media contacts and long-term relationships that are essential for managing day-to-day media relations for our clients. We organize major events, press conferences, editorial board tours and all the other elements that go into encouraging positive coverage or responding to negative reports where needed. But we also understand that sometimes the best media relations involve keeping our clients' names out of the news.

- Project Siting and Development: When a client plans to locate a facility in a new area, managing perceptions at the local level is often essential for winning regulatory approval and avoiding hostile intervention from outside interests. KP has the experience and the record of proven success that has provided winning strategies for industrial projects large and small throughout the state.

- Coalition Building: Success can often depend on bringing together diverse groups that share an interest in a beneficial outcome. KP's experienced professionals have helped to organize some of the largest coalitions in California history.

- Grassroots Outreach: Building public support for an issue involves reaching deep into communities and working through grassroots organizations. KP brings our clients' messages into the community centers, city halls, church buildings, and neighborhoods to help build support and communicate with the public at the local level.

Successful representation of our clients requires more than conventional methods.

COMPANY HISTORY

KP Public Affairs' leadership in public affairs management grows out of the recognition that in California today, successful representation of our clients requires more than conventional methods of lobbying and legislative advocacy can deliver. Government at all levels has become more transparent, more open to public participation and subject to much closer public scrutiny. Analysts, commentators, academics and the media take more interest in the powers of state and local government and their potential for changing public policy. Most important, in an age of term limits, the old-style of politics solely based on personal relationships can no longer meet the needs of the people who do business here.

That was just part of the vision that Michael Kahl and Frederick Pownall shared as they built KP Public Affairs into the largest public affairs management firm in California. Each had established his own, very successful advocacy practice beginning in the 1970s. In 1996, they joined together to create the modern firm, offering advocacy and analysis in a steadily expanding program of client services. Public Relations was added as an essential component of effective representation in 1996.

In 2004, KP Public Affairs successfully completed the transition of the firm's management and ownership to a larger partnership of senior professionals. And in 2005, the company further expanded the scope of its representation through a merger with the lobbying firm Manning & Associates.

For more than a decade, KP Public Affairs has been ranked as one of the leading lobbying firms in California.

KP

BROAD EXPERTISE

KP's talented professionals bring extensive experience in many issue areas together under one roof. At the onset of our relationship with a client, we devote the time necessary to develop a comprehensive understanding of your business needs. Knowledge is what makes the governmental process work – knowledge of the rules, the issues and the people involved. It is a system that rewards creativity. KP offers noteworthy expertise in the following areas:

AGRICUTURE

California agriculture is the most productive in the country, but farming communities face epic challenges in the areas of urbanization, labor, and environmental quality. These challenges continue as state officials propose new policies to limit the use of California land and water resources. KP Public Affairs has successfully represented farm interests on a wide range of issues including fee increases, drainage and water quality and supply.

BUDGET ADVOCACY

The annual budget dance is a convoluted process that is a mystery to many, but not to KP. Each year, we shepherd important funding decisions through the budget process for public agency and corporate clients. KP has a track record of successfully getting funding in both good and bad budget cycles and limiting the imposition of unnecessary fees on our clients. We have helped clients get funding for historic restoration work, water conservation projects and to pay for new programs that benefited state contractors. We also have successfully advocated for legislative appropriations of bond measures passed by the voters.

BUSINESS REGULATION

KP Public Affairs represents a number of the state's leading business trade associations and has a long history of leadership in supporting governmental reforms. In the 1990s, KP led the campaign to require state agencies to consider the impact of new regulations on the state's economy and to establish economic impact as a significant factor in the regulatory process. In recent years, KP Public Affairs led the lobbying efforts to defeat onerous financial privacy rules and participated in the broader business community campaign to curb frivolous lawsuits.

ENERGY

For decades, KP Public Affairs has represented America's leading oil companies as well as numerous other energy-related clients in matters before the Legislature, the regulatory community and other policy-making bodies. KP Public Affairs has been involved in virtually every major change to the state's environmental and energy laws and regulations, and is universally recognized as the state's top strategic firm in this subject area.

ENVIRONMENTAL REGULATION AND LEGISLATION

KP Public Affairs has successfully represented companies large and small, from the top of Fortune's 500 to entrepreneurial startups, in helping business leaders work through some of the state's most controversial and complex environmental issues. Through its work with the Legislature, the Governor's office, state agencies and local air and water

KP

quality boards, KP's environmental practice provides companies with strategic counsel and individualized assistance in mitigating adverse policy considerations and navigating the regulatory and legislative maze to achieve our clients' goals.

FINANCE

As the world's eighth largest economy, new developments in California's laws and regulations often play an important role in shaping national and international policy. KP Public Affairs led efforts in interstate banking and privacy protection that have served as models for other states and the United States Congress, and KP is the firm of record for many of the nation's top financial institutions.

HEALTH CARE

Through its representation of several of California's health care organizations, KP Public Affairs has helped to develop and shape some of the most complex aspects of the state's health care and financing policies. Our extensive experience working with leaders in the legislative, administrative and regulatory arenas have resulted in a decade of success for our hospital and medical provider clients as well as millions of dollars in new financing agreements.

INTERNATIONAL TRADE

California's geographic proximity to Asia has highlighted the importance of the goods movement industry, making it one of the fastest growing segments of the state's economy. As trade increases, the Legislature and state and local regulators have proposed new fees and taxes and greater regulatory control over port activities. KP Public Affairs worked to defeat legislation designed to curb international trade. Additionally, KP has worked with business stakeholders to create CALTrade, a lobbying coalition whose mission is to impact state trade policies.

LOCAL AND STATE GOVERNMENT

California has major budget and revenue problems to resolve, and the decisions made at the state level can have significant impact on the overall business climate, funding for education and infrastructure development, and local finance. KP Public Affairs is unique in our capability to provide in-depth analysis and counsel to a wide variety of governmental entities, including municipalities, educational institutions and county governments. With formulas, allocations and special programs at risk, and an increasing trend toward shifting responsibility and risk to local government, KP has played a central role in providing critical information for a wide range of institutions outside the Capitol.

NATURAL RESOURCES

California has a long history of leading the country in environmental protection. Land use, water, air quality, timber resource extraction, soil, wetlands, wildlife, native plants, coastal properties, mountain, desert and inland valleys – all face some of the most rigorous oversight and protection in the world.
In many respects, the standards and restrictions invented in California have become the model for other states and nations. KP Public Affairs has been at the forefront of this evolving area of the law for

more than three decades. Our knowledge of the issues and experience with the regulatory agencies involved cannot be matched by any other firm.

PROCUREMENT

Landing a contract through the state procurement process requires an understanding of the inner workings of various state agencies and the Department of General Services. It can also require the ability to secure ongoing funding through the legislative budget process. Public policy expertise in KP Public Affairs' multiple practice areas helps inform our strategy and advocacy in almost every area of state procurement.

PROJECT SITING AND PROPERTY DEVELOPMENT

Adhering to the state's complex permitting and siting requirements can become a perplexing and ongoing drain on a company's resources. KP Public Affairs has successfully managed the approval process for several new facilities in which numerous local and environmental issues had to be addressed. Over the years, KP staff have played key roles in helping to enact many of California's statutes in this area. Our familiarity with the decision-making process and with the leaders on all sides of these debates greatly enhances our ability to build coalitions and generate local community and media support, which is often essential to protect the financial investments of our clients.

TAXATION

KP Public Affairs is uniquely positioned to tackle complicated tax issues that arise in the Legislature or taxing agencies. KP has developed a specialty in providing our clients with detailed information and far-reaching reports that address the potential effects of legislative proposals that seek to impose new fees or taxes on selected industries. Working with economists and other financial experts, our advocates are armed with sophisticated financial analysis that often makes the difference between winning or losing.

TORT REFORM

KP Public Affairs continues to lead California business coalitions who seek a fairer tort system. KP Public Affairs successfully represented a coalition of homebuilders in revamping California's construction dispute liability scheme. This multi-year effort began with the enactment of AB 1700 (Steinberg) that overhauled the pre-litigation dispute resolution process for condominium construction defect litigation. This success was followed by the enactment of SB 800 (Burton). SB 800 fundamentally changed the tort liability scheme for construction dispute cases. It contained the precedent-setting requirement that a homebuilder has the "right to repair" any condominium or single family home prior to being sued. KP Public Affairs has also represented lenders, insurers and other industries in efforts to reform the tort system.

KP

■ TRIBAL GOVERNMENT

The growing empowerment of tribal governments throughout California is causing profound changes in the public life of the state, and opening new opportunities for government-to-government cooperation and economic development. KP Public Affairs provides strategic counsel, communications and public relations support, events coordination and public outreach for tribal governments as well as companies interested in new business opportunities within Indian Country.

■ WATER POLICY

No resource issue has had a greater or more contentious role in shaping the growth of California than water. KP Public Affairs includes several of the state's premier experts in water policy and development, which has enabled our company to remain at the forefront of decision-making for this most precious resource. Because water policy has far-reaching impacts that extend beyond storage and distribution to include many aspects of energy, land use and industrial and residential development, KP represents a broad range of interests on state and local matters.

KP

CLIENTS

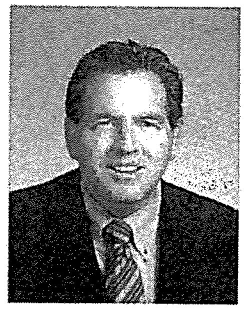
At KP, we work in partnership with our clients to deliver positive business results. Our clients include many of the nation's most respected corporations, public agencies, companies that deal with environmental issues, leaders in agriculture, land use and development, resource managers, innovators, financial institutions, healthcare providers and entrepreneurs. Our clients are an important part of our success and many of them have been with us for years. Because their interests touch so many of the keys to California's future, KP is working at the center of most of the major policy issues that come before the Governor and the state Legislature. Our list of clients includes:

Aerojet Rocketdyne Holdings, Inc.
Airbnb, Inc.
Akin Gump Strauss Hauer & Feld LLP
Albemarle Corporation
American Technologies, Inc.
Battery Council International
Bell Helicopter
California Academy of Cosmetic Surgery
California Ambulatory Surgery Association
California Business Roundtable
California Integrated Physician Practice Association
California Licensed Foresters Association
California Manufacturers and Technology Association
California Mortgage Bankers Association
California Orthotic and Prosthetic Association
California Restaurant Association
California Small Business Association
California Society of Anesthesiologists
Carpet Collectors
CEMEX
Cisco
Citigroup
Colgate-Palmolive
Comcast Corporation and Affiliated Entities, Including NBC Universal Media, LLC
Cozen O'Connor Public Strategies
Daimler
Deloitte LLP
Dow Chemical Company
Embassy of Japan
Ernst & Young LLP
Forest Landowners of California
General Electric Company & Subsidiaries
Genworth Financial, Inc.
Google
Grant Thornton LLP
Hart InterCivic
Hawaiian Gardens Casino
Hearing Healthcare Providers California
Hertz Corporation
High Desert Power Project, LLC
ICL-IP America Inc.
KPMG LLP
Lockheed Martin Corporation
Los Angeles County Business Federation (BizFed)
Los Angeles Department of Water and Power
Lyft, Inc.
Menzies Aviation
Mojave Water Agency
Mosquito and Vector Control Association of California
Opternative
Pacific Merchant Shipping Association
Pepperdine University's Graziadio School of Business
Pew Charitable Trusts
Phelan Piñon Hills Community Services District
Precision Castparts Corp. and affiliated companies

KP

CLIENTS

PricewaterhouseCoopers, LLP
Primerica Life Insurance Company
Public Storage
Purell/GoJo Industries
Recurrent Energy, LLC
Sacramento Children's Home
Sacramento Transportation Authority
San Joaquin Joint Powers Authority
San Luis and Delta-Mendota Water Authority
Shell Oil Company
State Water Contractors
Sunol Aggregates
Surgical Care Affiliates
Tenaska
The Pacific Companies
UST Global
Veritec Solutions LLC
Western Municipal Water District
Western States Petroleum Association
Western United Dairymen
Westlands Water District
Willow Springs Water Bank
Wine Institute
WME/IMG



MICHAEL BURNS

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Sacramento, CA 95814

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E mburns@ka-pow.com

PROFESSIONAL EXPERIENCE

Michael Burns joined the firm in January of 2003. Mr. Burns' practice involves all aspects of public affairs consulting in both the KP Advocacy and KP Public Relations divisions. He is a registered lobbyist, working for a variety of clients on public policy issues before the Legislature and state government. Mr. Burns' legislative experience includes serving as Chief Consultant and as Chief of Staff to the Majority Leader of the California State Senate. During his service in the Legislature, Mr. Burns was involved in several major revisions of state law, including interstate banking, victims' rights and regulatory reform.

Mr. Burns also served as head of Burson-Marsteller's Public Affairs practice in Southern California and Chicago. During his tenure with Burson-Marsteller, Mr. Burns managed an international campaign to secure approval for a new wireless standard, developed and patented by a U.S. company. Additionally, he served as the leader of Burson-Marsteller's utility practice, representing investor owned utilities throughout the country.

Mr. Burns also headed the strategic planning and corporate consulting divisions of an entertainment company involved in talent management and film and television production.

Mr. Burns' clients include Western States Petroleum Association, Pacific Merchant Shipping Association, and NBC/Universal.

EDUCATION

University of California, Santa Barbara, 1978.

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

Mr. Burns serves on the Board of the California State Summer School of the Arts.

Mr. Burns is married and the father of three children. He and his wife are active in fundraising for local schools and organizations.

JENNY DUDIKOFF

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F 916-448-4923
E jdudikoff@ka-pow.com

PROFESSIONAL EXPERIENCE

Jenny Dudikoff joined KP's public relations team in early 2013 with a strong background in communications and government affairs.

Ms. Dudikoff has experience on a variety of ballot measure campaigns ranging from energy initiatives to tax and fee initiatives and redistricting reform. Jenny was heavily involved in the Legislative and Congressional redistricting reform efforts that have taken place in California including Proposition 11 (2008), Proposition 20 and 27 (2010) and Proposition 40 (2012). She was instrumental in the passage of Proposition 40 by managing the day-to-day outreach and earned media components of the campaign.

Ms. Dudikoff also has extensive experience managing issue advocacy campaigns including Californians Against Higher Taxes (CAHT) and Californians Against Food and Beverage Taxes (CAFBT). In 2010, Jenny managed the day-to-day CAFBT efforts including an aggressive grassroots effort along with an effective communications program. As the lead on both projects, Jenny worked closely with the media to coordinate public hearings, press conferences, and local events.

Her work has also involved developing and executing statewide grassroots and communication strategies on a number of issues, developing campaign materials and tracking legislation.

Over the years, Jenny has worked very closely with California's business community and leaders to educate voters, opinion leaders and the press on the importance of increasing jobs and recovering California's economy.

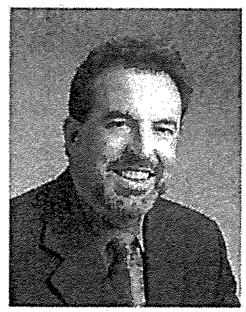
Jenny also has experience working on a variety of technical healthcare issues including the access and quality of patient care and the increased use of biotechnology in the practice of medicine.

Ms. Dudikoff has also acted as a spokesperson on several projects ranging from Proposition 23 to the Small Business Action Committee as well as multiple issue advocacy efforts.

Prior to joining KP, Jenny served as a Senior Account Executive for Goddard Claussen/West in Sacramento.

EDUCATION

Jenny graduated from California State University, Chico with a bachelor's degree in Political Science.



ED MANNING

1201 K Street, Suite 800
Sacramento, CA 95814

M 916-448-2162
F 916-448-4923
E emanning@ka-pow.com

PROFESSIONAL EXPERIENCE

Mr. Manning is a partner with KP Public Affairs. A registered lobbyist and environmental lawyer with extensive government, political and legal experience, Mr. Manning has led broad-based coalitions on such diverse issues as greenhouse gas legislation, construction defect litigation reform, water supply infrastructure and land use reform among others. He has been the lead negotiator for business interests on many landmark legislative efforts, including most recently, SB 375 (Steinberg) that creates relief from the California Environmental Quality Act (CEQA) for homebuilders and a new planning process for land use and transportation to achieve greenhouse gas reductions. Mr. Manning has also been successful in shaping various bond measures for clients and assisting them in receiving competitive grants for regional water supply projects and infill infrastructure funding to support housing.

A recognized authority on environmental and resource regulatory issues, Mr. Manning frequently lobbies regulatory agencies, including the California Environmental Protection Agency and Resources Agency as well as their numerous member departments including the State Water Resources Control Board, Air Resources Board, Department of Fish and Game, Department of Water Resources and Integrated Waste Management Board. Mr. Manning also lobbies local governments and commissions.

Mr. Manning represents a variety of clients in helping shape California's ongoing regulatory processes to implement AB 32 (the Global Warming Solutions Act of 2006), which will establish mandatory greenhouse gas reductions for industries doing business in California.

Before he began lobbying full time, Mr. Manning was a partner in the Los Angeles law firm of Weston, Benshoof (now part of Alston & Bird). His practice focused on environmental, resource and land use law.

Mr. Manning also has extensive experience in the public sector, serving as General Counsel to Lieutenant Governor Leo McCarthy and as his designated alternate on the State Lands Commission. There, Mr. Manning was one of the architects of California's Oil Spill Prevention and Response Act (OSPRA). Prior to that, Mr. Manning spent several years in the Santa Monica City Attorney's Office and the Los Angeles County District Attorney's Office.

EDUCATION

Rider University, Lawrenceville, NJ 1982 –
B.A. Political Science

Loyola Law School, Los Angeles, CA 1985 –
Juris Doctor

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

Mr. Manning recently served on the Finance Committee for the election of Sacramento Mayor Kevin Johnson. Mr. Manning is a member of the Board of the Sacramento Area Chamber of Commerce. He previously served as co-chair of the Mono Lake Committee Board of Directors. While living in Los Angeles, Mr. Manning was a member of the Los Angeles Board of Airport Commissioners. He also served on the Blue Ribbon Commission on Water Rates and the Environmental Affairs Commission. He is a member of the State Bar of California. Mr. Manning is married and the father of two daughters. He and his wife are activein fundraising for Christian Brothers High School as well as other local organizations.

ERIC NEWMAN

1201 K Street, Suite 800
Sacramento, CA 95814

M 916-448-2162
D 916-498-7763
F 916-448-4923
E enewman@ka-pow.com

PROFESSIONAL EXPERIENCE

Eric Newman has over 26 years of expertise in the full panoply of environmental issues facing California regulators and legislators. Mr. Newman practiced for eleven years (nine as a partner) as an environmental compliance attorney and lobbyist for the San Francisco-based law firm of Landels, Ripley & Diamond and the past 11 years as an environmental specialist at KP Public Affairs. Mr. Newman has focused on toxics, the California Environmental Quality Act, surface water and drinking water regulation, Proposition 65, air, solid and hazardous waste matters, as well as a host of other environmental and non-environmental issues, as both a lobbyist and lawyer for major business concerns, statewide organizations and as a coordinator of numerous coalitions, on both regulatory and legislative matters. KP Public Affairs is the top ranked political advocacy firm in California. Mr. Newman's work has contributed in major ways to the firm's reputation and standing in this state.

Mr. Newman has been a key component in building the firm's environmental practice on both the legislative and regulatory fronts. He is well known by the environmental committee members and staff in the legislature as well as the California Environmental Protection Agency and all of its environmental agencies. Mr. Newman knows the ins-and-outs of the environmental issues and players as one of the select few of successful environmental lobbyists in California.

Mr. Newman's clients include aerospace, manufacturing, waste management and a host of major corporate players in the environmental area as well as a number of small and medium size companies active in the state. Mr. Newman has coordinated numerous high stakes and high visibility coalitions from chrome 6 and perchlorate drinking water issues to major revisions to the State's Superfund and other environmental cleanup laws. Mr. Newman also has worked for numerous years for a variety of clients on the State's Underground Storage Tank Cleanup Fund. He is a regular presence in the Cal EPA building and is often consulted by senior regulators on difficult environmental issues.

Mr. Newman started his legal career as an associate for five years with the Orange County-based law firm of Rutan and Tucker as a land use litigator in state and federal courts, and as an assistant City Attorney for the cities of Irvine, Laguna Beach, San Clemente, Villa Park and San Fernando.

Mr. Newman is married and has three older children, all in college or grad school, who have been very successful in water polo and swimming. Mr. Newman has played a key role in volunteering his time to such efforts and participating in related local commissions and other local government and political activities.

EDUCATION

Mr. Newman attended UC Davis as an undergrad where he finished first in both of his majors, economics and political science public service and in the upper one percent of the graduating class with highest honors. He also attended law school at UC Davis, graduating with highest honors and focusing on environmental and water law.

June 2, 2017

Item No: **8g(5)**

Honorable Mayor and Members
of the Marina City Council

City Council Meeting
of June 6, 2017

CITY COUNCIL CONSIDER ADOPTING RESOLUTION NO. 2017-, AUTHORIZING THE CITY MANAGER TO EXECUTE A CONTRACT WITH KP PUBLIC AFFAIRS FOR PUBLIC RELATIONS AND ADVOCACY SERVICES.

REQUEST:

It is requested that City Council consider:

1. Adopting Resolution No. 2017-, authorizing the City Manager to execute a contract with KP Public Affairs for public relations and advocacy services.
2. Authorizing Finance Director to make appropriate accounting and budgetary entries.

BACKGROUND:

One of the most important issues facing the City of Marina is the protection and preservation of the City's water resources. The City's water resources and water policies have far-reaching impacts that extend beyond just the supply of water today.

The Monterey Peninsula Water Supply Project proposed by California American Water Company (CalAm) is a project to develop a desalination plant and associated facilities to supply water to areas that CalAm serves on the Monterey Peninsula. Various proposals and projects have evolved over time and are now focused on a large project located in Marina. The City has become increasingly concerned about the potentially significant and irreversible impacts of the Project on Marina's water supply, water quality, sensitive coastal environment and citizens.

The City has reviewed and commented on a draft EIR/EIS issued in January 2017 for this project. The California Public Utilities Commission and the Monterey Bay National Marine Sanctuary are being requested to issue permits and/or authorizations for different aspects of the Project.

It has become clear to the City of Marina that the potentially serious, significant and long-term adverse environmental impacts of the Project on the City have not been adequately studied, evaluated or mitigated, and a proper evaluation of the Project alternatives has been undermined by the legal deficiencies in the individual environmental analyses. The City is currently 100 percent dependent for its water supply on groundwater within the Salinas Valley Groundwater Basin. Marina's continued use of and access to this supply is essential to its continued economic vitality and sustainability of life.

The City of Marina's comments to the Draft EIR/EIS set forth that the document is legally inadequate in many critical subject areas and fails to meet the requirements of CEQA and NEPA. Some of the shortcomings of the document include: Inflated Water Demand; No Water Rights; Sustainable Groundwater Management Act Conflicts; Direct Legal Prohibitions; Inadequate Project Description; Wrong Environmental Baseline; Anticipated Groundwater Impacts; Inadequate Water Modeling; Brine Discharge Impacts; Coastal Ecosystem Impacts; Greehhouse Gas Emissions; Significant Historic Resource Impact; Deficient Environmental Justice Analysis; Inadequate Alternatives Analysis.

In view of the key missing information, faulty project Objective/Purpose and Need statements, inadequate analysis of multiple environmental impacts, deficient mitigation measures, and resulting inability to properly select and evaluate alternatives in the Draft EIR/EIS engaging a public relations firm to assist in advocacy, public relations services, collaboration with partners, coalition building, grassroots outreach, and transparency it critical to the citizens of Marina.

ANALYSIS:

After reaching out to various agencies requesting information and recommendations for a firm that specializes in advocacy, public relations and has a strong background in environmental, natural resources and water policy the firm of KP Public Affairs was recommended. The attached **("EXHIBIT A")** is a brochure from the firm.

The City has received a proposal from KP Public Affairs that proposes a combined budget of $20,000 per month for a four month period for a total of $80,000. The budget covers both advocacy and public relations services. Given the shortened timeframe, the level of support from the project developer and the need to reach and collaborate with citizens and the cities in the region, this project will require an intense level of effort and support and high level meetings in a relatively short time frame. KP Public Affairs will be able to revise the scope of work and budget as needed.

Advocacy Services

KP Public Affairs recommends an initial advocacy program that would include reaching out to critical audiences and pursuing their help in modifying the proposed project to protect the City's water supply. This will include developing advocacy materials explaining the issues; explore the possibility of legislative oversight hearings; arranging meetings with key high level government offices and officials at the local, regional and state levels.

Public Relations Services

KP Public Affairs recommends an initial program that would include developing materials explaining the issues, utilizing communication channels to disseminate the City of Marina's concerns about the project, and engaging City and Regional officials and residents to inform the political public. These services would include:

- Material development
  - Develop compelling materials explaining the City of Marina's concerns regarding the project
- Media outreach
  - Develop a media calendar around the project that will respond to regulatory actions
  - Develop and distribute media products such as op-eds and press release that will draw attention to critical issues
  - Conduct backgrounders with local and relevant media to educate members of the press on the issue
- Events
  - Publicize events such as the City of Marina presentations to other cities and influencers that will elevate the City's concerns about the project with relevant stakeholders
- Social media
  - Utilize social media channels to reach important audiences about the ramifications of the project as proposed
  - Updating the City website with materials that are easy to understand and resonate with residents about the project

- Third-party support
    - Work with city officials to encourage third parties to offer their input on the project and issues of concern
- Coalition building and collaboration
- Grassroots outreach

FISCAL IMPACT:

It is proposed that the City Council allocate $80,000 from unallocated fund balance to cover the $80,000 cost of KP Public Affairs.

CONCLUSION:

Staff recommends the City Council authorize the City Manager to execute a contract with KP Public Affairs subject to approval by the City Attorney for advocacy and public relations services relating to the Monterey Peninsula Water Supply Project.

Respectfully submitted,

____

Layne P. Long
City Manager
City of Marina

EXHIBIT

N

From:	Bruce Delgado <bdelgado62@gmail.com>
Sent:	Saturday, March 23, 2019 8:04 AM
To:	Deborah Mall; Layne Long; Wellington Law Office
Subject:	Fwd: thank you, City of Marina Media Report - October 2, 2018

---------- Forwarded message ---------
From: **Alison MacLeod** <amacleod@ka-pow.com>
Date: Mon, Nov 26, 2018, 13:34
Subject: RE: thank you, City of Marina Media Report - October 2, 2018
To: Bruce Delgado <bdelgado62@gmail.com>
Cc: Layne Long <llong@cityofmarina.org>, Sara Steck Myers <ssmyers@att.net>, Skip Spaulding <sspaulding@fbm.com>, Tom van der List <TvanderList@ka-pow.com>, Ed Manning <emanning@ka-pow.com>, Gail Morton <mortonformarina@gmail.com>, Michael Burns <mburns@ka-pow.com>

Thanks for the note and congrats on the re-election ☺

We're continuing to push on the Cal Am issue through a variety of avenues . . . As you know we're setting up meetings with key influencers, we've put together recommendations for social media and digital advertising, sent out information and prepared new letters for decision-makers, we're pursuing new opportunities with the EJ issues including the Attorney General's office and other third parties, and are seeking out new media opportunities.

Let me know if you have questions or suggestions on any of our activities.

Hope you had a wonderful Thanksgiving.

Best,

Alison

From: Bruce Delgado <bdelgado62@gmail.com>
Sent: Sunday, November 25, 2018 11:44 AM
To: Alison MacLeod <amacleod@ka-pow.com>
Cc: Layne Long <llong@cityofmarina.org>; Sara Steck Myers <ssmyers@att.net>; Skip Spaulding <sspaulding@fbm.com>; Tom van der List <TvanderList@ka-pow.com>; Ed Manning <emanning@ka-pow.com>; Gail Morton <mortonformarina@gmail.com>
Subject: thank you, City of Marina Media Report - October 2, 2018

EXHIBIT
O

From: Katherine Biala
Sent: Tuesday, July 03, 2018 09:44 PM
To: Layne Long; Bruce Delgado; George Riley; Keith Van Der Maaten
Subject: Fwd: July joint meeting

See below. This Friday late afternoon seems to be the only date that will work?.Bruce, can we do at 4:00 pm? Please confirm with all.

Thanks,
Kathy

Begin forwarded message:

From: Katherine Biala <kybiala@icloud.com<mailto:kybiala@icloud.com>>
Subject: Re: July joint meeting
Date: July 3, 2018 at 9:40:19 PM MST
To: georgetriley@gmail.com<mailto:georgetriley@gmail.com>
Cc: MCWD Keith <KVanDerMaaten@mcwd.org<mailto:KVanDerMaaten@mcwd.org>>

All, of all the 3 dates submitted by Bruce and George, it appears that only this Friday July 6 will work (July 16 is MCWD Board meeting and the Downtown Ad Hoc committee) and I cannot do on July 11. Shall we all commit to this Friday July 6 at City Hall conference room? We have not heard from Keith yet but let?s plan on this date for now. Thanks everyone! Kathy

Sent from my iPhone

On Jul 3, 2018, at 3:27 PM, georgetriley@gmail.com<mailto:georgetriley@gmail.com> wrote:

I?m OK on 7/6 Fri afternoon,
7/11 Wed after 5.
7/16 Mon after 5.
George

On Jul 3, 2018, at 3:00 PM, Katherine Biala <kybiala@icloud.com<mailto:kybiala@icloud.com>> wrote:

Keith and George, please see if we can accommodate Bruce?s limited schedule as he can only meet after 5 pm. George, if you can not attend, perhaps Michael can? Thanks all. Kathy

Sent from my iPhone

Begin forwarded message:

From: Bruce Delgado <bdelgado62@gmail.com<mailto:bdelgado62@gmail.com>>
Date: July 2, 2018 at 10:18:49 PM MST
To: Layne Long <llong@cityofmarina.org<mailto:llong@cityofmarina.org>>
Cc: Katherine Biala <kybiala@icloud.com<mailto:kybiala@icloud.com>>, Keith Van Der Maaten <kvandermaaten@mcwd.org<mailto:kvandermaaten@mcwd.org>>, George Riley <georgetriley@gmail.com<mailto:georgetriley@gmail.com>>, Juli Hofmann <jhofmann@redshift.com<mailto:jhofmann@redshift.com>>

Subject: Re: July joint meeting

I can do this Friday late afternoon, July 6.

After July 15th I can do the following:
Wed July 11 evening after 5pm
Mon July 16 after 6pm
Wed July 18 after 530pm
Thur July 19 after 5pm

On Mon, Jul 2, 2018 at 10:37 AM, Layne Long <llong@cityofmarina.org<mailto:llong@cityofmarina.org>> wrote:
I'm gone July 20 - 29th.

Layne

-----Original Message-----
From: Katherine Biala [mailto:kybiala@icloud.com<mailto:kybiala@icloud.com>]
Sent: Monday, July 2, 2018 9:31 AM
To: Layne Long <llong@cityofmarina.org<mailto:llong@cityofmarina.org>>; Bruce Delgado <Bdelgado62@gmail.com<mailto:Bdelgado62@gmail.com>>; Keith Van Der Maaten <kvandermaaten@mcwd.org<mailto:kvandermaaten@mcwd.org>>
Cc: George Riley <georgetriley@gmail.com<mailto:georgetriley@gmail.com>>; Juli Hofmann <jhofmann@redshift.com<mailto:jhofmann@redshift.com>>
Subject: July joint meeting

All, we have need again to convene our joint meeting with PWN and Just Water for updates. Can we please look at some dates mid-July? Want to get this penciled in as it is always a challenge to coordinate some date/times. Bruce, can we start first with you?

Thanks all,
Kathy

--
Mayor Bruce Delgado
cell: (831) 277-7690
email: bdelgado62@gmail.com<mailto:bdelgado62@gmail.com>

EXHIBIT

P

CITY OF MARINA

Cal Am's Desalination Project =

Higher Water Rates for Marina and Monterey Peninsula Residents

More Development & Traffic Congestion

Serious Environmental Harm

- **Monterey Peninsula residents already have the highest water rates in the nation.** With the construction of an expensive new desalination facility, Cal Am customers can expect to see major increases in their water bills.
- **Cal Am's desalination project is vastly oversized for their service territory.** Customers will suffer from exorbitant new charges in order to provide a greater water supply for major hotels and new housing developments.
- Stanford University experts found that **the project would harm Marina's groundwater supply and render the aquifer unable to supply Marina residents with safe drinking water.** As a result, Marina residents will be forced to buy their water from Cal Am at the ever-increasing rates charged to Monterey Peninsula residents.

STANFORD

- **The massive desalination plant in overpriced and unnecessary** – there are much more reasonable and sustainable solutions available to meet the region's water supply needs.

MONTEREY PENINSULA RESIDENTS ALREADY PAY THE HIGHEST RATES NATIONWIDE

New Rank	Old Rank	Utility	State	Owner	2015 Bill	2017 Bill	Increase	% Increase
1	**9**	**California American Water – Monterey**	**CA**	**Private**	**$716.18**	**$1,202.59**	**$486.41**	**68%**
2	2	Padre Dam Municipal Water District	CA	Public	$826.94	$959.27	$132.33	16%
3	8	Goleta Water District	CA	Public	$736.62	$958.55	$221.94	30%
4	3	Pennsylvania American Water – West	PA	Private	$792.84	$847.59	$54.75	7%
5	4	Pennsylvania American Water – Pittsburgh	PA	Private	$792.84	$847.59	$54.75	7%
6	5	Pennsylvania American Water – Lake Scranton	PA	Private	$792.84	$847.59	$54.75	7%
7	6	Pennsylvania American Water – Norristown	PA	Private	$792.84	$847.59	$54.75	7%
8	10	West Virginia American Water – Kanawha Valley	WV	Private	$710.63	$827.37	$116.74	16%
9	7	Aqua Pennsylvania	PA	Private	$782.38	$782.38	$-	0%
10	1	Flint	MI	Public	$910.05	$710.83	$(199.22)	-22%

NOTES: Annual bills were calculated for households using 60,000 gallons a year, using rates inside the main service area, as of January 2015 and April 2017.

Cal Am's Desalination Project **Will**

Destroy the Marina Coastline

Betray the Very Nature of the Coastal Act

Trample on Our Principles of Environmental and Economic Justice

- The proposed desalination plant **violates the spirit of the California Coastal Act**, which has protected local communities from developments that damage coastlines and run contrary to the will of local communities.
- Cal Am, along with major business interests, is seeking approval from state and federal government agencies to locate their slant well drilling operation in Marina's coastal area. Despite the availability of several lower-cost, environmentally-sustainable alternatives, the California Public Utilities Commission (CPUC) is proceeding toward approval of the desal project, **ignoring considerable evidence of environmental and economic injustices**.
- Marina requests that the CPUC, California Coastal Commission, the California State Water Resources Control Board, and the State Lands Commission consider the social, environmental and economic justice of locating a project in Marina against the will of the local community. State agencies should follow Governor Brown's directive:

  "California must continue to build on recent progress that uplifts our values of equity and social and economic justice."

GOALS OF THE CALIFORNIA COASTAL ACT:

- Protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment
- Assure orderly, balanced utilization and conservation of coastal zone resources
- Maximize public access to and along the coast
- Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses

Superior Alternatives to Cal Am's Desalination Plant Would Avoid Water Rate Increases, Environmental Degradation, and Overbuilding in the Region

- CalAm's desalination plant is unnecessary to meet the present and future needs of the region. It will **undermine water conservation efforts and promote out-of-control growth**. In 2015, Cal Am service area demand was only 9,545 acre-feet-per-year (afy) of water, enough to meet sustainable business, residential and environmental needs. Yet their project proposal including the desal plant would supply more than 16,000 afy, which far exceeds the current and future needs of the region.
- Cal Am's oversupply will be used to build out the region's hotel industry and develop new housing areas where transportation and environmental issues already exist, **at the expense of existing local residents**.
- With little concern for the potential increase in greenhouse gas emissions and **harmful quality of life impacts**, state regulators are plowing ahead with a project that completely diverges from our long-held desire to manage growth responsibly to protect the long-term health and well-being of the region.

Insert MCWD CHART

Frequently Asked Questions
Cal Am Water's Monterey Peninsula Water Supply Project

What is a seawater desalination plant?

A desalination plant is a facility which converts salty seawater into clean drinking water. In the proposed project, reverse osmosis technology would be used, sending saline water through a semi-permeable membrane filter, leaving potable water on one side and highly concentrated saline solution, known as brine, on the other. The leftover brine is then diluted with seawater and pumped back into the ocean. Due to high energy demand along with high initial and operational costs, desalination plants are the most expensive form of drinking water production and bring significant environmental impacts. **However, in reality, hydrogeologists and recent Stanford research studies prove that the Monterey Peninsula Water Supply Project's (MPWSP) desal plant will extract huge amounts of groundwater rather than just seawater.**

How is the water collected?

The project proposes using slant wells, pulling both groundwater and seawater resources. Because of the questionable feasibility of slant wells, there is currently not a single commercial desalination plant using this technology anywhere in the world. Moreover, the location of the proposed slant wells specifically targets groundwater from aquifers beneath Marina's jurisdiction, jeopardizing the natural groundwater processes and the City's only supply of fresh drinking water.

What is the demand for this project?

The project need is vastly overstated. The desalination plant would result in a new water supply for Cal Am of more than 10,750 acre-feet per year (afy), giving Cal Am a total water supply of about 16,000 afy. However, existing demand is only around 9,500 afy and conservation measures should be prioritized to balance growing population needs. The true need for additional water supplies will likely be reviewed by an Administrative Law Judge at the California Public Utilities Commission.

Where does the City of Marina get its water?

The City of Marina currently obtains 100 percent of its potable water from groundwater underneath the City. The Salinas Valley Groundwater Basin includes several subbasins, which are seriously threatened by the proposed Cal Am project. The project's slant wells would draw water from the 180/400 aquifer that has been classified as one of 21 "critically overdrafted" groundwater basins out of more than 400 basins in the state. Drawing freshwater from this location not only will deplete limited resources, but it will also allow seawater intrusion and contamination to occur in the Monterey subbasin that is used for drinking water. The proposed MPWSP is in direct conflict with California's new Sustainable Groundwater Management Act (SGMA) which aims to protect and restore our precious groundwater supplies, and would further jeopardize this already endangered resource.

Who is building this project?

The project would be built by California American (Cal Am), a subsidiary of the private, for-profit, water utility provider, American Water Works Company, Inc., headquartered in New Jersey. Cal Am serves customers in approximately 85% of the Monterey Peninsula and approximately 615,000 customers statewide. By virtue of the for-profit nature of Cal Am, all investment costs are passed on to customers through rate increases. But Cal Am does not serve the residents or businesses in the City of Marina, which depend on the Marina Coast Water District instead.

Will this project increase water rates?

To build this expensive project, Cal Am will likely increase its customers' water rates further, on top of the increases that already took effect earlier this year. Additionally, Marina residents would be uniquely impacted. The project will likely degrade water quality and deplete resources in the City's groundwater aquifer, thereby raising water production or treatment costs for Marina Coast Water District, or requiring the purchase of extremely expensive replacement water.

Who will the project serve?

The project will serve Monterey peninsula residents that are customers of the for-profit Cal Am. The City of Marina, however, is served by the publicly owned Marina Coast Water District. The project will have a disproportionate impact on the city's disadvantaged communities, who will be faced with negative impacts to their water supply, construction and operational impacts without receiving any of the project benefits. Simply put, Marina will be harmed for the benefit of neighboring cities who don't want this project in their own backyard.

Will this construction cause harmful community impacts?

The impacts to the Marina community may be significant in both the short and long term. The project represents a large industrial use with the potential to result in severe irreversible impacts to the City, particularly in regards to potential depletion and contamination of its water supply, and the likely huge adverse impacts to its sensitive coastal ecosystem.

Will this impact the coastal ecosystem?

The project is likely to have significant impacts on Marina's coastal ecosystem. With regard to marine biological resources, the project area is home to 34 species of mammals, over 180 species of seabirds, 525 fish species, four sea turtle species, 31 different invertebrate phyla, and over 450 species of marine algae. In addition, the project area is home to 27 federally designated threatened and endangered species. In the distillation process, the project will produce 14 million gallons of high-salinity brine discharge per day, which will then be deposited in the seafloor of the marine sanctuary. The project's slant wells would be sited in Marina's sensitive coastal habitat and would likely accelerate coastal erosion on Marina's beaches as well as adversely impact the coastal dunes.

To learn more, visit www.ci.marina.ca.us

Major Risks from Cal Am's Proposed Monterey Peninsula Water Supply Project

Threat to Groundwater

Project is inconsistent with the Sustainable Groundwater Management Act by jeopardizing

"**One of 21 critically over drafted groundwater basins**"

out of **more than 400** groundwater basins in California

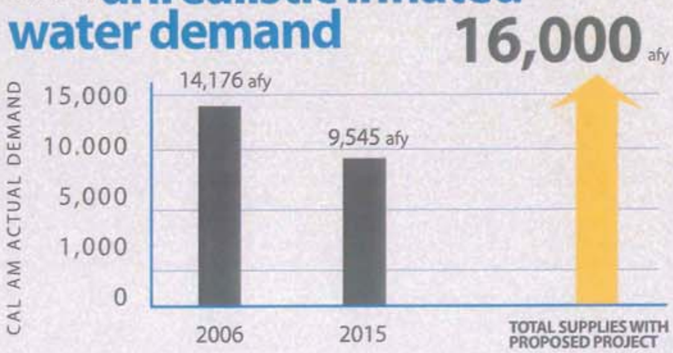
Project will deplete resources and degrade quality *in the* **Salinas Valley Groundwater Basin**, where Marina gets

100% *of its* **drinking water**

Substantial **groundwater NOT seawater** will be used for the project

Oversized Project Exceeds Demand

Total MPSWP capacity is **too large** based on **unrealistic inflated water demand**



Environmental Harm

Project will produce **14 million gallons** *of* **high-salinity brine discharge** per day which will be deposited in **the seafloor** *of the* **marine sanctuary.**

Marina Bears all the Risk

Depleted groundwater resources

No water for Marina residents

Contamination of the groundwater basin

Increased energy use

Increased CO2 emissions

Project would produce **541 metric tons** of CO^2 each year

To learn more, visit **www.ci.marina.ca.us**

Concerns with Cal Am Water's Proposed Monterey Peninsula Water Supply Project (MPWSP)

Cal Am, a private for-profit water corporation, has proposed a desalination plant that threatens the City of Marina and its groundwater supply that residents rely upon for 100% of their drinking water.

Major Concerns:

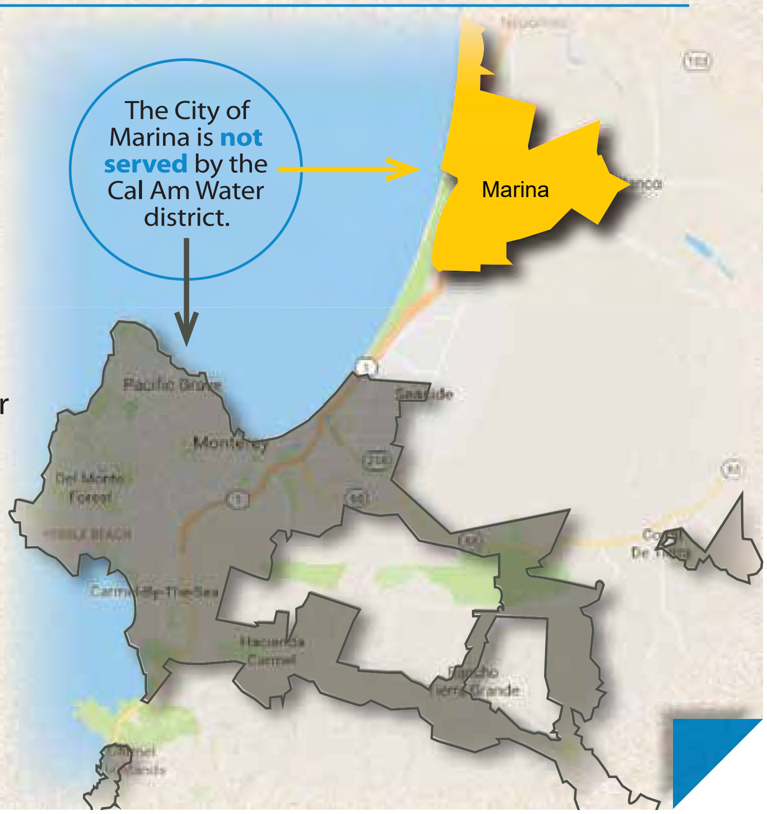
- Despite having **no groundwater rights**, Cal Am's project will extract water from an already **critically overdrafted basin**.
- Groundwater pumping will increase seawater intrusion – **contaminating and possibly significantly harming Marina's fresh drinking water supply**.
- The project is in **direct conflict with the state's Sustainable Groundwater Management Act**, which requires regional coordination and responsible planning to restore precious groundwater resources.
- The proposed project is **massive in scale** – far exceeding any realistic or responsible demand projections.

Marina will suffer long term environmental harm from the project, with no benefit or strategy to mitigate the impacts.

City of Marina Harmed for the Benefit of Neighboring Cities

After a State Supreme Court ruling, the State Water Resources Board is requiring that Cal Am stop illegally pumping water from the Carmel River. But their proposed desalination plant is not a responsible alternative – it would deplete and degrade Marina's drinking water supply despite the fact that Cal Am has no groundwater rights and would be acting in conflict with state laws protecting groundwater basins.

Why is the project proposed to be built in the City of Marina, at the expense of Marina's own ecosystem and quality of life, instead of within Cal Am's own service territory? There are other more environmentally sustainable alternatives that would work.



Project Size Far Exceeds Service Area Demand

Cal Am demand forecasts are overinflated and cannot justify such a large project.

- The proposed desalination project would **produce more water by itself (10,750 afy) than Cal Am has delivered to its customers** in either 2014 or 2015 – and there are about 6,000 afy of other water sources in Cal Am's local supply portfolio.
- Due to permanent conservation measures, **Cal Am service area demand declined** from 14,176 afy in 2006 to 9,545 afy in 2015.

Conservation measures should be prioritized to balance growing population needs.

Project Would Jeopardize Marina's Drinking Water, and Not Use Just Ocean Water

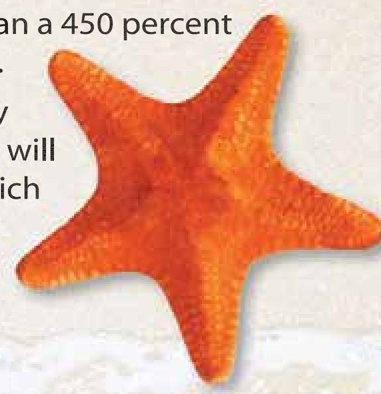
The project is not a true seawater desalination plant – instead it will tap into limited groundwater supplies that must be responsibly managed under new requirements of the State's Sustainable Groundwater Management Act.

- The Salinas Valley Groundwater Basin under the city of Marina is 1 of only 21 California groundwater basins in "critical overdraft" condition and should not be the source of a brand new water supply project.

Potential Environmental Impacts and Unproven Slant Well Technology Presents High Risk

Desalination is costly, energy intensive, and brings significant environmental risk. Beyond that, nowhere in the world does a commercial desalination plant use the proposed slant well drilling methodology.

- **Greenhouse gas emission increases:** The plant would bring more than a 450 percent increase over existing energy demand for Cal Am's entire water supply.
- **Threat to coastal ecosystem:** The project area is home to 27 federally designated threatened and endangered species; the proposed project will produce 14 million gallons of high-salinity brine discharge per day, which will then be deposited in seafloor of the marine sanctuary.



More Environmentally Sustainable Alternatives Must Be Pursued

The full range of potential alternatives including smaller project options have not been properly evaluated.

Any new water supply plan for Cal Am's service territory must not harm the City of Marina and must protect local groundwater sustainability.

To learn more, visit www.ci.marina.ca.us

EXHIBIT

Q

From:	Alison MacLeod <amacleod@ka-pow.com>
To:	Layne Long; Keith Van Der Maaten
CC:	Tom van der List; Michael Burns
Sent:	7/6/2018 3:09:54 PM
Subject:	prep for July 12 meeting
Attachments:	Marina New Factsheet July 2018.pdf; new talking points 7-6.docx

Keith and Layne,
In preparation for next week's meeting with John Robertson, attached please find draft talking points and a draft leave behind document. If you want to jump on the phone early next week we can talk these through, and can revise the talking points as needed. Keith - in particular take a look at the handout because you'll see on backside we left a spot at the end to add in further detail from MCWD. We could add a chart elucidating the cost impacts if you have the analysis completed, or a chart that provides more clarity on the alternate solution that you will be advocating for (showing that the alternate solution in fact meets reasonable demand levels).
Take a look and let us know how we can help with next steps.

Thanks,
Alison

From: Tom van der List
Sent: Friday, June 8, 2018 4:39 PM
To: Layne Long; Alison MacLeod; 'kvandermaaten@mcwd.org'
Cc: Michael Burns; Ed Manning
Subject: RE: follow up

Layne and Keith,

We have confirmed an in-person meeting with John Robertson (Peter VanLangen will also attend).

Date:
Thursday, July 12

Time:
2:00pm – 3:30pm

Address:
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401-7906
When you arrive, call from the lobby and they will let you in.

Best,
Tom

From: Layne Long <llong@cityofmarina.org>
Sent: Thursday, June 7, 2018 9:07 PM
To: Alison MacLeod <amacleod@ka-pow.com>; 'kvandermaaten@mcwd.org' <kvandermaaten@mcwd.org>

Cc: Michael Burns <mburns@ka-pow.com>; Ed Manning <emanning@ka-pow.com>; Tom van der List <tvanderlist@ka-pow.com>
Subject: RE: follow up

July 12 and 13 work for me.

Thanks,
Layne

From: Alison MacLeod [mailto:amacleod@ka-pow.com]
Sent: Thursday, June 07, 2018 5:40 PM
To: 'kvandermaaten@mcwd.org' <kvandermaaten@mcwd.org>; Layne Long <llong@cityofmarina.org>
Cc: Michael Burns <mburns@ka-pow.com>; Ed Manning <emanning@ka-pow.com>; Tom van der List <TvanderList@ka-pow.com>
Subject: follow up

Thanks for a productive conversation. I think we strategized a series of avenues to help drive a bolder message and apply pressure at key trigger points. We will put together a clear outline for next steps. In the meantime, as you know we had already been pursuing additional meeting opportunities. We got word back regarding the following options for a meeting with John Robertson, the Water Board's Central Coast executive officer. Can you please let me know by noon tomorrow what works so we can get this set on the calendar?

- Wednesday, July 11 – open all day
- Thursday, July 12
- Friday, July 13 – afternoon

I'm also reattaching the zip file of some of our prior materials in case you guys are now able to make a breakthrough in posting content on the city or MCWD websites. Keith – take a look because if you are able to create a landing page I'm happy to work with your team to pull the language/links. Or Layne, if you're able to find a way to post these informational resources on the city site as we've discussed that would be great.

Thank you,

Alison MacLeod
KP PUBLIC AFFAIRS
621 Capitol Mall, Suite 1900, Sacramento, CA 95814
phone. (916)498.7730 **mobile.** (916)225.6317
w. www.ka-pow.com e. amacleod@ka-pow.com

EXHIBIT
R

Attys@WellingtonLaw.com

From: Bruce Delgado <bdelgado62@gmail.com>
Sent: Saturday, March 23, 2019 8:02 AM
To: Deborah Mall; Wellington Law Office; Layne Long
Subject: Fwd: materials
Attachments: Marina_Updated Strategy_10-11-18.docx; MarinaSocialDigitalProgram(1).pdf; Coastal Commission letter_draft 11-13.docx; Draft Resolution_well moratorium.docx; City of Marina website language_draft 10-25-18.docx; 2018-09-13 Final Press Release_PUC Decision _for distribution.docx; Marina Press Release (rev)_10-23-18 clean FINAL.docx; Marina New Factsheet July 2018.pdf

---------- Forwarded message ---------
From: **Alison MacLeod** <amacleod@ka-pow.com>
Date: Tue, Nov 27, 2018, 11:13
Subject: materials
To: bdelgado62@gmail.com <bdelgado62@gmail.com>
Cc: Tom van der List <TvanderList@ka-pow.com>

Bruce,

Per our discussion I'm sending you a series of documents. I will send over later this afternoon a suggested presentation for you to give at the forum this evening.

- Strategy document from October (I've conducted an extensive round of outreach based on that plan and am in the process of scheduling additional meetings/briefings)
- Fact sheet you may want to handout tonight
- Recommended social/digital plan per the strategy memo
- Recommended draft letter to CCC per the strategy memo
- Recommended website content
- Draft city resolution calling for expansion of the well moratorium (not sure status of this)
- Recent press releases that demonstrate key messages

Let me know if you have questions

Thanks

Alison MacLeod

KP PUBLIC AFFAIRS

621 Capitol Mall, Suite 1900, Sacramento, CA 95814
phone. (916)498.7730 **mobile.** (916)225.6317

w. www.ka-pow.com e. amacleod@ka-pow.com

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Situation

Last month, the California Public Utilities Commission (CPUC) granted Cal Am the certificate of public convenience and necessity (CPCN), the first in a series of permitting hurdles for the MPWSP. In the coming 130 days, Cal Am will be seeking a series of subsequent regulatory reviews/approvals. Based on discussions with Skip, Sara, Keith and Layne, we believe the best opportunities for engagement lie with the Regional Water Board, CA Coastal Commission (CCC), and State Lands Commission (SLC). Decision-making at these agencies is more affected by political considerations, as opposed to the CPUC which employs a more insular, semi-judicial process.

As we have seen from the CPUC proceedings, and more recently with the letter from the Coastal Commission rejecting their support for an amendment to Marina's LCP, it is clear that there is a strong insider desire to advance the Cal Am project. Thus far, Marina's substantive legal arguments have been ignored, and public comments by agency officials demonstrate that Cal Am has a significant advantage as its project is being evaluated.

The city of Marina needs to pursue a much more aggressive public relations program to apply pressure on decision-makers and try to prevent a permit approval from one of the agencies mentioned above. We know that Cal Am is simultaneously pursuing their own PR efforts and coordinating closely with agency staff, so Marina can seek to counter-balance those efforts and create a more contentious environment for review of the project – such a PR campaign at this stage can increase the likelihood of Marina's position being considered more fully, but it is not a guarantee of success for Marina. To that end, we have outlined a communications program that will deliver strong, political arguments in an attempt to gain the attention and agreement of key decisionmakers at the CCC, SLC, and Regional Water Board.

Approach

We have outlined below a series of steps to brand Cal Am's proposal as contrary to long-held state policies and environmental protection principles that should guide these permitting agencies. This approach will force key decision-makers to acknowledge Marina's concerns about the project from a cost, groundwater protection, coastal and environmental impact perspective.

The strategy hinges on amplifying the anti-environment, anti-environmental justice, and anti-local control nature of the proposal with key audiences. Ultimately, the strategy is designed to make the decision-makers concerned that a decision in favor of the Cal Am's proposal will be viewed as a betrayal to the policies they are required to advance.

Key Audiences:

- Decision Makers
  - Coastal Commission
  - State Lands Commission
  - State and Regional Water Boards
  - Legislators
    - Monning
    - Stone
- Third-party groups involved with the three permitting agencies and relevant to the desalination issue (e.g. environmental organizations involved in coastal protection)

Key Messages:

- CCC
  - A vote for the Cal Am project is pro-development and betrays the mission of coastline protection
  - The CCC previously took credit for closing a cement company operating on Marina's coastline, now the CCC is working behind the scenes to locate a new industrial operation in the same place
  - Siting an industrial desal operation in the same location as Cemex over the objections of the local community is an assault on local land use control
- SLC
  - Marina has a lower median income, a much higher poverty rate, and is more ethnically diverse compared to neighboring cities – this suggests that the city is being taken advantage of by more powerful regional interests
  - California's commitment to environmental justice protections should ensure that Cal Am is not able to force its facility on a poorer community that does not want it and will not benefit from it
- SWRCB/Regional Water Board
  - The state is currently undergoing a massive program to protect and restore groundwater where over-drafting has occurred – in contrast, the Cal Am project proposes to draw massive amounts of water from Marina's aquifer, which is contrary to the Sustainable Groundwater Management

Act and sets a horrible precedent for future efforts to protect local groundwater resources

- Costs
    - Cal Am already charges the highest rates in the country – the desalination project will raise water rates even higher and will have a disproportionate impact on lower income families and small businesses
    - State and local decision makers are inexplicably ignoring lower cost, more environmentally-friendly alternative water supply solutions for the region

Tactics

- Inform Marina/County residents
    - Launch a highly visible digital advertising campaign geotargeted to Monterey County to provide counter-messaging to Cal Am campaign – send viewers to http://futureh2o.mcwd.org/ for more info
    - Hold official community briefing by MCWD on the alternate solution
    - Post updated content on Marina website and social media – promote alternative solution

- Engage media
    - Pitch media who reported on Coastal Commission issues
        - Encourage them to consider - why is the Coastal Commission cc'ing the Cal Am President on Marina's LCP amendment letter?
    - Hold a City Council press conference outside of Coastal Commission meeting that will be held Nov 7-9 in the Northern Central Coast (exact location TBD)
    - Pitch national reporters on the unfair attack on Marina, disregard for project's local impacts (compare to Flint, Michigan) – Rachel Maddow, Michael Moore, Politico, Huffington Post, etc.
    - Send updated pitches to environmental reporters in CA with copy of CCC letter on LCP amendment
    - Secure interest from a freelance environmental reporter to write a feature piece on the issue

- Contact decision-makers
    - City Council/staff should attend the SLC meeting on October 18 in Sacramento and deliver public comments
    - Draft letter expressing strong objections to the PUC decision with an appeal to the elected officials to encourage federal and state agencies to

support state policies and values by rejecting Cal Am's proposal; include a copy of Mayor Delgado's recent Capitol Weekly op-ed and share with:
        - Stone
        - Monning
        - Harris
        - Feinstein
        - Panetta
        - County Supervisors
        - All city council members at cities within the County
        - SLC board members
        - CCC board members
        - Regional Water Board members
        - State Water Board members

- Collaborate with third parties
    - Work with Spotlight on Coastal Corruption to submit Public Records Request
    - Highlight environmental justice concerns
        - Reach out to Gladys Limón, Executive Director of California Environmental Justice Alliance, and GreenAction requesting their help
        - Request a meeting with Attorney General Becerra's new Bureau of Environmental Justice within the Environment Section at the California Department of Justice
            - Becerra stated: "The harsh reality is that some communities in California – particularly low-income communities and communities of color – continue to bear the brunt of pollution from industrial development, poor land use decisions, transportation, and trade corridors. Meeting the needs of these communities requires our focused attention. That's why I'm establishing the Bureau of Environmental Justice," said California Attorney General Xavier Becerra. "To all who advocate for environmental justice, the California Department of Justice will work with you and fight for a clean, safe and healthy environment. We have a moral and legal responsibility to do so."
- Request meetings with permitting agencies to continue to express concern, highlight recent PUC actions, request help
    - Whether Marina has previously met with these representatives or not, we recommend meeting with these targets to reiterate our concerns, explain the deficiencies in the PUC position, and request help – it is important for the city of Marina to maintain a visible presence with these decision-

makers and continue to deliver strong messages, as we know that Cal Am is doing so in support of their proposal

- Regional Water Board staff
  - John Robertson
- SLC
  - Anne Baker (Betty Yee's designee for SLC)
- CCC
  - Aaron Peskin
  - Dayna Bocho
  - Steve Padilla
  - Sarah Aminzadeh
- Elected officials
  - State: staff for Stone, Monning
  - Federal: staff for Feinstein, Harris, Panetta

City of Marina letterhead

California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Dear Commissioners:

The City of Marina would like to express its support for the California Coastal Commission's proposed Environmental Justice (EJ) Policy. We appreciate the Commission's historical commitment to protecting coastal natural resources and providing public access and lower-cost recreation opportunities for all Californians. Adoption and adherence to the EJ policy reinforces the Coastal Commission's environmental commitment and ensures that economically diverse communities are not denied coastal access on the basis of race, ethnicity, gender, socio-economic status, or place of residence.

The credibility of this important policy will be tested in the coming months when the Commission is asked to review a major new coastal development that will interfere with the ability of Marina residents to enjoy their coastline. California American Water (Cal Am), a private, for-profit water company, is proposing a massive desalination plant and drilling project to be located on Marina's coastline for the benefit of their shareholders and to provide water for other communities in the region. The residents of Marina will receive none of the benefits of the project, while still having to bear its burdens and face irreparable harm to their local natural resources. We urge the Commission to be prepared to hold fast to its commitment to the principles of fairness, equal burden and justice.

In your explanation of the need for an EJ policy, the Commission listed several results that the policy is intended to achieve, and our comments below support those objectives. In addition, the Coastal Commission objectives align with the 2012 opinion from then-Attorney General Kamala Harris, who opined that Marina and other local governments have a responsibility to environmental justice when approving specific projects and planning for future development: "Fairness in this context means that the benefits of a healthy environment should be available to everyone, and the burdens of pollution should not be focused on sensitive populations or on communities that already are experiencing its adverse effects."[1]

We are hopeful that the Coastal Commission's development and adoption of an explicit EJ policy will help guide your future decision-making as you consider proposals like Cal Am's and as you create new opportunities for public input and project evaluation.

Meaningful Engagement:

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[1] https://oag.ca.gov/sites/all/files/agweb/pdfs/environment/ej_fact_sheet.pdf

The goal of "meaningful engagement" is particularly important given the history of uneven influence in the approval of development projects throughout the state. We look forward to the Commission holding hearings in Marina about the disposition of our coastline and any proposed use that runs contrary to the wishes of our residents.

Coastal Access:
Regarding "coastal access," Marina believes the principle of "access and lower-cost recreation opportunities for everyone" would be threatened by the Cal Am desalination project because it will cause irreparable harm to the coastal area, sand dunes and habitat. Such a development runs contrary to the Commission's major accomplishment in 2017 that resulted in a Cease and Desist Order to close Cemex's coastal sand mining plant. In contrast to the Cease and Desist Order, the desalination plant will force Marina to forgo the "parks, trails, surf spots, beach barbecue and fire pits, safe swimming beaches, fishing piers, campgrounds, and associated free or low-cost parking areas" that could be available to their residents.

Access to Process:
The goal of Access to Process is very important to Marina residents, who are hopeful that the Coastal Commission, unlike the California Public Utilities Commission, will do more than just provide a forum for citizen participation but act proactively and responsibly to assess a community's EJ concerns. We hope that there is a real interest in knowing the desires of a community that has a diverse ethnic, racial and income make-up and that you seek to understand how coastal protection is just as important to our community.

Accountability and Transparency:
The EJ policy embraces accountability and transparency, committing to a process that considers whether and how proposed development will positively or negatively affect underserved communities: "The Commission will make use of CalEnviro Screen and/or similar tools to identify disadvantaged communities, and where otherwise consistent with the Coastal Act will carefully consider on the facts presented appropriate permit conditions to avoid or mitigate impacts to underserved communities."

Marina hopes that commitment extends to the desalination project, a coastal development by a large corporate special interest that is being pursued against the wishes of a community and that will interfere with the right of residents to enjoy their coastline.

Part of Cal Am's attempted rationale is that their project would be in the same spot as the Cemex sand mining operations. But the Commission recognized the harm of that industrial operation and voted to shut it down. The desal project would undermine the accountability and credibility of the Commission's previous action on Cemex and instead expose Marina to further industrial impacts, further destruction of the coastal habitat, and threaten its groundwater without bringing Marina residents any project benefits.

Justice would be turned on its head if coastal development was decided on the basis of the wealth, political power, and connections of the developer. Marina is a working community with a 17.1 percent poverty rate, which is more than double neighboring Monterey at eight percent and triple the rate in Pacific Grove at six percent. We are also much more ethnically diverse, with 62% of our residents from minority backgrounds. Should our city be expected to continue to bear the burden of industrial operations for the benefit of our wealthier neighbors? We are already home to the regional wastewater treatment and a regional landfill. What else is "our responsibility" when other cities in the Peninsula get a pass on hosting all these operations?

Climate Change. Finally, the EJ policy recognizes the impacts of climate change and the potential effect on communities. Marina and other communities in the region are already "more vulnerable to climate-driven water quality and supply issues that can result from seawater intrusion, contamination from extreme storm events, and drought." But a fair environmental justice policy should ask what the communities are doing themselves to address the climate threats; imposing a new development on a neighboring community is not an appropriate climate change policy.

We believe the Coastal Commission's EJ policy is an important tool for judgment and evaluation in the Cal Am project and others that follow. The Commission is right to be concerned about privatization of coastal lands, loss of open space, and equitable access. Your mission statement highlights a commitment to the regulation of environmentally sustainable development, rigorous use of science, strong public participation and intergovernmental coordination. We couldn't agree more.

We look forward to the establishment of this policy and to working with you to fulfill the Commission's critical mission.

Sincerely,

Bruce Delgado

Mayor, City of Marina

City of Marina Website Language

Cal Am, a private for-profit water corporation, has proposed a desalination plant that would be located in the City of Marina – the plant would use slant wells to draw brackish (salt) water, and also tap into significant fresh groundwater sources that Marina residents rely upon for 100% of their drinking water.

The proposed Monterey Peninsula Water Supply desalination project is currently being reviewed under the requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The California Public Utilities Commission released the project's Final Environmental Impact Report (EIR) and issued a Certificate of Public Convenience and Necessity (CPCN) for the Project.

The City of Marina has been engaged for years in the regulatory review process for the project, and has raised a series of questions regarding project impacts. To date, Cal Am has not outlined a clear plan to address these questions or concerns:

- **Risk of depletion of Marina's groundwater sources:** Research by experts at Stanford University shows that the desalination project would tap into freshwater sources. Those groundwater supplies must be responsibly managed under new requirements of California's Sustainable Groundwater Management Act (SGMA). How would the desalination project avoid harming this protected groundwater resource?
- **Legality of withdrawals:** Despite having no groundwater rights, Cal Am's project will extract water from an already critically overdrafted basin – in direct conflict with SGMA, which requires regional coordination and responsible planning to restore precious groundwater resources. How would Cal Am's project be in compliance with groundwater management law?
- **Questionable project size:** The proposed project is far larger in size than realistic local water demand projections indicate is needed. Can Cal Am pursue other water supply projects of smaller size that would have lesser environmental impacts?
- **Impacts to Marina residents:** The project would be located in the City of Marina and tap into Marina's drinking water supply, yet the desalination plant will not serve water customers within the city of Marina boundaries. How will local water supplies and local water rates for Marina residents be protected?
- **Increase in seawater intrusion:** As the water is pumped from the targeted aquifers it will lead to increased seawater intrusion in the area, which could significantly harm Marina's fresh drinking water supply. How would this contamination be avoided?
- **Consistency with local values:** The Project would force a new industrial use on the very same site that the Coastal Commission voted to remove the Cemex sand mining operation. A major desalination project would pose harmful impacts inconsistent with environmental justice, coastal protection, and land use values held by the City and the State.

The final EIR/EIS is available online at the National Marine Sanctuary's website at www.montereybay.noaa.gov

Related Documents:

Monterey Peninsula Water Supply Project Website (CPUC)
Comment Letter by City of Marina on the Draft EIR
Comment Letter by the Marina Coast Water District on the Draft EIR
City of Marina Project Fact Sheet
City of Marina Project Infographic
City of Marina Frequently Asked Questions Document
City of Marina Fact Sheet on Sustainable Groundwater Management Act
City of Marina Fact Sheet on Environmental Impacts

City of Marina Press Releases:

City of Marina Appeals Improper CPUC Approval of Key Environmental Document for Cal Am Desalination Project to California Supreme Court – October 23, 2018

City of Marina Denounces Decision by CPUC to Approve Cal Am Desalination Project as Inconsistent with Community and Environmental Values – September 13, 2018

Final Environmental Impact Report Released for Monterey Peninsula Water Supply Project – Public Comment Period is Open – April 9, 2018

October 23, 2018 | For Immediate Release

Contact: Alison MacLeod (916)498-7730; amacleod@ka-pow.com

City of Marina Appeals Improper CPUC Approval of Key Environmental Document for Cal Am Desalination Project to California Supreme Court

Petition Highlights Legal Violations of California Environmental Quality Act

(Marina, CA) – The City of Marina has petitioned the California Supreme Court to review the Environmental Impact Report (EIR) for the Cal Am Monterey Peninsula Water Supply Project (Project) approved by the California Public Utilities Commission (CPUC). The City asserts that the EIR is factually, scientifically and legally inadequate and fails to adequately consider the impacts of a large industrial desalination project in a protected coastal setting within a disadvantaged community.

"The CPUC approval not only violates the California Environmental Quality Act (CEQA), but it flies in the face of long held values that our state has embraced for generations," said Marina Mayor Bruce Delgado.

The City is now considering the Project's coastal development permit and it requires an adequate EIR to fulfill its responsibilities. The Project EIR's current widespread inadequacies impair its use by all responsible agencies that are now required to use the environmental document in their own permit review processes. The City is asking the California Supreme Court to quickly find that the EIR is inadequate under CEQA and overturn its certification to prevent permitting bodies from issuing project approvals based on a deficient environmental analysis.

"We are greatly concerned about the potential harm from this Project to our city, and it is essential that other regulatory agencies understand how completely flawed the EIR and CPUC certification is before they base their own permitting decisions on this document," said Delgado. "The CPUC failed to fulfill its duty to protect our working-class community from anticipated severe impacts to our coastal ecosystem, our groundwater, and our own land use planning. It appears that they were in support of Cal Am's Project from the start and that has shaped their actions restricting communications with us, ignoring the adverse impacts of the Project to Marina, and ultimately rushing a decision in favor of Cal Am. They did not fairly or fully consider better water supply alternatives that could provide water to the Peninsula at a reasonable or lower cost and avoid adverse environmental impacts to Marina, which will bear the burden of the Project's construction and operation."

The desalination Project approved by the CPUC would use experimental slant wells almost completely located under the ground in the City of Marina, rather than under the ocean. These risky slant wells would extract approximately 16 million gallons per day of groundwater from the "critically overdrafted" Salinas Valley Groundwater Basin (which supplies 100 percent of the City's drinking water) and export it after treatment to other Monterey Peninsula communities. Cal Am has no established water rights, or any likely path to obtain such water rights in the future, that would authorize it to extract water from this protected basin.

The CPUC also committed legal error by failing to consider results of an important new study by Dr. Rosemary Knight from Stanford University that provides a three-dimensional picture of the actual hydrologic conditions in this basin, and which clearly demonstrates how the slant well intakes will tap into a supply of fresh water and make the groundwater basin further susceptible to depletion and contamination. The CPUC did not revise and recirculate the EIR to include this new information as was required by law, and instead inexplicably concluded that the potential Project impacts to groundwater would not be significant. The CPUC also failed to adequately address environmental justice concerns despite the fact that the Project wells will take water from a disadvantaged community without providing any meaningful protection or mitigation.

Marina's filing highlights a litany of deficiencies in the EIR that the CPUC failed to make any attempt to resolve. The Commission did not fairly consider reasonable alternatives, and improperly concluded that environmental impacts in key resource areas – including ESHA, terrestrial species, coastal ecosystem, marine species, groundwater resources and other areas – would be "less than significant."

"This Project would likely cause irreparable harm to our city by damaging our local water supply and exposing our coast to significant environmental damage, none of which is adequately analyzed in this EIR" said Delgado. "There are no Project benefits for the City of Marina, and no proposed mitigations that would address our many concerns. The CPUC is required to carefully consider Project impacts as well as reasonable alternatives to meet the Project goals, but they failed on both accounts. Their EIR review of impacts is one-sided, and their decision in support of Cal Am is based on an EIR displaying serious violations of CEQA."

# # #

SOCIAL MEDIA STRATEGY

Objective

To raise awareness, educate, and reiterate the harmful implications of the Cal Am Project to influence decision of the State Lands Commission and Coastal Commission.

Social media strategy

All the posts and ads will drive users to the following landing pages where they can learn more information about the negative implications of Cal Am's desalination project. http://futureh2o.mcwd.org/mcwd-desalination/

A portion of the social media posts will drive users to four op-eds that were published:

- http://capitolweekly.net/divisions-desalination-monterey-peninsula/
- https://www.montereyherald.com/2018/04/16/marina-mayor-bruce-delgado-when-it-comes-to-water-be-a-good-neighbor/
- https://www.montereyherald.com/2018/02/02/bruce-delgado-cal-ams-proposed-desal-plant-bad-idea-and-bad-for-marina/
- https://www.sfchronicle.com/opinion/openforum/article/A-test-of-California-s-commitment-to-12405228.php

Facebook boosted posts and ads

The attached social posts should be shared on Facebook using a boosting and paid ad strategy. "Boosting" guarantees that the ads are served to the City's target audience. The boosted posts are shared on a user's social media feed and on the City of Marina's Facebook page. KP recommends a modest budget of $10 a day for boosting organic posts, and adjusting the budget based on the posts' analytics and desired result.

The paid Facebook ad strategy has more advanced targeting capabilities to further enhance your reach and secure engagement. Marina's ads will not be published on the Facebook page, but will be served to your customized audience on their own Facebook News Feed side ads, Messenger ads, Instagram stories, instant articles, and Audience Network. The Facebook ad targeting strategies are more effective when your account has a large number of followers. Therefore, KP recommends launching two ad sets, one with the objective of increasing your City's followers, and the other to drive users to engage. The proposed budget for the Facebok ad campaign is $500 per month. The following targeting strategy will be used:

- Geo-targeting: Serve ads to those residing in the Penninsula
- Look-alike audience: Serve ads to those who have profiles similar to those that are already following the City of Marina
- Custom audience: Create a custom audience based on people who have visited the City of Marina website and people who have engaged with the Marina Facebook page.

Digital ad strategy

Google display ads are a highly effective means of delivering messages based on a user's profile, habits, and location. Digital ads will be placed on high-profile media outlets, trade publications, and relevant websites during a specified time period. KP recommends a budget of $80-100 a day, and adjusting the budget based on the posts' analytics and desired result. The following targeting strategy will be used:

- Geo-targeting: Serving ads to those residing in the Penninsula and/or at specific event locations (in-district hearings, Marina events, etc.)
- Interest-based targeting: Deliver ads to those interested in policy, water supply, local news
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- Direct ad placements: Place ads on local and regional news websites such Monterey Herald, SF Chronicle, Monterey County Weekly, KAZU.org

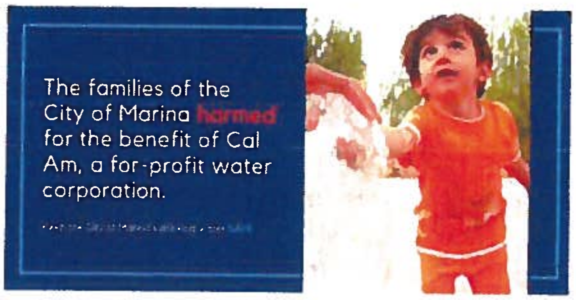
- *Budgets for each campaign can be modified.

SOCIAL MEDIA CONTENT

01

Theme: Threatens groundwater

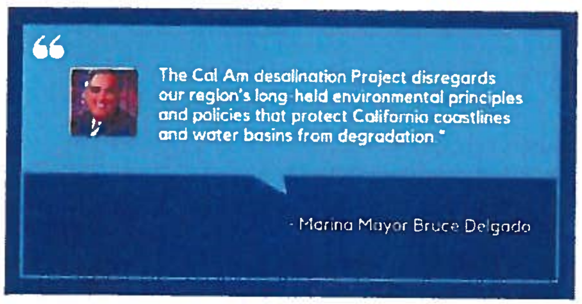
Cal Am desal project is inconsistent with the Sustainable Groundwater Management Act - it jeopardizes one of 21 critically over drafted groundwater basins out of more than 400 groundwater basins in California



02

Theme: Threatens groundwater

Stanford University experts found that Cal Am's desalination project threatens Marina's groundwater supply.



03

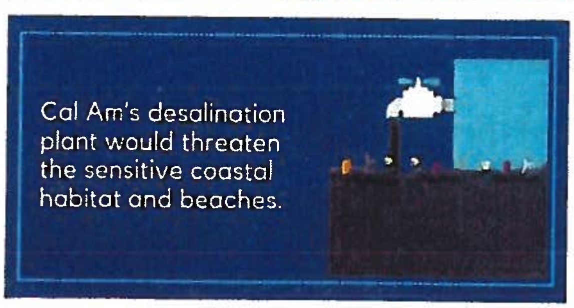
Theme: Environmental harm

Cal Am desal project = Threat to Coastal Ecosystem: The project area is home to 27 federally designated threatened and endangered species; the proposed project will produce 14 million gallons of high-salinity brine discharge per day, which will then be deposited in seafloor of the marine sanctuary.

04

Theme: Harms Marina residents

Cal Am desal project will deplete resources and degrade groundwater quality in the Salinas Valley Groundwater Basin, where the City of Marina gets 100% of its drinking water.

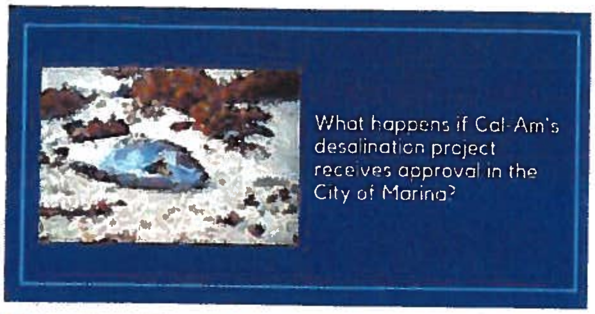


05

Theme: Environmental harm

Cal Am's desal project will destroy the Marina coastline, betray the Coastal Act, trample on our principles of environmental and economic justice

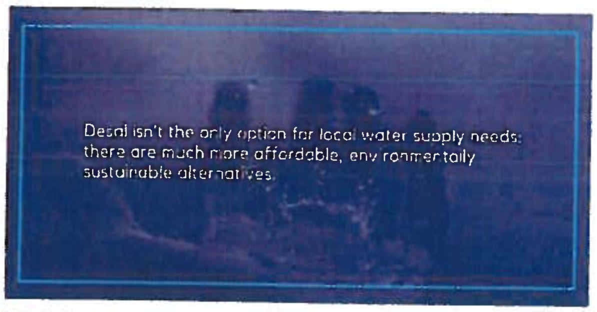
SOCIAL MEDIA CONTENT



06

Theme: Environmental Harm

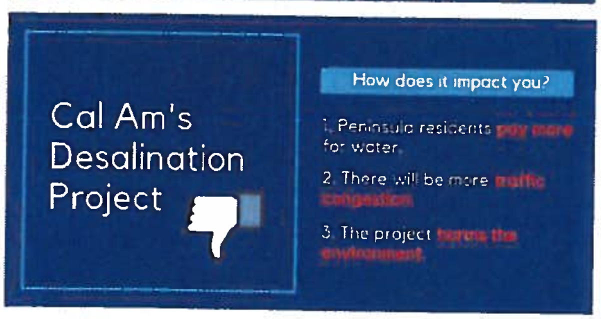
Cal Am's desal plant would harm a critically overdrafted groundwater basin and lead to more contamination and seawater intrusion.



07

Theme: Alternative solutions available

Let's work together on a water supply solution that will meet local demands while respecting the community and our region's environmental values



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Theme: Harms Marina residents

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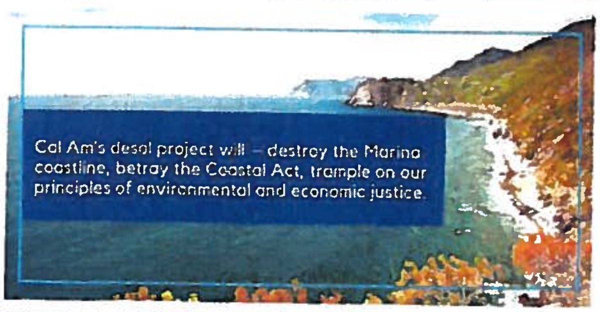
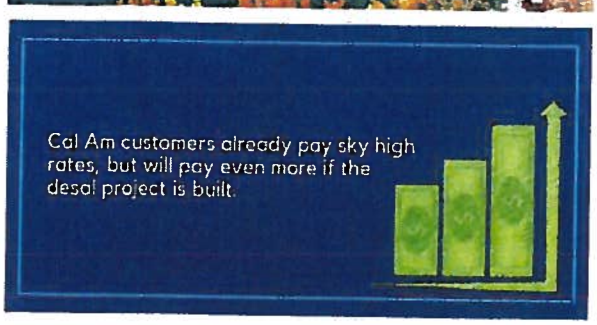


09

Theme: Environmental harm

Superior Alternatives to Cal Am's Desalination Plant Would Avoid Water Rate Increases, Environmental Degradation, and Overbuilding in the Region.

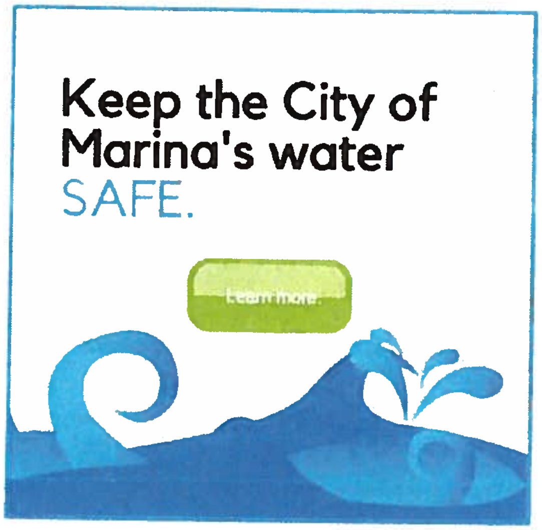


10

Theme: Harms Marina residents/other solutions available

Other water supply solutions exist that are much more affordable, safer, sustainable than Cal Am's desal plant

AD MOCKUPS


Keep the City of
Marina's water
SAFE.


Environmental Harm
Project will produce
14 million
gallons of
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Keep the
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Cal Am's new plant
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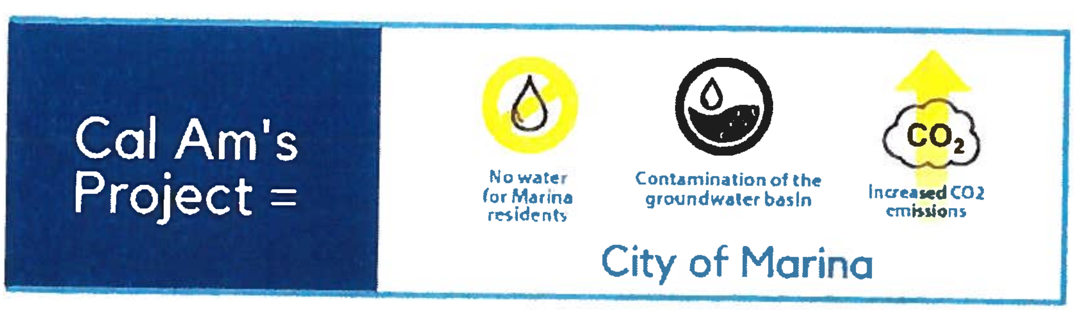
Learn more.


Cal Am's
Project =
No water
for Marina
residents
Contamination of the
groundwater basin
CO_2
Increased CO2
emissions
City of Marina

SOCIAL MEDIA STRATEGY

Objective

To raise awareness, educate, and reiterate the harmful implications of the Cal Am Project to influence decision of the State Lands Commission and Coastal Commission.

Social media strategy

All the posts and ads will drive users to the following landing pages where they can learn more information about the negative implications of Cal Am's desalination project. http://futureh2o.mcwd.org/mcwd-desalination/

A portion of the social media posts will drive users to four op-eds that were published:

- http://capitolweekly.net/divisions-desalination-monterey-peninsula/
- https://www.montereyherald.com/2018/04/16/marina-mayor-bruce-delgado-when-it-comes-to-water-be-a-good-neighbor/
- https://www.montereyherald.com/2018/02/02/bruce-delgado-cal-ams-proposed-desal-plant-bad-idea-and-bad-for-marina/
- https://www.sfchronicle.com/opinion/openforum/article/A-test-of-California-s-commitment-to-12405228.php

Facebook boosted posts and ads

The attached social posts should be shared on Facebook using a boosting and paid ad strategy. "Boosting" guarantees that the ads are served to the City's target audience. The boosted posts are shared on a user's social media feed and on the City of Marina's Facebook page. KP recommends a modest budget of $10 a day for boosting organic posts, and adjusting the budget based on the posts' analytics and desired result.

The paid Facebook ad strategy has more advanced targeting capabilities to further enhance your reach and secure engagement. Marina's ads will not be published on the Facebook page, but will be served to your customized audience on their own Facebook News Feed side ads, Messenger ads, Instagram stories, instant articles, and Audience Network. The Facebook ad targeting strategies are more effective when your account has a large number of followers. Therefore, KP recommends launching two ad sets, one with the objective of increasing your City's followers, and the other to drive users to engage. The proposed budget for the Facebok ad campaign is $500 per month. The following targeting strategy will be used:

- Geo-targeting: Serve ads to those residing in the Penninsula
- Look-alike audience: Serve ads to those who have profiles similar to those that are already following the City of Marina
- Custom audience: Create a custom audience based on people who have visited the City of Marina website and people who have engaged with the Marina Facebook page.

Digital ad strategy

Google display ads are a highly effective means of delivering messages based on a user's profile, habits, and location. Digital ads will be placed on high-profile media outlets, trade publications, and relevant websites during a specified time period. KP recommends a budget of $80-100 a day, and adjusting the budget based on the posts' analytics and desired result. The following targeting strategy will be used:

- Geo-targeting: Serving ads to those residing in the Penninsula and/or at specific event locations (in-district hearings, Marina events, etc.)
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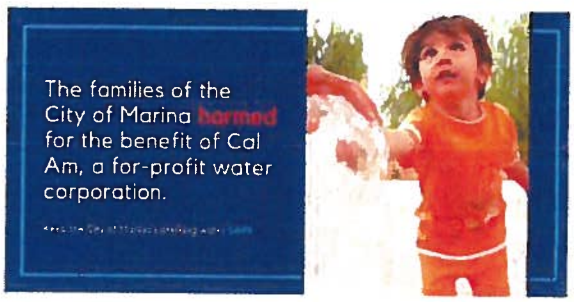

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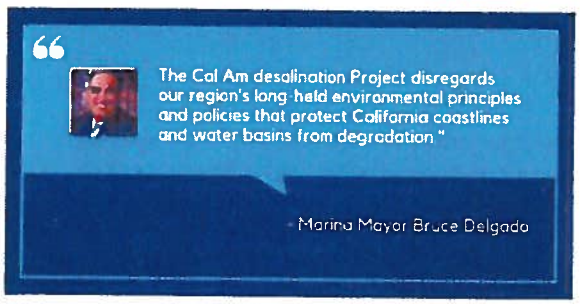

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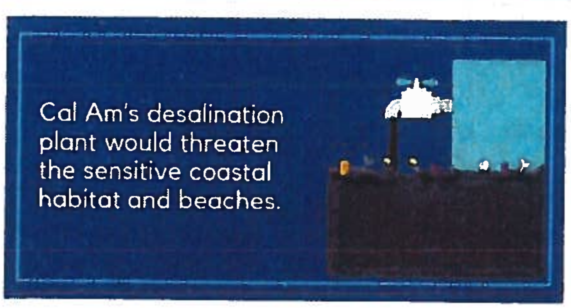

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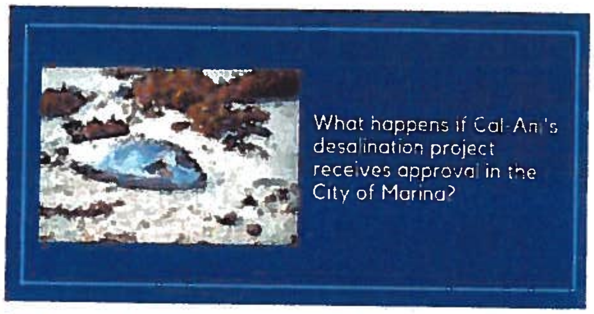

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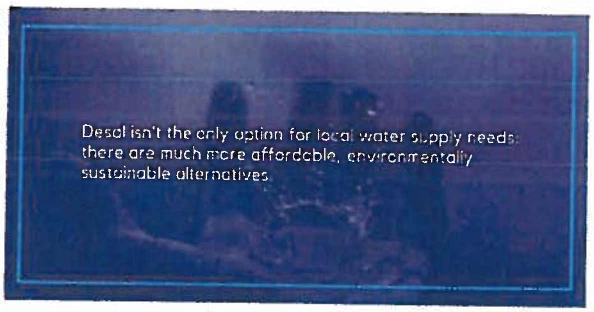

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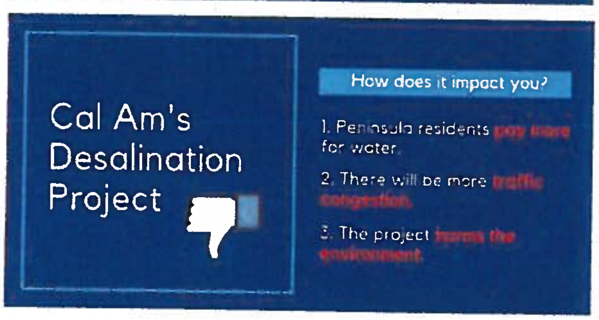

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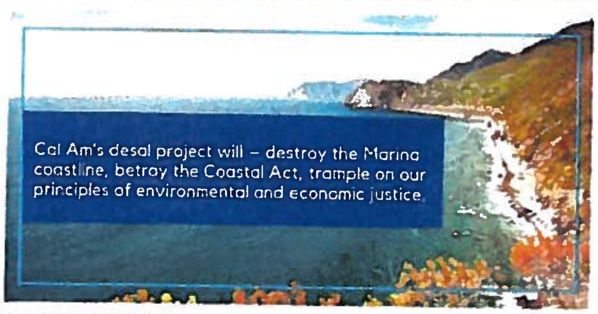

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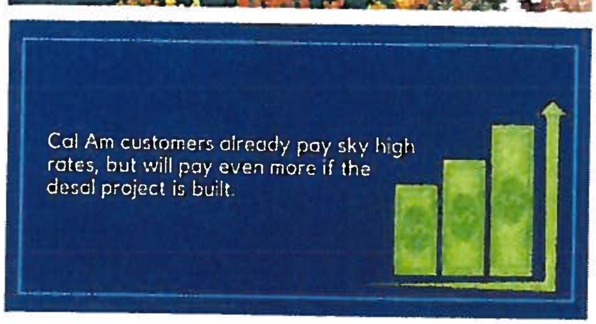

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Theme: Harms Marina residents/other solutions available

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Keep the City of Marina's water SAFE.
Learn more.

Environmental Harm
Project will produce
14 million gallons of
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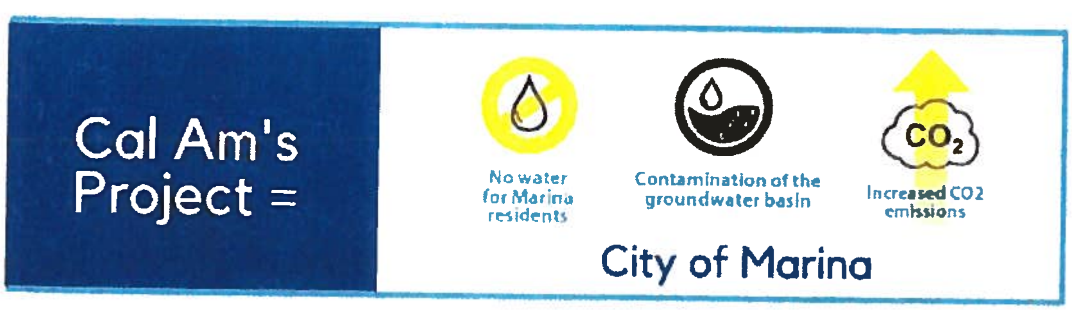
Keep the City of Marina's water SAFE.

Cal Am's new plant jeopardizes the water supply serving residents in City of Marina.
Learn more.



Cal Am's Project =
No water for Marina residents
Contamination of the groundwater basin
CO_2
Increased CO2 emissions
City of Marina

Draft Resolution

City of Marina

A RESOLUTION OF CITY COUNCIL OF THE CITY OF MARINA CALLING FOR EXPANDED APPLICATION OF THE BAN ON NEW WELLS

WHEREAS, the City of Marina is committed to protecting its local groundwater resources, and;

WHEREAS, the Monterey County Board of Supervisors and the County Water Resources Agency approved an emergency ordinance to prohibit new wells in the 180-foot, 400-foot and deep aquifers in the Salinas Valley to avoid seawater intrusion, and;

WHEREAS, the moratorium exempts municipal and domestic wells, and;

WHEREAS, the City of Marina believes the moratorium should apply to the entire Salinas Valley and prohibit Cal Am's planned slant well drilling in the Salinas Valley Groundwater Basin, and;

WHEREAS, Pumping freshwater from the already "critically overdrafted" Salinas Valley Groundwater Basin is in direct conflict with the state's new Sustainable Groundwater Management Act (SGMA), and would run counter to the state's interest in protecting groundwater resources, and its efforts to promote conservation and responsible resource management, and;

WHEREAS, Under SGMA, the Marina Coast Water District has been designated as a Groundwater Sustainability Agency and is required to protect its service area against significant and unreasonable reduction of groundwater storage, avoid seawater intrusion, and represent the interests of all beneficial uses and users of the groundwater, and;

WHEREAS, A recent study by water experts at Stanford University used state-of-the-art airborne imaging technology to map out the location of salt, brackish, and fresh water in the northern Salinas Valley, and their study confirmed the presence of freshwater in the areas where Cal Am is claiming its desalination project slant wells will draw saltwater, and;

WHEREAS, The type of proposed slant well drilling has not been feasible elsewhere, and Marina should not be the testing grounds for this technology when the local groundwater supply is already in danger of depletion and contamination from salt water intrusion, and;

WHEREAS, Better regional water supply solutions exist that would protect the groundwater basin – the true water supply gap could be met with a simple expansion of the Pure Water Monterey project and other alternate measures, and;

WHEREAS, Policymakers should prioritize environmental and community concerns – and choose water supply solutions that are responsible, sustainable, environmentally friendly, and supported by the communities where they are located;

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Marina does hereby:

1. Call for expansion of the proposed moratorium on new wells in order to include domestic and municipal wells in the Salinas Valley Groundwater Basin, and;
2. Call for the County to consider Cal Am's slant wells as a violation of their commitment to protect groundwater, and;
3. Oppose siting a desalination project in an area that would impact our groundwater basin by reducing groundwater levels or causing further seawater intrusion, and;
4. Call for Cal Am to pursue alternate regional water supply solutions including expansion of the Pure Water Monterey project, and;
5. Call upon the Marina Coast Water District to work with regional partners to pursue long term water supply solutions that protect the Marina's groundwater supplies.

PASSED AND ADOPTED by the City Council of the City of Marina at a regular meeting duly held on the xx, by the following vote:

AYES: COUNCIL MEMBERS:

NOES: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

ABSTAIN: COUNCIL MEMBERS:

____

Bruce C. Delgado, Mayor

ATTEST:

____

Anita Sharp, Deputy City Clerk

Press Release

Contact: Alison MacLeod (916)225-6317

City of Marina Denounces Decision by CPUC to Approve Cal Am Desalination Project as Inconsistent with Community and Environmental Values

The City of Marina is extremely disappointed in the decision announced today by the California Public Utilities Commission (CPUC) that approves a Certificate of Public Convenience and Necessity (CPCN) for Cal Am's Monterey Peninsula Water Supply Project (Project). This decision shows complete disregard for the desalination Project's serious impacts to Marina's community values, groundwater resources and sensitive coastal environment and it fails to provide a legally adequate environmental analysis to be used by other agencies, like Marina, that will consider Project permits.

The PUC incorrectly concludes that the desalination plant is the only realistic option to meet local water supply needs, when in fact there are much more affordable, environmentally sustainable alternatives available. The City of Marina remains willing to work with neighboring cities on a regional solution that will solve the water supply needs while respecting the community and environmental values of the residents of Marina.

"This desalination Project threatens to cause severe environmental harm to groundwater resources in Marina and will have a disproportionate impact on our city's disadvantaged communities, who will be required to bear negative impacts without receiving any of the Project water," said Bruce Delgado, Mayor of the City of Marina. "Despite recent rhetoric about a concern for disadvantaged communities, the CPUC authorized the siting of destructive industrial plant in a disadvantaged coastal community. Only one Commissioner mentioned Marina while the other Commissioners focused on the benefit to customers in Cal Am's Monterey District, which does not include Marina, from increased water supply. The Commission ignored the adverse impacts of the Project itself on Marina."

"The record simply does not support the CPUC's claims that the Project impacts we fear will be absent or minimal. Too often we have seen CPUC-approved projects where the costs are vastly underestimated and the impacts are far greater than expected. The CPUC cannot afford to make the same mistakes here," said Delgado.

Despite the CPUC's decision, the desalination plant does not yet have the green light to proceed. Cal Am's Project requires a series of permits and approvals from additional regulatory bodies. The City of Marina, Coastal Commission, Regional Water Quality Control Board, State Lands Commission, and other entities will be called upon to carefully review the record and assess the Project's impacts under the agency's special jurisdiction, including environmental harm to the coastline, depletion and degradation of the groundwater basin, and infringement upon the local community's ability to determine land use.

The CPUC decision stated that the Project at a size of 6.4 million gallons per day was the only feasible project that could meet local water demand. However, four experts who testified at the October-November 2017 evidentiary hearings calculated that Cal Am's realistic future water demand is 10,500 acre-feet per year (afy), not the bloated 14,500 afy amount adopted by the decision. Moreover, there are other sources of water, including expansion of the Pure Water Monterey project and water sales from Marina Coast Water District that could meet the demand in a much more responsible, affordable, and sustainable manner. The Project's Final Environmental Impact Report never even addressed these alternatives.

"It is unbelievable that the CPUC dismissed such better water supply alternatives given the dramatic and sustained drop in Cal Am water system demand," said Delgado. "The CPUC has foreclosed any opportunity for reasonable alternatives to be fully vetted. The offers of many parties and agencies to work together to develop a more acceptable solution that would benefit the entire region have been ignored."

The CPUC decision points to an interim deadline in Cal Am's Carmel River Cease and Desist Order issued by the State Water Board to stop its illegal diversions from the Carmel River as the reason for cutting off additional evaluation of alternatives and issuing a decision at this time. However, the record shows that this milestone will have no real impact on Cal Am's water services.

"Trading one bad water supply problem for another in Marina with even more far-reaching environmental and community impact issues is not a policy the CPUC should embrace. The decision to build a massive industrial desalination project in a disadvantaged community should not be driven by a desire to move quickly to avoid penalties for Cal Am – that is not the obligation of the CPUC. Instead, the CPUC has a legal obligation to conduct a full examination of not just CPUC project benefits, but also its negative impacts and possible alternatives," said Delgado.

The City of Marina has identified a series of major Project risks and feasibility issues including:

- depletion and degradation of a critically overdrafted groundwater basin that is protected by the state's Sustainable Groundwater Management Act;
- the lack of any current water rights or any reasonable future path to obtain such rights in this critically overdrafted basin;
- betrayal of local water conservation efforts as the Project would pump massive amounts of water that far exceed realistic demands in Cal Am's service territory;
- the Final Environmental Impact Report/ Environmental Impact Statement displays factual, scientific and legal inadequacies;
- major expected impacts to Marina's unique and special coastal ecosystem from the acres of slant wells, pipelines and other industrial facilities, which are expected to have permanent impacts on the coastal sand dunes and the protected western snowy plover and other species that live in this habitat;
- and total disregard for Marina's community values and for its successful effort, in partnership with the Coastal Commission and State Lands Commission, to end the harmful Cemex sand mining operation on the very same Project site.

"Our water resources are precious and must be protected," said Delgado. "The Cal Am desalination Project disregards our region's long-held environmental principles and policies that protect California coastlines and water basins from degradation. Marina has already been forced to accommodate major industrial facilities including the regional landfill, sewage treatment plant, and beach sand mine. Cal Am's Project is yet the latest example of our working-class city being targeted to bear the burden of these facilities for the benefit of neighboring communities."

# # #

EXHIBIT

S

From:	Alison MacLeod <amacleod@ka-pow.com>
To:	Bruce Delgado
CC:	Keith Van Der Maaten; Layne Long; Tom van der List
Sent:	12/21/2018 10:57:00 AM
Subject:	Re: LYne and Anita can copies of made? Re: talking points for today

How did the meetings go yesterday?

From: Bruce Delgado <bdelgado62@gmail.com>
Sent: Thursday, December 20, 2018 8:10 AM
To: Alison MacLeod
Cc: Keith Van Der Maaten; Layne Long; Tom van der List
Subject: LYne and Anita can copies of made? Re: talking points for today

On Wed, Dec 19, 2018, 14:33 Alison MacLeod <amacleod@ka-pow.com wrote:
Also – there are federal permitting agencies including U.S. Army Corps of Engineers, USFWS and NOAA – you can ask that Harris/Feinstein engage with those agencies to ask questions about the process, and request that those agencies do not issue permits based on the current EIS because the PUC clearly disregarded key evidence/information.

From: Alison MacLeod
Sent: Wednesday, December 19, 2018 2:26 PM
To: 'Keith Van Der Maaten' <KVanDerMaaten@mcwd.org>; Layne Long <llong@cityofmarina.org>; Bruce Delgado <bdelgado62@gmail.com>
Cc: Tom van der List <tvanderlist@ka-pow.com>
Subject: RE: talking points for today

Yes- I recommend you deliver mostly the same messages. However, you'll need to start with the basic overview of Cal Am's proposal since I doubt the staffers you'll meet tomorrow have been following the issue -so start with what the actual proposal is and its main flaws.

I've attached talking points here.

I sent their offices background fact sheets, but it would be good for you to bring copies as leave behinds. I've attached some handouts here.

From: Keith Van Der Maaten <KVanDerMaaten@mcwd.org>
Sent: Wednesday, December 19, 2018 12:28 PM
To: Alison MacLeod <amacleod@ka-pow.com>; Layne Long <llong@cityofmarina.org>; Bruce Delgado <bdelgado62@gmail.com>
Cc: Tom van der List <TvanderList@ka-pow.com>
Subject: RE: talking points for today

Do we see these same talking points used for Senator Monning being used in our meeting tomorrow w/ Feinstien and Harris' staff, or is there another angle/ask we want to pursue?

Thanks,
Keith

From: Alison MacLeod <amacleod@ka-pow.com>
Sent: Friday, December 14, 2018 8:49 AM
To: Keith Van Der Maaten <KVanDerMaaten@mcwd.org>; Layne Long <llong@cityofmarina.org>; Bruce Delgado <bdelgado62@gmail.com>
Cc: Tom van der List <TvanderList@ka-pow.com>
Subject: talking points for today

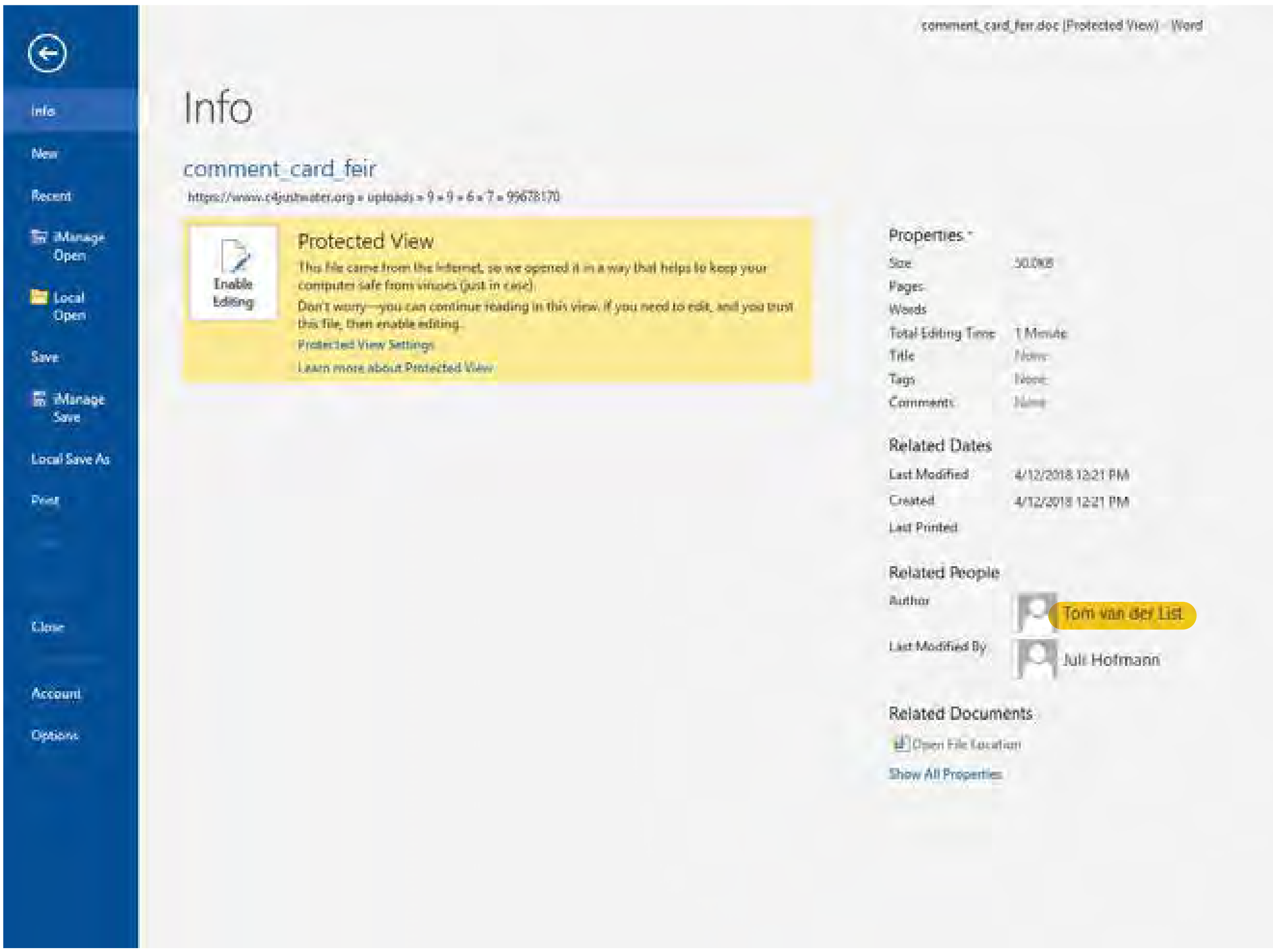
Per our discussion last night, attached please find suggested talking points for your meeting today with Senator Monning. Good luck and let me know how it goes!

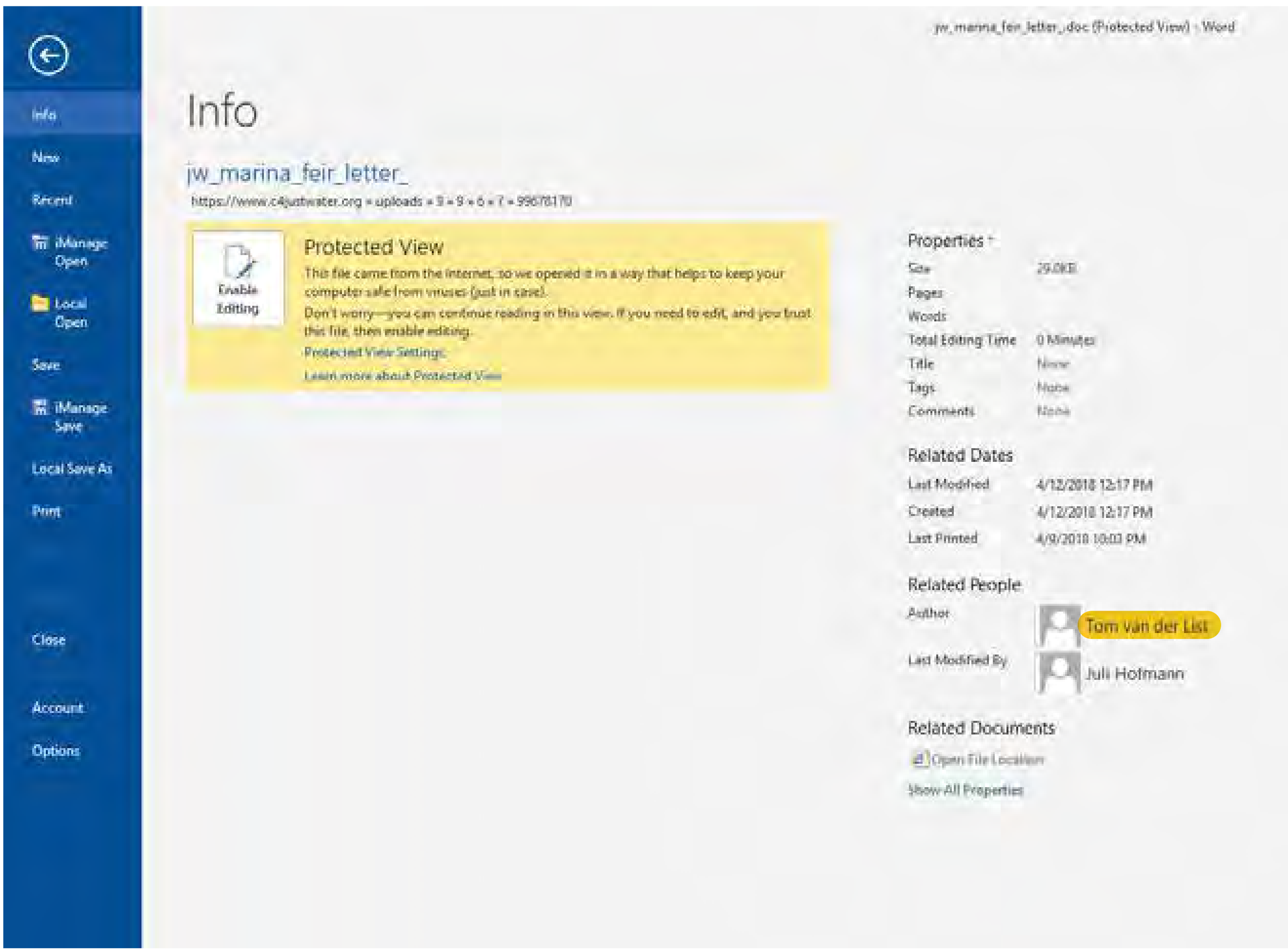
Best,
Alison

EXHIBIT
T

METADATA REPORT ON CITIZENS FOR JUST WATER FORM OPPOSITION LETTERS

ITEMID	CUSTODIAN	ORGANIZATION	DOCAUTHOR	EDOC_AUTHOR	FILENAME	MD5HASH
2144156	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	ccc_sample_letter_for_website.docx	DF511AF70755F15918265252C1891543
2144158	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	coastal_commissioners_letter_03_16_18_c4jw.doc	AF6C1F15EBA58EC63BF2FFDE811E61B4
2144160	JustWater	Microsoft Office Word	Tom van der List	Tom van der List	comment_card_feir.doc	4D7FD8092EFE6570B6D3D53912BC018D
2144161	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	dear_cpuc.doc	306F8FB3AC2A4C7C8DE0047A5979E459
2144162	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	dear_mark_stone.doc	485025B5A275CEE010CAB3E5C36A6A12
2144163	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	dear_monterey_bay_national_marine_sanctuary_official.doc	84CB134676DC1864C2E22CDBF5F9E6E5
2144164	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	dear_senator_monning.doc	29F366B81001460314887B33B2FC64E3
2144165	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	dear_state_water_board_official.doc	ED47DC24ACACEC215DA366DB53E583D4
2144166	JustWater	Microsoft Office Word	Tom van der List	Tom van der List	jw_marina_feir_letter_.doc	2F19E04D5F8E729F19FC9FACA7E316C0
2144167	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	jw_region_letter_feir_.doc	441BDEFD32D5D5FA082C81E3152D109B


comment_card_feir.doc (Protected View) - Word
Info
New
Recent
iManage Open
Local Open
Save
iManage Save
Local Save As
Print
Close
Account
Options
Info
comment_card_feir
https://www.c4justwater.org » uploads » 9 » 9 » 6 » 7 » 99678170
Enable Editing
Protected View
This file came from the Internet, so we opened it in a way that helps to keep your computer safe from viruses (just in case).
Don't worry—you can continue reading in this view. If you need to edit, and you trust this file, then enable editing.
Protected View Settings
Learn more about Protected View
Properties
Size 50.0KB
Pages
Words
Total Editing Time 1 Minute
Title None
Tags None
Comments None
Related Dates
Last Modified 4/12/2018 12:21 PM
Created 4/12/2018 12:21 PM
Last Printed
Related People
Author
Tom van der List
Last Modified By
Juli Hofmann
Related Documents
Open File Location
Show All Properties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Created
4/12/2018 12:17 PM
Last Printed
4/9/2018 10:03 PM
Related People
Author
Tom van der List
Last Modified By
Juli Hofmann
Related Documents
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METADATA REPORT ON CITIZENS FOR JUST WATER FORM OPPOSITION LETTERS

ITEMID	CUSTODIAN	ORGANIZATION	DOCAUTHOR	EDOC_AUTHOR	FILENAME	MD5HASH
2144156	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	ccc_sample_letter_for_website.docx	DF511AF70755F15918265252C1891543
2144158	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	coastal_commissioners_letter_03_16_18_c4jw.doc	AF6C1F15EBA58EC63BF2FFDE811E61B4
2144160	JustWater	Microsoft Office Word	Tom van der List	Tom van der List	comment_card_feir.doc	4D7FD8092EFE6570B6D3D53912BC018D
2144161	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	dear_cpuc.doc	306F8FB3AC2A4C7C8DE0047A5979E459
2144162	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	dear_mark_stone.doc	485025B5A275CEE010CAB3E5C36A6A12
2144163	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	dear_monterey_bay_national_marine_sanctuary_official.doc	84CB134676DC1864C2E22CDBF5F9E6E5
2144164	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	dear_senator_monning.doc	29F366B81001460314887B33B2FC64E3
2144165	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	dear_state_water_board_official.doc	ED47DC24ACACEC215DA366DB53E583D4
2144166	JustWater	Microsoft Office Word	Tom van der List	Tom van der List	jw_marina_feir_letter_.doc	2F19E04D5F8E729F19FC9FACA7E316C0
2144167	JustWater	Microsoft Office Word	Kathy Biala	Kathy Biala	jw_region_letter_feir_.doc	441BDEFD32D5D5FA082C81E3152D109B

EXHIBIT

U

From: Alison MacLeod [mailto:amacleod@ka-pow.com]
Sent: Thursday, April 05, 2018 10:39 AM
To: 'Layne Long (llong@cityofmarina.org)'; Spaulding, Skip (20) x4918
Cc: Michael Burns; Tom van der List; 'bdelgado62@gmail.com'
Subject: RE: Marina Strategy Call Follow up

Attached please find the sample comment card and sample Marina resident comment letter. With your ok, we'd like to send these to Kathy Biala today for her to have in advance of the community meeting next week.

From: Alison MacLeod
Sent: Wednesday, April 4, 2018 2:38 PM
To: 'Layne Long (llong@cityofmarina.org)' <llong@cityofmarina.org>; 'Skip Spaulding' <SSpaulding@FBM.com>
Cc: Michael Burns <mburns@ka-pow.com>; Tom van der List <tvanderlist@ka-pow.com>
Subject: FW: Marina Strategy Call Follow up

Re-sending the postcard, website language, press release. Per below we suggest paid social media ads to heighten visibility and spur comment submittals - You could do this through Marina's Facebook page https://www.facebook.com/MarinaMRYBay/ , or do google display ads, or contribute funds to the Just Water effort to help boost their posts https://www.facebook.com/justice4water/

We will work on a sample comment letter for Kathy's audience and reach out to her, and also an op-ed for the city. With the green light on the press release we can distribute that to media and stakeholders.

Let us know if you want to move forward with the public signage/banner and the specs and we can send a design through.

EXHIBIT

V

From: Alison MacLeod <amacleod@ka-pow.com>
To: Bruce Delgado; Katherine Biala
CC: Layne Long; Phil Wellman; George Riley; MWChrislock; Juli Hofmann; Keith Van Der Maaten; Tom van der List
Sent: 11/29/2018 2:10:39 PM
Subject: RE: next meeting to brainstorm PR efforts regarding desal threat

If you would like KP to join, Tom and I can plan to attend on Dec. 13

From: Bruce Delgado <bdelgado62@gmail.com>
Sent: Thursday, November 29, 2018 7:05 AM
To: Katherine Biala <kybiala@icloud.com>
Cc: Layne Long <llong@cityofmarina.org>; Phil Wellman <phil@wellmanad.com>; George Riley <georgetriley@gmail.com>; MWChrislock <mwchrislock@redshift.com>; Alison MacLeod <amacleod@ka-pow.com>; Juli Hofmann <jhofmann@redshift.com>; Keith Van Der Maaten <KVanDerMaaten@mcwd.org>
Subject: next meeting to brainstorm PR efforts regarding desal threat

I think the synergy between C4JW, City, and KP(public relations firm) could be much more effective and maybe if we met in person at least once it may help. I also think we should invite Phil Wellman and Melodie Chrislock to infuse peninsula efforts of Public Water Now with our own where appropriate.

I am cc-ing Phil into this email thread for him and Melodie (who was already in this thread) to consider joining us Dec 13 or 14.

thank you,
Bruce

On Thu, Nov 29, 2018, 06:45 Katherine Biala <kybiala@icloud.com wrote:
Thanks, Bruce, for so quickly proposing two dates for our joint meeting. Let's see how others schedules are.

I wonder if we can invite KP to this meeting? When we met with them in Sacramento, following the Betty Yee meeting, they said they would actually come down to be present at a meeting in which we could coordinate strategic efforts and PR support. That is up to you, however, since they are a contracted service provider but I think they could do much to help all of us, especially citizen groups.

Please consider.

Cordially,
Kathy

Begin forwarded message:

From: Bruce Delgado <bdelgado62@gmail.com>
Subject: Re: Joint meeting
Date: November 28, 2018 at 10:21:15 PM PST
To: Katherine Biala <kybiala@icloud.com>
Cc: Layne Long <llong@cityofmarina.org>, Keith Van Der Maaten <kvandermaaten@mcwd.org>, George Riley <georgetriley@gmail.com>, MWChrislock <mwchrislock@redshift.com>, Juli Hofmann <jhofmann@redshift.com>

I can meet Thurs Dec 13, 515pm or later and Fri Dec. 14, 415pm or later.
Bruce

On Wed, Nov 28, 2018 at 9:57 PM Katherine Biala <kybiala@icloud.com> wrote:
All, after our Sacramento meeting with Betty Yee and her two top staff members today, we need to try to schedule another joint meeting for City, MCWD, Just Water and PWN (Melodie will now be their representative) as we have some important information to discuss. Since March 13 is a fast upcoming deadline for CalAm to obtain permits, we should probably reconvene as soon as possible in December.

Please forward possible available dates/times. Let's start with Keith, Bruce and Layne, please.

Thanks all,
Kathy

--
Mayor Bruce Delgado
cell: (831) 277-7690
email: bdelgado62@gmail.com

From:	Katherine Biala <kybiala@icloud.com>
To:	Layne Long; Bruce Delgado; Keith Van Der Maaten; George Riley; Melodie Chrislock; Juli Hofmann
CC:	Allison MacLeod
Sent:	11/29/2018 3:28:13 PM
Subject:	Mark your calendars: Joint meeting

Ok, the date is:

Thursday, Dec. 13 at 5:15 pm - 6:30 pm at City Hall conference room.

The City PR firm will be joining us to see how they might assist in any of the outreach efforts.

Thanks everyone!

Cordially,
Kathy

Kathy Biala
Cell: 831-242-0023
Other: 831-920-2762
Fax: 831-241-6370
Email: kybiala@icloud.com

EXHIBIT

W

Bruce Carlos Delgado is with Michael Owen and 50 others.
February 5 ·

Bad idea: Cal Am Water Co. proposal to take water from underneath Marina

MONTEREYHERALD.COM
www.montereyherald.com
By Bruce DelgadoCalifornia American Water Company, a subsidiary of the national, for-profit water provider, American Water, is proposing a massive new desalination plant in the city of Marina. This project poses a substantial threat to our loca

19 · 21 Comments 1 Share

Like Comment Share

Karin Locke Thank you Bruce Delgado for this excellent letter. MARINA is certainly in the direct line of action. I do not think this desalination plant would be put in Pacific Grove at the new water plant there, or that the county would allow it off of the Carmel ... See More
4
Like · Reply · 23w

Tina Zmak Thank you, Bruce! 3
Like · Reply · 22w

Frank Emerson The "Bad Idea" is stopping a drought proof water supply right in the middle of what appears to be another criticallly dry year for Monterey. The slant wells will not affect Marina's wells. This is just wrong on the facts.
Like · Reply · 21w

Bruce Carlos Delgado replied · 17 Replies

Robina Bhatti Yes a tragedy in the making if this goes forward.
Like · Reply · 21w

Write a comment...

Bruce Carlos Delgado is with Marilou Heres-Brown and 94 others.

February 3 ·

Bad idea: Cal Am Water Co. proposal to take water from underneath City of Marina.

MONTEREYHERALD.COM

www.montereyherald.com

By Bruce DelgadoCalifornia American Water Company, a subsidiary of the national, for-profit water provider, American Water, is proposing a massive new desalination plant in the city of Marina. This project poses a substantial threat to our loca

33 · 30 Comments · 3 Shares

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Robert W. Coble Cal Am bears complete responsibility for the failure of the dam. It did not maintain it and provide dredging and removal of silt when it could have.

Like · Reply · 23w

Chuck Fuller replied · 4 Replies

Patty Von Ohlen Cramer They will do it, too!! I heard there are no under ground water rights!! My sister's friend had a ranch by an Indian Casino and they drilled down and took all her well water. She had to sell her farm!!

3

Like · Reply · 23w

Steve Zmak Well said Mr. Mayor! 1

Like · Reply · 23w

Amy Thistle Tackett Loved the point about social injustice. I think Marina folks would benefit from learning about the the water rights of said water. Who has the current rights to the water and what happens if we allow our water rights (if we do have current rights) to be taken away? The social and political history of CA is rich with very interesting water rights stories... #owensvalley

3

Like · Reply · 23w · Edited

Bruce Carlos Delgado is with Roberto Antonio Maceira and 89 others.

December 8, 2017 ·

In this week's op-ed piece in SF Chronicle I try to summarize the main concerns that add up to an environmental injustice.

http://www.sfchronicle.com/.../A-test-of-California-s-commitm...

The proposal is to install desalination facilities in the City of Marina that wouldn't provide any water for our City but would subject us to the brunt of this projects adverse impacts. This would be an unwelcome scenario for any town under the gun of such a proposal.

Thanks to Steve Zmak for the beautiful photos of Marina and to those that provided input during the draft process

31 · 3 Comments 3 Shares

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Scott Douglas Laxier I remember a 1991 SJSU ES Field Studies class where we visited the Monterey Bay and looked at the threats of saltwater intrusion. Nice effort, Bruce.

Like · Reply · 31w · 3

Bart Kowalski Good work Bruce. Let us know when we should call our elected officials.

Like · Reply · 31w · 1

Wendy Root Askew I met a woman this weekend in San Francisco. When I mentioned I was from Marina she immediately mentioned your Op-Ed and asked if I knew the guy who wrote it. She was so impressed with the article and concerned about the water issues we are dealing with. I promised her that I'd let you know!

Like · Reply · 31w · 4

Bruce Carlos Delgado
December 7, 2017 ·

Here is original text of op-ed b4 editing.

California's new groundwater sustainability law tested.

By Bruce Delgado...
Continue Reading

17 — 3 Comments 2 Shares

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View 1 more comment

Jon Detka Well said Bruce Carlos Delgado!
Like · Reply · 31w

Dave Feliz Thank you Bruce.
Like · Reply · 31w

Bruce Carlos Delgado is with Steve Eklund and 89 others.
December 7, 2017 ·

In this week's op-ed piece in SF Chronicle I try to summarize the main concerns that add up to an environmental injustice.

http://www.sfchronicle.com/…/A-test-of-California-s-commitm…

The proposal is to install desalination facilities in the City of Marina that wouldn't provide any water for our City but would subject us to the brunt of this projects adverse impacts. This would be an unwelcome scenario for any town under the gun of such a proposal.... See More

SFCHRONICLE.COM

"A test of California\u2019s commitment to groundwater sustainability"

"Throughout California, access to water and how it is distributed is a perennial issue. Water conflicts are often nuanced and take on a life of their own. In some cases, a local conflict can have statewide implications

28

45 Comments 16 Shares

Like Comment Share

Bruce Carlos Delgado is with Joycelyn Whindleton and 97 others.

January 18, 2017 ·

Interested in where our water comes from.

Salinas Valley (which includes the City of Marina), is the 4th largest agricultural-producing valley in the world and has serious water quality/quantity problems. One author of this 1995 White Paper regarding problem/solution to safe yield of Salinas Valley groundwater suggested I read it. It is an educational document so I want to share it here. It is about a one hour read but needn't be done in one sitting. The punch line is summarized on its easy-to-read last page.

MCWRA.CO.MONTEREY.CA.US

www.mcwra.co.monterey.ca.us

19

25 Comments 2 Shares

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EXHIBIT

X

OPINION // OPEN FORUM

A test of California's commitment to groundwater sustainability

By Bruce Delgado
Dec. 4, 2017

Aerial view of Marina, a city of 20,000 in northern Monterey County.

Photo: By Steve Zmack, Steve Zmack Photography 2008

Throughout California, access to water and how it is distributed is a perennial issue. Water conflicts are often nuanced and take on a life of their own. In some cases, a local conflict can have statewide implications — the City of Marina, a small city along the shores of Monterey Bay, finds itself in such a conflict.

In 2009, the California State Water Resources Control Board ordered the private, for-profit California American Water Company to end its illegal water diversions from the Carmel River. In looking for alternate water sources, Cal Am now has focused on a proposal to sink slant wells in the City of Marina to supply a desalination plant, which would pump large amounts of water from an aquifer within the Salinas Valley Groundwater Basin.

Cal Am's plant would draw brackish groundwater, not seawater, through slant wells. That water is located in one of the state's 21 critically over-drafted groundwater basins that have been identified as a priority for protection under the Sustainable Groundwater Management Act passed in 2014. Therein lies the conflict.

Will the groundwater act have the force needed to demand protection of the aquifer from continued over-pumping, or does it allow approvals for new projects to export water out of the basin? Now we wait to see the groundwater act's true effect on water policy and planning decisions.

For more than 70 years, seawater intrusion has plagued those dependent upon the Salinas Valley Groundwater Basin for freshwater. With pumping demands continually increasing over time, seawater intrusion has been exacerbated. To protect local water sources in Marina, the Monterey Peninsula and many other areas where water demand is outstripping supply, the state stepped in with the sustainable groundwater management act. Indeed, California is one of the last states to formalize groundwater management.

The state created Local Groundwater Sustainability Agencies, which move decisions on local water use to the local level, to oversee critically over-drafted basins, such as the aquifer under the city of Marina. Each agency is required to develop a groundwater sustainability plan by 2020.

Yet Cal Am's proposal to take many million gallons per day from this aquifer is not part of the sustainability plan. To the contrary, this project would ignore the groundwater act's environmental protections, deplete scarce water resources, and allow further seawater intrusion into the aquifer.

From a state policy perspective, the proposed project would set a horrible precedent on many levels.

We understand the greater Monterey Peninsula region must get water from somewhere besides the Carmel River. But we encourage Cal Am to choose a project that won't jeopardize an already over-drafted groundwater basin, and won't cause undue harm to the City of Marina or its coastline.

Cal Am's proposal for its project to desalinate brackish water is enormous and unrealistic. Realistic demand projections prove alternate solutions are viable.

Thankfully, Californians took water conservation seriously and made significant behavior changes in recent years. Within Cal Am's service, water demand declined from 14,176 acre feet per year in 2006 to 9,285 acre feet per year in 2016. Yet, the project proposal wants us all to agree on a future Cal Am water supply of approximately 16,000 acre fee a year — 6,700 acre feet a year over current demand.

Cal Am will have at least 9,000 acre feet a year of water in future years from nondesalination sources, even after reducing its diversions from the Carmel River as mandated. True demand could be met by more responsible alternatives.

Will the state stay true to its stated policy of local control, protecting coastlines from industrial development, and better management of scarce groundwater? Cal Am's proposal is going through the project review and approval process.

This review is not just about the siting of a desalination plant. This is a significant water conflict that will test the durability of the Sustainable Groundwater Management Act — setting either a good or bad precedent that surely will inform future water decisions statewide.

Bruce Delgado is the mayor of Marina (Monterey County).

EXHIBIT

Y

Bruce Delgado: Cal Am's proposed desal plant bad idea and bad for Marina

By MONTEREY COUNTY HERALD | migration@dfmdev.com |
PUBLISHED: February 2, 2018 at 12:00 am | UPDATED: September 11, 2018 at 12:00 am

By Bruce Delgado

California American Water Company, a subsidiary of the national, for-profit water provider, American Water, is proposing a massive new desalination plant in the city of Marina. This project poses a substantial threat to our local groundwater supply and the coastal ecosystem, not just in Marina, but across much of the Monterey Peninsula. Cal Am has no legal rights to draw from the targeted water source, and the project itself is in direct conflict with the state's new Sustainable Groundwater Management Act. This is not to mention the extraordinary cost of the project, which undoubtedly would be passed along to Cal Am customers.

As it stands, this project cannot be considered a true seawater desalination plant — instead it would draw groundwater directly from sub-basins within the Salinas Valley Groundwater Basin using nine slant wells. While project proponents would like you to believe the targeted water is primarily salt or brackish water, a recent study by Stanford University proves the project would actually draw upon significant freshwater sources as well.

Using a helicopter and powerful sensors, Stanford geologists measured the proportion of fresh, salt, and brackish water in underground aquifers. As we suspected, the sub-basins where Cal Am wants to drill were not only primarily fresh water, but also actively recharging. Moreover, the study revealed that further depletion of the sub-basins will offset their delicate equilibrium and cause further salt-water intrusion — which contaminates our drinking water supply.

Complicating matters further, the targeted basin is already classified as one of only 21 critically overdrafted water basins in the state. Under California's Sustainable Groundwater Management Act, which was signed into law in 2014, local jurisdictions are required to protect their service area against significant and unreasonable reduction of groundwater storage, avoid seawater intrusion, and represent the interests of all beneficial users of the groundwater. But somehow Cal Am thinks they can ignore this state law and trample upon local authorities that are trying to comply with state requirements to protect and restore this groundwater resource.

The proposed desalination project is a lose-lose for the vity of Marina. Marina residents are not served by Cal Am and, as a result, no one in the Marina community will receive water from this project. Instead, Marina's sustainability of its affordable drinking water source and its valuable beach and coastal dune ecosystem would bear the brunt of adverse impacts from the slant wells' construction and operation, their associated above-ground infrastructure, and access roads.

We fought hard to bring an end to the Cemex sand mining operation on our coast. And just when we have a chance to restore that land as a protected community asset, that very same location would be turned over to Cal Am for another harmful industrial project. The city of Marina objects to the environmental injustice of siting yet another regional industrial facility (Marina is already home to the regional landfill, sewage treatment plant, and beach sand mine) in our ethnically diverse, working-class city, only to extract water for Cal Am-served communities of Monterey, Carmel, Pebble Beach, and others — but not Marina.

Alternative solutions include Cal Am accepting potable water offerings from another local water agency that has legal rights to local water, and pursuing an expansion of the "Pure Water Monterey" recycled water project that is already under construction.

Cal Am should focus on these non-desalination options that are available, affordable and sustainable — these would satisfy their customers' water demand for the next decade and cease over-drafting from the Carmel River. This would allow time to plan and develop a truly regional desalination plant, one that is publicly owned and includes willing partners from Monterey, Santa Cruz and San Benito counties.

Other options may mean lower profits for Cal Am, but they would better protect the long term interests of this unique and valuable coastal community.

Bruce Delgado is mayor of the city of Marina.

Monterey County Herald

EXHIBIT

Z

NEWS

Marina Mayor Bruce Delgado: When it comes to water, be a good neighbor

By **MONTEREY COUNTY HERALD** | migration@dfmdev.com |
PUBLISHED: April 16, 2018 at 12:00 am | UPDATED: September 11, 2018 at 12:00 am

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By Bruce Delgado

Marina mayor

Imagine your neighbors deciding to pave part of your attractive front yard to make a car port for their RV — right on the spot you just restored for a new garden. You would immediately ask: why don't you use your own yard rather than mine?

Good neighbors are considerate, cooperative, and work together for the benefit of the entire neighborhood, and they consider their neighbor's point of view. Those basic tenets also apply to neighboring cities.

But that neighborly spirit is nowhere to be found when it comes to the Monterey Peninsula Water Supply Project, which includes a massive desalination plant in, around and through Marina.

As a good neighbor, Marina supports efforts to secure an adequate regional water supply and we are working closely with the Marina Coast Water District in calling for new supplies, such as expansion of the Pure Water Monterey recycled water project. And we support an appropriately-sized and environmentally-safe regional desalination project. That's our commitment to the neighboring cities and the

But, we are disappointed with the recently-issued and inadequate Environmental Impact Report/Statement (EIR/EIS) on the proposed project. The document fails to adequately evaluate the harmful impacts to Marina — it disregards our serious concerns related to groundwater depletion, saltwater intrusion, damage to the coastal ecosystem and more. We call on other cities to carefully consider how this project would significantly harm Marina, and look instead toward other more environmentally-responsible and sustainable alternatives. Any city government bears the responsibility to do what we are doing: looking out for the long-term interests of our residents and ensuring that new industrial projects are not approved if they pose serious, unnecessary risks.

Our priorities are simple, and should be shared by all of our neighboring cities:

Conservation. The EIR/EIS dismisses a critical report by Stanford researchers that illustrates how slant well drilling on Marina's coast could threaten the city's groundwater supply. The EIR/EIS also fails to account for the fact that the state has designated the basin underlying the slant well site as critically over-drafted, which triggers a special process to protect further groundwater harm and restore supplies. Given these facts, how does it make sense that the amount and integrity of a local water supply could be jeopardized further by a huge industrial water project (extracting up to 24 million gallons of water per day) to export that water elsewhere?

Fairness. The EIR/EIS also fails to properly consider the adverse impact of the project on the Marina community, in stark contrast to the region's stated commitment to environmental justice and fairness. If, as the EIR/EIS states, the impacts to Marina are not significant, then why doesn't another city that would actually receive water from the project offer to host the project wells? Rather than dictating Marina's land use decisions, why not find a location that the entire region can support?

Environmental Protection. Marina worked hard to rid our coastline of an environmentally-damaging sand mining plant. However, the new desalination slant wells would be located in that exact site, but the EIR/EIS fails to acknowledge the significance of undermining our long-term efforts to restore that land for the benefit of wildlife and residents.

Being a good neighbor is more than a slogan. It requires people and cities to put themselves in each others' shoes and ask if they would be OK with the decision if it was their front yard. Most neighbors would not plan to park their RV in a neighbor's

We are committed to finding a long term, regional water supply solution, but we know there are better options available. We urge our neighbors to take a closer look.

Monterey County Herald

EXHIBIT
AA

CAPITOL WEEKLY
COVERING CALIFORNIA GOVERNMENT AND POLITICS
(https://capitolweekly.net)

MENU

OPINION

Marina bears heavy burden in desalination dispute

BY ***BRUCE DELGADO*** POSTED 10.02.2018

TWITTER (HTTPS://TWITTER.COM/SHARE)

FACEBOOK

EMAIL (MAILTO:?SUBJECT=MARINA BEARS HEAVY BURDEN IN DESALINATION DISPUTE&BODY='HTTPS://CAPITOLWEEKLY.NET/DIVISIONS-DESALINATION-

In parched, drought-stricken California, where water is considered liquid gold, the politics of power and wealth are playing out in real-time.

The California Public Utilities Commission's (CPUC) recent decision to allow the California American Water Company (Cal-Am) to proceed with its Monterey Peninsula Water Supply Project desalination plant is great news – that is, if you live in Carmel, Pacific Grove or Monterey.

But the City of Marina, where less affluent residents live and where the actual desalination plant will pull water from, will bear only the consequences of the project without receiving any of the water produced.

MONTEREY-PENINSULA/')

Cal-Am is hedging that by siting its groundwater pumping project in working-class Marina, regulatory bodies will quietly issue necessary approvals, even though the

The problem is that for more than seventy years, seawater intrusion has plagued those dependent upon the Salinas Valley Groundwater Basin for freshwater

project ignores important environmental protections, tramples on the rights of Marina residents, and allows further seawater intrusion into the local water supply.

Although the CPUC rationalized their decision, other regulatory agencies, namely the California Coastal Commission and the State Lands Commission cannot – and must not – ignore these realities.

Water in the Monterey peninsula is supplied via private, for-profit Cal-Am, which in 1995 was ordered to terminate its unlawful diversions from the Carmel River. In response, Cal-Am proposed a solution that included placing an industrial pumping and desalination operation in the City of Marina. That project will pump large amounts of water from the Salinas Valley Groundwater Basin, the basin that serves as Marina's main source of water.

The problem is that for more than seventy years, seawater intrusion has plagued those dependent upon the Salinas Valley Groundwater Basin for freshwater. As the Cal-Am project draws primarily groundwater, not seawater, from the basin, an independent team of researchers from Stanford concluded that it will cause additional seawater intrusion. That will lead to depletion and degradation of a critically over-drafted groundwater basin that is – at least in theory — protected by the state's Sustainable Groundwater Management Act.

Ironically, the City of Marina doesn't even receive water through Cal-Am and will not receive a drop of water from the proposed project

The proposed desalination plant also violates the spirit of the California Coastal Act, which has protected local communities from developments that damage coastlines and run contrary to the will of local communities. Cal-Am says that it will "remediate" any damage. This is not the same thing as assuring that damage won't occur.

There are viable, environmentally sound alternatives to the Cal-Am project. Numerous experts have testified that other sources of water, including expansion of the Pure Water Monterey project and water sales from Marina Coast Water District, could meet the demand. The alternative projects could meet demand in a much more responsible, affordable, and sustainable manner.

Ironically, the City of Marina doesn't even receive water through Cal-Am and will not receive a drop of water from the proposed project. So why push forward to locate the project in Marina?

One clue about the decision to pursue the path of least resistance lies in Flint, Michigan.

It's been four years since high levels of lead, E. coli, and other toxins were discovered in Flint's water system, yet the corroded pipes have still not been replaced and the low-income residents of that city still have little access to clean drinking water. Racial and class undertones in the Flint debacle cannot be ignored, given that many low-income residents and people of color cannot afford to move out of the region.

Marina is not Flint, Michigan, and the Cal-Am water project poses environmental and supply risks, not a health threat. But just as we must question whether delays would continue in Flint if it were a higher-income community, we should also ask Cal-Am's champions whether they would feel the same way about the project risks and benefits if they actually lived in Marina.

We residents of Marina have faith that the California Coastal Commission and the State Lands Commission will honor their commitments to carefully protect our precious lands and resources for present and future generations. If those Commissioners believe our community matters just as much as our neighbors, they will clearly reject the Cal-Am project in its entirety.

—

Editor's Note: Bruce Delgado is the mayor of the city of Marina.

Comments for this thread are now closed ×

2 Comments Capitol Weekly 1 Login

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GusLevy • 6 months ago

When will the lesser cities around the Monterey Peninsula fully grasp the fact they exist in order to supply the vegetables, the retail shopping outlets, the budget housing, the physical labor...and the water...for the important affluent Liberals of Carmel, PG and Monterey.

Sheesh...where's the gratitude from these people and towns for being allowed to bathe in the glory of the important three cities!

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jdweekley • 7 months ago

Bruce is right...furthermore, the private, for-profit company, Cal-Am, is spending many, many thousands of dollars of rate-payer provided money to fight Measure J, which would mandate that the Monterey Peninsula Water Management District own and operate all water infrastructure. This would effectively force Cal-Am to sell to the district its assets in the area. Obviously, they don't want to do that.

While kicking out Cal-Am might be one path towards slowing or stopping the plan to outsource the environmental impact of their plan to Marina. Yet, Marina doesn't get to vote on Measure J, even though we will likely bear much of the burden should it fail.

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BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

ADMINISTRATIVE LAW JUDGES GARY WEATHERFORD,
DARCIE HOUCK and ROBERT HAGA, co-presiding

	)	**EVIDENTIARY HEARING**
Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates.	)	**Application 12-04-019**

REPORTER'S TRANSCRIPT
San Francisco, California
October 26, 2017
Pages 3631 - 3862
EH - Volume 22

Reported by: Ana M. Gonzalez, CSR No. 11320
Thomas Brenneman, CSR No. 9554
Doris Huaman, CSR No. 10538

PUBLIC UTILITIES COMMISSION, STATE OF CALIFORNIA
SAN FRANCISCO, CALIFORNIA

I N D E X

Exhibits:	**Iden.**	**Evid.**
CJW-04	3635	
DRA-19	3635	
DRA-20	3635	
DRA-21	3635	
MCD-43	3637	
MCD-44	3637	
RWA-27	3731	
RWA-28	3732	
SF-13-A	3732	

SAN FRANCISCO, CALIFORNIA

OCTOBER 26, 2017 - 9:40 a.m.

* * * * *

ERIC SABOLSICE

resumed the stand and testified further as follows:

ADMINISTRATIVE LAW JUDGE HAGA: The Commission will come to order.

This is the second day of hearings in the evidentiary hearings for Application 12-04-019. And as a preliminary matter we have a few exhibits that were distributed this morning.

ALJ HOUCK: We have CJW-4 was identified. And is there another copy of that exhibit?

MS. BERKLEY: I have just one left. There were three copies.

ALJ HOUCK: We needed four.

MS. BERKLEY: Okay. Gave one to the court reporter. And actually, Cal-Am had each of the three versions. Do you mind if I do the -- sorry.

ALJ HOUCK: So CJW-4 has been marked and identified. And it's an excerpt from the California groundwater sustainability.

MS. BERKLEY: It's DWR.

supply will actually provide significant benefits and improve the quality of life for citizens in the area, in general.

Q I see. Right. That is the general area though. You are not referring specifically to the citizens of Marina.

MS. DOLQUEIST: Objection, that mischaracterized his testimony.

MS. BERKLEY: He just said it.

ALJ HOUCK: Excuse me.

MS. BERKLEY: Sorry, sorry.

ALJ HOUCK: One at a time.

I'm going to sustain the objection.

MS. BERKLEY: Okay.

Q Can you tell us how selling our water for profit to another community is a benefit to the Marina community?

MS. DOLQUEIST: Objection, argumentative.

MS. BERKLEY: Sorry?

MS. DOLQUEIST: Objection, argumentative question.

ALJ HOUCK: Sustained.

Can you rephrase that?

MS. BERKLEY: Seriously?

ALJ HOUCK: Seriously.

MS. BERKLEY: Q What are the benefits that Marina would gain by selling water to another community?

A Again, the communities, Marina and the peninsula, are linked in many ways. Families, people that work on the peninsula live in Marina, vice versa.

Q I'm sorry. I'm not asking about the interconnectedness. I'm asking specifically about the City of Marina.

ALJ HOUCK: Is your question what benefits would the City of Marina get?

MS. BERKLEY: What benefit will the residents of Marina get.

MS. DOLQUEIST: That was his answer. Please let him finish his answer. It is responsive to the question.

ALJ HOUCK: Go ahead and answer.

THE WITNESS: So I live in -- I'll just try to characterize it that with the sufficient water supply, the hospitality industry on the peninsula will be able to operate. We won't have this severe rationing situation that we are in today. People who work in the hospitality industry and live in Marina will continue to have their jobs and their income. There is a link between the two communities regarding hospitality and a number of things. So the financial condition of industries in the area that depend on water will benefit, communities in Salinas and Marina and Monterey. And that is my response.

MS. BERKLEY: Q I see.

MS. FARINA: Objection, move to strike the community being on rationing. There is no rationing.

ALJ HOUCK: Sustained.

MS. BERKLEY: Q Do you know how many citizens are in Marina?

A I think it is about 35,000.

Q Actually, no --

ALJ HOUCK: Is there a question?

MS. BERKLEY: Sorry.

Q Okay. So is it possible that your number is an inaccurate number?

A Sure, I just -- I'm not that familiar with the population there.

Q Right. Okay. So what do you know about Marina and its community values?

A I know -- I read the testimony of Mayor Delgado and others in referencing community values and their concerns. So my testimony was based on what I've read there.

Q Is it possible that you have no real experience or firsthand idea about the values of Marina's 21,000 citizens?

MS. DOLQUEIST: Objection, your Honor.

It is argumentative, assumes facts not in evidence.

MS. BERKLEY: Can you explain that to me? I'm sorry. I don't understand.

ALJ HAGA: Cross-examination is about his testimony and what he has stated. So if you have a specific element of his --

(Crosstalk.)

ALJ HAGA: -- that you would like to ask about, that is what you should ask about.

MS. BERKLEY: Okay. Very good.

Q So can you explain to me when on Question 10 when we, Citizens for Just Water, expressed our concern of being taken advantage of by Cal-Am, the response was regarding not the citizens but rather the physical use of infrastructure that is already in Marina. When, in fact, we were talking about the exploitation of a community.

MS. DOLQUEIST: Objection, your Honor. Vague and overbroad.

ALJ HOUCK: Sustained.

MS. BERKLEY: Okay. So then I need a little bit of help here. Because I feel, and what we as Citizens for Just Water feel is that we asked a question regarding our community, the citizens, residents of our community. The response that we got had nothing to do with the people. The response was about, you know, existing pipes.

So if you all can help me, you all are smarter than I am and who are lawyers can help me rephrase this. I would really like some help, because I don't hear anything here about our citizens.

ALJ HOUCK: The witness was responding to a statement that is in your testimony. So your testimony at the moment is still there in the record, and you are going to have a chance to have somebody be potentially cross-examined on this as we haven't ruled on the motion to strike. So he is responding as to what his opinion is as to what that statement in your testimony meant.

MS. BERKLEY: I understand that piece.

ALJ HOUCK: So if there is something about his response that you want clarification on, you can ask that question. But you can't add to what he is saying or try to get additional meaning, if that --

MS. BERKLEY: I'm not sure how I did that. I accept your response. Okay. So we can -- did you want to say more? I don't want to cut you off either.

ALJ HOUCK: Judge Haga?

ALJ HAGA: To the extent that you have a disagreement about what he says, and it is contrary to what you've said, the time to argue about what you meant and what he did or did not say is in the briefs. The time to ask him to clarify his statement and to get the factual information about what he said is now. The time to argue about what he said, what you've said, is in the briefs.

MS. BERKLEY: I apologize on the record to all of you. That we are just citizens in the process of learning but really, really passionate about our community and protecting a group of people who are -- yeah, never mind.

Q This will be my last question. So just last clarification, also Question 11 and No. 11 and response. Our concern, again, was that the desalination plant intake wells will result in further reduction in the quality of life for the people of Marina.

MS. DOLQUEIST: Objection, this is testimony.

ALJ HOUCK: She hasn't asked it yet.

MS. BERKLEY: Q All right. So your response -- you can see your response. So I guess my question for you then is how come the way that you are answering this is referring not specifically to the concern of Marina, but why is it every time we talk about the citizens of Marina you go back to referring to the connection of the region?

MS. DOLQUEIST: Objection, argumentative.

ALJ HOUCK: I'm going to let him answer it.

MS. BERKLEY: Thank you.

THE WITNESS: So in my testimony I attempted to provide in Question 10 why the facility was sited in its current planned location, and that it was sited there not to take advantage of anyone that didn't enter into the siting calculus. It was sited at the location because, as the utility company, if you are going to build something you want to take advantage of existing infrastructure to reduce the cost. And so if you are going to lay a pipeline, you will put it in a street where there is a right-of-way and there is an access as opposed to through a field, and putting a pipe in the street provides benefits and reduces the cost.

Locating the desalination plant at its current location takes advantage of an existing outfall. If we had to construct a completely new outfall, that would significantly drive up the project. It has nothing to do with economics of communities, but simply existing infrastructure.

The wells at CEMEX, the reason for the slant wells -- and I talk about impinging, entrainment and the benefits of subsurface intakes, and the fact that the aquifer there is completely intruded, and the seawater will supply the project and is not of use to anyone else. So there is no impact from the slant wells, and the location of the plant was based strictly on the outfall from the PCA.

And that was what I was trying to explain.

Q Okay. I'm sorry. Go ahead.

A And again, trying to defend the reason why we located it where it is. It was not -- we were not intending to take advantage of anyone.

Q Thank you. One last yes or no question, then I will be done.

So based on what you just said, yes or no, the criteria was based on cost rather than evaluating the quality of life for the people?

MS. DOLQUEIST: Objection, that mischaracterizes the testimony.

MS. BERKLEY: No, I'm sorry. I disagree. I'm sorry, sorry, sorry, sorry.

ALJ HAGA: Why do you disagree?

MS. BERKLEY: I disagree because based on what you just said. You talked about infrastructure. You talked about cost. You didn't say anything about the wellbeing of the community and the people who will be directly affected by the physical location and building of these slant wells.

MS. DOLQUEIST: I don't agree with that characterization and --

MS. BERKLEY: Okay. Then maybe we can read what was just said.

ALJ HOUCK: Off the record for one moment.

(Off the record.)

ALJ HOUCK: Back on the record.

Go ahead and answer the question.

MS. BERKLEY: Q It was just an original yes or no question.

A And can you repeat it one more time?

Q Is it correct that the primary criteria for evaluating where the slant wells should go and in putting this entire project together was based first on cost rather than on community assessment, quality of life and on the overdraft?

A The adjudication relates to the Seaside Basin?

Q Oh. I'm sorry. Yes.

A Yes. Let me say, for the Seaside Basin, there are many people who draft from the Seaside Basin, not only Cal-Am.

Q Thank you. Do you think that it's fair for Cal-Am to draw from another area that has its own responsibility for -- that already has its own responsibility for water supply?

A The part that I absolutely understand is that if there's any harm or injury that it has to be mitigated, and if it can't be mitigated, then we really don't have a project. Taking a very close look at this project, I really believe the issues that will kind of stand the test of time, in fact, can be mitigated. And it will cause no harm to the City of Marina. Some of that is unfully tested at this point, but that's -- we've had a lot discussions both with law and asking ourselves -- and you know, I kind of get it. In our community, not everything we do as a city council is popular, and we have to deal with a number of those things. But I believe that at the end of this that there will be no harm to Marina. There will be a tremendous benefit. And in fact -- you know, we -- we're connected. We live in each other's communities. We shop in each other's communities. We work in each other's communities. Ultimately this has to work for all of us. We kind of get that.

Q Okay. But given what you've just said here, that you do believe that trust and integrity are of paramount values for building a healthy community and given that Cal-Am has been, for all intents and purposes, a serial overdrafter, why --

A Excuse me. I'm -- I guess --

MR. MCGLOTHLIN: Objection. Misstates the witness' testimony.

ALJ HOUCK: Sustained.

MS. BERKLEY: Okay. I apologize.

ALJ HOUCK: Eliminate the word "serial," and re-ask your question.

MS. BERKLEY: Okay.

Q So given that Cal-Am has overdrafted the Carmel River and Seaside Basin, why should the City of Marina and the residents of Marina value and trust Cal-Am to come in with this project?

MR. LAREDO: Objection. That's argumentative.

ALJ HAGA: And in our judgment, it is not -- you did not tie it to those issues.

Mr. Minton.

MR. MINTON: May we go off the record?

ALJ HAGA: Then we'll go off the record.

(Off the record.)

ALJ HAGA: We will be back on the record.

It is after 4:00 o'clock, and we will be recessing this hearing until 9:30 on Monday. Thank you.

We are adjourned for the day.

(Whereupon, at the hour of 4:14 p.m., this matter having been continued to 9:30 a.m., October 30, 2017, at San Francisco, California, the Commission then adjourned.)

* * * * *

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates.	Application 12-04-019

CERTIFICATION OF TRANSCRIPT OF PROCEEDING

I, Ana M. Gonzalez, Certified Shorthand Reporter No. 11320, in and for the State of California do hereby certify that the pages of this transcript prepared by me comprise a full, true and correct transcript of the testimony and proceedings held in the above-captioned matter on October 26, 2017.

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EXECUTED this 26th day of October, 2017.

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Ana M. Gonzalez
CSR No. 11320

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates.	Application 12-04-019

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Thomas Brenneman
CSR No. 9554

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

Application of California-American Water Company (U210W) for Approval Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates.	)	Application 12-04-019

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EXECUTED this 26th day of October, 2017.

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Doris Huaman
CSR No. 10538

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BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE

STATE OF CALIFORNIA

ADMINISTRATIVE LAW JUDGES GARY WEATHERFORD and
ROBERT HAGA, and DARCIE HOUCK, co-presiding

Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates.	)	EVIDENTIARY HEARING Application 12-04-019

REPORTERS' TRANSCRIPT
San Francisco, California
October 30, 2017
Pages 3863 - 4078
EH - Volume 23

Reported by: Ana M. Gonzalez, CSR No. 11320
Nina Shori, CSR No. 8856
Doris Huaman, CSR No. 10538
Karly Powers, CSR No. 13991

PUBLIC UTILITIES COMMISSION, STATE OF CALIFORNIA
SAN FRANCISCO, CALIFORNIA

I N D E X

it's a separate concept.

ALJ HAGA: Mr. Warburton, it's not being excluded. You're over-reading what is occurring in this part of the proceeding, what has occurred in the past in this proceeding, what is occurring elsewhere in this proceeding. There are many overlapping processes. This proceeding has been going on for a number of years. The record is extremely voluminous. So to say that it is not considered or excluded in any way I think is misreading the current record and the current process. There are certainly a number of factors that will come into play as we move towards deciding this case.

Does anyone have anything new to add to this discussion?

MR. MCGLOTHLIN: Your Honor, I would only point out that the issues of water impacts were the subject of the extensive testimony in 2015.

ALJ HAGA: Ms. Berkley.

MS. BERKLEY: Lisa Berkley for Citizens For Just Water.

I understand -- we understand this has been going on for a very long time. We understand too that each hearing addresses different topics, but sometimes we need to be able to look at the capacity for the whole picture and the bigger picture in order to really understand the micro. And in this context, when we talk about community values, we're talking about the potential quality of water we drink from. We're talking about our lives, the water that we cook from, the water that we brush our teeth with. That implication of that has -- touches on all parts of our life. To exclude it from here feels that it would be detrimental to the discussion on community values.

I respect your decision not to get into the depth of the science; however, to leave out aspects of it in the conversation seems potentially neglectful on all of our parts to do so.

ALJ HAGA: Ms. Berkley, we are not leaving anything out. There are opportunities to provide input across this proceeding including in this phase that -- where if you -- where we have allowed a great deal of proposed testimony related to these aspects.

MS. MUZZIN: Your Honor, one final follow-up on Mr. McGlothlin. His statement should not be taken to indicate that the Commission in other proceedings has never the supply needs?

A I don't believe we have the time given there's a CDO hanging over our head, and that's not our area of expertise.

MR. WARBURTON: Thank you. No further questions.

MS. BERKLEY: Your Honor?

ALJ HAGA: Hold on, Ms. Berkley.

The Water Management District had asked for a minute of questioning.

MR. LAREDO: No. We're passing, your Honor.

ALJ HAGA: Ms. Berkley, you did not reserve any time for this witness.

MS. BERKLEY: No. I just have one question.

ALJ HAGA: I'll allow one question.

CROSS-EXAMINATION

BY MS. BERKLEY:

Q If the cease and desist order is lifted, will the hotels and restaurants replace toilets, shower heads or low water-using landscapes?

A Ask me that question again.

Q If the hotels and restaurants would replace the toilets -- or would the hotels and restaurants replace toilets, shower heads or low water-using landscapes if the cease and desist order is lifted?

A No. We would continue our conservation efforts without question.

MS. BERKLEY: Thank you.

ALJ HAGA: Thank you, Ms. Berkley.

MS. DOLQUEIST: Your Honor.

ALJ HAGA: Yes.

MS. DOLQUEIST: I do have two questions if that's allowable.

ALJ HAGA: Cal-American had reserved time. Two questions. Yes, please.

CROSS-EXAMINATION

BY MS. DOLQUEIST:

Q Good morning, Mr. Narigi.

A Good morning.

Q My first question is -- relates to the Monterey Aquarium. Do you know if the Monterey Aquarium has its own water supply?

A Yes, they have. I don't know if it supplies everything, but I know they do have a desal plant.

Q My second question is you offered some testimony stating that it could take years or even decades to fully utilize the amount of water currently predicted for the tourism bounce-back. Given that, do you recommend waiting to move forward with the desal project?

ALJ HAGA: We will be off the record.

(Off the record.)

ALJ HAGA: We will be on the record.

Ms. Berkley asked since Mr. Riley will be here tomorrow, this witness will continue, whether we should have Mr. Riley conduct the questions. The answer is to that is yes.

Ms. Berkley, you are next for Citizens For Just Water.

MR. McTARNAGHAN: Your Honor, just to avoid confusion, I think you referred to --

(Crosstalk.)

ALJ HAGA: Yes.

MR. McTARNAGHAN: -- Ms. Berkley's client --

ALJ HAGA: I misspoke.

CROSS-EXAMINATION

BY MS. BERKLEY:

Q Good afternoon, Mr. Crooks.

A Good afternoon.

Q I'm Lisa Berkley for Citizens for Just Water?

In this first part we will be referring to your testimony of downsizing beginning on page 17, specifically Answer 21 page 19 line 16, I believe it is. Beyond cost on risks mentioned here, from an engineering perspective what are the potential or possible flaws or shortcomings with a larger desal plant that could negatively impact a community?

A You are on page 19 where I speak to cost, risk and benefits?

Q Yes. Well, this entire section is, as I understand it, about downsizing. And you are talking about on line 16 page 19 the risks. And so I would actually like to take a step back and look at just if we didn't downsize, what your project is requesting, what are the potential or possible flaws or shortcomings with the desal plant that could negatively impact the community? I'm asking from an engineering perspective.

A Well, I didn't testify to that. I was speaking to the lower plant 4.8 --

Q Okay. Then let's talk about the smaller plant then.

A Okay.

Q So same question: Beyond cost and risk mentioned, from an engineering perspective what are the potential or possible flaws or shortcomings with the desal plant that could negatively impact a community?

ALJ WEATHERFORD: Excuse me. Are you

referring to a specific size, 6.4 or 4.8, or just --

(Crosstalk.)

MS. BERKLEY: It is pretty much any reduction because -- as I understood the whole section on downsizing.

ALJ WEATHERFORD: You don't need to testify, just ask him.

MS. BERKLEY: Q Okay.

A Well, I specifically speak to permitting and time and cost, because the change from a 6.4 to a 4.8 is -- the physical engineering difference is minor.

Q Okay. So what are then any potential or possible flaws or shortcomings that could negatively impact a community just in general then?

A I don't know. I'm sorry. There is no way -- I don't know.

MR. SUBIAS: I am going to object to the extent that it assumes facts not in evidence.

ALJ WEATHERFORD: What was that?

MR. SUBIAS: Object on the basis it assumes facts not in evidence.

ALJ WEATHERFORD: Let's see, I'm not sure that is true.

MR. SUBIAS: The question was what was

the negative --

(Crosstalk.)

ALJ WEATHERFORD: In the evidence in this proceeding, I think we have had quite a range of testimony, don't you?

MR. SUBIAS: I think it is assuming there were negative attributes to the community.

ALJ WEATHERFORD: Okay. Do you want to ask him first if any downsizing has any negative impacts?

MS. BERKLEY: All right. We'll ask start there.

Q Would downsizing provide any potential or possible flaws or negative impacts to the community?

A It -- there is probably many, if I had time to think about it. One that pops in my head is obviously water supply shortage.

Q I don't want to interrupt you. Are you done?

A I'm done.

Q What about specifically to the community of Marina?

A Again, 4.8 versus 6.4 there is no -- not much difference.

Q Okay. What about just desal plants in general, harm they could cause to a community?

ALJ WEATHERFORD: Excuse me. Could you be more specific? Are you talking globally or locally --

(Crosstalk.)

MS. BERKLEY: Let me move on then.

Q So Cal-Am asserts that this project is a subsurface ocean intake technology; is that correct?

A The source supplies are subsurface slant wells.

Q Hypothetically speaking, if there were possible groundwater intake from the 180 aquifer and it is overlying dune sand aquifer, how can this be a challenge to our community values? It was a hypothetical question.

A Anything to do with hydrogeologic water and aquifers I defer to Mr. Leffler. I'm not a hydrogeologist.

Q From your experience being an engineer, are there any risks that could come from this if there were groundwater -- saltwater intrusion?

A There is saltwater intrusion.

Q Okay, sorry. I said that wrong, apologies.

There were possible -- if there was

groundwater intake from the 180 aquifer and overlying -- dune sand aquifers, in what way could this challenge our community?

A This is a Draft EIR, or I should say CEQA-related items. It is not appropriate, I don't believe, for me to speak to those items.

Q Well, I understand. I'm not actually asking about the science though. I'm asking in what -- if this was possible, I'm not -- what -- and you have many years of experience as an engineer. I would assume you are familiar with these kinds of situations occurring. And so what kind of negative impact have you seen on a community?

A From?

Q From drawing from groundwater sources instead of saltwater sources, hypothetically speaking?

ALJ WEATHERFORD: When you are referring to "community," are you referring specifically to the peninsula or to Marin City?

MS. BERKLEY: Q Let's start with just region, or specifically in this case to Marina.

A Well, I'll try to generalize some things, I suppose. Seawater is intruded into the area that we are locating the wells.

Q Okay.

A In terms of our wells, they will be located in that region.

Q Okay.

A And the specifics of the hydrogeotechnical that goes along with that again is Mr. Leffler.

In terms of groundwater, in my experience there is all sorts of issues with groundwater wells. It is not just seawater, there is contamination, and other things.

Marina Coast water in general has experienced issues with their wells and their -- seawater intrusion already occurred at their wells.

MS. MUZZIN: Your Honor, I would like to strike the comment about Marina Coast Water District, unresponsive and irrelevant.

ALJ WEATHERFORD: Your testimony, was this to Marina Coast Water District or Marina Coast as a general area?

THE WITNESS: I'll strike the "Marina Coast," if I may. If I can use that word as a non-attorney.

MS. MUZZIN: Thank you, your Honor. Thank you, Mr. Crooks.

MS. BERKLEY: Just for the sake of

time, let's move on.

Q Have you seen our CJW Exhibit 4?

A No.

ALJ HAGA: Off the record to hand a copy.

ALJ WEATHERFORD: Do you want to give the title of that?

MS. BERKLEY: It is Bulletin 118, Interim Update 2016, California's Groundwater. It was issued by the Department of Water Resources on December 22nd, 2016.

ALJ WEATHERFORD: This is an excerpt; is that correct?

MS. BERKLEY: Correct.

ALJ WEATHERFORD: Do you have the pages?

MS. BERKLEY: Yes, I'm actually interested in page 15 of the report.

ALJ WEATHERFORD: Does the witness have a copy of that?

THE WITNESS: Not that I know. But I can see what you are holding, and I've seen that before, the 118.

MS. BERKLEY: Yes.

ALJ WEATHERFORD: I think is the update.

MS. BERKLEY: Q So that was the first question: Have you actually seen this before?

A I have.

Q How was the Salinas Valley Water Basin reflected on this document?

A It is identified as -- it looks like 3-004.01 and over on the right in the table it says that basin is 180/400, but I think generally that it Salinas. Pink is critically overdrafted.

Q So you just answered my next question: Is it in overdraft?

A That is what the graphic says.

Q Thank you.

We are going to move on now to Question 56 page 37 line 6.

A Of direct?

Q Yes, I'm sorry, direct errata.

A Page 56?

Q No, I'm sorry, Question 56 page 37 line 9 at line 6.

A Mm-mm.

Q You state that you have support from the community for this project; is that correct?

A I said "a portion."

Q What community are you talking about?

A The community in general and around

Monterey Peninsula region.

Q How do you know they support this project?

A Because just as I know people don't, I know people do.

Q Well, you make --

A As evidenced by the intervenor testimony, several support the project.

Q You also made reference to the settlements, correct?

A I do.

Q Is there anyone in the settlements that you refer to who owns water rights or property rights in the affected areas where the slant wells will be placed?

A I don't know.

Q Did MCWD or the City of Marina sign any of the agreements?

A I don't know offhand, but I'm pretty sure they have not. I would have to look at each signature.

Q Did local neighborhoods or any HOAs or anybody who has water rights or land rights sign it?

A Well, what do you mean by "land rights"?

Q Who -- property owners.

A In what boundary, Monterey County?

Q No. In the affected areas where the slant wells will be placed.

A I'm not clear. CEMEX owns the land.

Q In the settlements you've made reference to have any agency or property owners who hold water rights in the affected area signed the agreement?

ALJ WEATHERFORD: Excuse me, there were two settlements. You are speaking of the large settlement?

MS. BERKLEY: Yes, the large one, thank you.

MR. SUBIAS: Your Honor, I'm going to object as being vague and ambiguous as to the affected area.

ALJ WEATHERFORD: Well, I guess you could precede with a question about what areas are affected, then go to your question.

MS. BERKLEY: Q What areas are affected by these settlements?

ALJ WEATHERFORD: If any?

MS. BERKLEY: If any. Thank you, your Honor.

THE WITNESS: What areas? That is generalization to the Monterey Peninsula region.

MS. BERKLEY: Q So specifically where

the slant wells will be or are intended to be.

A As I mentioned, they are intended to be on the CEMEX property. The property that is owned by CEMEX today.

Q And other than CEMEX, any other agencies that signed these documents have any property rights or water rights to the area?

A They own property and land in the Monterey Peninsula region. Other people that signed the agreement, they don't own the CEMEX land.

Q Okay. Thank you.

Could you explain -- could you please explain why Cal-Am should be granted responsibility for managing a new water project after overdrafting very close to -- after either overdrafting or very close to overdrafting the Carmel River or Seaside Basin?

MR. SUBIAS: Objection, argumentative.

MS. BERKLEY: I don't mean that argumentatively. I'm asking a very simple question --

(Crosstalk.)

MS. BERKLEY: Okay, I got it.

ALJ WEATHERFORD: You want to elaborate?

MR. SUBIAS: Sure. The question is asking the witness to assume that Cal-Am has overdrafted the area, I think we've already admitted. And then asking him based on that to then go forward and explain why the Commission should adopt that, accept it and then continue to authorize Cal-Am to engage in actions that it has requested.

ALJ WEATHERFORD: But with respect to the first comment you've made, it is a matter of record given the two CDOs that it has been overdraft, right?

MR. SUBIAS: Yes.

ALJ WEATHERFORD: So that is a matter of record --

MR. SUBIAS: Yes.

ALJ WEATHERFORD: -- I don't see how you can object to.

MR. SUBIAS: I'm not objecting to that portion. I'm objecting to the substance of the second part.

ALJ WEATHERFORD: The second part is?

MR. SUBIAS: Is why given the overdrafting should anyone allow you to manage the project, and I'm paraphrasing.

ALJ WEATHERFORD: Overruled.

MS. BERKLEY: Thank you, your Honor.

THE WITNESS: We own the -- and operate

the water system. And we have, in my opinion, when the Seaside Basin was adjudicated Carmel River -- State Water Resources Control Board made their decision about the water rights. We have done everything we can in cooperation with all the permitting authorities to resolve the changing circumstances on water supply in our system, and we are good stewards of our water system. And we continue to be, and we have honored our commitments to deliver new water supply as best as we can.

MS. BERKLEY: Q Can you explain how you are good stewards of your water system, please?

A "Good stewards," it is a broad term. But we regularly invest in our facilities. We maintain them. We run them. So we are good stewards of our system in our community.

Q I will come back to that and move forward.

Regarding Question 60 page 38 line 12, do you think the proposed slant well project facility reflects the community values of open space and natural habitat preservation? Yes or no, please.

A That is what I state.

Q Could you please explain that and elaborate on why you think that they reflect the community values of open space and natural habitat preservation? In what way do they do that?

ALJ WEATHERFORD: That is two questions.

MS. BERKLEY: Apologies. Thank you.

ALJ WEATHERFORD: Let him answer the first.

MS. BERKLEY: Q Fair enough.

A So Question 60, in what way does it preserve open space? Is that what you said?

Q Yes. How does this project contribute, is another way I could say it, to the values of open space and habitat preservation?

ALJ WEATHERFORD: If it does.

MS. BERKLEY: Q If it does.

A Well, there is -- this again is in the CEQA territory. And certain aspects of it, there is mitigation, that is required for the project. And we have to mitigate and adjust for factors that are determined in that EIR process. We have to account for some of these items. And it is a utility project that is coastal dependant. And our facilities, as I've stated before, are de minimus in nature.

ALJ HAGA: Ms. Berkley, you asked for 15 minutes for this witness. You are now at 20 minutes.

MS. BERKLEY: Okay. Just the last question, then.

Q With the consent agreement that you've referred to in your September 12th testimony in the CEMEX CDO document that talks about industrial, can you explain how industrial development is in alignment with this agreement?

A What agreement?

Q The CEMEX CDO.

A Well, again, the CEMEX CDO, I am not going to interpret the legal -- I'm not going to get into legal interpretation on what is and is not allowed. I've stated in my testimony that our easement rights and activities are preserved in that agreement, in my nonlegal opinion. And, therefore, we have the ability to do what is prescribed in our easement. And as I stated before, our facilities are de minimus in nature. It is 360 acres, and this footprint will take up 0.2 percent of the site. We successfully put in a test slant well at the site with no impact. I shouldn't say "no," little impact, de minimus. So it is not different, in my opinion.

Q Going back to the environmental stewardship. Everything that you mentioned was referring to infrastructure, and I struggle to see how -- could you please explain to me how good stewardship enables you to overdraft the Carmel Valley River and the Seaside Basin?

A Yeah. So I guess I could relate to it like this, in simple terms: We pump groundwater wells. The State comes out later and says there is a new arsenic limit, it went from 50 to 10. Therefore, we have to go put treatment in, treat those wells. Does that mean that we were not good stewards of the water that we deliver to our community? No. We pumped off the river. We pumped off Seaside until circumstances changed. And when State regulators intervened and made a decision that changes circumstances, we have tried to respond.

The pumping on those facilities were going on for decades, and they were reported upon. And, therefore, at some point the State looked at it and made a different interpretation later. And we responded, and we are attempting to respond. To me it is not different than any other change in regulation.

MS. BERKLEY: Thank you for the extra minutes. Thank you. We are complete.

ALJ HAGA: Thank you, Ms. Berkley. At this point we will end the day for today. We've run out of time.

The initial schedule tomorrow is that we will finish with Mr. Crooks. There is not too much left. Given the scheduling impacts where people have requested that are not available after tomorrow, we will then move to Mr. Stephenson, then Mr. Stoldt. Figure out -- we will figure -- get as much of Mr. Leffler in as we can. At 3:10 we will stop whatever we are and hear from Mr. Delgado and Mr. Long.

THE REPORTER: Does this need to be on the record?

ALJ HAGA: Does this need to be on the record?

MR. FOGELMAN: Probably.

ALJ HAGA: Mr. Fogelman.

MR. FOGELMAN: Just to put it on the record, we had requested at the beginning of the hearing that the Cal-Am witnesses in general and that Mr. Leffler in particular go first. And we had asked that tomorrow be a

EXHIBIT
DD

Code Red Forum Tues. Nov. 27, City Hall Chambers, 6-8:30 pm.

6:02-6:05 pm Welcome by Lisa Berkley (moderator) **3 mins.**

6:05-6:20 pm Kathy Biala for C4JustWater **15 mins.** Topic: Environmental justice; show video clips of citizens speaking at CCC meeting on EJ and commissioner responses.

6:20-6:35 pm Bruce Delgado, City of Marina. Topic: Fatal flaws and concerns about Desal Project that reflect environmental injustice- **15 minutes**

6:35-6:50 pm Keith Vander Maaten, MCWD. Topic: SGMA goals and inconsistency shown by AEM that CalAm pumping will cause basin harm. **15 mins**

6:50-7:00 pm George Riley, Public Water Now. Topic: Huge Measure J success. Caution people that Measure J passing will not stop the Desal project…separate tracks. Review what are next steps in Measure J. **10 mins**

7:00-7:15 pm Mike McCullogh, M1W. **15 mins** Topic: Regional water project of recycled water;describe MPWSP component of PWM; relay the CPUC hearings of Sept. 13 and describe Expansion project that was not considered.

7:15 pm-7:30 pm **15 mins.** Rep from Citizens for Just Water. Topic: Public actions; sign and be present for Dec. 6 Regional St Water Board meeting in San Luis Obispo. Gauge time for Q&A but call to action is priority (Time to discuss with speakers after the program).

EXHIBIT EE

LISA 282 words General, Rights, science, SGMA

Cal-Am assumed taking groundwater from a neighboring jurisdiction without any water rights, would be supported by CPUC. They were right. Cal-Am assumed they could use their wholly inadequate science and ignore a vastly superior study to prove “no harm” to an entire basin. They assumed correctly. Cal-Am was confident that the CPUC wouldn’t consider viable alternatives to their project. Right again! Cal-Am assumed approvals could be gotten, irrespective of their own ratepayers’ objections and the complete lack of outreach to the city most environmentally impacted. Cal-Am ignored thousands of public comments.

In a letter dated Sept. 4 to the CPUC, State Water Board reiterated that Cal-Am must meet the requirements for appropriative groundwater rights that include establishing that the water source is “surplus” and does “not injure other lawful users of water”. Isn’t “surplus” and “no harm” by extracting massive amounts of groundwater from a critically over drafted basin… an oxymoron?

Why was verification of water rights NOT the first step to **any** approvals for this project?
Why was the far superior, completed AEM science never admitted into ***<u>any</u>*** CPUC hearings when an ***entire*** basin’s health is at stake?
Why is data from the test slant well analyzed by four hydro-geologists representing special interests, not potable water users, with two of the four paid by Cal-Am and one owning patents to the slant well technology?
What accountabilities does Cal-Am have to sustainable groundwater goals in ***<u>our</u>*** basin from which they intend to extract groundwater, without water rights?

Please help us protect and responsibly manage our own water resource by challenging the science of Cal-Am’s limited understanding of our basin and the gross illegitimacy of this project in the face of SGMA mandates.

KATHY 257 words Basin extracted water

The CPUC in its EIR and in its final decision, deceptively and repeatedly reports that the CalAm desal project will extract “mostly or predominantly” seawater. This is an intentional minimization of the specific take from our groundwater and this take will **CAUSE**, **<u>not mitigate</u>**, seawater intrusion.

This water taken from Marina’s jurisdiction without any documented legal rights, is part of the Salinas Valley Groundwater Basin.
This basin has been identified as one of CA’s 21 critically overdrafted basins.

This basin has continued to have alarming seawater intrusion such that the County Board of Supervisors recently issued a moratorium on all new wells.
This groundwater is the sole source of potable water for the city of Marina provided by MCWD, a small and responsible public water district with the lowest rates of water in the region.
The water to be extracted by CalAm is brackish and fresh, both part of MCWD's legal groundwater allocations.
This Basin has two already identified GSAs under SGMA. Cal-Am is not one of these!

Please give Marina and MCWD a fair consideration of the ***best*** available science and the right to protect our water from an outsider who has a proven record of irresponsible management of their own two water sources.

Citizens for Just Water has provided a Science Matters handout. Even as laypersons, we understand the basic inadequacy of Cal-Am's science and realize how powerful the forces were in CPUC to ignore the AEM study because the truth would not serve them well. Please allow the AEM data to be fully considered.

AUDRA 282 words environ. Injustice

The community of Marina was never properly acknowledged by the CPUC in their support of Cal-Am's Desal project. As incredible as this may sound, even though the water for the Cal-Am's project was to come from Marina, all analyses of water demand needs focused ***exclusively*** on the Peninsula. The impact that water extraction from Salinas Valley Groundwater Basin would have on water users **here** and the ability to meet ***our own*** current and future potable water demands was never considered. This is a ***classic*** case of environmental injustice.

Marina is a small city of 21,000 people and one of the most ethnically diverse communities in California for a city this size. More than half of our residents are minorities and 1 in 10 residents claim two or more races. 15.3% live below the poverty level, unlike the residents of Carmel, Pebble Beach and Monterey. The CPUC's own website discusses disadvantaged communities and a link that ranks Marina 81-90% disadvantaged – 4 times higher than the Peninsula communities for whom this water will benefit.

Cal-Am by omission of Marina's needs applied differing standards between the community that would be served by the project versus the community where the project will be built. Because of this unusual circumstance of a water source **not** within an applicant's **own** district, Cal-Am was able to minimize attention to Marina and the Salinas Valley Groundwater Basin and skirt proper analysis of the impacts, yet appear to meet all the requirements for evaluation of their project from a Peninsula focus.

Only by repeated questioning of the project's basic premises can the numerous deceptions be uncovered. Please insist on rigorous scientific proof of all that is put before you by Cal-Am.

281 words for Public Water Now rep; Economic feasibility

The CPUC that issued the first approvals for the Cal-Am Desalination project, is supposed to be "responsible for ensuring that California's investor-owned water utilities deliver clean, safe, and reliable water to their customers ***at reasonable rates***." The CPUC's many decisions on ***behalf*** of Cal-Am's customers have resulted in the Peninsula now having the highest water rates in the country.

Despite 11,552 signatures (when only 6100 were needed) to successfully place Measure J on November's ballot for a CalAm buy-out feasibility study, the CPUC ***completely ignored*** a viable expansion of an affordable, state-of-the-art recycling project called Pure Water Monterey as an alternative to their costly and harmful project.

CalAm justified their project by grossly over inflating Peninsula water demand needs and managed to avoid an analysis of economic feasibility for us already beleaguered ratepayers. Cal-Am wants to be the owners of a new slant well technology at any cost…at the expense of their own ratepayers and at the expense of the hapless victims of a neighboring disadvantaged city.

Their project is a reverse Robin Hood story… stealing from the poor to give to the rich. Peninsula ratepayers and Marina residents are to be exploited in order to provide for the Cal-Am shareholders, patent owners, and the monied Peninsula commercial and hospitality industry which thrive under Cal-Am's unbalanced tiered rate system.

Lastly, if a single **test** slant well was projected to cost only $4M dollars and turned out to be over $20M, what will the cost be to the ratepayers for a projected $300M Desal project? **A project that no one can afford, is no project at all.** We ask you to consider the economic feasibility of this project. Some public agency MUST.

EXHIBIT
FF

From:	kbiala@milestonemma.net
To:	Keith Van Der Maaten
Sent:	1/11/2017 12:15:24 AM
Subject:	Error Correction: Jan. 17 Water Forum

Keith, in my last email, I gave the wrong date. Please see below for the correct information:

If you read Monterey County Weekly's recent expose on the Marina/Fort Ord/Salinas Valley water supply, you're aware of serious threats due to overpumping and seawater intrusion.

Seawater and overpumping have already compromised an unsustainable water supply. Just Water invites you to encounter the facts and learn how adding Cal Am slant wells will accelerate disaster.

Get educated on ***paper water***, ***contract water***, ***real water***, and what's at stake at a free public forum.

Tuesday, January 17, 6 to 8pm
Marina Library, 190 Seaside Circle, Marina
From Hwy 1, exit Reservation Road, R at first signal, left on Seaside Circle.

Panelists:

- Attorney and former state water-board member Marc del Piero
- Attorney Molly Erickson
- Activist Mike Salerno
- Moderator: Marina city councilmember Gail Morton

Please forward this announcement to groups and individuals.
Hosted by Just Water. Info: c4JustWater@gmail.com

Cordially,
Kathy

Kathy Biala
Cell: 831-242-0023
Other: 831-920-2762
Fax: 831-241-6370
Email: kbiala@milestonemma.net

EXHIBIT GG

http://www.montereycountyweekly.com/news/local_news/marina-residents-unite-against-cal-am-desal-project/article_bc71d538-e8d4-11e6-8426-bb4a4aa40ed8.html

War of the Wells

Marina residents unite against Cal Am desal project.

David Schmalz Feb 2, 2017

Marina City Councilwoman Gail Morton is among those raising awareness of the potential risk of Cal Am's slant wells to Marina's water supply. "I'm trying to get people to jump up and be accounted for," she says.

Nic Coury

While the Marina Coast Water District has had little success in the courts over the past several years, an informal group of Marina residents have banded together to try to win in a different forum: the court of public opinion.

The group formed late last year, well before the draft environmental impact report for California American Water's proposed Monterey Peninsula Water Supply Project was released for public comment Jan. 13.

At issue is the future water supply for Marina and the former Fort Ord, and the fear among some Marina residents that if Cal Am's proposed project – which includes 10 slant wells on Marina's coast to serve a desalination plant – is allowed to go forward, it will further induce seawater intrusion and forever decimate the 180 – and 400-foot aquifers, which remain a key water source for some Marina Coast wells.

Marina City Councilwoman Gail Morton is among those sounding the alarm. Though she says she hasn't had time yet to read through the entire draft EIR, which numbers more than 2,000 pages, what she read in the executive summary gave her pause.

For one, she says, it states the project would pump "seawater," when in fact its slant wells would pump highly brackish groundwater, which is contentious as it relates to water rights.

Morton also feels the project's intake wells – which draw from underground rather than the open ocean, in order to minimize impacts on marine life – put the region's water supply at risk, favoring marine life at the expense of people.

"There's no balance," she says.

To learn more about the proposed project's impact on Marina's water supply, Marina Coast Water District is set to hire a firm – to the tune of about $250,000 – to conduct electrical resistivity tomography imaging over Marina Coast's service area, and beyond. The imaging, which provides a detailed picture of underground features up to 900 feet deep, is carried out by flying over an area with a helicopter that has a suspended instrument hanging beneath it that sends signals into the ground.

About 500 miles of flight lines are planned, but because of permitting issues with Caltrans (the copter must fly relatively low over Highway 1), the imaging won't happen until spring.

That data would be a key tool for Marina Coast to do its own modeling of impacts related to Cal Am's project. Though it would come after the comment period for the draft EIR closes on Feb. 27, that modeling could provide influence over whether the project is approved, and – depending on its revelations – potentially stave off harm to Marina's water supply.

"If they're operating [slant wells] for two to three years, and then discover significant harm, now what have you set up? An absolute public policy mess," Marina Coast board member Tom Moore says.

Cal Am Director of Engineering Ian Crooks says test well data shows those fears are unfounded, and adds that the 180 – and 400-foot aquifers have already been intruded by seawater for decades.

"[The concerns] are not founded by history and fact. We have test well results that prove it," Crooks says. "When you hear these complaints about the [180-foot aquifer], in my mind that's a crazy proposition – the [180-foot aquifer] was damaged and done a long time ago."

David Schmalz

EXHIBIT HH

From: Katherine Biala <kybiala@icloud.com>
To: Bruce Delgado; Keith Van Der Maaten; Juli Hofmann; georgetriley@gmail.com; Gail Morton
Sent: 4/18/2018 12:14:59 AM
Subject: Gratefulness!

All, our collective efforts and ability to reach out to the public in our entire region has been an amazing feat of commitment! Only by all of us pooling our efforts and seeing ourselves as invested in this common goal do we have this chance to prevail. I am so appreciative of our ability to work together like this!

Thank you, thank you! The two Code Red Forums had great attendance and we collected many signed letters!

Cordially,
Kathy

EXHIBIT
II

Attys@WellingtonLaw.com

From:	Bruce Delgado <bdelgado62@gmail.com>
Sent:	Sunday, March 24, 2019 1:10 PM
To:	Wellington Law Office; Layne Long
Subject:	Fwd: Press Release and Do unto others - NEVER come out and say...
Attachments:	ATT00001.htm; Do unto others - draft op-ed_Delgado_rev.docx

---------- Forwarded message ---------
From: **Layne Long** <llong@cityofmarina.org>
Date: Mon, Apr 9, 2018 at 11:36 AM
Subject: Fwd: Press Release and Do unto others - NEVER come out and say...
To: Alison MacLeod <amacleod@ka-pow.com>, TvanderList@ka-pow.com <TvanderList@ka-pow.com>, Paul (Skip) Spaulding <SSpaulding@fbm.com>, mburns@ka-pow.com <mburns@ka-pow.com>, Bruce Delgado <Bdelgado62@gmail.com>

More comments from Gail Morton.

Layne

Sent from my iPhone

Begin forwarded message:

> **From:** "gmorton@montereyfamilylaw.com" <gmorton@montereyfamilylaw.com>
> **Date:** April 8, 2018 at 4:29:24 PM PDT
> **To:** Layne Long <llong@cityofmarina.org>
> **Subject: Press Release and Do unto others - NEVER come out and say...**
>
> WE NEED the public to hear and understand the threat to their property is no water, or water at an unreasonably high cost in the future.
> The taking of water by CalAM threatens MDWD ability to continue to provide a long-term sustainable water supply for Marina and all of the Fort Ord developments at a REASONABLE PRICE.
>
> So much of the material is talking over the heads of the public audience.
>
> Gail Morton
> Monterey Family Law
> 5 Via Joaquin
> Monterey California 93940
> 831 375-0100
> gmorton@montereyfamilylaw.com

EXHIBIT JJ

AGENDA ITEM #2

CITY OF MARINA
211 Hillcrest Avenue
Marina, CA 93933
831-884-1278; FAX 831-384-9148
www.cityofmarina.org

April 23, 2019

Monterey County Planning Commission Members
County Government Center
168 West Alisal Street
Salinas, California 93901

Re: Agenda Item No. 2
Desalination Plant Component of the MPWSP
Planning Commission Meeting on April 24, 2019

Dear Chair Getzelman and Fellow Commissioners:

I, Layne Long, City Manager of the City of Marina ("City" or "Marina"), am providing these written comments on behalf of the City with regard to the California-American Water (Cal-Am) application for a Combined Development Permit, including a Use Permit, for the desalination plant component of the Monterey Peninsula Water Supply Project ("Project" or "MPWSP").

The City understands that the Planning Commission is considering the Combined Development Permit at the public hearing on April 24, 2019.

The City further understands that the proposed desalination plant would be constructed in the unincorporated portion of Monterey County adjacent to the City's sphere of influence. The City of Marina is greatly concerned about many aspects of this Project, particularly those that would be required for installation in, through or adjacent to the City, including the desalination plant itself.

CALIFORNIA SUPREME COURT LITIGATION

The City of Marina is a responsible agency for the Project and has responsibility for considering the issuance of the major Coastal Development Permit ("CDP") for the Project for the facilities (including the experimental slant wells) that would be located in the City's coastal zone.

The City believes that there are serious factual, scientific and legal inadequacies in the Environmental Impact Report for the Project certified on September 13, 2018 by the California Public Utilities Commission for the Project and in the corresponding Public Utilities Code analyses and permit findings.

The City has filed litigation in the California Supreme Court challenging the CPUC decisions.

The City filed a Petition for Writ of Review on January 16, 2019 and then filed an Amended Petition for Writ of Review on February 26, 2019. The City understands that the County has been served and provided with copies of aforementioned filings.

Among other issues, the City asserts, in its Amended Petition, claims relating to: (1) the Commission's failure to conduct meaningful responsible agency consultation with the City on topics within Marina's Coastal Act jurisdiction, including impacts to Environmentally Sensitive Habitat Areas ("ESHA"), protected species, and groundwater resources; (2) the Project's lack of water rights, or any reasonable future path forward to obtain such water rights, due in part to the critically overdrafted conditions in the Salinas Valley Groundwater Basin and Cal-Am's anticipated inability to prove that the Project will not injure or harm legal water users in the Basin; (3) the failure to properly analyze the impacts of the Project on the social, economic, cultural and environmental values of the City, particularly since it is a "disadvantaged community" under federal and state laws protected by environmental justice principles; (4) the Project's adverse impacts on the Basin's groundwater; (5) the dramatic decline in Cal-Am's Monterey District water demand, which indicates that the Project is not actually needed; and (6) the fact that feasible alternatives to the Project, such as the viable expansion of the Pure Water Monterey recycled water project, were not properly evaluated in the EIR or CPUC processes.

As you may be aware, Marina Coast Water District ("MCWD") also filed a Petition in the California Supreme Court, which has been consolidated with Marina's Petition. <u>The County of Monterey was named by the City as a Real Party in Interest, but has not appeared in the litigation. The Monterey Peninsula Water Management District was also named as a Real Party in Interest and filed an Answer supporting the requests of the City and MCWD that the Supreme Court grant the writ to review these issues</u>. These Petitions are currently pending.

STATUS OF THE MARINA COASTAL DEVELOPMENT PERMIT APPLICATION

On March 7, 2019, the City of Marina Planning Commission denied Cal-Am's application for a Coastal Development Permit to allow portions of the proposed MPWSP within the jurisdiction of the City, including 6 new slant wells and the refurbishment of a previously approved test slant well (7 total slant wells). A copy of the City of Marina Planning Commission decision is attached (Attachment 1) to this letter for reference.

Cal-Am has appealed this decision to the Marina City Council, which has a forthcoming appeal consideration public hearing scheduled for Tuesday, April 30, 2019.

WATER RIGHTS ISSUES

The City is very concerned that the Project's lack of water rights or any reasonable or accepted path forward to obtain such rights makes the Project infeasible. Since Cal-Am does not intend to begin obtaining such rights until it has fully constructed and begun to operate the Project, there is a real risk that, if these rights are not obtained, all of the environmental burdens of the MPWSP construction will be imposed on the City of Marina and all of the economic costs of the Project will be imposed on Cal-Am ratepayers with no corresponding benefit. This lack of water rights is a prominent "Achilles Heel" for the Project.

ATTACHMENT B

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San Diego, California 92130
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www.lw.com

LATHAM & WATKINS LLP

MEMORANDUM

November 21, 2019

Subject: Update to Cal-Am Letters Regarding Bias on the Part of City of Marina Officials

This memorandum provides an update to the evidence of the City of Marina's bias against California-American Water Company ("Cal-Am") and its Monterey Peninsula Water Supply Project ("Project") previously provided in Latham & Watkins' April 25, 2019 letter sent to the City of Marina City Council. Our April 25 letter specifically requested the recusal of Mayor Bruce Delgado, Councilmember Lisa Berkley, and Councilmember Gail Morton from consideration of Cal-Am's appeal of the Marina Planning Commission's denial of a local coastal development permit ("CDP") application for those portions of the Project located within the City of Marina's Coastal Zone due to their longstanding bias against the Project, and demonstrated that the City as a whole continues to maintain an institutional bias against the Project and Cal-Am's efforts to develop it. As described in that letter, this bias is obvious and of public knowledge, as City officials—including Mayor Delgado and City Manager Layne Long—have worked closely with KP Public Affairs to coordinate on opposition strategy and opposition outreach materials concerning Cal-Am's Project.[1]

An update to the above-referenced materials regarding the explicit bias exhibited by City of Marina officials is necessary based on testimony provided at the California Coastal Commission's ("CCC") informational hearing regarding Cal-Am's appeal of its CDP application to the CCC, held on November 14, 2019. At this hearing, City Manager Long, Mayor Delgado, Councilmember Berkley, Commissioner Biala, and the City's outside counsel, Skip Spaulding, spoke in blatant opposition to the Project, continuing to exhibit the same prejudice against the Project as described in the April 25 and February 8 letters.[2] These City of Marina officials made

[1] Cal-Am also submitted a February 8, 2019 letter to the City of Marina Planning Commission, requesting the recusal of Commissioner Kathy Biala and Commission Chair David Burnett for their documented bias against the Project.

[2] A recording of the November 14 CCC informational hearing on Cal-Am's CDP appeal is available here: https://cal-span.org/unipage/?site=cal-span&owner=CCC&date=2019-11-14. City Manager Long begins his presentation at 1:25:25, Mr. Spaulding begins speaking on behalf

numerous comments displaying their long-standing and vehement opposition to the Project, as well as the City's continued institutional bias against the Project.

While videos showing the bias of various City of Marina officials are available on the CCC's website, the following summary of specific examples of this bias is provided for the record below:

- City Manager Long asserted that the Project will cause "environmental injustices" in the City of Marina and that the "just decision" would be to deny Cal-Am's CDP appeal (11/14/19 Hearing Video, 1:28:10);

- City Manager Long also asserted that the settlement agreement regarding the CEMEX sand mining facility in northern Marina limits future use of the former CEMEX site to recreational, public access, educational, and habitat restoration uses, and that the Project defeats the purpose of the settlement agreement by maintaining the site as an "industrial facility" and preventing public access to the beach (11/14/19 Hearing Video, 1:29:20);

- City Manager Long and Councilmember Berkley argued that the Project will adversely impact the aquifers that supply drinking water to the City of Marina (11/14/19 Hearing Video, 1:30:30; 2:18:25);

- City Manager Long and Mayor Delgado asserted that the Pure Water Monterey ("PWM") Expansion can serve as a feasible alternative to the Project, without providing any evidence to support that position (11/14/19 Hearing Video, 1:30:40; 2:04:10);

- Mr. Spaulding stated that the City "fully supports" the CCC staff report's recommendation to deny Cal-Am's CDP appeal and application and reiterated various claims that the Project would adversely affect environmentally sensitive habitat areas, that the PWM expansion is a feasible alternative, and that denial of the Project would not adversely affect the public welfare (11/14/19 Hearing Video, 1:34:15);

- Mayor Delgado argued that constructing the Project is more expensive than the PWM Expansion and that water produced by the Project will cost more than water produced by the PWM Expansion, "forcing" low income residents to pay higher rates, despite the fact that Marina is outside of Cal-Am's service territory (11/14/19 Hearing Video, 2:02:20);

- Councilmember Berkley noted that for the past several years, the City has spent seven percent of its annual $22 million budget in opposing Cal-Am. Councilmember Berkley asserted that as a result of these expenditures, the City was forced to raise local sales taxes via ballot initiative, creating "further financial stress" on the "already disadvantaged community" (11/14/19 Hearing Video, 2:18:35);

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of the City at 1:34:00, Mayor Delgado begins his comments at 2:01:05, Councilmember Berkley begins speaking at 2:17:25, and Commissioner Biala begins her comments at 2:59:00.

- Councilmember Berkley argued that the CCC staff "should be commended" for issuance of the staff report recommending denial of Cal-Am's CDP application and appeal (11/14/19 Hearing Video, 2:19:30);

- Commissioner Biala asked for a "show of hands" for persons opposing the Project, and played a five-minute video produced by Project opponents Citizens for Just Water (11/14/19 Hearing Video, 2:59:15). This video asserted that the Project will unfairly impact the Fort Ord and Marina communities, that the Project will have impacts to groundwater resources and protected species, that Cal-Am does not possess rights to source water for the Project, and that the Project will prevent public access to beaches. The video also stated that the City of Marina has expended one million dollars in public funds in opposition to the Project in the past year, and expects to expend an additional one million dollars to continue that opposition (11/14/19 Hearing Video, 3:04:15). Finally, the video repeated the unsupported assertion that PWM Expansion can serve as a Project alternative (11/14/19 Hearing Video, 3:04:55).

These comments are typical of the bias that Marina officials have long shown against the Project and reinforce the conclusion that these officials—and the City as an institution—maintain an unequivocal bias against the Project and therefore the City and City Council are incapable of providing for fair and unbiased hearings involving the Project. As Cal-Am has made clear in its prior correspondence to the City of Marina, dated August 20, 2019, regarding the City's efforts to establish a Groundwater Sustainability Agency for the CEMEX property, this attempt by the City is yet another attempt to block the Project.

USE PERMIT STANDARD

The City draws your attention to the Use Permit section of Monterey County's Code (Section 21.74.050(B)(1), which contains the following language:

> *In order to grant any use permit, the findings of the Appropriate Authority shall be:*
>
> 1. *The establishment, maintenance, or operation of the use or structure applied for, will not, under the circumstances of the particular case, be detrimental to health, safety, peace morals, comfort, and general welfare of persons residing or working in the neighborhood of such proposed use; or be detrimental or injurious to property and improvement in the neighborhood; or to the general welfare of the County.*

For the reasons that detailed above, and in the City's Amended Petition in the Supreme Court, the City of Marina does not believe that the desalination plant meets the Use Permit standards because of its potential serious impacts on the social, economic, cultural and environmental values of the City's residents, many of who reside or work in close proximity to the plant.

Thank you for the opportunity to submit these comments on behalf of the City of Marina.

Please contact me if you have any questions regarding this matter.

Sincerely,

Layne Long
City Manager
City of Marina
llong@cityofmarina.org
(831) 884-1224

ATTACHMENT C

November 1, 2019

City of Marina Groundwater Sustainability Agency
211 Hillcrest Avenue
Marina, CA 93933
Attn: Brian McMinn, Public Works Director/City Engineer
publicworksengineeringdept@cityofmarina.org

SUBJECT: HWG COMMENTS ON CITY OF MARINA DRAFT GROUNDWATER SUSTAINABILITY PLAN FOR THE MARINA GSA AREA OF THE 180/400 FOOT AQUIFER SUBBASIN DATED OCTOBER 2019

Dear Mr. McMinn:

This letter provides the comments of the Hydrogeologic Working Group (HWG) on the City of Marina's Draft Groundwater Sustainability Plan (GSP) for the proposed City of Marina (Marina) Groundwater Sustainability Agency (GSA) Plan Area of the 180/400 Foot Aquifer Subbasin. Marina developed this Draft GSP for a very small area (400 acres) already covered by the Salinas Valley Basin (SVB) GSA Groundwater Sustainability Plan, thereby creating many current and potential future conflicts for meeting the requirements of the Sustainable Groundwater Management Act (SGMA). The Marina GSP develops a monitoring network with Representative Monitoring Sites (RMS) and sets sustainable management criteria (SMC) for locations largely outside of its Plan Area. Regardless of the conflicts it creates, the City of Marina Draft GSP is based on a faulty Basin Setting, unjustified sustainable management criteria, and makes no attempt to address the only viable aquifer within its boundaries (the Deep Aquifer). This letter provides both an Executive Summary highlighting some of our main comments, and a Detailed Comments section. It should be noted that the Executive Summary and Detailed Comments provided in this letter are not comprehensive (due in part to the size of the draft GSP and limited time for HWG members to review), and our lack of comment on a specific point or issue in the draft GSP should not be taken as HWG concurrence on or acceptance of that specific point or issue.

EXECUTIVE SUMMARY

The City of Marina Draft GSP made available for public review in October 2019 has several major fatal flaws that can generally be categorized as follows: flawed Basin Setting analyses, inappropriate and unjustified application of sustainable management criteria, a flawed monitoring program, lack of its own projects and legitimate management actions, and major conflicts with the SVB GSP. An overall comment is that the entire document is based on the questionable premise that the groundwater resources within MGSA can be used beneficially and that groundwater extraction within MGSA (from the Dune Sand Aquifer, 180-FTE Aquifer, or 400-Foot Aquifer) does harm to that resource. Our high-level summary comments on the key Draft GSP chapters are provided below, with a detailed comments section following this Executive Summary.

HWG summary comments on the flawed Basin Setting analyses (Chapter 3) are:

- The GSP presents a flawed hydrogeologic conceptual model (HCM) based on incorrect and invalid hydrogeologic interpretations of the aerial electromagnetics (AEM) surface geophysics and other data that is not in agreement with available field data including boring logs, aquifer test, groundwater level, and groundwater quality data;
- The Marina GSA made no attempt to enlist the support and expertise of the Hydrogeologic Working Group (HWG) members (or utilize the most up-to-date hydrogeologic conceptual model for the area in the HWG Technical Report) in understanding the hydrogeology of the area even the though the HWG has recently provided oversight on the most recent and an extensive investigation of the hydrogeology specific to the MGSA area;
- Groundwater levels/quality and aquifer/aquitard continuity are mischaracterized both outside and especially within the MGSA Plan Area;
- The flawed Basin Setting analyses create many conflicts with the Salinas Valley Basin GSP;
- The nature of seawater intrusion and the resulting impacts to potential beneficial uses is grossly mischaracterized;
- The extremely flawed Basin Setting analyses lead to flawed and improper setting of sustainable management criteria.

HWG comments on the sustainable management criteria presented in the Marina GSP (Chapter 4) are:

- The GSP attempts to set SMC for areas outside of its Plan Area are unjustified and outside of its jurisdiction, and an attempt to usurp authority that belongs to the SVBGSA;
- The GSP sets strict SMC based on inappropriate and flawed interpretations of technical data and analyses;
- The GSP SMC inside and outside of the MGSA Plan Area present many conflicts to the SVBGSA GSP and interfere with key projects and management actions listed in the SVB GSP.

HWG comments on the monitoring program presented and adopted in the Marina GSP (Chapter 5) are:

- Without approval and development of the Monterey Peninsula Water Supply Project (MPWSP), the monitoring program described in the GSP will not be funded, installed, or monitoring initiated;
- The monitoring program is composed of representative monitoring sites located primarily outside of the MGSA Plan Area, which is not appropriate or within the jurisdiction of Marina GSA and in direct conflict with the SVB GSP.

HWG comments on the projects and management actions included in the Marina GSP (Chapter 6) include:

- The Marina GSP presents no projects or legitimate management actions of its own;
- The Marina GSP selectively agrees with certain SVBGSP projects and management actions and then sets SMC to prevent implementation of other SVB GSP projects and management actions it disagrees with, which presents a clear conflict with SVB GSP;
- From the beginning of the document and all throughout the chapters, the MGSA GSP speaks about the MPWSP as a project, providing numerous opinions about its potential negative impacts without formally including the MPWSP as a potential project, consistent with the recommendations of the SVBGSP;

HWG comments on the conflicts of the Marina GSP with the Salinas Valley Basin GSP include:

- The Marina GSP attempts to set SMC in areas under the sole jurisdiction of SVB GSP;
- The Marina GSP attempts to apply SVB GSP SMC to locations not included in the SVB GSP, which is a conflict that would have the effect of preventing implementation of certain SVB GSP projects and management actions;
- The Marina GSP designates the Dune Sand Aquifer (DSA) as a principal aquifer for which minimum thresholds (MTs) and measurable objectives (MOs) are assigned; thereby creating a clear conflict with the SVB GSP that specifically declined to designate the Dune Sand Aquifer as a principal aquifer even though MCWD consultants specifically brought it to the attention of SVB GSA and requested it be designated a principal aquifer in the SVB GSP;
- The Marina GSP sets SMC that would prevent implementation of certain key SVB GSP projects/management actions

More specific and detailed comments on City of Marina's Draft GSP are provided below.

DETAILED COMMENTS

Chapter 1 - Introduction

1.The GSP states, "A locally-focused GSP is needed in the MGSA Area to address the hydrogeologic conditions and management needs unique to this portion of the Subbasin." (Section 1.1, page 1-3)

HWG Comment: *The MGSP does not provide the hydrogeologic foundation and justification to support the need for a locally-focused GSP.*

2. The GSP states, "Near the shore, where the highest groundwater salinities have been documented, an interface between a seawater intrusion wedge and a zone of higher quality groundwater (the low total dissolved solids [TDS] zone) that is locally recharged through the highly permeable Dune Sand Aquifer extends downward into the 180-Foot Aquifer. (Section 1.1, page 1-3)

HWG Comment: *There is no technical support for this statement. Additional comments related to this statement are provided in subsequent sections of this letter.*

3. The GSP states, "A state of equilibrium exists between a more saline, dense seawater intrusion wedge that tends to flow landwards, and an over-riding, less dense and higher quality groundwater zone that tends to flow shoreward." (Section 1.1, pages 1-3 and 1-4)

HWG Comment: *This description is too simplistic for a complex system, where there are multiple saline wedges that have intruded inland several miles over several decades. The GSP provides no technical drawings to support this statement nor does it reference actual physical data.*

4. The GSP states, "The freshwater that potentially flows from the Dune Sand Aquifer to the upper 180-Foot Aquifer may also contribute to maintaining this high quality groundwater zone." (Section 1.1, page 1-4)

HWG Comment: *There is no technical support provided for this statement that also uses the words "potentially" and "may" (further demonstrating the uncertainty of the statement).*

5. The GSP states that MCWRA, "…prohibited the expansion of groundwater extraction in the Deep Aquifers. As such, a key objective of the MGSA GSP is to protect the existing high quality of waters in the Deep Aquifers underlying the MGSA Area."

HWG Comment: *While the GSP states here that protection of the Deep Aquifer beneath he MGSA is critical, the GSP actually allows for dramatic increases in Deep Aquifer pumping by MCWD and sets no SMC for groundwater levels in the Deep Aquifer.*

6. The GSP states, "Based on the data discussed in Chapter 3 (Basin Setting), maintaining the groundwater elevations and thickness of the higher quality groundwater zone (low TDS zone) needed to protect against seawater intrusion will largely prevent undesirable results from occurring for all six sustainability indicators in the MGSA Area, and will support the sustainability goals of the neighboring GSAs." (Section 1.2, page 1-6).

HWG Comment: *There is no data to support this statement; and, in fact, available data support a conclusion opposite to this statement.*

Chapter 2 – Plan Area

1. The GSP states, "Figure 2-9, Figure 2-10, and Figure 2-11 show the density of domestic, municipal, and production wells per square mile in the vicinity of the MGSA Area, as available from the DWR Well Completion Report Map Application (DWR 2019a)." (Section 2.1.3, pages 2-8 to 2-9)

HWG Comment: *DWR Completion reports do not note whether wells are active or abandoned.*

2. The GSP states, "CEMEX has two production wells at the CEMEX Lapis Plant sand mine site (one active and one inactive)."

HWG Comment: *This is Incorrect information, the second CEMEX well has collapsed casing and cannot be used again without re-drilling.*

3.The GSP states, "Groundwater in the MGSA Area is currently used for industrial supply at the CEMEX Lapis Plant sand mine site, and groundwater containing less than 3,000 mg/L TDS has a designated potential beneficial use as a source of domestic and municipal supply." (Section 2.2.7.3, page 2-18)

HWG Comment: *The CEMEX wells produce water with approximately 19,000 mg/L TDS for industrial uses (washing sand). A TDS concentration of 3,000 mg/L requires treatment for municipal and domestic uses.*

4.The GSP states, "The slant wells would extract a combined volume of approximately 17,400 AFY of groundwater consisting of a combination of saline groundwater (some of which originated in the ocean) and low total dissolved solids (TDS) groundwater from the Dune Sand and 180-Foot Aquifers within the Subbasin (HWG 2017)." (Section 2.3.2, page 2-26)

HWG Comment: *This is an incorrect and unsupported statement. The vast majority of extracted water will be sourced from the ocean, and Dune Sand Aquifer water quality is near seawater quality at the coast and brackish water quality inland. Few localized areas of lower TDS water are present. It is a misrepresentation to attribute this statement to the HWG 2017 and not clear why this statement is attributed to HWG 2017.*

5.The GSP states, "If the proposed MPWSP is fully approved and implemented, or if well extractions by others are proposed, such extractions of groundwater potentially may cause exceedances of measurable objectives established for the MGSA Area and trigger the need for management actions." (Section 2.3.2, page 2-26)

HWG Comment: *There is no supporting data for this opinion/assumption, which appears to be placed in this section just get this opinion in the GSP. Furthermore, measurable objectives ae meant to represent average basin conditions after sustainability is achieved, with seasonal and year to year fluctuations around the MO. The MO is not meant to be a trigger level.*

Chapter 3 – Basin Setting

1. The GSP states, "…the aquifers above a depth of approximately 700 feet are seawater intruded…" (Section 3.1.2.2, page 3-3).

HWG Comment: *Just to clarify and provide more detail, the seawater intruded aquifers in the MGSA Plan Area include the Dune Sand Aquifer, the 180-FTE Aquifer, and the 400-Foot Aquifer. These aquifers extend to a depth ranging from about 575 to 700 feet in the Marina GSP Plan Area and surrounding region; thus, the vertical extent of seawater intrusion ranges from 575 to 700 feet below ground surface (bgs). The uppermost Deep Aquifer occurs at a depth of 900 feet bgs, and there is 200 to 300 feet of clay between the base of the 400-Foot Aquifer and the top of the uppermost Deep Aquifer. In addition, water level information from the area documents an approximate 60 foot differential in water levels between the 400-ft and Deep Aquifers – documenting the limited connection of these systems.*

2. The GSP states that the vertical boundary of the MGSA Plan Area is 2,000 feet bgs (Section 3.1.2.2, page 3-3).

HWG Comment: *This text description of the vertical boundary is in conflict with Figure 3-3, which appears to show a vertical boundary of 800 to 1,200 feet bgs.*

3. The GSP relies on old geologic cross-sections (Section 3.1.6, page 3-10).

HWG Comment: *The cited geologic cross-section references and (Figures 3-6 and 3-11 to 3-13 do not utilize best available science and most recent borehole and geophysical logs for wells drilled within MGSA and nearby, nor do they utilize the most recent geologic cross-sections developed based on these data (see HWG, November 2017). This results in gross misrepresentation of hydrogeologic conditions for the MGSA Plan Area. Furthermore, the geologic cross-sections provided in the GSP (Figures 3-6, 3-11, 3-12, and 3-13) are not even located within the MGSA Plan Area and therefore to not meet the GSP requirements. Geologic cross-sections that use the latest available data and occur within the MGSA are provided in the HWG Final Technical Report (HWG, November 2017).*

4. The GSP relies on Gottschalk (2018) for discussion/description of geologic units (Section 3.1.6, page 3-11).

HWG Comment: *Mr. Gottschalk is not a geologist and relied primarily on surface geophysics in the cited report. The HWG has previously demonstrated the flaws and incorrect hydrostratigraphic interpretations based on the surface geophysics data (e.g., HWG, April 12, 2019). A detailed description of the geology within and adjacent to the MGSA Plan Area based on latest available data and best available science is provided in the HWG Final Technical Report (HWG, November 2017).*

5.The GSP repeatedly refers to "low-TDS groundwater" throughout the document (e.g., Section 3.1.6.1, page 3-11, Section 3.2.2, page 3-35).

HWG Comment: *The GSP applies the term "low-TDS groundwater" to groundwater with TDS up to 3,000 mg/L as inferred by surface geophysics. Notwithstanding all the uncertainty inherent in attempts to quantify both TDS and lithology from surface geophysics data discussed in numerous previous documents by the HWG (e.g., November 2017, January 2018, August 2018, January 2019, March 2019, April 2019), it has been demonstrated that groundwater with TDS greater than 1,000 mg/L has chloride levels exceeding MCLs such that it cannot be used for municipal or agricultural use without desalination. Furthermore, it has been shown that groundwater in the region with TDS greater than 1,500 mg/L has chloride exceeding the 500 mg/L standard used by MCWRA in mapping seawater intrusion. The surface geophysics study referenced in the GSP (Gottschalk, 2018) made no attempt to distinguish and map occurrence of groundwater TDS greater than 1,000 or 1,500 mg/L. Thus, references in the GSP to "low-TDS groundwater" includes primarily areas with groundwater having chloride greater than 500 mg/L that are included by MCWRA in mapping the seawater intruded area of the groundwater basin.*

6.The GSP mischaracterizes the Dune Sand Aquifer in multiple instances in the GSP. One example is the attempt to label the Dune Sand Aquifer as a "principal aquifer" (Section 3.1.6.1, page 3-11).

HWG Comment: *The Dune Sand Aquifer is not a principal aquifer in the subbasin, as is essentially acknowledged in the GSP where it states, "…it is not commonly used for drinking water or agricultural irrigation". The MCWRA, which has studied and characterized the groundwater basin for many decades,* *does not consider the Dune Sand Aquifer as a principal aquifer. The Salinas Valley Basin (SVB) GSP also does not treat the Dune Sand Aquifer as a principal aquifer. This is one example of the many conflicts that the MGSA GSP creates with the SVB GSP that already covers the MGSA GSP Plan Area.*

7.The GSP does not distinguish and describe the differences between the Salinas Valley Aquitard (SVA) and Fort-Ord Salinas Valley Aquitard (FO-SVA) and its significance to the perched/mounded aquifer (underlain by FO-SVA) versus the Dune Sand Aquifer and its equivalents (not underlain by FO-SVA in many places in the document (Section 3.1.6.1, page 3-11).

HWG Comment: *It should be noted that the SVA and FO-SVA are not the same aquitard and FO-SVA occurs at a much higher elevation; therefore, they should not be referred to as the same aquitard. Of primary significance regarding characterization of the shallow aquifer system is that pumping from the proposed MPWSP will have no impact on the perched-mounded aquifer, which is the primary area of the claimed low-TDS groundwater (3,000 mg/L TDS or less; chloride up to 1,000 mg/L or greater). Also, the western edge of this area lies well outside the MGSA Plan Area approximately 0.5 miles or further to the east near MW-7 (HWG, 2017).*

8.The GSP states, "The thinning of the SVA is coincident with a drop in the hydraulic head in the Dune Sand Aquifer (Section 3.1.6.1, page 3-11).

HWG Comment: *The GSP reference to SVA should be FO-SVA. Also, the reference to "thinning" of the aquitard is really a pinching out of the aquitard. The area where the FO-SVA pinches out is the demarcation between the Perched/Mounded Aquifer and the Dune Sand Aquifer (oceanward of this point). Future pumping from the MPWSP would not affect the hydraulically separate Perched/Mounded Aquifer, which is where most of the referenced "low-TDS water" is located.*

9.The GSP states, "In the MGSA Area, the Dune Sand Aquifer is seawater intruded; however, high recharge rates have resulted in a large zone of groundwater containing lower concentrations of TDS immediately east of, and extending into the eastern portion of, the MGSA area." (Section 3.1.6.1, page 3-11).

HWG Comment: *We agree that the Dune Sand Aquifer is seawater intruded in the MGSA area; this is fully documented by TDS concentrations from MW-1S, 3S, and 4S that extend from about 400 feet east of the western edge of MGSA to the eastern boundary of MGSA (actually MW-4 is slightly east of most of the eastern boundary of MGSA). These concentrations range from 34,400 mg/L TDS in the western portion of MGSA to 7,700 mg/L TDS at the eastern boundary of MGSA. Thus, it is clear from field data that no so-called "low-TDS water" (which is really brackish water with chlorides exceeding 1,000 mg/L) exists within the MGSA. As stated above, the purported "low-TDS" zone is not immediately adjacent to the eastern boundary of the MGSA Plan Area.*

10. The following sentence in the GSP states, "The seaward discharge of low TDS groundwater from this area, and the flow of groundwater from the Dune Sand Aquifer to the Upper 180-Foot Aquifer, appears to mound groundwater in the Dune Sand and Upper 180-Foot Aquifers near the coast, creating a local groundwater barrier against encroaching seawater intrusion." ((Section 3.1.6.1, page 3-11).

HWG Comment: *As explained above, there is no "low TDS groundwater" in the MGSA Plan Area, so there can be no seaward discharge of such water. Furthermore, groundwater flows over the edge of the FO-SVA (where is pinches out) from the Perched/Mounded aquifer (not the Dune Sand Aquifer) into the underlying 180-FTE Aquifer approximately 0.75 mile inland of the eastern edge of the MGSA Plan Area (not near the coast), and there is no indication any significant mound is created from this small amount of groundwater flow that clearly is not impeding seawater intrusion.*

11. The GSP states, "…near the MGSA Area, the Dune Sand Aquifer is hydraulically connected to, and supports, local groundwater-dependent ecosystems (GDEs), including palustrine and emergent wetlands which support protected species." (Section 3.1.6.1, page 3-12). The Marina GSP references GDEs in several places throughout the document (e.g., pages 3-16, 3-19, 3-24, 3-42, 3-60, 3-72, 4-6, 4-10, 4-12)

HWG Comment: *It is most important to note that no GDEs occur within the MGSA Plan Area, and the MGSA GSP has no jurisdiction to set sustainable management criteria (SMC) for GDEs that occur within only the SVB GSA Plan Area. This is a clear and problematic conflict with the SVB GSP. Furthermore, it is important to note that these nearby areas were not fully evaluated to determine if potential GDEs obtained from TNC mapping are actual GDEs (despite claims to the contrary in the MGSA GSP). The role of surface water in supporting these GDEs, as opposed to groundwater, was not evaluated. In addition, it is clear from MPWSP monitoring well data that the shallow aquifer beneath the GDEs nearest to MGSA is highly saline and would not support (and actually would be detrimental to) most types of vegetation.*

12. The GSP states, "The 180-Foot Aquifer underlies the SVA and is the uppermost regional aquifer that has historically been used as a groundwater supply. Near the MGSA area, it is seawater intruded…"

HWG Comment: *We agree that the 180-FTE Aquifer (referred to in GSP as 180-Foot Aquifer) is the shallowest aquifer historically used for groundwater supply and is seawater intruded in the MGSA area.*

13. The GSP states in reference to the 180/400-Foot Aquitard, "Geophysical studies reported by Gottschalk et. al. (2018) have confirmed this aquitard is discontinuous in and near the MGSA Area, and its hydraulic connection to the overlying 180-Foot Aquifer in the vicinity of the MGSA area is substantiated by available hydrographs (Section 3.2.1.3)." (Section 3.1.6.4, page 3-12).

HWG Comment: *Previous studies (e.g., MCWRA, 2017) cited in various places in the GSP regarding potential gaps in the 180/400-Foot Aquitard did not have the MPWSP borings available to incorporate. These recent data (documented in HWG, 2017) show presence of the 180/400-Foot Aquitard where gaps were previously suggested. In addition, the HWG (April 2019) previously demonstrated that purported gap(s) claimed in the AEM study (Gottschalk, et. al., 2018) were incorrectly interpreted and the gap(s) in fact do not exist. Finally, review of boring logs and water level data (head differences and different patterns of fluctuation in different depth zones/aquifers) in the MPWSP monitoring wells or other data demonstrate no gaps are present in the 180/400-Foot Aquitard beneath and near MGSA. Even if there were a gap somewhere in the aquitard, there are significant differences in vertical hydraulic conductivity (much lower) compared to horizontal hydraulic conductivity within aquifers that create a degree of* *confinement and resistance to vertical flow, and reduced heads in the 180-FTW Aquifer from proposed MPWSP slant well pumping would reduce the rate of vertical migration to the 400-Foot Aquifer.*

14. The GSP states, "…saline groundwater in the 180-Foot Aquifer, which has been recorded farther inland than in the 400-Foot Aquifer, has been documented to migrate vertically into the 400-Foot Aquifer, deteriorating water quality in the 400-Foot Aquifer…" (Section 3.1.6.5, page 3-13)

HWG Comment: *While this is true, vertical migration to the 400-Foot Aquifer has only been documented to occur several miles inland of the coast and has not been documented in or near the MGSA. In addition, the vertical migration of contamination has been linked primarily to cross connected wells as opposed to aquitard gaps.*

15. The GSP appears to question the integrity of the 400-Foot/Deep Aquitard stating, "More variable lithology has been interpreted from other deep well geophysical logs in the area…", and "…regional continuity and competence are not well understood." (Section 3.1.6.6, page 3-13).

HWG Comment: *Borehole lithologic and geophysical logs for the nearby USGS Deep Aquifer monitoring well and MCWD water supply wells 10, 11, and 12 show 200 to 300 feet of fine-grained clay and silt deposits comprising the 400-Foot/Deep Aquifer Aquitard. The lack of seawater intrusion in the Deep Aquifer, which has groundwater levels on the order of 100 feet below sea level in the MGSA area and a strong vertically downward gradient from the 400-Foot Aquifer, with high salinity in the 400-Foot Aquifer beneath and surrounding the MGSA also shows the strong integrity of the aquitard between the 400-Foot Aquifer and Deep Aquifer.* Again, the large difference in water levels between the 400-Foot Aquifer and Deep Aquifers provides evidence of a thick/tight aquitard separating these aquifer zones.

16. The GSP states that typical specific yield values range from 10 to 30 percent. The GSP also states that specific storage values, which the GSP states are equivalent to storage coefficient values, typically range from 10^{-3} to 10^{-5}.

HWG Comment: *Typical specific yield values actually range from 3% (for clay) to 30% (for gravel). Specific storage values are not the same as storage coefficient values; specific storage values must be multiplied by aquifer thickness to obtain storage coefficient values. The range of* 10^{-3} *to* 10^{-5} *cited in the GSP is typical for storage coefficient, while specific storage values are typically* 10^{-5} *to* 10^{-6} *per foot.*

17. The aquifer parameter values cited in the GSP for near the MGSA Plan Area are stated to be derived from the CEMEX model (3.1.7.2, page 3-15).

HWG Comment: *The calibrated CEMEX Model parameters do not match the values stated in the GSP. It is important to note there is a large difference in hydraulic conductivity values between the Dune Sand Aquifer (which occurs within 1 to 1.5 miles of the coast) and the Perched/Mounded Aquifer further inland, which is the aquifer containing the purported low-TDS water east of the MGSA area. As indicated in the more regional groundwater model used in the FEIR (CPUC, 2018), the Perched/Mounded Aquifer has much lower K values ranging from 2 to 4 feet/day compared to the much higher values cited in the GSP.*

18. The GSP states, "The Dune Sand Aquifer is not currently used as a water supply, but does support surface water systems and does yield water to GDEs in the immediate vicinity of the MGSA Area…" (Section 3.1.8, page 3-16).

HWG Comment: *We agree that the Dune Sand Aquifer is not used as a water supply. There are no GDEs within the MGSA area, and the Marina GSP has no jurisdiction over setting SMC for GDEs. Furthermore, the GSP assumes nearby mapped Potential GDEs are Actual GDEs without evaluating the more likely contribution of surface water in maintaining vegetation in these areas and without considering the fact that shallow groundwater is saline in the mapped Potential GDE areas near MGSA.*

19. With regard to pumping from the CEMEX well in the MGSA Area, the GSP states, "The amount of groundwater produced from the lower TDS zone in the upper 180-Foot Aquifer vs. saline groundwater from the deeper portions of the 180-Foot Aquifer and the underlying 400-Foot Aquifer is not known." (Section 3.1.8, page 3-16).

HWG Comment: *Available data clearly demonstrate that there is no lower TDS water within the MGSA area in the 180-Foot and 400-Foot Aquifers.*

20. With regard to the potential MPWSP slant wells, the GSP states, "The wells would extract water radially from the DSA and 180-Foot Aquifer near the coast. Groundwater captured by the wells would include saline groundwater originating outside the western (seaward) Subbasin boundary, saline groundwater from aquifers within the Subbasin, and low-TDS groundwater from aquifers within the Subbasin." (Section 3.1.8, page 3-17; Section 3.3.8.1, page 3-58).

HWG Comment: *There are several corrections and clarifications that need to be made to this text. First, the wells would not extract water in a radial pattern, rather most of the water flowing to the wells would be derived from the ocean side of the wells. Second, the wells would capture saline water seeping through the seabed and migrating a short distance through the Dune Sand Aquifer and 180-Foot Aquifer to the slant well screens, as opposed to the referenced, "saline groundwater" from west of the Subbasin boundary. Third, is that the slant wells will capture a small amount of brackish water (as opposed to low-TDS groundwater) from the Subbasin aquifers.*

21. The GSP states the following with regard to pumping from Marina Coast Water District Deep Aquifer wells, "The combined extraction from these wells was approximately 1,823 AFY in 2015, and is forecast to increase to 3,905 AFY by 2035…" (Section 3.1.8, page 3-17).

HWG Comment: *While the Marina GSP states its support for prohibition against pumping from new Deep Aquifer wells, it is silent on the issue of increased pumping from existing Deep Aquifer wells. The cited MCWD Deep Aquifer pumping numbers represent a greater than doubling of the amount of current pumping from the Deep Aquifer, a pumping amount that already results in Deep Aquifer water levels east of the GSP boundary on the order of 60-100 feet below sea level. Also, whereas, as stated above, it is inappropriate for the GSP to proscribe SMC outside of its jurisdiction, the combined pumpage of the <u>existing</u> agricultural deep aquifer wells just east of the GSP boundary is approximately 5,000 acre-feet/year (AFY). Such increased pumping from the Deep Aquifer by MCWD and others is likely not* *sustainable, but the Marina GSP provides no SMC for Deep Aquifer groundwater levels or storage even though it is the only viable and potable aquifer within its boundaries.*

22. The GSP references Figure 3-15 as being from a report for the Central Coast Groundwater Coalition (Section 3.1.9, page 3-17).

HWG Comment: *On Figure 3-15 the cited reference is MCWRA, 2017.*

23. The GSP discusses the need to protect groundwater with TDS of 3,000 mg/L and states, "…a prominent zone of higher quality groundwater extends approximately from the eastern portion of the MGSA Area eastward through the area underlain by the Dune Sand Aquifer, and extends vertically downward into the 180-Foot Aquifer (Gottschalk et.al., 2018)." (Section 3.1.9, Pages 3-18 to 3-19).

HWG Comment: *As stated previously in this document and described in the HWG Final Report (November 2017), there is no groundwater less than 3,000 mg/L within the MGSA Plan Area, so the statement in the text about such water extending from the eastern portion of the MGSA Area is incorrect. Well MW-4 on the eastern boundary of the MGSA area has no groundwater less than 7,500 mg/L TDS. Furthermore, it is important to note that groundwater to the east of the MGSA area that is 3,000 mg/L TDS has chloride concentrations exceeding 1,000 mg/L, which is approximately twice the highest MCL for chloride and therefore a non-potable source of water for domestic, municipal, and agricultural uses.*

24. The GSP states, "These GDEs utilize shallow groundwater from the Dune Sand Aquifer to meet a significant portion of their water demand." (Section 3.1.11.2, page 3-19).

HWG Comment: *The presence of Actual GDEs as opposed to a Potential GDEs has not been fully evaluated in the Marina GSP. We note that any GDE near the MGSA boundary is subject to being underlain by saline shallow groundwater, and the contribution of fresh surface water sources has not been evaluated.*

25. The GSP states, "Potentiometric surface maps prepared for the vicinity of the MGSA Area indicate the groundwater flow direction in the Dune San Aquifer is toward the coast." (Section 3.1.11, page 3-20).

HWG Comment: *The only shallow monitoring wells within the MGSA are MW-1S, MW-3S, and MW-4S. Data from these monitoring wells (under static conditions without the test slant well pumping) show the Dune Sand Aquifer groundwater flow directions within MGSA that vary from inland to relatively flat depending on the season and year being evaluated (see HWG, 2017). Water quality data for these monitoring wells also demonstrates significant seawater intrusion has occurred throughout the MGSA in the Dune Sand Aquifer. Thus, the GSP mischaracterizes shallow groundwater flow within the MGSA Plan Area.*

26. The GSP states, "…there is an upward gradient between the 180-Foot Aquifer and the Dune Sand Aquifer at the monitoring well cluster that is nearest to the coast…" (Section 3.1.11, page 3-20).

HWG Comment: *There is an overall downward gradient between MW-1S and MW-1M under static conditions (without the test slant well pumping). The GSP mischaracterizes the vertical gradient and uses this mischaracterization to argue for a hydrogeologic conceptual model (seaward discharge of groundwater from the Dune Sand Aquifer and upper 180-Foot Aquifer) that is not present beneath MGSA.*

27. The GSP describes the chloride islands found in a study by MCWRA that are located approximately 3.5 to 4.5 miles inland of the MGSA, presents a potential aquitard gap map in Figure 3-20, and generally implies this issue is relevant in the MGSA Plan Area. (Section 3.1.12, page 3-20). The chloride island issue is discussed in other places in the GSP as well (e.g., Section 3.2.3.2, page 3-37).

HWG Comment: *This issue of possible aquitard gaps and chloride islands was documented at locations far inland and not relevant to the Marina GSP. In addition, detailed work by MCWRA was able assign these chloride islands to being caused by poorly constructed wells. The cited study by MCWRA did not have MPWSP monitoring well boring logs available to incorporate in their study. The locations of the MPWSP borings relative to the purported aquitard gaps (GSP Figure 3-20) is displayed in the attached **Figure 1**. MPWSP MW-8 has a major clay zone present from approximately 225 to 295 feet bgs and MW-9 has a major clay zone present from approximately 225 to 350 feet bgs (aquitard intervals in other boreholes include: MW-1: 210-275; MW-3: 215-285; MW-4: 260-300; MW-5: 305-395 (higher ground elevation); and MW-7: 225-270).*

28. The GSP goes into a detailed description of the surface geophysics (AEM) study conducted by Marina Coast Water District's consultants. A statement made in the GSP in this section is, "The 180/400-Foot Aquitard is discontinuous and notably absent beneath a portion of the MGSA Area and in a large area located just east of the MGSA Area. This occurs in the vicinity of an area where the aquitard was previously judged to be thin or absent by MCWRA (see Figure 3-20)." (Section 3.1.12, page 3-21)

HWG Comment: *The HWG has previously provided extensive documentation of erroneous hydrogeologic interpretations of the AEM data (HWG, November 2017, January 2018, August 2018, January 2019, March 2019, and April 2019). The HWG April 2019 document clearly demonstrates with field data that the hydrogeologic interpretation of aquitard gaps from the AEM study is invalid. Furthermore, as described above, MPWSP monitoring well borehole logs demonstrate that areas of uncertain aquitard continuity areas identified by MCWRA (who did not have MPWSP monitoring well borehole data available to them at the time of their study) near MGSA are no longer uncertain and clearly have significant aquitard material present. Furthermore, review of water level and water quality data for the MPWSP clearly demonstrate the presence and continuity of the 180/400-Foot Aquitard beneath MGSA and surrounding MGSA.*

29. The GSP states, "The 400-Foot Aquitard is uneven, and the Deep Aquifer occurs at some locations as shallow as depths of approximately 650 feet below the ground surface." (Section 3.1.12, page 3-21 and 3-22).

HWG Comment: *The GSP provides no basis or reference for this description of the 400 Foot/Deep Aquifer Aquitard and the depth to the top of the Deep Aquifer, but it clearly does not apply to the MGSA or vicinity as noted above in Comment 15 for Chapter 3.*

30. The GSP states, "The water quality data show a prominent saline groundwater wedge (>10,000 mg/L TDS) which dives downward from the coast through the Dune Sand and 180-Foot Aquifers, and extends downward into the 400-Foot Aquifer through a large gap in the 180/400 Foot Aquitard." (Section 3.1.12, page 3-22).

HWG Comment: *This characterization of a large gap in the 180/400 Foot Aquitard is based solely on surface geophysics AEM data (not water quality data as stated in GSP text), and was clearly demonstrated to be wrong and contrary to water quality field data in a previous HWG letter (April 2019). This is one major example of invalid hydrogeologic interpretations generated by MCWD consultants from the surface geophysics AEM data. The AEM data hydrogeologic interpretations were not ground-truthed with actual field data that included borehole lithologic logs, borehole geophysical logs, water level data, and water quality data. In fact, many of the surface geophysics AEM data hydrogeologic interpretations are in direct opposition to the readily available field data.*

31. The GSP states, "A correlation between groundwater elevations and GDE stress or habitat quality has not been established." (Section 3.1.13, page 3-24).

HWG Comment: *While we agree this statement is true, the Marina GSP subsequently establishes an unjustified and very stringent minimum threshold for GDEs, the locations of which are not even within MGSA's Plan Area and jurisdiction.*

32. The GSP states, "Before a substantial groundwater extraction is implemented in the MGSA Area, there would be a need for a locally refined groundwater flow model this is able to simulate solute transport and density-driven flow…" (Section 3.1.13, page 3-24).

HWG Comment: *This issue was addressed in the Final Environmental Impact Report (FEIR) for the MPWSP, which essentially concluded such a model was not necessary (section 8.2.12, CPUC, 2018).*

33. The GSP describes the MPWSP nested monitoring well network as having installed one well in each aquifer (Dune Sand Aquifer, 180-Foot Aquifer, and 400-Foot Aquifer) at each of the eight sites. (Section 3.1.13, page 3-26).

HWG Comment: *It should be noted that at site MW-5, the shallow monitoring well is screened in the Perched/Mounded Aquifer and not the Dune Sand Aquifer equivalent at that location; and at the MW-6 site the middle and deep monitoring wells are both screened within the 180-Foot Aquifer.*

34. The GSP provides selected groundwater contour maps for the various aquifers along with discussion of groundwater levels, gradients, and implications thereof (Section 3.2.1.2, pages 3-27 to 3-30, Figures 3-25 to 3-33).

***HWG Comment**: There are several important points to note in this GSP discussion: 1) The GSP only presents groundwater elevations and contour maps for March and April at the peak (highest seasonal) groundwater levels whereas MCWRA focus their analysis of groundwater levels/contours on the Summer and Fall months that are critical to understanding seawater intrusion; 2) the entire GSP analysis of groundwater levels/contours is biased and unrepresentative because it ignores groundwater levels/contour during the majority of the year that drive local and regional seawater intrusion (see HWG 2017 for a more balanced discussion of Spring and Fall groundwater contour maps); 3) presenting a local contour map for March 2015 is not useful because the majority of the MPWSP monitoring well network had not yet been installed; there were plenty of opportunities to prepare and show groundwater contour maps representative of static conditions due to interruptions in test slant well pumping (e.g., June to October 2015; March to May, 2016); 4) the Dune Sand Aquifer groundwater contour map mixes wells from different aquifers (Perched/Mounded Aquifer and Dune Sand Aquifer), which results in mischaracterization of shallow groundwater flow; 5) the March 12, 2017 groundwater contour map either does not show static groundwater level conditions (i.e., the map is misdated), or it mixes groundwater levels for MW-1S and MW-3S for two different times (i.e., test slant well is pumping for the MW-1S reading and not pumping for the MW-3S reading); 6) the April 2018 groundwater contour map indicates groundwater flow from MW-1S, 3S, 4S, and 7S towards MW-8S and the Monterey Landfill monitoring wells, but this is not indicated on Figure 3-27; 7) the March 2017 and April 2018 groundwater contour maps for the 180-FTE Aquifer show steep inland gradients towards MW-6 that are not reflected on the maps (Figure 3-29 and Figure 3-30); 8) all the hydraulic gradient calculations are misleading in terms of magnitude (and in some cases direction) due to use of only Spring groundwater level measurements (see HWG 2017 or a more balanced discussion of magnitude and direction of hydraulic gradients).*

35. The GSP states, "At the landfill, groundwater elevations in the landfill area may be affected by local shallow French drains for landfill hydraulic containment and leachate collection systems…and are lower than expected." (Section 3.2.1.1, page 3-28).

***HWG Comment:** The French drains only impact the uppermost perched zone at the landfill, and do not impact the -2 Foot Aquifer (Dune Sand Aquifer equivalent) well measurements (e.g., Wells G-1, G-2, C-34, and others) shown on the GSP maps.*

36. The GSP terminates groundwater level contours south of the Salinas River to avoid, "…conjecture about the effect of river seepage on groundwater elevations in this area…" (Section 3.2.1.1, page 3-28)

***HWG Comment:** If the GSP had focused on Fall groundwater level measurements and contours as it should have, there would be no need to worry about conjecture regarding river seepage.*

37. The GSP states, "Near the coast in wells MW-1S…groundwater elevations increased by approximately 7 feet…between March 2017 and April 2018." (Section 3.2.1.1, page 3-29)

***HWG Comment:** The GSP is clearly mixing test slant well pumping and non-pumping water level measurements at MW-1S in this statement and on its maps for these two time periods.*

38. The GSP compares September 2018 groundwater elevations to 30-year averages and states it indicates "average stable to somewhat recovering conditions" for the 180-Foot Aquifer (Section 3.2.1.3, page 3-31).

HWG Comment: *The discussion in this section of the GSP is very misleading and compares a single snapshot in time to 30-year averages, and is not indicative of recent or overall conditions in the subbasin that very substantially from year to year.*

39. The GSP discusses MPWSP MW-6M and MW-6M(L) and suggests groundwater levels may indicate, "…an area where the 180-Foot and 400-Foot Aquifers are in direct communication." (Section 3.2.1.3, page 3-33).

HWG Comment: *As is clear from review of the borehole lithologic and geophysical logs, and related discussion by HWG in the Technical Report (November 2017), the 180/400=Foot Aquitard is quite substantial at this location, and the 180-Foot and 400-Foot Aquifers are clearly not in "direct communication."*

40. The GSP states, "In well clusters MW-7, MW-8 and MW-9, there is less separation between the hydrographs for the middle (M) lower (D) wells than in well clusters MW-1, MW-3, and MW-4, indicating the 180/400-Foot Aquitard may be less competent or absent in this area, as also documented by the AEM surveys in this area…" (Section 3.2.1.3, page 3-33)

HWG Comment: *Examination of all available data for the MPWSP monitoring wells (borehole lithologic logs, geophysical logs, groundwater level data, groundwater quality data, pumping test data) consistently demonstrate the presence of substantial hydraulic separation between the 180-FTE and 400-Foot Aquifers in the MPWSP monitoring well network area. In addition, the HWG have demonstrated the hydrogeologic misinterpretation of AEM data with regard to aquitard gaps and other misleading and/or incorrect conclusions from AEM data interpretation (e.g., HWG, April 2019).*

41. The GSP acknowledges that, "There is a cyclical pattern of high groundwater elevations in the winter/spring and low elevations in the summer/fall." (Section 3.2.1.3, page 3-33)

HWG Comment: *While the GSP acknowledges this key fact here, it fails to present or describe groundwater levels, contours, and gradients during the key summer and fall months that drive seawater intrusion in the MGSA and SVBGSA Plan areas.*

42. The GSP states that groundwater levels during the test slant well pumping test declined by "…approximately 8 feet in MW-1S and MW-1M, and by 3 feet in MW-3S and MW-3M…" and that "pumping-related drawdown was too gradual to be readily distinguishable…" in other MPWSP monitoring wells. The GSP goes on to state, "…groundwater elevations in most of these wells appeared to show a sudden recovery (or rebound) when pumping was temporarily discontinued in the spring of 2016." (Section 3.2.1.3, page 3-34).

HWG Comment: *The HWG previously documented (e.g., HWG, July 2015) in detail that drawdowns from pumping the test slant well were approximately 8 feet in MW-1S, 2 feet in MW-3S, negligible in MW-4S, 6 feet in MW-1M, 2 feet in MW-3M, negligible in MW-4M, and 0 in all other MPWSP monitoring wells. The purported "recovery" in spring 2016 had nothing to do with operation of the test slant well, but rather represented regional pumping fluctuations tied to variation in climatic conditions as is apparent by the fact that the recovery started prior to the test slant well being turned off and occurred in aquifers and well locations completely unaffected by test slant well pumping. Furthermore, if such a notable recovery occurred at these well locations upon turning the test slant well off, it would have consistently been observed (but was not) when the test slant well was temporarily turned off on numerous occasions.*

43. The GSP states in reference to monitoring well drawdown during test slant well pumping, "Drawdown in the deep wells illustrates a strong hydraulic connection between the 180-Foot and 400-Foot Aquifer in this area, consistent with a thin or absent 180/400-Foot Aquitard in much of the area." (Section 3.2.1.3, page 3-34).

HWG Comment: *As described above and elsewhere in this comment letter, and in other HWG documents, the cited drawdown in the 400-Foot Aquifer from pumping of the test slant well does not exist and this conclusion is completely erroneous. This erroneous conclusion is further illustrated by the GSP claim that drawdown from test slant well pumping resulted in the greatest drawdown and most rapid response in the 400-Foot Aquifer, which is an aquifer that is not even screened and pumped from in the test slant well.*

44. The GSP states, "In 2017, storage recovered by approximately 24,000 AF, indicating that, as had occurred on several past occasions during the period of record, that significant storage recovery is possible within a relatively short period of time." (Section 3.2.2, page 3-34)

HWG Comment: *It should be noted here that 2016-2017 was a record rainfall year, which is a rare occurrence and would be expected to result in some recovery. It should also be recognized that basin "recovery" can occur in part via seawater intrusion.*

45. In referring to MCWD consultant hydrogeologic interpretation of surface geophysics work the GSP states, "This includes low TDS groundwater identified within the MGSA Area…" (Section 3.2.2, page 3-35)

HWG Comment: *This statement clearly illustrates again the erroneous hydrogeologic interpretation of AEM data presented by MCWD/Marina consultants and in this GSP. While field groundwater level and quality data clearly demonstrate that TDS in the Dune Sand Aquifer, 180-FTE Aquifer, and 400-Foot Aquifer within MGSA exceeds 7,500 mg/L, Marina/MCWD consultants and the MGSA GSP keep stating that such water exists within the MGSA Plan area based on the AEM data. This clearly demonstrates either flawed AEM data or (more likely) a flawed interpretation of the AEM data.*

46. The GSP states, "…it is entirely possible that in an aquifer where seawater intrusion has occurred at 500 mg/L chloride, that there will be large groundwater areas within the 500 mg/L impacted area that have higher quality groundwater than at the leading edge." The GSP also states that groundwater

quality in the seawater intruded area, "…may well be sufficient for many beneficial uses." (Section 3.2.3.1, page 3-36)

HWG Comment: *There is no evidence to support these statements. The so-called "low-TDS" groundwater claimed to be found by interpretation of AEM data has chloride concentrations exceeding the maximum chloride MCL (600 mg/L) and up to 1,000 mg/L or more. Furthermore, this so-called "higher quality groundwater" is not sufficient for domestic, municipal, or agricultural beneficial uses without treatment. Lastly, any attempt to develop any actual better quality groundwater zones (if they were to exist) within the seawater intruded soon will result in rapid salinization of such pumping wells.*

47. The GSP states, "…the seawater intrusion front defined using the 500 mg/L chloride threshold…does not mean that the groundwater within the affected region is no longer suitable for current or potential beneficial uses." (Section 3.2.3.1, page 3-36)

HWG Comment: *Again, the GSP presents no evidence to support this statement.*

48. The GSP states that it "augmented" the MCWRA seawater intrusion maps to show zones of low TDS groundwater "…identified during the AEM survey…" (Section 3.2.3.2, page 3-37).

HWG Comment: *It is not clear why the MCWRA seawater intrusion maps (which show areas of groundwater with chloride exceeding 500 mg/L) need to be "augmented" by "low TDS" zones that have chloride concentrations exceeding 500 mg/L and up to as much as 1,000 mg/L or more. The "augmented" maps really don't display any information of value.*

49. The GSP states, "Geophysical data collected in 2017 indicate that groundwater elevations in the Dune Sand Aquifer are close to the river stage elevation, and decline away from the river, suggesting a losing condition…" (Section 3.2.6.1.1, page 3-41)

HWG Comment: *The surface geophysical data do not provide groundwater elevation data.*

50. The GSP states, "No potential GDEs are mapped in the MGSA Area, but several potential GDEs are located nearby. Potential GDEs near the MGSA Area include riverine wetlands and riparian habitat along the banks of the Salinas River, and Palustrine and emergent wetland areas that are seasonally flooded in depressions a short distance east of the MGSA Area, north in the Salinas River National Wildlife Refuge, and south in the City of Marina." Additional discussion of these potential GDEs located outside of the MGSA Plan Area (and within the undisputed area of SVB GSA GSP) occurs in subsequent paragraphs of the GSP. (Section 3.2.6.1.2, page 3-42 to 3-44.)

HWG Comment: *The fact that no GDEs are located with the Marina GSP Plan Area means that the SVB GSA and GSP (and not City of Maria GSA and GSP) has jurisdiction over that evaluation of (to determine if potential GDEs are considered actual GDEs) and setting of SMC for these GDEs if deemed necessary. We note that Salinas River GDEs are located two miles or further from potential MPWSP slant wells within MGSA. In addition, the fact that nearby GDEs are seasonally flooded and have a seasonal nature to them (and are associated with "a lens of less pervious soil") suggests a surface water source is most likely sustaining vegetation in these areas. The GSP evaluation to determine if potential GDEs are actual*

GDEs did not consider that shallow groundwater in these nearby potential GDE areas is saline or the likelihood that fresh surface water is the primary sustaining factor for these areas and (which means they are not GDEs).

51. The GSP states, "Hydrographs for well MW-4S indicate that the seasonal fluctuation in groundwater elevations in this well was approximately 2 feet, and suggest that pumping-induced drawdown was approximately 1 foot. The above ET analysis demonstrates the correlation between groundwater levels and ET from this wetland, and illustrates its sensitivity to groundwater level declines." (Section 3.2.6.1.2, page 3-44).

HWG Comment: *Previous HWG documents demonstrate negligible drawdown at MW-4S (e.g., HWG, 2015). Available data make clear that there was no drawdown from test slant well pumping at potential GDE locations that are outside the MGSA Plan Area. Any claimed changes in ET (assuming there are any given the wide ranges in ET cited) from the wetland areas is related to other (likely climatic) factors.*

52. The GSP states, "…it is not possible to determine the extent to which the drawdown induced during the test slant well pumping test resulted in significant and unreasonable impacts to the GDE, or whether the results were temporary and reversible." (Section 3.2.6.1.2, page 3-44).

HWG Comment: *As stated above, it is clear from available data that there was no drawdown from test slant well pumping at the referenced potential GDE locations. Thus, the claimed impacts at potential GDE locations (assuming such impacts even occurred) are due to other factors and illustrate the uncertainty of such an analysis. Most importantly, this is a clear and significant conflict with the SVG GSA GSP, which has sole jurisdiction and authority to evaluate potential GDEs within its Plan Area and to determine if SMC need to be set.*

53. The GSP states that since monitoring wells were only installed within MGSA Plan area as of 2015, "…there is little data for development of a local historical water budget prior to 2015."

HWG Comment: *The majority of the water budget is not dependent on well data, which is only needed for evaluation of surface inflow and outflow. The vertical components of the water budget (e.g., recharge from precipitation, surface water, irrigation, and discharge from wells) do not require well data and can be calculated for historic conditions.*

54. The GSP states, "…density-driven convection of saline groundwater in the intruding wedge underlying the MGSA Area likely results in the mixing of saline and low-TDS groundwater in the upper portion of the intruding wedge, which discharges seaward." (Section 3.3.2, page 3-47).

HWG Comment: *This discussion and previous/subsequent discussion in the GSP relative to the Ghyben-Herzberg approximation (e.g., Section 3.3.8.1, page 3-59) are based on there being one continuous seawater wedge in the area. This discussion is fundamentally flawed because each aquifer (Dune Sand Aquifer, 180-FTE Aquifer, and 400-Foot Aquifer) has its own distinct seawater intrusion wedge (and given the stratification within a given aquifer, there are likely multiple "mini-wedges" depending on the distribution of hydraulic conductivity and water levels). Beneath the MGSA, the wedge interfaces with* *"low-TDS groundwater" are inland of the MGSA Plan area for all three aquifers, as demonstrated by lack of any aquifer TDS being less than approximately 7,500 mg/L.*

55. Table 3-7 shows groundwater levels and vertical gradients for late March and early April at MPWSP monitoring wells, and Figures 3-25 through 3-33 also show only March/April groundwater level and contours. (Section 3.3.3, pages 3-51 through 3-53).

HWG Comment: *The GSP only shows groundwater levels for the various aquifers at their peak (highest) elevations, and does not provide overall representative groundwater levels, groundwater contours, or vertical gradients. Groundwater levels are considerably lower with steeper inland gradients during other times of year (i.e., before March and after April), but these conditions are not displayed in the GSP (see HWG 2017 for more representative description of groundwater levels and gradients).*

56. The GSP calculates purported subsurface inflow in the Dune Sand Aquifer from the east in the MGSA based on March 2017 groundwater levels. (Section 3.3.7.1, pages 3-56 and 3-57).

HWG Comment: *The GSP uses groundwater levels/gradients from a record wet rainfall year and peak seasonal month for groundwater levels. This calculation should utilize average groundwater levels across a given year and range of climatic conditions across several years. Such a calculation would likely result in no net subsurface inflow from the east, which is evident from the saline groundwater conditions within the Dune Sand Aquifer within the MGSA.*

57. The GSP provides a discussion of the ocean water percentage extracted by the test slant well, and suggests it is unknown but expected to be larger than 10 percent; thus, a value of 30% is used for subsequent water balance calculations. (Section 3.3.8.1, page 3-59)

HWG Comment: *The GSP ignores the weekly water quality data collected from the test slant in discussing the ocean water percentage. This field data was reported in weekly/monthly monitoring reports, and demonstrates that the ocean water percentage averaged 10% over the long term (including record wet year conditions). Thus, the use of a 30% value for ocean water percentage is clearly erroneous as demonstrated by field data.*

58. The GSP states, "Discharge from the Dune Sand Aquifer to the Pacific Ocean is approximately 435 AFY (seaward direction out of the western MGSA boundary)." (Section 3.3.8.1, page 3-59).

HWG Comment: *This statement/calculation is clearly erroneous, and the basis for the calculation is not explained. Again, the only groundwater level data even presented in the GSP is for March/April (the peak/highest groundwater levels in a given year), which are not representative of the average annual condition needed for this calculation.*

59. The GSP states, "…the 400-Foot Aquifer did experience drawdown during test slant well pumping…" (Section 3.3.8.2, page 3-60).

HWG Comment: *This statement/conclusion is clearly erroneous and not supported by the abundant available field data during the three years of test slant well pumping, including several episodes of the* *test slant well being turned off and on, during which drawdown (and recovery) would be demonstrated if it occurred.*

60. The GSP states, "…groundwater storage beneath the MGSA Area does not appear to be decreasing at the present. This implies that conditions at the seaward edge of the saline intrusion front in the Subbasin are relatively stable; however significant changes in groundwater pumping in this area could upset this equilibrium and have both local and inland implications for future seawater intrusion." (Section 3.3.9, page 3-61).

HWG Comment: *Stable groundwater storage conditions does not mean there is not continuing seawater intrusion; it just means the inland gradient is relatively constant on an average annual basis. Pumping from the proposed MPWSP within MGSA would serve to help mitigate future inland seawater intrusion as was demonstrated in the MPWSP FEIR.*

61. The GSP makes several assumptions and statements in its discussion of Current Groundwater Budget Supplement (Section 3.3.10.2, pages 3-64 and 3-65).

HWG Comment: *Many of these assumptions/statements are incorrect or not valid, e.g., all test slant well extraction assigned to DSA; much of the inflow into the DSA from the landward side of MGSA Area was captured by the test slant well; the amount of infiltrating seawater cannot be evaluated without a model.*

62. The GSP states, "The proposed pumping of 17,400 AFY of feed water for the MPWSP, if permitted and implemented, would extract primarily saline groundwater from beneath the ocean and saline as well as low TDS groundwater from the Dune Sand and 180-Foot Aquifers in the Subbasin." (Section 3.3.10.4, page 3-69).

HWG Comment: *This sentence is more accurately written as, "The proposed pumping of 17,400 AFY of feed water for the MPWSP, if permitted and implemented, would extract primarily saline water from the ocean and small amounts of saline to brackish groundwater from the Dune Sand and 180-Foot Aquifers in the Subbasin from within the MPWSP slant well capture zone."*

63. The GSP states, "In the Monterey Subbasin, groundwater demand from the Deep Aquifer by MCWD to supply the City of Marina is expected to increase….however, the increase is projected to be within MCWD's allocated pumping rights." (Section 3.3.10.4, page 3-69).

HWG Comment: *Regardless of allocated pumping rights, it remains unclear if the proposed MCWD increase in pumping from the Deep Aquifer is sustainable. In addition, the increased pumping from the Deep Aquifer to the east to support agricultural expansion is based on overlying rights, not allocated (paper water) pumping rights, and are thereby superior to MCWD.*

64. The GSP references in several places the need for modeling of density-driven groundwater flow (e.g., Section 3.3.10.4, page 3-69; Section 3.3.11, page 3-71).

HWG Comment: *Somewhat ironically, if the MGSA Plan area is impacted to the point of needing to consider use of density-dependent groundwater flow software, the groundwater in MGSA is impacted well beyond the point of any undesirable results thresholds (i.e., any reasonable MTs and MOs were exceed long ago by a substantial amount and further degradation by seawater intrusion would have no impact on potential uses of groundwater within MGSA). Regardless, this issue is addressed in Comment 32 for Chapter 3.*

65. The GSP references in multiples places the need to assure that sustainability goals are met. (Section 3.3.10.4, page 3-69).

HWG Comment: *It is not clear what existing groundwater beneath MGSA needs to be sustained given TDS concentrations exceeding 7,500 mg/L in all aquifers other than in the Deep Aquifer, and Deep Aquifer sustainability is not defined and addressed in the GSP.*

66. The GSP states, "The MPWSP monitoring well east of the MGSA Area…did not show a direct response to Slant Well pumping…" (Section 3.3.10.5, page 3-70).

HWG Comment: *While this statement is true, there were also several wells within MGSA GSP Plan Area that showed no response to test slant well pumping including: MW-1D, MW-3D, MW-4S, MW-4M, and MW-4D. The only MPWSP monitoring wells that showed a measurable response to test slant well pumping were MW-1S, MW-1M, MW-3S, and MW-3M.*

67. The GSP states, "Groundwater gradients in the Dune Sand Aquifer remained generally similar throughout the period of record." (Section 3.3.10.5, page 3-70).

HWG Comment: *This statement is incorrect. Groundwater levels were generally lower and had a steeper inland gradient in 2015 and 2016, which were slightly below average to slightly above average rainfall years, compared to subsequent years that showed generally higher groundwater levels due to the record wet year in 2017.*

68. The GSP includes a paragraph on slant well pumping in Section 3.3.11 on page 3-71.

HWG Comment: *The paragraph should be edited as follows: "The amount of landward saline and brackish groundwater from the Subbasin aquifers captured by test slant well pumping was approximately 10% of the amount pumped. A large portion of the groundwater pumped by the test slant well was saline groundwater originating from the ocean outside the western boundary of the Subbasin. The MPWSP test slant well salinity data and groundwater elevations in the DSA indicate that a small amount of groundwater was derived from saline and brackish groundwater in the Dune Sand and 180-Foot Aquifer. Conceptual water budgets are provided assuming 10 percent of the test slant well groundwater was captured Subbasin groundwater, as demonstrated by field data collected during test slant well testing that showed the actual percentage of Subbasin groundwater extracted from the Subbasin by the test slant well."*

69. The GSP includes a paragraph on the potential use of a density-driven flow model in Section 3.3.11 on page 3-71.

HWG Comment: *See Comment 32 for Chapter 3.*

70. The GSP states MGSA will support, "…projects and management actions that will be implemented by SVBGSA under its regional GSP…"(Section 3.3.12, page 3-72).

HWG Comment: *While this statement is made here and in several other places in the MGSA GSP, it also attempts to set SMC that will not allow one of SVBGSA's main projects – a groundwater extraction barrier to mitigate seawater intrusion.*

71. With regard to test slant well pumping, the GSP states, "The groundwater quality and level monitoring data indicates that some groundwater from the low-TDS zone in the DSA and 180-Foot Aquifer was drawn into the test slant well from the east; however, the data are insufficient to determine whether there was a significant and unreasonable impact to these resources during the test time period, and whether the saline groundwater intrusion wedge advanced inland or thickened as a result." (Section 3.3.12, page 3-72).

HWG Comment: *This GSP statement is incorrect; and the field data show primarily ocean water and a small amount of brackish water extracted by the test slant well. Furthermore, the test slant well pumping created a capture zone that helped reduce inland seawater intrusion.*

72. The GSP states, "The proposed implementation of the MPWSP…has the potential to…contribute to regional overdraft conditions." (Section 3.3.12, page 3-72).

HWG Comment: *The reality is that the MPWSP has the potential to be part of the solution to regional overdraft and historical/current seawater intrusion problems. Extractions at the coast are a major component of the SVB GSP to mitigate seawater intrusion.*

73. The GSP states, "The sustainable management criteria, monitoring program and management actions described in chapters 4, 5, and 6 are intended to identify and address any overdraft in the MGSA area (from any cause) before it results in significant and unreasonable impacts." (Section 3.3.12, pages 3-72 and 3-73). A similar statement is made in Section 4.2 on page 4-4.

HWG Comment: *It is not clear how significant and unreasonable impacts in the MGSA area can be defined when groundwater TDS concentrations already exceeds 7,500 mg/L.*

74. The GSP defines sustainable yield for the MGSA Area as "the amount of groundwater that can be withdrawn annually over a period of time without causing undesirable results within or near the MGSA Area." The GSP goes on to identify four areas of potential undesirable results for significant and unreasonable impacts beyond a 2015 baseline condition: 1) chronic groundwater level decline in the DSA that adversely affects GDEs; 2) reduction in "low-TDS" groundwater storage; 3) seawater intrusion; and 4) degradation of "low TDS" groundwater zone. (Section 3.3.13, page 3-73; Section 4.2, pages 4-4 and 4-5).

HWG Comment: *It is not clear why these four items are all stated to be applicable to the DSA, 180-Foot Aquifer, and 400-Foot Aquifer, but only the seawater intrusion item is considered to be applicable to the Deep Aquifer; this suggests chronic groundwater level decline, reduction in groundwater storage, and degradation of the only actual "low-TDS" groundwater within MGSA is allowable within the Deep Aquifer beneath MGSA. Also, given that significant and undesirable conditions for groundwater level decline, reduction in low-TDS groundwater storage, seawater intrusion, and degradation of low TDS groundwater zone have already occurred in MGSA as of 2015 (actually, long before 2015), it is not clear how or why future significant and unreasonable conditions can be defined. Essentially, sustainable yield is not* *applicable to MGSA, except possibly for the Deep Aquifer. It is also important to note that GDEs and "low TDS" groundwater do not occur within the MGSA area in the Dune Sand, 180-Foot Aquifer, and 400-Foot Aquifer, and that these three aquifers have been thoroughly seawater intruded as of 2015; thus, it is unclear what are the undesirable results that could occur within MGSA relative to the 2015 baseline condition.*

Chapter 4 – Sustainable Management Criteria

1. The GSP states, "Chronic declines in inland groundwater levels have led to a reversal in the groundwater gradients in the 180-Foot and 400-Foot Aquifers from shoreward to landward, causing water affected by seawater intrusion to flow inland for a distance of up to approximately 7 miles." (Section 4.2, page 4-3).

HWG Comment: *We agree.*

2. The GSP states that MGSA's sustainability goal is, "… to manage groundwater resources in the MGSA Area in a way that ensures all beneficial uses and users in, or affected by, groundwater management in the MGSA Area are protected from undesirable results, and have access to a safe and reliable groundwater supply that meets current and future demand. This goal will support SVBGSA's sustainability goal by addressing undesirable results at a local level and protecting local resources from further degradation, while coordinating with MCWRA, SVBGSA and MCWD GSA to support regional groundwater management, including groundwater level and seawater intrusion monitoring, and mitigation projects and management actions that will contain and reverse the conditions resulting from regional overdraft." (Section 4.2, page 4-5)

HWG Comment: *It is not clear who/what are the beneficial users/uses within MGSA for groundwater that exceeds 7,500 mg/L TDS (the entirety of the Dune Sand Aquifer, 180-FTE Aquifer, and 400-Foot Aquifer within MGSA). Even if there were beneficial uses of groundwater exceeding 7,500 mg/L TDS, it is not clear how such beneficial use would be impacted by a modest increase in TDS from the existing very elevated and non-potable concentration. The Marina GSP does not coordinate well with or support the SVBGSA GSP – many of the sustainable management criteria are in conflict with the SVB GSA's jurisdiction and/or SVB GSP sustainable management criteria, projects, and management actions.*

3. The GSP states that implementation objectives in support of the MGSA sustainability goal include ensuring that, "…groundwater is available for beneficial and potential beneficial uses, including all of the diverse municipal, domestic, agricultural, industrial, and environmental uses potentially affected by management actions within the MGSA…" (Section 4.2, pages 4-5 and 4-6).

HWG Comment: *There are no demonstrated municipal, domestic, agricultural, or environmental uses of groundwater within or even near the MGSA in the Dune Sand Aquifer, 180-FTE Aquifer, and 400-Foot Aquifer due to extremely high salinity levels in groundwater. CEMEX represents an Industrial use of highly brackish water.*

4. The GSP makes several references to protecting groundwater containing less than 3,000 mg/L TDS as having a potential beneficial use as a domestic or municipal drinking water supply per SWRCB Resolution No. 88-63 (e.g., Section 4a-2, page 4-6).

HWG Comment: *The HWG has previously demonstrated (HWG, August 2018) that groundwater with TDS of 3,000 mg/L in the MGSA vicinity has chlorides exceeding 1,000 mg/L, which far exceeds chloride*

MCLs and represents a chloride concentration greater than chloride levels at which numerous agricultural, municipal, and domestic water supply wells have been abandoned. These chloride levels are not suitable for municipal or domestic beneficial uses and would need to be treated to be useable for beneficial use.

5. The GSP states, "The consistency of the locally-defined criteria with criteria developed by SVBGSA in their GSP was evaluated, so that the sustainable management criteria in this GSP would address local conditions while remaining regionally compatible." (Section 4.3, page 4-6)

HWG Comment: *The sustainable management criteria in the Marina GSP are clearly in conflict with and not compatible with the SVBGSA GSP, as demonstrated with many of our comments.*

6. With reference to the approach for evaluating sustainable management criteria in the Marina GSA Plan area, the GSP states, "The assessment was conducted based upon the hydrogeologic conceptual model and water budget information summarized in Chapter 3." (Section 4.3, page 4-6).

HWG Comment: *As demonstrated in our preceding comments on Chapter 3, the Basin Setting discussion of the hydrogeologic conceptual model, groundwater conditions, and water budget contains has many flaws, incorrect statements, and invalid assumptions, and provides a poor and unrealistic basis for assessment of sustainable management criteria. This has resulted in inappropriate and unjustified minimum thresholds and measurable objectives in Chapter 4.*

7. The GSP notes that, "…SVBGSA has not designated any monitoring well near the MGSA Area, so there is no possibility that groundwater extraction in this area would create an undesirable result detected under their Regional GSP." (Section 4.4.1, page 4-9).

HWG Comment: *There is likely good reason that SVBGSA specifically did not establish monitoring compliance points adjacent to the coast in the MGSA and other areas. For example, water level near the coast are not the key to mitigating seawater intrusion; rather, water levels further inland are the key to halting seawater intrusion. Furthermore, lower groundwater levels near the coast may be key in helping mitigate seawater intrusion such as through use of an extraction barrier, which is a key potential project for the SVBGSA.*

8. The GSP states, "With respect to potential future groundwater extraction in the MGSA area, potential adverse impacts to beneficial users and uses from groundwater level decline include development or worsening of gradients that promote seawater intrusion…" (Section 4.4.1, page 4-9).

HWG Comment: *Gradients that promote seawater intrusion have been occurring historically and currently exist in the MGSA Plan Area. Pumping within the MGSA Plan Area will actually help mitigate seawater intrusion, as demonstrated in the MPWSP FEIR.*

9.The GSP uses a local definition (based on SVB GSP assessment of 180-Foot and 400-Foot Aquifers) for significant and unreasonable groundwater level decline as 1 foot above low groundwater levels measured in 2015 (Section 4.4.1, page 4-10).

HWG Comment: *While this definition may make sense for the 180-Foot and 400-Foot Aquifers further inland, the MGSA GSP does not provide an adequate basis or justification for requiring such a stringent definition in/near MGSA for these two Principal Aquifers or for application to the Dune Sand Aquifer, which is not a Principal Aquifer for the SVB GSP.*

10.The GSP states, "…undesirable results, minimum thresholds, and measurable objectives for chromic groundwater level decline are not adopted for the Deep Aquifer in this GSP." (Section 4.4.1, page 4-11)

HWG Comment: *This is perplexing given that the Deep Aquifer contains the only groundwater worthy of setting MTs and MOs for within the MGSA.*

11.The GSP states that drawdown from test slant well pumping "…decreased with distance from the MGSA Area." (Section 4.4.1, page 4-11).

HWG Comment: *There was no drawdown from test slant well pumping at the eastern boundary and outside the MGSA Plan Area.*

12.The GSP states, "The minimum threshold for groundwater elevation drawdown in the Dune Sand Aquifer is established as a drawdown attributable to groundwater extraction in the MGSA Area of 1 foot above the 2015 low groundwater levels recorded in monitoring wells near GDEs in the vicinity of the MGSA Area." (Section 4.4.2.1, page 4-12).

HWG Comment: *The Marina GSP has no authority to set minimum thresholds outside its Plan Area and in fact presents a major conflict with the SVB GSP. Even if it were allowed to set this MT, the basis and justification for the selected MT in the Marina GSP is woefully inadequate. Furthermore, setting MTs for the Dune Sand Aquifer is a conflict with the SVB GSP, which does not recognize the Dune Sand Aquifer as a principal aquifer for which to establish SMC. It is also noteworthy that drawdown beyond the stated MT is apparently allowed for pumping outside of the MGSA Plan Area.*

13.The GSP states, "…wetlands such as the vernal ponds that occur east of the MGSA Area are likely to be more highly groundwater dependent and contain sensitive communities that could be adversely affected by drawdown." (Section 4.4.2.1, page 4-12).

HWG Comment: *The Marina GSP neither establishes the dependence on groundwater (which is saline in the referenced GDE areas) as opposed to surface water, nor establishes the link to vegetative stress from drawdown (there was no drawdown at the referenced GDEs from test slant well pumping). As stated previously, the Marina GSP has no jurisdiction to set MTs for GDEs located "east of the MGSA Area", which causes a major conflict with SVB GSP.*

14.The Marina GSP adopts the SVB GSP definition of groundwater level MTs in the 180-Foot and 400-Foot Aquifers for the area within MGSA: 1 foot above historical low groundwater elevations measured in 2015 in 15% or more of the monitoring wells (Section 4.4.2.2, page 4-14).

HWG Comment: *The rationale and justification for adopting the regional-scale MTs at the monitoring well locations shown in the SVB GSP are not applicable or appropriate to the location and local-scale area of the MGSA Plan Area.*

15.The Marina GSP states, "…the thickness and water quality of the low-TDS zone must also be maintained." (Section 4.4.2.3, page 4-15)

HWG Comment: *The "low-TDS" zone referred to here is brackish non-potable water. It is not clear why this brackish water zone must be maintained. It does nothing to stop seawater intrusion, which has continued unabated for the last several decades, and cannot be used for municipal, domestic, or agricultural water supply without extensive treatment for TDS, nitrate, and other constituents. In fact, implementation of the MPWSP would actually help mitigate the inland seawater intrusion that has and is occurring through the MGSA Plan Area and vicinity.*

16.The Marina GSP states, "A significant and unreasonable condition for degraded water quality is a statistically-significant increase in the chloride or TDS concentration of groundwater in the low-TDS groundwater zone." (Section 4.4.2.3, page 4-15). Later in the GSP, a "statistically significant" increasing trend in TDS or chloride concentrations is used to set SMC (Section 4.6.3, page 4-33; Section 4.7.1, page 4-34) and triggers (Section 6.2.1.1, page 6-4).

HWG Comment: *We have several comments, many already stated previously: 1) The "low-TDS" zone is a non-potable brackish water zone; 2) It is not clear why this brackish water zone needs to be protected since it cannot be used for potable water supply and does nothing to prevent seawater intrusion; 3) The cited brackish water zone is outside of the MGSA Plan Area, and the Marina GSP has no jurisdiction/authority to set MTs/MOs for this area; 4) The approach to set MTs here sounds like a contaminant/environmental hydrogeology approach, and has no relevance to protecting groundwater in terms of chloride and TDS concentrations – particularly when the TDS and chloride concentrations already exceed all applicable MCL thresholds.*

17.The Marina GSP states, "MGSA's local sustainable management criteria for the Dune Sand Aquifer are compatible with the SVBGSA's management strategy for the underlying regional aquifers." (Section 4.4.2.4, page 4-16)

HWG Comment: *As stated previously in this letter, MGSA's SMC for the DSA are specifically not compatible with the SMBGSA's management strategy that does not recognize the DSA as a primary aquifer and sets no MTs/MOs for the DSA.*

18.The Marina GSP refers to setting MTs to protect "…beneficial users of groundwater for domestic irrigation, and small non-transient supply systems near the MGSA Area…" (Section 4.4.2.5, page 4-17)

HWG Comment: *The Marina GSP does not identify the locations of any beneficial users of groundwater for domestic, irrigation, or small supply systems near the MGSA Plan Area. As stated elsewhere in this letter, the MGSP is trying to establish SMC for locations outside of its Plan Area for which it has no authority/jurisdiction to do so, and presents a clear conflict with the SVBGSP that covers these areas.*

19.The Marina GSP states, "…measurable objectives for groundwater level decline are intended to serve as triggers for management actions…" (Section 4.4.3, page 4-18)

HWG Comment: *The purpose of measurable objectives (MO) is not to serve as a trigger for management actions. The MO is intended to represent the anticipated average condition (in this case, groundwater levels) after sustainability is achieved after 2040.*

20.The Marina GSP states, "Interim milestones will only be established if corrective actions are implemented…" (Section 4.4.3, page 4-18)

HWG Comment: *Interim milestones are required to be established in the GSP.*

21. The Marina GSP states, "The MGSA area is located at the western edge of a substantial zone of low-TDS groundwater (TDS<3,000 mg/L) extending vertically from the DSA into the 180-Foot Aquifer and the 400-Foot Aquifer…" (Section 4.5.1, page 4-19)

HWG Comment: *We have several comments: 1) The "low-TDS" zone consists of non-potable brackish water with chlorides, TDS and commonly nitrate far in excess of all MCL thresholds; 2) The brackish water with TDS less than 3,000 mg/L does not exist at the eastern edge of the MGSA Plan Area, but* *rather is located east of the MGSA Plan Area; 3) There is not one zone of continuous brackish water through the three aquifers, a conclusion that was based on faulty interpretation of AEM data as described in the HWG April 2019 letter, but rather there are separate seawater intrusion wedges in each aquifer; 4) The Marina GSP is trying to set SMC for locations outside of its Plan Area for which it has no authority/jurisdiction to do so.*

21.The Marina GSP states, "Short-term groundwater extraction during the test slant well pumping test may have depleted the low-TDS zone in the Dune Sand and 180-Foot Aquifers…" (Section 4.5.1, page 4-20)

HWG Comment: *This conclusion is incorrect – the test slant well pumping test had no drawdown impacts from MW-4 and beyond, which is well to the west of the claimed "low-TDS" non-potable brackish water zone.*

22.The Marina GSP states, "SVBGSA's GSP does not present sustainable management criteria for the Dune Sand Aquifer because its GSP is more regionally focused." (Section 4.5.2.2, page 4-24; *Section 4.7.2.2, page 4-38*)

HWG Comment: *The SVBGSA specifically choose not to designate the Dune Sand Aquifer as a principal aquifer and specifically choose not to set SMC for the Dune Sand Aquifer. The Marina GSP's attempt to set SMC for the DSA is a major conflict with the SVBGSA, a conflict made even greater by attempts to set SMC for the DSA outside of the MGSA Plan Area.*

24. The Marina GSP claims that its groundwater storage minimum threshold would help to control seawater intrusion and benefit municipal and irrigation groundwater uses/users (Section 4.5.2.3, page 4-24)

HWG Comment: *The Marina GSP MTs would actually prevent implementation of a primary tool identified in the SVBGSP to control seawater intrusion – a groundwater extraction barrier. Thus, the Marina GSP presents major conflicts with the SVB GSP.*

25. The Marina GSP states that SVBGSA's definition of seawater intrusion (chloride > 500 mg/L) does not recognize areas of "…better quality groundwater in the aquifers seaward of the seawater intrusion line…" (Section 4.6.1, page 4-26).

HWG Comment: *The claimed "better quality groundwater" is comprised of groundwater with TDS up to 3,000 mg/L, which has chlorides exceeding 1,000 mg/L and nitrates exceeds MCLs in many areas. The chloride level of the 3,000 mg/L TDS groundwater is far in excess of the 500 mg/L chloride definition used to define seawater intrusion and far in excess of chloride MCLs. Thus, it is not "better quality groundwater" as claimed by the Marina GSP.*

26. The Marina GSP states, "Groundwater extraction in the MGSA Area has the potential to affect the dynamic equilibrium of this nearshore groundwater system and cause seawater intrusion through the migration of the of the saline water wedge, which could in turn lead to deeper seawater intrusion into the currently unintruded Deep Aquifer, or promote the lateral migration or persistence of seawater intrusion…further inland." (Section 4.6.1, page 4-26). This claim is repeated in Section 6.2.1.1 on page 6-3.

HWG Comment: *Groundwater extraction from the DSA and 180-FTE Aquifer in the MGSA area poses no risk of seawater intrusion in the Deep Aquifer. The risk to seawater intrusion in the Deep Aquifer is solely* *from overpumping of wells screened within the Deep Aquifer, which is likely already occurring. In addition, pumping from the currently intruded aquifers from wells within MGSA will help to mitigate further seawater intrusion to inland locations.*

27. The Marina GSP states, "…the Dune Sand, 180-Foot and 400-Foot Aquifers are currently seawater intruded and therefore experiencing undesirable results…" (Section 4.6.1, page 4-27).

HWG Comment: *These three aquifers are certainly well beyond the threshold of experiencing undesirable results with TDS concentrations exceeding 7,500 mg/L. It is not clear how a GSP can have a definition for undesirable results within its Plan Area for groundwater that is already experiencing undesirable results and has TDS exceeding 7,500 mg/L. It would seem that the existing groundwater would need to not be experiencing undesirable results in order to set thresholds and have a definition of achieving undesirable results in the future.*

28. The GSP states, "Regionally, SVBGSA has adopted the line defined by Highway 1 as the seawater intrusion minimum threshold for the Deep Aquifer; In this local GSP MGSA has adopted a position that any detectable seawater intrusion into the currently unintruded Deep Aquifer represents a significant and unreasonable impact and would exceed the minimum threshold for seawater intrusion into this important local aquifer." (Section 4.6.2, page 4-28)

HWG Comment: *The MGSP adopts a minimum threshold for seawater intrusion in the Deep Aquifer (which is not used within the MGSA) that is a clear conflict with the SVBGSP. The MGSP later attempts to justify the conflicting MTs by saying the two are not in conflict since there are no Deep Aquifer production wells west of Highway 1 (page 4-31); however, this justification for conflicting MTs is not valid because seawater intrusion could easily occur between the ocean and Highway 1 but not east of Highway 1 if Deep Aquifer seawater intrusion is sourced from beneath ocean or the submarine canyon Deep Aquifer outcrop. Furthermore, while the MGSP adopts a conflicting seawater intrusion MT, it adopts no groundwater level MT and specifically allows for greatly increased pumping in the Deep Aquifer from Marina Coast Water District Deep Aquifer wells that present a high risk for seawater intrusion as Deep Aquifer groundwater levels decline further.*

29. The GSP establishes concentration limits of 1,000 mg/L for TDS and 500 mg/L for chloride defining seawater intrusion in the Deep Aquifer. (Section 4.6.2, page 4-28).

HWG Comment: *The GSP adopts a double standard by saying seawater intrusion has occurred when TDS exceeds 1,000 mg/L or chloride exceeds 500 mg/L in the Deep Aquifer, yet concentrations of 3,000 mg/L TDS and over 1,000 mg/L chloride represent low-TDS groundwater in the shallower aquifers that have beneficial uses and must be protected.*

30. The GSP states, "The groundwater level and quality monitoring will be conducted in accordance with the monitoring plan outlined in Chapter 5." (Section 4.6.2.5, page 4-32).

HWG Comment: *It is very important to note here that the groundwater level and monitoring program described in the Marina GSP will not be constructed and implemented if the MPWSP does not move forward. The MGSA will have to design, construct, and implement its own completely different monitoring network if the MPWSP does not go forward, and this alternative monitoring program is not described in the MGSP.*

31. The GSP describes the sustainability goal for the MGSP as managing groundwater resources in the MGSA Plan Area in a way to ensure all beneficial uses/users are protected from undesirable results and have access to a safe and reliable groundwater supply. (Section 4.6.3, page 4-32).

HWG Comment: *Aside from the Deep Aquifer, which is specifically not protected in the MGSP, the groundwater in the MGSA Plan Area already far exceeds any reasonable definition of undesirable results and contains only unusable and non-potable groundwater supplies. Essentially, there are no beneficial users/uses to be protected within MGSA Plan Area.*

32. The GSP defines undesirable results for groundwater quality as concentrations exceeding MCLs and reduced crop production (Section 4.7.1, pages 4-33 to 4-34)

HWG Comment: *Both of these undesirable result conditions already exist in MGSA and have existed within MGSA for the last several decades.*

33. The GSP attempts to set MTs for contaminant plumes (Section 4.7.2, Page 4-36).

HWG Comment: *There are no contaminant plumes within the MGSA Plan Area. Any attempt to set MTs for contaminant plumes outside the MGSA area is a clear conflict with the SVBGSP.*

34. The GSP sets minimum thresholds and measurable objectives for land subsidence using groundwater levels as a proxy. The minimum threshold requires groundwater levels remain above 2015 levels (Section 4.8.2, page 4-42).

HWG Comment: *There is no rationale, evidence, or justification for the minimum threshold and measurable objective set for land subsidence.*

35. GSP Figure 4-1 states, "Approximately 1-Foot Recovery When Pumping Stopped" in reference to test slant well pumping.

HWG Comment: *This statement is incorrect. The arrows pointing to purported recovery when test slant well pumping stopped are clearly related to seasonal increases in groundwater levels.*

Chapter 5 – Monitoring Network

1. With regard to the Dune Sand Aquifer, the GSP states, "The uppermost aquifer, which is of local importance due to its interaction with local groundwater-dependent ecosystems (GDEs), substantial storage of groundwater with designated potential beneficial use as a municipal or domestic supply, and importance in maintaining nearshore seawater intrusion dynamics…" (Section 5.1, page 5-1).

HWG Comment: *While it remains unclear if the Dune Sand Aquifer plays any role in supporting GDEs, it is clear there are no GDEs within the MGSA Plan Area and the Marina GSP should not be addressing GDEs outside of its jurisdiction. There is no groundwater with potential beneficial uses within the MGSA Plan Area. The historic and current nearshore seawater intrusion dynamics have allowed for historic and ongoing seawater intrusion.*

2.With regard to the 180-Foot Aquifer, the GSP states the seawater intruded area, "…includes significant zones of groundwater with a designated beneficial use as a domestic and municipal supply in the vicinity…" (Section 5.1, page 5-1).

HWG Comment: *There is no groundwater in the Dune Sand Aquifer, 180-FTE Aquifer, or 400-Foot Aquifer with designated beneficial use as a domestic and municipal supply in the MGSA Plan Area. In addition, there are no significant areas with designated domestic or municipal supply beneficial use in the MGSA vicinity.*

3.The GSP states, "…the MGSA GSP will rely primarily on data collected from a local monitoring network adopted in and around the MGSA Area under the Mitigation, Monitoring and Reporting program (MMRP) for the proposed Monterey Peninsula Water Supply Project (MPWSP)…" (Section 5.1.2, page 5-3).

HWG Comment: *The MGSA GSP is relying primarily on a local monitoring network that will not be implemented if the MPWSP does not move forward. The sustainable management criteria proposed in the MGSA GSP preclude development of the MPWSP. Thus, if the MGSA GSP is approved, adopted, and enforced for the MGSA Plan Area, the MPWSP will not be able move forward and the local monitoring network will not be implemented. Therefore, the proposed MGSA GSP does not have a viable monitoring network.*

4.The GSP describes a monitoring network and representative monitoring sites comprised of locations primarily outside of the MGSA Plan Area (Section 5.1.4, pages 5-4 to 5-5).

HWG Comment: *The MGSA has no jurisdiction to establish a monitoring network and RMS sites outside of its Plan Area, which presents major conflicts with the SVB GSA that has jurisdiction of these areas.*

5.The GSP describes minimum thresholds and measurable objectives for groundwater levels for principal aquifers encompassed by its monitoring network (Section 5.2.1, pages 5-6 and 5-7).

HWG Comment: *This section presents many conflicts with the SVB GSA GSP, many of which are described elsewhere in this letter. Another conflict is that the MGSA attempts to assign SVB GSA GSP minimum thresholds and measurable objectives for the 180-Foot Aquifer to RMS locations near the coast that are not included in the SVB GSA GSP. It is likely that the SVB GSA GSP RMS locations were carefully selected to be compatible with proposed projects and management actions that allow maximum potential to achieve subbasin sustainability. The MGSA RMS locations present major conflicts to SVB GSA, and would likely impede SVB GSA attempts to reach sustainability.*

6.The GSP states, "Because groundwater is not currently extracted from the Deep Aquifer in the MGSA Area, minimum thresholds and measurable objectives were not established for the Chronic Lowering of Groundwater Levels sustainability indicator in the aquifer…" (Section 5.2.1, page 5-7).

HWG Comment: *Groundwater is not currently extracted from the Dune Sand Aquifer in the MGSA Area; therefore, under this rationale there should be not minimum thresholds and measurable objectives established for the Dune Sand Aquifer.*

7.The GSP states, "MCWRA will conduct monitoring of seven other Deep Aquifer wells as part of the MMRP. Locations of these wells are shown on Figure 5-2, and well construction and monitoring information is presented in Table 5-4." (Section 5.2.1, page 5-7)

HWG Comment: *It is not clear why data from these wells were not included in the analysis; especially since the introduction states the Deep Aquifer is a primary source of freshwater to the City of Marina. As stated above, it is also very important to note that the MMRP will not be implemented if the MPWSP does not move forward.*

8. The GSP states, "The MPWSP wells were installed to monitor the effects pumping the test slant well." (Section 5.2.2, page 5-7)

HWG Comments: *The purposes of installing the MPWSP monitoring wells extended far beyond monitoring effects of pumping the test slant well. These monitoring wells are intended to provide background water level and water quality data well beyond the influence of test slant well pumping, provide borehole lithologic and geophysical logs to improve characterization of aquifers/aquitards within and well beyond the CEMEX area, allow for long-term monitoring of water levels and water quality after implementation of the MPWSP both within and outside the influence of proposed intake slant wells, and for other uses.*

9. The adequacy and density of the monitoring network is described in Section 5.2.2 and 5.2.3 (pages 5-8 to 5-10).

HWG Comment: *The adequacy and density of the monitoring network should be focused on the MGSA Plan Area, and not encroach on the authority and jurisdiction of other GSAs/GSPs.*

10. In the section entitled, "Groundwater elevation and quality data in the MGSA Area", the GSP states that groundwater elevation and quality data in the MGSA Area are limited and that five additional monitoring well clusters will be installed to address data gaps (Section 5.2.7, page 5-13).

HWG Comment: *We note that none of the five proposed new monitoring well clusters are located within the MGSA Plan Area.*

11. The GSP states, "This definition of seawater intrusion adopts a concentration that is aligned with potential impacts to municipal and agricultural beneficial uses; however, it includes water with existing actual and potential beneficial uses." (Section 5.4.1, pages 5-19 to 5-20)

HWG Comment: *Groundwater in the MGSA cannot be used as a potable source without treatment. The only current use of groundwater in the MGSA Plan area is the CEMEX well for industrial wash water. The MCWRA 500 mg/l chloride concentration is an appropriate threshold for monitoring and definition of seawater intrusion (some may even argue for a lower threshold definition such as 250 mg/L chloride, which the MCWRA also used for contouring as the level that the growers were concerned about). The reference to potential beneficial uses refers to SWRCB resolution regarding TDS up to 3,000 mg/L; however, such water is non-potable and has chlorides exceeding 1,000 mg/L placing it appropriately within the zone of seawater intrusion.*

12. The GSP states, "Groundwater extraction in the MGSA Area has the potential to affect the dynamic equilibrium of this nearshore groundwater system and cause seawater intrusion through the migration of the saline groundwater wedge…" (Section 5.4.1, page 5-20).

HWG Comment: *This statement is incorrect; properly located groundwater extraction at the coast will serve to induce or maintain a seaward gradient, thus inhibiting seawater intrusion to inland locations.*

13. The GSP states, "…groundwater extraction from the upper aquifer system could cause further seawater intrusion by expansion or migration of the saline groundwater wedge that underlies this area. Such an expansion or migration would put the Deep Aquifer at greater risk of seawater intrusion." (Section 5.4.1, page 5-20)

HWG Comment: *This statement is incorrect. Pumping from the DSA and 180-FT Aquifer at the coast will have little impact on the 400-Foot Aquifer due to the presence of 180-/400-Foot Aquitard. The 400-Foot aquifer is already highly intruded at the coast and inland. If the 400-Foot aquifer is the source of recharge for the Deep Aquifer, the already extremely high salinity in the 400-Foot Aquifer has not yet been demonstrated to impact the Deep Aquifer wells.*

14. In reference to setting MTs for seawater intrusion the GSP references, "…Lateral migration of the saline water intrusion wedge beyond the limits established by the 2017 AEM survey…" (Section 5.4.1, page 5-21)

HWG Comment: *The AEM data must first be validated through physical water quality data before it can be used as a reference point, and previous HWG letters have demonstrated this has not been done (HWG, April 2019). These previous HWG letters also demonstrate the many flaws and uncertainties in the hydrogeologic interpretations of the AEM data presented by MCWD and City of Marina consultants.*

15. The GSP states, "Groundwater extraction in the MGSA Area potentially could disturb the equilibrium that exists between the saline water intrusion wedge and overlying low-TDS groundwater zone, cause mixing of low-TDS and saline groundwater or otherwise lead to the capture and migration of saline groundwater, potentially impacting the low-TDS groundwater zone or existing supply wells in the area." (Section 5.5.1, page 5-25)

HWG Comment: *This statement is incorrect. There is no evidence to support this statement. Any existing equilibrium is with pumping induced seawater intrusion. Pumping at the coast would serve to mitigate at least a portion of the inland movement of seawater intrusion, and partially reverse SWI in the area inland of the pumping at the coast.*

Chapter 6 – Projects and Management Actions

1. The GSP states, "MGSA has not identified any feasible projects within the MGSA Area…"; and "MGSA will coordinate with and support SVBGSA in the implementation of projects and management actions it has determined to be locally and regionally beneficial…" (Section 6.1, page 6-2)

HWG Comment: *The MGSA has developed no projects of its own, and has developed SMC specifically designed to stop selected SVBGSA projects from being implemented.*

2. Chapter 6 of the GSP presents a confusing array of triggers and additional studies labeled as management actions (Section 6.2, pages 6-2 to 6-11).

HWG Comment: *The use of "triggers" and "management actions" presented in Chapter 6 do not align with SGMA and GSP requirements, and present many conflicts with the SVBGSP.*

3. The GSP lists the SVBGSP projects and management actions that it supports (Section 6.5, pages 6-12 to 6-17).

HWG Comment: *The GSP specifically does not support and sets SMC to prevent implementation of the groundwater extraction barrier, which is a primary and critical project in the SVBGSP. This is a clear conflict with the SVBGSP.*

4. The GSP states that groundwater extraction could substantially deplete the low-TDS groundwater

storage, thereby "…substantially depleting this resource for inland water rights holders." (Section 6.2.1.1, page 6-3)

HWG Comment: *Groundwater pumping at the coast would actually help mitigate seawater intrusion and improve availability of low TDS groundwater for inland pumpers.*

5. The GSP states that the seawater intrusion measurable objective would, "...prevent or reverse seawater intrusion advancement into the Deep Aquifer." (Section 6.2.1.2, page 6-6)

HWG Comment: *Setting seawater intrusion MO/MT for the DSA, 180-FTE, and 400-Foot Aquifers in MGSA does nothing to prevent seawater intrusion in the Deep Aquifer. Reducing pumping in the Deep Aquifer is the only way to control/prevent seawater intrusion in the Deep Aquifer.*

6. In discussing potential management actions for GDEs, the GSP states, "The triggers are equal to the measurable objectives…" (Section 6.2.2.1, page 6-7)

HWG Comment: *The DWR draft BMP for Sustainable Management Criteria defines the measurable objective as, "quantitative goals that reflect the basin's desired groundwater conditions…", and should be set to allow,"…a reasonable margin of flexibility…that will accommodate droughts, climate change, conjunctive use operations…" The BMP does not refer to using measurable objectives as triggers; rather they represent the anticipated/desired basin condition after sustainability is achieved.*

7. The GSP essentially bases its GDE MT/MO on 2015 groundwater levels, and states that a baseline biological assessment of GDEs will be done in the future to allow for comparison of future GDE biologic conditions to its baseline (Sections 6.2.2 and 6.2.3, pages 6-7 to 6-12).

HWG Comment: *While the GDE MT/MO are based on 2015 groundwater levels, there is no corresponding baseline biological assessment to utilize as described in the GSP. The baseline biological assessment yet to be conducted will not be representative of 2015 groundwater, surface water, and climatic conditions.*

8. The GSP claims legal authority to, "…conduct investigations to determine the need for groundwater management, and to monitor compliance and enforcement of a GSP." (Section 6.3, page 6-11)

HWG Comment: *A key question to be answered here is does a GSA have this legal authority for lands outside of its Plan Area?*

9. In discussing CSIP in-lieu recharge projects (including reduction/avoidance of pumping of groundwater from wells in the CSIP area), the GSP states in several places, "This is beneficial to MGSA because of its proximity to the CSIP service area and because pumping reductions in these areas support measurable objectives related to groundwater elevation, groundwater storage and seawater intrusion." (Section 6.5.1, pages 6-13 to 6-15)

HWG Comment: *The GSP does not describe the MPWSP return water agreement, which provides the same benefits described here in the GSP text.*

Sincerely,

The Hydrogeologic Working Group (Dennis Williams, Tim Durbin, Martin Feeney, Peter Leffler)

Dennis Williams

Timothy J Durbin

Tim Durbin

Martin Feeney

Peter Leffler

Peter Leffler

Attachments:

Figure 1 Locations of MPWSP Boreholes Relative to GSP Potential Aquitard Gap Areas

REFERENCES

California Public Utilities Commission (CPUC), CalAm Monterey Peninsula Water Supply Project Environmental Impact Report/Environmental Impact Statement, SCH#2006101004, March 2018.

The Hydrogeologic Working Group (HWG), *Monterey Peninsula Water Supply Project – Test Slant Well Long Term Pumping Test and Coastal Development Permit #A-3-MRA-14-0050*, letter addressed to California Coastal Commission, July 23, 2015.

HWG, *HWG Hydrogeologic Investigation Technical Report*, November 6, 2017.

HWG, *Memorandum Responding to Comments on HWG Hydrogeologic Investigation Technical Report*, January 4, 2018.

HWG, *HWG Comments on Technical Appendices/Attachments to Letters Submitted by MCWD and City of Marina to the CPUC and MBNMS on April 19, 2018, Letter to John Forsythe/CPUC and Paul Michel/MBNMS*, August 15, 2018.

HWG, *HWG Comments on Technical Presentations and Letters/Memorandum Prepared by HGC, EKI, and MCWD for City of Marina Public Workshop on MPWSP Coastal Development Permit Held on January 8, 2019*, January 25, 2019.

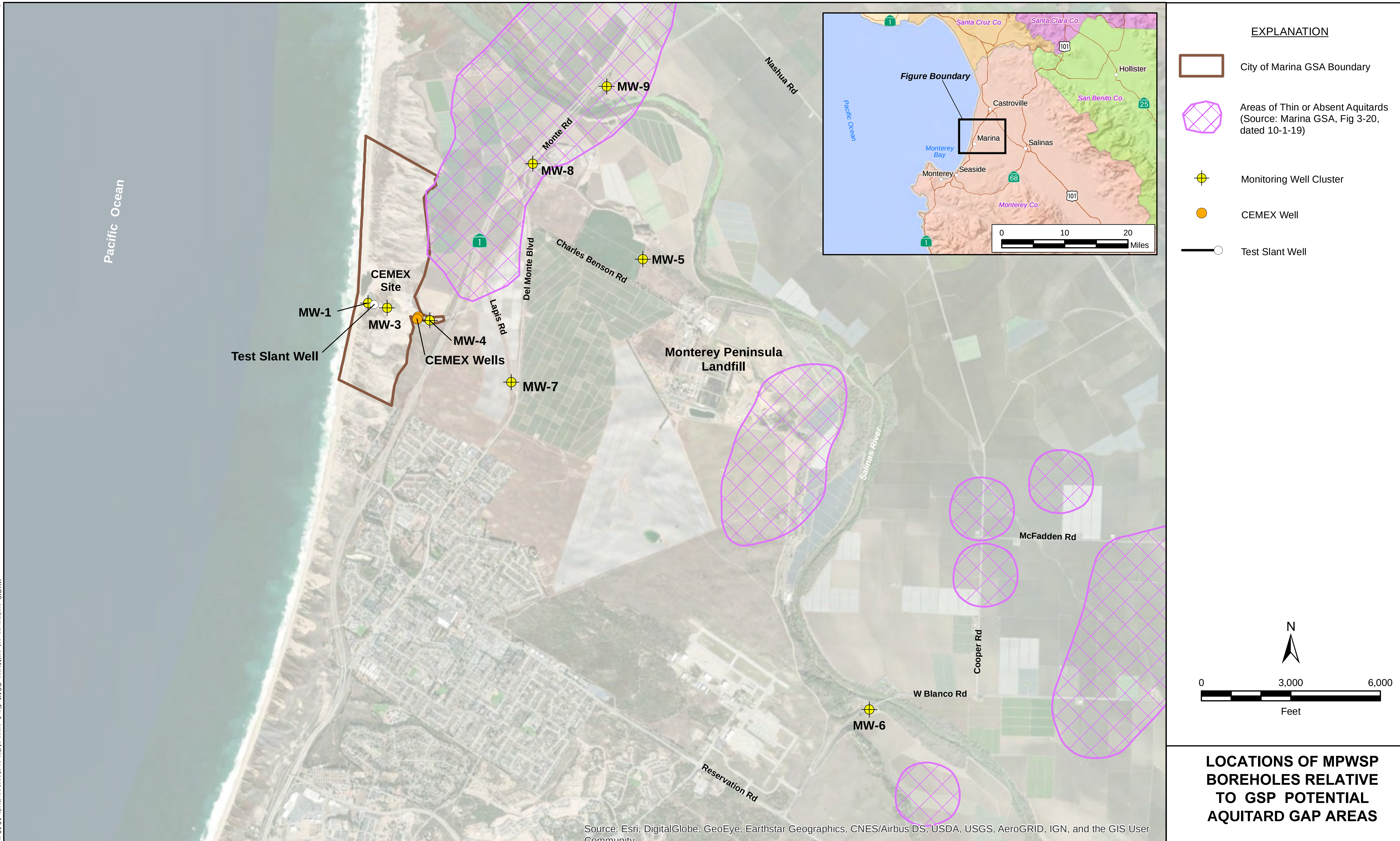
HWG, *HWG Responses to Dr. Knight Letter Addressed to HWG and Submitted During City of Marina Planning Commission Hearing on MPWSP Coastal Development Permit Held on February 14, 2019*, March 6, 2019.

HWG, *HWG Comments on Remy Moose Manley Letter Attachments Prepared by HGC, EKI, and AGF for City of Marina Planning Commission Hearing Agenda Item #6A on MPWSP Coastal Development Permit Held on February 14*, 2019, April 12, 2019.

LIST OF ACRONYMS & ABBREVIATIONS

AEM	Aerial Electromagnetics
bgs	below ground surface
Cal Am or CalAm	California American Water Company
CPUC	California Public Utilities Commission
DSA	Dune Sand Aquifer
EIR	Environmental Impact Report
FEIR	Final Environmental Impact Report
FO-SVA	Ford Ord Salinas Valley Aquitard
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCM	Hydrogeologic Conceptual Model
HWG	Hydrologic Working Group
MCWD	Marina Coast Water District
MCWRA	Monterey County Water Resources Agency
mg/L	Milligrams per Liter
MGSA	Marina Groundwater Sustainability Agency
MGSP	Marina Groundwater Sustainability Plan
MO	Measurable Objective
MPWSP	Monterey Peninsula Water Supply Project
MT	Minimum Threshold
MW	Monitoring Well
RMS	Representative Monitoring Site
SGMA	Sustainable Groundwater Management Act
SMC	Sustainable Management Criteria
SVB	Salinas Valley Basin
TDS	Total Dissolved Solids
TSW	test slant well
USGS	United States Geological Survey
180-FTE Aquifer	180-Foot Equivalent Aquifer

Figures



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LOCATIONS OF MPWSP BOREHOLES RELATIVE TO GSP POTENTIAL AQUITARD GAP AREAS

23-Oct-19

CALIFORNIA AMERICAN WATER

MONTEREY PENINSULA WATER SUPPLY PROJECT

FIGURE 1

GEOSCIENCE

Daniel F. Gallery
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November 21, 2019

City of Marina
Brian McMinn, Public Works Director
211 Hillcrest Avenue
Marina, CA 93933

Via email only to: bmcminn@cityofmarina.org

RE: Comments on City of Marina Groundwater Sustainability Plan

Dear Mr. McMinn:

This office represents RMC Pacific Materials, LLC ("CEMEX") and I have been asked to provide comment on the City of Marina's ("City") groundwater sustainability plan (the "GSP") for the 180/400 Foot Aquifer Sub-basin (the "Basin"), which was released for comment on October 7, 2019.

CEMEX 1

At the outset, I note that the City filed its notification of intent to serve as the groundwater sustainability agency ("GSA") for a portion of the Basin on April 26, 2018, which is almost a full year after the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") had filed its intent to serve as the GSA for the entire Basin on April 27, 2017. Water Code § 10723.8 (c) states that if an agency desires to serve as a GSA for the same basin as another agency, the second agency must file its notice of intent to do so within 90 days of the first agency filing its notice of intent. The City missed this deadline by about 275 days. While the Department of Water Resources may have accepted the City's notice, we do not, and urge the City to withdraw its GSP. Should the City persist, CEMEX reserves, and does not waive, any rights to challenge the City's GSP, as warranted. Subject to the foregoing, CEMEX submits the following additional comments.

We understand that the Hydrogeologic Working Group has submitted technical comments on the GSP, which comments we join and support, so we focus our comments primarily on legal issues associated with the City's GSP.

CEMEX 2

On various pages throughout the GSP, the City mischaracterizes the settlement agreement between CEMEX and the California Coastal Commission. For example, on pages xi, 3-69, 4-4, and 4-20, the City states that pumping at the CEMEX well will cease at the end of 2020. This not only misstates the terms of the settlement agreement, but also is of no import. The shutdown of CEMEX's well, regardless of timing, cannot be expected to have any effect on inland brackish water areas as conceded by the City and noted more fully below. We encourage the City to either correct or remove these misstatements from the GSP, as the minuscule amount of water that has been and continues to be pumped by CEMEX is not responsible for the groundwater impacts at issue in this Basin.

We also note that the parcels potentially subject to the City's GSP are not consistently described. The

CEMEX 3

City's resolution forming its groundwater sustainability agency (Resolution 2018-25) limits application of the new agency to APNs 203-011-001, -011, -019, and -020, but the City's GSP purports to expand application beyond what was authorized by resolution to include also APNs 203-011-023, 175-011-046, and 175-011-031, which are not even contiguous to the previously identified parcels. We also note that the depictions of the GSP area contained in the GSP do not appear to include all the parcels included in the initial resolution. Instead, they seem to depict only CEMEX property.

CEMEX 4

This selective and inconsistent identification of parcels subject to the GSP is concerning because it supports our overall concern with the GSP, which is that the City is not really interested in managing groundwater in the Basin; it is primarily interested in the control of certain landowners only, otherwise it would have selected all of the land that overlies the Basin, would have included the Deep Aquifer as a managed basin, and would not have selected just a few landowners who pump brackish water that is not a source of drinking water for the City.

CEMEX 5

Thus, the idea that the City's GSP is capable of bringing the Basin into sustainability appears to be a charade, as the City's own GSP admits that the Basin "is subject to significant and unreasonable seawater intrusion due largely to long-term groundwater extraction in the inland portions of the Subbasin in excess of the sustainable yield."[1] This seawater intrusion is acknowledged to have traveled as far as 7 miles inland.[2] And yet the City's GSP only applies to CEMEX's properties, and a couple other properties for reasons not provided in the GSP. The irony of including just these properties is evident from the City's open admission in the GSP that pumping from CEMEX's well "is therefore sustainable relative to SGMA's 2015 baseline"[3], and "the CEMEX well pumping has not resulted in significant and unreasonable seawater intrusion or low-TDS water depletion."[4] Since CEMEX's wells are not responsible for seawater intrusion 7 miles inland, this begs the question of whose wells are responsible, and why aren't those wells responsible for the seawater intrusion subject to the City's GSP? The answer is the wells responsible for the seawater intrusion are very likely the wells that supply the City with its own water (i.e. Marina Coast Water District wells), and the City very much does not want its own wells to be subject to its GSP. This conclusion is supported by the fact that the City chose to *not* include the Deep Aquifer as a groundwater basin managed by its GSA.

CEMEX 6

Not having its own wells subject to its own GSP has allowed the City to propose an incredibly stringent definition of a "significant and unreasonable reduction in groundwater storage," as follows[5]:

- A depletion of the amount of low-TDS groundwater in storage in the DSA, 180-Foot Aquifer and 400-Foot Aquifer in and near the MGSA Area resulting from groundwater extraction in the MGSA Area;
- A depletion of the amount of low-TDS groundwater in storage that adversely impacts groundwater right holders; or
- An imbalance in the amount of low-TDS groundwater and denser saline water that leads to further seawater intrusion.

Each of these standards belies the City's stated intent in adopting its GSP. With regard to the first, we

[1] Page 3-1, 3-72, 4-1.
[2] Page i, 4-1.
[3] Page 3-73.
[4] Page 4-4, 4-20.
[5] Page 4-20.

CEMEX 6

note that only groundwater extraction from within the City's GSA (i.e. essentially from within the CEMEX properties) that results in a depletion in the amount of low-TDS water is considered to be a "significant and unreasonable reduction in groundwater storage;" yet if groundwater pumping from any area that is *not within* the City's GSA results in the same or a similar depletion, or that results in a depletion of groundwater from within the Deep Aquifer, then the City has no issue with such depletion. Thus, the City's GSP proposes to only regulate and penalize pumping from within properties cherry-picked for the GSA and to disregard all of the wells that serve the City and its inhabitants.

CEMEX 7

With regard to the second and third bulleted standards, due to the incredibly small number of properties subject to the jurisdiction of the GSA and the standards set in the GSP, there is no feasible way to enforce either of these standards if they occur outside the jurisdiction of the GSA. Since the GSA only covers a handful of properties, any activities that trigger either of these standards which are outside of the City's GSA are beyond the reach of the City's GSA and can operate with impunity. In sum, these standards are largely meaningless to the broader problem and only affect actions within the GSA boundaries.

CEMEX 8

This is arbitrary, capricious, and a gross abuse of the City's authorities. It is arbitrary and capricious because the City's own GSP acknowledges that pumping from within the GSA boundaries has not caused the 7 miles of seawater instruction, yet it proposes to address seawater intrusion by ignoring the actual problem wells that are farther inland. Thus, the GSP is not reasonably related to ensure the public welfare as it does not address, at all, the known causes.[6] Indeed, the GSP boundaries were drawn in such a manner as to avoid them. It is an abuse of authority because it is designed to penalize and ultimately saddle one private property owner or a few with the cost of administering the GSP while allowing those who have caused the problem to operate free of regulation, control, and cost, even though they will exacerbate the problem with seawater intrusion.[7]

CEMEX 9

We encourage the City to withdraw its notice of intent to serve as the GSA and withdraw its proposed GSP. The SVBGSA was timely filed, its GSP appears to treat groundwater users fairly and spread the cost of a new agency across the Basin, rather than unfairly and abusively targeting a single or even a few groundwater users.

Very truly yours,

Jesse W. Barton

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[6] *Euclid v. Amber Co.* (1926) 272 U.S. 365.

[7] See GSP page xix. It is impermissible to permit development on one parcel and deny it as to another for the purpose of unreasonably regulating development activities. *Hernandez v. City of Hanford* (2007) 41 Cal. 4th 279, 294.

MONTEREY COUNTY

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November 25, 2019

Brian McMinn, Public Works Director
City of Marina Groundwater Sustainability Agency
211 Hillcrest Ave
Marina, CA 93933

Re: Draft Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Dear Mr. McMinn:

Monterey County Water Resources Agency (MCWRA) staff has reviewed the Draft Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin released by the MGSA in October 2019.

MCWRA
Letter 1

MCWRA believes conflict exists between this Draft Groundwater Sustainability Plan (GSP) and the Draft Groundwater Sustainability Plan released for review by the Salinas Valley Basin Groundwater Sustainability Agency. The development of Groundwater Sustainability Plans is addressed in California Code of Regulations; Title 23 (Waters); Division 2 (Department of Water Resources); Chapter 1.5 (Groundwater Management); Subchapter 2 (Groundwater Sustainability Plans); Article 1 (Introductory Provisions). Multiple sections within Article 1 address the consideration and/or impact of a GSP on adjacent basins. MCWRA believes that the apparent conflict between the two draft GSPs may indicate a deficiency in the City of Marina GSA's GSP for the Marina GSA Area of the 180/400-Foot Aquifer in terms of plan principles, evaluation criteria and interbasin coordination. MCWRA has provided specific comments on the Draft GSP in the enclosure.

MCWRA appreciates the opportunity to comment on the GSP for the 180/400 Foot Aquifer Subbasin. If you have any questions regarding the enclosed comments, please contact MCWRA at 831-755-4860.

Sincerely,

FOR:

Brent Buche
General Manager

MCWRA Comments on Draft Groundwater Sustainability Plan for the Marina GSA Area of the 180/400-Foot Aquifer Subbasin

Global Comments

MCWRA 1

- It is of the opinion of the Monterey County Water Resources Agency (MCWRA) that conflict exists between this Draft Groundwater Sustainability Plan and the Draft Groundwater Sustainability Plan released for review by the Salinas Valley Basin Groundwater Sustainability Agency. The development of Groundwater Sustainability Plans is addressed in California Code of Regulations; Title 23 (Waters); Division 2 (Department of Water Resources); Chapter 1.5 (Groundwater Management); Subchapter 2 (Groundwater Sustainability Plans); Article 1 (Introductory Provisions). Within Article 1 the following subsections define areas the MCWRA believes may indicate a deficiency in the City of Marina Groundwater Sustainability Agency's Groundwater Sustainability Plan regarding elements of plan principles, criteria and interbasin coordination:
    - <u>350.4 - General Principles (f)</u> - A Plan will be evaluated, and its implementation assessed, consistent with the objective that a basin be sustainably managed within 20 years of Plan implementation without adversely affecting the ability of an adjacent basin to implement its Plan or achieve and maintain its sustainability goal over the planning and implementation horizon.
    - <u>354.28 - Minimum Thresholds GSP must address (3)</u> - How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.
    - <u>355.4 - Criteria for Plan Evaluation (7; Referring to what DWR will consider when evaluating a GSP...)</u> - Whether the Plan will adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of its sustainability goal.
    - <u>357.2 - Interbasin Agreements</u> - Interbasin agreements may be included in the Plan to support a finding that implementation of the Plan will not adversely affect an adjacent basin's ability to implement its Plan or impede the ability to achieve its sustainability goal.

MCWRA 2

- Document organization is difficult to follow. GSP contains frequently repeated language.

MCWRA 3

- GSP omits information on the Return Water Agreement – part of the MPWSP is the requirement to make available for delivery to the Salinas Valley Basin a volume of water equal to the percentage of Salinas Valley Basin groundwater in the total MPWSP source water production, as determined by the Monterey County Water Resources Agency.

MCWRA 4

- Chapters 4 & 5 overstate the "resolution/fine-scale detail" that can be determined from AEM work to quantify the "thickness", the "lateral or vertical migration", or concentration changes in the saline water intrusion wedge and the overlying TDS zone. AEM work is best suited to determining qualitive changes not quantifying changes.

MCWRA 5

- The GSP contains misleading statements about the potential beneficial uses (municipal or domestic supply) for water exceeding 3,000 mg/L TDS. The water would first have to be treated to meet Drinking Water Standards; this would include desalination.

MCWRA 6

- There is no discussion of nitrate in groundwater quality as a degraded groundwater quality issue that could cause an Undesirable Result.

MCWRA 7

- The Dune Sand "is not considered a principal aquifer because it is thin, laterally discontinuous, and a minor source of water." (from SVBGSA GSP Executive Summary p.4) How can the MGSA GSP be reconciled with the treatment of the Dune Sand by the SVBGSA?

MCWRA 8

- Definition of water quality standards: Specify that the standards repeatedly called out as 1,000 mg/L TDS and 500 mg/L Chloride are California's upper limit for secondary drinking water standards. The EPA's and California's recommended maximum secondary limits are 500 mg/L TDS and 250 mg/L Chloride.

MCWRA 9

- Groundwater Dependent Ecosystems: The GDEs mentioned near the MGSA area are outside of the jurisdiction area for the MGSA. These exist in the SVBGSA area, whose GSP recognizes might exist, but need to be field mapped to confirm they exist. Even if they do, SVBGSA's GSP doesn't mention the concern of decreasing groundwater levels negatively affecting GDEs.

<u>Comments on Chapter 3 – Basin Setting</u>

MCWRA 10

- Section 3.1.9, page 3-17, second paragraph: "MCWRA uses a standard of 500 milligrams per liter (mg/L) to define the areas affected by seawater intrusion and inform its management decisions." Should specify that this refers to 500 milligrams per liter (mg/L) chloride.

MCWRA 11

- Section 3.1.9, page 3-17 third paragraph: GSP states ..."chloride islands" have formed in the 400-ft aquifer beyond the main intrusion front as a result of downward migration of groundwater... in areas where the aquitard separating the two aquifers is thin or absent...". This vertical movement can also be caused by wells with screens across multiple aquifer units, improperly constructed or abandoned wells, wells in poor condition or from a vertical hydraulic gradient wherein groundwater levels are deeper in the underlying aquifer.

MCWRA 12

- Section 3.1.9, page 3-18: GSP states "The Federal Clean Water Act defines groundwater containing less than 10,000 mg/L as an Underground Sources of Drinking Water." Suggest clarifying that this refers to 10,000 mg/L TDS.

MCWRA 13

- Section 3.1.11.1, second paragraph
  - The Ag areas east and northeast of the MGSA boundary receive CSIP water. ...it is assumed that any applied irrigation water that is not consumptively used by crops recharges the underlying aquifers
  - The area of CSIP is not in the Recharge Areas Mapped by Monterey County, as shown in Figure 3-19.

MCWRA 14

- Section 3.1.11.1, page 3-19: GSP states: "Measured river loses range from 4.5 cubic feet per second to 12.2 cubic feet per second per river mile. Assuming these measurements are representative of river losses over typical year..."
  - These are calculated losses for the Salinas River from below the reservoirs to Spreckels. Loss from Chualar to Spreckels is 5.3 cfs, and from T&S to Spreckels is 4.5 cfs. 2017 and 2018 river series also showed higher loss rates in all subareas compared to long-term averages. These years also followed a 5-year drought.

MCWRA 15

- Section 3.1.12, first paragraph: "Migration of Salinas groundwater may be occurring downward through caps in the 180/400 Ft Aquitard". Other factors may have contributed to this including wells screened in multiple aquifers, wells with poor casings, etc.

MCWRA 16

- Section 3.2.1.3, second paragraph (Regional Hydrographs): Discussion of where data from wells is compiled should refer to quarterly, not annual, reports from MCWRA

MCWRA 17

- Section 3.2.1.3, third paragraph (below Table 3-2): Appendix 3.C is not available. Can't confirm hydrographs or trends inferring from hydrographs

MCWRA 18

- Section 3.2.1.3, bullet points: Appendix 3.D is not available. Can't confirm hydrographs or trends discussed in bullet points

MCWRA 19

- Figure 3-20 has the shapefile for the "Area of Impact" from the "Recommendations Report" but the Area of Impact in Ord 5302 is a different extent. Which is the text referring to? The Ordinance or the Recommendations report?

MCWRA 20

- Figure 3-35 is the wrong graph. The GSP shows the East Side annual groundwater level change graph. The figure, and text describing it, should be corrected. Text is on page 3-34, Section 2.2

MCWRA 21

- Section 3.2.2, page 3-35: MW-5 is not in the MGSA. Data for MW-7 should be included in the discussion.

MCWRA 22

- Section 3.2.2, page 3-35: GSP mischaracterizes/overstates the AEM work and the information that can be interpreted from the data. For example, nowhere is there a description of how resistivity data is converted first to conductivity and the what conversion factor is used to convert conductivity to TDS.

MCWRA 23

- Section 3.2.3.2, last paragraph on page 3-37: Confirm if SVBGSA and/or MCWD GSA are considering direct recharge into the Dune Sands rather than just the 180/400 Foot Aquifers.

MCWRA 24

- Section 3.2.3.1, first paragraph: Discussion of duration of seawater intrusion in 180/400 Foot Aquifers should be corrected to indicate that the 180-Foot has been subject to SWI for 75 years and the 400-Foot has been subjected to SWI for 60 years.

MCWRA 25

- Section 3.2.3.1, bullet points: Prior paragraph references the 500 m/L of chloride used by MCWRA to draw seawater intrusion lines. Standards referenced are all for TDS which is confusing after talking about chloride. State of California has adopted an upper Secondary Maximum Contaminant Level (SMCL) of 500 mg/L chloride and short-term maximum SMCL of 600 mg/L chloride. (NOTE: Recommended maximum level is 250 mg/L chloride).

MCWRA 26

- Section 3.2.3.1, first paragraph after bullet points: GSP states "An important consideration is that the salt concentration at which seawater intrusion is defined in the Subbasin is much lower than the TDS concentration in seawater which is approximately 35,000 mg/L..." The typical chloride concentration of seawater (19,000 mg/L chloride) is part of the dissolved solids measured by TDS. Chloride is one of the most abundant ions in seawater, making up about 54% of the dissolved ions concentration.

MCWRA 27

- Section 3.2.3.2, second paragraph on page 3-38: Where is the 8,300 acre-area number derived from?

MCWRA 28

- Figure 3-36 and 3-35: The low-TDS groundwater zone outlines (from Gottschalk et al., 2018) are outside of the MGSA boundary. Most of the measurable objectives mention detecting changes in the thickness of this low-TDS zone, however this is in SVBGSA's boundary.
-

MCWRA 29

- Figure 3-38 – None of the GDE locations mapped are within the MGSA area. These locations would be addressed by SVBGSA GSP. An agreement between the SVBGSA & MGSA should include this concern.

Comments on Chapter 4 – Sustainable Management Criteria

MCWRA 30

- Section 4.2, page 4-4: Reference to the 1996 Annexation Agreement – include copy as an appendix.

MCWRA 31

- Section 4.4.1, page 4-8, 1st paragraph under the blue box, 2nd to last sentence: Text reads ",with the depth to groundwater increasing toward the Salinas River." This is incorrect, depth to groundwater decreases towards the Salinas River.

MCWRA 32

- Section 4.4.2.1, page 4-13, first full paragraph: Discussion about hydrographs omits any discussion of the role of precipitation and water year type on the hydrographs.

MCWRA 33

- Section 4.5.1, page 4-19: The GSP's assertion of "a substantial zone of low-TDS groundwater (TDS < 3,000 mg/L) extending vertically from the DSA into the 180-Foot Aquifer and the 400-Foot Aquifer Sections 3.1.12 and 3.2.2." is from Hopkins' interpretation of the AEM work. The GSP should include the lab data for MW clusters. TDS at MW-1, MW-3, MW-4, TSW and the CEMEX well(s) at all depths exceed 3,000 mg/L. These are all the wells in the MGSA area. The location of low-TDS zone that is referred to, if it exists at all, would appear to be located outside of the MGSA area.
    - MCWRA first contoured seawater intrusion (e.g. ≥ 500 mg/L chloride) at this area in both the 180-Foot & 400-Foot Aquifers in 1975. During the last 45 years the seawater intrusion front has continued to advance inland and to increase in chloride concentration in this area.
    - Estimating TDS for EC: Quality of groundwater, for each Zone, is tied to how AEM resistivity data that is converted to conductivity is then converted to TDS. A site-specific factor is needed to reliably convert EC to TDS. This is developed from laboratory analysis. What is the factor MGSA and Gottschalk (AEM work) are using?

MCWRA 34

- These "low-TDS" waters are referred to in multiple places as "a higher quality groundwater zone" or "substantial storage of groundwater with designated potential beneficial use as a municipal or domestic supply". All the water quality data collected at the Test Slant Well, MW-1, MW-3, and MW-4, the MPWSP monitoring wells on the site at the MGSA area have chloride and TDS concentrations that exceed the Secondary Drinking Water Standards and is well above Agricultural Suitability for Irrigation Water, Class III – Injurious to Unsatisfactory. Additionally, statements about the "significant" or "substantial" quantity of this water is misleading, there is a lack of applicable data to determine volume.

MCWRA 35

- Section 4.5.1, page 4-20: There is a partial sentence at the end of the last paragraph on this page.

MCWRA 36

- Section 4.5.2, page 4-21, 2nd bullet point: States "Seasonal fluctuations in groundwater elevations in the Dune Sand Aquifer range from approximately 1 to 2 feet." Where are the data? Suggest including a hydrograph. This page goes on to say, "The range of fluctuation in the low-TDS zone of thickness is not known. These factors limit the ability...distinguishable from natural background fluctuations." What methodology will be used measure the thickness? How can a change of 1 foot be distinguishable when it states that the range of fluctuations is not known and that there is a limited ability to reliably detect very small changes in the thickness?

MCWRA 37

- Section 4.6.2, page 4-28, 4th bullet point: Not sure that AEM and induction logging have the capability to distinguish the small/fine-scale changes stated in the minimum thresholds.

MCWRA 38

- Section 4.8.3, first bullet point: GSP refers to "A groundwater elevation in the 180- Foot or 400-Ft Aquifers that is 2 feet above historic low groundwater elevations measured in 2015...". Should this be 1 foot?

MCWRA 39

- Section 4.9.1, page 4-47, 2nd bullet point, last sentence: "Therefore, the Salinas River is managed...the existing depletions are neither significant nor unreasonable." MCWRA does not agree with this and it over-simplifies the operations of the Salinas River.

MCWRA 40

- Section 4.9.1, page 4-47, 3rd bullet point: What about riparian rights? Groundwater pumpers don't have to hold "water rights".

Comments on Chapter 5 – Monitoring Network

MCWRA 41

- Global to chapter 5: Monitoring Network and Objectives are all taken from Agency's Programs and the possible development of the Integrated Coastal Monitoring Program, but there currently is no agreement in place between MGSA and MCWRA.

MCWRA 42

- P 5-9, Last paragraph, 1st sentence: Appears to be an incomplete quotation. Suggest confirming, as we believe the 17,400 AFY includes water from DSA and 180-Foot Aquifer, but also the ocean water extracted through the seafloor.

MCWRA 43

- Section 5.3.1, second bullet point under Dune Sand, 180-Foot and 400-Foot Aquifers (pg 5-15); also referenced in second bullet point on page 5-21
    - "Spatial distribution of groundwater level decline that indicates the logged changes identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA area"

- What is the "zone of drawdown influence"? How is this defined, what is this derived from? Is this referring to the model predicted drawdown in the Integrated Coastal Monitoring Program and Plan?

Salinas Valley Basin
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November21, 2019

Brian McMinn
City of Marina
Directory of Public Works
211 Hillcrest Avenue.
Marina CA 93933

Subject: Comments on the Marina Groundwater Sustainability Plan

Mr. McMinn

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) staff and consultants have reviewed the Marina Groundwater Sustainability Agency (MGSA) Draft Groundwater Sustainability Plan (GSP), dated October 2019. While the MGSA has made a significant attempt to quickly develop a passable GSP, SVBGSA finds the draft GSP incomplete, inaccurate, and incompatible with SVBGSA's GSP for the 180/400-Foot Aquifer Subbasin.

SVBGSA Letter 1

SVBGSA is concerned that the large number of errors and omissions in the MGSA GSP will result in the GSP being rejected by the California Department of Water Resources (DWR). An inadequate GSP by MGSA could potentially result in the entire 180/400-Foot Aquifer Subbasin being declared out of compliance with the Sustainable Groundwater Management Act (SGMA). Submitting this GSP therefore puts the SVBGSA at risk of being part of a subbasin that is declared probationary by the State of California.

SVBGSA Letter 2

A coordination agreement between SVBGSA and MGSA is required if both GSPs are submitted to DWR. DWR will declare both SBGSA and MGSA's GSPs incomplete if a coordination agreement is not included. Unfortunately, SVBGSA has identified a number of technical areas where it will be very difficult to reach the settlements needed for a coordination agreement.

SVBGSA Letter 3

Significant points of required coordination that will be difficult to achieve include:

- The MGSA attempts to set thresholds for future groundwater levels and other criteria in wells managed by SVBGSA. SVBGSA is the only GSA with authority to set management criteria within the SVBGSA area. MGSA can only set management criteria for wells within its boundaries.

SVBGSA Letter 4

- The MGSA attempts to set criteria for Groundwater Dependent Ecosystems (GDEs) that are in the SVBGSA GSP area. SVBGSA is the only GSA with authority to set management criteria within the SVBGSA area. MGSA can only set management criteria for wells within its boundaries.

SVBGSA Letter 5

SVBGSA Letter 6

- Coordination between the two GSPs requires a consistent description of the principal aquifers and hydrogeology. Coordination between the two GSPs will not be possible until there is agreement on whether or not the Dune Sand Aquifer constitutes a principal aquifer.

SVBGSA Letter 7

- SGMA requires that a single undesirable result for each sustainability indicator be applied to the entire Subbasin. The SVBGSA GSP and the MGSA GSP state significantly different undesirable results. As explained in more detail in the attached document, it is unlikely that a single undesirable result can be reconciled between the two plans for indicators such as seawater intrusion and surface water depletion.

The sections in the attached comment document expand on the concerns listed above, and detail additional concerns with the MGSA GSP.

Should you have question or comments please contact me by telephone at 831-682-2592, or email at petersen@svbgsa.org.

Sincerely,

SCP

Gary Petersen

General Manager, Salinas Valley Basin Groundwater Sustainability Agency

CC: Board of Directors SVBGSA
Dustin Cooper, Minasian, Meith, Soares, Secton & Cooper

Comments on Marina Groundwater Sustainability Plan

Executive Summary

SVBGSA 1
The Executive Summary states that the SVBGSA used a pre-publication version of the USGS SVIHM to evaluate and develop regional water budgets for the Subbasin; however, the SVIHM was only used for the future projected water budget, as stated in the SVBGSA 180/400-Foot Aquifer Groundwater Sustainability Plan.

This GSP relies on the water budget and other information from the SVBGSA 180/400-Foot Aquifer Subbasin GSP, which does not include the Dune Sand Aquifer as a principal aquifer. This GSP also includes GDEs dependent on the vernal ponds; however, the GDEs appear to be entirely or mostly outside the MGSA area.

Chapter 1: Introduction

SVBGSA 2
Several maps of GSA Jurisdictions in the Subbasin are incorrect because they use GIS layers that have since been updated. The MCWD GSA area does not include the Marina Airport, so the Ord Service Area triangle extending into the 180/400-Foot Aquifer Subbasin should be smaller (Figures ES-1, 1-2, 1-3, 2-2).

SVBGSA 3
In Chapter 1, page 1-2, it states that the remaining subbasins in the Salinas Valley Basin are designated as high priority by DWR, but not critically overdrafted. This should be corrected to be "medium- and high-priority."

SVBGSA 4
Section 1.3 incorrectly states that the MCWD GSA has retained its jurisdictional authority to approve the SVBGSA GSP. This may have been copied from an earlier draft of the SVBGSA GSP, but it should be deleted from the MGSA GSP.

SVBGSA 5
Section 1.5 incorrectly states that "…DWR considers none of these three GSAs to be exclusive GSAs for the entire Subbasin; however, each GSA is exclusive for that portion of the Subbasin within its jurisdictional boundaries." Currently, DWR considers neither the SVBGSA nor the MGSA exclusive in any part of the Subbasin.

Chapter 2: Plan Area

SVBGSA 6
This chapter states that there are 8 subbasins in the Salinas Valley Groundwater Basin. This should be corrected to be 9, based on the addition of the Atascadero Subbasin (page 2-1).

SVBGSA 7
In Section 2.2.10.4 MCWD Recycled Water Project, it is misleading to state the 19,500 AFY of recycled water for Castroville area. Locating that statement in this section makes it seem that this amount is in addition to CSIP and M1W that have already been discussed. Up to 19,500 AFY capacity of M1W should be shifted to section 2.2.10.1 and clarify the amount of recycled water for landscaping in Marina in 2.2.10.4.

Chapter 3: Basin Setting

SVBGSA 8
Much of Chapter 3 provides description of the entire Salinas Valley Groundwater Basin or the 180/400-Foot Aquifer Subbasin, not just the area under the jurisdiction of the MGSA. The Plan should more clearly separate when it is not discussing the area under the jurisdiction of the MGSA.

SVBGSA 9
Chapter 3 states that the MGSA area is 398 acres; however, if the MGSA area is trimmed to the Subbasin outline used by DWR it is closer to 372-acres (pg. 3-1).

SVBGSA 10

Section 3.1.6 identifies the Dune Sand Aquifer as a principal aquifer in the Subbasin. The SVBGSA GSP does not identify the Dune Sand Aquifer as a principal aquifer, and therefore the SVBGSA does not propose to manage this sand veneer. Coordination between the two GSPs requires a consistent description of the principal aquifers and hydrogeology. Coordination between the two GSPs will not be possible until there is agreement on whether or not the Dune Sand Aquifer constitutes a principal aquifer.

SVBGSA 11

It would help to have more sources cited, such as in the first paragraph of 3.1.6.1.

Chapter 4: Sustainable Management Criteria

SVBGSA 12

This chapter fails to establish a single adequate sustainable management criterion for the MGSA area. The minimum thresholds, measurable objectives, and undesirable results established in this chapter do not meet the requirements of the SGMA regulations. Because the sustainable management criteria to not meet the requirements of the SGMA regulations, the MGSA and SVBGSA GSPs cannot be coordinated. This is because:

1. Coordination requires a single undesirable result be stated for each sustainability indicator in the Subbasin.
2. Undesirable results are a combination of minimum thresholds.
3. Therefore, the minimum thresholds in each GSP must be defined using comparable criteria.
4. Currently, the minimum thresholds are not defined comparably in the two GSPs.

One example of the problem outlined above are the sustainable management criteria for seawater intrusion. The SVBGSA GSP sets minimum thresholds based on the location of an isocontour. The MGSA sets minimum thresholds based on either a thickening of the existing seawater intrusion wedge, or a spatial distribution of groundwater level decline. It is impossible to develop a meaningful numerical combination of these various minimum thresholds. Therefore, it is impossible to develop an undesirable result for the Subbasin.

Additionally, the GSP fails to set any sustainable management criteria for the Deep Aquifers. Regulations require that sustainable management criteria be set for each principal aquifer in the GSP area. Specific comments on the sustainable management criteria for each sustainability indicator, and an explanation of why the sustainable management criteria are inadequate, are listed in the following subsections.

Section 4.4 Chronic Lowering of Groundwater Levels

SVBGSA 13

Section 4.4.1 is inadequate because it does not establish undesirable results for the chronic decline of groundwater levels. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is established, and therefore fails to establish undesirable results as required by regulation.

SVBGSA 14

Section 4.4.2.1 sets groundwater elevation minimum thresholds for the Dune Sand Aquifer. The Dune Sand Aquifer is not considered a principal aquifer by the SVBGSA, and therefore no sustainable management criteria for the Dune Sand Aquifer are required or enforceable.

SVBGSA 15

Section 4.4.2.1 erroneously sets the groundwater elevation minimum thresholds in the Dune Sand Aquifer as a drawdown due to pumping rather than a groundwater elevation as required by regulation (§354.28 (c)(1)). Furthermore, the minimum thresholds in the Dune Sand Aquifer are erroneously based on conditions and measurements in areas covered by the SVBGSA GSP. The MGSA GSP has no authority to set sustainable management criteria in the SVBGSA GSP area. Therefore, the groundwater elevation minimum thresholds in the Dune Sand Aquifer are invalid.

SVBGSA 16

The GSP fails to establish any groundwater elevation minimum thresholds in Section 4.4.2 as required by regulation. Groundwater elevation minimum thresholds must be a quantitative value established that each representative monitoring site. The GSP includes no quantitative groundwater elevation criteria at any representative monitoring site in the MGSA GSP area.

SVBGSA 17

The groundwater elevation minimum threshold definitions for the 180-Foot and 400-Foot aquifers are incorrectly established as a percentage of monitoring wells with groundwater elevations above a certain criterion. Minimum thresholds must be set in each representative monitoring site, not as a percentage of monitoring wells. This GSP erroneously confuses the concepts of minimum thresholds and undesirable results.

SVBGSA 18

Section 4.4.3 defines measurable objectives based on a drawdown due to pumping rather than a groundwater elevation as required by regulation. Groundwater elevation measurable objectives must be a quantitative groundwater elevation established at each representative monitoring site. The GSP includes no quantitative groundwater elevation criteria at any representative monitoring site in the MGSA GSP area, and therefore fails to establish any groundwater elevation measurable objectives.

SVBGSA 19

This GSP fails to establish any interim milestones for the chronic lowering of groundwater levels.

Section 4.5 Reduction in Groundwater Storage

SVBGSA 20

Section 4.5.1 is inadequate because it does not establish undesirable results for the reduction in groundwater storage. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is stated, and therefore this GSP fails to establish undesirable results as required by regulation.

SVBGSA 21

Section 4.5.2 erroneously attempts to establish the minimum thresholds for reduction in groundwater storage as either a decrease in thickness of low-TDS zone, or a spatial distribution of groundwater level decline. By regulation, the minimum threshold for the reduction in groundwater storage is a total volume of groundwater that can be withdrawn. Therefore, this section fails to adequately establish a minimum threshold for the reduction in groundwater storage.

SVBGSA 22

Section 4.5.3 erroneously attempt to establish the measurable objectives for reduction in groundwater storage as either a decrease in thickness of low-TDS zone, or a spatial distribution of groundwater level decline. By regulation, measurable objectives for the reduction in groundwater storage are established as a total volume of groundwater that can be withdrawn. Therefore, this section fails to adequately establish a measurable objective for the reduction in groundwater storage.

SVBGSA 23

The GSP fails to establish any reduction in groundwater storage interim milestones.

Section 4.6 Seawater Intrusion

SVBGSA 24

This section incorrectly states that the 180-Foot and 400-Foot Aquifers are, “experiencing undesirable results based on the regional definition”. The SVBGSA defines an undesirable result as seawater intrusion past the mapped 2017 500 mg/L chloride isocontour. There are no published data showing that this undesirable result has occurred.

SVBGSA 25

Section 4.6.1 is inadequate because it does not establish undesirable results for seawater intrusion. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is stated, and therefore this GSP fails to establish undesirable results as required by regulation.

SVBGSA 26 Section 4.6.2 erroneously attempt to establish the minimum thresholds for seawater intrusion as either a thickening of the existing seawater intrusion wedge, or a spatial distribution of groundwater level decline. By regulation, the minimum thresholds for seawater intrusion is the location of an isocontour. Therefore, this section fails to adequately establish a minimum threshold for the reduction in groundwater storage.

SVBGSA 27 Section 4.6.3 erroneously attempts to establish the measurable objectives for seawater intrusion as either a statistically significant increasing trend in chlorides in three or more wells, or an increase in the thickness of the sailing groundwater wedge. By regulation, the measurable objective for seawater intrusion is an isocontour. Therefore, this section fails to adequately establish a measurable objective for seawater intrusion.

SVBGSA 28 The GSP fails to establish any seawater intrusion interim milestones.

Section 4.7 Degraded Groundwater Quality

SVBGSA 29 Section 4.7.1 is inadequate because it does not establish undesirable results for degraded groundwater quality. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is stated, and therefore this GSP fails to establish undesirable results as required by regulation.

SVBGSA 30 Section 4.6.2 erroneously attempt to establish the minimum thresholds for degraded groundwater quality as either a violation of groundwater quality objectives for the low-TDS groundwater zone, or interference with ongoing cleanups of contaminant plumes. By regulation, the minimum thresholds for degraded groundwater quality is either:

1. A number of supply wells that exceeds concentrations of constituents of concern
2. A volume of water that exceeds concentrations of constituents of concern, or
3. A location of an isocontour

The proposed minimum thresholds do not meet any of these criteria, and therefore, this section fails to adequately establish a minimum threshold for the reduction in groundwater storage.

SVBGSA 31 Section 4.6.3 erroneously attempt to establish the measurable objectives for degraded groundwater quality as either a statistically significant increasing trend in chloride or TDS in three or more wells, a statistically significant increase above baseline chloride or TDS concentrations at the 90% confidence level, or a spatial pattern of groundwater level declines that indicate water quality changes. By regulation, the measurable objective for degraded groundwater quality is either:

1. A number of supply wells that exceeds concentrations of constituents of concern
2. A volume of water that exceeds concentrations of constituents of concern, or
3. A location of an isocontour

The proposed measurable objectives do not meet any of these criteria, and therefore this section fails to adequately establish a measurable objective for seawater degraded groundwater quality.

SVBGSA 32 The GSP fails to establish any degraded groundwater quality interim milestones.

Section 4.8 Land Subsidence

Section 4.8.1 is inadequate because it does not establish undesirable results for land

SVBGSA 33 subsidence. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is stated, and therefore this GSP fails to establish undesirable results as required by regulation.

SVBGSA 34 Section 4.8.2 states that this GSP uses groundwater elevation data as a proxy for land subsidence because no land subsidence is currently measured in the basin and no evidence of land subsidence has been observed. While it is incorrect that no land subsidence is currently measured in the basin, it is acceptable to use groundwater elevation data as a proxy for land subsidence. However, in order to use groundwater elevation as a proxy, the GSP must establish that significant correlation exists between groundwater elevations and land subsidence. The GSP fails to establish this correlation.

SVBGSA 35 Minimum thresholds for land subsidence in the 180-Foot and 400-Foot Aquifers are based on a percentage of groundwater elevations that are above a certain standard. This erroneously confuses the concepts of minimum thresholds and undesirable results. Minimum thresholds must be set at every representative monitoring site. Therefore, this section fails to adequately establish minimum thresholds for land subsidence.

SVBGSA 36 Section 4.6.3 erroneously sets measurable objectives for land subsidence in the 180-Foot and 400-Foot Aquifers as a percentage of groundwater elevations that are above a certain standard. This erroneously confuses the concepts of measurable objectives and undesirable results. Measurable objectives must be set at every representative monitoring site. Therefore, this section fails to adequately establish measurable objectives for land subsidence.

SVBGSA 37 The GSP fails to establish any land subsidence interim milestones.

Section 4.9 Depletion of Interconnected Surface Water

SVBGSA 38 Section 4.9.1 is inadequate because it does not establish undesirable results for depletion of interconnected surface waters. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is stated, and therefore this GSP fails to establish undesirable results as required by regulation. Furthermore, the depletion of interconnected surface water concerns listed in section 4.9.1 include areas in the SVBGSA GSP area.

SVBGSA 39 The assessment of undesirable results includes discussions of the Salinas River, which in not in the MGSA GSP area, and GDEs that are outside the MGSA GSP area. The GSP can only define sustainable management criteria within the plan area. The plan cannot define criteria for the SVBGSA GSP area.

SVBGSA 40 Section 4.9.2 appears to use groundwater elevation data as a proxy for depletion of interconnected surface waters. It is acceptable to use groundwater elevation data as a proxy, however the GSP must establish that significant correlation exists between groundwater elevations and the rate or volume of surface water depletions. The GSP fails to establish this correlation, and therefore fails to adequately establish minimum thresholds for depletion of interconnected surface water.

SVBGSA 41 Section 4.9.3 appears to use drawdown attributable to groundwater extraction in the MGSA area as a proxy for depletion of interconnected surface waters measurable objectives. It is not acceptable to use drawdown as a proxy; it is only acceptable to use groundwater elevation as a proxy for depletion of interconnected surface water measurable objectives. Therefore, this GSP fails to adequately establish measurable objectives for depletion of interconnected surface water.

Chapter 5: Monitoring Network

SVBGSA 42

This chapter largely relies on groundwater monitoring sites within the SVBGSA GSP area. This GSP cannot set sustainable management criteria for representative monitoring sites in the SVBGSA GSP area. Only three well clusters identified in this chapter: MW-1, MW-3, and MW-4 appear to lie within the boundaries of the MGSA GSP. These are the only three well clusters that can be included in the MGSA GSP. The groundwater monitoring network for any of the sustainable management criteria therefore comprises only seven wells: MW-1S, MW-1M, MW-1D, MW-3S, MW-3M, MW-3D, MW-4S, MW-4M, MW-4D, and 1032. All other representative monitoring wells identified in the Chapter 5 are apparently in the SVBGSA GSP. Although the MGSA can collect data from these wells, the MGSA cannot set sustainable management criteria at these wells.

SVBGSA 43

No groundwater monitoring wells exist or are planned, to monitor the Deep Aquifers within the MGSA GSP area. By regulation, the GSP must include groundwater elevation monitoring in each principal aquifer.

Chapter 6: Projects and Actions

SVBGSA 44

Projects and actions in SGMA are designed to avoid undesirable results. As stated in our review of Chapter 4, there are currently no correctly established undesirable results in the GSP. Therefore, no actions need to be implemented immediately. The actions are therefore potential actions to avoid future undesirable results. However, with no clearly stated undesirable results, it is impossible to assess how any projects or actions will achieve sustainability.

SVBGSA 45

Management action 6.1 contains no definitive actions to address seawater intrusion. While SVBGSA appreciates the measured and thoughtful response approach, the management action is not developed to a point where it will have any impact on seawater intrusion.

SVBGSA 46

Management action 6.2 contains no definitive actions to address impacts to GDEs. While SVBGSA appreciates the measured and thoughtful response approach, the management action is not developed to a point where it will have any impact on GDE health.

SVBGSA 47

Management action 6.3 is more accurately a plan to fill a data gap, not a management action that leads to sustainability. This is explicitly stated in Section 6.2.3.3. The SVBGSA agrees that this is a data gap that could be filled, but it more accurately fits in Chapter 7.

SVBGSA appreciates MGSA's support of the projects and management actions included in SVBGSA's GSP.

Chapter 7: Implementation Plan

SVBGSA 48

The GSP states that the MGSA plans to construct a locally refined groundwater flow, solute transport and density driven flow model. As required by SGMA, all GSPs in the Subbasin must use consistent data and tools. Therefore, any model developed by the MGSA will need to be approved and adopted by SVBGSA. This is a future coordination issue that is currently unresolved.

SVBGSA 49

The implementation plan discusses monitoring representative monitoring sites outside of the MGSA boundary. While MGSA can collect data from these sites, it has not authority to set sustainable management criteria at these sites including minimum thresholds and measurable objectives.

SVBGSA 50

The GSP lists the interconnection between groundwater and the Salinas River as a data gap. The Salinas River does not pass through the MGSA GSP area, and the MGSA GSP has no location where groundwater is interconnected with the Salinas River. Therefore, this is not a data gap the MGSA must fill.

SVBGSA 51

SVBGSA disagrees with the statement that there is insufficient data to assess subsidence. The subsidence data provided by DWR shows no recent subsidence in the MGSA GSP area.

November 1, 2019

City of Marina Groundwater Sustainability Agency
211 Hillcrest Avenue
Marina, CA 93933
Attn: Brian McMinn, Public Works Director/City Engineer
publicworksengineeringdept@cityofmarina.org

SUBJECT: HWG COMMENTS ON CITY OF MARINA DRAFT GROUNDWATER SUSTAINABILITY PLAN FOR THE MARINA GSA AREA OF THE 180/400 FOOT AQUIFER SUBBASIN DATED OCTOBER 2019

Dear Mr. McMinn:

This letter provides the comments of the Hydrogeologic Working Group (HWG) on the City of Marina's Draft Groundwater Sustainability Plan (GSP) for the proposed City of Marina (Marina) Groundwater Sustainability Agency (GSA) Plan Area of the 180/400 Foot Aquifer Subbasin. Marina developed this Draft GSP for a very small area (400 acres) already covered by the Salinas Valley Basin (SVB) GSA Groundwater Sustainability Plan, thereby creating many current and potential future conflicts for meeting the requirements of the Sustainable Groundwater Management Act (SGMA). The Marina GSP develops a monitoring network with Representative Monitoring Sites (RMS) and sets sustainable management criteria (SMC) for locations largely outside of its Plan Area. Regardless of the conflicts it creates, the City of Marina Draft GSP is based on a faulty Basin Setting, unjustified sustainable management criteria, and makes no attempt to address the only viable aquifer within its boundaries (the Deep Aquifer). This letter provides both an Executive Summary highlighting some of our main comments, and a Detailed Comments section. It should be noted that the Executive Summary and Detailed Comments provided in this letter are not comprehensive (due in part to the size of the draft GSP and limited time for HWG members to review), and our lack of comment on a specific point or issue in the draft GSP should not be taken as HWG concurrence on or acceptance of that specific point or issue.

EXECUTIVE SUMMARY

The City of Marina Draft GSP made available for public review in October 2019 has several major fatal flaws that can generally be categorized as follows: flawed Basin Setting analyses, inappropriate and unjustified application of sustainable management criteria, a flawed monitoring program, lack of its own projects and legitimate management actions, and major conflicts with the SVB GSP. An overall comment is that the entire document is based on the questionable premise that the groundwater resources within MGSA can be used beneficially and that groundwater extraction within MGSA (from the Dune Sand Aquifer, 180-FTE Aquifer, or 400-Foot Aquifer) does harm to that resource. Our high-level summary comments on the key Draft GSP chapters are provided below, with a detailed comments section following this Executive Summary.

HWG 1

HWG 2

HWG summary comments on the flawed Basin Setting analyses (Chapter 3) are:

- The GSP presents a flawed hydrogeologic conceptual model (HCM) based on incorrect and invalid hydrogeologic interpretations of the aerial electromagnetics (AEM) surface geophysics and other data that is not in agreement with available field data including boring logs, aquifer test, groundwater level, and groundwater quality data;
- The Marina GSA made no attempt to enlist the support and expertise of the Hydrogeologic Working Group (HWG) members (or utilize the most up-to-date hydrogeologic conceptual model for the area in the HWG Technical Report) in understanding the hydrogeology of the area even the though the HWG has recently provided oversight on the most recent and an extensive investigation of the hydrogeology specific to the MGSA area;
- Groundwater levels/quality and aquifer/aquitard continuity are mischaracterized both outside and especially within the MGSA Plan Area;
- The flawed Basin Setting analyses create many conflicts with the Salinas Valley Basin GSP;
- The nature of seawater intrusion and the resulting impacts to potential beneficial uses is grossly mischaracterized;
- The extremely flawed Basin Setting analyses lead to flawed and improper setting of sustainable management criteria.

HWG 3

HWG comments on the sustainable management criteria presented in the Marina GSP (Chapter 4) are:

- The GSP attempts to set SMC for areas outside of its Plan Area are unjustified and outside of its jurisdiction, and an attempt to usurp authority that belongs to the SVBGSA;
- The GSP sets strict SMC based on inappropriate and flawed interpretations of technical data and analyses;
- The GSP SMC inside and outside of the MGSA Plan Area present many conflicts to the SVBGSA GSP and interfere with key projects and management actions listed in the SVB GSP.

HWG 4

HWG comments on the monitoring program presented and adopted in the Marina GSP (Chapter 5) are:

- Without approval and development of the Monterey Peninsula Water Supply Project (MPWSP), the monitoring program described in the GSP will not be funded, installed, or monitoring initiated;
- The monitoring program is composed of representative monitoring sites located primarily outside of the MGSA Plan Area, which is not appropriate or within the jurisdiction of Marina GSA and in direct conflict with the SVB GSP.

HWG 5

HWG comments on the projects and management actions included in the Marina GSP (Chapter 6) include:

- The Marina GSP presents no projects or legitimate management actions of its own;
- The Marina GSP selectively agrees with certain SVBGSP projects and management actions and then sets SMC to prevent implementation of other SVB GSP projects and management actions it disagrees with, which presents a clear conflict with SVB GSP;
- From the beginning of the document and all throughout the chapters, the MGSA GSP speaks about the MPWSP as a project, providing numerous opinions about its potential negative impacts without formally including the MPWSP as a potential project, consistent with the recommendations of the SVBGSP;

HWG 6

HWG comments on the conflicts of the Marina GSP with the Salinas Valley Basin GSP include:

- The Marina GSP attempts to set SMC in areas under the sole jurisdiction of SVB GSP;
- The Marina GSP attempts to apply SVB GSP SMC to locations not included in the SVB GSP, which is a conflict that would have the effect of preventing implementation of certain SVB GSP projects and management actions;
- The Marina GSP designates the Dune Sand Aquifer (DSA) as a principal aquifer for which minimum thresholds (MTs) and measurable objectives (MOs) are assigned; thereby creating a clear conflict with the SVB GSP that specifically declined to designate the Dune Sand Aquifer as a principal aquifer even though MCWD consultants specifically brought it to the attention of SVB GSA and requested it be designated a principal aquifer in the SVB GSP;
- The Marina GSP sets SMC that would prevent implementation of certain key SVB GSP projects/management actions

More specific and detailed comments on City of Marina's Draft GSP are provided below.

DETAILED COMMENTS

Chapter 1 - Introduction

HWG 7

1.The GSP states, "A locally-focused GSP is needed in the MGSA Area to address the hydrogeologic conditions and management needs unique to this portion of the Subbasin." (Section 1.1, page 1-3)

HWG Comment: *The MGSP does not provide the hydrogeologic foundation and justification to support the need for a locally-focused GSP.*

HWG 8

2. The GSP states, "Near the shore, where the highest groundwater salinities have been documented, an interface between a seawater intrusion wedge and a zone of higher quality groundwater (the low total dissolved solids [TDS] zone) that is locally recharged through the highly permeable Dune Sand Aquifer extends downward into the 180-Foot Aquifer. (Section 1.1, page 1-3)

HWG Comment: *There is no technical support for this statement. Additional comments related to this statement are provided in subsequent sections of this letter.*

HWG 9

3. The GSP states, "A state of equilibrium exists between a more saline, dense seawater intrusion wedge that tends to flow landwards, and an over-riding, less dense and higher quality groundwater zone that tends to flow shoreward." (Section 1.1, pages 1-3 and 1-4)

HWG Comment: *This description is too simplistic for a complex system, where there are multiple saline wedges that have intruded inland several miles over several decades. The GSP provides no technical drawings to support this statement nor does it reference actual physical data.*

HWG 10

4. The GSP states, "The freshwater that potentially flows from the Dune Sand Aquifer to the upper 180-Foot Aquifer may also contribute to maintaining this high quality groundwater zone." (Section 1.1, page 1-4)

HWG Comment: *There is no technical support provided for this statement that also uses the words "potentially" and "may" (further demonstrating the uncertainty of the statement).*

HWG 11

5. The GSP states that MCWRA, "…prohibited the expansion of groundwater extraction in the Deep Aquifers. As such, a key objective of the MGSA GSP is to protect the existing high quality of waters in the Deep Aquifers underlying the MGSA Area."

HWG Comment: *While the GSP states here that protection of the Deep Aquifer beneath he MGSA is critical, the GSP actually allows for dramatic increases in Deep Aquifer pumping by MCWD and sets no SMC for groundwater levels in the Deep Aquifer.*

HWG 12

6. The GSP states, "Based on the data discussed in Chapter 3 (Basin Setting), maintaining the groundwater elevations and thickness of the higher quality groundwater zone (low TDS zone) needed to protect against seawater intrusion will largely prevent undesirable results from occurring for all six sustainability indicators in the MGSA Area, and will support the sustainability goals of the neighboring GSAs." (Section 1.2, page 1-6).

HWG Comment: *There is no data to support this statement; and, in fact, available data support a conclusion opposite to this statement.*

Chapter 2 – Plan Area

HWG 13

1. The GSP states, "Figure 2-9, Figure 2-10, and Figure 2-11 show the density of domestic, municipal, and production wells per square mile in the vicinity of the MGSA Area, as available from the DWR Well Completion Report Map Application (DWR 2019a)." (Section 2.1.3, pages 2-8 to 2-9)

HWG Comment: *DWR Completion reports do not note whether wells are active or abandoned.*

HWG 14

2. The GSP states, "CEMEX has two production wells at the CEMEX Lapis Plant sand mine site (one active and one inactive)."

HWG Comment: *This is Incorrect information, the second CEMEX well has collapsed casing and cannot be used again without re-drilling.*

HWG 15

3.The GSP states, "Groundwater in the MGSA Area is currently used for industrial supply at the CEMEX Lapis Plant sand mine site, and groundwater containing less than 3,000 mg/L TDS has a designated potential beneficial use as a source of domestic and municipal supply." (Section 2.2.7.3, page 2-18)

HWG Comment: *The CEMEX wells produce water with approximately 19,000 mg/L TDS for industrial uses (washing sand). A TDS concentration of 3,000 mg/L requires treatment for municipal and domestic uses.*

HWG 16

4.The GSP states, "The slant wells would extract a combined volume of approximately 17,400 AFY of groundwater consisting of a combination of saline groundwater (some of which originated in the ocean) and low total dissolved solids (TDS) groundwater from the Dune Sand and 180-Foot Aquifers within the Subbasin (HWG 2017)." (Section 2.3.2, page 2-26)

HWG Comment: *This is an incorrect and unsupported statement. The vast majority of extracted water will be sourced from the ocean, and Dune Sand Aquifer water quality is near seawater quality at the coast and brackish water quality inland. Few localized areas of lower TDS water are present. It is a misrepresentation to attribute this statement to the HWG 2017 and not clear why this statement is attributed to HWG 2017.*

HWG 17

5.The GSP states, "If the proposed MPWSP is fully approved and implemented, or if well extractions by others are proposed, such extractions of groundwater potentially may cause exceedances of measurable objectives established for the MGSA Area and trigger the need for management actions." (Section 2.3.2, page 2-26)

HWG Comment: *There is no supporting data for this opinion/assumption, which appears to be placed in this section just get this opinion in the GSP. Furthermore, measurable objectives ae meant to represent average basin conditions after sustainability is achieved, with seasonal and year to year fluctuations around the MO. The MO is not meant to be a trigger level.*

Chapter 3 – Basin Setting

HWG 18

1. The GSP states, "…the aquifers above a depth of approximately 700 feet are seawater intruded…" (Section 3.1.2.2, page 3-3).

HWG Comment: *Just to clarify and provide more detail, the seawater intruded aquifers in the MGSA Plan Area include the Dune Sand Aquifer, the 180-FTE Aquifer, and the 400-Foot Aquifer. These aquifers extend to a depth ranging from about 575 to 700 feet in the Marina GSP Plan Area and surrounding region; thus, the vertical extent of seawater intrusion ranges from 575 to 700 feet below ground surface (bgs). The uppermost Deep Aquifer occurs at a depth of 900 feet bgs, and there is 200 to 300 feet of clay between the base of the 400-Foot Aquifer and the top of the uppermost Deep Aquifer. In addition, water level information from the area documents an approximate 60 foot differential in water levels between the 400-ft and Deep Aquifers – documenting the limited connection of these systems.*

HWG 19

2. The GSP states that the vertical boundary of the MGSA Plan Area is 2,000 feet bgs (Section 3.1.2.2, page 3-3).

HWG Comment: *This text description of the vertical boundary is in conflict with Figure 3-3, which appears to show a vertical boundary of 800 to 1,200 feet bgs.*

3. The GSP relies on old geologic cross-sections (Section 3.1.6, page 3-10).

HWG 20

HWG Comment: *The cited geologic cross-section references and (Figures 3-6 and 3-11 to 3-13 do not utilize best available science and most recent borehole and geophysical logs for wells drilled within MGSA and nearby, nor do they utilize the most recent geologic cross-sections developed based on these data (see HWG, November 2017). This results in gross misrepresentation of hydrogeologic conditions for the MGSA Plan Area. Furthermore, the geologic cross-sections provided in the GSP (Figures 3-6, 3-11, 3-12, and 3-13) are not even located within the MGSA Plan Area and therefore to not meet the GSP requirements. Geologic cross-sections that use the latest available data and occur within the MGSA are provided in the HWG Final Technical Report (HWG, November 2017).*

4. The GSP relies on Gottschalk (2018) for discussion/description of geologic units (Section 3.1.6, page 3-11).

HWG 21

HWG Comment: *Mr. Gottschalk is not a geologist and relied primarily on surface geophysics in the cited report. The HWG has previously demonstrated the flaws and incorrect hydrostratigraphic interpretations based on the surface geophysics data (e.g., HWG, April 12, 2019). A detailed description of the geology within and adjacent to the MGSA Plan Area based on latest available data and best available science is provided in the HWG Final Technical Report (HWG, November 2017).*

5.The GSP repeatedly refers to "low-TDS groundwater" throughout the document (e.g., Section 3.1.6.1, page 3-11, Section 3.2.2, page 3-35).

HWG 22

HWG Comment: *The GSP applies the term "low-TDS groundwater" to groundwater with TDS up to 3,000 mg/L as inferred by surface geophysics. Notwithstanding all the uncertainty inherent in attempts to quantify both TDS and lithology from surface geophysics data discussed in numerous previous documents by the HWG (e.g., November 2017, January 2018, August 2018, January 2019, March 2019, April 2019), it has been demonstrated that groundwater with TDS greater than 1,000 mg/L has chloride levels exceeding MCLs such that it cannot be used for municipal or agricultural use without desalination. Furthermore, it has been shown that groundwater in the region with TDS greater than 1,500 mg/L has chloride exceeding the 500 mg/L standard used by MCWRA in mapping seawater intrusion. The surface geophysics study referenced in the GSP (Gottschalk, 2018) made no attempt to distinguish and map occurrence of groundwater TDS greater than 1,000 or 1,500 mg/L. Thus, references in the GSP to "low-TDS groundwater" includes primarily areas with groundwater having chloride greater than 500 mg/L that are included by MCWRA in mapping the seawater intruded area of the groundwater basin.*

6.The GSP mischaracterizes the Dune Sand Aquifer in multiple instances in the GSP. One example is the attempt to label the Dune Sand Aquifer as a "principal aquifer" (Section 3.1.6.1, page 3-11).

HWG 23

HWG Comment: *The Dune Sand Aquifer is not a principal aquifer in the subbasin, as is essentially acknowledged in the GSP where it states, "…it is not commonly used for drinking water or agricultural irrigation". The MCWRA, which has studied and characterized the groundwater basin for many decades,* *does not consider the Dune Sand Aquifer as a principal aquifer. The Salinas Valley Basin (SVB) GSP also does not treat the Dune Sand Aquifer as a principal aquifer. This is one example of the many conflicts that the MGSA GSP creates with the SVB GSP that already covers the MGSA GSP Plan Area.*

7.The GSP does not distinguish and describe the differences between the Salinas Valley Aquitard (SVA) and Fort-Ord Salinas Valley Aquitard (FO-SVA) and its significance to the perched/mounded aquifer (underlain by FO-SVA) versus the Dune Sand Aquifer and its equivalents (not underlain by FO-SVA in many places in the document (Section 3.1.6.1, page 3-11).

HWG 24

HWG Comment: *It should be noted that the SVA and FO-SVA are not the same aquitard and FO-SVA occurs at a much higher elevation; therefore, they should not be referred to as the same aquitard. Of primary significance regarding characterization of the shallow aquifer system is that pumping from the proposed MPWSP will have no impact on the perched-mounded aquifer, which is the primary area of the claimed low-TDS groundwater (3,000 mg/L TDS or less; chloride up to 1,000 mg/L or greater). Also, the western edge of this area lies well outside the MGSA Plan Area approximately 0.5 miles or further to the east near MW-7 (HWG, 2017).*

8.The GSP states, "The thinning of the SVA is coincident with a drop in the hydraulic head in the Dune Sand Aquifer (Section 3.1.6.1, page 3-11).

HWG 25

HWG Comment: *The GSP reference to SVA should be FO-SVA. Also, the reference to "thinning" of the aquitard is really a pinching out of the aquitard. The area where the FO-SVA pinches out is the demarcation between the Perched/Mounded Aquifer and the Dune Sand Aquifer (oceanward of this point). Future pumping from the MPWSP would not affect the hydraulically separate Perched/Mounded Aquifer, which is where most of the referenced "low-TDS water" is located.*

9.The GSP states, "In the MGSA Area, the Dune Sand Aquifer is seawater intruded; however, high recharge rates have resulted in a large zone of groundwater containing lower concentrations of TDS immediately east of, and extending into the eastern portion of, the MGSA area." (Section 3.1.6.1, page 3-11).

HWG 26

HWG Comment: *We agree that the Dune Sand Aquifer is seawater intruded in the MGSA area; this is fully documented by TDS concentrations from MW-1S, 3S, and 4S that extend from about 400 feet east of the western edge of MGSA to the eastern boundary of MGSA (actually MW-4 is slightly east of most of the eastern boundary of MGSA). These concentrations range from 34,400 mg/L TDS in the western portion of MGSA to 7,700 mg/L TDS at the eastern boundary of MGSA. Thus, it is clear from field data that no so-called "low-TDS water" (which is really brackish water with chlorides exceeding 1,000 mg/L) exists within the MGSA. As stated above, the purported "low-TDS" zone is not immediately adjacent to the eastern boundary of the MGSA Plan Area.*

10. The following sentence in the GSP states, "The seaward discharge of low TDS groundwater from this area, and the flow of groundwater from the Dune Sand Aquifer to the Upper 180-Foot Aquifer, appears to mound groundwater in the Dune Sand and Upper 180-Foot Aquifers near the coast, creating a local groundwater barrier against encroaching seawater intrusion." ((Section 3.1.6.1, page 3-11).

HWG 27 ***HWG Comment:*** *As explained above, there is no "low TDS groundwater" in the MGSA Plan Area, so there can be no seaward discharge of such water. Furthermore, groundwater flows over the edge of the FO-SVA (where is pinches out) from the Perched/Mounded aquifer (not the Dune Sand Aquifer) into the underlying 180-FTE Aquifer approximately 0.75 mile inland of the eastern edge of the MGSA Plan Area (not near the coast), and there is no indication any significant mound is created from this small amount of groundwater flow that clearly is not impeding seawater intrusion.*

11. The GSP states, "…near the MGSA Area, the Dune Sand Aquifer is hydraulically connected to, and supports, local groundwater-dependent ecosystems (GDEs), including palustrine and emergent wetlands which support protected species." (Section 3.1.6.1, page 3-12). The Marina GSP references GDEs in several places throughout the document (e.g., pages 3-16, 3-19, 3-24, 3-42, 3-60, 3-72, 4-6, 4-10, 4-12)

HWG 28 ***HWG Comment:*** *It is most important to note that no GDEs occur within the MGSA Plan Area, and the MGSA GSP has no jurisdiction to set sustainable management criteria (SMC) for GDEs that occur within only the SVB GSA Plan Area. This is a clear and problematic conflict with the SVB GSP. Furthermore, it is important to note that these nearby areas were not fully evaluated to determine if potential GDEs obtained from TNC mapping are actual GDEs (despite claims to the contrary in the MGSA GSP). The role of surface water in supporting these GDEs, as opposed to groundwater, was not evaluated. In addition, it is clear from MPWSP monitoring well data that the shallow aquifer beneath the GDEs nearest to MGSA is highly saline and would not support (and actually would be detrimental to) most types of vegetation.*

12. The GSP states, "The 180-Foot Aquifer underlies the SVA and is the uppermost regional aquifer that has historically been used as a groundwater supply. Near the MGSA area, it is seawater intruded…"

HWG 29 ***HWG Comment:*** *We agree that the 180-FTE Aquifer (referred to in GSP as 180-Foot Aquifer) is the shallowest aquifer historically used for groundwater supply and is seawater intruded in the MGSA area.*

13. The GSP states in reference to the 180/400-Foot Aquitard, "Geophysical studies reported by Gottschalk et. al. (2018) have confirmed this aquitard is discontinuous in and near the MGSA Area, and its hydraulic connection to the overlying 180-Foot Aquifer in the vicinity of the MGSA area is substantiated by available hydrographs (Section 3.2.1.3)." (Section 3.1.6.4, page 3-12).

HWG 30 ***HWG Comment:*** *Previous studies (e.g., MCWRA, 2017) cited in various places in the GSP regarding potential gaps in the 180/400-Foot Aquitard did not have the MPWSP borings available to incorporate. These recent data (documented in HWG, 2017) show presence of the 180/400-Foot Aquitard where gaps were previously suggested. In addition, the HWG (April 2019) previously demonstrated that purported gap(s) claimed in the AEM study (Gottschalk, et. al., 2018) were incorrectly interpreted and the gap(s) in fact do not exist. Finally, review of boring logs and water level data (head differences and different patterns of fluctuation in different depth zones/aquifers) in the MPWSP monitoring wells or other data demonstrate no gaps are present in the 180/400-Foot Aquitard beneath and near MGSA. Even if there were a gap somewhere in the aquitard, there are significant differences in vertical hydraulic conductivity (much lower) compared to horizontal hydraulic conductivity within aquifers that create a degree of* *confinement and resistance to vertical flow, and reduced heads in the 180-FTW Aquifer from proposed MPWSP slant well pumping would reduce the rate of vertical migration to the 400-Foot Aquifer.*

HWG 31

14. The GSP states, "…saline groundwater in the 180-Foot Aquifer, which has been recorded farther inland than in the 400-Foot Aquifer, has been documented to migrate vertically into the 400-Foot Aquifer, deteriorating water quality in the 400-Foot Aquifer…" (Section 3.1.6.5, page 3-13)

HWG Comment: *While this is true, vertical migration to the 400-Foot Aquifer has only been documented to occur several miles inland of the coast and has not been documented in or near the MGSA. In addition, the vertical migration of contamination has been linked primarily to cross connected wells as opposed to aquitard gaps.*

HWG 32

15. The GSP appears to question the integrity of the 400-Foot/Deep Aquitard stating, "More variable lithology has been interpreted from other deep well geophysical logs in the area…", and "…regional continuity and competence are not well understood." (Section 3.1.6.6, page 3-13).

HWG Comment: *Borehole lithologic and geophysical logs for the nearby USGS Deep Aquifer monitoring well and MCWD water supply wells 10, 11, and 12 show 200 to 300 feet of fine-grained clay and silt deposits comprising the 400-Foot/Deep Aquifer Aquitard. The lack of seawater intrusion in the Deep Aquifer, which has groundwater levels on the order of 100 feet below sea level in the MGSA area and a strong vertically downward gradient from the 400-Foot Aquifer, with high salinity in the 400-Foot Aquifer beneath and surrounding the MGSA also shows the strong integrity of the aquitard between the 400-Foot Aquifer and Deep Aquifer.* Again, the large difference in water levels between the 400-Foot Aquifer and Deep Aquifers provides evidence of a thick/tight aquitard separating these aquifer zones.

HWG 33

16. The GSP states that typical specific yield values range from 10 to 30 percent. The GSP also states that specific storage values, which the GSP states are equivalent to storage coefficient values, typically range from 10^{-3} to 10^{-5}.

HWG Comment: *Typical specific yield values actually range from 3% (for clay) to 30% (for gravel). Specific storage values are not the same as storage coefficient values; specific storage values must be multiplied by aquifer thickness to obtain storage coefficient values. The range of* 10^{-3} *to* 10^{-5} *cited in the GSP is typical for storage coefficient, while specific storage values are typically* 10^{-5} *to* 10^{-6} *per foot.*

HWG 34

17. The aquifer parameter values cited in the GSP for near the MGSA Plan Area are stated to be derived from the CEMEX model (3.1.7.2, page 3-15).

HWG Comment: *The calibrated CEMEX Model parameters do not match the values stated in the GSP. It is important to note there is a large difference in hydraulic conductivity values between the Dune Sand Aquifer (which occurs within 1 to 1.5 miles of the coast) and the Perched/Mounded Aquifer further inland, which is the aquifer containing the purported low-TDS water east of the MGSA area. As indicated in the more regional groundwater model used in the FEIR (CPUC, 2018), the Perched/Mounded Aquifer has much lower K values ranging from 2 to 4 feet/day compared to the much higher values cited in the GSP.*

HWG 35

18. The GSP states, "The Dune Sand Aquifer is not currently used as a water supply, but does support surface water systems and does yield water to GDEs in the immediate vicinity of the MGSA Area…" (Section 3.1.8, page 3-16).

HWG Comment: *We agree that the Dune Sand Aquifer is not used as a water supply. There are no GDEs within the MGSA area, and the Marina GSP has no jurisdiction over setting SMC for GDEs. Furthermore, the GSP assumes nearby mapped Potential GDEs are Actual GDEs without evaluating the more likely contribution of surface water in maintaining vegetation in these areas and without considering the fact that shallow groundwater is saline in the mapped Potential GDE areas near MGSA.*

HWG 36

19. With regard to pumping from the CEMEX well in the MGSA Area, the GSP states, "The amount of groundwater produced from the lower TDS zone in the upper 180-Foot Aquifer vs. saline groundwater from the deeper portions of the 180-Foot Aquifer and the underlying 400-Foot Aquifer is not known." (Section 3.1.8, page 3-16).

HWG Comment: *Available data clearly demonstrate that there is no lower TDS water within the MGSA area in the 180-Foot and 400-Foot Aquifers.*

HWG 37

20. With regard to the potential MPWSP slant wells, the GSP states, "The wells would extract water radially from the DSA and 180-Foot Aquifer near the coast. Groundwater captured by the wells would include saline groundwater originating outside the western (seaward) Subbasin boundary, saline groundwater from aquifers within the Subbasin, and low-TDS groundwater from aquifers within the Subbasin." (Section 3.1.8, page 3-17; Section 3.3.8.1, page 3-58).

HWG Comment: *There are several corrections and clarifications that need to be made to this text. First, the wells would not extract water in a radial pattern, rather most of the water flowing to the wells would be derived from the ocean side of the wells. Second, the wells would capture saline water seeping through the seabed and migrating a short distance through the Dune Sand Aquifer and 180-Foot Aquifer to the slant well screens, as opposed to the referenced, "saline groundwater" from west of the Subbasin boundary. Third, is that the slant wells will capture a small amount of brackish water (as opposed to low-TDS groundwater) from the Subbasin aquifers.*

HWG 38

21. The GSP states the following with regard to pumping from Marina Coast Water District Deep Aquifer wells, "The combined extraction from these wells was approximately 1,823 AFY in 2015, and is forecast to increase to 3,905 AFY by 2035…" (Section 3.1.8, page 3-17).

HWG Comment: *While the Marina GSP states its support for prohibition against pumping from new Deep Aquifer wells, it is silent on the issue of increased pumping from existing Deep Aquifer wells. The cited MCWD Deep Aquifer pumping numbers represent a greater than doubling of the amount of current pumping from the Deep Aquifer, a pumping amount that already results in Deep Aquifer water levels east of the GSP boundary on the order of 60-100 feet below sea level. Also, whereas, as stated above, it is inappropriate for the GSP to proscribe SMC outside of its jurisdiction, the combined pumpage of the <u>existing</u> agricultural deep aquifer wells just east of the GSP boundary is approximately 5,000 acre-feet/year (AFY). Such increased pumping from the Deep Aquifer by MCWD and others is likely not* *sustainable, but the Marina GSP provides no SMC for Deep Aquifer groundwater levels or storage even though it is the only viable and potable aquifer within its boundaries.*

HWG 39

22. The GSP references Figure 3-15 as being from a report for the Central Coast Groundwater Coalition (Section 3.1.9, page 3-17).

HWG Comment: *On Figure 3-15 the cited reference is MCWRA, 2017.*

HWG 40

23. The GSP discusses the need to protect groundwater with TDS of 3,000 mg/L and states, "…a prominent zone of higher quality groundwater extends approximately from the eastern portion of the MGSA Area eastward through the area underlain by the Dune Sand Aquifer, and extends vertically downward into the 180-Foot Aquifer (Gottschalk et.al., 2018)." (Section 3.1.9, Pages 3-18 to 3-19).

HWG Comment: *As stated previously in this document and described in the HWG Final Report (November 2017), there is no groundwater less than 3,000 mg/L within the MGSA Plan Area, so the statement in the text about such water extending from the eastern portion of the MGSA Area is incorrect. Well MW-4 on the eastern boundary of the MGSA area has no groundwater less than 7,500 mg/L TDS. Furthermore, it is important to note that groundwater to the east of the MGSA area that is 3,000 mg/L TDS has chloride concentrations exceeding 1,000 mg/L, which is approximately twice the highest MCL for chloride and therefore a non-potable source of water for domestic, municipal, and agricultural uses.*

HWG 41

24. The GSP states, "These GDEs utilize shallow groundwater from the Dune Sand Aquifer to meet a significant portion of their water demand." (Section 3.1.11.2, page 3-19).

HWG Comment: *The presence of Actual GDEs as opposed to a Potential GDEs has not been fully evaluated in the Marina GSP. We note that any GDE near the MGSA boundary is subject to being underlain by saline shallow groundwater, and the contribution of fresh surface water sources has not been evaluated.*

HWG 42

25. The GSP states, "Potentiometric surface maps prepared for the vicinity of the MGSA Area indicate the groundwater flow direction in the Dune San Aquifer is toward the coast." (Section 3.1.11, page 3-20).

HWG Comment: *The only shallow monitoring wells within the MGSA are MW-1S, MW-3S, and MW-4S. Data from these monitoring wells (under static conditions without the test slant well pumping) show the Dune Sand Aquifer groundwater flow directions within MGSA that vary from inland to relatively flat depending on the season and year being evaluated (see HWG, 2017). Water quality data for these monitoring wells also demonstrates significant seawater intrusion has occurred throughout the MGSA in the Dune Sand Aquifer. Thus, the GSP mischaracterizes shallow groundwater flow within the MGSA Plan Area.*

26. The GSP states, "…there is an upward gradient between the 180-Foot Aquifer and the Dune Sand Aquifer at the monitoring well cluster that is nearest to the coast…" (Section 3.1.11, page 3-20).

HWG 43

HWG Comment: *There is an overall downward gradient between MW-1S and MW-1M under static conditions (without the test slant well pumping). The GSP mischaracterizes the vertical gradient and uses this mischaracterization to argue for a hydrogeologic conceptual model (seaward discharge of groundwater from the Dune Sand Aquifer and upper 180-Foot Aquifer) that is not present beneath MGSA.*

27. The GSP describes the chloride islands found in a study by MCWRA that are located approximately 3.5 to 4.5 miles inland of the MGSA, presents a potential aquitard gap map in Figure 3-20, and generally implies this issue is relevant in the MGSA Plan Area. (Section 3.1.12, page 3-20). The chloride island issue is discussed in other places in the GSP as well (e.g., Section 3.2.3.2, page 3-37).

HWG 44

HWG Comment: *This issue of possible aquitard gaps and chloride islands was documented at locations far inland and not relevant to the Marina GSP. In addition, detailed work by MCWRA was able assign these chloride islands to being caused by poorly constructed wells. The cited study by MCWRA did not have MPWSP monitoring well boring logs available to incorporate in their study. The locations of the MPWSP borings relative to the purported aquitard gaps (GSP Figure 3-20) is displayed in the attached* ***Figure 1****. MPWSP MW-8 has a major clay zone present from approximately 225 to 295 feet bgs and MW-9 has a major clay zone present from approximately 225 to 350 feet bgs (aquitard intervals in other boreholes include: MW-1: 210-275; MW-3: 215-285; MW-4: 260-300; MW-5: 305-395 (higher ground elevation); and MW-7: 225-270).*

28. The GSP goes into a detailed description of the surface geophysics (AEM) study conducted by Marina Coast Water District's consultants. A statement made in the GSP in this section is, "The 180/400-Foot Aquitard is discontinuous and notably absent beneath a portion of the MGSA Area and in a large area located just east of the MGSA Area. This occurs in the vicinity of an area where the aquitard was previously judged to be thin or absent by MCWRA (see Figure 3-20)." (Section 3.1.12, page 3-21)

HWG 45

HWG Comment: *The HWG has previously provided extensive documentation of erroneous hydrogeologic interpretations of the AEM data (HWG, November 2017, January 2018, August 2018, January 2019, March 2019, and April 2019). The HWG April 2019 document clearly demonstrates with field data that the hydrogeologic interpretation of aquitard gaps from the AEM study is invalid. Furthermore, as described above, MPWSP monitoring well borehole logs demonstrate that areas of uncertain aquitard continuity areas identified by MCWRA (who did not have MPWSP monitoring well borehole data available to them at the time of their study) near MGSA are no longer uncertain and clearly have significant aquitard material present. Furthermore, review of water level and water quality data for the MPWSP clearly demonstrate the presence and continuity of the 180/400-Foot Aquitard beneath MGSA and surrounding MGSA.*

HWG 46

29. The GSP states, "The 400-Foot Aquitard is uneven, and the Deep Aquifer occurs at some locations as shallow as depths of approximately 650 feet below the ground surface." (Section 3.1.12, page 3-21 and 3-22).

HWG Comment: *The GSP provides no basis or reference for this description of the 400 Foot/Deep Aquifer Aquitard and the depth to the top of the Deep Aquifer, but it clearly does not apply to the MGSA or vicinity as noted above in Comment 15 for Chapter 3.*

HWG 47

30. The GSP states, "The water quality data show a prominent saline groundwater wedge (>10,000 mg/L TDS) which dives downward from the coast through the Dune Sand and 180-Foot Aquifers, and extends downward into the 400-Foot Aquifer through a large gap in the 180/400 Foot Aquitard." (Section 3.1.12, page 3-22).

HWG Comment: *This characterization of a large gap in the 180/400 Foot Aquitard is based solely on surface geophysics AEM data (not water quality data as stated in GSP text), and was clearly demonstrated to be wrong and contrary to water quality field data in a previous HWG letter (April 2019). This is one major example of invalid hydrogeologic interpretations generated by MCWD consultants from the surface geophysics AEM data. The AEM data hydrogeologic interpretations were not ground-truthed with actual field data that included borehole lithologic logs, borehole geophysical logs, water level data, and water quality data. In fact, many of the surface geophysics AEM data hydrogeologic interpretations are in direct opposition to the readily available field data.*

HWG 48

31. The GSP states, "A correlation between groundwater elevations and GDE stress or habitat quality has not been established." (Section 3.1.13, page 3-24).

HWG Comment: *While we agree this statement is true, the Marina GSP subsequently establishes an unjustified and very stringent minimum threshold for GDEs, the locations of which are not even within MGSA's Plan Area and jurisdiction.*

HWG 49

32. The GSP states, "Before a substantial groundwater extraction is implemented in the MGSA Area, there would be a need for a locally refined groundwater flow model this is able to simulate solute transport and density-driven flow…" (Section 3.1.13, page 3-24).

HWG Comment: *This issue was addressed in the Final Environmental Impact Report (FEIR) for the MPWSP, which essentially concluded such a model was not necessary (section 8.2.12, CPUC, 2018).*

HWG 50

33. The GSP describes the MPWSP nested monitoring well network as having installed one well in each aquifer (Dune Sand Aquifer, 180-Foot Aquifer, and 400-Foot Aquifer) at each of the eight sites. (Section 3.1.13, page 3-26).

HWG Comment: *It should be noted that at site MW-5, the shallow monitoring well is screened in the Perched/Mounded Aquifer and not the Dune Sand Aquifer equivalent at that location; and at the MW-6 site the middle and deep monitoring wells are both screened within the 180-Foot Aquifer.*

34. The GSP provides selected groundwater contour maps for the various aquifers along with discussion of groundwater levels, gradients, and implications thereof (Section 3.2.1.2, pages 3-27 to 3-30, Figures 3-25 to 3-33).

HWG 51

***HWG Comment**: There are several important points to note in this GSP discussion: 1) The GSP only presents groundwater elevations and contour maps for March and April at the peak (highest seasonal) groundwater levels whereas MCWRA focus their analysis of groundwater levels/contours on the Summer and Fall months that are critical to understanding seawater intrusion; 2) the entire GSP analysis of groundwater levels/contours is biased and unrepresentative because it ignores groundwater levels/contour during the majority of the year that drive local and regional seawater intrusion (see HWG 2017 for a more balanced discussion of Spring and Fall groundwater contour maps); 3) presenting a local contour map for March 2015 is not useful because the majority of the MPWSP monitoring well network had not yet been installed; there were plenty of opportunities to prepare and show groundwater contour maps representative of static conditions due to interruptions in test slant well pumping (e.g., June to October 2015; March to May, 2016); 4) the Dune Sand Aquifer groundwater contour map mixes wells from different aquifers (Perched/Mounded Aquifer and Dune Sand Aquifer), which results in mischaracterization of shallow groundwater flow; 5) the March 12, 2017 groundwater contour map either does not show static groundwater level conditions (i.e., the map is misdated), or it mixes groundwater levels for MW-1S and MW-3S for two different times (i.e., test slant well is pumping for the MW-1S reading and not pumping for the MW-3S reading); 6) the April 2018 groundwater contour map indicates groundwater flow from MW-1S, 3S, 4S, and 7S towards MW-8S and the Monterey Landfill monitoring wells, but this is not indicated on Figure 3-27; 7) the March 2017 and April 2018 groundwater contour maps for the 180-FTE Aquifer show steep inland gradients towards MW-6 that are not reflected on the maps (Figure 3-29 and Figure 3-30); 8) all the hydraulic gradient calculations are misleading in terms of magnitude (and in some cases direction) due to use of only Spring groundwater level measurements (see HWG 2017 or a more balanced discussion of magnitude and direction of hydraulic gradients).*

HWG 52

35. The GSP states, "At the landfill, groundwater elevations in the landfill area may be affected by local shallow French drains for landfill hydraulic containment and leachate collection systems…and are lower than expected." (Section 3.2.1.1, page 3-28).

***HWG Comment:** The French drains only impact the uppermost perched zone at the landfill, and do not impact the -2 Foot Aquifer (Dune Sand Aquifer equivalent) well measurements (e.g., Wells G-1, G-2, C-34, and others) shown on the GSP maps.*

HWG 53

36. The GSP terminates groundwater level contours south of the Salinas River to avoid, "…conjecture about the effect of river seepage on groundwater elevations in this area…" (Section 3.2.1.1, page 3-28)

***HWG Comment:** If the GSP had focused on Fall groundwater level measurements and contours as it should have, there would be no need to worry about conjecture regarding river seepage.*

HWG 54

37. The GSP states, "Near the coast in wells MW-1S…groundwater elevations increased by approximately 7 feet…between March 2017 and April 2018." (Section 3.2.1.1, page 3-29)

***HWG Comment:** The GSP is clearly mixing test slant well pumping and non-pumping water level measurements at MW-1S in this statement and on its maps for these two time periods.*

HWG 55

38. The GSP compares September 2018 groundwater elevations to 30-year averages and states it indicates "average stable to somewhat recovering conditions" for the 180-Foot Aquifer (Section 3.2.1.3, page 3-31).

HWG Comment: *The discussion in this section of the GSP is very misleading and compares a single snapshot in time to 30-year averages, and is not indicative of recent or overall conditions in the subbasin that very substantially from year to year.*

HWG 56

39. The GSP discusses MPWSP MW-6M and MW-6M(L) and suggests groundwater levels may indicate, "…an area where the 180-Foot and 400-Foot Aquifers are in direct communication." (Section 3.2.1.3, page 3-33).

HWG Comment: *As is clear from review of the borehole lithologic and geophysical logs, and related discussion by HWG in the Technical Report (November 2017), the 180/400=Foot Aquitard is quite substantial at this location, and the 180-Foot and 400-Foot Aquifers are clearly not in "direct communication."*

HWG 57

40. The GSP states, "In well clusters MW-7, MW-8 and MW-9, there is less separation between the hydrographs for the middle (M) lower (D) wells than in well clusters MW-1, MW-3, and MW-4, indicating the 180/400-Foot Aquitard may be less competent or absent in this area, as also documented by the AEM surveys in this area…" (Section 3.2.1.3, page 3-33)

HWG Comment: *Examination of all available data for the MPWSP monitoring wells (borehole lithologic logs, geophysical logs, groundwater level data, groundwater quality data, pumping test data) consistently demonstrate the presence of substantial hydraulic separation between the 180-FTE and 400-Foot Aquifers in the MPWSP monitoring well network area. In addition, the HWG have demonstrated the hydrogeologic misinterpretation of AEM data with regard to aquitard gaps and other misleading and/or incorrect conclusions from AEM data interpretation (e.g., HWG, April 2019).*

HWG 58

41. The GSP acknowledges that, "There is a cyclical pattern of high groundwater elevations in the winter/spring and low elevations in the summer/fall." (Section 3.2.1.3, page 3-33)

HWG Comment: *While the GSP acknowledges this key fact here, it fails to present or describe groundwater levels, contours, and gradients during the key summer and fall months that drive seawater intrusion in the MGSA and SVBGSA Plan areas.*

42. The GSP states that groundwater levels during the test slant well pumping test declined by "…approximately 8 feet in MW-1S and MW-1M, and by 3 feet in MW-3S and MW-3M…" and that "pumping-related drawdown was too gradual to be readily distinguishable…" in other MPWSP monitoring wells. The GSP goes on to state, "…groundwater elevations in most of these wells appeared to show a sudden recovery (or rebound) when pumping was temporarily discontinued in the spring of 2016." (Section 3.2.1.3, page 3-34).

HWG 59

HWG Comment: *The HWG previously documented (e.g., HWG, July 2015) in detail that drawdowns from pumping the test slant well were approximately 8 feet in MW-1S, 2 feet in MW-3S, negligible in MW-4S, 6 feet in MW-1M, 2 feet in MW-3M, negligible in MW-4M, and 0 in all other MPWSP monitoring wells. The purported "recovery" in spring 2016 had nothing to do with operation of the test slant well, but rather represented regional pumping fluctuations tied to variation in climatic conditions as is apparent by the fact that the recovery started prior to the test slant well being turned off and occurred in aquifers and well locations completely unaffected by test slant well pumping. Furthermore, if such a notable recovery occurred at these well locations upon turning the test slant well off, it would have consistently been observed (but was not) when the test slant well was temporarily turned off on numerous occasions.*

HWG 60

43. The GSP states in reference to monitoring well drawdown during test slant well pumping, "Drawdown in the deep wells illustrates a strong hydraulic connection between the 180-Foot and 400-Foot Aquifer in this area, consistent with a thin or absent 180/400-Foot Aquitard in much of the area." (Section 3.2.1.3, page 3-34).

HWG Comment: *As described above and elsewhere in this comment letter, and in other HWG documents, the cited drawdown in the 400-Foot Aquifer from pumping of the test slant well does not exist and this conclusion is completely erroneous. This erroneous conclusion is further illustrated by the GSP claim that drawdown from test slant well pumping resulted in the greatest drawdown and most rapid response in the 400-Foot Aquifer, which is an aquifer that is not even screened and pumped from in the test slant well.*

HWG 61

44. The GSP states, "In 2017, storage recovered by approximately 24,000 AF, indicating that, as had occurred on several past occasions during the period of record, that significant storage recovery is possible within a relatively short period of time." (Section 3.2.2, page 3-34)

HWG Comment: *It should be noted here that 2016-2017 was a record rainfall year, which is a rare occurrence and would be expected to result in some recovery. It should also be recognized that basin "recovery" can occur in part via seawater intrusion.*

HWG 62

45. In referring to MCWD consultant hydrogeologic interpretation of surface geophysics work the GSP states, "This includes low TDS groundwater identified within the MGSA Area…" (Section 3.2.2, page 3-35)

HWG Comment: *This statement clearly illustrates again the erroneous hydrogeologic interpretation of AEM data presented by MCWD/Marina consultants and in this GSP. While field groundwater level and quality data clearly demonstrate that TDS in the Dune Sand Aquifer, 180-FTE Aquifer, and 400-Foot Aquifer within MGSA exceeds 7,500 mg/L, Marina/MCWD consultants and the MGSA GSP keep stating that such water exists within the MGSA Plan area based on the AEM data. This clearly demonstrates either flawed AEM data or (more likely) a flawed interpretation of the AEM data.*

46. The GSP states, "…it is entirely possible that in an aquifer where seawater intrusion has occurred at 500 mg/L chloride, that there will be large groundwater areas within the 500 mg/L impacted area that have higher quality groundwater than at the leading edge." The GSP also states that groundwater

HWG 63

quality in the seawater intruded area, "…may well be sufficient for many beneficial uses." (Section 3.2.3.1, page 3-36)

HWG Comment: *There is no evidence to support these statements. The so-called "low-TDS" groundwater claimed to be found by interpretation of AEM data has chloride concentrations exceeding the maximum chloride MCL (600 mg/L) and up to 1,000 mg/L or more. Furthermore, this so-called "higher quality groundwater" is not sufficient for domestic, municipal, or agricultural beneficial uses without treatment. Lastly, any attempt to develop any actual better quality groundwater zones (if they were to exist) within the seawater intruded soon will result in rapid salinization of such pumping wells.*

HWG 64

47. The GSP states, "…the seawater intrusion front defined using the 500 mg/L chloride threshold…does not mean that the groundwater within the affected region is no longer suitable for current or potential beneficial uses." (Section 3.2.3.1, page 3-36)

HWG Comment: *Again, the GSP presents no evidence to support this statement.*

HWG 65

48. The GSP states that it "augmented" the MCWRA seawater intrusion maps to show zones of low TDS groundwater "…identified during the AEM survey…" (Section 3.2.3.2, page 3-37).

HWG Comment: *It is not clear why the MCWRA seawater intrusion maps (which show areas of groundwater with chloride exceeding 500 mg/L) need to be "augmented" by "low TDS" zones that have chloride concentrations exceeding 500 mg/L and up to as much as 1,000 mg/L or more. The "augmented" maps really don't display any information of value.*

HWG 66

49. The GSP states, "Geophysical data collected in 2017 indicate that groundwater elevations in the Dune Sand Aquifer are close to the river stage elevation, and decline away from the river, suggesting a losing condition…" (Section 3.2.6.1.1, page 3-41)

HWG Comment: *The surface geophysical data do not provide groundwater elevation data.*

HWG 67

50. The GSP states, "No potential GDEs are mapped in the MGSA Area, but several potential GDEs are located nearby. Potential GDEs near the MGSA Area include riverine wetlands and riparian habitat along the banks of the Salinas River, and Palustrine and emergent wetland areas that are seasonally flooded in depressions a short distance east of the MGSA Area, north in the Salinas River National Wildlife Refuge, and south in the City of Marina." Additional discussion of these potential GDEs located outside of the MGSA Plan Area (and within the undisputed area of SVB GSA GSP) occurs in subsequent paragraphs of the GSP. (Section 3.2.6.1.2, page 3-42 to 3-44.)

HWG Comment: *The fact that no GDEs are located with the Marina GSP Plan Area means that the SVB GSA and GSP (and not City of Maria GSA and GSP) has jurisdiction over that evaluation of (to determine if potential GDEs are considered actual GDEs) and setting of SMC for these GDEs if deemed necessary. We note that Salinas River GDEs are located two miles or further from potential MPWSP slant wells within MGSA. In addition, the fact that nearby GDEs are seasonally flooded and have a seasonal nature to them (and are associated with "a lens of less pervious soil") suggests a surface water source is most likely sustaining vegetation in these areas. The GSP evaluation to determine if potential GDEs are actual*

GDEs did not consider that shallow groundwater in these nearby potential GDE areas is saline or the likelihood that fresh surface water is the primary sustaining factor for these areas and (which means they are not GDEs).

HWG 68

51. The GSP states, "Hydrographs for well MW-4S indicate that the seasonal fluctuation in groundwater elevations in this well was approximately 2 feet, and suggest that pumping-induced drawdown was approximately 1 foot. The above ET analysis demonstrates the correlation between groundwater levels and ET from this wetland, and illustrates its sensitivity to groundwater level declines." (Section 3.2.6.1.2, page 3-44).

HWG Comment: *Previous HWG documents demonstrate negligible drawdown at MW-4S (e.g., HWG, 2015). Available data make clear that there was no drawdown from test slant well pumping at potential GDE locations that are outside the MGSA Plan Area. Any claimed changes in ET (assuming there are any given the wide ranges in ET cited) from the wetland areas is related to other (likely climatic) factors.*

HWG 69

52. The GSP states, "…it is not possible to determine the extent to which the drawdown induced during the test slant well pumping test resulted in significant and unreasonable impacts to the GDE, or whether the results were temporary and reversible." (Section 3.2.6.1.2, page 3-44).

HWG Comment: *As stated above, it is clear from available data that there was no drawdown from test slant well pumping at the referenced potential GDE locations. Thus, the claimed impacts at potential GDE locations (assuming such impacts even occurred) are due to other factors and illustrate the uncertainty of such an analysis. Most importantly, this is a clear and significant conflict with the SVG GSA GSP, which has sole jurisdiction and authority to evaluate potential GDEs within its Plan Area and to determine if SMC need to be set.*

HWG 70

53. The GSP states that since monitoring wells were only installed within MGSA Plan area as of 2015, "…there is little data for development of a local historical water budget prior to 2015."

HWG Comment: *The majority of the water budget is not dependent on well data, which is only needed for evaluation of surface inflow and outflow. The vertical components of the water budget (e.g., recharge from precipitation, surface water, irrigation, and discharge from wells) do not require well data and can be calculated for historic conditions.*

HWG 71

54. The GSP states, "…density-driven convection of saline groundwater in the intruding wedge underlying the MGSA Area likely results in the mixing of saline and low-TDS groundwater in the upper portion of the intruding wedge, which discharges seaward." (Section 3.3.2, page 3-47).

HWG Comment: *This discussion and previous/subsequent discussion in the GSP relative to the Ghyben-Herzberg approximation (e.g., Section 3.3.8.1, page 3-59) are based on there being one continuous seawater wedge in the area. This discussion is fundamentally flawed because each aquifer (Dune Sand Aquifer, 180-FTE Aquifer, and 400-Foot Aquifer) has its own distinct seawater intrusion wedge (and given the stratification within a given aquifer, there are likely multiple "mini-wedges" depending on the distribution of hydraulic conductivity and water levels). Beneath the MGSA, the wedge interfaces with* *"low-TDS groundwater" are inland of the MGSA Plan area for all three aquifers, as demonstrated by lack of any aquifer TDS being less than approximately 7,500 mg/L.*

HWG 72

55. Table 3-7 shows groundwater levels and vertical gradients for late March and early April at MPWSP monitoring wells, and Figures 3-25 through 3-33 also show only March/April groundwater level and contours. (Section 3.3.3, pages 3-51 through 3-53).

HWG Comment: *The GSP only shows groundwater levels for the various aquifers at their peak (highest) elevations, and does not provide overall representative groundwater levels, groundwater contours, or vertical gradients. Groundwater levels are considerably lower with steeper inland gradients during other times of year (i.e., before March and after April), but these conditions are not displayed in the GSP (see HWG 2017 for more representative description of groundwater levels and gradients).*

HWG 73

56. The GSP calculates purported subsurface inflow in the Dune Sand Aquifer from the east in the MGSA based on March 2017 groundwater levels. (Section 3.3.7.1, pages 3-56 and 3-57).

HWG Comment: *The GSP uses groundwater levels/gradients from a record wet rainfall year and peak seasonal month for groundwater levels. This calculation should utilize average groundwater levels across a given year and range of climatic conditions across several years. Such a calculation would likely result in no net subsurface inflow from the east, which is evident from the saline groundwater conditions within the Dune Sand Aquifer within the MGSA.*

HWG 74

57. The GSP provides a discussion of the ocean water percentage extracted by the test slant well, and suggests it is unknown but expected to be larger than 10 percent; thus, a value of 30% is used for subsequent water balance calculations. (Section 3.3.8.1, page 3-59)

HWG Comment: *The GSP ignores the weekly water quality data collected from the test slant in discussing the ocean water percentage. This field data was reported in weekly/monthly monitoring reports, and demonstrates that the ocean water percentage averaged 10% over the long term (including record wet year conditions). Thus, the use of a 30% value for ocean water percentage is clearly erroneous as demonstrated by field data.*

HWG 75

58. The GSP states, "Discharge from the Dune Sand Aquifer to the Pacific Ocean is approximately 435 AFY (seaward direction out of the western MGSA boundary)." (Section 3.3.8.1, page 3-59).

HWG Comment: *This statement/calculation is clearly erroneous, and the basis for the calculation is not explained. Again, the only groundwater level data even presented in the GSP is for March/April (the peak/highest groundwater levels in a given year), which are not representative of the average annual condition needed for this calculation.*

HWG 76

59. The GSP states, "…the 400-Foot Aquifer did experience drawdown during test slant well pumping…" (Section 3.3.8.2, page 3-60).

HWG Comment: *This statement/conclusion is clearly erroneous and not supported by the abundant available field data during the three years of test slant well pumping, including several episodes of the* *test slant well being turned off and on, during which drawdown (and recovery) would be demonstrated if it occurred.*

HWG 77

60. The GSP states, "…groundwater storage beneath the MGSA Area does not appear to be decreasing at the present. This implies that conditions at the seaward edge of the saline intrusion front in the Subbasin are relatively stable; however significant changes in groundwater pumping in this area could upset this equilibrium and have both local and inland implications for future seawater intrusion." (Section 3.3.9, page 3-61).

HWG Comment: *Stable groundwater storage conditions does not mean there is not continuing seawater intrusion; it just means the inland gradient is relatively constant on an average annual basis. Pumping from the proposed MPWSP within MGSA would serve to help mitigate future inland seawater intrusion as was demonstrated in the MPWSP FEIR.*

HWG 78

61. The GSP makes several assumptions and statements in its discussion of Current Groundwater Budget Supplement (Section 3.3.10.2, pages 3-64 and 3-65).

HWG Comment: *Many of these assumptions/statements are incorrect or not valid, e.g., all test slant well extraction assigned to DSA; much of the inflow into the DSA from the landward side of MGSA Area was captured by the test slant well; the amount of infiltrating seawater cannot be evaluated without a model.*

HWG 79

62. The GSP states, "The proposed pumping of 17,400 AFY of feed water for the MPWSP, if permitted and implemented, would extract primarily saline groundwater from beneath the ocean and saline as well as low TDS groundwater from the Dune Sand and 180-Foot Aquifers in the Subbasin." (Section 3.3.10.4, page 3-69).

HWG Comment: *This sentence is more accurately written as, "The proposed pumping of 17,400 AFY of feed water for the MPWSP, if permitted and implemented, would extract primarily saline water from the ocean and small amounts of saline to brackish groundwater from the Dune Sand and 180-Foot Aquifers in the Subbasin from within the MPWSP slant well capture zone."*

HWG 80

63. The GSP states, "In the Monterey Subbasin, groundwater demand from the Deep Aquifer by MCWD to supply the City of Marina is expected to increase….however, the increase is projected to be within MCWD's allocated pumping rights." (Section 3.3.10.4, page 3-69).

HWG Comment: *Regardless of allocated pumping rights, it remains unclear if the proposed MCWD increase in pumping from the Deep Aquifer is sustainable. In addition, the increased pumping from the Deep Aquifer to the east to support agricultural expansion is based on overlying rights, not allocated (paper water) pumping rights, and are thereby superior to MCWD.*

64. The GSP references in several places the need for modeling of density-driven groundwater flow (e.g., Section 3.3.10.4, page 3-69; Section 3.3.11, page 3-71).

HWG 81

HWG Comment: *Somewhat ironically, if the MGSA Plan area is impacted to the point of needing to consider use of density-dependent groundwater flow software, the groundwater in MGSA is impacted well beyond the point of any undesirable results thresholds (i.e., any reasonable MTs and MOs were exceed long ago by a substantial amount and further degradation by seawater intrusion would have no impact on potential uses of groundwater within MGSA). Regardless, this issue is addressed in Comment 32 for Chapter 3.*

HWG 82

65. The GSP references in multiples places the need to assure that sustainability goals are met. (Section 3.3.10.4, page 3-69).

HWG Comment: *It is not clear what existing groundwater beneath MGSA needs to be sustained given TDS concentrations exceeding 7,500 mg/L in all aquifers other than in the Deep Aquifer, and Deep Aquifer sustainability is not defined and addressed in the GSP.*

HWG 83

66. The GSP states, "The MPWSP monitoring well east of the MGSA Area…did not show a direct response to Slant Well pumping…" (Section 3.3.10.5, page 3-70).

HWG Comment: *While this statement is true, there were also several wells within MGSA GSP Plan Area that showed no response to test slant well pumping including: MW-1D, MW-3D, MW-4S, MW-4M, and MW-4D. The only MPWSP monitoring wells that showed a measurable response to test slant well pumping were MW-1S, MW-1M, MW-3S, and MW-3M.*

HWG 84

67. The GSP states, "Groundwater gradients in the Dune Sand Aquifer remained generally similar throughout the period of record." (Section 3.3.10.5, page 3-70).

HWG Comment: *This statement is incorrect. Groundwater levels were generally lower and had a steeper inland gradient in 2015 and 2016, which were slightly below average to slightly above average rainfall years, compared to subsequent years that showed generally higher groundwater levels due to the record wet year in 2017.*

HWG 85

68. The GSP includes a paragraph on slant well pumping in Section 3.3.11 on page 3-71.

HWG Comment: *The paragraph should be edited as follows: "The amount of landward saline and brackish groundwater from the Subbasin aquifers captured by test slant well pumping was approximately 10% of the amount pumped. A large portion of the groundwater pumped by the test slant well was saline groundwater originating from the ocean outside the western boundary of the Subbasin. The MPWSP test slant well salinity data and groundwater elevations in the DSA indicate that a small amount of groundwater was derived from saline and brackish groundwater in the Dune Sand and 180-Foot Aquifer. Conceptual water budgets are provided assuming 10 percent of the test slant well groundwater was captured Subbasin groundwater, as demonstrated by field data collected during test slant well testing that showed the actual percentage of Subbasin groundwater extracted from the Subbasin by the test slant well."*

HWG 86

69. The GSP includes a paragraph on the potential use of a density-driven flow model in Section 3.3.11 on page 3-71.

HWG Comment: *See Comment 32 for Chapter 3.*

HWG 87

70. The GSP states MGSA will support, "…projects and management actions that will be implemented by SVBGSA under its regional GSP…"(Section 3.3.12, page 3-72).

HWG Comment: *While this statement is made here and in several other places in the MGSA GSP, it also attempts to set SMC that will not allow one of SVBGSA's main projects – a groundwater extraction barrier to mitigate seawater intrusion.*

HWG 88

71. With regard to test slant well pumping, the GSP states, "The groundwater quality and level monitoring data indicates that some groundwater from the low-TDS zone in the DSA and 180-Foot Aquifer was drawn into the test slant well from the east; however, the data are insufficient to determine whether there was a significant and unreasonable impact to these resources during the test time period, and whether the saline groundwater intrusion wedge advanced inland or thickened as a result." (Section 3.3.12, page 3-72).

HWG Comment: *This GSP statement is incorrect; and the field data show primarily ocean water and a small amount of brackish water extracted by the test slant well. Furthermore, the test slant well pumping created a capture zone that helped reduce inland seawater intrusion.*

HWG 89

72. The GSP states, "The proposed implementation of the MPWSP…has the potential to…contribute to regional overdraft conditions." (Section 3.3.12, page 3-72).

HWG Comment: *The reality is that the MPWSP has the potential to be part of the solution to regional overdraft and historical/current seawater intrusion problems. Extractions at the coast are a major component of the SVB GSP to mitigate seawater intrusion.*

HWG 90

73. The GSP states, "The sustainable management criteria, monitoring program and management actions described in chapters 4, 5, and 6 are intended to identify and address any overdraft in the MGSA area (from any cause) before it results in significant and unreasonable impacts." (Section 3.3.12, pages 3-72 and 3-73). A similar statement is made in Section 4.2 on page 4-4.

HWG Comment: *It is not clear how significant and unreasonable impacts in the MGSA area can be defined when groundwater TDS concentrations already exceeds 7,500 mg/L.*

HWG 91

74. The GSP defines sustainable yield for the MGSA Area as "the amount of groundwater that can be withdrawn annually over a period of time without causing undesirable results within or near the MGSA Area." The GSP goes on to identify four areas of potential undesirable results for significant and unreasonable impacts beyond a 2015 baseline condition: 1) chronic groundwater level decline in the DSA that adversely affects GDEs; 2) reduction in "low-TDS" groundwater storage; 3) seawater intrusion; and 4) degradation of "low TDS" groundwater zone. (Section 3.3.13, page 3-73; Section 4.2, pages 4-4 and 4-5).

HWG Comment: *It is not clear why these four items are all stated to be applicable to the DSA, 180-Foot Aquifer, and 400-Foot Aquifer, but only the seawater intrusion item is considered to be applicable to the Deep Aquifer; this suggests chronic groundwater level decline, reduction in groundwater storage, and degradation of the only actual "low-TDS" groundwater within MGSA is allowable within the Deep Aquifer beneath MGSA. Also, given that significant and undesirable conditions for groundwater level decline, reduction in low-TDS groundwater storage, seawater intrusion, and degradation of low TDS groundwater zone have already occurred in MGSA as of 2015 (actually, long before 2015), it is not clear how or why future significant and unreasonable conditions can be defined. Essentially, sustainable yield is not* *applicable to MGSA, except possibly for the Deep Aquifer. It is also important to note that GDEs and "low TDS" groundwater do not occur within the MGSA area in the Dune Sand, 180-Foot Aquifer, and 400-Foot Aquifer, and that these three aquifers have been thoroughly seawater intruded as of 2015; thus, it is unclear what are the undesirable results that could occur within MGSA relative to the 2015 baseline condition.*

Chapter 4 – Sustainable Management Criteria

HWG 92

1. The GSP states, "Chronic declines in inland groundwater levels have led to a reversal in the groundwater gradients in the 180-Foot and 400-Foot Aquifers from shoreward to landward, causing water affected by seawater intrusion to flow inland for a distance of up to approximately 7 miles." (Section 4.2, page 4-3).

HWG Comment: *We agree.*

HWG 93

2. The GSP states that MGSA's sustainability goal is, "… to manage groundwater resources in the MGSA Area in a way that ensures all beneficial uses and users in, or affected by, groundwater management in the MGSA Area are protected from undesirable results, and have access to a safe and reliable groundwater supply that meets current and future demand. This goal will support SVBGSA's sustainability goal by addressing undesirable results at a local level and protecting local resources from further degradation, while coordinating with MCWRA, SVBGSA and MCWD GSA to support regional groundwater management, including groundwater level and seawater intrusion monitoring, and mitigation projects and management actions that will contain and reverse the conditions resulting from regional overdraft." (Section 4.2, page 4-5)

HWG Comment: *It is not clear who/what are the beneficial users/uses within MGSA for groundwater that exceeds 7,500 mg/L TDS (the entirety of the Dune Sand Aquifer, 180-FTE Aquifer, and 400-Foot Aquifer within MGSA). Even if there were beneficial uses of groundwater exceeding 7,500 mg/L TDS, it is not clear how such beneficial use would be impacted by a modest increase in TDS from the existing very elevated and non-potable concentration. The Marina GSP does not coordinate well with or support the SVBGSA GSP – many of the sustainable management criteria are in conflict with the SVB GSA's jurisdiction and/or SVB GSP sustainable management criteria, projects, and management actions.*

HWG 94

3. The GSP states that implementation objectives in support of the MGSA sustainability goal include ensuring that, "…groundwater is available for beneficial and potential beneficial uses, including all of the diverse municipal, domestic, agricultural, industrial, and environmental uses potentially affected by management actions within the MGSA…" (Section 4.2, pages 4-5 and 4-6).

HWG Comment: *There are no demonstrated municipal, domestic, agricultural, or environmental uses of groundwater within or even near the MGSA in the Dune Sand Aquifer, 180-FTE Aquifer, and 400-Foot Aquifer due to extremely high salinity levels in groundwater. CEMEX represents an Industrial use of highly brackish water.*

HWG 95

4. The GSP makes several references to protecting groundwater containing less than 3,000 mg/L TDS as having a potential beneficial use as a domestic or municipal drinking water supply per SWRCB Resolution No. 88-63 (e.g., Section 4a-2, page 4-6).

HWG Comment: *The HWG has previously demonstrated (HWG, August 2018) that groundwater with TDS of 3,000 mg/L in the MGSA vicinity has chlorides exceeding 1,000 mg/L, which far exceeds chloride*

MCLs and represents a chloride concentration greater than chloride levels at which numerous agricultural, municipal, and domestic water supply wells have been abandoned. These chloride levels are not suitable for municipal or domestic beneficial uses and would need to be treated to be useable for beneficial use.

HWG 96

5. The GSP states, "The consistency of the locally-defined criteria with criteria developed by SVBGSA in their GSP was evaluated, so that the sustainable management criteria in this GSP would address local conditions while remaining regionally compatible." (Section 4.3, page 4-6)

HWG Comment: *The sustainable management criteria in the Marina GSP are clearly in conflict with and not compatible with the SVBGSA GSP, as demonstrated with many of our comments.*

HWG 97

6. With reference to the approach for evaluating sustainable management criteria in the Marina GSA Plan area, the GSP states, "The assessment was conducted based upon the hydrogeologic conceptual model and water budget information summarized in Chapter 3." (Section 4.3, page 4-6).

HWG Comment: *As demonstrated in our preceding comments on Chapter 3, the Basin Setting discussion of the hydrogeologic conceptual model, groundwater conditions, and water budget contains has many flaws, incorrect statements, and invalid assumptions, and provides a poor and unrealistic basis for assessment of sustainable management criteria. This has resulted in inappropriate and unjustified minimum thresholds and measurable objectives in Chapter 4.*

HWG 98

7. The GSP notes that, "…SVBGSA has not designated any monitoring well near the MGSA Area, so there is no possibility that groundwater extraction in this area would create an undesirable result detected under their Regional GSP." (Section 4.4.1, page 4-9).

HWG Comment: *There is likely good reason that SVBGSA specifically did not establish monitoring compliance points adjacent to the coast in the MGSA and other areas. For example, water level near the coast are not the key to mitigating seawater intrusion; rather, water levels further inland are the key to halting seawater intrusion. Furthermore, lower groundwater levels near the coast may be key in helping mitigate seawater intrusion such as through use of an extraction barrier, which is a key potential project for the SVBGSA.*

HWG 99

8. The GSP states, "With respect to potential future groundwater extraction in the MGSA area, potential adverse impacts to beneficial users and uses from groundwater level decline include development or worsening of gradients that promote seawater intrusion…" (Section 4.4.1, page 4-9).

HWG Comment: *Gradients that promote seawater intrusion have been occurring historically and currently exist in the MGSA Plan Area. Pumping within the MGSA Plan Area will actually help mitigate seawater intrusion, as demonstrated in the MPWSP FEIR.*

HWG 100

9.The GSP uses a local definition (based on SVB GSP assessment of 180-Foot and 400-Foot Aquifers) for significant and unreasonable groundwater level decline as 1 foot above low groundwater levels measured in 2015 (Section 4.4.1, page 4-10).

HWG Comment: *While this definition may make sense for the 180-Foot and 400-Foot Aquifers further inland, the MGSA GSP does not provide an adequate basis or justification for requiring such a stringent definition in/near MGSA for these two Principal Aquifers or for application to the Dune Sand Aquifer, which is not a Principal Aquifer for the SVB GSP.*

HWG 101

10.The GSP states, "…undesirable results, minimum thresholds, and measurable objectives for chromic groundwater level decline are not adopted for the Deep Aquifer in this GSP." (Section 4.4.1, page 4-11)

HWG Comment: *This is perplexing given that the Deep Aquifer contains the only groundwater worthy of setting MTs and MOs for within the MGSA.*

HWG 102

11.The GSP states that drawdown from test slant well pumping "…decreased with distance from the MGSA Area." (Section 4.4.1, page 4-11).

HWG Comment: *There was no drawdown from test slant well pumping at the eastern boundary and outside the MGSA Plan Area.*

HWG 103

12.The GSP states, "The minimum threshold for groundwater elevation drawdown in the Dune Sand Aquifer is established as a drawdown attributable to groundwater extraction in the MGSA Area of 1 foot above the 2015 low groundwater levels recorded in monitoring wells near GDEs in the vicinity of the MGSA Area." (Section 4.4.2.1, page 4-12).

HWG Comment: *The Marina GSP has no authority to set minimum thresholds outside its Plan Area and in fact presents a major conflict with the SVB GSP. Even if it were allowed to set this MT, the basis and justification for the selected MT in the Marina GSP is woefully inadequate. Furthermore, setting MTs for the Dune Sand Aquifer is a conflict with the SVB GSP, which does not recognize the Dune Sand Aquifer as a principal aquifer for which to establish SMC. It is also noteworthy that drawdown beyond the stated MT is apparently allowed for pumping outside of the MGSA Plan Area.*

HWG 104

13.The GSP states, "…wetlands such as the vernal ponds that occur east of the MGSA Area are likely to be more highly groundwater dependent and contain sensitive communities that could be adversely affected by drawdown." (Section 4.4.2.1, page 4-12).

HWG Comment: *The Marina GSP neither establishes the dependence on groundwater (which is saline in the referenced GDE areas) as opposed to surface water, nor establishes the link to vegetative stress from drawdown (there was no drawdown at the referenced GDEs from test slant well pumping). As stated previously, the Marina GSP has no jurisdiction to set MTs for GDEs located "east of the MGSA Area", which causes a major conflict with SVB GSP.*

HWG 105

14.The Marina GSP adopts the SVB GSP definition of groundwater level MTs in the 180-Foot and 400-Foot Aquifers for the area within MGSA: 1 foot above historical low groundwater elevations measured in 2015 in 15% or more of the monitoring wells (Section 4.4.2.2, page 4-14).

HWG Comment: *The rationale and justification for adopting the regional-scale MTs at the monitoring well locations shown in the SVB GSP are not applicable or appropriate to the location and local-scale area of the MGSA Plan Area.*

HWG 106

15.The Marina GSP states, "…the thickness and water quality of the low-TDS zone must also be maintained." (Section 4.4.2.3, page 4-15)

HWG Comment: *The "low-TDS" zone referred to here is brackish non-potable water. It is not clear why this brackish water zone must be maintained. It does nothing to stop seawater intrusion, which has continued unabated for the last several decades, and cannot be used for municipal, domestic, or agricultural water supply without extensive treatment for TDS, nitrate, and other constituents. In fact, implementation of the MPWSP would actually help mitigate the inland seawater intrusion that has and is occurring through the MGSA Plan Area and vicinity.*

HWG 107

16.The Marina GSP states, "A significant and unreasonable condition for degraded water quality is a statistically-significant increase in the chloride or TDS concentration of groundwater in the low-TDS groundwater zone." (Section 4.4.2.3, page 4-15). Later in the GSP, a "statistically significant" increasing trend in TDS or chloride concentrations is used to set SMC (Section 4.6.3, page 4-33; Section 4.7.1, page 4-34) and triggers (Section 6.2.1.1, page 6-4).

HWG Comment: *We have several comments, many already stated previously: 1) The "low-TDS" zone is a non-potable brackish water zone; 2) It is not clear why this brackish water zone needs to be protected since it cannot be used for potable water supply and does nothing to prevent seawater intrusion; 3) The cited brackish water zone is outside of the MGSA Plan Area, and the Marina GSP has no jurisdiction/authority to set MTs/MOs for this area; 4) The approach to set MTs here sounds like a contaminant/environmental hydrogeology approach, and has no relevance to protecting groundwater in terms of chloride and TDS concentrations – particularly when the TDS and chloride concentrations already exceed all applicable MCL thresholds.*

HWG 108

17.The Marina GSP states, "MGSA's local sustainable management criteria for the Dune Sand Aquifer are compatible with the SVBGSA's management strategy for the underlying regional aquifers." (Section 4.4.2.4, page 4-16)

HWG Comment: *As stated previously in this letter, MGSA's SMC for the DSA are specifically not compatible with the SMBGSA's management strategy that does not recognize the DSA as a primary aquifer and sets no MTs/MOs for the DSA.*

HWG 109

18.The Marina GSP refers to setting MTs to protect "…beneficial users of groundwater for domestic irrigation, and small non-transient supply systems near the MGSA Area…" (Section 4.4.2.5, page 4-17)

HWG Comment: *The Marina GSP does not identify the locations of any beneficial users of groundwater for domestic, irrigation, or small supply systems near the MGSA Plan Area. As stated elsewhere in this letter, the MGSP is trying to establish SMC for locations outside of its Plan Area for which it has no authority/jurisdiction to do so, and presents a clear conflict with the SVBGSP that covers these areas.*

HWG 110

19.The Marina GSP states, "…measurable objectives for groundwater level decline are intended to serve as triggers for management actions…" (Section 4.4.3, page 4-18)

HWG Comment: *The purpose of measurable objectives (MO) is not to serve as a trigger for management actions. The MO is intended to represent the anticipated average condition (in this case, groundwater levels) after sustainability is achieved after 2040.*

HWG 111

20.The Marina GSP states, "Interim milestones will only be established if corrective actions are implemented…" (Section 4.4.3, page 4-18)

HWG Comment: *Interim milestones are required to be established in the GSP.*

HWG 112

21. The Marina GSP states, "The MGSA area is located at the western edge of a substantial zone of low-TDS groundwater (TDS<3,000 mg/L) extending vertically from the DSA into the 180-Foot Aquifer and the 400-Foot Aquifer…" (Section 4.5.1, page 4-19)

HWG Comment: *We have several comments: 1) The "low-TDS" zone consists of non-potable brackish water with chlorides, TDS and commonly nitrate far in excess of all MCL thresholds; 2) The brackish water with TDS less than 3,000 mg/L does not exist at the eastern edge of the MGSA Plan Area, but* *rather is located east of the MGSA Plan Area; 3) There is not one zone of continuous brackish water through the three aquifers, a conclusion that was based on faulty interpretation of AEM data as described in the HWG April 2019 letter, but rather there are separate seawater intrusion wedges in each aquifer; 4) The Marina GSP is trying to set SMC for locations outside of its Plan Area for which it has no authority/jurisdiction to do so.*

HWG 113

21.The Marina GSP states, "Short-term groundwater extraction during the test slant well pumping test may have depleted the low-TDS zone in the Dune Sand and 180-Foot Aquifers…" (Section 4.5.1, page 4-20)

HWG Comment: *This conclusion is incorrect – the test slant well pumping test had no drawdown impacts from MW-4 and beyond, which is well to the west of the claimed "low-TDS" non-potable brackish water zone.*

HWG 114

22.The Marina GSP states, "SVBGSA's GSP does not present sustainable management criteria for the Dune Sand Aquifer because its GSP is more regionally focused." (Section 4.5.2.2, page 4-24; *Section 4.7.2.2, page 4-38*)

HWG Comment: *The SVBGSA specifically choose not to designate the Dune Sand Aquifer as a principal aquifer and specifically choose not to set SMC for the Dune Sand Aquifer. The Marina GSP's attempt to set SMC for the DSA is a major conflict with the SVBGSA, a conflict made even greater by attempts to set SMC for the DSA outside of the MGSA Plan Area.*

HWG 115

24. The Marina GSP claims that its groundwater storage minimum threshold would help to control seawater intrusion and benefit municipal and irrigation groundwater uses/users (Section 4.5.2.3, page 4-24)

HWG Comment: *The Marina GSP MTs would actually prevent implementation of a primary tool identified in the SVBGSP to control seawater intrusion – a groundwater extraction barrier. Thus, the Marina GSP presents major conflicts with the SVB GSP.*

HWG 116

25. The Marina GSP states that SVBGSA's definition of seawater intrusion (chloride > 500 mg/L) does not recognize areas of "…better quality groundwater in the aquifers seaward of the seawater intrusion line…" (Section 4.6.1, page 4-26).

HWG Comment: *The claimed "better quality groundwater" is comprised of groundwater with TDS up to 3,000 mg/L, which has chlorides exceeding 1,000 mg/L and nitrates exceeds MCLs in many areas. The chloride level of the 3,000 mg/L TDS groundwater is far in excess of the 500 mg/L chloride definition used to define seawater intrusion and far in excess of chloride MCLs. Thus, it is not "better quality groundwater" as claimed by the Marina GSP.*

HWG 117

26. The Marina GSP states, "Groundwater extraction in the MGSA Area has the potential to affect the dynamic equilibrium of this nearshore groundwater system and cause seawater intrusion through the migration of the of the saline water wedge, which could in turn lead to deeper seawater intrusion into the currently unintruded Deep Aquifer, or promote the lateral migration or persistence of seawater intrusion…further inland." (Section 4.6.1, page 4-26). This claim is repeated in Section 6.2.1.1 on page 6-3.

HWG Comment: *Groundwater extraction from the DSA and 180-FTE Aquifer in the MGSA area poses no risk of seawater intrusion in the Deep Aquifer. The risk to seawater intrusion in the Deep Aquifer is solely* *from overpumping of wells screened within the Deep Aquifer, which is likely already occurring. In addition, pumping from the currently intruded aquifers from wells within MGSA will help to mitigate further seawater intrusion to inland locations.*

27. The Marina GSP states, "…the Dune Sand, 180-Foot and 400-Foot Aquifers are currently seawater intruded and therefore experiencing undesirable results…" (Section 4.6.1, page 4-27).

HWG 118

HWG Comment: *These three aquifers are certainly well beyond the threshold of experiencing undesirable results with TDS concentrations exceeding 7,500 mg/L. It is not clear how a GSP can have a definition for undesirable results within its Plan Area for groundwater that is already experiencing undesirable results and has TDS exceeding 7,500 mg/L. It would seem that the existing groundwater would need to not be experiencing undesirable results in order to set thresholds and have a definition of achieving undesirable results in the future.*

28. The GSP states, "Regionally, SVBGSA has adopted the line defined by Highway 1 as the seawater intrusion minimum threshold for the Deep Aquifer; In this local GSP MGSA has adopted a position that any detectable seawater intrusion into the currently unintruded Deep Aquifer represents a significant and unreasonable impact and would exceed the minimum threshold for seawater intrusion into this important local aquifer." (Section 4.6.2, page 4-28)

HWG 119

HWG Comment: *The MGSP adopts a minimum threshold for seawater intrusion in the Deep Aquifer (which is not used within the MGSA) that is a clear conflict with the SVBGSP. The MGSP later attempts to justify the conflicting MTs by saying the two are not in conflict since there are no Deep Aquifer production wells west of Highway 1 (page 4-31); however, this justification for conflicting MTs is not valid because seawater intrusion could easily occur between the ocean and Highway 1 but not east of Highway 1 if Deep Aquifer seawater intrusion is sourced from beneath ocean or the submarine canyon Deep Aquifer outcrop. Furthermore, while the MGSP adopts a conflicting seawater intrusion MT, it adopts no groundwater level MT and specifically allows for greatly increased pumping in the Deep Aquifer from Marina Coast Water District Deep Aquifer wells that present a high risk for seawater intrusion as Deep Aquifer groundwater levels decline further.*

29. The GSP establishes concentration limits of 1,000 mg/L for TDS and 500 mg/L for chloride defining seawater intrusion in the Deep Aquifer. (Section 4.6.2, page 4-28).

HWG 120

HWG Comment: *The GSP adopts a double standard by saying seawater intrusion has occurred when TDS exceeds 1,000 mg/L or chloride exceeds 500 mg/L in the Deep Aquifer, yet concentrations of 3,000 mg/L TDS and over 1,000 mg/L chloride represent low-TDS groundwater in the shallower aquifers that have beneficial uses and must be protected.*

30. The GSP states, "The groundwater level and quality monitoring will be conducted in accordance with the monitoring plan outlined in Chapter 5." (Section 4.6.2.5, page 4-32).

HWG 121

HWG Comment: *It is very important to note here that the groundwater level and monitoring program described in the Marina GSP will not be constructed and implemented if the MPWSP does not move forward. The MGSA will have to design, construct, and implement its own completely different monitoring network if the MPWSP does not go forward, and this alternative monitoring program is not described in the MGSP.*

HWG 122

31. The GSP describes the sustainability goal for the MGSP as managing groundwater resources in the MGSA Plan Area in a way to ensure all beneficial uses/users are protected from undesirable results and have access to a safe and reliable groundwater supply. (Section 4.6.3, page 4-32).

HWG Comment: *Aside from the Deep Aquifer, which is specifically not protected in the MGSP, the groundwater in the MGSA Plan Area already far exceeds any reasonable definition of undesirable results and contains only unusable and non-potable groundwater supplies. Essentially, there are no beneficial users/uses to be protected within MGSA Plan Area.*

HWG 123

32. The GSP defines undesirable results for groundwater quality as concentrations exceeding MCLs and reduced crop production (Section 4.7.1, pages 4-33 to 4-34)

HWG Comment: *Both of these undesirable result conditions already exist in MGSA and have existed within MGSA for the last several decades.*

HWG 124

33. The GSP attempts to set MTs for contaminant plumes (Section 4.7.2, Page 4-36).

HWG Comment: *There are no contaminant plumes within the MGSA Plan Area. Any attempt to set MTs for contaminant plumes outside the MGSA area is a clear conflict with the SVBGSP.*

HWG 125

34. The GSP sets minimum thresholds and measurable objectives for land subsidence using groundwater levels as a proxy. The minimum threshold requires groundwater levels remain above 2015 levels (Section 4.8.2, page 4-42).

HWG Comment: *There is no rationale, evidence, or justification for the minimum threshold and measurable objective set for land subsidence.*

HWG 126

35. GSP Figure 4-1 states, "Approximately 1-Foot Recovery When Pumping Stopped" in reference to test slant well pumping.

HWG Comment: *This statement is incorrect. The arrows pointing to purported recovery when test slant well pumping stopped are clearly related to seasonal increases in groundwater levels.*

Chapter 5 – Monitoring Network

HWG 127

1. With regard to the Dune Sand Aquifer, the GSP states, "The uppermost aquifer, which is of local importance due to its interaction with local groundwater-dependent ecosystems (GDEs), substantial storage of groundwater with designated potential beneficial use as a municipal or domestic supply, and importance in maintaining nearshore seawater intrusion dynamics…" (Section 5.1, page 5-1).

HWG Comment: *While it remains unclear if the Dune Sand Aquifer plays any role in supporting GDEs, it is clear there are no GDEs within the MGSA Plan Area and the Marina GSP should not be addressing GDEs outside of its jurisdiction. There is no groundwater with potential beneficial uses within the MGSA Plan Area. The historic and current nearshore seawater intrusion dynamics have allowed for historic and ongoing seawater intrusion.*

2.With regard to the 180-Foot Aquifer, the GSP states the seawater intruded area, "…includes significant zones of groundwater with a designated beneficial use as a domestic and municipal supply in the vicinity…" (Section 5.1, page 5-1).

HWG 128

***HWG Comment:** There is no groundwater in the Dune Sand Aquifer, 180-FTE Aquifer, or 400-Foot Aquifer with designated beneficial use as a domestic and municipal supply in the MGSA Plan Area. In addition, there are no significant areas with designated domestic or municipal supply beneficial use in the MGSA vicinity.*

HWG 129

3.The GSP states, "…the MGSA GSP will rely primarily on data collected from a local monitoring network adopted in and around the MGSA Area under the Mitigation, Monitoring and Reporting program (MMRP) for the proposed Monterey Peninsula Water Supply Project (MPWSP)…" (Section 5.1.2, page 5-3).

***HWG Comment:** The MGSA GSP is relying primarily on a local monitoring network that will not be implemented if the MPWSP does not move forward. The sustainable management criteria proposed in the MGSA GSP preclude development of the MPWSP. Thus, if the MGSA GSP is approved, adopted, and enforced for the MGSA Plan Area, the MPWSP will not be able move forward and the local monitoring network will not be implemented. Therefore, the proposed MGSA GSP does not have a viable monitoring network.*

HWG 130

4.The GSP describes a monitoring network and representative monitoring sites comprised of locations primarily outside of the MGSA Plan Area (Section 5.1.4, pages 5-4 to 5-5).

***HWG Comment:** The MGSA has no jurisdiction to establish a monitoring network and RMS sites outside of its Plan Area, which presents major conflicts with the SVB GSA that has jurisdiction of these areas.*

HWG 131

5.The GSP describes minimum thresholds and measurable objectives for groundwater levels for principal aquifers encompassed by its monitoring network (Section 5.2.1, pages 5-6 and 5-7).

***HWG Comment:** This section presents many conflicts with the SVB GSA GSP, many of which are described elsewhere in this letter. Another conflict is that the MGSA attempts to assign SVB GSA GSP minimum thresholds and measurable objectives for the 180-Foot Aquifer to RMS locations near the coast that are not included in the SVB GSA GSP. It is likely that the SVB GSA GSP RMS locations were carefully selected to be compatible with proposed projects and management actions that allow maximum potential to achieve subbasin sustainability. The MGSA RMS locations present major conflicts to SVB GSA, and would likely impede SVB GSA attempts to reach sustainability.*

HWG 132

6.The GSP states, "Because groundwater is not currently extracted from the Deep Aquifer in the MGSA Area, minimum thresholds and measurable objectives were not established for the Chronic Lowering of Groundwater Levels sustainability indicator in the aquifer…" (Section 5.2.1, page 5-7).

***HWG Comment:** Groundwater is not currently extracted from the Dune Sand Aquifer in the MGSA Area; therefore, under this rationale there should be not minimum thresholds and measurable objectives established for the Dune Sand Aquifer.*

HWG 133

7.The GSP states, "MCWRA will conduct monitoring of seven other Deep Aquifer wells as part of the MMRP. Locations of these wells are shown on Figure 5-2, and well construction and monitoring information is presented in Table 5-4." (Section 5.2.1, page 5-7)

***HWG Comment:** It is not clear why data from these wells were not included in the analysis; especially since the introduction states the Deep Aquifer is a primary source of freshwater to the City of Marina. As stated above, it is also very important to note that the MMRP will not be implemented if the MPWSP does not move forward.*

HWG 134

8. The GSP states, "The MPWSP wells were installed to monitor the effects pumping the test slant well." (Section 5.2.2, page 5-7)

HWG Comments: *The purposes of installing the MPWSP monitoring wells extended far beyond monitoring effects of pumping the test slant well. These monitoring wells are intended to provide background water level and water quality data well beyond the influence of test slant well pumping, provide borehole lithologic and geophysical logs to improve characterization of aquifers/aquitards within and well beyond the CEMEX area, allow for long-term monitoring of water levels and water quality after implementation of the MPWSP both within and outside the influence of proposed intake slant wells, and for other uses.*

HWG 135

9. The adequacy and density of the monitoring network is described in Section 5.2.2 and 5.2.3 (pages 5-8 to 5-10).

HWG Comment: *The adequacy and density of the monitoring network should be focused on the MGSA Plan Area, and not encroach on the authority and jurisdiction of other GSAs/GSPs.*

HWG 136

10. In the section entitled, "Groundwater elevation and quality data in the MGSA Area", the GSP states that groundwater elevation and quality data in the MGSA Area are limited and that five additional monitoring well clusters will be installed to address data gaps (Section 5.2.7, page 5-13).

HWG Comment: *We note that none of the five proposed new monitoring well clusters are located within the MGSA Plan Area.*

HWG 137

11. The GSP states, "This definition of seawater intrusion adopts a concentration that is aligned with potential impacts to municipal and agricultural beneficial uses; however, it includes water with existing actual and potential beneficial uses." (Section 5.4.1, pages 5-19 to 5-20)

HWG Comment: *Groundwater in the MGSA cannot be used as a potable source without treatment. The only current use of groundwater in the MGSA Plan area is the CEMEX well for industrial wash water. The MCWRA 500 mg/l chloride concentration is an appropriate threshold for monitoring and definition of seawater intrusion (some may even argue for a lower threshold definition such as 250 mg/L chloride, which the MCWRA also used for contouring as the level that the growers were concerned about). The reference to potential beneficial uses refers to SWRCB resolution regarding TDS up to 3,000 mg/L; however, such water is non-potable and has chlorides exceeding 1,000 mg/L placing it appropriately within the zone of seawater intrusion.*

HWG 138

12. The GSP states, "Groundwater extraction in the MGSA Area has the potential to affect the dynamic equilibrium of this nearshore groundwater system and cause seawater intrusion through the migration of the saline groundwater wedge…" (Section 5.4.1, page 5-20).

HWG Comment: *This statement is incorrect; properly located groundwater extraction at the coast will serve to induce or maintain a seaward gradient, thus inhibiting seawater intrusion to inland locations.*

HWG 139

13. The GSP states, "…groundwater extraction from the upper aquifer system could cause further seawater intrusion by expansion or migration of the saline groundwater wedge that underlies this area. Such an expansion or migration would put the Deep Aquifer at greater risk of seawater intrusion." (Section 5.4.1, page 5-20)

HWG Comment: *This statement is incorrect. Pumping from the DSA and 180-FT Aquifer at the coast will have little impact on the 400-Foot Aquifer due to the presence of 180-/400-Foot Aquitard. The 400-Foot aquifer is already highly intruded at the coast and inland. If the 400-Foot aquifer is the source of recharge for the Deep Aquifer, the already extremely high salinity in the 400-Foot Aquifer has not yet been demonstrated to impact the Deep Aquifer wells.*

HWG 140

14. In reference to setting MTs for seawater intrusion the GSP references, "…Lateral migration of the saline water intrusion wedge beyond the limits established by the 2017 AEM survey…" (Section 5.4.1, page 5-21)

HWG Comment: *The AEM data must first be validated through physical water quality data before it can be used as a reference point, and previous HWG letters have demonstrated this has not been done (HWG, April 2019). These previous HWG letters also demonstrate the many flaws and uncertainties in the hydrogeologic interpretations of the AEM data presented by MCWD and City of Marina consultants.*

HWG 141

15. The GSP states, "Groundwater extraction in the MGSA Area potentially could disturb the equilibrium that exists between the saline water intrusion wedge and overlying low-TDS groundwater zone, cause mixing of low-TDS and saline groundwater or otherwise lead to the capture and migration of saline groundwater, potentially impacting the low-TDS groundwater zone or existing supply wells in the area." (Section 5.5.1, page 5-25)

HWG Comment: *This statement is incorrect. There is no evidence to support this statement. Any existing equilibrium is with pumping induced seawater intrusion. Pumping at the coast would serve to mitigate at least a portion of the inland movement of seawater intrusion, and partially reverse SWI in the area inland of the pumping at the coast.*

Chapter 6 – Projects and Management Actions

HWG 142

1. The GSP states, "MGSA has not identified any feasible projects within the MGSA Area…"; and "MGSA will coordinate with and support SVBGSA in the implementation of projects and management actions it has determined to be locally and regionally beneficial…" (Section 6.1, page 6-2)

HWG Comment: *The MGSA has developed no projects of its own, and has developed SMC specifically designed to stop selected SVBGSA projects from being implemented.*

HWG 143

2. Chapter 6 of the GSP presents a confusing array of triggers and additional studies labeled as management actions (Section 6.2, pages 6-2 to 6-11).

HWG Comment: *The use of "triggers" and "management actions" presented in Chapter 6 do not align with SGMA and GSP requirements, and present many conflicts with the SVBGSP.*

HWG 144

3. The GSP lists the SVBGSP projects and management actions that it supports (Section 6.5, pages 6-12 to 6-17).

HWG Comment: *The GSP specifically does not support and sets SMC to prevent implementation of the groundwater extraction barrier, which is a primary and critical project in the SVBGSP. This is a clear conflict with the SVBGSP.*

4. The GSP states that groundwater extraction could substantially deplete the low-TDS groundwater

HWG 145

storage, thereby "…substantially depleting this resource for inland water rights holders." (Section 6.2.1.1, page 6-3)

HWG Comment: *Groundwater pumping at the coast would actually help mitigate seawater intrusion and improve availability of low TDS groundwater for inland pumpers.*

HWG 146

5. The GSP states that the seawater intrusion measurable objective would, "...prevent or reverse seawater intrusion advancement into the Deep Aquifer." (Section 6.2.1.2, page 6-6)

HWG Comment: *Setting seawater intrusion MO/MT for the DSA, 180-FTE, and 400-Foot Aquifers in MGSA does nothing to prevent seawater intrusion in the Deep Aquifer. Reducing pumping in the Deep Aquifer is the only way to control/prevent seawater intrusion in the Deep Aquifer.*

HWG 147

6. In discussing potential management actions for GDEs, the GSP states, "The triggers are equal to the measurable objectives…" (Section 6.2.2.1, page 6-7)

HWG Comment: *The DWR draft BMP for Sustainable Management Criteria defines the measurable objective as, "quantitative goals that reflect the basin's desired groundwater conditions…", and should be set to allow,"…a reasonable margin of flexibility…that will accommodate droughts, climate change, conjunctive use operations…" The BMP does not refer to using measurable objectives as triggers; rather they represent the anticipated/desired basin condition after sustainability is achieved.*

HWG 148

7. The GSP essentially bases its GDE MT/MO on 2015 groundwater levels, and states that a baseline biological assessment of GDEs will be done in the future to allow for comparison of future GDE biologic conditions to its baseline (Sections 6.2.2 and 6.2.3, pages 6-7 to 6-12).

HWG Comment: *While the GDE MT/MO are based on 2015 groundwater levels, there is no corresponding baseline biological assessment to utilize as described in the GSP. The baseline biological assessment yet to be conducted will not be representative of 2015 groundwater, surface water, and climatic conditions.*

HWG 149

8. The GSP claims legal authority to, "…conduct investigations to determine the need for groundwater management, and to monitor compliance and enforcement of a GSP." (Section 6.3, page 6-11)

HWG Comment: *A key question to be answered here is does a GSA have this legal authority for lands outside of its Plan Area?*

HWG 150

9. In discussing CSIP in-lieu recharge projects (including reduction/avoidance of pumping of groundwater from wells in the CSIP area), the GSP states in several places, "This is beneficial to MGSA because of its proximity to the CSIP service area and because pumping reductions in these areas support measurable objectives related to groundwater elevation, groundwater storage and seawater intrusion." (Section 6.5.1, pages 6-13 to 6-15)

HWG Comment: *The GSP does not describe the MPWSP return water agreement, which provides the same benefits described here in the GSP text.*

Sincerely,

The Hydrogeologic Working Group (Dennis Williams, Tim Durbin, Martin Feeney, Peter Leffler)

Dennis Williams

Tim Durbin

Martin Feeney

Peter Leffler

Attachments:

Figure 1 Locations of MPWSP Boreholes Relative to GSP Potential Aquitard Gap Areas

REFERENCES

California Public Utilities Commission (CPUC), CalAm Monterey Peninsula Water Supply Project Environmental Impact Report/Environmental Impact Statement, SCH#2006101004, March 2018.

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HWG, *HWG Comments on Technical Appendices/Attachments to Letters Submitted by MCWD and City of Marina to the CPUC and MBNMS on April 19, 2018, Letter to John Forsythe/CPUC and Paul Michel/MBNMS*, August 15, 2018.

HWG, *HWG Comments on Technical Presentations and Letters/Memorandum Prepared by HGC, EKI, and MCWD for City of Marina Public Workshop on MPWSP Coastal Development Permit Held on January 8, 2019*, January 25, 2019.

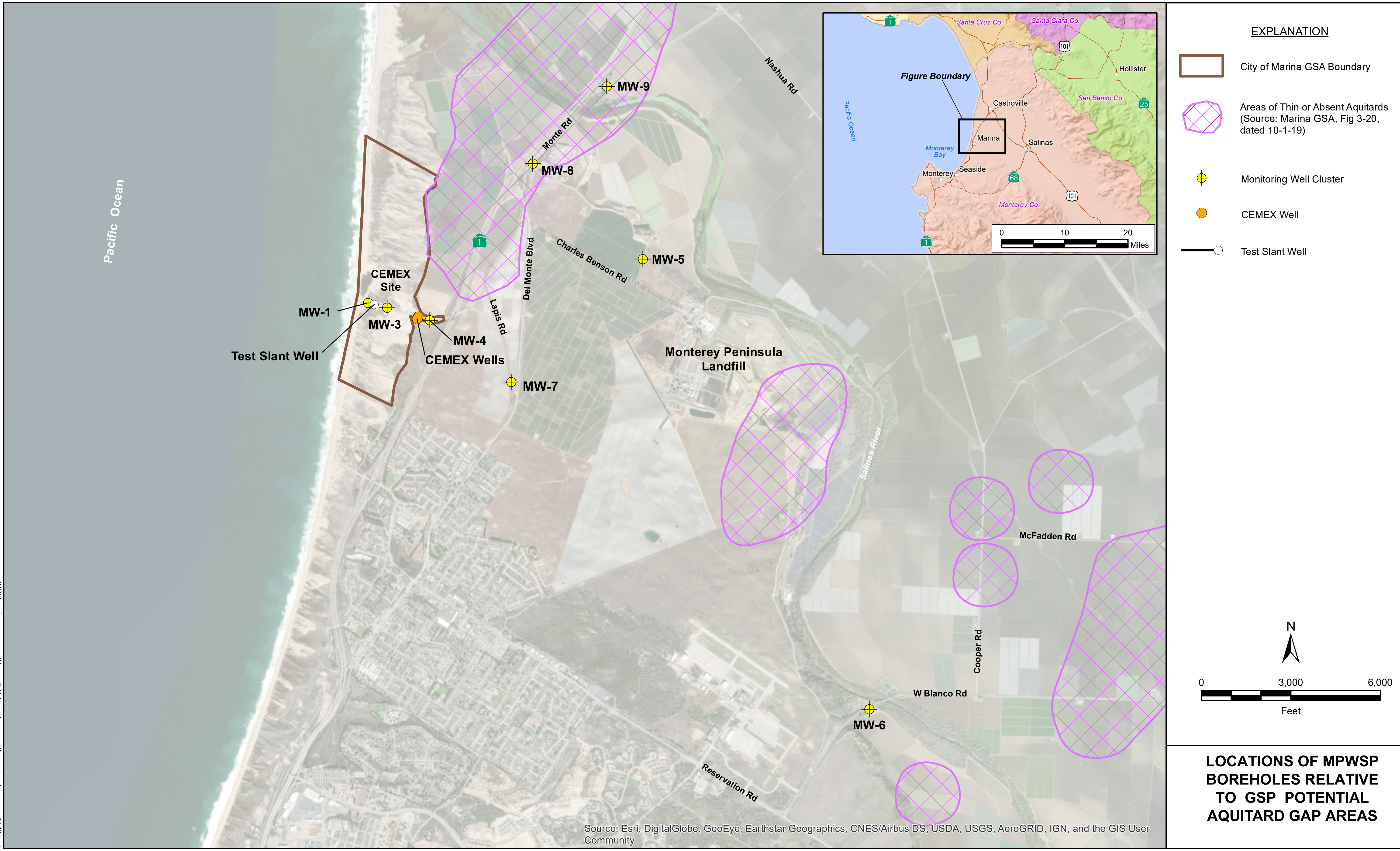
HWG, *HWG Responses to Dr. Knight Letter Addressed to HWG and Submitted During City of Marina Planning Commission Hearing on MPWSP Coastal Development Permit Held on February 14, 2019*, March 6, 2019.

HWG, *HWG Comments on Remy Moose Manley Letter Attachments Prepared by HGC, EKI, and AGF for City of Marina Planning Commission Hearing Agenda Item #6A on MPWSP Coastal Development Permit Held on February 14*, 2019, April 12, 2019.

LIST OF ACRONYMS & ABBREVIATIONS

AEM	Aerial Electromagnetics
bgs	below ground surface
Cal Am or CalAm	California American Water Company
CPUC	California Public Utilities Commission
DSA	Dune Sand Aquifer
EIR	Environmental Impact Report
FEIR	Final Environmental Impact Report
FO-SVA	Ford Ord Salinas Valley Aquitard
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCM	Hydrogeologic Conceptual Model
HWG	Hydrologic Working Group
MCWD	Marina Coast Water District
MCWRA	Monterey County Water Resources Agency
mg/L	Milligrams per Liter
MGSA	Marina Groundwater Sustainability Agency
MGSP	Marina Groundwater Sustainability Plan
MO	Measurable Objective
MPWSP	Monterey Peninsula Water Supply Project
MT	Minimum Threshold
MW	Monitoring Well
RMS	Representative Monitoring Site
SGMA	Sustainable Groundwater Management Act
SMC	Sustainable Management Criteria
SVB	Salinas Valley Basin
TDS	Total Dissolved Solids
TSW	test slant well
USGS	United States Geological Survey
180-FTE Aquifer	180-Foot Equivalent Aquifer

Figures



LOCATIONS OF MPWSP BOREHOLES RELATIVE TO GSP POTENTIAL AQUITARD GAP AREAS

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23-Oct-19

CALIFORNIA AMERICAN WATER

MONTEREY PENINSULA WATER SUPPLY PROJECT

FIGURE 1

GEOSCIENCE

VOLUME II: SECTION 2.0 – MATRIX OF RESPONSES TO COMMENTS

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
CEMEX 1	General	At the outset, I note that the City filed its notification of intent to serve as the groundwater sustainability agency ("GSA") for a portion of the Basin on April 26, 2018, which is almost a full year after the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") had filed its intent to serve as the GSA for the entire Basin on April 27, 2017. Water Code § 10723.8 (c) states that if an agency desires to serve as a GSA for the same basin as another agency, the second agency must file its notice of intent to do so within 90 days of the first agency filing its notice of intent. The City missed this deadline by about 275 days. While the Department of Water Resources may have accepted the City's notice, we do not, and urge the City to withdraw its GSP. Should the City persist, CEMEX reserves, and does not waive, any rights to challenge the City's GSP, as warranted.	The Marina Groundwater Sustainability Agency's (MGSA's) notification to serve as a GSA complies with the California Water Code (CWC) requirements and is valid. Please refer to the Master Response 1 - MGSA Formation for additional information.	None
CEMEX 2	pages xi, 3-69, 4-4 and 4-20	On various pages throughout the GSP, the City mischaracterizes the settlement agreement between CEMEX and the California Coastal Commission. For example, on pages xi, 3-69, 4-4, and 4-20, the City states that pumping at the CEMEX well will cease at the end of 2020. This not only misstates the terms of the settlement agreement, but also is of no import. The shutdown of CEMEX's well, regardless of timing, cannot be expected to have any effect on inland brackish water areas as conceded by the City and noted more fully below. We encourage the City to either correct or remove these misstatements from the GSP, as the minuscule amount of water that has been and continues to be pumped by CEMEX is not responsible for the groundwater impacts at issue in this Basin.	The City worked closely with the California Coastal Commission and the State Lands Commission in a series of combined enforcement actions in 2016-17 to end the current sand mining operation on the CEMEX site by December 31, 2020. The end of the sand mining operation will likely end the pumping from the CEMEX well. However, pumping will cease at the latest in 2024 because, in the settlement, CEMEX agreed to remove "[t]he shops and wells" by December 31, 2024. Consent Settlement Agreement and Cease and Desist Order CCC-17-CD-02, Appendix A, Exhibit 3 Removal Schedule. This has been corrected in the GSP as noted to the right. The CEMEX well is mentioned as a part of the local basin setting and water budget description information of the GSP, as is appropriate and required. CEMEX well pumping is noted as a component of historical and current groundwater pumping in the MGSA Area in Sections 3.1.12, 3.1.13, 3.2.1, 3.3.2, 3.3.8, and 3.3.11. Section 3.2.4 discusses water quality data from the CEMEX well. Section 3.3.12 discusses that while the CEMEX well may have contributed historically to seawater intrusion, it is likely that conditions were stable as	Revised text on page xi of the Executive Summary: Pumping of the CEMEX well is expected to cease in December 2020 or, at the latest in December 2024, when CEMEX removes the well, resulting in the in lieu recharge of approximately 300 AFY of groundwater. Revised text on page 3-16: The CEMEX permitted operations will end by December 31, 2020 due to the agency enforcement actions described in Chapter 2, and pumping for the facility will cease by that time (Powder & Bulk Solids 2017) or, at the latest in December 2024, when CEMEX removes the well. Revised text on page 3-71: Pumping of the CEMEX well is expected to cease in December 2020 or, at the latest in December 2024, when CEMEX removes the well, resulting in the *in lieu* recharge of approximately 300 AFY of groundwater to the 180-Foot and 400-Foot Aquifers, and the loss of approximately 300 AFY of groundwater recharge to the DSA from

[1] Note that responses that indicate a comment is noted or references to a Master Response do not implicitly indicate agreement with a comment.

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			of 2015. Section 3.3.13 discusses that pumping at an extraction rate of 300 AFY from the CEMEX well is likely sustainable.	saline water discharged to the CEMEX percolation ponds, which will be restored. Revised text on page 4-4: Pumping of the CEMEX well will cease when the plant closes at the end of 2020 <ins>or, at the latest in December 2024, when CEMEX removes the well</ins> (Section 3.1.8). Text on page 4-20 has been deleted.
CEMEX 3	Section 1.1, page 1-2	We also note that the parcels potentially subject to the City's GSP are not consistently described. The City's resolution forming its groundwater sustainability agency (Resolution 2018-25) limits application of the new agency to APNs 203-011-001, -011, -019, and -020, but the City's GSP purports to expand application beyond what was authorized by resolution to include also APNs 203-011-023, 175-011-046, and 175-011-031, which are not even contiguous to the previously identified parcels. We also note that the depictions of the GSP area contained in the GSP do not appear to include all the parcels included in the initial resolution. Instead, they seem to depict only CEMEX property.	Thank you for the comment. The parcels within the MGSA GSP Area are APN 203-011-001, APN 203-011-019, and APN 203-011-020. Parcel APN 203-011-11 is outside the GSA boundary and was inadvertently listed in Resolution No. 2018-25. Parcels listed on page 2-2 include portions of APN 203-011-023, APN 175-011-046, APN 175-011-031, and APN 203-011-011, which were listed in error.	Revised text on page 1-2: The MGSA Area is bounded by the Pacific Ocean along the western border and includes Monterey County Assessor Parcel Numbers <ins>(APN) APN 203-011-001, APN 203-011-019, and APN 203-011-020</ins>. Revised text on page 2-2: The MGSA Area includes Assessor Parcel Numbers <ins>(APN) APN 203-011-001, APN 203-011-019, and APN 203-011-020</ins>.
CEMEX 4	General	This selective and inconsistent identification of parcels subject to the GSP is concerning because it supports our overall concern with the GSP, which is that the City is not really interested in managing groundwater in the Basin; it is primarily interested in the control of certain landowners only, otherwise it would have selected all of the land that overlies the Basin, would have included the Deep Aquifer as a managed basin, and would not have selected just a few landowners who pump brackish water that is not a source of drinking water for the City.	The commenter's concerns are noted. The rationale for establishment of the MGSA boundaries and the GSP area is described on page 1-2 in the first paragraph of Section 1.1 as the "portion of the Subbasin that lies within its [the City of Marina's] jurisdictional limits, but outside the jurisdictional limits of the Marina Coast Water District (MCWD)... ." MCWD has established a separate GSA in the remaining area for which the City has planning responsibility, and the City did not wish to create an overlap with this agency by filing to become a GSA for that area. This rationale has been communicated consistently and transparently in notifications and public meetings throughout the GSP preparation process. The Deep Aquifer is identified and described as a Principal Aquifer in Chapter 3 of the GSP, included in the establishment of Sustainable Management Criteria in Chapter 4 and monitoring networks in	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			Chapter 5, and addressed by management actions described in Chapter 6.	
CEMEX 5	Ex Sum (page i), Chapters 3 and 4, pages 3-1, 3-72, 3-73, 4-1, 4-4, and 4-20	Thus, the idea that the City's GSP is capable of bringing the Basin into sustainability appears to be a charade, as the City's own GSP admits that the Basin "is subject to significant and unreasonable seawater intrusion due largely to long-term groundwater extraction in the inland portions of the Subbasin in excess of the sustainable yield"(pages 3-1, 3-72, 4-1). This seawater intrusion is acknowledged to have traveled as far as 7 miles inland (pages i and 4-1). And yet the City's GSP only applies to CEMEX's properties, and a couple other properties for reasons not provided in the GSP. The irony of including just these properties is evident from the City's open admission in the GSP that pumping from CEMEX's well "is therefore sustainable relative to SGMA's 2015 baseline"(page 3-73), and "the CEMEX well pumping has not resulted in significant and unreasonable seawater intrusion or low-TDS water depletion"(pages 4-4 and 4-20). Since CEMEX's wells are not responsible for seawater intrusion 7 miles inland, this begs the question of whose wells are responsible, and why aren't those wells responsible for the seawater intrusion subject to the City's GSP? The answer is the wells responsible for the seawater intrusion are very likely the wells that supply the City with its own water (i.e. Marina Coast Water District wells), and the City very much does not want its own wells to be subject to its GSP. This conclusion is supported by the fact that the City chose to not include the Deep Aquifer as a groundwater basin managed by its GSA.	The commenter's opinions are noted. The purpose of the GSP is discussed in Section 1.1 (pp 1-2 to 1-4) and the Sustainability Goal is discussed in Section 1.2 (pp 1-4 to 1-6) and Section 4.2 (pp 4-3 to 4-6). The rationale for establishment of the GSP area and the GSP's approach to the Deep Aquifer are addressed in the response to Comment CEMEX 4, above. The MCWD wells which provide water to the City are located outside the 180/400-Foot Subbasin in the Monterey Subbasin, and therefore are not subject to inclusion or regulation under this GSP; however, the potential effects of groundwater extraction within the MGSA Area on these wells must be considered. It should be noted that to our knowledge these wells have not been implicated as improperly causing or contributing to seawater intrusion. The Deep Aquifer is identified and described as a Principal Aquifer in Chapter 3 of the GSP, included in the establishment of Sustainable Management Criteria in Chapter 4, and included in the monitoring networks discussed in Chapter 5.	None
CEMEX 6	Section 4.5.1, page 4-20	Not having its own wells subject to its own GSP has allowed the City to propose an incredibly stringent definition of a "significant and unreasonable reduction in groundwater storage," as follows: · A depletion of the amount of low-TDS groundwater in storage in the DSA, 180-Foot Aquifer and 400-Foot Aquifer in and near the MGSA Area resulting from groundwater extraction in the MGSA Area; · A depletion of the amount of low-TDS groundwater in storage that adversely impacts groundwater right holders; or · An imbalance in the amount of low-TDS groundwater and denser saline water that leads to further seawater intrusion. Each of these standards belies the City's stated intent in adopting its GSP. With regard to the first, we note that only	The rationale for the application of the criteria cited in the comment to define significant and unreasonable reduction in groundwater storage is described on pages 4-19 and 4-20 of the GSP. Prevention of long-term reduction in groundwater storage, adverse impacts to groundwater right holders, and seawater intrusion are reasonable criteria consistent with the GSP regulation requirements and Department of Water Resources (DWR) guidance. The GSP states these criteria apply to groundwater extraction within the MGSA Area in order to avoid confusion because MGSA	The following change has been made to the first criteria bullet to make it more consistent with the SVBGSA's criteria for defining significant and unreasonable reduction in groundwater storage: "A ~~depletion of~~ <u>long-term reduction in</u> the amount of low-TDS groundwater in storage in the DSA, 180-Foot Aquifer and 400-Foot Aquifer in and near the MGSA Area resulting from groundwater extraction in the MGSA Area;"

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		groundwater extraction from within the City's GSA (i.e. essentially from within the CEMEX properties) that results in a depletion in the amount of low-TDS water is considered to be a "significant and unreasonable reduction in groundwater storage;" yet if groundwater pumping from any area that is not within the City's GSA results in the same or a similar depletion, or that results in a depletion of groundwater from within the Deep Aquifer, then the City has no issue with such depletion. Thus, the City's GSP proposes to only regulate and penalize pumping from within properties cherry-picked for the GSA and to disregard all of the wells that serve the City and its inhabitants.	has no authority to regulate groundwater extraction outside of its jurisdiction.	
CEMEX 7	Section 4.5.1, page 4-20	With regard to the second and third bulleted standards, due to the incredibly small number of properties subject to the jurisdiction of the GSA and the standards set in the GSP, there is no feasible way to enforce either of these standards if they occur outside the jurisdiction of the GSA. Since the GSA only covers a handful of properties, any activities that trigger either of these standards which are outside of the City's GSA are beyond the reach of the City's GSA and can operate with impunity. In sum, these standards are largely meaningless to the broader problem and only affect actions within the GSA boundaries.	Please see Master Response 2 - MGSA's Jurisdiction and GSP Requirements. The Sustainable Groundwater Management Act (SGMA) requires that a GSP or set of GSPs "cover [] the entire basin." CWC § 10727(b). As a result, MGSA's GSP manages groundwater in the MGSA Area as part of the broader management of groundwater across the entire 180/400 Foot Aquifer Subbasin (Subbasin). The coordinated enforcement of the Subbasin's GSPs will be used to achieve the sustainable management criteria identified in MGSA's GSP and SVBGSA's GSP. MGSA assumes no authority or responsibility for managing groundwater extraction outside of its jurisdictional boundaries.	None
CEMEX 8	General	This is arbitrary, capricious, and a gross abuse of the City's authorities. It is arbitrary and capricious because the City's own GSP acknowledges that pumping from within the GSA boundaries has not caused the 7 miles of seawater instruction [sic], yet it proposes to address seawater intrusion by ignoring the actual problem wells that are farther inland. Thus, the GSP is not reasonably related to ensure the public welfare as it does not address, at all, the known causes (*Euclid v. Amber Co.* (1926) 272 U.S. 365). Indeed, the GSP boundaries were drawn in such a manner as to avoid them. It is an abuse of authority because it is designed to penalize and ultimately saddle one private property owner or a few with the cost of administering the GSP while allowing those who have caused the problem to operate free of regulation, control, and cost, even though they will exacerbate the problem with seawater	The cases CEMEX cites address the constitutionality of zoning ordinances. *See Vill. of Euclid, Ohio v. Ambler Realty Co.*, 272 U.S. 365 (1926); *Hernandez v. City of Hanford*, 41 Cal. 4th 279 (2007). They do not apply to MGSA's adoption of its GSP under authority provided by the California Legislature through SGMA. MGSA does not agree with CEMEX's interpretation or application of the legal principles in these cases in this GSP context. The rationale for establishment of the MGSA boundaries is discussed in our response to Comment CEMEX 4.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		intrusion (See GSP page xix. It is impermissible to permit development on one parcel and deny it as to another for the purpose of unreasonably regulating development activities. *Hernandez v. City of Hanford* (2007) 41 Cal. 4th 279, 294).	MGSA's GSP serves the legitimate and required goal of contributing to the sustainable management of the Subbasin by promoting sustainable groundwater management in its seaward portion. The GSP will achieve this by establishing sustainable management criteria to prevent undesirable results related to groundwater extraction within its jurisdictional boundaries, conducting sufficient monitoring to assess plan implementation, and implementing management actions as necessary.	
CEMEX 9	General	We encourage the City to withdraw its notice of intent to serve as the GSA and withdraw its proposed GSP. The SVBGSA was timely filed, its GSP appears to treat groundwater users fairly and spread the cost of a new agency across the Basin, rather than unfairly and abusively targeting a single or even a few groundwater users.	The comment is noted. Contrary to this comment, MGSA's GSP addresses critical gaps in SVBGSA's GSP to sustainably manage the Subbasin, including its failure to (1) utilize all of the available information and science, including recent local investigations; (2) designate, protect, and manage the Dune Sand Aquifer as a Principal Aquifer; (3) provide sufficient protections against ongoing or worsening seawater intrusion that consider nearshore dynamics; (4) meaningfully recognize, address, monitor, and manage groundwater-dependent ecosystems as a beneficial groundwater use; (5) consider state and federal protections for habitats and species in and near the MGSA area; and (6) include an adequate monitoring network in the coastal portion of the Subbasin, which under SVBGSA's GSP is very sparsely monitored. Further, MGSA's GSP complies with all SGMA's requirements for a GSP. As a result, MGSA's GSP could form part of a set of GSPs for the Subbasin that complies with SGMA, if appropriate coordination is undertaken.	None
CalAm 1	General	The City made it abundantly clear during its groundwater sustainability agency ("GSA") formation hearing (and since) that its sole objective in exercising authority under the Sustainable Groundwater Management Act ("SGMA") is to stop CalAm's Monterey Peninsula Water Supply Project ("MPWSP" or "Project"). CalAm previously expressed its concern that the City will leave no stone unturned in acting on its bias against the Project. (See, CalAm April 25, 2019 letter attached hereto as Attachment A.). Comments from	The commenter's opinions are noted. MGSA does not agree with these comments, which consist solely of an emotional and factually incorrect diatribe against the City, MGSA, and the GSP. MGSA seeks to protect the coastal areas within its jurisdiction and contribute to the sustainable management of the Subbasin. The purpose of the GSP is discussed in Section 1.1 (pp 1-2 to 1-4) and the Sustainability Goal is discussed in Section 1.2	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		the City at the recent Coastal Commission hearing regarding the MPWSP further confirmed the City's bias against the Project. (See, Latham & Watkins November 21, 2019 Memorandum attached hereto as Attachment B.). The content of and significant deficiencies in the MGSA GSP, which the City hurriedly cobbled together at the eleventh hour, are further evidence of the City's myopic and misguided efforts to thwart the MPWSP, a project that science demonstrates will be beneficial to the Salinas Valley Groundwater Basin ("SVGB").	(pp 1-4 to 1-6) and Section 4.2 (pp 4-3 to 4-6). The objective is not to stop the Monterey Peninsula Water Supply Project (MPWSP). The City has a long-standing track record of protecting groundwater in the MGSA area. For example, in 1996, the City entered into an extensive Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands (Annexation Agreement) with several other parties, including the CEMEX property owner. The expressed purpose of the Annexation Agreement is "to help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin through voluntary commitments by the Parties to limit, conserve and manage the use of groundwater from the Salinas River groundwater basin." The groundwater conditions on the CEMEX property were one main focus of the Annexation Agreement. The City also worked closely with the California Coastal Commission and the State Lands Commission in a series of combined enforcement actions in 2016-17 to end the current sand mining operation on the CEMEX site by December 31, 2020. After decades of efforts to end this environmentally destructive use, this termination was achieved through a settlement approved by all three agencies. In addition to terminating this mining use at the end of next year and gaining full restoration of the site, the settlement requires CEMEX to transfer the entire site at a reduced purchase price to a non-profit organization or government entity approved by the Coastal Commission and the City. The City's formation of MGSA MGSA's GSP are a continuation of the City's efforts to protect and manage the coastal areas in the City's jurisdiction.	
CalAm 2	General	As detailed in CalAm's August 12, 2019 comment letter on the City's initial groundwater sustainability plan ("GSP") preparation notification, the Salinas Valley Basin Groundwater Sustainability Agency ("SVBGSA") is the exclusive GSA for the 180/400 Foot Aquifer Subbasin	The MGSA's notification to serve as a GSA complies with the regulations and is valid; SVBGSA never became the exclusive GSA for the 180/400 Foot Aquifer Subbasin. Please refer to the Master	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		("180/400 Subbasin"), including the area covered by the MGSA GSP ("MGSA Area"). Thus, the City is not a GSA and does not have the authority to adopt a GSP.	Response 1 - MGSA Formation for additional information.	
CalAm 3	General	The SVBGSA's Salinas Valley 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan ("SVBGSA GSP") already covers the 180/400 Subbasin, including the MGSA Area. Thus, the MGSA GSP is unnecessary, suggests GSP overlap in the 180/400 Subbasin, and given its deficiencies, increases the likelihood of State intervention in the 180/400 Subbasin.	The purpose of the GSP is discussed in Section 1.1 (pp 1-2 to 1-4). MGSA's GSP is necessary in part because it addresses critical gaps in SVBGSA's GSP to sustainably manage the Subbasin, including its failure to (1) utilize all of the available information and science, including recent local investigations; (2) designate, protect, and manage the Dune Sand Aquifer as a Principal Aquifer; (3) provide sufficient protections against ongoing or worsening seawater intrusion that consider nearshore dynamics; (4) meaningfully recognize, address, monitor, and manage groundwater-dependent ecosystems as a beneficial groundwater use; (5) consider state and federal protections for habitats and species in and near the MGSA area; and (6) include an adequate monitoring network in the coastal portion of the Subbasin, which under SVBGSA's GSP is essentially unmonitored. Further, MGSA's GSP complies with all SGMA's requirements for a GSP. As a result, MGSA's GSP would form part of a set of GSPs for the Subbasin that complies with SGMA.	None
CalAm 4	General	The MGSA GSP incorrectly asserts that the City is an exclusive GSA for the MGSA Area. As noted above, the SVBGSA is the exclusive GSA for the MGSA Area (and beyond). Further, to the extent overlap is deemed to exist in the 180/400 Subbasin because of the City's improper SGMA efforts in the MGSA Area, CalAm understands that the County of Monterey plans to exercise its authority pursuant to Water Code section 10724 to become the exclusive GSA for the MGSA Area. As such, the City will not have authority to adopt a GSP for or take any SGMA related actions in the MGSA Area.	The commenter's opinions are noted, although they are not factually or legally accurate. Please refer to Master Response 1 - MGSA Formation.	None
CalAm 5	General	The MGSA GSP conflicts with SVBGSA GSP in significant ways relating to the hydrogeologic conditions in the 180/400 Subbasin, sustainable management criteria for the 180/400 Subbasin, and the potential management projects and actions. For example, the MGSA GSP does not include a seawater intrusion barrier project, one of the SVBGSA's most important management projects. These significant conflicts,	Please see Master Response 3 - GSP Coordination Requirements.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		as well as the lack of coordination between the two GSAs and their GSPs, prevent MGSA GSP and SVBGSA GSP coordination as required by SGMA. (See, Wat. Code §§ 10727(b)(3), 10727.6, 10733(b); 23 Cal. Code Regs. § 357.4.) The MGSA GSP does not make any attempt to address these significant conflicts or lack of coordination with the SVBGSA GSP.		
CalAm 6	General	The MGSA GSP is based on the flawed premise that groundwater potentially subject to use by the MPWSP can be beneficially used (without desalination) by other groundwater users and that CalAm's extraction of that groundwater as part of the MPWSP will adversely impact the 180/400 Subbasin.	As described in detail in Master Response 4 - Groundwater Quality and Seawater Intrusion, geophysical investigations have identified a zone of low-total dissolved solids (TDS) groundwater east of the MGSA Area which contains less than 3,000 milligrams per liter (mg/L) TDS. State Water Resources Control Board (SWRCB) Resolution No. 88-63 designates all such groundwater as having a beneficial use for domestic and municipal supply. In its recent December 20, 2019 letter to the Subbasin GSA's, the Central Coast Regional Water Quality Control Board (RWQCB) reiterated its implementation of the non-degradation policy SWRCB Resolution No. 68-16 protecting the existing quality of these waters. We agree that for water containing TDS or chloride in excess of drinking water standards, treatment would be required prior to use and have edited the GSP as noted to the right. We note that other beneficial uses, such as industrial, process water aquaculture or similar uses, may not require treatment prior to use. The GSP makes no determination that groundwater extraction for the MPWSP will adversely impact the 180/400 Foot Subbasin; however, as required by SGMA, it identifies potential significant and unreasonable impacts that could occur as a result of groundwater extraction in the MGSA Area and establishes sustainable management criteria, monitoring networks, and management actions for their prevention. These criteria are discussed in Chapter 4.	Revised text on page vii of the Executive Summary: Water with TDS less than 3,000 mg/L has a designated use as a municipal and domestic water supply and its degradation is prohibited under State Water Resource Control Board resolutions; <u>however, for water containing TDS or chloride in excess of drinking water standards, treatment would be required prior to use, which is not an uncommon requirement for municipal and domestic water supply wells.</u> Revised text on page 1-5: Comply with State Water Resources Control Board (SWRCB) Resolution No. 88-63, which designates all groundwaters of the state containing less than 3,000 milligrams per liter (mg/L) of TDS as having a potential beneficial use as a domestic or municipal drinking water supply <u>(for water containing TDS or chloride in excess of drinking water standards, treatment would be required prior to use, which is not an uncommon requirement for municipal and domestic water supply wells)</u>; and SWRCB Resolution No. 68-16, which requires the high quality of these waters to be maintained unless the state finds that certain specific conditions are met; Revised text on page 2-19: Groundwater in the MGSA Area is currently used for industrial supply at the CEMEX Lapis Plant sand mine site, and groundwater containing less than 3,000 mg/L TDS has a designated potential beneficial use as a source of domestic and municipal supply. <u>For water</u>

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
				containing TDS or chloride in excess of drinking water standards, treatment would be required prior to use, which is not an uncommon requirement for municipal and domestic water supply wells. Revised text on page 3-19: Under State Water Resources Control Board (SWRCB) Resolution No. 88-63, the state considers all groundwater containing TDS at concentrations less than 3,000 mg/L as having a potential beneficial use as a domestic and municipal supply. For water containing TDS or chloride in excess of drinking water standards, treatment would be required prior to use, which is not an uncommon requirement for municipal and domestic water supply wells. Revised text on page 3-37: Under SWRCB Resolution No. 88-63, the state considers all groundwater containing TDS at concentrations less than 3,000 mg/L as having a potential beneficial use as a domestic and municipal supply. For water containing TDS or chloride in excess of drinking water standards, treatment would be required prior to use. It should be noted that is not uncommon for municipal or domestic water supply systems to treat prior to potable use. This Resolution is adopted as part of RWQCB's Water Quality Protection Plan for the region. See Attachment B (Chapter 5 edits).
CalAm 7	General	The MGSA GSP disregards sound science, data and information relating to the MGSA Area, including information relating to the hydrogeologic setting and the MPWSP (i.e., its operations and impacts). Instead, the MGSA GSP improperly describes the MPWSP and its impacts, as well as the hydrogeologic conditions in the MGSA Area and elsewhere, and relies on incorrect and invalid hydrogeologic studies and/or interpretations that have been rejected by various	The commenter's opinions are noted, but they are not factually or legally accurate. Please refer to Master Response 5 - Use and Interpretation of Geophysical Studies for information regarding the science and studies relied upon to establish the hydrogeologic conceptual model discussed in Chapter 3 of the GSP and addressing the requirement in the GSP regulations to use the best	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		peer reviewers, regulatory agencies, and the courts. As a result, the MGSA GSP includes inappropriate and unsupported sustainable management criteria and otherwise does not comply with SGMA.	available science and information (23 CCR §§ 351(h), 354.14(b)(4)(B), 354.16, 354.18(e), 354.44(c), and 355.4(b)(1)). Master Response 4 - Groundwater Quality and Seawater Intrusion includes a discussion regarding the source water assumptions for the MPWSP. Other comments regarding discussion of the MPWSP are addressed below.	
CalAm 8	General	The MGSA GSP improperly, and without an adequate scientific basis, attempts to link purported groundwater-related issues occurring outside of the MGSA Area with activities within the MGSA Area in an attempt to justify SGMA implementation actions in the MGSA Area.	The purpose of the GSP is discussed in Section 1.1 (pp 1-2 to 1-4). Please refer to Master Response 2 - MGSA's Jurisdiction and GSP Requirements for a discussion regarding the need to consider effects occurring outside the MGSA Area when setting sustainable management criteria for groundwater extraction within the MGSA Area. The GSP must support and not conflict with sustainable groundwater management of the Subbasin as a whole. Thus, this linkage is consistent with the GSP regulations, which require that groundwater extraction and management actions within the MGSA Area not result in undesirable results regardless of whether they occur within or outside the MGSA Area.	None
CalAm 9	General	The MGSA GSP does not adequately describe management actions and objectives, as required by SGMA, and improperly identifies "measurable objectives" as triggers for action rather than as goals for maintaining or improving groundwater conditions, and fails to establish interim milestones for the sustainability indicators. (See, Wat. Code § 10727.2 (b); 23 Cal. Code Regs. §§ 351(q) and (s), 354.30, 354.44(a).)	The terminology used to describe management action trigger thresholds and measurable objectives has been updated to clarify the role of measurable objectives, provide a separate discussion regarding triggers for management actions, and identify interim milestones.	*See* Attachment A (Chapter 4 Edits)
CalAm 10	General	Despite the fact that the Deep Aquifer is the only aquifer in the MGSA Area that is not severely seawater-intruded, and that groundwater pumping (by Marina Coast Water District) is expected to increase therein, the MGSA GSP largely does not address the Deep Aquifer to ensure sustainable groundwater management therein (e.g., set minimum thresholds and measurable objectives in an attempt to protect the aquifer). Instead, the MGSA GSP focuses entirely on the seawater-intruded aquifers from which the MPWSP may draw water,	Please refer to Master Response 6 - Sustainable Management Criteria for a discussion regarding sustainable management criteria for the Deep Aquifer and to Master Response 4 – Groundwater Quality and Seawater Intrusion for a discussion of potential water quality impacts considered in the GSP. It is not a correct statement that minimum thresholds and measurable objectives have not been set for the Deep Aquifer. Chapter 4 of the GSP discusses sustainable management criteria for	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		and is not focused on improving groundwater conditions in the MGSA Area.	the Deep Aquifer for every applicable sustainability indicator, and provides the rationale and data for determining which sustainability indicators are not applicable.	
MCWRA Letter 1	General	MCWRA believes conflict exists between this Draft Groundwater Sustainability Plan (GSP) and the Draft Groundwater Sustainability Plan released for review by the Salinas Valley Basin Groundwater Sustainability Agency. The development of Groundwater Sustainability Plans is addressed in California Code of Regulations; Title 23 (Waters); Division 2 (Department of Water Resources); Chapter 1.5 (Groundwater Management); Subchapter 2 (Groundwater Sustainability Plans); Article 1 (Introductory Provisions). Multiple sections within Article 1 address the consideration and/or impact of a GSP on adjacent basins. MCWRA believes that the apparent conflict between the two draft GSPs may indicate a deficiency in the City of Marina GSA's GSP for the Marina GSA Area of the 180/400-Foot Aquifer in terms of plan principles, evaluation criteria and interbasin coordination. MCWRA has provided specific comments on the Draft GSP in the enclosure.	Please refer to Master Response 2 - MGSA's Jurisdiction and GSP Requirements. It is precisely the provisions of the GSP regulations and the Water Code which the commenter cites that require MGSA's GSP to include sustainable management criteria which prevent undesirable results in the surrounding areas from groundwater extraction and management actions occurring within the MGSA Area. Please refer to Master Response 3 - GSP Coordination Requirements. MGSA agrees it is critical that potential conflicts between the MGSA's and SVBGSA's GSPs be resolved through coordination as per the process outlined in the SGMA regulations. To that end, MGSA submitted an approved proposed coordination agreement for SVBGSA's consideration in August 2019 using a template provided by them, and met on several occasions to discuss its approach to development of a GSP and identify potential conflicts; however, SVBGSA indicated it would engage in discussions regarding coordination and resolution of the conflicts only if MGSA withdraws its notification of intent to become a GSA. Notably, we have also had a number of discussions with MCWD and its consultants regarding coordination of the GSP and have reviewed its contents and approach with them, and they have not raised any of these concerns. Coordination under SGMA requires the good faith commitment and cooperation of all GSAs in a Subbasin.	None
MCWRA 1	Global Comments	It is of the opinion of the Monterey County Water Resources Agency (MCWRA) that conflict exists between this Draft Groundwater Sustainability Plan and the Draft Groundwater Sustainability Plan released for review by the Salinas Valley Basin Groundwater Sustainability Agency. The development of Groundwater Sustainability Plans is addressed in California	Please refer to our response to Comment MCWRA Letter 1, above. We note that SVBGSA is required to meet the same requirements relative to the MGSA's GSP, but has made no meaningful attempts to coordinate with MGSA.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		Code of Regulations; Title 23 (Waters); Division 2 (Department of Water Resources); Chapter 1.5 (Groundwater Management); Subchapter 2 (Groundwater Sustainability Plans); Article 1 (Introductory Provisions). Within Article 1 the following subsections define areas the MCWRA believes may indicate a deficiency in the City of Marina Groundwater Sustainability Agency's Groundwater Sustainability Plan regarding elements of plan principles, criteria and interbasin coordination: · 350.4 - General Principles (f) - A Plan will be evaluated, and its implementation assessed, consistent with the objective that a basin be sustainably managed within 20 years of Plan implementation without adversely affecting the ability of an adjacent basin to implement its Plan or achieve and maintain its sustainability goal over the planning and implementation horizon. · 354. 28 - Minimum Thresholds GSP must address (3) - How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals. · 355.4 – Criteria for Plan Evaluation (7; Referring to what DWR will consider when evaluating a GSP…) – Whether the Plan will adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of its sustainability goal. · 357.2 – Interbasin Agreements – Interbasin agreements may be included in the Plan to support a finding that implementation of the Plan will not adversely affect an adjacent basin's ability to implement its Plan or impede the ability to achieve its sustainability goal.		
MCWRA 2	Global Comments	Document organization is difficult to follow. GSP contains frequently repeated language.	Although some of the discussions in the GSP may seem repetitive, the GSP follows a combination of formats followed by SVBGSA and GSPs for other subbasins. The result is complete and systematic when addressing the SGMA requirements. We note SVBGSA and other GSAs follow a similar approach in their GSPs.	None
MCWRA 3	Global Comments	GSP omits information on the Return Water Agreement - part of the MPWSP is the requirement to make available for delivery to the Salinas Valley Basin a volume of water equal to the percentage of Salinas Valley Basin groundwater in the	Information regarding the Return Water Agreement has been added to Section 2.2.10 (Conjunctive Use Programs) on page 2-20.	New text on page 2-20: <u>The MPWSP will draw groundwater from the Subbasin with subsurface slant intake wells as the water source for the desalination plant. Under the terms of the June 14, 2016 Return Water</u>

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		total MPWSP source water production, as determined by the Monterey County Water Resources Agency.		Settlement Agreement (CalAm 2016), CalAm proposes to replace some of the groundwater it withdraws from the Subbasin by delivering a portion of the "return water" from its desalination treatment plant by providing a portion of the treated water from its desalination plant to Castroville Community Services District (CCSD). The program has not received final approvals or begun operating, and it currently lacks any water rights. If it is ever approved, begins operation, and the "return water" program is implemented, the GSP will be revised with further information on the agreement.
MCWRA 4	Global Comments	Chapters 4 & 5 overstate the "resolution/fine-scale detail" that can be determined from AEM work to quantify the "thickness", the "lateral or vertical migration", or concentration changes in the saline water intrusion wedge and the overlying TDS zone. AEM work is best suited to determining qualitive changes not quantifying changes.	Please refer to Master Response 5 - Use and Interpretation of Geophysical Studies, and the response to Comment CalAm 7 above. Airborne electromagnetics (AEM) is being used by SWRCB to map and monitor areas of groundwater containing less than 3,000 mg/L TDS in other portions of the state, and is considered suitable for this purpose. It should be noted that the GSP does not propose to use AEM for the purpose of monitoring changes in TDS concentrations or migration of TDS or chloride isocontours. As described in Chapter 5, a combination of groundwater level and water and induction logging performed by MCWRA will be used for that purpose. Revised text in Chapter 5 recognizes that the resolution of induction logging will be data driven.	See Attachment A (Chapter 4 edits) and Attachment B (Chapter 5 edits).
MCWRA 5	Global Comments	The GSP contains misleading statements about the potential beneficial uses (municipal or domestic supply) for water exceeding 3,000 mg/L TDS. The water would first have to be treated to meet Drinking Water Standards; this would include desalination.	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion. The discussion of applicable state water quality standards, including SWRCB Resolution Nos. 88-63 and 68-16 are included in compliance with the requirements of 23 CCR § 354.28(b)(5), which state that a GSP should discuss "[h]ow state, federal, or local standards relate to the relevant sustainability indicator." We agree that for water containing TDS or chloride in excess of drinking water standards, treatment would be required prior to use and have	The last sentence of Section 2.2.7.3 on page 2-19 is revised as follows: Groundwater in the MGSA Area is currently used for industrial supply at the CEMEX Lapis Plant sand mine site. The extracted groundwater is reported to contain a concentration of approximately 19,000 mg/L TDS. In addition, groundwater containing less than 3,000 mg/L TDS has a designated potential beneficial use as a source of domestic and municipal supply as noted above. This

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			edited the GSP as noted to the right. We note that other beneficia uses, such as industrial, process water aquaculture or similar uses, may not require treatment prior to use.	water would require treatment prior to use for domestic and municipal supply, which is common for domestic and municipal water supply systems.
MCWRA 6	Global Comments	There is no discussion of nitrate in groundwater quality as a degraded groundwater quality issue that could cause an Undesirable Result.	Nitrate is discussed in detail in Section 3.1.9 (p. 3-18) and Section 3.2.4.2 (p. 3-40). As noted in these sections, nitrate is widespread in shallow groundwater underlying agricultural areas east of the MGSA Area at concentrations near or exceeding the Maximum Contaminant Level (MCL) for drinking water; however, it has not been established as a chemical of concern in the MGSA Area. For this reason, undesirable results related to nitrate are not anticipated.	None
MCWRA 7	Global Comments	The Dune Sand "is not considered a principal aquifer because it is thin, laterally discontinuous, and a minor source of water." (from SVBGSA GSP Executive Summary p.4) How can the MGSA GSP be reconciled with the treatment of the Dune Sand by the SVBGSA?	The rationale for designation of the Dune Sand Aquifer as a Principal Aquifer is discussed in Section 3.1.6.1 (pp 3-11 and 3-12) and Section 5.1 (p. 5-1) of the GSP. Please refer to Master Response 7 - Dune Sand Aquifer for additional information regarding the designation of the Dune Sand Aquifer as a Principal Aquifer. This discrepancy between the GSPs should be resolved through coordination between MGSA and SVBGSA as discussed in Master Response 3 - GSP Coordination Requirements. MGSA believes the SVBGSA GSP's omission of the Dune Sand Aquifer as a Principal Aquifer is a deficiency with respect to the sustainable management of groundwater extraction and management in the coastal area of the Subbasin; however, designation of the Dune Sand Aquifer as a Principal Aquifer in MGSA's GSP is not likely to cause or contribute to undesirable results in the surrounding areas managed by SVBGSA or MCWD GSA, or to interfere with their ability to meet the Sustainability Goals for the Subbasin or the adjacent Monterey Subbasin. We further note that MCWD GSA intends to designate the Dune Sand Aquifer as a Principal Aquifer in its GSP for the adjacent Monterey Subbasin, which will also need to be coordinated with SVBGSA.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
MCWRA 8	Global Comments	Definition of water quality standards: Specify that the standards repeatedly called out as 1,000 mg/L TDS and 500 mg/L Chloride are California's upper limit for secondary drinking water standards. The EPA's and California's recommended maximum secondary limits are 500 mg/L TDS and 250 mg/L Chloride.	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion. Additional discussion of water quality standards has been added to the GSP as noted to the right.	Revised text on page xiv of the Executive Summary: Exceedance of the upper SMCL for chloride or TDS (500 mg/L and 1,000 mg/L, respectively) in any Deep Aquifer monitoring well included in the water quality monitoring well network. Revised text on page 3-38 of the GSP: For water containing TDS or chloride in excess of drinking water standards, treatment would be required prior to use. It should be noted it is not uncommon for municipal or domestic supply systems to treat water prior to potable use. The State of California has adopted an upper Secondary Maximum Contaminant Level (SMCL) ~~for TDS~~ of 1,000 mg/L TDS and 500 mg/L chloride, and a short-term maximum SMCL of 1,500 mg/L TDS and 600 mg/L chloride. United States Environmental Protection Agency's (EPA's) and California's recommended maximum secondary limit is 500 mg/L TDS and 250 mg/L chloride. TDS and chloride concentrations in groundwater ranging to the "upper" contaminant level are acceptable if it is neither reasonable nor feasible to provide more suitable water sources. However, for purposes of determining whether groundwater is suitable for domestic and municipal water purposes, SWRCB Resolution No. 88-63, which is incorporated in the RWQCB's Basin Plan, governs over all other standards. See Attachment B (Chapter 5 edits).
MCWRA 9	Global Comments	Groundwater Dependent Ecosystems: The GDEs mentioned near the MGSA area are outside of the jurisdiction area for the MGSA. These exist in the SVBGSA area, whose GSP recognizes might exist, but need to be field mapped to confirm they exist. Even if they do, SVBGSA's GSP doesn't mention the concern of decreasing groundwater levels negatively affecting GDEs.	Please refer to Master Response 2 - MGSA Jurisdiction and GSP Requirements for information regarding the need for the GSP to address and prevent potential undesirable results outside the MGSA Area during plan implementation. The MGSA GSP is required to prevent significant and unreasonable impacts to beneficial users and uses outside the MGSA that could interfere with the	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			ability of the GSPs to meet the Sustainability Goal for the Subbasin, which includes the protection of environmental beneficial uses. Please refer to Master Response 8 - Groundwater Dependent Ecosystems for additional information regarding the characterization and significance of groundwater dependent ecosystems (GDEs) near the MGSA Area. MGSA has determined GDEs east of the MGSA Area could be adversely affected by groundwater extraction inside the MGSA Area. The fact that SVBGSA's assessment of GDEs throughout the Subbasin has not progressed to the point of recognizing these particular GDEs is not relevant to this finding or to the requirement for the MGSA's GSP to consider it. MGSA has advised SVBGSA regarding its findings. It is also noteworthy that other commenters (notably The Nature Conservancy) have deemed SVBGSA's handling of GDEs as inadequate. It is anticipated that assessment, monitoring and management of these GDEs can be readily coordinated with SVBGSA, and this will be a benefit to SVBGSA's ability to meet the Sustainability Goals in its GSP for the adjacent area of this Subbasin.	
MCWRA 10	Section 3.1.9, page 3-17 second paragraph	"MCWRA uses a standard of 500 milligrams per liter (mg/L) to define the areas affected by seawater intrusion and inform its management decisions." Should specify that this refers to 500 milligrams per liter (mg/L) chloride.	Thank you for pointing out this omission. The GSP has been corrected as noted to the right.	Revised text on page 3-18: MCWRA uses a standard of 500 milligrams per liter (mg/L) <u>chloride</u> to define the areas affected by seawater intrusion and inform its management decisions
MCWRA 11	Section 3.1.9, page 3-17, third paragraph	GSP states ... "chloride islands" have formed in the 400-ft aquifer beyond the main intrusion front as a result of downward migration of groundwater ... in areas where the aquitard separating the two aquifers is thin or absent ... ". This vertical movement can also be caused by wells with screens across multiple aquifer units, improperly constructed or abandoned wells, wells in poor condition or from a vertical hydraulic gradient wherein groundwater levels are deeper in the underlying aquifer.	We agree that improperly constructed or abandoned wells can be a conduit for vertical seawater intrusion. The comment has been addressed as indicated to the right. However, this fact does not impair the accuracy of the Draft GSP's original conclusion. Please see Master Comment 4 - Groundwater Quality and Seawater Intrusion for additional discussion regarding this topic.	New text on page 3-17: <u>Vertical movement of saline groundwater into the 400-Foot Aquifer at "islands" could be due to both downward migration in areas where the aquitard thins or is heterogeneous, or at locations where wells are improperly constructed or abandoned, forming a conduit through which vertical migration may occur.</u>

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
MCWRA 12	Section 3.1.9, page 3-18	GSP states "The Federal Clean Water Act defines groundwater containing less than 10,000 mg/L as an Underground Sources of Drinking Water." Suggest clarifying that this refers to 10,000 mg/L TDS.	The comment has been addressed by making the addition as indicated to the right.	Revised text on page 3-18: The Federal Clean Water Act defines groundwater containing less than 10,000 mg/L <u>TDS</u> as an Underground Source of Drinking Water. Revised text on page 3-38: The Federal Clean Water Act defines groundwater containing less than 10,000 mg/L <u>TDS</u> as an Underground Source of Drinking Water.
MCWRA 13	Section 3.1.11.1, second paragraph, Figure 3-19	The Ag areas east and northeast of the MGSA boundary receive CSIP water .... it is assumed that any applied irrigation water that is not consumptively used by crops recharges the underlying aquifers. The area of CSIP is not in the Recharge Areas Mapped by Monterey County, as shown in Figure 3-19.	The comment is correct; however, the area identified is underlain primarily by well drained soils as indicated on Figure 3-9. It is therefore reasonable to assume that most applied irrigation water that is not consumptively used percolates to groundwater. This is also consistent with the groundwater mound shown on Figure 3-29 and discussed in Section 3.2.1.2 (p. 3-29).	None
MCWRA 14	Section 3.1.11.1, page 3-19	GSP states: "Measured river loses range from 4.5 cubic feet per second to 12.2 cubic feet per second per river mile. Assuming these measurements are representative of river losses over typical year ..." These are calculated losses for the Salinas River from below the reservoirs to Spreckels. Loss from Chualar to Spreckels is 5.3 cfs, and from T&S to Spreckels is 4.5 cfs. 2017 and 2018 river series also showed higher loss rates in all subareas compared to long-term averages. These years also followed a 5-year drought.	Thank you for the clarification. The information has been added to the GSP as noted to the right.	New text on page 3-19: Measured river losses ranged from 4.5 cubic feet per second (cfs) to 12.2 cfs per river mile. <u>It should be noted that these river measurements were conducted following a 5-year drought.</u> Assuming these measurements are representative of river losses over a typical year, this would be equivalent to a loss of approximately 3,300 to 8,840 AFY per river mile to groundwater recharge.
MCWRA 15	Section 3.1.12, first paragraph	"Migration of Salinas groundwater may be occurring downward through caps [sic] in the 180/400 Ft Aquitard". Other factors may have contributed to this including wells screened in multiple aquifers, wells with poor casings, etc.	Please refer to the response to Comment MCWRA 11.	New text on page 3-20: <u>Vertical movement of saline water into the 400-Foot Aquifer at "islands" could be due to both downward migration in areas where the aquitard thins or is heterogeneous, or at locations where wells are improperly constructed or abandoned, forming a conduit through which vertical migration may occur.</u>
MCWRA 16	Section 3.2.1.3, second paragraph	(Regional Hydrographs): Discussion of where data from wells is compiled should refer to quarterly, not annual, reports from MCWRA	Thank you for the clarification. The information has been added to the GSP as noted to the right.	Revised text on page 3-30: Data from approximately 50 of these wells are compiled in <u>MCWRA quarterly</u> reports

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
				(included in MCWRA 2015, 2016, 2017, 2018).
MCWRA 17	Section 3.2.1.3, page 3-31 (below Table 3-2)	Appendix 3.C is not available. Can't confirm hydrographs or trends inferring from hydrographs.	As was noted in the October 4, 2019 Draft GSP, Appendix 3.C contains hydrographs from wells monitored by MCWRA within 7 miles of the MGSA Area and is included in the final version of the MGSA GSP submitted to DWR. We have added the reference for the report from which these hydrographs were taken as indicated to the right.	Hydrographs for eight individual wells in the 180/400 Foot Aquifer Subbasin monitored by MCWRA (SVBGSA 2019) within approximately 7 miles of the MGSA Area that are not limited by confidentiality agreements are included in Appendix 3.C. Appendix 3.C is included in this version of the GSP.
MCWRA 18	Section 3.2.1.3, pages 3-33 and 3-34 bullet points	Appendix 3.D is not available. Can't confirm hydrographs or trends discussed in bullet points.	As was noted in the October 4, 2019 Draft GSP, Appendix 3.D contains hydrographs from wells monitored for the MPWSP and is included in the final version of the MGSA GSP submitted to DWR. We have added the reference for the publicly available MPWSP report from which these hydrographs were taken as indicated to the right.	Appendix 3.D provides copies of the groundwater elevation hydrographs and specific conductance plots for the 24 monitoring wells constructed for the proposed MPWSP (GeoScience Support Services 2019). Appendix 3.D is included in this version of the GSP.
MCWRA 19	Figure 3-20	Figure 3-20 has the shapefile for the "Area of Impact" from the "Recommendations Report" but the Area of Impact in Ord 5302 is a different extent. Which is the text referring to? The Ordinance or the Recommendations report?	Figure 3-20 shows the area of seawater intrusion and the areas of thin or absent aquitards from Figure 12 of the MCWRA (2017) Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley report. The text on pages 3-20 and 3-22 describes the gaps in the 180/400-Foot Aquitard as shown on Figure 3-20. Ordinance No. 5302 is not discussed Section 3.1.12 of the GSP.	Revised text on page 3-20: The MCWRA (2017) report identifies 15 locations where gaps in the 180/400-Foot Aquitard were confirmed to exist. Figure 3-20 presents a map view illustration of the "area of impact" as mapped by MCWRA and the identified aquitard gaps.
MCWRA 20	Section 3.2.2, page 3-34, Figure 3-35	Figure 3-35 is the wrong graph. The GSP shows the East Side annual groundwater level change graph. The figure, and text describing it, should be corrected.	This comment is not clear. Figure 3-35 shows exactly the same graph as shown in Figure 5-29 in the SVBGSA October 1, 2019 Draft GSP and is a graph of the change in storage (not groundwater level) with units of acre-feet.	None
MCWRA 21	Section 3.2.2, page 3-35	MW-5 is not in the MGSA. Data for MW-7 should be included in the discussion.	Please refer to Master Response 2 - MGSA Jurisdiction and GSP Requirements for a discussion regarding the requirements to consider data outside the MGSA Area in describing the basin setting. Please note that water level data for MW-7 were not available prior to startup of the slant	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			well pilot test and therefore could not be included in the discussion of pre-test conditions.	
MCWRA 22	Section 3.2.2, page 3-35	GSP mischaracterizes/overstates the AEM work and the information that can be interpreted from the data. For example, nowhere is there a description of how resistivity data is converted first to conductivity and the [sic] what conversion factor is used to convert conductivity to TDS.	Please refer to Master Response 5 - Use and Interpretation of Geophysical Studies, and the response to Comment CalAm 7 above. AEM is being used by SWRCB to map and monitor areas of groundwater containing less than 3,000 mg/L TDS in other portions of the state, and is considered suitable for this purpose. The methodology, limitations and conversion factors used to process the AEM data are discussed in the referenced report (Gottschalk et al 2018).	None
MCWRA 23	Section 3.2.3.2, page 3-37, last paragraph	Confirm if SVBGSA and/or MCWD GSA are considering direct recharge into the Dune Sands rather than just the 180/400 Foot Aquifers.	As stated on page 9-22 of the SVBGSA Draft 180/400-Foot Aquifer Subbasin GSP, the types of projects that can be developed to supplement the 180/400-Foot Aquifer Subbasin's groundwater supplies or limit seawater intrusion include 1) in-lieu recharge through direct delivery of water to replace groundwater pumping and 2) direct recharge through recharge basins or wells. The purpose of these projects is recharge to the 180-Foot and 400-Foot Aquifers; however, south of the Salinas River this recharge would necessarily occur through the Dune Sand Aquifer. The text has been revised to address this comment as indicated.	Revised text on page 3-36: These projects are intended to increase the water elevation in the 180-Foot Aquifer and 400-Foot Aquifer to slow seawater intrusion; <u>however, south of the Salinas River this recharge would necessarily occur through the Dune Sand Aquifer</u>.
MCWRA 24	Section 3.2.3.1, page 3-35, first paragraph	Discussion of duration of seawater intrusion in 180/400 Foot Aquifers should be corrected to indicate that the 180-Foot has been subject to SWI for 75 years and the 400-Foot has been subjected to SWI for 60 years.	Thank you for the clarification. The text has been augmented to address the MCWRA comment.	Revised text on page 3-37: Regionally, the 180-Foot Aquifer has been subject to seawater intrusion for more than <u>75 years and the 400-Foot Aquifer for 60 years</u>, as demonstrated by increased salt content in wells near the Monterey Bay coastline.
MCWRA 25	Section 3.2.3.1, page 3-36, bullet points	Prior paragraph references the 500 m/L of chloride used by MCWRA to draw seawater intrusion lines. Standards referenced are all for TDS which is confusing after talking about chloride. State of California has adopted an upper Secondary Maximum Contaminant Level (SMCL) of 500 mg/L chloride and short-term maximum SMCL of 600 mg/L chloride. (NOTE: Recommended maximum level is 250 mg/L chloride).	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion and the response to Comment MCWRA 8.	Refer to the response to Comment MCWRA 8.

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
MCWRA 26	Section 3.2.3.1, page 3-36, first paragraph after bullet points	GSP states "An important consideration is that the salt concentration at which seawater intrusion is defined in the Subbasin is much lower than the TDS concentration in seawater which is approximately 35,000 mg/L. " The typical chloride concentration of seawater (19,000 mg/L chloride) is part of the dissolved solids measured by TDS. Chloride is one of the most abundant ions in seawater, making up about 54% of the dissolved ions concentration.	The comment is noted. Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion.	None
MCWRA 27	Section 3.2.3.2, page 3-38	Second paragraph: Where is the 8,300 acre-area number derived from?	The estimate of 8,300 acres was derived from figures included in Gottschalk et al (2018).	The reference has been added to the text
MCWRA 28	Figures 3-36 and 3-37	The low-TDS groundwater zone outlines (from Gottschalk et al., 2018) are outside of the MGSA boundary. Most of the measurable objectives mention detecting changes in the thickness of this low-TDS zone, however this is in SVBGSA's boundary.	Please refer to Master Response 2 - MGSA Jurisdiction and GSP Requirements. Figures 3-36 and 3-37 are maps showing the progression of the seawater intrusion front over time up to 2015 in the 180-Foot and 400-Foot Aquifers. SGMA and its regulations require MGSA to consider these types of basin conditions when drafting its GSP. *See* 23 CCR § 354.12. Indeed, the basin setting "serves as the basis for defining and assessing reasonable sustainable management criteria and projects and management actions" (*id*). Note that the sustainable management criteria have been changed in response to comments from SVBGSA as discussed below in our responses to the comments received from SVBGSA and presented in the attached, revision-marked version of Chapter 4 included as Attachment A.	*See* Attachment A (Chapter 4 Edits)
MCWRA 29	Figure 3-38	None of the GDE locations mapped are within the MGSA area. These locations would be addressed by SVBGSA GSP. An agreement between the SVBGSA & MGSA should include this concern.	Please refer to Master Response 2 - MGSA Jurisdiction and GSP Requirements for an explanation of the reasons why the GSP must consider conditions, beneficial uses, and beneficial users of groundwater that may be affected by groundwater extraction and management within the MGSA Area. SGMA's regulations specifically require a GSP to identify GDEs "within the basin." 23 CCR § 354.16(g). MGSA's GSP does not defer addressing these GDEs (unlike SVBGSA) because they are known and must be protected at the outset by the GSP. This is among the topics that would be addressed in an inter-basin coordination	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			agreement as discussed in Master Response 3 - GSP Coordination Requirements.	
MCWRA 30	Section 4.2, page 4-4	Reference to the 1996 Annexation Agreement - include copy as an appendix.	A reference to the City of Marina, Marina Coast Water District, and Monterey County (1996) Annexation Agreement and Groundwater Mitigation Framework for Marina Arid Lands, dated March 1996, has been cited in this paragraph and added to the reference list in Chapter 8. A copy of the document has been attached to Chapter 8.	Added reference to the Annexation Agreement on page 4-4 and included as appendix to Chapter 8:
MCWRA 31	Section 4.4.1, page 4-8	1st paragraph under blue box, 2nd to last sentence: Text reads "with the depth to groundwater increasing toward the Salinas River." This is incorrect, depth to groundwater decreases towards the Salinas River.	The MCWRA prepared map "Salinas Valley Basin August 2017 Lines of Equal Groundwater Elevation in the Pressure 400-Foot and East Side Deep Aquifers" has a -10 foot contour near the MGSA and -20 foot contour near the Salinas River: depth to groundwater is increasing towards the Salinas River in the 180-Foot and 400-Foot Aquifers.	None
MCWRA 32	Section 4.4.2.1, page 4-13, first full paragraph	Discussion about hydrographs omits any discussion of the role of precipitation and water year type on the hydrographs.	This paragraph discussed the correlation between groundwater levels measured in well MW-4s and actual evapotranspiration. It includes a discussion of variability in summer evapotranspiration between 2010 and 2018 and measured groundwater levels in MW-4S between 2014 and 2018, including seasonal fluctuations and interannual changes. It is mentioned that 2014 to 2016 was a period of severe drought. Precipitation is shown on the hydrograph. Further discussion of the hydrograph and water year types is not needed to support this discussion.	None
MCWRA 33	Section 4.5.1, page 4-19	The GSP's assertion of "a substantial zone of low-TDS groundwater (TDS < 3,000 mg/L) extending vertically from the DSA into the 180-Foot Aquifer and the 400-Foot Aquifer Sections 3.1.12 and 3.2.2." is from Hopkins' interpretation of the AEM work. The GSP should include the lab data for MW clusters. TDS at MW-1, MW-3, MW-4, TSW and the CEMEX well(s) at all depths exceed 3,000 mg/L. These are all the wells in the MGSA area. The location of low-TDS zone that is referred to, if it exists at all, would appear to be located outside of the MGSA area. · MCWRA first contoured seawater intrusion (e.g. ≥ 500	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion. The results discussed in the GSP are taken from the interpretation of hydrostratigraphy and water quality data contained in Gottschalk *et al* (2018) and the associated processed data. That report describes the methodology used, including the conversion factors used and the approach used to distinguish lithologic from water quality variations.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		mg/L chloride) at this area in both the 180-Foot & 400-Foot Aquifers in 1975. During the last 45 years the seawater intrusion front has continued to advance inland and to increase in chloride concentration in this area. · Estimating TDS for EC: Quality of groundwater, for each Zone, is tied to how AEM resistivity data that is converted to conductivity is then converted to TDS. A site-specific factor is needed to reliably convert EC to TDS. This is developed from laboratory analysis. What is the factor MGSA and Gottschalk (AEM work) are using?	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements. SGMA's GSP regulations require a discussion regarding the need and requirement to consider basin setting information, including water quality data outside of the MGSA Area in order to develop and implement sustainable management criteria for groundwater extraction inside the MGSA Area. Please refer to the responses to Comments HWG 24 and 26 below for a discussion of the fact the AEM data indicate the low-TDS groundwater zone encroaches on and extends into the eastern portion of the MGSA Area at some locations. The TDS data from the referenced monitoring wells are generally from long screen intervals and the sampling methodologies employed do not resolve vertical variability in water quality through the screen intervals.	
MCWRA 34	Chapter 4	These "low-TDS" waters are referred to in multiple places as "a higher quality groundwater zone" or "substantial storage of groundwater with designated potential beneficial use as a municipal or domestic supply". All the water quality data collected at the Test Slant Well, MW-1, MW-3, and MW-4, the MPWSP monitoring wells on the site at the MGSA area have chloride and TDS concentrations that exceed the Secondary Drinking Water Standards and is well above Agricultural Suitability for Irrigation Water, Class III - Injurious to Unsatisfactory. Additionally, statements about the "significant" or "substantial" quantity of this water is misleading, there is a lack of applicable data to determine volume.	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion for a discussion regarding the various applicable water quality standards. We agree that chloride and TDS concentrations are higher in groundwater beneath the MGSA Area than in the area further to the east, where the zone of low-TDS groundwater that is the subject of the language addressed by this comment is located. Please refer to Master Response 5 - Use and Interpretation of Geophysical Studies for a discussion regarding the appropriateness of using AEM data to assess of the extent and volume of groundwater containing less than 3,000 mg/L TDS. The study presented in Gottschalk *et al* (2018) presents an estimate that the Dune Sand Aquifer contains over 200,000 acre-feet of low-TDS groundwater. In addition, groundwater contained in this low-TDS zone is beneficially utilized by GDEs identified near the MGSA Area (see Master Response 8 - Groundwater Dependent Ecosystems). As such, we believe the available data are consistent with describing the volume of low-TDS groundwater in the Dune Sand Aquifer as "significant" and "substantial" in the	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			GSP. AEM is being used by SWRCB for the purpose of mapping the extent of water containing less than 3,000 mg/L TDS in other portions of the state, and the Stanford team which completed the cited work is currently conducting work for DWR in support of the SGMA program in several critically overdrafted basins using the same general AEM methodologies. As such, we do not agree that there is a lack of applicable data to estimate volume.	
MCWRA 35	Section 4.5.1, page 4-20	There is a partial sentence at the end of the last paragraph on this page.	A period was inadvertently included in the middle of the sentence and has been removed as indicated to the right. Thank you for the comment.	Revised text on page 4-20: The pumping test was discontinued in February 2018 without reports of undesirable results, and represents the only long-term groundwater extraction within the MGSA Area.
MCWRA 36	Section 4.5.2, page 4-21, 2nd bullet point	GSP states "Seasonal fluctuations in groundwater elevations in the Dune Sand Aquifer range from approximately 1 to 2 feet." Where are the data? Suggest including a hydrograph. This page goes on to say, "The range of fluctuation in the low-TDS zone of thickness is not known. These factors limit the ability ... distinguishable from natural background fluctuations." What methodology will be used measure the thickness? How can a change of 1 foot be distinguishable when it states that the range of fluctuations is not known and that there is a limited ability to reliably detect very small changes in the thickness?	The water level data are taken from the MPWSP published hydrographs which are included in Appendix 3.D (included in the final GSP and from publicly available sources known to the commenter). In addition, hydrographs for the MW-4 well cluster are included in Figure 4-1. A combination of groundwater level monitoring, extraction reporting and induction logging will be used to assess changes in groundwater storage in the low TDS zone. Revised text in Chapter 5 recognizes that the resolution of induction logging will be data driven.	*See* Attachment A (Chapter 4 Edits) and Attachment B (Chapter 5 edits)
MCWRA 37	Section 4.6.2, page 4-28, 4th bullet point	Not sure that AEM and induction logging have the capability to distinguish the small/fine-scale changes stated in the minimum thresholds.	See response to Comment MCWRA 36 above.	*See* Attachment A (Chapter 4 Edits)
MCWRA 38	Section 4.8.3, p. 4-45, 1st bullet point	GSP refers to "A groundwater elevation in the 180-Foot or 400-Ft Aquifers that is 2 feet above historic low groundwater elevations measured in 2015 ...". Should this be 1 foot?	The correct value is 1 foot above 2015 groundwater levels.	The corrected value has been included in Chapter 4.
MCWRA 39	Section 4.9.1, page 4-47, 2nd bullet point,	GSP states "Therefore, the Salinas River is managed ... the existing depletions are neither significant nor unreasonable."	The statement was adapted from the SVBGSA's GSP. We have determined that this over-simplified	The text on page 4-58 is modified as follows: In addition to managing the river for environmental needs, the MCWRA manages the Salinas River to maintain adequate

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
	last sentence	MCWRA does not agree with this and it over-simplifies the operations of the Salinas River.	statement is not necessary and have deleted is as indicated to the right.	water supply for other beneficial uses. The Nacimiento and San Antonio reservoirs provide flood control benefits as well as groundwater recharge benefits through its sandy channels, where water rights holders along the river can pump out water according to their water rights~~. Therefore, the Salinas River is managed to satisfy the water supply needs of riparian pumpers and the existing depletions are neither significant nor unreasonable.~~
MCWRA 40	Section 4.9.1, page 4-47, 3rd bullet point	What about riparian rights? Groundwater pumpers don't have to hold "water rights".	Groundwater pumpers must still hold water rights. The major categories of potential groundwater rights are overlying rights, appropriative rights and prescriptive rights. While riparian rights only apply to surface waters, landowners overlying a basin possess overlying rights to pump groundwater for their reasonable use (*City of Pasadena v. City of Alhambra*, 33 Cal. 2d 908, 925 (1949)). However, it is unclear how MCWRA's comment relates to this portion of MGSA's GSP, which states: "Regionally, there is significant leakance from the Salinas River to the underlying groundwater, but it is not considered unreasonable with regards to riparian rights holders. To the extent that groundwater pumping depletes surface water flows, these depletions and the potential surface water limitations would be injurious only if the surface water right holders held rights senior to the groundwater pumpers." Therefore, no changes to the GSP are proposed.	None
MCWRA 41	Chapter 5, global comment	Monitoring Network and Objectives are all taken from Agency's Programs and the possible development of the Integrated Coastal Monitoring Program, but there currently is no agreement in place between MGSA and MCWRA.	Per our conversations with MCWRA staff, the data proposed for utilization will be public data; however, MGSA is in the process of developing an agreement with MCWRA regarding data sharing and use of confidential data.	New text on page 5-3: MGSA anticipates that data collected by MCWRA for the MPWSP MMRP will be provided to MGSA for this GSP. In the event that the MPWSP is not implemented, MGSA will explore alternative arrangements with MCWRA to implement the monitoring program. MGSA is in the process of developing an agreement with MCWRA regarding utilization of monitoring data from its proposed coastal monitoring program. This

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
				agreement would recognize that if the MPWSP does not move forward, MCWRA will consult with the GSAs having jurisdiction in the area to develop an alternative coastal monitoring program using the existing monitoring and supply wells identified in its published work plan.
MCWRA 42	Section 5.2.3, page 5-9, last paragraph, 1st sentence	Appears to be an incomplete quotation. Suggest confirming, as we believe the 17,400 AFY includes water from DSA and 180-Foot Aquifer, but also the ocean water extracted through the seafloor.	For the purposes of this section, we have edited the GSP as noted to the right to reference the stratigraphic intervals in which the slant wells are completed rather than making reference to the withdrawal from groundwater from Subbasin Aquifers.	The MGSA Area encompasses approximately 372 acres and is proposed as the location for the extraction of 17,400 acre-feet/year (AFY) of groundwater from slant wells screened in the DSA and 180-Foot Aquifer stratigraphic intervals for the MPWSP (HWG 2017).
MCWRA 43	Section 5.3.1, pages 5-15 and 5-21	Second bullet point under Dune Sand, 180-Foot and 400-Foot Aquifers (page 5-15); also referenced in second bullet point on page 5-21 · "Spatial distribution of groundwater level decline that indicates the logged changes identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA area" What is the "zone of drawdown influence”? How is this defined, what is this derived from? Is this referring to the model predicted drawdown in the Integrated Coastal Monitoring Program and Plan?	This language was included in the draft GSP because MGSA has no authority to regulate groundwater extraction outside of its jurisdictional boundaries and the sustainable management criteria being monitored apply only in the area that may be influenced by pumping that MGSA may regulate. The area of predicted 1 foot drawdown from the proposed slant well pumping was presented in the Final Environmental Impact Report/Final Environmental Impact Statement (FEIR/FEIS) prepared for the MPWSP (ESA 2018). Clarification has been added as indicated to the right.	See Attachment B (Chapter 5 edits)
SVBGSA Letter 1	General	While the MGSA has made a significant attempt to quickly develop a passable GSP, SVBGSA finds the draft GSP incomplete, inaccurate, and incompatible with SVBGSA’s GSP for the 180/400-Foot Aquifer Subbasin.	The commenter's opinions are noted, but are incorrect. As demonstrated more fully throughout MGSA's comment responses, MGSA's GSP is complete, accurate, and complies with SGMA requirements.	None
SVBGSA Letter 2	General	SVBGSA is concerned that the large number of errors and omissions in the MGSA GSP will result in the GSP being rejected by the California Department of Water Resources (DWR). An inadequate GSP by MGSA could potentially result in the entire 180/400-Foot Aquifer Subbasin being declared out of compliance with the Sustainable Groundwater Management Act (SGMA). Submitting this GSP therefore puts	The commenter's opinions and concerns are noted, but are incorrect. As demonstrated by our responses to SVBGSA and to other commenters, the MGSA's Final GSP complies fully and completely with SGMA and its requirements. As discussed in Master Response 3 - GSP Coordination Requirements, we believe that many of SVBGSA's concerns stem from the assumption that if any	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		the SVBGSA at risk of being part of a subbasin that is declared probationary by the State of California.	coordination is needed to assure successful implementation of the MGSA's and SVBGSA's GSPs, the responsibility for coordination falls solely on MGSA. This is not correct. MGSA's GSP addresses gaps in SVBGSA's GSP, and as a result, if MGSA and SVBGSA can reach a coordination agreement, DWR is more likely to find their coordinated GSPs sufficient than SVBGSA's alone.	
SVBGSA Letter 3	General	A coordination agreement between SVBGSA and MGSA is required if both GSPs are submitted to DWR. DWR will declare both SBGSA and MGSA's GSPs incomplete if a coordination agreement is not included. Unfortunately, SVBGSA has identified a number of technical areas where it will be very difficult to reach the settlements needed for a coordination agreement.	MGSA agrees that CWC Sections 10717(b)(3) and 10733.4(b) require GSAs to file their coordination agreement with their GSPs. MGSA remains committed and willing to work with SVBGSA to reach a coordination agreement. Please refer to Master Response 3 -GSP Coordination Requirements for additional information regarding this issue.	None
SVBGSA Letter 4	General	Significant points of required coordination that will be difficult to achieve include: • The MGSA attempts to set thresholds for future groundwater levels and other criteria in wells managed by SVBGSA. SVBGSA is the only GSA with authority to set management criteria within the SVBGSA area. MGSA can only set management criteria for wells within its boundaries.	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements. The GSP sets thresholds and objectives for representative monitoring sites outside its boundaries for the purpose of regulating groundwater extraction within its boundaries. This is not prohibited by the GSP Regulations, and in fact is required to assure that groundwater management in the MGSA Area can be implemented in coordination with SVBGSA to assure sustainable groundwater management throughout the Subbasin. It also ensures that groundwater management in the MGSA Area will not prevent adjacent groundwater subbasins from achieving their sustainability objectives. We acknowledge that the establishment and implementation of sustainable management criteria must be coordinated between MGSA and SVBGSA as discussed in Master Response 3 - GSP Coordination Requirements.	None
SVBGSA Letter 5	General	Significant points of required coordination that will be difficult to achieve include: • The MGSA attempts to set criteria for Groundwater Dependent Ecosystems (GDEs) that are in the SVBGSA GSP area. SVBGSA is the only GSA with authority to set	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements and Master Response 8 - Groundwater Dependent Ecosystems. SGMA and its regulations require MGSA to consider basin conditions such as the presence of GDEs when drafting its GSP. *See* 23 CCR § 354.12.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		management criteria within the SVBGSA area. MGSA can only set management criteria for wells within its boundaries.	The regulations specifically require a GSP to identify GDEs "within the basin." *Id.* § 354.16(g). SVBGSA's failure to recognize or consider the GDEs located near the MGSA Area in its GSP puts these protected resources at risk of irreversible damage. We acknowledge that the establishment and implementation of sustainable management criteria must be coordinated between MGSA and SVBGSA as discussed in Master Response 3 - GSP Coordination Requirements.	
SVBGSA Letter 6	General	Significant points of required coordination that will be difficult to achieve include: • Coordination between the two GSPs requires a consistent description of the principal aquifers and hydrogeology. Coordination between the two GSPs will not be possible until there is agreement on whether or not the Dune Sand Aquifer constitutes a principal aquifer.	Please refer to Master Response 7 - Dune Sand Aquifer for additional information regarding the designation of the Dune Sand Aquifer as a Principal Aquifer. MGSA agrees that coordination between SVBGSA and MGSA will require agreement on whether or not the Dune Sand Aquifer constitutes a Principal Aquifer. We acknowledge that the establishment and implementation of sustainable management criteria must be coordinated between MGSA and SVBGSA as discussed in Master Response 3 - GSP Coordination Requirements; however, we note that under the SGMA regulations, this responsibility applies to SVBGSA as well as to MGSA. We further note that the consultants for MCWD GSA consider the Dune Sand Aquifer to be a Principal Aquifer in the adjacent Monterey Subbasin, and similar coordination discussions will therefore need to take place between MCWD GSA and SVBGSA.	None
SVBGSA Letter 7	General	Significant points of required coordination that will be difficult to achieve include: • SGMA requires that a single undesirable result for each sustainability indicator be applied to the entire Subbasin. The SVBGSA GSP and the MGSA GSP state significantly different undesirable results. As explained in more detail in the attached document, it is unlikely that a single undesirable result can be reconciled between the two plans for indicators such as seawater intrusion and surface water depletion.	Please refer to Master Response 6 - Sustainable Management Criteria. MGSA's GSP presents the undesirable results established in SBBGSA's GSP and then includes local information intended to serve as a complement. Chapter 4 of the GSP has been edited regarding this approach. We note that under the SGMA regulations, this responsibility for coordination regarding establishment of sustainable management criteria falls to SVBGSA as well as to MGSA. We acknowledge that the establishment and implementation of sustainable management criteria must be coordinated between MGSA and SVBGSA as discussed in Master	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			Response 3 - GSP Coordination Requirements. We further note that the consultants for MCWD GSA share many of the same concerns regarding local undesirable results.	
SVBGSA 1	Executive Summary	The Executive Summary states that the SVBGSA used a pre-publication version of the USGS SVIHM to evaluate and develop regional water budgets for the Subbasin; however, the SVIHM was only used for the future projected water budget, as stated in the SVBGSA 180/400-Foot Aquifer Groundwater Sustainability Plan.	We appreciate SVBGSA's clarification. The text has been revised consistent with the comment.	Revised text on page x of the Executive Summary: SVBGSA used <u>the pre-publication version of</u> the USGS Salinas Valley Integrated Hydrological Model (SVIHM) to evaluate and develop <u>the future projected</u> regional water budgets for the Subbasin.
SVBGSA 1a	Executive Summary	This GSP relies on the water budget and other information from the SVBGSA 180/400-Foot Aquifer Subbasin GSP, which does not include the Dune Sand Aquifer as a principal aquifer.	Please refer to Master Response 7 - Dune Sand Aquifer for information regarding the local importance of the Dune Sand Aquifer and the reasons for its designation as a Principal Aquifer. As indicated in the comment, this GSP relies on the regional water budget analysis completed by SVBGSA supplemented by a local water budget under current conditions and qualitative information regarding local historical and projected water budget conditions. The local water budget does account separately for the Dune Sand Aquifer and includes the following groundwater inflow components: deep percolation of precipitation, deep percolation of process water, subsurface inflow from adjacent areas, and inter-aquifer influxes. Outflows from the groundwater system include groundwater pumpage from the MPWSP test slant well and subsurface discharge from the Dune Sand Aquifer to the Pacific Ocean. It should be noted that these components are also accounted for in the general/regional SBVGSA water budget, only the Dune Sand Aquifer is not separately distinguished; therefore, the water budgets in the two GSPs are compatible.	None
SVBGSA 1b	Executive Summary	This GSP also includes GDEs dependent on the vernal ponds; however, the GDEs appear to be entirely or mostly outside the MGSA area.	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements and Master Response 8 - Groundwater Dependent Ecosystems. SGMA and its regulations require MGSA to consider basin conditions such as the presence of GDEs when drafting its GSP. *See* 23 CCR § 354.12. The regulations specifically require a GSP to	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			identify GDEs "within the basin." *Id.* § 354.16(g). SVBGSA's failure to recognize or consider the GDEs located near the MGSA Area in its GSP puts these protected resources at risk of irreversible damage. We acknowledge that the establishment and implementation of sustainable management criteria must be coordinated with SVBGSA as discussed in Master Response 3 - GSP Coordination Requirements.	
SVBGSA 2	Chapter 1, Figures ES-1, 1-2, 1-3, and 2-2	Several maps of GSA Jurisdictions in the Subbasin are incorrect because they use GIS layers that have since been updated. The MCWD GSA area does not include the Marina Airport, so the Ord Service Area triangle extending into the 180/400-Foot Aquifer Subbasin should be smaller.	The revised MCWD GSA area boundary was uploaded to the DWR website after the Draft MGSA GSP was released for public review on October 4, 2019. The new boundary has been downloaded and the figures in question have been revised.	MCWD GSA boundaries on Figures ES-1, 1-1, 1-3, 2-2, and 5-1 have been revised.
SVBGSA 3	Chapter 1, page 1-2	In Chapter 1, it states that the remaining subbasins in the Salinas Valley Basin are designated as high priority by DWR, but not critically overdrafted. This should be corrected to be "medium- and high-priority."	The statement has been corrected as indicated to the right.	Revised text on page 1-2: The remaining subbasins in the Salinas Valley Basin are designated as <u>medium- and</u> high-priority by DWR, but not critically overdrafted.
SVBGSA 4	Section 1.3, page 1-8	Section 1.3 incorrectly states that the MCWD GSA has retained its jurisdictional authority to approve the SVBGSA GSP. This may have been copied from an earlier draft of the SVBGSA GSP, but it should be deleted from the MGSA GSP.	MGSA has clarified the text to state that MCWD GSA and SVBGSA will collaborate during the GSP development process for the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin as specified in the December 13, 2019 Framework Agreement between these two GSAs.	Revised text on page 1-8: Although MCWD GSA and SVBGSA have agreed that SVBGSA will prepare the GSP for these areas<u>, the parties agreed to actively consult with each other and review draft work products during the GSP development process for the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin</u> MCWD GSA has retained its jurisdictional authority to approve the GSP for these areas.
SVBGSA 5	Section 1.5, page 1-10	Section 1.5 incorrectly states that "…DWR considers none of these three GSAs to be exclusive GSAs for the entire Subbasin; however, each GSA is exclusive for that portion of the Subbasin within its jurisdictional boundaries." Currently, DWR considers neither the SVBGSA nor the MGSA exclusive in any part of the Subbasin.	This issue is currently subject to ongoing litigation.	Revised text on page 1-10: "DWR considers none of these three GSAs to be exclusive GSAs for the entire Subbasin~~; however, MCWD GSA is the exclusive GSA for that portion of the Subbasin within its jurisdictional boundaries~~."
SVBGSA 6	Section 2.1.1.1, page 2-1	This chapter states that there are 8 subbasins in the Salinas Valley Groundwater Basin. This should be corrected to be 9, based on the addition of the Atascadero Subbasin.	The statement has been corrected, and the Atascadero Area Subbasin has been added to Figure 2-1.	Revised text on page 2-1: The Salinas Valley Groundwater Basin includes eight <u>nine</u> groundwater subbasins designated by the California Department of Water Resources

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
				(DWR) in Bulletin 118 (DWR 2004) and shown on Figure 2-1, including the 180/400 Foot Subbasin, East Side Aquifer Subbasin, Forebay Aquifer Subbasin, Upper Valley Aquifer Subbasin, Langley Area Subbasin, Monterey Subbasin, Seaside Subbasin, Atascadero Area Subbasin, and Paso Robles Area Subbasin. Figure 2-1 has been revised to show the Atascadero Subbasin.
SVBGSA 7	Section 2.2.10.4, page 2-20	In Section 2.2.10.4 MCWD Recycled Water Project, it is misleading to state the 19,500 AFY of recycled water for Castroville area. Locating that statement in this section makes it seem that this amount is in addition to CSIP and M1W that have already been discussed. Up to 19,500 AFY capacity of M1W should be shifted to section 2.2.10.1 and clarify the amount of recycled water for landscaping in Marina in 2.2.10.4.	Thank you for the clarification. The text in Sections 2.2.10.1 and 2.2.10.4 has been edited as suggested. Up to 19,400 AFY of recycled water from M1W has been described in Section 2.2.10.1 under Monterey County Water Recycling Projects. MCWD currently uses about 600 AFY of recycled water for landscaping in the Marina and Seaside areas.	Revised text on page 2-19 (Section 2.2.10.1): The following discussion will be added at the end of the section: M1W operates a large treatment plant located in the County Environmental Park north of Marina off Del Monte Boulevard. This plant will produce up to 19,500 AFY of recycled water for irrigation in the Castroville area to help contain seawater intrusion. The farmers in this area will be able to reduce groundwater pumping from the aquifer and thereby fight seawater intrusion. This plant will provide recycled water (approximately 600 AFY) for some landscaped areas in Marina. Revised text on page 2-20 (Section 2.2.10.4): MCWD currently uses about 600 AFY of recycled water for landscaping in the Marina and Seaside areas. The use of recycled water reduces the amount of groundwater that is pumped from aquifers. In the Salinas Valley, where aquifers are over pumped, reduced pumping decreases the rate of seawater intrusion. MCWD will receive recycled water from M1W (described above) for some landscaped areas in Marina.
SVBGSA 8	Chapter 3	Much of Chapter 3 provides description of the entire Salinas Valley Groundwater Basin or the 180/400-Foot Aquifer Subbasin, not just the area under the jurisdiction of the	The GSP distinguishes discussion regarding the regional setting from local setting. Additional edits	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		MGSA. The Plan should more clearly separate when it is not discussing the area under the jurisdiction of the MGSA.	may be considered for future updates as coordination discussions with SVBGSA progress.	
SVBGSA 9	Chapter 3, page 3-1	Chapter 3 states that the MGSA area is 398 acres; however, if the MGSA area is trimmed to the Subbasin outline used by DWR it is closer to 372-acres.	The comment is correct, and the text has been revised consistent with the SVBGSA comment. The boundary of the MGSA Area has been trimmed to match the 180/400 Foot Aquifer Subbasin outline published by DWR and figures have been updated as appropriate.	Revised text on page 3-1: This chapter describes the basin setting of the City of Marina Groundwater Sustainability Agency (MGSA) Area of the 180/400 Foot Subbasin (MGSA Area), a 372-acre area at the western end of the 180/400 Foot Aquifer Subbasin (Subbasin). Boundary has been updated on Figures as appropriate.
SVBGSA 10	Section 3.1.6, page 3-11	Section 3.1.6 identifies the Dune Sand Aquifer as a principal aquifer in the Subbasin. The SVBGSA GSP does not identify the Dune Sand Aquifer as a principal aquifer, and therefore the SVBGSA does not propose to manage this sand veneer. Coordination between the two GSPs requires a consistent description of the principal aquifers and hydrogeology. Coordination between the two GSPs will not be possible until there is agreement on whether or not the Dune Sand Aquifer constitutes a principal aquifer.	The rationale for designation of the Dune Sand Aquifer as a Principal Aquifer is discussed in Section 3.1.6.1 (pp 3-11 and 3-12) and Section 5.1 (p. 5-1) of the GSP. Please refer to Master Response 7 - Dune Sand Aquifer for information regarding the local importance of the Dune Sand Aquifer and the reasons for its designation as a Principal Aquifer. The Dune Sand Aquifer underlies over 20 square miles, is estimated to contain over 200,000 acre-feet of low-TDS groundwater designated for protection under SWRCB Resolution No. 88-63 and provides water to protected GDEs. SVBGSA's failure to recognize or consider the GDEs located near the MGSA Area in its GSP puts these protected resources at risk of irreversible damage. We acknowledge that the establishment and implementation of sustainable management criteria must be coordinated with SVBGSA as discussed in Master Response 3 - GSP Coordination Requirements; however, we note that under the SGMA regulations, the responsibility for coordination regarding establishment of sustainable management criteria falls to SVBGSA as well as to MGSA. We further note that the consultants for MCWD GSA share many of the same concerns regarding designation of the Dune Sand Aquifer as a Principal Aquifer.	None
SVBGSA 11	Section 3.1.6.1, page 3-10	It would help to have more sources cited, such as in the first paragraph of 3.1.6.1.	The SVBGSA GSP included fewer than 80 cited references, and the MGSA GSP includes more than 125 cited references. Sources for the first	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			paragraph of Section 3.1.6.1 are cited in Section 3.1.6 and include eight cited references.	
SVBGSA 12	Chapter 4	This chapter fails to establish a single adequate sustainable management criterion for the MGSA area. The minimum thresholds, measurable objectives, and undesirable results established in this chapter do not meet the requirements of the SGMA regulations. Because the sustainable management criteria to not meet the requirements of the SGMA regulations, the MGSA and SVBGSA GSPs cannot be coordinated. This is because: 1. Coordination requires a single undesirable result be stated for each sustainability indicator in the Subbasin. 2. Undesirable results are a combination of minimum thresholds. 3. Therefore, the minimum thresholds in each GSP must be defined using comparable criteria. 4. Currently, the minimum thresholds are not defined comparably in the two GSPs. One example of the problem outlined above are the sustainable management criteria for seawater intrusion. The SVBGSA GSP sets minimum thresholds based on the location of an isocontour. The MGSA sets minimum thresholds based on either a thickening of the existing seawater intrusion wedge, or a spatial distribution of groundwater level decline. It is impossible to develop a meaningful numerical combination of these various minimum thresholds. Therefore, it is impossible to develop an undesirable result for the Subbasin. Additionally, the GSP fails to set any sustainable management criteria for the Deep Aquifers. Regulations require that sustainable management criteria be set for each principal aquifer in the GSP area. Specific comments on the sustainable management criteria for each sustainability indicator, and an explanation of why the sustainable management criteria are inadequate, are listed in the following subsections.	Please refer to Master Response 3 - GSP Coordination Requirements and Master Response 6 - Sustainable Management Criteria. The premise for the commenter's conclusion is flawed and could as easily be applied to find that the sustainable management criteria adopted in the SVBGSA's GSP are inadequate. The comment asserts that MGSA's sustainable management criteria are inadequate and do not meet the requirements of the SGMA regulations for the sole reason that they differ from the sustainable management criteria in the SVBGSA GSP. They then allege that because the sustainable management criteria contained in MGSA's GSP do not meet the requirements of the SGMA regulations, coordination of the two GSPs is not possible, ignoring the fact that the SGMA regulations clearly require coordination between GSA's to resolve such differences and assure sustainable groundwater management. Thus, what is deficient is the required coordination between the two GSPs. MGSA has attempted to coordinate preparation of its GSP with SVBGSA on numerous occasions and remains open to advancing coordination discussions. Consistent with this SGMA-compliant posture, in response to SVBGSA's comments, MGSA has adopted several important changes to its GSP that align it more closely with SVBGSA's GSP as noted below and in Attachment A.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 13	Section 4.4.1, page 4-8	Section 4.4.1 is inadequate because it does not establish undesirable results for the chronic decline of groundwater levels. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is established, and therefore fails to establish undesirable results as required by regulation.	Undesirable results for the chronic decline of groundwater levels are discussed on pages 4-8 through 4-11 of the draft GSP. Based on other GSPs developed for chronically overdrafted basins, MGSA adopted a structure in the draft GSP where undesirable results are discussed before minimum thresholds, following the order in which they are	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			discussed in the GSP regulations, and the GSP therefore did not list the specific combination of minimum thresholds that lead to an undesirable result. We have edited Chapter 4 to correct this and to change the order in which minimum thresholds, measurable objectives, and undesirable results are discussed to match the structure of SVBGSA's GSP, and to include a discussion of applicable minimum thresholds in the subsection on undesirable results. Please refer to Master Response 6 - Sustainable Management Criteria for additional information.	
SVBGSA 14	Section 4.4.2.1, page 12	Section 4.4.2.1 sets groundwater elevation minimum thresholds for the Dune Sand Aquifer. The Dune Sand Aquifer is not considered a principal aquifer by the SVBGSA, and therefore no sustainable management criteria for the Dune Sand Aquifer are required or enforceable.	The rationale for designation of the Dune Sand Aquifer as a Principal Aquifer is discussed in Section 3.1.6.1 (pp. 3-11 and 3-12) and Section 5.1 (p. 5-1) of the GSP. Please refer to Master Response 7 - Dune Sand Aquifer for information regarding the local importance of the Dune Sand Aquifer and the reasons for its designation as a Principal Aquifer. The establishment and implementation of sustainable management criteria must be coordinated between MGSA and SVBGSA as discussed in Master Response 3 - GSP Coordination Requirements. Under the SGMA regulations, the responsibility for coordination regarding establishment of sustainable management criteria falls to SVBGSA as well as to MGSA. We further note that based on our conversations with the consultants for MCWD GSA, they share many of the same concerns regarding designation of the Dune Sand Aquifer as a Principal Aquifer. Furthermore, the failure to set sustainable management criteria for the Dune Sand Aquifer fails to protect existing beneficial uses of shallow groundwater by protected GDEs, a fact which was also cited by The Nature Conservancy as a deficiency in SVBGSA's GSP, rendering it inadequate.	None
SVBGSA 15	Section 4.4.2.1, page 4-12	Section 4.4.2.1 erroneously sets the groundwater elevation minimum thresholds in the Dune Sand Aquifer as a drawdown due to pumping rather than a groundwater elevation as required by regulation (§354.28 (c)(1)). Furthermore, the	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements for a discussion regarding the need to establish sustainable management criteria in the area surrounding the	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		minimum thresholds in the Dune Sand Aquifer are erroneously based on conditions and measurements in areas covered by the SVBGSA GSP. The MGSA GSP has no authority to set sustainable management criteria in the SVBGSA GSP area. Therefore, the groundwater elevation minimum thresholds in the Dune Sand Aquifer are invalid.	MGSA Area to address deficiencies in the SVBGSA's GSP. Table 4-1 has been added to Section 4.4.2 and presents the specific groundwater level minimum threshold applicable to each representative monitoring site for the GSP that were calculated using the minimum threshold methodology presented in the draft GSP. The text has also been edited to reflect this addition, and to clarify that the minimum thresholds will be used in the GSP to regulate groundwater extraction inside the MGSA Area and associated drawdown.	
SVBGSA 16	Section 4.4.2, pages 4-11 to 4-14	The GSP fails to establish any groundwater elevation minimum thresholds in Section 4.4.2 as required by regulation. Groundwater elevation minimum thresholds must be a quantitative value established that each representative monitoring site. The GSP includes no quantitative groundwater elevation criteria at any representative monitoring site in the MGSA GSP area.	Please see response to Comment SVBGSA 15, above.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 17	Section 4.4.2.2, page 4-14	The groundwater elevation minimum threshold definitions for the 180-Foot and 400-Foot aquifers are incorrectly established as a percentage of monitoring wells with groundwater elevations above a certain criterion. Minimum thresholds must be set in each representative monitoring site, not as a percentage of monitoring wells. This GSP erroneously confuses the concepts of minimum thresholds and undesirable results.	The percentage of wells exceeding the minimum threshold defines undesirable results and has therefore been moved to the section discussing undesirable results.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 18	Section 4.4.3, page 4-18	Section 4.4.3 defines measurable objectives based on a drawdown due to pumping rather than a groundwater elevation as required by regulation. Groundwater elevation measurable objectives must be a quantitative groundwater elevation established at each representative monitoring site. The GSP includes no quantitative groundwater elevation criteria at any representative monitoring site in the MGSA GSP area, and therefore fails to establish any groundwater elevation measurable objectives.	Similar to the above response to Comment SVBGSA 15, Table 4-2 has been added to present the specific groundwater level measurable objective applicable to each representative monitoring site for the GSP. The text has also been edited to reflect this change, and references to drawdown have been corrected.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 19	Section 4.4.3, page 4-17	This GSP fails to establish any interim milestones for the chronic lowering of groundwater levels.	Interim milestones have been added in Table 4-2. Like SVBGSA's GSP, MGSA has determined that groundwater levels are currently above the minimum threshold and has established measurable objectives that will allow for some	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			future decline in groundwater levels, while maintaining groundwater levels sufficiently above the minimum threshold to allow for operational flexibility under variable future climatic and water demand and supply conditions. Please refer to Master Response 6 - Sustainable Management Criteria for additional information regarding the development and application of sustainable management criteria.	
SVBGSA 20	Section 4.5.1, pages 4-19 and 4-20	Section 4.5.1 is inadequate because it does not establish undesirable results for the reduction in groundwater storage. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is stated, and therefore this GSP fails to establish undesirable results as required by regulation.	Undesirable results for reduction in groundwater storage are discussed on pages 4-19 through 4-20 of the draft GSP. Based on other GSPs developed for chronically overdrafted basins, MGSA adopted a structure in the draft GSP where undesirable results are discussed before minimum thresholds, following the order in which they are discussed in the GSP regulations, and the GSP therefore did not list the specific combination of minimum thresholds that lead to an undesirable result. We have edited Chapter 4 to correct this and to change the order in which minimum thresholds, measurable objectives and undesirable results are discussed to match the structure of SVBGSA's GSP, and to include a discussion of applicable minimum thresholds in the subsection on undesirable results. Please refer to Master Response 6 - Sustainable Management Criteria for additional information.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 21	Section 4.5.2, pages 4-21 to 4-25	Section 4.5.2 erroneously attempts to establish the minimum thresholds for reduction in groundwater storage as either a decrease in thickness of low-TDS zone, or a spatial distribution of groundwater level decline. By regulation, the minimum threshold for the reduction in groundwater storage is a total volume of groundwater that can be withdrawn. Therefore, this section fails to adequately establish a minimum threshold for the reduction in groundwater storage.	The minimum threshold has been clarified to adopt the SVBGSA's regional threshold based on its sustainable yield, supplemented by a local threshold based on storage reduction of the low-TDS zone to prevent undesirable results while data gaps regarding the local sustainable yield are addressed. This threshold is based on measurements using groundwater levels combined with induction logging and extraction reporting as a proxy for extraction volumes along. Please refer to Master Response 6 - Sustainable Management Criteria for additional information.	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
SVBGSA 22	Section 4.5.3, page 4-25	Section 4.5.3 erroneously attempt to establish the measurable objectives for reduction in groundwater storage as either a decrease in thickness of low-TDS zone, or a spatial distribution of groundwater level decline. By regulation, measurable objectives for the reduction in groundwater storage are established as a total volume of groundwater that can be withdrawn. Therefore, this section fails to adequately establish a measurable objective for the reduction in groundwater storage.	Refer to our response to Comment SVBGSA 21 above. Please refer to Master Response 6 - Sustainable Management Criteria for additional information.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 23	Section 4.5.3, pages 4-25 and 4-26	The GSP fails to establish any reduction in groundwater storage interim milestones.	Interim milestones have been added. Similar to SVBGSA's GSP, they are identical to the minimum threshold. Please refer to Master Response 6 - Sustainable Management Criteria for additional information.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 24	Section 4.6.1, page 4-27	This section incorrectly states that the 180-Foot and 400-Foot Aquifers are, "experiencing undesirable results based on the regional definition". The SVBGSA defines an undesirable result as seawater intrusion past the mapped 2017 500 mg/L chloride isocontour. There are no published data showing that this undesirable result has occurred.	The text has been revised to reflect the finding that DWR has listed the Subbasin as critically overdrafted based on undesirable results related to seawater intrusion; however, undesirable results under SGMA are defined in the GSP as the inland migration of the 500 mg/L chloride isocontour past 2017 locations mapped by MCWRA, and there is no evidence that this has occurred.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 25	Section 4.6.1, pages 4-26 and 4-27	Section 4.6.1 is inadequate because it does not establish undesirable results for seawater intrusion. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is stated, and therefore this GSP fails to establish undesirable results as required by regulation.	Undesirable results for seawater intrusion are discussed on pages 4-26 through 4-27 of the draft GSP. Based on other GSPs developed for chronically overdrafted basins, MGSA adopted a structure in the draft GSP where undesirable results are discussed before minimum thresholds, following the order in which they are discussed in the GSP regulations, and the GSP therefore did not list the specific combination of minimum thresholds that lead to an undesirable result. We have edited Chapter 4 to correct this and to change the order in which minimum thresholds, measurable objectives and undesirable results are discussed to match the structure of SVBGSA's GSP, and to include a discussion of applicable minimum thresholds in the subsection on undesirable results. Please refer to Master Response 6 -	*See* Attachment A (Chapter 4 Edits)

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			Sustainable Management Criteria for additional information.	
SVBGSA 26	Section 4.6.2, page 4-28	Section 4.6.2 erroneously attempt [sic] to establish the minimum thresholds for seawater intrusion as either a thickening of the existing seawater intrusion wedge, or a spatial distribution of groundwater level decline. By regulation, the minimum thresholds for seawater intrusion is the location of an isocontour. Therefore, this section fails to adequately establish a minimum threshold for the reduction in groundwater storage.	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion for a discussion regarding the importance of considering the nearshore seawater intrusion dynamics in setting sustainable management criteria for seawater intrusion. We have edited the discussion of minimum thresholds for seawater intrusion to adopt the minimum threshold of the SVBGSA's GSP for the 180-Foot and 400-Foot Aquifers; however, we find the SVBGSA's minimum threshold for seawater intrusion into the Deep Aquifer to be non-compliant with all applicable water quality standards cited in the RWQCB's Basin Plan by permitting seawater intrusion into an aquifer system that is currently not seawater intruded. We have therefore adopted a minimum threshold for the Deep Aquifer of a theoretical 500 mg/L chloride isocontour location at the Subbasin's seaward boundary. In addition, we have adopted a minimum threshold for the Dune Sand Aquifer as the location of the 1,660 mg/L chloride isocontour in 2017, as explained further in our edits to Chapter 4. Finally, we have retained discussion of the importance of nearshore seawater intrusion dynamics in establishing an adequate monitoring program, as discussed in the DWR's BMP for monitoring networks and identification of data gaps. Please refer to Master Response 6 - Sustainable Management Criteria for additional information.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 27	Section 4.6.3, page 4-33	Section 4.6.3 erroneously attempts to establish the measurable objectives for seawater intrusion as either a statistically significant increasing trend in chlorides in three or more wells, or an increase in the thickness of the sailing groundwater wedge. By regulation, the measurable objective for seawater intrusion is an isocontour. Therefore, this section fails to adequately establish a measurable objective for seawater intrusion.	Please refer to our response to Comment SVBGSA 26, above. The GSP has been edited to adopt the measurable objectives of the SBVGSA's GSP for the 180-Foot and 400-Foot Aquifers. For the Deep Aquifer, the measurable objective is established as being identical to the minimum threshold because allowing seawater intrusion into this unintruded aquifer is inconsistent with sustainable groundwater management. The measurable objective for seawater intrusion into the Dune	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			Sand Aquifer is set along Highway 1 consistent with the adopted measurable objectives for the 180-Foot and 400-Foot Aquifers.	
SVBGSA 28	Section 4.6.3, pages 4-32 and 4-33	The GSP fails to establish any seawater intrusion interim milestones.	Please refer to our response to Comments SVBGSA 26 and 27, above. The GSP has been edited to adopt the interim milestones of the SBVGSA's GSP for the 180-Foot and 400-Foot Aquifers. For the Deep Aquifer, the interim milestones are established as being identical to the Minimum Threshold because allowing seawater intrusion into this unintruded aquifer is inconsistent with sustainable groundwater management. The interim milestones are described in the edited version of Chapter 4 of the GSP.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 29	Section 4.7.1, pages 4-33 to 4-35	Section 4.7.1 is inadequate because it does not establish undesirable results for degraded groundwater quality. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is stated, and therefore this GSP fails to establish undesirable results as required by regulation.	Undesirable results for water quality degradation are discussed on pages 4-33 through 4-35 of the draft GSP. Based on other GSPs developed for chronically overdrafted basins, MGSA adopted a structure in the draft GSP where undesirable results are discussed before minimum thresholds, following the order in which they are discussed in the GSP regulations, and the GSP therefore did not list the specific combination of minimum thresholds that lead to an undesirable result. We have edited Chapter 4 to correct this and to change the order in which minimum thresholds, measurable objectives and undesirable results are discussed to match the structure of SVBGSA's GSP, and to include a discussion of applicable minimum thresholds in the subsection on undesirable results. Please refer to Master Response 6 - Sustainable Management Criteria for additional information.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 30	Section 4.7.2, page 4-35	Section 4.6.2 [sic] erroneously attempt [sic] to establish the minimum thresholds for degraded groundwater quality as either a violation of groundwater quality objectives for the low-TDS groundwater zone, or interference with ongoing cleanups of contaminant plumes. By regulation, the minimum thresholds for degraded groundwater quality is either: 1. A number of supply wells that exceeds concentrations of constituents of concern	The GSP regulations require that the minimum threshold for degraded groundwater quality " ... *shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be used on the number of supply wells, a volume of*	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		2. A volume of water that exceeds concentrations of constituents of concern, or 3. A location of an isocontour. The proposed minimum thresholds do not meet any of these criteria, and therefore, this section fails to adequately establish a minimum threshold for the reduction in groundwater storage.	*water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin*." Thus, the regulations clearly require consideration of violation of water quality standards and migration of contamination plumes (e.g., which interferes with cleanup efforts) to be considered in setting minimum thresholds. The portion of the regulations cited in the comment only refers to the way in which the minimum thresholds are expressed. Consequently, since the wells for which monitoring data will be evaluated to assess compliance with the minimum threshold are monitoring wells (and not supply wells), we have revised the minimum objective to be expressed as the migration of a TDS or chloride isocontour as noted in the revised version of Chapter 4 included as Attachment A. The minimum threshold for induced migration of contamination plumes is consistent with the regulations and remains unchanged.	
SVBGSA 31	Section 4.7.3, page 4-40	Section 4.6.3 [sic] erroneously attempt to establish the measurable objectives for degraded groundwater quality as either a statistically significant increasing trend in chloride or TDS in three or more wells, a statistically significant increase above baseline chloride or TDS concentrations at the 90% confidence level, or a spatial pattern of groundwater level declines that indicate water quality changes. By regulation, the measurable objective for degraded groundwater quality is either: 1. A number of supply wells that exceeds concentrations of constituents of concern, 2. A volume of water that exceeds concentrations of constituents of concern, or 3. A location of an isocontour. The proposed measurable objectives do not meet any of these criteria, and therefore this section fails to adequately establish a measurable objective for seawater degraded groundwater quality.	Please refer to the response to Comment SVBGSA 30, above. The measurable objective has been modified to be expressed as the migration of an isoconcentration contour as noted in the revised version of Chapter 4 included as Attachment A. The measurable objective for induced migration of contaminant plumes complies with the SGMA regulations and remains unchanged.	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
SVBGSA 32	Section 4.7.3, pages 4-39 and 4-40	The GSP fails to establish any degraded groundwater quality interim milestones.	Since the measurable objectives are determined based on protection of established water quality standards, Chapter 4 of the GSP has been modified to establish interim milestones that are equal to the measurable objectives.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 33	Section 4.8.1, page 4-41	Section 4.8.1 is inadequate because it does not establish undesirable results for land subsidence. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is stated, and therefore this GSP fails to establish undesirable results as required by regulation.	Undesirable results for subsidence are discussed on pages 4-40 through 4-41 of the draft GSP. Based on other GSPs developed for chronically overdrafted basins, MGSA adopted a structure in the draft GSP where undesirable results are discussed before minimum thresholds, following the order in which they are discussed in the GSP regulations, and the GSP therefore did not list the specific combination of minimum thresholds that lead to an undesirable result. We have edited Chapter 4 to correct this and to change the order in which minimum thresholds, measurable objectives and undesirable results are discussed to match the structure of SVBGSA's GSP, and to include a discussion of applicable minimum thresholds in the subsection on undesirable results. Please refer to Master Response 6 - Sustainable Management Criteria for additional information.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 34	Section 4.8.2, page 4-42	Section 4.8.2 states that this GSP uses groundwater elevation data as a proxy for land subsidence because no land subsidence is currently measured in the basin and no evidence of land subsidence has been observed. While it is incorrect that no land subsidence is currently measured in the basin, it is acceptable to use groundwater elevation data as a proxy for land subsidence. However, in order to use groundwater elevation as a proxy, the GSP must establish that significant correlation exists between groundwater elevations and land subsidence. The GSP fails to establish this correlation.	Information regarding subsidence measurements in the portion of the Subbasin near the MGSA Area is discussed in Section 3.2.5 of the GSP, and that based on the available data the MGSA Area has not experienced significant subsidence. We have clarified the statement in Section 4.8.2 of the GSP to be more consistent with this finding. In addition, we have added a short paragraph discussing the cause of subsidence and its relationship to groundwater levels to better support the use of groundwater elevation data as a proxy for the minimum threshold.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 35	Section 4.8.2, page 4-42	Minimum thresholds for land subsidence in the 180-Foot and 400-Foot Aquifers are based on a percentage of groundwater elevations that are above a certain standard. This erroneously confuses the concepts of minimum thresholds and undesirable results. Minimum thresholds must be set at every	Undesirable results for subsidence are discussed on pages 4-40 through 4-41 of the draft GSP. Based on other GSPs developed for chronically overdrafted basins, MGSA adopted a structure in the draft GSP where undesirable results are	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		representative monitoring site. Therefore, this section fails to adequately establish minimum thresholds for land subsidence.	discussed before minimum thresholds, following the order in which they are discussed in the GSP regulations, and the GSP therefore did not list the specific combination of minimum thresholds that lead to an undesirable result. We have edited Chapter 4 to correct this and to change the order in which minimum thresholds, measurable objectives, and undesirable results are discussed to match the structure of SVBGSA's GSP. Table 4-1 has been added to Section 4.4.2 to present the minimum thresholds applicable to each representative monitoring site for chronic groundwater level decline and subsidence. Please refer to Master Response 6 - Sustainable Management Criteria for additional information.	
SVBGSA 36	Section 4.8.3, page 4-45	Section 4.6.3 [sic] erroneously sets measurable objectives for land subsidence in the 180-Foot and 400-Foot Aquifers as a percentage of groundwater elevations that are above a certain standard. This erroneously confuses the concepts of measurable objectives and undesirable results. Measurable objectives must be set at every representative monitoring site. Therefore, this section fails to adequately establish measurable objectives for land subsidence.	Table 4-2 has been added to present the specific groundwater level measurable objective applicable to each representative monitoring site for the GSP. The text has also been edited to reflect this change, and references to drawdown have been revised.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 37	Section 4.8.3, page 4-45	The GSP fails to establish any land subsidence interim milestones.	Interim milestones have been added in Table 4-2.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 38	Section 4.9.1, pages 4-46 to 4-48	Section 4.9.1 is inadequate because it does not establish undesirable results for depletion of interconnected surface waters. Undesirable results are defined as a combination of minimum thresholds. No combination of minimum thresholds is stated, and therefore this GSP fails to establish undesirable results as required by regulation. Furthermore, the depletion of interconnected surface water concerns listed in section 4.9.1 include areas in the SVBGSA GSP area.	Undesirable results for depletion of interconnected surface waters are discussed on pages 4-46 through 4-48 of the draft GSP. Based on other GSPs developed for chronically overdrafted basins, MGSA adopted a structure in the draft GSP where undesirable results are discussed before minimum thresholds, following the order in which they are discussed in the GSP regulations, and the GSP therefore did not list the specific combination of minimum thresholds that lead to an undesirable result. We have edited Chapter 4 to correct this and to change the order in which minimum thresholds, measurable objectives and undesirable results are discussed to match the structure of SVBGSA's GSP, and to include a discussion of	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			applicable minimum thresholds in the subsection on undesirable results. Please refer to Master Response 6 - Sustainable Management Criteria for additional information.	
SVBGSA 39	Section 4.9.1, pages 4-46 to 4-48	The assessment of undesirable results includes discussions of the Salinas River, which in not in the MGSA GSP area, and GDEs that are outside the MGSA GSP area. The GSP can only define sustainable management criteria within the plan area. The plan cannot define criteria for the SVBGSA GSP area.	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements for a discussion of the need to consider the effects of groundwater extraction and management within the MGSA Area on interconnected surface water outside of the MGSA Area in order to comply with the GSP regulations. SVBGSA's GSP does not include the basin setting description information, description of GDEs (including GDEs along the Salinas River), or sustainable management criteria necessary to assure sustainable groundwater management for all beneficial uses and users, including environmental users of groundwater, within and in the vicinity of the MGSA Area. MGSA's GSP addresses these data gaps in a way intended to be coordinated with SVBGSA's GSP to assure sustainable groundwater management throughout the Subbasin. Please refer to Master Response 3 - GSP Coordination Requirements for information regarding the need for SVBGSA and MGSA to participate in mutual and effective coordination.	None
SVBGSA 40	Section 4.9.2, page 4-48	Section 4.9.2 appears to use groundwater elevation data as a proxy for depletion of interconnected surface waters. It is acceptable to use groundwater elevation data as a proxy, however the GSP must establish that significant correlation exists between groundwater elevations and the rate or volume of surface water depletions. The GSP fails to establish this correlation, and therefore fails to adequately establish minimum thresholds for depletion of interconnected surface water.	Surface-groundwater interaction is discussed in Section 3.2.6 (pp. 3-41 through 3-44). Undesirable results for subsidence are discussed on pages 4-40 through 4-41 of the draft GSP. A paragraph discussing the correlation between shallow groundwater levels near the Salinas River and depletion of interconnected surface water has been added to Section 4.9.2 as noted in the updated version of Chapter 4 included as Attachment A. Table 4-1 has been added to Section 4.4.2 to present the minimum thresholds applicable to each representative monitoring site for chronic groundwater level decline, subsidence and interconnected surface water.	*See* Attachment A (Chapter 4 Edits)
SVBGSA 41	Section 4.9.3, pages	Section 4.9.3 appears to use drawdown attributable to groundwater extraction in the MGSA area as a proxy for	Table 4-2 has been added to present the specific groundwater level measurable objective applicable	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
	4-52 and 4-53	depletion of interconnected surface waters measurable objectives. It is not acceptable to use drawdown as a proxy; it is only acceptable to use groundwater elevation as a proxy for depletion of interconnected surface water measurable objectives. Therefore, this GSP fails to adequately establish measurable objectives for depletion of interconnected surface water.	to each representative monitoring site for the GSP. The text has also been edited to reflect this change, and references to drawdown have been modified.	
SVBGSA 42	Chapter 5	This chapter largely relies on groundwater monitoring sites within the SVBGSA GSP area. This GSP cannot set sustainable management criteria for representative monitoring sites in the SVBGSA GSP area. Only three well clusters identified in this chapter: MW-1, MW-3, and MW-4 appear to lie within the boundaries of the MGSA GSP. These are the only three well clusters that can be included in the MGSA GSP. The groundwater monitoring network for any of the sustainable management criteria therefore comprises only seven wells: MW-1S, MW-1M, MW-1D, MW-3S, MW-3M, MW-3D, MW-4S, MW-4M, MW-4D, and 1032. All other representative monitoring wells identified in the Chapter 5 are apparently in the SVBGSA GSP. Although the MGSA can collect data from these wells, the MGSA cannot set sustainable management criteria at these wells.	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements for a discussion regarding the need to establish and consider monitoring networks outside the MGSA Area in order to implement the GSP and assure sustainable management of the Subbasin. SGMA's regulations require that monitoring networks "shall promote the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions that occur through implementation of the Plan." 23 CCR § 354.32. The monitoring networks must also be "capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation." *Id.* § 354.34(a)). There is no requirement that all monitoring sites be located within a GSA's jurisdictional boundaries. In fact, compliance with the cited regulations may require otherwise. The monitoring networks in SVBGSA's GSP designate inadequate monitoring locations near the MGSA Area for principal aquifers identified either by MGSA or SVBGSA, essentially leaving the area inadequately managed. Sustainable management activities, including monitoring, must be coordinated in compliance with the GSP regulations as discussed in Master Response 3 - GSP Coordination Requirements. The responsibility for this coordination is mutual, and SVBGSA does not have the authority to unreasonably limit MGSA to considering only	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			monitoring data from within its jurisdictional area without coordinating to assure that the data it gathers are sufficient to support sustainable groundwater management in the MGSA Area.	
SVBGSA 43	Chapter 5	No groundwater monitoring wells exist or are planned, to monitor the Deep Aquifers within the MGSA GSP area. By regulation, the GSP must include groundwater elevation monitoring in each principal aquifer.	The GSP will rely on groundwater monitoring conducted by MCWRA in the vicinity of the MGSA Area to comply with this requirement.	None
SVBGSA 44	Chapter 6	Projects and actions in SGMA are designed to avoid undesirable results. As stated in our review of Chapter 4, there are currently no correctly established undesirable results in the GSP. Therefore, no actions need to be implemented immediately. The actions are therefore potential actions to avoid future undesirable results. However, with no clearly stated undesirable results, it is impossible to assess how any projects or actions will achieve sustainability.	The GSP regulations require that "… *[e]ach Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin*" (23 CCR § 354.44(a)). They further require a GSP to include "... *a description of the measurable objective that is expected to benefit from the project or management action. The list shall include projects and management actions that may be utilized to meet interim milestones, the exceedance of minimum thresholds, or where undesirable results have occurred or are imminent*" (23 CCR § 354.44(b)(1)). The management actions described in Chapter 6 are fully consistent with these requirements.	None
SVBGSA 45	Section 6.2.1, pages 6-2 to 6-7	Management action 6.1 contains no definitive actions to address seawater intrusion. While SVBGSA appreciates the measured and thoughtful response approach, the management action is not developed to a point where it will have any impact on seawater intrusion.	We disagree with this characterization of Management Action 1. Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion for a discussion of the nearshore seawater intrusion dynamics, including density-driven flow of highly saline groundwater, preferential pathways, and vertical as well as horizontal seawater intrusion when evaluating and addressing seawater intrusion. Given the importance of considering and addressing these processes, Management Action 1 is specifically targeted to address further seawater intrusion in the Dune Sand Aquifer, addresses the potential for vertical seawater intrusion into the Deep Aquifer, and may be beneficial to addressing inland seawater intrusion in the 180-Foot and 400-Foot	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			Aquifers. It is unreasonable to assume the management action would not have these effects.	
SVBGSA 46	Section 6.2.2, pages 6-7 to 6-10	Management action 6.2 contains no definitive actions to address impacts to GDEs. While SVBGSA appreciates the measured and thoughtful response approach, the management action is not developed to a point where it will have any impact on GDE health.	We disagree with this characterization of Management Action 2. As described in detail in Section 6.2.2.1 (pp. 6-7 through 6-9), Management Action 2 presents a logical progression of actions following a sequence from (1) Detection Monitoring; to (2) Biological and Hydrologic Assessment; and (3) Response Action Planning and Implementation. The description addresses the requirements of 23 CCR § 354.44(b) to identify the triggers for action, the specific actions involved, and the benefits expected to result. The management action is protective of GDE health in an environment where adverse effects have not yet occurred.	None
SVBGSA 47	Section 6.2.3, pages 6-10 and 6-11	Management action 6.3 is more accurately a plan to fill a data gap, not a management action that leads to sustainability. This is explicitly stated in Section 6.2.3.3. The SVBGSA agrees that this is a data gap that could be filled, but it more accurately fits in Chapter 7. SVBGSA appreciates MGSA's support of the projects and management actions included in SVBGSA's GSP.	We agree with this assessment and have moved Management Action 3 to Section 7.1.2 and identified it as part of Activity 2 to address existing data gaps.	Removed discussion of Management Action 3 from Chapter 6 and inserted it as an implementation action under Action 2 described in Section 7.1.2.
SVBGSA 48	Chapter 7, page 7-1	The GSP states that the MGSA plans to construct a locally refined groundwater flow, solute transport and density driven flow model. As required by SGMA, all GSPs in the Subbasin must use consistent data and tools. Therefore, any model developed by the MGSA will need to be approved and adopted by SVBGSA. This is a future coordination issue that is currently unresolved.	MGSA believes that development of a tool to address this data gap will need to be coordinated among the GSAs with responsibility of sustainable groundwater management in the nearshore area of the Subbasin. The GSP points out that MCWD GSA is planning to develop such a tool on pages 7-1, 7-3 and 7-11, and that MGSA will cooperate and coordinate with this endeavor. Table 7-1 on page 7-15 states "*MGSA to coordinate with SVBGSA and MCWD GSA on model review and significant outcome. Assumes need for local dual density model developed primarily by MCWD in cooperation with MGSA.*" We have added explicit statements to the other pages referencing that development of a local model will also be coordinated with SVBGSA.	Added statements on pages 7-1, 7-3 and 7-11 that the assumed development of a local groundwater model by MCWD GSA will also be coordinated with SVBGSA. Revised text on page 7-1: Concurrent with the above update, refining the GSP based on the planned development of a locally-refined groundwater flow model by Marina Coast Water District (MCWD) GSA that is able to simulate solute transport and density-driven flow <u>(these activities will also be coordinated with SVBGSA);</u> Revised text on page 7-3: The results of these studies and investigations, and the availability of refined tools and monitoring networks, may lead to changes in local

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
				monitoring networks and approaches during GSP implementation or as part of the planned five-year GSP update. <u>These activities will also be coordinated with SVBGSA.</u> Revised text on page 7-11: MCWD GSA is currently planning to conduct such studies for the area that includes their GSA boundaries and the surrounding region, including the MGSA Area and beyond. MGSA will collaborate with and review these studies, and update the HCM, sustainable management criteria, monitoring networks and management actions in this GSP to assure the sustainability goals are met if the MPWSP is implemented. <u>These activities will also be coordinated with SVBGSA.</u>
SVBGSA 49	Section 7.1.1.1, pages 7-2 to 7-7	The implementation plan discusses monitoring representative monitoring sites outside of the MGSA boundary. While MGSA can collect data from these sites, it has not authority to set sustainable management criteria at these sites including minimum thresholds and measurable objectives.	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements for a discussion regarding the appropriateness and need for the GSP to establish sustainable management criteria for representative monitoring sites outside the MGSA jurisdictional boundaries for the purpose of sustainable groundwater management activities within its boundaries.	None
SVBGSA 50	Section 7.1.2, page 7-8	The GSP lists the interconnection between groundwater and the Salinas River as a data gap. The Salinas River does not pass through the MGSA GSP area, and the MGSA GSP has no location where groundwater is interconnected with the Salinas River. Therefore, this is not a data gap the MGSA must fill.	Based on the available data, the statement that groundwater underlying the MGSA Area is not hydraulically connected to the Salinas River is incorrect. Further, it is clearly stated in the GSP that MGSA intends for SVBGSA to take the lead on addressing this data gap, and to coordinate with them. Section 7.1.2.2 of the GSP states "*SVBGSA has noted that the release of the calibrated USGS SVIHM will provide an important new tool and valuable additional data regarding the interconnection between the Salinas River and the DSA and other shallow aquifers, and the underlying 180-Foot Aquifer. Furthermore, SVBGSA has proposed a regional investigation to assess the level of interconnection using existing shallow wells*	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			located adjacent to the Salinas River (if any can be identified) and up to two new shallow wells along the Salinas River. MGSA will review the model results and the results of the SVBGSA investigation, perform supplemental local or regional evaluations as needed, and incorporate them into updates of the GSP." Table 7-1 on page 7-15 states *"MGSA to coordinate with SVBGSA and MCWD GSA on model review and significant outcome."* Please refer to Master Response 2 - MGSA's Jurisdiction and GSP Requirements for additional discussion regarding the appropriateness and need to characterize basin conditions and address data gaps outside the MGSA jurisdictional boundaries in order to support implementation of its GSP within its jurisdictional boundaries.	
SVBGSA 51	Section 7.1.2, page 7-8	SVBGSA disagrees with the statement that there is insufficient data to assess subsidence. The subsidence data provided by DWR shows no recent subsidence in the MGSA GSP area.	The references section of the GSP states in full that "*Although available data suggest that the vicinity of the MGSA Area has not experienced significant subsidence, the data are insufficient to assess the potential vulnerability of this area to future subsidence if groundwater extractions are increased.*" Please refer to Section 3.2.5 of the GSP for a discussion regarding subsidence measurements in the portion of the Subbasin near the MGSA Area. This section presents recent data from 2015 through 2018, which indicates that no significant subsidence occurred during that time and suggests the MGSA Area has not experienced significant subsidence. However, this section also acknowledges that DWR indicated in a 2014 study that insufficient data were available to assess the future vulnerability of the Salinas Valley Basin to future subsidence. Thus, while we agree that future subsidence near the MGSA Area is unlikely based on past measurements and the nature of the potentially-affected aquifers, we believe that the potential for subsidence must be further addressed before it can be ruled out as a potentially applicable sustainability indicator. Section 3.2.5 therefore goes on to state that "*MGSA will work*	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			with SVBGSA to address this data gap during GSP implementation."	
HWG 1	General	An overall comment is that the entire document is based on the questionable premise that the groundwater resources within MGSA can be used beneficially and that groundwater extraction within MGSA (from the Dune Sand Aquifer, 180-FTE Aquifer, or 400-Foot Aquifer) does harm to that resource.	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion. In California, all water under the ground is "groundwater," and under the "Sources of Drinking Water Policy" (SWRCB Resolution No. 88-63), the State Board provides that all groundwater is presumptively considered a potential source of drinking water. There is a pathway to "de-designate" groundwater of greater than 3,000 mg/L of TDS for the drinking water beneficial use through a public process before the Regional and State Boards, which has never occurred in this location. The corresponding federal standard under the Clean Water Act defines groundwater containing TDS at a concentration of less than 10,000 mg/l as an Underground Source of Drinking Water. 40 C.F.R. § 144.3. HWG appears to confuse the standards that apply to the source of drinking water with the standards that apply to produced or actual drinking water (often referred to as maximum contaminant levels or "MCLs"). The proper state and federal standards for determining whether groundwater is "usable" for drinking water are the "sources of drinking water" criteria, which utilize these 3,000 and 10,000 mg/L TDS standards. MGSA must comply with these standards, as well as the State Board's Resolutions and the Regional Board Basin Plan which incorporates them.	None
HWG 2	Chapter 3	HWG summary comments on the flawed Basin Setting analyses (Chapter 3) are: · The GSP presents a flawed hydrogeologic conceptual model (HCM) based on incorrect and invalid hydrogeologic interpretations of the aerial electromagnetics (AEM) surface geophysics and other data that is not in agreement with available field data including boring logs, aquifer test, groundwater level, and groundwater quality data; · The Marina GSA made no attempt to enlist the support and expertise of the Hydrogeologic Working Group (HWG)	We disagree with all of these comments. The MGSA is not flawed and does not mischaracterize hydrogeologic conditions. It is a draft document going through a normal review process. These HWG general comments are discussed further in our responses to specific HWG comments; therefore, are addressed below. Please refer to Master Response 5 - Use and Interpretation of	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		members (or utilize the most up-to-date hydrogeologic conceptual model for the area in the HWG Technical Report) in understanding the hydrogeology of the area even the though the HWG has recently provided oversight on the most recent and an extensive investigation of the hydrogeology specific to the MGSA area; · Groundwater levels/quality and aquifer/aquitard continuity are mischaracterized both outside and especially within the MGSA Plan Area; · The flawed Basin Setting analyses create many conflicts with the Salinas Valley Basin GSP; · The nature of seawater intrusion and the resulting impacts to potential beneficial uses is grossly mischaracterized; · The extremely flawed Basin Setting analyses lead to flawed and improper setting of sustainable management criteria.	Geophysical Studies for additional background regarding this issue. It should be noted that MGSA's preparation of the GSP was properly noticed, publicly disclosed and the subject of several advertised and noticed public workshops where public input was solicited. MGSA would have welcomed HWG's input into the GSP preparation process. Indeed, MGSA met with several interested parties to discuss the details of its approach and receive input. MGSA did review, rely on and reference the technical information developed by HWG and CalAm's other hydrogeologic and environmental consultants, and appreciates the contribution from this extensive dataset.	
HWG 3	Chapter 4	HWG comments on the sustainable management criteria presented in the Marina GSP (Chapter 4) are: · The GSP attempts to set SMC for areas outside of its Plan Area are unjustified and outside of its jurisdiction, and an attempt to usurp authority that belongs to the SVBGSA; · The GSP sets strict SMC based on inappropriate and flawed interpretations of technical data and analyses; · The GSP SMC inside and outside of the MGSA Plan Area present many conflicts to the SVBGSA GSP and interfere with key projects and management actions listed in the SVB GSP.	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements for a discussion regarding the appropriateness and need for the GSP to rely on data and sustainable management criteria that address conditions in the area outside MGSA's jurisdictional boundaries that could be affected by groundwater extraction within its boundaries. Please refer to Master Response 3 - GSP Coordination Requirements for a discussion regarding the regulations and requirements regarding GSP coordination that are intended to resolve potential conflicts and promote alignment between GSAs in the implementation of their GSPs.	None
HWG 4	Chapter 5	HWG comments on the monitoring program presented and adopted in the Marina GSP (Chapter 5) are: · Without approval and development of the Monterey Peninsula Water Supply Project (MPWSP), the monitoring program described in the GSP will not be funded, installed, or monitoring initiated; · The monitoring program is composed of representative monitoring sites located primarily outside of the MGSA Plan Area, which is not appropriate or within the jurisdiction of Marina GSA and in direct conflict with the SVB GSP.	MGSA is in the process of developing an agreement with MCWRA regarding utilization of monitoring data from its proposed coastal monitoring program. Once developed, this agreement will recognize that if the proposed MPWSP does not move forward, MCWRA will consult with the GSAs having jurisdiction in the area to develop an alternative coastal monitoring program using the existing monitoring and supply wells identified in its published work plan.	Reference to the development of an alternative coastal monitoring program in the event the MPWSP does not move forward has been added to Chapter 5. See Attachment B (Chapter 5 edits).

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			Reference to this contingency has been added to Chapter 5. Please see the Master Response 2 - MGSA Jurisdiction and GSP Requirements. A GSA must consider the basin setting, which "serves as the basis for defining and assessing reasonable sustainable management criteria and projects and management actions" (23 CCR § 354.12). SGMA's regulations require a GSA to develop sustainable management criteria based on an analysis of the basin, not only the GSA's area. Those criteria include the undesirable results (*id.* § 354.26), minimum thresholds (*id.* § 354.28), and measurable objectives *(id.* § 354.30).	
HWG 5	Chapter 6	HWG comments on the projects and management actions included in the Marina GSP (Chapter 6) include: · The Marina GSP presents no projects or legitimate management actions of its own; · The Marina GSP selectively agrees with certain SVBGSP projects and management actions and then sets SMC to prevent implementation of other SVB GSP projects and management actions it disagrees with, which presents a clear conflict with SVB GSP; · From the beginning of the document and all throughout the chapters, the MGSA GSP speaks about the MPWSP as a project, providing numerous opinions about its potential negative impacts without formally including the MPWSP as a potential project, consistent with the recommendations of the SVBGSP.	The commenter's opinions are noted. Please refer to the response to Comment SVBGSA 44 and the discussion regarding Management Actions 1 and 2 contained in Sections 6.2.1 and 6.2.2 (pp. 6-2 through 6-10) for detailed information regarding management actions in conformance with 23 CCR § 354.44, including triggers, actions and the measurable objectives benefited. To provide perspective on anticipated future coordination with SVBGSA, Chapter 6 also includes a summary of applicable projects which MGSA intends to support. The only proposed SVBGSA project in the seaward portion of the Subbasin that is not included in this discussion is the implementation of a seawater intrusion barrier. As noted in MGSA's comments on the SVBGSA GSP, we find that the analysis of this potential project is incomplete and its proposal is premature because a modeling tool capable of adequately assessing its effects is not yet developed and a monitoring network to assess its implementation is not proposed. The MPWSP is a water supply project proposed by CalAm. It is not a sustainability project under any GSP. The proposed construction of its desalination plant component is mentioned in SVBGSA's GSP, but it is not incorporated in or "recommended" in that GSP as the commenter claims. The project and its potential effects are evaluated in the GSP in	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			compliance with the requirement to "*estimate and project future water budget information and future aquifer response to proposed sustainable groundwater management practices over the planning and implementation horizon*" (23 CCR, § 354.18(c)(2)(B)).	
HWG 6	Marina GSP	HWG comments on the conflicts of the Marina GSP with the Salinas Valley Basin GSP include: · The Marina GSP attempts to set SMC in areas under the sole jurisdiction of SVB GSP; · The Marina GSP attempts to apply SVB GSP SMC to locations not included in the SVB GSP, which is a conflict that would have the effect of preventing implementation of certain SVB GSP projects and management actions; · The Marina GSP designates the Dune Sand Aquifer (DSA) as a principal aquifer for which minimum thresholds (MTs) and measurable objectives (MOs) are assigned; thereby creating a clear conflict with the SVB GSP that specifically declined to designate the Dune Sand Aquifer as a principal aquifer even though MCWD consultants specifically brought it to the attention of SVB GSA and requested it be designated a principal aquifer in the SVB GSP; · The Marina GSP sets SMC that would prevent implementation of certain key SVB GSP projects / management actions.	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements for a discussion regarding the appropriateness and need for the GSP to rely on data and sustainable management criteria that address conditions in the area outside MGSA's jurisdictional boundaries that could be affected by groundwater extraction within its boundaries. Please refer to Master Response 3 - GSP Coordination Requirements for a discussion regarding the regulations and requirements regarding GSP coordination that are intended to resolve potential conflicts and prevent interference between GSAs in the implementation of their GSPs. These are mutual responsibilities shared by all GSAs and not the responsibility of MGSA alone. Please refer to Master Response 7 - Dune Sand Aquifer for information regarding the Dune Sand Aquifer and why it should be managed as a principal aquifer, a position shared by MCWD GSA, which is responsible for preparing the GSP for the adjacent areas in the Monterey Subbasin. The commenter provides no information to support the assertion that the sustainable management criteria adopted in the draft GSP will prevent the implementation of any SVBGSA projects or management actions; however, intra-basin coordination is required as discussed in Master Response 3 – GSP Coordination Requirements.	None
HWG 7	Section 1.1, page 1-3	The GSP states, "A locally-focused GSP is needed in the MGSA Area to address the hydrogeologic conditions and management needs unique to this portion of the Subbasin." ***HWG Comment:*** The MGSP does not provide the	Locally-controlled groundwater management is a cornerstone of the SGMA regulations, and MGSA is not required to provide a justification to prepare and implement a GSP for its jurisdictional area. Nevertheless, the purpose and need for a locally-	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		hydrogeologic foundation and justification to support the need for a locally-focused GSP.	focused GSP is discussed in Section 1.1 (pp. 1-1 through 1-4).	
HWG 8	Section 1.1, page 1-3	The GSP states, "Near the shore, where the highest groundwater salinities have been documented, an interface between a seawater intrusion wedge and a zone of higher quality groundwater (the low total dissolved solids [TDS] zone) that is locally recharged through the highly permeable Dune Sand Aquifer extends downward into the 180-Foot Aquifer. ***HWG Comment:*** There is no technical support for this statement. Additional comments related to this statement are provided in subsequent sections of this letter.	The technical basis for this statement is discussed in detail in Section 3.1.12 (pp. 3-20 to 3-22) and Section 3.2.3 (pp. 3-35 to 3-38), as well as in the cited technical references in these sections. Additional related HWG comments are addressed below.	None
HWG 9	Section 1.1, pages 1-3 to 1-4	The GSP states, "A state of equilibrium exists between a more saline, dense seawater intrusion wedge that tends to flow landwards, and an over-riding, less dense and higher quality groundwater zone that tends to flow shoreward." ***HWG Comment:*** This description is too simplistic for a complex system, where there are multiple saline wedges that have intruded inland several miles over several decades. The GSP provides no technical drawings to support this statement nor does it reference actual physical data.	The MGSA GSP Chapter 1 introduction provides an overview of site hydrogeologic conditions. Additional information is discussed in detail in Section 3.1.12 (pp. 3-20 to 3-22) and Section 3.2.3 (pp. 3-35 to 3-38), as well as in the cited technical references in these sections. Cross-sections showing the relationship between the saline water wedge and low-TDS groundwater zone are presented in Figures 3-21, 3-22, and 3-23. We note that while it is theoretically possible that multiple saline water wedges exist as asserted by the commenter, we know of no data in the Subbasin that corroborates this hypothesis. Rather, the available data suggest the existence of a single wedge of highly saline water near the coast, and the intrusion of multiple aquifers by lower concentration solutes that have been transported inland over a period of several decades.	None
HWG 10	Section 1.1, page 1-4	The GSP states, "The freshwater that potentially flows from the Dune Sand Aquifer to the upper 180- Foot Aquifer may also contribute to maintaining this high quality groundwater zone." ***HWG Comment:*** There is no technical support provided for this statement that also uses the words "potentially" and "may" (further demonstrating the uncertainty of the statement).	The MGSA GSP Chapter 1 introduction provides an overview of site hydrogeologic conditions, but the conclusion is nevertheless well supported in this section. Additional information is discussed in detail in Section 3.1.12 (pp. 3-20 to 3-22) and Section 3.2.3 (pp. 3-35 to 3-38), as well as in the cited technical references in these sections. Cross-sections showing the relationship between the saline water wedge and low-TDS groundwater zone are presented in Figures 3-21, 3-22, and 3-23. Maps showing the areas of high quality	~~The Thus,~~ Based on the best available science, ~~-~~freshwater that ~~potentially~~ flows from the Dune Sand Aquifer to the upper 180-Foot Aquifer ~~may also~~ contributes to maintaining this high-quality groundwater zone.

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			groundwater in the Dune Sand Aquifer and 180-Foot Aquifer that were identified during using AEM investigation results. *See* Figures 3-36 and 3-37. The interpretation of a low-TDS groundwater zone extending through the Dune Sand Aquifer and into the 180-Foot Aquifer is a reasonable interpretation based on the best currently available information and science. Please refer to Master Response 5 - Use and Interpretation of Geophysical Studies for additional information. We have corrected the cited language to be more consistent with these discussions	
HWG 11	Section 1.1, page 1-4	The GSP states that MCWRA, "…prohibited the expansion of groundwater extraction in the Deep Aquifers. As such, a key objective of the MGSA GSP is to protect the existing high quality of waters in the Deep Aquifers underlying the MGSA Area." ***HWG Comment:*** While the GSP states here that protection of the Deep Aquifer beneath he [sic] MGSA is critical, the GSP actually allows for dramatic increases in Deep Aquifer pumping by MCWD and sets no SMC for groundwater levels in the Deep Aquifer.	It is incorrect to say that the GSP "allows for dramatic increases in Deep Aquifer pumping." The existing municipal supply wells completed in the Deep Aquifer are located in the adjacent Monterey Subbasin, and while the GSP must consider reasonably foreseeable increases in groundwater demand from these wells, it has no jurisdiction or responsibility to manage or control them. As discussed in our response to Comment CalAm 10, it is also not a correct statement that minimum thresholds and measurable objectives have not been established in the GSP for the Deep Aquifer. Chapter 4 of the GSP discusses sustainable management criteria for the Deep Aquifer for every applicable sustainability indicator, and provides the rationale and data for determining which sustainability indicators are not applicable.	None
HWG 12	Section 1.2, page 1-6	The GSP states, "Based on the data discussed in Chapter 3 (Basin Setting), maintaining the groundwater elevations and thickness of the higher quality groundwater zone (low TDS zone) needed to protect against seawater intrusion will largely prevent undesirable results from occurring for all six sustainability indicators in the MGSA Area, and will support the sustainability goals of the neighboring GSAs." ***HWG Comment:*** There is no data to support this statement; and, in fact, available data support a conclusion opposite to this statement.	The MGSA GSP Chapter 1 introduction provides an overview of site hydrogeologic conditions. The supporting data for this conclusion are presented throughout Chapter 3 and are an obvious conclusion of the hydrogeologic conceptual model. Additional information regarding the seawater intrusion conditions and dynamics in the nearshore portion of the Subbasin is discussed in Section 3.1.12 (pp. 3-20 to 3-22) and Section 3.2.3 (pp. 3-35 to 3-38), as well as in the cited technical references in these sections. AEM data have shown that the Dune Sand Aquifer in the MGSA Area is seawater intruded; however, high recharge	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			rates have resulted in a large zone of groundwater containing lower concentrations of TDS immediately east of, and extending into, the eastern portion of the MGSA Area. The seaward discharge of low-TDS groundwater from this area and the flow of groundwater from the Dune Sand Aquifer to the Upper 180-Foot Aquifer appears to mound groundwater in the Dune Sand and Upper 180-Foot Aquifers near the coast, creating a local groundwater barrier against encroaching seawater intrusion. This conclusion is based on widely accepted groundwater hydrologic principles that describe the behavior of groundwater zones of different salinities and densities juxtaposed against each other in a nearshore setting. The commenter provides no data to support its assertion.	
HWG 13	Section 2.1.3, pages 2-8 to 2-9	The GSP states, "Figure 2-9, Figure 2-10, and Figure 2-11 show the density of domestic, municipal, and production wells per square mile in the vicinity of the MGSA Area, as available from the DWR Well Completion Report Map Application (DWR 2019a)." ***HWG Comment:*** DWR Completion reports do not note whether wells are active or abandoned.	This information represents the best available data as of the time of this GSP and was adopted from work completed by SVBGSA for its GSP.	None
HWG 14	Section 2.1.3, page 2-9	The GSP states, "CEMEX has two production wells at the CEMEX Lapis Plant sand mine site (one active and one inactive)." ***HWG Comment:*** This is Incorrect information, the second CEMEX well has collapsed casing and cannot be used again without re-drilling.	Thank you for the clarification. The text has been revised consistent with the comment.	Revised text on page 2-9: CEMEX has two production wells at the CEMEX Lapis Plant sand mine site (one active and one inactive). <u>One well is active, and the second CEMEX well has collapsed casing and cannot be used without re-drilling</u>.
HWG 15	Section 2.2.7.3, page 2-18	The GSP states, "Groundwater in the MGSA Area is currently used for industrial supply at the CEMEX Lapis Plant sand mine site, and groundwater containing less than 3,000 mg/L TDS has a designated potential beneficial use as a source of domestic and municipal supply." ***HWG Comment:*** The CEMEX wells produce water with approximately 19,000 mg/L TDS for industrial uses (washing sand). A TDS concentration of 3,000 mg/L requires treatment for municipal and domestic uses.	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion and the response to Comment MCWRA 5, above. The statement occurs at the end of a discussion regarding the beneficial users and potential beneficial uses of groundwater in the Subbasin described in the RWQCB's Basin Plan. It is not the intent of the statement to link the water quality of water extracted from the CEMEX well and the designated beneficial uses of groundwater containing less than 3,000 mg/L TDS. However, that does not affect the	The last sentence of Section 2.2.7.3 on page 2-19 is revised as follows: Groundwater in the MGSA Area is currently used for industrial supply at the CEMEX Lapis Plant sand mine site<u>. The extracted groundwater is reported to contain a concentration of approximately 19,000 mg/L TDS. In addition</u>, groundwater containing less than 3,000 mg/L TDS has a designated potential beneficial use as a source of domestic and municipal supply <u>as noted above.</u>

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			applicability of SWRCB Resolution Nos. 88-63 and 68-16. Please refer to the revised text to the right.	
HWG 16	Section 2.3.2, page 2-26	The GSP states, "The slant wells would extract a combined volume of approximately 17,400 AFY of groundwater consisting of a combination of saline groundwater (some of which originated in the ocean) and low total dissolved solids (TDS) groundwater from the Dune Sand and 180-Foot Aquifers within the Subbasin (HWG 2017)." ***HWG Comment:*** This is an incorrect and unsupported statement. The vast majority of extracted water will be sourced from the ocean, and Dune Sand Aquifer water quality is near seawater quality at the coast and brackish water quality inland. Few localized areas of lower TDS water are present. It is a misrepresentation to attribute this statement to the HWG 2017 and not clear why this statement is attributed to HWG 2017.	This entire statement should not have been attributed to HWG. The sentence has been revised as noted to the right. Please refer to Master Response 4 - Groundwater Quality and Seawater intrusion for a discussion regarding water quality in the vicinity of the MGSA Area and the seawater content of groundwater pumped from the proposed slant wells. We note that a recent independent review by an independent hydrogeologic consultant retained by the California Coastal Commission determined that "*a change in the hydraulic gradient of the upper aquifer in the area (the Dune Sands Aquifer) suggests that Cal-Am's wells would extract greater volumes of non-seawater than identified in Cal-Am's models*" and "*Cal-Am's modeling appears to be flawed in that it did not account for potential fresh water capture beyond an identified capture zone. There is uncertainty about how much additional fresh water capture could occur, depending on how the model interprets the hydrogeology of the Dune Sands Aquifer and an underlying aquitard.*" (California Coastal Commission 2019).	Revised text on page 2-26: The slant wells would extract a combined volume of approximately 17,400 AFY ~~(HWG 2017)~~ of groundwater consisting of a combination of saline groundwater (some of which originated in the ocean) and low total dissolved solids (TDS) groundwater from the Dune Sand and 180-Foot Aquifers within the Subbasin.
HWG 17	Section 2.3.2, page 2-26	The GSP states, "If the proposed MPWSP is fully approved and implemented, or if well extractions by others are proposed, such extractions of groundwater potentially may cause exceedances of measurable objectives established for the MGSA Area and trigger the need for management actions." ***HWG Comment:*** There is no supporting data for this opinion/assumption, which appears to be placed in this section just get this opinion in the GSP. Furthermore, measurable objectives ae meant to represent average basin conditions after sustainability is achieved, with seasonal and year to year fluctuations around the MO. The MO is not meant to be a trigger level.	The supporting data for this conclusion are presented throughout Chapter 3 and are an obvious conclusion of the hydrogeologic conceptual model. The Dune Sand Aquifer, 180-Foot Aquifer and 400-Foot Aquifer are hydraulically connected in the portion of the Subbasin near the MGSA Area, and the hydraulic separation of the Deep Aquifer from the upper aquifer system is not certain. Groundwater extraction within the MGSA Area may be expected to affect both groundwater levels and solute distribution throughout the upper aquifer system, which may lead to undesirable results as discussed in Chapter 4. As noted in the responses to the SVBGSA comments above, the discussion of measurable objectives in Chapter 4	*See* Attachments A (Chapter 4 Edits) and C (Chapter 6 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			has been separated from the discussion of trigger levels in Chapter 6.	
HWG 18	Section 3.1.2.2, page 3-3	The GSP states, "…the aquifers above a depth of approximately 700 feet are seawater intruded…". ***HWG Comment:*** Just to clarify and provide more detail, the seawater intruded aquifers in the MGSA Plan Area include the Dune Sand Aquifer, the 180-FTE Aquifer, and the 400-Foot Aquifer. These aquifers extend to a depth ranging from about 575 to 700 feet in the Marina GSP Plan Area and surrounding region; thus, the vertical extent of seawater intrusion ranges from 575 to 700 feet below ground surface (bgs). The uppermost Deep Aquifer occurs at a depth of 900 feet bgs, and there is 200 to 300 feet of clay between the base of the 400-Foot Aquifer and the top of the uppermost Deep Aquifer. In addition, water level information from the area documents an approximate 60 foot differential in water levels between the 400-ft and Deep Aquifers – documenting the limited connection of these systems.	The comment is noted. We offer the following corrections: HWG has not conducted any investigations to assess the competence of the Deep Aquitard. As noted in Section 3.1.6.6 of the GSP, logging of a boring in Marina by USGS interpreted a zone of silty clay and mudstone from about 700 to 900 feet below the ground surface; however, USGS acknowledged the stratigraphic interval in which this aquitard was encountered has also been identified as containing transmissive units locally referred to as the 900-Foot Aquifer (Hanson et al. 2002). More variable lithology has been interpreted from other deep well geophysical logs in the area (MCWRA 2017). As such, while substantial units of low permeability appear to exist within and beneath the lower portions of the upper aquifer system, their regional continuity and competence are not well understood. The Deep Aquifer consists of a system of aquifers occurring between approximately 780 and 2,000 feet below ground level (Kennedy Jenks 2004). USGS (Hanson et al. 2002) states the basal part of the upper aquifer system, encountered from approximately 670 to 955 feet below ground surface at a deep boring in the City of Marina, is locally referred to as the 900-Foot Aquifer, which is generally considered part of the Deep Aquifer system. To our knowledge, groundwater level data in the Deep Aquifer system is still considered too uncertain and variable to draw conclusions regarding potential hydraulic connections between the upper aquifer system and the Deep Aquifer, making it potentially vulnerable to vertical seawater intrusion as described in MCWRA (2017).	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
HWG 19	Section 3.1.2.2, page 3-3	The GSP states that the vertical boundary of the MGSA Plan Area is 2,000 feet bgs. ***HWG Comment:*** This text description of the vertical boundary is in conflict with Figure 3-3, which appears to show a vertical boundary of 800 to 1,200 feet bgs.	The comment is a simplification of the text which is more detailed as follows: "*Figure 3 3 shows a contour map of the estimated depth to the base of the aquifers in the basin (Durbin et al. 1978). In the vicinity of the MGSA Area, the aquifers above a depth of approximately 700 feet are seawater intruded, and water supply wells extract groundwater from the "Deep Aquifer," which is a system of aquifers that occurs between approximately 900 and 2,000 feet below ground surface (Hanson et al. 2002) within the Pliocene marine Purisima Formation. The wells completed in this aquifer system near the MGSA Area provide the water supply for Marina Coast Water District (MCWD), which serves the City of Marina and the adjacent Ord Community. These wells are completed at depths ranging from approximately 900 to approximately 1,950 feet below ground level. This GSP has adopted the base of the Deep Aquifer system and the vertical boundary of the MGSA Area as 2,000 feet below ground level.*"	None
HWG 20	Section 3.1.6, page 3-10	The GSP relies on old geologic cross-sections. ***HWG Comment:*** The cited geologic cross-section references and (Figures 3-6 and 3-11 to 3-13 do not utilize best available science and most recent borehole and geophysical logs for wells drilled within MGSA and nearby, nor do they utilize the most recent geologic cross-sections developed based on these data (see HWG, November 2017). This results in gross misrepresentation of hydrogeologic conditions for the MGSA Plan Area. Furthermore, the geologic cross-sections provided in the GSP (Figures 3-6, 3-11, 3- 12, and 3-13) are not even located within the MGSA Plan Area and therefore to not meet the GSP requirements. Geologic cross-sections that use the latest available data and occur within the MGSA are provided in the HWG Final Technical Report (HWG, November 2017).	This MGSA GSP will be implemented together with the regional GSP prepared by SVBGSA for the remainder of the Subbasin to sustainably manage the groundwater resources in the 180/400 Foot Aquifer Subbasin. As a consequence, the MGSA GSP includes data, information, and maps from the SVBGSA GSP, including the referenced geologic cross sections. To integrate the MGSA GSP with the SVBGSA GSP for the 180/400 Foot Aquifer Subbasin, the MGSA GSP uses the SVBGSA GSP figures and these geologic cross sections are included in the SVBGSA GSP. The commenter's opinion regarding a "gross misrepresentation" is incorrect and unsupported.	None
HWG 21	Section 3.1.6, page 3-11	The GSP relies on Gottschalk (2018) for discussion/description of geologic units. ***HWG Comment:*** Mr. Gottschalk is not a geologist and relied primarily on surface geophysics in the cited report. The HWG has previously demonstrated the flaws and incorrect hydrostratigraphic interpretations based on the surface geophysics data (e.g., HWG, April 12, 2019). A detailed	See response to Comment CalAm 7.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		description of the geology within and adjacent to the MGSA Plan Area based on latest available data and best available science is provided in the HWG Final Technical Report (HWG, November 2017).		
HWG 22	Section 3.1.6.1, page 3-11; Section 3.2.2, page 3-35	The GSP repeatedly refers to "low-TDS groundwater" throughout the document. ***HWG Comment:*** The GSP applies the term "low-TDS groundwater" to groundwater with TDS up to 3,000 mg/L as inferred by surface geophysics. Notwithstanding all the uncertainty inherent in attempts to quantify both TDS and lithology from surface geophysics data discussed in numerous previous documents by the HWG (e.g., November 2017, January 2018, August 2018, January 2019, March 2019, April 2019), it has been demonstrated that groundwater with TDS greater than 1,000 mg/L has chloride levels exceeding MCLs such that it cannot be used for municipal or agricultural use without desalination. Furthermore, it has been shown that groundwater in the region with TDS greater than 1,500 mg/L has chloride exceeding the 500 mg/L standard used by MCWRA in mapping seawater intrusion. The surface geophysics study referenced in the GSP (Gottschalk, 2018) made no attempt to distinguish and map occurrence of groundwater TDS greater than 1,000 or 1,500 mg/L. Thus, references in the GSP to "low- TDS groundwater" includes primarily areas with groundwater having chloride greater than 500 mg/L that are included by MCWRA in mapping the seawater intruded area of the groundwater basin.	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion for a discussion regarding the applicable water quality standards considered in the GSP, and to Master Response 5 - Use and Interpretation of Geophysical Studies for information regarding the application of AEM to determining the extent of groundwater containing less than 3,000 mg/L TDS by state agencies and the USGS. The GSP's adopted standard to define low-TDS groundwater is consistent with state standards that are utilized to identify waters requiring protection under RWQCB Basin Plans, and therefore is appropriate and relevant. Please refer to the response to Comment MCWRA 8 for changes made to the GSP regarding water quality standards.	See Comment MCWRA 8
HWG 23	Section 3.1.6.1, page 3-11	The GSP mischaracterizes the Dune Sand Aquifer in multiple instances in the GSP. One example is the attempt to label the Dune Sand Aquifer as a "principal aquifer". **HWG Comment:** The Dune Sand Aquifer is not a principal aquifer in the subbasin, as is essentially acknowledged in the GSP where it states, "…it is not commonly used for drinking water or agricultural irrigation". The MCWRA, which has studied and characterized the groundwater basin for many decades, does not consider the Dune Sand Aquifer as a principal aquifer. The Salinas Valley Basin (SVB) GSP also does not treat the Dune Sand Aquifer as a principal aquifer. This is one example of the many conflicts that the MGSA GSP creates with the SVB GSP that already covers the MGSA GSP Plan Area.	Please refer to Master Response 7 - Dune Sand Aquifer for information regarding the rationale for recognizing the Dune Sand Aquifer as a Principal Aquifer in the GSP. Contrary to HWG's claim, MCWRA has made no determination regarding whether the Dune Sand Aquifer constitutes a Principal Aquifer under SGMA, and has no jurisdiction to do so. We further note that it is our understanding MCWD GSA, which will prepare the GSP for the areas of the Monterey Subbasin adjacent to the MGSA Area, considers the Dune Sand Aquifer to be a Principal Aquifer. The fact that the SVBGSA and MGSA currently have different approaches to designation and management of the Dune Sand Aquifer is a matter	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			to be resolved by intra-basin coordination between the GSAs under SGMA and does not constitute a flaw in MGSA's GSP. It should be noted that we do not consider these differences to be insurmountable and believe the sustainability goals of the GSPs to be compatible.	
HWG 24	Section 3.1.6.1, page 3-11	The GSP does not distinguish and describe the differences between the Salinas Valley Aquitard (SVA) and Fort-Ord Salinas Valley Aquitard (FO-SVA) and its significance to the perched/mounded aquifer (underlain by FO-SVA) versus the Dune Sand Aquifer and its equivalents (not underlain by FO-SVA in many places in the document. ***HWG Comment:*** It should be noted that the SVA and FO-SVA are not the same aquitard and FO-SVA occurs at a much higher elevation; therefore, they should not be referred to as the same aquitard. Of primary significance regarding characterization of the shallow aquifer system is that pumping from the proposed MPWSP will have no impact on the perched-mounded aquifer, which is the primary area of the claimed low-TDS groundwater (3,000 mg/L TDS or less; chloride up to 1,000 mg/L or greater). Also, the western edge of this area lies well outside the MGSA Plan Area approximately 0.5 miles or further to the east near MW-7 (HWG, 2017).	The relationship between the Salinas Valley Aquitard and Fort Ord-Salinas Valley Aquitard is noted in Sections 3.1.6.1 and 3.1.6.2 (pp. 3-11 and 3-12) and the existence of locally perched aquifers is also noted. The AEM data discussed in Section 3.1.12 (pp. 3-20 to 3-22) and 3.2.3 (pp. 3-35 to 3-38) and presented in Gottschalk et al. (2018) does not indicate that the low-TDS zone is limited to the identified perched aquifer areas. In fact, the cross sections presented in Figures 3-21, 3-22, and 3-23 clearly show the low-TDS zone extending below the perched zones, and water quality monitoring data for MPWSP wells indicate the presence of low-TDS water in the Dune Sand, 180-Foot and 400-Foot Aquifers in several locations. In addition, while the mapped areas of the low-TDS zone for which Gottschalk et al. provided volume estimates are located east of the MGSA Area, the AEM data show shallow groundwater with low TDS concentrations extending into the eastern portion of the MGSA Area in some areas.	None
HWG 25	Section 3.1.6.1, page 3-11	The GSP states, "The thinning of the SVA is coincident with a drop in the hydraulic head in the Dune Sand Aquifer. ***HWG Comment:*** The GSP reference to SVA should be FO-SVA. Also, the reference to "thinning" of the aquitard is really a pinching out of the aquitard. The area where the FO-SVA pinches out is the demarcation between the Perched/Mounded Aquifer and the Dune Sand Aquifer (oceanward of this point). Future pumping from the MPWSP would not affect the hydraulically separate Perched/Mounded Aquifer, which is where most of the referenced "low-TDS water" is located.	Please refer to our response to Comment HWG 24.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
HWG 26	Section 3.1.6.1, page 3-11	The GSP states, "In the MGSA Area, the Dune Sand Aquifer is seawater intruded; however, high recharge rates have resulted in a large zone of groundwater containing lower concentrations of TDS immediately east of, and extending into the eastern portion of, the MGSA area." ***HWG Comment:*** We agree that the Dune Sand Aquifer is seawater intruded in the MGSA area; this is fully documented by TDS concentrations from MW-1S, 3S, and 4S that extend from about 400 feet east of the western edge of MGSA to the eastern boundary of MGSA (actually MW-4 is slightly east of most of the eastern boundary of MGSA). These concentrations range from 34,400 mg/L TDS in the western portion of MGSA to 7,700 mg/L TDS at the eastern boundary of MGSA. Thus, it is clear from field data that no so-called "low-TDS water" (which is really brackish water with chlorides exceeding 1,000 mg/L) exists within the MGSA. As stated above, the purported "low-TDS" zone is not immediately adjacent to the eastern boundary of the MGSA Plan Area.	Please refer to the above response to Comment HWG 24. Based on the AEM investigation, the western edge of low-TDS groundwater in the Dune Sand Aquifer extends slightly into the MGSA Area in some areas, and about 700 feet east of the MGSA Area at other locations. On a regional scale, "immediately east" is a reasonable description. We note that most of the MPWSP monitoring wells have relatively long screen intervals, and would not necessarily distinguish the existence of the low-TDS zone as it thins to the west.	None
HWG 27	Section 3.1.6.1, page 3-11	The following sentence in the GSP states, "The seaward discharge of low TDS groundwater from this area, and the flow of groundwater from the Dune Sand Aquifer to the Upper 180-Foot Aquifer, appears to mound groundwater in the Dune Sand and Upper 180-Foot Aquifers near the coast, creating a local groundwater barrier against encroaching seawater intrusion." ***HWG Comment:*** As explained above, there is no "low TDS groundwater" in the MGSA Plan Area, so there can be no seaward discharge of such water. Furthermore, groundwater flows over the edge of the FOSVA (where is pinches out) from the Perched/Mounded aquifer (not the Dune Sand Aquifer) into the underlying 180-FTE Aquifer approximately 0.75 mile inland of the eastern edge of the MGSA Plan Area (not near the coast), and there is no indication any significant mound is created from this small amount of groundwater flow that clearly is not impeding seawater intrusion.	Please refer to the responses to Comments CalAm 7, HWG 24, and HWG 26, and to Master Response 4 - Groundwater Quality and Seawater Intrusion.	None
HWG 28	Section 3.1.6.1, page 3-12; (also pages 3-16, 3-19, 3-24, 3-42, 3-60, 3-72,	The GSP states, "…near the MGSA Area, the Dune Sand Aquifer is hydraulically connected to, and supports, local groundwater-dependent ecosystems (GDEs), including palustrine and emergent wetlands which support protected species." The Marina GSP references GDEs in several places throughout the document (e.g., pages 3-16, 3-19, 3-24, 3-42, 3-60, 3-72, 4-6, 4-10, 4-12).	Please refer to Master Response 8 - Groundwater Dependent Ecosystems for the approach taken to identify GDEs near the MGSA Area and assess their dependence on shallow groundwater in the Dune Sand Aquifer. Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements for information regarding the need and	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
	4-6, 4-10, 4-12)	***HWG Comment:*** It is most important to note that no GDEs occur within the MGSA Plan Area, and the MGSA GSP has no jurisdiction to set sustainable management criteria (SMC) for GDEs that occur within only the SVB GSA Plan Area. This is a clear and problematic conflict with the SVB GSP. Furthermore, it is important to note that these nearby areas were not fully evaluated to determine if potential GDEs obtained from TNC mapping are actual GDEs (despite claims to the contrary in the MGSA GSP). The role of surface water in supporting these GDEs, as opposed to groundwater, was not evaluated. In addition, it is clear from MPWSP monitoring well data that the shallow aquifer beneath the GDEs nearest to MGSA is highly saline and would not support (and actually would be detrimental to) most types of vegetation	appropriateness to identify beneficial groundwater users in the vicinity of the MGSA Area that may be affected by groundwater extraction within the MGSA Area, and to set sustainable management criteria that are protective of these groundwater uses. MGSA followed guidance from The Nature Conservancy (TNC) to identify potential GDEs, and evaluated summer time ET to assess their dependence on groundwater rather than surface water. Although it is acknowledged in the GSP that data gaps exist regarding the degree of groundwater dependence of these GDEs and their sensitivity to groundwater level decline, it is appropriate and necessary to establish sustainable management criteria for these protected resources while these data gaps are investigated. The identification of the GDEs is not a "clear and problematic conflict" as the commenter asserts. It is data that points to a need for sustainable management that must be coordinated with by the two GSAs as discussed in Master Response 3 - GSP Coordination Requirements.	
HWG 29	Section 3.1.6.3, page 3-12	The GSP states, "The 180-Foot Aquifer underlies the SVA and is the uppermost regional aquifer that has historically been used as a groundwater supply. Near the MGSA area, it is seawater intruded…" ***HWG Comment:*** We agree that the 180-FTE Aquifer (referred to in GSP as 180-Foot Aquifer) is the shallowest aquifer historically used for groundwater supply and is seawater intruded in the MGSA area.	The comment is noted.	None
HWG 30	Section 3.1.6.4, page 3-12	The GSP states in reference to the 180/400-Foot Aquitard, "Geophysical studies reported by Gottschalk et. al. (2018) have confirmed this aquitard is discontinuous in and near the MGSA Area, and its hydraulic connection to the overlying 180-Foot Aquifer in the vicinity of the MGSA area is substantiated by available hydrographs (Section 3.2.1.3)." ***HWG Comment:*** Previous studies (e.g., MCWRA, 2017) cited in various places in the GSP regarding potential gaps in the 180/400-Foot Aquitard did not have the MPWSP borings available to incorporate. These recent data (documented in HWG, 2017) show presence of the 180/400-Foot Aquitard where gaps were previously suggested. In addition, the HWG	Please refer to Master Response 5 - Use and Interpretation of Geophysical Studies for a discussion regarding the advantages and limitation of geophysical data to characterize subsurface stratigraphic and water quality conditions. Geophysical methods such as AEM provide a clear advantage over data from borings in that they provide a three-dimensional image of subsurface conditions whereas boring data must be extrapolated over significant distances. Conversely, boring logs can provide direct data whereas geophysical data rely on the	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		(April 2019) previously demonstrated that purported gap(s) claimed in the AEM study (Gottschalk, et. al., 2018) were incorrectly interpreted and the gap(s) in fact do not exist. Finally, review of boring logs and water level data (head differences and different patterns of fluctuation in different depth zones/aquifers) in the MPWSP monitoring wells or other data demonstrate no gaps are present in the 180/400-Foot Aquitard beneath and near MGSA. Even if there were a gap somewhere in the aquitard, there are significant differences in vertical hydraulic conductivity (much lower) compared to horizontal hydraulic conductivity within aquifers that create a degree of confinement and resistance to vertical flow, and reduced heads in the 180-FTW Aquifer from proposed MPWSP slant well pumping would reduce the rate of vertical migration to the 400-Foot Aquifer.	interpretation and modeling of indirect data used to image the subsurface, much as an MRI is used to image tissues in a body and biopsy are used for more specific assessment. Optimally, both must be interpreted together. HWG has not investigated all of the locations where MCWRA and Gottschalk et al. (2018) identified potential aquitard gaps and has not confirmed that they do not exist. The data indicate that gaps appear to be confirmed in some areas, whereas in other areas gaps remain to be confirmed or boring and geophysical data conflict. The hydrogeologic conceptual model in the GSP is based on the best currently available data and will be refined in future GSP updates as more data become available.	
HWG 31	Section 3.1.6.5, page 3-13	The GSP states, "…saline groundwater in the 180-Foot Aquifer, which has been recorded farther inland than in the 400-Foot Aquifer, has been documented to migrate vertically into the 400-Foot Aquifer, deteriorating water quality in the 400-Foot Aquifer…". ***HWG Comment:*** While this is true, vertical migration to the 400-Foot Aquifer has only been documented to occur several miles inland of the coast and has not been documented in or near the MGSA. In addition, the vertical migration of contamination has been linked primarily to cross connected wells as opposed to aquitard gaps.	Vertical migration has been identified at several locations identified in MCWRA (2017) and Gottschalk et al. (2018). It has been linked to both aquitard gaps and improperly constructed or abandoned wells. Please refer to our responses to Comments MCWRA 11 and 15.	*See* Comments MCWRA 11 and 15.
HWG 32	Section 3.1.6.6, page 3-13	The GSP appears to question the integrity of the 400-Foot/Deep Aquitard stating, "More variable lithology has been interpreted from other deep well geophysical logs in the area…", and "…regional continuity and competence are not well understood.". ***HWG Comment:*** Borehole lithologic and geophysical logs for the nearby USGS Deep Aquifer monitoring well and MCWD water supply wells 10, 11, and 12 show 200 to 300 feet of fine-grained clay and silt deposits comprising the 400-Foot/Deep Aquifer Aquitard. The lack of seawater intrusion in the Deep Aquifer, which has groundwater levels on the order of 100 feet below sea level in the MGSA area and a strong vertically downward gradient from the 400-Foot Aquifer, with high salinity in the 400-Foot Aquifer beneath and surrounding the MGSA also shows the strong integrity of the aquitard between the 400- Foot Aquifer and Deep Aquifer. Again, the	Please refer to the response to Comment HWG 19, above. The interpretation provided by HWG has not affected the County's policies regarding management of the Deep Aquifer. As noted in Section 3.2.3.2, Monterey County's prohibition against new Deep Aquifer wells was based in part of the following finding: "*To date, seawater intrusion has not been reported in the Deep Aquifer. However, due to concern about the potential competence of aquitards separating this aquifer from the overlying seawater-intruded aquifers, MCWRA recommended a moratorium on further development of groundwater supplies in this aquifer (MCWRA 2017). Subsequently, the county adopted Ordinance 5302, prohibiting the construction of new wells in the Deep Aquifer*	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		large difference in water levels between the 400-Foot Aquifer and Deep Aquifers provides evidence of a thick/tight aquitard separating these aquifer zones.	*beneath the areas impacted by seawater intrusion*."	
HWG 33	Section 3.1.7.1, page 3-15	The GSP states that typical specific yield values range from 10 to 30 percent. The GSP also states that specific storage values, which the GSP states are equivalent to storage coefficient values, typically range from 10^{-3} to 10^{-5}. ***HWG Comment:*** Typical specific yield values actually range from 3% (for clay) to 30% (for gravel). Specific storage values are not the same as storage coefficient values; specific storage values must be multiplied by aquifer thickness to obtain storage coefficient values. The range of 10^{-3} to 10^{-5} cited in the GSP is typical for storage coefficient, while specific storage values are typically 10^{-5} to 10^{-6} per foot.	The values noted in the draft GSP were taken from the available literature and models as noted in the GSP. No changes are necessary.	None
HWG 34	Section 3.1.7.2, page 3-15	The aquifer parameter values cited in the GSP for near the MGSA Plan Area are stated to be derived from the CEMEX model. ***HWG Comment:*** The calibrated CEMEX Model parameters do not match the values stated in the GSP. It is important to note there is a large difference in hydraulic conductivity values between the Dune Sand Aquifer (which occurs within 1 to 1.5 miles of the coast) and the Perched/Mounded Aquifer further inland, which is the aquifer containing the purported low-TDS water east of the MGSA area. As indicated in the more regional groundwater model used in the FEIR (CPUC, 2018), the Perched/Mounded Aquifer has much lower K values ranging from 2 to 4 feet/day compared to the much higher values cited in the GSP.	Low TDS water is not only in the perched aquifer. The GSP values focus on the more regional Dune Sand Aquifer and not the perched zones.	None
HWG 35	Section 3.1.8, page 3-16	The GSP states, "The Dune Sand Aquifer is not currently used as a water supply, but does support surface water systems and does yield water to GDEs in the immediate vicinity of the MGSA Area…". ***HWG Comment:*** We agree that the Dune Sand Aquifer is not used as a water supply. There are no GDEs within the MGSA area, and the Marina GSP has no jurisdiction over setting SMC for GDEs. Furthermore, the GSP assumes nearby mapped Potential GDEs are Actual GDEs without evaluating the more likely contribution of surface water in maintaining vegetation in these areas and without considering the fact that shallow	See the response to Comment HWG 28.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		groundwater is saline in the mapped Potential GDE areas near MGSA.		
HWG 36	Section 3.1.8, page 3-16	With regard to pumping from the CEMEX well in the MGSA Area, the GSP states, "The amount of groundwater produced from the lower TDS zone in the upper 180-Foot Aquifer vs. saline groundwater from the deeper portions of the 180-Foot Aquifer and the underlying 400-Foot Aquifer is not known." ***HWG Comment:*** Available data clearly demonstrate that there is no lower TDS water within the MGSA area in the 180-Foot and 400-Foot Aquifers.	Please refer to the above responses to Comments HWG 24 and 26. Because all of the water quality data within the MGSA Area comes from wells with long screen intervals, the extent of the low-TDS groundwater zone within the MGSA Area is not known. AEM data suggest some shallow low-TDS groundwater exists in the eastern portion of the MGSA Area is potentially captured by the CEMEX well.	None
HWG 37	Section 3.1.8, page 3-17; Section 3.3.8.1, page 3-58	With regard to the potential MPWSP slant wells, the GSP states, "The wells would extract water radially from the DSA and 180-Foot Aquifer near the coast. Groundwater captured by the wells would include saline groundwater originating outside the western (seaward) Subbasin boundary, saline groundwater from aquifers within the Subbasin, and low-TDS groundwater from aquifers within the Subbasin.". ***HWG Comment:*** There are several corrections and clarifications that need to be made to this text. First, the wells would not extract water in a radial pattern, rather most of the water flowing to the wells would be derived from the ocean side of the wells. Second, the wells would capture saline water seeping through the seabed and migrating a short distance through the Dune Sand Aquifer and 180-Foot Aquifer to the slant well screens, as opposed to the referenced, "saline groundwater" from west of the Subbasin boundary. Third, is that the slant wells will capture a small amount of brackish water (as opposed to low-TDS groundwater) from the Subbasin aquifers.	Please refer to Master Response 4 - Groundwater Quality and Seawater intrusion for a discussion regarding water quality in the vicinity of the MGSA Area and the seawater content of groundwater pumped from the proposed slant wells. Please also refer to our responses to Comments HWG 24 and 26 regarding the presence and extent of low TDS water that could be captured by the proposed slant wells. As noted in our response to Comment HWG 16, a recent independent review by an independent hydrogeologic consultant retained by the California Coastal Commission determined that "*... a change in the hydraulic gradient of the upper aquifer in the area (the Dune Sands Aquifer) suggests that Cal-Am's wells would extract greater volumes of non-seawater than identified in Cal-Am's models*" and "*... Cal-Am's modeling appears to be flawed in that it did not account for potential fresh water capture beyond an identified capture zone. There is uncertainty about how much additional fresh water capture could occur, depending on how the model interprets the hydrogeology of the Dune Sands Aquifer and an underlying aquitard.*" (California Coastal Commission 2019).	None
HWG 38	Section 3.1.8, page 3-17	The GSP states the following with regard to pumping from Marina Coast Water District Deep Aquifer wells, "The combined extraction from these wells was approximately 1,823 AFY in 2015, and is forecast to increase to 3,905 AFY by 2035…".	Please refer to our responses to Comments CEMEX 5 and 6, CalAm 10, and HWG 11. As noted in Section 4.4.1 of the draft GSP (pp. 4-10 and 4-11), the reason that the GSP does not set sustainable management criteria for groundwater level decline	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		HWG Comment: While the Marina GSP states its support for prohibition against pumping from new Deep Aquifer wells, it is silent on the issue of increased pumping from existing Deep Aquifer wells. The cited MCWD Deep Aquifer pumping numbers represent a greater than doubling of the amount of current pumping from the Deep Aquifer, a pumping amount that already results in Deep Aquifer water levels east of the GSP boundary on the order of 60-100 feet below sea level. Also, whereas, as stated above, it is inappropriate for the GSP to proscribe SMC outside of its jurisdiction, the combined pumpage of the existing agricultural deep aquifer wells just east of the GSP boundary is approximately 5,000 acre-feet/ year (AFY). Such increased pumping from the Deep Aquifer by MCWD and others is likely not sustainable, but the Marina GSP provides no SMC for Deep Aquifer groundwater levels or storage even though it is the only viable and potable aquifer within its boundaries.	or storage depletion in the Deep Aquifer is because no groundwater extraction from the Deep Aquifer is currently occurring within the MGSA Area or is reasonably anticipated to occur in the future. As such, there is no source of groundwater level decline or storage depletion for the Deep Aquifer to be managed in the GSP area. The municipal extraction to which the commenter is referring occurs in the adjacent Monterey Subbasin and will be assessed in the GSP to be prepared for that area. The MGSA has no jurisdiction to regulate groundwater extraction outside of its boundaries. Therefore, apart from the description of anticipated regional trends in groundwater extraction from the Deep Aquifer in the Basin Setting section of the GSP, it would not be appropriate for MGSA to further speculate about the sustainability of future groundwater extraction in areas that are under the jurisdiction of SVBGSA or MCWD GSA, except to the extent that groundwater extractions impact groundwater management in the MGSA Area.	
HWG 39	Section 3.1.9, page 3-17	The GSP references Figure 3-15 as being from a report for the Central Coast Groundwater Coalition. ***HWG Comment:*** On Figure 3-15 the cited reference is MCWRA, 2017.	This comment is noted, and the text reference has been changed.	Revised text on page 3-17: Figure 3-15 presents a Piper diagram from a report prepared <u>by MCWRA (2017)</u> that plots major ion data from the principal aquifers within and near the Subbasin.
HWG 40	Section 3.1.9, pages 3-18 and 3-19	The GSP discusses the need to protect groundwater with TDS of 3,000 mg/L and states, "…a prominent zone of higher quality groundwater extends approximately from the eastern portion of the MGSA Area eastward through the area underlain by the Dune Sand Aquifer, and extends vertically downward into the 180-Foot Aquifer (Gottschalk et.al., 2018)." ***HWG Comment:*** As stated previously in this document and described in the HWG Final Report (November 2017), there is no groundwater less than 3,000 mg/L within the MGSA Plan Area, so the statement in the text about such water extending from the eastern portion of the MGSA Area is incorrect. Well MW-4 on the eastern boundary of the MGSA area has no groundwater less than 7,500 mg/L TDS. Furthermore, it is important to note that groundwater to the east of the MGSA	Please refer to our responses to Comments HWG 24 and 26 regarding the extent of low-TDS groundwater in and near the MGSA Area. Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion for additional information regarding the applicable water quality standards cited in the GSP.	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		area that is 3,000 mg/L TDS has chloride concentrations exceeding 1,000 mg/L, which is approximately twice the highest MCL for chloride and therefore a non-potable source of water for domestic, municipal, and agricultural uses.		
HWG 41	Section 3.1.11.2, page 3-19	The GSP states, "These GDEs utilize shallow groundwater from the Dune Sand Aquifer to meet a significant portion of their water demand." ***HWG Comment:*** The presence of Actual GDEs as opposed to a Potential GDEs has not been fully evaluated in the Marina GSP. We note that any GDE near the MGSA boundary is subject to being underlain by saline shallow groundwater, and the contribution of fresh surface water sources has not been evaluated.	Please refer to the response to Comment HWG 28 and to Master Response 8 - Groundwater Dependent Ecosystems. MGSA followed and exceeded guidance from DWR and The Nature Conservancy (TNC) to evaluate the potential GDEs. HWG has no data to corroborate its assertion that the uppermost groundwater underlying the GDEs is saline and is incorrect in asserting that the potential contribution of surface water has not been evaluated. Although some data gaps remain and are recognized in the GSP, the GSP regulations require that these important beneficial groundwater uses be protected through the establishment of sustainable management criteria and the implementation of monitoring while data gaps are addressed.	None
HWG 42	Section 3.1.11, page 3-20	The GSP states, "Potentiometric surface maps prepared for the vicinity of the MGSA Area indicate the groundwater flow direction in the Dune Sand Aquifer is toward the coast." ***HWG Comment:*** The only shallow monitoring wells within the MGSA are MW-1S, MW-3S, and MW-4S. Data from these monitoring wells (under static conditions without the test slant well pumping) show the Dune Sand Aquifer groundwater flow directions within MGSA that vary from inland to relatively flat depending on the season and year being evaluated (see HWG, 2017). Water quality data for these monitoring wells also demonstrates significant seawater intrusion has occurred throughout the MGSA in the Dune Sand Aquifer. Thus, the GSP mischaracterizes shallow groundwater flow within the MGSA Plan Area.	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements for a discussion of the need and requirement for the GSP to consider sufficient data to develop and implement its GSP, regardless of whether these data fall within or outside the MGSA Area. The development of potentiometric surface maps is discussed in Section 3.2.1 and supports the stated conclusions.	None
HWG 43	Section 3.1.11, page 3-20	The GSP states, "…there is an upward gradient between the 180-Foot Aquifer and the Dune Sand Aquifer at the monitoring well cluster that is nearest to the coast…". ***HWG Comment:*** There is an overall downward gradient between MW-1S and MW-1M under static conditions (without the test slant well pumping). The GSP mischaracterizes the vertical gradient and uses this	Please refer to the groundwater level data presented in Table 3-7, which support the stated interpretation.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		mischaracterization to argue for a hydrogeologic conceptual model (seaward discharge of groundwater from the Dune Sand Aquifer and upper 180-Foot Aquifer) that is not present beneath MGSA.		
HWG 44	Section 3.1.12, page 3-20; Section 3.2.3.2, page 3-37	The GSP describes the chloride islands found in a study by MCWRA that are located approximately 3.5 to 4.5 miles inland of the MGSA, presents a potential aquitard gap map in Figure 3-20, and generally implies this issue is relevant in the MGSA Plan Area. The chloride island issue is discussed in other places in the GSP as well (e.g., Section 3.2.3.2, page 3-37). ***HWG Comment:*** This issue of possible aquitard gaps and chloride islands was documented at locations far inland and not relevant to the Marina GSP. In addition, detailed work by MCWRA was able assign these chloride islands to being caused by poorly constructed wells. The cited study by MCWRA did not have MPWSP monitoring well boring logs available to incorporate in their study. The locations of the MPWSP borings relative to the purported aquitard gaps (GSP Figure 3-20) is displayed in the attached Figure 1. MPWSP MW-8 has a major clay zone present from approximately 225 to 295 feet bgs and MW-9 has a major clay zone present from approximately 225 to 350 feet bgs (aquitard intervals in other boreholes include: MW-1: 210-275; MW-3: 215-285; MW-4: 260-300; MW-5: 305-395 (higher ground elevation); and MW-7: 225-270).	Please refer to our responses to Comments MCWRA 11 and 15, and HWG 31.	See Comments MCWRA 11 and 15.
HWG 45	Section 3.1.12, page 3-21	The GSP goes into a detailed description of the surface geophysics (AEM) study conducted by Marina Coast Water District's consultants. A statement made in the GSP in this section is, "The 180/400-Foot Aquitard is discontinuous and notably absent beneath a portion of the MGSA Area and in a large area located just east of the MGSA Area. This occurs in the vicinity of an area where the aquitard was previously judged to be thin or absent by MCWRA (see Figure 3-20)." ***HWG Comment:*** The HWG has previously provided extensive documentation of erroneous hydrogeologic interpretations of the AEM data (HWG, November 2017, January 2018, August 2018, January 2019, March 2019, and April 2019). The HWG April 2019 document clearly demonstrates with field data that the hydrogeologic interpretation of aquitard gaps from the AEM study is invalid. Furthermore, as described above, MPWSP monitoring well borehole logs demonstrate that	Please refer to Master Response 5 - Use and Interpretation of Geophysical Studies and our response to Comment HWG 30.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		areas of uncertain aquitard continuity areas identified by MCWRA (who did not have MPWSP monitoring well borehole data available to them at the time of their study) near MGSA are no longer uncertain and clearly have significant aquitard material present. Furthermore, review of water level and water quality data for the MPWSP clearly demonstrate the presence and continuity of the 180/400-Foot Aquitard beneath MGSA and surrounding MGSA.		
HWG 46	Section 3.1.12, pages 3-21 and 3-22	The GSP states, "The 400-Foot Aquitard is uneven, and the Deep Aquifer occurs at some locations as shallow as depths of approximately 650 feet below the ground surface." ***HWG Comment:*** The GSP provides no basis or reference for this description of the 400 Foot/Deep Aquifer Aquitard and the depth to the top of the Deep Aquifer, but it clearly does not apply to the MGSA or vicinity as noted above in Comment 15 for Chapter 3.	Please refer to our response to Comment HWG 18, above. As stated in Section 3.1.6.7, USGS (Hanson et al. 2002) states the basal part of the upper aquifer system, encountered from approximately 670 to 955 feet below ground surface at a deep boring in the City of Marina, is locally referred to as the 900-Foot Aquifer, which is generally considered part of the Deep Aquifer system.	None
HWG 47	Section 3.1.12, page 3-22	The GSP states, "The water quality data show a prominent saline groundwater wedge (>10,000 mg/L TDS) which dives downward from the coast through the Dune Sand and 180-Foot Aquifers, and extends downward into the 400-Foot Aquifer through a large gap in the 180/400 Foot Aquitard.". ***HWG Comment:*** This characterization of a large gap in the 180/400 Foot Aquitard is based solely on surface geophysics AEM data (not water quality data as stated in GSP text), and was clearly demonstrated to be wrong and contrary to water quality field data in a previous HWG letter (April 2019). This is one major example of invalid hydrogeologic interpretations generated by MCWD consultants from the surface geophysics AEM data. The AEM data hydrogeologic interpretations were not ground-truthed with actual field data that included borehole lithologic logs, borehole geophysical logs, water level data, and water quality data. In fact, many of the surface geophysics AEM data hydrogeologic interpretations are in direct opposition to the readily available field data.	Please refer to Master Response 5 - Use and Interpretation of Geophysical Studies for additional background regarding the methods used to assess the hydrostratigraphy and water quality distribution beneath the nearshore area of the Subbasin, which are being applied by USGS, SWRCB and DWR at other locations throughout the state. Please refer to the report by Gottschalk et al. (2018) for the methodology used to ground truth the geophysical interpretations to boring geophysical and lithologic log data. In preparing the GSP, MGSA's consultants have compared the water quality data gathered by CalAm's consultants for its long-screen interval monitoring wells completed in the Dune Sand, 180-Foot and 400-Foot Aquifers to the AEM-derived water quality data, and found them to be generally compatible. MGSA does not agree that HWG has "clearly demonstrated" this characterization to be wrong or clearly contrary to water quality field data.	None
HWG 48	Section 3.1.13, page 3-24	The GSP states, "A correlation between groundwater elevations and GDE stress or habitat quality has not been established." ***HWG Comment:*** While we agree this statement is true, the Marina GSP subsequently establishes an unjustified and very	Please refer to Master Response 8 - Groundwater Dependent Ecosystems. The need to resolve data gaps does not mean that sustainable management criteria can or should not be set while they are resolved, since irreversible harm to protected	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		stringent minimum threshold for GDEs, the locations of which are not even within MGSA's Plan Area and jurisdiction.	habitats could result. The rationale for the minimum threshold adopted for protection of GDEs is based on studies cited on pages 4-12 and 4-13 of the draft GSP for similar GDEs, which currently represent the best available data. Further study to establish a local correlation between groundwater levels and habitat stress or degradation is planned to be implemented during the early period of GSP implementation and may support the adoption of different standards that would be adopted in a GSP update.	
HWG 49	Section 3.1.13, page 3-24	The GSP states, "Before a substantial groundwater extraction is implemented in the MGSA Area, there would be a need for a locally refined groundwater flow model this is able to simulate solute transport and density-driven flow…". ***HWG Comment:*** This issue was addressed in the Final Environmental Impact Report (FEIR) for the MPWSP, which essentially concluded such a model was not necessary (section 8.2.12, CPUC, 2018).	We have reviewed the MPWSP FEIR and supporting technical documents, and have found the supporting modeling studies and tools are inadequate to predict the effects of future pumping on density-driven flow and solute transport near the coast. During preparation of the GSP, we discussed the need for additional modeling to support long-term sustainable management with SVBGSA, MCWD, and MCWRA. SVBGSA's consultants, MCWD's consultants and MCWRA staff all agreed that a refined groundwater model capable assessing density-driven flow and solute transport is likely needed to support long-term sustainable groundwater management in the region. MCWD was considering development of such a model to support development of the GSP for the adjacent Monterey Subbasin	None
HWG 50	Section 3.1.13, page 3-26	The GSP describes the MPWSP nested monitoring well network as having installed one well in each aquifer (Dune Sand Aquifer, 180-Foot Aquifer, and 400-Foot Aquifer) at each of the eight sites. ***HWG Comment:*** It should be noted that at site MW-5, the shallow monitoring well is screened in the Perched/Mounded Aquifer and not the Dune Sand Aquifer equivalent at that location; and at the MW-6 site the middle and deep monitoring wells are both screened within the 180-Foot Aquifer.	This is noted on pages 3-28 and 3-29 of the draft GSP.	None
HWG 51	Section 3.2.1.2,	The GSP provides selected groundwater contour maps for the various aquifers along with discussion of groundwater levels,	Responses to the numbered points noted in the comment are as follows:	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
	pages 3-27 to 3-30, Figures 3-25 to 3-33	gradients, and implications thereof. ***HWG Comment:*** There are several important points to note in this GSP discussion: 1) The GSP only presents groundwater elevations and contour maps for March and April at the peak (highest seasonal) groundwater levels whereas MCWRA focus their analysis of groundwater levels/contours on the Summer and Fall months that are critical to understanding seawater intrusion; 2) the entire GSP analysis of groundwater levels/contours is biased and unrepresentative because it ignores groundwater levels/contour during the majority of the year that drive local and regional seawater intrusion (see HWG 2017 for a more balanced discussion of Spring and Fall groundwater contour maps); 3) presenting a local contour map for March 2015 is not useful because the majority of the MPWSP monitoring well network had not yet been installed; there were plenty of opportunities to prepare and show groundwater contour maps representative of static conditions due to interruptions in test slant well pumping (e.g., June to October 2015; March to May, 2016); 4) the Dune Sand Aquifer groundwater contour map mixes wells from different aquifers (Perched/Mounded Aquifer and Dune Sand Aquifer), which results in mischaracterization of shallow groundwater flow; 5) the March 12, 2017 groundwater contour map either does not show static groundwater level conditions (i.e., the map is misdated), or it mixes groundwater levels for MW-1S and MW-3S for two different times (i.e., test slant well is pumping for the MW-1S reading and not pumping for the MW-3S reading); 6) the April 2018 groundwater contour map indicates groundwater flow from MW-1S, 3S, 4S, and 7S towards MW-8S and the Monterey Landfill monitoring wells, but this is not indicated on Figure 3-27; 7) the March 2017 and April 2018 groundwater contour maps for the 180-FTE Aquifer show steep inland gradients towards MW-6 that are not reflected on the maps (Figure 3-29 and Figure 3-30); 8) all the hydraulic gradient calculations are misleading in terms of magnitude (and in some cases direction) due to use of only Spring groundwater level measurements (see HWG 2017 or a more balanced discussion of magnitude and direction of hydraulic gradients).	(1) Water level data were posted for periods before, during and after pumping of the test slant well because operation of the test slant well had the potential for the extensive impact on water levels. (2) Same response as Comment 1. In addition, the GSP analysis is not biased and unrepresentative. Groundwater level data from Fall 2018 were reviewed and compared to the groundwater elevation contour maps prepared for Spring 2018. The interpreted direction of groundwater flow for the Dune Sand, 180-Foot and 400-Foot Aquifers were generally consistent for the Spring and Fall 2018 data, indicating that during this time groundwater the effect of seasonal groundwater level decline was relatively uniform across the area analyzed. (3) The purpose of the March 2015 map was to present water level data prior to startup of the test slant well. (4) The Dune Sand Aquifer maps have data posted for a relatively wide area that includes MPWSP, Fort Ord, and the Monterey Peninsula Class III landfill. Only MPWSP wells MW-1, MW-3, MW4, MW-7, and MW-8 are contoured, and they are all considered to be completed in the same aquifer. (5) Water level data were calculated using piezometer data from Test Slant Well Long Term Pumping Monitoring Report No. 97. (6) This comment is not clear. Also, the Monterey Landfill monitoring wells are not included in the DSA contouring because it is not clear they are in the same hydrogeologic regime. (7) This comment is noted. (8) Same response as Comment 1 above.	
HWG 52	Section 3.2.1.1, page 3-28	The GSP states, "At the landfill, groundwater elevations in the landfill area may be affected by local shallow French drains for landfill hydraulic containment and leachate collection systems…and are lower than expected."	The text has been revised to expand the discussion on groundwater movement in the landfill.	Revised text on page 3-28: "<u>At the landfill, groundwater elevations in the landfill area may be affected by multiple perched layers, the drainage control systems for landfill</u>

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		HWG Comment: The French drains only impact the uppermost perched zone at the landfill, and do not impact the -2 Foot Aquifer (Dune Sand Aquifer equivalent) well measurements (e.g., Wells G-1, G-2, C-34, and others) shown on the GSP maps.		hydraulic containment, and other factors (RMC Geoscience, Inc. 2019), and are lower than expected. Groundwater flow direction and gradient are influenced by the Salinas River and by pumping from the landfill water supply wells. Groundwater flow is also locally influenced by surface water recharge associated with the storm water percolation pond, the relatively poor drainage conditions south of the landfill whereby water is routed around the landfill in unlined surface channels, and by pumping from the site water supply wells (RMC Geoscience, Inc. 2019)."
HWG 53	Section 3.2.1.1, page 3-28	The GSP terminates groundwater level contours south of the Salinas River to avoid, "…conjecture about the effect of river seepage on groundwater elevations in this area…". ***HWG Comment:*** If the GSP had focused on Fall groundwater level measurements and contours as it should have, there would be no need to worry about conjecture regarding river seepage.	See the response to Comment HWG 51 for the rationale for selection of dates for contour map development and for an assessment of spring vs. fall data after cessation of slant test well pumping. Interpretation of river seepage is a concern both during the spring and fall.	None
HWG 54	Section 3.2.1.1, page 3-29	The GSP states, "Near the coast in wells MW-1S…groundwater elevations increased by approximately 7 feet…between March 2017 and April 2018.". ***HWG Comment:*** The GSP is clearly mixing test slant well pumping and non-pumping water level measurements at MW-1S in this statement and on its maps for these two time periods.	The statement is intended to point out the rise in groundwater levels after the cessation of test slant well pumping. It is not "mixing" data.	None
HWG 55	Section 3.2.1.3, page 3-31	The GSP compares September 2018 groundwater elevations to 30-year averages and states it indicates "average stable to somewhat recovering conditions" for the 180-Foot Aquifer. ***HWG Comment:*** The discussion in this section of the GSP is very misleading and compares a single snapshot in time to 30-year averages, and is not indicative of recent or overall conditions in the Subbasin that very substantially from year to year.	The discussion clearly states that the comparison is for a set of September 2018 measurements, so it is clear it is a snapshot in time.	None
HWG 56	Section 3.2.1.3, page 3-33	The GSP discusses MPWSP MW-6M and MW-6M(L) and suggests groundwater levels may indicate, "…an area where the 180-Foot and 400-Foot Aquifers are in direct communication.".	The text has been revised as noted to the right to delete mention of direct communication.	Revised text on Page 3-33: There is little difference in the groundwater elevations for wells MW-6M and MW-6D. The designation for the latter was changed to well MW-

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		HWG Comment: As is clear from review of the borehole lithologic and geophysical logs, and related discussion by HWG in the Technical Report (November 2017), the 180/400=Foot Aquitard is quite substantial at this location, and the 180-Foot and 400-Foot Aquifers are clearly not in "direct communication."		6M(L) in recent MPWSP reports, recognition of the fact that it is completed in the lower 180-Foot Aquifer. ~~or in an area where the 180-Foot and 400-Foot Aquifers are in direct communication"~~
HWG 57	Section 3.2.1.3, page 3-33	The GSP states, "In well clusters MW-7, MW-8 and MW-9, there is less separation between the hydrographs for the middle (M) lower (D) wells than in well clusters MW-1, MW-3, and MW-4, indicating the 180/400-Foot Aquitard may be less competent or absent in this area, as also documented by the AEM surveys in this area…". ***HWG Comment:*** Examination of all available data for the MPWSP monitoring wells (borehole lithologic logs, geophysical logs, groundwater level data, groundwater quality data, pumping test data) consistently demonstrate the presence of substantial hydraulic separation between the 180-FTE and 400- Foot Aquifers in the MPWSP monitoring well network area. In addition, the HWG have demonstrated the hydrogeologic misinterpretation of AEM data with regard to aquitard gaps and other misleading and/or incorrect conclusions from AEM data interpretation (e.g., HWG, April 2019).	The GSP text is a discussion of water level differences for the M and D intervals comparing inland wells MW-7, MW-9, and MW-9 to seaward wells MW-1, MW-3, and MW-4. Because the elevation differences between the M and D wells is less in the inland wells, it would suggest that there is more leakance from the M to the D zone in the inland area. This could be due to a thinner aquitard or higher vertical hydraulic conductivity.	None
HWG 58	Section 3.2.1.3, page 3-33	The GSP acknowledges that, "There is a cyclical pattern of high groundwater elevations in the winter/spring and low elevations in the summer/fall." ***HWG Comment:*** While the GSP acknowledges this key fact here, it fails to present or describe groundwater levels, contours, and gradients during the key summer and fall months that drive seawater intrusion in the MGSA and SVBGSA Plan areas.	See the above response to Comment HWG 51. Groundwater level data from Fall 2018 were reviewed and compared to the groundwater elevation contour map prepared for Spring 2018. The interpreted direction of groundwater flow for the Dune Sand, 180-Foot and 400-Foot Aquifers were generally consistent for the Spring and Fall 2018 data, indicating that during this time the effect of seasonal groundwater level decline was relatively uniform across the area analyzed.	None
HWG 59	Section 3.2.1.3, page 3-34	The GSP states that groundwater levels during the test slant well pumping test declined by "…approximately 8 feet in MW-1S and MW-1M, and by 3 feet in MW-3S and MW-3M…" and that "pumping-related drawdown was too gradual to be readily distinguishable…" in other MPWSP monitoring wells. The GSP goes on to state, "…groundwater elevations in most of these wells appeared to show a sudden recovery (or rebound) when pumping was temporarily discontinued in the	Based on the MPWSP monitoring well hydrographs (GeoScience Support Services, Inc. 2018) there are three major recovery events observed during test slant well pumping: June 5, 2015, March 4, 2016, and February 28, 2018. In addition, short-term pumping shutdowns of the pilot slant well occurred (with more limited associated recovery) in mid-December 2016, mid-January 2017, and	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		spring of 2016." ***HWG Comment:*** The HWG previously documented (e.g., HWG, July 2015) in detail that drawdowns from pumping the test slant well were approximately 8 feet in MW-1S, 2 feet in MW-3S, negligible in MW-4S, 6 feet in MW-1M, 2 feet in MW-3M, negligible in MW-4M, and 0 in all other MPWSP monitoring wells. The purported "recovery" in spring 2016 had nothing to do with operation of the test slant well, but rather represented regional pumping fluctuations tied to variation in climatic conditions as is apparent by the fact that the recovery started prior to the test slant well being turned off and occurred in aquifers and well locations completely unaffected by test slant well pumping. Furthermore, if such a notable recovery occurred at these well locations upon turning the test slant well off, it would have consistently been observed (but was not) when the test slant well was temporarily turned off on numerous occasions.	early-February 2017. Multiplying the number of wells (24) times the number of events (6) equals a total of 144 potential recovery curves. However, well clusters MW-8 and MW-9 did not have transducers in the wells early enough to document the June 5, 2015 shutdown: therefore, there were 138 potential recovery curves (144-6). The 138 recovery curves were reviewed to evaluate the relationship between shutdown and water level recovery in the wells. For about 60 percent of the recovery events, there was a positive correlation between shutdown and recovery, indicating that the recovery may be related to the shutdown, and that pumping-related drawdown occurred in the well. For about 30 percent there was no observable correlation between shutdown and recovery. The remaining 10 percent of the curves it was not possible to determine a trend conclusively. Along with the six pumping shutdown events, water level changes could occur due to regional pumping (or cessation of regional pumping), rainfall events, and stage height changes in the Salinas River. However, for most of the recovery curves, water level temporally correlated to the shutdown of the pilot slant test well. The correlation between the recovery and shutdown is unlikely to be a coincidence. Therefore, there are data to support the assertion that pumping of the test slant well had a drawdown impact on distant monitoring wells completed in all three monitoring zones, and that pumping impacts extend beyond just the CEMEX plant area.	
HWG 60	Section 3.2.1.3, page 3-34	The GSP states in reference to monitoring well drawdown during test slant well pumping, "Drawdown in the deep wells illustrates a strong hydraulic connection between the 180-Foot and 400- Foot Aquifer in this area, consistent with a thin or absent 180/400-Foot Aquitard in much of the area." ***HWG Comment:*** As described above and elsewhere in this comment letter, and in other HWG documents, the cited drawdown in the 400-Foot Aquifer from pumping of the test slant well does not exist and this conclusion is completely erroneous. This erroneous conclusion is further illustrated by the GSP claim that drawdown from test slant well pumping	See the response to Comment HWG 59.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		resulted in the greatest drawdown and most rapid response in the 400-Foot Aquifer, which is an aquifer that is not even screened and pumped from in the test slant well.		
HWG 61	Section 3.2.2, page 3-34	The GSP states, "In 2017, storage recovered by approximately 24,000 AF, indicating that, as had occurred on several past occasions during the period of record, that significant storage recovery is possible within a relatively short period of time." ***HWG Comment:*** It should be noted here that 2016-2017 was a record rainfall year, which is a rare occurrence and would be expected to result in some recovery. It should also be recognized that basin "recovery" can occur in part via seawater intrusion.	The comment is noted	None
HWG 62	Section 3.2.2, page 3-35	In referring to MCWD consultant hydrogeologic interpretation of surface geophysics work the GSP states, "This includes low TDS groundwater identified within the MGSA Area…". ***HWG Comment:*** This statement clearly illustrates again the erroneous hydrogeologic interpretation of AEM data presented by MCWD/Marina consultants and in this GSP. While field groundwater level and quality data clearly demonstrate that TDS in the Dune Sand Aquifer, 180-FTE Aquifer, and 400-Foot Aquifer within MGSA exceeds 7,500 mg/L, Marina/MCWD consultants and the MGSA GSP keep stating that such water exists within the MGSA Plan area based on the AEM data. This clearly demonstrates either flawed AEM data or (more likely) a flawed interpretation of the AEM data.	Please refer to our response to Comments HWG 24 and 26. The water quality data in question are derived primarily from wells with long screen intervals and do not contradict the existence of low-TDS groundwater in the uppermost portion of the aquifer identified by the AEM studies.	None
HWG 63	Section 3.2.3.1, page 3-36	The GSP states, "…it is entirely possible that in an aquifer where seawater intrusion has occurred at 500 mg/L chloride, that there will be large groundwater areas within the 500 mg/L impacted area that have higher quality groundwater than at the leading edge." The GSP also states that groundwater quality in the seawater intruded area, "…may well be sufficient for many beneficial uses.". ***HWG Comment:*** There is no evidence to support these statements. The so-called "low-TDS" groundwater claimed to be found by interpretation of AEM data has chloride concentrations exceeding the maximum chloride MCL (600 mg/L) and up to 1,000 mg/L or more. Furthermore, this so-called "higher quality groundwater" is not sufficient for domestic, municipal, or agricultural beneficial uses without treatment. Lastly, any attempt to develop any actual better	A December 20, 2019 letter from RWQCB to GSA's in Salinas Valley Basin states that "*The Central Coast Water Board encourages GSAs to develop GSPs that protect existing high-quality waters and beneficial uses identified in the Basin Plan. Some of the beneficial uses specific to groundwater include municipal, domestic, agricultural, and industrial supply, and preservation of biological habitats of significance in the form of groundwater dependent ecosystems. Water Boards are required to protect high-quality waters by Resolution No. 68-16, "Statement of Policy with respect to Maintaining High Quality of Waters in California," which is also known as the State Antidegradation Policy. The Central Coast Water Board cannot authorize any*	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		quality groundwater zones (if they were to exist) within the seawater intruded soon will result in rapid salinization of such pumping wells.	*degradation, or lowering of the baseline water quality, without first finding that the degradation complies with Resolution No. 68-16*." The point of the statement in the GSP is that there are reasons to protect the existing high quality of waters in the seawater intruded portions of the Subbasin. While the HWG may wish to de-emphasize or dismiss this obligation, the MGSA cannot. The AEM data demonstrate variable lateral and vertical distribution of groundwater quality between the nearshore saline water wedge and the inland seawater intrusion front, so the GSP statement is not speculative. In addition, it is correct to state that the demand for many agricultural and industrial beneficial uses can be met with water containing over 500 mg/L chloride or 1,000 mg/L TDS. Finally, please refer to Master Response 4 - Groundwater Quality and Seawater intrusion. In California, all water under the ground is "groundwater," regardless of whether it is seawater intruded, and under the "Sources of Drinking Water Policy" (State Board Resolution No. 88-63), the State Board provides that groundwater containing less than 3,000 mg/L TDS be managed based on a designated beneficial use for domestic and municipal supply. The need to treat this water prior to use for domestic or municipal supply is not relevant under this policy.	
HWG 64	Section 3.2.3.1, page 3-36	The GSP states, "…the seawater intrusion front defined using the 500 mg/L chloride threshold…does not mean that the groundwater within the affected region is no longer suitable for current or potential beneficial uses." ***HWG Comment:*** Again, the GSP presents no evidence to support this statement.	Please refer to the response to Comment HWG 63.	None
HWG 65	Section 3.2.3.2, page 3-37	The GSP states that it "augmented" the MCWRA seawater intrusion maps to show zones of low TDS groundwater "…identified during the AEM survey…". ***HWG Comment:*** It is not clear why the MCWRA seawater intrusion maps (which show areas of groundwater with chloride exceeding 500 mg/L) need to be "augmented" by "low TDS" zones that have chloride concentrations exceeding	The significance of the low-TDS zones outlined on the figures is explained in the text on page 3-37 of the draft GSP. "*As shown in these figures and discussed in Section 3.1.12, a zone of low TDS groundwater (TDS < 3,000 mg/L) exists in an approximately 8,300-acre area that is locally recharged through the Dune Sand Aquifer*	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		500 mg/L and up to as much as 1,000 mg/L or more. The "augmented" maps really don't display any information of value.	*(Gottschalk et al. 2018). TDS concentrations detected in groundwater samples collected from this area in April 2019 range from 896 to 3,000 mg/L, and chloride concentrations range from 112 to 950 mg/L (Figure 3-16). This zone appears to be in a relatively stable state of equilibrium with a saline groundwater intrusion wedge whose upper contact cuts through the eastern side of the MGSA Area. Under Ghyben-Herzberg dynamics, this wedge should remain stable as long as the thickness of the overlying low TDS groundwater zone is maintained.*"	
HWG 66	Section 3.2.6.1.1, page 3-41	The GSP states, "Geophysical data collected in 2017 indicate that groundwater elevations in the Dune Sand Aquifer are close to the river stage elevation, and decline away from the river, suggesting a losing condition…". ***HWG Comment:*** The surface geophysical data do not provide groundwater elevation data.	Water table elevations are routinely investigated using electrical resistance, electromagnetic or other geophysical methods. Water table depths near the river may be interpreted from the sections shown on Figure 3-22. Please refer to Gottschalk et al. (2018) for the methods used to assess saturated conditions.	None
HWG 67	Section 3.2.6.1.2, pages 3-42 to 3-44	The GSP states, "No potential GDEs are mapped in the MGSA Area, but several potential GDEs are located nearby. Potential GDEs near the MGSA Area include riverine wetlands and riparian habitat along the banks of the Salinas River, and Palustrine and emergent wetland areas that are seasonally flooded in depressions a short distance east of the MGSA Area, north in the Salinas River National Wildlife Refuge, and south in the City of Marina." Additional discussion of these potential GDEs located outside of the MGSA Plan Area (and within the undisputed area of SVB GSA GSP) occurs in subsequent paragraphs of the GSP. ***HWG Comment:*** The fact that no GDEs are located with the Marina GSP Plan Area means that the SVB GSA and GSP (and not City of Maria GSA and GSP) has jurisdiction over that evaluation of (to determine if potential GDEs are considered actual GDEs) and setting of SMC for these GDEs if deemed necessary. We note that Salinas River GDEs are located two miles or further from potential MPWSP slant wells within MGSA. In addition, the fact that nearby GDEs are seasonally flooded and have a seasonal nature to them (and are associated with "a lens of less pervious soil") suggests a surface water source is most likely sustaining vegetation in these areas. The GSP evaluation to determine if potential	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements for discussion of the need and requirement to consider conditions outside a GSA's jurisdictional boundaries when setting sustainable management criteria for groundwater extraction inside its boundaries. Please refer to the response to Comment HWG 28 and to Master Response 8 - Groundwater Dependent Ecosystems. MGSA followed and exceeded guidance from DWR and The Nature Conservancy (TNC) to evaluate the potential GDEs. HWG has no data to corroborate its assertion that the uppermost groundwater underlying the GDEs is saline and is incorrect in asserting that the potential contribution of surface water has not been evaluated. Although some data gaps remain and are recognized in the GSP, the GSP regulations require that these important beneficial groundwater uses be protected through the establishment of sustainable management criteria and the implementation of monitoring while data gaps are addressed.	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		GDEs are actual GDEs did not consider that shallow groundwater in these nearby potential GDE areas is saline or the likelihood that fresh surface water is the primary sustaining factor for these areas and (which means they are not GDEs).		
HWG 68	Section 3.2.6.1.2, page 3-44	The GSP states, "Hydrographs for well MW-4S indicate that the seasonal fluctuation in groundwater elevations in this well was approximately 2 feet, and suggest that pumping-induced drawdown was approximately 1 foot. The above ET analysis demonstrates the correlation between groundwater levels and ET from this wetland, and illustrates its sensitivity to groundwater level declines." ***HWG Comment:*** Previous HWG documents demonstrate negligible drawdown at MW-4S (e.g., HWG, 2015). Available data make clear that there was no drawdown from test slant well pumping at potential GDE locations that are outside the MGSA Plan Area. Any claimed changes in ET (assuming there are any given the wide ranges in ET cited) from the wetland areas is related to other (likely climatic) factors.	We have revised Figure 4-1 to show the hydrographs for wells MW-4S, 4M and 4D, all of which show an abrupt rise in groundwater levels when test slant well pumping was discontinued in 2016 and 2018. This observation is consistent with recovery of drawdown induced by pumping the test slant well and to be a more probable explanation that the coincidental change in regional pumping proposed by HWG. In addition, the changes in summer ET are correlated to differences in the summer time groundwater levels and illustrate the sensitivity of the response.	Revised Figure 4-1.
HWG 69	Section 3.2.6.1.2, page 3-44	The GSP states, "…it is not possible to determine the extent to which the drawdown induced during the test slant well pumping test resulted in significant and unreasonable impacts to the GDE, or whether the results were temporary and reversible." ***HWG Comment:*** As stated above, it is clear from available data that there was no drawdown from test slant well pumping at the referenced potential GDE locations. Thus, the claimed impacts at potential GDE locations (assuming such impacts even occurred) are due to other factors and illustrate the uncertainty of such an analysis. Most importantly, this is a clear and significant conflict with the SVG GSA GSP, which has sole jurisdiction and authority to evaluate potential GDEs within its Plan Area and to determine if SMC need to be set.	Please refer to Master Response 6 – Sustainable Management Criteria. MGSA's ET analysis in the GSP demonstrated the correlation between groundwater levels and ET from the Armstrong Ranch Ponds wetland and illustrated its sensitivity to groundwater level declines. Shallow groundwater drawdown induced by pumping in the MGSA Area could adversely affect these GDEs, harming or degrading protected habitat, and harming protected species.	No changes.
HWG 70	Section 3.3.1, page 3-45	The GSP states that since monitoring wells were only installed within MGSA Plan area as of 2015, "…there is little data for development of a local historical water budget prior to 2015." ***HWG Comment:*** The majority of the water budget is not dependent on well data, which is only needed for evaluation of surface inflow and outflow. The vertical components of the	Groundwater inflow and outflow are key groundwater budget components, without which an overall groundwater budget cannot be constrained. Historical surface water budget data were provided to the extent available, including historical recharge. Regionally, the GSP has	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		water budget (e.g., recharge from precipitation, surface water, irrigation, and discharge from wells) do not require well data and can be calculated for historic conditions.	adopted the historical water budget for the Subbasin (of which the local MGSA water budget is a relatively small component) presented in the SVBGSA GSP. No additional information is warranted.	
HWG 71	Section 3.3.2, page 3-47	The GSP states, "…density-driven convection of saline groundwater in the intruding wedge underlying the MGSA Area likely results in the mixing of saline and low-TDS groundwater in the upper portion of the intruding wedge, which discharges seaward." ***HWG Comment:*** This discussion and previous/subsequent discussion in the GSP relative to the Ghyben- Herzberg approximation (e.g., Section 3.3.8.1, page 3-59) are based on there being one continuous seawater wedge in the area. This discussion is fundamentally flawed because each aquifer (Dune Sand Aquifer, 180-FTE Aquifer, and 400-Foot Aquifer) has its own distinct seawater intrusion wedge (and given the stratification within a given aquifer, there are likely multiple "mini-wedges" depending on the distribution of hydraulic conductivity and water levels). Beneath the MGSA, the wedge interfaces with "low-TDS groundwater" are inland of the MGSA Plan area for all three aquifers, as demonstrated by lack of any aquifer TDS being less than approximately 7,500 mg/L.	Although it is theoretically possible that "mini-wedges" of dense saline groundwater could occur in some intervals or that separate wedges occur in each aquifer in some areas, there are no data to support this interpretation. Rather, the AEM data indicate the presence of a single larger wedge underlying the MGSA Area and its vicinity that spans all three aquifers in the upper aquifer system in areas where the intervening aquitards are thin or locally absent. The conceptual model proposed in the comment therefore is not supported by any actual data. The water quality data cited are derived from wells with long screen intervals using a sampling methodology that does not distinguish vertical variations in water quality within the screen intervals. We also note that density-driven flow is generally not considered significant at solute concentrations that are less than a few thousand milligrams per liter. In seawater intruded areas with lower TDS concentrations, salinity moves with the groundwater in the aquifer as a solute under Darcy flow assumptions. As such, seawater intrusion processes are characterized by a static or migrating saline water wedge near the shore, and as concentrations are diluted and dispersed, by solute transport in areas that are further inland. Please refer to General Response 4 - Groundwater Quality and Seawater Intrusion for additional discussion.	None
HWG 72	Section 3.3.3, pages 3-51 through 3-53	Table 3-7 shows groundwater levels and vertical gradients for late March and early April at MPWSP monitoring wells, and Figures 3-25 through 3-33 also show only March/April groundwater level and contours. ***HWG Comment:*** The GSP only shows groundwater levels for the various aquifers at their peak (highest) elevations, and does not provide overall representative groundwater levels, groundwater contours, or vertical gradients. Groundwater	We acknowledge that groundwater levels and gradients are seasonally variable, as discussed on pages 3-33 and 3-34 of the draft GSP. As noted in our responses to Comments HWG 51 and 58, groundwater level data from Fall 2018 were reviewed and compared to the groundwater elevation contour map prepared for Spring 2018. The interpreted direction of groundwater flow for	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		levels are considerably lower with steeper inland gradients during other times of year (i.e., before March and after April), but these conditions are not displayed in the GSP (see HWG 2017 for more representative description of groundwater levels and gradients).	the Dune Sand, 180-Foot and 400-Foot Aquifers were generally consistent for the Spring and Fall 2018 data, indicating that during this time the effect of seasonal groundwater level decline was relatively uniform across the area analyzed. For the purposes of the basin setting description in the GSP, maps were developed to show groundwater level conditions prior to slant well pumping (only one dataset was available), during slant well pumping, and after slant well pumping (only one dataset was available). These data are sufficient to inform an assessment of current conditions and support development of sustainable management criteria in the initial version of the GSP. Additional data will be gathered and the conceptual understanding of seasonal variations in groundwater conditions will be refined as the GSP is implemented.	
HWG 73	Section 3.3.7.1, pages 3-56 and 3-57	The GSP calculates purported subsurface inflow in the Dune Sand Aquifer from the east in the MGSA based on March 2017 groundwater levels. ***HWG Comment:*** The GSP uses groundwater levels/gradients from a record wet rainfall year and peak seasonal month for groundwater levels. This calculation should utilize average groundwater levels across a given year and range of climatic conditions across several years. Such a calculation would likely result in no net subsurface inflow from the east, which is evident from the saline groundwater conditions within the Dune Sand Aquifer within the MGSA.	The 2017 water budget was calculated to represent the time period during pumping of the test slant well, which dominated the water budget during this time. Assessment of multiple variations in the water budget during pumping of the well is not warranted.	None
HWG 74	Section 3.3.8.1, page 3-59	The GSP provides a discussion of the ocean water percentage extracted by the test slant well, and suggests it is unknown but expected to be larger than 10 percent; thus, a value of 30% is used for subsequent water balance calculations. ***HWG Comment:*** The GSP ignores the weekly water quality data collected from the test slant in discussing the ocean water percentage. This field data was reported in weekly/monthly monitoring reports, and demonstrates that the ocean water percentage averaged 10% over the long term (including record wet year conditions). Thus, the use of a 30% value for ocean water percentage is clearly erroneous as demonstrated by field data.	The entire quote is as follows: "*ESA (2018) estimated an "Ocean Water Percentage" of approximately 90 percent using the CEMEX model during the first year of test slant well pumping for the full MPWSP raw water makeup system; however, the modeling assumed a landward gradient in the DSA. The actual gradient in the DSA is seaward, so the amount of groundwater captured from the DSA from the inland portions of the aquifer would be larger than simulated. The conceptual groundwater budget summaries presented in Table 3 10 and Table 3 11 therefore include alternative budgets based on an estimated*	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			10 percent and 30 percent of the extracted test slant well groundwater being produced from the aquifers underlying the MGSA Area." As noted in our response to Comment HWG 16, a recent independent review by an independent hydrogeologic consultant retained by the California Coastal Commission corroborated this assessment and determined that "... *a change in the hydraulic gradient of the upper aquifer in the area (the Dune Sands Aquifer) suggests that Cal-Am's wells would extract greater volumes of non-seawater than identified in Cal-Am's model*s" and "... *Cal-Am's modeling appears to be flawed in that it did not account for potential fresh water capture beyond an identified capture zone. There is uncertainty about how much additional fresh water capture could occur, depending on how the model interprets the hydrogeology of the Dune Sands Aquifer and an underlying aquitard*." (California Coastal Commission 2019). Thus, the GSP approach is reasonable to bracket the potential range in the actual ocean water percentage.	
HWG 75	Section 3.3.8.1, page 3-59	The GSP states, "Discharge from the Dune Sand Aquifer to the Pacific Ocean is approximately 435 AFY (seaward direction out of the western MGSA boundary)." ***HWG Comment:*** This statement/calculation is clearly erroneous, and the basis for the calculation is not explained. Again, the only groundwater level data even presented in the GSP is for March/April (the peak/highest groundwater levels in a given year), which are not representative of the average annual condition needed for this calculation.	Please refer to the response to Comment HWG 51. The Dune Sand Aquifer discharge to the sea under current condition was estimated using Darcy's Law: Q = kiA, where: Q = the discharge k = the horizontal hydraulic conductivity i = the hydraulic gradient A = the cross sectional area of the aquifer. The input used for the calculation are listed in Table 3-10 on page 3-66.	None
HWG 76	Section 3.3.8.2, page 3-60	The GSP states, "…the 400-Foot Aquifer did experience drawdown during test slant well pumping…". ***HWG Comment:*** This statement/conclusion is clearly erroneous and not supported by the abundant available field data during the three years of test slant well pumping, including several episodes of the test slant well being turned off and on, during which drawdown (and recovery) would be demonstrated if it occurred.	Please refer to the responses to Comments HWG 59 and 60.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
HWG 77	Section 3.3.9, page 3-61	The GSP states, "…groundwater storage beneath the MGSA Area does not appear to be decreasing at the present. This implies that conditions at the seaward edge of the saline intrusion front in the Subbasin are relatively stable; however significant changes in groundwater pumping in this area could upset this equilibrium and have both local and inland implications for future seawater intrusion." ***HWG Comment:*** Stable groundwater storage conditions does not mean there is not continuing seawater intrusion; it just means the inland gradient is relatively constant on an average annual basis. Pumping from the proposed MPWSP within MGSA would serve to help mitigate future inland seawater intrusion as was demonstrated in the MPWSP FEIR.	The GSP states that conditions appear to be in a state of equilibrium, not that seawater intrusion is not actively occurring. The MPWSP FEIR included an evaluation of the potential impacts of the project, and did not include any solute transport or seawater intrusion modeling to assess whether the project would help mitigate seawater intrusion. As such, no technical analysis has been conducted to assess the project's claimed benefits to seawater intrusion.	None
HWG 78	Section 3.3.10.2, pages 3-64 and 3-65	The GSP makes several assumptions and statements in its discussion of Current Groundwater Budget Supplement. ***HWG Comment:*** Many of these assumptions/statements are incorrect or not valid, e.g., all test slant well extraction assigned to DSA; much of the inflow into the DSA from the landward side of MGSA Area was captured by the test slant well; the amount of infiltrating seawater cannot be evaluated without a model.	The comment is noted. Please refer to the detailed responses below.	None
HWG 79	Section 3.3.10.4, page 3-69	The GSP states, "The proposed pumping of 17,400 AFY of feed water for the MPWSP, if permitted and implemented, would extract primarily saline groundwater from beneath the ocean and saline as well as low TDS groundwater from the Dune Sand and 180-Foot Aquifers in the Subbasin." ***HWG Comment:*** This sentence is more accurately written as, "The proposed pumping of 17,400 AFY of feed water for the MPWSP, if permitted and implemented, would extract primarily saline water from the ocean and small amounts of saline to brackish groundwater from the Dune Sand and 180-Foot Aquifers in the Subbasin from within the MPWSP slant well capture zone."	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion for a discussion regarding the applicable water quality standards and the terms used to describe water quality in the GSP. "Brackish" is an imprecise term subject to various definitions, depending on the reference. In view of the available data and the definitions provided in the GSP, the statement is more accurate and precise as written.	None
HWG 80	Section 3.3.10.4, page 3-69	The GSP states, "In the Monterey Subbasin, groundwater demand from the Deep Aquifer by MCWD to supply the City of Marina is expected to increase….however, the increase is projected to be within MCWD's allocated pumping rights." ***HWG Comment:*** Regardless of allocated pumping rights, it remains unclear if the proposed MCWD increase in pumping from the Deep Aquifer is sustainable. In addition, the increased pumping from the Deep Aquifer to the east to	The subject groundwater extraction will occur from the adjacent Monterey Subbasin. Evaluation of the long-term sustainability of Deep Aquifer pumping is the responsibility of the GSAs responsible for regulating groundwater extraction from this aquifer, namely SVBGSA and MCWD GSA. The projected increase in Deep Aquifer extraction by MCWD is discussed per the GSP regulation	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		support agricultural expansion is based on overlying rights, not allocated (paper water) pumping rights, and are thereby superior to MCWD.	requirements for regional demand forecasts. The reference to pumping allocations is pertinent because it was based on a preliminary analysis of sustainable yield. Based on our review of the SVBGSA GSP and other available demand forecasts, we are not aware of any projected increases in Deep Aquifer pumping east of the MGSA Area. As a SGMA document this GSP does not purport to make any determinations regarding water rights.	
HWG 81	Section 3.3.10.4, page 3-69; Section 3.3.11, page 3-71	The GSP references in several places the need for modeling of density-driven groundwater flow. ***HWG Comment:*** Somewhat ironically, if the MGSA Plan area is impacted to the point of needing to consider use of density-dependent groundwater flow software, the groundwater in MGSA is impacted well beyond the point of any undesirable results thresholds (i.e., any reasonable MTs and MOs were exceed long ago by a substantial amount and further degradation by seawater intrusion would have no impact on potential uses of groundwater within MGSA). Regardless, this issue is addressed in Comment 32 for Chapter 3	The response of the dense saline water wedge near the shore to changes in groundwater extraction can reasonably be expected to result in changes in low-TDS waters located proximal to the MGSA Area, as well as changes in solute transport in more inland areas. As discussed in Master Response 4 - Groundwater Quality and Seawater Intrusion, DWRs guidance on monitoring networks and data gaps emphasizes the importance of understanding density-driven flow in the nearshore environment in order to assess seawater intrusion. As discussed in the response to Comment HWG-49, there is general agreement among GSAs and water management agencies in the area that a refined groundwater model that can simulate density-driven flow and solute transport is needed to support long-term sustainable groundwater management.	None
HWG 82	Section 3.3.10.4, page 3-69	The GSP references in multiples places the need to assure that sustainability goals are met. ***HWG Comment:*** It is not clear what existing groundwater beneath MGSA needs to be sustained given TDS concentrations exceeding 7,500 mg/L in all aquifers other than in the Deep Aquifer, and Deep Aquifer sustainability is not defined and addressed in the GSP.	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion regarding the applicable water quality standards that drive the sustainable management criteria for groundwater quality degradation. Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements for a discussion regarding the need and requirement to consider and address basin conditions, including water quality, both within and outside the MGSA Area.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			Please refer to our responses to Comments HWG 24 and 26 for an explanation regarding water quality beneath the MGSA Area.	
HWG 83	Section 3.3.10.5, page 3-70	The GSP states, "The MPWSP monitoring well east of the MGSA Area…did not show a direct response to Slant Well pumping…". ***HWG Comment:*** While this statement is true, there were also several wells within MGSA GSP Plan Area that showed no response to test slant well pumping including: MW-1D, MW-3D, MW-4S, MW-4M, and MW-4D. The only MPWSP monitoring wells that showed a measurable response to test slant well pumping were MW-1S, MW-1M, MW-3S, and MW-3M.	Please refer to the responses to Comments HWG 59 and 60.	None
HWG 84	Section 3.3.10.5, page 3-70	The GSP states, "Groundwater gradients in the Dune Sand Aquifer remained generally similar throughout the period of record." ***HWG Comment:*** This statement is incorrect. Groundwater levels were generally lower and had a steeper inland gradient in 2015 and 2016, which were slightly below average to slightly above average rainfall years, compared to subsequent years that showed generally higher groundwater levels due to the record wet year in 2017.	This discussion relates Section 3.3.10.5 "Water Year Types Associated with Water Budget" (p 3-70). Water level data were posted for periods before, during and after pumping of the test slant well because operation of the test slant well had the potential for the extensive impacts on groundwater levels. Groundwater level gradient were estimated using the March 2017 (during pilot slant well pumping) and April 2018 (after pilot slant well pumping test stopped). March 2015 groundwater level data were not contoured due to the limited number of wells available. The March 2017 gradient was estimated to be 0.00054 and the April 2018 gradient was estimated to be 0.00062. The text has been revised as noted to the right.	The text on page 3-70 was revised to include the following statement: <u>Groundwater gradients calculated from the Dune Sand Aquifer March 2017 groundwater level map (during a wet year and pumping of the pilot slant well) and April 2018 groundwater level map (during a dry year and after the pilot slant well was shutdown) were similar. In addition, the gradient directions remained similar during the fall of each year; however, the magnitudes of the landward gradients in the 180- and 400-Foot Aquifers increased in the summer and fall.</u>
HWG 85	Section 3.3.11, page 3-71	The GSP includes a paragraph on slant well pumping in Section 3.3.11. ***HWG Comment:*** The paragraph should be edited as follows: "The amount of landward saline and brackish groundwater from the Subbasin aquifers captured by test slant well pumping was approximately 10% of the amount pumped. A large portion of the groundwater pumped by the test slant well was saline groundwater originating from the ocean outside the western boundary of the Subbasin. The MPWSP test slant well salinity data and groundwater elevations in the DSA indicate that a small amount of groundwater was derived from saline and brackish groundwater in the Dune Sand and	See responses to Comments HWG 74 and 79. Based on this information, we believe the description is more accurate and precise as currently written.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		180- Foot Aquifer. Conceptual water budgets are provided assuming 10 percent of the test slant well groundwater was captured Subbasin groundwater, as demonstrated by field data collected during test slant well testing that showed the actual percentage of Subbasin groundwater extracted from the Subbasin by the test slant well."		
HWG 86	Section 3.3.11, page 3-71	The GSP includes a paragraph on the potential use of a density-driven flow model in Section 3.3.11. ***HWG Comment:*** See Comment 32 for Chapter 3.	See response to Comment HWG 49.	None
HWG 87	Section 3.3.12, page 3-72	The GSP states MGSA will support, "…projects and management actions that will be implemented by SVBGSA under its regional GSP…". ***HWG Comment:*** While this statement is made here and in several other places in the MGSA GSP, it also attempts to set SMC that will not allow one of SVBGSA's main projects – a groundwater extraction barrier to mitigate seawater intrusion.	The commenter's assertion is baseless. The rationale and objectives of the sustainable management criteria adopted in the GSP are discussed in detail in Chapter 4. MGSA developed its SMC based on the groundwater conditions occurring in the Subbasin, not to target certain SVBGSA projects. Instead, MGSA's GSP does not support the groundwater extraction barrier project because it has not been adequately evaluated and SVBGSA's GSP does not include adequate monitoring to assess its impacts and effectiveness. It should be noted that the MPWSP is a proposed water supply project, and is not part of SVBGSAs seawater extraction barrier or any other project adopted under a GSP to promote groundwater sustainability.	None
HWG 88	Section 3.3.12, page 3-72	With regard to test slant well pumping, the GSP states, "The groundwater quality and level monitoring data indicates that some groundwater from the low-TDS zone in the DSA and 180-Foot Aquifer was drawn into the test slant well from the east; however, the data are insufficient to determine whether there was a significant and unreasonable impact to these resources during the test time period, and whether the saline groundwater intrusion wedge advanced inland or thickened as a result." ***HWG Comment:*** This GSP statement is incorrect; and the field data show primarily ocean water and a small amount of brackish water extracted by the test slant well. Furthermore, the test slant well pumping created a capture zone that helped reduce inland seawater intrusion.	See responses to Comments HWG 74 and 79.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
HWG 89	Section 3.3.12, page 3-72	The GSP states, "The proposed implementation of the MPWSP…has the potential to…contribute to regional overdraft conditions." ***HWG Comment:*** The reality is that the MPWSP has the potential to be part of the solution to regional overdraft and historical/current seawater intrusion problems. Extractions at the coast are a major component of the SVB GSP to mitigate seawater intrusion.	The MPWSP is a proposed water supply project and is not part of SVBGSAs seawater extraction barrier or any other project adopted under a GSP to promote groundwater sustainability. CalAm and HWG have provided no solute transport or seawater intrusion modeling or other data to evaluate the MPWSP's effect on seawater intrusion, whether beneficial or otherwise.	None
HWG 90	Section 3.3.12, pages 3-72 and 3-73	The GSP states, "The sustainable management criteria, monitoring program and management actions described in chapters 4, 5, and 6 are intended to identify and address any overdraft in the MGSA area (from any cause) before it results in significant and unreasonable impacts." (Section 3.3.12, pages 3-72 and 3-73). A similar statement is made in Section 4.2 on page 4-4. ***HWG Comment:*** It is not clear how significant and unreasonable impacts in the MGSA area can be defined when groundwater TDS concentrations already exceeds 7,500 mg/L.	The criteria used to define significant and unreasonable impacts are defined in Sections 4.4.1, 4.5.1, 4.6.1, 4.7.1, 4.8.1, and 4.9.1 of the draft GSP. Note that in the final GSP, the order of the subsections for each sustainability indicator has been changed in response to comments received from SVBGSA, and these sections have been renumbered to 4.4.3, 4.5.3, etc.	*See* Attachment A (Chapter 4 Edits)
HWG 91	Section 3.3.13, page 3-73; Section 4.2, pages 4-4 and 4-5	The GSP defines sustainable yield for the MGSA Area as "the amount of groundwater that can be withdrawn annually over a period of time without causing undesirable results within or near the MGSA Area." The GSP goes on to identify four areas of potential undesirable results for significant and unreasonable impacts beyond a 2015 baseline condition: 1) chronic groundwater level decline in the DSA that adversely affects GDEs; 2) reduction in "low-TDS" groundwater storage; 3) seawater intrusion; and 4) degradation of "low TDS" groundwater zone. ***HWG Comment:*** It is not clear why these four items are all stated to be applicable to the DSA, 180-Foot Aquifer, and 400-Foot Aquifer, but only the seawater intrusion item is considered to be applicable to the Deep Aquifer; this suggests chronic groundwater level decline, reduction in groundwater storage, and degradation of the only actual "low-TDS" groundwater within MGSA is allowable within the Deep Aquifer beneath MGSA. Also, given that significant and undesirable conditions for groundwater level decline, reduction in low-TDS groundwater storage, seawater intrusion, and degradation of low TDS groundwater zone have already occurred in MGSA as of 2015 (actually, long before 2015), it is not clear how or why future significant and unreasonable conditions can be defined. Essentially,	Please refer to our responses to Comments CEMEX 5 and 6, CalAm 10, HWG 11 and HWG 38. As noted in Section 4.4.1 of the draft GSP (pp. 4-10 and 4-11), the reason that the GSP does not set sustainable management criteria for groundwater level decline or storage depletion in the Deep Aquifer is because no groundwater extraction from the Deep Aquifer is currently occurring within the MGSA Area or is reasonably anticipated to occur in the future. Please refer to our response to Comment HWG 90 above for references to the rationale and criteria for the definition of significant and unreasonable conditions. Please refer to our responses to Comments HWG 24 and 26 for information regarding the distribution of low-TDS groundwater near and beneath the MGSA Area. Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion for discussion regarding the applicable water quality standards that were considered in the establishment of sustainable management criteria.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		sustainable yield is not applicable to MGSA, except possibly for the Deep Aquifer. It is also important to note that GDEs and "low TDS" groundwater do not occur within the MGSA area in the Dune Sand, 180-Foot Aquifer, and 400- Foot Aquifer, and that these three aquifers have been thoroughly seawater intruded as of 2015; thus, it is unclear what are the undesirable results that could occur within MGSA relative to the 2015 baseline condition.		
HWG 92	Section 4.2, page 4-3	The GSP states, "Chronic declines in inland groundwater levels have led to a reversal in the groundwater gradients in the 180-Foot and 400-Foot Aquifers from shoreward to landward, causing water affected by seawater intrusion to flow inland for a distance of up to approximately 7 miles." ***HWG Comment:*** We agree.	The comment is noted.	None
HWG 93	Section 4.2, page 4-5	The GSP states that MGSA's sustainability goal is, "… to manage groundwater resources in the MGSA Area in a way that ensures all beneficial uses and users in, or affected by, groundwater management in the MGSA Area are protected from undesirable results, and have access to a safe and reliable groundwater supply that meets current and future demand. This goal will support SVBGSA's sustainability goal by addressing undesirable results at a local level and protecting local resources from further degradation, while coordinating with MCWRA, SVBGSA and MCWD GSA to support regional groundwater management, including groundwater level and seawater intrusion monitoring, and mitigation projects and management actions that will contain and reverse the conditions resulting from regional overdraft." ***HWG Comment:*** It is not clear who/what are the beneficial users/uses within MGSA for groundwater that exceeds 7,500 mg/L TDS (the entirety of the Dune Sand Aquifer, 180-FTE Aquifer, and 400-Foot Aquifer within MGSA). Even if there were beneficial uses of groundwater exceeding 7,500 mg/L TDS, it is not clear how such beneficial use would be impacted by a modest increase in TDS from the existing very elevated and non-potable concentration. The Marina GSP does not coordinate well with or support the SVBGSA GSP – many of the sustainable management criteria are in conflict with the SVB GSA's jurisdiction and/or SVB GSP sustainable management criteria, projects, and management actions.	Beneficial uses and users of groundwater are discussed in Section 2.5.1 on pages 2-34 and 2-35. Please refer to our responses to Comments HWG 24 and 26 for information regarding the distribution of low-TDS groundwater near and beneath the MGSA Area. Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion for discussion regarding the applicable water quality standards that were considered in the establishment of sustainable management criteria.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
HWG 94	Section 4.2, pages 4-5 and 4-6	The GSP states that implementation objectives in support of the MGSA sustainability goal include ensuring that, "…groundwater is available for beneficial and potential beneficial uses, including all of the diverse municipal, domestic, agricultural, industrial, and environmental uses potentially affected by management actions within the MGSA…". ***HWG Comment:*** There are no demonstrated municipal, domestic, agricultural, or environmental uses of groundwater within or even near the MGSA in the Dune Sand Aquifer, 180-FTE [sic] Aquifer, and 400-Foot Aquifer due to extremely high salinity levels in groundwater. CEMEX represents an Industrial use of highly brackish water.	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion for discussion regarding the applicable water quality standards that were considered in the establishment of sustainable management criteria.	None
HWG 95	Section 4.2, page 4-6	The GSP makes several references to protecting groundwater containing less than 3,000 mg/L TDS as having a potential beneficial use as a domestic or municipal drinking water supply per SWRCB Resolution No. 88-63. ***HWG Comment:*** The HWG has previously demonstrated (HWG, August 2018) that groundwater with TDS of 3,000 mg/L in the MGSA vicinity has chlorides exceeding 1,000 mg/L, which far exceeds chloride MCLs and represents a chloride concentration greater than chloride levels at which numerous agricultural, municipal, and domestic water supply wells have been abandoned. These chloride levels are not suitable for municipal or domestic beneficial uses and would need to be treated to be useable for beneficial use.	The comment is noted, but does not in any way change the obligation of MGSA to comply with the referenced SWRCB resolutions and the RWQCB Basin Plan into which they are incorporated. Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion. In California, all water under the ground is "groundwater," and under the "Sources of Drinking Water Policy" (State Board Resolution No. 88-63), the State Board provides that all groundwater is presumptively considered a potential source of drinking water. There is a pathway to "de-designate" groundwater of greater than 3,000 mg/L of TDS for the drinking water beneficial use through a public process before the Regional and State Boards, which has not occurred in this location. The corresponding federal standard under the Clean Water Act defines groundwater containing TDS at a concentration of less than 10,000 mg/l as an Underground Source of Drinking Water. 40 C.F.R. § 144.3. HWG appears to confuse the standards that apply to the source of drinking water with the standards that apply to produced or actual drinking water (often referred to as maximum contaminant levels or "MCLs"). The proper state and federal standards for determining whether groundwater is "usable" for drinking water are the "sources of	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			drinking water" criteria, which utilize these 3,000 and 10,000 mg/L TDS standards. MGSA must comply with these standards, as well as the State Board's Resolutions and the Regional Board Basin Plan which incorporates them.	
HWG 96	Section 4.3, page 4-6	The GSP states, "The consistency of the locally-defined criteria with criteria developed by SVBGSA in their GSP was evaluated, so that the sustainable management criteria in this GSP would address local conditions while remaining regionally compatible." ***HWG Comment:*** The sustainable management criteria in the Marina GSP are clearly in conflict with and not compatible with the SVBGSA GSP, as demonstrated with many of our comments.	Please refer to Master Response 3 - GSP Coordination Requirements. MGSA is tasked with the development of local sustainable management criteria. We believe the developed criteria, as edited in response to SVBGSA's comments on the draft GSP, to be compatible with the SVBGSA's GSP. Ultimately, SVBGSA and MGSA share an equal responsibility for the coordination of their GSPs to assure sustainable groundwater management of the Subbasin.	None
HWG 97	Section 4.3, page 4-6	With reference to the approach for evaluating sustainable management criteria in the Marina GSA Plan area, the GSP states, "The assessment was conducted based upon the hydrogeologic conceptual model and water budget information summarized in Chapter 3." ***HWG Comment:*** As demonstrated in our preceding comments on Chapter 3, the Basin Setting discussion of the hydrogeologic conceptual model, groundwater conditions, and water budget contains has many flaws, incorrect statements, and invalid assumptions, and provides a poor and unrealistic basis for assessment of sustainable management criteria. This has resulted in inappropriate and unjustified minimum thresholds and measurable objectives in Chapter 4.	HWG's opinions are noted, although MGSA does not agree that there any such flaws, incorrect statements, or invalid assumptions or that the basis is poor or unrealistic. These general comments were addressed in our responses to the above comments.	None
HWG 98	Section 4.4.1, page 4-9	The GSP notes that, "…SVBGSA has not designated any monitoring well near the MGSA Area, so there is no possibility that groundwater extraction in this area would create an undesirable result detected under their Regional GSP." ***HWG Comment:*** There is likely good reason that SVBGSA specifically did not establish monitoring compliance points adjacent to the coast in the MGSA and other areas. For example, water level near the coast are not the key to mitigating seawater intrusion; rather, water levels further inland are the key to halting seawater intrusion. Furthermore, lower groundwater levels near the coast may be key in helping mitigate seawater intrusion such as through use of an	We note that the SVBGSA's GSP designates a single monitoring well in the 180-Foot Aquifer 4 miles from the MGSA Area, a single monitoring well in the 400-Foot Aquifer 1 mile from the MGSA Area, no monitoring wells in the Dune Sand Aquifer, and no Deep Aquifer monitoring wells in the southwestern portion of the Subbasin. We cannot speculate as to the rationale for this decision, because it is not described in the GSP; however, the effect is that the nearshore area in the southwestern portion of the Subbasin is inadequately managed under the SVBGSA's GSP. The data regarding groundwater sustainability	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		extraction barrier, which is a key potential project for the SVBGSA.	indicators that SVBGSA proposes to gather are inadequate to support sustainable groundwater management in this area. We further note that the MPWSP is not a part of a groundwater sustainability project adopted in any GSP, and the effects of this project on seawater intrusion, beneficial or otherwise, have not been evaluated.	
HWG 99	Section 4.4.1, page 4-9	The GSP states, "With respect to potential future groundwater extraction in the MGSA area, potential adverse impacts to beneficial users and uses from groundwater level decline include development or worsening of gradients that promote seawater intrusion…" ***HWG Comment:*** Gradients that promote seawater intrusion have been occurring historically and currently exist in the MGSA Plan Area. Pumping within the MGSA Plan Area will actually help mitigate seawater intrusion, as demonstrated in the MPWSP FEIR.	As noted above, the MPWSP is not a part of a groundwater sustainability project adopted in any GSP, and the effects of this project on seawater intrusion, beneficial or otherwise, have not been evaluated in the FEIR or any other document we are aware of.	None
HWG 100	Section 4.4.1, page 4-10	The GSP uses a local definition (based on SVB GSP assessment of 180-Foot and 400-Foot Aquifers) for significant and unreasonable groundwater level decline as 1 foot above low groundwater levels measured in 2015. ***HWG Comment:*** While this definition may make sense for the 180-Foot and 400-Foot Aquifers further inland, the MGSA GSP does not provide an adequate basis or justification for requiring such a stringent definition in/near MGSA for these two Principal Aquifers or for application to the Dune Sand Aquifer, which is not a Principal Aquifer for the SVB GSP.	In its GSP, SVBGSA extends this definition across the entire Subbasin and to the coast. The MGSA's GSP has merely added representative monitoring sites to gather data regarding sustainability indicators in the nearshore area of the Subbasin. Application of this minimum threshold to the Dune Sand Aquifer is a logical extension to prevent significant and unreasonable harm to GDEs.	None
HWG 101	Section 4.4.1, page 4-11	The GSP states, "…undesirable results, minimum thresholds, and measurable objectives for chromic groundwater level decline are not adopted for the Deep Aquifer in this GSP." ***HWG Comment:*** This is perplexing given that the Deep Aquifer contains the only groundwater worthy of setting MTs and MOs for within the MGSA.	Please refer to our responses to Comments CEMEX 5 and 6, CalAm 10, HWG 11, HWG 38, and HWG 91. As noted in Section 4.4.1 of the draft GSP (pp. 4-10 and 4-11), the reason that the GSP does not set sustainable management criteria for groundwater level decline or storage depletion in the Deep Aquifer is because no groundwater extraction from the Deep Aquifer is currently occurring within the MGSA Area or is reasonably anticipated to occur in the future.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
HWG 102	Section 4.4.1, page 4-11	The GSP states that drawdown from test slant well pumping "…decreased with distance from the MGSA Area." ***HWG Comment:*** There was no drawdown from test slant well pumping at the eastern boundary and outside the MGSA Plan Area.	MGSA disagrees with this statement. Please refer to our responses to Comments HWG 59 and 60.	None
HWG 103	Section 4.4.2.1, page 4-12	The GSP states, "The minimum threshold for groundwater elevation drawdown in the Dune Sand Aquifer is established as a drawdown attributable to groundwater extraction in the MGSA Area of 1 foot above the 2015 low groundwater levels recorded in monitoring wells near GDEs in the vicinity of the MGSA Area." ***HWG Comment:*** The Marina GSP has no authority to set minimum thresholds outside its Plan Area and in fact presents a major conflict with the SVB GSP. Even if it were allowed to set this MT, the basis and justification for the selected MT in the Marina GSP is woefully inadequate. Furthermore, setting MTs for the Dune Sand Aquifer is a conflict with the SVB GSP, which does not recognize the Dune Sand Aquifer as a principal aquifer for which to establish SMC. It is also noteworthy that drawdown beyond the stated MT is apparently allowed for pumping outside of the MGSA Plan Area.	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements for the need and requirement to establish minimum thresholds for sustainability indicators that could experience significant and unreasonable effects as a result of groundwater extraction and management, whether within or near the MGSA Area. Please refer to Master Response 3 - GSP Coordination Requirements for a discussion regarding the responsibilities of MGSA and SVBGSA to coordinate preparation and implementation of their respective GSPs. It is noteworthy that MCWD GSA, which will be responsible for preparing the GSP sections covering the Fort Ord and Marina areas of the Monterey Subbasin, considers the Dune Sand Aquifer to be a Principal Aquifer. The MGSA has no authority to regulate pumping outside its jurisdictional boundaries.	None
HWG 104	Section 4.4.2.1, page 4-12	The GSP states, "…wetlands such as the vernal ponds that occur east of the MGSA Area are likely to be more highly groundwater dependent and contain sensitive communities that could be adversely affected by drawdown." ***HWG Comment:*** The Marina GSP neither establishes the dependence on groundwater (which is saline in the referenced GDE areas) as opposed to surface water, nor establishes the link to vegetative stress from drawdown (there was no drawdown at the referenced GDEs from test slant well pumping). As stated previously, the Marina GSP has no jurisdiction to set MTs for GDEs located "east of the MGSA Area", which causes a major conflict with SVB GSP.	Please refer to the responses to Comments HWG 28, HWG 41, and to Master Response 8 - Groundwater Dependent Ecosystems. MGSA followed and exceeded guidance from DWR and The Nature Conservancy (TNC) to evaluate the potential GDEs. HWG has no data to corroborate its assertion that the uppermost groundwater underlying the GDEs is saline and is incorrect in asserting that the potential contribution of surface water has not been evaluated. Although some data gaps remain and are recognized in the GSP, the GSP regulations require that these important beneficial groundwater uses be protected through the establishment of sustainable management criteria and the implementation of monitoring while data gaps are addressed.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
HWG 105	Section 4.4.2.2, page 4-14	The Marina GSP adopts the SVB GSP definition of groundwater level MTs in the 180-Foot and 400- Foot Aquifers for the area within MGSA: 1 foot above historical low groundwater elevations measured in 2015 in 15% or more of the monitoring wells. ***HWG Comment:*** The rationale and justification for adopting the regional-scale MTs at the monitoring well locations shown in the SVB GSP are not applicable or appropriate to the location and local-scale area of the MGSA Plan Area.	The commenter provides no basis for this opinion. These minimum thresholds and the definition for undesirable results are adopted in the SVBGSA GSP for the entire Subbasin. The rationale for adopting them in the MGSA's GSP is discussed in Section 4.4 of the GSP.	None
HWG 106	Section 4.4.2.3, page 4-15	The Marina GSP states, "…the thickness and water quality of the low-TDS zone must also be maintained." ***HWG Comment:*** The "low-TDS" zone referred to here is brackish non-potable water. It is not clear why this brackish water zone must be maintained. It does nothing to stop seawater intrusion, which has continued unabated for the last several decades, and cannot be used for municipal, domestic, or agricultural water supply without extensive treatment for TDS, nitrate, and other constituents. In fact, implementation of the MPWSP would actually help mitigate the inland seawater intrusion that has and is occurring through the MGSA Plan Area and vicinity.	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion for details regarding the water quality standards considered in basin characterization and establishment of sustainable management criteria, and the terminology used to discuss water quality in the GSP. Applicable water quality standards include SWRCB Resolution Nos. 88-63 and 68-16, which require protection of water quality in the low-TDS groundwater zone. The rationale for maintaining the thickness of the low-TDS groundwater zone is discussed in Section 3.2.3.2. As noted previously, the MPWSP has not been proposed or included as a groundwater sustainability project under SGMA in any GSP, and the project proponents have conducted no evaluation to verify the effects of the project on seawater intrusion, whether beneficial or otherwise.	None
HWG 107	Section 4.4.2.3, page 4-15; Section 4.6.3, page 4-33; Section 4.7.1, page 4-34; Section 6.2.1.1, page 6-4	The Marina GSP states, "A significant and unreasonable condition for degraded water quality is a statistically-significant increase in the chloride or TDS concentration of groundwater in the low-TDS groundwater zone."(Section 4.4.2.3) Later in the GSP, a "statistically significant" increasing trend in TDS or chloride concentrations is used to set SMC (Section 4.6.3 and Section 4.7.1) and triggers (Section 6.2.1.1). ***HWG Comment:*** We have several comments, many already stated previously: 1) The "low-TDS" zone is a non-potable brackish water zone; 2) It is not clear why this brackish water zone needs to be protected since it cannot be used for potable water supply and does nothing to prevent seawater intrusion; 3) The cited brackish water zone is outside of the MGSA Plan Area, and the Marina GSP has no jurisdiction/authority to set MTs/MOs for this area; 4) The	Comments 1), 2) and 3) have been addressed previously. As noted in our response to Comments SVBGSA 30, 31 and 32, the GSP regulations require consideration of violation of water quality standards in setting sustainable management criteria for groundwater quality degradation. Since the wells for which monitoring data will be evaluated to assess compliance with the minimum threshold are monitoring wells (and not supply wells), we have revised the minimum objective to be expressed as the migration of a TDS or chloride isocontour as noted in the revised version of Chapter 4 included as Attachment A.	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		approach to set MTs here sounds like a contaminant/environmental hydrogeology approach, and has no relevance to protecting groundwater in terms of chloride and TDS concentrations – particularly when the TDS and chloride concentrations already exceed all applicable MCL thresholds.		
HWG 108	Section 4.4.2.4, page 4-16	The Marina GSP states, "MGSA's local sustainable management criteria for the Dune Sand Aquifer are compatible with the SVBGSA's management strategy for the underlying regional aquifers." ***HWG Comment:*** As stated previously in this letter, MGSA's SMC for the DSA are specifically not compatible with the SMBGSA's management strategy that does not recognize the DSA as a primary aquifer and sets no MTs/MOs for the DSA.	These comments were previously addressed in several responses above.	None
HWG 109	Section 4.4.2.5, page 4-17	The Marina GSP refers to setting MTs to protect "…beneficial users of groundwater for domestic irrigation, and small non-transient supply systems near the MGSA Area…" ***HWG Comment:*** The Marina GSP does not identify the locations of any beneficial users of groundwater for domestic, irrigation, or small supply systems near the MGSA Plan Area. As stated elsewhere in this letter, the MGSP is trying to establish SMC for locations outside of its Plan Area for which it has no authority/jurisdiction to do so, and presents a clear conflict with the SVBGSP that covers these areas.	Section 3.1.8 (p. 3-16) states "Small non-transient water systems reliant on groundwater are located near Neponset, near the Marina Airport and near the regional wastewater treatment plant located east of the MGSA Area." Figure 2-6 identifies the locations of these existing small groundwater supply systems. Additional domestic, irrigation and other supply wells may exist in the area, as also acknowledged in the MMRP adopted for the MPWSP and in the SVBGSA's GSP. However, the purpose of the minimum thresholds is primarily to comply with applicable water quality standards, including SWRCB Resolution Nos. 88-63 and 68-16. The comment regarding authority/jurisdiction has been previously addressed.	None
HWG 110	Section 4.4.3, page 4-18	The Marina GSP states, "…measurable objectives for groundwater level decline are intended to serve as triggers for management actions…" ***HWG Comment:*** The purpose of measurable objectives (MO) is not to serve as a trigger for management actions. The MO is intended to represent the anticipated average condition (in this case, groundwater levels) after sustainability is achieved after 2040.	The discussion of measurable objectives has been edited to remove reference to triggers for management actions.	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
HWG 111	Section 4.4.3, page 4-18	The Marina GSP states, "Interim milestones will only be established if corrective actions are implemented…" **HWG Comment:** Interim milestones are required to be established in the GSP.	Interim milestones have been established for each sustainability indicator in the revised Chapter 4.	*See* Attachment A (Chapter 4 Edits)
HWG 112	Section 4.5.1, page 4-19	The Marina GSP states, "The MGSA area is located at the western edge of a substantial zone of low- TDS groundwater (TDS<3,000 mg/L) extending vertically from the DSA into the 180-Foot Aquifer and the 400-Foot Aquifer…" ***HWG Comment:*** We have several comments: 1) The "low-TDS" zone consists of non-potable brackish water with chlorides, TDS and commonly nitrate far in excess of all MCL thresholds; 2) The brackish water with TDS less than 3,000 mg/L does not exist at the eastern edge of the MGSA Plan Area, but rather is located east of the MGSA Plan Area; 3) There is not one zone of continuous brackish water through the three aquifers, a conclusion that was based on faulty interpretation of AEM data as described in the HWG April 2019 letter, but rather there are separate seawater intrusion wedges in each aquifer; 4) The Marina GSP is trying to set SMC for locations outside of its Plan Area for which it has no authority/jurisdiction to do so.	These comments were previously addressed in several responses above.	None
HWG 113	Section 4.5.1, page 4-20	The Marina GSP states, "Short-term groundwater extraction during the test slant well pumping test may have depleted the low-TDS zone in the Dune Sand and 180-Foot Aquifers…" ***HWG Comment:*** This conclusion is incorrect – the test slant well pumping test had no drawdown impacts from MW-4 and beyond, which is well to the west of the claimed "low-TDS" non-potable brackish water zone.	Please refer to our responses to Comments HWG 59 and 60. Pumping had an observed drawdown impact at the MW-4 well cluster and beyond, and reasonably could have impacted the low-TDS groundwater zone. The quoted statement acknowledges this possibility.	None
HWG 114	Section 4.5.2.2, page 4-24; Section 4.7.2.2, page 4-38	The Marina GSP states, "SVBGSA's GSP does not present sustainable management criteria for the Dune Sand Aquifer because its GSP is more regionally focused." ***HWG Comment:*** The SVBGSA specifically choose not to designate the Dune Sand Aquifer as a principal aquifer and specifically choose not to set SMC for the Dune Sand Aquifer. The Marina GSP's attempt to set SMC for the DSA is a major conflict with the SVBGSA, a conflict made even greater by attempts to set SMC for the DSA outside of the MGSA Plan Area.	These comments were previously addressed in several responses above.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
HWG 115	Section 4.5.2.3, page 4-24	The Marina GSP claims that its groundwater storage minimum threshold would help to control seawater intrusion and benefit municipal and irrigation groundwater uses/users. ***HWG Comment:*** The Marina GSP MTs would actually prevent implementation of a primary tool identified in the SVBGSP to control seawater intrusion – a groundwater extraction barrier. Thus, the Marina GSP presents major conflicts with the SVB GSP.	These comments were previously addressed in several responses above.	None
HWG 116	Section 4.6.1, page 4-26	The Marina GSP states that SVBGSA's definition of seawater intrusion (chloride > 500 mg/L) does not recognize areas of "…better quality groundwater in the aquifers seaward of the seawater intrusion line…" ***HWG Comment:*** The claimed "better quality groundwater" is comprised of groundwater with TDS up to 3,000 mg/L, which has chlorides exceeding 1,000 mg/L and nitrates exceeds MCLs in many areas. The chloride level of the 3,000 mg/L TDS groundwater is far in excess of the 500 mg/L chloride definition used to define seawater intrusion and far in excess of chloride MCLs. Thus, it is not "better quality groundwater" as claimed by the Marina GSP.	Please refer to Master Response 4 - Groundwater Quality and Seawater Intrusion. These comments were previously addressed in several responses above.	None
HWG 117	Section 4.6.1, page 4-26; Section 6.2.1.1, page 6-3	The Marina GSP states, "Groundwater extraction in the MGSA Area has the potential to affect the dynamic equilibrium of this nearshore groundwater system and cause seawater intrusion through the migration of the of the saline water wedge, which could in turn lead to deeper seawater intrusion into the currently unintruded Deep Aquifer, or promote the lateral migration or persistence of seawater intrusion…further inland.". This claim is repeated in Section 6.2.1.1. ***HWG Comment:*** Groundwater extraction from the DSA and 180-FTE Aquifer in the MGSA area poses no risk of seawater intrusion in the Deep Aquifer. The risk to seawater intrusion in the Deep Aquifer is solely from overpumping of wells screened within the Deep Aquifer, which is likely already occurring. In addition, pumping from the currently intruded aquifers from wells within MGSA will help to mitigate further seawater intrusion to inland locations.	As noted in our response to Comments HWG 18, 19, and 32, the integrity of the Deep Aquitard is uncertain and the potential for vertical seawater intrusion from the 400-Foot Aquifer into the Deep Aquifer was cited as a reason for Monterey County's prohibition against the construction of new supply wells in the Deep Aquifer. The potential effect of groundwater extraction on solute transport and density-driven flow in the nearshore aquifer system has not been evaluated using modeling tools that are suitable for simulating these processes. As such, the possibility of inducing vertical seawater intrusion into the Deep Aquifer by groundwater extraction from the upper aquifer system has not yet been evaluated. Similarly, potential effects, beneficial or otherwise, of creating a new nearshore equilibrium on the inland migration of the 500 mg/L isocontour has not been evaluated by any modeling studies. As such, the speculative statements in the comment that the risk of seawater intrusion in the Deep Aquifer is solely from overpumping of Deep Aquifer	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
			Wells and that pumping from currently intruded aquifers within the MGSA Area will help to mitigate further seawater intrusion to inland locations are not supported by any technical data.	
HWG 118	Section 4.6.1, page 4-27	The Marina GSP states, "…the Dune Sand, 180-Foot and 400-Foot Aquifers are currently seawater intruded and therefore experiencing undesirable results…". ***HWG Comment:*** These three aquifers are certainly well beyond the threshold of experiencing undesirable results with TDS concentrations exceeding 7,500 mg/L. It is not clear how a GSP can have a definition for undesirable results within its Plan Area for groundwater that is already experiencing undesirable results and has TDS exceeding 7,500 mg/L. It would seem that the existing groundwater would need to not be experiencing undesirable results in order to set thresholds and have a definition of achieving undesirable results in the future.	The comment is confusing. The MGSA has adopted a revised definition of the minimum threshold associated with seawater intrusion of inland migration of the 500 mg/L chloride isocontour beyond its Fall 2017 position. By this definition, undesirable results are not currently occurring in the seawater intruded area. However, it is recognized that the existence of seawater intrusion is a historical and ongoing undesirable result under DWR's Bulletin 118 that led to designation of the Subbasin as critically overdrafted. This clarification has been added to Chapter 4 in response to comments from SVBGSA.	*See* Attachment A (Chapter 4 Edits)
HWG 119	Section 4.6.2, page 4-28	The GSP states, "Regionally, SVBGSA has adopted the line defined by Highway 1 as the seawater intrusion minimum threshold for the Deep Aquifer; In this local GSP MGSA has adopted a position that any detectable seawater intrusion into the currently unintruded Deep Aquifer represents a significant and unreasonable impact and would exceed the minimum threshold for seawater intrusion into this important local aquifer." ***HWG Comment:*** The MGSP adopts a minimum threshold for seawater intrusion in the Deep Aquifer (which is not used within the MGSA) that is a clear conflict with the SVBGSP. The MGSP later attempts to justify the conflicting MTs by saying the two are not in conflict since there are no Deep Aquifer production wells west of Highway 1 (page 4-31); however, this justification for conflicting MTs is not valid because seawater intrusion could easily occur between the ocean and Highway 1 but not east of Highway 1 if Deep Aquifer seawater intrusion is sourced from beneath ocean or the submarine canyon Deep Aquifer outcrop. Furthermore, while the MGSP adopts a conflicting seawater intrusion MT, it adopts no groundwater level MT and specifically allows for greatly increased pumping in the Deep Aquifer from Marina Coast Water District Deep Aquifer wells that present a high risk for	The full text of the referenced section on page 4-31 reads as follows: "*A difference is that this GSP establishes any detection of seawater intrusion in the Deep Aquifer as significant and unreasonable; whereas, the SVBGSA defines a minimum threshold for seawater intrusion as a 500 mg/L chloride isoconcentration contour near Highway 1. Functionally, these thresholds will not conflict since there are no production wells in the Deep Aquifer west of Highway 1; however, from a resource management viewpoint this GSP better captures the local management needs and intent. As such, these thresholds will promote cohesive management to achieve the sustainability goals of MGSA, SVBGSA and MCWD GSA, which will be refined as needed during GSP implementation*." Chapter 4 has been clarified to define the minimum threshold for seawater intrusion as the position of the 500 mg/L isocontour at the seaward boundary of the Subbasin. Setting the minimum threshold at Highway 1 would violate applicable water quality standards and is unacceptable under SGMA and the California Water Code. MGSA will coordinate with SVBGSA and other GSAs with	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		seawater intrusion as Deep Aquifer groundwater levels decline further.	jurisdiction in the area to coordinate development and implementation of a suitable sustainable management criteria for seawater intrusion into the Deep Aquifer. The comments regarding adoption of conflicting standards, MGSA jurisdiction, and the regulation of groundwater extraction outside the MGSA Area have been previously addressed in several responses above.	
HWG 120	Section 4.6.2, page 4-28	The GSP establishes concentration limits of 1,000 mg/L for TDS and 500 mg/L for chloride defining seawater intrusion in the Deep Aquifer. ***HWG Comment:*** The GSP adopts a double standard by saying seawater intrusion has occurred when TDS exceeds 1,000 mg/L or chloride exceeds 500 mg/L in the Deep Aquifer, yet concentrations of 3,000 mg/L TDS and over 1,000 mg/L chloride represent low-TDS groundwater in the shallower aquifers that have beneficial uses and must be protected.	The GSP does not adopt a double standard. The consideration of applicable water quality standards in establishing sustainable management criteria is discussed in Master Response 4 - Groundwater Quality and Seawater Intrusion. Note that the minimum threshold for seawater intrusion has been revised as the position of a 500 mg/L chloride isocontour and is consistent with SVBGSA's definition, except for the position of the isocontour in the Deep Aquifer and the establishment of an isocontour in the Dune Sand Aquifer.	See Attachment A (Chapter 4 Edits)
HWG 121	Section 4.6.2.5, page 4-32	The GSP states, "The groundwater level and quality monitoring will be conducted in accordance with the monitoring plan outlined in Chapter 5." ***HWG Comment:*** It is very important to note here that the groundwater level and monitoring program described in the Marina GSP will not be constructed and implemented if the MPWSP does not move forward. The MGSA will have to design, construct, and implement its own completely different monitoring network if the MPWSP does not go forward, and this alternative monitoring program is not described in the MGSP.	As noted in our response to Comment HWG 4, MGSA is in the process of developing an agreement with MCWRA regarding utilization of monitoring data from its proposed coastal monitoring program. Once developed, this agreement will recognize that if the MPWSP does not move forward, MCWRA will consult with the GSAs having jurisdiction in the area to develop an alternative coastal monitoring program using the existing monitoring and supply wells identified in its published work plan. Reference to this contingency has been added to Chapter 5.	None
HWG 122	Section 4.6.3, page 4-32	The GSP describes the sustainability goal for the MGSP as managing groundwater resources in the MGSA Plan Area in a way to ensure all beneficial uses/users are protected from undesirable results and have access to a safe and reliable groundwater supply. ***HWG Comment:*** Aside from the Deep Aquifer, which is specifically not protected in the MGSP, the groundwater in the MGSA Plan Area already far exceeds any reasonable	These comments were previously addressed in several responses above.	None

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		definition of undesirable results and contains only unusable and non-potable groundwater supplies. Essentially, there are no beneficial users/uses to be protected within MGSA Plan Area.		
HWG 123	Section 4.7.1, pages 4-33 to 4-34	The GSP defines undesirable results for groundwater quality as concentrations exceeding MCLs and reduced crop production. ***HWG Comment:*** Both of these undesirable result conditions already exist in MGSA and have existed within MGSA for the last several decades.	The cited section lists the criteria considered for the definition of undesirable results. The comment is noted.	None
HWG 124	Section 4.7.2, page 4-36	The GSP attempts to set MTs for contaminant plumes. ***HWG Comment:*** There are no contaminant plumes within the MGSA Plan Area. Any attempt to set MTs for contaminant plumes outside the MGSA area is a clear conflict with the SVBGSP.	The contaminant plumes in question are located in the adjacent Monterey Subbasin, and the Mitigation Monitoring and Reporting Plan (MMRP) required for the MPWSP recognizes that these plumes could be affected by pumping within the MGSA Area. For this reason, sustainable management criteria for potentially significant and unreasonable plume migration induced by pumping within the MGSA Area must be established to comply with the GSP regulation requirement to prevent undesirable results in adjacent basins, as further discussed in Master Response 2 – MGSA's Jurisdiction and GSP. An inter-basin coordination agreement will be established with MCWD GSA prior to adoption of their GSP.	None
HWG 125	Section 4.8.2, page 4-42	The GSP sets minimum thresholds and measurable objectives for land subsidence using groundwater levels as a proxy. The minimum threshold requires groundwater levels remain above 2015 levels. ***HWG Comment:*** There is no rationale, evidence, or justification for the minimum threshold and measurable objective set for land subsidence.	In compliance with the GSP regulations, the GSP uses the adopted minimum thresholds for groundwater level decline as a proxy and demonstrates that it is correlated to subsidence and would be adequate to prevent undesirable results. This is consistent with BMPs published by DWR for development of sustainable management criteria, which state that groundwater levels may be used as a proxy if the GSP can "[d]*demonstrate that the minimum thresholds and measurable objectives for chronic declines of groundwater levels are sufficiently protective to ensure significant and unreasonable occurrences of other sustainability indicators will be prevented."*	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
HWG 126	Figure 4-1	GSP Figure 4-1 states, "Approximately 1-Foot Recovery When Pumping Stopped" in reference to test slant well pumping. ***HWG Comment:*** This statement is incorrect. The arrows pointing to purported recovery when test slant well pumping stopped are clearly related to seasonal increases in groundwater levels.	Please refer to our responses to Comments HWG 59 and 60. For illustration, Figure 4-1 has been modified to show the same response in all three nested wells in the MW-4 cluster during the two longest breaks in groundwater extraction. It is unlikely that these recoveries would be related to regional pumping patterns, and HWG presents no pumping data to support this assertion.	None
HWG 127	Section 5.1, page 5-1	With regard to the Dune Sand Aquifer, the GSP states, "The uppermost aquifer, which is of local importance due to its interaction with local groundwater-dependent ecosystems (GDEs), substantial storage of groundwater with designated potential beneficial use as a municipal or domestic supply, and importance in maintaining nearshore seawater intrusion dynamics…" ***HWG Comment:*** While it remains unclear if the Dune Sand Aquifer plays any role in supporting GDEs, it is clear there are no GDEs within the MGSA Plan Area and the Marina GSP should not be addressing GDEs outside of its jurisdiction. There is no groundwater with potential beneficial uses within the MGSA Plan Area. The historic and current nearshore seawater intrusion dynamics have allowed for historic and ongoing seawater intrusion.	These comments were previously addressed in several responses above.	None
HWG 128	Section 5.1, page 5-1	With regard to the 180-Foot Aquifer, the GSP states the seawater intruded area, "…includes significant zones of groundwater with a designated beneficial use as a domestic and municipal supply in the vicinity…" ***HWG Comment:*** There is no groundwater in the Dune Sand Aquifer, 180-FTE Aquifer, or 400-Foot Aquifer with designated beneficial use as a domestic and municipal supply in the MGSA Plan Area. In addition, there are no significant areas with designated domestic or municipal supply beneficial use in the MGSA vicinity.	These comments were previously addressed in several responses above.	None
HWG 129	Section 5.1.2, page 5-3	The GSP states, "…the MGSA GSP will rely primarily on data collected from a local monitoring network adopted in and around the MGSA Area under the Mitigation, Monitoring and Reporting program (MMRP) for the proposed Monterey Peninsula Water Supply Project (MPWSP)…" ***HWG Comment:*** The MGSA GSP is relying primarily on a local monitoring network that will not be implemented if the MPWSP does not move forward. The sustainable	As noted in our response to Comment HWG 4, MGSA is in the process of developing an agreement with MCWRA regarding utilization of monitoring data from its proposed coastal monitoring program. Once developed, this agreement will recognize that if the MPWSP does not move forward, MCWRA will consult with GSAs having jurisdiction in the area to develop an	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		management criteria proposed in the MGSA GSP preclude development of the MPWSP. Thus, if the MGSA GSP is approved, adopted, and enforced for the MGSA Plan Area, the MPWSP will not be able move forward and the local monitoring network will not be implemented. Therefore, the proposed MGSA GSP does not have a viable monitoring network.	alternative coastal monitoring program using the existing monitoring and supply wells identified in its published work plan. Reference to this contingency has been added to Chapter 5.	
HWG 130	Section 5.1.4, pages 5-4 to 5-5	The GSP describes a monitoring network and representative monitoring sites comprised of locations primarily outside of the MGSA Plan Area. ***HWG Comment:*** The MGSA has no jurisdiction to establish a monitoring network and RMS sites outside of its Plan Area, which presents major conflicts with the SVB GSA that has jurisdiction of these areas.	These comments were previously addressed in several responses above.	None
HWG 131	Section 5.2.1, pages 5-6 and 5-7	The GSP describes minimum thresholds and measurable objectives for groundwater levels for principal aquifers encompassed by its monitoring network. ***HWG Comment:*** This section presents many conflicts with the SVB GSA GSP, many of which are described elsewhere in this letter. Another conflict is that the MGSA attempts to assign SVB GSA GSP minimum thresholds and measurable objectives for the 180-Foot Aquifer to RMS locations near the coast that are not included in the SVB GSA GSP. It is likely that the SVB GSA GSP RMS locations were carefully selected to be compatible with proposed projects and management actions that allow maximum potential to achieve subbasin sustainability. The MGSA RMS locations present major conflicts to SVB GSA, and would likely impede SVB GSA attempts to reach sustainability.	These comments were previously addressed in several responses above. It is not clear how the establishment of representative monitoring locations to assess sustainability indicators where they do not presently exist would impede sustainable groundwater management.	None
HWG 132	Section 5.2.1, page 5-7	The GSP states, "Because groundwater is not currently extracted from the Deep Aquifer in the MGSA Area, minimum thresholds and measurable objectives were not established for the Chronic Lowering of Groundwater Levels sustainability indicator in the aquifer…". ***HWG Comment:*** Groundwater is not currently extracted from the Dune Sand Aquifer in the MGSA Area; therefore, under this rationale there should be not minimum thresholds and measurable objectives established for the Dune Sand Aquifer.	Unlike the Deep Aquifer, substantial groundwater extraction from the Dune Sand Aquifer is proposed in the MGSA Area, and therefore must be considered in the establishment of sustainable management criteria and monitoring networks.	None
HWG 133	Section 5.2.1, page	The GSP states, "MCWRA will conduct monitoring of seven other Deep Aquifer wells as part of the MMRP. Locations of	The GSP includes the results of deep aquifer studies in the vicinity of the MGSA Area reported	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
	5-7; Figure 5-2; Table 5-4	these wells are shown on Figure 5-2, and well construction and monitoring information is presented in Table 5-4." ***HWG Comment:*** It is not clear why data from these wells were not included in the analysis; especially since the introduction states the Deep Aquifer is a primary source of freshwater to the City of Marina. As stated above, it is also very important to note that the MMRP will not be implemented if the MPWSP does not move forward.	by MCWRA, USGS, and Zidar and Feeney (2019). These studies considered data from the wells in question and are considered the best available information to establish the basin setting and hydrogeologic conceptual model. The comment regarding the approach to groundwater monitoring if the MPWSP does not move forward is addressed in several responses above.	
HWG 134	Section 5.2.2, page 5-7	The GSP states, "The MPWSP wells were installed to monitor the effects pumping the test slant well." ***HWG Comments:*** The purposes of installing the MPWSP monitoring wells extended far beyond monitoring effects of pumping the test slant well. These monitoring wells are intended to provide background water level and water quality data well beyond the influence of test slant well pumping, provide borehole lithologic and geophysical logs to improve characterization of aquifers/aquitards within and well beyond the CEMEX area, allow for long-term monitoring of water levels and water quality after implementation of the MPWSP both within and outside the influence of proposed intake slant wells, and for other uses.	The comment is noted. Under the MMRP for the MPWSP, the stated purpose for monitoring of the wells is correct even if they serve a broader purpose for CalAm.	None
HWG 135	Section 5.2.2 and 5.2.3, pages 5-8 to 5-10	The adequacy and density of the monitoring network is described in Section 5.2.2 and 5.2.3. ***HWG Comment:*** The adequacy and density of the monitoring network should be focused on the MGSA Plan Area, and not encroach on the authority and jurisdiction of other GSAs/GSPs.	The commenter's opinion is noted.	None
HWG 136 (10)	Section 5.2.7, page 5-13	In the section entitled, "Groundwater elevation and quality data in the MGSA Area", the GSP states that groundwater elevation and quality data in the MGSA Area are limited and that five additional monitoring well clusters will be installed to address data gaps. ***HWG Comment:*** We note that none of the five proposed new monitoring well clusters are located within the MGSA Plan Area.	The comment is noted.	None
HWG 137	Section 5.4.1, pages 5-19 to 5-20	The GSP states, "This definition of seawater intrusion adopts a concentration that is aligned with potential impacts to municipal and agricultural beneficial uses; however, it includes water with existing actual and potential beneficial uses."	These comments were previously addressed in several responses above.	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		HWG Comment: Groundwater in the MGSA cannot be used as a potable source without treatment. The only current use of groundwater in the MGSA Plan area is the CEMEX well for industrial wash water. The MCWRA 500 mg/l chloride concentration is an appropriate threshold for monitoring and definition of seawater intrusion (some may even argue for a lower threshold definition such as 250 mg/L chloride, which the MCWRA also used for contouring as the level that the growers were concerned about). The reference to potential beneficial uses refers to SWRCB resolution regarding TDS up to 3,000 mg/L; however, such water is non-potable and has chlorides exceeding 1,000 mg/L placing it appropriately within the zone of seawater intrusion.		
HWG 138	Section 5.4.1, page 5-20	The GSP states, "Groundwater extraction in the MGSA Area has the potential to affect the dynamic equilibrium of this nearshore groundwater system and cause seawater intrusion through the migration of the saline groundwater wedge…". ***HWG Comment:*** This statement is incorrect; properly located groundwater extraction at the coast will serve to induce or maintain a seaward gradient, thus inhibiting seawater intrusion to inland locations.	These comments were previously addressed in several responses above.	None
HWG 139	Section 5.4.1, page 5-20	The GSP states, "…groundwater extraction from the upper aquifer system could cause further seawater intrusion by expansion or migration of the saline groundwater wedge that underlies this area. Such an expansion or migration would put the Deep Aquifer at greater risk of seawater intrusion." ***HWG Comment:*** This statement is incorrect. Pumping from the DSA and 180-FT Aquifer at the coast will have little impact on the 400-Foot Aquifer due to the presence of 180-/400-Foot Aquitard. The 400-Foot aquifer is already highly intruded at the coast and inland. If the 400-Foot aquifer is the source of recharge for the Deep Aquifer, the already extremely high salinity in the 400-Foot Aquifer has not yet been demonstrated to impact the Deep Aquifer wells.	These comments were previously addressed in several responses above.	None
HWG 140	Section 5.4.1, page 5-21	In reference to setting MTs for seawater intrusion the GSP references, "…Lateral migration of the saline water intrusion wedge beyond the limits established by the 2017 AEM survey…". ***HWG Comment:*** The AEM data must first be validated through physical water quality data before it can be used as a reference point, and previous HWG letters have	The AEM data have already been validated following the standard geophysical investigation protocols described in Gottschalk *et al*. (2018). It should be noted that the minimum thresholds for seawater intrusion have been modified to be more closely aligned with SVBGSA's minimum thresholds in response to several comments received from	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		demonstrated this has not been done (HWG, April 2019). These previous HWG letters also demonstrate the many flaws and uncertainties in the hydrogeologic interpretations of the AEM data presented by MCWD and City of Marina consultants.	them. Please refer to Attachment A for these changes.	
HWG 141	Section 5.5.1, page 5-25	The GSP states, "Groundwater extraction in the MGSA Area potentially could disturb the equilibrium that exists between the saline water intrusion wedge and overlying low-TDS groundwater zone, cause mixing of low-TDS and saline groundwater or otherwise lead to the capture and migration of saline groundwater, potentially impacting the low-TDS groundwater zone or existing supply wells in the area." ***HWG Comment:*** This statement is incorrect. There is no evidence to support this statement. Any existing equilibrium is with pumping induced seawater intrusion. Pumping at the coast would serve to mitigate at least a portion of the inland movement of seawater intrusion, and partially reverse SWI in the area inland of the pumping at the coast.	These comments were previously addressed in several responses above.	None
HWG 142	Section 6.1, page 6-2	The GSP states, "MGSA has not identified any feasible projects within the MGSA Area…"; and "MGSA will coordinate with and support SVBGSA in the implementation of projects and management actions it has determined to be locally and regionally beneficial…" ***HWG Comment:*** The MGSA has developed no projects of its own, and has developed SMC specifically designed to stop selected SVBGSA projects from being implemented.	The commenter's assertion is baseless. The rationale and objectives of the sustainable management criteria adopted in the GSP are discussed in detail in Chapter 4. The sustainable management criteria adopted in the GSP are intended to assure sustainable groundwater management and are not targeted to stop any identified SVBGSA projects. MGSA developed its SMC based on the groundwater conditions occurring in the Subbasin, not to target certain SVBGSA projects. However, MGSA's GSP does not support the groundwater extraction barrier project because it has not been adequately evaluated and SVBGSA's GSP does not include adequate monitoring to assess its impacts and effectiveness.	None
HWG 143	Section 6.2, pages 6-2 to 6-11	Chapter 6 of the GSP presents a confusing array of triggers and additional studies labeled as management actions. ***HWG Comment:*** The use of "triggers" and "management actions" presented in Chapter 6 do not align with SGMA and GSP requirements, and present many conflicts with the SVBGSP.	The triggers and management actions are consistent with the requirements of the GSP regulations to identify management actions, the measurable objectives they are intended and expected to benefit, and the circumstances and threshold criteria for their implementation and curtailment (23 CCR § 354.44(b)(1)).	None

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
HWG 144	Section 6.5, pages 6-12 to 6-17	The GSP lists the SVBGSP projects and management actions that it supports. ***HWG Comment:*** The GSP specifically does not support and sets SMC to prevent implementation of the groundwater extraction barrier, which is a primary and critical project in the SVBGSP. This is a clear conflict with the SVBGSP.	The commenter's assertion is baseless. The rationale and objectives of the sustainable management criteria adopted in the GSP are discussed in detail in Chapter 4. The sustainable management criteria adopted in the GSP are intended to assure sustainable groundwater management are not targeted to stop any identified SVBGSA projects. MGSA developed its SMC based on the groundwater conditions occurring in the Subbasin, not to target certain SVBGSA projects. However, MGSA's GSP does not support the proposed extraction barrier because it has not been adequately evaluated and SVBGSA's GSP does not include adequate monitoring to assess its impacts and effectiveness.	None
HWG 145	Section 6.2.1.1, page 6-3	The GSP states that groundwater extraction could substantially deplete the low-TDS groundwater storage, thereby "…substantially depleting this resource for inland water rights holders." ***HWG Comment:*** Groundwater pumping at the coast would actually help mitigate seawater intrusion and improve availability of low TDS groundwater for inland pumpers.	The quoted comment is specifically focused on depletion of groundwater resources near the MGSA Area with a designated beneficial use for domestic and municipal supply.	None
HWG 146	Section 6.2.1.2, page 6-6	The GSP states that the seawater intrusion measurable objective would, "...prevent or reverse seawater intrusion advancement into the Deep Aquifer." ***HWG Comment:*** Setting seawater intrusion MO/MT for the DSA, 180-FTE, and 400-Foot Aquifers in MGSA does nothing to prevent seawater intrusion in the Deep Aquifer. Reducing pumping in the Deep Aquifer is the only way to control/prevent seawater intrusion in the Deep Aquifer.	Note that the measurable objectives for seawater intrusion have been refined to align more closely with those established by SVBGSA, except that the measurable objective for the Deep Aquifer is set at the seaward Subbasin boundary. As noted in our previous responses above, vertical migration of seawater intrusion from the 400-Foot Aquifer into the Deep Aquifer is recognized to exist, and the proposed measurable objectives would prevent this occurrence.	None
HWG 147	Section 6.2.2.1, page 6-7	In discussing potential management actions for GDEs, the GSP states, "The triggers are equal to the measurable objectives…" ***HWG Comment:*** The DWR draft BMP for Sustainable Management Criteria defines the measurable objective as, "quantitative goals that reflect the basin's desired groundwater conditions…", and should be set to allow,"…a reasonable margin of flexibility…that will accommodate droughts, climate change, conjunctive use operations…" The	Note that reference to triggers for management actions has been removed from this discussion as indicated in the edited version of Chapter 4 included as Attachment A.	*See* Attachment A (Chapter 4 Edits)

Responses to Comments on the Public Review Draft of the Groundwater Sustainability Plan for the Marina GSA Area of the 180/400 Foot Aquifer Subbasin

Comment No.	Section, Page No.	Comment	Response[1]	Changes to GSP
		BMP does not refer to using measurable objectives as triggers; rather they represent the anticipated/desired basin condition after sustainability is achieved.		
HWG 148	Sections 6.2.2 and 6.2.3, pages 6-7 to 6-12	The GSP essentially bases its GDE MT/MO on 2015 groundwater levels, and states that a baseline biological assessment of GDEs will be done in the future to allow for comparison of future GDE biologic conditions to its baseline. ***HWG Comment:*** While the GDE MT/MO are based on 2015 groundwater levels, there is no corresponding baseline biological assessment to utilize as described in the GSP. The baseline biological assessment yet to be conducted will not be representative of 2015 groundwater, surface water, and climatic conditions.	The minimum thresholds and measurable objectives for groundwater level decline in the Dune Sand Aquifer are based on the current best available information regarding groundwater dependent ecosystems as required by the GSP regulations. To the extent that baseline comparisons are needed in the future, ET data for a baseline period prior to 2015 may be utilized to assess whether future biomass productivity responses are within or outside of statistical norms.	None
HWG 149	Section 6.3, page 6-11	The GSP claims legal authority to, "…conduct investigations to determine the need for groundwater management, and to monitor compliance and enforcement of a GSP." ***HWG Comment:*** A key question to be answered here is does a GSA have this legal authority for lands outside of its Plan Area.?	Please refer to Master Response 2 – MGSA's Jurisdiction and GSP Requirements. SGMA authorizes GSAs to conduct investigations "[t]o determine the need for groundwater management" and "monitor compliance and enforcement." CWC § 10725.4(a)(1), (4). This aligns with SGMA's holistic view and approach to basin-wide groundwater management. The MGSA GSP does not "impose fees or regulatory requirements on activities outside [its] boundaries." *Id.* § 10726.8(b). Instead, MGSA's GSP utilizes information and data regarding the Subbasin to manage the area within the Marina Area.	None
HWG 150	Section 6.5.1, pages 6-13 to 6-15	In discussing CSIP in-lieu recharge projects (including reduction / avoidance of pumping of groundwater from wells in the CSIP area), the GSP states in several places, "This is beneficial to MGSA because of its proximity to the CSIP service area and because pumping reductions in these areas support measurable objectives related to groundwater elevation, groundwater storage and seawater intrusion." ***HWG Comment:*** The GSP does not describe the MPWSP return water agreement, which provides the same benefits described here in the GSP text.	Discussion of the Return Water Agreement has been added to Chapter 2 as noted in our response to Comment MCWRA 3.	See response to Comment MCWRA 3.

VOLUME II: SECTION 3.0 – MASTER RESPONSES

MASTER RESPONSE 1
MGSA FORMATION

SUMMARY OF COMMENTS

The following public comments received on Marina Groundwater Sustainability Agency's (MGSA's) Groundwater Sustainability Plan (GSP) voice similar general concerns regarding MGSA's GSA Formation:

- California American Water Company (CalAm) contends that Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) is the exclusive GSA for the Subbasin, including the area covered by the Marina GSA (MGSA) Groundwater Sustainability Plan (GSP); therefore, the City is not a GSA and does not have the authority to adopt a GSP (Comments CalAm 2 and 4).
- SVBGSA states that "[c]urrently, DWR considers neither the SVBGSA nor the MGSA exclusive in any part of the Subbasin" (Comment SVBGSA 5).
- CEMEX argues that MGSA missed the deadline to file its notice of intent to serve as a GSA under California Water Code (CWC) § 10723.8 (c) (Comment CEMEX 1). CalAm cites a comment letter it filed on August 12, 2019, regarding MGSA's initial notification to prepare a GSP that makes the same assertion (Comment CalAm 2).

RESPONSE

As outlined in MGSA's August 28, 2019 letter to the California Department of Water Resources (DWR), the City of Marina formed MGSA in full compliance with the Sustainable Groundwater Management Act (SGMA). On March 20, 2018, the Marina City Council adopted a resolution forming MGSA to "undertake sustainable groundwater management within the portion of the Salinas Valley Ground Water Basin 180/400 Foot Aquifer Subbasin within the City and outside of the Marina Coast Water District service area." On April 16, 2018, MGSA properly filed a notice of its GSA formation with DWR under CWC § 10723.8. DWR duly accepted and posted MGSA's notice of GSA formation on its SGMA Portal.

SGMA does not contain a mandatory final deadline for the formation of all GSAs, even for medium and high priority basins. The June 30, 2017 date identified by the commenters refers to CWC § 10735.2(a)(1), which relates to the circumstances under which the State Water Resources Control Board (State Board) can designate a basin as a probationary basin and thereafter take steps to develop its own interim groundwater sustainability plan for that basin. *See* CWC §§ 10735.4-10736.6. Accordingly, the June 30, 2017 date is only the trigger date for a potential probationary basin finding if one or more GSAs, or a local agency "alternative" plan, has not been noticed for an entire basin. It is not a drop-dead date for all GSAs to have been formed, and additional GSAs can form in a basin after that date.

DWR characterizes the June 30, 2017 date on its website as only an "initial planning milestone" and recognizes that new GSAs can, will, and have been formed after that as SGMA implementation continues. This portion of the DWR website states in full (emphasis added):

*SGMA required Groundwater Sustainability Agencies (GSAs) to form in the State's high- and medium- priority basins and subbasins by June 30, 2017. Over 260 GSAs in over 140 basins **were formed by SGMA's initial planning milestone**. However, **as SGMA continues to be implemented** and the priorities and boundaries of some basins change, **new GSAs will be formed,** and existing GSAs may want to reorganize, consolidate, or withdraw from managing in all of part of a basin. All GSA notifications are managed on DWR's SGMA Portal.*[1]

The GSA formation process was expected to and has continued after June 30, 2017. Indeed, after June 30, 2017, DWR posted at least ten other new GSA formation notices, including those for the Fresno County Pleasant Valley GSA Area, City of Coalinga GSA, Vina GSA, Montecito Groundwater Basin GSA, Owens Valley Groundwater Authority GSA (for two different basin areas), Castaic Basin GSA, Triangle Water District GSA, Santa Barbara County Water Agency GSA—Goleta Fringe Areas, and Corning Subbasin GSA. All but one of these post-June 30, 2017 GSA formations cover high or medium priority basins.

In addition to commenting on the July 30, 2017 date, the commenters contend that MGSA failed to file its GSA notification before SVBGSA became the exclusive GSA for the Subbasin under CWC § 10723.8(c). CWC § 10723.8(c) provides that a local agency notice to become a GSA for a particular basin/subbasin "shall take effect" 90 days after posting if no other local agency has filed a notification of its intent to undertake groundwater management in all or a portion of the same area prior to expiration of this 90-day period. If another agency files such a notice before the expiration of this period, the GSA notice shall not take effect.

Here, contrary to CalAm's comments, SVBGSA never became the exclusive GSA for the Subbasin. On February 6, 2017, MCWD formed a GSA for a portion of the Subbasin area that SVBGSA claimed in its GSA notice, and, on March 14, 2017, DWR posted the notice of this formation (even before SVBGSA filed its notice). Thus, since MCWD filed a GSA formation notice for a portion of the same Subbasin area that SVBGSA's later notice covered, CWC § 10723.8 prescribes that SVBGSA's notice did not take effect, and SVBGSA never became the exclusive GSA for the Subbasin.[2] Because SVBGSA was not the exclusive GSA for the Subbasin when MGSA filed its notice on April 16, 2018 (and in fact has never become the exclusive GSA for the Subbasin), MGSA still could file a valid GSA notification.

In sum, DWR has consistently informed all parties that SVBGSA never achieved exclusive GSA status for the Subbasin under Section 10723.8 because of the timely filings of MCWD GSA for this Subbasin. Similarly, DWR has consistently maintained that MGSA filed a valid GSA notification for the MGSA area. MSGA therefore has a right to prepare a GSP and contribute to the sustainable management of the Subbasin.

[1] This website page is found at https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainable-Agencies.

[2] The SGMA Portal still lists SVBGSA and MGSA as overlapping, non-exclusive GSAs. *See* https://sgma.water.ca.gov/portal/gsa/all.

MASTER RESPONSE 2

MGSA'S JURISDICTION AND GSP REQUIREMENTS

SUMMARY OF COMMENTS

Several of the public comments received from Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA), Monterey County Water Resources Agency (MCWRA), and Hydrogeologic Working Group (HWG) on Marina Groundwater Sustainability Agency's (MGSA's) Groundwater Sustainability Plan (GSP) voice similar concerns regarding MGSA's ability to consider data and management actions outside of the MGSA Area, including MGSA's jurisdiction and authority to:

- Set management criteria (Comments HWG 6, 28, 35, 38, and 109; SVBGSA Letter 4 and 5; SVBGSA 39 and 42);
- Manage Groundwater Dependent Ecosystems (GDEs) (Comments MCWRA 9 and 29; HWG 28, 35, 48, 67, 69, 104, and 127; SVBGSA 1b and 39);
- Set minimum thresholds and measurement objectives (Comments HWG 105, 107, and 112; SVBGSA 49; MCWRA 28);
- Conduct investigations to determine the need for groundwater management (Comment HWG 149);
- Monitor GSP compliance or establish a monitoring network (Comments HWG 4 and 130); and
- Enforce its GSP (Comments CEMEX 7 and 8).

RESPONSE

The Sustainable Groundwater Management Act (SGMA) allows multiple GSAs to coordinate the management of a single groundwater basin (California Water Code (CWC) § 10727(b)(3)). In doing so, SGMA requires the GSAs to "*coordinate . . . to ensure that the plans utilize the same data and methodologies*" (*Id.* § 10727.6). This requirement necessarily implies that each GSA for the basin will consider data from outside their GSA notification area. Indeed, this requirement would be superfluous if a GSA could only consider information within its GSA area. No other section of SGMA limits a GSA's ability to incorporate data and information regarding the basin outside of its GSA area, and the commenters do not identify any authority for such a limitation. If the Legislature intended to limit what information a GSA could consider, it would have articulated those limitations in SGMA's coordination provisions. Instead, SGMA and its regulations mandate that a GSA must consider basin-wide factors when drafting its GSP.

SGMA envisions that GSPs will manage groundwater on a basin-wide level and requires that a GSP or set of GSPs "*cover[] the entire basin*" (CWC § 10727(b)). Consistent with this holistic view of sustainable groundwater management, SGMA does not define a basin based on a GSA's jurisdiction (*id.* § 10721(b) (defining basin as "*a groundwater basin or subbasin identified and defined in Bulletin 118*")). SGMA and its regulations likewise require GSAs to base their GSPs on the data and characteristics of the entire basin, not just the area covered by their GSA notification. (*See e.g.*, *id.* § 10750.8(a) (requiring a GSP to include *"[a] description of the physical setting and characteristics of the aquifer system underlying the basin*")).

SGMA's regulations confirm that a GSA must consider and analyze the entire basin when drafting a GSP. In particular, the regulations provide that a GSP must describe the basin setting, which includes "*the information about the physical setting and characteristics of the basin and current conditions of the basin*" as well as "*the identification of data gaps and levels of uncertainty*" (CCR 23 § 354.12). The basin setting then "*serves as the basis for defining and assessing reasonable sustainable management criteria and projects and management actions*" (*id*.).

Likewise, in defining undesirable results, a GSP must consider *"[t]he cause of groundwater conditions occurring throughout the basin that would lead to or has led to undesirable results based on information described in the basin setting*" (Cal Code of Regulations (CCR) § 354.26. (b)(1)). SGMA's regulations also require each GSP to describe "*the monitoring network objectives for the basin, including an explanation of how the network will be developed and implemented to monitor groundwater and related surface conditions, and the interconnection of surface water and groundwater, with sufficient temporal frequency and spatial density to evaluate the affects and effectiveness of Plan implementation*." (CCR § 354.34(b)).

MCWRA and other commenters argue that the GDEs MGSA's GSP identifies fall outside of MGSA's jurisdiction. However, SGMA and its regulations require MGSA to consider these types of basin conditions when drafting its GSP (*see* CCR 23, § 354.12)) and as a basis for assessing the implementation of its plan (*id* § 354.26(b)(2)). Indeed, the regulations specifically require a GSP to identify GDEs "*within the basin*" (*id.* § 354.16(g)). SGMA's regulations similarly require a GSA to develop numerous other plan elements based on an analysis of the basin, not only the GSA's area. Those plan elements include the hydrogeologic conceptual model (*id.* § 354.14), groundwater conditions (*id.* § 354.16), water budget (*id.* 23, § 354.18), the basin's sustainability goal (*id.* § 354.24), undesirable results (*id.* § 354.26), minimum thresholds (*id.* § 354.28), measurable objectives (*id.* § 354.30), monitoring networks (*id.* § 354.32), and projects and management actions (*id.* § 354.44).

Several commenters question MGSA's ability to set sustainable management criteria outside the MGSA Area. For example, SVBGSA contends that MGSA can only set sustainable management criteria for wells within its boundaries. However, each GSP is required to: (1) "*describe . . . [t]he criteria used to define when* ***and where*** *the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator*" (*id.* § 354.26(b)(2) (emphasis added)), (2) "*describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin*" (*id.* § 354.25(a)), (3) describe *"[h]ow minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals*" (*id.* § 354.28(b)(3)), (4) "*collect . . . data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate* ***changing conditions that occur through implementation of the Plan***" (*id*. § 354.32 (emphasis added)), (5) "*develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions* ***as necessary to evaluate Plan***

implementation" (*id.* § 354.34(a) (emphasis added)), (6) "*determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon*" in part, the*"[i]mpacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal*" (*id.* § 354.34(f)(3)), (7) "*describe the following information about the monitoring network: . . . [f]or each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative monitoring sites*" (*id.* § 354.34(g)(3)), and (8) "*include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin*" (*id.* § 354.44(a)).

As these requirements demonstrate, SGMA's regulations contemplate that a GSA will consider areas outside its jurisdictional boundaries in assessing basin conditions and establishing monitoring networks, sustainable management criteria, and management actions that are necessary to assure that implementing its GSP results in sustainable groundwater management for the basin as a whole. Here, MGSA identifies actions to support the implementation of MGSA's GSP ***within its jurisdictional boundaries*** – not to regulate sustainable management outside its GSA area, as SVBGSA mistakenly interpreted. Specifically, the characterization, monitoring, and management of groundwater conditions outside the MGSA's jurisdictional area inform and support sustainable groundwater management activities within MGSA's jurisdictional areas, as required by the SGMA's regulations. In other words, MGSA's GSP considers and analyzes basin conditions, data, management, and monitoring to develop management plans for the MGSA Area. The MGSA GSP does not "*impose fees or regulatory requirements on activities outside [its] boundaries*." CWC § 10726.8(b). Instead, MGSA's GSP simply manages the MGSA Area based on a holistic view of the Subbasin as SGMA requires.

In conclusion, we note that SVBGSA's GSP does not include the basin setting description information, monitoring networks, sustainable management criteria, or management actions necessary to ensure sustainable groundwater management within the MGSA Area. MGSA's GSP addresses these data and management gaps in a way intended to be coordinated with SVBGSA's GSP and assure sustainable groundwater management throughout the Subbasin. The specific items addressed outside MGSA's jurisdictional boundaries for this purpose include the following:

- Description of beneficial uses near the MGSA Area that could be affected by groundwater management within the MGSA Area, including nearby GDEs;
- Details regarding the basin hydrogeologic conceptual model and water budget in the area potentially affected by groundwater management within the MGSA Area;
- Designation and description of principal aquifers, monitoring networks, and sustainable management criteria in the area potentially affected by groundwater management within the MGSA Area; and
- Management actions to be undertaken inside the MGSA's jurisdictional boundaries to address potential undesirable results outside those boundaries.

MASTER RESPONSE 3

GSP COORDINATION REQUIREMENTS

SUMMARY OF COMMENTS

The following public comments received on the Groundwater Sustainability Plan (GSP) for the Marina Groundwater Sustainability Agency (MGSA) Area of the 180/400 Foot Aquifer Subbasin (Subbasin) voice similar general concerns regarding alleged deficiencies in the MGSA GSP and perceived conflicts between the MGSA GSP and the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) GSP that hamper coordination between the two GSAs as required by the Sustainable Groundwater Management Act (SGMA). The following general and specific comments were received:

- California American Water Company (CalAm), Monterey County Water Resources Agency (MCWRA), SVBGSA, and Hydrologic Working Group (HWG – a group of four individual consultants who represent CalAm and the Salinas Valley Water Coalition) allege that the MGSA GSP is incomplete, inaccurate, and incompatible with SVBGSA's GSP and comment that there are many conflicts between the MGSA GSP and the SVBGSA GSP. They are concerned that the alleged conflicts, as well as the lack of coordination between the two GSAs and their GSPs, prevent coordination of the MGSA GSP and SVBGSA GSP as required by SGMA. In addition, CalAm contends that the MGSA GSP does not make any attempt to address these significant conflicts or lack of coordination with the SVBGSA GSP (Comments CalAm 5, 7, and 8, MCWRA Letter 1, MCWRA 1, 7, 9, 28, 29, and 41, SVBGSA Letters 1, 2, 3, 4, 5,6, and 7, SVBGSA 12 and 48, HWG 2, 3, 4, 5, 6, 23, 96, 114, 115, 131, 144,).

- CalAm, MCWRA, SVBGSA, and HWG identify several technical areas where commenters believe there are conflicts, or it will be difficult to achieve coordination, including the following: (Comments CalAm 5, MCWRA Letter 1, MCWRA 1, SVBGSA Letter 3, 4, 5, 6, 7, and SVBGSA 12):

    - SVBGSA and MCWRA asserts MGSA does not have authority to set sustainable management criteria referencing future groundwater levels at wells located outside MGSA's jurisdictional boundaries and within the area of the Subbasin managed by SVBGSA. They claim SVBGSA is the only GSA with authority to set management criteria within the SVBGSA area and that MGSA can only set management criteria for wells within its boundaries (Comments MCWRA 9 and 29, SVBGSA Letter 4 and 5).

    - Some commenters contend that MGSA presents a flawed hydrogeological conceptual model based on incorrect and invalid hydrogeologic interpretations which leads to a flawed basin setting. Coordination between the two GSPs requires a consistent description of the principal aquifers and hydrogeology, and they contend that coordination between the two GSPs will not be possible until there is agreement on whether or not the Dune Sand Aquifer constitutes a principal aquifer (Comments MCWRA 7, SVBGSA Letter 6, HWG 2, 6, 23, and 114).

    - SVBGSA is concerned that MGSA states significantly different undesirable results from the SVBGSA GSP. SGMA requires that a single undesirable result for each sustainability indicator be applied to the entire Subbasin. SVBGSA states that it is unlikely that a single undesirable result can be reconciled between the two plans for indicators such as seawater intrusion and surface water depletion (SVBGSA Letter 7).

- Several commenters expressed concerns that MGSA sets sustainable management criteria that conflict with sustainable management criteria in SVBGSA's GSP or that would prevent implementation of certain key SVBGSA GSP projects and management actions (Comments MCWRA 28, SVBGSA Letter 4 and 5, SVBGSA 12, HWG 3, 5, 6, 96, 114, 115, 131, and144).

RESPONSE

Background

The purpose of the MGSA GSP is to support regional efforts to address significant and unreasonable seawater intrusion in the 180/400 Foot Aquifer Subbasin and return the Subbasin to sustainable groundwater management within 20 years, as required by SGMA. The MGSA GSP will achieve this by supporting the projects and management actions that SVBGSA plans to implement under its regional GSP and by assuring that local groundwater resources are sustainably managed to protect local and regional beneficial uses and users. MGSA developed a locally-focused GSP to provide the framework necessary to ensure sustainable groundwater management in the MGSA Area of the Subbasin. The MGSA GSP will be implemented together with the regional SVBGSA GSP for the remainder of the Subbasin to sustainably manage the groundwater resources in the Subbasin.

A locally-focused GSP is needed in the MGSA Area to address the hydrogeologic conditions and management needs unique to this portion of the Subbasin, and SVBGSA's GSP is inadequate to inform sustainable groundwater management in this portion of the Subbasin due to a lack of characterization and monitoring sites as discussed in Master Response 2 – MGSA's Jurisdiction and GSP Requirements. The MGSA GSP addresses critical gaps in SVBGSA's GSP to sustainably manage the Subbasin, including its failure to (1) utilize all of the available information and science, including recent local investigations; (2) designate, protect, and manage the Dune Sand Aquifer as a Principal Aquifer; (3) provide sufficient protections against ongoing or worsening seawater intrusion that consider nearshore dynamics as required by the California Department of Water Resources (DWR) Best Management Practices (BMP) guidance; (4) meaningfully recognize, address, monitor, and manage groundwater-dependent ecosystems (GDEs) as a beneficial groundwater use; (5) consider state and federal protections for habitats and species in and near the MGSA area; and (6) include an adequate monitoring network in the coastal portion of the Subbasin, which under SVBGSA's GSP is largely unmonitored.

As such, MGSA's GSP serves the legitimate and required goal of contributing to the sustainable management of the Subbasin by promoting sustainable groundwater management in its seaward portion. The MGSA GSP will achieve this by establishing sustainable management criteria to prevent undesirable results related to groundwater extraction within its jurisdictional boundaries, conducting sufficient monitoring to assess plan implementation, and implementing management actions as necessary. MGSA's GSP complies with all SGMA's requirements for a GSP, and together with the

SVBGSA GSP, could form a set of GSPs for the 180/400 Foot Aquifer Subbasin that complies with SGMA. Without the MGSA GSP, the SVBGSA's GSP would be inadequate.

Coordination Requirements

Coordination agreements are required if multiple GSAs in a basin submit multiple GSPs to DWR for review. SGMA defines a coordination agreement as *"a legal agreement adopted between two or more GSAs that provides the basis for coordinating multiple agencies or GSPs within a basin*" (California Water Code (CWC) §10721(d)). The intended objective of the coordination agreement, as stated in the GSP Regulations, is to "*ensure that the Plans are developed and implemented utilizing the same data and methodologies, and that elements of the Plans necessary to achieve the sustainability goal for the basin are based upon consistent interpretations of the basin setting*" (California Code of Regulations Title 23 (23 CCR) § 357.4(a)).

The minimum content of a coordination agreement is addressed in Section 357.4 of the SGMA regulations. The coordination agreement should describe a single point of contact for the basin, outline the responsibilities of each GSA, include procedures for the timely exchange of information between the GSAs, establish procedures for resolving conflicts between GSAs, ensure that the GSAs use the same data and methodologies for the assumptions described in Water Code Section 10727.6, and describe a coordinated data management system. Each GSA has a responsibility under SGMA to meet the terms of the coordination agreement. In accordance with Section 10727.6, the minimum GSP elements that must be coordinated in a basin include groundwater elevation data, groundwater extraction data, surface water supply, total water use, change in groundwater storage, water budgets, and sustainable yield. Upon adoption of a GSP, the GSA shall submit the GSP to DWR for review in accordance with Water Code Section 10733.4(a). If multiple GSPs are developed for a groundwater basin, the GSAs shall jointly submit the following to DWR: (1) the GSPs; (2) an explanation of how the GSPs together will satisfy Water Code Sections 10727.2, 10727.4, and 10727.6; and (3) a copy of the coordination agreement between the GSAs to ensure the coordinated implementation of the groundwater sustainability plans for the entire basin (CWC § 10733.4(b)).

Based on our review of the SGMA regulations and DWR guidelines, we note the following:

- All GSAs in a basin must actively participate in intra-basin coordination when more than one GSP is prepared – each party shares an equal responsibility. SVBGSA states "*a coordination agreement between SVBGSA and MGSA is required if both GSPs are submitted to DWR*" (Comment SVBGSA Letter 3). MGSA believes many of SVBGSA's concerns stem from an assumption that if any coordination is needed for successful implementation of the MGSA's and SVBGSA's GSPs, the responsibility for coordination falls solely on the MGSA. This is not correct. MGSA's GSP addresses critical gaps in SVBGSA's GSP. As a result, if MGSA and SVBGSA can reach a coordination agreement, DWR is more likely to find their coordinated GSPs adequate than SVBGSA's alone.

- As noted in Master Response 2 – MGSA's Jurisdiction and GSP Requirements, a GSA is responsible for establishing the necessary sustainable management criteria and monitoring networks to implement its GSP and achieve its sustainability goals. The regulations and guidelines place no limitations on whether sustainable management criteria or monitoring locations extend outside a GSA's jurisdictional boundaries. Only a GSA's ability to regulate groundwater extractors or impose fees is limited to these boundaries. By the very nature of groundwater flow, a GSP must consider conditions outside of its plan boundaries when multiple GSPs are prepared in a basin or Subbasin. SGMA and its regulations recognize this reality and require that a GSA consider basin-wide factors when drafting its GSP. The only applicable requirement is that GSPs be coordinate to rely on the same information and hydrogeologic conceptual model to assure contiguous and compatible management.

- As discussed in Master Response 4 – Water Quality and Seawater Intrusion, Master Response 7 – Dune Sand Aquifer, and Master Response 8 – Groundwater Dependent Ecosystems, the requirement to base GSPs on the same basin understanding and information applies to all GSAs and does not fall on one GSP. The primary requirement is that the best available information and science be utilized, that data gaps be identified and addressed as necessary for plan implementation, and that appropriate coordination occurs. The fact that SVBGSA did not consider nearshore seawater intrusion dynamics as recommended by DWR's BMP guidance, did not recognize the Dune Sand Aquifer as warranting management based on significant actual and potential beneficial uses, and has not yet undertaken investigations to address data gaps regarding GDEs in its territory does not mean the MGSA's proactive local approach to these issues makes it solely responsible for their resolution. In fact, as noted above, MGSA's approach addresses gaps in SVBGSA's GSP and creates a compatible and cohesive management strategy that can be implemented to better meet the Subbasin sustainability goal if the appropriate coordination takes place.

Steps Taken to Achieve Coordination

As noted above, MGSA agrees it is critical that potential conflicts between the MGSA and SVBGSA GSPs be resolved through coordination according to the process outlined in the SGMA regulations. To that end, MGSA submitted a draft coordination agreement pursuant to Water Code 10727.6 and Section 357.4 of the SGMA regulations for SVBGSA's consideration in August 2019 using a template provided by them. After that time, MGSA undertook the following additional activities to coordinate GSP preparation with SVBGSA:

- Attended SVBGSA Executive Committee and Board of Directors meetings on August 22, September 12, September 26, October 10, October 24, November 14, November 28, and December 12, 2019 to support discussion regarding the pending agreement;

- Held public meetings to discuss the GSP preparation on August 7, October 8, and October 29, 2019;

- Met with SVBGSA staff and their consultants on September 13 and October 8, 2019 to discuss coordination of the GSPs as MGSA's GSP was being prepared; and
- Met with SVBGSA staff on several occasions for informal discussions on MGSA's GSP preparation, objectives, and desire to coordinate with SVBGSA.

To date, SVBGSA has not responded with any requested revisions to the draft coordination agreement. MGSA followed up on October 9, 2019 with a letter of inquiry as to any action by the SVBGSA Board of Directors and conveyed that MGSA was open and available for dialogue. Communications from SVBGSA indicated that withdrawal of MGSA's notification of intent to become a GSA was the only condition under which SVBGSA would consider continuing discussions. MGSA transmitted a letter of record on November 21, 2019 which stated MGSA's understanding of SVBGSA's threshold condition for any discussion of coordination (i.e., withdrawal as a GSA for the Marina area). And SVBGSA confirmed this position in its November 21, 2019 response letter.

Notably, MGSA has also had a number of discussions with Marina Coast Water District (MCWD) GSA and its consultants regarding coordination of the MGSA GSP and have reviewed its contents and approach with them. MCWD GSA did not raise any of the concerns voiced by SVBGSA but shared technical information regarding its findings, provided a template of its Data Management System and provided constructive comments regarding the MGSA GSP during its preparation. Coordination under SGMA requires the commitment and cooperation of all GSAs in a Subbasin, which includes SVBGSA, MCWD GSA, and MGSA.

The comment letter received from SVBGSA regarding MGSA's draft GSP is the only substantive communication received from SVBGSA to date that facilitates coordination of the GSPs. MGSA has therefore taken SVBGSA's comments, and the comments received from other stakeholders, to refine its GSP to support coordination. This includes a number of technical clarifications, refinement of the sustainable management criteria, monitoring approaches and networks, and management actions as discussed in Chapters 4, 5, and 6, respectively. These changes include clarifications to the hydrogeologic conceptual model and the supporting data, refinement of the sustainable management criteria to be more closely aligned with the SVBGSA's approach and more clearly aligned with SGMA, development of a more focused monitoring approach, and refinement of the management actions and associated triggers.

MGSA disagrees with the assertions that its hydrogeologic conceptual model is flawed and that its sustainable management criteria conflict with those of SVBGSA or are developed to prevent implementation of any of its key projects. These assertions are fully addressed in our responses to individual comments or other Master Responses.

In sum, we contend that SGMA requires adequate coordination to support locally-based sustainable groundwater management in the shoreward part of the Subbasin. MGSA remains prepared to coordinate with SVBGSA and MCWD GSA to meet SGMA's goal of sustainable management of the Subbasin.

MASTER RESPONSE 4

GROUNDWATER QUALITY AND SEAWATER INTRUSION

SUMMARY OF COMMENTS

The following public comments received on the Groundwater Sustainability Plan (GSP) for the Marina Groundwater Sustainability Agency (MGSA) Area of the 180/400 Foot Aquifer Subbasin (Subbasin) voice similar general concerns regarding the potential beneficial uses of groundwater, the water quality standards relevant to establishment of sustainable management criteria, the water quality criteria used to define areas affected by seawater intrusion and the characterization of source water for the proposed Monterey Peninsula Water Supply Project (MPWSP) desalination plant, and the allegedly overstated effects of groundwater extraction on the principal aquifers. The following general and specific comments were received:

- California American Water Company (CalAm), Monterey County Water Resources Agency (MCWRA) and the Hydrogeologic Working Group (HWG – a group of four individual consultants who represent CalAm and the Salinas Valley Water Coalition) had similar comments that MGSA's GSP is inaccurate, misleading, or flawed to assume that water containing up to 3,000 milligrams per liter (mg/L) of total dissolved solids (TDS) can be beneficially used for domestic or municipal supply without treatment by desalination (Comments CalAm 6, MCWRA 5, HWG 15, 22, and 95).

- MCWRA and HWG stated that additional water quality standards should be referenced and considered in order to more accurately characterize groundwater quality and potential uses, including the following (Comments MCWRA 8, MCWRA 25, HWG 22, and HWG 63):

    - Clarifying that the standards of 1,000 mg/L TDS and 500 mg/L Chloride are California's upper limit for Secondary Maximum Contaminant Levels (SMCLs);

    - Identifying the recommended secondary maximum contaminant levels (SMCLs) of 500 mg/L TDS and 250 mg/L Chloride; and

    - Identifying the short term maximum SMCLs of 1,500 mg/L TDS and 600 mg/L chloride.

- HWG made numerous comments asserting that the definition of low-TDS groundwater used in the GSP includes groundwater containing chloride well in excess of the concentration used to define seawater intrusion (500 mg/L), with chloride concentrations more than twice the upper SMCL (i.e., over 1,000 mg/L) and typically containing nitrate in excess of MCLs. They described this groundwater as brackish, non-potable for domestic, municipal, and agricultural uses and with no identified beneficial uses. They questioned the focus of the GSP on discussing and protecting this category of groundwater. (*See* Comments HWG 22, 26, 40, 63, 64, 65, 95, 112, 116, 120, 122, and 137).

- HWG made several comments regarding the characterization of water withdrawn from the test slant well and predicted to be withdrawn by the proposed slant wells used for the MPWSP's desalination supply (Comments HWG 74, 85, and 88). They indicated the water should be described as consisting primarily of seawater with a small percentage of brackish water from the Subbasin aquifers. They stated that the data gathered during test slant well pumping enable them to predict with relatively high confidence that the quantity of non-seawater extracted from the Subbasin Aquifers was at most 10 percent.

- HWG also questioned the hydrogeologic conceptual model based on airborne electromagnetic (AEM) data that describes a zone of higher quality (“low-TDS”) groundwater overriding a dense, saline water wedge extending inland from the coast and extending through the Dune Sand Aquifer and into the 180-Foot Aquifer (Comments HWG 16, 63, and 79).

RESPONSE

Background

The GSP regulations require that the hydrogeologic conceptual model include a description of the “*[g]eneral water quality of the principal aquifers, which may be based on information derived from existing technical studies or regulatory programs*” (Title 23, California Code of Regulations (23 CCR) § 354.14(b)(4)(D)). The GSP regulations also require that a GSP include a description of *“[g]roundwater quality issues that may affect the supply and beneficial uses of groundwater*” (*id.* § 354.16(d)). Further, a GSP’s description of minimum thresholds must include an explanation of “*[h]ow state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the Agency shall explain the nature of and basis for the difference*” (*id.* § 354.28(b)(5)). In compliance with this requirement, the MGSA GSP uses all the available data to describe the general water quality in the principal aquifers including the Dune Sand, 180-Foot, 400-Foot, and Deep Aquifers and considers applicable water quality standards.

Groundwater Quality Standards

A discussion of applicable state and federal water quality standards used to characterize groundwater quality is presented in Section 3.2.3 of the GSP. As discussed in this section, seawater intrusion into the 180-Foot and 400-Foot Aquifers is monitored by MCWRA, which uses a standard of 500 mg/L chloride to define the areas affected by seawater intrusion and inform its management decisions. Based on this standard, seawater intrusion has progressed inland from the coast over a distance of approximately four to seven miles in the 180-Foot Aquifer, and three to four miles in the 400-Foot Aquifer.

The GSP already discusses SMCLs, particularly those relating to the Upper and Short Term SMCLs for TDS. SMCLs are enforceable, drinking water standards primarily intended to protect public welfare by addressing qualities such as odor, taste, and appearance. Compliance with SMCLs also minimizes risk of corrosion of pipes, fixtures, valves, other plumbing materials, and household appliances. Per EPA, SMCLs are not intended to address human health concerns.

Section 3.2.3 also includes discussion of State Water Resources Control Board (SWRCB) Resolution Nos. 88-63 and 68-16. Under SWRCB Resolution No. 88-63, the state considers that “*all surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply*” where TDS concentrations are less than 3,000 mg/L. This resolution is adopted as part of Central Coast Regional Water Quality Control Board (CCRWQCB) Water Quality Protection Plan (Basin Plan) for the area. Accordingly, these standards fully govern the question of what groundwater is considered suitable or potentially suitable for municipal and domestic drinking water supply.

In addition, Resolution No. 68-16 requires that "*whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained*." This resolution is also known as the Antidegradation Policy and requires that the existing high quality of waters be maintained to the maximum extent possible. The resolution only allows degradation if it is consistent with maximum benefit to the people of the state, will not unreasonably affect present and potential beneficial uses, and will not result in water quality lower than applicable standards.

The CCRWQCB recently emphasized the importance of these standards when it sent a letter to the Groundwater Sustainability Agencies (GSAs) in the Salinas Valley area, dated December 20, 2019, regarding "*Issues for Consideration in Development of Groundwater Sustainability Plans for Central Coast Groundwater Basins*." Among other things, the letter states the following:

> *The Central Coast Water Board encourages GSAs to develop GSPs that protect existing high-quality waters and beneficial uses identified in the Basin Plan. Some of the beneficial uses specific to groundwater include municipal, domestic, agricultural, and industrial supply, and preservation of biological habitats of significance in the form of groundwater dependent ecosystems. Water Boards are required to protect high-quality waters by Resolution No. 68-16, "Statement of Policy with respect to Maintaining High Quality of Waters in California," which is also known as the State Antidegradation Policy. The Central Coast Water Board cannot authorize any degradation, or lowering of the baseline water quality, without first finding that the degradation complies with Resolution No. 68-16.*

These requirements apply regardless of whether the resource is being actively used or requires treatment prior to use.

In consideration of the above standards, MGSA determined that where TDS concentrations are lower than 3,000 mg/L, Resolution No. 88-63 applies and Resolution No. 68-16 requires that the existing groundwater quality be maintained. While for public water systems water treatment would be required to achieve the SMCLs prior to water distribution, the requirements of the above SWRCB resolutions are applicable and govern the characterization of groundwater resources and the establishment of sustainable management criteria for water quality.

To that end, the GSP adopted the term "low-TDS groundwater" to describe groundwater resources containing less than 3,000 mg/L TDS, characterized and determined the extent of these resources, and adopted appropriate sustainable management criteria, monitoring networks, and management actions for their sustainable management. This term was selected because the terms "freshwater" and "brackish water" can have multiple definitions. We note that actual active beneficial uses of this resource include groundwater-dependent ecosystems near the MGSA Area and small non-transient water systems reliant on groundwater located near Neponset, near the Marina Airport and near the regional wastewater treatment plant located east of the MGSA Area.

Seawater Intrusion

The GSP regulations require that a GSP include a description of the "*seawater intrusion conditions in the basin*" (23 CCR § 354.16(c)) and the *"[g]roundwater quality issues that may affect the supply and beneficial uses of groundwater*" (*id.* § 354.16(d)). GSPs must also include monitoring for "*seawater intrusion using chloride concentrations so that the current and projected rate and extent of seawater intrusion for each applicable principal aquifer may be calculated*" (*id.* § 354.34(c)(3)). As part of its Best Management Practices (BMPs) for Monitoring Networks[1] for seawater intrusion, California Department of Water Resources (DWR) emphasizes the importance of capturing "*changes in water quality conditions associated with the dynamic seawater-freshwater interface along coastal aquifers. This system is largely controlled by differences in water density and hydraulic head to maintain the advancement of the seawater front. A robust understanding is necessary to identify the preferential flow pathways where seawater can intrude inland and associate with freshwater groundwater extractions or declines in head*." In compliance with these requirements, the MGSA GSP uses all the available data, including AEM geophysical data, to describe the extent of seawater intrusion. Please refer to Master Response 5 – Use and Interpretation of Geophysical Studies regarding the application of AEM to assess the extent of low-TDS groundwater in and near the MGSA Area, and its relationship to the dense, saline water wedge that intrudes the Subbasin from the west.

In keeping with the above DWR guidance, it is important to consider both density-driven flow and advective solute transport to assess seawater intrusion, as well as to have a thorough understanding of potential preferential flow pathways. The findings of the AEM studies, coupled with the results of groundwater quality and level data from studies completed for the MPWSP support the following conclusions. MGSA is at the seaward edge of an area affected by seawater intrusion that extends inland for several miles; however, not all seawater-intruded groundwater is equal. Density-driven flow is important near the coast, where dense, highly saline water intrudes from the west. It is here that the Ghyben-Herzberg relationship between a dense saline water wedge and the over-riding lower-density zone of low-TDS water is important. Further inland, solute migration is driven by induced groundwater gradients resulting from inland pumping. Seawater intrusion in this area is characterized by much lower TDS and chloride concentrations that may or may not exceed the standards set by SWRCB Resolution No. 88-63. Irrespective of the actual or potential beneficial uses of these waters, they are considered seawater intruded if they exceed the 500 mg/L chloride standard. In both the nearshore and inland areas, consideration of potential preferential pathways for vertical seawater intrusion is important. Vertical intrusion can occur through aquitard gaps or heterogeneity, or through improperly constructed or abandoned wells. In the nearshore areas, vertical and horizontal intrusion is

[1] California Department of Water Resources (DWR), *Best Management Practices for the Sustainable Management of Groundwater, Monitoring Networks and Identification of Data Gaps BMP*, California Department of Water Resources Sustainable Groundwater Management Practices (December 2016).

driven by hydraulic or density gradients, or combinations of the two. Conversely, in the inland areas it is driven by hydraulic gradients.

Much of the emphasis on characterization and monitoring of seawater intrusion to date, especially in regard to the work conducted by CalAm and HWG for the MPWSP, has been on the horizontal migration of dissolved solutes driven by lateral hydraulic gradients. Density driven flow and preferential pathways for vertical seawater intrusion have not been considered. It should be noted that the long screen intervals of most of the monitoring wells installed in and near the MGSA Area limit the ability to confirm the vertical salinity distribution in the aquifer and the vertical variability in groundwater gradients and flow conditions. Data from long-screen monitoring wells, which represent averaged conditions, and boring logs, which must be interpolated, are best understood and interpreted with geophysical data that are based on an indirect interpretation of subsurface conditions but present a continuous three-dimensional dataset. Without the use of both datasets, the ability to understand subsurface conditions and seawater intrusion dynamics is hampered. Similarly, models used to assess seawater intrusion must be capable of simulating density driven flow, solute transport, and preferential migration pathways. The absence of such a model is a significant data gap identified in the GSP that will be addressed in coordination with the other agencies having jurisdiction in the area.

Groundwater Extraction

The exact effect of groundwater extraction in the MGSA Area on the interface between the dense saline water wedge intruding the upper aquifer system and the overlying low-TDS groundwater zone has not been evaluated, but a probable effect is that capture of groundwater from the seaward-flowing low-TDS groundwater zone by extraction wells would capture substantial volumes of low-TDS groundwater and decrease the extent and thickness of this zone, which could allow thickening and further landward and downward migration of the saline water wedge driven by increased density gradients. The AEM data demonstrate that aquitards which would impede downward vertical migration of seawater-intruded groundwater between the 180-Foot and 400-Foot Aquifers elsewhere in the Subbasin are locally thin or absent in portions of this area, allowing higher density saline groundwater to migrate downward as vertical density gradients increase, impacting the 400-Foot Aquifer if the saline water wedge within the 180-Foot Aquifer thickens or moves further inland. Finally, the underlying Deep Aquifer system provides a source of drinking water for the City of Marina and is not yet affected by seawater intrusion. The aquitard system overlying the Deep Aquifer is heterogeneous and both USGS and MCWRA have questioned its integrity. As such, a key objective of the MGSA GSP is to protect the existing high-quality waters in the Deep Aquifers underlying the MGSA Area from potential degradation by vertical seawater intrusion caused by groundwater extraction from the upper aquifer system. We note that horizontal seawater intrusion is also a significant concern for the Deep Aquifer. Existing groundwater extraction from the Deep Aquifer that could drive the horizontal migration of seawater intrusion in the vicinity of the MGSA Area occurs in the adjacent subbasin; nevertheless, as noted in Section 6.5.10, this GSP will support SVBGSA's and MCWRA's proposal to strengthen the existing prohibition against the construction of new Deep Aquifer wells until more is known about the sustainable yield of this aquifer. In addition, in coordination with MCWD GSA and SVBGSA, MGSA will continue to evaluate the need for modification of its sustainable management criteria, monitoring programs and management actions to best address seawater intrusion into the Deep Aquifer

As described in Section 3.1.9 of the MGSA GSP, extraction of water from slant wells for the MPWSP desalination plant would capture saline groundwater originating outside the western (seaward) Subbasin boundary, saline groundwater from aquifers within the Subbasin, and low-TDS groundwater from aquifers within the Subbasin. In their comments, HWG states that "*the vast majority of extracted water will be sourced from the ocean, and Dune Sand Aquifer water quality is near seawater quality at the coast and brackish water quality inland*" …and … *"[f]ew localized areas of lower TDS water are present*." However, there are several credible studies cited in the GSP that contradict this assertion by the HWG and demonstrate that much greater amounts of low TDS groundwater would be extracted by these wells than HWG apparently believes.

Indeed, the California Coastal Commission retained an independent hydrogeologic consultant to review the body of hydrogeologic data compiled for the area by the Stanford AEM team, CalAm, HWG, and several consultants retained by local water agencies and came to the following conclusions:[2]

> *There are several significant data gaps regarding the groundwater flow paths in the Dune Sands Aquifer that should be addressed through data collection. The modeling should also be re-done with new data, with development of a new conceptual site model, and with modifications to the previous model to reflect this new information.*
>
> *Cal-Am's modeling appears to be flawed in that it did not account for potential fresh water capture beyond an identified capture zone. There is uncertainty about how much additional fresh water capture could occur, depending on how the model interprets the hydrogeology of the Dune Sands Aquifer and an underlying aquitard.*
>
> *Groundwater monitoring and modeling done during Cal-Am's CEQA review showed that Cal-Am would extract mostly seawater from the aquifers, although recent studies done by other parties show that Cal-Am could extract more "non-seawater," including fresh or brackish water that others might rely on as a source of drinking water. The Commission's independent review of key issues in these studies determined that Cal-Am could adversely affect more of these "non-seawater" supplies than had been previously identified, resulting in an inability to find that the project conforms to the provision of Coastal Act Section 30231 requiring that development prevent the depletion of groundwater supplies.*
>
> *Some residents have expressed concerns that the slant wells may compromise aquifers underlying the City, which could lead to sea water intrusion and an eventual need for a new water supply system, which would almost certainly increase their water rates as well. Although Cal-Am asserts that Marina's water supply will not be impacted under*

[2] California Coastal Commission, 2019. Addendum to Staff Report for CDP Application 9-19-0918 and Appeal A-3-MRA-19-0034 (California American Water Company) (November 4, 2019).

both drought and non-drought conditions, a credible assertion has been made that it could result in a depletion of groundwater supplies . . . .

Conceptual Model

The above conclusions demonstrate that MGSA appropriately evaluated and considered the AEM and electrical resistance tomography (ERT) studies together with boring and well data to establish the hydrogeologic conceptual model for the GSP, including identification of key data gaps. The geophysical studies completed by the Stanford University team and cited in the GSP used well-established methodologies to create two- and three-dimensional images of hydrostratigraphic and groundwater quality conditions at a scale and continuity that is not possible to assess from the borings and wells in the area (*See* Master Response 5 – Use and Interpretation of Geophysical Studies). The AEM data provide an additional level of insight into the nearshore seawater intrusion dynamics and the potential effects of groundwater extraction in the MGSA Area. The AEM data reflecting the discontinuity of aquitards and the existence of low-TDS water underlying the area were considered valid by the California Coastal Commission's independent consultant.[3] The following key conceptual model conclusions are derived from this analysis:

- The hydrostratigraphy is more spatially variable than assumed in the existing regional conceptual models. Specifically, aquitards that separate hydrostratigraphic units include discontinuities and heterogeneity that has allowed vertical migration of seawater intrusion.
- The upper aquifer system is not uniformly seawater intruded – water quality is spatially variable both vertically and laterally, creating density gradients that drive groundwater flow and salinity transport.
- Near the shore, a highly saline, dense groundwater wedge extends inland and downward through the aquifer system and is juxtaposed against a less dense low-TDS groundwater zone that is locally recharged through the Dune Sand Aquifer.
- Inland seawater intrusion occurs at lower solute concentrations that is driven by inland-directed hydraulic gradients; however, vertical groundwater flow also occurs at some locations from the 180-Foot to the 400-Foot Aquifer.
- Groundwater extraction in the MGSA Area would change the existing equilibrium between different salinity zones, changing the balance of density-driven and hydraulic gradient-driven flow. Such a disruption has the potential to induce lateral and vertical migration of highly saline groundwater.
- The existing data suggest that the fraction of low-TDS aquifer water extracted by the proposed slant wells for the MPWSP could well be substantially greater than the HWG's 10 percent estimate, which was based exclusively on a simplified groundwater model that did not consider aquifer system heterogeneity or the existence of an extensive zone of low-TDS groundwater with a designated beneficial use for domestic and municipal supply.

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[3] Weiss Associates, 2019. Independent Hydrogeological Review of Recent Data and Studies Related to California American Water's Proposed Monterey Regional Water Supply Project. November 1.

MASTER RESPONSE 5

USE AND INTERPRETATION OF GEOPHYSICAL STUDIES

SUMMARY OF COMMENTS

The following public comments received on the Groundwater Sustainability Plan (GSP) for the Marina Groundwater Sustainability Agency (MGSA) Area of the 180/400 Foot Aquifer Subbasin (Subbasin) voice similar general concerns regarding the use and interpretation of studies to prepare the GSP:

- California American Water Company (CalAm) comments that the GSP disregards sound science and relies on incorrect and invalid hydrogeologic studies and/or interpretations that have been rejected by various peer reviewers, regulatory agencies, and the courts (Comment CalAm 7).
- Monterey County Water Resources Agency (MCWRA) states the GSP mischaracterizes/ overstates the airborne electromagnetics (AEM) work and the information that can be interpreted from it. They indicate that Chapters 4 and 5 of the GSP overstate the resolution of AEM to monitor water quality contrasts or concentration changes and that AEM is best suited for determining qualitative changes rather than quantifying changes in water quality (Comment MCWRA 4). They are unsure if AEM or induction logging has the resolution to distinguish the scale of changes used to define the minimum water quality and seawater intrusion minimum thresholds (Comment MCWRA 37).
- Hydrogeologic Working Group (HWG – a group of four individual consultants who represent California American Water Company [CalAm] and the Salinas Valley Water Coalition) comment that the interpretations of the AEM data presented in the reports and papers authored by the Stanford geophysics team include many flaws and uncertainties (Comment HWG 2). They contend that the GSP presents a flawed hydrogeologic conceptual model based on incorrect and invalid hydrogeologic interpretations of the AEM data that are inconsistent with available field data, that HWG has demonstrated gaps in the aquitard system identified by the AEM and other geophysical studies are incorrectly interpreted and do not exist, and that other hydrogeologic conclusions from the AEM study are incorrect and/or misleading (Comments HWG 2, 30, 45, 47, 58, and 112). They state the AEM data interpretations were not ground-truthed with borehole lithologic logs, geophysical logs, water level data, and water quality data, and that many of the AEM data interpretations are in direct opposition to readily available field data (Comment HWG 47). With respect to water quality interpretations, HWG claim that the available water quality data indicate the AEM interpretations in the GSP are based on flawed data or interpretations (Comments HWG 62 and 112). They state that AEM data must be validated through physical water quality data before it can be used as a reference point (Comment HWG 112).

RESPONSE

Background

The GSP regulations require that *"[e]ach Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow*" (Title 23, California Code of Regulations (23 CCR) § 354.18(e)). The regulations state that *"'[b]est available science' refers to the use of sufficient and credible information and data, specific to the decision being made and the time frame available for making that decision, that is consistent with scientific and engineering professional standards of practice*." (23 CCR § 351(h)).

In compliance with this requirement, MGSA's GSP objectively considered all the available data to provide a working understanding that is sufficient to address local hydrogeologic conditions, to understand the associated uncertainties and data gaps, and to develop plans to address them as needed to assure sustainable groundwater management. Chapter 8 of the GSP cites 128 references that were used in establishing the basin setting, evaluating current conditions, and establishing the sustainable management criteria of the GSP. As discussed in Chapter 1 and presented in detail in Chapter 3, the hydrogeology of the 180/400 Foot Aquifer Subbasin (Subbasin) has been a topic of numerous investigations and monitoring programs by Monterey County Water Resources Agency, United States Geological Survey, and the proponents of various water supply and management projects. Most recently, subsurface investigation and groundwater monitoring were conducted within and in the vicinity of the MGSA Area by the proponents of the Monterey Peninsula Water Supply Project (MPWSP) and later discussed by HWG, seawater intrusion investigations were performed by MCWRA, and a Stanford University research team investigated the area by using geophysical techniques as part of a larger study to assess the three-dimensional variability in aquifer stratigraphy and water salinity in the area of seawater intrusion along the Monterey Bay coastline. As stated in the GSP, all of these studies were considered in establishing the conceptual hydrogeologic model for the GSP area.

Applicability and Reliability of AEM

Geologic and groundwater supply investigations often rely on a combination of surface mapping, geophysical techniques, and data from borings or wells. One method is not inherently superior to the others, but each is subject to its own inherent set of advantages and limitations. Typically, the best results are obtained when multiple methods are considered together. Surface mapping provides two-dimensional information from which interaction with the surface environment (e.g., groundwater recharge and discharge) may be interpreted, and subsurface conditions may be inferred. Borings and wells can directly measure subsurface conditions and material properties, but they are limited to a single point and require the interpolation of data between boring locations to assess subsurface conditions. The points between which the data must be interpolated are often relatively widely spaced because of cost or other practical considerations. Geophysical methods can assess subsurface conditions in two-dimensional sections or in three dimensions, eliminating the need for interpolation between measurement points, and can be implemented over a wide area at a relatively modest cost. Geophysical methods use subsurface electrical, electromagnetic, seismic, or gravimetric data to infer stratigraphic and chemical composition (e.g., water quality) data. These methods are most effective when calibrated to lithologic, electrical, or water quality data from borings or wells.

The geophysical studies completed by Stanford University and cited in the GSP used well-established methodologies (including electrical resistance tomography (ERT) and AEM techniques). A number of references are cited in the GSP that provide more detailed information regarding industry standard practices, data validity and applications of these methods. These methodologies are widely used in the groundwater community to create two- and three-dimensional images of hydrostratigraphic and groundwater quality conditions and seawater intrusion characteristics in nearshore areas, at a scale and continuity that is not possible to assess from the borings and wells in the area. The data were calibrated to boring geophysical logs and water quality data, as discussed in the cited reports, and specific examples were included that demonstrate the application of the data to identify gaps in aquitards and the resulting vertical downward migration of seawater affected water from shallower to deeper aquifers.

MGSA utilized this valuable data, gathered by one of our country's leading educational institutions, along with all other available data, to prepare the MGSA's GSP in the shoreward portion of the Subbasin. In contrast, the Salinas Valley Basin Groundwater Sustainability Agency's (SVBGSA) GSP for the Subbasin does not reference or use this data, and relies on very few datapoints near (within four miles of) the shore.

Notably, other agencies are using the northward extension of the same geophysical datasets for SGMA groundwater sustainability planning purposes. For example, in its recent draft GSP for the Santa Cruz Mid-County Subbasin, the Santa Cruz Mid-County Groundwater Agency (MGA) notes the following:

> *In May 2017, the MGA successfully completed an offshore Airborne Electromagnetic (AEM) geophysical survey to assess groundwater salinity levels and map the approximate location of the saltwater/freshwater interface in the offshore groundwater aquifers. This important data will inform the assessment of the extent and progress of seawater intrusion into the Basin and the management responses. The MGA anticipates repeating the AEM survey on a five-year interval (2022) to identify movement of the interface and assess seawater intrusion.*

Taryn Ravazzini, DWR Deputy Director for Statewide Groundwater Management, provided the following information at the November 2019 meeting of the California Water Commission during a presentation on DWR's activities and milestones related to SGMA:[1]

> *The Department, along with the State Water Resources Control Board (SWRCB), has a partnership with Stanford University and the United Kingdom of Denmark to conducting*

[1] Austin, Chris, 2019. CA Water Commission: An update on implementation of the Sustainable Groundwater Management Act (or SGMA): Maven's Notebook, https://mavensnotebook.com/2019/11/26/

*an AEM study . . . . Ms. Ravazzini likened AEM to an MRI for the subsurface. The data are gathered by transmitting an electromagnetic signal from a system attached to a plane or helicopter. The process gives a visual of the geology almost 1500 feet down and detects clay layers, sand layers, and the like. "*It allows us to get a better understanding of the characterization of the basins which then allows us to better target where we recharge so that we can improve the groundwater levels and the health of the aquifer*," she said.*

The partnership has been doing pilot studies in Butte County, Indian Wells Valley, and San Luis Obispo County. Stanford University is currently pulling the data together. Ms. Ravazzini said the Department is looking to take that study statewide, so one of the targets for 2020/2021 is to build out that AEM study.

In another current example of the application of AEM to hydrostratigraphic and water quality studies, AEM is being used as a major component of a regional study of groundwater quality adjacent to oil and gas fields in the San Joaquin Valley.[2] AEM resistivity models are being used to delineate groundwater salinity in an effort to locate groundwater adjacent to oil and gas fields that could have future beneficial use. AEM is also being used to assess hydrogeologic controls on fluid transport between oil and gas operations and protected groundwater. This work is being completed under contract to the SWRCB under its Regional Monitoring Program of oil and gas field areas under SB64. The objective of the Regional Monitoring Program is to characterize and monitor groundwater in potential risk zones and identify where vulnerable beneficial use water resources are located. Part of that effort will systematically delineate aquifer zones containing less than 3,000 milligrams per liter (mg/L) total dissolved solids (TDS) and between 3,000 and 10,000 mg/L TDS to help create a tiered approach for the regional monitoring.[3]

Based on the above information, we offer the following conclusions in response to the comments discussed above:

- AEM is a proven, effective and state-of-the-art technology commonly used to explore and characterize subsurface hydrostratigraphic and water quality conditions for groundwater resources studies. We note that as pointed out in prior correspondence from MGSA, the AEM studies have not been deemed incorrect or invalid, or rejected by anyone except CalAm and the individuals who call themselves the HWG.
- AEM is being used by state and federal agencies for the precise purpose of assessing groundwater flow conditions and zones of groundwater containing water of a quality better than 3,000 mg/L TDS with a view to the protection of those zones.
- AEM is being used and proposed to be used for monitoring of changes in water quality, specifically related to advancing seawater intrusion and changes in the zones containing

[2] Ball, 2018. Mapping protected groundwater adjacent to oil and gas fields, San Joaquin Valley, California. Paper presented at AEM2018, 7th International Workshop on Airborne Electromagnetics.

[3] https://www.waterboards.ca.gov/water_issues/programs/groundwater/sb4/regional_monitoring/

groundwater with less than 3,000 mg/L TDS. Induction logging is based on the same concept and is also suitable for this purpose. Nevertheless, we acknowledge and appreciate MCWRA's comment that the limitations of inductance logging must be recognized in the proposed measurable objectives discussed in Chapter 4 and the monitoring program discussed in Chapter 5 of the GSP. Please refer to our responses to Comments MCWRA 4 and 37 for a description of changes to these chapters that were adopted to address these comments.

Interpretation of AEM to Inform the Hydrogeologic Conceptual Model

The use of AEM to interpret the subsurface hydrostratigraphy and water quality in the vicinity of the MGSA Area has been a point of contention between the proponents of the MPWSP, including CalAm, HWG, and CEMEX on the one side, and the Stanford University geophysics research group and consultants on the other side. The MPWSP proponents reject the conclusions presented by the Stanford team and contend the hydrostratigraphy of the area is well understood, aquitards are relatively continuous, and groundwater quality can be uniformly described as seawater intruded beyond the ability to support beneficial uses.

The Stanford team and several local consultants contend the AEM data provide an additional level of insight into the hydrostratigraphy and water quality of the area that indicates aquitards are not as continuous as previously thought and water quality is more variable, and a significant zone of groundwater containing less than 3,000 mg/L TDS exists in the upper aquifer system which has potential beneficial uses. The California Coastal Commission retained an independent hydrogeologic consultant to review the data and interpretations provided by both groups and came to the following conclusions:[4]

> *"Commission staff contracted with an independent hydrogeologist to review these studies and conclusions and to reach independent conclusions about these issues. That independent review concluded that there are several substantial remaining uncertainties about how Cal-Am's extraction of groundwater will affect the groundwater basin and the amount of potentially usable groundwater within the area."*
>
> *"There are several significant data gaps regarding the groundwater flow paths in the Dune Sands Aquifer that should be addressed through data collection. The modeling should also be re-done with new data, with development of a new conceptual site model, and with modifications to the previous model to reflect this new information."*
>
> *"Cal-Am's modeling appears to be flawed in that it did not account for potential fresh water capture beyond an identified capture zone. There is uncertainty about how much additional fresh water capture could occur, depending on how the model interprets the hydrogeology of the Dune Sands Aquifer and an underlying aquitard."*
>
> *"Groundwater monitoring and modeling done during Cal-Am's CEQA review showed that Cal-Am would extract mostly seawater from the aquifers, although recent studies done*

[4] California Coastal Commission, 2019. Addendum to Staff Report for CDP Application 9-19-0918 and Appeal A-3-MRA-19-0034 (California American Water Company) (November 4, 2019).

by other parties show that Cal-Am could extract more "non-seawater," including fresh or brackish water that others might rely on as a source of drinking water. The Commission's independent review of key issues in these studies determined that Cal-Am could adversely affect more of these "non-seawater" supplies than had been previously identified, resulting in an inability to find that the project conforms to the provision of Coastal Act Section 30231 requiring that development prevent the depletion of groundwater supplies."

"Some residents have expressed concerns that the slant wells may compromise aquifers underlying the City, which could lead to sea water intrusion and an eventual need for a new water supply system, which would almost certainly increase their water rates as well. Although Cal-Am asserts that Marina's water supply will not be impacted under both drought and non-drought conditions, a credible assertion has been made that it could result in a depletion of groundwater supplies . . . ."

The above conclusions demonstrate that MGSA appropriately evaluated and considered the AEM and ERT studies together with boring and well data to establish the hydrogeologic conceptual model for the area. Questions raised by the AEM data about the continuity of aquitards and the existence of low-TDS water underlying the area were considered valid by the California Coastal Commission's independent consultant.[5] Further refinement of the hydrogeologic conceptual model, and additional modeling, will be needed to adequately understand the effects of groundwater extraction in the MGSA Area. These data gaps are recognized in Chapter 3 of the GSP, and specific management actions to address them are discussed in Chapters 6 and 7. For the initial version of the Final GSP, the current hydrogeologic conceptual model presents the best understanding of potential conditions to support sustainable groundwater management as refinement occurs.

[5] Weiss Associates, 2019. Independent Hydrogeological Review of Recent Data and Studies Related to California American Water's Proposed Monterey Regional Water Supply Project. November 1.

MASTER RESPONSE 6

SUSTAINABLE MANAGEMENT CRITERIA

SUMMARY OF COMMENTS

The following public comments received on the Groundwater Sustainability Plan (GSP) for the Marina Groundwater Sustainability Agency (MGSA) Area of the 180/400 Foot Aquifer Subbasin (Subbasin) voice similar general concerns regarding the Sustainable Management Criteria adopted in the GSP and resulting coordination requirements between the MGSA GSP and the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) GSP.

- Several commenters question the technical basis of the sustainable management criteria established in the GSP. California American Water Company (CalAm) claims the GSP relies on incorrect and invalid hydrogeologic studies and/or interpretations and that as a result, it includes inappropriate and unsupported sustainable management criteria (Comment CalAm 7). CEMEX is concerned that the GSP provides an incredibly stringent definition of significant and unreasonable reduction in groundwater storage (Comment CEMEX 6). The Hydrogeologic Working Group (HWG - a group of four individual consultants who represent CalAm and the Salinas Valley Water Coalition) asserts that a flawed Basin Setting analysis leads to flawed and improper sustainable management criteria in the GSP (Comment HWG 2), and that the GSP sets strict sustainable management criteria based on inappropriate and flawed interpretations of technical data and analyses (Comment HWG 3 and 97). They believe the justification for the groundwater level decline minimum threshold adopted in the GSP is inadequate (Comment HWG 103) and that the definition of undesirable results for groundwater quality degradation has no relevance to protecting groundwater in terms of chloride or nitrate concentrations, particularly when chloride and nitrate concentrations already exceed the maximum contaminant levels for drinking water (Comment HWG 107). In a related comment, SVBGSA asserts that the groundwater elevation minimum thresholds set for the Dune Sand Aquifer are not required or enforceable because the SVBGSA does not consider it to be a principal aquifer (Comment SVBGSA 14).

- CEMEX, Monterey County Water Resources Agency (MCWRA), SVBGSA, and HWG express concerns that the sustainable management criteria established in the GSP reference wells and areas located outside the MGSA Area. CEMEX states there is no feasible way for MGSA to enforce standards outside its jurisdictional boundaries and that any activities outside the MGSA Area that trigger these standards will be able to operate with impunity (Comment CEMEX 7). MCWRA points out that an agreement between MGSA and SVBGSA will be needed to address this concern (Comment MCWRA 29). SVBGSA states that MGSA "can only set management criteria for wells within its boundaries" (Comments SVBGSA Letter 4 and 5) and that the discussion of undesirable results should not consider the Salinas River and associated groundwater-dependent ecosystems because it is not located in the MGSA Area (Comment SVBGSA 39). Similarly, HWG asserts that the GSP attempts to set sustainable management criteria outside of the plan area that are unjustified and outside MGSA's jurisdiction (HWG 3 and 103).

- SVBGSA expresses a concern that coordination between the MGSA and SVBGSA GSPs will be difficult to achieve because SGMA requires a single definition of undesirable results for each sustainability indicator for each Subbasin, and the two GSPs state significantly different undesirable results (Comment SVBGSA Letter 7). They go on to state that the GSP fails to establish a single, adequate sustainable management criterion for the MGSA Area that complies with SGMA's regulations, and therefore, the GSPs cannot be coordinated (Comment SVBGSA 12). They claim this is because SGMA requires a single undesirable result for each sustainability indicator in the Subbasin, and since undesirable results are a combination of minimum thresholds, the minimum thresholds in each GSP must be defined using comparable criteria, and currently, minimum thresholds are not defined comparably in the two GSPs.

In addition to the above comments, SVBGSA and MCWRA made other comments regarding the sustainable management criteria in the GSP which are addressed in the Response to Comments Matrix and the attached revision marked edits implemented to Chapters 4, 5, and 6 of the GSP. Many of these comments were useful to align the sustainable management criteria in the GSP more closely with that of SVBGSA's GSP and refine their alignment with the requirements of SGMA.

RESPONSE

Background

The GSP regulations state that *"[s]ustainable management criteria and projects and management actions shall be commensurate with the level of understanding of the basin setting, based on the level of uncertainty and data gaps*" (California Code of Regulations Title 23 (23 CCR) § 350.4(d)). For each Minimum Threshold, the GSP regulations require a six-step assessment process including the following (*Id.* § 354.28(b)):

> *"(1) The information and criteria relied upon to establish and justify the minimum thresholds, … supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting.*
>
> *(2) The relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results. …*
>
> *(3) How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.*
>
> *(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.*
>
> *(5) How state, federal, or local standards relate to the relevant sustainability indicator. …*
>
> *(6) How each minimum threshold will be quantitatively measured. …"*

Technical Basis for Sustainable Management Criteria

Each GSA is both permitted and required to develop locally-appropriate sustainable management criteria based on local hydrogeologic conditions, beneficial groundwater uses and users, current and future groundwater demand, stakeholder input, and local management preferences. As noted above, the development of sustainable management criteria must be supported by technical information regarding the basin setting and the use of other appropriate tools. As discussed in Master Response 5 – Use and Interpretation of Geophysical Studies, the GSP relies on the full range of available data sources, the application of which is fully justified and which represent the best available information and science and are consistent with scientific and engineering professional standards of practice. We refer the commenters and interested parties to the cited references for additional information regarding the studies relied upon to support the hydrogeologic conceptual model, analysis of current conditions and water budget analysis, as well as the detailed discussions presented in detail in Chapter 3. The basis for development of sustainable management criteria for each sustainability indicator is discussed in accordance with the six analysis steps discussed above in Sections 4.4 through 4.9. Based on this information, the sustainable management criteria meet SGMA requirements for development of sustainable management criteria.

The GSP regulations require that a GSA consider "*the level of uncertainty and data gaps*" in establishing sustainable management criteria. As discussed in Chapters 3 and 4, MGSA considered a number of key data gaps in the establishment of the sustainable management criteria for this GSP. In several cases, including the establishment of sustainable management criteria for groundwater-dependent ecosystems and groundwater storage reduction, interim criteria were developed to avoid potential undesirable results while studies are undertaken, new modeling tools become available, and data are gathered to address data gaps. These criteria are appropriate given the available data, the existence of data gaps, and the objective of avoiding undesirable results, and will be refined in future GSP updates based on a refined understanding of the basin setting.

Validity of Sustainable Management Criteria Outside a GSA's Jurisdictional Boundaries

The comments regarding the applicability and appropriateness of establishing sustainable management criteria outside a GSA's jurisdictional boundaries are addressed in Master Response 2 – MGSA's Jurisdiction and GSP Requirements. A GSA is responsible for establishing the necessary sustainable management criteria and monitoring networks to implement its GSP and achieve its sustainability goals within its jurisdictional boundaries. The comments misinterpret the function of the sustainability criteria, implying that it is to improperly project regulatory authority outside the GSA's jurisdictional boundaries. It is not. Rather, their purpose is to appropriately and fully inform GSA actions to regulate groundwater extraction within the GSA's boundaries. It is important to note that the setting in which these activities are taking place represents a data, monitoring, and management gap in SVBGSA's GSP relative to local sustainable management, as discussed in Master Response 3 – GSP Coordination Requirements. The regulations and guidelines place no limitations on whether sustainable management criteria or monitoring locations may extend outside a GSA's jurisdictional boundaries. Only a GSA's ability to regulate groundwater extractors or impose fees is limited to these boundaries.

By the very nature of groundwater flow, a GSP must consider conditions outside of its plan boundaries when multiple GSPs are prepared in a basin or subbasin. SGMA and its regulations recognize this reality and require that a GSA consider basin-wide factors when drafting its GSP. However, coordination between GSAs is important in the establishment, monitoring, and implementation of sustainable management criteria outside a GSA's boundaries.

Coordination of Sustainable Management Criteria

Master Response 3 – GSP Coordination Requirements discusses the responsibility and need to coordinate the development and implementation of sustainable management criteria. SVBGSA, HWG, and MCWRA assert that the apparent existence of conflicts or differences between the local sustainable management criteria in MGSA's GSP and the regional sustainable management criteria in SVBGSA's GSP represents a deficiency in MGSA's GSP that prevents effective coordination. But as noted in the Master Response, the responsibility for coordination lies with both GSAs. In addition, differences in sustainable management criteria developed in light of local conditions and management requirements and criteria developed based on a more regional understanding and goals are expected, and indicate a need for local coordination in order to assure sustainable management.

These dynamics are illustrated in Comment SVBGSA 12, which indicates that *"(1) Coordination requires a single undesirable result be stated for each sustainability indicator in the Subbasin; (2) Undesirable results are a combination of minimum thresholds; (3) Therefore, the minimum thresholds in each GSP must be defined using comparable criteria; (4) Currently, the minimum thresholds are not defined comparably in the two GSPs.*" On this basis, SVBGSA concludes that the MGSA's GSP "*fails to establish a single adequate sustainable management criterion*," that the "*sustainable management criteria to not meet the requirements of the SGMA regulations*," and that "*the MGSA and SVBGSA GSPs cannot be coordinated.*" In short, SVBGSA assumes that because MGSA's local sustainable management criteria are different from MGSA's, they are deficient and non-compliant with SGMA, and coordination is impossible; when in fact, coordination is needed to assure sustainable management in the seaward portion of the Subbasin.

MASTER RESPONSE 7

DUNE SAND AQUIFER

SUMMARY OF COMMENTS

The following public comments received on the Groundwater Sustainability Plan (GSP) for the Marina Groundwater Sustainability Agency (MGSA) Area of the 180/400 Foot Aquifer Subbasin (Subbasin) voice similar general concerns regarding the GSP's characterization of the Dune Sand Aquifer, designation as a principal aquifer, and potential resulting conflicts with the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) GSP. The following general comments were received:

- Monterey County Water Resources Agency (MCWRA) comments that a conflict exists between the MGSA GSP and the SVBGSA GSP regarding principal aquifers within the 180/400 Foot Aquifer Subbasin. They indicate that in the SVBGSA GSP the Dune Sand is not considered a principal aquifer because it is "*thin, laterally discontinuous, and a minor source of water*," and they question how the MGSA GSP can be reconciled with the SVBGSA GSP regarding treatment of the Dune Sand Aquifer (Comment MCWRA 7).

- SVBGSA states that coordination between the two GSPs requires a consistent description of the principal aquifers and hydrogeology, and that coordination between the two GSPs will not be possible until there is agreement on whether or not the Dune Sand Aquifer constitutes a principal aquifer (Comments SVBGSA Letter 5 and Comment SVBGSA 10). They are concerned that the MGSA GSP relies on the water budget and other information from the SVBGSA 180/400-Foot Aquifer Subbasin GSP, which does not include the Dune Sand Aquifer as a principal aquifer (Comment SVBGSA 1a). In addition, they assert that no sustainable management criteria are required or enforceable for the Dune Sand Aquifer because it is not considered a principal aquifer (Comment SVBGSA 14).

- Hydrogeologic Working Group (HWG – a group of four individual consultants who represent California American Water Company [CalAm] and the Salinas Valley Water Coalition) comment that the entire document is based on the premise that the groundwater resources within MGSA can be used beneficially and that groundwater extraction within MGSA from the Dune Sand Aquifer harms that resource (Comment HWG 1). They are concerned that the MGSA GSP designates the Dune Sand Aquifer as a principal aquifer and assigns minimum thresholds and measurable objectives, thereby creating a conflict with the SVBGSA GSP. They state that SVBGSA acknowledged that even though Marina Coast Water District's (MCWD's) consultants requested that the Dune Sand Aquifer be designated a principal aquifer in the SVBGSA GSP, they specifically declined to do so (Comment HWG 6). HWG question the hydrogeologic conceptual model for the Dune Sand Aquifer that characterized aquifer properties and groundwater flow (Comments HWG 10, 25, 26, 27, and 42). In addition, they contend the MGSA GSP mischaracterizes the Dune Sand Aquifer because it is not commonly used for drinking water or for agricultural irrigation (Comments HWG 23 and 35).

RESPONSE

Background

The GSP regulations require that *"[e]ach [GSP] include a hydrogeologic conceptual model of the basin based on technical studies and qualified maps that characterizes the physical components and interaction of the surface water and groundwater systems in the basin"* (Title 23, California Code of Regulations (23 CCR) § 354.14(a)). The regulations also identify the level of detail to be included for the hydrogeologic conceptual model to aid in describing the basin setting for the GSP development and sustainability analysis. In particular, they require characterization of the principal aquifers and aquitards including formation names, physical properties, structural properties, general water quality, primary use or uses, and any data gaps (*id.* § 354.14(b)(4)). *"'Principal Aquifers' refer to aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems*" (*id.* § 351(aa). For these aquifers, a GSP must describe groundwater and seawater intrusion conditions (*id.* § 354.16), establish minimum thresholds (*id.* § 354.28), and describe monitoring networks (*id.* § 354.34).

Characterization of the Dune Sand Aquifer

The Dune Sand Aquifer is present south of the Salinas River and is the predominant unconfined aquifer in the Marina and Fort Ord areas. It is composed of well sorted aeolian sand of Pleistocene to Recent age that extends up to 4 miles inland and underlies over 20 square miles of the 180/400 Foot Aquifer and Monterey Subbasins. It extends to depths ranging from 60 to over 100 feet beneath the ground surface. As a result of the relatively high permeability of the Dune Sand Aquifer, it supports high recharge rates and has little to no runoff. Notably, south of the Salinas River, there are no major creeks, streams, or rivers that drain at and in the vicinity of the MGSA Area which relates to the high permeability, high recharge rate of the Dune Sand Aquifer. Within much of the Marina and Fort Ord areas, the Dune Sand Aquifer overlies a clay layer known in Fort Ord groundwater investigations as the Fort Ord- Salinas Valley Aquitard (FO-SVA) which is identified regionally as part of the Salinas Valley Aquitard (SVA). When underlain by the SVA, the Dune Sand Aquifer is also referred to as the Perched Dune Sand Aquifer or the A-Aquifer. The underlying SVA or FO-SVA, where present, create a perched or semi-perched condition for the Dune Sand Aquifer. Near the coast and south of the Salinas River, the SVA thins out, bringing the Dune Sand Aquifer and the underlying 180-Foot Aquifer into hydraulic connection. The thinning of the SVA is coincident with a drop in the hydraulic head in the Dune Sand Aquifer. Here, the groundwater enters the underlying Upper 180-Foot Aquifer and flows southeastward, according to the hydraulic gradient.

As discussed in additional detail in Master Response 4 – Groundwater Quality and Seawater Intrusion), much of the Dune Sand Aquifer is seawater intruded; however, high recharge rates have resulted in large zones of groundwater containing concentrations of total dissolved solids (TDS) less than 3,000 milligrams per liter (mg/L). Airborne electromagnetic investigations of the extent of this low-TDS zone have estimated it contains over 200,000 acre-feet of groundwater (Gottschalk *et al.* 2018). This groundwater is identified State Water Resources Control Board (SWRCB) Resolution 88-63 and the Regional Water Quality Control Board's Basin Plan for the Central Coast Region (CCRWQCB 2019) as having a designated beneficial use for domestic and municipal supply. This low-TDS zone is juxtaposed against a wedge of saline groundwater that extends inland from near the shore downward through the upper aquifer system from near the shore. Under Ghyben-Herzberg dynamics, such interfaces in seawater intruded aquifers occur under equilibrium conditions with the position of the interface defined by the thickness of the overriding freshwater lens. As such, the low-TDS water zone in the Dune Sand Aquifer plays an important role in limiting the advance of saline water into the aquifer system.

Groundwater occurs at depth beneath the tall, active dunes at the coast but can be relatively shallow further inland and beneath hollows and depressions. As discussed in detail in Master Response 8 – Groundwater Dependent Ecosystems, near the MGSA Area, the Dune Sand Aquifer is hydraulically connected to and supports local groundwater dependent ecosystems (GDEs), including palustrine and emergent wetlands that support protected species. These GDEs were identified in accordance with the GSP regulations using data provided by the Department of Water Resources[1] and procedures recommended by The Nature Conservancy (TNC 2018). The groundwater dependence of these wetlands was further evaluated by analyzing the summertime evapotranspiration (ET) over a period of 10 years using remote sensing data. It was found that wetland ET decreased as groundwater levels declined approximately 2 feet, indicting these GDEs are highly dependent on groundwater levels in the Dune Sand Aquifer.

Based on the above information, we offer the following conclusions in response to the comments discussed in the previous section and in support of MGSA's designation of the Dune Sand Aquifer as a principal aquifer:

- The Dune Sand Aquifer provides groundwater that sustains sensitive and protected GDEs in the vicinity of the MGSA area. As such it meets the definition of a principal aquifer because it provides significant quantities of groundwater to surface water systems and beneficial users of surface water.
- The Dune Sand Aquifer underlies an area exceeding 20 square miles and stores significant quantities of groundwater (over 200,000 acre-feet) with a designated beneficial use for domestic and municipal supply under SWRCB Resolution No. 88-63.
- The low-TDS groundwater stored in the Dune Sand Aquifer exists in equilibrium juxtaposition against a wedge of dense saline water intruding through the upper aquifer system. This low-TDS zone may play an important role in impeding further inland and downward migration of dense saline groundwater into the Subbasin Aquifers, and thus affects the storage of significant and economical quantities of groundwater further inland and potentially deeper in the underlying Deep Aquifer.
- The MCWD GSA, which is responsible for the sustainable management of groundwater in the portions of the Monterey Subbasin adjacent to the MGSA Area, considers the Dune Sand Aquifer a principal aquifer. Designation of the Dune Sand Aquifer as a Principal Aquifer is necessary to comply with requirements in the GSP regulations.

[1] *The Department of Water Resources' Natural Communities Commonly Associated with Groundwater dataset is available at: https://gis.water.ca.gov/app/NCDatasetViewer/*

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MASTER RESPONSE 8

GROUNDWATER DEPENDENT ECOSYSTEMS

SUMMARY OF COMMENTS

The following public comments received on the Groundwater Sustainability Plan (GSP) for the Marina Groundwater Sustainability Agency (MGSA) Area of the 180/400 Foot Aquifer Subbasin (Subbasin) voice similar general concerns regarding the identification and characterization of groundwater dependent ecosystems (GDEs) in the vicinity of the MGSA Area, as well as the resulting coordination requirements between the MGSA GSP and the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) GSP.

- Monterey County Water Resources Agency (MCWRA) comments that GDEs near the MGSA Area are within the jurisdictional area of SVBGSA and outside the jurisdictional area of MGSA. They state that although SVBGSA recognizes the potential existence of GDEs in their GSP, their existence requires confirmation by field mapping. They further point out that the SVBGSA GSP does not mention decreasing groundwater levels as negatively affecting GDEs (Comment MCWRA 9). MCWRA points out that a coordination agreement between SVBGSA and MGSA should address GDEs (Comment MCWRA 29).

- SVBGSA states that coordination between the two GSPs will be difficult to achieve because MGSA sets sustainable management criteria for GDEs, including GDEs dependent on vernal ponds, which are entirely or mostly outside the MGSA Area (Comment SVBGSA Letter 5, Comment SVBGSA 1b). Regarding the discussion of surface water depletion that could affect potential GDEs along the Salinas River, SVBGSA contends the MGSA GSP can only define sustainable management criteria within the MGSA plan area (Comment SVBGSA 39).

- Hydrogeologic Working Group (HWG – a group of four individual consultants who represent California American Water Company [CalAm] and the Salinas Valley Water Coalition) comment that no GDEs occur within the MGSA Area, and MGSA has no jurisdiction to set sustainable management criteria for GDEs located in the SVBGSA GSP Area (Comments HWG 28, 69, 104, and 127). They voice concern that the role of surface water rather than groundwater in supporting these GDEs was not evaluated and state that the shallow aquifer beneath the GDEs is highly saline and would not support and actually would be detrimental to most types of vegetation (Comments HWG 28, 35, 41, and 104). They agree a correlation between groundwater elevations and GDE stress or habitat quality has not been established and question the minimum thresholds set for GDEs in the GSP (Comments HWG 48 and 67). They contend that there was no drawdown from test slant well pumping at potential GDE locations and that any changes in evapotranspiration (ET) were likely due to climatic factors (Comments HWG 67 and 68, 69, and 104). They state that it remains unclear whether the Dune Sand Aquifer plays any role in supporting GDEs (Comment HWG-127).

RESPONSE

As described in Master Response 2 – MGSA Jurisdiction and GSP Requirements, the Sustainable Groundwater Management Act's (SGMA's) regulations confirm that a GSA must consider and analyze the entire basin when drafting a GSP. In particular, the regulations provide that a GSP must describe the basin setting, which includes "*the information about the physical setting and characteristics of the basin and current conditions of the basin*" (Title 23, California Code of Regulations (23 CCR) § 354.12). The basin setting then "*serves as the basis for defining and assessing reasonable sustainable management criteria*" (*id*.). SGMA and its regulations require MGSA to consider basin conditions when identifying and accessing undesirable results (*id.* § 354.26(b)(1) and (2)).

SGMA's regulations specifically require a GSP to identify GDEs "within the basin" (*id.* § 354.16(g)). SGMA requires that all beneficial uses and users, including environmental users of groundwater, be considered in the development and implementation of GSPs (California Water Code (CWC) § 10723.2). It is clear from the regulations that in drafting a GSP, a GSA must assess whether groundwater extraction and management within its jurisdictional boundaries may cause adverse impacts to beneficial uses and users (including GDEs) both within and surrounding its jurisdictional boundaries. Similarly, in developing sustainable management criteria, undesirable results both within and surrounding a GSA must be considered and addressed. The basin characterization information and sustainable management criteria in the GSP will be used by MGSA to inform groundwater management within its jurisdictional boundaries and to coordinate plan implementation with SVBGSA in accordance with 23 CCR § 357.4, as discussed in Master Response 6 (Sustainable Management Criteria). It does not and will not encroach on or conflict with the SVBGSA's jurisdiction or GSP implementation; however, coordination with SVBGSA is required as described in the GSP.

In order to address the requirements of 23 CCR 354.16(g), MGSA used information provided by the California Department of Water Resources (DWR) as well as best available information as described below. MGSA identified potential GDEs in the area that could be affected by groundwater extraction and management within the MGSA Area using the DWR's "NC Dataset Viewer" of the "Natural Communities Commonly Associated with Groundwater" database[1] compiled by The Nature Conservancy (TNC) in cooperation with DWR. These potential GDEs were further evaluated using the best practices recommended by TNC (2018), and several GDEs, determined to likely be dependent on shallow groundwater within the Dune Sand Aquifer, were identified near the MGSA Area. The identified GDEs were then further evaluated based on information provided in the Coastal/Vernal Pond Management Plan adopted under the City of Marina Local Coastal Program (The Habitat Conservation Group 1994). As recommended by TNC, MGSA reviewed the GDE Pulse[2] website and the California Natural Diversity Database (CNDDB) (CDFW 2019) to identify the potential species that could be affected by sustainable groundwater management in the MGSA Area. Finally, the relationship between groundwater levels and

[1] *The Department of Water Resources' Natural Communities Commonly Associated with Groundwater dataset is available at: https://gis.water.ca.gov/app/NCDatasetViewer/*

[2] *The Nature Conservancy tool GDE Pulse is available at https://gde.codefornature.org/#/home*

summer evapotranspiration at one of the identified GDE areas was assessed to evaluate the historical effect of groundwater level variations on biomass productivity.

The above analysis was necessary because SVBGSA's GSP fails to provide complete information regarding the area surrounding the MGSA Area, leaving a data gap that SVBGSA intends to address at some unspecified date in the future. SVBGSA's GSP suggests that groundwater use by GDEs is minimal but does not provide any data to support this conclusion. It does not include an assessment of whether GDEs actually exist in the Subbasin, but defers further assessment and development of sustainable management criteria related to GDEs to the future. Thus, the assessment of GDEs in MGSA's GSP augments SBVGSA's plan with local data to inform implementation of MGSA's GSP. It does not conflict with SVBGSA's GSP as the commenters suggest. However, since the GDEs in question are within the SVBGSA's jurisdictional boundaries, appropriate coordination is required to assure that groundwater extraction and management actions within the MGSA Area support sustainable groundwater management of the Subbasin as a whole in accordance with 23 CCR § 357.4, as discussed in Master Response 6 (Sustainable Management Criteria).

The GSP identifies several uncertainties and data gaps regarding GDEs including the degree of groundwater connection of some GDEs and the correlation of GDE stress response and habitat quality to groundwater level changes. All three commenters appear to suggest that as long as there is uncertainty regarding the degree of groundwater connection of a GDE or its stress response to groundwater level decline, it is inappropriate to propose sustainable management criteria. Such an approach does not comply with the GSP regulations, which require that sustainable management criteria be established that will assure sustainable groundwater management ***while*** data gaps are addressed. *See* 23 CCR §§ 354.24 and 355.4(b). The vernal ponds are designated as Environmentally Sensitive Habitat Areas (ESHAs) under the 2013 *City of Marina Local Coastal Program (LCP) Land Use Plan*. ESHAs are designated protected areas within the Coastal Zone of California under the California Coastal Act. The biodiversity and unique features of coastal vernal ponds in the vicinity of the MGSA Area are also protected under the 1994 City of Marina *Coastal/Vernal Ponds Comprehensive Management Plan*. Deferring development of sustainable management criteria while data gaps are filled may allow irreversible damage to these protected habitats. MGSA's GSP prevents such undesirable results and requires the collection of additional information to address data gaps in future GSP updates. The use of more refined approach by MGSA's GSP will need to be coordinated with the implementation of SBVGSA's GSP and their investigation of the data gaps in accordance with 23 CCR § 357.4, as discussed in Master Response 6 (Sustainable Management Criteria).

HWG comments that the GDEs identified in the GSP may not in fact be groundwater dependent because shallow groundwater in the Dune Sand Aquifer is highly saline. The data used to make this assertion is collected from the shallow groundwater monitoring wells constructed to support slant test well pumping test for the Monterey Peninsula Water Supply Project (MPWSP). The concentrations of total dissolved solids (TDS) detected in samples from these wells in April 2019 ranged from 896 to 32,600 milligrams per liter (mg/L) in April 2019, with the highest concentrations detected in wells adjacent to the coast (GSS 2019). However, airborne electromagnetic surveys of the Dune Sand Aquifer indicate the uppermost groundwater TDS concentrations east of the MGSA Area are generally below

3,000 mg/L. As such, the available data do not support HWG's assertion that shallow groundwater in the Dune Sand Aquifer is too saline to support GDEs.

HWG also states that pumping of the Monterey Peninsula Water Supply Project (MPWSP) test slant well produced no drawdown in the Dune Sand Aquifer, and any plant stress that may have been identified during the evapotranspiration (ET) analysis discussed in the GSP is therefore within the range of natural climatic variability. We disagree with HWG's assertion that pumping of the slant test well produced no drawdown in the Dune Sand Aquifer outside of the CEMEX plant area. Based on a review of the MPWSP monitoring well hydrographs for the five well clusters with wells completed in the Dune Sand Aquifer (MW-4, MW-6, MW-7, MW-8 and MW-9) (GSS 2019) there were two major shut down events during test slant well pumping that occurred after extended periods of pumping (March 4, 2016, and February 28, 2018) that resulted in groundwater level recovery at many of these wells, indicating they were subject to drawdown influence from the test slant well. Specifically, there were a total of 30 recovery events logged in these hydrographs. There was a distinct and abrupt recovery of several feet in groundwater levels at all five locations in the 180-Foot and 400-Foot Aquifers during both shutdowns, for a total of 20 events. At the same time, there was an abrupt recovery of about 2 feet in the Dune Sand Aquifer wells during two recovery events, a slight recovery during four recovery events, and no observed recovery during four recovery events. Groundwater recovery in shallow wells may also be influenced by changes in regional pumping, recharge events or stage variation in the Salinas River, or recovery signals may be muted by local drawdown. However, the observation of a potential recovery signal in 60 percent of Dune Sand Aquifer wells correlated with a distinct recovery signal in the deeper wells indicates it is likely the Dune Sand Aquifer is in hydraulic communication with the underlying aquifers at many locations, and that pumping of the test slant well produced attenuated drawdown at these locations. This observation is also consistent with modeling of the potential groundwater resources effects of the proposed MPWSP for the Environmental Impact Report/Environmental Impact Statement indicated that pumping from the Dune Sand and 180-Foot Aquifers to supply water for the project is expected to result in drawdown ranging from 1 to 5 feet in the Dune Sand Aquifer in the area between the MPWSP and the Salinas River (ESA 2018). There are no data to substantiate HWG's assertion that pumping of the test slant well produced no drawdown in the Dune Sand Aquifer outside of the immediate vicinity of the CEMEX plant.

It should be noted that regardless of the source of the groundwater level change, the ET analysis conducted at Armstrong Pond and discussed on pages 4-12 and 4-13 of the draft GSP demonstrates the GDE showed strong indications of groundwater dependence at a time of the year when surface water is not available. Vegetation stress as evidenced by decreased ET (which correlates directly with decreased biomass productivity) occurred in response to a relatively modest groundwater level decline of about 2 feet. As discussed in Section 4.4 of the GSP, this is consistent with the response of herbaceous wetland GDEs in a compilation of studies conducted by The Nature Conservancy in the western United States that examined plant response of 17 herbaceous wetland indicator species (11 common and six rare) to groundwater drawdown, which indicated gradual loss of indicator species starting with as little as 0.66 feet of drawdown, with a median of 2.99 feet, and complete loss at 6.23 feet (Gerla et al. 2015). This illustrates that the GDEs are potentially sensitive to relatively modest groundwater level declines, but the resulting changes in the vegetation community, habitat degradation, habitat succession, and reversibility have not yet been established. In addition, it was not clear whether the changes in ET could be attributed to drawdown induced by test slant well pumping or if groundwater level declines during the drought were primarily responsible. As noted above, the existence of potential data gaps does not justify a lack of management of groundwater extraction within the MGSA Area to protect GDEs from undesirable results. The GSP therefore assumes that the GDEs can be affected by groundwater pumping in the MGSA Area and establishes sustainable management criteria that are protective of these beneficial groundwater uses while these data gaps are addressed.

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VOLUME II: ATTACHMENT A – CHAPTER 4 EDITS

~~DRAFT:~~ CHAPTER 4 – SUSTAINABLE MANAGEMENT CRITERIA
Groundwater Sustainability Plan
for the Marina GSA Area
of the 180/400 Foot Aquifer Subbasin

City of Marina
Groundwater Sustainability Agency
Marina, California

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TABLE OF CONTENTS

Tables

Figures

4 SUSTAINABLE MANAGEMENT CRITERIA

4.1 Introduction and Background

Regulation Requirements:
§354.22 This Subarticle describes criteria by which an Agency defines conditions in its Plan that constitute sustainable groundwater management for the basin, including the process by which the Agency shall characterize undesirable results, and establish minimum thresholds and measurable objectives for each applicable sustainability indicator.

~~The ~~California Department of Water Resources (DWR) has identified the 180/400 Foot Aquifer Subbasin (Subbasin) ~~is ~~as subject to significant and unreasonable seawater intrusion due largely to long-term groundwater extraction in the inland portions of the Subbasin in excess of the sustainable yield, and DWR has also ~~been ~~identified ~~by the Department of Water Resources~~the Subbasin as one of 21 California basins that are in a condition of "critical overdraft" (DWR 2016a). Seawater intrusion was first identified in the jurisdictional area of the Marina Groundwater Sustainability Agency (the MGSA Area) in the 1940s, and over the following decades progressed inland for a distance of over 7 miles in some areas. The purpose of this GSP is to ~~examine ~~consider local efforts and support regional efforts to address this undesirable result and return to Subbasin to sustainable groundwater management within 20 years, as required by the Sustainable Groundwater Management Act (SGMA). MGSA will achieve this by evaluating local projects and supporting the projects and management actions that will be implemented by Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) under its regional Groundwater Sustainability Plan (GSP), and by assuring that local groundwater resources are managed sustainably to protect local and regional beneficial uses and users.

This chapter of the GSP presents the criteria that constitute sustainable groundwater management in the MGSA Area~~,~~ and describes significant regulatory requirements. These "Sustainable Management Criteria" define the desired future groundwater resources condition of the MGSA Area in the Subbasin~~,~~ and commit MGSA to actions that will meet these objectives. The ~~S~~sustainable ~~M~~management ~~C~~criteria defined in this chapter include the following components (definitions for the terms in quotes are presented further below):

- The "Sustainability Goal" for the MGSA Area of the Subbasin is presented;
- "Undesirable Results" applicable to each "Sustainability Indicator" are identified;
- The "Minimum Thresholds" by which these Undesirable Results may be recognized are selected; and
- "Measurable Objectives" by which the groundwater resources in the MGSA Area may be managed are established.

The following definitions are used to guide the development of ~~S~~sustainable ~~M~~management ~~C~~criteria for the MGSA Area:

- A **Sustainability Goal** is a succinct statement of the GSA's objectives and desired conditions of the groundwater basin, how the basin will get to that desired condition, and why the measures planned will lead to success. Unlike the other sustainable management criteria, the sustainability goal is not quantitative, but supported by locally-defined minimum thresholds and undesirable results. Demonstration of the absence of undesirable results supports a determination that the basin is operating within its sustainable yield and, thus, that the sustainability goal has been achieved (DWR 2017).

- **Sustainability Indicators** are any of the following six effects potentially caused by groundwater conditions that, when significant and unreasonable, cause ~~U~~undesirable ~~R~~results (California Water Code (CWC) § 10721(x)):
    - Chronic Lowering of Groundwater Levels;
    - Reduction of Groundwater Storage;
    - Degraded Groundwater Quality;
    - Land Subsidence;
    - Seawater Intrusion; and
    - Depletion of Interconnected Surface Waters.
- **Undesirable Results** occur when significant and unreasonable effects for any of the sustainability indicators defined by SGMA are caused by groundwater conditions occurring in the basin. Undesirable results are included as ~~S~~sustainable ~~M~~management ~~C~~criteria as a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin. A description of undesirable results should include the potential effects on the beneficial uses and users of groundwater, land uses and property interests, and other potential effects that may occur or are occurring from the undesirable result. (23 California Code of Regulations (CCR) § 354.26)

  Undesirable results may be defined by minimum threshold exceedances at a single monitoring site, multiple monitoring sites, a portion of a basin, a management area, or an entire basin.
- **Minimum Thresholds** refers to a numeric value or values for each sustainability indicator used to define undesirable results. (23 CCR § 354.28)

  Minimum thresholds are quantitative values that represent groundwater conditions at representative monitoring points and that indicate an unreasonable condition. For example, a discrete groundwater or salinity level in a well may be a minimum threshold because groundwater levels dropping below or salinity levels rising beyond the specified level would be an unreasonable condition.
- **Measurable Objectives** refer to specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions that have been included in an adopted Plan to achieve the sustainability goal for the basin. Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin within 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon. (23 CCR § 354.30)

  Measurable objectives are goals that the GSP is designed to achieve. Measurable ~~O~~objectives are set so there is a reasonable margin of operational flexibility between the minimum threshold and measurable objective that will accommodate droughts, climate change, conjunctive use operations, or other groundwater management activities. For some sustainability indicators, projects and management actions are needed to achieve measurable objectives. Although measurable objectives are not enforceable during implementation of the GSP, the GSP needs to demonstrate that there is a planned path toward achieving measurable objectives.

This chapter includes or references the data used to develop the ~~s~~sustainable ~~m~~management ~~c~~criteria and to evaluate how they influence the beneficial uses and users of groundwater within and surrounding the MGSA Area. The ~~S~~sustainable ~~M~~management ~~C~~criteria discussed in this chapter were developed based on information about the basin from the hydrogeologic conceptual model (Section 3.1), information about current and historical groundwater conditions (Section 3.2), the water budget (Section 3.3), other publicly available information, information and public feedback about groundwater conditions near the MGSA Area obtained during City Council meetings held over the last three years and during recent public MGSA meetings about the GSP development process, and meetings with MGSA staff.

To retain an organized approach, this chapter follows the same section/subsection structure for each ~~S~~sustainability ~~I~~indicator. The result is somewhat repetitive, but is complete and systematic when addressing the SGMA requirements. Each section follows a consistent format that contains the information required by 23 CCR §§ 354.22 et. seq and outlined in the Sustainable Management Criteria Best Management Practices guidance document developed by DWR (DWR 2017).

4.2 SUSTAINABILITY GOAL

Regulation Requirements:

§ 354.24. Sustainability Goal

Each Agency shall establish in its Plan a sustainability goal for the basin that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline. The Plan shall include a description of the sustainability goal, including information from the basin setting used to establish the sustainability goal, a discussion of the measures that will be implemented to ensure that the basin will be operated within its sustainable yield, and an explanation of how the sustainability goal is likely to be achieved within 20 years of Plan implementation and is likely to be maintained through the planning and implementation horizon.

CWC § 10721 defines sustainable groundwater management as “the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.” A sustainability goal is the desired culmination of sustainable groundwater management, resulting in the maintenance of sustainable groundwater conditions (the absence of undesirable results), or their achievement within 20 years, when compared to a 2015 baseline condition. The sustainability goal reflects these requirements and succinctly states the GSAs’ objectives and the desired conditions of the GSP area.

The sustainable yield is defined as the amount of groundwater that can be withdrawn annually over a period of time without causing u~~U~~ndesirable r~~R~~esults. Regionally, the primary undesirable result in the 180/400 Foot Aquifer Subbasin has been seawater intrusion in the 180-Foot and 400-Foot Aquifers caused by long-term overdraft and declining groundwater levels in the inland portions of the Subbasin (SBVGSA 2019, MCWRA 2017a). Chronic declines in inland groundwater levels have led to a reversal in the groundwater gradients in the 180-Foot and 400-Foot Aquifers from shoreward to landward, causing water affected by seawater intrusion to flow inland for a distance of up to approximately 7 miles. As a result of these conditions, DWR designated the 180/400 Foot Subbasin as being subject to "Critical Conditions of Overdraft" (DWR 2016a), which means that preparation of GSPs in the Subbasin must be expedited to meet a January 31, 2020 submittal deadline.

Based on a water budget analysis, SVBGSA has estimated the historical sustainable yield of the Subbasin as ~~97,300~~96,950 acre-feet per year (AFY), ~~which represents a 10% reduction in total pumping relative to the average annual historical rates in order to arrest overdraft~~and the long-term average sustainable yield as 112,000 AFY (SVBGSA 2019).[1] In addition, as discussed in Chapter 6, SVBGSA plans to implement a number of projects and management actions to raise groundwater levels in the inland portions of the Subbasin through *in lieu* and applied recharge, with a goal of arresting and even reversing ~~further~~ seawater intrusion. This GSP adopts, and ~~the~~ MGSA will support, the regional sustainable yield as estimated for the 180/400 Foot Aquifer Subbasin in SVBGSA's GSP. In addition, MGSA will support SVBGSA's projects and management actions that are expected to benefit groundwater elevations at and in the vicinity of the MGSA Area.

Locally, the contribution to the sustainable yield ~~for the~~from groundwater extraction in the MGSA Area is defined as the amount of groundwater that can be withdrawn annually over a period of time from the MGSA Area without causing undesirable results within or near the MGSA Area. Current and historical groundwater extraction in the MGSA Area has been limited to process water pumping for the CEMEX sand plant (approximately 300 AFY), which represents the only long-term groundwater extraction within the MGSA Area. Data are not available to assess if groundwater extraction from the CEMEX well historically contributed to seawater intrusion in this area since the 1960s when pumping started. Due to concern about limiting extractions to avoid seawater intrusion, the City of Marina and several other agencies entered into the 1996 Annexation Agreement limiting extractions at the CEMEX property to 500 AFY. Based on available water quality data for the CEMEX well, long-term pumping has likely reached a state of equilibrium as of the SGMA baseline dat~~e~~a of 2015. As such, ~~the~~ CEMEX well pumping has not resulted in significant and unreasonable seawater intrusion or ~~low-TDS water depletion~~groundwater quality degradation as defined by SGMA. Pumping of the CEMEX well will cease when the plant closes at the end of 2020, or at the latest in December 2024 when CEMEX removes the well (Section ~~3.3.13~~3.1.8).

In the future, groundwater extraction rates in the MGSA Area are proposed to be increased significantly for the proposed MPWSP. If the proposed MPWSP is implemented, ~~T~~the proposed slant wells for the project would pump up to 17,400 AFY (HWG 2017). As discussed in Section 3.3.13, without additional data and modeling tools, it is not possible to assess the rate of the slant well pumping that would be sustainable in the long term. MGSA will update the estimate for the local sustainable yield and coordinate with SVBGSA to update the basin-wide sustainable yield as needed and as information becomes available during GSP implementation. The ~~S~~sustainable ~~M~~management ~~C~~criteria defined in

[1] SVBGSA states this is an estimate only, and that the sustainable yield estimate for the Subbasin will be modified and updated as more data are collected and more analyses are performed, including evaluation of the United States Geological Survey (USGS) Salinas Valley Integrated Hydrologic Model (SVIHM), which is expected to be released in late 2020.

this chapter, combined with the monitoring program specified in Chapter 5 and the management actions outlined in Chapter 6, are intended to assure that any groundwater extraction in the MGSA Area is managed sustainably, and that undesirable results do not occur in the MGSA Area or the surrounding Subbasin area.

Undesirable results potentially associated with future groundwater extraction in the MGSA Area include the following significant and unreasonable impacts, which are further evaluated and discussed in the subsequent sections of this chapter:

- Groundwater level decline which adversely impacts beneficial groundwater uses and/or users, especially ~~in the area~~ near the MGSA Area where several existing groundwater supply wells and ~~G~~groundwater ~~D~~dependent ~~E~~ecosystems (GDEs) are present;
- Reduction in groundwater storage which adversely impacts beneficial groundwater uses and/or users~~, especially in the area underlain by the low total dissolved solids (TDS) groundwater zone that exists within the Dune Sand, 180-Foot and 400-Foot Aquifers (Chapter 3)~~;
- Further seawater intrusion into the Dune Sand, 180-Foot and 400-Foot Aquifers, and/or seawater intrusion into the Deep Aquifer;
- Degradation of groundwater quality within the Dune Sand, 180-Foot and/or 400-Foot Aquifers that adversely affects beneficial uses or users, especially in the low-TDS groundwater zone;
- Land subsidence that adversely affects surface land uses; and
- Surface water depletion that adversely affects beneficial surface water uses or users, including GDEs.

This GSP adopts SVBGSA's sustainability goal, which is stated as follows (SVBGSA 2019):

> *The goal of this GSP is to manage the groundwater resources of the 180/400-Foot Aquifer Subbasin for long-term community, financial, and environmental benefits to the Subbasin's residents and businesses. This GSP will ensure long-term viable water supplies while maintaining the unique cultural, community, and business aspects of the Subbasin. It is the express goal of this GSP to balance the needs of all water users in the Subbasin.*

~~The MGSA's sustainability goal is as follows:~~Local i~~I~~mplementation objectives in support of this goal include the following:

> ~~The sustainability goal of this GSP is *to*~~*MGSA will manage groundwater resources in the MGSA Area in a way that ensures all beneficial uses and users in, or affected by, groundwater management in the MGSA Area are protected from undesirable results, and have access to a safe and reliable groundwater supply that meets current and future demand. This goal will support SVBGSA's sustainability goal by addressing undesirable results at a local level and protecting local resources from further degradation, while coordinating with MCWRA, SVBGSA*

and MCWD GSA to support regional groundwater management, including groundwater level and seawater intrusion monitoring, and mitigation projects and management actions that will contain and reverse the conditions resulting from regional overdraft. MGSA will:

~~*Implementation objectives in support of this goal include the following:*~~

- *Support the protection of reliable groundwater supply and quality to promote the public health and welfare now and into the future;*
- *Ensure that groundwater is available for beneficial and potential beneficial uses, including all of the diverse municipal, domestic, agricultural, industrial, and environmental uses potentially affected by management actions within the MGSA Area;*
- *Protect the aquifers underlying the MGSA Area against further seawater intrusion;*
- *Comply with State Water Resources Control Board (SWRCB) Resolution No. 88-63, which designates all groundwaters of the State containing less than 3,000 milligrams per liter (mg/L) of total dissolved solids (TDS) as having a potential beneficial use as a domestic or municipal drinking water supply, and SWRCB Resolution No. 68-16, which requires the high quality of these waters to be maintained unless the ~~S~~state finds that certain specific conditions are met;*
- *Maintain or enhance groundwater levels and groundwater discharge where GDEs exist near the MGSA Area;*
- *Maintain operational flexibility within the Subbasin, assuring that groundwater resources are available during times of drought without causing undesirable results;*
- *Account for changing groundwater conditions related to implementation of future groundwater supply projects, projected climate change, and sea level rise, in sustainability planning and management; and*
- *Coordinate with, support, and avoid undesirable results to neighboring GSA areas and groundwater basins in regional efforts to achieve groundwater sustainability.*

To achieve the sustainability goal, MGSA will undertake the following measures:

- Establish sustainable management criteria, including definition of minimum thresholds, measurable objectives, interim milestones and undesirable results as discussed in this chapter;
- Implement a monitoring program as discussed in Chapter 5 for each sustainability indicator at and in the vicinity of the MGSA Area to assess compliance with, and progress toward the identified measurable objectives and interim milestones;

- Implement the management actions identified in Chapter 6 to assure compliance with the measurable objectives and interim milestones identified in this chapter, and to prevent the occurrence of undesirable results; and

- Complete the actions identified in Chapter 7 to implement the GSP, address data gaps, support the plan review and updates, and fulfill reporting obligations.

4.3 Approach

Locally-defined significant and unreasonable conditions were identified based on assessment of hydrogeologic conditions, beneficial uses and users of groundwater, existing and historical undesirable results, potential future groundwater level, storage and quality trends, existing applicable standards and potential future groundwater demands. The consistency of the locally-defined criteria with criteria developed by SVBGSA in their GSP was evaluated, so that the sustainable management criteria in this GSP would address local conditions while remaining regionally compatible. The assessment was conducted based upon the hydrogeologic conceptual model and water budget information summarized in Chapter 3, and was discussed with MGSA staff and local consultants, and coordination discussions were held with ~~Salinas Valley Basin Groundwater Sustainability Agency (~~SVBGSA~~)~~, Marina Coast Water District (MCWD) GSA, and Monterey County Water Resources Agency (MCWRA).

As discussed in Chapters 6 and 7, the United States Geological Survey (USGS) is developing the Salinas Valley Integrated Hydrologic Model (SVIHM) as a tool to improve groundwater and surface water management strategies in the Salinas Valley Basin. SVBGSA intends to use this model to refine its assessment of groundwater budgets and flow, and to update its GSP. MGSA intends to cooperate and coordinate with ~~the~~ SVBGSA in this effort, assess the need for additional studies and modeling refinement, and update this GSP, including the sustainable management criteria described in this chapter. In addition, MCWD GSA intends to construct a locally-refined groundwater flow model that can incorporate solute transport and density driven flow, to support development and implementation of its GSP in the Monterey Subbasin. MGSA intends to cooperate and coordinate with MCWD GSA and SVBGSA in this effort and will assess using the resulting model to update and refine this GSP.

Similar to SVBGSA's GSP, this chapter follows the same structure for each Sustainability Indicator. A separate subsection is included for each ~~S~~sustainability ~~I~~indicator, with subsections that address each of the regulatory requirements of 23 CCR §§ 354.22, *et. seq* and outlined in the DWR guidance (DWR~~,~~ 2017). Each Sustainability Indicator subsection includes a description of:

- The local factors potentially contributing to significant and unreasonable conditions;
- How minimum thresholds were developed, including:
  - The information and methodology used to develop the minimum thresholds (23 CCR § 354.28 (b)(1));

  - The relationship between minimum thresholds and the sustainability indicators, and how they will avoid undesirable results (23 CCR § 354.28 (b)(2));
  - The effect of minimum thresholds on neighboring basins' and GSPs' ability to meet sustainability goals (23 CCR § 354.28 (b)(3));
  - The effect of minimum thresholds on beneficial uses and users of groundwater (23 CCR § 354.28 (b)(4));
  - Relevant federal, state, or local standards (23 CCR § 354.28 (b)(5)); and
  - The method for quantitatively measuring minimum thresholds (23 CCR § 354.28 (b)(6));
- How measurable objectives were developed, including:
  - The methodology for setting measurable objectives (23 CCR § 354.30); and
  - Interim milestones, as applicable (23 CCR § 354.30 (a), §354.30 (e), §354.34 (g)(3)).
- How locally-~~defined~~ significant and unreasonable conditions (u~~U~~ndesirable r~~R~~esults) were defined, including:
  - The criteria for defining undesirable results (23 CCR § 354.26 (b)(2));
  - The potential causes of undesirable results (23 CCR § 354.26 (b)(1)); and
  - The effects of these undesirable results on the beneficial users and uses (23 CCR § 354.26 (b)(3))

4.4 . CHRONIC DECLINE OF GROUNDWATER LEVELS

4.4.1 LOCAL FACTORS POTENTIALLY CONTRIBUTING TO SIGNIFICANT AND UNREASONABLE CONDITIONS

Regionally, chronic lowering of groundwater levels in the Subbasin's aquifers has historically occurred and is ongoing due to groundwater production for agricultural, municipal, and domestic use that exceeds the long-term sustainable yield of the Subbasin and the absence of viable alternative sources of water supply (SVBGSA 2019). A groundwater depression has developed~~located~~ north of Salinas ~~has developed~~ and is visible on~~in~~ both the 180-Foot/Shallow East Side Aquifer and 400-Foot/Deep East Side Aquifer maps, where elevations are generally -80 to -120 feet mean sea level (msl). Groundwater elevation contour maps for the 180-Foot and 400-Foot Aquifers indicate an inland flow direction over a broad region surrounding the MGSA Area (see for example the groundwater elevation contour maps included in MCWRA [2017a]). East of the MGSA Area, groundwater levels were generally historically interpreted to be -10 to -20 feet msl in the 180-Foot Aquifer and -20 to -30 feet msl in the 400-Foot Aquifer during August measurements (when groundwater elevations are generally lowest), with the depth to groundwater increasing toward the Salinas River. These groundwater gradient data are based on widely spaced wells, and should be considered generalizations for the vicinity of the MGSA Area.

SVBGSA's GSP defines significant and unreasonable groundwater elevation declines in the Subbasin as those that:

- Are at or below the lowest groundwater elevations observed between 1994 and 2015 (based on public and stakeholder input that identified historically low groundwater elevations as significant and unreasonable);
- Cause significant financial burdens to local municipalities, landowners, and farmers; and/or
- Interfere with other sustainability indicators (i.e., seawater intrusion, subsidence, etc.).

With respect to potential future groundwater extraction in the MGSA Area, potential adverse impacts to beneficial users and uses from groundwater level decline include adverse impacts to GDEs~~S~~, development or worsening of gradients that promote seawater intrusion, well interference drawdown, and lowering of groundwater elevations to uneconomical levels. In the vicinity of the MGSA Area, groundwater extraction from the seawater-intruded portions of the 180-Foot Aquifer and 400-Foot Aquifer is currently ~~generally~~ relatively limited, and SVBGSA proposes to adopt an ordinance that would prohibit the construction and operation of supply wells within the Castroville Seawater Intrusion Project (CSIP) service area east and northeast of the MGSA Area (Section 6.6.3). Based on this information, this GSP considers significant and unreasonable groundwater elevation declines in and near the MGSA Area as those that:

- Are at or below the lowest groundwater elevations observed between 1994 and 2015 identified regionally by SVBGSA (based on regional public and stakeholder input to SVBGSA that identified these historically low groundwater elevations as significant and unreasonable);
- Cause significant financial burdens to local municipalities, landowners, and farmers through interference drawdown or groundwater pumping level reduction to less economical levels; and/or
- Result in s~~S~~ignificant adverse impacts to GDEs.

Insufficient data currently exist to map flow directions and groundwater elevations in the Deep Aquifer, and MCWRA does not produce groundwater level maps of the Deep Aquifer. The construction of new wells in the Deep Aquifer is currently prohibited and there are no plans to construct any Deep Aquifer wells within the MGSA Area. As discussed in Chapter 6, MGSA will support management actions by SVBGSA to strengthen these prohibitions. As such, under current and foreseeable future conditions, there will be no groundwater extraction from the Deep Aquifer that could affect the groundwater level decline sustainability indicator that can be managed under this GSP. For these reasons, this sustainability indicator is considered currently inapplicable to this GSP, and undesirable results, minimum thresholds, and measurable objectives for chronic groundwater level decline are not adopted for the Deep Aquifer~~ in this GSP~~. This determination will be reassessed during future GSP updates, and additional sustainable management criteria for the Deep Aquifer will be added if appropriate.

4.4.2 Minimum Thresholds

Regulation Requirements:

§354.28 (a) Each Agency in its Plan shall establish minimum thresholds that quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site established pursuant to Section 354.36. The numeric value used to define minimum thresholds shall represent a point in the basin that, if exceeded, may cause undesirable results as described in Section 354.26.

(b) The description of minimum thresholds shall include the following:

(1) The information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator. The justification for the minimum threshold shall be supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting. (d) An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.

(c) Minimum thresholds for each sustainability indicator shall be defined as follows:

(1) Chronic Lowering of Groundwater Levels. The minimum threshold for chronic lowering of groundwater levels shall be the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results. Minimum thresholds for chronic lowering of groundwater levels shall be supported by the following:

(A) The rate of groundwater elevation decline based on historical trends, water year type, and projected water use in the basin.

SVBGSA determined that average groundwater elevations in 2015 and 2016, at the end of a significant drought, represented a significant and unreasonable condition relative to groundwater elevation decline. Using a composite hydrograph analysis approach for the Subbasin, SVBGSA determined that the lowest average groundwater elevations during the representative climatic cycle (from 1967 to 1998) occurred in 1991 and 1992, and were on average 1 foot above the 2015 and 2016 elevations. The minimum thresholds for significant and unreasonable groundwater level decline ~~was~~ were therefore established as 1 foot above 2015 groundwater elevations~~, and a~~. A groundwater level map was prepared defining this "compliance surface~~.~~," and minimum thresholds were determined for designated representative monitoring sites (RMS) by determining the elevation of this surface ~~as~~ at each site.

Locally, groundwater extraction within the MGSA Area has the potential to draw down groundwater levels below minimum threshold elevations established by ~~the~~ SVBGSA. However, SVBGSA has not designated any ~~monitoring wells~~RMS near the MGSA Area, so there is ~~no~~ limited possibility that groundwater extraction in this area would create an undesirable result detected under their Regional GSP. A single 400-Foot Aquifer well is located approximately 1 mile from the MGSA Area and a single 180-Foot Aquifer well is located approximately 4 miles from the MGSA Area. There are no RMS designated in the Dune Sand Aquifer in SVBGSA's GSP. Groundwater elevation data for existing wells ~~in this area~~near the MGSA Area do not have sufficient long-term groundwater elevation data to establish historical low groundwater levels prior to 2015. Several wells monitored by MCWRA with data beginning in approximately 2005 are located about 4 miles from the MGSA Area to the east and northeast (Zidar and Feeney 2019). Examination of the hydrographs for these wells indicates groundwater elevations in these wells were either at their lowest point, or near their lowest point, in 2015 and 2016.

Groundwater extraction for the test slant well pumping test performed for the MPWSP resulted in approximately 1 to 5 feet of drawdown (decreasing with distance from the MGSA Area), which recovered rapidly after the end of the test (Sections 3.2.1.2 and 3.2.1.3) and does not represent "chronic" or long-term groundwater elevation decline. As summarized in the following section, an analysis of evapotranspiration (ET) from a GDE located near the MGSA Area indicates that from 2014 to 2016, a combination of drought conditions and drawdown in the Dune Sand Aquifer resulted in a substantial decrease in summertime ET, indicating vegetative stress. ET from the GDE has since recovered; however, it is not known whether the habitat suffered long term changes and degradation in the process, or if the habitat was able to recover. For these reasons, it is not known whether pumping of the test slant well during this time caused undesirable results. Future groundwater extraction is proposed to be increased significantly above the test slant well extraction rates, which potentially place additional stress on sustainability indicators. The sustainable management criteria in this chapter, and the monitoring and management action programs described in Chapters 5 and 6 are intended to assure sustainable groundwater management.

The following sections describe the process used to establish minimum thresholds for RMS designated under this GSP to address chronic decline in groundwater levels in the MGSA Area. The minimum thresholds and measurable objectives established for RMS near the MGSA are presented in Table 4-1.

TABLE 4-1. MINIMUM THRESHOLDS AND MEASURABLE OBJECTIVES FOR CHRONIC DECLINE IN GROUNDWATER LEVELS

Monitoring Site	Aquifer	Approximate date of Lowest Groundwater Level	2015 Summer/Fall Lowest Groundwater Level (ft NAVD88)	Minimum Threshold (ft NAVD88)	Measureable Objective (ft NAVD88)
MW-4S	Dune Sand	Mid Sept 2015	3.0	4.0	4.0
MW-4M	180-Foot	Mid Aug 2015	-3.0	-2.0	-0.1
MW-4D	400-Foot	Late Aug 2015	-15.9	-14.9	-8.8
MW-5M	180-Foot	Mid Aug 2015	-4.8	-3.8	-2.8
MW-5D	400-Foot	Late Aug 2015	-22.0	-16.0	-10.0
MW-6M	180-Foot	Mid Aug 2015	-26.0	-25.0	-18.0
MW-7S	Dune Sand	Mid Oct 2015	3.8	4.8	4.8
MW-7M	180-Foot	Late Aug 2015	-7.1	-6.1	-2.5
MW-7D	400-Foot	Late Aug 2015	-14.9	-13.9	-7.8
MW-8S	Dune Sand	Mid Sept 2015	1.6	2.6	2.6
MW-8M	180-Foot	Late Aug 2015	-5.9	-4.8	-2.1
MW-8D	400-Foot	Late Aug 2015	-21.0	-14.0	-8.0
MW-9M	180-Foot	Late Aug 2015	-11.4	-10.4	-7.0
MW-9D	400-Foot	Late Aug 2015	-25.1	-24.1	-18.0

Notes:
ft NAVD88 = feet above the North American Vertical Datum of 1988

4.4.2.1 DUNE SAND AQUIFER

As discussed in Sections 2.3.1.2 and 3.2.6.1, several areas of "vernal ponds" are located near the MGSA Area and have been identified as GDEs. Vernal ponds include palustrine and emergent wetlands which are considered locally unique and are protected as Environmentally Sensitive Habitat Areas (ESHA) under the California Coastal Act and managed under a plan prepared by the City of Marina and local environmental stakeholders.

The ecological water requirements and thresholds of responses to changes in groundwater levels differ among GDEs. Deep-rooted obligate phreatophytes such as oak trees are not expected to be significantly affected by drawdown which is within the range of natural groundwater level fluctuations or occurs over a period of years. The gradual change would allow the root systems to adapt. Similarly, the effect of drawdown on riparian woodlands and wetlands that have significant surface water inflows from streams, canals, and agricultural drains is expected to be less significant. However, wetlands such as the vernal ponds ~~that occur~~present east of the MGSA Area are likely to be more highly groundwater dependent and contain sensitive communities that could be adversely affected by drawdown. The ability of such GDEs to adapt or recover from groundwater declines depends largely on the overall water budget and the degree to which the GDE is dependent on groundwater. The degree of interaction between wetlands and groundwater can vary greatly and depends on many factors including their position in the landscape, the permeability of the substrate, depth to the water table, and seasonal fluctuations in water inputs. GDEs develop in response to unique timing, duration, frequency, and chemistry of water inputs. Major changes in wetland hydrology would be expected to significantly affect ecological function. However, minor changes in hydrology may result in little to no change in the ecological function of wetlands, depending on baseline conditions and whether those changes are short- or long-term and offset by seasonal recharge of the aquifer or surface inputs (JJ&A 2018).

The condition and species composition of wetland vegetation can serve as an early warning indicator of water stress. A compilation of studies conducted by The Nature Conservancy in the western United States that examined plant response of 17 herbaceous wetland indicator species (11 common and six rare) to groundwater drawdown, indicated gradual loss of indicator species starting with as little as 0.66 feet (0.2 meter) of drawdown, with a median of 2.99 feet (0.91 meter), and complete loss at 6.23 feet (1.9 meter) (Gerla *et al.* 2015). Rhode *et al.* (2017) reviewed policies adopted for management of GDEs in the United States and globally, and assessed that thresholds for GDE responses to groundwater level decline are often assumed to follow linear, curvilinear, or step-wise functions, but that in reality they are likely habitat specific. A study of the effects of regulatory drawdown thresholds on inundation area and plant community composition in southeast Australia suggested that drawdowns from 0.82 feet (0.25 meter) to 0.98 feet (0.3 meter) represent a threshold where community composition is likely to change (Deane *et al.* 2017). The study setting was a regional unconfined aquifer with shallow groundwater levels and wetlands dependent on groundwater discharge, and included wetlands considered sensitive to even small declines in groundwater level. Thresholds were assigned based on ecological value, with higher functioning wetlands sensitive to changes assigned a threshold of up to 0.82 feet (0.25 meter) of acceptable drawdown over the course of five years; regional triggers were set at 1.64 feet (0.50 meter) over ~~5~~five years. Drawdown in shallow groundwater systems may alter community composition by increasing cover of exotic and terrestrial species, and increasing soil salinity from evapotranspiration;

drawdown in deeper water systems may result in community change with conditions supporting greater cover of sedge species.

The Armstrong Ranch Ponds (Vernal Pond #6) are located approximately 300 to 1,000 feet east of the MGSA Area and include a series of seasonal wetlands with ponded water in the winter and wet herbaceous meadows likely subsisting on shallow groundwater during the dry season (The Habitat Restoration Group 1994). An analysis of ~~evapotranspiration (~~ET~~)~~ from these ponds and the surrounding area is presented in Figure 4-1. Summer (June, July, and August) ~~evapotranspiration~~ET was calculated using the surface energy balance method (Paul *et al.* 2011, 2018) from remote sensing data generated by the Landsat Satellite mission by Formation Environmental under contract to ~~the Department of Water Resources (~~DWR~~)~~. The results indicate summer ET ranged from approximately 5 to 10 inches from 2010 to 2013, then decreased to approximately 1 to 5 inches in 2014 and 2015, and 1 to 3 inches in 2016. In 2017, ET increased to approximately 3 to 10 inches, and in 2018, ET was approximately 5 to 12 inches. The decline in ET from 2014 to 2016 occurred during a period of severe drought; however, the test slant well pumping test was also conducted from April 2015 to February 2018 (Geo~~s~~Science Support Services 2019). Hydrographs for well MW-4S indicate that the seasonal fluctuation in groundwater elevations in this well was approximately 2 feet, and suggest that pumping-induced drawdown was approximately 1 foot. The lowest groundwater elevations were observed in the summer of 2016; ~~and~~groundwater elevations averaged about 2 feet higher in summer 2017 and summer 2018.

The above ET analysis demonstrates the correlation between groundwater levels and ET from this GDE, and illustrates its sensitivity to groundwater level declines. ET, and by correlation biomass productivity, rebounded with groundwater levels; however, it is not known whether the stress induced in the GDE resulted in a change in the vegetation community, habitat degradation, or habitat succession that is not readily reversible. Based on this data, it is not possible to determine the extent to which the drawdown induced during the test slant well pumping period resulted in significant and unreasonable impacts to the GDE, or whether the results were temporary and reversable.

For these reasons, ~~T~~the minimum thresholds for chronic groundwater ~~elevation drawdown~~level decline in the Dune Sand Aquifer ~~is~~ are established as ~~a drawdown attributable to groundwater extraction in the MGSA Area of~~an elevation of 1 foot above the 2015 low groundwater levels recorded in Dune Sand Aquifer monitoring wells near identified GDEs in the vicinity of the MGSA Area (MW-4S, 7S and 8S). This threshold is based on potential significant and unreasonable impacts to identified GDEs. It is adopted on an interim basis based on the rationale ~~below~~above~~, and~~. The threshold will be updated based on biological assessment of GDEs in the vicinity of the MGSA Area to determine their sensitivity to groundwater elevation declines and confirmation by SVBGSA as to the degree to which potential GDEs along Salinas River are groundwater vs. surface water reliant. The minimum thresholds are established based on the following approach:

~~For this reason, this GSP adopts the following minimum threshold for chronic groundwater level decline in the DSA:~~

- At each RMS for the Dune Sand Aquifer, a groundwater elevation ~~An interim~~ minimum threshold is calculated as ~~of~~ a groundwater elevation that is 1 foot above 2015 summertime or fall low groundwater elevation documented in well hydrographs for the shallow MPWSP monitoring wells (Appendix 3.D). ~~s in shallow monitoring wells near GDEs in the MGSA groundwater elevation monitoring well network.~~

The correlation between groundwater elevations and GDE responses for the identified GDEs is identified as a data gap. In addition, the degree of groundwater dependence of potential GDEs located near Salinas River is a data gap. As discussed in Chapter 7~~6~~, a baseline biological assessment of the GDEs in the vicinity of the MGSA Area will be performed, and the minimum thresholds and measurable objectives will be adjusted, as appropriate. In addition, the GDE monitoring approach will be refined as discussed in Chapter 5, and the management actions will be updated as discussed in Chapter 6.

4.4.2.2 180-Foot and 400-Foot Aquifer

Minimum thresholds for the 180-Foot and 400-Foot Aquifers are driven by the potential for well interference drawdown and consistency with minimum thresholds adopted by SVBGSA which are intended, in part, to decrease the inland gradients that have led to regional seawater intrusion. As discussed in Section 4.4.2, SVBGSA determined that average groundwater elevations in 2015 and 2016, at the end of a significant drought, represented a significant and unreasonable condition relative to groundwater elevation decline, and established initial minimum thresholds 1 foot above this elevation. These thresholds were then locally adjusted based on hydrograph analysis at some individual RMS.

Thresholds of significance for well interference drawdown vary, but are commonly lower for domestic wells, which tend to be shallower and have less available drawdown, and greater for irrigation, industrial or municipal supply wells, which are generally deeper and have more available drawdown. A study of well interference drawdown thresholds adopted for projects in California conducted in Stanislaus County concluded that a well interference threshold of 5 feet for domestic wells and 20 feet for higher capacity production wells is unlikely to lead to significant and unreasonable impacts (JJ&A 2018). The range of documented seasonal fluctuation in groundwater elevations in the 180-Foot and 400-Foot Aquifers varies from approximately 5 feet within about 2 miles of the MGSA Area to between approximately 10 to 30 feet further inland about 4 miles from the MGSA Area (Section 3.2.1.2).

The minimum threshold for groundwater elevation decline in the 180-Foot and 400-Foot Aquifers is therefore established consistent with the SVBGSA regional thresholds of a~~as follows, consistent with the SVBGSA's regional definition:A~~ groundwater elevations at RMS in the 180-Foot or 400-Foot Aquifers that ~~is~~ are 1 foot above historical low groundwater elevations measured in 2015 as determined from analysis of the hydrographs included in Appendix 3.D. For RMS located near well 14S/02E-08M02, which is approximately 1 mile northeast of the MGSA Area, minimum thresholds were adjusted to better match the minimum threshold adopted by SVBGSA for the 400-Foot Aquifer at this location, and in the overlying 180-Foot Aquifer in accordance with existing vertical gradients.~~in 15% or more of the monitoring wells in the MGSA groundwater elevation monitoring well network~~. These elevations are generally relatively consistent with SVBGSA's minimum thresholds and are appropriate given seasonal groundwater level fluctuation as well as thresholds commonly used to assess interference drawdown to prevent nearby groundwater users from experiencing significant and unreasonable impacts.

4.4.2.3 Relationship Between Minimum Thresholds and Other Sustainability Indicators

Regulation Requirements
§ 354.28 (b) The description of minimum thresholds shall include the following:
(2) The relationship between the minimum thresholds for each sustainability indictor, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.
(c) Minimum thresholds for each sustainability indicator shall be defined as follows:
(1) Chronic Lowering of Groundwater Levels. The minimum threshold for chronic lowering of groundwater levels shall be the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results. Minimum thresholds for chronic lowering of groundwater levels shall be supported by the following:
(B) Potential effects on other sustainability indicators.

The groundwater elevation minimum thresholds are derived from historical groundwater elevation measurements. Therefore, the minimum thresholds are unique at every ~~well~~RMS, but when combined represent a "compliance surface." The distribution of groundwater elevations in this compliance surface is a historically accurate, and reasonably achievable condition; that is, individual minimum threshold values at each well will not conflict with each other.

Groundwater elevation minimum thresholds can influence other sustainability indicators. The groundwater elevation minimum thresholds are selected to avoid undesirable results for other sustainability indicators.

- **Reduction in groundwater storage**. As discussed in Section 4.5, a significant and unreasonable condition for change in groundwater storage is ~~depletion of the low-TDS zone in the Dune Sand, 180-Foot and 400-Foot Aquifers~~defined as an annual extraction of groundwater in the MGSA A~~a~~rea that falls above the total long-term sustainable yield of the Subbasin established by SVBGSA or that results in depletion of the amount of low-TDS groundwater in storage in the Dune Sand, 180-Foot and 400-Foot Aquifers east of the MGSA Area. The minimum thresholds for groundwater elevation decline were selected to protect the beneficial uses of groundwater in the Dune Sand Aquifer by GDEs and to provide continuity with regional minimum thresholds for the 180-Foot and 400-Foot Aquifer. Decline of groundwater elevations would be associated with changes in storage, and will be used in combination with water quality monitoring to assess changes in low-TDS groundwater storage. These sustainable management criteria will be used in combination to manage both chronic decline in groundwater levels and reduction in groundwater storage. Although the minimum thresholds may not be precisely aligned, they are compatible and related, and will be used in combination to assure sustainable groundwater management. These thresholds may be refined during GSP implementation as more information and better tools become available. Therefore, the groundwater elevation decline minimum threshold is unlikely to result in a significant and unreasonable reduction in groundwater storage.

- **Seawater intrusion.** ~~A significant and unreasonable condition for seawater intrusion is lateral or vertical migration of the saline water intrusion wedge located beneath and east of the MGSA Area.~~ As discussed in Section 4.6, significant and unreasonable seawater intrusion is defined as the migration of chloride isocontours that define the extent of seawater intrusion as of 2017 (for the 180-Foot, 400-Foot and Deep Aquifers) or 2018 (for the Dune Sand Aquifer). Groundwater elevation minimum thresholds were established to be consistent with thresholds established by SVBGSA to prevent inland gradients that may result~~s~~ in the advance of seawater intrusion in the 180- and 400-Foot Aquifers. As discussed in Section 3.2.3.2, a decline in groundwater levels would lead to a change in the interface dynamics between the saline water intrusion wedge and the overlying low-TDS zone. Compliance with the groundwater elevation decline minimum threshold will help to assure a reasonable balance is maintained. ~~; however, groundwater elevations alone are insufficient – the thickness and water quality of the low-TDS zone must also be maintained. Groundwater level monitoring will be used together with water quality monitoring to assure that the minimum thresholds for groundwater elevation decline, seawater intrusion, reduction in groundwater storage and water quality degradation are assessed and managed in an integrated fashion. These thresholds were specifically selected to be used as part of a comprehensive management strategy. Although they may not be precisely aligned~~As such, the minimum thresholds for groundwater elevation decline and seawater intrusion ~~, they~~ are compatible and related, and will be used in combination to assure sustainable groundwater management. Furthermore, the thresholds may be adjusted during GSP implementation as more information becomes available in order to refine their alignment. Therefore, the groundwater level decline minimum threshold is unlikely to result in significant and unreasonable seawater intrusion, but rather, will help to prevent seawater intrusion.

- **Degraded water quality**. ~~A significant and unreasonable condition for degraded water quality is a statistically-significant increase in the chloride or TDS concentration of groundwater in the low-TDS groundwater zone.~~As discussed in Section 4.7, significant and unreasonable degradation of groundwater quality is defined as the lateral or vertical migration of a TDS isocontour, or the induced migration of a contaminant contour exceeding water quality objectives in a nearby contamination plume. This sustainability indicator is closely related to changes in the dynamic equilibrium between the saline water intrusion wedge near the shore and the overlying low-TDS groundwater zone that could be caused by groundwater level decline. ~~the decline of groundwater elevations in this zone, and groundwater elevation and quality monitoring will be used in tandem to assess potential undesirable results for this sustainability indicator.~~ As such, although the minimum thresholds may not be precisely aligned, they are compatible and related, and will be used in combination to assure sustainable groundwater management. Furthermore, the thresholds for degraded water quality and groundwater elevation decline may be adjusted during GSP implementation as more information becomes available in order to refine their alignment. Therefore, the groundwater elevation decline minimum threshold is unlikely to result in significant and unreasonable degraded water quality, but rather, will help to protect water quality.

- **Subsidence**. A significant and unreasonable condition for subsidence is any measurable long-term inelastic subsidence that damages existing infrastructure. Subsidence is caused by depressurization and compaction of fine-grained sediments in response to lowering groundwater levels, especially in confined systems when groundwater elevations fall below historical lows. The groundwater elevation minimum thresholds are set within 1 foot of historical low groundwater elevations, making measurable subsidence unlikely.

- **Depletion of interconnected surface waters.** A significant and unreasonable condition for the depletion of interconnected surface waters is depletion that induces significant and unreasonable degradation of GDEs, seawater intrusion in the tidal reaches of the river, or groundwater pumping-induced depletion of flow in the Salinas River that results in significant and unreasonable impacts to surface water uses. Lowering average groundwater elevations in areas adjacent to GDEs or other interconnected surface water bodies will incrementally increase depletion rates; however, the thresholds for groundwater level decline are set within the range of historical groundwater elevations in the Dune Sand Aquifer, which is unlikely to increase depletion to the point where it adversely affects GDEs or beneficial uses of surface water in the Salinas River. Furthermore, the threshold for groundwater level decline in the Dune Sand Aquifer was set specifically to be protective of the beneficial uses of surface water by wetland communities. For these reasons, the minimum threshold for chronic decline of groundwater levels is unlikely to result in significant and unreasonable impacts to the beneficial uses of surface water.

4.4.2.4 Minimum Thresholds in Relation to Adjacent Subbasins and GSPs

Regulation Requirements
§ 354.28 (b) The description of minimum thresholds shall include the following:
(3) How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.

The MGSA Area is located adjacent to the Monterey Subbasin and shares boundaries with ~~Marina Coast Water District (~~MCWD~~)~~ GSA and SVBGSA. The minimum threshold was selected to prevent potential locally-caused undesirable results from unsustainable groundwater extraction in the MGSA Area, while retaining compatibility with regional sustainable management criteria. Sustainable management criteria were established in coordination with MCWD GSA to support its sustainable management strategy. In addition, the minimum threshold for the 180-Foot and 400-Foot Aquifers was selected to be compatible with SVBGSA's minimum thresholds, which apply to the remainder of the Subbasin and to the portion of the Monterey Subbasin that is not managed by MCWD GSA. The thresholds represent a smooth groundwater elevation surface and would be continuous across inter-agency and inter-basin boundaries. As such, these thresholds will promote cohesive management to achieve the sustainability goals of MGSA, SVBGSA, and MCWD GSA.

MGSA's local sustainable management criteria for the Dune Sand Aquifer are compatible with SVBGSA's management strategy for the underlying regional aquifers. The minimum thresholds for the Dune Sand Aquifer to address local resource conditions will not impede or conflict with SVBGSA's ability to reach their sustainability goals. To the contrary, they will protect sensitive local resources in the portion of the Subbasin managed by SVBGSA from potential harm caused by unsustainable groundwater extraction in the MGSA Area.

4.4.2.5 Impact of Minimum Thresholds on Beneficial Uses and Users

Regulation Requirements:
§ 354.28 (b) The description of minimum thresholds shall include the following:
(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

The groundwater elevation minimum thresholds may have the following effects on beneficial users and land uses in the Subbasin:

- The threshold for the Dune Sand Aquifer is designed to prevent significant impacts to GDEs by assuring the groundwater supply on which they rely is not unreasonably affected by groundwater extraction in the MGSA Area. This will help to preserve protected habitats and species.
- The threshold for the 180-Foot and 400-Foot Aquifers is set within the range of historical groundwater level fluctuation, with the intent that beneficial users of groundwater for domestic, irrigation and small non-transient supply systems near the MGSA Area would not experience significant interference drawdown as a result of groundwater pumping in the MGSA Area. In addition, gradients that could induce the advancement of seawater intrusion would be controlled consistent with SVBGSA's regional strategy, so that the effect of seawater intrusion on downgradient groundwater users and property owners would not increase, and potentially could decrease as planned recharge and *in lieu* recharge projects are implemented.
- By setting the threshold within the historical range of groundwater level fluctuation, the likelihood of significant depletion of ~~low-TDS water~~groundwater resources ~~with potential beneficial uses as domestic and municipal supply~~ is decreased, protecting the water rights of potential beneficial users.
- If the MPWSP is constructed and ~~the~~ groundwater elevations decline~~s~~ to ~~measurable objectives described in Section 4.4.3 are reached~~trigger levels established in Chapter 6, management actions ~~may be required~~will be implemented to address ~~the drawdown~~groundwater level decline before undesirable results occur~~, as described in Chapter 6~~.

4.4.2.6 Current Standards Relevant to Sustainability Indicator

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(5) How state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the Agency shall explain the nature of and basis for the difference.

No federal, state, or local standards exist for chronic lowering of groundwater elevations.

4.4.2.7 Measurement of Minimum Thresholds

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(6) How each minimum threshold will be quantitatively measured, consistent with the monitoring network requirements described in Subarticle 4.

Groundwater elevation minimum thresholds will be directly measured ~~from~~ at RMS in the monitoring well network. The groundwater level monitoring will be conducted in accordance with the monitoring plan outlined in Chapter 5. Furthermore, the groundwater level monitoring will meet the requirements of the technical and reporting standards included in DWR's Regulations. A biological resource investigation will be conducted as described in Chapter 7~~6~~ to assess GDE susceptibility to drawdown, establish current baseline conditions, and develop a GDE response monitoring program.

4.4.3 Measurable Objectives and Interim Milestones

Regulation Requirements:

§354.30 (a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin with 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.

(b) Measurable objectives shall be established for each sustainability indicator, based on quantitative values using the same metrics and monitoring sites as are used to define the minimum thresholds.

(c) Measurable objectives shall provide a reasonable margin of operational flexibility under adverse conditions which shall take into consideration components such as historical water budgets, seasonal and long-term trends, and periods of drought, and be commensurate with levels of uncertainty.

(e) Each Plan shall describe a reasonable path to achieve the sustainability goal for the basin within 20 years of Plan implementation, including a description of interim milestones for each relevant sustainability indicator, using the same metric as the measurable objective, in increments of five years. The description shall explain how the Plan is likely to maintain sustainable groundwater management over the planning and implementation horizon.

The measurable objectives for chronic lowering of groundwater levels represent target groundwater elevations that are higher than the minimum thresholds in order to provide early warning so potentially adverse trends can be addressed in a timely fashion. Measurable objectives are also established to leave adequate operating flexibility to deal with anticipated variability in conditions such as seasonal and inter-annual climatic variations and droughts, uncertainties in aquifer conditions or unanticipated events. As stated in Section 4.2,

> *"~~The sustainability goal of this GSP is to~~MGSA will manage groundwater resources in the MGSA Area in a way that ensures all beneficial uses and users in, or affected by, groundwater management in the MGSA Area are protected from undesirable results, and have access to a safe and reliable groundwater supply that meets current and future demand."*

~~As such, the measurable objectives for groundwater level decline are intended to serve as triggers for management actions to prevent or mitigate undesirable results as described in Chapter 6. Interim milestones will only be established if corrective actions are implemented as part of these management actions; however, MGSA will support and collaborate with SVBGSA and MCWD GSA to meet their interim milestones, as appropriate.~~

The ~~following~~ measurable objectives ~~are~~ established for groundwater level decline are summarized in Table 4-2, and were developed based on the following approach:

- **Dune Sand Aquifer.** An elevation 1 foot above 2015 low groundwater levels in RMS near GDEs located east of the MGSA Area was adopted to establish the interim minimum thresholds. These minimum thresholds ~~to~~will be updated as warranted based on future planned investigations to address existing data gaps in the relationship between groundwater level declines and GDE response, as discussed in Chapter 7. MGSA adopts t~~T~~hese minimum thresholds ~~will be adopted~~ as measurable objectives on an interim basis as the data gaps are addressed and sustainable management criteria are updated early during the GSP implementation process. Based on the limited amplitude of seasonal and inter-annual fluctuation in groundwater levels in the Dune Sand Aquifer and the planned schedule for data gap analysis, this approach allows for protection of GDEs while allowing near-term flexibility in groundwater management. ~~The following conditions will trigger Management Action 2 described in Chapter 6:~~

TABLE 4-2. MEASURABLE OBJECTIVES AND INTERIM MILESTONES FOR CHRONIC DECLINE IN GROUNDWATER LEVELS

Monitoring Site	Aquifer	Minimum Threshold (ft NAVD88)	Current Groundwater Level* (ft NAVD88)	Interim Milestone at Year 2025 (ft NAVD88)	Interim Milestone at Year 2030 (ft NAVD88)	Interim Milestone at Year 2035 (ft NAVD88)	Measurable Objective (goal at Year 2040) (ft NAVD88)
MW-4S	Dune Sand	4.0	6.2	5.6	5.1	4.5	4.0
MW-4M	180-Foot	-2.0	0.8	0.4	-0.1	-0.5	-1.0
MW-4D	400-Foot	-14.9	-9.4	-9.3	-9.1	-9.0	-8.8
MW-5M	180-Foot	-6.3	-3.2	-3.1	-3.0	-2.9	-2.8
MW-5D	400-Foot	-16.0	-14.4	-13.3	-12.2	-11.1	-10.0
MW-6M	180-Foot	-25.0	-17.6	-17.7	-17.8	-17.9	-18.0
MW-7S	Dune Sand	4.8	8.8	7.8	6.8	5.8	4.8
MW-7M	180-Foot	-6.1	-2.9	-2.8	-2.7	-2.6	-2.5
MW-7D	400-Foot	-13.9	-10.6	-9.9	-9.2	-8.5	-7.8
MW-8S	Dune Sand	2.6	4.6	4.1	3.6	3.1	2.6
MW-8M	180-Foot	-4.8	-2.2	-2.2	-2.2	-2.1	-2.1
MW-8D	400-Foot	-14.0	-10.6	-10.0	-9.3	-8.7	-8.0
MW-9M	180-Foot	-10.4	-7.6	-7.4	-7.3	-7.1	-7.0
MW-9D	400-Foot	-24.1	-13.5	-14.6	-15.8	-16.9	-18.0

Notes:
NAVD88 = North American Vertical Datum of 1988

- ~~A drawdown to an elevation 1 foot above the 2015 low groundwater levels recorded in monitoring wells in the groundwater elevation monitoring network near GDEs. This measurable objective is an interim value that is set equal to the minimum threshold until a biological assessment can be completed to address data gaps in the relationship between groundwater level declines and GDE response.~~

- **180-Foot and 400-Foot Aquifers.** Measurable objectives were established to be consistent with those established by SVBGSA to provide a uniform and compatible and implementable strategy that addresses undesirable results regionally and allows for appropriate operating flexibility. SVBGSA identifies few RMS near the MGSA Area, but in order to establish measurable objectives, the groundwater elevation of SVBGSA's measurable objectives above its minimum thresholds for the nearest RMS in the 180- and 400-Foot Aquifers was utilized to establish compatible measurable objectives for this GSP, as follows:
  - The nearest SVBGSA RMS identified for the 180-Foot Aquifer are well 4S/02E-03F04, located about 4 miles northeast of the MGSA Area, and well 14S/02E-27A01, located about 4 miles to the east. The measurable objectives for these wells are set at 6.1 and 8 feet above the minimum thresholds, for an average of 7.0 feet. Therefore, for each 180-Foot Aquifer RMS in this GSP, the measurable objective was initially established at an elevation that is 7.0 feet above the minimum threshold. Hydrographs for the nested wells at each RMS location were then reviewed, and the measurable objective 180-Foot

Aquifer Wells was adjusted by scaling between the measurable objectives for the shallow and deep wells in accordance with observed vertical gradients to help assure that measurable objectives are set at realistically achievable elevations. Finally, for RMS at which minimum thresholds were adjusted to better match minimum thresholds adopted by SVBGSA, the measurable objectives were adjusted accordingly.

- The nearest SVBGSA RMS identified for the 400-Foot Aquifer is well 14S/02E-08M02, located about 1 mile northeast of the MGSA Area. The measurable objectives for this well~~s~~ is set at 6.1 feet above the minimum threshold. Therefore, for each 400-Foot Aquifer RMS in this GSP, the measurable objective was initially established at an elevation that is 6.1 feet above the minimum threshold. A similar approach to the above was used for final adjustments for RMS near well 14S/02E-08M02.~~A drawdown attributable to groundwater extraction in the MGSA Area (as determined by the spatial distribution of drawdown) to the following elevation:~~

The above-derived measurable objectives will be further updated as appropriate as additional modeling data from the SVIHM and other tools and studies become available, and in coordination with SVBGSA's update of its GSP.

- ~~A groundwater elevation in the 180-Foot or 400-Foot Aquifers that is 2 feet above historical low groundwater elevations measured in 2015 in 15% or more of the monitoring wells in the MGSA groundwater elevation monitoring well network.~~

4.4.4 Undesirable Results

Regulation Requirements:

§354.26 (a) Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.

§354.26 (b) The description of undesirable results shall include the following:

(1) The cause of groundwater conditions occurring throughout the basin that would lead to or has led to undesirable results based on information described in the basin setting, and other data or models as appropriate.

(2) The criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.

(3) Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results.

§354.26 (c) The Agency may need to evaluate multiple minimum thresholds to determine whether an undesirable result is occurring in the basin. The determination that undesirable results are occurring may depend upon measurements from multiple monitoring sites, rather than a single monitoring site.

Under SVBGSA's GSP, the groundwater elevation undesirable result for the Subbasin, on a regional scale, is reached when over the course of any one year, more than 15% of the groundwater elevation minimum thresholds are exceeded in any single aquifer (*i.e.*, either in the 180-Foot or the 400-Foot Aquifer). The 15% limit on minimum threshold exceedances for chronic lowering of groundwater levels allows for four exceedances in the 23 existing monitoring wells in SVBGSA's current monitoring network: two in the 180-Foot Aquifer and two in the 400-Foot Aquifer. This was considered by SVBGSA a reasonable number of exceedances given the hydrogeologic uncertainty of the Subbasin. Although the monitoring well network currently employed by SVBGSA does not include any wells located southwest of the Salinas River near the MGSA Area, the ~~S~~sustainable ~~M~~management ~~C~~criteria adopted by SVBGSA, combined with their projects and management actions, are expected by SVBGSA to lead to stabilization and likely improvement of the landward gradients in the 180-Foot and 400-Foot Aquifers that have led to seawater intrusion regionally.

Based on ~~this~~ the information in the previous sections, the local definition for significant and unreasonable groundwater level decline ~~is based on~~considers the following additional criteria:

- Groundwater drawdown in the 180-Foot or 400-Foot Aquifers below historical low groundwater elevations during SVBGSA's representative hydrologic period, assumed to be 1 foot above low groundwater levels measured in 2015 ~~in monitoring wells in the MGSA monitoring well network~~has been determined to be an appropriate definition of minimum thresholds by both SVBGSA and MGSA;
- ~~Well~~ This minimum threshold addresses potential undesirable results related to interference drawdown that adversely affects the capacity or economic viability of existing wells;
- This minimum threshold also limits landward gradients that drive inland seawater intrusion; and
- A similar approach has been determined by MGSA to be an appropriate definition for minimum thresholds in the Dune Sand Aquifer and would prevent drawdown~~and/or~~
- ~~Groundwater drawdown~~ in the Dune Sand Aquifer that is sufficient to cause vegetative stress in GDEs that leads to habitat degradation or harm to protected species.

The causes of potential undesirable results are discussed in Section 4.4.1 and the potential effects of undesirable results on the beneficial users of groundwater, land uses and property owners are discussed in Sections 4.4.1 and 4.4.2.

An undesirable result for chronic decline in groundwater levels is defined using the following combinations of minimum thresholds identified in Section 4.4.2:

- For the Dune Sand Aquifer, an undesirable result is defined to occur when minimum thresholds are exceeded at two or more RMS. There are currently three RMS located near GDEs ~~in proximity~~proximal to the MGSA Area (MW 4S, 7S and 8S). Review of hydrographs for the Dune Sand Aquifer included in Appendix 3.D indicates that groundwater levels can be affected by a variety of influences, including groundwater extraction, recharge from precipitation, recharge from the Salinas River and climatic factors. In order to account for uncertainty in aquifer conditions, an exceedance at two locations (66% ~~percent~~ of the RMS) is considered to provide an adequate level of confidence that an undesirable result is occurring given uncertainty about the aquifer system.
- The definition for undesirable results in the 180-Foot and 400-Foot Aquifers is an exceedance of the minimum thresholds in 15% or more of the RMS (i.e., two or more wells) in the MGSA groundwater elevation monitoring well network that are located proximal to potential drawdown receptors (MW 4M, 4D, 5M, 5D, 6M, 6M(L), 7M, 7L, 8M, 8L, 9M, and 9L). ~~An~~

~~undesirable result is defined to occur when minimum thresholds are exceeded in 15 % or more of the monitoring wells in an aquifer.~~

~~This threshold is~~~~is t~~The above definitions are effectively a westward and upward extension of the ~~minimum threshold~~~~undersirable~~undesirable result definition adopted by SVBGSA for the Subbasin, so as to avoid the formation of regional groundwater gradients that were determined to be significant and unreasonable and that could result in the advancement of seawater intrusion. Based on the available data, these thresholds will also be adequate to prevent significant and unreasonable well interference drawdown. ~~Nevertheless,~~ There are at least three small water supply systems reliant on groundwater in the area, and additional irrigation and domestic wells may exist. Therefore, interference drawdown of existing wells is a potential impact to be monitored as part of the Mitigation Monitoring and Reporting Plan (MMRP) (Zidar and Feeney 2019) for the proposed MPWSP and is a potential impact prevented under this GSP.

Additional beneficial users of shallow groundwater within the Dune Sand Aquifer include ~~groundwater-dependent ecosystems (~~GDEs~~),~~ which could also be adversely affected by groundwater elevation declines induced by pumping in the MGSA Area. As discussed in Section 3.2.6.1, several GDEs that support protected habitat and species are located in the vicinity of ~~east of~~ the MGSA Area~~, and similar features occur further to the north and south~~. ~~As a first step in this analysis, potential GDEs were identified near the MGSA Area in the Department of Water Resources' (DWR's) "NC Dataset Viewer" of the "Natural Communities Commonly Associated with Groundwater" database compiled by The Nature Conservancy in cooperation with DWR. Using best practices recommended by The Nature Conservancy (TNC 2019), these potential GDEs were determined to likely be dependent on shallow groundwater within the Dune Sand Aquifer.~~ The identified GDEs include palustrine and emergent wetlands (~~"~~vernal ponds~~"~~) with protected habitat and species, and are located to the east, northeast and southeast of the MGSA Area. In addition, riparian vegetation and riverine wetlands were identified along the Salinas River that may be at least partly dependent on groundwater. Shallow groundwater drawdown induced by pumping in the MGSA Area could adversely affect these GDEs, harming or degrading protected habitat, and harming protected species. Drawdown of the shallow groundwater table below the normal range of seasonal variation has the potential to induce stress in vegetation that ~~that~~ is dependent upon groundwater for all or a portion of the year, and unable to adapt to the greater groundwater depths. As a result, GDEs can be destroyed, undergo succession to a different state, or be otherwise degraded. The above definition of undesirable results recognizes this possibility and is the basis for sustainable management of this resource that would prevent significant and unreasonable impacts.

4.5 Reduction in Groundwater Storage

4.5.1 Local Factors Potentially Contributing to Significant and Unreasonable Conditions

Regionally, reduction in storage in the Subbasin's aquifers has historically occurred and is ongoing due to groundwater production for agricultural, municipal, and domestic use that exceeds the long-term sustainable yield of the Subbasin (SVBGSA 2019). ~~As noted in Section 4.4, a~~As previously described, a large groundwater depression ~~located~~has developed north of Salinas and is ~~has developed in~~apparent on both the 180-Foot/Shallow East Side Aquifers and 400-Foot/Deep East Side Aquifer maps, where elevations are generally -80 to -120 feet msl, and has led to other undesirable results. As a result, less groundwater in storage is available as a buffer against surface water supply shortfalls without causing undesirable results, most notably seawater intrusion. In keeping with this condition, SVBGSA's GSP defines significant and unreasonable reductions in groundwater storage in the Subbasin as those that:

- Lead to long-term reduction in groundwater storage;
- Lead to seawater intrusion and a reduction of water quality;
- Interfere with other sustainability indicators; and
- ~~a~~Affect GDEs and interconnected surface water.

Locally, the MGSA Area is located at the western edge of a substantial zone of low-TDS groundwater (TDS < 3,000 mg/L) extending vertically from the DSA into the180-Foot Aquifer and the 400-Foot Aquifer Sections 3.1.12 and 3.2.2. The volume of low-TDS groundwater in storage within the DSA alone has been estimated to be 188,000 acre-feet (Gottschalk *et al.* 2018). The State Water Resources Control Board (SWRCB) has designated groundwater with TDS concentrations of less than 3,000 mg/L as having an actual or potential beneficial use as municipal and domestic supply (SWRCB Resolution No. 88-63). The proposed MPWSP slant supply wells would draw source water from the Dune Sand and 180-Foot Aquifers, including water from this low-TDS zone. California law and the California Public Utilities Commission decision regarding the proposed MPWSP require that groundwater extraction for that proposed project may not adversely affect existing beneficial groundwater users or groundwater right holders (CPUC 2018). Thus, this low-TDS groundwater zone is the primary Subbasin groundwater storage that could be depleted by groundwater extraction in the MGSA Area.

As described Section 3.3.13, the local contribution to the sustainable yield from groundwater extraction in the MGSA Area is the amount of groundwater that can be withdrawn annually over a period of time without causing undesirable results within or near the MGSA Area. Undesirable results include, but may not be limited to, the following significant and unreasonable impacts beyond a 2015 baseline condition:

- Chronic groundwater level decline in the Dune Sand Aquifer that adversely effects GDEs or other beneficial groundwater users, including holders of overlying groundwater rights;
- Further seawater intrusion into the Dune Sand, 180-Foot, 400-Foot, and/or Deep Aquifers; or
- Degradation of the low-TDS groundwater zone within the Dune Sand and/or 180-Foot Aquifer.

~~Pumping of saline process water for the CEMEX plant has been ongoing since the 1960's at a rate of approximately 300 AFY. It is possible that this well is withdrawing a combination of saline and low-TDS groundwater; however, the long-term pumping has likely reached a state of equilibrium as of the SGMA baseline data of 2015. As such, the CEMEX well pumping has not resulted in significant and unreasonable low-TDS water depletion. Pumping of the CEMEX well will cease when the plant closes at the end of 2020. Short-term groundwater extraction during the test slant well pumping test may have depleted the low-TDS zone in the Dune Sand and 180-Foot Aquifers, however, the tools to assess the~~

~~amount of depletion do not currently exist. The pumping test was discontinued in February 2018. without reports of undesirable results, and represents the only long-term groundwater extraction within the MGSA Area.~~

~~As discussed in Section 4.2, g~~Groundwater extraction for the CEMEX plant has been ongoing since the 1960~~'~~s without reports of undesirable results, and represents the only long-term groundwater extraction within the MGSA Area. It is possible that this well is withdrawing a combination of saline and low-TDS groundwater. Data are not available to assess if groundwater extraction from the CEMEX well historically contributed to seawater intrusion in this area since the 1960s when pumping started, but based on the available data the groundwater level and quality conditions associated with this extraction were likely stable by 2015 and therefore considered sustainable under SGMA. However, due to concern about limiting extractions to avoid ~~such contributions~~seawater intrusion, the City of Marina, MCWD, and Monterey County ~~and several other agencies~~ entered into the 1996 Annexation Agreement (provided as Appendix 8.B) limiting extractions at the CEMEX property to 500 AFY.

Water quality trends and groundwater elevations during test slant well pumping at a rate of 2,860 AFY from April 2015 to February 2018 indicate that low TDS groundwater (< 3,000 mg/L TDS) from the inland portion of the Dune Sand and 180-Foot Aquifers was likely being captured during the test, and that the equilibrium between the saline groundwater wedge and low TDS groundwater zone within and east of the MGSA Area may have been at least temporarily affected. As previously described, ET from nearby GDEs decreased significantly during this test, due to a combination of drawdown and drought conditions. The ET from this GDE has since recovered, but it is not known whether vegetative stress resulted in longer-term changes to the habitat community composition or quality. For these reasons, without additional data and modeling tools, it is not possible to assess whether continued pumping at the rate of the test slant well would be sustainable in the long term or whether it would cause undesirable results that indicate a significant and unreasonable reduction in groundwater storage. If the MPWSP is fully approved and implemented, the proposed increased source water pumping rate of 17,400 AFY would have a greater effect on the local groundwater budget, potentially further stressing sustainability indicators including groundwater level decline (and impacts to GDEs), water quality degradation, and seawater intrusion.

~~Locally, MGSA has evaluated the following criteria to establish the minimum threshold for depletion of groundwater storage in the low-TDS groundwater zone in the Dune Sand, 180-Foot and 400-Foot Aquifers:~~

- ~~As discussed in Section 2.2.6.4, the 1996 *Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands* (1996 Annexation Agreement), which was entered to "help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin," limited groundwater withdrawal for the CEMEX property to Lonestar's historical use of 500 AFY of groundwater."~~

- ~~Seasonal fluctuations in groundwater elevations in the Dune Sand Aquifer range from approximately 1 to 2 feet. The range of fluctuation in the low-TDS zone thickness is not known. These factors limit the ability to reliably detect very small changes in low-TDS-zone thickness;~~

~~however, changes or 1 foot or more should be distinguishable from natural background fluctuations.~~

The construction of new wells in the Deep Aquifer is currently prohibited and there are no plans to construct any Deep Aquifer wells within the MGSA Area. As discussed in Chapter 6, MGSA will support management actions by SVBGSA to strengthen these prohibitions. For these reasons, undesirable results, minimum thresholds, and measurable objectives for reduction in groundwater storage are not adopted for the Deep Aquifer in this GSP.

4.5.2 Minimum Thresholds

Regulation Requirements:
§354.28 (a) Each Agency in its Plan shall establish minimum thresholds that quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site established pursuant to Section 354.36. The numeric value used to define minimum thresholds shall represent a point in the basin that, if exceeded, may cause undesirable results as described in Section 354.26. (b) The description of minimum thresholds shall include the following: (1) The information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator. The justification for the minimum threshold shall be supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting. (c) Minimum thresholds for each sustainability indicator shall be defined as follows: (2) Reduction of Groundwater Storage. The minimum threshold for reduction of groundwater storage shall be a total volume of groundwater that can be withdrawn from the basin without causing conditions that may lead to undesirable results. Minimum thresholds for reduction of groundwater storage shall be supported by the sustainable yield of the basin, calculated based on historical trends, water year type, and projected water use in the basin. (d) An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.

Section ~~§~~ 354.28(c)(2) of the Regulations state~~s~~ that "*The minimum threshold for reduction of groundwater storage shall be a total volume of groundwater that can be withdrawn from the basin without causing conditions that may lead to undesirable results*." SVBGSA has adopted a basin-wide minimum threshold equal to the total volume of groundwater that can be annually withdrawn from the Subbasin without leading to a long-term reduction in groundwater storage or interfering with other sustainability indicators, which is a calculated long-term average sustainable yield of 112,000 AFY. The minimum threshold applies to pumping of natural recharge only. Pumping of intentionally recharged water that is not part of the natural recharge is not considered when compared against the minimum threshold. SVBGSA's calculations account for current land use, future urban growth, and anticipated reasonable climate change. Seawater intrusion (i.e., seawater inflow volume) is not considered part of the sustainable yield. ~~are The~~ SVBGSA's GSP states that during average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, ~~the~~ total groundwater pumping shall not exceed the minimum threshold, which is equivalent to the long-term sustainable yield of the aquifers in the Subb~~B~~asin. SVBGSA states the sustainable yield is an estimate only and will be updated as additional studies are undertaken and data are compiled (e.g., to address identified data gaps). Release of the SVIHM by the USGS, which is currently expected in late 2020, will represent a significant improvement in the tools available for assessment of Subbasin sustainable yield, and SVBGSA, MCWD GSA and MGSA all plan to use this tool to refine their understanding of the local and regional water budgets.

Because the local tools to further assess the MGSA Area component of the Subbasin-wide sustainable yield are not yet available, this GSP adopts SVBGSA's basin-wide sustainable yield estimate as a minimum threshold, supplemented locally by the following interim minimum threshold related to the low-TDS groundwater zone near the MGSA Area in order to prevent undesirable results from groundwater extraction in the MGSA Area:

- A decrease in the amount of low-TDS groundwater in storage in the Dune Sand, 180-Foot and 400-Foot Aquifers as measured by groundwater elevations, extraction reporting and induction logging.

This interim minimum threshold is adopted to prevent significant and unreasonable impacts to GDEs, seawater intrusion, groundwater quality degradation, and potential harm to overlying groundwater right holders, while the data gaps regarding the sustainable yield are addressed as discussed in Chapters 6 and 7, and until a local sustainable yield volume minimum threshold can be determined.

The relationship between groundwater elevations (combined with induction logging and extraction volume logging to assess changes in the volume of low-TDS groundwater storage) and undesirable results related to chronic groundwater level decline (through significant and unreasonable impacts to GDEs), seawater intrusion and groundwater quality degradation is discussed in Section 4.5.1.

~~Consequently, the following minimum thresholds have been adopted to define significant and unreasonable groundwater storage depletion:~~

- ~~A decrease in the thickness of the low TDS zone of more than 1 foot (considering seasonal variability) identified by induction logging in three or more wells in the induction logging monitoring well network; and~~
- ~~A spatial distribution of groundwater level decline that indicates the logged changes identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA Area.~~

4.5.2.1 Relationships Between Minimum Thresholds and Other Sustainability Indicators

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following: (2) The relationship between the minimum thresholds for each sustainability indictor, including and explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.

The minimum threshold for reduction in groundwater storage is based on ~~a uniform standard applied with two spatial significance tests for confirmation. The standards are compatible and the spatial significance tests are intended to eliminate the effect of offsetting trends and natural fluctuations~~a basin-wide estimate of sustainable yield shared by the GSAs with jurisdiction in the Subbasin, supplemented by a local storage threshold that prevents undesirable results while data gaps in the local and regional sustainable yield are addressed. Therefore, ~~so~~ there is no conflict between the minimum threshold ~~ir~~ application at different locations in the Subbasin.

Groundwater storage reduction thresholds are related to other sustainability indicators in the MGSA Area and its vicinity. The groundwater storage reduction threshold was selected to avoid undesirable results for other sustainability indicators and to promote compatible management strategies. By definition, the sustainable yield must avoid undesirable results related to any of the other sustainability indicators. If measurable objectives and interim milestones are not met, MGSA will act to curtail local pumping to sustainable levels and refine the local sustainable yield estimate. MGSA will also coordinate with SVBGSA to update the regional sustainable yield estimate as appropriate.

- **Chronic decline in groundwater levels**. As discussed in Section 4.4, a significant and unreasonable condition for change in groundwater elevations is a decline below levels that cause GDE s~~S~~tress, result in significant and unreasonable interference drawdown, or decline below levels regionally determined by SVBGSA to result in undesirable conditions related to seawater intrusion. ~~drawdown below an elevation surface that is consistent with the regional management strategy for the Subbasin.~~ Decline of groundwater elevations would be associated with changes in storage and will be used in combination with water quality monitoring to assess changes in low-TDS groundwater storage. These sustainable management criteria will be used in combination to manage both chronic decline in groundwater levels and reduction in groundwater storage. Although the minimum thresholds may not be precisely aligned, they are compatible and related, and will be used in combination to assure sustainable groundwater management. Indeed, the interim minimum threshold for reduction in storage has been developed to prevent potential undesirable results related to decline in groundwater levels. These thresholds may be refined during GSP implementation as more information and better tools become available. Therefore, the groundwater storage reduction minimum threshold is unlikely to result in significant and unreasonable groundwater level decline.

- **Seawater intrusion.** As discussed in Section 4.6, significant and unreasonable seawater intrusion is defined as the migration of chloride isocontours that define the extent of seawater intrusion as of 2017 (for the 180-Foot, 400-Foot and Deep Aquifers) or 2018 (for the Dune Sand Aquifer). ~~A significant and unreasonable condition for seawater intrusion is lateral or vertical migration of the saline water intrusion wedge located beneath and east of the MGSA Area.~~ This sustainability indicator is closely related to changes in the dynamic equilibrium between the saline water intrusion wedge near the shore and the overlying low-TDS groundwater zone. By definition, sustainable yield is predicated in the avoidance of undesirable results, including seawater intrusion, and the sustainable management of seawater intrusion and reduction in storage will be coordinated. Indeed, the interim minimum threshold for reduction in storage has been developed to prevent potential undesirable results related to seawater intrusion. ~~As discussed in Section 3.2.3.2, a decrease in low-TDS groundwater storage would lead to a change in the interface dynamics between the saline water intrusion wedge and the overlying low-TDS zone. The threshold will help to maintain a regional balance in the amount of low-TDS water in storage in the aquifers; however, the balance may still be locally changed. Because the threshold is relatively low compared to the total volume of low-TDS water in storage, it is not expected to significantly change the saline/low-TDS interface dynamics near the MGSA Area. Furthermore, t~~The thresholds for seawater intrusion and reduction in storage may be adjusted during GSP implementation as more information becomes available in order to refine their alignment and assure the avoidance of undesirable results. Therefore, the groundwater storage reduction minimum threshold is unlikely to result in significant and unreasonable seawater intrusion, but rather, may help to prevent seawater intrusion.

- **Degraded water quality**. As discussed in Section 4.7, significant and unreasonable degradation of groundwater quality is defined as the lateral or vertical migration of a TDS isocontour, or the induced migration of a contaminant contour exceeding water quality objectives in a nearby contamination plume. This sustainability indicator is closely related to seawater intrusion. By definition, sustainable yield is predicated in the avoidance of undesirable results, including degradation in groundwater quality, and the sustainable management of groundwater quality degradation and reduction in storage will be coordinated. Indeed, the interim minimum threshold for reduction in storage has been developed to prevent potential undesirable results related to groundwater quality degradation. ~~A significant and unreasonable condition for degraded water quality is a statistically-significant increase in the chloride or TDS concentration of groundwater in the low-TDS groundwater zone. This sustainability indicator is closely related to reduction in groundwater storage in the low-TDS groundwater zone, and groundwater elevation and quality monitoring will be used in tandem to assess potential undesirable results for both sustainability indicators. Although the minimum thresholds may not be precisely aligned, they are compatible and related, and will be used in combination to assure sustainable groundwater management. Furthermore, t~~The thresholds for degraded water quality and reduction in storage may be adjusted during GSP implementation as more information becomes available in order to refine their alignment and assure the avoidance of undesirable results. Therefore, the groundwater storage reduction minimum threshold is unlikely to result in significant and unreasonable degraded water quality, but rather, may help to protect water quality.

- **Subsidence**. A significant and unreasonable condition for subsidence is any measurable long-term inelastic subsidence that damages existing infrastructure. Subsidence is caused by depressurization and compaction of fine-grained sediments in response to lowering groundwater levels, especially in confined systems when groundwater elevations fall below historical lows. Since the threshold for reduction in ~~low-TDS~~ groundwater storage is unlikely to be associated with significant and unreasonable declines in groundwater elevations, measurable subsidence is unlikely.

- **Depletion of interconnected surface waters.** A significant and unreasonable condition for the depletion of interconnected surface waters is depletion that induces significant and unreasonable degradation of GDEs, seawater intrusion in the tidal reaches of the river, or groundwater pumping-induced depletion of flow in the Salinas River that results in significant and unreasonable impacts to beneficial surface water uses. As discussed above, the minimum threshold for reduction in groundwater storage is unlikely to result in a significant and unreasonable decline in groundwater levels. Without a significant decline in groundwater levels, significant changes in surface water depletion are not anticipated. Therefore, the groundwater storage reduction minimum threshold is unlikely to result in significant and unreasonable depletion of interconnected surface water.

4.5.2.2 Minimum Thresholds in Relation to Adjacent Subbasins and GSPs

Regulation Requirements
§ 354.28 (b) The description of minimum thresholds shall include the following:
(3) How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.

The MGSA Area is located adjacent to the Monterey Subbasin and shares boundaries with ~~Marina Coast Water District (~~MCWD~~)~~ GSA and SVBGSA. The ~~low-TDS groundwater zone~~aquifers for which the minimum thresholds were developed extend~~s~~ from the 180/400 Foot Aquifer Subbasin into the Monterey Subbasin south and southeast of the MGSA Area. The minimum threshold was selected to prevent potential locally-caused undesirable results caused by unsustainable groundwater extraction in the MGSA Area, while retaining compatibility with regional sustainable management criteria that will be coordinated across S~~s~~ubbasin boundaries. Sustainable management criteria were coordinated with MCWD to support their sustainable management strategy in the adjacent Monterey Subbasin. MCWD also participated in the development of SVBGSA's GSP, including establishment of the regional sustainable management criteria for groundwater storage depletion adopted in this GSP, and therefore, ~~they~~the sustainable management criteria are regionally compatible across the jurisdictions of all the GSAs in the 180/400 Foot Aquifer Subbasin and the adjacent Monterey Subbasin, and~~. In addition, minimum thresholds for the 180-Foot and 400-Foot Aquifers were selected to be compatible with SVBGSA's minimum thresholds for regional groundwater management, which apply to the remainder of the Subbasin and to the portion of the Monterey Subbasin that is not managed by MCWD GSA. As such, these thresholds~~ will promote cohesive management to achieve the sustainability goals of MGSA, SVBGSA, and MCWD GSA.

SVBGSA's GSP does not present sustainable management criteria for the Dune Sand Aquifer ~~because its GSP is more regionally focused~~; however, the SVBGSA GSP water budget and sustainable yield estimates include recharge through the Dune Sand Aquifer, so in effect, it is included in these estimates. In addition, we understand that MCWD GSA intends to manage the Dune Sand Aquifer as a principal aquifer in the GSP for the Monterey Subbasin. As such, the fact that the minimum threshold for groundwater storage depletion in this GSP applies to the Dune Sand as well as the 180-Foot and 400-Foot Aquifers will not conflict with the ability of MCWD GSA or SVBGSA to meet their respective sustainability goals. ~~MGSA's locally-developed minimum thresholds for reduction in groundwater storage are compatible with SVBGSA's regional sustainable management criteria for the underlying regional aquifers and they will protect resources of local value, while also preventing significant and unreasonable harm to the groundwater quality and storage in the underlying aquifers caused by unsustainable groundwater extraction in the MGSA Area.~~

4.5.2.3 Impact of Minimum Thresholds on Beneficial Uses and Users

Regulation Requirements:
§ 354.28 (b) The description of minimum thresholds shall include the following:
(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

The groundwater storage reduction minimum threshold may have the following effects on beneficial users and land uses in the Subbasin:

- The threshold will help to maintain the amount of low-TDS water in storage with a designated potential beneficial use for domestic and municipal supply.

- The threshold will serve to assure that the low-TDS/saline water balance in the seaward side of the Subbasin is retained, helping to control seawater intrusion and benefiting municipal and irrigation groundwater uses and users.
- The threshold will help assure the future availability of ~~low-TDS~~ groundwater with potential beneficial uses to groundwater right holders.
- ~~If the MPWSP is constructed and the groundwater storage reduction measurable objectives described in Section 4.5.3 are reached, the management actions described in Section 6.2.1 will be implemented.~~

4.5.2.4 Current Standards Relevant to Sustainability Indicator

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(5) How state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the Agency shall explain the nature of and basis for the difference.

No federal, state, or local standards exist for reduction of groundwater storage. California water law requires that if the MPWSP is fully approved and implemented, the project will not obtain appropriative water rights if the extraction of groundwater causes injury to existing beneficial users or water rights in the Subbasin.

4.5.2.5 Measurement of Minimum Thresholds

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(6) How each minimum threshold will be quantitatively measured, consistent with the monitoring network requirements described in Subarticle 4.

Groundwater storage reduction will be measured using the MGSA monitoring well network using a combination of groundwater level ~~and groundwater quality~~ monitoring together with extraction reporting and induction logging to calculate changes in low-TDS groundwater storage as an interim proxy for extraction volume estimates alone. ~~, including groundwater sampling and analysis, the use of specific conductance sensors, and annual induction logging to assess the lateral and vertical distribution of salinity. The induction logging data will be used to assess the thickness and changes in thickness, of the low-TDS water zone at each MPWSP monitoring well cluster.~~ The groundwater level and quality monitoring will be conducted in accordance with the monitoring plan outlined in Chapter 5, and~~.~~ ~~Furthermore, the groundwater level monitoring~~ will meet the requirements of the technical and reporting standards included in the Regulations.

4.5.3 Measurable Objectives and Interim Milestones

Regulation Requirements:

§354.30 (a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin with 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.

(b) Measurable objectives shall be established for each sustainability indicator, based on quantitative values using the same metrics and monitoring sites as are used to define the minimum thresholds.

(c) Measurable objectives shall provide a reasonable margin of operational flexibility under adverse conditions which shall take into consideration components such as historical water budgets, seasonal and long-term trends, and periods of drought, and be commensurate with levels of uncertainty.

(e) Each Plan shall describe a reasonable path to achieve the sustainability goal for the basin within 20 years of Plan implementation, including a description of interim milestones for each relevant sustainability indicator, using the same metric as the measurable objective, in increments of five years. The description shall explain how the Plan is likely to maintain sustainable groundwater management over the planning and implementation horizon.

~~•~~ SVBGSA has set a measurable objective for reduction in groundwater storage that is the same as its minimum threshold, which is the estimated sustainable yield of the Subbasin of 112,000 AFY. Recognizing the practical limitations ~~of assessing small changes in storage in the low-TDS groundwater zone relative to seasonal and inter-annual variability~~imposed by the current data gaps, the MGSA adopts the same approach ~~locally~~in this GSP. This GSP therefore adopts a regional measurable objective equal to the estimated Subbasin sustainable yield of 112,000 AFY, supplemented locally by an interim measurable objective of a decrease in the amount of low-TDS groundwater in storage in the Dune Sand, 180-Foot and 400-Foot Aquifers as measured by groundwater elevations, extraction reporting and induction logging. Interim milestones shall be equal to the measurable objectives. The interim local measurable objective will be updated as local and regional data gaps regarding Subbasin sustainable yield are addressed in accordance with Chapters 6 and 7. ~~The measurable objective for groundwater storage decline is set at the same quantitative standard as the minimum threshold, and serves as the trigger for implementing Management Action 1 as described in Section 6.2.1:A decrease in the thickness of the low TDS zone of more than 1 foot (considering seasonal variability) identified by induction logging three or more wells in the induction logging monitoring well network; and~~

~~• A spatial distribution of groundwater level decline that indicates the logged changes identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA Area.~~

~~The measurable objectives for this sustainability indicator are intended to serve as triggers for management actions to prevent or mitigate undesirable results as described in Chapter 6. Interim milestones will only be established if corrective actions are implemented as part of these management actions; however, MGSA will support and collaborate with SVBGSA and MCWD GSA to meet their interim milestones, as appropriate.~~,

4.5.4 Undesirable Results

Regulation Requirements:

§354.26 (a) Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.

§354.26 (b) The description of undesirable results shall include the following:

(1) The cause of groundwater conditions occurring throughout the basin that would lead to or has led to undesirable results based on information described in the basin setting, and other data or models as appropriate.

(2) The criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.

(3) Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results.

§354.26 (c) The Agency may need to evaluate multiple minimum thresholds to determine whether an undesirable result is occurring in the basin. The determination that undesirable results are occurring may depend upon measurements from multiple monitoring sites, rather than a single monitoring site.

Based on ~~this~~ the information in the previous sections, ~~this GSP defines~~the local definition for significant and unreasonable reduction in groundwater storage ~~based on~~considers the following:

- The GSP regulations define the minimum threshold for reduction in groundwater storage as a groundwater volume that can be withdrawn without causing conditions that may lead to undesirable results (23 CCR § 354.28(c)(2)). By definition, this requires consideration of and close coordination with management of other sustainable management criteria.
- Depletion of groundwater storage has the potential to cause, or lead to conditions that ~~will~~ in the future may cause, significant and unreasonable:
  - Impacts to GDEs;
  - Seawater intrusion or groundwater quality degradation that affects agricultural, municipal and other beneficial uses and potential beneficial uses; and/or
  - Reduction in the availability of groundwater and surface water by water right holders, or increased pumping or treatment costs.
- ~~A depletion of the amount of low-TDS groundwater in storage in the DSA, 180-Foot Aquifer and 400-Foot Aquifer in and near the MGSA Area resulting from groundwater extraction in the MGSA Area;~~
- ~~A depletion of the amount of low-TDS groundwater in storage that adversely impacts groundwater right holders; or~~
- ~~An imbalance in the amount of low-TDS groundwater and denser saline water that leads to further seawater intrusion.~~

The causes of potential undesirable results are further discussed in Section 4.5.1 and the potential effects of undesirable results on the beneficial users of groundwater, land uses, and property owners are discussed in Sections 4.5.1 and 4.5.2.

~~The~~ An undesirable result for reduction in groundwater storage is defined based on the minimum threshold discussed in Section 4.5.2 as an annual depletion, in any given year, exceeding the Subbasin-wide minimum threshold of 112,000 AFY or resulting in a depletion of low-TDS groundwater storage east of the MGSA Area as determined as measured by groundwater elevations, extraction reporting and induction logging. Because additional local tools to further assess the MGSA Area component of the basin-wide sustainable yield are expected to be available in the near future, MGSA has adopted this definition of undesirable results to prevent undesirable results as data gaps are addressed.

~~of groundwater in storage in the low-TDS groundwater zone as determined by groundwater elevation monitoring, groundwater quality monitoring and induction logging to assess the thickness of the low-TDS zone, as discussed further in Chapter 5.~~

4.6 SEAWATER INTRUSION

4.6.1 LOCAL FACTORS POTENTIALLY CONTRIBUTING TO SIGNIFICANT AND UNREASONABLE CONDITIONS

As discussed in Section 3.2.3.2, MCWRA has been designated as the agency responsible for monitoring seawater intrusion in the Subbasin and publishes estimates of the extent of seawater intrusion every two years based on the inferred location of the 500 mg/L chloride concentration isocontour. Maps showing the progression of the seawater intrusion front over time up to 2015 in the 180-Foot and 400-Foot Aquifers are presented as Figure 4-1 ~~**Error! Reference source not found.**~~ and Figure 4-2~~**Error! Reference source not found.**~~, respectively. These figures also show the advance of seawater intrusion into the Dune Sand Aquifer using a standard of 3,000 mg/L TDS (or 1,660 mg/L chloride using a conversion factor of 0.554 for the chloride content of seawater) identified during the airborne electromagnetic (AEM) survey (Gottschalk *et al*. 2018). Continued seawater intrusion is driven by a large trough north and northeast of Salinas where groundwater elevations have fallen below sea level. SVBGSA estimates of groundwater storage losses due to continued seawater intrusion in the Subbasin range from 8,000 to 14,000 AFY (SVBGSA 2019).

As part of its Best Management Practices (BMPs) for Monitoring Networks[2] for seawater intrusion, DWR emphasizes the importance of capturing "*changes in water quality conditions associated with the dynamic seawater-freshwater interface along coastal aquifers. This system is largely controlled by differences in water density and hydraulic head to maintain the advancement of the seawater front. A robust understanding is necessary to identify the preferential flow pathways where seawater can intrude inland and associate with freshwater groundwater extractions or declines in head*." In compliance with these requirements, the MGSA GSP uses all the available data, including AEM geophysical data, to describe the extent of seawater intrusion, and considers both the nearshore dynamics as well as the inland intrusion front described in SVBGSA's GSP.~~.~~

[2] California Department of Water Resources (DWR), *Best Management Practices for the Sustainable Management of Groundwater, Monitoring Networks and Identification of Data Gaps BMP*, California Department of Water Resources Sustainable Groundwater Management Practices (December 2016).

Locally, the MGSA Area is located on the seaward side of the interface between a dense saline water intrusion wedge and an over-riding zone of low-TDS groundwater that is locally recharged through the Dune Sand Aquifer. The interface extends from the Dune Sand Aquifer in the eastern portion of the MGSA Area and dips eastward down through the 180-Foot Aquifer and into the 400-Foot Aquifer and is subject to density-driven flow in general conformance with Ghyben-Herzberg dynamics (Sections 3.1.12 and 3.2.2). Groundwater extraction in the MGSA Area has the potential to affect the dynamic equilibrium of this nearshore groundwater system and cause seawater intrusion through the migration of the saline water wedge, which could in turn lead to deeper seawater intrusion into the currently unintruded Deep Aquifer, or promote the lateral migration or persistence of seawater intrusion (as defined by the 500 mg/L chloride ~~iso~~concentration isocontour) further inland.

As discussed in Section 3.2.3.1, the gravity-driven interface dynamics which occur near the MGSA Area differ from the advective solute transport that characterizes seawater intrusion in more inland areas, where the intruding water has a much lower TDS concentration and density. In these inland areas, dissolved solids essentially behave as a tracer that follows groundwater flow landward in the 180- and 400-Foot Aquifers and seaward in the Dune Sand Aquifer. ~~As noted above, the Dune Sand, 180-Foot and 400-Foot Aquifers are currently seawater intruded and therefore experiencing undesirable results based on the regional definition. However, these~~ Portions of the seawater intruded areas of these aquifers contain groundwater ~~with~~ designated ~~potential beneficial uses, including~~as suitable or potentially suitable for municipal and domestic supply under SWRCB Resolution No. 88-63, that are required to be protected from further degradation by seawater intrusion under SWRCB Resolution No. 68-16. ~~In addition, movement of the saline water intrusion wedge could exacerbate seawater intrusion further inland, and lead to the further migration of the regional seawater intrusion front.~~ The ~~above definition of undesirable results is therefore intended to~~sustainable management criteria for seawater intrusion must therefore address local conditions and anticipated groundwater demand changes so as to supplement and support the regional definition, thus maintaining and achieving sustainable management both locally and regionally.

The Deep Aquifer is not currently seawater intruded. As discussed in Chapter 3, however, the Deep Aquifer is believed to receive recharge via leakance from the overlying 400-Foot Aquifer. The competence and lateral continuity of the aquitards that separate the Deep Aquifer system from the overlying aquifers has not been well characterized; therefore, Monterey County has adopted an ordinance prohibiting further development of this aquifer until the required characterization is complete. As discussed in Chapters 6 and 7, plans are being discussed by MCWRA, SVBGSA and MCWD GSA to address this data gap. Based on this information, the possibility exists that seawater intrusion could migrate vertically from the 400-Foot Aquifer into the Deep Aquifer. There are currently no Deep Aquifer wells in the MGSA Area, and this GSP includes support for prohibition of installation of Deep Aquifer production wells in the MGSA Area. Nevertheless, groundwater extraction from the upper aquifer system could cause further seawater intrusion by expansion or migration of the saline water wedge that underlies this area. Such an expansion or migration would put the Deep Aquifer at greater risk of seawater intrusion.

~~Based on this information, the local definition for significant and unreasonable seawater intrusion is based on the following:~~

- ~~Lateral or downward movement of the saline water intrusion wedge; or~~
- ~~Seawater intrusion into the Deep Aquifer.~~

4.6.2 Minimum Thresholds

Regulation Requirements:

§354.28 (a) Each Agency in its Plan shall establish minimum thresholds that quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site established pursuant to Section 354.36. The numeric value used to define minimum thresholds shall represent a point in the basin that, if exceeded, may cause undesirable results as described in Section 354.26.

(b) The description of minimum thresholds shall include the following:

(1) The information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator. The justification for the minimum threshold shall be supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting.

(c) Minimum thresholds for each sustainability indicator shall be defined as follows:

(3) Seawater Intrusion. The minimum threshold for seawater intrusion shall be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results. Minimum thresholds for seawater intrusion shall be supported by the following:

(A) Maps and cross-sections of the chloride concentration isocontour that defines the minimum threshold and measurable objective for each principal aquifer.

(B) A description of how the seawater intrusion minimum threshold considers the effects of current and projected sea levels.

(d) An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence

Section ~~§~~ 354.28(c)(3) of the Regulations states that "*The minimum threshold for seawater intrusion shall be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results*." Regionally, SVBGSA's GSP defines significant and unreasonable seawater intrusion in the Subbasin as seawater intrusion beyond the position of the 500 mg/L chloride isoconcentration contour interpolated by MCWRA in 2017 for the 180-Foot and 400-Foot Aquifers (~~MCWRA~~ SVBGSA 2019). The minimum threshold adopted by the SVBGSA for seawater intrusion into the Deep Aquifer is ~~a~~the location ~~for a~~of the 500 mg/L chloride isocontour at Highway 1. SVBGSA does not present a minimum threshold for the Dune Sand Aquifer.

Locally, the minimum thresholds for seawater intrusion were developed based on assessment of the following additional criteria:

- The extent of the saline water intrusion wedge (TDS > 10,000 mg/L) interpreted from airborne electromagnetic surveys performed in 2017 (Gottschalk *et al.* 2018) plays an important role in seawater intrusion dynamics recognized in the DWR guidance and could affect both lateral and vertical seawater intrusion;
- ~~The current lack of documented s~~Seawater intrusion into the Deep Aquifer has not yet been observed; and

- ~~The potential that migration or expansion of the saline water wedge beneath and near the MGSA Area could result in seawater intrusion into the Deep Aquifer, or cause further lateral migration of the inland extent of the 500 mg/L chloride isoconcentration contour that defines seawater intrusion regionally~~The Dune Sand Aquifer stores significant volumes of low-TDS groundwater with TDS concentrations less than 3,000 mg/L (chloride < 1,660 mg/L) with a designated beneficial use for domestic and municipal supply.

~~Regionally, the 2017 extent of the 500 mg/L chloride concentration isocontour as mapped by MCWRA is adopted as the seawater intrusion minimum threshold for both the 180- and 400-Foot Aquifers. Regionally, SVBGSA has adopted the line defined by Highway 1 as the seawater intrusion minimum threshold for the Deep Aquifer; In this local GSP MGSA has adopted a position that any detectable seawater intrusion into the currently unintruded Deep Aquifer represents a significant and unreasonable impact and would exceed the minimum threshold for seawater intrusion into this important local aquifer.~~

Based on this ~~assessment~~information, MGSA established the following minimum thresholds for significant and unreasonable seawater intrusion ~~for the upper aquifer system (the Dune Sand, 180-Foot and 400-Foot Aquifers):~~in this GSP:

- **Dune Sand Aquifer**. In compliance with SWRCB Resolution Nos. 88-63 and 68-16, this GSP defines the minimum threshold for significant and unreasonable seawater intrusion into the Dune Sand Aquifer as migration of the 1,700 mg/L chloride isocontour (equivalent to 3,000 mg/L TDS) beyond the location determined by Gottschalk *et al.* (2018) (Figure 4-2).
- **180-Foot and 400-Foot Aquifers**. This GSP adopts the SVBGSA minimum threshold of significant unreasonable seawater intrusion beyond the position of the 500 mg/L chloride concentration isocontour interpolated by MCWRA in 2017 (Figure 4-2). ~~Thickening of the saline water intrusion wedge by more than 5 % compared to baseline measurements made before any expansion of pumping in the MGSA Area occurs, as determined by induction logging results in the induction-logging monitoring well network; or Lateral migration of the saline water intrusion wedge beyond the limits established by the 2017 AEM survey, as determined by interpolation of induction logging results in the induction monitoring well network; and~~
- **Deep Aquifer.** In compliance with SWRCB Resolution No. 68-16, this GSP defines significant and unreasonable seawater intrusion into the Deep Aquifer as migration of a 500 mg/L chloride isocontour into the Deep Aquifer landward of the western Subbasin boundary (Figure 4-2).
- ~~A spatial pattern of groundwater level declines that indicates the seawater intrusion wedge migration or expansion identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA Area.~~

~~Significant and unreasonable seawater intrusion in the Deep Aquifer is defined by the following minimum thresholds:~~

- ~~Exceedance of the SMCL for chloride or TDS (500 mg/L and 1,000 mg/L, respectively) in any Deep Aquifer monitoring well included in the water quality monitoring well network.~~

As discussed in Chapter 6, MCWD GSA plans to develop a groundwater model that incorporates solute and transport and density driven flow, and that can be used to evaluate the effectiveness of local management actions and projects to address seawater intrusion, as well as the potential impacts of increased groundwater extraction. This model will include the MGSA Area and will incorporate the effects of sea level rise. The minimum thresholds adopted herein may be refined or revised based upon the results of this model, when available. Therefore, the minimum thresholds and actions to avoid undesirable results will address sea level rise.

4.6.2.1 Relationships Between Minimum Thresholds and Other Sustainability Indicators

Regulation Requirements: **§354.28 (**b) The description of minimum thresholds shall include the following: (2) The relationship between the minimum thresholds for each sustainability indictor, including and explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.

The minimum thresholds for seawater intrusion ~~into the Dune Sand, 180-Foot and 400-Foot Aquifers are thickness measurements and lateral interpolations of the extent of the saline water wedge~~chloride and TDS isocontours are interpolated from water quality, conductance sensor and inductance logging data. ~~made by induction logging at monitoring well locations or other suitable investigation techniques, combined with groundwater level measurements to verify influence by pumping in the MGSA Area. These minimum thresholds will complement each other. The minimum thresholds for seawater intrusion into the deep aquifer are single concentration values.~~ Seawater intrusion minimum thresholds are related to several other sustainability indicators. The seawater intrusion thresholds were selected to avoid undesirable results for other sustainability indicators and to promote compatible management strategies.

- **Chronic decline in groundwater levels**. As discussed in Section 4.4, a significant and unreasonable condition for change in groundwater elevations is a decline below levels that cause GDE stress, result in significant and unreasonable interference drawdown, or decline below levels regionally determined by SVBGSA to result in undesirable conditions related to seawater intrusion. ~~As discussed in Section 4.4, a significant and unreasonable condition for change in groundwater elevations is drawdown below an elevation surface that is consistent with the regional management strategy for the Subbasin.~~ A decline of groundwater elevations would likely be associated with any measured migration of the ~~saline water wedge~~TDS isocontour in the Dune Sand Aquifer, and will be ~~used~~ considered in combination with water quality ~~monitoring in the upper aquifer system~~data to assess the relationship of ~~water quality changes~~seawater intrusion to pumping in the MGSA Area. These sustainable management criteria will be used in combination to manage both chronic decline in groundwater levels and seawater intrusion. Although the minimum thresholds may not be precisely aligned, they are compatible and related, and will be used in combination to assure sustainable groundwater management. These thresholds may be refined during GSP implementation as more information and better tools become available. Therefore, the seawater intrusion minimum threshold is unlikely to result in significant and unreasonable groundwater level decline.

- **Reduction in groundwater storage**. As discussed in Section 4.5, a significant and unreasonable condition for change in groundwater storage is ~~A~~defined as an annual extraction of groundwater in the MGSA Area that falls above the total long-term sustainable yield of the Subbasin established by SVBGSA or that results in depletion of the amount of low-TDS groundwater in storage in the Dune Sand, 180-Foot and 400-Foot Aquifers east of the MGSA Area. ~~As discussed in Section 4.5, a significant and unreasonable condition for change in groundwater storage is depletion of the low-TDS zone in the Dune Sand, 180-Foot or 400-Foot Aquifer.~~ By definition, sustainable yield is predicated ~~in~~on the avoidance of undesirable results, including seawater intrusion, and the sustainable management of seawater intrusion and reduction in storage will be coordinated. In addition, ~~R~~reduction in the amount of low-TDS groundwater in storage may be associated with seawater intrusion; therefore, storage reduction will be assessed using both groundwater level and quality data. The minimum threshold for seawater intrusion is intended to protective of groundwater quality and will not interfere with the assessment of storage depletion. Although these minimum thresholds may not be precisely aligned, they are compatible and related, and will be used in combination to assure sustainable groundwater management. These thresholds may be refined during GSP implementation as more information and better tools become available. Therefore, the seawater intrusion minimum threshold is unlikely to result in significant and unreasonable reduction in groundwater storage.

- **Degraded water quality**. As discussed in Section 4.7, significant and unreasonable degradation of groundwater quality is defined as the lateral or vertical migration of a TDS isocontour, or the induced migration of a contaminant contour exceeding water quality objectives in a nearby contamination plume. This sustainability indicator is closely related to seawater intrusion. ~~A significant and unreasonable condition for degraded water quality is a statistically-significant increase in the chloride or TDS concentration of groundwater in the low-TDS groundwater zone. This sustainability indicator is closely related to expansion or migration of the underlying saline water intrusion wedge, and groundwater elevation and quality monitoring will be used in tandem to assess potential undesirable results for both sustainability indicators.~~ Although the minimum thresholds may not be precisely aligned, they are compatible and related, and will be used in combination to assure sustainable groundwater management. Furthermore, the thresholds for degraded water quality and seawater intrusion may be adjusted during GSP implementation as more information becomes available in order to refine their alignment. Therefore, the seawater intrusion minimum threshold is unlikely to result in significant and unreasonable degraded water quality, but rather, will protect water quality.

- **Subsidence**. A significant and unreasonable condition for subsidence is any measurable long-term inelastic subsidence that damages existing infrastructure. Subsidence is caused by depressurization and compaction of fine-grained sediments in response to lowering groundwater levels, especially in confined systems when groundwater elevations fall below historical lows. Seawater intrusion thresholds are unrelated to the cause of land subsidence.

- **Depletion of interconnected surface waters.** A significant and unreasonable condition for the depletion of interconnected surface waters is depletion that induces, significant and unreasonable degradation of GDEs, seawater intrusion in the tidal reaches of the river, or groundwater pumping-induced depletion of flow in the Salinas River that results in significant and unreasonable impacts to surface water uses. The seawater intrusion thresholds will not affect the mechanics of surface-groundwater interaction, but could theoretically affect the quality of groundwater that is discharged to surface water discharge zones, such as wetlands. However, the seawater intrusion thresholds include water quality thresholds intended to prevent the significant degradation of groundwater quality that would adversely affect wetlands. In addition, as discussed in Section 4.9, declining groundwater levels near the tidally-influenced lower reach of the Salinas River could cause seawater intrusion through the river bed. The minimum thresholds for groundwater level decline are intended to prevent significant additional seawater intrusion from the lower reaches of the Salinas River. The minimum thresholds established for seawater intrusion are not expected to affect these dynamics.

4.6.2.2 Minimum Thresholds in Relation to Adjacent Subbasins and GSPs

Regulation Requirements

§ 354.28 (b) The description of minimum thresholds shall include the following:

(3) How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.

The MGSA Area is located adjacent to the Monterey Subbasin and shares boundaries with ~~Marina Coast Water District (~~MCWD~~)~~ GSA and SVBGSA. The seawater intruded areas~~saline water intrusion wedge~~ for which the minimum thresholds were developed and the associated saline water intrusion wedge and low-TDS groundwater zone occur, extend~~s~~ from the 180/400 Foot Aquifer Subbasin into the Monterey Subbasin south and southeast of the MGSA Area. The minimum thresholds ~~was~~ were selected to align with and support regional efforts to contain seawater intrusion in the 180- and 400-Foot Aquifers and also address ~~potential locally-caused undesirable results associated with groundwater extraction, while retaining compatibility with regional sustainable management criteria~~local seawater intrusion into the Dune Sand and Deep Aquifers. Sustainable management criteria were established in collaboration with MCWD to support their sustainable management strategy for the Dune Sand and Deep Aquifers in the adjacent Monterey Subbasin. In addition, minimum thresholds for the 180-Foot and 400-Foot Aquifers ~~were selected to be compatible~~aligned with SVBGSA's minimum thresholds for regional groundwater management, which apply to the remainder of the Subbasin and to the portion of the Monterey Subbasin that is not managed by MCWD GSA. ~~A difference is~~

Differences between this GSP and the SVBGSA GSP include that this GSP (1) establishes a minimum threshold for seawater intrusion into the Dune Sand Aquifer to protect significant local resources, and (2) establishes the location of the chloride isocontour that defines the minimum threshold for seawater intrusion into the Deep Aquifer at the coastal margin of the Subbasin rather than at Highway 1 in order to fully protect this important groundwater resource and comply with applicable ~~standards for~~ water quality protection standards. These measures are considered necessary to address gaps in the SVBGSA's regional GSP and support locally-defined sustainable groundwater management~~,~~ and will be coordinated with SVBGSA and MCWD GSA. ~~any detection of seawater intrusion in the Deep Aquifer as significant and unreasonable; whereas, the SVBGSA defines a minimum threshold for seawater intrusion as a 500 mg/L chloride isoconcentration contour near Highway 1. Functionally, these thresholds will not conflict since there are no production wells in the Deep Aquifer west of Highway 1; however, from a resource management viewpoint this GSP better captures the local management needs and intent.~~ As such, these thresholds will promote cohesive management to achieve the sustainability goals of MGSA, SVBGSA, and MCWD GSA, which will be refined as needed during GSP implementation.

~~SVBGSA's GSP does not present sustainable management criteria for the Dune Sand Aquifer because its GSP is more regionally focused; however, MGSA's locally-developed minimum thresholds for seawater intrusion are compatible with SVBGSA's regional sustainable management criteria for the underlying regional aquifers, and will help to control regional seawater intrusion.~~

4.6.2.3 IMPACT OF MINIMUM THRESHOLDS ON BENEFICIAL USES AND USERS

Regulation Requirements:
§ 354.28 (b) The description of minimum thresholds shall include the following:
(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

The seawater intrusion minimum thresholds may have the following effects on beneficial users and land uses in the Subbasin:

- The threshold will help to prevent the regional advance of seawater intrusion in the 180- and 400-Foot Aquifers in the inland areas east of the ~~MGSA Area~~Subbasin. Local monitoring in support of this minimum threshold will help to fill existing data gaps regarding nearshore processes related to density-driven flow.
- The threshold for the Dune Sand Aquifer will help to protect the quality of low-TDS water in storage with a designated potential beneficial use for domestic and municipal supply from further degradation by seawater intrusion.
- The threshold will help to protect the Deep Aquifer, which is an important municipal and agricultural water supply and currently the only source of municipal water for the City of Marina, from seawater intrusion.
- If the MPWSP is constructed and the seawater intrusion measurable objectives described in Section 4.6~~7~~.3 are reached, the management actions described in Section 6.2.1 will be implemented.

4.6.2.4 CURRENT STANDARDS RELEVANT TO SUSTAINABILITY INDICATOR

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(5) How state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the Agency shall explain the nature of and basis for the difference.

The seawater intrusion minimum thresholds incorporate the locally defined 500 mg/L chloride standard for definition of seawater intrusion into the 180-Foot, 400-Foot, and Deep Aquifers. In addition, the seawater intrusion minimum threshold addresses ~~specifically incorporate state and federal standards for drinking water and~~ applicable Water Quality Standards incorporated into the Regional Water Quality Control Board's Water Quality Control Plan, including ~~the SMCLs for chloride and TDS, and~~ SWRCB Resolution Nos. 88-63 and 68-16.

4.6.2.5 MEASUREMENT OF MINIMUM THRESHOLDS

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(6) How each minimum threshold will be quantitatively measured, consistent with the monitoring network requirements described in Subarticle 4.

Seawater intrusion will be measured from the MGSA monitoring well network using ~~a combination of groundwater level and~~ groundwater quality monitoring, including groundwater sampling and analysis, ~~the use of~~ specific conductance sensors, and semi-annual induction logging to assess the lateral and vertical distribution of salinity. The groundwater ~~level and~~ quality monitoring will be conducted in accordance with the monitoring plan outlined in Chapter 5. Groundwater quality data to evaluate compliance with minimum thresholds and measurable objectives for seawater intrusion will be gathered from the wells listed in Tables 5-1, 5-2, and 5-3 for the Dune Sand, 180-Foot and 400-Foot Aquifers, respectively. Groundwater quality data to evaluate compliance with minimum thresholds and measurable objectives in the Deep Aquifer will be gathered from the supply wells listed in Table 5-4 (MCWD #'s 10, 11 and 12; and MCWRA #'s 25973, 21655 and 22755). ~~Furthermore, the groundwater level monitoring will meet the requirements of the technical and reporting standards included in the Regulations.~~

4.6.3 Measurable Objectives and Interim Milestones

Regulation Requirements:

§354.30 (a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin with 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.

(b) Measurable objectives shall be established for each sustainability indicator, based on quantitative values using the same metrics and monitoring sites as are used to define the minimum thresholds.

(c) Measurable objectives shall provide a reasonable margin of operational flexibility under adverse conditions which shall take into consideration components such as historical water budgets, seasonal and long-term trends, and periods of drought, and be commensurate with levels of uncertainty.

(e) Each Plan shall describe a reasonable path to achieve the sustainability goal for the basin within 20 years of Plan implementation, including a description of interim milestones for each relevant sustainability indicator, using the same metric as the measurable objective, in increments of five years. The description shall explain how the Plan is likely to maintain sustainable groundwater management over the planning and implementation horizon.

The measurable objectives for seawater intrusion represent ~~statistical indicators that provide early warning so potentially adverse trends can be addressed in a timely fashion~~positions of chloride ~~iso~~concentration isocontours that define the desired future state of the Subbasin. Measurable objectives are also established to leave adequate operating flexibility to deal with anticipated variability in conditions such as seasonal and inter-annual climatic variations and droughts, uncertainties in aquifer conditions or unanticipated events. As stated in Section 4.2,

> "~~*The sustainability goal of this GSP is to*~~MGSA will *manage groundwater resources in the MGSA Area in a way that ensures all beneficial uses and users in, or affected by, groundwater management in the MGSA Area are protected from undesirable results, and have access to a safe and reliable groundwater supply that meets current and future demand*."

The following measurable objectives are established in this GSP:

- **Dune Sand Aquifer**. The measurable objectives are established to equal the minimum threshold of maintaining the 1,700 mg/L chloride isocontour at its current location. The interim milestones are identical to the measurable objective.
- **180-Foot and 400-Foot Aquifers**. MGSA will coordinate with SVBGSA, as appropriate, and support the measurable objective and interim milestones in the SVBGSA's GSP of moving the 500 mg/L chloride isocontour westward to Highway 1 by 2020.

- **Deep Aquifer.** The measurable objective for the Deep Aquifer will be to prevent significant and unreasonable seawater intrusion and maintain the location of the 500 mg/L chloride isocontour outside the seaward Subbasin Boundary. The interim milestones are identical to the measurable objective.

~~As such, the measurable objectives for seawater intrusion are intended to serve as triggers for management actions to prevent or mitigate undesirable results as described in Chapter 6. Interim milestones will only be established if corrective actions are implemented as part of these management actions; however, MGSA will support and collaborate with SVBGSA and MCWD GSA to meet their interim milestones, as appropriate.~~

~~Seawater intrusion is closely related to the potential degradation of groundwater quality in the upper aquifer system (including the Dune Sand, 180-Foot and 400-Foot Aquifers), and will be evaluated using the same monitoring dataset as described in Chapter 5. To facilitate integrated management of seawater intrusion and water quality degradation, the same measurable objectives are adopted for both sustainability indicators for the upper aquifer system, as follows:~~

- ~~A statistically significant ($p < 0.1$) increasing trend in groundwater concentrations of chloride or TDS in three or more wells in the MGSA groundwater quality monitoring network at the 90% confidence level using an appropriate Mann-Kendall trend test (e.g. Seasonal Mann-Kendall) (US EPA 2009); or~~
- ~~An increase in the thickness of the saline groundwater wedge of more than 3 feet identified by induction logging in three or more deep monitoring wells in the induction monitoring well network.~~

~~The following measurable objective is adopted as an early indicator of potential seawater intrusion into the Deep Aquifer:~~

- ~~A statistically significant ($p < 0.1$) increasing trend in groundwater concentrations of chloride or TDS in any monitoring well in the MGSA groundwater quality monitoring network in the Deep Aquifer at the 90% confidence level using an appropriate Mann-Kendall trend test (e.g. Seasonal Mann-Kendall) (US EPA 2009).~~

4.6.4 Undesirable Results

Regulation Requirements:

§354.26 (a) Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.

(b) The description of undesirable results shall include the following:

(1) The cause of groundwater conditions occurring throughout the basin that would lead to or has led to undesirable results based on information described in the basin setting, and other data or models as appropriate.

(2) The criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.

(3) Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results.

(c) The Agency may need to evaluate multiple minimum thresholds to determine whether an undesirable result is occurring in the basin. The determination that undesirable results are occurring may depend upon measurements from multiple monitoring sites, rather than a single monitoring site.

Based on the information in the previous sections, the local definition for significant and unreasonable seawater intrusion considers the following:

- Ongoing seawater intrusion in the 180- and 400-Foot Aquifers has been regionally identified based on the migration of seawater intrusion beyond the documented position of the 500 mg/L chloride isocontour, and has resulted in the designation by DWR of the aquifer being in a condition of critical overdraft. SVBGSA's GSP does not consider nearshore seawater intrusion dynamics and preferential pathways that are important to understanding this process. The monitoring program discussed in Chapter 5 will provide additional data to promote understanding of the process. Nevertheless the 500 mg/L chloride isocontour is an adequate and appropriate measure of undesirable results.

- The SVBGSA's GSP does not establish a definition for significant and unreasonable seawater intrusion into the Dune Sand Aquifer; however, this GSP considers that this aquifer contains a significant quantity of low-TDS groundwater that requires protection from degradation by seawater intrusion under SWRCB Resolution Nos. 88-63 and 68-16. In order to comply with these resolutions, this GSP defines undesirable results for seawater intrusion into the Dune Sand Aquifer.

- The Deep Aquifer is not currently seawater intruded and is an important local and regional source of municipal and agricultural groundwater supply. Any seawater intrusion into this aquifer would violate existing water quality standards and put this important water supply at risk; therefore, any seawater intrusion into the Deep Aquifer is considered an undesirable result.

The causes of potential undesirable results related to seawater intrusion are further discussed in Section 4.6.1 and the potential effects of undesirable results on the beneficial users of groundwater, land uses and property owners are discussed in Sections 4.6.1 and 4.6.2.

An undesirable result for seawater intrusion is defined as follows based on the minimum thresholds discussed in Section 4.6.2:

- **Dune Sand Aquifer.** Migration of the 1,700 mg/L chloride isocontour beyond its location in 2018, indicating seawater intrusion into the low-TDS zone identified in Gottschalk *et al.* (2018), as interpreted from water quality sampling and induction logging data collected by MCWRA.

- **180-Foot and 400-Foot Aquifer.** Seawater intrusion beyond the position of the 500 mg/L chloride isocontour interpolated by MCWRA in 2017, as determined by seawater intrusion maps prepared by MCWRA.

- **Deep Aquifer.** Seawater intrusion beyond a theoretical 500 mg/L chloride isocontour established as the western (seaward) edge of the Subbasin, as interpreted from groundwater quality monitoring data collected by MCWRA.

4.7 Degraded Groundwater Quality

4.7.1 Local Factors Potentially Contributing to Significant and Unreasonable Conditions

Regionally, SVBGSA's GSP defines significant and unreasonable changes in water quality in the Subbasin as increases in the concentrations of chemical constituents that either:

- Result in groundwater concentrations in a public supply well above an established Maximum Contaminant Level (MCL) or Secondary Maximum Contaminant Level (SMCL); or
- Lead to reduced crop production.

SVBGSA defines undesirable results based on the exceedance of MCLs or SMCLs in public supply wells, or the exceedance of agricultural standards in irrigation wells. Noting that minimum thresholds are based on a degradation of groundwater quality, not an improvement of groundwater quality, SVBGSA's approach is designed to avoid any action by SVBGSA that may inadvertently move groundwater constituents that have already been identified in the Subbasin in such a way that the constituents have a significant and unreasonable impact to public supply or irrigation wells that would not otherwise occur. A list of constituents of concern was developed based on reported detections of constituents in the Subbasin above levels of concern.

Locally, the MGSA Area is located at the western edge of a substantial zone of low-TDS groundwater (TDS < 3,000 ~~milligrams per liter [~~mg/L~~]~~) extending from the Dune Sand Aquifer into the 180-Foot Aquifer and the 400-Foot Aquifer (Sections 3.1.12 and 3.2.2). Groundwater with TDS concentrations less than 3,000 mg/L is designated as having a potential beneficial use as municipal and domestic supply (~~State Water Resources Control Board [~~SWRCB~~]~~ Resolution No. 88-63) and is required to be protected from degradation under SWRCB Resolution No. 68-16. The California Public Utility Commission's decision regarding the proposed MPWSP requires that groundwater extraction for that proposed project may not cause injury to existing beneficial groundwater users or groundwater water right holders. Groundwater extraction in the MGSA Area could disturb the equilibrium that exists between the saline water intrusion wedge and overlying low-TDS groundwater zone, cause mixing of low-TDS and saline groundwater or otherwise lead to the capture and migration of saline groundwater, potentially impacting the low-TDS groundwater zone or existing supply wells in the area.

Contaminant plumes that are known to impair water quality locally and could be captured by or induced to migrate by groundwater extraction in the MGSA Area include the Fort Ord Superfund Site Operable Unit Carbon Tetrachloride (OUCTP) plume, located in the shallow "A-Aquifer" and 180-Foot Aquifer approximately 2 to 3 miles southeast of the MGSA Area in the Monterey Subbasin. As a required mitigation measure for the proposed MPWSP, MCWRA is tasked with reviewing the monitoring data for this plume to assess whether groundwater extraction for the proposed MPWSP in the MGSA Area is capturing this plume and causing it to migrate. The results of this assessment will be reported annually and will be reviewed by MCWRA.

Other than potential seawater intrusion, no sources of potential point- or non-point source water quality degradation have been identified in the Deep Aquifer. The sustainable management criteria and monitoring programs developed for the Deep Aquifer to address seawater intrusion are sufficient to address potential water quality degradation, and no sustainable management criteria are developed in this GSP for the deep aquifer for the degradation of water quality sustainability indicator.

4.7.2 Minimum Thresholds

Regulation Requirements:

§354.28 (a) Each Agency in its Plan shall establish minimum thresholds that quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site established pursuant to Section 354.36. The numeric value used to define minimum thresholds shall represent a point in the basin that, if exceeded, may cause undesirable results as described in Section 354.26.

(b) The description of minimum thresholds shall include the following:

(1) The information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator. The justification for the minimum threshold shall be supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting.

(c) Minimum thresholds for each sustainability indicator shall be defined as follows:

(4) Degraded Water Quality. The minimum threshold for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be used on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin.

(d) An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.

Section ~~§~~ 354.28(c)(4) of the Regulations states that "*the minimum threshold for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be used on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin*." SVBGSA has adopted the potential exceedance of MCLs or SMCLs in public supply wells, or the exceedance of agricultural standards in irrigation wells, as a basis for assignment of Subbasin-wide minimum thresholds to wells.

Locally, the minimum thresholds for degradation of groundwater quality were developed ~~based on~~considering the following additional criteria:

- Violation of water quality objectives for the low-TDS groundwater zone, including SWRCB Resolution No. 88-63 and SWRCB Resolution No. 68-16;
- Degradation of groundwater quality in nearby public supply wells, including the exceedance of MCLs or SMCLs; and
- Interference with or obstruction of ongoing requirements to investigate or clean up a contamination plume.

Based on this assessment, the following minimum thresholds were established:

- Significant and unreasonable degradation of water quality in the low-TDS groundwater zone in the Dune Sand, 180-Foot and 400-Foot Aquifers is defined as lateral or vertical migration of the 3,000 mg/L TDS isocontour beyond the location established by the 2018 AEM study (Gottschalk *et al.* 2018).

- Significant and unreasonable degradation of water quality in the Deep Aquifer is defined as exceedance of the TDS or chloride SMCL in one or more public supply wells completed in the Deep Aquifer near the MGSA. ~~by the following combination of minimum thresholds:~~
    - ~~A statistically significant ($p < 0.05$) increasing trend in groundwater concentrations of chloride or TDS in three or more wells in the water quality monitoring well network at the 95% confidence level using an appropriate Mann-Kendall trend test (e.g. Seasonal Mann-Kendall) (US EPA 2009);~~
    - ~~A statistically significant increase (SSI) above baseline chloride or TDS concentration in three or more wells at the 95% confidence level using an appropriate statistical technique per EPA 2009; and~~
    - ~~A spatial pattern of groundwater level declines that indicates the statistically-significant water quality changes identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA Area.~~
- Significant and unreasonable migration of a contamination plume is defined by ~~a combination of~~ the following minimum thresholds:
    - Migration or spread of the portion of a contamination plume that exceeds applicable water quality objectives by more than 100 feet toward the center of groundwater extraction in the MGSA Area, as documented by plume maps for the cleanup site.

4.7.2.1 Relationships Between Minimum Thresholds and Other Sustainability Indicators

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(2) The relationship between the minimum thresholds for each sustainability indictor, including and explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.

The minimum thresholds for reduction in groundwater storage are thickness measurements of the low-TDS groundwater zone made by induction logging at monitoring well locations, combined with groundwater level measurements to verify influence by pumping in the MGSA Area. These minimum thresholds will complement each other.

Degradation of groundwater quality minimum thresholds are related to several other sustainability indicators. The groundwater quality degradation thresholds were selected to avoid undesirable results for other sustainability indicators and to promote compatible management strategies.

- **Chronic decline in groundwater levels**. As discussed in Section 4.4, a significant and unreasonable condition for change in groundwater elevations is a decline below levels that cause GDE stress, result in significant and unreasonable interference drawdown, or decline below levels regionally determined by SVBGSA to result in undesirable conditions related to seawater intrusion. ~~As discussed in Section 4.4, a significant and unreasonable condition for change in groundwater elevations is drawdown below an elevation surface that is consistent with the regional management strategy for the Subbasin.~~ Decline of groundwater elevations would be associated with changes in groundwater quality and will be used in combination with water quality monitoring to assess the relationship of water quality changes to pumping in the

MGSA Area. These sustainable management criteria will be used in combination to manage both chronic decline in groundwater levels and groundwater quality degradation. Although the minimum thresholds may not be precisely aligned, they are compatible and related, and will be used in combination to assure sustainable groundwater management. These thresholds may be refined during GSP implementation as more information and better tools become available. Therefore, the groundwater quality degradation minimum threshold is unlikely to result in significant and unreasonable groundwater level decline.

- **Reduction in groundwater storage**. As discussed in Section 4.5, a significant and unreasonable condition for change in groundwater storage is defined as an annual extraction of groundwater in the MGSA Area that falls above the total long-term sustainable yield of the Subbasin established by SVBGSA or that results in depletion of the amount of low-TDS groundwater in storage in the Dune Sand, 180-Foot and 400-Foot Aquifers east of the MGSA Area. ~~A~~. ~~As discussed in Section 4.5, a significant and unreasonable condition for change in groundwater storage~~ By definition, sustainable yield is predicated in the avoidance of undesirable results, including seawater intrusion, and the sustainable management of seawater intrusion and reduction in storage will be coordinated. In addition, reduction in the amount of low-TDS groundwater in storage may be associated with seawater intrusion; therefore, storage reduction will be considered when assessing the potential for seawater intrusion~~. is depletion of the low-TDS zone in the Dune Sand, 180-Foot and 400-Foot Aquifer.~~ . Reduction in the amount of low-TDS groundwater in storage may be associated with changes in groundwater quality and their distribution; therefore, storage reduction will be assessed using both groundwater level and quality data. The minimum threshold for degradation of groundwater quality is intended to protective of groundwater quality and will not interfere with the assessment of storage depletion. Although these minimum thresholds may not be precisely aligned, they are compatible and related, and will be used in combination to assure sustainable groundwater management. These thresholds may be refined during GSP implementation as more information and better tools become available. Therefore, the groundwater quality degradation minimum threshold is unlikely to result in significant and unreasonable reduction in groundwater storage.

- **Seawater intrusion.** As discussed in Section 4.6, significant and unreasonable seawater intrusion is defined as the migration of chloride isocontours that define the extent of seawater intrusion as of 2017 (for the 180-Foot, 400-Foot and Deep Aquifers) or 2018 (for the Dune Sand Aquifer). ~~A significant and unreasonable condition for seawater intrusion is lateral or vertical migration of the saline water intrusion wedge located beneath and east of the MGSA Area.~~ Migration of the saline water wedge that underlies the coastal area could be associated with degradation of groundwater quality ~~in the overlying low-TDS zone~~; as such, the two sustainability indicators and their minimum thresholds are potentially related. Both are intended to prevent related undesirable results. Thus, the minimum threshold for degradation of groundwater quality may help to prevent seawater intrusion.

- **Subsidence**. A significant and unreasonable condition for subsidence is any measurable long-term inelastic subsidence that damages existing infrastructure. Subsidence is caused by depressurization and compaction of fine-grained sediments in response to lowering groundwater levels, especially in confined systems when groundwater elevations fall below historical lows. Water quality thresholds are unrelated to the cause of land subsidence.

- **Depletion of interconnected surface waters.** A significant and unreasonable condition for the depletion of interconnected surface waters is depletion that induces significant and unreasonable degradation of GDEs, seawater intrusion in the tidal reaches of the river, or groundwater pumping-induced depletion of flow in the Salinas River that results in significant and unreasonable impacts to beneficial surface water uses. The water quality thresholds will not affect the mechanics of surface groundwater interaction; however, they could affect the quality of groundwater that is discharged to surface water discharge zones, such as wetlands. The minimum thresholds for the low-TDS zone will prevent the significant degradation of groundwater quality that would adversely affect wetlands.

4.7.2.2 Minimum Thresholds in Relation to Adjacent Subbasins and GSPs

Regulation Requirements
§ 354.28 (b) The description of minimum thresholds shall include the following:
(3) How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.

The MGSA Area is located adjacent to the Monterey Subbasin and shares boundaries with ~~Marina Coast Water District (~~MCWD~~)~~ GSA and SVBGSA. The low-TDS groundwater zone for which the minimum thresholds were developed extends from the 180/400 Foot Aquifer Subbasin into the Monterey Subbasin south and southeast of the MGSA Area. The OUCTP plume is located in the Monterey Subbasin southeast of the MGSA Area. The Deep Aquifer underlies both the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin. The minimum threshold was selected to prevent potential locally-caused undesirable results from unsustainable groundwater extraction in the MGSA Area, while retaining compatibility with regional sustainable management criteria. Sustainable management criteria were established in collaboration with MCWD to support their sustainable management strategy in the adjacent Monterey Subbasin. In addition, minimum thresholds for the 180-Foot and 400-Foot Aquifers were selected to be compatible with SVBGSA's minimum thresholds for regional groundwater management, which apply to the remainder of the Subbasin and to the portion of the Monterey Subbasin that is not managed by MCWD GSA. As such, these thresholds will promote cohesive management to achieve the sustainability goals of MGSA, SVBGSA and MCWD GSA.

SVBGSA's GSP does not present sustainable management criteria for the Dune Sand Aquifer because its GSP is more regionally focused. MGSA's locally-developed minimum thresholds for degradation of groundwater quality are compatible with SVBGSA's regional sustainable management criteria for the underlying regional aquifers and will protect resources of local value, while also preventing the degradation of water quality in the underlying aquifers caused by groundwater extraction in the MGSA Area.

4.7.2.3 Impact of Minimum Thresholds on Beneficial Uses and Users

Regulation Requirements:
§ 354.28 (b) The description of minimum thresholds shall include the following:
(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

The groundwater quality degradation minimum thresholds may have the following effects on beneficial users and land uses in the Subbasin:

- The threshold will help to maintain the quality of low-TDS water in storage with a designated potential beneficial use for domestic and municipal supply.
- The threshold will help assure the future availability of low-TDS groundwater with potential beneficial uses to groundwater beneficial users, including GDEs and water right holders.
- ~~If the MPWSP is constructed and the groundwater quality degradation measurable objectives described in Section 4.5.3 are reached, the management actions described in Section 6.2.1 will be implemented.~~

4.7.2.4 Current Standards Relevant to Sustainability Indicator

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(5) How state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the Agency shall explain the nature of and basis for the difference.

The groundwater quality minimum thresholds specifically incorporate state and federal standards for drinking water and applicable Water Quality Standards incorporated into the Regional Water Quality Control Board's Water Quality Control Plan, including SWRCB Resolution Nos. 88-63 and 68-16.

4.7.2.5 Measurement of Minimum Thresholds

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(6) How each minimum threshold will be quantitatively measured, consistent with the monitoring network requirements described in Subarticle 4.

Groundwater quality degradation will be measured from the monitoring ~~well~~ network using ~~a combination of groundwater level and~~ groundwater quality monitoring, including groundwater sampling and analysis, the use of specific conductance sensors, and annual induction logging to assess the lateral and vertical distribution of ~~salinity~~TDS. The groundwater ~~level and~~ quality monitoring will be conducted in accordance with the monitoring plan outlined in Chapter 5. Groundwater quality data to evaluate compliance with minimum thresholds and measurable objectives for groundwater quality degradation will be gathered from the wells listed in Tables 5-1, 5-2, and 5-3 for the Dune Sand, 180-Foot and 400-Foot Aquifers, respectively. Groundwater quality data to evaluate compliance with minimum thresholds and measurable objectives in the Deep Aquifer will be gathered from the supply wells listed in Table 5-4 (MCWD #'s 10, 11 and 12; and MCWRA #'s 25973, 21655 and 22755). ~~Furthermore, the groundwater level monitoring will meet the requirements of the technical and reporting standards included in the Regulations.~~

4.7.3 Measurable Objectives and Interim Milestones

Regulation Requirements:

§354.30 (a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin with 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.

(b) Measurable objectives shall be established for each sustainability indicator, based on quantitative values using the same metrics and monitoring sites as are used to define the minimum thresholds.

(c) Measurable objectives shall provide a reasonable margin of operational flexibility under adverse conditions which shall take into consideration components such as historical water budgets, seasonal and long-term trends, and periods of drought, and be commensurate with levels of uncertainty.

(e) Each Plan shall describe a reasonable path to achieve the sustainability goal for the basin within 20 years of Plan implementation, including a description of interim milestones for each relevant sustainability indicator, using the same metric as the measurable objective, in increments of five years. The description shall explain how the Plan is likely to maintain sustainable groundwater management over the planning and implementation horizon.

The measurable objectives for degradation of groundwater quality in the low-TDS groundwater zone positions of ~~iso~~concentration isocontours that define the desired future state of the Subbasin, which is to protect and preserve this resource in compliance with SWRCB Resolution Nos. 88-63 and 68-16. The measurable objectives for water quality degradation in the Deep Aquifer, for which no historical degradation has been reported to date, are ~~statistical~~ intended as indicators that provide early warning so potentially adverse trends can be addressed in a timely fashion. Measurable objectives are also established to leave adequate operating flexibility to deal with anticipated variability in conditions such as seasonal and inter-annual climatic variations and droughts, uncertainties in aquifer conditions or unanticipated events. As stated in Section 4.2,

> "~~*The sustainability goal of this GSP is to*~~MGSA will *manage groundwater resources in the MGSA Area in a way that ensures all beneficial uses and users in, or affected by, groundwater management in the MGSA Area are protected from undesirable results, and have access to a safe and reliable groundwater supply that meets current and future demand*."

~~As such, the measurable objectives for groundwater quality degradation are intended to serve as triggers for management actions to prevent or mitigate undesirable results as described in Chapter 6. Interim milestones will only be established if corrective actions are implemented as part of these management actions; however, MGSA will support and collaborate with SVBGSA and MCWD GSA to meet their interim milestones, as appropriate.~~

The following measurable objectives have been established for groundwater quality degradation:

- The measurable objective for degradation of water quality in the low-TDS groundwater zone are defined ~~by the following combination of thresholds~~to be the same as the minimum threshold, which is the 2018 vertical and lateral position of the 3,000 mg/L TDS isocontour in the Dune Sand, 180-Foot, and 400-Foot Aquifers, as determined by the 2018 AEM survey (Gottschalk *et al.* 2018).~~:~~
- The measurable objective for degradation of water quality in the Deep Aquifer is no supply wells with MCL or SMCL exceedances for TDS or chloride.

- ~~A statistically significant ($p < 0.1$) increasing trend in groundwater concentrations of chloride or TDS in three or more wells in the water quality monitoring well network at the 90% confidence level using an appropriate Mann-Kendall trend test (e.g. Seasonal Mann-Kendall) (EPA 2009);~~
- ~~A statistically significant increase (SSI) above baseline chloride or TDS concentration in three or more wells at the 90% confidence level using an appropriate statistical technique per EPA (2009); and~~
- ~~A spatial pattern of groundwater level declines that indicates the statistically-significant water quality changes identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA Area.~~

- The measurable objective for migration of a contamination plume is defined by ~~a combination of~~ the following ~~thresholds~~:
    - An observable spread of the portion of a contamination plume that exceeds applicable water quality objectives over two or more consecutive monitoring events toward the center of groundwater extraction in the MGSA Area, as documented by plume maps for the cleanup site.

If significant and unreasonable migration of a contamination plume is identified, it may be assumed that the agencies responsible for oversight of the cleanup will work with groundwater extractors to implement appropriate corrective actions and establish interim milestones as needed.

4.7.4 Undesirable Results

Regulation Requirements:

§354.26 (a) Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.

(b) The description of undesirable results shall include the following:

(1) The cause of groundwater conditions occurring throughout the basin that would lead to or has led to undesirable results based on information described in the basin setting, and other data or models as appropriate.

(2) The criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.

(3) Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results.

(c) The Agency may need to evaluate multiple minimum thresholds to determine whether an undesirable result is occurring in the basin. The determination that undesirable results are occurring may depend upon measurements from multiple monitoring sites, rather than a single monitoring site.

§354.28 (c) Minimum thresholds for each sustainability indicator shall be defined as follows:

(4) Degraded Water Quality. The minimum threshold for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be used on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin.

Based on the information in the previous sections, the local definition for significant and unreasonable groundwater quality degradation considers the following:

- The SVBGSA's GSP does not establish a definition for significant and unreasonable groundwater quality degradation in the Dune Sand Aquifer; however, this GSP considers that this aquifer~~,~~ and the underlying portions of the 180-Foot and 400-Foot Aquifers~~,~~ contain a significant quantity of low-TDS groundwater that requires protection from degradation under SWRCB Resolution Nos. 88-63 and 68-16. In order to comply with these resolutions, this GSP defines undesirable results for groundwater quality degradation of the low-TDS zone in the Dune Sand, 180-Foot, and 400-Foot Aquifers.

- The Deep Aquifer is not currently seawater intruded and is an important local and regional source of municipal and agricultural groundwater supply. Any water quality degradation of this aquifer would violate existing water quality standards and put this important water supply at risk; therefore, any degradation of water quality in municipal supply wells in the Deep Aquifer beyond applicable water quality objectives is considered an undesirable result.

The causes of potential undesirable results related to groundwater quality degradation are further discussed in Section 4.7.1 and the potential effects of undesirable results on the beneficial users of groundwater, land uses, and property owners are discussed in Sections 4.7.1 and 4.7.2.

An undesirable result for groundwater quality degradation is defined as follows based on the minimum thresholds discussed in Section 4.7.2:

- **Dune Sand Aquifer.** Migration of the 1,660 mg/L chloride isocontour beyond its location in 2018, indicating seawater intrusion into the low-TDS zone identified in Gottschalk *et al.* (2018), as interpreted from water quality sampling and induction logging data gathered by MCWRA.
- **180-Foot and 400-Foot Aquifer.** Seawater intrusion beyond the position of the 500 mg/L chloride isocontour interpolated by MCWRA in 2017, as determined by seawater intrusion maps prepared by MCWRA.
- **Deep Aquifer.** Seawater intrusion beyond a theoretical 500 mg/L chloride isocontour established as the western (seaward) edge of the Subbasin, as interpreted from groundwater quality monitoring data gathered by MCWRA.
- **Migration of Contamination Plumes.** Migration or spread of the portion of a contamination plume that exceeds applicable water quality objectives by more than 100 feet toward the center of groundwater extraction in the MGSA Area, as documented by plume maps for the cleanup site.

4.8 Land Subsidence

4.8.1 Local Factors Potentially Contributing to Significant and Unreasonable Conditions

Regionally, land subsidence is not closely monitored in the Monterey Bay region and has not been reported in Salinas Valley. In 2014, DWR reported that continuous monitoring stations located near the coast in the Pajaro Valley and Santa Cruz areas displayed a declining trend, but recorded total cumulative subsidence of less than 1 inch (DWR 2014). Vertical displacement estimates between June 2015 and June 2018 derived from Interferometric Synthetic Aperture Radar (InSAR) data collected by the European Space Agency (ESA) Sentinel-1A satellite and processed by TRE ALTAMIRA Inc. (TRE) under contract with DWR ranged from approximately 0.01 to 0.025 foot near the MGSA Area. This data is subject to a measurement error of 0.1 feet (SVBGSA 2019), so reported subsidence magnitudes are not significant. During the first two years of this time period, the test slant well-constructed for the MPWSP project in the MGSA Area was pumped at a rate exceeding 2,000 gallons per minute.

The risk of land subsidence results from lowered groundwater elevations, specifically when groundwater elevations decrease to levels significantly below the lowest historical groundwater elevations, leading to the depressurization and consolidation of fine-grained sediments. When groundwater elevations fluctuate only within the range of historical conditions, the alluvial layers are not subject to effective stress greater than historical conditions and therefore are generally not at significant risk of subsidence. In addition, sediments in unconfined and predominantly coarse-grained aquifers are at lower risk of significant subsidence. The subsidence risk in and near the MGSA Area is relatively low.

Because seasonal fluctuation and inter-annual variability in groundwater elevations in the unconfined Dune Sand Aquifer are in the range of 1 to 4 feet, subsidence resulting for groundwater level changes in this aquifer are not reasonably anticipated and no sustainable management criteria are established for the Dune Sand Aquifer for the subsidence sustainability indicator. Similarly, there are no Deep Aquifer extraction wells in the MGSA A~~a~~rea, and none are reasonably foreseen. As such, because no Deep

Aquifer groundwater extraction from the MGSA Area requires sustainable management, no sustainable management criteria are established for the Deep Aquifer for the subsidence sustainability indicator.

4.8.2 Minimum Thresholds

Regulation Requirements:

§354.28 (a) Each Agency in its Plan shall establish minimum thresholds that quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site established pursuant to Section 354.36. The numeric value used to define minimum thresholds shall represent a point in the basin that, if exceeded, may cause undesirable results as described in Section 354.26.

(b) The description of minimum thresholds shall include the following:

(1) The information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator. The justification for the minimum threshold shall be supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting.

(c) Minimum thresholds for each sustainability indicator shall be defined as follows:

(5) Land Subsidence. The minimum threshold for land subsidence shall be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results. Minimum thresholds for land subsidence shall be supported by the following:

(A) Identification of land uses and property interests that have been affected or are likely to be affected by land subsidence in the basin, including and explanation of how the Agency has determined and considered those uses and interests, and the Agency's rationale for establishing minimum thresholds in light of those effects.

(B) Maps and graphs showing the extent and rate of land subsidence in the basin that defines the minimum threshold and measurable objectives.

(d) An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.

Section 354.28(c)(5) of the Regulations states that "*The minimum threshold for land subsidence shall be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results*." Section 354.28(d) of the Regulations states that "*an Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence*."

This GSP uses groundwater elevation data as a proxy for land subsidence measurements~~ because no land subsidence is currently measured in the Basin and no evidence of land subsidence has been observed~~. According to the "Draft Sustainable Management Criteria BMP" (DWR 2017), an example land subsidence minimum threshold while using a groundwater elevation proxy can be determined as follows:

> *"Groundwater level minimum thresholds are above historical low groundwater levels. The GSA determines and documents that avoidance of the minimum thresholds for groundwater levels will also ensure that subsidence will be avoided. In this approach, the GSA would be applying the same numeric definition to two undesirable results – chronic lowering of groundwater and subsidence."*

As noted in Section 4.8.1, pumping of the test slant well from 2015 to early 2018 did not result in significant measurable subsidence. Vertical displacement estimates between June 2015 and June 2018 ranged from approximately 0.01 to 0.025 foot near the MGSA Area, which is negligible. The slant well pumping represents the highest historical rate of groundwater extraction in the MGSA, and likely also the lowest drawdown.~~, and~~ It did not result in significant subsidence; therefore, application of the groundwater level decline minimum thresholds, which are above historical low groundwater levels, is very unlikely to result in significant subsidence. Drawdown within the MGSA Area will be greater; however, the aquifers that would be pumped by the MPWSP are the unconfined to semi-confined Dune Sand and 180-Foot Aquifers~~,~~. These aquifers are relatively granular~~,~~ and are not overlain by infrastructure in the MGSA Area that is vulnerable to damage from subsidence. For these reasons, the minimum thresholds established for the groundwater level decline RMS are an adequate proxy for the management of subsidence. Therefore, this GSP adopts the minimum thresholds presented in Table 4-1 as a proxy for subsidence. ~~The minimum thresholds adopted for chronic decline in groundwater levels will meet this objective. Therefore, this GSP adopts the following proxy groundwater elevation threshold as a proxy for land subsidence.~~

- ~~A groundwater elevation in the 180-Foot or 400-Foot Aquifers that is 1 foot above historical low groundwater elevations measured in 2015 in 15 % or more of the monitoring wells in the groundwater elevation monitoring well network.~~

4.8.2.1 Relationships Between Minimum Thresholds and Other Sustainability Indicators

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(2) The relationship between the minimum thresholds for each sustainability indictor, including and explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.

Subsidence minimum thresholds have little or no impact on other minimum thresholds, as described below.

- **Chronic lowering of groundwater elevations.** As discussed in Section 4.4, a significant and unreasonable condition for change in groundwater elevations is a decline below levels that cause GDE stress, result in significant and unreasonable interference drawdown, or decline below levels regionally determined by SVBGSA to result in undesirable conditions related to seawater intrusion. ~~As discussed in Section 4.4, a significant and unreasonable condition for change in groundwater elevations is drawdown below an elevation surface that is consistent with the regional management strategy for the Subbasin.~~ Subsidence minimum thresholds are set to be the chronic lowering of groundwater elevation minimum thresholds. Managing subsidence to groundwater elevation minimum thresholds could not cause unacceptably low groundwater levels. Therefore, the subsidence proxy minimum thresholds will not compel a significant or unreasonable lowering of groundwater levels.
- **Change in groundwater storage**. As discussed in Section 4.5, a significant and unreasonable condition for change in groundwater storage is defined as an annual extraction of groundwater in the MGSA Area that falls above the total long-term sustainable yield of the Subbasin established by SVBGSA or that results in depletion of the amount of low-TDS groundwater in storage in the Dune Sand, 180-Foot and 400-Foot Aquifers east of the MGSA Area. ~~As discussed in Section 4.5, a significant and unreasonable condition for change in groundwater storage is depletion of the low-TDS zone in the Dune Sand, 180-Foot and 400-Foot Aquifer.~~ The

subsidence proxy minimum thresholds will not ~~change~~ increase the amount of pumping and will not result in a significant or unreasonable change in groundwater storage.

- **Seawater intrusion**. As discussed in Section 4.6, significant and unreasonable seawater intrusion is defined as the migration of chloride isocontours that define the extent of seawater intrusion as of 2017 (for the 180-Foot, 400-Foot, and Deep Aquifers) or 2018 (for the Dune Sand Aquifer). ~~A significant and unreasonable condition for seawater intrusion is lateral or vertical migration of the saline water intrusion wedge located beneath and east of the MGSA Area. As discussed in Section 3.2.3.2, a decrease in low-TDS groundwater storage would lead to a change in the interface dynamics between the saline water intrusion wedge and the overlying low-TDS groundwater zone.~~ The subsidence proxy minimum thresholds will maintain groundwater levels above historic lows and therefore will not induce additional advancement of seawater intrusion.

- **Degraded water quality**. As discussed in Section 4.7, significant and unreasonable degradation of groundwater quality is defined as the lateral or vertical migration of a TDS isocontour, or the induced migration of a contaminant contour exceeding water quality objectives in a nearby contamination plume. ~~A significant and unreasonable condition for degraded water quality is a statistically-significant increase in the chloride or TDS concentration of groundwater in the low-TDS groundwater zone. This~~ The subsidence sustainability indicator is closely related to the decline of groundwater elevations and is limited by the proxy minimum thresholds presented in Section 4.4.2. As discussed in Section 4.4.2.3, the minimum thresholds for groundwater level decline will not lead to degradation of groundwater quality; therefore use of these proxy thresholds for subsidence ~~, and groundwater elevation and quality monitoring will be used in tandem to assess potential undesirable results for this sustainability indicator. Managing subsidence to groundwater elevation minimum thresholds could not cause unacceptably low groundwater levels. The subsidence minimum thresholds, therefore,~~ will not result in a significant or unreasonable change in groundwater quality.

- **Depletion of interconnected surface waters.** A significant and unreasonable condition for the depletion of interconnected surface waters is depletion that causes significant and unreasonable degradation of GDEs, induces seawater intrusion in the tidal reaches of the river, or groundwater pumping-induced depletion of flow in the Salinas River that results in significant and unreasonable impacts to surface water uses. The ground level subsidence minimum thresholds will not change the amount or location of pumping (and therefore, surface water depletion) and will not result in a significant or unreasonable depletion of interconnected surface waters.

4.8.2.2 Minimum Thresholds in Relation to Adjacent Subbasins and GSPs

Regulation Requirements
§ 354.28 (b) The description of minimum thresholds shall include the following: (3) How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.

The MGSA Area is located adjacent to the Monterey Subbasin and shares boundaries with ~~Marina Coast Water District (~~MCWD~~)~~ GSA and SVBGSA. The MGSA uses groundwater elevation data as a proxy for the land subsidence minimum threshold. The minimum threshold was selected to address potential locally-caused undesirable results associated with groundwater extraction, while retaining compatibility with regional sustainable management criteria. Sustainable management criteria were established in collaboration with MCWD to support their sustainable management strategy. In addition, the proxy minimum threshold for the 180-Foot and 400-Foot Aquifers were selected to be compatible with SVBGSA's minimum thresholds, which apply to the remainder of the Subbasin and to the portion of the Monterey Subbasin that is not managed by MCWD GSA. These thresholds will promote cohesive management to achieve the sustainability goals of MGSA, SVBGSA and MCWD GSA.

4.8.2.3 Impact of Minimum Thresholds on Beneficial Uses and Users

Regulation Requirements:
§ 354.28 (b) The description of minimum thresholds shall include the following:
(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

The subsidence proxy minimum thresholds are set to prevent long-term inelastic subsidence that could harm infrastructure. Available data indicate that there is currently no long-term subsidence occurring in the Subbasin that affects infrastructure, and reductions in pumping, to the extent required, are already required by minimum thresholds for other sustainability indicators. Therefore, the subsidence proxy minimum thresholds do not require any additional reductions in pumping and there is no negative impact on beneficial users.

4.8.2.4 Current Standards Relevant to Sustainability Indicator

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(5) How state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the Agency shall explain the nature of and basis for the difference.

There are no federal, state, or local regulations related to subsidence.

4.8.2.5 Measurement of Minimum Thresholds

Regulation Requirements:
§354.28 (b) The description of minimum thresholds shall include the following:
(6) How each minimum threshold will be quantitatively measured, consistent with the monitoring network requirements described in Subarticle 4.

Groundwater elevation proxy minimum thresholds will be directly measured from the RMS in the monitoring well network. ~~The g~~Groundwater level monitoring will be conducted in accordance with the monitoring plan outlined in Section 5. Furthermore, the groundwater level monitoring will meet the requirements of the technical and reporting standards included in the Regulations.

4.8.3 Measurable Objectives and Interim Milestones

Regulation Requirements:

§354.30 (a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin with 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.

(b) Measurable objectives shall be established for each sustainability indicator, based on quantitative values using the same metrics and monitoring sites as are used to define the minimum thresholds.

(c) Measurable objectives shall provide a reasonable margin of operational flexibility under adverse conditions which shall take into consideration components such as historical water budgets, seasonal and long-term trends, and periods of drought, and be commensurate with levels of uncertainty.

(e) Each Plan shall describe a reasonable path to achieve the sustainability goal for the basin within 20 years of Plan implementation, including a description of interim milestones for each relevant sustainability indicator, using the same metric as the measurable objective, in increments of five years. The description shall explain how the Plan is likely to maintain sustainable groundwater management over the planning and implementation horizon.

The measurable objectives for subsidence are ~~the same as the measurable objectives for chronic lowering of groundwater levels~~proxy groundwater levels~~,~~ which represent target groundwater elevations that are higher than the proxy minimum thresholds in order to provide early warning so potentially adverse trends can be addressed in a timely fashion. Measurable objectives are also established to leave adequate operating flexibility to deal with anticipated variability in conditions such as seasonal and inter-annual climatic variations and droughts, uncertainties in aquifer conditions or unanticipated events. As stated in Section 4.2,

> "~~*The sustainability goal of this GSP is to*~~*MGSA will manage groundwater resources in the MGSA Area in a way that ensures all beneficial uses and users in, or affected by, groundwater management in the MGSA Area are protected from undesirable results, and have access to a safe and reliable groundwater supply that meets current and future demand*."

~~As such, the measurable objectives for groundwater level decline (and therefore subsidence) are intended to serve as triggers for management actions to prevent or mitigate undesirable results as described in Chapter 6. Interim milestones will only be established if corrective actions are implemented as part of these management actions; however, MGSA will support and collaborate with SVBGSA and MCWD GSA to meet their interim milestones, as appropriate.~~

This GSP adopts the measurable objectives and interim milestones summarized in Table 4-2 as a proxy for the subsidence sustainability indicator. ~~The following measurable subsidence proxy objectives have been established for groundwater level decline:~~

- ~~A groundwater elevation in the 180-Foot or 400-Foot Aquifers that is 2 feet above historical low groundwater elevations measured in 2015 in 15 % or more of the monitoring wells in the MGSA monitoring well network.~~

4.9 Depletion of Interconnected Surface Water

4.9.1 LOCAL FACTORS POTENTIALLY CONTRIBUTING TO SIGNIFICANT AND UNREASONABLE CONDITIONS

The MGSA Area is located approximately 4,000 feet from the Salinas River, and projected groundwater elevations are within less than 20 feet of the river thalweg elevation, suggesting an interconnection may exist between the Dune Sand Aquifer and the river at this location (Section 3.2.6.1.1). Geophysical data collected in 2017 indicate that groundwater elevations in the Dune Sand Aquifer are close to the river stage elevation, and decline away from the river, suggesting a losing condition. Within approximately ½ mile of the river mouth, the geophysical data suggest that seawater intrusion may be occurring through the riverbed and into the Dune Sand Aquifer and underlying 180-Foot Aquifer (Figure 3-22). Under these conditions, a decline in groundwater elevations near the river would affect river flows and could increase the infiltration of saline water from the river into the aquifer. In addition, although they are likely to be primarily dependent on surface water flows, riverine wetlands and riparian habitat located further upstream along the river could be affected by groundwater elevation declines (Figure 3-38).

As discussed in Section 3.2.6.1.1, projected groundwater elevations in the spring of 2018 were within less than 2 to 5 feet of several mapped vernal ponds (palustrine and emergent wetlands) located east of the MGSA Area that are designated as environmentally sensitive habitat areas that are protected by the California Coastal Act, other laws and mitigation agreements (Section 2.1.2). Groundwater elevation declines beneath these GDEs could adversely affect protected habitats and species.

Groundwater modeling for the proposed MPWSP predicted that the amount of river flow depletion would result from makeup groundwater pumping to supply the project would be 400 AFY (ESA 2018). These modeling results have not been verified for preparation of this GSP; however, for perspective, the predicted depletion is less than 1 cubic foot/second and would be unlikely to have a significant and unreasonable effect on the beneficial uses of water in the Salinas River. The USGS is developing the SVIHM as a regional modeling and hydrogeologic assessment tool, and this model is expected to be more robust and refined than the model used for the MPWSP impact analysis. As discussed in Chapters 6 and 7, SVBGSA intends to use the USGS SVIHM to evaluate surface-groundwater interaction. Additionally, the MCWD GSA intends to build a refined local model that may incorporate the Salinas River. MGSA intends to engage with these efforts and review the modeling investigations, and to refine, among other things, the assessment of surface-groundwater interaction along the lower reach of the Salinas River.

The geophysical investigation data illustrated in Figure 3-22 suggest that seawater intrusion through the riverbed in the lower ½ mile reach of the river has historically occurred; however, the data are insufficient to assess whether current intrusion rates differ from historical baseline rates. Review of historical evapotranspiration data suggest a decline in groundwater availability to GDEs east of the MGSA Area occurred during the test slant well pumping test conducted from April 2015 to February 2018; however, this period also coincided with a drought, and measured groundwater elevation declines resulted from both drought and pumping conditions. ET rates in 2017 and 2018 appeared to recover to their pre-test levels. It is not known whether the GDEs were adversely affected during this period of stress. As such, it is not known if there were recent significant and unreasonable impacts to GDEs.

4.9.2 Minimum Thresholds

Regulation Requirements:

§354.28 (a) Each Agency in its Plan shall establish minimum thresholds that quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site established pursuant to Section 354.36. The numeric value used to define minimum thresholds shall represent a point in the basin that, if exceeded, may cause undesirable results as described in Section 354.26.

(b) The description of minimum thresholds shall include the following:

(1) The information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator. The justification for the minimum threshold shall be supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting.

(c) Minimum thresholds for each sustainability indicator shall be defined as follows:

(6) Depletions of Interconnected Surface Water. The minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results. The minimum threshold established for depletions of interconnected surface water shall be supported by the following:

(A) The location, quantity, and timing of depletions of interconnected surface water.

(B) A description of the groundwater and surface model used to quantify surface water depletion. If a numerical groundwater and surface water model is not used to quantify surface water depletion, the Plan shall identify and describe an equally effective method, tool, or analytical model to accomplish the requirements of this Paragraph. (B) Maps and graphs showing the extent and rate of land subsidence in the basin that defines the minimum threshold and measurable objectives.

(d) An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.

Section 354.28(d) of the Regulations states that "*an Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence*." According to the "Draft Sustainable Management Criteria BMP" (DWR 2017), one possible approach to using minimum thresholds for chronic groundwater level decline as a proxy for another minimum threshold is to:

> *"[d]emonstrate that the minimum thresholds and measurable objectives for chronic declines of groundwater levels are sufficiently protective to ensure significant and unreasonable occurrences of other sustainability indicators will be prevented. In other words, demonstrate that setting a groundwater level minimum threshold satisfies the minimum threshold requirements for not only chronic lowering of groundwater levels but other sustainability indicators at a given site."*

Depletion of interconnected surface water is directly related to groundwater level decline in the uppermost aquifer system which is in contact with the stream or wetland being affected, in this case, the Dune Sand Aquifer. As discussed in Section 4.9.2, groundwater modeling for the proposed MPWSP predicted that, if implemented, the project would result in a river flow depletion less than 1 cubic foot/second, which would be unlikely to have a significant and unreasonable effect on the beneficial uses of water in the Salinas River(ESA 2018). As such, the primary potential effect of concern associated with the decline of groundwater levels in the Dune Sand Aquifer is potential stress to GDEs. The rationale for establishment of a minimum threshold for the Dune Sand Aquifer to prevent potential significant and unreasonable impacts to GDEs is described in Section 4.4.2, and also applies to establishment of a minimum threshold for depletion of interconnected surface water. For these reasons, the minimum thresholds established for the groundwater level decline RMS are an adequate proxy for the depletion of interconnected surface water. Therefore, this GSP adopts the minimum thresholds for RMS in the Dune Sand Aquifer presented in Table 4-1 as a proxy for depletion of interconnected surface water ~~B~~based on the potential for adverse impacts to GDEs. Because 180-Foot, 400-Foot and Deep Aquifers are not directly interconnected to surface water, no minimum thresholds or measurable objectives are established for these aquifers.~~, the minimum threshold for depletion of interconnected surface water as well as for chronic decline in groundwater levels is the same, which is:~~

- ~~Drawdown of the water table in the Dune Sand Aquifer that exceeds 1 foot above summer 2015 low groundwater elevations in the groundwater level monitoring network wells near GDEs or the Salinas River.~~

4.9.2.1 Relationships Between Minimum Thresholds and Other Sustainability Indicators

> **Regulation Requirements:**
> **§354.28 (**b) The description of minimum thresholds shall include the following:
> (2) The relationship between the minimum thresholds for each sustainability indictor, including and explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.

~~Locally, the~~The interconnected surface water minimum thresholds ~~are the same as~~use the groundwater elevation decline minimum thresholds for the Dune Sand Aquifer as a proxy. They are derived from historical groundwater elevation measurements. Therefore, the minimum thresholds are unique at every well, but when combined represent a "compliance surface" that represents a cohesive dataset. There is no conflict between the thresholds at adjacent locations.

Interconnected surface water minimum thresholds can influence other sustainability indicators. The groundwater elevation minimum thresholds are selected to avoid undesirable results for other sustainability indicators.

- **Chronic lowering of groundwater elevations.** As discussed in Section 4.4, a significant and unreasonable condition for change in groundwater elevations is a decline below levels that cause GDE s~~S~~tress, result in significant and unreasonable interference drawdown, or decline below levels regionally determined by SVBGSA to result in undesirable conditions related to seawater intrusion. ~~As discussed in Section 4.4, a significant and unreasonable condition for change in groundwater elevations is drawdown below an elevation surface that is consistent with the regional management strategy for the Subbasin, and above recent historical low groundwater elevations.~~ The thresholds for depletion of interconnected surface water and chronic groundwater level decline are identical and will prevent undesirable results for both sustainability indicators.

- **Reduction in groundwater storage**. As discussed in Section 4.5, a significant and unreasonable condition for change in groundwater storage is defined as an annual extraction of groundwater in the MGSA Area that falls above the total long-term sustainable yield of the Subbasin established by SVBGSA or that results in depletion of the amount of low-TDS groundwater in storage in the Dune Sand, 180-Foot and 400-Foot Aquifers east of the MGSA Area. ~~As discussed in Section 4.5, a significant and unreasonable condition for change in groundwater storage is depletion of the low-TDS zone in the Dune Sand, 180-Foot and 400-Foot Aquifer.~~ Decline of groundwater elevations would be associated with changes in storage, therefore, limiting changes in storage would also limit groundwater level declines and changes in surface-groundwater interaction. The minimum thresholds for both sustainability indicators will have the same effect – these thresholds will complement each other.

- **Seawater intrusion.** As discussed in Section 4.6, significant and unreasonable seawater intrusion is defined as the migration of chloride isocontours that define the extent of seawater intrusion as of 2017 (for the 180-Foot, 400-Foot and Deep Aquifers) or 2018 (for the Dune Sand Aquifer). ~~A significant and unreasonable condition for seawater intrusion is lateral or vertical migration of the saline water intrusion wedge located beneath and east of the MGSA Area.~~ As discussed in Section 3.2.3.2, a decline in groundwater levels would lead to a change in the interface dynamics between the saline water intrusion wedge and the overlying low-TDS zone, and could potentially result in seawater intrusion; however, the minimum threshold for groundwater level decline in the Dune Sand Aquifer is set at a much lower level based on protection of GDEs. ~~Compliance with the groundwater elevation decline minimum threshold will help to assure a reasonable balance is maintained~~Thus, these minimum thresholds are adequate to address~~, addressing~~ both seawater intrusion and depletion of interconnected surface water. Groundwater elevation declines could induce additional saline water intrusion the bed of the lowermost reaches of the Salinas River; however, the minimum threshold for interconnected surface waters is set above recent groundwater elevations, so the compliance with the minimum threshold should prevent a worsening of seawater intrusion beyond historical levels. For these reasons, the interconnected surface water minimum threshold is unlikely to result in significant and unreasonable ~~degraded water quality~~seawater intrusion, but rather, will help to protect water quality.

- **Degraded water quality**. As discussed in Section 4.7, significant and unreasonable degradation of groundwater quality is defined as the lateral or vertical migration of a TDS isocontour, or the induced migration of a contaminant contour exceeding water quality objectives in a nearby contamination plume. ~~A significant and unreasonable condition for degraded water quality is a statistically-significant increase in the chloride or TDS concentration of groundwater in the low-TDS groundwater zone.~~ This sustainability indicator is closely related to the decline of groundwater elevations; however, the minimum threshold for groundwater level decline in the Dune Sand Aquifer is set at a much lower level based on protection of GDEs. ~~in this zone, and groundwater elevation and quality monitoring will be used in tandem to assess potential undesirable results for this sustainability indicator~~. For these reasons, the interconnected surface water minimum threshold is unlikely to result in significant and unreasonable degraded water quality, but rather, will help to protect water quality.

- **Subsidence**. A significant and unreasonable condition for subsidence is any measurable long-term inelastic subsidence that damages existing infrastructure. Subsidence is caused by depressurization and compaction of fine-grained sediments in response to lowering groundwater levels, especially in confined systems when groundwater elevations fall below historical lows. The groundwater elevation minimum thresholds are set 1 foot above recent low groundwater elevations, making measurable subsidence unlikely.

4.9.2.2 Minimum Thresholds in Relation to Adjacent Subbasins and GSPs

Regulation Requirements
§ 354.28 (b) The description of minimum thresholds shall include the following:
(3) How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.

~~Locally, t~~The proxy minimum thresholds for the Depletion of Interconnected Surface Water ~~and Groundwater~~ are the same as the minimum thresholds for the Chronic Decline of Groundwater Levels in the Dune Sand Aquifer, ~~which~~ and are compatible across Subbasin and GSP boundaries.

The MGSA Area is located adjacent to the Monterey Subbasin and shares boundaries with ~~Marina Coast Water District (~~MCWD~~)~~ GSA and SVBGSA. The minimum threshold was selected to address potential locally-caused undesirable results associated with groundwater extraction, while retaining compatibility with regional sustainable management criteria. Sustainable management criteria were established in collaboration with MCWD to support their sustainable management strategy. ~~In addition, minimum threshold for the 180-Foot and 400-Foot Aquifers were selected to be compatible with SVBGSA's minimum thresholds, which apply to the remainder of the Subbasin and to the portion of the Monterey Subbasin that is not managed by MCWD GSA.~~ The thresholds represent a smooth groundwater elevation surface and would be continuous across inter-agency and inter-basin boundaries. As such, these thresholds will promote cohesive management to achieve the sustainability goals of MGSA, SVBGSA, and MCWD GSA.

SVBGSA's GSP does not present sustainable management criteria for the Dune Sand Aquifer; however, the minimum thresholds established in MGSA's GSP for the Dune Sand Aquifer are compatible with SVBGSA's management strategy for the underlying regional aquifers. The minimum thresholds for the Dune Sand Aquifer to address local resource conditions will not impede or conflict with SVBGSA's ability to reach their sustainability goals. To the contrary, they will protect sensitive local resources in the portion of the Subbasin managed by SVBGSA from potential harm caused by groundwater extraction in the MGSA Area.

SVBGSA has identified aquifer interaction with interconnected surface water and GDEs as a data gap it plans to investigate further through the installation of additional monitoring wells and the use of the United States Geological Survey (USGS) soon to be released Salinas Valley integrated Hydrologic Model (SVIHM). As discussed in Chapters 6 and 7, MGSA plans to support SVBGSA's evaluation and to review the results and other available hydrologic and biological data to determine whether modification of the sustainable management criteria for interconnected surface water in this GSP require updating. The application of the minimum threshold for interconnected surface water in this GSP will not interfere with SVBGSA's management or data gap investigation, and any data gleaned during implementation of the GSP will be shared with SVBGSA.

4.9.2.3 Impact of Minimum Thresholds on Beneficial Uses and Users

Regulation Requirements:
§ 354.28 (b) The description of minimum thresholds shall include the following:
(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

The interconnected surface water groundwater proxy minimum thresholds for beneficial uses are the same as groundwater elevation minimum thresholds. Specifically, relative to interconnected surface water, they may have the following effects on beneficial users and land uses in the Subbasin:

- The groundwater elevation threshold for the Dune Sand Aquifer will assure that GDEs are not adversely affected by groundwater extraction in the MGSA Area. This will help to preserve protected habitats and species.
- The threshold will prevent an increase in the rate of seawater intrusion through the riverbed in the lower, tidally-influenced reach of the Salinas River.
- ~~If the MPWSP is constructed and the seawater intrusion measurable objectives described in Section 4.9.3 are reached, the management actions described in Section 6.2.2 will be implemented.~~

4.9.2.4 Current Standards Relevant to Sustainability Indicator

> **Regulation Requirements:**
> **§354.28 (**b) The description of minimum thresholds shall include the following:
> (5) How state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the Agency shall explain the nature of and basis for the difference.

Streamflow requirements as described in the National Marine and Fisheries Service (NMFS) *Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River* (MCWRA 2005). MCWRA currently manages flows in the Salinas River to meet the requirements of the National Marine Fisheries biological opinion (National Marine Fisheries Service 2007). The NMFS biological opinion was developed using measured streamflows between 1995 and 2005. The measured streamflow reflects current surface water depletion rates, and therefore current depletion rates are already incorporated into the river management plan. Releases from Nacimiento Reservoir and San Antonio Reservoir have successfully maintained required environmental flows under current groundwater pumping and surface water depletion conditions. The Steelhead Trout flow prescriptions are described in MCWRA, 2005. This document guides the operating rules for the San Antonio and Nacimiento reservoir releases.

4.9.2.5 Measurement of Minimum Thresholds

> **Regulation Requirements:**
> **§354.28 (**b) The description of minimum thresholds shall include the following:
> (6) How each minimum threshold will be quantitatively measured, consistent with the monitoring network requirements described in Subarticle 4.

Groundwater elevation minimum thresholds will be directly measured from the monitoring well network. The groundwater level monitoring will be conducted in accordance with the monitoring plan outlined in Chapter 5. Furthermore, the groundwater level monitoring will meet the requirements of the technical and reporting standards included in the Regulations.

4.9.3 Measurable Objectives and Interim Milestones

Regulation Requirements:
§354.30 (a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin with 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.
(b) Measurable objectives shall be established for each sustainability indicator, based on quantitative values using the same metrics and monitoring sites as are used to define the minimum thresholds.
(c) Measurable objectives shall provide a reasonable margin of operational flexibility under adverse conditions which shall take into consideration components such as historical water budgets, seasonal and long-term trends, and periods of drought, and be commensurate with levels of uncertainty.
(e) Each Plan shall describe a reasonable path to achieve the sustainability goal for the basin within 20 years of Plan implementation, including a description of interim milestones for each relevant sustainability indicator, using the same metric as the measurable objective, in increments of five years. The description shall explain how the Plan is likely to maintain sustainable groundwater management over the planning and implementation horizon.

As discussed in Section 4.4 and Chapter 7, groundwater elevation minimum thresholds and measurable objectives are established for the Dune Sand Aquifer on an interim basis until investigations to address data gaps in the degree of groundwater connection of riverine wetlands and GDEs, and the response of other GDEs to groundwater level decline, can be assessed. Because the documented historical range in groundwater elevations in the Dune Sand Aquifer is relatively limited, the interim measurable objectives are established equal to the minimum thresholds, and interim milestones are established at the same elevations.

~~The measurable objectives for chronic lowering of groundwater levels, and therefore, interconnected surface water and groundwater, represent target groundwater elevations that are higher than the minimum thresholds in order to provide early warning so potentially adverse trends can be addressed in a timely fashion. Measurable objectives are also established to leave adequate operating flexibility to deal with anticipated variability in conditions such as seasonal and inter-annual climatic variations and droughts, uncertainties in aquifer conditions or unanticipated events. As stated in Section 4.2,~~

> ~~*"The sustainability goal of this GSP is to manage groundwater resources in the MGSA Area in a way that ensures all beneficial uses and users in, or affected by, groundwater management in the MGSA Area are protected from undesirable results, and have access to a safe and reliable groundwater supply that meets current and future demand."*~~

~~As such, the measurable objectives for groundwater level decline are intended to serve as triggers for management actions to prevent or mitigate undesirable results as described in Chapter 6. Interim milestones will only be established if corrective actions are implemented as part of these management actions; however, MGSA will support and collaborate with SVBGSA and MCWD GSA to meet their interim milestones, as appropriate.~~

~~The following measurable objectives have been established for groundwater level decline:~~

~~**Dune Sand Aquifer.**~~ ~~The following conditions will trigger Management Action 2 described in Chapter 6:~~

~~A drawdown attributable to groundwater extraction in the MGSA Area (as determined by the spatial distribution of drawdown) to an elevation 1 foot above the 2015 low groundwater levels recorded in monitoring wells in the groundwater elevation monitoring network near GDEs. This measurable objective is an interim value that is set equal to the minimum threshold until a biological assessment can be completed to address data gaps in the relationship between groundwater level declines and GDE response.~~

4.9.4 Undesirable Results

Regulation Requirements:
§354.26 (a) Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.
(b) The description of undesirable results shall include the following:
(1) The cause of groundwater conditions occurring throughout the basin that would lead to or has led to undesirable results based on information described in the basin setting, and other data or models as appropriate.
(2) The criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.
(3) Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results.
(c) The Agency may need to evaluate multiple minimum thresholds to determine whether an undesirable result is occurring in the basin. The determination that undesirable results are occurring may depend upon measurements from multiple monitoring sites, rather than a single monitoring site.

Regionally, the SVBGSA describes significant and unreasonable depletion of interconnected surface water in the Subbasin as depletion of interconnected surface water flows that may prevent the MCWRA from meeting biological flow requirements in the Salinas River, or would cause an unreasonable impact on other water rights holders. The following criteria were considered by SVBGSA (2019):

- MCWRA currently manages flows in the Salinas River to meet the requirements of the National Marine Fisheries Service (NMFS) biological opinion (NMFS 2007). The NMFS biological opinion was developed using measured streamflows between 1995 and 2005. The measured streamflow reflects current surface water depletion rates, and therefore current depletion rates are already incorporated into the river management plan. Furthermore, releases from Nacimiento Reservoir and San Antonio Reservoir have successfully maintained required environmental flows under current groundwater pumping and surface water depletion conditions. The Steelhead Trout flow prescriptions are described in *Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River* (MCWRA 2005). This document guides the operating rules for the San Antonio and Nacimiento reservoir releases. Therefore, steelhead flow requirements are being met and current surface water depletion rates are not unreasonable with regards to maintaining flow required in the biological opinion.

- In addition to managing the river for environmental needs, the MCWRA manages the Salinas River to maintain adequate water supply for other beneficial uses. The Nacimiento and San Antonio reservoirs provide flood control benefits as well as groundwater recharge benefits through its sandy channels, where water rights holders along the river can pump out water according to their water rights. Therefore, among other things, the Salinas River is managed to satisfy the water supply needs of riparian pumpers and the existing depletions are neither significant nor unreasonable.

- Regionally, there is significant leakance from the Salinas River to the underlying groundwater, but it is not considered unreasonable with regards to riparian rights holders. To the extent that groundwater pumping depletes surface water flows, these depletions and the potential surface water limitations would be injurious only if the surface water right holders held rights senior to the groundwater pumpers.

~~The remaining potential impacts of concern in the area that could be affected by groundwater extraction within the MGSA Area~~Locally, the following additional criteria were considered in defining undesirable results for this GSP: ~~include inducing seawater intrusion through the bed of the river in the lowermost, tidally-influenced, river reach and potential adverse impacts to GDEs. Based on this information, the local undesirable results associated with the depletion of interconnected surface water include the following:~~

- Potential seawater intrusion through the bed of the tidally-influenced reach of the Salinas River resulting from groundwater drawdown in the Dune Sand Aquifer near the river; and
- Groundwater drawdown in the Dune Sand Aquifer near GDEs that is sufficient to cause vegetative stress that leads to habitat degradation or harm to protected species.

The causes of potential undesirable results are further discussed in Section 4.9.1 and the potential effects of undesirable results on the beneficial users of groundwater, land uses, and property owners are discussed in Sections 4.9.1 and 4.9.2.

Based on this information, undesirable results for the depletion of interconnected surface water sustainability indicator are defined as an exceedance of the groundwater elevation proxy minimum thresholds at two or more locations in the Dune Sand Aquifer in any given year.

FIGURE 4-1. ANALYSIS OF EVAPOTRANSPIRATION FROM A GDE AT THE ARMSTRONG RANCH VERNAL POND COMPLEX

FIGURE 4-2. MEASURABLE OBJECTIVES FOR THE SEAWATER INTRUSION SUSTAINABILITY INDICATOR

VOLUME II: ATTACHMENT B – CHAPTER 5 EDITS

~~DRAFT:~~ CHAPTER 5 – MONITORING NETWORK
Groundwater Sustainability Plan
for the Marina GSA Area
of the 180/400 Foot Aquifer Subbasin

City of Marina
Groundwater Sustainability Agency
Marina, California

JANUARY 2020~~OCTOBER 2019~~

TABLE OF CONTENTS

Tables

Figures

Appendices

Appendix 5.A – MPWSP Logs and Well Completion Diagrams

Appendix 5.B – MCWRA Monitoring Protocols

Appendix 5.C – Chloride Data Contouring Protocols

Appendix 5.D – Induction Logging

5 MONITORING NETWORK

Regulation Requirements:
§354.32 This Subarticle describes the monitoring network that shall be developed for each basin, including monitoring objectives, monitoring protocols, and data reporting requirements. The monitoring network shall promote the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions that occur through implementation of the Plan.

This chapter describes the monitoring networks used to collect data to support implementation of the Groundwater Sustainability Plan (GSP) for the Marina Groundwater Sustainability Agency (MGSA) Area. This chapter has been prepared in accordance with Title 23, California Code of Regulations (CCR) § 354.32 and describes monitoring objectives, monitoring protocols, and data reporting requirements.

5.1 INTRODUCTION

Regulation Requirements:
§354.34(a) Each Agency shall develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan Implementation.

The MGSA Area covers approximately ~~398~~372 acres and is part of the broader 180/400 Foot Aquifer Subbasin (Subbasin). Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) manages the portions of the Subbasin that lie outside the MGSA Area under a regional GSP (Figure 5-1). Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA) has jurisdiction over the Central Marina and Ord Community portions of its service area in this Subbasin, although MCWD has entered into an agreement with SVBGSA for SVBGSA to prepare the GSP in these areas.

This chapter describes the monitoring network that will be used to collect representative information about groundwater conditions as necessary to evaluate and guide implementation of the local GSP for the MGSA Area. Monitoring activities will focus on key resources and the following four principal aquifers within and proximal to the MGSA Area, which are further described in Section 3.1.6:

- **Dune Sand Aquifer (~~DSA~~Dune Sand Aquifer).** The uppermost aquifer, which is of local importance due to its interaction with local groundwater-dependent ecosystems (GDEs), substantial storage of groundwater with designated potential beneficial use as a municipal or domestic supply, and importance in maintaining nearshore seawater intrusion dynamics;

- **180-Foot Aquifer.** The uppermost groundwater supply aquifer of regional importance in the Subbasin, which is seawater intruded in the vicinity of the MGSA Area, but includes significant zones of groundwater with a designated beneficial use as a domestic and municipal supply in the vicinity;

- **400-Foot Aquifer.** The second groundwater supply aquifer of regional importance in the Subbasin, which is seawater intruded in the vicinity of the MGSA Area, but includes significant zones of groundwater with a designated beneficial use as a domestic and municipal supply in the vicinity; and

- **Deep Aquifer.** The deepest regional groundwater supply aquifer, which is not seawater intruded and currently provides the only source of municipal water supply for the City of Marina.

As described in Chapter 2, several existing monitoring programs that are being implemented by Monterey County Water Resources Agency (MCWRA), SVBGSA or others are relevant to the MGSA Area and data collected for these programs will be used for the monitoring program for this MGSA GSP as described further below.

In the event that the Monterey Peninsula Water Supply Project (MPWSP) is not implemented, MGSA will explore alternative arrangements with MCWRA to implement the monitoring program. MGSA is in the process of developing an agreement with MCWRA regarding utilization of monitoring data from its proposed coastal monitoring program. Once developed, ~~T~~this agreement would recognize that if the MPWSP does not move forward, MCWRA will consult with GSAs having jurisdiction in the area to develop an alternative coastal monitoring program using the existing monitoring and supply wells identified in the Mitigation Monitoring and Reporting Program (MMRP) for the MPWSP (CPUC 2018, Zidar and Feeney 2019).

5.1.1 Monitoring Network Objectives

Regulation Requirements:

§354.34(b) Each Plan shall include a description of the monitoring network objectives for the basin, including an explanation of how the network will be developed and implemented to monitor groundwater and related surface conditions, and the interconnection of surface water and groundwater, with sufficient temporal frequency and spatial density to evaluate the affects and effectiveness of Plan implementation. The monitoring network objectives shall be implemented to accomplish the following:

1) Demonstrate progress toward achieving measurable objectives described in the Plan.
2) Monitor impacts to the beneficial uses or users of groundwater.
3) Monitor changes in groundwater conditions relative to measurable objectives and minimum thresholds.
4) Quantify annual changes in water budget components.

The Sustainable Groundwater Management Act (SGMA) requires that monitoring networks be developed to promote the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in groundwater basins managed by GSAs, and to evaluate changing conditions that occur as GSPs are implemented. The monitoring networks must be established to collect representative information to demonstrate short-term, seasonal, and long-term trends as needed to support the following SGMA requirements:

- Monitor changes in groundwater conditions and demonstrate compliance with minimum thresholds and progress toward achieving measurable objectives and interim milestones, as appropriate;

- Monitor impacts to the beneficial uses or users of groundwater;

- Quantify annual changes in water budget components; and
- Assess the criteria that trigger the implementation and termination of management actions and assess their effectiveness under conditions that include minimum threshold exceedances, variable conditions, and adverse impacts to beneficial uses and users of groundwater.

5.1.2 Network Development Process

Regulation Requirements:
§354.34(c) Each monitoring network shall be designed to accomplish the following for each sustainability indicator: [§354.34(c)(1) through §354.34(c)(6) are individually listed below]

Monitoring networks are developed for each of the six sustainability indicators identified in SGMA, including:

- Chronic Lowering of Groundwater Levels;
- Reduction in Groundwater Storage;
- Seawater Intrusion;
- Degraded Groundwater Quality;
- Land Subsidence; and
- Depletion of Interconnected Surface Water.

Since DWR's regulations allow MGSA to use existing monitoring sites in its monitoring network, the monitoring networks described in this chapter include existing locations as well as currently planned expansions of existing programs. As described in Section 2.2, there are several existing and well-developed monitoring programs and networks that are used to monitor the principal aquifers in the 180/400 Foot Aquifer Subbasin. These include regional programs implemented by MCWRA to monitor groundwater elevations and seawater intrusion, including monitoring for the California Statewide Ambient Groundwater Elevation Monitoring (CASGEM) program. Other programs will be implemented by SVBGSA to monitor groundwater storage changes, subsidence, and surface-groundwater interaction for their 180/400 Foot Aquifer Subbasin GSP. These programs are pertinent to this MGSA GSP as they characterize regional conditions and trends in the Subbasin. However, because the MGSA Area comprises a relatively limited portion of the Subbasin's seaward edge, the MGSA GSP will rely primarily on data collected from a local monitoring network adopted in and around the MGSA Area under the Mitigation, Monitoring and Reporting Program (MMRP) for the proposed Monterey Peninsula Water Supply Project (MPWSP) (CPUC 2018, Zidar and Feeney 2019).

In the event that the MPWSP is not implemented, MGSA will explore alternative arrangements with MCWRA to implement the monitoring program. MGSA is in the process of developing an agreement with MCWRA regarding utilization of monitoring data from its proposed coastal monitoring program. Once developed, this agreement would recognize that if the MPWSP does not move forward, MCWRA will consult with GSAs having jurisdiction in the area to develop an alternative coastal monitoring program using the existing monitoring and supply wells identified in the MMRP for the MPWSP.

The locations of the existing and proposed wells in MCWRA's MMRP monitoring program are shown in Figure 5-2. There are currently eight monitoring well clusters with 24 wells within and near the MGSA Area that were installed to monitor test slant well pumping for the MPWSP design and environmental studies. Each of these clusters has a well completed in the ~~DSA~~Dune Sand Aquifer, the 180-Foot Aquifer, and the 400-Foot Aquifer The existing clusters are designated MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 (the MW-2 cluster was not constructed).[1] Under the MMRP for the proposed MPWSP, if the project moves forward, MCWRA will construct five additional well clusters with three wells each at locations MW-A, MW-B, MW-C, MW-D and MW-E, and construct another well at MW-5S screened in the Dune Sand Aquifer below the perched zone, to expand the network of nested monitoring wells to a total of 40 wells (Zidar and Feeney 2019). In addition, under the MMRP MCWRA will monitor a number of other existing wells in the vicinity of the MGSA Area that are in the MCWRA, MCWD or Fort Ord monitoring networks, including 10 wells completed in the Dune Sand Aquifer, eight wells completed in the 180-Foot Aquifer, five wells completed in the 400-Foot Aquifer and eight wells completed in the Deep Aquifer. MCWRA will also monitor six nested monitoring wells in the Deep Aquifer constructed by the United States Geological Survey (USGS) at two locations approximately ½ mile south of the MGSA Area. The locations and construction details of these 77 wells are summarized in Tables 5-1 through 5-4 for the Dune Sand, 180-Foot, 400-Foot, and Deep Aquifers, respectively. Boring logs and well completion diagrams are provided in Appendix 5~~-~~.A.

This MGSA GSP monitoring network will include the MCWRA's MMRP monitoring program wells as described in the following sections. Data from all of the monitoring wells will be considered to characterize regional groundwater conditions surrounding the MGSA Area, but only a subset of wells will be included in the monitoring networks used to assess groundwater level and quality conditions for compliance with the measurable objectives and minimum thresholds established in Chapter 4. Tables 5-1 through 5-4 identify the wells which are included in the MGSA groundwater elevation, groundwater quality and/or induction logging monitoring networks. In addition to groundwater monitoring data, some sustainability indicators may rely on collection of other types of data (e.g., induction logging, groundwater extraction reporting and biological monitoring). Data gaps are identified for each monitoring network; filling these data gaps and developing more extensive and complete monitoring programs will improve MGSA's and others' ability to support sustainable groundwater management and refine the existing conceptual and numerical hydrogeologic models.

5.1.3 Representative Monitoring Sites

Regulation Requirements:

§354.36 Each Agency may designate a subset of monitoring sites as representative of conditions in the basin or an area of the basin, as follows:

§354.36(a) Representative monitoring sites may be designated by the Agency as the point at which sustainability indicators are monitored, and for which quantitative values for minimum thresholds, measurable objectives, and interim milestones are defined.

[1] Monitoring data indicates MW-5S is screened in a perched aquifer above the DSA. Therefore, the monitoring well has been re-designated as MW-5S(P) to indicate it is representative of a local perched aquifer. Similarly, MW-6D is screened in the lower portion of the 180-Foot Aquifer and has been re-designated as MW-6M(L) to indicate it represents the 180-Foot Aquifer.

Representative monitoring sites (RMS) are defined in the regulations as a subset of monitoring sites that are considered representative of conditions in a subbasin. The subset of wells designated as~~that represents the network of~~ the RMS for the Dune Sand Aquifer, 180-Foot, and the 400-Foot Aquifers in Chapter 4 was used to establish minimum thresholds and measurable objectives for each of the sustainability indicators (refer to Table 4-1)~~-~~. The network that will be used to collect data to evaluate the sustainability indicators will include all of the monitoring wells that are part of MCWRA's MMRP monitoring program~~,~~ and are ~~is~~ identified in Tables 5-1 through 5-4, and discussed in the subsections for each sustainability indicator.

5.1.4 Review and Evaluation of Monitoring Network

Regulation Requirements:
§354.38(a) Each Agency shall review the monitoring network and include an evaluation in the Plan and each five-year assessment, including a determination of uncertainty and whether there are data gaps that could affect the ability of the Plan to achieve the sustainability goal for the basin.

MGSA will review the monitoring network described in this GSP at a frequency of not greater than every five years to assess whether data gaps exist that could affect MGSA's ability to achieve the sustainability goals for the MGSA Area. An initial evaluation will be conducted in collaboration with Marina Coast Water District (MCWD) GSA, SVBGSA, and MCWRA when the United States Geologic Survey (USGS) releases the Salinas Valley Integrated Hydrologic Model (SVIHM), as described below. ~~Such d~~Data gaps, if identified, could result in the need to install additional monitoring wells or add additional monitoring locations or procedures to complement the existing network and/or to increase the frequency of monitoring. Reviews and appropriate response actions will be performed in collaboration with SVBGSA, MCWRA and MCWD GSA. Several areas of review are identified at this time:

- As discussed in Section 7.1.4, USGS anticipates releasing its fully calibrated SVIHM in late 2020 (SVBGSA 2019). The SVIHM, when available, will represent the state of the science when it comes to groundwater management tools in the Salinas Valley Basin, and SVBGSA intends to update its GSP based on refined information regarding the groundwater flow system, water budgets and predictive capability of that model. MGSA intends to work in parallel with SVBGSA in its review of the calibrated SVIHM and update this GSP at the same time. If the new information is significant for local groundwater management, MGSA will prepare an addendum or update report refining the GSP.
- Monitoring of the Deep Aquifer in the 180/400 Foot Aquifer Subbasin has historically been limited considering the thickness and complexity of this aquifer system. The 14 Deep Aquifer wells included in the groundwater level and quality monitoring networks for this GSP help to address this data gap. Additional characterization and monitoring of the Deep Aquifer are currently being discussed by MCWRA, SVBGSA and MCWD GSA, and it is possible that additional monitoring wells will be completed in the Deep Aquifer near the MGSA Area in the future. Monitoring of the Deep Aquifer, for the purposes of this GSP, will be accomplished using

information from existing USGS and other monitoring wells that are being monitored by MCWRA, and expanded if new wells are installed in the area.

- MCWD GSA will review the adequacy of this monitoring well network during development of the GSP for the Monterey Subbasin, which is due to be completed in 2022. This review will be conducted in the context of developing a locally-refined groundwater flow, solute transport, and density-driven flow model. Any refinements or changes in the monitoring network adopted by MCWD GSA will be reviewed and considered for adoption in this GSP to ensure that the local monitoring system provides consistent data for both GSPs.

5.2 Chronic Lowering of Groundwater Levels

Regulation Requirements:
§354.34(c) Each monitoring network shall be designed to accomplish the following for each sustainability indicator:
(1) Chronic Lowering of Groundwater Levels. Demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features by the following methods:
A) A sufficient density of monitor wells to collect representative measurements through depth-discrete perforated intervals to characterize the groundwater table or potentiometric surface for each principal aquifer.
B) Static groundwater elevation measurements shall be collected at least two times per year, to represent seasonal low and seasonal high groundwater conditions.

The sustainability indicator for Chronic Lowering of Groundwater Levels is evaluated by monitoring groundwater elevations. The regulations require a network of monitoring wells sufficient to demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features.

The California Statewide CASGEM program provides groundwater elevation data in a format that is readily and widely available to the public and can be readily adopted into SGMA compliance programs. ~~The~~ SVBGSA has adopted the Subbasin CASGEM program into its monitoring network for the Subbasin. However, there is only one CASGEM well in the vicinity of the MGSA Area, which is not sufficient to fulfill the requirements of the GSP regulations for monitoring under this GSP. Therefore, groundwater elevation monitoring network of this GSP will include the existing and planned monitoring well clusters associated with the MPWSP to monitor the ~~DSA~~Dune Sand Aquifer, 180-Foot Aquifer and 400-Foot Aquifer, the existing USGS monitoring wells approximately ½ mile south of the MGSA Area to monitor the Deep Aquifer, and the remaining Deep Aquifer wells included in the MMRP monitoring program. Monitoring of these wells will be conducted by MCWRA under the *Integrated Coastal Groundwater Monitoring Program and Plan* (Zidar and Feeney 2019).

5.2.1 Description of the Monitoring Approach and Network

Regulation Requirements:
§354.34(g)(3) For each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative monitoring sites established pursuant to Section 354.36
§354.34(h) The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used.

Chronic Lowering of Groundwater Levels is related in various ways to each of the other sustainability indicators. It has the potential to cause well interference, result in regionally greater pumping depths, reduce groundwater storage, result in additional seawater intrusion, degrade water quality, cause subsidence, and deplete interconnected surface waters. Beneficial users of shallow groundwater such as groundwater-dependent ecosystems (GDEs) could also be adversely affected by groundwater elevation declines.

In the vicinity of the MGSA Area, groundwater extraction from the seawater-intruded portions of the 180-Foot Aquifer and 400-Foot Aquifer is generally limited. As one of the management actions in SVBGSA's GSP for the Subbasin (SVBGSA 2019), SVBGSA proposes to adopt an ordinance that would prohibit the construction and operation of water supply wells within the Castroville Seawater Intrusion Project (CSIP) service area east and northeast of the MGSA Area. Nevertheless, small non-transient water systems reliant on groundwater are located near Neponset, near the Marina Airport and near the regional wastewater treatment plant located east of the MGSA Area (Section 3.1.8). In addition, interference drawdown with existing wells is a potential impact in the vicinity of the MGSA Area that is identified in the MMRP for the proposed MPWSP. ~~In addition~~Also, as discussed in Section 3.2.6.~~1~~2, several GDEs that support protected habitat and species are located east of the MGSA Area, and similar features occur farther to the north and south. Based on this information, undesirable results for the Chronic Lowering of Groundwater Levels sustainability indicator in the MGSA Area are defined based on significant and unreasonable well interference drawdown, and significant and unreasonable hydrological or biological impacts to GDEs.

As described in Chapter 4, minimum thresholds and measurable objectives for the Chronic Lowering of Groundwater Levels sustainability indicator are defined for the principal aquifers as follows:

- **Dune Sand Aquifer** – MGSA has established the minimum threshold and measurable objective in the Dune Sand Aquifer as 1 foot above the 2015 low groundwater levels recorded in monitoring wells in the groundwater elevation monitoring network near GDEs in the vicinity of the MGSA Area, based on potential significant and unreasonable impacts to GDEs. The specific Minimum Thresholds and Measurable Objectives designated for each RMS are indicated on Table 4-1. These values are adopted on an interim basis based on the rationale in Section 4.4.2.1, and will be updated as discussed in ~~Section 6.2.3~~Chapter 7 based on a baseline biological assessment of the GDEs to address a data gap in the understanding of GDE response and sensitivity to groundwater elevation declines.

- **180-Foot and 400-Foot Aquifers** – MGSA has established the minimum threshold at 1 foot above historical low groundwater elevations measured in 2015, adjusted for local hydrogeologic conditions and corresponding measurable objectives for SVBGSA RMS near the area as discussed in Section 4.4.2 and summarized in Table 4-1. Measurable objectives are also summarized in Table 4-1, and were established to provide sufficient operational flexibility under variable conditions consistent with the nearest SVBGSA RMS, and in several cases were similarly adjusted. ~~in 15% or more of the monitoring wells in the groundwater elevation monitoring network in these aquifers, which is consistent with the SVBGSA's minimum threshold. The measurable objective is established at 2 feet above the low historical groundwater elevations measured in 2015 in order to provide early warning and operational flexibility.~~

- **Deep Aquifer** – Because groundwater is not currently extracted from the Deep Aquifer in the MGSA Area and future construction of new supply wells is currently prohibited, minimum thresholds and measurable objectives were not established for the Chronic Lowering of Groundwater Levels sustainability indicator in this aquifer. The need to establish sustainable management criteria for the Deep Aquifer for the decline in groundwater levels sustainability indicator will be reassessed during future reviews and GSP updates.

Tables 5-1 through 5-4 identify the monitoring wells included in the groundwater elevation monitoring network for each aquifer, ~~and~~ provide summary information regarding these wells. These tables include wells utilized to assess groundwater occurrence, flow directions and hydraulic gradients, as well as RMS designated in Chapter 4. Boring logs and well completion diagrams are provided in Appendix 5-A.

The MPWSP monitoring wells were installed to monitor the effects of pumping the test slant well. The locations of the MPWSP monitoring wells are shown on Figure 5-2. Each monitoring location from MW-1 to MW-9 consists of a cluster of three wells (the MW-2 well cluster was not constructed). The individual wells in each cluster were drilled to monitor responses in the ~~DSA~~Dune Sand Aquifer (shallow well, *e.g.* MW-1S), 180-Foot Aquifer (moderate depth well, *e.g.* MW-1M), and 400-Foot Aquifer (deep well, *e.g.* MW-1D). Each of the MPWSP monitoring wells is equipped with a water level transducer that logs information at 5- to 15-~~-~~minute intervals. Three of the existing MPWSP well clusters (MW-1, MW-3, and MW-4) are located within the MGSA Area. MCWRA is currently planning the installation of five new monitoring well clusters to provide additional coverage to monitor the hydrogeological effects of the MPWSP, if it is implemented (Zidar and Feeney 2019). These proposed well cluster locations have been preliminarily named MW-A through MW-E and are shown on Figure 5-2. Once installed, the new monitoring well clusters would be added to the existing monitoring network for the purposes of this MGSA GSP.

The USGS monitoring wells include two clusters of nested wells screened at differing intervals within the Deep Aquifer system. Information regarding the nested USGS wells is presented on Table 5-4, and the location of the nested wells is shown on Figure 5-2. The USGS wells are located approximately ½ mile south of the MGSA Area, and are equipped with pressure transducers and monitored quarterly by MCWRA. MCWRA will conduct monitoring of seven other Deep Aquifer wells as part of the MMRP. Locations of these wells are shown on Figure 5-2, and well construction and monitoring information is presented in Table 5-4. Although these other monitoring wells are not currently equipped with water level transducers, MCWRA plans to install transducers.

The current CASGEM monitoring network proposed in the SBVGSA GSP consists of 23 wells with publicly available data within the 180/400 Foot Aquifer Subbasin. As a voluntary program, MCWRA based the

CASGEM network primarily on wells that were owned and monitored by MCWRA prior to initiation of the CASGEM program. The MGSA GSP will consider information from these CASGEM wells to interpret the regional setting for its local groundwater monitoring program; however, these wells will not be part of the monitoring network for this GSP.

5.2.2 ADEQUACY OF THE MONITORING NETWORK

Regulation Requirements:
§354.34(d) The monitoring network shall be designed to ensure adequate coverage of sustainability indicators. If management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the basin setting and sustainable management criteria specific to that area.
§354.34(e) A Plan may utilize site information and monitoring data from existing sources as part of the monitoring network.

Each MPWSP monitoring well cluster, both existing and planned for installation in the future, includes wells with generally similar depths and screen intervals completed in the ~~DSA~~Dune Sand Aquifer, the 180-Foot Aquifer and the 400-Foot Aquifer. Overall, with the planned additions, the MPWSP monitoring well network will include 40 monitoring wells within and adjacent to the MGSA Area (Tables 5-1 to 5-3 and Figure 5-2). The existing and proposed monitoring well clusters are designed and distributed to assess the potential groundwater level effects of groundwater extraction within the MGSA Area. The nearest existing Deep Aquifer monitoring wells are approximately ½ mile from the MGSA Area; however, no groundwater extraction from the Deep Aquifer using wells completed in the MGSA Area is anticipated.

Specific considerations related to the adequacy and sufficiency of the MGSA GSP groundwater elevation monitoring network include the following:

- **Dune Sand Aquifer** – The existing (and planned) MPWSP monitoring wells completed in the ~~DSA~~Dune Sand Aquifer and included in the MGSA GSP groundwater elevation monitoring network will provide relatively broad coverage to assess potential groundwater elevation declines associated with groundwater extraction in the MGSA Area, potential reduction of groundwater storage in the low total dissolved solids (TDS) zone in the DSA, changes in the low-TDS zone gradients and thickness that could portend advancing seawater intrusion, potential depletion of interconnected surface water, and potential adverse effects on beneficial groundwater users including GDEs.

- **180-Foot Aquifer** – The existing (and planned) MPWSP monitoring wells completed in the 180-Foot Aquifer and included in the MGSA GSP groundwater elevation monitoring network provide relatively broad coverage to assess potential groundwater level decline, interference drawdown effects to existing supply wells~~,~~ and net gradient changes~~ that may portend seawater intrusion~~. However, the length of the screened intervals of these wells (average 110 feet for existing wells) precludes assessment of gradient changes between the upper and lower 180-Foot Aquifer or thinning of the low TDS zone within this aquifer. MCWD will review the general adequacy of the monitoring well networks in the area to support the GSP being developed for the Monterey Subbasin. MGSA will review the outcome of this analysis and any additional studies, and the monitoring program of this GSP may be refined if needed to facilitate inter-basin coordination of groundwater monitoring programs.

- **400-Foot Aquifer** – The existing (and planned) MPWSP monitoring wells completed in the 400-Foot Aquifer and included in the MGSA GSP groundwater elevation monitoring network provide broad coverage to assess potential groundwater level decline, interference drawdown effects to existing supply wells, and gradient changes ~~that may portend seawater intrusion~~. Coverage is limited to the upper portion of the 400-Foot Aquifer.

- **Deep Aquifer** – The six existing nested USGS monitoring wells completed in the Deep Aquifer, and an additional eight supply wells included in the MGSA GSP groundwater elevation monitoring network cover a considerable area surrounding the MGSA Area; however, the Deep Aquifer is a complex system that is 1,300 feet thick. As such, these wells provide an indication of groundwater elevation trends, but may not be sufficient to assess gradients. MGSA will cooperate with planned efforts by MCWRA, SVBGSA and MCWD GSA to further investigate and monitor the Deep Aquifer during GSP implementation.

5.2.3 DENSITY OF MONITORING SITES AND FREQUENCY OF MEASUREMENTS

Regulation Requirements:

§354.34(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:

1) Amount of current and projected groundwater use.
2) Aquifer characteristics, including confined or unconfined aquifer conditions, or other physical characteristics that affect groundwater flow.
3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.
4) Whether the Agency has adequate long-term existing monitoring results or other technical information to demonstrate an understanding of aquifer response.

Based on DWR's SGMA regulations and the Best Management Practices (BMPs) published by DWR on monitoring networks (DWR 2016d), a visual analysis of the proposed MGSA GSP monitoring network was performed using professional judgment to evaluate whether there are data gaps in the groundwater elevation monitoring network in terms of density and frequency of measurements. While there is no definitive requirement on monitoring well density, DWR's BMPs cite several studies (Heath 1976, Sophocleous 1983, Hopkins 1994) that recommend 0.2 to 10 wells per 100 square miles for basin-wide groundwater management programs. The BMPs note that professional judgment should be used to design the monitoring network to account for high-pumping areas, proposed projects, and other subbasin specific factors.

The MGSA Area encompasses approximately ~~398~~372 acres and is proposed as the location for the extraction of 17,400 acre-feet/year (AFY) of groundwater from slant wells screened in the ~~DSA~~Dune Sand Aquifer and 180-Foot Aquifer stratigraphic intervals for the MPWSP (HWG 2017). This proposed high rate of groundwater extraction at a single site is unique in the area, and assessing potential undesirable results associated with this extraction rate requires a relatively denser monitoring network and monitoring frequency than for the general regional groundwater management applications contemplated in DWR's BMPs. As described in previous subsections, the monitoring well network adopted for the MGSA GSP, if all wells are installed as proposed, will ultimately consist of up to 13 monitoring wells in each of the ~~DSA~~Dune Sand Aquifer, the 180-Foot Aquifer and the 400-Foot Aquifer. These wells are (or will be) equipped with pressure transducers and will be monitored at least quarterly. The frequency and density of measurements is adequate for assessing potential effects that could lead to undesirable results in this setting; however, as discussed previously, the vertical distribution of monitoring points in the 180-Foot Aquifer is limited.

The six USGS monitoring wells and the other eight wells used to monitor the Deep Aquifer also are (or will be) equipped with pressure transducers and are monitored quarterly, which is an adequate monitoring frequency. These wells provide relatively good coverage around the MGSA Area; however, because of the thickness and complexity of the Deep Aquifer they may be insufficient to assess lateral gradients. Regionally, the monitoring well density in the Deep Aquifer has been identified by SVBGSA and MCWRA as being insufficient to assess conditions in this aquifer system (SVBGSA 2019, MCWRA 2017a). MCWRA, SVBGSA and MCWD GSA are discussing plans to investigate the Deep Aquifer system in the Salinas Valley. It is anticipated that the investigation results will provide information regarding the nature and hydraulic properties of the Deep Aquifer. Specifically, the groundwater flow patterns in the Deep Aquifer, the interconnection between the disparate aquifer units in this system, how they are recharged, and the extent of potential leakance from the overlying upper aquifer system is expected to be addressed. No specific scope or schedule has been proposed at this time. MGSA will provide comments on the scope and results of this study and incorporate the results into a future update of the MGSA GSP.

5.2.4 Additional Monitoring Network Information

5.2.4.1 Scientific Rationale for Site Selection

Regulation Requirements:
§354.34(g) Each Plan shall describe the following information about the monitoring network:
(1) Scientific rationale for the monitoring site selection process.

The MPWSP monitoring wells, both existing and planned for installation in the future, are adopted as the MGSA GSP groundwater elevation monitoring network because the wells are specifically designed and completed to monitor the effects of groundwater withdrawals associated with the MPWSP in the ~~DSA~~Dune Sand Aquifer, the 180-Foot Aquifer, and the 400-Foot Aquifer. The proposed additional well locations were designated by MCWRA under the MMRP for that project to address data gaps (CPUC 2018, MCWRA 2019e). Monitoring of the Deep Aquifer will be accomplished using wells constructed by USGS to investigate and characterize the Deep Aquifer at multiple depth intervals, and augmented with other available wells monitored by MCWRA.

The CASGEM network consists of much more widely distributed wells that are of limited use for managing groundwater in the MGSA Area but provide an informative regional context. For this reason, the CASGEM well information will be used only as necessary to augment data from the MPWSP and

USGS wells. Information from other wells in the MCWRA network monitored as part of the MMRP will be used to interpret the regional setting for MGSA's local groundwater monitoring program.

5.2.4.2 Consistency with Data and Reporting Standards

Regulation Requirements:
§354.34(g) Each Plan shall describe the following information about the monitoring network:
(2) Consistency with data and reporting standards described in Section 352.4. If a site is not consistent with those standards, the Plan shall explain the necessity of the site to the monitoring network, and how any variation from the standards will not affect the usefulness of the results obtained.

SGMA requires certain data and reporting standards for groundwater monitoring wells that are used for GSP purposes. Relevant standards include the following:

- Field measurements of elevations of groundwater and land surface shall be measured and reported in feet to an accuracy of at least 0.1 feet relative to NAVD88;
- Geographic locations shall be reported in latitude and longitude coordinates in decimal degrees to five decimal places, to a minimum accuracy of 30 feet relative to NAD83;
- A description of well use, such as public supply, irrigation, monitoring, etc.;
- Casing perforations, borehole depth, and total well depth;
- Well completion reports, if available, from which the names of private owners have been redacted;
- Geophysical logs, well construction diagrams, or other relevant information if available;
- Identification of principal aquifers monitored; and
- Other relevant well construction information, such as well capacity, casing diameter, or casing modifications, as available.

The MPWSP and USGS wells that comprise the monitoring network for the MGSA GSP meet all of these relevant reporting standards as shown in Tables 5-1 through 5-4 and Appendix 5~~-~~.A.

5.2.5 Monitoring Protocols

Regulation Requirements:
§352.2 Each Plan shall include monitoring protocols adopted by the Agency for data collection and management, as follows:
(a) Monitoring protocols shall be developed according to best management practices.
(b) The Agency may rely on monitoring protocols included as part of the best management practices developed by the Department, or may adopt similar monitoring protocols that will yield comparable data.
(c) Monitoring protocols shall be reviewed at least every five years as part of the periodic evaluation of the Plan, and modified as necessary.
§354.34(i) The monitoring protocols developed by each Agency shall include a description of technical standards, data collection methods, and other procedures or protocols pursuant to Water Code Section 10727.2(f) for monitoring sites or other data collection facilities to ensure that the monitoring network utilizes comparable data and methodologies.

Chapter 4 of the MCWRA CASGEM monitoring plan (MWCRA 2015) includes a description of the monitoring procedures employed by that agency. These CASGEM groundwater elevation monitoring protocols will be utilized by MCWRA to implement their monitoring program. The monitoring protocols are included in Appendix 5.B. Groundwater elevation data are currently collected both by hand and using automated pressure transducers. The monitoring protocols established by MCWRA cover multiple monitoring methods for collection of data by hand and by automated pressure transducers. Data collected by MCWRA are anticipated to be provided to MGSA for this GSP.

5.2.6 Use of Groundwater Elevations as Proxy for Other Sustainability Indicators

Regulation Requirements:

§354.36(b) Groundwater elevations may be used as a proxy for monitoring other sustainability indicators if the Agency demonstrates the following:

1) Significant correlation exists between groundwater elevations and the sustainability indicators for which groundwater elevation measurements serve as a proxy.
2) Measurable objectives established for groundwater elevation shall include a reasonable margin of operational flexibility taking into consideration the basin setting to avoid undesirable results for the sustainability indicators for which groundwater elevation measurements serve as a proxy.

§354.36(c) The designation of a representative monitoring site shall be supported by adequate evidence demonstrating that the site reflects general conditions in the area.

MGSA will use groundwater elevations as a proxy to monitor for the Land Subsidence and Depletion of Interconnected Surface Water sustainability indicators. As discussed in Section 4.8.2, ~~T~~the risk of land subsidence results from lowered groundwater elevations, specifically when groundwater elevations decrease to levels below the lowest historical water elevations, which leads to the depressurization and consolidation of fine-grained sediments. When groundwater elevations fluctuate within the range of historical conditions, the alluvial layers are not subject to effective stress greater than historical conditions and therefore are generally not at significant risk of subsidence.

As discussed in Section 4.9.2, ~~G~~groundwater elevations in the Dune Sand Aquifer will be used to monitor potential effects to interconnected surface waters (ISW) and GDEs. Change in the potential relationship between groundwater and ISW is directly proportional to the induced gradient changes resulting from groundwater drawdown in shallow aquifers. Similarly, the interaction between groundwater elevations and GDEs is strongly correlated when the GDEs include wetlands, or when groundwater-dependent vegetation cannot adequately adapt to changing groundwater elevations.

5.2.7 DATA GAPS

Regulation Requirements:
§354.38(b) Each Agency shall identify data gaps wherever the basin does not contain a sufficient number of monitoring sites, does not monitor sites at a sufficient frequency, or utilizes monitoring sites that are unreliable, including those that do not satisfy minimum standards of the monitoring network adopted by the Agency.
(c) If the monitoring network contains data gaps, the Plan shall include a description of the following:
1) The location and reason for data gaps in the monitoring network.
2) Local issues and circumstances that limit or prevent monitoring.
(d) Each Agency shall describe steps that will be taken to fill data gaps before the next five-year assessment, including the location and purpose of newly added or installed monitoring sites.
(e) Each Agency shall adjust the monitoring frequency and density of monitoring sites to provide an adequate level of detail about site-specific surface water and groundwater conditions and to assess the effectiveness of management actions under circumstances that include the following:
1) Minimum threshold exceedances.
2) Highly variable spatial or temporal conditions
3) Adverse impacts to beneficial uses and users of groundwater.
4) The potential to adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of sustainability goals in an adjacent basin.

The potential data gaps identified for the MGSA GSP groundwater elevation monitoring network are as follows:

- **Groundwater elevation and quality data in the MGSA Area**~~:~~ – The available data to characterize groundwater elevations and groundwater quality in the MGSA Area and vicinity are both spatially and temporally limited. Such data are needed to characterize groundwater flow patterns in the ~~DSA~~Dune Sand Aquifer, the 180-Foot Aquifer and the 400-Foot Aquifer and assess recent trends in seawater intrusion. The installation of monitoring well clusters at five additional locations by MCWRA as proposed (and as revised if necessary) will address this data gap spatially. Temporally, the limited duration of the temporal data set will be addressed as additional data are gathered over time.

- **Interconnection between the Salinas River and the ~~DSA~~Dune Sand Aquifer and 180-Foot Aquifer** – Limited data are available to assess the degree to which the Salinas River is connected to the underlying groundwater systems (~~DSA~~Dune Sand Aquifer and 180-Foot Aquifer). This data gap will be addressed in collaboration with SVBGSA's efforts to assess surface-groundwater interaction along the river regionally through monitoring and use of the Salinas Valley Integrated Hydrologic Model (SVIHM). Locally, MGSA will evaluate potential interconnection between the ~~DSA~~Dune Sand Aquifer and the 180-Foot Aquifer and the Salinas River by examining river stage measurements and the groundwater elevations in the MW-6 and MW-9 well clusters.

- **Deep Aquifer system** – Deep Aquifer monitoring wells near the MGSA area are present at 10 locations, with multiple-depth completions at two locations. Although this network provides relatively well dispersed coverage laterally near the MGSA Area, the Deep Aquifer is relatively thick (1,300 feet) and the existing monitoring well network may be inadequate to reliably assess groundwater gradients. Groundwater extraction from the Deep Aquifer occurs outside the

MGSA Area within the portions of the Subbasin managed by MCWD GSA and SVBGSA. These agencies will play the primary role in investigating and monitoring the Deep Aquifer in this area, and MGSA will cooperate with and support their actions, including expansion of the monitoring well network, to incorporate new wells, if appropriate.

- **Depth discrete groundwater data** – Certain wells in the 180-Foot Aquifer and 400-Foot Aquifer were constructed with very long screened intervals (e.g., over 100 feet in many cases), which introduces uncertainty with respect to the specific aquifer horizon monitored by the well, and the interpretation of local groundwater gradients. This data gap will be addressed as necessary during implementation of the GSP, in collaboration with MCWD GSA. The need to address this data gap may depend on whether the monitoring data indicate that the triggers for the management actions described in Chapter 6 are being exceeded, and whether more vertically discrete data are needed for the implementation and monitoring of those management actions.

5.3 Reduction in Groundwater Storage

Regulation Requirements:
§354.34(c) Each monitoring network shall be designed to accomplish the following for each sustainability indicator:
(2) Reduction of Groundwater Storage. Provide an estimate of the change in annual groundwater in storage.

Regionally, reduction in storage in the Subbasin's aquifers has historically occurred and is ongoing due to groundwater production for agricultural, municipal, and domestic use that exceeds the long-term sustainable yield of the Subbasin and the absence of viable alternative sources of water supply. As described in Chapter 3, a large groundwater depression has developed north of Salinas and is apparent on both the 180-Foot/Shallow East Side Aquifers and 400-Foot/Deep East Side Aquifer maps, where elevations are generally -80 to -120 feet msl, and has led to other undesirable results. As a result, less groundwater in storage is available as a buffer against surface water supply shortfalls without causing undesirable results, most notably seawater intrusion. The sustainability indicator for Reduction in Groundwater Storage is evaluated by monitoring groundwater elevations, ~~and groundwater quality and~~ performing induction logging ~~in the monitoring well network~~ and collecting extraction data from groundwater users within the Subbasin on an annual basis. The regulations require a network of monitoring wells sufficient to provide an estimate of the change in annual groundwater in storage.

5.3.1 Description of the Monitoring Approach and Network

Regulation Requirements:
§354.34(g)(3) For each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative monitoring sites established pursuant to Section 354.36
§354.34(h) The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used.

Because the local tools to further assess the MGSA Area component of the Subbasin-wide sustainable yield are not yet available, this GSP adopts SVBGSA's basin-wide sustainable yield estimate of 112,000

AFY as a minimum threshold, supplemented locally with the following interim minimum threshold related to the low-TDS groundwater zone near the MGSA Area in order to prevent undesirable results ~~form~~from groundwater extraction in the MGSA Area:

- A decrease in the amount of low-TDS groundwater in storage in the Dune Sand, 180-Foot and 400-Foot Aquifers as measured by induction logging.

The regional minimum threshold applies to pumping of natural recharge only. Pumping of intentionally recharged water that is not part of the natural recharge is not considered when compared against the minimum threshold. SVBGSA's calculations account for current land use, future urban growth, and anticipated reasonable climate change. Seawater intrusion (i.e., seawater inflow volume) is not considered part of the sustainable yield. SVBGSA states the sustainable yield is an estimate only and will be updated as additional studies are undertaken and data are compiled (e.g., to address identified data gaps when the SVHM becomes available). The local interim minimum threshold is adopted to prevent significant and unreasonable impacts to GDEs, seawater intrusion, groundwater quality degradation, and potential harm to overlying groundwater right holders, while the data gaps regarding the sustainable yield are addressed as discussed in Chapters 6 and 7, and until a local sustainable yield volume can be determined. It is based on assessment of the amount of low-TDS groundwater in storage, which has been determined to be related to these other sustainability indicators.

~~As discussed in Sections 3.1.12 and 3.2.2, the MGSA Area is located at the western edge of a substantial zone of low-TDS groundwater (TDS < 3,000 milligrams per liter [mg/L]) extending vertically from the DSA into the180-Foot Aquifer and the 400-Foot Aquifer. The volume of low-TDS groundwater in storage within the DSA alone has been estimated to be 188,000 acre-feet (Gottschalk *et al.* 2018). Groundwater with TDS concentrations less than 3,000 mg/L is designated as having potential beneficial use as municipal and domestic supply (State Water Resources Control Board [SWRCB] Resolution No. 88-63).~~

~~The proposed MPWSP slant supply wells would draw source water from the Dune Sand and 180-Foot Aquifers, including groundwater from this low-TDS zone. California water law and SWRCB require that groundwater extraction for the proposed MPWSP may not adversely affect existing beneficial groundwater users or groundwater right holders (CPUC 2018). Based on this information, the local definition for significant and unreasonable reduction in groundwater storage is based on a depletion of the amount of low-TDS groundwater in storage in the DSA, 180-Foot Aquifer and 400-Foot Aquifer in and near the MGSA Area resulting from groundwater extraction in the MGSA Area that adversely impacts overlying groundwater right holders and leads to further seawater intrusion.~~

~~As described in more detail in Chapter 4, the local definition for significant and unreasonable reduction in groundwater storage is based on the following:~~

- ~~A depletion of the amount of low-TDS groundwater in storage in the DSA, 180-Foot Aquifer or 400-Foot Aquifer in and near the MGSA Area resulting from groundwater extraction in the MGSA Area;~~

- ~~A depletion of the amount of low-TDS groundwater in storage that adversely impacts groundwater right holders; or~~
- ~~An imbalance in the amount of low-TDS groundwater and denser saline groundwater that leads to further seawater intrusion.~~

~~Minimum thresholds and measurable objectives that have been adopted for the Reduction of Groundwater Storage sustainability indicator are defined as follows:~~

- ~~**Dune Sand, 180-Foot and 400-Foot Aquifers:**~~
    - ~~A decrease in the thickness of the low TDS zone of more than 1 foot (considering seasonal variability) identified by induction logging three or more wells in the induction logging monitoring well network; and~~
    - ~~A spatial distribution of groundwater level decline that indicates the logged changes identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA Area.~~
- ~~**Deep Aquifer –** Because construction of new wells in the Deep Aquifer is currently prohibited and there are no plans to construct any Deep Aquifer wells in the MGSA Area, minimum thresholds and measurable objectives were not established for the Reduction of Groundwater Storage sustainability indicator for the Deep Aquifer in this MGSA GSP.~~

~~The following data are needed to assess compliance with these minimum thresholds:~~

- ~~Data regarding changes in the amount of low-TDS groundwater in storage will be derived from groundwater elevation measurements and groundwater quality measurements taken from the MPWSP monitoring well network.~~
- ~~Groundwater extraction data will be necessary to evaluate the cause and nature of potential changes in the volume of low-TDS water in storage. The MGSA will collect data regarding groundwater extraction within the MGSA Area, and coordinate with the MCWRA to obtain groundwater pumping information from the 180/400 Foot Aquifer Subbasin that is relevant to the MGSA Area. Groundwater extraction data are provided to MCWRA under confidentiality agreements and data must be discussed without revealing the locations monitored or the well owner's identities.~~
- ~~Specific conductance sensors and induction logging of each monitoring well location on a quarterly basis will be used to assess the lateral and vertical distribution of salinity and the thickness and changes in thickness of the low-TDS water zone in the deep monitoring well at each MPWSP monitoring well cluster.~~

The existing (and planned) MPWSP monitoring wells will serve as the MGSA GSP groundwater storage monitoring network. Well information is provided on Tables 5-1 through 5-3, the boring logs and well completion diagrams are provided in Appendix 5.A, and the locations of the MPWSP monitoring wells are shown on Figure 5-2. Groundwater extraction data for the ~~area east of the MGSA Area will be obtained from SVBGSA~~MGSA Area will be obtained from pumpers and compiled. MGSA will prepare annual estimates of the changes in low-TDS groundwater in storage near the MGSA. This estimate will be conducted based on annual induction logging conducted by MCWRA, and will be used to assess changes in the amount of low-TDS water in storage in the aquifer system. Finally, MGSA will estimate of the amount of low-TDS groundwater withdrawn annually from the aquifer system based on pumping and water quality data provided by pumpers within the MGSA Area. The estimates will be made using volume and mass balance calculations, and supported by modeling and assessment of water quality data as necessary. Data will be provided to SVBGSA for consideration in their annual assessment of groundwater storage reduction.

5.3.2 Adequacy of Monitoring Network, Density of Monitoring Sites, and Frequency of Measurements

Regulation Requirements:

§354.34(d) The monitoring network shall be designed to ensure adequate coverage of sustainability indicators. If management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the basin setting and sustainable management criteria specific to that area.

§354.34(e) A Plan may utilize site information and monitoring data from existing sources as part of the monitoring network

§354.34(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:

1) Amount of current and projected groundwater use.
2) Aquifer characteristics, including confined or unconfined aquifer conditions, or other physical characteristics that affect groundwater flow.
3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.
4) Whether the Agency has adequate long-term existing monitoring results or other technical information to demonstrate an understanding of aquifer response.

The adequacy of the groundwater elevation monitoring network is discussed in Section 5.2.2. Groundwater extraction within the MGSA Area will be metered and reported by extractors, and groundwater extraction from wells in the adjacent areas is reported to and complied by MCWRA. These components together result in an adequate monitoring network for the purpose of assessing potential groundwater storage changes. The density and frequency of groundwater elevation measurements in the MPWSP wells is discussed in Section 5.2.3. Groundwater extraction data is compiled annually, which is adequate to allow interpretation of the nature and cause of potential volume changes.

Procedures and examples of the use of induction logging to assess salinity contrast distributions and changes are provided by Zidar and Feeney (2019) and are included as Appendix 5.D. Induction logging will be conducted annually at each of the nested MPWSP monitoring well locations. Vertical contrasts from borehole geophysical logs can typically be identified to a resolution of approximately 5 feet. The inherent uncertainty in the storage change estimates will be assessed and discussed; the certainty of estimates may range ~~form~~from order of magnitude to more refined volume estimates.

5.3.3 Additional Monitoring Network Information

5.3.3.1 Scientific Rationale for Site Selection

Regulation Requirements:
§354.34(g) Each Plan shall describe the following information about the monitoring network:
(1) Scientific rationale for the monitoring site selection process.

The scientific rationale for the selection of sites for the groundwater storage monitoring network is the same as for the groundwater elevation monitoring network discussed in Section 5.2.4.1. Induction logging will be used to assess the vertical distribution of groundwater of varying salinity at each well cluster. Induction logging is a geophysical method analogous to AEM that is often used to assess salinity distribution and changes in wells. Induction logging each nested MPWSP well site will provide a vertical profile of salinity distribution in the upper aquifer system to the approximate maximum depth of the low-TDS zone across the MGSA Area and eastward, at a lateral spacing that is suitable for assessment of the approximate change of low-TDS water in storage. ~~Induction logging works in a similar fashion to airborne electromagnetics (AEM) to assess salinity-related conductivity contrasts.~~

5.3.3.2 Consistency with Data and Reporting Standards

Regulation Requirements:
§354.34(g) Each Plan shall describe the following information about the monitoring network:
(2) Consistency with data and reporting standards described in Section 352.4. If a site is not consistent with those standards, the Plan shall explain the necessity of the site to the monitoring network, and how any variation from the standards will not affect the usefulness of the results obtained.

As discussed in Section 5.2.4.2, the data associated with the MGSA GSP monitoring network are consistent with the reporting standards required by SGMA. Reductions in low-TDS groundwater storage will be estimated ~~using~~ based on the calculated changes in storage volumes in acre-feet of groundwater and pumping volumes will be reported in acre-feet per year. ~~the thickness of the low-TDS water zone as determined on induction logs for each MPWSP monitoring well cluster. There are no DWR standards for induction logging; however, industry-standard practices will be used. Water volumes associated with the evaluation of groundwater storage will be reported in acre-feet and surface water flow rates will be reported in cubic feet per second in accordance with 23 CFR § 352.4~~.

5.3.4 Monitoring Protocols

Regulation Requirements:
§352.2 Each Plan shall include monitoring protocols adopted by the Agency for data collection and management, as follows:
(a) Monitoring protocols shall be developed according to best management practices.
(b) The Agency may rely on monitoring protocols included as part of the best management practices developed by the Department, or may adopt similar monitoring protocols that will yield comparable data.
(c) Monitoring protocols shall be reviewed at least every five years as part of the periodic evaluation of the Plan, and modified as necessary.
§354.34(i) The monitoring protocols developed by each Agency shall include a description of technical standards, data collection methods, and other procedures or protocols pursuant to Water Code Section 10727.2(f) for monitoring sites or other data collection facilities to ensure that the monitoring network utilizes comparable data and methodologies.

Chapter 4 of the MCWRA CASGEM monitoring plan (MWCRA 2015) includes a description of the monitoring procedures employed by that agency. These CASGEM groundwater elevation monitoring protocols will be utilized by MCWRA to implement their monitoring program. The monitoring protocols are included in Appendix 5.B. Procedures and examples of the use of induction logging to assess salinity contrast distributions and changes are provided by Zidar and Feeney (2019) and are included as Appendix 5.D. ~~Induction monitoring procedures are discussed in Feeney and Zidar (2019).~~

MGSA will coordinate with SVBGSA and MCWRA to acquire information regarding groundwater withdrawals that are relevant to the MGSA Area. Pumping volume and water quality data for groundwater extraction within the MGSA Area will be obtained directly from the extractors and from MCWRA. SVBGSA has stated that it will download data directly from the State's Drinking Water Information Clearinghouse website ("Drinking Water Information Clearinghouse") regarding municipal groundwater users and small water systems. No other protocols are required. For agricultural groundwater users, SVBGSA will work with MCWRA to develop a protocol for sharing data that is currently reported under County Ordinance 3717.

5.3.5 Use of Groundwater Elevations as Proxy for Other Sustainability Indicators

Regulation Requirements:

§354.36(b) Groundwater elevations may be used as a proxy for monitoring other sustainability indicators if the Agency demonstrates the following:

1) Significant correlation exists between groundwater elevations and the sustainability indicators for which groundwater elevation measurements serve as a proxy.
2) Measurable objectives established for groundwater elevation shall include a reasonable margin of operational flexibility taking into consideration the basin setting to avoid undesirable results for the sustainability indicators for which groundwater elevation measurements serve as a proxy.

§354.36(c) The designation of a representative monitoring site shall be supported by adequate evidence demonstrating that the site reflects general conditions in the area.

As discussed in Section 5.3.1, groundwater elevations will be used in combination with ~~groundwater quality,~~ induction logging and extraction volumes to estimate changes in the volume of low-TDS groundwater in storage as an interim proxy for sustainable yield volume estimates. The relationship between the amount of low-TDS groundwater in storage and potential local undesirable results related to chronic decline in groundwater levels (significant and unreasonable impacts to GDEs), seawater intrusion and water quality degradation is discussed in Section 3.5.1. ~~to assess the potential for undesirable results related to storage depletion. Changes in aquifer conductivity, groundwater quality and elevations are suitable early indicators of potential significant and unreasonable storage depletion of the low-TDS groundwater zone in the DSA, 180-Foot Aquifer and 400-Foot Aquifer.~~

5.3.6 DATA GAPS

Regulation Requirements:

§354.38(b) Each Agency shall identify data gaps wherever the basin does not contain a sufficient number of monitoring sites, does not monitor sites at a sufficient frequency, or utilizes monitoring sites that are unreliable, including those that do not satisfy minimum standards of the monitoring network adopted by the Agency.

§354.38(c) If the monitoring network contains data gaps, the Plan shall include a description of the following:
1) The location and reason for data gaps in the monitoring network.
2) Local issues and circumstances that limit or prevent monitoring.

§354.38 (d) Each Agency shall describe steps that will be taken to fill data gaps before the next five-year assessment, including the location and purpose of newly added or installed monitoring sites.

§354.38(e) Each Agency shall adjust the monitoring frequency and density of monitoring sites to provide an adequate level of detail about site-specific surface water and groundwater conditions and to assess the effectiveness of management actions under circumstances that include the following:
1) Minimum threshold exceedances.
2) Highly variable spatial or temporal conditions
3) Adverse impacts to beneficial uses and users of groundwater.
4) The potential to adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of sustainability goals in an adjacent basin.

The following data gaps associated with the monitoring network in the vicinity of the MGSA Area are relevant to this sustainability indicator:

- **Sustainable yield** – SVBGSA indicates that its Subbasin-wide minimum threshold and sustainable yield volume of 112,000 AFY is an estimate and subject to refinement and update after the SVIHM becomes available. Similarly, the modeling tools needed to assess the local sustainable yield in the MGSA Area are expected to become available during the early phases of GSP implementation and will be used to address data gaps in the local and regional sustainable yield estimates as discussed in Chapters 6 and 7.

- **Groundwater extraction data** – The CEMEX well is currently the only extraction well in the MGSA Area of the Subbasin. MGSA will coordinate with SVBGSA and MCWD GSA to determine the local contribution to the sustainable yield from groundwater extraction in the MGSA Area, which is the amount of groundwater that can be withdrawn annually over a period of time without causing undesirable results within or near the MGSA Area.

- **Groundwater elevation and quality data in the MGSA Area**~~:~~ – The available data to characterize groundwater elevations ~~and groundwater quality~~ in the MGSA Area and vicinity are both spatially and temporally limited. Such data are needed to characterize groundwater flow patterns in the ~~DSA~~Dune Sand Aquifer, the 180-Foot Aquifer and the 400-Foot Aquifer and assess recent trends in seawater intrusion. The installation of monitoring well clusters at five additional locations by MCWRA as proposed (and as revised if necessary) will address this data gap spatially. Temporally, the limited duration of the temporal data set will be addressed as additional data are gathered over time.

- **Depth discrete groundwater data** – Certain wells in the 180-Foot Aquifer and 400-Foot Aquifer were constructed with very long screened intervals (e.g., over 100 feet in many cases), which introduces uncertainty with respect to the specific aquifer horizon monitored by the well, and the interpretation of local groundwater gradients. This data gap will be addressed as necessary during implementation of the GSP, in collaboration with MCWD GSA. The need to address this data gap may depend on whether the monitoring data indicate that the triggers for the management actions described in Chapter 6 are being exceeded, and whether more vertically discrete data are needed for the implementation and monitoring of those management actions.

5.4 SEAWATER INTRUSION

Regulation Requirements:
§354.34(c) Each monitoring network shall be designed to accomplish the following for each sustainability indicator:
(3) Seawater Intrusion. Monitor seawater intrusion using chloride concentrations, or other measurements convertible to chloride concentrations, so that the current and projected rate and extent of seawater intrusion for each applicable principal aquifer may be calculated.

Seawater intrusion will be evaluated ~~measured from the~~using the MPWSP monitoring well network to collect a ~~using a~~ combination of ~~groundwater level and~~ groundwater quality ~~monitoring, including groundwater sampling and analysis,~~ and induction logging data to interpolate chloride isocontours~~-~~ and provide additional data regarding the nearshore processes that drive seawater intrusion regionally, including density-driven flow and preferential pathways for vertical migration. ~~assess the lateral and vertical distribution of saline groundwater and to evaluate potential changes in saline groundwater with depth.~~

5.4.1 DESCRIPTION OF THE MONITORING APPROACH AND NETWORK

Regulation Requirements:
§354.34(g)(3) For each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative monitoring sites established pursuant to Section 354.36
§354.34(h) The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used.

~~Regionally, SVBGSA's GSP defines significant and unreasonable seawater intrusion in the Subbasin as seawater intrusion beyond the position of the 500 mg/L chloride isoconcentration contour interpolated by MCWRA in 2017 (MCWRA 2019e). This definition of seawater intrusion adopts a concentration that is aligned with potential impacts to municipal and agricultural beneficial uses; however, it includes water with existing actual and potential beneficial uses. Potential movement of the seawater intrusion front at this concentration occurs by advective solute transport, rather than by density-driven flow.~~

~~Locally, the MGSA Area is located on the seaward side of the interface between a dense saline groundwater intrusion wedge and an over-riding zone of low-TDS groundwater that is locally recharged through the Dune Sand Aquifer. The interface extends from the Dune Sand Aquifer in the eastern portion of the MGSA Area and dips eastward down through the 180-Foot Aquifer and into the 400-Foot Aquifer (Sections 3.1.12 and 3.2.2). Groundwater extraction in the MGSA Area has the potential to affect the dynamic equilibrium of this nearshore groundwater system and cause seawater intrusion~~

~~through the migration of the saline groundwater wedge, which could in turn lead to deeper seawater intrusion into the currently unintruded Deep Aquifer, or promote the lateral migration or persistence of seawater intrusion (as defined by the 500 mg/L chloride isoconcentration contour) further inland.~~

~~The Deep aquifer is not currently seawater intruded; however, the deep aquifer is believed to receive recharge via leakance from the overlying 400-Foot Aquifer and the possibility exists that seawater intrusion could migrate vertically from the 400-Foot Aquifer into the Deep Aquifer. There are currently no Deep Aquifer wells in the MGSA Area, and this GSP includes support for prohibition of installation of Deep Aquifer production wells in the MGSA Area. Nevertheless, groundwater extraction from the upper aquifer system could cause further seawater intrusion by expansion or migration of the saline groundwater wedge that underlies this area. Such an expansion or migration would put the Deep Aquifer at greater risk of seawater intrusion.~~

~~Based on this information, the local definition for significant and unreasonable seawater intrusion is based on the following:~~

- ~~Lateral or downward movement of the saline groundwater intrusion wedge; or~~
- ~~Seawater intrusion into the Deep Aquifer.~~

~~The Dune Sand, 180-Foot and 400-Foot Aquifers are currently seawater intruded and therefore experiencing undesirable results based on the regional definition. However, these aquifers contain groundwater with designated beneficial uses that are required to be protected from impairment under SWRCB Resolution No. 88-63 and from further degradation by seawater intrusion under SWRCB Resolution No. 68-16. In addition, movement of the saline groundwater intrusion wedge could exacerbate seawater intrusion further inland, and lead to the further migration of the regional seawater intrusion front. The above definition of undesirable results is therefore intended to address local conditions and anticipated groundwater demand changes so as to supplement and support the regional definition, thus maintaining and achieving sustainable management both locally and regionally.~~

MGSA established the following minimum thresholds for significant and unreasonable seawater intrusion in this GSP:

- **Dune Sand Aquifer**. In compliance with SWRCB Resolution Nos. 88-63 and 68-16, this GSP defines the minimum threshold for significant and unreasonable seawater intrusion into the Dune Sand Aquifer as migration of the 1,700 mg/L chloride isocontour (equivalent to 3,000 mg/L TDS) beyond the location determined by ~~the~~ Gottschalk *et al.* (2018) (Figure 4-2).
- **180-Foot and 400-Foot Aquifers**. This GSP adopts the SVBGSA minimum threshold of significant unreasonable seawater intrusion beyond the position of the 500 mg/L chloride ~~iso~~concentration isocontour interpolated by MCWRA in 2017 (Figure 4-2).

- **Deep Aquifer.** In compliance with SWRCB Resolution No. 68-16, this GSP defines significant and unreasonable seawater intrusion into the Deep Aquifer as migration of a 500 mg/L chloride isocontour into the Deep Aquifer landward of the western Subbasin boundary.

The following measurable objectives are established for Seawater Intrusion:

- **Dune Sand Aquifer**. The measurable objectives are established to equal the minimum threshold of maintaining the 1,700 mg/L chloride isocontour at its current location. The interim milestones are identical to the measurable objective.
- **180-Foot and 400-Foot Aquifers**. MGSA will collaborate with SVBGSA and support the measurable objective and interim milestones in the SVBGSA's GSP of moving the 500 mg/L chloride isocontour westward to Highway 1 by 2020.
- **Deep Aquifer.** The measurable objective for the Deep Aquifer will be to prevent significant and unreasonable seawater intrusion and maintain the location of the 500 mg/L chloride isocontour outside the seaward Subbasin Boundary. The interim milestones are identical to the measurable objective.

~~Minimum thresholds for the Seawater Intrusion sustainability indicator are defined as follows:~~

- ~~**Dune Sand, 180-Foot and 400-Foot Aquifers**:~~
  - ~~Thickening of the saline water intrusion wedge by more than 5% compared to baseline measurements made before any expansion of pumping in the MGSA Area occurs, as determined by induction logging results in the induction-logging monitoring well network; or Lateral migration of the saline water intrusion wedge beyond the limits established by the 2017 AEM survey, as determined by interpolation of induction logging results in the induction monitoring well network; and~~
  - ~~A spatial pattern of groundwater level declines that indicates the seawater intrusion wedge migration or expansion identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA Area.~~
- ~~**Deep Aquifer** - Exceedance of the SMCL for chloride or TDS (500 mg/L and 1,000 mg/L, respectively) in any Deep Aquifer monitoring well included in the water quality monitoring well network.~~

~~The following measurable objectives are defined for the seawater intrusion sustainability indicator:~~

- ~~**Dune Sand, 180-Foot and 400-Foot Aquifers**:~~
  - ~~A statistically significant ($p < 0.1$) increasing trend in groundwater concentrations of chloride or TDS in three or more wells in the MGSA groundwater quality monitoring network at the 90% confidence level using an appropriate Mann-Kendall trend test (e.g. Seasonal Mann-Kendall) (US EPA 2009); or~~

- ~~An increase in the thickness of the saline groundwater wedge of more than 3 feet identified by induction logging in three or more deep monitoring wells in the induction monitoring well network.~~

~~**Deep Aquifer –** A statistically significant ($p < 0.1$) increasing trend in groundwater concentrations of chloride or TDS in any monitoring well in the Deep Aquifer in the MGSA groundwater quality monitoring network at the 90% confidence level using an appropriate Mann-Kendall trend test (e.g. Seasonal Mann-Kendall) (US EPA 2009).~~

The following data are needed to assess compliance with the minimum thresholds:

- Groundwater quality data for ~~TDS and~~ chloride at various depths and locations over time form the primary basis for ~~drawing~~interpolation of chloride concentration isocontour maps to assess~~ing~~ compliance related to this sustainability indicator. ~~;~~

To provide additional data regarding the nearshore processes that drive seawater intrusion regionally, including density-driven flow and preferential pathways for vertical migration, the following data will be collected:

- Groundwater elevation data are necessary to understand the lateral and vertical gradients that may drive seawater intrusion, and to assess gradients and drawdown in the area affected by pumping within the MGSA Area; and

- Induction logging data from each monitoring well location will be used as an additional data source to assess the lateral and vertical distribution of ~~the saline groundwater wedge at each MPWSP monitoring well cluster~~low-TDS and more highly saline groundwater.

As described in Section 5.2.1, the existing (and planned) MPWSP monitoring wells are included in the MGSA GSP seawater intrusion monitoring network. Well information is provided on Tables 5-1 through 5-4, the boring logs and well completion diagrams are provided in Appendix 5.A, and the locations of the MPWSP monitoring wells are shown on Figure 5-2.

5.4.2 Adequacy of Monitoring Network, Density of Monitoring Sites, and Frequency of Measurements

Regulation Requirements:
§354.34(d) The monitoring network shall be designed to ensure adequate coverage of sustainability indicators. If management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the basin setting and sustainable management criteria specific to that area.
§354.34(e) A Plan may utilize site information and monitoring data from existing sources as part of the monitoring network
§354.34(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:
1) Amount of current and projected groundwater use.
2) Aquifer characteristics, including confined or unconfined aquifer conditions, or other physical characteristics that affect groundwater flow.

3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.
4) Whether the Agency has adequate long-term existing monitoring results or other technical information to demonstrate an understanding of aquifer response.

The adequacy of the groundwater elevation and quality monitoring network is discussed in Section 5.2.2, and adequacy of the induction logging monitoring network is discussed in 5.3.2. The density and frequency of groundwater elevation and groundwater quality measurements in the MPWSP wells is discussed in Section 5.2.3 and 5.3.3. Given the spatial distribution of the low-TDS groundwater zone and the saline water intrusion wedge in the vicinity of the MGSA Area (Figures 3-21, 3-22 and 3-23) and the use of continuous induction logging at each well cluster, the locations and completion depths of the existing and proposed monitoring wells will provide a generally adequate monitoring network to assess the potential migration of the wedge both laterally and vertically. The data gap related to long screen intervals will partly addressed through the use of induction logging, and the need for additional vertically-delineated monitoring zones will be evaluated in cooperation with MCWD GSA during GSP implementation. The collection of quarterly or more frequent data meets or exceeds the standards normally applied for the assessment of seawater intrusion or solute plume migration.

Monitoring data from the Deep Aquifer wells will provide an indication as to whether the Deep Aquifer system in this area is being affected by seawater intrusion; however, the existing monitoring well network in the Deep Aquifer system may be insufficient to interpret groundwater gradients. In addition, the potential vertical leakance from overlying seawater intruded aquifers remains unknown. These data gaps have been proposed to be addressed by SVBGSA, MCWRA and MCWD GSA. The MGSA will cooperate with these investigative activities.

5.4.3 Additional Monitoring Network Information

5.4.3.1 Scientific Rationale for Site Selection

Regulation Requirements:
§354.34(g) Each Plan shall describe the following information about the monitoring network:
(1) Scientific rationale for the monitoring site selection process.

As discussed above, the existing and proposed monitoring well network and monitoring frequency provide an adequate basis for assessment of chloride isocontour migration and potential water quality and gradient changes that could be indicative of active seawater intrusion in the vicinity of the saline water intrusion wedge in this area. The Deep Aquifer well location and completions were selected by USGS to optimally investigate the hydrostratigraphy of the Deep Aquifer at this location, and are supplemented by additional Deep Aquifer wells in MCWRA's monitoring program.

5.4.3.2 Consistency with Data and Reporting Standards

Regulation Requirements:
§354.34(g) Each Plan shall describe the following information about the monitoring network:
(2) Consistency with data and reporting standards described in Section 352.4. If a site is not consistent with those standards, the Plan shall explain the necessity of the site to the monitoring network, and how any variation from the standards will not affect the usefulness of the results obtained.

As discussed in Section 5.2.4.2, the data associated with the MGSA GSP groundwater elevation and quality monitoring network are consistent with the reporting standards required by SGMA. Increases in seawater intrusion will be assessed by determining whether interpolated chloride isocontours, reported in mg/L for each of the principal aquifers, have moved. ~~estimated using the thickness and lateral distribution of the low-TDS water zone as determined on induction logs for each MPWSP monitoring well cluster.~~

5.4.4 Monitoring Protocols

Regulation Requirements:

§352.2 Each Plan shall include monitoring protocols adopted by the Agency for data collection and management, as follows:

(a) Monitoring protocols shall be developed according to best management practices.

(b) The Agency may rely on monitoring protocols included as part of the best management practices developed by the Department, or may adopt similar monitoring protocols that will yield comparable data.

(c) Monitoring protocols shall be reviewed at least every five years as part of the periodic evaluation of the Plan, and modified as necessary.

§354.34(i) The monitoring protocols developed by each Agency shall include a description of technical standards, data collection methods, and other procedures or protocols pursuant to Water Code Section 10727.2(f) for monitoring sites or other data collection facilities to ensure that the monitoring network utilizes comparable data and methodologies.

MCWRA has established protocols for collecting groundwater quality data from monitoring wells and analyzing those data for seawater intrusion. These protocols are also applied to collection of groundwater quality data from the MPWSP monitoring wells and the USGS Deep Aquifer wells. The groundwater quality data monitoring protocols are available in the Monterey County Quality Assurance Project Plan (QAPP) and included in Appendix 5.B. MCWRA also established chloride data contouring protocols to develop the isoconcentration contour map, provided in Appendix 5.C. Data collected by MCWRA in accordance with these protocols is anticipated to be provided to MGSA for this GSP. Induction logging will be performed in accordance with the procedures presented in Zidar and Feeney (2019) and included in Appendix 5.D.

5.4.5 DATA GAPS

Regulation Requirements:

§354.38(b) Each Agency shall identify data gaps wherever the basin does not contain a sufficient number of monitoring sites, does not monitor sites at a sufficient frequency, or utilizes monitoring sites that are unreliable, including those that do not satisfy minimum standards of the monitoring network adopted by the Agency.

§354.38(c) If the monitoring network contains data gaps, the Plan shall include a description of the following:

1) The location and reason for data gaps in the monitoring network.
2) Local issues and circumstances that limit or prevent monitoring.

§354.38 (d) Each Agency shall describe steps that will be taken to fill data gaps before the next five-year assessment, including the location and purpose of newly added or installed monitoring sites.

§354.38(e) Each Agency shall adjust the monitoring frequency and density of monitoring sites to provide an adequate level of detail about site-specific surface water and groundwater conditions and to assess the effectiveness of management actions under circumstances that include the following:

1) Minimum threshold exceedances.
2) Highly variable spatial or temporal conditions
3) Adverse impacts to beneficial uses and users of groundwater.
4) The potential to adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of sustainability goals in an adjacent basin.

The following potential data gaps identified for the MGSA GSP groundwater elevation monitoring network are applicable to the Seawater Intrusion sustainability indicator:

- **Groundwater elevation and quality data in the MGSA Area**: The available data to characterize groundwater elevations and groundwater quality in the MGSA Area and vicinity are both spatially and temporally limited. Such data are needed to characterize groundwater flow patterns in the ~~DSA~~Dune Sand Aquifer, the 180-Foot Aquifer and the 400-Foot Aquifer and assess recent trends in seawater intrusion. The installation of monitoring well clusters at five additional locations by MCWRA as proposed (and as revised if necessary) will address this data gap spatially. Temporally, the limited duration of the temporal data set will be addressed as additional data are gathered over time.

- **Interconnection between the Salinas River and the ~~DSA~~Dune Sand Aquifer and 180-Foot Aquifer**: Limited data are available to assess the degree to which the Salinas River is connected to the underlying groundwater systems (~~DSA~~Dune Sand Aquifer and 180-Foot Aquifer). The available data suggest that seawater intrusion may be occurring through the bed of the Salinas River near the river mouth (Section 3.2.6.1, Figure 3-22), where the river may be tidally influenced. Decreased groundwater elevations in the ~~DSA~~Dune Sand Aquifer could result in additional seawater intrusion in this area. This data gap will be addressed in collaboration with SVBGSA's efforts to assess surface-groundwater interaction along the river regionally through monitoring and use of the SVIHM. Locally, MGSA will evaluate potential interconnection between the ~~DSA~~Dune Sand Aquifer and the 180-Foot Aquifer and the Salinas River by examining river stage measurements and the groundwater elevations in the MW-6 and MW-9 well clusters.

- **Deep Aquifer system:** The of Deep Aquifer monitoring wells may be insufficient to interpret groundwater gradients and may be insufficient to provide early warning of potential seawater intrusion. Groundwater extraction from the Deep Aquifer occurs outside the MGSA Area within the portions of the Subbasin managed by MCWD GSA and SVBGSA. These agencies will play the primary role in investigating and monitoring the Deep Aquifer in this area, and MGSA will cooperate with and support their actions.

- **Depth discrete groundwater data** – Certain wells in the 180-Foot Aquifer and 400-Foot Aquifer were constructed with very long screened intervals (e.g., over 100 feet in many cases), which introduces uncertainty with respect to the specific aquifer horizon monitored by the well, and the interpretation of local groundwater gradients. This data gap will be addressed as necessary during implementation of the GSP, in collaboration with MCWD GSA. The need to address this data gap may depend on whether the monitoring data indicate that the triggers for the management actions described in Chapter 6 are being exceeded, and whether more vertically discrete data are needed for the implementation and monitoring of those management actions.

5.5 Water Quality Degradation

Regulation Requirements:
§354.34(c) Each monitoring network shall be designed to accomplish the following for each sustainability indicator:
(4) Degraded Water Quality. Collect sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators, as determined by the Agency, to address known water quality issues.

Groundwater quality degradation will be measured from the monitoring well network using ~~a combination of groundwater level and~~ groundwater quality monitoring, including groundwater sampling and analysis, the use of specific conductance sensors, and annual induction logging to assess the lateral and vertical distribution of TDS and chloride.

5.5.1 Description of the Monitoring Approach and Network

Regulation Requirements:
§354.34(g)(3) For each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative monitoring sites established pursuant to Section 354.36
§354.34(h) The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used.

~~As discussed in Sections 3.1.12 and 3.2.2, the MGSA Area is located at the western edge of a substantial zone of low-TDS groundwater (TDS < 3,000 mg/L) extending from the DSA into the180-Foot Aquifer and the 400-Foot Aquifer. Groundwater with TDS concentrations less than 3,000 mg/L is designated as having a potential beneficial use as municipal and domestic supply (SWRCB Resolution No. 88-63) and is required to be protected from degradation under SWRCB Resolution No. 68-16.~~

~~Groundwater extraction in the MGSA Area potentially could disturb the equilibrium that exists between the saline water intrusion wedge and overlying low-TDS groundwater zone, cause mixing of low-TDS and~~

~~saline groundwater or otherwise lead to the capture and migration of saline groundwater, potentially impacting the low-TDS groundwater zone or existing supply wells in the area.~~

~~The Fort Ord Superfund Site Operable Unit Carbon Tetrachloride Plume (OUCTP) is located in the A-Aquifer and 180-Foot Aquifer approximately 7,000 feet southeast of the MGSA Area. MCWRA is tasked with reviewing the monitoring data for this plume to assess whether potential groundwater extraction for the proposed MPWSP in the MGSA Area is capturing this plume and causing it to migrate. The results of this assessment will be reported annually. MGSA will review this monitoring data.~~

~~Based on this information, the local definition for significant and unreasonable degradation of groundwater quality is based on the following:~~

- ~~A statistically-significant degradation of Violation of water quality of the low-TDS groundwater zone, caused by groundwater extraction in the MGSA Area, including SWRCB Resolution No. 88-63 and SWRCB Resolution No. 68-16; or~~
- ~~Degradation of groundwater quality in nearby public supply wells, including the exceedance of MCLs or SMCLs; and~~
- ~~Interference with or obstruction of ongoing requirements to investigate or clean up a contamination plume.~~
- ~~Capture or migration of an existing contamination plume by pumping in the MGSA Area.~~

~~Other than potential seawater intrusion, no sources of potential point- or non-point source water quality degradation have been identified in the Deep Aquifer. The sustainable management criteria and monitoring programs developed for the Deep Aquifer to address seawater intrusion are sufficient to address potential water quality degradation.~~

The following minimum thresholds were established for the groundwater quality degradation sustainability indicator:

- Significant and unreasonable degradation of water quality in the low-TDS groundwater zone in the Dune Sand, 180-Foot and 400-Foot Aquifers is defined as lateral or vertical migration of the 3,000 mg/L TDS isocontour beyond the location established by the 2018 AEM study (Gottschalk *et al.* 2018).
- Significant and unreasonable degradation of water quality in the Deep Aquifer is defined as exceedance of the TDS or chloride SMCL in one or more public supply wells completed in the Deep Aquifer near the MGSA Area.
- Significant and unreasonable migration of a contamination plume is defined by the following minimum threshold:
    - Migration or spread of the portion of a contamination plume that exceeds applicable water quality objectives by more than 100 feet toward the center of groundwater extraction in the MGSA Area, as documented by plume maps for the cleanup site.

The following measurable objectives have been established for groundwater quality degradation:

- The measurable objective for degradation of water quality in the low-TDS groundwater zone are defined to be the same as the minimum threshold, which is the 2018 vertical and lateral position of the 3,000 mg/L TDS isocontour in the Dune Sand, 180-Foot and 400-Foot Aquifers, as determined by the 2018 AEM survey (Gottschalk *et al.* 2018).~~:~~
- The measurable objective for degradation of water quality in the Deep Aquifer is no supply wells with MCL or SMCL exceedances for TDS or chloride.
- The measurable objective for migration of a contamination plume is defined by the following:
  - An observable spread of the portion of a contamination plume that exceeds applicable water quality objectives over two or more consecutive monitoring events toward the center of groundwater extraction in the MGSA Area, as documented by plume maps for the cleanup site.

~~Based on this assessment and described in more detail in Chapter 4, minimum thresholds for the Degraded Water Quality sustainability indicator are defined for each of the principal aquifers as follows (measurable objectives are set a 90% level of confidence):~~

- ~~**Dune Sand, 180-Foot and 400-Foot Aquifers:**~~
  - ~~A statistically significant ($p < 0.05$) increasing trend in groundwater concentrations of chloride or TDS in three or more wells at the 95% confidence level using an appropriate Mann-Kendall trend test (e.g. Seasonal Mann-Kendall) from the United Stated Environmental Protection Agency's (US EPA's) Unified Guidance for Statistical Analysis of Groundwater Monitoring Data (US EPA 2009);~~
  - ~~A statistically significant increase (SSI) above baseline chloride or TDS concentration in three or more wells at the 95% confidence level using an appropriate statistical technique per EPA 2009; and~~
  - ~~A spatial pattern of groundwater level declines that indicates the statistically-significant water quality changes identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA Area.~~
- ~~**Deep Aquifer** – The sustainable management criteria and monitoring programs developed for the Deep Aquifer to address seawater intrusion are sufficient to address potential water quality degradation, therefore, no minimum thresholds or measurable objectives were established.~~

The following data are needed to assess compliance with these thresholds:

- Groundwater quality data for TDS and chloride at various depths and locations over time within the low-TDS groundwater zone form the primary basis for assessing compliance related to this sustainability indicator in the Dune Sand, 180-Foot and 400-Foot Aquifers;

- Induction logging data from each monitoring well location will be used to additionally assess the lateral and vertical distribution of TDS and chloride at each MPWSP monitoring well cluster and assess changes; and
- ~~Groundwater level data to assess gradients and drawdown in the area affected by pumping within the MGSA Area; and~~
- Groundwater level contour maps and plume maps for the OUCTP area of the Fort Ord Superfund Site.

Summary information for the groundwater elevation and quality monitoring network that will be used to assess this sustainability indicator is presented in Tables 5-1 through 5-3, and boring logs and well completion diagrams are provided in Appendix 5-A. The location of these monitoring wells is shown on Figure 5-2, which also presents the locations of five additional monitoring well clusters that are proposed to be installed by MCWRA.

5.5.2 Adequacy of Monitoring Network, Density of Monitoring Sites, and Frequency of Measurements

Regulation Requirements:

§354.34(d) The monitoring network shall be designed to ensure adequate coverage of sustainability indicators. If management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the basin setting and sustainable management criteria specific to that area.

§354.34(e) A Plan may utilize site information and monitoring data from existing sources as part of the monitoring network.

§354.34(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:

1) Amount of current and projected groundwater use.
2) Aquifer characteristics, including confined or unconfined aquifer conditions, or other physical characteristics that affect groundwater flow.
3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.
4) Whether the Agency has adequate long-term existing monitoring results or other technical information to demonstrate an understanding of aquifer response.

The adequacy of the groundwater elevation and quality monitoring network is discussed in Section 5.2.2. The density and frequency of groundwater elevation and quality measurements in the MPWSP wells is discussed in Section 5.2.3 and 5.3.3, and the adequacy of the induction logging monitoring network is discussed in 5.3.2. Given the spatial distribution of the low-TDS zone in the vicinity of the MGSA Area (Figures 3-21, 3-22 and 3-23) and the use of continuous induction logging at each well cluster, the locations and completion depths of the existing and proposed monitoring wells will provide a generally adequate monitoring network to assess the potential migration of this zone both laterally and vertically. The data gap related to long screen intervals will partly addressed through the use of induction logging, and the need for additional vertically-delineated monitoring zones will be evaluated in cooperation with MCWD GSA during GSP implementation. The collection of quarterly or more frequent data meets or exceeds the standards normally applied for the assessment of seawater intrusion or solute plume migration.

5.5.3 Additional Monitoring Network Information

5.5.3.1 Scientific Rationale for Site Selection

Regulation Requirements:
§354.34(g) Each Plan shall describe the following information about the monitoring network:
(1) Scientific rationale for the monitoring site selection process.

As discussed above, the existing monitoring well network and monitoring frequency provide an adequate basis for assessment of potential water quality changes that could be indicative of water quality degradation in the low-TDS groundwater zone. ~~Continuing with the existing wells for which historical data are available will provide an adequate statistical dataset for computing intra-well statistics to assess potential water quality degradation.~~

5.5.3.2 Consistency with Data and Reporting Standards

Regulation Requirements:
§354.34(g) Each Plan shall describe the following information about the monitoring network:
(2) Consistency with data and reporting standards described in Section 352.4. If a site is not consistent with those standards, the Plan shall explain the necessity of the site to the monitoring network, and how any variation from the standards will not affect the usefulness of the results obtained.

As discussed in Section 5.2.4.2, the data associated with the MGSA GSP groundwater elevation and quality monitoring network are consistent with the reporting standards required by SGMA. The groundwater quality minimum thresholds specifically incorporate state and federal standards for drinking water and applicable Water Quality Standards incorporated into the Regional Water Quality Control Board's Water Quality Control Plan, including SWRCB Resolution Nos. 88-63 and 68-16.

5.5.4 Monitoring Protocols

Regulation Requirements:
§352.2 Each Plan shall include monitoring protocols adopted by the Agency for data collection and management, as follows:
(a) Monitoring protocols shall be developed according to best management practices.
(b) The Agency may rely on monitoring protocols included as part of the best management practices developed by the Department, or may adopt similar monitoring protocols that will yield comparable data.
(c) Monitoring protocols shall be reviewed at least every five years as part of the periodic evaluation of the Plan, and modified as necessary.
§354.34(i) The monitoring protocols developed by each Agency shall include a description of technical standards, data collection methods, and other procedures or protocols pursuant to Water Code Section 10727.2(f) for monitoring sites or other data collection facilities to ensure that the monitoring network utilizes comparable data and methodologies.

MCWRA has established protocols for collecting groundwater quality data from monitoring wells and analyzing those data for the water quality effects of seawater intrusion. These protocols are also applied to collection of groundwater quality data from the MPWSP monitoring wells and the USGS Deep Aquifer wells. The groundwater quality data monitoring protocols are available in the Monterey County Quality Assurance Project Plan (QAPP) and included in Appendix 5.B. Data collected by MCWRA in accordance with these protocols is anticipated to be provided to MGSA for this GSP. Induction logging will be performed in accordance with the procedures presented in Zidar and Feeney (2019) and included in Appendix 5.D.

5.5.5 Data Gaps

Regulation Requirements:
§354.38(b) Each Agency shall identify data gaps wherever the basin does not contain a sufficient number of monitoring sites, does not monitor sites at a sufficient frequency, or utilizes monitoring sites that are unreliable, including those that do not satisfy minimum standards of the monitoring network adopted by the Agency.
§354.38(c) If the monitoring network contains data gaps, the Plan shall include a description of the following:
1) The location and reason for data gaps in the monitoring network.
2) Local issues and circumstances that limit or prevent monitoring**.**

§354.38 (d) Each Agency shall describe steps that will be taken to fill data gaps before the next five-year assessment, including the location and purpose of newly added or installed monitoring sites.
§354.38(e) Each Agency shall adjust the monitoring frequency and density of monitoring sites to provide an adequate level of detail about site-specific surface water and groundwater conditions and to assess the effectiveness of management actions under circumstances that include the following:
1) Minimum threshold exceedances.
2) Highly variable spatial or temporal conditions
3) Adverse impacts to beneficial uses and users of groundwater.
4) The potential to adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of sustainability goals in an adjacent basin.

The following potential data gaps identified for the MGSA GSP groundwater elevation monitoring network are applicable to the Degradation of Groundwater Quality sustainability indicator:

- **Groundwater elevation and quality data in the MGSA Area**: The available data to characterize groundwater elevations and groundwater quality in the MGSA Area and vicinity are both spatially and temporally limited. Such data are needed to characterize groundwater flow patterns in the ~~DSA~~Dune Sand Aquifer, the 180-Foot Aquifer and the 400-Foot Aquifer and assess recent trends in seawater intrusion. The installation of monitoring well clusters at five additional locations by MCWRA as proposed (and as revised if necessary) will address this data gap spatially. Temporally, the limited duration of the temporal data set will be addressed as additional data are gathered over time.

- **Depth discrete groundwater data** – Certain wells in the 180-Foot Aquifer and 400-Foot Aquifer were constructed with very long screened intervals (e.g., over 100 feet in many cases), which introduces uncertainty with respect to the specific aquifer horizon monitored by the well, and the interpretation of local groundwater gradients. This data gap will be addressed as necessary during implementation of the GSP, in collaboration with MCWD GSA. The need to address this data gap may depend on whether the monitoring data indicate that the triggers for the management actions described in Chapter 6 are being exceeded, and whether more vertically discrete data are needed for the implementation and monitoring of those management actions.

5.6 Land Subsidence

Regulation Requirements:
§354.34(c) Each monitoring network shall be designed to accomplish the following for each sustainability indicator:
(5) Land Subsidence. Identify the rate and extent of land subsidence, which may be measured by extensometers, surveying, remote sensing technology, or other appropriate method.

Section 354.28(d) of the Regulations states that "*an Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence*." The MGSA GSP uses groundwater elevation data as a proxy for land subsidence measurements ~~because no land subsidence is currently measured in the Basin and no evidence of land subsidence has been observed~~based on the rationale described in Section 4.8.2. Groundwater elevation proxy minimum thresholds will be directly measured from the monitoring well network. In addition, in collaboration with SVBGSA, MGSA will obtain and review subsidence measurements and remote sensing data from DWR and other entities.

5.6.1 DESCRIPTION OF MONITORING APPROACH AND NETWORK

Regulation Requirements:
§354.34(g)(3) For each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative monitoring sites established pursuant to Section 354.36.
§354.34(h) The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used.

~~As discussed in Section 3.2.5, land subsidence is not closely monitored in the Monterey Bay region and has not been reported in Salinas Valley. In 2014, DWR reported that continuous monitoring stations located near the coast in the Pajaro Valley and Santa Cruz areas displayed a declining trend, but recorded total cumulative subsidence of less than 1 inch (DWR 2014). Vertical displacement estimates between June 2015 and June 2018 derived from Interferometric Synthetic Aperture Radar (InSAR) data collected by the European Space Agency (ESA) Sentinel-1A satellite and processed by TRE ALTAMIRA Inc. (TRE) under contract with the DWR ranged from approximately 0.01 to 0.025 foot near the MGSA Area. During the first two years of this time period, the test slant well-constructed for the MPWSP project in the MGSA Area was pumped at a rate exceeding 2,000 gallons per minute.~~

~~The risk of land subsidence results from lowered groundwater elevations, specifically when groundwater elevations decrease to levels significantly below the lowest historical groundwater elevations, leading to the depressurization and consolidation of fine-grained sediments. When groundwater elevations fluctuate only within the range of historical conditions, the alluvial layers are not subject to effective stress greater than historical conditions and therefore are generally not at significant risk of subsidence. In addition, sediments in unconfined and predominantly coarse-grained aquifers are at lower risk of significant subsidence.~~

~~Based on the available data, the undesirable result associated with this sustainability indicator is defined as drawdown-induced land subsidence that substantially interferes with surface land uses. The MGSA GSP uses groundwater elevation data as a proxy for land subsidence measurements because no land subsidence is currently measured in the Basin and no evidence of land subsidence has been observed. Based on the hydrogeologic setting and history of the area, in the absence of more site-specific investigation, it is reasonable to assume that the minimum thresholds and measurable objectives~~

~~established for Chronic Lowering of Groundwater Levels are adequate to protect against significant and unreasonable land subsidence.~~

~~Therefore, t~~This GSP adopts the following groundwater elevation minimum thresholds ~~and measurable objectives~~ that serve as a proxy for land subsidence minimum thresholds~~ and measurable objectives~~:

- **Dune Sand Aquifer** – The minimum thresholds for the Dune Sand Aquifer are established as an elevation of 1 foot above the 2015 low groundwater levels recorded in Dune Sand Aquifer monitoring wells near identified GDEs in the vicinity of the MGSA Area, and presented for wells MW-4S, 7S and 8S in Table 4-1. These minimum thresholds will be updated as warranted based on future planned investigations to address existing data gaps in the relationship between groundwater level declines and GDE response, as discussed in Chapter 7.

- **180-Foot and 400-Foot Aquifers** – The minimum thresholds for the 180-Foot and 400-Foot Aquifers are 1 foot above historical low groundwater elevations measured in 2015 as determined from analysis of the hydrographs included in Appendix 3.D. For RMS located near well 14S/02E-08M02, which is approximately 1 mile northeast of the MGSA Area, minimum thresholds were adjusted to better match the minimum threshold adopted by SVBGSA for the 400-Foot Aquifer at this location, and in the overlying 180-Foot Aquifer in accordance with existing vertical gradients. Values for RMS are presented in Table 4-1.

- **Deep Aquifer** – Because groundwater is not currently extracted from the Deep Aquifer in the MGSA Area, minimum thresholds and measurable objectives were not established for the Chronic Lowering of Groundwater Levels sustainability indicator in this aquifer and none are therefore adopted for subsidence.

This GSP adopts the following groundwater elevation measurable objectives that serve as a proxy for land subsidence minimum thresholds:

- **Dune Sand Aquifer.** MGSA adopts the above minimum thresholds as measurable objectives on an interim basis as data gaps are addressed and sustainable management criteria for GDEs are updated early during the GSP implementation process. Based on the limited amplitude of seasonal and inter-annual fluctuation in groundwater levels in the Dune Sand Aquifer and the planned schedule for data gap analysis, this approach allows for protection of GDEs while allowing near-term flexibility in groundwater management.

- **180-Foot and 400-Foot Aquifers** – For the 180-Foot Aquifer, measurable objectives were initially established at an elevation that is 7.0 feet above the minimum threshold and for the 400-Foot Aquifer measurable objectives were initially set at 6.1 feet above the minimum threshold, in accordance with the operating range adopted under SVBGSA's GSP in the westernmost portion of the Subbasin. Elevations were then adjusted based on proximity to well 14S/02E-08M02 and local gradient data.

- ~~**Dune Sand Aquifer** – Because sediments in unconfined and predominantly coarse-grained aquifers are at lower risk of significant subsidence, no minimum thresholds or measurable objectives were established for the Dune Sand Aquifer.~~

- ~~**180-Foot and 400-Foot Aquifer –** The minimum threshold is a groundwater elevation that is 1 foot above historical low groundwater elevations measured in 2015 in 15 % or more of the monitoring wells in the groundwater elevation monitoring well network. The measurable objective is a groundwater elevation that is 2 feet above historical low groundwater elevations measured in 2015 in 15 % or more of the monitoring wells.~~

- ~~**Deep Aquifer –** Because groundwater extraction from the Deep Aquifer in the MGSA Area is not taking place, no groundwater elevation minimum threshold or measurable objective was established for the Deep Aquifer.~~

Given that land subsidence is directly related to groundwater elevations and that the subsidence risk near the MGSA Area is relatively low, the MGSA GSP monitoring network for Land Subsidence will be the same monitoring network as that for Chronic Lowering of Groundwater Levels ~~as~~ described in Section 5.2. Well information for the wells in the MGSA GSP monitoring network is provided on Tables 5-2 and 5-3, the boring logs and well completion diagrams are provided in Appendix 5~~-~~.A, and the locations of the MPWSP monitoring wells are shown on Figure 5-2. No other monitoring is proposed, except for periodic review of subsidence measurement maps published by USGS, DWR, Jet Propulsion Laboratories (JPL) and others, including remote sensing InSAR data.

5.6.2 Adequacy of Monitoring Network, Density of Monitoring Sites, and Frequency of Measurements

Regulation Requirements:
§354.34(d) The monitoring network shall be designed to ensure adequate coverage of sustainability indicators. If management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the basin setting and sustainable management criteria specific to that area.
§354.34(e) A Plan may utilize site information and monitoring data from existing sources as part of the monitoring network.
§354.34(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:
1) Amount of current and projected groundwater use.
2) Aquifer characteristics, including confined or unconfined aquifer conditions, or other physical characteristics that affect groundwater flow.
3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.
4) Whether the Agency has adequate long-term existing monitoring results or other technical information to demonstrate an understanding of aquifer response.

The adequacy of the groundwater elevation monitoring network is discussed in Section 5.2.2. The density and frequency of groundwater elevation measurements in the existing and proposed MPWSP wells is discussed in Section 5.2.3. Given the anticipated spatial distribution of drawdown associated with groundwater extraction in the MGSA Area, the locations and completion depths of the existing monitoring wells will provide an adequate monitoring network to assess the potential for ~~drawdown-induced~~ subsidence related to groundwater level decline.

5.6.3 Additional Monitoring Network Information

5.6.3.1 Scientific Rationale for Site Selection

> **Regulation Requirements:**
> **§354.34(g)** Each Plan shall describe the following information about the monitoring network:
> **(1)** Scientific rationale for the monitoring site selection process.

In order to assess the potential for subsidence induced by pumping in the MGSA Area, groundwater elevation monitoring is needed at locations and depths where drawdown will be at maximum and where fine-grained aquitards could potentially be depressurized. The existing monitoring network of wells completed in the 180-Foot Aquifer and 400-Foot Aquifer meet this need.

5.6.3.2 Consistency with Data and Reporting Standards

> **Regulation Requirements:**
> **§354.34(g)** Each Plan shall describe the following information about the monitoring network:
> **(2)** Consistency with data and reporting standards described in Section 352.4. If a site is not consistent with those standards, the Plan shall explain the necessity of the site to the monitoring network, and how any variation from the standards will not affect the usefulness of the results obtained.

As discussed in Section 5.2.4.2, the data associated with the MGSA GSP groundwater elevation and quality monitoring network are consistent with the reporting standards required by SGMA.

5.6.4 Monitoring Protocols

> **Regulation Requirements:**
> **§352.2** Each Plan shall include monitoring protocols adopted by the Agency for data collection and management, as follows:
> (a) Monitoring protocols shall be developed according to best management practices.
> (b) The Agency may rely on monitoring protocols included as part of the best management practices developed by the Department, or may adopt similar monitoring protocols that will yield comparable data.
> (c) Monitoring protocols shall be reviewed at least every five years as part of the periodic evaluation of the Plan, and modified as necessary.
> **§354.34(i)** The monitoring protocols developed by each Agency shall include a description of technical standards, data collection methods, and other procedures or protocols pursuant to Water Code Section 10727.2(f) for monitoring sites or other data collection facilities to ensure that the monitoring network utilizes comparable data and methodologies.

Chapter 4 of the MCWRA CASGEM plan (MWCRA 2015) includes a description of the monitoring procedures employed by that agency. These CASGEM groundwater elevation monitoring protocols will be utilized by MCWRA to implement the monitoring program that is adopted by this GSP. The MCWRA monitoring protocols are included in Appendix 5.B. Groundwater elevation data are currently collected both by hand and using automated pressure transducers. The monitoring protocols established by MCWRA cover multiple monitoring methods for collection of data by hand and by automated pressure transducers.

5.6.5 Data Gaps

Regulation Requirements:

§354.38(b) Each Agency shall identify data gaps wherever the basin does not contain a sufficient number of monitoring sites, does not monitor sites at a sufficient frequency, or utilizes monitoring sites that are unreliable, including those that do not satisfy minimum standards of the monitoring network adopted by the Agency.

§354.38(c) If the monitoring network contains data gaps, the Plan shall include a description of the following:

1) The location and reason for data gaps in the monitoring network.
2) Local issues and circumstances that limit or prevent monitoring.

§354.38 (d) Each Agency shall describe steps that will be taken to fill data gaps before the next five-year assessment, including the location and purpose of newly added or installed monitoring sites.

§354.38(e) Each Agency shall adjust the monitoring frequency and density of monitoring sites to provide an adequate level of detail about site-specific surface water and groundwater conditions and to assess the effectiveness of management actions under circumstances that include the following:

1) Minimum threshold exceedances.
2) Highly variable spatial or temporal conditions
3) Adverse impacts to beneficial uses and users of groundwater.
4) The potential to adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of sustainability goals in an adjacent basin.

Although the available data suggest that the vicinity of the MGSA Area has not experienced significant subsidence, the data are reported to be insufficient to assess the potential future vulnerability of this area to future subsidence if groundwater extractions are increased. MGSA will work with SVBGSA to address this data gap as needed during GSP implementation. Given the relatively low risk of subsidence near the MGSA Area, the monitoring of groundwater elevations and review of remote sensing data periodically published by DWR, ~~the~~ USGS or others should be an adequate monitoring program for this sustainability indicator.

5.7 Depletion of Interconnected Surface Water

Regulation Requirements:

§354.34(c) Each monitoring network shall be designed to accomplish the following for each sustainability indicator:

(6) Depletions of Interconnected Surface Water. Monitor surface water and groundwater, where interconnected surface water conditions exist, to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions.

Depletion of interconnected surface water is directly related to groundwater level decline in the uppermost aquifer system which is in contact with the stream or wetland being affected, in this case, the Dune Sand Aquifer. As such, the primary potential effect of concern associated with the decline of groundwater levels in the Dune Sand Aquifer is potential stress to GDEs. The minimum thresholds established for the groundwater level decline RMS are an adequate proxy for the depletion of interconnected surface water. Groundwater elevation minimum thresholds will be directly measured in shallow wells in the monitoring well network. ~~which is in contact with the stream or wetland being affected, in this case, the Dune Sand Aquifer. Interconnected surface water monitoring will be conducted at wells in the monitoring network and will augment regional monitoring and modeling studies planned by SVBGSA to assess surface-groundwater interaction along the Salinas River. Shallow groundwater data, along with river discharge and stage data will be assessed to evaluate the extent,~~

~~nature and impacts of the interconnection of the Salinas River with the DSA and the underlying 180-Foot Aquifer. In addition, shallow groundwater elevation and quality monitoring, as well as biological monitoring will be used to monitor GDEs and the condition of the "vernal ponds" near the MGSA Area.~~

5.7.1 Description of the Monitoring Approach and Network

Regulation Requirements:

§354.34(c)(6) Depletions of Interconnected Surface Water. Monitor surface water and groundwater, where interconnected surface water conditions exist, to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions. The monitoring network shall be able to characterize the following:

A) Flow conditions including surface water discharge, surface water head, and baseflow contribution.
B) Identifying the approximate date and location where ephemeral or intermittent flowing streams and rivers cease to flow, if applicable.
C) Temporal change in conditions due to variations in stream discharge and regional groundwater extraction.
D) Other factors that may be necessary to identify adverse impacts on beneficial uses of the surface water. **§354.34(h)** The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used.

§354.34(g)(3) For each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative monitoring sites established pursuant to Section 354.36.

~~The MGSA Area is located approximately 4,000 feet from the Salinas River, and projected groundwater elevations are within less than 20 feet of the river thalweg elevation, suggesting an interconnection exists between the DSA and the river at this location (Section 3.2.6.1.1). Geophysical data collected in 2017 indicate that groundwater elevations in the Dune Sand Aquifer are close to the river stage elevation, and decline away from the river, suggesting a losing condition. Within approximately ½ mile of the river mouth, the geophysical data suggest that seawater intrusion may be occurring through the riverbed and into the Dune Sand Aquifer and underlying 180-Foot Aquifer (Figure 3-22). Under these conditions, a decline in groundwater elevations near the river would affect river flows and could increase the infiltration of saline water from the river into the aquifer. In addition, although they are likely to be primarily dependent on surface water flows, riverine wetlands and riparian habitat located further upstream along the river could be affected by groundwater elevation declines (Figure 3-38).~~

~~As discussed in Section 3.2.6.1.1, projected groundwater elevations in the spring of 2018 were within less than 2 to 5 feet of several mapped "vernal ponds" located east of the MGSA Area that are designated as environmentally sensitive habitat areas designated for protection under the California Coastal Act (Section 2.1.2). The identified GDEs in the vernal ponds include palustrine and emergent wetlands with protected habitat and species, and are located to the east, northeast and southeast of the MGSA Area. In addition, riparian vegetation and riverine wetlands were identified along the Salinas River that may be at least partly dependent on groundwater. Shallow groundwater drawdown induced by pumping in the MGSA Area could adversely affect these GDEs, harming or degrading protected habitat, and harming protected species. Drawdown of the shallow groundwater table below the normal range of seasonal variation as the potential to induce stress in vegetation that that is dependent upon~~

~~groundwater for all or a portion of the year, and unable to adapt to the greater groundwater depths. As a result, GDEs can be destroyed, undergo succession to a different state, or be otherwise degraded.~~

~~Undesirable results associated with the Depletion of Interconnected Surface Water therefore include potential seawater intrusion as well as significant adverse impacts to GDEs. A minimum threshold for inducing additional seawater intrusion from the Salinas River has not been established and will be evaluated as surface-groundwater interaction along the Salinas River is better characterized in collaboration with SVBGSA.~~

This GSP adopts the following groundwater elevation minimum thresholds that serve as a proxy for depletion of surface water minimum thresholds:

- **Dune Sand Aquifer** – The minimum thresholds for the Dune Sand Aquifer are established as an elevation of 1 foot above the 2015 low groundwater levels recorded in Dune Sand Aquifer monitoring wells near identified GDEs in the vicinity of the MGSA Area, and presented for wells MW-4S, 7S and 8S in Table 4-1. These minimum thresholds will be updated as warranted based on future planned investigations to address existing data gaps in the relationship between groundwater level declines and GDE response, as discussed in Chapter 7. Measurable objectives are identical to minimum thresholds.

~~Based on the potential for adverse impacts to GDEs, the~~ proxy ~~minimum thresholds for depletion of interconnected surface water is~~are ~~the same as for chronic decline in groundwater levels, and are compatible across Subbasin and GSP boundaries as follows:~~

- ~~**Dune Sand Aquifer** – The minimum thresholds and measurable objectives established are the same and are drawdown of the water table in the Dune Sand Aquifer that exceeds 1 foot above summer 2015 low groundwater elevations in the groundwater level monitoring network wells near GDEs or the Salinas River.~~

- **180-Foot, 400-Foot and Deep Aquifers** – Because these aquifers are not directly interconnected to surface water, no minimum thresholds or measurable objectives are established.

The following data are needed to assess compliance with these thresholds:

- To assess surface-groundwater interactions at the GDEs, shallow groundwater elevation ~~and quality~~ data are needed proximal to the surface water resources being considered.

- ~~To assess surface-groundwater interaction near the Salinas River, data at multiple levels within the aquifer system, and at multiple distances, are needed to assess the nature of the interaction and the connection of the surface water resource to regional aquifers.~~

- ~~Gaging station data are required to assess potential correlations between river discharge or stage and groundwater elevations.~~

- The reliance by GDEs on groundwater, and their ability to adapt to groundwater elevation declines, is variable depending on the nature of the habitat and species involved. As discussed in Chapter 7~~6~~, this has been identified as a data gap to be addressed ~~by Management Action 3~~during GSP implementation. The baseline biological conditions of the vernal ponds near the MGSA Area will be documented, and a biological monitoring program will be implemented to evaluate the effect of groundwater level changes on GDE habitat composition annually.

Summary information for the groundwater elevation and quality monitoring network that will be used to assess this sustainability indicator is presented in Table 5-1 and the boring logs and well completion diagrams are provided in Appendix 5.A. The locations of these monitoring wells are shown on Figure 5-2, which also presents the location of five additional monitoring well clusters that are proposed to be installed by MCWRA.

5.7.2 Adequacy of Monitoring Network, Density of Monitoring Sites, and Frequency of Measurements

Regulation Requirements:
§354.34(d) The monitoring network shall be designed to ensure adequate coverage of sustainability indicators. If management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the basin setting and sustainable management criteria specific to that area.
§354.34(e) A Plan may utilize site information and monitoring data from existing sources as part of the monitoring network.
§354.34(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:
1) Amount of current and projected groundwater use.
2) Aquifer characteristics, including confined or unconfined aquifer conditions, or other physical characteristics that affect groundwater flow.
3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.
4) Whether the Agency has adequate long-term existing monitoring results or other technical information to demonstrate an understanding of aquifer response.

The adequacy of the groundwater elevation monitoring network is discussed in Section 5.2.2. The density and frequency of groundwater elevation measurements in the MPWSP wells is discussed in Section 5.2.3. ~~The existence of continuously recording pressure transducers in these wells is particularly helpful for the assessment of river stage-groundwater elevation correlations. Two of the nested well clusters are located in close proximity~~proximal ~~to the Salinas River (MW-6 and MW-9), and the remaining~~The existing and proposed wells are sufficiently spread out through the area to assess drawdown distribution in the ~~DSA~~Dune Sand Aquifer that could affect vernal ponds.

The shallow Dune Sand Aquifer wells that are the RMS for this sustainability indicator are co-located with nested wells completed in the 180-Foot and upper 400-Foot Aquifers. In addition, two nested monitoring well clusters are located proximal to the Salinas River (MW-6 and MW-9). As discussed in Section 4.9.2, the potential undesirable results from surface water depletion associated with pumping in the MGSA Area are only anticipated to be associated with vernal ponds, and not with depletion of flow in the Salinas River. For this reason, the RMS do not include the wells located near the Salinas River and the existing RMS are considered adequate for sustainable groundwater management. However, interaction of groundwater extraction with the Salinas River is designated as a data gap and will be assessed in coordination with SVBGSA as discussed in Chapter 7. Groundwater level data collected from these wells, and from deeper wells in the remaining well clusters, will be used to further assess vertical hydraulic communication between the principal aquifers and surface-groundwater interaction along the Salinas River. This information may be used to refine the Hydrogeologic Conceptual Model, and the sustainable management criteria and monitoring networks may be refined in future updates of the GSP.

5.7.3 Additional Monitoring Network Information

5.7.3.1 Scientific Rationale for Site Selection

Regulation Requirements:
§354.34(g) Each Plan shall describe the following information about the monitoring network:
(1) Scientific rationale for the monitoring site selection process.

The existing and proposed wells are sufficiently spread out in the Dune Sand Aquifer to assess groundwater level decline in areas that could be affected by groundwater extraction in the MGSA Area that are proximal to identified vernal pond GDEs. ~~As discussed above, two of the nested well clusters~~wells ~~are located proximal to the Salinas River (MW-6 and MW-9), and the remaining existing and proposed wells are sufficiently spread out through the area to assess drawdown distribution in the DSA that could affect vernal ponds. The existence of clustered wells completed at multiple depths at each of the existing and proposed monitoring locations will assist with the assessments of vertical gradients and drawdown communication between the regional aquifers and interconnected surface waters or GDEs.~~ Biological surveys by a wetlands expert will allow assessments of GDE habitat composition and vigor to be made, as discussed in Chapter 7~~6~~, will establish baseline conditions, and will allow correlations to be established between groundwater levels in the Dune Sand Aquifer and ecosystem responses in the GDEs .

5.7.3.2 Consistency with Data and Reporting Standards

Regulation Requirements:
§354.34(g) Each Plan shall describe the following information about the monitoring network:
(2) Consistency with data and reporting standards described in Section 352.4. If a site is not consistent with those standards, the Plan shall explain the necessity of the site to the monitoring network, and how any variation from the standards will not affect the usefulness of the results obtained.

As discussed in Section 5.2.4.2, the data associated with the MGSA GSP groundwater elevation monitoring network are consistent with the reporting standards required by SGMA. Reporting standards for biological survey data have not been established.

5.7.4 Monitoring Protocols

Regulation Requirements:
§352.2 Each Plan shall include monitoring protocols adopted by the Agency for data collection and management, as follows:
(a) Monitoring protocols shall be developed according to best management practices.
(b) The Agency may rely on monitoring protocols included as part of the best management practices developed by the Department, or may adopt similar monitoring protocols that will yield comparable data.
(c) Monitoring protocols shall be reviewed at least every five years as part of the periodic evaluation of the Plan, and modified as necessary.
§354.34(i) The monitoring protocols developed by each Agency shall include a description of technical standards, data collection methods, and other procedures or protocols pursuant to Water Code Section 10727.2(f) for monitoring sites or other data collection facilities to ensure that the monitoring network utilizes comparable data and methodologies.

Chapter 4 of the MCWRA CASGEM plan (MWCRA 2015) includes a description of the monitoring procedures employed by that agency. These CASGEM groundwater elevation monitoring protocols will be utilized by MCWRA to implement their monitoring program. The monitoring protocols are included in Appendix 5.B. Groundwater elevation data are currently collected both by hand and using automated pressure transducers. The monitoring protocols established by MCWRA cover multiple monitoring methods for collection of data by hand and by automated pressure transducers. Data collected by MCWRA are anticipated to be provided to MGSA for this GSP.

5.7.5 Data Gaps

Regulation Requirements:
§354.38(b) Each Agency shall identify data gaps wherever the basin does not contain a sufficient number of monitoring sites, does not monitor sites at a sufficient frequency, or utilizes monitoring sites that are unreliable, including those that do not satisfy minimum standards of the monitoring network adopted by the Agency.
§354.38(c) If the monitoring network contains data gaps, the Plan shall include a description of the following:
1) The location and reason for data gaps in the monitoring network.
2) Local issues and circumstances that limit or prevent monitoring.
§354.38 (d) Each Agency shall describe steps that will be taken to fill data gaps before the next five-year assessment, including the location and purpose of newly added or installed monitoring sites.
§354.38(e) Each Agency shall adjust the monitoring frequency and density of monitoring sites to provide an adequate level of detail about site-specific surface water and groundwater conditions and to assess the effectiveness of management actions under circumstances that include the following:
1) Minimum threshold exceedances.
2) Highly variable spatial or temporal conditions
3) Adverse impacts to beneficial uses and users of groundwater.
4) The potential to adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of sustainability goals in an adjacent basin.

Regionally, the SVBGSP has identified surface-groundwater interaction along the Salinas River as a data gap. The available data evaluated in this GSP indicate that the lower reach of the Salinas River is likely in hydraulic communication with the ~~DSA~~Dune Sand Aquifer; however, the tools to evaluate the extent and nature of the interaction between the ~~DSA~~Dune Sand Aquifer and the river do not exist at this time. SVBGSA noted that the release of the calibrated USGS SVIHM will provide an important new tool and valuable additional data regarding the interconnection between the Salinas River and the ~~DSA~~Dune Sand Aquifer and other shallow aquifers, and the underlying 180-Foot Aquifer (SVBGSA 2019). Furthermore, SVBGSA has proposed a regional investigation to assess the level of river interconnection using existing shallow wells located adjacent to the Salinas River in combination with the SVIHM. MGSA will review the results of SVBGSA's investigation, perform supplemental local evaluations as needed, and incorporate them into updates of the MGSA GSP.

The following specific data gaps identified for the MGSA GSP groundwater level monitoring network are applicable to the Depletion of Interconnected Surface Water sustainability indicator:

- **Biological survey data for GDEs**: Limited current data are available to characterize wetland vegetation and habitat in and around the vernal ponds in the City of Marina and within the MGSA Area, and their potential sensitivity to pumping-induced drawdown. Such data are needed to assess the wetland habitat and any special-status plant and animal species present and to determine if drawdown of shallow groundwater is affecting, or may affect, the GDEs. Completion of a baseline biological survey and then performance of a biological survey by a wetlands expert once a year for the first five years will address this data gap.

- **Groundwater elevation and quality data in the vicinity of GDEs**: The available data to characterize groundwater elevations and groundwater quality in the MGSA Area and vicinity are both spatially and temporally limited. Such data are needed to assess surface water-groundwater interactions for GDEs in vernal ponds within the City of Marina and in the MGSA Area. The installation of monitoring well clusters at five additional locations by MCWRA will address this data gap spatially. Temporally, the limited duration of the temporal data set will be addressed as additional data are gathered over time.

- **Groundwater elevation and quality data in the MGSA Area**: The available data to characterize groundwater elevations and groundwater quality in the MGSA Area and vicinity are both spatially and temporally limited. Such data are needed to characterize groundwater flow patterns in the ~~DSA~~Dune Sand Aquifer and the 180-Foot Aquifer and assess spatial and temporal evidence for surface-groundwater interaction with the Salinas River and with GDEs (palustrine and emergent wetlands), especially to the northeast and southeast of the MGSA Area. The installation of monitoring well clusters at five additional locations by MCWRA will address this data gap spatially. Temporally, the limited duration of the temporal data set will be addressed as additional data are gathered over time.

- ~~**Interconnection between the Salinas River and the DSA and 180-Foot Aquifer**: Limited data are available to assess the nature and degree to which the Salinas River is connected to the underlying groundwater systems (DSA and 180-Foot Aquifer), the potential for seawater intrusion through the river bed in the tidally-influenced reaches of the river, and the relative reliance of riverine wetlands and riparian habitat associated with the river on surface water flows as opposed to groundwater. These data gaps will be addressed in collaboration with SVBGSA's efforts to assess surface-groundwater interaction along the river regionally through monitoring and use of the SVIHM. Locally, MGSA will evaluate potential interconnection between the DSA and the 180-Foot Aquifer and the Salinas River during GSP implementation by examining river stage measurements and the response of groundwater elevations in the MW-6~~

~~and MW-9 well clusters, and working with SVBGSA and MCWD GSA to simulate this interaction with the SVIHM.~~

5.8 Reporting Monitoring Data to the Department

Regulation Requirements:

§ 352.6 Data Management System

Each Agency shall develop and maintain a data management system that is capable of storing and reporting information relevant to the development or implementation of the Plan and monitoring of the basin.

§354.40 Reporting Monitoring Data to the Department

Monitoring data shall be stored in the data management system developed pursuant to Section 352.6. A copy of the monitoring data shall be included in the Annual Report and submitted electronically on forms provided by the Department.

A Microsoft Access DMS has been created to store GSP monitoring data in accordance with 23 CCR § 352.6, which requires that each GSA shall develop and maintain a data management system that is capable of storing and reporting information relevant to the development or implementation of the GSP and monitoring of the Subbasin. MGSA's database has a simple structure which is shared with the DMS being developed by MCWD GSA in support of its GSP for the Monterey Subbasin, which abuts the MGSA Area to the south. In addition, MGSA plans to coordinate with database personnel from SVBGSA to assure compatibility with the DMS being developed by that agency. Both GSAs will rely extensively on the same monitoring data collected by MCWRA; therefore, it is anticipated that very little data transfer will actually need to occur. SVBGSA is considering development of a web-based DMS to facilitate basin-wide groundwater management. MGSA will cooperate with this effort, but will retain a relatively simple structure for its DMS that is not web-based.

MGSA's Access DMS includes the following information:

- Physical well data, including location, elevation, type, depth, aquifer, construction date, and details, and ownership information;
- Depth to water measurements, reference point elevations and groundwater elevation elevations;
- Well production data;
- Well chemical data for TDS, chloride, specific conductance, and other selected general mineral parameters;
- Precipitation data including meteorological station location and monthly precipitation totals; and
- Gaging station location, stage, and discharge data.

MGSA's DMS will be periodically updated with monitoring data. It will be used to analyze and compare data, evaluate statistical relationships and trends, and provide model inputs and calibration datasets if needed, and create data tables and other outputs. In addition, information in the database has been migrated into a geodatabase in ESRI ArcGIS format to facilitate spatial analysis, production of graphics and communication with regional GIS users. The Geodatabase also includes various data for various mapped layers including:

- Topography, surface infrastructure, jurisdictional boundaries, land use designations, protected areas, and disadvantaged community areas;
- Hydrologic features and GDEs;
- Geologic and soils information;
- Groundwater elevation data;
- Groundwater chemical data including chloride and TDS isoconcentration contour data; and
- Geophysical investigation data.

The Access DMS and geodatabase will be used in combination to support adaptive management during GSP implementation and reporting to DWR. In accordance with 23 CCR § 352.6, a copy of the monitoring data will be included in the Annual Report and submitted electronically on forms provided by DWR.

TABLE 5-1. WELL INFORMATION AND DATA COLLECTED FOR WELLS IN THE DUNE SAND AQUIFER

Well Name	Latitude	Longitude	Well Type	Depth (ft bgs)	RP Elevation (ft msl)	Top of Perfs (ft bgs)	Bottom of Perfs (ft bgs)	Data Collected	Collection Frequency
MW-1S	36.71314	-121.80588	Monitoring	105	30.51	55	95	WL, WQ	C, C
MW-3S	36.71280	-121.80375	Monitoring	100	37.16	50	90	WL, WQ	C, C
MW-4S	36.71173	-121.79876	Monitoring	110	41.96	60	100	WL, WQ	C, C
MW-5S	36.71798	-121.77461	Monitoring	93	80.25	43	83	WL, WQ	C, C
MW-6S	36.67713	-121.74723	Monitoring	70	35.89	30	60	WL, WQ	C, C
MW-7S	36.70626	-121.78927	Monitoring	90	50.64	60	80	WL, WQ	C, C
MW-8S	36.72648	-121.78753	Monitoring	90	19.96	40	80	WL, WQ	C, C
MW-9S	36.73373	-121.77935	Monitoring	120	18.42	30	110	WL, WQ	C, C
MW-AS	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL*	*C*
MW-BS	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL*	*C*
MW-CS	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL*	*C*
MW-DS	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL*	*C*
MW-ES	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL*	*C*
MW-5S	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL*	*C*
MCWD MW#4	TBD	TBD	Monitoring	110	61	64	106	WL, WQ	C, C
MCWD MW#5	TBD	TBD	Monitoring	107	61	60	100	WL, WQ	C, C
MW-BW-76-A	TBD	TBD	Monitoring	50	17	20	50	TBD	TBD
MW-BW-84-A	TBD	TBD	Monitoring	65	19	24	64	TBD	TBD
MW-BW-83-A	TBD	TBD	Monitoring	68	24	26	66	TBD	TBD

Well Name	Latitude	Longitude	Well Type	Depth (ft bgs)	RP Elevation (ft msl)	Top of Perfs (ft bgs)	Bottom of Perfs (ft bgs)	Data Collected	Collection Frequency
MW-OU1-01-180	TBD	TBD	Monitoring	175	126	155	175	TBD	TBD
MW-OU1-02-180	TBD	TBD	Monitoring	195	138	175	195	TBD	TBD
MW-OU1-03-180	TBD	TBD	Monitoring	183	141	163	183	TBD	TBD
MW-BW-54-180	TBD	TBD	Monitoring	201	128	161	201	TBD	TBD
21667	TBD	TBD	Production	140	56	80	140	WL, WQ	M, A

Notes:
Proposed wells are italicized; MW-5S is a proposed replacement well for the existing well screened in a perched zone in the ~~DSA~~Dune Sand Aquifer.
Latitude and longitude in decimal degrees.
RP = Reference Point (top of casing), ft = feet, bgs = below ground surface, msl = mean sea level, Perfs = Perforations
~~DSA~~Dune Sand Aquifer = Dune Sand Aquifer, (L) = Lower interval in 180-Foot Aquifer, WL = Water Level, WQ = Water Quality, IN = Induction Logging, C = Continuous, A = Annual
Source: Monterey Peninsula Water Supply Project (HWG 2016); Integrated Coastal Groundwater Monitoring Plan (MCRWA 2019)

TABLE 5-2. WELL INFORMATION AND DATA COLLECTED FOR WELLS IN THE 180-FOOT AQUIFER

Well Name	Latitude	Longitude	Well Use	Depth (ft bgs)	RP Elevation (ft msl)	Top of Perfs (ft bgs)	Bottom of Perfs (ft bgs)	Data Collected	Collection Frequency
MW-1M	36.71316	-121.80591	Monitoring	235	29.86	115	225	WL, WQ	C, C
MW-3M	36.71278	-121.80371	Monitoring	225	37.35	105	215	WL, WQ	C, C
MW-4M	36.71174	-121.79879	Monitoring	270	41.99	130	260	WL, WQ	C, C
MW-5M	36.71796	-121.77462	Monitoring	320	80.48	100	310	WL, WQ	C, C
MW-6M	36.67712	-121.74726	Monitoring	220	35.68	150	210	WL, WQ	C, C
MW-6M(L)	36.67710	-121.74729	Monitoring	335	35.82	255	325	WL, WQ	C, C
MW-7M	36.70629	-121.78928	Monitoring	230	50.29	130	220	WL, WQ	C, C
MW-8M	36.72645	-121.78755	Monitoring	225	19.99	125	215	WL, WQ	C, C
MW-9M	36.73375	-121.77932	Monitoring	235	18.32	145	225	WL, WQ	C, C
MW-AM	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL*	*C*
MW-BM	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL*	*C*
MW-CM	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL*	*C*
MW-DM	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL*	*C*
MW-EM	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL*	*C*
MCWD DMW-1	TBD	TBD	Monitoring	240	60	190	230	WL, WQ	C, P
MCWD DMW-2	TBD	TBD	Monitoring	236	61	180	230	WL, WQ	C, P
MCWD Well #1	TBD	TBD	Production	225	84	124	NA	WL	C
MCWD Well #2	TBD	TBD	Production	200	75	128	NA	WL	C
14530	TBD	TBD	Production	350	103	260	340	WL	C

Well Name	Latitude	Longitude	Well Use	Depth (ft bgs)	RP Elevation (ft msl)	Top of Perfs (ft bgs)	Bottom of Perfs (ft bgs)	Data Collected	Collection Frequency
14531	TBD	TBD	Production	350	116	260	340	WL	C
MW-B-05-180	TBD	TBD	Production	210	120	175	205	WL, WQ	C, P
Airfield	TBD	TBD	Production	396	142	318	379	WL, WQ	C, P

Notes:
Proposed wells are italicized.
Latitude and longitude in decimal degrees
RP = Reference Point (top of casing), ft = feet, bgs = below ground surface, msl = mean sea level, Perfs = Perforations
~~DSA~~Dune Sand Aquifer = Dune Sand Aquifer, (L) = Lower interval in 180-Foot Aquifer, WL = Water Level, WQ = Water Quality, IN = Induction Logging, C = Continuous, A = Annual
Source: Monterey Peninsula Water Supply Project (HWG 2016); Integrated Coastal Groundwater Monitoring Plan (MCRWA 2019)

TABLE 5-3. WELL INFORMATION AND DATA COLLECTED FOR WELLS IN THE 400-FOOT AQUIFER

Well Name	Latitude	Longitude	Well Type	Depth (ft bgs)	RP Elevation (ft msl)	Top of Perfs (ft bgs)	Bottom of Perfs (ft bgs)	Data Collected	Collection Frequency
MW-1D	36.71317	-121.80594	Monitoring	337	29.68	277	327	WL, WQ, IN	C, C, A
MW-3D	36.71277	-121.80367	Monitoring	340	36.93	285	330	WL, WQ, IN	C, C, A
MW-4D	36.71174	-121.79883	Monitoring	340	41.95	290	330	WL, WQ, IN	C, C, A
MW-5D	36.71793	-121.77463	Monitoring	445	80.06	395	435	WL, WQ, IN	C, C, A
MW-7D	36.70632	-121.78929	Monitoring	355	50.24	295	345	WL, WQ, IN	C, C, A
MW-8D	36.72642	-121.78757	Monitoring	360	20.08	300	350	WL, WQ, IN	C, C, A
MW-9D	36.73377	-121.77929	Monitoring	403	18.32	353	393	WL, WQ, IN	C, C, A
MW-AD	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL, WQ-IN*	*C, A*
MW-BD	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL, WQ-IN*	*C, A*
MW-CD	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL, WQ-IN*	*C, A*
MW-DD	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL, WQ-IN*	*C, A*
MW-ED	*TBD*	*TBD*	*Monitoring*	*TBD*	*TBD*	*TBD*	*TBD*	*WL, WQ-IN*	*C, A*
1032	TBD	TBD	Production	506	31	400	506	WQ	A
239	TBD	TBD	Production	500	14	314	456	WL	M
2791	TBD	TBD	Production	600	140	438	580	WL	A
2718	TBD	TBD	Production	615	19	330	600	WL	A
1466	TBD	TBD	Production	556	16	395	540	WL, WQ	A, A

Notes:
Proposed wells are italicized; Latitude and longitude in decimal degrees.
RP = Reference Point (top of casing), ft = feet, bgs = below ground surface, msl = mean sea level, Perfs = Perforations
~~DSA~~Dune Sand Aquifer = Dune Sand Aquifer, (L) = Lower interval in 180-Foot Aquifer, WL = Water Level, WQ = Water Quality, IN = Induction Logging, C = Continuous, A = Annual
Source: Monterey Peninsula Water Supply Project (HWG 2016); Integrated Coastal Groundwater Monitoring Plan (MCRWA 2019)

TABLE 5-4. WELL INFORMATION AND DATA COLLECTED FOR WELLS IN THE DEEP AQUIFER

Well Name	Latitude	Longitude	Well Use	Depth (ft bgs)	Elevation (ft NAVD88)	Top of Perfs (ft bgs)	Bottom of Perfs (ft bgs)	Data Collected	Collection Frequency
DMW1-1	36.69917	-121.80750	Monitoring	960	60	930	950	WL, WQ	C, P
DMW1-2	36.69917	-121.80750	Monitoring	1070	60	1040	1060	WL, WQ	C, P
DMW1-3	36.69917	-121.80750	Monitoring	1440	60	1410	1430	WL, WQ	C, P
DMW1-4	36.69917	-121.80750	Monitoring	1890	60	1820	1860	WL, WQ, IN	C, P, A
DMW2-S	36.69917	-121.80750	Monitoring	1100	142	1040	1090	WL	C
DMW2-D	36.69917	-121.80750	Monitoring	1740	142	1680	1730	WL, IN	C, A
MCWD Well #10	TBD	TBD	Production	1500	153	930	1540	WL, WQ	P, A
MCWD Well #11	TBD	TBD	Production	1700	155	970	1650	WL, WQ	P, A
MCWD Well #12	TBD	TBD	Production	2023	109	1410	1960	WL, WQ	P, A
25973	TBD	TBD	Production	1780	132	1030	1780	WQ	A
21655	TBD	TBD	Production	825	105	670	805	WQ	A
22755	TBD	TBD	Production	1573	25	1450	1450	WQ	A
2691	TBD	TBD	Production	870	29	666	834	TBD	TBD
1672	TBD	TBD	Production	1560	6	880	1540	WL	M

Notes:
Latitude and longitude in decimal degrees; Perfs = Perforations
Ft = feet, bgs = below ground surface; NAVD88 = North American Vertical Datum of 1988
WL = Water Level, WQ = Water Quality, IN = Induction Logging, C = Continuous, P = Periodic, A = Annual
Source: Geohydrology of a Deep-Aquifer System Monitoring-Well Site (Hanson *et al.* 2002); Integrated Coastal Groundwater Monitoring Plan (MCRWA 2019)

FIGURE 5-1. JURISDICTIONAL AREAS COVERED BY GSAS

FIGURE 5-2. LOCATIONS OF WELLS IN THE MGSA GSP MONITORING NETWORK

APPENDIX 5.A – MPWSP LOGS AND WELL COMPLETION DIAGRAMS

APPENDIX 5.B – MCWRA MONITORING PROTOCOLS

APPENDIX 5.C – CHLORIDE DATA CONTOURING PROTOCOLS

~~Appendix 5.C~~APPENDIX 5.D – INDUCTION LOGGING

VOLUME II: ATTACHMENT C – CHAPTER 6 EDITS

CHAPTER 6 – PROJECTS AND MANAGEMENT ACTIONS
Groundwater Sustainability Plan
for the Marina GSA Area
of the 180/400 Foot Aquifer Subbasin

City of Marina
Groundwater Sustainability Agency
Marina, California

JANUARY 2020

TABLE OF CONTENTS

Figures

6 PROJECTS AND MANAGEMENT ACTIONS

Regulation Requirements:

§354.42 Introduction to Projects and Management Actions. This Subarticle describes the criteria for projects and management actions to be included in a Plan to meet the sustainability goal for the basin in a manner that can be maintained over the planning and implementation horizon.

§354.44(a) Each Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.

(b) Each Plan shall include a description of the projects and management actions that include the following:

(1) A list of projects and management actions proposed in the Plan with a description of the measurable objective that is expected to benefit from the project or management action. The list shall include projects and management actions that may be utilized to meet interim milestones, the exceedance of minimum thresholds, or where undesirable results have occurred or are imminent. The Plan shall include the following:

(A) A description of the circumstances under which projects or management actions shall be implemented, the criteria that would trigger implementation and termination of projects or management actions, and the process by which the Agency shall determine that conditions requiring the implementation of particular projects or management actions have occurred.

(B) The process by which the Agency shall provide notice to the public and other agencies that the implementation of projects or management actions is being considered or has been implemented, including a description of the actions to be taken.

(2) If overdraft conditions are identified through the analysis required by Section 354.18, the Plan shall describe projects or management actions, including a quantification of demand reduction or other methods, for the mitigation of overdraft.

(3) A summary of the permitting and regulatory process required for each project and management action.

(4) The status of each project and management action, including a time-table for expected initiation and completion, and the accrual of expected benefits.

(5) An explanation of the benefits that are expected to be realized from the project or management action, and how those benefits will be evaluated.

(6) An explanation of how the project or management action will be accomplished. If the projects or management actions rely on water from outside the jurisdiction of the Agency, an explanation of the source and reliability of that water shall be included.

(7) A description of the legal authority required for each project and management action, and the basis for that authority within the Agency.

(8) A description of the estimated cost for each project and management action and a description of how the Agency plans to meet those costs.

(9) A description of the management of groundwater extractions and recharge to ensure that chronic lowering of groundwater levels or depletion of supply during periods of drought is offset by increases in groundwater levels or storage during other periods.

(c) Projects and management actions shall be supported by best available information and best available science.

(d) An Agency shall take into account the level of uncertainty associated with the basin setting when developing projects or management actions.

6.1 INTRODUCTION

The 180/400 Foot Aquifer Subbasin (Subbasin) is subject to ~~significant and unreasonable~~ongoing seawater intrusion due largely to long-term groundwater extraction in the inland portions of the Subbasin in excess of the sustainable yield. As a result, it has been identified by California Department of Water Resources (DWR) as being one of 21 basins in a condition of critical overdraft (DWR 2016a). Seawater intrusion was first identified in the area of Marina Groundwater Sustainability Agency (the MGSA Area) in the 1940s, and over the following decades progressed inland for a distance of over 7 miles in some areas. The purpose of this GSP is to support regional efforts to address this ~~undesirable result~~condition and return the Subbasin to sustainable groundwater management within 20 years, as required by the Sustainable Groundwater Management Act (SGMA). MGSA will achieve this by supporting the projects and management actions that will be implemented by Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) under its regional Groundwater Sustainability Plan (GSP), and by assuring that local groundwater resources are managed sustainably to protect local and regional beneficial uses and users.

~~The purpose of this GSP is to examine local efforts and support regional efforts to address this undesirable result and return to Subbasin to sustainable groundwater management within 20 years, as required by the Sustainable Groundwater Management Act (SGMA). MGSA will achieve this by evaluating local projects and supporting the projects and management actions that will be implemented by Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) under its regional Groundwater Sustainability Plan (GSP) identified in Section 6.5 herein, and by assuring that local groundwater resources are managed sustainably to protect local and regional beneficial uses and users, including groundwater dependent ecosystems.~~

This chapter describes management actions that will be implemented by MGSA to assure sustainable groundwater management in the MGSA Area and prevent undesirable results. MGSA has not identified any feasible projects within the MGSA Area to promote sustainable groundwater management at this time, but will continue to evaluate potential projects. In addition, MGSA will consult and coordinate with SVBGSA and/or MCWD GSA to identify and support implementation of such projects in the future, as appropriate. Also included in this chapter is a brief description of SVBGSA projects and management actions for the Subbasin, some of which would provide regional benefits which include the MGSA Area and vicinity. MGSA will coordinate with and support SVBGSA in the implementation of projects and management actions it has determined to be locally and regionally beneficial, but they are not adopted and will not be implemented under this GSP. Additional details on SVBGSA's projects and management actions can be found in Chapter 9 of their GSP for the Subbasin (SVBGSA 2019).

6.2 MGSA Management Actions

In this GSP, the term "groundwater management actions" refers to activities that prevent undesirable results and promote sustainable groundwater management that do not require infrastructure or capital improvements. They include, among other things, the exercise of the powers and authorities set forth in Chapter 5 of SGMA, California Water Code (CWC) §§ 10725-10726.9. Management actions will be implemented based on an objective system of pre-established monitoring triggers in order to respond to potentially adverse conditions and prevent undesirable results as defined in Chapter 4. MGSA's management actions are described below.

6.2.1 MGSA Management Action 1: Management of Seawater Intrusion and Groundwater Quality Degradation

6.2.1.1 Description

In the vicinity of the MGSA Area, the undesirable results of seawater intrusion, water quality degradation and ~~groundwater storage depletion~~groundwater level decline are related. Each is a function of the MGSA Area's setting on the seaward side of the interface between a dense saline water intrusion wedge and an over-riding zone of low-total dissolved solids (TDS) groundwater (< 3,000 milligrams per liter [mg/L] TDS) that is locally recharged through the Dune Sand Aquifer~~ (DSA)~~. Groundwater extraction in the MGSA Area has the potential to affect the dynamic equilibrium of this nearshore groundwater system and cause seawater intrusion through the migration of the saline water wedge, which could in turn lead to further seawater intrusion into the Dune Sand Aquifer, ~~deeper~~ vertical seawater intrusion into the currently unintruded Deep Aquifer, or promote the lateral migration or persistence of seawater intrusion farther inland. ~~In addition, because the natural groundwater gradient is shoreward, groundwater extraction could substantially deplete the low-TDS groundwater storage in the DSA, 180-Foot Aquifer and 400-Foot Aquifer, substantially depleting the availability of this resource for inland water right holders.~~ Groundwater extraction could also lead to water quality degradation in the low-TDS groundwater zone by causing mixing of saline and low-TDS groundwater.

As described in Chapter 5, MGSA will monitor and evaluate the potential for groundwater elevation and water quality changes that are indicative of the above undesirable results. If the data indicate that ~~measurable objectives~~the triggers associated with the above undesirable results and included in this chapter may be reached as a result of these groundwater extractions, then MGSA will implement a series of escalating management actions. These management actions will include the following three general phases, with the progression between each phase set by a sequence of objective decision triggers:

(1) Detection Monitoring;

(2) Investigation, Verification and Hydrogeologic Conceptual Model Update; and

(3) Characterization, Response Action Planning and Implementation.

The components of Management Action 1 are shown graphically in Figure 6-1~~Figure 6-1~~, and may be summarized as follows. The Detection Monitoring phase presents the first tier of triggers that are specific to detecting groundwater quality degradation and related proxies for seawater intrusion, water quality degradation and low-TDS groundwater storage depletion at an early stage. ~~The triggers are set equal to the measurable objectives presented in Sections 4.5.3, 4.6.3, and 4.7.3 for groundwater storage depletion, groundwater quality degradation and/or seawater intrusion, respectively.~~ Management Action 1 will be implemented if any of the following ~~triggers~~ Tier 1 Trigger Thresholds are reached or exceeded~~ within the area of groundwater elevation decline induced by groundwater extraction within the MGSA Area~~:

- Trigger A - For ~~reduction in low-TDS groundwater zone storage~~seawater intrusion into the Dune Sand Aquifer:

- A decrease in the thickness of the low TDS zone of more than ~~1 foot~~5 feet (considering seasonal variability) identified by induction logging three or more wells in the induction logging monitoring well network; ~~and~~or
- An increase in the thickness of the saline groundwater wedge of more than ~~3~~5 feet identified by induction logging in three or more deep monitoring wells in the induction monitoring well network; and~~.~~
- A spatial distribution of groundwater level decline that indicates the logged changes identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA Area.[1]

- ~~Or, for seawater intrusion:~~
  - ~~A statistically significant (p < 0.1) increasing trend in groundwater concentrations of chloride or TDS in three or more wells in the MGSA groundwater quality monitoring network at the 90% confidence level using an appropriate Mann-Kendall trend test (e.g. Seasonal Mann-Kendall) (US EPA 2009); or~~
  - ~~An increase in the thickness of the saline groundwater wedge of more than 3 feet identified by induction logging in three or more deep monitoring wells in the induction monitoring well network.~~

- ~~Or,~~Trigger B - ~~f~~For degradation of groundwater quality in the low-TDS groundwater zone in the Dune Sand Aquifer, ~~or~~ 180-Foot Aquifer, 400-Foot Aquifer or ~~in the~~ Deep Aquifer:
  - A statistically significant (p < 0.1) increasing trend in groundwater concentrations of chloride or TDS in three or more wells in the water quality monitoring well network for any one aquifer at the 90% confidence level using an appropriate Mann-Kendall trend test (e.g. Seasonal Mann-Kendall) (US EPA 2009);
  - A statistically significant increase (SSI) above baseline chloride or TDS concentration in three or more wells at the 90% confidence level using an appropriate statistical technique per EPA 2009; and
  - A spatial pattern of groundwater level declines that indicates the statistically-significant water quality changes identified above occur within the zone of drawdown influence of groundwater extraction in the MGSA Area.

If ~~any of these measurable objectives~~Trigger A or B are reached or exceeded, then a Tier 1 Trigger threshold has been reached. Confirmation monitoring will be conducted to confirm that a Tier 1 Trigger event has occurred. If confirmed, a Tier 1 Trigger will either segue the management action into: (a) Tier 2 Investigation, Verification and Hydrogeologic Conceptual Model Updates for the Dune Sand, 180-Foot and 400-Foot Aquifer systems, or (b) if the ~~trigger has been detected~~Tier 1 Trigger event occurred in the Deep Aquifer, directly to the Characterization, Corrective Action Planning and Implementation phase.

[1] This second requirement for the trigger threshold is included because MGSA only has authority to regulate groundwater extractions within its jurisdictional boundaries.

The Investigation, Verification and Hydrogeologic Conceptual Model Update phase is in place to conduct additional investigation to determine the need for groundwater management (CWC § 10725.4), specifically, it consists of a focused evaluation to confirm that seawater intrusion or~~,~~ water quality degradation~~, and/or low-TDS groundwater storage depletion~~ is occurring, and is causing or is likely to cause significant and unreasonable effects. The Investigation, Verification and Hydrogeologic Conceptual Model Updates phase requires updating and refining the three-dimensional Hydrogeologic Conceptual Model with historic and current data sources (e.g., groundwater elevation, groundwater chemistry, geophysical data, etc.), and using two- and three-dimensional quantitative geostatistical techniques to assess if: (a) the low-TDS groundwater zone is thinning over time; (b) the saline groundwater wedge is expanding over time; and/or (c) water quality is degrading in the low-TDS groundwater zone. Evaluations will be data-driven, consisting of space-time geostatistical evaluations and/or plume stability analysis.

If one or more of these three conditions is met, then the management action for the Dune Sand, 180-Foot and 400-Foot Aquifers segues from Phase 2 into the Characterization, Response Action Planning and Implementation phase. The second phase Hydrogeologic Conceptual Model Update will also help identify and localize critical data gaps, uncertainties and risks so they can be considered during planning for characterization and corrective action.

The third phase of MGSA Management Action 1 is Characterization, Response Action Planning and Implementation. The following activities constitute the third phase:

- Alternative cause investigation to confirm that groundwater extractions in the MGSA Area are responsible for causing the effects of concern;
- Further Hydrogeologic Conceptual Model refinement to fill critical data gaps, and groundwater model development;
- Response action evaluation and selection;
- Stakeholder consultation (i.e., SVBGSA, MCWD GSA, Monterey County Water Resources Agency [MCWRA], environmental groups, and others);
- Response action implementation; and
- Monitoring of response action effectiveness.

Alternative cause investigations are necessary to establish the mechanism and function of the observed seawater intrusion, groundwater quality degradation, and/or low-TDS zone storage depletion, and verify they are resulting from groundwater extraction within the MGSA Area. If the cause is due to groundwater extraction within the MGSA Area, then a response action by MGSA and the groundwater extractor is appropriate to prevent or correct undesirable results. Response action identification and implementation will likely require the development of a three-dimensional numerical groundwater model that is capable of simulating seawater intrusion through advective solute transport and density-driven flow (or use of such a model if it has been developed by MCWD GSA, as discussed in Section 4.3). The updated Hydrogeologic Conceptual Model developed during the Investigation, Verification and

Hydrogeologic Conceptual Model Update phase will, in part, serve to support the conceptual design and parameterization inputs for constructing or refining the local groundwater model as needed.

The locally refined groundwater model and updated Hydrogeologic Conceptual Model will provide data-driven information to evaluate and select appropriate response action(s), including key design considerations and prediction of future implementation effectiveness and establishment of timetables. During the response action selection process, stakeholders including SVBGSA, MCWD GSA, MCWRA, environmental groups, and other interested parties will be consulted to provide input and coordinate implementation of response actions in their jurisdictional areas. Once implemented, criteria for monitoring action effectiveness will be data-driven and include multiple lines of evidence, such as, for example: (a) evaluating TDS and chloride temporal trend behaviors to see if trends shift from increasing to decreasing or insignificant; (b) determining if TDS/chloride concentrations reach baseline threshold levels and are stable over time; and/or (c) assessing if the TDS/chloride wedge and low-TDS zone thickness and storage become stable and/or improve over time. New Measurable Objectives and Interim Milestones would be established to achieve and maintain the sustainability goals of the GSP.

If the response action does not produce multiple lines of evidence showing the successful mitigation of the seawater intrusion, storage depletion and/or water quality degradation, or the new Measurable Objectives and Interim Milestones are not achieved, then the response action would be amended, re-implemented and monitored until the objectives are achieved. If implementation of the response action does achieve the Measurable Objectives, then a decision will be made to segue the groundwater program back into the first phase (Detection Monitoring). Detection Monitoring would then continue as described in this GSP.

6.2.1.2 Relevant Measurable Objectives

The measurable objectives benefiting from this management action include:

- ~~Groundwater elevation decline measurable objectives. Effective response actions would reverse groundwater elevation decline and return groundwater elevations to stable and/or increasing trends.~~
- ~~Low-TDS g~~Groundwater storage ~~depletion~~ reduction measurable objective. Effective response actions would ~~reverse decline of low TDS groundwater storage and return it to stable and/or increasing trends~~assure that groundwater extraction within the MGSA would occur within the sustainable yield of the basin, without causing undesirable results.
- The seawater intrusion measurable objective. Effective response actions would prevent or reverse further seawater intrusion in the upper aquifer system ~~reverse migration of the saline water intrusion wedge~~ and return it to stable conditions, and prevent or reverse seawater intrusion advancement into the Deep Aquifer.
- ~~Low-TDS g~~Groundwater quality measurable objective. Effective response actions would prevent or reverse ~~decline~~ degradation ~~of low TDS~~ groundwater quality by TDS and chloride in the low-

TDS zone of the Dune Sand~~, and~~ 180-Foot and 400-Foot Aquifer~~ Aquifer~~, or in the Deep Aquifer, and return it to stable and/or ~~increasing~~ improving trends.

6.2.1.3 Expected Benefits and Evaluation of Benefits

The primary benefit from implementing MGSA Management Action 1 is to avoid undesirable results related to seawater intrusion~~,~~ and groundwater quality degradation, protecting the current and future beneficial uses of groundwater~~ of the low-TDS zone, and depletion of low-TDS groundwater zone storage~~.

6.2.1.4 Circumstances for Implementation

The management action will be implemented depending upon evaluation of monitoring data and if Tier 1 and Tier 2 Trigger Thresholds are reached.

6.2.1.5 Permitting and Regulatory Process

No permitting or regulatory processes are necessary.

6.2.1.6 Implementation Schedule

Implementation will be dependent upon ~~if~~ whether Tier 1 and Tier 2 Trigger Thresholds are reached. The Investigation, Verification and Hydrogeologic Conceptual Model Updates phase would take approximately six months to a year to implement, and the Characterization, Corrective Action Planning and Implementation phase would take approximately one to two years to implement, and could continue for a longer period of time if conditions warrant.

6.2.1.7 Estimated Costs

Estimated costs to coordinate implementation are approximately $50,000 per year. Implementation costs would vary depending on the scope of investigation and corrective action, and would be developed prior to implementation and paid or reimbursed by the responsible groundwater extractors.

6.2.2 MGSA Management Action 2: Management of Impacts to Groundwater Dependent Ecosystems and Interconnected Surface Waters

6.2.2.1 Description

As discussed in Section 2.4.12, 3.2.6.1.2, and 4.4.2.2~~1~~, an evaluation of available data regarding potentially sensitive habitat and groundwater conditions indicates there are several significant GDEs that could be affected by groundwater withdrawal within the MGSA Area. Potential GDE's were identified near the MGSA Area in the California Department of Water Resources (DWR) "NC Dataset Viewer" of the "Natural Communities Commonly Associated with Groundwater" database compiled by The Nature Conservancy in cooperation with DWR. Using best practices recommended by The Nature Conservancy (TNC 2019), these GDEs were determined to likely be dependent on the presence of shallow groundwater within the Dune Sand Aquifer. The identified GDEs include palustrine and emergent wetlands (sometimes referred to as "vernal ponds") with protected habitat and species, and are located to the east, northeast and southeast of the MGSA Area. In addition, riparian vegetation and riverine wetlands were identified along the Salinas River that may be at least partly dependent on groundwater. Shallow groundwater drawdown induced by pumping in the MGSA Area could adversely affect these GDEs, harming or degrading protected habitat, and harming protected species.

As described in Chapter 5, MGSA will monitor and evaluate the potential for groundwater elevation changes that are indicative of the above undesirable results. If ~~the~~ groundwater level monitoring collected from wells near identified GDEs reaches the trigger thresholds presented below~~data indicate that measurable objectives associated with the above undesirable results may be reached as a result of these groundwater extractions~~, then MGSA will implement a series of escalating management actions. These management actions will include the following three general phases, with the progression between each phase set by a sequence of objective decision triggers:

(1) Detection Monitoring;

(2) Biological and Hydrologic Assessment; and

(3) Response Action Planning and Implementation.

The components of Management Action 2 are shown graphically in Figure 6-2~~Figure 6-2~~, and may be summarized as follows. The Detection Monitoring phase presents the first tier of triggers that are specific to detecting potential adverse impacts to GDEs at an early stage. The triggers are ~~equal to the measurable objectives discussed in Section 4.4.3.1 for groundwater elevation decline in the DSA, specifically:~~

~~A drawdown attributable to groundwater extraction in the MGSA Area to~~ an elevation 1 foot above the 2015 low groundwater levels recorded in monitoring wells near GDEs in the vicinity of the MGSA Area.[2]

Confirmation evaluation will be conducted to verify that a Tier 1 Trigger event has occurred by conducting a biological reconnaissance to observe and document conditions in the potentially affected GDE, ~~and~~ determining whether vegetation stress and habitat degradation is occurring that is distinguishable from conditions documented during the baseline assessment described in Section 7.1.2.3~~6.2.3~~, and assessing whether the groundwater level decline observed near the GDE is likely attributable to groundwater extraction within the MGSA Area.[3] If confirmed, a Tier 1 Trigger will segue the management action into Tier 2 Biological and Hydrologic Assessment.

[2] ~~Determination of whether the drawdown is attributable to groundwater pumping in the MGSA Area will be made based on the spatial and temporal distribution of observed drawdown, and evaluation of predicted distance-drawdown relationship. If drawdown is attributable to pumping outside the MGSA Area, SVBGSA will be advised.~~ This ~~measurable objective~~trigger threshold is an interim value for wells MW-4S, MW-7s and MW-8S until a baseline biological assessment as discussed in Section 7.1.2.3~~6.2.3~~. Based on this baseline biological assessment, a biological monitoring plan will be developed and the minimum thresholds and measurable objectives described in Section 4.4 may be modified, and the triggers and management actions described in this section refined.
[3] If the observed decline in groundwater levels is attributable to pumping outside the MGSA Area, SVBGSA will be advised.

The Biological and Hydrologic Assessment phase is in place to conduct additional investigation and focused evaluation to characterize the cause, nature and extent of the habitat degradation and assess whether significant and unreasonable impacts to the GDE are occurring or likely to occur as a result of groundwater extraction in the MGSA Area. This investigation will build on the baseline biological assessment discussed in Section 7.1.2.3~~6.2.3~~, and determine whether changes in vegetation vigor, community composition, or habitat quality and structure are taking place, and to quantify them if possible. Targeted evaluations will be conducted as needed to establish linkages to climatic variability and groundwater fluctuations and drawdown, and to assess potential future GDE responses. Investigations will be data-driven, and will rely on quantifiable metrics, as appropriate. If the potential for significant habitat degradation or significant harm to protected species is identified, then the management ~~action~~ will segue from the Assessment Phase ~~2 will segue~~ into the Response Action Planning and Implementation P~~p~~hase. The second phase will also help identify and localize critical data gaps, uncertainties and risks so they can be considered during planning for corrective action.

The third phase of MGSA Management Action 2 is Response Action Planning and Implementation. The third phase may include, but not be limited to, the following activities:

- Response action evaluation;
- Consultation with California Department of Fish and Wildlife (CDFW), other appropriate agencies and stakeholders;
- Response action implementation; and
- Monitoring of response action effectiveness.

The Biological and Hydrologic Assessment will provide data-driven information to evaluate and select appropriate response action(s), including performance objectives, mitigation alternatives, prediction of future implementation effectiveness and establishment of timetables. Once implemented, criteria for monitoring action effectiveness will be data-driven and include multiple lines of evidence, such as, for example: (a) evaluating groundwater elevation rebound; and (b) evaluating and comparing plant vigor, habitat quality and species quantities and diversity to baseline conditions to assess improvement and restoration. Measurable Objectives and Interim Milestones would be established to achieve and maintain the sustainability goals of the MGSA GSP.

If the response action does not produce multiple lines of evidence showing the successful mitigation of harmful impacts to the GDEs, or the Measurable Objectives and Interim Milestones are not achieved, then the response action would be amended, re-implemented and monitored until the objectives are achieved. If implementation of the response action does achieve the Measurable Objectives, then a decision will be made to segue the groundwater program back to the first phase (Detection Monitoring). Detection Monitoring would then continue as described in this GSP.

6.2.2.2 Relevant Measurable Objectives

The measurable objectives benefiting from this management action include:

- Groundwater elevation measurable objectives for the Dune Sand Aquifer for protection of GDEs. Effective response action would reverse groundwater elevation decline and return groundwater elevations to the normal range of seasonal values, protecting the GDE habitat from significant and unreasonable impacts.

6.2.2.3 Expected Benefits and Evaluation of Benefits

The primary benefit from implementing this management action is to avoid significant and unreasonable impacts to GDEs in the vicinity of the MGSA Area. These GDEs include designated environmentally sensitive habitat areas, wetland areas protected under mitigation agreements and laws, and habitats that support threatened, endangered, and other protected species. Implementation of the management actions will protect these valuable resources and help to assure compliance with state and federal regulations that govern them.

6.2.2.4 Circumstances for Implementation

The management action will be implemented depending upon evaluation of monitoring data and if Tier 1 and Tier 2 Trigger Thresholds are reached. ~~The following triggers are adopted:~~

~~Tier 1 Trigger: Exceedance of the Measurable Objectives for protection of GDEs, including:~~

~~A groundwater elevation that is 1 foot above historical low groundwater elevations measured in 2015 in the DSA near a designated GDE.~~

6.2.2.5 Permitting and Regulatory Process

Prior to adoption or implementation of response actions, informal consultation with CDFW will be undertaken. Informal consultation with United States Fish and Wildlife Service (USFWS) will be undertaken for any federally listed species.

6.2.2.6 Implementation Schedule

Implementation will be dependent upon whether Tier 1 and Tier 2 Trigger Thresholds are reached. It is expected that ~~Tier 2~~the Biological and Hydrologic Assessment Phase will take approximately six months to complete and the Response Action Implementation Phase will take up to approximately one year to complete, depending on the necessary action any additional data needs that must be addressed.

6.2.2.7 Estimated Costs

The estimated costs to implement Tier 2 investigations or coordinate response action implementation are approximately $50,000 per year. Implementation costs would vary depending on the scope of investigation and corrective action, and would be developed prior to implementation and paid or reimbursed by the responsible groundwater extractors.

~~6.2.3 MGSA Management Action 3: Baseline Biological Assessment of GDEs and Development of Biological Monitoring Plan for GDEs~~

~~6.2.3.1 Description~~

~~As discussed in Sections 3.2.6.1.2 and 4.4.2.1, the ecological water requirements and thresholds of response to changes in groundwater levels differ among GDEs. The ability of such GDEs to adapt or recover from groundwater declines depends largely on the overall water budget and the degree to which the GDE is dependent on groundwater. The degree of interaction between wetlands and groundwater can vary greatly and depends on many factors including their position in the landscape, the permeability of the substrate, depth to the water table, and seasonal fluctuations in water inputs. GDEs develop in response to unique timing, duration, frequency and chemistry of water inputs. An analysis of historical evapotranspiration (ET) variability, groundwater levels and drawdown at the Armstrong Ranch ponds demonstrates a correlation between groundwater levels and biomass productivity in this GDE, and illustrates its sensitivity to groundwater level declines. Biomass productivity rebounded with groundwater levels; however, it is not known whether the stress induced in the GDE resulted in a change in the vegetation community, habitat degradation, or habitat succession that is not readily reversible.~~

~~At this time, it is not possible to determine precisely what level of drawdown imposed on natural groundwater elevation fluctuations would have a significant and unreasonable impact on the GDEs near the MGSA Area. To address this data gap, MGSA will retain a qualified biologist to perform a baseline assessment of the vernal ponds that may be affected by groundwater elevation declines. The purpose of this baseline assessment will be to characterize these wetlands and their dependence on groundwater and potential sensitivity to groundwater elevation declines, and to establish baseline conditions for future comparison. Based on the findings of the baseline assessment, a monitoring plan will be developed to assess changes in the vigor and quality of the GDE habitats over time and allow correlation of changes to shallow groundwater elevations. Quantitative approaches, such as the development of habitat suitability index models, state and succession models, or similar assessment tools, will be developed to assess possible future changes in habitat quality, services and succession.~~

~~6.2.3.2 Relevant Measurable Objectives~~

~~The measurable objectives benefiting from this management action include:~~

- ~~Groundwater elevation measurable objectives for the DSA for protection of GDEs. Filling of the data gap would support setting the measurable objective at a level that is protective of GDEs without being unduly burdensome.~~

~~6.2.3.3 Expected Benefits and Evaluation of Benefits~~

~~The primary benefit from implementing this management action is to fill a data gap relative to informed management of GDEs. Implementation will assure that minimum thresholds and measurable objectives are set at appropriate levels to avoid significant and unreasonable impacts to GDEs in the vicinity of the MGSA Area, while not being unduly burdensome.~~

~~6.2.3.4 Circumstances for Implementation~~

~~The management action will be undertaken to address a data gap develop refined monitoring and management action protocols for GDEs.~~

~~6.2.3.5 Permitting and Regulatory Process~~

~~No permitting is required to complete this project. Informal consultation with CDFW and USFWS may be undertaken.~~

~~6.2.3.6 Implementation Schedule~~

~~Implementation is anticipated to take approximately six months to complete.~~

~~6.2.3.7 Estimated Costs~~

~~The estimated cost to implement the baseline biological assessment and prepare a GDE monitoring plan is $50,000.~~

6.3 Legal Authority

The CWC provides MGSA the following powers and authorities, among others, to implement the above management actions:

- CWC § 10725.4 (a) provides GSAs the authorities to conduct investigations to determine the need for groundwater management, and to monitor compliance and enforcement of a GSP.
- CWC § 10726.4 (a)(2) provides GSAs the authorities to control groundwater extractions by regulating, limiting, or suspending extractions from individual groundwater wells or extractions from groundwater wells in the aggregate.
- CWC § 10725.2. provides that a GSA may perform any act necessary or proper to implement the above authorities, and may adopt rules, regulations, ordinances, and resolutions as necessary to do so.

It is anticipated that, in the process of implementing the above authorities, MGSA may work with groundwater extractors to identify and implement alternative response actions that can comply with the Sustainable Management Criteria identified in this GSP.

6.4 Public Noticing

The City Council of the City of Marina administers MGSA and is responsible to consider and approve decisions regarding the implementation of the management actions described in this GSP. MGSA board meetings are held concurrently with City Council meetings on the first and third Tuesdays of each month in accordance with the Marina Municipal Code (Chapter 2.04) and City Ordinances: 2001-11 § 1 (2001), 78-12 § 1 (1978), and 75-2 § 1 (1975). The meetings are publicly noticed and agendas are made available on the City's website (https://www.cityofmarina.org/AgendaCenter). Open meetings may be preceded by a closed session if necessary and appropriate. As described in Section 1.5.1, resolutions presented to City Council are voted on and require a majority vote of a quorum to be passed and adopted. Open public hearings on specific resolutions may be held during meetings to allow for testimony from the public. City Council Members will consider public testimony prior to voting on specific resolutions.

As part of disseminating information to the general public, MGSA will post updates on its website to notify the public that the implementation of management actions is being considered or has been implemented. This will include a description of the actions to be taken. Additional noticing for the public will be conducted consistent as required in the case of the enactment of fees or assessments. Outreach may include public notices, meetings, website or social media presence, and email announcements.

6.5 SVBGSA AND MCWRA PROJECTS AND MANAGEMENT ACTIONS SUPPORTED BY MGSA

SVBGSA projects involve new or improved infrastructure to meet the regional Sustainable Management Criteria identified in SVBGSA's GSP for the Subbasin (SVBGSA 2019). MCWRA and others are proposing additional projects that will help to improve the understanding and sustainable management of groundwater resources in and near the MGSA Area. Several projects are discussed below based on their relevance to the MGSA Area and vicinity. Included are six projects that are planned for implementation or are already in progress (including four SVBGSA "Priority Projects"), and two SVBGSA "Alternative Projects" that will be implemented only if they are deemed cost effective or necessary to achieve sustainability.

Management actions in SVBGSA's GSP were defined as new or revised non-structural programs or policies that are intended to reduce or optimize local groundwater use (SVBGSA 2019). Management actions will be implemented only if they are deemed cost effective or necessary to achieve sustainability. The four SVBGSA management actions discussed below are considered potentially relevant to achieving the sustainability objectives of the MGSA GSP in and near the MGSA Area. These management actions are not adopted as part of this GSP; however, MGSA will cooperate with and support them because they provide benefits to the MGSA Area.

The proposed SVBGSA projects and management actions will provide *in lieu* recharge and direct recharge benefits including "arresting the decline, or raising, groundwater elevations" (SVBGSA 2019). For the 180-Foot Aquifer, SVBGSA has estimated a groundwater elevation rise of about 3.5 feet in the vicinity of the Salinas River and 2 feet in the vicinity of the MGSA Area as a result of implementing these project and management actions (SVBGSA 2019). For the 400-Foot Aquifer, SVBGSA has estimated a groundwater elevation rise of about 3.5 feet in the vicinity of the Salinas River and 3 feet in the vicinity of the MGSA Area. Raising groundwater elevations could change groundwater flow gradients, and potentially flow directions, in the 180-Foot and 400-Foot Aquifers.

These projects and management actions are further described in the following subsections.

6.5.1 Optimize Castroville Seawater Intrusion Project Operations (SVBGSA GSP Priority Project 2)

The Castroville Seawater Intrusion Project (CSIP) system will be optimized to better accommodate diurnal and seasonal fluctuation in irrigation demand, maximizing use of water supplied from the Salinas Valley Reclamation Project (SVRP) and the Salinas River Diversion Facility (SRDF), thereby reducing the need for groundwater pumping in the CSIP service area, which includes area east and northeast of the MGSA Area (Figure 2-6). This project aligns CSIP irrigation with availability of water rather than demand, to ensure the available supply water can be used to a greater extent. Refer to Chapter 9 of SVBGSA's GSP (SVBGSA 2019) for further details.

The primary benefits from *in lieu* recharge projects such as CSIP optimization include reduction or avoidance of groundwater pumping from wells in the CSIP area throughout the year. This is beneficial to MGSA because of its proximity to the CSIP service area and because pumping reductions in these areas support measurable objectives related to groundwater elevation, groundwater storage and seawater intrusion. A direct correlation between CSIP optimization and changes in groundwater elevations, subsidence, or seawater intrusion is likely not possible to assess because this is only one among several similar management actions and projects that will be implemented in the Subbasin. This project is anticipated to take three years to implement.

6.5.2 Improve SRDF Diversion (SVBGSA GSP Priority Project 3)

The SRDF Diversion improvements include installing a radial collector well to provide additional diversion capacity at the SRDF. The project includes installing additional water storage for the proposed 85 cubic feet per second (cfs) capacity of the SRDF. Refer to Chapter 9 of SVBGSA's GSP (SVBGSA 2019) for further details.

The primary benefits from in lieu recharge or Aquifer Storage and Recovery (ASR) projects such as SRDF expansion include provision of additional water supply to the CSIP system, allowing for its expansion into new service areas as well as providing a potential source of water for aquifer recharge. The expanded SRDF has the potential to yield up to 20,800 AFY if operated April through October. This is beneficial to the MGSA Area because of its proximity to the CSIP service area and because pumping reductions in these areas support measurable objectives related to groundwater elevation, groundwater storage and seawater intrusion. It is anticipated to take five to six years to implement this project.

6.5.3 Modify Monterey One Water Recycled Water Plant (SVRP Modifications) (SVBGSA GSP Priority Project 4)

Monterey One Water (M1W) is currently designing and permitting this project and SVBGSA intends to work closely with M1W on project implementation. M1W's Regional Wastewater Treatment Plant (RTP), located approximately 2 miles east of the MGSA Area, has a maximum capacity of 29.6 million gallons per day (mgd). Currently, the facility is only treating 16 to 18 mgd of influent wastewater. During the wet weather months, 100% of all secondary treated wastewater is discharged to the ocean, forgoing the opportunity for beneficial reuse. During the wet weather months, there is some demand for recycled water in the CSIP system; however, M1W cannot efficiently produce the tertiary treated water needed to meet agricultural demand during this time. As a result, growers turn to the groundwater basin for their irrigation needs during these months. Modifications are required at the M1W RTP in order to efficiently treat and store recycled water during the wet weather months. Refer to Chapter 9 of SVBGSA's GSP (SVBGSA 2019) for further details.

The primary benefits from *in lieu* recharge projects such as M1W SVRP Modifications is additional water supply to the CSIP system during low-demand wet weather months, reducing groundwater pumping. The M1W SVRP Modifications project has the potential to yield up to 1,100 AFY via *in lieu* recharge, providing an alternative to groundwater sources in the CSIP area. This is beneficial to MGSA because of its proximity to the CSIP service area and because pumping reductions in these areas support measurable objectives related to groundwater elevation, groundwater storage and seawater intrusion. This project will benefit other subbasins, such as the Monterey Subbasin by reducing pumping that impacts the neighboring subbasins. It is anticipated to take approximately two years to implement.

6.5.4 Expand Area Served by CSIP (SVBGSA GSP Priority Project 5)

The CSIP expansion project involves enlarging the system's service area, thereby increasing available water supplies in the spring and fall and lessening dependence on existing groundwater wells. It is likely that the existing CSIP supplies are not sufficient to meet the summertime demand of the expanded CSIP area without a significant increase in water supply from the Salinas River Diversion Facility (SRDF) or another source. Refer to Chapter 9 of SVBGSA's GSP (SVBGSA 2019) for further details.

The benefits of this project are similar to SVBGSA Project 1, described above. The expanded service area would lessen groundwater pumping by an amount equal to the quantity delivered: approximated as 9,900 AFY. This is beneficial to MGSA because of its proximity to the CSIP service area and because pumping reductions in these areas support measurable objectives related to groundwater elevation, groundwater storage and seawater intrusion. This project is anticipated to take five years to implement.

6.5.5 Construct Additional Nested Monitoring Wells in the Dune Sand and 180/400-Foot Aquifers Near the MGSA Area (Planned MCWRA Project)

As part of its obligation to implement the Mitigation, Monitoring and Reporting Program (MMRP) for the proposed Monterey Peninsula Water Supply Project (MPWSP), MCWRA plans to install and monitor five additional clusters of monitoring wells in the area surrounding the MGSA Area where spatial groundwater monitoring data gaps have been identified (CPUC 2018, MCWRA 2019d). These new wells would have similar screened intervals to the existing monitoring wells installed at eight locations to monitor the effects of pumping the full slant well array for the proposed MPWSP if it is fully approved and implemented. At each location, three monitoring wells would be constructed: one each in the Dune Sand Aquifer, 180-Foot Aquifer and 400-Foot Aquifer. These wells would be added to the monitoring well network, for a total of 40 wells, and would be monitored quarterly or more frequently by MCWRA. MCWRA has indicated it plans to proceed with this project in the near future.

6.5.6 Regional Deep Aquifer Characterization (Potential Project by MCWRA, SVBGSA and MCWD)

MCWRA, SVBGSA and MCWD GSA are discussing plans to investigate the Deep Aquifer system in the Salinas Valley. Although no specific plans are proposed at this time, there is broad consensus that this important data gap must be addressed during the early stages of GSP implementation to ensure that this important aquifer is sustainably managed. It is anticipated that the investigation results will provide information regarding the nature and hydraulic properties of the Deep Aquifer system. Specifically, the groundwater flow patterns in the Deep Aquifer, the interconnection between the disparate aquifer units in this system, how they are recharged, and the extent of potential leakance from the overlying upper aquifer system is expected to be addressed. No specific scope or schedule has been proposed at this time. MGSA will provide comments on the scope and results of this study, and incorporate the results into a future update of this GSP.

6.5.7 Agricultural Land and Pumping Allowance Retirement (SVBGSA GSP Management Action 1)

SVBGSA water charges revenues would be used to acquire and retire irrigated land and/or pumping allowances (potentially including carryover credits and recharge credits) to reduce pumping. All acquisitions would be completed on a voluntary basis from willing sellers at negotiated market prices. SVBGSA would cease irrigation on acquired land to reduce pumping. SVBGSA would coordinate with other local agencies and stakeholders to determine beneficial uses of the acquired land (e.g. establishment of native vegetation). Landowners selling pumping allowances to SVBGSA separate from land would be permitted to convert their land to rural residential use. The number of *de-minimis* wells authorized on converted land would be based on the amount of pumping allowance sold to SVBGSA. The final ratio of sold pumping allowance to the number of *de-minimis* wells allowed will be agreed to in the final water charges framework.

The benefit from land or pumping allowance retirement will be reduced pumping and either arresting groundwater elevation decline or raising groundwater elevations. Depending on the location of the land retirement, ancillary benefits include reducing seawater intrusion rates. Because it is unknown how many landowners will willingly enter the land retirement program, it is difficult to quantify the expected benefits at this time. The option for land retirement will begin immediately after SVBGSA's water charges framework is finalized and adopted. Although the land retirement program would be ongoing, it will be reliant on willing sellers and will likely be implemented intermittently.

6.5.8 Reservoir Reoperation (SVBGSA Management Action 2)

Reservoir reoperation entails a revised management scheme for the reservoirs that control the Salinas River flows. The purpose of this management action is to operate the reservoirs to achieve two goals:

- Allow surface flow releases to recharge groundwater in the various Salinas Valley Subbasins every winter; and
- Allow both natural and surplus flows to better reach the SRDF diversion.

The reservoir reoperations would more tightly integrate environmental flows with sustainable groundwater management activities to improve water availability for agricultural users and other groundwater users. The major beneficiaries of this management action would be the Upper Valley and Forebay Subbasins, as they receive most of the river percolation. There is limited benefit for the 180/400 Foot Aquifer Subbasin, primarily to allow enough water to flow to the SRDF for CSIP operations; for this reason, it would potentially benefit the MGSA Area.

Reservoir operations are managed by MCWRA, and would not be directly modified by SVBGSA. Over the next few years, MCWRA plans to prepare a Habitat Conservation Plan (HCP) that re-establishes the reservoir operating rules for the Salinas Valley. The HCP offers an opportunity for reservoirs to be explicitly operated for improved groundwater management as well as environmental flows and flood control. SVBGSA will participate in developing the HCP to implement the reservoir operations in a way that promotes this strategy.

The primary benefit from reservoir reoperation is increased flows in the Salinas River in the winter, to allow for additional groundwater recharge in the subbasins and more flexible use of the groundwater in storage. A second benefit is the availability of water at the SRDF diversion to allow for greater surface water use in the CSIP area, and potentially allow for CSIP area expansion (see SVBGSA Priority Project 5). The reservoir reoperation management action schedule will be contingent upon the development and finalization of the HCP and other reservoir operations criteria. The implementation schedule will start as soon as new reservoir operations criteria are developed in collaboration with MCWRA.

6.5.9 Restrict Pumping in CSIP Area (SVBGSA Management Action 3)

A number of the priority projects adopted by SVBGSA are designed to ensure a reliable, year-round supply of water to growers in the CSIP area. These projects will remove any need for groundwater pumping in the CSIP area. To promote use of CSIP water, SVBGSA may pass an ordinance preventing any pumping for irrigating agricultural lands served by CSIP. The benefit from the CSIP pumping restrictions is reduced Subbasin pumping and either arresting groundwater elevation decline or raising groundwater elevations. An ancillary benefit from shallower groundwater elevations may include reducing seawater intrusion. CSIP pumping restrictions would be implemented within one year of substantially completing the CSIP optimization projects.

6.5.10 Support and Strengthen MCWRA Restrictions on Additional Wells in the Deep Aquifer (SVBGSA Management Action 4)

MCWRA Ordinance No. 5302 restricts drilling new wells in the Deep Aquifer in an Area of Impact that is generally northwest of Davis Road. Exceptions are made for replacement wells, domestic wells, and municipal supply wells. This is a temporary urgency ordinance pending development of permanent regulations and is intended to decrease the potential for seawater intrusion into the Deep Aquifer until sufficient information can be obtained to assess its sustainable yield. SVBGSA plans to work with MCWRA to strengthen the ordinance to prevent any new wells from being drilled into the Deep Aquifer until more is known about the Deep Aquifer's sustainable yield. MGSA will support this management action because it will promote groundwater sustainability as defined in this GSP. The Deep Aquifer pumping restrictions will be implemented within one year of MCWRA completing its Deep Aquifer study (described in Section 6.5.6).

FIGURE 6-1. MANAGEMENT ACTION 1 WORKFLOW

FIGURE 6-2. MANAGEMENT ACTION 2 WORKFLOW