Attachment L

This page intentionally left blank.

ATTACHMENT L

355 South Grand Avenue, Suite 100
Los Angeles, California 90071-1560
Tel: +1.213.485.1234 Fax: +1.213.891.8763
www.lw.com

LATHAM & WATKINS LLP

FIRM / AFFILIATE OFFICES
Beijing, Boston, Brussels, Century City, Chicago, Dubai, Düsseldorf, Frankfurt, Hamburg, Hong Kong, Houston, London, Los Angeles, Madrid, Milan, Moscow, Munich, New York, Orange County, Paris, Riyadh, San Diego, San Francisco, Seoul, Shanghai, Silicon Valley, Singapore, Tokyo, Washington, D.C.

June 14, 2019

VIA EMAIL AND FEDEX

Chair John M. Phillips and Honorable Members of the Board of Supervisors
County of Monterey Board of Supervisors
P.O. Box 1728
Salinas, CA 93902

Re: *Monterey Peninsula Water Supply Project*: Responses to (1) Appeals of the Planning Commission's Approval of the Project's Desalination Plant (PLN150889) and Carmel Valley Pump Station (PLN150653) and (2) Comment Letters Submitted to the Planning Commission

Dear Chair Phillips and Honorable Supervisors:

On behalf of California-American Water Company ("Cal-Am"), we write to correct the record concerning several comments submitted to the County involving Cal-Am's application for development and use permits for the Desalination Plant and Carmel Valley Pump Station components of the Monterey Peninsula Water Supply Project ("MPWSP" or "Project") within the County. Specifically, this submittal provides Cal-Am's responses to the appeals submitted to the County Board of Supervisors by Marina Coast Water District ("MCWD") and Public Water Now ("PWN") (collectively, the "appellants"), as well as responses to comments submitted to the County Planning Commission by MCWD, the City of Marina, and California Unions for Reliable Energy ("CURE") (collectively, the "commenters"). Attachment A to this letter provides detailed responses to those appeals and comments.

The Project will provide substantial benefits to the County, providing replacement water supplies to approximately 150,000 residents or 33% of the County's population. Ensuring long-term water supply for the Monterey Peninsula will boost the region's economic vitality by substantially enhancing the reliability of water resources and water infrastructure. The Project will allow residential, commercial (including tourism) and industrial activities to continue to exist and flourish within the County, benefitting those who live and work throughout the area.

As detailed in Attachment A, none of the arguments raised in the appeals or comment letters has merit or precludes the County from approving permits for the Project's Desalination Plant and the Pump Station.

- The Planning Commission's findings are supported by substantial evidence, and the County—a responsible agency for this Project under the California Environmental

Quality Act ("CEQA")—properly has relied on the Environmental Impact Report/Environmental Impact Statement ("EIR/EIS") prepared and certified by the California Public Utilities Commission ("CPUC"). Further, the Planning Commission's findings and determinations are entitled to substantial deference.

- No significant new information since the CPUC certified the EIR/EIS requires the County to conduct additional environmental review and prepare a supplemental or subsequent EIR. The CPUC's decision thoroughly addressed the purportedly "new" information regarding groundwater, alternatives, and Project consistency with applicable land use plans.

- The Project will not result in or exacerbate existing seawater intrusion in the Salinas Valley Groundwater Basin. To the contrary, the Project will help impede further seawater intrusion.

- The Project complies with applicable water laws, including provisions set forth in the California Constitution, as well as the Sustainable Groundwater Management Act and the Water Quality Control Plan for the Central Coast Basin.

- Both the CPUC and State Water Resources Control Board have determined that Cal-Am may acquire water rights to salvaged groundwater, and the CPUC's decision supports that determination.

- The Planning Commission did not improperly piecemeal the Project because the CPUC already analyzed the entire MPWSP. The Planning Commission appropriately limited its review to the Desalination Plant and Pump Station and associated infrastructure, which are the Project components within the County's jurisdiction.

- The Project does not violate the County's moratorium on new groundwater wells, the Desalination Ordinance, or the Water Resources Agency Act. Further, the North Monterey County Local Coastal Plan does not apply to the Desalination Plant or Pump Station because those Project components are not in the Coastal Zone.

- The Project is consistent with the County's General Plan policies regarding agricultural activities and farmland, and the Planning Commission correctly determined that the Project will not impact agricultural activities.

- The Project complies with the County's building site coverage requirements and satisfies the County Code's standards for use permits.

- The Final EIR/EIS thoroughly evaluated the Project's potential noise, air quality, and growth-inducing impacts, and the Planning Commission properly relied on the EIR/EIS's analysis in making its determinations.

- The Pump Station and Desalination Plant are consistent with the County's standards for environmentally sensitive habits because neither Project component will be

LATHAM&WATKINS LLP

developed in environmentally sensitive habitats, based on the County's sensitive habitat maps and analysis in the EIR/EIS. Although biological surveys were not required under the County Code, the surveys Cal-Am submitted satisfied the County's requirements because the surveys covered the entirety of each site and were reviewed and accepted by the Planning Department. In addition, the mitigation measures identified in the EIR/EIS are sufficient to protect any potential environmentally sensitive habitats in the area.

We look forward to the Board of Supervisors' consideration of these critically important Project components, and respectfully request that the Board of Supervisors deny the appeals and approve the Combined Development Permit and Use Permit for the Desalination Plant and Pump Station, respectively.

Very truly yours,

Winston P. Stromberg
of LATHAM & WATKINS LLP

cc: Cheryl Ku, County of Monterey
Brandon Swanson, County of Monterey
Ian Crooks, California-American Water Company
Kathryn Horning, California-American Water Company
Denise Duffy, Denise Duffy & Associates, Inc.
John Chamberlain, AECOM
Anthony Lombardo, Anthony Lombardo & Associates, Inc.
DJ Moore, Latham & Watkins LLP
Jennifer Roy, Latham & Watkins LLP

<u>ATTACHMENT A</u>

This Attachment A responds to three appeals submitted to the Board of Supervisors: MCWD's appeals of Planning Commission Resolutions PLN150653 and PLN150889 ("MCWD Pump Station Appeal" and "MCWD Desal Plant Appeal," respectively), and PWN's appeal of Planning Commission Resolution PLN150889 ("PWN Appeal"). The Attachment also responds to comments submitted to the Planning Commission at or before its April 24, 2019, hearing by MCWD ("MCWD April 23, 2019 Letter"), the City of Marina ("Marina April 23, 2019 Letter'), and California Unions for Reliable Energy ("CURE April 23, 2019 Letter").

A. The Pending Litigation Regarding the Sufficiency of the EIR/EIS Does Not Impact the County's CEQA Obligations

- In its comments to the Planning Commission, Marina suggests that litigation filed in the California Supreme Court challenging the adequacy of the CPUC's EIR/EIS affects the County's obligations as a responsible agency under CEQA. (Marina April 23, 2019 Letter, pp. 1-2.) Marina is wrong. CEQA is unambiguous that when litigation is filed against an EIR, the responsible agency "*shall assume* that the EIR *does comply* with [CEQA]." (Pub. Resources Code, § 21167.3, subd. (b) [emphasis added]; see also CEQA Guidelines, § 15233; *City of Redding v. Shasta County LAFCO* (1989) 209 Cal.App.3d 1169, 1178.)

- The California Supreme Court has not ruled on Marina's and MCWD's petitions for writs of review challenging the EIR/EIS. As such, Marina's complaints regarding the sufficiency of the EIR/EIS are mere allegations, and each of them are contradicted by substantial evidence in the CPUC's record. The County must assume that the EIR/EIS is valid and utilize the EIR/EIS in conducting its analysis as a responsible agency under CEQA, which is exactly what the County did here when the Planning Commission approved the Desalination Plant and Pump Station.

B. Supplemental Environmental Review Is Not Warranted

- The appellants contend that supplemental environmental review is required before the County can approve the Desalination Plant and Pump Station. (PWN Appeal, pp. 1-3; MCWD Pump Station Appeal, pp. 1-6; MCWD Desal Plant Appeal, pp. 1-6.) Once an EIR is certified by the lead agency, CEQA ***prohibits*** the preparation of a supplemental or subsequent EIR except in very limited circumstances. (Pub. Resources Code, § 21166; see also CEQA Guidelines, §§ 15162, subd. (a), 15163.)

    - Public Resources Code section 21166 unambiguously states that "[w]hen an environmental impact report has been prepared for a project pursuant to this division, ***no subsequent or supplemental environmental impact report shall be required by the lead agency or by any responsible agency***." (Pub. Resources Code, § 21166 [emphasis added].) California courts have repeatedly held that upon certification of an EIR, there is a presumption against conducting further environmental review. "After an initial EIR is certified, CEQA establishes a presumption against additional environmental review." (*San Diego Navy Broadway Complex v. City of San Diego* (2010) 185 Cal.App.4th 924, 928.) In such circumstances, "[t]he low threshold for requiring the preparation of an EIR in the first instance is no longer applicable; instead, agencies are prohibited from requiring further environmental review unless the stated conditions are met." (*Id*. at 935.) "After certification, the interests of finality are favored over the policy of encouraging public comment." (*Laurel Heights Improvement Assn. v. Regents of University of California* (1993) 6 Cal.4th 112, 1130.) At this time, "the statutory presumption flips in favor of the developer and against further review." (*Moss v. County of Humboldt* (2008) 162 Cal.App.4th 1041, 1049, 1050.)

- "To require preparation of a subsequent or supplemental EIR, the change in the project or the circumstances surrounding it must not only be substantial, it ***must require major revisions of the EIR***." (*Fund for Envtl. Def. v. County of Orange* (1988) 204 Cal.App.3d 1538, 1552 [emphasis added]; see also *Ogden Environmental Services v. City of San Diego* (S.D. Cal. 1988) 687 F.Supp. 1436, 1451-1452.)

- The limited exceptions for additional environmental review are: (1) substantial changes are proposed in the project that will require major revisions of the previous EIR due to new significant environmental impacts or substantial increase in the severity of previously identified significant impacts; (2) substantial changes regarding project circumstances that will require major revisions of the previous EIR due to new significant environmental impacts or substantial increase in the severity of previously identified significant impacts; or (3) new information of substantial importance that was not known or could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified. (CEQA Guidelines, § 15162, subd. (a).)

  - The appellants argue that the last exception supports their claims that additional environmental review is required. However, "new information does not require a new EIR unless it shows [significant] effects that were not addressed in the previous EIR or effects that would be 'substantially more severe' than those addressed, or shows that the agency refuses to adopt certain new or feasible mitigation measures or alternatives." (*Committee for Re-Evaluation of the T-Line Loop v. San Francisco Mun. Transp. Agency* (2016) 6 Cal.App.5th 1237, 1255-1256.)

- As discussed below, the appellants fail to present significant new information that requires additional environmental review. No subsequent or supplemental EIR is required, and there is no evidence to support such a decision.

1. <u>No Significant New Information Regarding the Project's Groundwater Impacts Requires Further Environmental Review</u>

- The appellants claim that significant new information regarding the Project's potential groundwater impacts—particularly, groundwater gradients and Sustainable Groundwater Management Act ("SGMA") implementation efforts—warrants further environmental review. (MCWD Pump Station Appeal, pp. 4-5; MCWD Desal Plant Appeal, pp. 4-5; PWN Appeal, pp. 1-3.) Appellants' "information" is neither new nor significant.

- Relying on an October 2018 groundwater monitoring report, MCWD argues that the EIR/EIS "dismissed the potential for groundwater impacts to occur based on inaccurate assumptions regarding groundwater gradients in the Dune Sand and 180-Foot Aquifers." (MCWD Pump Station Appeal, pp. 4-5; MCWD Desal Plant Appeal, pp. 4-5.) Although the October 2018 report post-dates the CPUC's Final EIR/EIS certification, MCWD made the very same arguments regarding groundwater gradients[1] (i.e., that groundwater in the Dune Sand and 180-Foot Aquifers flowed toward the ocean) during the CPUC process. (See, e.g., FEIR/EIS, pp. 8.5-255, 8.5-288, 8.5-391.) As a result of MCWD's and others' comments regarding groundwater gradients, the Final EIR/EIS included a Master Response devoted to this issue confirming that, based on extensive monitoring well data in the area, "groundwater in both the Dune Sand Aquifer and 180/180-FTE Aquifer flows inland beneath the project area." (FEIR/EIS, p. 8.2-44.)

- The CPUC also addressed MCWD's comments concerning groundwater gradients in Appendix J to its Decision.[2] The CPUC explained that the "analyses presented in [MCWD's] comments misrepresent the [existing] conditions because they disregard or understate the presence and influence of the ocean, a substantial recharge boundary, and overestimate the extent that groundwater would be captures from inland sources." (Decision ("D.") 18-09-017, Appx. J, p. 16.) "[T]he comments overstate the conditions under which the gradient would reverse and begin to flow seaward." (*Id*., p. 17.)

- In addition, MCWD's and its consultants' arguments have been thoroughly debunked by the Hydrogeologic Working Group ("HWG"), a team of hydrogeologists and groundwater modeling experts representing the diverse interests of ratepayers, environmental groups, business groups, local governments and government agencies, and key stakeholders on the Monterey Peninsula. (See FEIR/EIS, pp. 8.2-24 to 8.2-27; see also HWG Comments on Technical Appendices/Attachments to Letters Submitted by MCWD and City of Marina to the CPUC and MBNMS on April 19, 2018 (Aug. 15, 2018), pp. 4, 11, 21, 28-30, attached hereto as Exhibit B.) As the HWG has explained, to make its argument MCWD has cherry picked data that ignores half of the period of record for the test slant well pumping period. (See HWG Technical Response (Jan. 25, 2019), pp. 2, 5, attached hereto as Exhibit C.)

    - The higher groundwater levels in 2018 to which MCWD points were the result of an unusually wet 2016-2017 water year. (*Id*., pp. 2-3, 5.) An examination of the entire test well monitoring network from 2015 through 2018 shows that there is "no clear seaward gradient." (*Id*., p. 2.)

    - Moreover, the fall 2018 conditions "generally reflect a continuation of levels/concentrations observed during 2017." (*Id*., p. 11; see also HWG Technical Response (Apr. 12, 2019), pp. 1-2, attached hereto as Exhibit D ["Groundwater level data collected in the [MPWSP] wells in 2019 are not new and different compared to

---

[1] A groundwater gradient represents the direction and slope of groundwater flow. (FEIR/EIS, p. 4.4-52.)

[2] Appendix J to D.18-09-017, attached hereto as Exhibit A, is a 51-page memorandum, dated September 12, 2018, from the CPUC's EIR/EIS preparation team to the Commissioners of the CPUC and Administrative Law Judges responding to comments received after the publication of the Final EIR/EIS.

previous groundwater level data"].)[3] Accordingly, the October 2018 data does not change what the CPUC considered or what it concluded.

        - As a result, the information MCWD proffers regarding groundwater gradients in the Project area is not new. It was submitted to, and considered by, the CPUC, and does not affect the Final EIR/EIS's conclusions that the Project will have a less-than-significant impact on groundwater resources. The trigger for further environmental review is not simply whether information has become available since certification of the EIR/EIS. The information must be significant new information that requires "major revisions" to the EIR/EIS or that shows significant effects were not addressed or would be more substantially more severe than those addressed in the EIR/EIS. (Pub. Resources Code, § 21166; see also CEQA Guidelines, §§ 15162, subd. (a), 15163.) Moreover, the new information must not have been known or could not have been known with the exercise of reasonable diligence at the time of the EIR/EIS' certification. (CEQA Guidelines, § 15162, subd. (a)(3).) MCWD's purported "new" information cannot satisfy these requirements.

    - Further, there may be localized and seasonal variations in hydraulic gradients, but these fluctuations do not change the EIR/EIS's conclusions that groundwater in the Project vicinity is subject to existing and continued seawater intrusion. (HWG Technical Response (Jan. 25, 2019), pp. 2, 3.) These variations do not change the fact that ample information shows historical and current seawater intrusion in the Dune Sand Aquifer and a landward gradient.

- In addition, MCWD contends that information from "Dr. Rosemary Knight of Stanford University . . . show[s] that the MPWSP will have new or substantially more severe significant groundwater effects compared to what was disclosed and analyzed in the CPUC's Final EIR." (MCWD April 23, 2019 Letter, p. 6.) MCWD made—and the CPUC rejected—this very same argument during the CPUC's administrative process.

    - Both the HWG and the CPUC—in the Final EIR/EIS and Appendix J—responded to MCWD's comments concerning Dr. Knight's preliminary and final airborne electromagnetic ("AEM") studies, and the CPUC appropriately determined that the AEM studies do not change the conclusions contained in or require any revisions to the Final EIR/EIS. (See D.18-09-017, Appx. J, pp. 15, 19-21; HWG Technical Response (Aug. 15, 2018), pp. 2-4.)

        - The Final EIR/EIS described and analyzed in detail the preliminary AEM study, including a comprehensive ten-page Master Response addressing the AEM technology, its substantial limitations compared to the actual groundwater monitoring well data on which the Final EIR/EIS relies, and the reasons why the preliminary AEM study's results did not change the Final EIR/EIS's conclusions regarding the Project's potential impacts on groundwater resources. (FEIR/EIS, pp. 8.2-53 to 8.2-

[3] This letter attaches three HWG reports as exhibits that respond to erroneous claims regarding groundwater impacts made by MCWD and its paid consultants. The reports, dated August 15, 2018, January 25, 2019, and April 12, 2019, are attached as Exhibits B through D.

62 [Master Response 9: Electrical Resistivity Tomography (ERT) and Airborne Electromagnetics (AEM)].) Further, nothing in the preliminary AEM study changed the fact that the Project will only draw source water from the identified capture zone, and that any groundwater in that zone is already heavily intruded by seawater. (FEIR/EIS, pp. 8.2-60 to 8.2-61.) California Secondary Maximum Contaminant Level for drinking water for Total Dissolved Solids (TDS) is 500 mg/L (22 Cal. Code Regs., § 64449), and the source water from the capture zone ranges from 23,000 mg/L to over 30,000 mg/L TDS—***46 to 60 times greater than the standard for drinking water***. (See FEIR/EIS, pp. 4.4-69, 4.4-90.)

  - The final AEM study, which was submitted to the CPUC after publication of the Final EIR/EIS, merely re-packaged data that was initially presented in the preliminary AEM study and analyzed extensively in the Final EIR/EIS. (D.18-09-017, Appx. J, p. 15.) Nonetheless, the HWG and CPUC reviewed and evaluated the final AEM study. The HWG submitted an objective, 56-page assessment of the final AEM study (see HWG Technical Response (Aug. 15, 2018)), and the CPUC's experts evaluated the final AEM study and HWG's August 2018 report in Appendix J to D.18-09-017. In Appendix J, the CPUC explained that the final AEM study did not change the Final EIR/EIS's conclusion that the Project would result in less-than-significant impacts to groundwater resources, as mitigated. (See D.18-09-017, Appx. J, p. 20 [the final AEM study "remains inconsequential to the analysis of groundwater impacts for the MPWSP because . . . the capture zone of the MPWSP slant wells would be located along the coast and would draw most of the source water from the ocean and not from inland groundwater sources."].)

- o The AEM studies simply do not change the facts that the Project: (1) will not capture fresh water that could be beneficially used without treatment; and (2) will result in less-than-significant impacts to groundwater resources as mitigated. (See D.18-09-017, Appx. C, pp. C-15 to C-17.)

- MCWD also argues that the Salinas Valley Basin Groundwater Sustainability Agency's ("SVBGSA") SGMA implementation efforts demonstrate that seaward groundwater gradients can be achieved during the Project's lifetime. (MCWD Pump Station Appeal, p. 5; MCWD Desal Plant Appeal, p. 5.) Contrary to MCWD's contention, the CPUC considered and responded to comments concerning SGMA implementation efforts. (See FEIR/EIS, p. 8.5-635.) The CPUC confirmed that it would "require decades of groundwater management to flatten the groundwater gradient, much less reverse it, and expectations that groundwater projects would be successful in affecting the inland gradient within the life of the MPWSP would be overly optimistic." (D.18-09-017, Appx. J, p. 18.) In addition, there are no reasonably foreseeable cumulative projects proposed under SGMA to reduce or reverse the current landward gradients at this time. (*Ibid*.)

  - o The fact that the SVBGSA will take a "basin-wide approach" to comply with SGMA is not new information. It has been an integral requirement of SGMA that the CPUC recognized in its environmental review of the Project. (See FEIR/EIS at 4.4-42, 8.2-31.)

- Moreover, compliance with SGMA does not require reversal of seawater intrusion. (Water Code, § 10727.2, subd. (b)(4).) As the HWG explained in a recent response to identical comments MCWD made to the City of Marina, "SGMA does not require gradients to be reversed, or the currently sea water intruded area to be restored (relative to January 2015 conditions)." (HWG Technical Response (Apr. 12, 2019), p. 13.)

- Further, the SVBGSA has only released draft chapters of various groundwater sustainability plans for public comment. The draft chapters on which MCWD relies minimally discuss seawater intrusion, and there is no discussion of SVBGSA's plans to implement SGMA in a way that would reverse the current landward groundwater gradients along the coast that have resulted from decades of groundwater pumping. (See FEIR/EIS, p. 4.4-16.) Although SVBGSA intends to complete additional chapters that will address groundwater sustainability programs and implementation, it is pure speculation to assume that these chapters will include actions to reverse existing seawater intrusion or the existing landward gradient.

2. <u>No Significant New Information Regarding Project Alternatives Requires the County to Conduct Further Environmental Review</u>

- MCWD contends that new information, such as Monterey One Water's ("M1W") response to an Advice Letter submitted by Cal-Am to the CPUC in March 2019, demonstrates that the Pure Water Monterey ("PWM") expansion is a viable Project alternative. (MCWD Pump Station Appeal, pp. 2-3; MCWD Desal Plant Appeal, pp. 2-3; MCWD April 23, 2019 Letter, p. 4.) The viability of the PWM expansion was raised and addressed at length during the CPUC proceedings and, thus, is not significant new information under CEQA. The Final EIR/EIS explains that "there is currently no formal proposal" to expand the Pure Water Monterey project. (See FEIR/EIS, p. 8.7-269.)

    - Further, the CPUC's findings make clear that while a PWM expansion would satisfy certain basic purposes of the Project (i.e., sufficient and reliable water supply), it would only do so in conjunction with construction ***of a desalination plant of some size*** within five to fifteen years. (See D.18-09-017, Appx. C, p. C-71.)

    - Even M1W itself has repeatedly called a PWM expansion a "back-up plan" in case the Project cannot be built, including in its Notice of Preparation for a Supplemental EIR for a PWM expansion and in other documents that post-date the Advice Letter upon which MCWD relies. (See <u>Exhibit E</u> [compilation of M1W Notice of Preparation of a Supplemental EIR and Public Scoping Meeting Notice (May 15, 2019); M1W Recycled Water Committee Agenda (Apr. 18, 2019); M1W Recycled Water Committee Minutes from April 18, 2019 Meeting, Items 10-13; M1W Board of Directors Consent Agenda (Apr. 29, 2019); M1W Board of Directors Minutes from April 29, 2019 Meeting].) ***As evidenced by its own documents, M1W does not intend for a PWM expansion to be a replacement for the Project***.

    - The CPUC also expressly determined that even under a maximum expansion scenario, PWM would be insufficient to satisfy the Peninsula's water demand. (See D.18-09-017, p. 40; see also *id*., Appx. C, pp. C-70 to C-71.) There is insufficient certainty concerning short- and long-term availability of source water supplies for a PWM expansion. (*Id*., p. C-71.) Much of the source water for a PWM expansion is projected to be storm water, and PWM expansion progress report source water numbers assume a normal or wet year. (*Ibid*.) While there would be a drought reserve, there is both uncertainty and variability as to the availability of water to support a PWM expansion. (*Ibid*.) Therefore, given the substantial evidence in the record that a PWM expansion is not a feasible alternative to the Project, the CPUC appropriately declined to analyze that alternative further and approved the Project.

- o In addition, as the Planning Commission correctly determined, a PWM expansion "would require the project owner to apply for expansion, complete environmental review, and obtain necessary permits, all of which is not within the County's purview." (Desalination Plant Resolution, p. 24.) In other words, a PWM expansion is outside the scope of the County's limited review of the Desalination Plant and Pump Station as a responsible agency. (See CEQA Guidelines, § 15096, subd. (g)(1).) Accordingly, the County need not consider it when considering permits for the Desalination Plant and Pump Station.

- o Similarly, PWN argues that Planning Commission staff mischaracterized the status of a PWM expansion. (PWN Appeal, p. 13.) PWN claims that M1W's and Monterey Peninsula Water Management District's commitment of funds toward an EIR for a PWM expansion should have been disclosed as part of the Planning Commission's evaluation of the Project. (*Ibid*.) Any commitment of funds toward environmental review does not change the facts that a PWM expansion is a back-up plan that is speculative at this time, would not achieve regional water demand identified by the CPUC, and would not satisfy Project objectives. Further, there is no indication that construction costs for a PWM expansion have been secured, and the CPUC has not analyzed the rates that would need to be charged to Cal-Am customers if water were secured from a PWM expansion.

- MCWD contends that the Planning Commission improperly found that a 4.8 million gallon per day ("mgd") desalination plant is not a feasible alternative to the Project. (MCWD Pump Station Appeal, p. 3; MCWD Desal Plant Appeal, p. 3; MCWD April 23, 2019 Letter, p. 5.)

  - o The CPUC analyzed and rejected a 4.8 mgd desalination plant alternative because it would not satisfy Project objectives. (D.18-09-017, pp. 69-70, 128-129; *id*., Appx. C, pp. C-72 to C-73; *id*., Appx. J, pp. 30-31.) As each desalination unit is 1.6 mgd in size, reducing the Project by one unit would result in a 4.8 mgd capacity. (D.18-09-017, p. 128.) Even when considered in conjunction with water expected to be supplied by the PWM project currently under construction, a 4.8 mgd desalination alternative would not provide water supply sufficient to meet demand consistent with the Project objectives. (*Id*., pp. 69-70, 128-129.)

  - o MCWD also argues that a smaller capacity plant is feasible because Cal-Am's most recent water demand numbers do not show large demand increases over time. (MCWD Pump Station Appeal, p. 3; MCWD Desal Plant Appeal, p. 3.) This ignores that the CPUC heard considerable testimony on water demand as part of its review of the Project and determined that the estimate of future water demand in the Final EIR/EIS is appropriate and adequate based on substantial evidence in the record. (See FEIR/EIS, pp.

2-11 to 2-13[4]; D.18-09-017, pp. 19-70.) Moreover, Cal-Am's recent demand figures are the result of some of the most extreme water conservation measures in the State, which do not represent actual water demand. (See FEIR/EIS, p. 8.2-102.)

    - As the CPUC recognized in its Decision, "[a]fter considering all of the testimony in the record, the Commission is persuaded by Cal-Am that these projections of future demand are reasonable based on growth of population, development, and tourism." (D.18-09-017, p. 50.) "In planning for the future, Cal-Am has shown that the growth it is projecting is reasonable under the California Waterworks standards, and we are persuaded that it represents the best projection of demand from future customers outside Pebble Beach." (*Id*., p. 51.) The estimate of future water demand also properly accounts for entitlements held by the Pebble Beach Company and two other fiscal sponsors for underwriting the development of a wastewater reclamation project (*id*., p. 2-12), hospitality industry rebound (FEIR/EIS, pp. 2-13 to 2-14), and the development of legal lots of record (*id*., pp. 2-14 to 2-15).

  - In addition, a smaller capacity plant would not avoid or substantially lessen any significant impacts of the Desalination Plant. For instance, a smaller alternative still would be constructed on the same site as the Desalination Plant and construction methods and Project operation would generally remain the same. Therefore, although operation of a 4.8 mgd desalination plant would require less energy and generate fewer greenhouse gas emissions, the change would not substantially reduce any impacts or change the classification of the impacts in the EIR/EIS. (See FEIR/EIS, p. 8.5-663.)

    - The CPUC's Decision also explains that a further reduced capacity alternative would: (1) result in "little to no cost differential"; (2) fail to provide sufficient water to "close the 4,956 afy gap between existing supply and project demand"; (3) fail to provide a buffer for contingencies; and (4) "would not avoid or substantially lessen any significant impacts of the project." (D.18-09-017, pp. 69-70.) Accordingly, substantial evidence in the record supports a rejection of a reduced capacity alternative.

- MCWD also alleges that significant new information demonstrates that a groundwater storage alternative in the Seaside Groundwater Basin may be feasible in conjunction with a PWM expansion. (MCWD Pump Station Appeal, pp. 3-4; MCWD Desal Plant Appeal, p. 4.) As discussed above, any expansion of the PWM at this point is speculative and would not meet Project objectives.

  - Further, the potential for groundwater storage in the Seaside Groundwater Basin is not new, as groundwater levels in the Seaside Groundwater Basin have been steadily declining for decades. (See Seaside Groundwater Basin, 2018 Basin Management Action Plan Presentation (Dec. 12, 2018) ("2018 Seaside Basin Plan Presentation"), attached as Exhibit F.)

---

[4] The Final EIR/EIS devotes an entire chapter to water demand, supplies, and water rights. (See FEIR/EIS, Chapter 2.)

- In addition, the 2018 Seaside Basin Plan Presentation highlights the loss of groundwater in storage over the last thirty years to emphasize why groundwater management is critical. (See *id*., pp. 3, 8, 11.) The presentation does not advocate for the banking of groundwater as an alternative water supply to the Project, as MCWD suggests. In fact, the 2018 Seaside Basin Plan Presentation specifically identifies the MPWSP as a supplemental water supply option to help with groundwater management in the basin and to protect against further decline of groundwater levels. (See *id*., p. 13.)

- Therefore, MCWD misconstrues the 2018 Seaside Basin Plan Presentation, which does not support MCWD's contention that significant new information demonstrates the feasibility of a groundwater storage alternative in the Seaside Groundwater Basin. Rather, the 2018 Seaside Basin Plan Presentation reinforces the importance of alternative water supply projects, including the MPWSP, to protecting the Basin.

3. <u>Marina's Denial of Cal-Am's CDP Application Does Not Constitute Significant New Information Requiring Slant Well Re-Design or Further Environmental Review</u>

- MCWD argues that Marina's denial of Cal-Am's CDP application for the components of the Project within Marina's Coastal Zone constitutes significant new information that requires Cal-Am to redesign the Project and requires the County to conduct further environmental review of such redesign. (MCWD Pump Station Appeal, p. 5 fn. 1; MCWD Desal Plant Appeal, p. 5 fn. 1.)
  - MCWD's argument ignores that Marina's denial was properly appealed to the California Coastal Commission by two Coastal Commissioners, Cal-Am, and two aggrieved parties. Although Marina and MCWD maintain that Marina's denial is not appealable, the Coastal Commission has repeatedly indicated to Marina that *any* decision on a CDP for a major public works project is appealable to the Coastal Commission. (See Letter from Coastal Commission to City of Marina (Mar. 14, 2019), attached hereto as <u>Exhibit G</u>; see also Email from Coastal Commission to City of Marina (May 14, 2019), attached hereto as <u>Exhibit H</u>; Letter from Coastal Commission to City of Marina, Re: Commission Appeal No. A-3-MRA-19-0034 (May 30, 2019), attached hereto as <u>Exhibit I</u>.) Marina's determination that its denial is not appealable to the Coastal Commission contradicts the Coastal Act and has been rejected by the Coastal Commission.
  - Because the Coastal Commission may overturn Marina's denial of the CDP application for the Project components within Marina's Coastal Zone, MCWD's assertion that Cal-Am must redesign the Project and submit the revised Project for additional environmental review is incorrect and premature.

4. <u>No Significant New Information Regarding the Project's Consistency with the County's General Plan and LCP Requires the County to Conduct Further Environmental Review</u>

- PWN asserts that the County must prepare a supplemental EIR to address certain requirements set forth in the County's General Plan and the North Monterey County Local

Coastal Plan ("LCP") relating to water supplies and agricultural resources. (PWN Appeal, pp. 14, 20-21, 23-24.)

- As a preliminary matter, the General Plan and LCP do not constitute significant new information because these documents were available at the time the CPUC prepared and certified the EIR/EIS. (Pub. Resources Code, § 21166; CEQA Guidelines, § 15233.)

- Further, the EIR/EIS fully analyzed the Project's consistency with applicable land use plans, including the General Plan and LCP.[5] (See FEIR/EIS, pp. 4.8-23 to 4.8-27.) For instance, the EIR/EIS fully analyzed the Project's potential impacts to agriculture, including consistency with the General Plan's agriculture policies. (*Id*., pp. 4.16-11, 4.16-17, 4.16-19 to 4.16-20.) A supplemental EIR to reevaluate land use plan consistency is unnecessary and would violate the requirements for additional environmental review set forth in CEQA Guidelines, section 15162, subdivision (a)(3).

C. The Project Will Not Result in Seawater Intrusion

- PWN wrongly asserts that Cal-Am intends to "illegally exploit" the SVGB aquifers. (PWN Appeal, p. 7.) To the contrary, the Project's capture zone is located in a coastal area of the SVGB that is already intruded with seawater that is not usable for human consumption or irrigation without treatment. (FEIR/EIS, pp. 4.4-69 to 4.4-70, 8.2-48.) As a result, the Project will withdraw primarily seawater from the SVGB (approximately 96%). (*Id*., p. 4.4-56.)

  - Further, "[t]he MPWSP would not deplete groundwater supply from the SVGB or result in a substantial net deficit in aquifer volume of the . . . 180-FTE Aquifer because the slant well capture zone would be supplied by an unlimited source of recharge from the Monterey Bay." (*Id*., p. 4.4-70.) PWM's claims have no merit.

- PWN further claims that the County has not received input from MCWRA regarding the Project's potential groundwater impacts. (PWN Appeal, p. 7.) PWN ignores that MCWRA testified at the Planning Commission's April 24, 2019, hearing. (See Transcript of County Planning Commission Hearing (Apr. 24, 2019), pp. 130-132, excerpts of which are attached hereto as <u>Exhibit J</u>.) At the hearing, MCWRA's hydrogeologist explained that the SVGB is seawater intruded and the water within the Project's capture zone "is saline." (*Id*., p. 131.) "[I]t is, by no means, freshwater." (*Ibid*.)

- PWN also contends that the Project will exacerbate seawater intrusion in the 180-Foot Aquifer, where seawater intrusion is most severe, by withdrawing groundwater from the Aquifer and "polluting the [Aquifer] with salt." (PWN Appeal, pp. 7, 8, 10, 12.)

  - PWM is wrong. The Project is expected to ***impede*** further seawater intrusion of the SVGB. (See FEIR/EIS, pp. 4.4-42 to 4.4-43, 4.4-69 to 4.4-70, 4.4-92, 4.4-101, 4.4-105, 8.2-49.) The Final EIR/EIS concluded that "the MPWSP would not exacerbate seawater

---

[5] As discussed below in Section G.3 *infra*, the LCP does not apply to the Desalination Plant or Pump Station, which are outside of the County's Coastal Zone.

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." (*Id*., p. 4.4-92.) In other words, the Project "***would facilitate the reduction of seawater intrusion in the long term***." (*Ibid*. [emphasis added].)

  - Because the Project would have less than significant adverse impacts on seawater intrusion, mitigation is not required, as PWN contends. (See PWN Appeal, p. 8; CEQA Guidelines, § 15124.6, subd. (a)(3).)

- PWN claims that data from a single monitoring well—MW-4M—in January 2018 demonstrates that Cal-Am's test slant well has significantly impacted seawater intrusion. (PWN Appeal, pp. 7-8.) Specifically, PWN asserts that the "ocean water percentage" in MW-4M rose from 52% in early 2015 to 70% toward the end of test well pumping in 2017. (*Ibid*.)

  - As an initial matter, PWN misuses the term "ocean water percentage." "Ocean water percentage" is a term of art that represents the percentage of ocean water—as opposed to groundwater—within the source water withdrawn by a slant well. (See FEIR/EIS, p. 8.2-22.) An increasing ocean water percentage indicates that the Project will withdraw more seawater, not potable groundwater, from the SVGB. (*Ibid*.)

  - To the extent PWN is referring to ocean water salinity levels, the Final EIR/EIS explains that variations in salinity throughout the test slant well pumping reflected regional and seasonal trends and were consistent with existing seawater intrusion. (See FEIR/EIS, p. 8.2-70.) The salinity levels remained in compliance with the conditions imposed by the Coastal Commission in the CDPs for the test slant well and did not indicate worsening seawater intrusion as a result of test slant well pumping. (*Id*. at p. 8.2-71.)

- Finally, contrary to PWN's contention that the Project will impact the "sole source" of drinking water for Marina residents (PWN Appeal, p. 8), the CPUC concluded that the Project will not interfere with any of Marina's municipal supply wells. (FEIR/EIS, pp. 4.4-69, 4.4-75.) Indeed, none of Marina's municipal supply wells are located in the aquifers from which the Project will draw its source water. (See *id*., p. 4.4-69.)

D. The Project Will Not Violate Applicable Groundwater Laws

- PWN alleges that the Project is inconsistent with groundwater and water quality laws, including the Clean Water Act, Safe Drinking Water Act, Porter-Cologne Act, SGMA, and the State Water Resources Control Board's Non-Degradation Rules. (PWN Appeal, p. 19.) Contrary to PWN's claims, the EIR/EIS confirmed that the Project is consistent with all applicable groundwater and water quality laws. (See, e.g., FEIR/EIS, pp. 8.2-31 to 8.2-36; 4.4-37 to 4.4-61.) PWN's allegations concerning specific groundwater and water quality laws are addressed in more detail below.

1. The Project Complies with SGMA

- PWN contends that Cal-Am has violated SGMA, which PWN alleges requires the protection and preservation of on-shore aquifers against any discretionary actions resulting in increased seawater intrusions into the Salinas Valley. (PWN Appeal, pp. 2, 5, 7, 9.) Contrary to PWN's claims, the Project does not violate SGMA's groundwater management goals and, as stated above, will slow or prevent further seawater intrusion into the SVGB.

    - SGMA requires sustainable management of medium and high priority groundwater basins. "Sustainable groundwater management" "means the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results," including significant and unreasonable lowering of groundwater levels, reduction in groundwater storage, seawater intrusion, degraded water quality, land subsidence, and surface water depletions. (Water Code, § 10721, subds. (v), (x).) While SGMA applies to the SVGB and its subbasins, substantial evidence in the Final EIR/EIS demonstrates that the Project will not cause any undesirable results and would be consistent with SGMA. (FEIR/EIS, pp. 4.4-42 to 4.4-43, 4.4-85 to 4.4-87, 4.4-100 to 4.4-101, 8.2-31 to 8.2-35.) SGMA would not restrict the Project's ability to pump groundwater as proposed. As explained above, the Project would help impede seawater intrusion by creating a seaward gradient in the contaminated aquifers that will halt or reverse the current landward movement of seawater intrusion into the SVGB. (See *id*., pp. 4.4-42 to 4.4-43, 4.4-69 to 4.4-70, 4.4-91 to 4.4-92, 8.2-49.) Therefore, the Project advances SGMA's objectives.

2. The Project Complies with the California Constitution

- PWN argues that the project "[d]irectly violates Article X, Section 2 of the California Constitution," because the alleged "intentional inducement of salt pollution into a potable aquifer wherein [Cal-Am] holds no water rights" is not a "reasonable use of water." (PWN Appeal, p. 4.)

    - As a preliminary matter, the Project will not exacerbate seawater intrusion or induce saltwater pollution of the SVGB and any argument to the contrary is rebutted by the substantial administrative record that was before the CPUC and relied upon by the Planning Commission. See Section C *supra*.

    - In addition, the Project is consistent with the mandates of the California Constitution. Article X, Section 2 requires that "the water resources of the State be put to beneficial use to the fullest extent to which they are capable." Thus, the California Constitution encourages the development, desalination, and appropriation of brackish groundwater and seawater in the SVGB that is otherwise not put to any beneficial use. That is precisely what the Project will do here, and as a result, Article X, Section 2 weighs in favor of the Project rather than against it. (See, e.g., *Pasadena v. Alhambra* (1949) 33 Cal.2d 908, 926 ["It is the policy of the state to foster the beneficial use of water and discourage waste, and when there is a surplus, whether of surface or ground water, the holder of prior rights may not enjoin its appropriation"].)

3. <u>The Project Complies with the Water Quality Control Plan for the Central Coast Basin ("Basin Plan")</u>

- PWN claims that Cal-Am is intentionally violating the State Water Resources Control Board's ("SWRCB") Anti-Degradation Policy as adopted in the Basin Plan by "intentionally contaminat[ing] 'potable groundwater supplies.'" (PWN Appeal, p. 4.)
  - The Basin Plan is not a water quality objective that Cal-Am or the Project can "violate." It is a policy document used by the Regional Water Quality Control Board to make beneficial use designations for receiving waters to evaluate water quality impacts from discharges to those waters.
  - As explained above in Section C *supra*, the Project will not result in or exacerbate existing seawater intrusion in the SVGB.
- PWN further claims that potable groundwater has been identified by "independent" researchers and was improperly excluded from consideration in the Final EIR/EIS and Planning Commission staff's evaluation. (PWN Appeal, p. 4.)
  - PWN ignores that groundwater in the Project's capture zone substantially exceeds California's drinking water standards for salinity—500 mg/L TDS (22 Cal. Code Regs., §64449)—and thus is not potentially suitable for municipal or domestic water supply under the Basin Plan. (FEIR/EIS, pp. 4.4-69, 8.2-48, 8.5-672.)
  - Moreover, PWN's contention that data shows nearby areas of potable groundwater is belied by the CPUC's record and the HWG's expert analysis. (D.18-09-017, Appx. J, p. 20; FEIR/EIS, pp. 4.4-36 to 4.4-38, 8.2-53 to 8.2-62, 8.5-440 to 8.5-443, 8.5-777; HWG Technical Response (Jan. 25, 2019), pp. 3-4; HWG Technical Response (Apr. 12, 2019), p. 6.)
    - Even the "independent" researchers themselves disclaim any conclusions in the final AEM study about "potable groundwater," stating "we do not define fresh water anywhere in the report . . . We give the name 'sources of drinking water' to water with TDS concentrations 0-3,000 mg/L.'" (See Letter from Dr. Rosemary Knight to HWG (Feb. 14, 2019), p. 4, attached hereto as <u>Exhibit K</u>.) Water with TDS concentrations of TDS up to 3,000 mg/L is not potable. (See 22 Cal. Code Regs., § 64449.) As discussed above, California Secondary Maximum Contaminant Level for drinking water for TDS is 500 mg/L. (*Ibid.*)
  - Further, the "independent" study on which PWN relies expressly states that it was prepared in connection with MCWD's own paid consultants, who have consistently opposed the Project throughout the environmental review process. (See HWG Technical Response (Aug. 25, 2018), p. 3.) The CPUC also extensively analyzed this study and properly concluded that the study does not change any of the EIR/EIS's analysis or conclusions that the Project will not have an adverse impact on groundwater resources. (See FEIR/EIS, pp. 8.2-53 to 8.2-61; D.18-09-017, Appx. J, pp. 15, 19-21.)

E. Cal-Am May Develop Appropriative Rights to Salvaged Water

- The appellants argue that the County cannot approve the Project because Cal-Am does not have, and cannot legally obtain, water rights for the Project. (MCWD Pump Station Appeal, pp. 9-10; MCWD Desal Plant Appeal, pp. 9-10; PWN Appeal, pp. 4-5, 8-11.) This claim has been repeatedly rejected by state agencies. Both the CPUC and State Water Resources Control Board ("SWRCB") have determined that Cal-Am may develop all necessary water rights to implement the Project. (See D.18-09-017, pp. 80-82; FEIR/EIS, pp. 2-31 to 2-43, 8.2-4 to 8.2-16 [Master Response 3: Water Rights]; see also *id.*, Appx. B2 [SWRCB Final Analysis of the Project].)

  - The primary source of water for the Project will originate from the ocean. (See FEIR/EIS, pp. 2-33, 2-36.) Cal-Am does not require a water right to develop, treat, and use ocean water pumped from the ocean beneath the sea floor. (See *id.*, pp. 2-36, 8.2-8; *id.*, Appx. B2, p. 33 ["Cal-Am needs no groundwater right or other water right to extract seawater from Monterey Bay."].) To a very minor extent, the Project will also withdraw water already contaminated due to seawater intrusion. (See *id.*, pp. 2-36 to 2-38 ["only brackish water from the Basin is projected to be drawn into the MPWSP supply."].) Cal-Am can develop groundwater rights to contaminated water in the SVGB because that water is surplus to the demands of existing SVGB groundwater users and is unusable without treatment. (*Id*., pp. 8.2-8, 8.2-10 to 8.2-11.)

  - As the SWRCB has explained, if otherwise unusable (i.e. brackish or contaminated) groundwater could be extracted without harm to existing lawful users and any fresh groundwater extracted is returned to the Basin to avoid injury to existing legal water users, then Cal-Am would have an appropriative water right to a portion of feedwater that comes from the SVGB. (See *id.*, p. 2-34.)

  - Similarly, California caselaw supports Cal-Am's ability to develop a right to brackish groundwater in the SVGB: (1) water saved from being lost or wasted is "salvaged" water; and (2) the person responsible for salvaging water acquires a priority right to the water. (*City of Santa Maria v. Adam* (2012) 211 Cal.App.4th 266, 304 ["simply stated, salvaged water is water that is saved from waste" and "so long as plaintiffs received the water to which they are entitled, waters that were 'rescued' by the defendants were essentially new waters, the right to use and distribute which belonged to defendant"] [internal quotations omitted]; see also *Wiggins v. Muscupiabe Land & Water Co.* (1896) 113 Cal. 182, 196 [finding that the defendant was entitled to salvaged water that would have been lost by absorption and evaporation absent salvage efforts]; *Cohen v. La Canada Land & Water Co.* (1861) 151 Cal. 680.) Thus, if unusable water is salvaged through innovative treatment technology or is saved from non-use or waste, and such use does not adversely impact other legal users or create or exacerbate undesirable conditions in the common supply, such uses are encouraged and protected.

  - The record confirms that there is surplus (i.e., unused) groundwater available in the SVGB for Cal-Am to appropriate, and that there is no evidence that the salvage of the surplus groundwater will cause legal injury to any existing water user or to the SVGB. (See FEIR/EIS, pp. 2-36 to 2-40, 4.4-24, 4.4-27, 4.4-31 to 4.4-34, 4.4-42 to 4.4-43, 4.4-

69 to 4.4-70, 8.2-10 to 8.2-12, 8.2-47 to 8.2-49, 8.2-52; see also *id.*, Appx. B2, pp. 15, 36, 48.) Thus, not only are appropriative groundwater rights for the Project feasible, but the development and perfection of those water rights are highly probable once the Project source water wells begin operation. (*Id.*, pp. 2-39 to 2-40, 8.2-4 to 8.2-15.)

- PWN also argues that because the SVGB is "over-drafted," Cal-Am is unable to attain water rights. (PWN Appeal, p. 14.) PWN confuses a shortage in usable groundwater with the availability of otherwise unusable water that may be salvaged. As discussed above, the Final EIR/EIS confirms that surplus salvageable groundwater exists in the SVGB, and that the Project is within the sustainable yield of the SVGB. (FEIR/EIS, pp. 4.4-69 to 4.4-70; *id.*, Appx. B2, pp. 49-50.)

F. The County Has Not Improperly Piecemealed the Project

- PWN alleges that Cal-Am's applications to the County for permits for the Desalination Plant and Pump Station constitute an "illegal 'piecemeal' application of a much larger project." (PWN Appeal, p. 5.) PWN further contends that the "project" that should be analyzed is an alleged conspiracy to pollute the SVGB with seawater. (*Ibid.*)
  - First, PWN's conspiracy claims are completely unsupported and should not be given any weight. Contrary to PWN's claims, and as discussed in Section C *supra*, the Project will not result in seawater intrusion and will not impact Marina's or MCWD's groundwater wells.
  - Second, the County is appropriately considering discretionary approvals for those specific components of the overall MPWSP that are within its jurisdiction in its capacity as a responsible agency. (CEQA Guidelines, § 15381 [defining "responsible agency" to include "all public agencies other than the lead agency which have discretionary approval over the project"].) The entire MPWSP—e.g., "the whole of [the] action"— has already been analyzed by the CPUC and the Monterey Bay National Marine Sanctuary in the Final EIR/EIS in compliance with CEQA. (See CEQA Guidelines, § 15378, subd. (a).) Therefore, no piecemealing has occurred.

G. The Project Complies with County Ordinances and Regulations

1. <u>The Project Does Not Violate the County's Moratorium on New Groundwater Wells</u>

- MCWD wrongly asserts that the Project violates County Ordinances 5302 and 5303, which enacted a moratorium on drilling new wells in certain coastal areas of the SVGB. (MCWD Pump Station Appeal, pp. 6-7; MCWD Desal Plant Appeal, pp. 6-7.) MCWD alleges that Cal-Am's slant wells are for "industrial" use—e.g., desalination—and not for "domestic needs." (*Ibid.*)
  - The moratorium does not affect the MPWSP, because Ordinance No. 5302 specifically exempts "municipal supply wells," which the Ordinance defines as "a water well that supplies potable water for the domestic needs of a permitted public water system."

(Monterey County Ordinance 5302, §§ 3.G, 5.A.4; see also *id*. at § 3.H [defining "public water system"].) The supply wells for the MPWSP, which will supply potable water for domestic use, fall within this exemption, and Ordinance 5302 thus does not prohibit operation of the Project (i.e., prohibit placement and operation of the Project wells). The County, the author of Ordinance 5302, has confirmed this interpretation. In the CPUC's proceedings regarding the Project, the County wrote that the "moratorium would not apply to new CalAm wells for the MPWSP, since Ordinance 5302 specifically exempts from its regulations new municipal supply wells." The County's view of the ordinance is entitled to great weight. (*Pac. Legal Found. v. Unemployment Ins. Appeals Bd*. (1981) 29 Cal.3d 101, 111 [noting that because of an agency's expertise, its view of a statute or regulation is entitled to great weight unless clearly erroneous or unauthorized, and that the courts cannot substitute their judgment for that of an agency on matters within the agency's discretion].) It is immaterial that the water must be purified to meet drinking water standards—this is typical for any water that is withdrawn for domestic use.

- Second, MCWD's position that the exemption for "municipal water supply wells" only applies to wells that *directly* pump potable water would largely eviscerate the exemption under the circumstances. The Ordinance applies to an "Area of Impact" that it defines as the area "where the Pressure 180- Foot and Pressure 400-Foot Aquifers have already been *impacted by seawater intrusion or where seawater intrusion is actively advancing in* the Salinas Valley Groundwater Basin." (Monterey County Ordinance 5302, § 1.C.7 [emphasis added].) The Ordinance further explains that "[s]eawater intrusion poses a threat to the public health, safety and welfare because it degrades and impairs water quality, *making the water unusable for drinking or agricultural production*." (*Id*. at § 1.C.2 [emphasis added].) Thus, the Ordinance applies to an area where the water is impacted by seawater intrusion and is not potable without some level of treatment (i.e., no well placed in the area could directly pump potable water). Under these circumstances and MCWD's proffered interpretation that the "municipal water supply well" exemption applies only to wells that directly pump potable water, the exemption would rarely (if ever) apply—thereby rendering it meaningless. Such a flawed interpretation and result runs contrary to "the fundamental principle of statutory construction that interpretations which render any part of a statute superfluous are to be avoided." (*Young v. McCoy* (2007) 147 Cal.App.4th 1078, 1083 [internal quotations omitted].)

- Further, the MPWSP will return desalinated product water into the SVGB to offset any groundwater pumped from the SVGB, which will ensure that the SVGB is made whole. In other words, the MPWSP is consistent with Ordinance 5302's goals of slowing seawater intrusion in the SVGB. (See, e.g., FEIR/EIS, pp. 4.4-70 ["The return water component of the MPWSP would benefit each of the aquifers by either reducing the area of influence or by increasing groundwater levels in other areas."], 4.4-91 to 4.4-92 [discussing the MPWSP's "contribution to redirecting or reversing the inland advance of seawater intrusion" and concluding that "the MPWSP provides a benefit for the basin"], 4.4-105 ["If the MPWSP ultimately returns a portion of the desalinated product water to the basin as in-lieu groundwater recharge, then it would benefit the 400-Foot Aquifer by reducing groundwater pumping in the area underlying the CSIP and CCSD."]; *id*., pp. 5.5-72 [discussing Alternative 5a's positive aquifer impacts].)

2. The Project Does Not Violate the County Desalination Ordinance

- MCWD incorrectly alleges that the Project violates Monterey County Health and Safety Code Chapter 10.72, which governs the County's issuance of permits for the construction and operation of desalination facilities and requires desalination facilities to be publicly owned. (MCWD Pump Station Appeal, p. 7; MCWD Desal Plant Appeal, p. 7.)

  - MCWD ignores that in December 2012, Cal-Am, the County, and the County Water Resources Agency entered into a settlement agreement in which they agreed, among other things, that Chapter 10.72 does not apply to Cal-Am or the MPWSP. (See FEIR/EIS, p. 4.8-20.) Further, and as stated in the Final EIR/EIS, in Decision 12-10-030, the CPUC found that its authority preempts Chapter 10.72 based on CPUC General Order ("GO") 103-A. (See FEIR/EIS, p. 4.8-19.) Under GO 103-A, the CPUC's authority preempts local agencies purporting to regulate water utilities pursuant to local authority. (See GO 103-A, § I.9.) The parties to the December 2012 settlement agreement, including the County, agreed that Decision D.12-10-030 would be final and binding on the parties. (See FEIR/EIS, p. 4.8-20.) No one filed a petition for writ of review challenging Decision D.12-10-030 or the County's approval of the December 2012 settlement agreement, and thus, both became final. Therefore, the County and the CPUC are in agreement that Chapter 10.72 does not apply to the Project, and MCWD's argument to the contrary has no merit.

  - MCWD further argues that the December 2012 settlement agreement in which the County agreed that Chapter 10.72 is not applicable to Cal-Am or the MPWSP is unenforceable, relying on *Summit Media LLC v. City of Los Angeles* (2012) 211 Cal.App.4th 921. (MCWD Pump Station Appeal, p. 7; MCWD Desal Plant Appeal, p. 7.) MCWD's claim fails. *Summit Media* is distinguishable and does not govern these circumstances. In *Summit Media*, the real parties in interest were subject to the local ordinances regarding billboards, but were exempted from the ordinances by the City of Los Angeles by way of a settlement agreement. (*Summit Media LLC*, *supra*, 211 Cal.App.4th at p. 927.) The court found that this amounted to an improper circumvention of otherwise applicable land use regulations. (*Id*. at 935.) In contrast, here, the County and CPUC agreed that Chapter 10.72 was not applicable to the MPWSP or Cal-Am in the first instance (as opposed to finding Chapter 10.72 applicable, but that Cal-Am was exempt).

- In addition, MCWD's characterization of Decision 12-10-030 as an "advisory opinion" that was not ripe is incorrect. (MCWD Pump Station Appeal, p. 7; MCWD Desal Plant Appeal, p. 7.) The CPUC already rejected this exact ripeness argument in D.13-07-048, which denied MCWD's and the County's applications for rehearing of D.12-10-030. In that proceeding, MCWD argued that preemption must await approval of a project in conflict with the Ordinance's provision. The CPUC disagreed: "[E]ven absent a direct conflict, the Commission has indicated that there is no room for local regulation of water utilities facilities." (See D.13-07-048.)

  - Further, MCWD's allegation that D.12-10-030 violates SGMA is entirely off base. (MCWD Pump Station Appeal, p. 7; MCWD Desal Plant Appeal, p. 7.) As described in

Section D *supra*, the Project is consistent with SGMA. Moreover, SGMA does not change the CPUC's authority to preempt Chapter 10.72, which plays no role under SGMA. Nothing in SGMA mandates public ownership of desalination facilities or conflicts with ownership and operation of a desalination plant by a public utility such as Cal-Am under the CPUC's jurisdiction. SGMA did not change the relevant legal framework under which the CPUC issued D.12-10-030.

3. <u>The North Monterey County LCP Does Not Apply to the Desalination Plant</u>

- PWN alleges that the Planning Commission failed to properly evaluate the Desalination Plant for consistency with the North Monterey County LCP policies regarding preservation of groundwater. (PWN Appeal, pp. 12, 21-23.) The LCP does not apply the Desalination Plant because the Plant will not be located within the County's Coastal Zone. (See FEIR/EIS, pp. 4.4-45, 4.8-3.)
    - Further, even if the LCP applied to Desalination Plant, the Final EIR/EIS concluded, based on substantial evidence, that the Project as a whole will not violate the LCP. Because the Project "would not affect groundwater quality or levels in a way that would adversely affect existing agricultural users, it would not result in a change in the existing environment that would indirectly result in the permanent conversion of [farmland] to a non-agricultural use." (*Id*., p. 4.16-19.)

4. <u>The Project Complies with the Monterey County Water Resources Agency Act ("Agency Act")</u>

- PWN claims that the Project violates the Agency Act by allegedly illegally exporting protected potable groundwater supplies outside of the basin. (PWN Appeal, p. 9.) The CPUC repeatedly addressed and rejected this argument throughout its administrative process.
    - As the Final EIR/EIS explains, Cal-Am and MCWRA[6] entered into the Return Water Settlement Agreement to ensure the Project's compliance with the Agency Act. (See FEIR/EIS, p. 8.5-677.) The Return Water Settlement Agreement specifies a calculation for Cal-Am to determine and return for use in the SVGB the amount of fresh water that is contained in the brackish water found in the MPWSP source water (as distinguished from seawater found in the source water). (*Id.*, pp. 8.5-774, 8-2-13.)
    - PWN's claim is based on a factually incorrect premise that the Project would extract significant amounts of potable freshwater from the Basin. As demonstrated in the Final EIR/EIS and explained above, the Project will extract mostly seawater and a small amount of seawater-intruded brackish groundwater; it is the fresh water component of the brackish groundwater that will be returned to the Basin under the Return Water

[6] MCWRA has statutory responsibility for interpreting and enforcing the Agency Act, and it has stated as a party to the Return Water Agreement that the Agreement satisfies the requirements of the Agency Act with respect to the Project. (FEIR/EIS, p. 8.5-677.)

Settlement Agreement as potable, desalinated water. (FEIR/EIS, pp. 8.2-13, 8.2-17 to 8.2-23.)

5. The Project Is Consistent with the Monterey County General Plan

- PWN challenges the Project's consistency with the County's 2010 General Plan. (PWN Appeal, pp. 4, 6, 13, 16, 19-20.) As explained below, the Project is consistent with the County's General Plan.

a. *The Desalination Plant Will Not Adversely Impact Farmlands and Agricultural Operations*

- PWN argues that the Project violates the 2010 General Plan's policies requiring the County to preserve agricultural lands and operations. (PWN Appeal, pp. 4, 6.) Specifically, PWN contends that Cal-Am's mapping of the farmland surrounding the Desalination Plant project site is "incomplete and intentionally deceptive" so as to misconstrue the nature of the farmland surrounding the site. (*Id.*, p. 6.) Further, PWN argues that construction of the Desalination Plant will result in the "permanent loss" of over half of the parcel on which the Plant is to be built to a heavy industrial use that is not allowed under the existing agriculture zoning ordinance. (*Ibid.*)

    - As an initial matter, PWN does not indicate the manner in which Cal-Am's mapping is allegedly deceptive. (See PWN Appeal, p. 6.) The EIR/EIS evaluated all land uses within 0.25 miles of all proposed Project sites, concluding that the lands adjacent to the Desalination Plant are zoned for agricultural and light industrial uses. (FEIR/EIS, pp. 4.8-1, 4.8-3, 4.8-9.) The EIR/EIS also accurately explained that the Desalination Plant property is bounded to the west and north by open space, grazing, and agricultural lands, and to the east and south by public facility and industrial uses at the Monterey County Landfill and the Monterey Regional Water Pollution Control Agency (i.e., Monterey One Water) Regional Wastewater Treatment Plant. (*Id.*, p. 4.8-9.) Moreover, as explained in the Final EIR/EIS, the California Department of Conservation, Division of Land Resource Protection, maps important farmlands and agricultural lands throughout California through its Farmland Mapping and Monitoring Program. (*Id.*, p. 4.16-2.) The Department's mapping indicates that the Desalination Plant will be located on 25 acres of a 46-acre parcel, and that approximately 1.7 acres of that larger parcel that will not include Project components is designated as "Prime Farmland." (*Id.*, p. 4.16-6, 4.16-14.) Specifically, the EIR/EIS explains that the identified 1.7 acres of Prime Farmland are *outside* of the Desalination Plant's proposed 25-acre footprint, and the current Plant site layout provides a 200-foot buffer from adjacent farmland to the west of the site. (*Ibid.*; see also Desalination Plant Resolution, p. 4 ["Siting the development on the upper terrace of the 46-acre parcel avoids the 1.7 acre portion of the parcel containing prime farmland."].) The Planning Commission properly concluded that the Desalination Plant is consistent with the General Plan's agricultural protection policies because the Plant does not involve development in viable farmlands designated as Prime, of Statewide Importance, Unique, or of Local Importance. (Desalination Plant Resolution, p. 8.)

- Further, the Final EIR/EIS concluded that the Project as designed is consistent with 2010 General Plan policies related to agriculture.[7] (FEIR/EIS, p. 4.16-11.) Although the Desalination Plant parcel is zoned for "Permanent Grazing," the County Zoning Ordinance allows for public and quasi-public land uses, including public utilities, on land zoned for Permanent Grazing with issuance of a Use Permit. (*Id.*, p. 4.16-19.) As the Planning Commission explained, the portion of land on which the Desalination Plant will be built is zoned PG/40-D-S, a designation that allows for development of water system facilities with issuance of a Use Permit. (Desalination Plant Resolution, p. 3.)
  - In addition, the Plant would be sited on land that has not been used for grazing or any other agricultural purpose since 1956. (FEIR/EIS, p. 4.16-14.) Therefore, the Planning Commission correctly concluded that the Desalination Plant will not impact existing agricultural activities because "no agricultural activity is currently present on the site." (Desalination Plant Resolution, p. 8.)
  - PWN also ignores the fact that the Desalination Plant parcel is adjacent to other industrial uses, such as the Monterey County Landfill and the Regional Wastewater Treatment Plant. (FEIR/EIS, p. 4.8-9.) PWN fails to provide any evidence that this land would be more appropriately developed with agricultural uses.
- As such, the Planning Commission correctly determined that the Desalination Plant is consistent with the General Plan's policies related to protection of agricultural resources, and the Planning Commission's determinations are entitled to substantial deference. (See *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1129-1130 ["It is well settled that a County is entitled to considerable deference in the interpretation of its own General Plan."]; see also *Sierra Club v. County of Napa* (2004) 121 Cal.App.4th 1490, 1509-1510.)

- PWN asserts that Project construction will "decimate" the water supplies available to farmland owners adjacent to the Desalination Plant site, adversely impacting agricultural operations. (PWN Appeal, p. 6.)
  - As explained in Section C *supra*, the Project will not deplete existing potable groundwater supplies in the SVGB. As such, PWN's claims that Cal-Am "has offered no replacement irrigation or drinking water as mitigation to the overlying farmland owners" are irrelevant. Nevertheless, as explained in the EIR/EIS, Cal-Am will fund the expansion of the existing regional groundwater monitoring program to include any areas where the Project may impact nearby production wells to ensure that owners of existing supply wells suffer no harm during the life of the Project. (FEIR/EIS, pp. 4.4-80, 4.4-87 to 4.4-89.) As part of this applicant-proposed mitigation measure, Cal-Am will coordinate with well owners to repair or replace damaged wells or compensate the owner for increased pumping costs. (*Id.*, p. 4.4-89.)

---

[7] The Final EIR/EIS also concluded that although construction of certain pipelines could impact agricultural lands, such impacts would be temporary and would be mitigated to a less than significant impact. (FEIR/EIS, pp. 4.16-11, 4.16-16.)

- Further, PWN appears to misunderstand the activities occurring on the Desalination Plant site. The Desalination Plant will be treating water drawn from subsurface slant wells at the CEMEX site in the City of Marina, approximately 2.2 miles from the Desalination Plant site and outside of the cone of depression of the subsurface slant wells. (*Id*., pp. 3-19, 4.4-66.) No new groundwater wells are proposed at the Desalination Plant site. Therefore, PWN's claims that the Desalination Plant will affect farmland adjacent to the Desalination Plant site has no merit.

- PWN argues that "legal prohibitions" prevent construction of the Project proximate to various "coastal farmlands" owned by the Ag Land Trust, with alleged reversionary rights to federal government. (PWN Appeal, p. 16.)

    - As an initial matter, PWN's argument concerns the location of the Project's subsurface slant wells at the CEMEX site in the City of Marina, which is outside of the County's jurisdiction.

    - Further, PWN ignores substantial evidence in the EIR/EIS confirming that the Project will not significantly impact agricultural wells or coastal aquifers. (See FEIR/EIS, pp. 4.4-64 to 4.4-102.)

    - PWN also attaches maps suggesting that the Project will adversely impact Ag Land Trust agricultural wells in the vicinity of the subsurface slant wells. (PWN Appeal, Exhibit 2.) To the contrary, as described in the EIR/EIS, CPUC and Monterey Bay National Marine Sanctuary representatives viewed two Ag Land Trust wells during a December 15, 2015, site visit. Subsequently, both of these wells (the "Big Well" and the "Small Well") were identified as active wells in the EIR/EIS. (FEIR/EIS, Table 4.4-10.) The "Small Well" is screened within the 400-Foot Aquifer, and the EIR/EIS concluded that the Project's pumping will have a less than significant impact on water availability and water quality from this well. (*Id*., pp. 8.6-450 to 8.6-451.) The "Big Well" is screened within the 900-Foot Aquifer, and the EIR/EIS's modeling indicates that no impacts would occur in the 900-Foot Aquifer as a result of proposed Project pumping. (*Id*., p. 8.6-451.)

b. *The Desalination Plant Is Exempt from General Plan Requirements for Demonstration of a Long-Term, Sustainable Water Supply*

- PWN asserts that construction of the Desalination Plant, and the Planning Commission's permitting of the Plant, violates 2010 General Plan Policy PS-3.1, which requires proof of a sustainable long-term water supply before issuance of a Use Permit for new development that will use water. (PWN Appeal, pp. 4, 13, 16, 19-20.)

    - As a preliminary matter, the Desalination Plant is exempt from Policy PS-3.1 as infrastructure that provides necessary services to the public, as confirmed by the Planning Commission. (Desalination Plant Resolution, p. 5 ["The proposed project is within this exception [as] . . . a desalination plant proposed by Cal Am to provide water for Cal Am's Monterey District service area."]; see also Monterey County General Plan, Policy PS-3.1.)

- Further, PWN ignores that the Project will draw seawater from aquifers underlying the ocean that are continually recharged by seawater. (See, e.g., FEIR/EIS, pp. 4.4-69 to 4.4-70.) Thus, any argument that the Project does not have a sustainable long-term water supply is wholly inaccurate.

H. The Project Complies with County Use Permit Requirements

1. The Planning Commission Properly Concluded that the Project Satisfies the County's Use Permit Standards

- Various commenters and appellants assert that the Project components in Monterey County cannot satisfy the County's requirements for issuance of a Use Permit. (See CURE April 23, 2019 Letter, p. 4; Marina April 23, 2019 Letter, p. 3; MCWD Pump Station Appeal, p. 10; MCWD Desal Plant Appeal, p. 10.) Not so.
  - County Code section 21.74.050(B)(1) requires that, before granting a Use Permit, the County must find that:

    > 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.

  - The Planning Commission appropriately concluded that the Pump Station and Desalination Plant comply with section 21.74.050(B)(1). (Desalination Plant Resolution, pp. 7-8; Pump Station Resolution, pp. 4-5.) The Planning Commission reached this conclusion following review of the Project by the County Resource Management Agency and findings from the Final EIR/EIS concluding that impacts from Project construction would either be less than significant or would be mitigated to the maximum extent feasible. (*Ibid.*)
    - Further, Planning Commission staff visited the Pump Station and Desalination Plant sites to confirm that the sites are usable for their respective uses, and the Planning Commission confirmed that the necessary public facilities are available at both sites. (*Ibid.*)
- Nevertheless, several commenters and appellants challenge the Planning Commission's findings. CURE asserts that Planning Commission staff's findings "are not supported by substantial evidence showing that the developments will not be detrimental to the health of persons residing or working nearby." (CURE April 23, 2019 Letter, p. 4.) Similarly, Marina argues that it "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." (Marina April 23, 2019 Letter, p. 3.) MCWD also vaguely alleges that the County's finding

is "not supported by evidence" or "otherwise erroneous." (MCWD Pump Station Appeal, p. 10; MCWD Desal Plant Appeal, p. 10.)

- These arguments merely reflect disagreement with the EIR/EIS's analysis and conclusions that the effects of construction and operation of the Desalination Plant and Pump Station will not be detrimental to health, safety, and welfare. The Planning Commission appropriately considered the EIR/EIS and other available evidence, and independently concluded that the Project components will not be detrimental to the wellbeing of persons living or working nearby. (Desalination Plant Resolution, pp. 7-8; Pump Station Resolution, pp. 4-5.) The commenters' vague claims are assertions without evidentiary support, and thus do not constitute substantial evidence to the contrary. (See CEQA Guidelines, § 15384.) The Planning Commission's determinations are entitled to substantial deference. (See *Gray*, *supra*, 167 Cal.App.4th at pp. 1129-1130; see also *Sierra Club*, *supra*, 121 Cal.App.4th at pp. 1509-1510.)

2. <u>The Project's Building Site Coverage Complies with the County Code</u>

- CURE argues that the County cannot approve Cal-Am's application for an Administrative Permit for the Desalination Plant because the plant would exceed County Code section 21.34.060's five percent limit on building site coverage within Permanent Grazing areas. (CURE April 23, 2019 Letter, pp. 16-17.)
  - The Planning Commission's calculations confirm that proposed building site coverage is well under the five percent limit. Under the County Code, a "building site" means "a parcel of land occupied or intended to be occupied by main structures and accessory structures and uses, including such open spaces as are provided or are intended to be used in connection therewith or are required by the regulations for the district wherein such parcel is located." (Monterey County Code, § 21.06.140.) "Coverage" is defined as "any area covered by a structure, structures or structure protrusions including decks twenty-four (24) inches or more above grade but ***not including*** building eaves of thirty (30) inches or less and ***similar non-usable areas***, paved driveways, sidewalks, paths, patios and decks less than twenty-four (24) inches above grade." (*Id*., § 21.06.250.) Thus, unusable areas and non-structures are explicitly excluded from calculating building site coverage, which is distinguishable from "lot coverage" used elsewhere in the County Code. (See, e.g., *id*., §§ 21.44.100, 21.46.070, 21.65.070.) Based on the County Code's definitions, the County properly included the filter building, reverse osmosis building, administration building, filter vessels, and water tanks in its building site coverage calculations, and excluded non-structures and non-usable areas, such as driveways. At the April 24, 2019, Planning Commission hearing, staff explicitly confirmed that all components would be "under 60,000-square feet, which is under the five percent lot coverage . . . on a 45-acre property." (See Monterey County Code, § 21.06.250; see also Transcript of County Planning Commission Hearing (Apr. 24, 2019), pp. 129, 159.)

- CURE also argues that the Desalination Plant would create approximately 15 acres of impervious surfaces. (CURE April 23, 2019 Letter, p. 17.)

- However, as described above, the County Code does not limit coverage of the site by ***impervious surfaces*** to five percent. Under the County Code, paved areas, driveways, parking surfaces, and other such impervious, non-structural coverage are omitted when calculating building site coverage. (Monterey County Code, § 21.06.250.) CURE's argument is therefore without merit.

I. The Commenters' Objections Regarding Environmental Impacts Were Already Addressed in the Final EIR/EIS

1. Noise Impacts Are Less than Significant

- CURE alleges that noise impacts from the Desalination Plant and Pump Station will be detrimental to the health, safety, and welfare. (CURE April 23, 2019 Letter, p. 5.) To the contrary, the noise from the Desalination Plant and Pump Station will comply with County noise ordinance requirements, which impose a noise limit of 85 dBA at 50 feet from the source. (Monterey County Code, § 10.60.030; see also FEIR/EIS, pp. 4.12-61 to 4.12-62.)

a. *Desalination Plant*

- As explained in the Final EIR/EIS, operation of the Desalination Plant generator and pumps would result in an increase of 0.2 dBA over ambient noise levels at 2,200 feet away, which is the location of the nearest residences to the Desalination Plant site. (FEIR/EIS, p. 4.12-57.) Because a change of 1 dBA cannot be perceived and an increase of 3 dBA is considered a barely perceptible difference (*id.*, p. 4.12-4), the Final EIR/EIS appropriately concluded that operation of the Desalination Plant will have less than significant noise impacts. (*Id.*, p. 4.12-57.)

- CURE argues that in analyzing noise impacts from the Desalination Plant, the Planning Commission should have examined impacts to persons within living or working within 1,000 feet of the Plant, arguing that the applicable zoning ordinance protects "persons residing or working in the neighborhood of such proposed use." (CURE April 23, 2019 Letter, p. 5.)

  - However, the County Code does not impose noise limits or require analysis of potential noise impacts to persons within 1,000 feet of the Desalination Plant. The language cited by CURE to support its argument that noise control ordinances protect "persons residing or working in the neighborhood of such proposed use" does not concern noise impacts. Instead, this language comes from County Code section 21.74.050, which provides the general standard under which the County may grant a use permit, as discussed above.

  - Further, the Planning Commission concluded that the nearest sensitive receptors to the Desalination Plant are two rural residences on Neoponset Road that are 2,200 and 3,900 feet from the Project area, respectively. (See Desalination Plant Resolution, p. 6; FEIR/EIS, p. 4.12-24.) Other closer uses are themselves industrial in nature, and have their own noise-generating activities. (FEIR/EIS, p. 4.8-9 [stating that the uses adjacent to the Desalination Plant include the County landfill and regional wastewater treatment plant].) As such, the Planning Commission properly concluded that the Desalination

Plant will be consistent with the County's noise ordinance requirements. (See Desalination Plant Resolution, p. 6.)

b. *Pump Station*

- As described in the Final EIR/EIS, although the pump at the Pump Station could generate noise levels of up to 76 dBA at 50 feet, the proposed building enclosure would attenuate noise levels by approximately 20 dBA. (FEIR/EIS, p. 4.12-58.) Therefore, the EIR/EIS explained that the increase in ambient noise levels at 50 feet from the Pump Station would only be an average of 1.1 dBA when the structure is considered. (*Ibid.*) As such, residents with homes beyond 50 feet from the Pump Station will not be able to perceive the noise increase from Pump Station operation. Nevertheless, the Final EIR/EIS conservatively requires that once construction of the Pump Station is completed, contractors will conduct 24-hour monitoring of noise levels in the vicinity of the Pump Station to ensure compliance with local noise standards. (*Id.*, p. 4.12-60.) Thus, the Planning Commission properly concluded that the Pump Station will comply with the County Code's noise restrictions. (See Pump Station Resolution, p. 5.)

2. <u>The Planning Commission Properly Relied on the Final EIR/EIS's Analysis of Air Quality Impacts</u>

- CURE contends that the Planning Commission's Staff Reports do not properly discuss air quality impacts. (CURE April 23, 2019 Letter, pp. 5-8.) However, air quality impacts have been thoroughly addressed by the EIR/EIS.
    - As explained above, as a responsible agency, the County must rely on the EIR/EIS—including its analysis of air quality impacts—even when the EIR/EIS has been challenged. (Pub. Resources Code, § 21167.3, subd. (b); see also Section A *supra*.) Therefore, the Staff Reports appropriately explain that "[n]o additional Air Quality impacts not analyzed in the EIR can be expected to occur and ***no further review is needed***." (See, e.g., Pump Station Staff Report, p. 7 [emphasis added]; Pump Station Resolution, pp. 4-5, 15-16.)

- CURE argues that the MPWSP's potential air quality impacts are inconsistent with General Plan Goal OS-10, which provides for the protection and enhancement of Monterey County's air quality. (CURE April 23, 2019 Letter, pp. 5-6.) To ensure consistency with Policy OS-10.6, CURE asserts that the County must impose mitigation measures above and beyond those proposed in the EIR/EIS. (*Id.*, p. 6.)
    - The Planning Commission correctly found that there are no additional air quality impacts not already analyzed in the EIR/EIS. (See, e.g., Pump Station Resolution, p. 5; Desalination Plant Resolution, p. 7.) The EIR/EIS has already imposed all feasible mitigation measures to reduce or eliminate temporary, construction-related air quality impacts, and the CPUC issued a statement of overriding consideration related to these impacts. (FEIR/EIS, pp. 4.10-21 to 4.10-34; D.18-09-017, Appx. C, pp. C-73 to C-75.) Thus, no further mitigation measures are necessary. The mitigation measures required by the EIR/EIS and carried forward through the Planning Commission's Condition of

Approval No. 19 with regard to the Pump Station and Condition of Approval No. 5 with regard to the Desalination Plant fulfill the County's responsibility under Policy OS-10.6. (See, e.g., Pump Station Resolution, p. 5; Desalination Plant Resolution, p. 9.)

- CURE also alleges that health impacts will be greater than anticipated in the Final EIR/EIS and that the Staff Reports fail to analyze all applicable air quality impacts. Specifically, CURE argues that the EIR/EIS did not model NO_2, ozone, $PM_{2.5}$, lead, or sulfates in ambient air quality and did not analyze health impacts of diesel exhaust. (CURE April 23, 2019 Letter, p. 6.)

    - Contrary to these assertions, the Final EIR/EIS did analyze and model NO_x (including NO_2) and $PM_{2.5}$. (See FEIR/EIS, p. 4.10-22; *id.*, Appx. G1, p. G1-2.) Although sulfates and lead were not specifically modeled, these particulates were thoroughly analyzed in the EIR/EIS and are not expected to result in any significant effects. (See, e.g., *id.*, pp. 4.10-4, 4.10-18.) Ozone impacts were also extensively considered as a secondary air pollutant. (See, e.g., *id.*, pp. 4.10-3, 4.10-5 to 4.10-6, 4.10-24, 8.5-603, 8.5-788.) CURE's quarrel with the EIR/EIS is irrelevant from a legal perspective, as the County is bound by the EIR/EIS's analysis.

    - Further, the Final EIR/EIS included health risk assessments for certain MPWSP construction sites, including the Pump Station. (FEIR/EIS, p. 4.10-20.) These assessments included estimations of emissions from diesel-fueled engines "based on PM_{10} exhaust emissions estimates made using the CalEEMod model that were then converted to maximum emissions concentrations, which were used to generate the maximum concentrations to estimate health risks." (*Ibid.*) Emissions from diesel-fueled engines were then analyzed using the U.S. Environmental Protection Agency's AERMOD dispersion model. (*Ibid.*) The EIR/EIS then analyzed acute health impacts from diesel exhaust. (*Ibid.*; see also *id.*, p. 4.10-28.) The EIR/EIS concluded that air quality impacts associated with the "project's potential to expose sensitive receptors to substantial pollutant concentrations would be less than significant." (*Id.*, p. 4.10-28.) As such, CURE's contentions are baseless and contradicted by the plain findings of the Final EIR/EIS.

- Finally, CURE argues that the Final EIR/EIS did not properly evaluate health risks from emergency use back-up generator emissions. (CURE April 23, 2019 Letter, p. 7.)

    - The Final EIR/EIS directly considers the use of such generators. (FEIR/EIS, pp. 4.10-30 to 4.10-31, 4.10-34.) As further explained at the Planning Commission hearing, these back-up generators would not be permanently installed and would be transported for use on an as-needed basis. (See Transcript of County Planning Commission Hearing (Apr. 24, 2019), pp. 188-189.)

- In any case, CURE's claims that the Final EIR/EIS contains deficiencies are irrelevant. If CURE truly believed that the Final EIR/EIS was substantively inadequate, it could have followed proper administrative procedures and filed an application for rehearing with the CPUC. CURE chose not to file an application for rehearing and cannot now make an end run around the CPUC by challenging the Final EIR/EIS in this forum.

3. <u>The Final EIR/EIS Demonstrates that Valley Fever Related Impacts Are Less than Significant</u>

- CURE claims: (a) the Final EIR/EIS fails to mitigate potential impacts from Valley Fever; (b) the Staff Reports do not properly consider Valley Fever; and (c) health risks associated with Valley Fever are not sufficiently controlled by the fugitive dust measures mandated by the Final EIR/EIS. CURE is wrong. The Final EIR/EIS, which the Planning Commission reviewed and relied upon, appropriately concludes that Valley Fever-related impacts will be less than significant. (FEIR/EIS, p. 4.10-29.)

    - The Final EIR/EIS explains that the majority of the population in Monterey County has likely already been exposed to Valley Fever and would continue to be exposed due to the "various earthmoving activities that have historically occurred and continue to occur" in the region that are ***unassociated with the MPWSP***, including "grading and excavation for agriculture, as well as new residential, commercial, and industrial development and surface mining operations[.]" (FEIR/EIS, pp. 4.10-28 to 4.10-29.) The Project's construction activities would result in localized ground-disturbing activities that are no different than those that occur continually within the County and would not result in a substantial increase in spore release. (*Ibid*.) Thus, the localized ground disturbance from Project construction would not substantially contribute to the number of Valley Fever spores in the air regionally. (*Id*., p. 4.10-29.) Even without any mitigation, the Final EIR/EIS finds that the Project "would not represent an increased risk to public health" because existing ground-disturbing activities are not causing a significant adverse health effect in the region, and Project construction would not substantially increase those activities. (*Id*., pp. 4.10-28 to 4.10-29.)

    - Nevertheless, the Final EIR/EIS imposes Mitigation Measure 4.10-1c requiring among other things, watering of all active construction areas multiple times a day, water sweeping of paved areas, and implementation of erosion control measures, to decrease potential incidents of Valley Fever by containing fugitive dust that may carry Valley Fever-causing spores and preventing those spores from becoming airborne to the maximum extent feasible. (*Id*., pp. 4.10-25 to 4.10-26.) As a result, the Final EIR/EIS and the Project's mitigation program more than adequately account for the risks and impacts associated with Valley Fever.

    - Moreover, the Final EIR/EIS does not alter any of the Federal, State, and local laws governing Valley Fever protection and exposure that are independently enforceable by various oversight agencies. (*Id*., pp. 8.5-603 to 8.5-604.)

    - In support of its erroneous allegations, CURE attaches an expert letter from Phyllis Fox. (CURE April 23, 2019 Letter, Att. A.) This letter simply reasserts the very same Valley Fever claims as those that were made, analyzed and rejected by the CPUC during the EIR/EIS process. By attaching the letter CURE raises no new significant information. (FEIR/EIS, pp. 8.6-481 to 8.6-485.) In sum, Valley Fever impacts are considered and mitigated for by the Final EIR/EIS, which the Planning Commission reviewed and relied upon in its findings.

4. The EIR/EIS Thoroughly Evaluated the Project's Potential Growth-Inducing Impacts

- PWN argues that the Project's growth-inducing impacts were not adequately addressed in the Final EIR/EIS and that the groundwater extractions associated with the Project are "excessive." (PWN Appeal, p. 11.)
  - The Final EIR/EIS evaluated both the direct and indirect growth-inducing impacts of the Project in over fifty pages of analysis. (FEIR/EIS, pp. 4.19-1 to 4.19-16, 6-5 to 6-41.) As discussed in the EIR/EIS, Alternative 5a (the reduced-size desalination plant alternative approved by the CPUC) reduces the proposed Project's project-level significant and unavoidable indirect growth-inducing impacts to a less than significant level, though a significant and unavoidable cumulative indirect growth-inducing impact would remain. (*Id.*, pp. 5.5-384 to 5.5-386.)
  - With respect to PWN's claims that the Project is "oversized" (PWN Appeal, p. 11), substantial evidence supports the need for the Project and Cal-Am's estimated water demand. (See, e.g., FEIR/EIS, p. 2-13.) The Project was sized to accommodate the forecasted demand for water in Cal-Am's service territory, which was independently affirmed by the CPUC. (D.18-09-017, pp. 47-50.) Following a robust and detailed review of various demand estimates produced by Cal-Am and others (see *id.*, pp. 24-33), the CPUC determined that "Cal-Am's future water demand will be approximately 14,000 afy," roughly 355 afy less than Cal-Am's estimate of 14,355 afy in 2017. (*Id.*, p. 68; see also *id.*, pp. 47, 56, 67, 171, 194-195.) Moreover, the CPUC found that "[p]rojecting any future demand amount less than approximately 14,000 afy presents unreasonable risk without commensurate public benefit." (*Id.*, p. 194.) Ultimately, the CPUC concluded that the Project "is the best option to ensure Cal-Am is able to meet its maximum day demand and peak hour demand requirements." (*Id.*, p. 70.) Both the EIR/EIS's assessment of demand and the CPUC's independent conclusion regarding the same demonstrate that the proposed groundwater extractions associated with the Project are proportionate to expected water demand.
    - In addition, PWN ignores that the CPUC approved a reduced-size, 6.4 mgd desalination plant implemented in conjunction with the PWM project, in lieu of the originally-proposed 9.6 mgd facility. As described above, the reduced-sized plant would reduce the project's indirect growth-inducing impacts identified in the EIR/EIS.
- For these reasons, the Final EIR/EIS adequately evaluated the Project's growth-inducing impacts and the Project is appropriately sized to meet expected water demand. (See also Section B.2 *supra*.)

J. The Pump Station and Desalination Plant Are Consistent with County Standards for Environmentally Sensitive Habitats

- Several commenters and appellants argue that the Project components are inconsistent with the County's requirements for construction in environmentally sensitive habitat (MCWD

April 23, 2019 Letter, pp. 6-8; MCWD Pump Station Appeal, pp. 7-9; MCWD Desal Plant Appeal, pp. 7-9; CURE April 23, 2019 Letter, pp. 9-16), despite Planning Commission staff's conclusions that the Pump Station and Desalination Plant are consistent the County's standards for environmentally sensitive habitat. (Desalination Plant Resolution, p. 26; Pump Station Resolution, p. 18.)

1. <u>The Desalination Plant and Pump Station Comply with County Environmentally Sensitive Habitat Standards</u>

- MCWD argues that the Planning Commission's findings ignored County Code section 21.66.020(D)(1), which prohibits development in environmentally sensitive habitat areas, except for "resource dependent uses." (MCWD April 23, 2019 Letter, p. 6; MCWD Pump Station Appeal, pp. 7-8; MCWD Desal Plant Appeal, pp. 7-8.) MCWD asserts that neither the Desalination Plant nor the Pump Station is a resource-dependent use. (MCWD April 23, 2019 Letter, pp. 6-7; MCWD Pump Station Appeal, p. 8; MCWD Desal Plant Appeal, p. 8.)
    - With respect to the Desalination Plant site, section 21.66.020(D)(1) does not apply because the portion of the Desalination Plant site subject to development is not "environmentally sensitive habitat."
        - "Environmentally sensitive habitat" is defined as "an area known or believed, based on substantial evidence, to contain rare or endangered species." (County Code, § 21.06.440.)
        - As described in the EIR/EIS, the Desalination Plant site has been regularly mowed or disked and currently is comprised of non-native grassland. (FEIR/EIS, pp. 4.6-10, 4.6-50, 4.6-79.) While the EIR/EIS explained that there is some potential for sensitive species to utilize such grasslands (see, e.g., *id*., p. 4.6-50), none of the surveys in the EIR/EIS identified the Desalination Plant as environmentally sensitive habitat or containing rare or endangered species, with the exception of a single occurrence of Monterey spineflower. (*Id*., pp. 4.6-37, 4.6-42, 4.6-75 to 4.6-77, 4.6-79.)
        - A biological survey was prepared by AECOM as part of the County's permitting process that shows the location of Monterey spineflower on the Desalination Plant property. The survey confirms that Monterey spineflower is not located within the disturbance or development area for the Desalination Plant. Accordingly, the Desalination Plant is not located in environmentally sensitive habitat, and section 21.66.020(D) does not apply.
    - With respect to the Pump Station site, several Monterey Pines are located on the southern portion of the site, as confirmed in a biological survey prepared by AECOM as part of the County's permitting process. However, similar to the Desalination Plant, the Pump Station structure will not be located in the Monterey Pine grove, and no Monterey Pine trees will be removed. Other than the Monterey Pines, the Pump Station site is comprised of non-native annual grassland, landscaped, and developed areas, and does not contain any sensitive natural communities. (FEIR/EIS, pp. 4.6-209.)

    - Out of an abundance of caution, Cal-Am has further refined the Pump Station project to re-route a drainage swale that was previously proposed to pass underneath the canopy of Monterey Pine grove. The drainage swale would not have impacted any root zones and would not have required the removal of any trees. Nevertheless, Cal-Am will be re-routing the drainage swale to completely avoid the Monterey Pine grove.

    - Accordingly, none of the Pump Station development will be located in environmentally sensitive habitat, and section 21.66.020(D)(1) does not apply.

2. <u>The Biological Surveys Submitted to the County Satisfy the Requirements of the County Zoning Code</u>

- MCWD and CURE allege that the Planning Commission failed to comply with County Code section 21.66.020(C)(1), which require the completion of biological surveys for proposed development that is either (1) within a known environmentally sensitive habitat, or (2) within 100 feet of an environmentally sensitive habitat, and has a potential negative impact on the long-term maintenance of the habitat. (MCWD April 23, 2019 Letter, p. 7; MCWD Pump Station Appeal, p. 8; MCWD Desal Plant Appeal, p. 9; CURE April 23, 2019 Letter, pp. 14-16.)

  - As described above, neither the Desalination Plant nor the Pump Station are located in environmentally sensitive habitat. Therefore, section 21.66.020(C)(1)(a) and its associated survey requirements are not triggered.

  - Further, while the Desalination Plant and Pump Station could be located within 100 feet of environmentally sensitive habitat, neither Project component "has [a] potential negative impact on the long-term maintenance of the habitat." (County Code, § 21.66.020(C)(1)(b).) As stated in both Resolutions, "the EIR recommended mitigation measures which, when implemented, will reduce impacts [to environmentally sensitive habitat] to a less than significant level." (Desalination Plant Resolution, pp. 26-27; Pump Station Resolution, p. 18.)

    - Specifically, with respect to the Desalination Plant site, the EIR/EIS includes detailed mitigation measures to ensure that impacts to Monterey spineflower are less than significant, including Mitigation Measures 4.6-1a (Retain a Lead Biologist to Oversee Implementation of Protective Measures), 4.6-1b (Construction Worker Environmental Awareness Training and Education Program), 4.6-1c (General Avoidance and Minimization Measures), 4.6-1e (Avoidance and Minimization Measures for Special-status Plants), 4.6-1n (Habitat Mitigation and Monitoring Plan), and 4.6-1p (Control Measures for Spread of Invasive Plants). (FEIR/EIS, pp. 4.6-170 to 4.6-179, 4.6-190 to 4.6-194.) For example, Mitigation Measure 4.6-1e requires, among other things, siting Project facilities to avoid permanent and temporary impacts on special-status plants, fencing or flagging special-status plants for avoidance during construction, compliance with any requirements from the U.S. Fish & Wildlife Service and California Department of Fish & Wildlife, and compensating for any unavoidable impacts. (*Id*., pp. 4.6-178 to 4.6-179.) The EIR/EIS concluded that implementation of required mitigation measures would reduce impacts on sensitive natural communities resulting from construction of the Desalination Plant to a less-than-significant level. (*Id*., pp. 4.6-199 to 4.6-200.)

  - Similarly, with respect to the Pump Station site, Mitigation Measure 4.6-1m imposes specific avoidance and mitigation measures for native stands of Monterey Pine, including siting Project facilities and construction activities to avoid native stands, fencing or flagging for avoidance prior to construction, biological monitoring during construction, and compliance with the Project's Habitat Mitigation and Monitoring Plan. (FEIR/EIS, p. 190.) Cal-Am is also required to comply with all applicable local tree ordinances. (*Id*., pp. 4.6-244.)

- o Although surveys were not required pursuant to County Code section 21.66.020(C)(1), AECOM prepared detailed, site-specific biological surveys for both the Desalination Plant and Pump Station sites as part of the County application process.[8] These surveys covered the entirety of the development areas on both sites, including disturbance and non-disturbance areas, and were reviewed and accepted by the Planning Department. The surveys extend at least 100 feet from the disturbance areas for development to the extent feasible.

3. <u>The Mitigation Measures Identified in the Resolutions and EIR/EIS Sufficiently Protect Environmentally Sensitive Habitat</u>

- CURE asserts that Planning Commission staff's conclusion that the Project components are consistent with Zoning Code section 21.66.020 is invalid because staff relied on the mitigation measures identified in the EIR/EIS, which CURE claims are insufficient because they "rely on a lack of data" and have been "deferred to the future." (CURE April 23, 2019 Letter, p. 12.)

  - o CURE merely repeats arguments that the CPUC already addressed in the Final EIR/EIS. (See FEIR/EIS, pp. 8.6-162 to 8.6-167, 8.6-186 to 8.6-196.) As stated above, the County must assume that the EIR/EIS is correct for purposes of its review of the Desalination Plant. Responsible agencies "shall assume that the EIR does comply with [CEQA]." (See Section A *supra*; see also Pub. Resources Code, § 21167.3, subd. (b); CEQA Guidelines, § 15233; *Shasta County LAFCO, supra*, 209 Cal.App.3d at p. 1178.)

  - o First, CURE argues, based on comments submitted to the CPUC by Ms. Renee Owens, that the EIR/EIS "relied on only reconnaissance levels surveys and databases," which CURE claims resulted in the EIR/EIS underestimating the presence and density of sensitive species in the Project areas. (CURE April 23, 2019 Letter, pp. 12-13.) As a result, CURE alleges that it is impossible to evaluate whether the mitigation measures

---

[8] CURE mistakenly asserts that biological surveys were prepared by ESA. (CURE April 23, 2019 Letter, p. 15.) The surveys were prepared by AECOM, who is included on the County's list of approved biologists. (See Monterey County Resource Management Agency, Approved Consultants for Preparing County Required Environmental Report, Biology Consultants, attached hereto as <u>Exhibit L</u>.)

provided in the EIR/EIS, and recommended by Planning Commission staff, are sufficient to reduce impacts to sensitive species. (*Id.*, p. 13.)

- As explained in the Final EIR/EIS in response to Ms. Owens' comments, the EIR/EIS did not rely solely on California Natural Diversity Database ("CNDDB") or California Native Plant Society ("CNPS") records. (FEIR/EIS, p. 8.6-498.) Instead, the results from the CNDDB and CNPS information were used, "along with an evaluation of habitat conditions and life history of each special-status species," to determine whether a special-status species has a potential to occur anywhere within the Project area. (*Ibid.*) Further, multiple biological surveys were conducted in the Project area between 2012 and 2016 for the specific purpose of obtaining data for analysis of the Project, including a combination of reconnaissance-level field surveys and focused and protocol-level surveys. (*Id.*, p. 8.6-497.) All of this data was used to craft the mitigation measures listed in the EIR/EIS, which the Planning Commission then appropriately adopted through the Resolutions. Accordingly, any argument that the mitigation measures intended to prevent impacts to sensitive habitats and species are based on inadequate data is completely without merit.

o Second, CURE asserts that the mitigation measures provided in the EIR/EIS and adopted in the Staff Reports "lack specificity or are deferred," again repeating arguments made by Ms. Owens in EIR/EIS briefing. (CURE April 23, 2019 Letter, pp. 13-14.) Specifically, CURE argues that Mitigation Measure 4.6-1b, which requires training for construction workers to ensure that they are aware of special status species and measures to avid impacts, improperly defers mitigation because it does not specify what those measures are. (*Id.*, p. 13.)

- CURE's argument ignores the subsequent paragraphs in both Staff Reports, which provide the specific mitigation measures that must be carried out by construction workers at the Project construction sites. (Desalination Plant Staff Report, Ex. B, pp. 12-13; Pump Station Staff Report, Ex. B, pp. 8-10.) The detailed performance standards for each of these mitigation measures is also laid out in exacting detail in the EIR/EIS. (FEIR/EIS, pp. 4.6-172 to 4.6-195.) Thus, the measures are sufficiently detailed and enforceable.

o CURE also alleges that Mitigation Measure 4.6-1e, which requires consultation with U.S. Fish & Wildlife Service and California Department of Fish and Wildlife to mitigate impacts to sensitive plant species in the Project area, improperly defers mitigation. (CURE April 23, 2019 Letter, p. 13.)

- Again, CURE ignores the detailed performance standards articulated for Mitigation Measure 4.6-1e in the EIR/EIS. (FEIR/EIS, pp. 4.6-178 to 4.6-180; see also CEQA Guidelines, § 15126.4, subd. (a)(1)(B) [mitigation measures may specify performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way]; *Fort Mojave Indian Tribe v. Dept. of Health Services* (1995) 38 Cal.App.4th 1574, 1603 [upholding mitigation measure requiring implementation of measures developed through consultation with federal and state wildlife agencies].)

K. The Planning Commission's Findings Are Supported by the Evidence

- MCWD alleges that various Planning Commission findings are "not supported by evidence" or are "otherwise erroneous." (MCWD Pump Station Appeal, pp. 10-12; MCWD Desal Plant Appeal, pp. 10-12.) To the contrary, substantial evidence in the EIR/EIS and the County's record supports the Planning Commission's findings. The Planning Commission's consistency determinations are entitled to considerable deference. (*Gray*, *supra*, 167 Cal.App.4th at pp. 1129-1130; *Sierra Club*, *supra*, 121 Cal.App.4th at pp. 1509-1510.)

  - **Consistency With County Policies**

    - The Planning Commission correctly determined that the Project is consistent with applicable County land use plans and policies. (See Sections G.3, G.5, H.1, *supra*; see also FEIR/EIS, pp. 4.8-23 to 4.8-27 [analyzing applicable County land use plans and policies].)

  - **Health and Safety**

    - The Planning Commission correctly determined that the Project will not be detrimental to the health, safety, peace, morals, comfort, and general welfare of persons residing in the neighborhood or to the general welfare of the County. (See Sections H.1, I, *supra*.) As described above, the Project's air quality, noise, and groundwater impacts are mitigated to the maximum extent feasible and would not be detrimental to health, safety, or welfare.

  - **Zoning Violations**

    - The Planning Commission correctly determined that the Desalination Plant and Pump Station comply with applicable zoning requirements. (See Sections G.5.a, H.2, I.1, J, *supra*.) The uses on each site are expressly allowed with approval of a Use Permit (see County Code, § 21.74.050(B)(1)), and the developments comply with applicable height, setback, and site coverage requirements. (See Desalination Plant Resolution, pp. 7-8; Pump Station Resolution, pp. 4-5.)

  - **CEQA (Previously Adopted EIR)**

    - As described above, the Planning Commission appropriately relied on the EIR/EIS as the basis for its responsible agency review, as required by CEQA. (See Section A *supra*.)

  - **CEQA (No Supplemental or Subsequent EIR Is Needed)**

    - The Planning Commission correctly determined that no supplemental or subsequent EIR is warranted. (See Section B *supra*.)

- **CEQA Findings**

  - MCWD erroneously claims that there is significant new information that must be evaluated in a supplemental or subsequent EIR. These claims are addressed in Section B *supra*.

- **No Feasible Alternatives**

  - The Planning Commission correctly determined that Project alternatives, including the PWM expansion, are infeasible. (See Section B.2 *supra*.)

- **Statement of Overriding Considerations**

  - Contrary to MCWD's and PWN's claims (MCWD Appeal PLN150653, p. 11; MCWD Appeal PLN150889, pp. 11-12; PWN Appeal, pp. 13-14), the Planning Commission's statements of overriding considerations are supported by substantial evidence in the EIR/EIS and is consistent with the CPUC's findings concerning the Project's important regional benefits. (See, e.g., FEIR/EIS, pp. 2-8, 4.20-5, 4.6-2, 4.6-126, 4.4-70, 4.4-91 to 4.4-92, 5.5-72; D.18-09-017, Appx. C, pp. C-74 to C-75.)

- **Environmentally Sensitive Habitat Areas**

  - The Planning Commission correctly determined that the Project is consistent with the County Code provisions regarding protection of environmentally sensitive habitat. (See Section J *supra*.)

US-DOCS\107554915

EXHIBIT A

State of California

M e m o r a n d u m

Date: September 12, 2018

To: **Commissioners and ALJs**

From: John E. Forsythe - Energy Division
MPWSP CEQA/NEPA Team
CPUC Legal Division

File No: A.12-04-019 Cal-Am MPWSP FEIR/EIS

Subject: **Responses to Comments Received After Publication of MPWSP Final EIR/EIS**

Numerous comments have been raised in parties' briefs and separate comment letters directed to the CPUC following publication of the Final EIR/EIS in March 2018. Some of these have included additional studies, including the final report on airborne electromagnetic (AEM) data collected for MCWD[1] and a May 11, 2018 Technical Memorandum on the potential Pure Water Monterey System expansion.[2] None of these additional communications and studies raise any issues that cause us to believe there are new or more severe significant impacts beyond those identified in the Final EIR/EIS or that new mitigation measures or additional alternatives would be warranted. The vast majority of these comments already have been raised and responded to in the Final EIR/EIS.

Below is a summary of comments that appear to or claim to present new information, or otherwise merit a response, and responses to these comments.

Responsible Agency Consultation

The City of Marina is a responsible agency under CEQA because it will address project approvals other than those being acted on by the CPUC, notably a coastal development permit for the source water slant wells at the CEMEX site. CalAm has applied to the City of Marina for such permit. CEQA requires that the lead agency under CEQA, here the CPUC, prepare and circulate a Notice of Preparation concerning the subject of an EIR being prepared so that responsible agencies and others may provide written comments to the lead agency as to significant environmental issues and possible mitigation measures and alternatives that should be explored in the EIR. (CEQA Guidelines section 15082(b).) A responsible agency may request a meeting with the lead agency to assist the lead agency in determining the scope and content of the EIR. (CEQA Guidelines section 15082(c).) A responsible agency must respond to consultation by the lead agency, designate representatives to attend meetings requested by the lead agency about the EIR, and submit comments on the

1 Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA, prepared for Marina Coast Water District. Ian Gottschalk, Rosemary Knight, Stanford University, Stanford, CA; Ted Asch, Jared Abraham, Jim Cannia, Aqua Geo Frameworks, Mitchell, NE. 15 March 2018.

2 Pure Water Monterey System Expansion Study Update for 7-mgd Capacity, Final Technical Memorandum, prepared for Monterey One Water. Craig Lichty and Todd Reynolds, Kennedy/Jenks Consultants. 11 May 2018.

EIR concerning project activities within the agency's area of expertise or that are required to be approved by the agency. (CEQA Guidelines Section 15096.)

The City of Marina claims that the CPUC has failed to properly consult with it throughout the 6-year process of the Final EIR/EIS being prepared. This is not correct. The CEQA/NEPA team has actively engaged with the City of Marina, exceeding the requirements of CEQA. In addition, the City became a party to the CPUC proceeding, so has had the opportunity to submit briefs on all of the issues, testimony addressing its interests and concerns, and comments on the Proposed Decision, and to participate in the oral argument held in front of the Administrative Law Judges and Commissioners on August 22, 2018.

A full chronology of communications between the City of Marina and the CPUC CEQA team beginning with the issuance of the 2012 Notice of Preparation is presented as Exhibit A.

Groundwater

Model Bias and "Data Tampering"

Overview

In the Water Plus[3] Opening Brief dated April 19, 2018, and in Water Plus comments on the Proposed Decision dated September 4, 2018, Dr. Ron Weitzman accuses the modeling consultants, HydroFocus and Geoscience, of data tampering. Dr. Weitzman's accusations stem primarily from his interpretation of a correlation of model errors (residuals) with model-calculated water levels in a single aquifer (the "180-Foot Aquifer"). The 180-Foot Aquifer is represented by model layer 4 in the North Marina Groundwater Model, v. 2016 ($NMGWM^{2016}$ or North Marina model). Water Plus has provided no direct evidence to support the data tampering accusation. Rather, the evidence in the record (including but not limited to Final EIR/EIS Master Response 12: The North Marina Groundwater Model (v. 2016), and Final EIR/EIS Section 8.6.20) indicates that the data tampering accusations are false because:

1. Model runs by multiple independent entities (including Lawrence Berkeley National Laboratories, see EIR/EIS Appendix E1) produced identical results.
2. The information used to produce the graphs showing the correlation from which Water Plus infers data tampering include measured and model-calculated water levels. These water levels are easily accessed and can be viewed by anyone desiring to do so using Microsoft Excel. There is no intermediary program applied to the water levels prior to analysis and presentation other than Microsoft Excel.
3. There are logical, scientific, and straightforward explanations for the correlations.

This evidence is discussed in more detail below.

Model runs by multiple independent entities re-produced the same results

Three independent entities (i.e., Geoscience, HydroFocus, and Lawrence Berkeley National Laboratories or LBNL) produced the same output (model-calculated water levels), using different MODFLOW executables, confirming that the model-calculated water levels were not modified during the model run. As noted by LBNL in EIR/EIS Appendix E1 on page 2, "Based on this review, LBNL found its simulation results match those in Appendix E2 [Final NMGWM Report] of the DEIR. Some of the groundwater modeling outputs are

[3] Water Plus submitted comments on the Draft EIR/EIS under the organization name of Water Ratepayers Association of the Monterey Peninsula, or WRAMP.

reproduced exactly, while others show small differences that can be attributed to computer round-off and cancellation errors."

There is no computer program that "selectively" transfers data from MODFLOW output to an Excel spreadsheet

The data that correspond to the model scenarios reported in the January 2017 MPWSP Draft EIR/EIS continue to be publically available here: http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/comms_n_docs.html. The step-by-step process by which those data are read directly into an Excel file is presented in Exhibit B. There is no intermediary program that would provide an opportunity for the data to be modified.

There are logical, scientific, and straightforward explanations for the correlations

The commenter's accusations of data tampering stem primarily from his interpretation of a correlation of model errors (residuals) with model-calculated water levels in a single aquifer (the "180-Foot Aquifer"). The correlation that is claimed to be evidence of data tampering is actually related to the availability of only poor quality model inputs, resulting in model bias. In this case, model bias means that the differences between the model-calculated water levels and the measured water levels – these differences are referred to as the model errors or "residuals" – are not consistent over the range of model-calculated water levels; the residuals (or errors) increase with increasing model-calculated water levels. Ideally, for a given model layer there should be both positive and negative residuals (model-calculated water levels fall equally and unpredictably higher and lower than measured water levels), and a plot showing the residual values on the y-axis and the model-calculated values on the x-axis should be approximately horizontal and scattered around zero for the entire range of model-calculated values. This would illustrate that the residuals are random and unpredictable, and there is little to no correlation. For example, the plot of Model Layer 8 for the 900-Foot Aquifer (this is described as the "Deeper Aquifers" in the Final EIR/EIS) shown below in Figure 1 does not show model bias. That is, the values of the residuals do not show a trend (correlation) as model-calculated water levels increase.

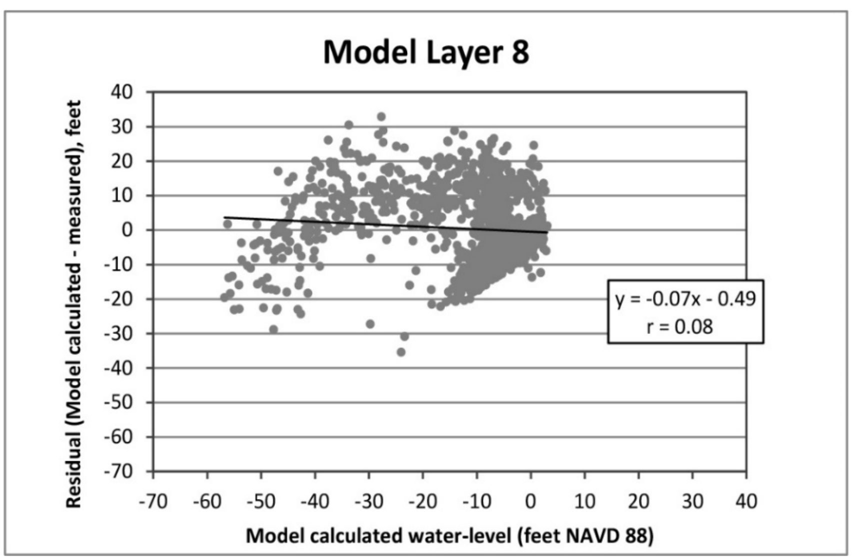


Figure 1. Relation of residuals and model calculated water levels for Model Layer 8 (900-Foot Aquifer), reproduced from Appendix E2 Figure 4.3b with trend line values expanded from one decimal place to two (the number of decimal places reported does not influence the conclusions).

In contrast, for Model Layer 4, which represents the 180-Foot Aquifer, residuals increase with increasing model-calculated water levels as shown in the graph in Figure 2 below. This means that there is a bias in the model for this layer – as model-calculated water levels increase, we can predict that residuals will also increase.

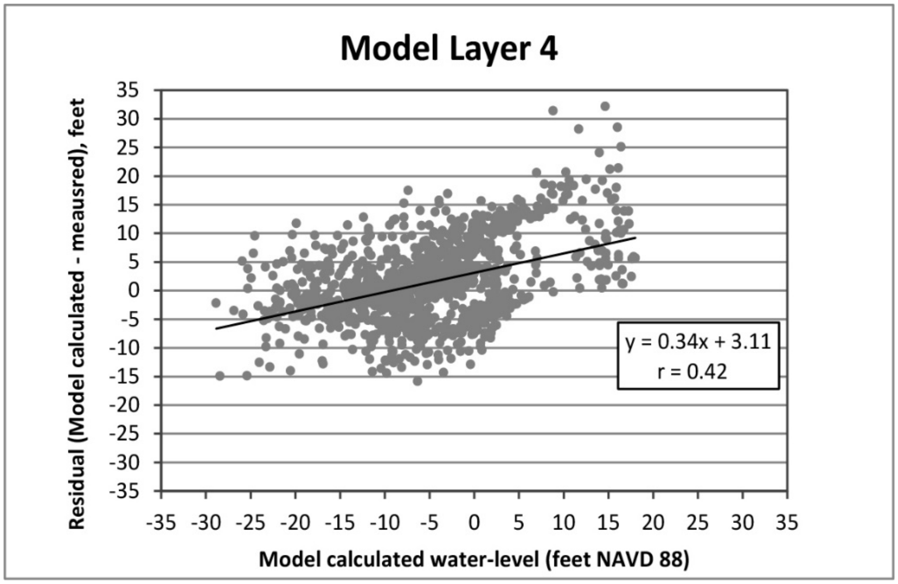


Figure 2. Relation of residuals and model calculated water levels for model layer 4 (180-Foot Aquifer), reproduced from Final EIR/EIS Appendix E2 Figure 4.3b with trend line values expanded from one decimal place to two (the number of decimal places reported does not influence the conclusions).

When HydroFocus evaluated the NMGWM prepared by Geoscience for the April 2015 Draft EIR, this bias was recognized as being the result of using NMGWM model inputs that were derived from data generated by the very coarse-grained, regional in nature, and outdated Salinas Valley Integrated Groundwater Surface Water Model (SVIGSM or Salinas Valley model), which is what was available as inputs for the NMGWM. As discussed in Final EIR/EIS Section 4.4.4.2, in Appendix E2, and in Master Response 12, the NMGWM^{2016} was converted to superposition mode to isolate the change in conditions to those caused solely by the proposed project. In this conversion, initial water levels and background recharge and pumping were all set to zero throughout the model area. The superposition approach was employed to remove the bias of the poor-quality SVIGSM data, and reliably simulate the potential groundwater hydrologic effects attributable only to the proposed project. Superposition is a widely accepted approach to simulating the effects of groundwater extractions on water levels. It effectively isolates the hydrologic effects and obviates the need to consider the input problems associated with data from the SVIGSM.

Responses to Comments in Water Plus Opening Brief dated April 19, 2018

Comment

"2. Model corruption, not inadequacy. Both the second draft and the FEIR/EIS ("the two documents") identify data corruption as "Model Bias" meaning in this non-standard nomenclature that a non-zero correlation exists between predictions and errors."[4]

4 Throughout this response to Water Plus comments, the "second draft" is assumed to refer to the January 2017 Draft EIR/EIS.

Response

The use of graphs that show the regression relation between model residuals (the difference between model calculated or “predicted” water levels and measured or “observed” water levels) and model-calculated water levels is one standard practice for recognizing model bias. Bias in models results when the residuals do not conform to the assumptions of regression analysis as described in “Applied Regression Analysis” by Draper and Smith.[5] Draper and Smith (see page 60 of the third edition) provided guidance on how residuals should behave for model results. Specifically, the assumptions are that the errors are independent, have zero mean, have a constant variance, and follow a normal distribution. Similar assumptions are listed in “Statistical Methods in Water Resources” by Helsel and Hirsch,[6] (see page 225).

In Final EIR/EIS Appendix E2 Figure 4.3b for model layers 2, 6, and 8, the r value or correlation coefficient is close to 0.0. This means that the errors for different values of model-calculated water levels are independent of the values of the model-calculated water levels. Why is this important? If the errors are not independent, then the model tends to do a better job in (is “biased” toward) some places and times than in others. The model then fails to satisfy the criterion (as per Draper and Smith) of independent residuals, and the model is not entirely correct because it is biased. This was the case for the model results for Model Layer 4 where the correlation coefficient is 0.42 (see Figure 2 above). The superposition approach was employed to remove the bias of the poor-quality SVIGSM data, and reliably simulate the potential groundwater hydrologic effects attributable only to the proposed project. Superposition isolates the proposed project’s hydrologic effects, effectively addressing the input problems associated with data from the SVIGSM.

Comment

“Citing Figures 4.3b and 4.3d in Appendix E2 of both the second draft and the FEIR/EIS, the two documents unaccountably provide different values for this non-zero correlation: the second draft, 0.4, and the FEIR/EIS (for the same correlation), 0.2 (p. 8.2-90).”

Response

The Final EIR/EIS text mistakenly reported the r^2 value (0.2), which is not the same as the r value (0.4). This has been corrected in the published Errata for Final EIR/EIS page 8.2-90. Note that the Final EIR/EIS Appendix E2 Figures 4.3b and 4.3d are correct, and both list 0.4 as the correlation coefficient (r value).

Comment

“This is not the only problem with the representation of this number in the two documents. The number actually should be negative rather than positive; HydroFocus mistakenly represented error as predicted value minus observed measurement (see Figure 4.3d in Appendix E2) though observed measurement is equal to predicted value plus error so that error is in fact equal to observed measurement minus predicted value.”

Response

Indeed, Draper and Smith specify the residual calculation as equal to the measured value minus the modeled value. However, calculating the regression coefficient using residuals calculated as the

---

5 Draper, Norman R., and Harry Smith, 1998. Applied Regression Analysis, Third Edition, A Wiley Interscience Publication.
6 Helsel, D.R., and R.M. Hirsch, 1992. Statistical Methods in Water Resources, Elsevier Science Publishing Company.

modeled value minus the measured value only changes the sign, not the magnitude of the regression coefficient. Furthermore, the interpretation of the sign of the regression coefficient is determined by the practitioner's definition of the residual, which was clearly stated up-front as part of model evaluation. Therefore, the regression coefficient as determined by HydroFocus is an acceptable indicator of model bias and its definition had no influence on the interpretation of the bias.

Comment

"Common statistical practice is to represent correlations to two decimal places and, following this practice, the actual correlation between predictions and errors for the 180-foot aquifer is equal to -.45, as shown in Figure 2 of the Appendix."

Response

As shown in Figure 2 above, the correlation coefficient ("r") is 0.42 for Model Layer 4. The difference between 0.4 and 0.42 had no influence on the interpretation of the results.

Comment

"Both the second draft and the FEIR/EIS attribute the Model Bias to model inability to work properly when observed measurements rise or decline perhaps too steeply or for too long, as shown in Figure 4.3d of Appendix E2 (figure the same in the two documents)."

Response

This comment is an incorrect representation of the explanation for the model bias. Specifically, Final EIR/EIS Appendix E2 states on page 23 that the inability of the model to correctly simulate highs and lows in the groundwater levels is likely due to the timing and magnitude of specified pumping and recharge (model inputs). Because the timing and magnitude of the model inputs for pumping and recharge are the same for the North Marina and Salinas Valley models, and the inputs for the North Marina model for pumping and recharge came from the Salinas Valley Model, a logical conclusion is that the source of the bias is from the Salinas Valley model. As described above and in Master Response 12, the model bias has been addressed for purposes of the EIR/EIS analysis by converting to the superposition method.

Comment

"The data in this figure[7] represent the years 1979 to 1991, only the beginning portion of the analyzed data, which extend twenty more years to 2011. The correlation of -.45 applies to the entire data range, not to only the beginning twelve-year portion of it."

Response

The beginning portion of the data was used to illustrate the source of model bias and to calculate the correlation coefficient. As illustrated in Appendix E2 Figure 4.1a, this is the only portion of the data that can be used to estimate bias because it is the only portion where there are measured values for comparison with the modeled values.

[7] Comment refers to Figure 4.3d of Appendix E2

Comment

"The model in question is called MODFLOW, developed by the U.S. Geological Survey. The model is not the problem. As shown in the following section (II.E.3), the problem is the selectively restricted data range used to explain the errant correlation."

Response

The range was selected because it was the only period for which there were both measured and modeled values. Both measured and modeled values are needed to calculate the residuals which are utilized to test for bias.

Comment

"*3. Zero correlation, not independence, between predictions and errors*. The FEIR/EIS claims (p. 8.2-89) that Model Bias occurs when model errors 'do not conform to the assumptions of regression analysis (the assumptions that the model errors are independent, have zero mean, have a constant variance and follow a normal distribution (Ward et al., 1987)).' This Ward et al. citation appears to be to a textbook used in a statistics course taken by at least one of the FEIR/EIS authors. It is not only old; it is also inaccurate."

Response

This was a mistake in the bibliography that has been corrected in the published Errata. The reference is not Ward et al. (1987) but Draper and Smith, "Applied Regression Analysis," Third Edition, published in 1998 by Wiley Interscience. This book's senior author is Professor Emeritus of Statistics at the University of Wisconsin, Madison, and is widely cited (32,274 citations according to Google Scholar). Coauthor Harry Smith is a former faculty member of the Mt. Sinai School of Medicine. The statements by Draper and Smith are consistent with other texts (e.g., Helsel and Hirsch, 1992, "Statistical Methods in Water Resources" published by Elsevier).

Comment

"Independence of model predictions and errors implies zero correlation between them, which itself is not an *assumption* but, as shown in Equation 5.2.41 on p. 68 of the statistics book by Dr. John Doherty underlying the MODFLOW model's estimation process, an *outcome* of the process, which produces, along with measurement estimates ("predictions") and other information, errors having the least possible variation (minimal error variance)."

Response

Doherty[8] stated that "for a calibrated model, residuals are normal to model outputs." This statement is in complete agreement with the need to achieve zero correlation of residuals versus model outputs. As stated above, it was impossible to improve the North Marina model calibration (and reduce the bias in Model Layer 4) because of the legacy inputs from the Salinas Valley model. While these inputs could have been adjusted to achieve better calibration, there is insufficient data with which to do this. Therefore, the superposition approach was adopted.

---

8 Doherty, John, 2015. Calibration and Uncertainty Analysis for Complex Environmental Models. Watermark Numerical Computing, Brisbane, Australia.

Comment

“Zero correlation is neither an assumption nor a requirement of model estimation. Like predictions, it is one of the results. That means when zero correlation between predictions and errors fails to occur, manipulation of either the measurements or their predictions produced by the model *must* have occurred.”

Response

Manipulation is not the reason zero correlation between predictions and errors fails to occur. The word “manipulation” is used only once in Doherty’s book in the following text: “Geostatistical software which can generate realizations of complex, flow-determining geological features is freely available. However, …. manipulation of features which appear in these realizations in a calibration setting is difficult, if not impossible.” Doherty does not state that the lack of zero correlation is the result of data or prediction manipulations. Dr. Weitzman proposes this as a reason for the non-zero correlation between residuals (errors) and model-calculated water levels. However, as has been stated and demonstrated in Master Response 12 in the Final EIR/EIS, there is ample evidence that manipulations have not occurred. As Draper and Smith (1998) point out, model incorrectness (not data or model manipulation) is indicated by non-zero correlation of residuals. Moreover, “incomplete or biased process representation, errors in the specification of initial and boundary conditions, as well as errors in the model parameters, can render the predictions of groundwater dynamics uncertain and biases.”[9]

Doherty discussed bias in several places. On page 161, he states that “a defective model has the potential to incur bias in some of its management-critical predictions.” Doherty further states that “No model is a perfect simulator of environmental processes at any study site. While this does not invalidate the use of models in environmental decision-making, it does mean that they should be used with caution. It also means that modelers should be aware of the repercussions of model defects so that, when called upon to make the many subjective decisions that modelling entails, these decisions can be as informed as possible.” Moreover, Doherty states in Chapter 9 that: “Model defects arise from many sources. They may arise from approximations used in the model algorithm, in failure to provide enough parameters to represent system property heterogeneity, in erroneous definition of temporal and spatial boundary conditions, in the need for spatial and temporal discretization that supports numerical representation of partial differential equations, from improper definition of system stresses and source terms, and from many other sources.”

In this case, the model defect was the inability of the North Marina model to adequately simulate water levels in the 180-Foot Aquifer due to deficient inputs from the Salinas Valley model. The precaution taken by HydroFocus to overcome this defect was to utilize the superposition approach and remove the source of the bias. The most likely sources of error in the superposition analysis using the NMGWM^{2016} arise from uncertainty associated with modeled boundary conditions including sea level rise, specified hydraulic conductivity values, and assumed project operations including pumping rates and relative contributions of groundwater in aquifers represented by Model Layer 2 and Model Layer 4 to total slant well pumping. We used the results from sensitivity model runs to delineate the potential range in drawdown contours and thus bracket the possible drawdown due to uncertainty in model input and assumptions. See Final EIR/EIS Appendix E2, Section 6.

9 Rojas, Rodrigo, Luc Feyen, and Alain Dassargues, 2008. Conceptual model uncertainty in groundwater modeling: Combining generalized likelihood uncertainty estimation and Bayesian model averaging, Water Resources Research, 44, W12418, doi:10.1029/2008WR006908.

Comment

"Figures 2 and 3 in the Appendix are examples of non-zero (Figure 2) and zero (Figure 3) correlations between predictions and errors. Following Equation 5.2.41 in the Doherty book cited above, the text observes that a geometric interpretation of the equation is that "residuals (errors) are normal to model outputs," meaning that in a graph showing errors (vertical axis) as a function of predictions (horizontal axis) the error trend should be a straight line at right angles to the vertical axis."

Response

This is true for models where there is no bias and in complete agreement with the need to achieve zero correlation of residuals versus model outputs.

Comment

"That is the case in Figure 3, which does not reflect data corruption for the 900-foot aquifer, but not in Figure 2, which does, for the 180-Foot Aquifer (see the red trend line in each figure). Where and how the data corruption of model output for the 180-Foot Aquifer occurred are questions to which the FEIR/EIS, like the draft immediately preceding it, has tried but failed to provide answers that can withstand scrutiny. Figures 2 and 3 tell the story."

Response

The commentor erroneously assumes that lack of zero correlation is due to data corruption. There is no evidence for corruption of model output for the 180-Foot Aquifer. As explained above, there is bias introduced by errors in the specified monthly pumping and recharge rates. The following narrative and figures provide detail to explain why the correlation of residuals and modeled water levels exists.

Figure 3, below, shows model-calculated and measured water levels for a single well 02J01 located in Model Layer 4. In the early years on the graph represented by the first pop-out, the measured seasonal water level peaks occur sooner than the model-calculated peaks, resulting in a relatively large difference between model-calculated and measured values (large values of the calculated residual). In the later years on the graph represented by the second pop-out, the agreement between the timing of measured and model-calculated peaks improve and the differences between model-calculated and measured water levels decrease. As a result, the long-term trend in the differences between model-calculated and measured water levels shifts from relatively large values to relatively smaller values.

When these residuals are plotted on a graph with the residual values on the y-axis and the model-calculated water levels on the x-axis (Figure 4), the values plot on a general line showing an upward trend – meaning, negative values of model-calculated water levels are associated with relatively small residuals, and positive model-calculated water levels are associated with relatively large residuals.

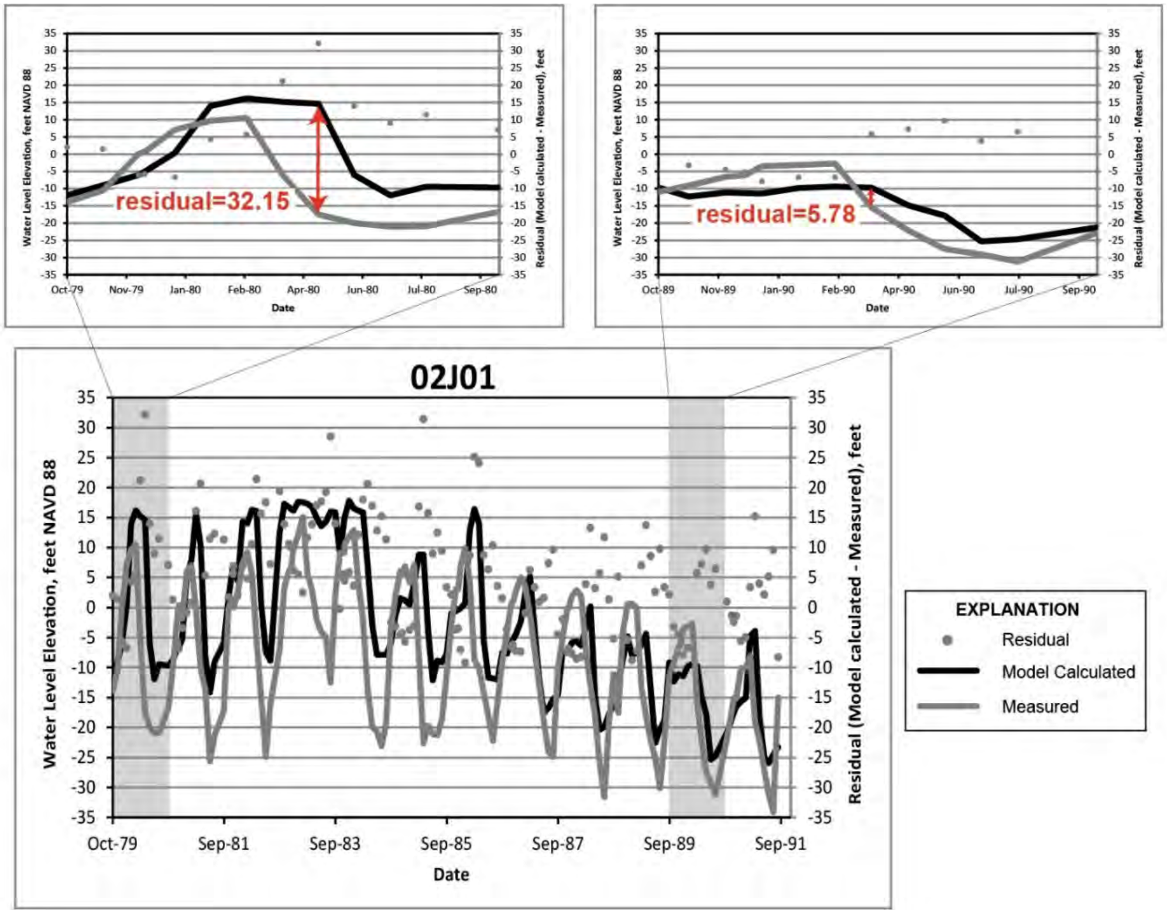


Figure 3. Model-calculated and measured water levels for a single well 02J01 located in Model Layer 4, reproduced from EIR/EIS Appendix E2 Figure 4.3d, with portions extracted to show detailed information.

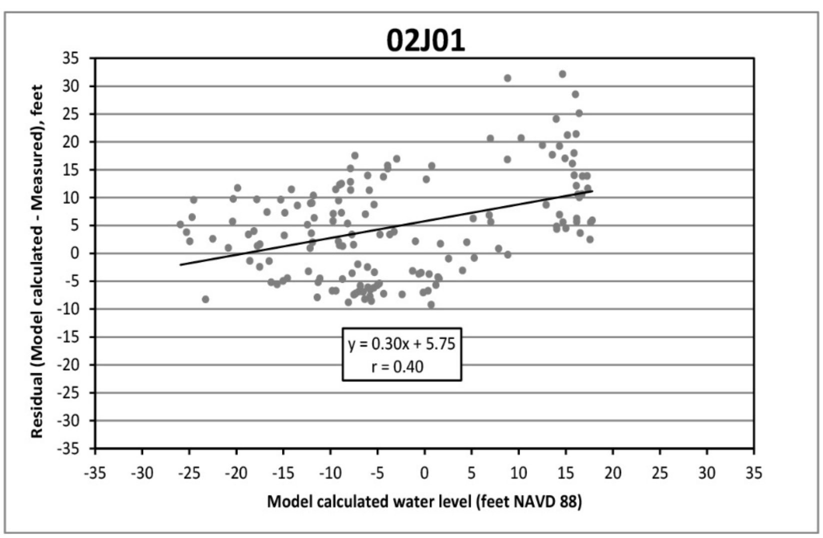


Figure 4. Residuals versus modeled calculated water levels for a single well 02J01 located in Model Layer 4, reproduced from EIR/EIS Appendix E2 Figure 4.3d with trend line values expanded from one decimal place to two (the number of decimal places reported does not influence the conclusions).

In contrast, the differences between Model Layer 8 model-calculated and measured water levels are generally random, as indicated by their scatter, and independent, as indicated by the slope being very close to zero. Figure 5 shows model-calculated and measured water levels for a single well 19Q03 located in Model Layer 8. There is better agreement between model-calculated and measured seasonal water level peaks throughout the simulation period. Moreover, there is no trend when the residuals are plotted on a graph (Figure 6) where the residual value is on the y-axis and the model-calculated water level values are on the x-axis (the values generally plot on a horizontal line).

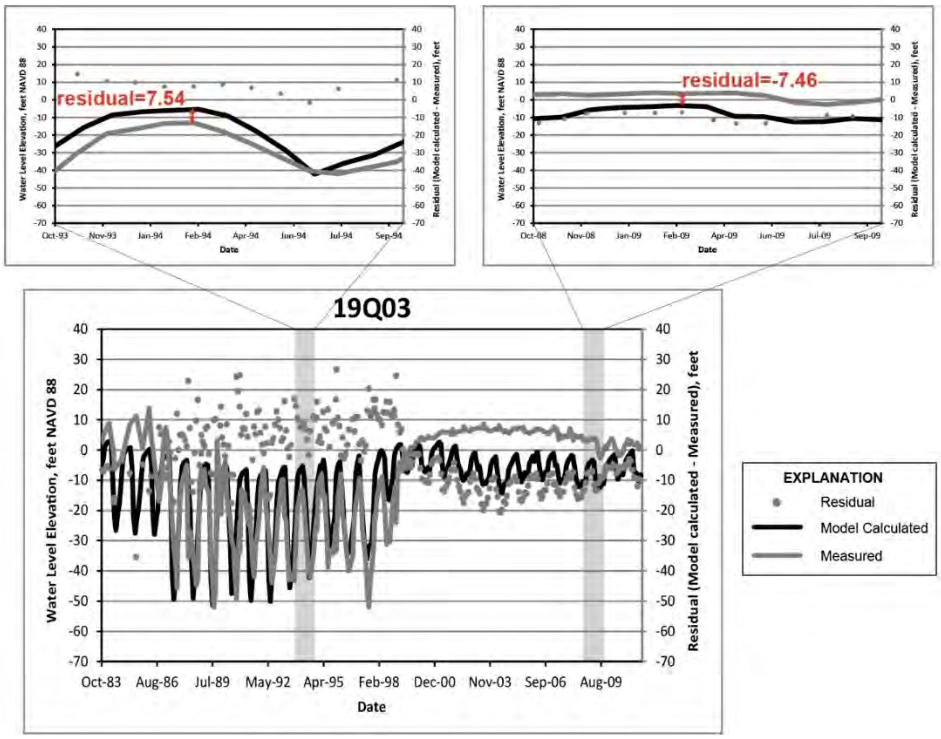


Figure 5. Model-calculated and measured water levels for a single well 19Q03 located in Model Layer 8.

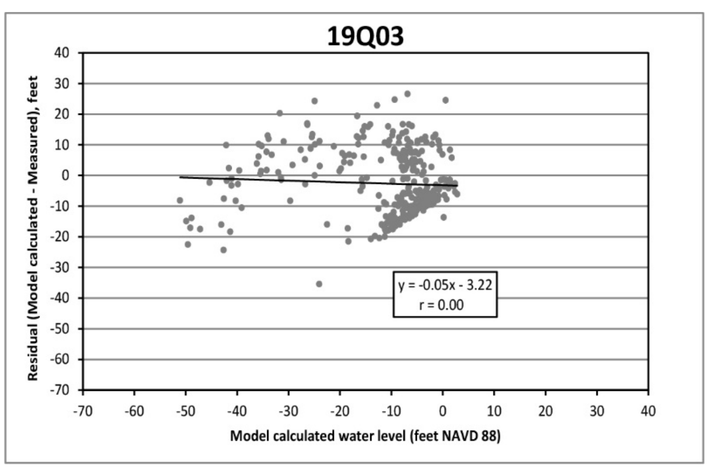


Figure 6. Residuals versus modeled calculated water levels for a single well 19Q03 located in Model Layer 8.

These figures confirm that the model bias identified in Appendix E2 is limited to Model Layer 4 and show that it is caused by the timing and magnitude of shift between seasonal peaks. The model-calculated seasonal peaks are the result of model inputs – not data tampering. Specifically, the timing and magnitude of pumping and recharge specified in the model for extraction wells in Model Layers 4 and 8 were originally derived from the SVIGSM. Using the NMGWM in a superposition mode for the EIR/EIS analysis eliminated the model bias caused by the poor quality SVIGSM-generated data.

Comment

"The U-shaped relationship in Figure 3 for the 900-foot aquifer shows that zero correlation can exist between predictions and errors even when they are not independent of each other: In this case, as one goes up the other first goes down and then goes up (like the letter U). When predictions, tagging observed water elevations, are relatively low, as they are in the later years of data collection, a plot of errors against predictions for those years of 900-foot aquifer data would look very much like the one for the 180-foot aquifer in Figure 4.3d of Appendix E2 of the FEIR/EIS even though for the complete 900-foot aquifer data set zero correlation exists between predictions and errors. (The error trend would be downward rather than upward, as it is in Figure 4.3d, because HydroFocus determined error incorrectly, as shown earlier.) If HydroFocus had used such a plot for the 900-foot aquifer to explain non-zero correlation, it would have explained something that did not exist. The non-zero correlation for the entire 180-foot aquifer data set is evidence of the corruption of output data, nothing else. A good place to look for the source of that corruption is the computer program that selectively transferred the MODFLOW output to a Microsoft Excel spreadsheet, which HydroFocus and the other consultants used to analyze the results."

Response

The step-by-step process by which the publicly available MODFLOW output file is read directly into an Excel file is presented in Exhibit B. There is no intermediate program that transferred the MODFLOW output to an Excel spreadsheet.

Comment

"*4. Net, not full, effect of pumping isolated by MODFLOW model*. As noted earlier, recognizing that something was wrong with the output of the MODFLOW model, HydroFocus modified the model to produce what it identified as a superposition model. The modification consisted of setting all water elevations on the boundary enclosing the zone under study (North Marina or CEMEX) and all square blocks within the zone equal to zero (p. 8.2-93). The result was a model that isolated the impact of test-well pumping on water elevation within each block within the zone, while eliminating the possible nuisance influences of regional pumping and recharge on water elevation. The theory underlying this modification is that a MODFLOW model containing these regional influences run with and without the influence of test-well pumping would produce a difference in results showing the same isolated impact of test-well pumping that a superposition model would (p. 8.2-94). Because a model like MODFLOW isolates solely the portion of an influence that is uncorrelated with other influences accounted for by the model, the only condition under which the superposition theory would be correct is that none of the regional influences on water elevations within the zone is correlated with test-well pumping.

That condition is not likely to exist. It would not exist, for example, if regional pumping were related to test-well pumping, a relationship that would occur if regional pumping increased seawater intrusion within the zone. The resulting increased density of the water drawn by the test well would reduce its impact on water elevations within the zone so that the greater the influence of regional pumping the smaller would be the influence of test well pumping. The superposition model rests on a shaky theoretical foundation. That is unfortunate because "the Lead Agencies and their CEQA/NEPA experts relied on HydroFocus' superposition modeling report (Appendix E2) in their evaluation of the project (p. 8.2-30)."

Response

The superposition approach simulates solely the effects of slant-well pumping. As correctly stated by the commenter, the result was a model that isolated the impact of test-well pumping on water elevation within each block within the zone, regardless of the influences of regional pumping and recharge on water elevation.

Comment

"An example of the serious consequences of this reliance is that, in a review of the second draft, the consulting firm GeoHydros, which, instead of superposition, used the difference between unmodified MODFLOW model runs (one with and one without test well pumping) to isolate the net impact of test-well pumping on water elevations, "reported that 756 AFY of the water removed by the slant wells would come from upward flow into the overlying 180-Foot and Dune Sand Aquifers from the 400-Foot and deeper aquifers . . . [producing] harm to the deeper aquifers. 8.2-95). Obtaining a contrary result using superposition, HydroFocus discounted that conclusion (*Ibid*) which, in view of superposition's shortcomings, is likely true."

Response

HydroFocus responded to the GeoHydros comments (comment MCWD-GH-21 in Final EIR/EIS Section 8.5.2 on page 8.5-751) by explaining that the water budget results reported by HydroFocus are calculated directly from the method of superposition, whereas the GeoHydros results are calculated by subtracting two (with and without project pumping) model runs. If correctly implemented, the results from the two approaches must be identical, as HydroFocus showed using an example problem in Attachment 1 to Appendix E-2. However, the analysis employed by GeoHydros was shown to be flawed. Furthermore, either approach provides the change in water budget components and those changes must be applied to the real-world groundwater conditions. When appropriately interpreted relative to field-measured conditions, the budget changes indicate that slant well pumping is expected to reduce outflow from the 180-Foot Aquifer to the 400-Foot Aquifer, likely providing a water quality benefit to the deep aquifers.

Final EIR/EIS Master Response 12, The North Marina Groundwater Model (v. 2016), provides more detail.

Responses to Water Plus comments on the Proposed Decision dated September 4, 2018

For all comments related to the perceived conflict of interest with Geoscience, see Final EIR/EIS Master Response 5, The Role of the Hydrogeologic Working Group and its Relationship to the EIR/EIS, Section 8.2.5.6. No new information is raised in these comments regarding the relationship of Geoscience to this project.

Comment

"Important to note now is that Dr. John Doherty, who wrote the text underlying the parameter-estimation portion (PEST) of MODFLOW, confirmed in a 19 February 2015 personal email message to me that, along with the estimates, the model produces—does not simply assume—zero correlation between them and their residuals."

Response

The commenter has not provided a copy of this email message, so the CEQA/NEPA team cannot review it. However, MODFLOW itself does not perform statistical analysis, and PEST is not a "portion" of MODFLOW. Moreover, PEST was not used to calibrate the NMGWM^{2016} (nor is it mentioned in the modeling report).

Comment

"Because both the two new CPUC consultants confirmed my far-from-zero correlation between predictions and errors, they concluded that MODFLOW, as applied in the NMGWM or in the CM, was at fault. That was the reason for the replacement of those two models by the Superposition Model."

Response

In fact, as explained previously, HydroFocus (and LBNL, independently) confirmed that the correlation between predictions and errors was the result of inputs from the SVIGSM, not the "fault" of MODFLOW. No direct evidence has been presented by Water Plus to support the data tampering accusation. In fact, the available evidence indicates that the data tampering accusations are false as explained above in responses to the Water Plus Opening Brief dated April 19, 2018. Further, Water Plus continues to erroneously interpret the use of superposition to mean that a new model was developed. Superposition does not replace the NMGWM^{2016}; rather, it is a method of analysis that uses the NMGWM^{2016}, as explained in detail in Final EIR/EIS Master Response 12, Section 8.2.12.3.

Comment

"The consultant who made that replacement assumed that neither model met the assumption of independence between model predictions and errors. What the consultant did not realize is that, regardless of whether that assumption of independence is met, MODFLOW in any of its applications that produces estimates also produces a zero correlation between them and their errors in the process of optimizing the estimation."

Response

Statistical calculations were not conducted using MODFLOW. Furthermore, no process of "optimizing the estimation" was employed, as explained above in responses to the Water Plus Opening Brief dated April 19, 2018.

Seawater Intrusion

Comments by Water Plus on the Proposed Decision (dated September 4, 2018) state on page 12, "The test well began with 74 percent seawater and ended with 93 percent. That result indicates the project would increase seawater intrusion into Salinas Valley groundwater, contrary to the intent of the Agency Act." Additionally, letters from Margaret Ann Coppernoll and Ag Land Trust suggest that CalAm is either currently (via the test slant well) or would be (via Project wells) intentionally exacerbating seawater intrusion in the SVGB in order to support the process of obtaining water rights. This claim is unsubstantiated, and the CEQA/NEPA team's work and responses to comments and reports (e.g., Final EIR/EIS Master Responses 8 and 11) show that the test slant well has not, and the Project wells would not, exacerbate existing, ongoing seawater intrusion into the SVGB. As described in Final EIR/EIS Section 4.4.5.2 on page 4.4-101, pumping over the life of the project would change the local groundwater quality of the inland areas close to the slant wells and within the groundwater capture zone from the current brackish-to-saline quality to a higher salinity. The increase in salinity within this small area would occur because the slant wells would draw in the brackish water that is currently in the aquifer formation and seawater would flow in to replace it. This effect would only occur within the capture zone near the coast at the CEMEX site; areas outside of the capture zone would not be affected. Thus, assertions by Water Plus, Coppernoll, and Ag Land Trust that the project would exacerbate seawater intrusion elsewhere in the SVGB (i.e., outside of the capture zone) are not supported by the evidence.

AEM and Hydrogeology

In addition to and within the context of the Final AEM Report released in April 2018, EKI, Hopkins Groundwater Consultants Inc. (HGC), and Jacobson James and Associates (JJA) commented on the groundwater analysis in the Final EIR/EIS and the work completed by the Hydrogeologic Working Group (HWG) (appended to MCWD comments on Final EIR/EIS). Aqua Geo Frameworks (AGF) also commented (appended to City of Marina comments on Final EIR/EIS). Further, the HWG submitted comments to the CPUC and MBNMS on April 19, 2018, responding to the Final AEM Report and reports and technical memos by HGC, AGF, EKI, GeoHydros, and JJA.

Comments submitted by AGF focused on the HWG's interpretation of the Stanford AEM study results, specifically, the methodology used by HWG to correlate the AEM results with actual groundwater quality. HWG's correlation was presented in Final EIR/EIS Appendix E3 and was discussed in Section 4.4.1.4 and Master Response 8.2.9. AGF comments do not change the discussion or conclusions presented in the EIR/EIS.

Generally speaking, the comments provided by EKI, HGC, and JJA claim that the Final EIR/EIS:

- does not analyze how a change (e.g., a reduction, or reversal) in the inland groundwater gradient would alter the projected capture zone nor how the capture zone could increase seawater intrusion;
- does not adequately address how the project would impact efforts under the Sustainable Groundwater Management Act (SGMA);
- does not incorporate, and in some cases dismisses, the findings of Dr. Knight's AEM study, especially in the representation of hydrogeologic conditions of the Dune Sands Aquifer and 180-Foot Aquifer at the coast;
- underplays and misrepresents the unique recharge conditions in the North Marina Subarea and dismisses the presence of a freshwater lens inland of the CEMEX site; and
- misrepresents the definition of brackish water and does not acknowledge the beneficial uses of groundwater with TDS of 3,000 mg/L or less.

The CEQA/NEPA team has previously encountered and commented on most of these issues and claims, none of which present new information that would change our working understanding of the hydrogeologic setting or the conclusions of the impact analyses presented in the Groundwater Resources section of the Final EIR/EIS. The following subsections provide additional clarification and respond to the issues raised in these comments. However, it is important to note that the comments and responses presented here do not provide any new information that would change the environmental setting or impact analyses or conclusions of the Final EIR/EIS.

Inland Gradient and Groundwater Capture Zones

Reduced or Reversed Groundwater Gradients

Based on comments received on the January 2017 Draft EIR/EIS, the March 2018 Final EIR/EIS includes an enhanced discussion and accompanying graphics showing the extent of the groundwater capture zone that would be created in the Dune Sand Aquifer and the 180-Foot/180-Foot Equivalent (FTE) Aquifer by pumping source water from MPWSP slant wells; see EIR/EIS Sections 4.4.4.2 and 4.4.5.2, and Master Response 8.2.8. Comments received on the Final EIR/EIS from EKI, HGC, and JJA address the groundwater zone of capture and claim that the Final EIR/EIS is deficient because the analysis does not address the configuration of the MPWSP slant well capture zone if the inland groundwater gradient were reduced or reversed in the future.

The relationship between the inland groundwater gradient and seawater intrusion is discussed in detail in the Final EIR/EIS Section 4.4.1.3. In summary, before human development of the Salinas Valley, groundwater flowed at a certain gradient toward, and was discharged into, the Monterey Bay (landward to seaward gradient). Extensive groundwater pumping beginning in the mid-20th century throughout the Salinas Valley resulted in a regional decline in the inland groundwater levels, causing the landward to seaward flow gradient to reverse, and become the seaward to landward (inland) flow gradient that currently exists; see Final EIR/EIS Figure 4.4-5, which shows the existing groundwater depression east of Salinas in the 180-Foot Aquifer. The existing inland gradient allows ocean water to mix with the fresh water inland of the coast, causing the seawater intrusion that is present today in the SVGB. As is appropriate under CEQA and NEPA, the existing environmental conditions are those against which the project's environmental impacts are measured, as opposed to hypothetical, speculative future conditions.

The inland gradient and the presence of the ocean would control the extent of the capture zone projected to be created by the MPWSP pumping. The ocean is a constant-head recharge boundary; in other words, the ocean is an area from where the aquifers are consistently replenished. Most of the water drawn into the slant wells would come from the ocean. The comments on the Final EIR/EIS assert that if the current inland groundwater gradient were reduced (got flatter) or reversed (started flowing toward the ocean) in the future, the project would begin to draw fresh water from areas inland of the coast. However, the analyses presented in the comments misrepresent the conditions because they disregard or understate the presence and influence of the ocean, a substantial recharge boundary, and overestimate the extent that groundwater would be captured from inland sources.

The effects of a flatter groundwater gradient on coastal pumping are demonstrated in EIR/EIS Appendix E2, as well as in a study completed by HydroMetrics for MCWD in 2008.[10] Groundwater modeling conducted for the EIR/EIS found that the size of the capture zone would increase with a flatter inland gradient (see Appendix E2, Figure 5.7). HydroMetrics demonstrated that with no seaward or landward gradient, the capture zone from two vertical groundwater supply wells, drilled into the 180-Foot Aquifer 800 feet inland, would become wider along the coast in order to capture the same amount of flow, rather than drawing groundwater from inland aquifers. This is because the flow gradient from the ocean is steeper and the travel distance and time for ocean water to reach the wells is shorter than it is for inland groundwater to reach the wells. The conditions examined under the HydroMetrics study can also be considered a worst-case condition in comparison to the proposed project because the MPWSP wells would be slanted beneath the coastline (rather than 800 feet inland as evaluated by HydroMetrics for MCWD in 2008) where the gradient would be even

[10] HydroMetrics, LLC. Preliminary Modeling Results for the MCWD Desalination Intake. Draft Technical Memorandum to Martin Feeney. July 23, 2008.

steeper and the travel distance and travel time from the ocean to the slant wells would be even shorter than modeled by HydroMetrics.

Similarly, the comments overstate the conditions under which the gradient would reverse and begin to flow seaward. Again, the effects of the ocean as a recharge boundary are either disregarded or understated by certain commenters, leading to a misleading projection of the capture zone extent and an overestimated potential for the wells to draw groundwater from inland sources. Considering the findings of the HydroMetrics study, under a reversed gradient, some inland water could be drawn into the MPWSP slant wells, but the volume of inland water arriving at the slant wells would be far less and take more time than it would for the higher volume of seawater to reach the slant wells. Most of the water entering the slant wells would still come from the ocean if the gradient were seaward rather than landward as it is today. Indeed, as noted by the SWRCB in its July 2013 Final Analysis of the MPWSP (EIR/EIS Appendix B2), "The extraction wells are not predicted to draw water equally from seaward and landward areas. In a system that has no gradient of flow, extraction wells would draw water equally from seaward and landward directions, but this is not true in the proposed MPWSP area because there is a significant gradient of groundwater flow from the seaward areas toward the inland pumping depressions. In the long-term, the situation may be altered and the source of the water drawn from the extraction well system would need to be reevaluated under the following conditions: (1) if pumping of water from inland areas is reduced to the point that the groundwater system is in equilibrium, and (2) the pumping depressions are reduced such that there is no longer a landward gradient." (at Section 5.3 on page 24).

What is important to consider here is that there is very little likelihood, and it would be total speculation to believe, that the existing groundwater gradient in the Dune Sand and 180-Foot Aquifers could be reversed within the life of the project. As discussed below, even under the requirements of the SGMA, achieving groundwater elevations in the SVGB necessary to reverse (or even flatten) the existing inland gradient would require concerted basin-wide efforts to reduce pumping and increase recharge inland of the coast. See Response to Comment Marina-JJ&A-6 at Final EIR/EIS page 8.5-634.

Inducing Seawater Intrusion

Seawater is currently mixing with groundwater at the coast and flowing landward from the ocean through the Dune Sand Aquifer and 180-Foot/180-FTE Aquifer because of the existing landward gradient, discussed above. Comments assert that the capture zone created by the MPWSP would induce seawater intrusion in areas outside the groundwater capture zone. While the pumping influence of the proposed MPWSP slant wells within the limits of the capture zone would capture and draw in the saline and brackish groundwater (this is illustrated in Final EIR/EIS Figure 4.4-13b), groundwater flow on the periphery of the capture zone, while not being drawn into the wells, would be directed around the exterior of the capture zone and would continue to flow inland. Groundwater flowing outside the influence of the slant well capture zone would continue to flow inland as it does currently. The capture zone created by the slant well pumping would not induce additional seawater intrusion adjacent to and beyond the limits of the capture zone. The slant wells would in fact capture saline water that would otherwise flow inland as seawater intrusion and would, therefore, assist in impeding seawater intrusion along the coastline at CEMEX (site of the proposed slant wells).

Seawater Intrusion and "Chloride Islands" in the 400-Foot Aquifer

Comments assert that the Final EIR/EIS is deficient because it fails to fully acknowledge the presence of isolated areas of elevated chloride concentrations in the 400-Foot Aquifer east of the seawater intrusion front. These areas (aka "chloride islands") were identified through the seawater intrusion monitoring and mapping conducted by the Monterey County Water Resources Agency (MCWRA). As discussed in EIR/EIS Section 4.4.1.4, the MCWRA has been monitoring seawater intrusion in the 180-Foot and 400-Foot Aquifers since 1947 by measuring chloride concentrations in several participating groundwater wells. EIR/EIS Figures 4.4-10 and 4.4-11 show the extent of seawater intrusion based on the 2013 monitoring data. The latest seawater intrusion maps released on April 11, 2018, after the publication of the Final EIR/EIS, show seawater intrusion monitoring data for 2015 and 2017 (see Figures 1 and 2, attached).[11] These data show a slight advance of the seawater intrusion front (where information was available) in the 180-Foot Aquifer. The data for the 400-Foot Aquifer show an advance of seawater intrusion along the northern, central, and southern portion of the intrusion front, and show three isolated areas of elevated chloride concentrations (chloride islands) east of the front. The presence of these chloride islands documents the occurrence of inter-aquifer seawater intrusion. Inter-aquifer seawater intrusion occurs when seawater-intruded groundwater migrates vertically between aquifers. This can be caused in several ways: thin or discontinuous aquitards (clay layers); well screens that cross multiple aquifer units (multi-aquifer wells); improperly constructed or abandoned wells; wells in poor condition; or vertical hydraulic gradients where groundwater levels are deeper in the underlying aquifer, either due to the naturally occurring hydraulic heads in the aquifer or pumping-induced groundwater level differentials.[12] Varying combinations of these conditions are present at many locations throughout the 180/400-Foot Aquifer Subbasin, as evidenced by vertically migrating groundwater.[13] EIR/EIS Section 4.4.1.2 describes the 180/400-Foot Aquitard unit (the clay layer between the 180-Foot and 400-Foot aquifers) as generally 50 to 100 feet thick, although it can be as much as 200 to 250 feet thick, and can be absent in some areas. The EIR/EIS also states that, at the CEMEX site, the 180/400-Foot Aquitard is about 220 feet deep and is 10 to 70 feet thick. The Stanford AEM study produced imagery that could be interpreted as inland gaps in the 180/400-Foot Aquitard that result in inter-aquifer intrusion between the 180-Foot Aquifer and 400-Foot Aquifer.

The inter-aquifer seawater intrusion and the chloride islands that currently exist are too far inland to have an effect on, or to be affected by, the MPWSP slant well pumping. As described in the EIR/EIS Impact 4.4-3 and shown graphically in EIR/EIS Figures 4.4-15 and 4.4-16, the chloride islands are 2 to 3 miles from the farthest extent of the slant well pumping influence. However, the impact analysis and accompanying figures also show that delivering the MPWSP return water to the CCSD and/or the CSIP area in lieu of groundwater pumping would contribute to groundwater recovery in the 400-Foot Aquifer, thereby helping to retard the inland advance (and vertical migration) of seawater intrusion. The MPWSP could, therefore, have a beneficial effect on the aquifer by reducing seawater intrusion.

MPWSP Effects on Sustainable Groundwater Management Act (SGMA)

Comments assert that the Final EIR/EIS fails to consider that future groundwater projects and those proposed as part of SGMA could restore groundwater levels in the SVGB and ultimately raise groundwater levels enough to flatten or reverse the inland groundwater gradient. It would realistically require decades of groundwater management to flatten the groundwater gradient, much less reverse it, and expectations that groundwater projects would be successful in affecting the inland gradient within the life of the MPWSP would be overly optimistic. There are no reasonably foreseeable cumulative projects proposed to reduce or reverse the current landward gradients in the Dune Sands and 180-Foot aquifers at this time, and while projects under the SGMA may improve the sustainability of the SVGB -- such as a basin-wide reduction in pumping, and/or increased recharge necessary to fill the groundwater depression on the east side of Salinas,

---

11 MCWRA seawater intrusion maps showing the seawater intrusion front and the chloride islands from 2015 monitoring data were released August 18, 2017.

12 Monterey County Water Resources Agency (MCWRA). *Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin,* Special Reports Series 17-01, October 2017.

13 Ibid.

and/or projects that may involve increasing protective groundwater elevations along the coast (much like CSIP) or include extraction systems to capture incoming seawater intrusion along the coast at CEMEX (much like the proposed MPWSP) -- such actions or projects are too speculative to assume and opine about in the EIR/EIS.

Final Stanford AEM Study

The final report of the Stanford AEM study, titled, "Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA" (prepared by Ian Gottschalk and Rosemary Knight of Stanford University) was released on March 15, 2018, just two weeks prior to the release of the Final EIR/EIS. Review of the final Stanford AEM study did not bring to light any new information or findings that would change the conclusions in the Final EIR/EIS. As concluded in the Final EIR/EIS, the Stanford AEM study shows a distribution of groundwater quality that is generally consistent with that developed in the HWG hydrogeologic investigations and generally consistent with the MCWRA seawater intrusion mapping for the 180-Foot and 400-Foot Aquifers.

The organization, presentation of data, and discussion of findings in the final report of the Stanford AEM study, however, does not appear to be on par with the technical rigor displayed in the previous peer-reviewed academic works relating to Electric Resistivity Tomography (ERT) prepared through Stanford University.[14,15] The March 2018 final report does not contain many of the elements that would be expected in a published academic manuscript or a scientific technical report. These elements include an abstract; description of study area; description of an accepted hydrogeologic conceptual model; details of data acquisition, processing, and inversion; a thorough discussion of results and conclusions; and necessary appendices containing outside data sources, including exploratory logs, geophysical logs, and water quality results. The lack of adherence to standard protocols for the presentation, data analysis, and technical peer review calls into question whether the report can be used as a reliable, unbiased technical source.

Definition of Drinking Water

One overriding difficulty with interpreting and applying the findings of the Stanford AEM study is that it considers drinking water as having a Total Dissolved Solids (TDS) concentration ranging between 0 and 1,000 milligrams per liter (mg/L) and considers groundwater between 0 and 3,000 mg/L as a "source of drinking water." This is misleading and skews the conclusions of the study, undermining its utility. The California Code of Regulations (CCR) title 22 recommends 500 mg/L TDS as a Secondary Maximum Contaminant Level ("Consumer Acceptance Contaminant Levels Ranges") with 1,000 TDS as the upper limit for drinking water. In most cases, groundwater exceeding 500 mg/L TDS must undergo some treatment before it is used for a domestic or municipal drinking water supply.

Another key component of drinking water standards (not discussed and factored into the AEM Study) is chloride concentrations. As discussed in EIR/EIS Section 4.4.1.4, the MCWRA uses chloride rather than TDS to track the advance of seawater intrusion in the 180-Foot and 400-Foot aquifer groundwater. The MCWRA's seawater intrusion program monitors select wells and biennially produces maps of the inland advance of the intrusion front. The MCWRA defines the seawater intrusion front as the inland extent at which the concentration of chloride in groundwater is at least 500 mg/L. A chloride concentration of 500 mg/L

14 Pidlisecky, A., T. Moran, B. Hanson, and R. Knight, 2016. Electrical Resistivity Imaging of Seawater Intrusion into the Monterrey Bay Aquifer System. Groundwater Vol. 54, No. 2, March-April, pages 255-261.

15 Goebel, Meredith, Adam Pidlisecky, and Rosemary Knight, 2017. Resistivity Imaging Reveals Complex Pattern of Saltwater Intrusion along Monterey Coast, Journal of Hydrology, accepted manuscript February 22.

represents a level that is twice the National Secondary Drinking Water Regulation (250 mg/L) and that exceeds the concentration for water considered to be of “Class III - injurious or unsatisfactory” quality for agricultural irrigation (350 mg/L).[16] The recommended California Secondary Maximum Contaminant Level under CCR Title 22, which is California’s regulatory limit for chloride based on the National Secondary Drinking Water Regulation, is 250 mg/L with an upper limit of 500 mg/L. This means that groundwater within the seawater intrusion line (since it contains chloride in concentrations greater than 500 mg/L) could not be drinking water under state or federal standards.

The Stanford AEM study report further confuses its findings regarding the distribution of water quality by not clearly defining what is meant by “freshwater,” a term used throughout the report. The AEM report considers “drinking water” and “sources of drinking water” (discussed above) but the term “freshwater” is not defined by a TDS concentration. By doing this, “freshwater” could be misconstrued to mean drinking water that is readily available as a potable supply without treatment. Fresh water, as defined in EIR/EIS Sections 4.4.1.4 and Master Response 8.2.2, is groundwater that is below 500 mg/L TDS based on the recommended Secondary Maximum Contaminant Level set forth by CCR Title 22. Groundwater monitoring has clearly shown that groundwater in the MPWSP area may well be a “source of drinking water,” but it cannot become a readily available potable supply without treatment. Monitoring of the 24 MPWSP monitoring wells between February 2015 and June 2015 found only one isolated instance of groundwater in the Dune Sand, 180-Foot, or 400-Foot aquifer below 500 mg/L TDS (366 mg/L in monitoring well MW-9 D, screened in the 400-Foot Aquifer).

The Stanford AEM study concludes that there are zones of low TDS groundwater in the Dune Sand and 180-Foot aquifers inland of the proposed MPWSP slant wells. While this may be the case in some areas, especially the Dune Sand Aquifer following one of the wettest months in recent history (May 2017 when the AEM survey was completed), it remains inconsequential to the analysis of groundwater impacts for the MPWSP because, as discussed in the EIR/EIS, the capture zone of the MPWSP slant wells would be located along the coast and would draw most of the source water from the ocean and not from inland groundwater sources. Comments on the Final EIR/EIS insist that the Stanford AEM study provides new information on the hydrogeologic conditions within the Dune Sands Aquifer and the 180-Foot Aquifer. However, most of these comments were previously addressed in the Final EIR/EIS after reviewing the preliminary AEM results.

Definition of Brackish Water

MCWD, CJW, Schiavone, and others continue to opine that the Final EIR/EIS inaccurately applies the range of 500 mg/L to 33,500 mg/L TDS as the definition of brackish water and argue that groundwater with 3,000 mg/L TDS or less must be considered suitable, or potentially suitable, for municipal or domestic water supply based on the SWRCB Resolution No. 66-83 (Sources of Drinking Water) as revised by Resolution No. 2006-0008. Comments state that the Stanford AEM study and water quality samples from MPWSP monitoring well MW-4 contain TDS concentrations below 3,000 mg/L TDS and, therefore, this water must be considered a source of drinking water. The defined range of brackish water used in the Final EIR/EIS is based on the California Code of Regulations (CCR) Title 22 recommended Secondary Maximum Contaminant Level (“Consumer Acceptance Contaminant Levels Ranges”) of 500 mg/L TDS for drinking water and the salinity of seawater (33,500 mg/L TDS) in the Monterey Bay. Regardless of what the SWRCB Resolution No. 66-68 defines as “a suitable or potentially suitable source of domestic or Municipal water supply,” water with TDS concentrations exceeding 500 mg/L and chloride concentrations exceeding

[16] National Secondary Drinking Water Regulations are non-enforceable guidelines regarding contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, some states may choose to adopt them as enforceable standards.

250 mg/L exceeds USEPA's "secondary maximum contaminant levels" (SMCLs) for these contaminants and is typically unfavorable to most customers and ultimately unsuitable for drinking water unless it is treated. The SMCLs are established in USEPA's National Secondary Drinking Water Regulations, which provide guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. As these contaminants are not considered to present a risk to human health at the SMCL, these guidelines are non-enforceable; however, they demonstrate the level at which TDS and chloride concentrations make water unsuitable for drinking.[17]

Furthermore, this water, as identified in the Stanford AEM study, is present in the Dune Sand Aquifer (which is not currently used for water supply) and allegedly in certain areas in the upper 180-Foot Aquifer. Based on groundwater monitoring reports, it is likely that there are isolated, discontinuous zones of lower TDS groundwater in the sediments of the Dune Sand Aquifer that are surrounded by zones of higher TDS groundwater, particularly following periods of heavy precipitation. Given the hydrogeological characteristics of the Dune Sand Aquifer and its proximity to the coast, even if the groundwater identified by the Stanford AEM study as a potential source of drinking water were suitable and were extracted for a water supply, the volume would not be adequate to sustain a domestic or municipal supply. Additionally, based on the potential distribution of lower and higher TDS groundwater, it is likely that a groundwater supply well in the Dune Sands Aquifer would soon become brackish or saline as the zones of low TDS water were evacuated and higher TDS groundwater entered the well.

Terrestrial Biological Resources

Environmentally Sensitive Habitat Areas (ESHA)

MCWD argues that physical ESHA impacts cannot be reduced to less than significant due to a land use conflict with the City of Marina Local Coastal Plan; however, the physical (Impacts 4.6-2 and 4.6-7) and policy (Impact 4.6-4) impacts are distinct, and both are adequately addressed in the Final EIR/EIS.

Western Snowy Plover

The Water Plus opening brief addresses impacts on western snowy plover and presents information obtained from Point Blue Conservation Science (PBCS), then presents a statistical analysis based on that information to argue that the test slant well has had adverse impacts on snowy plover nesting and use of the CEMEX site. At a meeting in April 2018 hosted by Mayor Bruce Delgado in Marina with participation from MBNMS, U.S. Fish and Wildlife Service, PBCS, and members of the public, the group discussed the PBCS-collected snowy plover data in detail. The lead scientist from PBCS had the opportunity to explain their data and collection methods and put the Marina site data into its proper context with the entire Monterey Bay snowy plover population. The agencies and PBCS encouraged more collaboration to accurately interpret the data, so that other members of the public would have the benefit of data analysis that was vetted by subject matter experts. The statistical analysis provided by Water Plus regarding the impacts of the test slant well is an improper and incomplete interpretation of the PBCS data because it does not include other variables identified by PBCS that directly affect the snowy plover population in this region, such as the increased number of disturbances from pedestrians and dogs observed along this section of the Monterey Bay beaches, noted especially at the CEMEX south monitoring site and explained by PBCS at the April 2018 meeting. There is a correlation between pedestrian/dog disturbances and fledging rates for plover. For example, PBCS's 2017

[17] USEPA, 2017. Secondary Drinking Water Standards: Guidance for Nuisance Chemicals. Available online at https://www.epa.gov/dwstandardsregulations/secondary-drinking-water-standards-guidance-nuisance-chemicals

data at the CEMEX south site suggests that unmanaged pedestrian use may be negatively impacting fledging rates. In contrast, at the CEMEX north monitoring site (which includes the test well) the 2017 rate of fledging was greater than the bay-wide average. All of the groups at the meeting concurred that additional data analysis is needed for further illumination on the pedestrian disturbance factor impacting plovers at the CEMEX south site (personal communication, MBNMS staff).

Water Plus asserted that compensation for loss of western snowy plover habitat by developing habitat elsewhere does not qualify as mitigation for the loss of potential future use of the CEMEX lands as a "nature park" by the City of Marina; however, there is no CEQA impact on a potential future land use of this site. The impact is on the resource – the plover – and the mitigation is consistent with mitigation requirements of resource agencies with subject matter jurisdiction. Final EIR/EIS Master Response 14 provides relevant information about the future disposition of the CEMEX site under the CEMEX Settlement Agreement, and the status of CalAm's easement within the CEMEX site.

Bird Nesting During Construction

The attachment by Renee Owens to CURE's Opening Brief dated April 19, 2018, argues that birds that initiate nesting during construction could still be impacted, contrary to conclusions in the Final EIR/EIS. The commenter refers to Mitigation Measure 4.6-1i, part 3, which allows sustained construction activity at facility sites that began prior to nesting season to continue into the nesting season without performing bird nesting surveys of the construction disturbance area. The intent of this measure is not to allow the take of a bird that decides to nest within or near a facility site that is under construction. Mitigation Measure 4.6-1i provides protection for all nests found in the project area or vicinity to ensure that the construction activities do not cause the adult to abandon an active nest or young or change an adult's behavior such that it could not care for an active nest or young. Even if a nest was not identified during a preconstruction nesting bird survey, once the nest has been identified within or near a facility site where sustained construction is ongoing, the biologist has the responsibility to implement appropriate protective measures around the nest to avoid take.

As an example, a black phoebe could decide to nest under the eaves of a building that is adjacent to a future facility site where grading has been ongoing. As the black phoebe would have established the nest while grading was occurring at the adjacent site, rather than nesting on any number of buildings farther from the construction site, it is reasonable to assume the black phoebe is comfortable nesting adjacent to site grading activities. Under this scenario, once grading is complete (i.e., the construction activity under which the nest was established is completed and the next activity begins, such as pouring a slab or framing a structure), the lead biologist (with authority under Mitigation Measure 4.6-1a, as set forth in part below) would have an opportunity to evaluate implementing protective measures around the nest to avoid take. Should the biologist determine the nest is at risk of take as a result of the change in construction activity, the biologist would establish appropriate protective measures around the nest, according to Mitigation Measure 4.6-1i, until the nest is no longer active.

> **Mitigation Measure 4.6-1a: Retain a Lead Biologist to Oversee Implementation of Protective Measures.**
>
> …In the event that construction-related activities have the potential to violate the prescribed special-status species and habitat protection measures, the project Lead Biologist, or other appointed qualified biological monitors shall report to construction or operational site supervisors with authority to stop work to prevent any violations. Work shall proceed only after the construction-related hazards to special-status species and habitats are removed and the species is no longer at risk. Violations shall be thoroughly documented as part of compliance monitoring activities…

For reference, Mitigation Measure 4.6-1i is included below.

Mitigation Measure 4.6-1i: Avoidance and Minimization Measures for Nesting Birds.

This measure applies to all nesting birds protected by the federal Migratory Bird Treaty Act and Section 3503 of the California Fish and Game Code, except for western snowy plover and western burrowing, which are addressed in Mitigation Measure 4.6-1d and 4.6-1h, respectively.

Nesting birds may be present at all of the proposed facility sites. A qualified biologist shall conduct preconstruction avian nesting surveys prior to initiation of construction activities at all facility sites, unless otherwise indicated below.

1. No preconstruction surveys or avoidance measures are required for construction activities that would be completed entirely during the non-nesting season (September 16 to January 31).
2. For all construction activities scheduled to occur during the nesting season (February 1 to September 15), the qualified biologist shall conduct a preconstruction avian nesting survey no more than 10 days prior to the start of staging, site clearing, and/or ground disturbance. Copies of the survey results shall be submitted to the CPUC.
3. If construction activities at any given facility site begins in the non-breeding season and proceeds continuously into the breeding season, no surveys are required as long as a similar type of construction continues.
4. If there is a break of 10 days or more in construction activities during the breeding season, a new nesting bird survey shall be conducted before reinitiating construction.
5. The surveying biologist shall be capable of determining the species and nesting stage without causing intrusive disturbance. The surveys shall cover all potential nesting sites within 500 feet of the project area for raptors and within 300 feet for other birds.

If active nests are found in the project area or vicinity (500 feet for raptors and 300 feet for other birds), the nests shall be continuously surveyed for the first 24 hours prior to any construction related activities to establish a behavioral baseline and, once work commences, all nests shall be continuously monitored to detect any behavioral changes as a result of the project, if feasible. If behavioral changes are observed, work causing the change shall cease and CDFW shall be consulted for additional avoidance and minimization measures. The avoidance and minimization measures shall ensure that the construction activities do not cause the adult to abandon an active nest or young or change an adult's behavior so it could not care for an active nest or young.

If continuous monitoring is not feasible, a no-disturbance buffer (at least 500 feet for raptors and 250 feet for other birds [or as otherwise determined in consultation with CDFW and USFWS] shall be created around the active nests). The buffer distance can be reduced with authorization from CDFW if construction activities would not cause an adult to abandon an active nest or young or change an adult's behavior so it could not care for an active nest or young. If the nest(s) are found in an area where ground disturbance is scheduled to occur, the project operator shall require that ground disturbance be delayed until after the birds have fledged.

This measure also applies to periodic maintenance of the subsurface slant wells.

Marine Biological Resources

Accumulation of organic matter infiltrating into the subsurface of the ocean floor over intakes

CURE's April 23, 2018 letter from Linda Sobczynski, and the attached Amended Exhibit A from Dr. Radoslaw Sobczynski, argue that particulate organic material (POM) accumulation in sediments resulting from the intake of water for the proposed project slant wells would result in negative and unmitigable impacts on water quality and, therefore, the marine environment. Dr. Sobczynski argues that if there are anaerobic conditions, for example, when the slant wells go offline, then accumulated biomass in the sediments that were drawn to and are surrounding the well screens will support growth of sulfate reducing bacteria (SRB) that are capable of releasing hydrogen sulfide (H_2S).

Rates and quantities of POM accumulation used by Dr. Sobczynski to demonstrate impacts on the marine environment in Monterey Bay as a result of pumping the proposed project slant wells are based on concentrations of POM in the water column and in sediments from eutrophic environments such as the Baltic Sea, and from experiments involving artificially high additions of POM to sediments. The following responses to Dr. Sobczynski's April 23, 2018 Amended Exhibit A demonstrate that data specific to Monterey Bay are readily available in the published literature and provide evidence to support the argument that POM accumulation would not result in significant impacts. The following response also explains that the infiltration of POM into the sediments that Dr. Sobcynski suggests would be caused by the proposed project slant well pumping should have occurred decades ago with the introduction of seawater intrusion into the Salinas Valley Groundwater Basin; the negative and unmitigable impacts described by Dr. Sobczynski have not, in fact, occurred.

Comment

In Exhibit A, Dr. Sobczynski argues that "dissolved organic matter (DOM) and suspended organic matter (SOM) … will easily infiltrate into the subsurface due to slant well operations … [and] once dragged into capillary channels of filter medium by the slant well suction forces, DOM and SOM will stay there."

Response

By definition, DOM is dissolved in the water and cannot accumulate or bind to particles. Only SOM, also called particulate organic material (POM), can accumulate. In this statement, Dr. Sobcyzynski is confusing DOM with POM and making the statements that "the boundary layer is penetrable and indeed it is already filled with DOM and SOM" is speculative and not supported by any scientific evidence.

Comment

"The CPUC and MBNMS did not provide sufficient responses to my comments on the DEIR/S. According to the CPUC and MBNMS, wave generated orbital velocities are so strong that no fine organic matter will impinge on the seafloor or infiltrate into the soft substrate." See Final EIR/EIS Response to Comment CURE-Sobczynski-2 on page 8.6-514.

Response

Dr. Sobczynski claims that infiltration will occur, biomass will accumulate, an anoxic subsurface will lead to toxic conditions, that reverse osmosis (RO) plant operators prefer water that is anoxic, that environmental impacts due to organic waste will stimulate production of hydrogen sulfide (H_2S), and that mitigation measures are required. Responses to these claims follow:

Comment: Infiltration will occur

Dr. Sobczynski maintains "organic matter will infiltrate into the subsurface. Over time this leads to accumulation of the organic matter... ." To emphasize this point, Dr. Sobczynski quotes Dr. Huettel as saying "If the statement of Jenkins [that wave generated water velocities would prevent accumulation of fine organic matter] would apply, microbes and meio- and macrofauna organisms living on detrital matter deposited in the sand would starve."

Response:

This comment confuses flux (the action or process of flowing), with accumulation. The organisms consuming organic matter will not starve as long as there is a constant supply of organic matter, which is possible with flux and without long-term accumulation. In order to get an idea of the amount of organic carbon accumulated in Monterey Bay sediments as compared to the data from the Baltic Sea that Dr. Sobczynski uses in his arguments, see Table 1 which contrasts the dramatic differences between an enclosed brackish water system like the Baltic Sea, with an oceanic upwelling system with relatively low plant nutrients and containing abundant dissolved oxygen, like Monterey Bay.

TABLE 1
COMPARISON OF WATER COLUMN CHLOROPHYLL CONCENTRATIONS AND SEDIMENT CARBON CONTENT OF THE BALTIC SEA AND MONTEREY BAY

System	Chlorophyll Concentration (spring/summer)	Sediment Carbon Content	Characteristics	Citations
Baltic Sea	60/25 µg/L	3-7%	enclosed brackish water system heavily influenced by cyanobacterial blooms	Kahru et al. 1994,[18] Berg et al. 2001,[19] Naik and Poutanen 1984,[20] Bianchi et al. 2000[21]
Monterey Bay	1-2/1 µg/L	0.3-0.5%	relatively oligotrophic oceanic upwelling system	Kudela and Dugdale 2000, Rice et al. 1993,[22] Berelson et al. 2003,[23] CCLEAN data[24]

18 Kahru Mati, Ulrich Horstmann, and Ove Rud, 1994. Satellite detection of increased cyanobacteria blooms in the Baltic Sea: natural fluctuation or ecosystem change? Ambio, Vol. 23, No. 8, pp. 469-472.

19 Berg, Gry Mine, Patricia M. Glibert, Niels O. G. Jørgensen, Maija Balode, and Ingrida Purina, 2001. Variability in inorganic and organic nitrogen uptake associated with riverine nutrient input in the Gulf of Riga, Baltic Sea. Estuaries, Vol. 24, pp. 204-214.

20 Naik, Sugandhini and Eeva-Liisa Poutanen, 1984. Humic substances in Baltic Sea sediments. Oceanologica Acta Vol. 7, No. 4, pp. 431-439.

21 Bianchi, T.S., E. Engelhaupt, P. Westman, T. Andren, C. Rolff, and R. Elmgren, 2000. Cyanobacterial blooms in the Baltic Sea: Natural or human-induced? Limnology and Oceanography Vol. 45, No. 3, pp. 716-726.

22 Rice, D.W., C.P. Seltenrich, R.B. Spies, and M.L. Keller, 1993. Seasonal and annual distribution of organic contaminants in marine sediments from Elkhorn Slough, Moss Landing Harbor and nearshore Monterey Bay, California. Environmental Pollution Vol. 82, pp. 79-91.

23 Berelson, William, Jim McManus, Kenneth Coale, Ken Johnson, David Burdige, Tammy Kilgore, Debbie Colodner, Francisco Chavez, Rafael Kudela, and Joceline Boucher, 2003. A time series of benthic flux measurements from Monterey Bay, CA. Continental Shelf Research Vol. 23, pp. 457–481.

24 Central Coast Long-term Environmental Assessment Network (CCLEAN), data available from California Environmental Data Exchange Network (CEDEN), http://www.ceden.org

Comment: Biomass will accumulate

Dr. Sobczynski supports his assertion that "organic matter will infiltrate and accumulate in the subsurface" by citing a study by Kotwicki from the Baltic Sea.

Response:

There is no doubt that POM raining down from the water column accumulates in sediments on the seafloor. This accumulation is a function of the rate of supply of organic material coupled with the physical environment and the degree to which it allows organic material to accumulate in the sediments. The greatest degree of accumulation tends to occur in relatively sheltered environments with a high rate of primary production and terrestrial inputs of organic matter. Conversely, the least amount of organic material accumulation in sediments occurs in environments with high wave energy that have low rates of primary production. An example of the former is the Baltic Sea and an example of the latter is Monterey Bay. As presented in Table 1, the Baltic Sea is a system that sustains massive blooms of phytoplankton during the spring and summer seasons, which result in a high concentration of POM in the sediments. Therefore, Baltic Sea sediments with POM concentrations that are 10 to 20 times higher (based on carbon content) than Monterey Bay sediments (see Table 1), and that have a different clay content than Monterey Bay sediments, cannot be used to infer binding of carbon and POM to Monterey Bay sediments during the operation of the proposed project slant wells.

Furthermore, Dr. Sobczynski cites research by Borodovskiy from the 1960s that seawater contains 0.5 to 1.5 grams per cubic meter (g/m^3) of SOM. This is also not relevant to the current discussion because: 1) the SOM differs by orders of magnitude based on the system/region discussed; and 2) as demonstrated in Table 1 and citations therein, typical chlorophyll concentrations (the principal constituent of SOM) in Monterey Bay are between 1 and 2 micrograms per liter (µg/L) with occasional concentrations of 4 to 8 µg/L in the fall;[25] this is two to three orders of magnitude below a concentration of 0.5 to 1.5 g/m^3 SOM cited by Dr. Sobczynski.[26] To date, a concentration of SOM close to 0.5 g/m^3 has only been witnessed once in Monterey Bay, during a dinoflagellate bloom in 2006, which lasted for a few days.[27] Dr. Sobczynski cites a study by Precht et al.[28] as support of Dr. Borodovskiy where Baltic Sea sediments were collected and placed into a wave tank before ground-up red algae was added at a rate of 2 grams per square meter (g/m^2) per week to the sediments. This amounts to organic matter deposition rates that are orders of magnitude greater than organic matter deposition rates in Monterey Bay (see Table 1). Therefore, the data that Dr. Sobczynski uses to reach the conclusions about

25 Kudela, R.M., and R.C. Dugdale, 2000. Nutrient regulation of phytoplankton productivity in Monterey Bay, California. Deep-Sea Research II 47, pp. 1023-1053.

26 1 microgram is equal to 1/1,000,000 of a gram, and one liter is equal to 1/1000 of a cubic meter. Therefore, 1 microgram per liter is equal to 1/1000 of a gram per cubic meter. Typical SOM concentrations in Monterey Bay are 0.001 to 0.002 g/m^3, compared to 0.5 to 1.5 g/m^3 in the Baltic Sea cited by Dr. Sobczynski.

27 Kudela, Raphael M., Jenny Q. Lane, and William P. Cochlan, 2008. The potential role of anthropogenically derived nitrogen in the growth of harmful algae in California, USA. Harmful Algae 8, pp. 103-110.

28 Precht, Elimar, Ulrich Franke, Lubos Polerecky, and Markus Huettel, 2004. Limnology and Oceanography, Vol. 49, No. 3, pp. 693-705.

the mass of SOM that could potentially accumulate during infiltration of Monterey Bay sediments are not relevant to Monterey Bay or the proposed MPWSP.

Dr. Sobczynski cites a study by Precht and Huettel[29] of wave-induced filtration rates through Weser River Estuary sediments that was used to estimate input of particulate organic carbon (POC) into Monterey Bay sands of 1.4 to 2 grams/m^2 per day. As mentioned above, these carbon deposition rates are not possible given the POC concentrations (based on primary productivity) found in the water column in Monterey Bay (see Table 1). Therefore, this entire discussion of the potential build-up of organic matter based on these deposition rates is not applicable to the MPWSP.

Lastly, regardless of concentration of SOM in the water, SOM will be kept suspended as long as ambient currents and wave-induced orbital velocities are greater than either settling rates or the velocity of water drawn into the desalination intake wells. Dr. Sobczynski has made no effort to calculate whether the intake velocities would be great enough to counteract wave-induced orbital velocities and lead to POM/POC accumulations in the sand. For example, high-energy beaches in Monterey Bay, under which the intake wells would be located, experience wave heights on the order of meters throughout the seasons in response to intense storms (e.g., Fort Ord beach[30]).

Comment: Anoxic Subsurface Will Lead to Toxic Conditions in the Aquatic Habitat and Reverse Osmosis Plant operators prefer to keep water anoxic

In his comments on the Draft EIR/EIS, Dr. Sobczynski indicated that "if there are anaerobic conditions, for example, when slant wells go offline, then accumulated biomass in the filter medium will be supporting growth of sulfate reducing bacteria (SRB) that are capable of releasing hydrogen sulfide (H_2S)." Final EIR/EIS Response to Comment CURE-Sobczynski-4, on page 8.6-516, explains that operation of the slant wells would not result in anaerobic conditions because oxygenated water would continue to move through the filter medium as a result of continuous operation of the other wells (typically, most wells would be operational with one on standby or "offline" at a time).

In opposition to this explanation in the Final EIR/EIS response, Dr. Sobczynski argues that the desalination process would inherently require or result in anaerobic/anoxic conditions, and thus the potential release of H_2S would remain a problem. To support this assertion, Dr. Sobczynski cites a CalAm Test Slant Well Long Term Pumping monitoring report showing high levels of iron and manganese, and argues that RO plant operators do not want feedwater to be oxygenated because such iron and manganese levels can cause fouling of RO membranes.

Dr. Sobczynski further argues that RO plant operators know that H_2S can be released due to accumulated organic matter in anaerobic conditions, and cites a portion of a Dow Chemical

29 Precht, Elimar, and Markus Huettel, 2003. Advective pore-water exchange driven by surface gravity waves and its ecological Implications. Limnology and Oceanography, Vol. 48, No. 4, pp. 1674–1684.
30 Dingler, John R., and Thomas E. Reiss, 2002. Changes to Monterey Bay beaches from the end of the 1982-83 El Niño through the 1997-98 El Niño. Marine Geology Vol. 181, pp. 249-263.

Company Technical Manual on how to prevent potential problems with the presence of H_2S in desalination feedwater.

Response:

The Final EIR/EIS discussion of the proposed pre-treatment system described in Section 3.2.2.1 on page 3-22 clearly indicates that iron and manganese concentrations could cause fouling of RO membranes (indicative of the operator *expecting* oxygenated feedwater) and states: "A low dosage of chlorine would be added to the source water to separate out iron and manganese, and the precipitate would be removed by the filters." Thus, Dr. Sobczynski's argument that the RO plant operator would endeavor to "keep water anoxic" to prevent precipitation of iron and manganese is contrary to the description of the proposed project.

The Dow Chemical Company manual cited by Dr. Sobczynski is titled, "Water Chemistry and Pretreatment: Treatment of Feedwater Containing Hydrogen Sulfide"[31] and what Dr. Sobczynski does not cite is the first sentence in the Dow manual, which says, "Some well waters, usually brackish waters, are in a reduced state typically lack of oxygen (therefore referred to as anoxic or anaerobic) and the presence of iron, manganese, ammonium and/or hydrogen sulfide (H_2S)." However, the feedwater from the proposed slant wells would be mostly seawater and would not lack oxygen. As described on Final EIR/EIS page 8.2-22, the long-term equilibrium of the feedwater is estimated to range from 96 to 99 percent ocean water and as discussed on Final EIR/EIS page 4.3-9, ambient dissolved oxygen levels in Monterey Bay at a depth of approximately 100 feet have ranged from 4.25 milligrams per liter (mg/L) to 8.00 mg/L.

As mentioned above, research in wave tanks using Baltic Sea sediments with a high organic carbon content is not germane to the current situation in Monterey Bay, and statements such as "Anoxic conditions occur [below a few millimeters of the surface] regardless of whether slant wells are taken offline" are baseless.

Comment: Environmental impact due to organic waste stimulating production of H2S

Dr. Sobczynski claims that "the production of toxic H2S will deteriorate, adversely disturb, and physico-chemically and bio-chemically modify the aquatic habitat resulting in a significant impact."

Response:

This claim is speculative, and is based on a scenario of extreme POM deposition into the sediments. In particular, the statement that "I suspect that bioaccumulation of DOM and SOM has already occurred due to test slant well operation" is not supported by evidence. Furthermore, seawater has already intruded inland a maximum of approximately 8 miles within the 180-Foot Aquifer, and 3.5 miles within the 400-Foot Aquifer (see Final EIR/EIS Figures 4.4-10 and 4.4-11) as a result of

---

[31] The Dow Chemical Company, undated. Water Chemistry and Pretreatment: Treatment of Feedwater Containing Hydrogen Sulfide. Available online at http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_0042/0901b80380042b91.pdf.

groundwater pumping, and there is no evidence suggesting that the release of toxic H_2S is occurring today.

Comment: Mitigation measures are required for a significant impact

Dr. Sobczynski claims here that "the mere operation of the slant well will result in the production of deadly hydrogen sulfide" which will "modify the aquatic environment resulting in a significant impact" and uses Pescadero Lagoon, CA, as an example of how hydrogen sulfide can cause fish kills. It is Dr. Sobczynski's "opinion that no mitigation measures will be sufficient to reduce the impact to less than significant."

Response:

Because the extreme rates of POM deposition presented by Dr. Sobczynski are not reflective of the project location in Monterey Bay (see Table 1), it is our opinion that it is unlikely H_2S will be produced in the quantities/rates resulting in the scenario presented by Dr. Sobczynski. Since slant well pumping would not result in the wholesale death or fish kills of benthic or pelagic communities, mitigation for the less than significant impact is not required. The analysis in the EIR/EIS is supported by substantial evidence, while Dr. Sobczynski's claim of a significant impact related to bioaccumulation of DOM and SOM and production of H_2S is speculative and based on data that is not relevant to this location. For example, the Pescadero Lagoon cited by Dr. Sobczynski (formally called the Pescadero Marsh Natural Preserve) is a seasonal lagoon system on the Central California Coast of California that is not dissimilar to the eutrophic conditions experienced in the Baltic Sea. The fish kill at the Pescadero Lagoon cited by Dr. Sobczynski occurred during dramatic draining events of the lagoon that take place when the sandbar that separates the lagoon from the ocean is breached. The conditions that precipitated the fish kills at Pescadero Lagoon are no more relevant to conditions in Monterey Bay and the proposed project, than are the rates of POM deposition from the Baltic Sea.

Comment: Additional Concerns with the Lead Agencies' Responses to Comments

Dr. Sobczynski argues that desalination will result in an increase in the concentration of nutrients in the subsurface capture zone, particularly following a toxin-producing harmful algal bloom (HAB).

Response:

Toxic algal blooms are a regular feature of Monterey Bay (Kudela et al. 2008; CeNCOOS, 2018[32]) and they result from changes in circulation leading to warming of surface water and stratification (Ryan et al. 2009[33]). They do not result from nutrient input alone; rather, nutrients sustain blooms once they are initiated due to changes in circulation. While HABs can cause operational issues for desalination

[32] Central and Northern California Ocean Observing System (CeNCOOS), 2018. Monterey Bay Algal Bloom History. https://www.cencoos.org/learn/blooms/monterey, accessed July 20, 2018.

[33] Ryan, John P., Andrew M. Fischer, Raphael M. Kudela, James F.R. Gower, Stephanie A. King, Roman Marin III, and Francisco P. Chavez, 2009. Influences of upwelling and downwelling winds on red tide bloom dynamics in Monterey Bay, California. Continental Shelf Research Vol. 29, pp. 785-795.

pre-treatment systems, particularly for facilities incorporating open water intakes,[34] subsurface intakes are not affected by algal blooms. As described in Final EIR/EIS Section 4.5.5.2, various studies have documented that nearshore currents at the seafloor are dominated by the orbital velocities of waves, and there is no evidence that the HABs have been drawn into the Salinas Valley Groundwater Basin as a result of ongoing groundwater pumping, or would be drawn into and accumulate in the proposed slant well capture zone.

Conclusion

Dr. Sobczynski argues that POM accumulation in sediments resulting from pumping the slant wells for the MPWSP will result in a host of negative and unmitigable impacts on the marine environment. However, the rates and quantities of POM accumulation used by Dr. Sobczynski are based on concentrations of POM in the water column and in sediments from eutrophic environments such as the Baltic Sea, and from experiments with artificially high additions of POM to sediments. Dr. Sobczynski has chosen to use these sources of data rather than data on water column concentrations of POM, rain rates of POM to the sediments, as well as sediment organic matter concentrations from Monterey Bay, which, as demonstrated above, are readily available in the published literature. Furthermore, the phenomena described by Dr. Sobczynski are existing conditions; existing seawater intrusion within the 180-Foot and 400-Foot Aquifers has not resulted in the impacts that Dr. Sobczynski describes.

Alternatives

People's Project GHG Emissions

Water Plus provided an attachment dated March 2018, supporting the suggestion that the People's Project would use solar energy and argues that it would, therefore, have fewer GHG emissions than the MPWSP, resulting in an environmentally superior project. However, implementation of revised Mitigation Measure 4.11-1 would result in no net new GHG emissions from the MPWSP and the argument for environmental superiority on the basis of GHG emissions alone is not supported.

Reduced Capacity Alternative

Some comments state that the EIR/EIS should have considered a reduced capacity desalination alternative. Section 5.1.1, Alternatives Analysis – CEQA/NEPA Requirements, of the EIR/EIS (at pages 5.1-2 through 5.1-3) sets forth the requirements for developing and undertaking an alternatives analysis; Section 5.1.2, Project Objectives and Significant Impacts, of the EIR/EIS (at pages 5.1-3 through 5.1-6) discusses the purpose and need under NEPA and the project objectives under CEQA that pertain to the project. Briefly, CEQA provides that the range of alternatives considered in an EIR (here, an EIR/EIS) is governed by the "rule of reason" such that the EIR need only include those alternatives necessary to permit a reasoned choice. (CEQA Guidelines section 15126.6(f).) "The alternative shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the Lead Agency determines could feasibly obtain most of the basic objectives of the project." (Id.) As to NEPA, other than for the no action alternative, alternatives should meet the purpose and

[34] Caron, David, et al., 2009. Harmful algae and their potential impacts on desalination operations off southern California. https://dornsife.usc.edu/assets/sites/378/docs/Caron_pdfs/2009_Caron_etal_WR_Proofs.pdf

need (40 CFR § 1502.13), and be reasonable, i.e., practical or feasible from the technical and economic standpoint and using common sense. The discussion below pertains to both CEQA and NEPA considerations.

The EIR/EIS included an extraordinarily detailed and multi-level alternatives analysis exploring many options. Specifically as to the notion that the EIR/EIS should have included a reduced capacity alternative, this is not accurate because: (1) the EIR/EIS did evaluate in detail two reduced capacity alternatives (in addition to the No Project Alternative); (2) a further reduced capacity alternative would not meet the basic objectives of the project or the purpose and need for the project; (3) a further reduced capacity alternative would not likely avoid or substantially reduce significant environmental effects of the project; and (4) the Final EIR/EIS did discuss a further reduced capacity option. Any one of these is sufficient to explain why an even smaller desalination plant than those studied in the EIR/EIS need not be addressed in detail.

The EIR/EIS studied as the primary project throughout the document a 9.6 mgd desalination plant, and associated facilities (EIR/EIS Chapter 4). Two alternatives were examined in detail at a 6.4 mgd desalination plant size (Chapter 5). These were Alternative 5a (Intake Slant Wells at CEMEX) and Alternative 5b (Intake Slant Wells at Potrero Road). Each of these alternatives – a considerably smaller capacity than the 9.6 mgd plant project – was examined in detail in the EIR/EIS, which identified the impacts associated with such reduced capacity alternatives. As to each of these smaller alternatives considered on its own, the EIR/EIS concluded that the alternative would fail to meet the basic project objectives (and purpose and need) due to vastly insufficient water supply and reliability for all types of water years and seasons. (Final EIR/EIS pages 5.4-52 and 5.4-59.) Alternative 5a or 5b would meet the project objectives only when considered in the cumulative sense along with the approved Pure Water Monterey project (PWM, also known as GWR). When the MPWSP Draft EIR/EIS was prepared, the PWM project had been approved by the lead agency, as well as a Water Purchase Agreement approved by the CPUC for CalAm to secure 3,500 afy of water from that source. Thus, it was reasonable for the PWM project to be assumed in the cumulative analysis for Alternatives 5a and 5b. However, the PWM had not yet completed NEPA review, received all requisite permits and approvals and been constructed, nor (naturally) begun operating and reliably providing water to customers. Construction on elements of the PWM project has now begun, but not all permits have been secured (e.g., NEPA review is on-going and draft Waste Discharge Requirements have been issued by the Regional Water Quality Control Board). The EIR/EIS consideration of Alternatives 5a and 5b as reduced capacity desalination options on their own provides information concerning smaller desalination alternatives.

There is no requirement to analyze an even smaller desalination plant because it would fail to meet the basic project objectives. Given that each desalination unit is 1.6 mgd in size, the next reduced desalination plant size would be 4.8 mgd. Clearly, on its own, such a smaller desalination plant could not meet the basic objectives of the project to supply existing and projected future demand within CalAm's Monterey service territory (see project objectives 1 through 7 on Final EIR/EIS page 5.1-5). Even when considered in conjunction with water expected to be supplied by the PWM project currently under construction, a 4.8 mgd desalination alternative would not provide water supply sufficient to meet demand consistent with the project objectives (or the NEPA purpose and need). Furthermore, prudent water planning and applicable water planning standards and guidelines require planning for all types of water years, including inevitable droughts. Under drought circumstances when little to no water is available from the ASR system, there would be insufficient supply to reliably meet, and be able to satisfy, peak month and peak day demands. Seasonal variability and potential drought conditions would exacerbate the water deficit of a 4.8 mgd desalination plant, even with PWM water available. (See Final EIR/EIS Section 8.2.13.5, pages 8.2-117 through 8.2-118 and Appendix L for data concerning supply and demand and a possible smaller desalination plant.) For these reasons, a smaller capacity desalination plant would not come close to meeting the basic project objectives and was properly not analyzed in detail in the EIR/EIS.

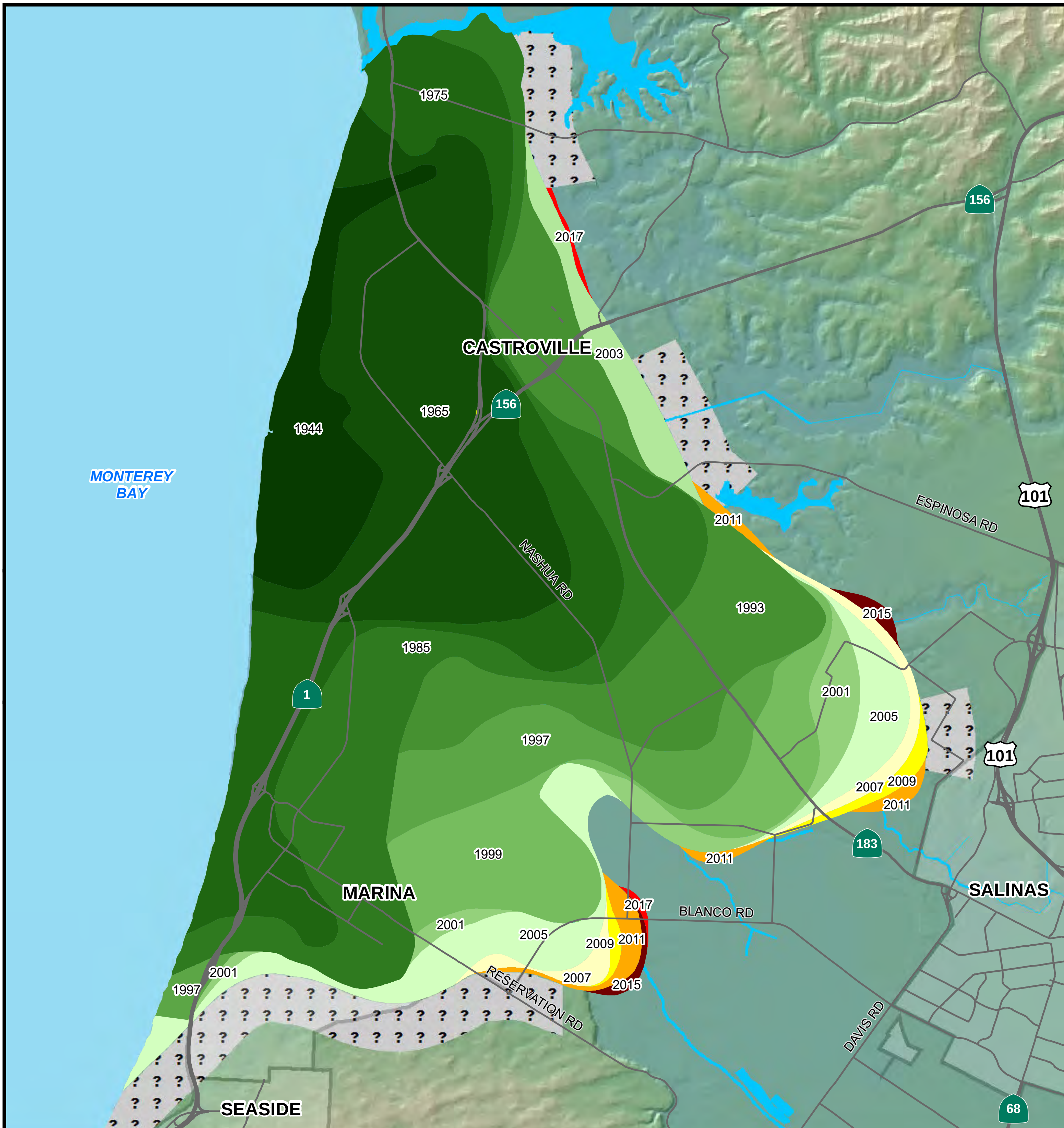
In addition, a smaller capacity desalination plant need not be analyzed in that it does not appear that such an option would avoid or substantially lessen any significant impacts of the project. Many significant impacts would result from construction of the project and those would remain as described for Alternative 5a since the same infrastructure would be constructed (pipelines, etc.), the desalination plant would be on the same site and the same five well pads would be needed at the CEMEX site. While operation of a 4.8 mgd desalination plant would require less energy and therefore generate fewer greenhouse gas emissions, the change may not be a substantial reduction in impacts and Alternative 5a would not have unavoidable adverse impacts in these areas in any event. As stated on page 8.5-663 of the Final EIR/EIS: "The magnitude of any potential adverse impacts resulting from the implementation of a desalination plant that is reduced in size from Alternative 5a and 5b would be reduced from what was evaluated for Alternatives 5a and 5b in EIR/EIS Section 5.5. However, it is expected that the classifications of all such impacts would remain the same as set forth in the EIR/EIS, as would the suggested mitigation measures."

The purpose of exploring alternatives in an EIR/EIS is to seek and fully consider a reasonable range of options that would alleviate or substantially reduce significant environmental impacts of the project. Since a further reduced capacity alternative would not meet this goal (and, as discussed above, would fall short of meeting project objectives), it need not be included in the EIR/EIS.

Finally, as this discussion shows, the Final EIR/EIS did indeed discuss a 4.8 mgd plant in myriad places and include data on such an infeasible option. (See EIR/EIS Section 8.2.13.5, pages 8.2-117 through 8.2-118; EIR/EIS page 8.5-663; and Appendix L.)

Additional Materials

Attached as Exhibit C is a letter received from the State Water Resources Control Board (SWRCB) dated September 4, 2018. The letter suggests numerous changes to the Commission's Administrative Law Judges' Proposed Decision concerning the project. The changes relate to specifics and minor suggested language changes concerning the SWRCB's orders and the topic of project water rights. None of the suggested text changes to the Proposed Decision alter or affect any analyses or conclusions of the Final EIR/EIS. The minor changes to the discussion of water rights in the Proposed Decision appear intended to reflect precise language used in the state Water Code, but do not affect the meaning or conclusions of the water rights discussion in either the Proposed Decision or the EIR/EIS.



Historical Seawater Intrusion Map

Pressure 180-Foot Aquifer - 500 mg/L or Greater Chloride Areas

? No Data   **Cities**

1944 **1997** **2007**
1965 **1999** **2009**
1975 **2001** **2011**
1985 **2003** **2015**
1993 **2005** **2017**

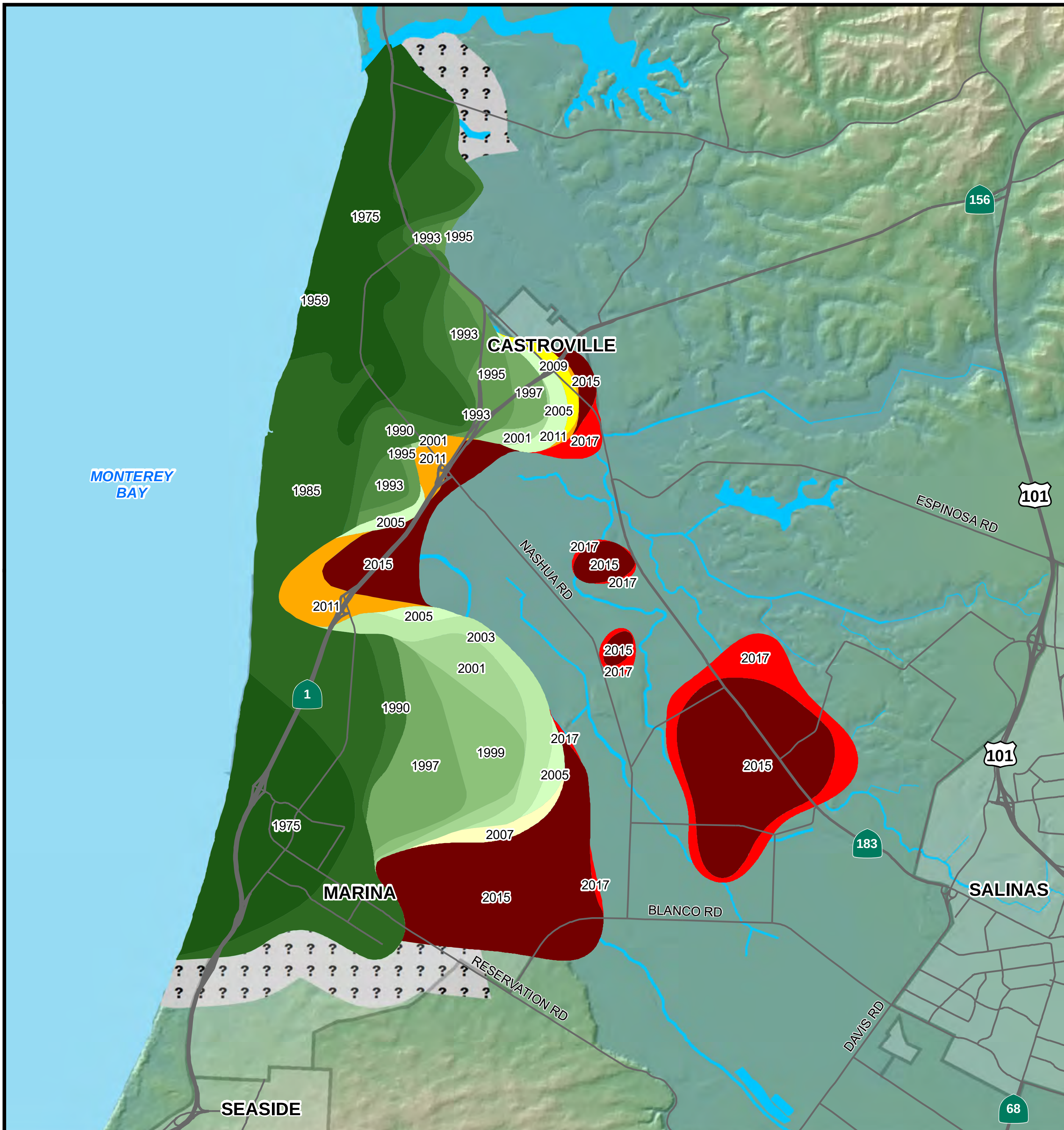
*** Seawater Intruded Areas By Year**

N W E S

0 0.5 1 1.5 2 **Miles**

The scale and configuration of all project boundaries and information shown herein are not intended as a guide for design or survey work.

Map Date: 4/11/2018



Historical Seawater Intrusion Map

Pressure 400-Foot Aquifer - 500 mg/L or Greater Chloride Areas

Cities
? ? No Data

1959	1997	2007
1975	1999	2009
1985	2001	2011/2013
1990	2003	2015
1993	2005	2017
1995		

*** Seawater Intruded Areas By Year**

N W E S

0 0.5 1 1.5 2 Miles

The scale and configuration of all project boundaries and information shown herein are not intended as a guide for design or survey work.

Map Date: 4/25/2018

EXHIBIT A

Chronology of Communications between the City of Marina as a Responsible Agency and the CPUC as Lead Agency

Oct 10, 2012: The CPUC issued a Notice of Preparation (NOP) for the MPWSP EIR. No comments were submitted by the City of Marina.

June 10, 2013: The CPUC CEQA Team attended a meeting with Local, State and Federal agencies at CalAm offices in PG to discuss alternative intake and discharge locations. Following a presentation by the CPUC CEQA Team and a discussion by the attendees of the alternatives, the attendees, including the City of Marina's Director of Community Development (Christine di Iorio) and Planning Services Manager (Theresa Szymanis), agreed that the active mining area at CEMEX was the preferred location for the proposed slant wells. The City declared itself the Lead Agency for preparing the Test Slant Well CEQA compliance, and said it would be preparing a CEQA Initial Study to determine if the Test Slant well was exempt from CEQA or if the City would require a Mitigated Negative Declaration.

Oct 17, 2013: The CPUC CEQA Team met with the Christine di Iorio and Theresa Szymanis at the City of Marina to make introductions, and to discuss the test slant well, the MPWSP project description, the 6.4 mgd Project Variant, the EIR Approach to Analyses, and the EIR Approach to Alternatives.

Jan 23, 2014: CPUC CEQA staff attended the City of Marina Planning Commission meeting where they considered and declined to make a determination on CalAm's application for a CDP for boreholes at CEMEX. CPUC CEQA staff met with Mayor Delgado following the meeting, and discussed a broad range of MPWSP issues of interest to the Mayor.

Feb 10, 2014: CPUC CEQA staff received a request from Theresa Szymanis for responses to questions about the boreholes from Mayor Delgado; CPUC CEQA staff provided responses the same day.

Feb 12, 2014: At the request of City staff, CPUC CEQA staff attended the Marina City Council meeting addressing the appeal of the decision by the City's Planning Commission to decline to make an interpretation of the City's Surface Mining and Reclamation Standards with regards to CalAm's CDP application for boreholes at CEMEX.

March 21, 2014: In response to a request, CPUC CEQA staff provided SWCA, the City of Marina's environmental consultant preparing the Test Slant Well's CEQA Initial Study, with the CPUC-prepared Coastal Hazard Mapping at the CEMEX property.

March 11, 2015: CPUC CEQA/NEPA team contacted City of Marina City Manager Layne Long to notify the City of the scheduled Draft EIR release date, and to arrange for a briefing to City Council on the Draft EIR prior to the public meetings.

April 30, 2015: CPUC published the Draft MPWSP EIR.

May 12, 2015: CPUC CEQA team presented the results of the Draft EIR to the Marina City Council at a public meeting.

May 26, 2015 CPUC held a Public Meeting on the Draft EIR at the Marina Public Library.

July 1, 2015 CPUC CEQA Team received a comment letter on the Draft EIR from City Manager Layne Long, including attachments from the City's environmental consultant SWCA, and Robert Abrams Consulting Hydrogeologist.

July 7, 2015 CPUC CEQA Team received a supplemental comment letter on the Draft EIR from City Manager Layne Long.

August 26, 2015: NOAA's Office of National Marine Sanctuaries issued a Notice of Intent (NOI) to prepare an EIS for the project and solicited input on the full spectrum of environmental issues and concerns relating to the scope and content of the EIS. The City of Marina did not submit comments in response to the NOI.

September 2015: The CPUC Energy Division announced that the Draft EIR would be modified and recirculated as a joint EIR/EIS in coordination with MBNMS, and made clear that key substantive comments and themes of comments received on the April 2015 Draft EIR would be addressed in the appropriate sections of the EIR/EIS.

Sept. 11, 2015: At the request of the City of Marina, the CPUC CEQA/NEPA team sent a hard drive with the NMGWM data files to the City of Marina, c/o Robert Abrams Consulting Hydrogeologist.

January 13, 2017: CPUC/MBNMS published the MPWSP Draft EIR/EIS. Marina City Council members, Planning Commission members, City Manager Layne Long, and the Community Development Department were all mailed a CD copy of the Draft EIR/EIS. A hard copy was delivered to the City of Marina Community Development Department.

January 24, 2017: At the request of the City of Marina, the CPUC CEQA/NEPA team provided the City with digital print files for the 4-volume Draft EIR/EIS, and provided an additional 15 executive summaries, extra CDs and 2 full hard copy sets of the Draft EIR/EIS.

February 2, 2017: CPUC/MBNMS CEQA/NEPA staff and management met with City Manager Layne Long, SWCA representative Emily Creel, and Marina's counsel from Wellington Law, to discuss the Draft EIR/EIS and the CPUC's upcoming Draft EIR/EIS presentation to the Marina City Council.

February 3, 2017: The CPUC CEQA/NEPA team responded to a follow up email request from Emily Creel at SWCA inquiring about test well data in the Draft EIR/EIS.

February 7, 2017: CPUC CEQA/NEPA team presented the findings of the Draft EIR/EIS to Marina City Council at a public meeting.

February 15, 2017: CPUC/MBNMS held a Public Meeting on the Draft EIR/EIS at the Marina Public Library.

March 29, 2017: The law firm of Farella Braun + Martel provided comments on the Draft EIR/EIS on behalf of the City of Marina. The City's 97-page letter included 154 individual comments, and 29 additional pages in an attached letter from Robert Abrams that included 32 individual comments. Responses to these 186 individual comments are provided in Final EIR/EIS Section 8.5.1.

April 17, 2017: CPUC CEQA/NEPA team contacted Fred Aegerter, Director of City of Marina Community Development Department, to coordinate with and request the City's participation in an upcoming field visit to the MPWSP project area by biologists from the CA Coastal Commission, CPUC CEQA/NEPA team, and CalAm, to review potential impacts to ESHA (Environmentally Sensitive Habitat Areas).

April 18, 2017: CPUC CEQA/NEPA team emailed City Manager Layne Long, and Fred Aegerter, requesting a City of Marina biologist be available for the site walk with the CA Coastal Commission and CEQA/NEPA team and CalAm biologists.

April 27, 2017: CPUC CEQA/NEPA team emailed the CA Coastal Commission biologist leading the site visit, and copied Layne Long and Fred Aegerter at City of Marina, and Emily Creel at SWCA, regarding the upcoming site visit and associated lack of responses to prior attempts to contact the City of Marina.

May 3, 2017: CPUC CEQA/NEPA team contacted Emily Creel at SWCA by phone to inquire about their providing a biologist for the CA Coastal Commission-instigated site walk.

May 19, 2017: First habitat site walk by biologists from the CA Coastal Commission, CEQA/NEPA team, CalAm and City of Marina (Kristen Outten from SWCA).

July 19, 2017: Follow-up habitat site walk by biologists from the CA Coastal Commission, CEQA/NEPA team, CalAm and City of Marina (Kristen Outten from SWCA).

August 7, 2017: CPUC CEQA/NEPA team members attended a presentation of the draft results of the SkyTEM Airborne Electromagnetics investigations to a joint meeting of the MCWD Board of Directors and the Board of Directors of the MCWD Groundwater Sustainability Agency at the Marina City Council chambers.

March 28, 2018: CPUC and MBNMS published the Final EIR/EIS. A CD of the Final EIR/EIS was mailed to Farella Braun + Martel, and a Notice of Availability with a web link to the Final EIR/EIS was mailed to all City of Marina City Council and Planning Commission members. A hard copy set (8 books) and 20-CDs of the Final EIR/EIS were hand delivered to City Manager Layne Long.

April 13, 2018: CPUC CEQA/NEPA team members attended a meeting in the City of Marina, hosted by Mayor Bruce Delgado and attended by the U.S. Fish and Wildlife Service, Point Blue Conservation Service, and a number of members of the public. The group discussed the Point Blue-collected snowy plover data at CEMEX in detail.

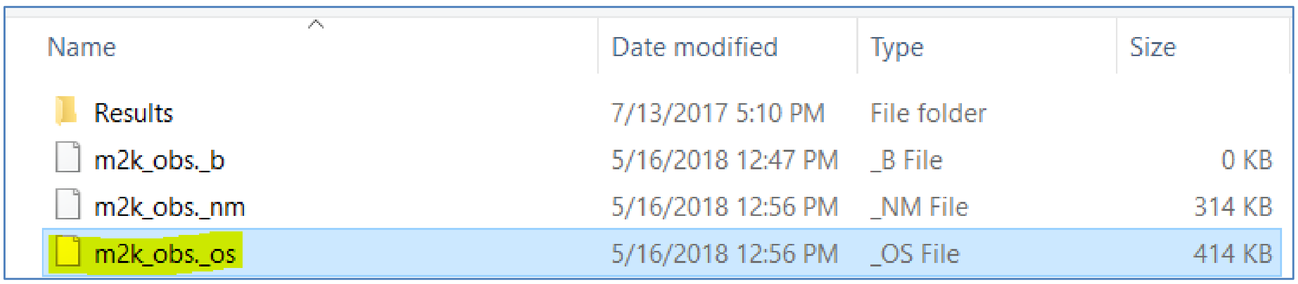
This page intentionally left blank

EXHIBIT B

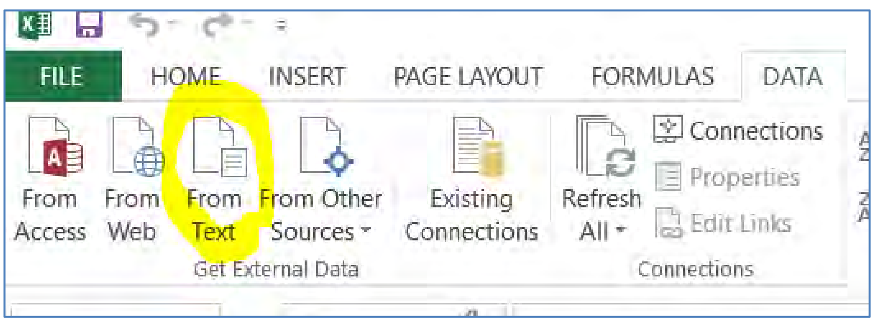
Converting MODFLOW Output Files to EXCEL

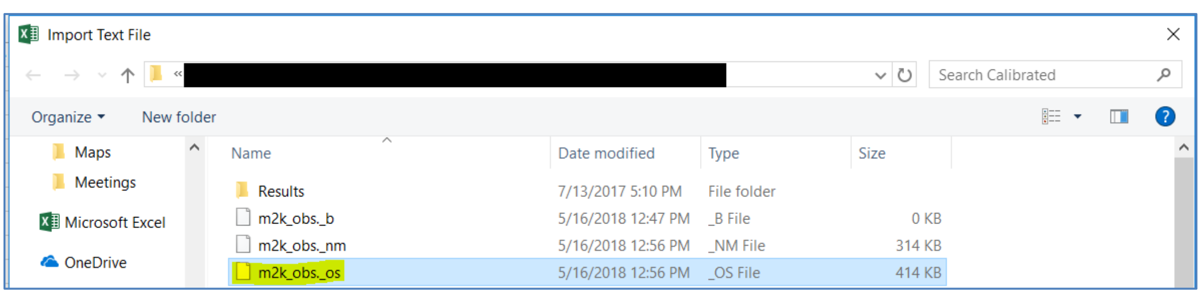
The screenshots below present the process by which the publicly available MODFLOW output file (available at http://www.cpuc.ca.gov/Environment/info/esa/mpwsp/comms_n_docs.html) is read directly into an Excel file.

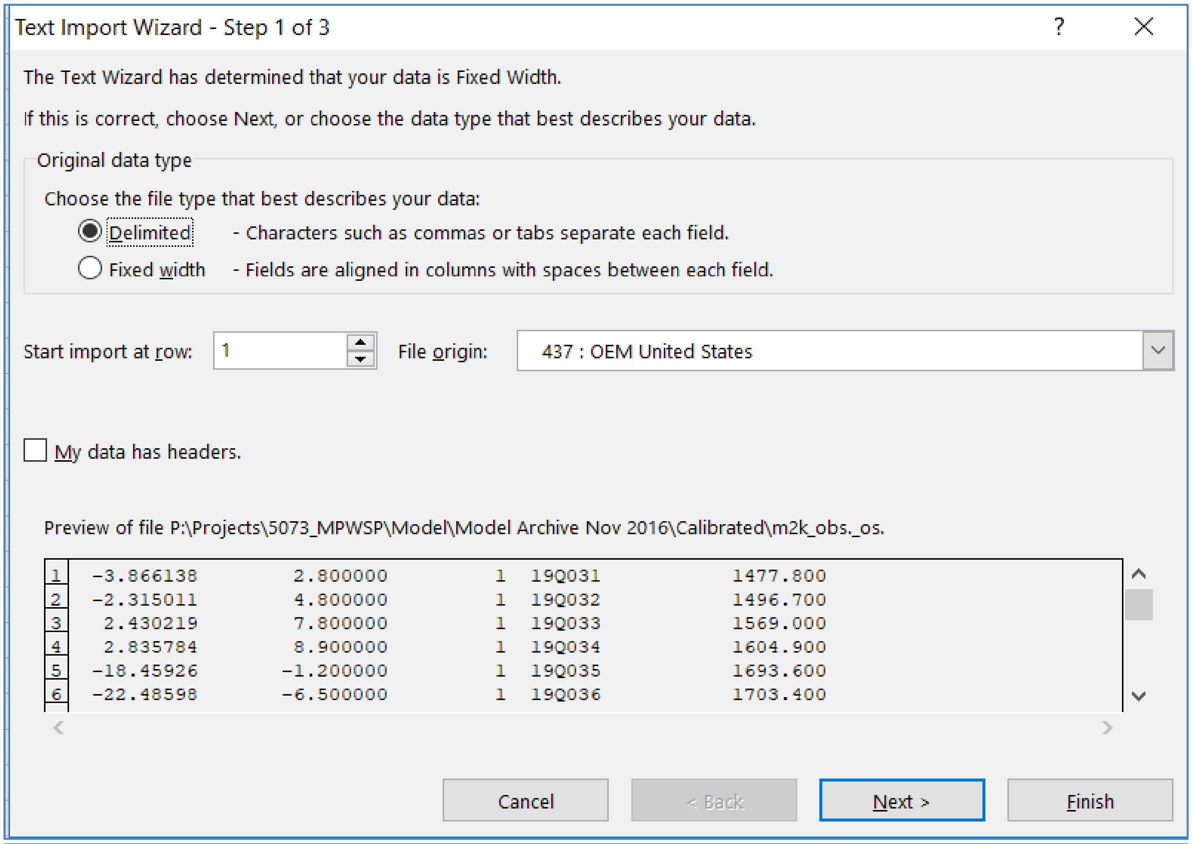
i. MODFLOW creates the “m2k_obs._os” output file within the model folder.

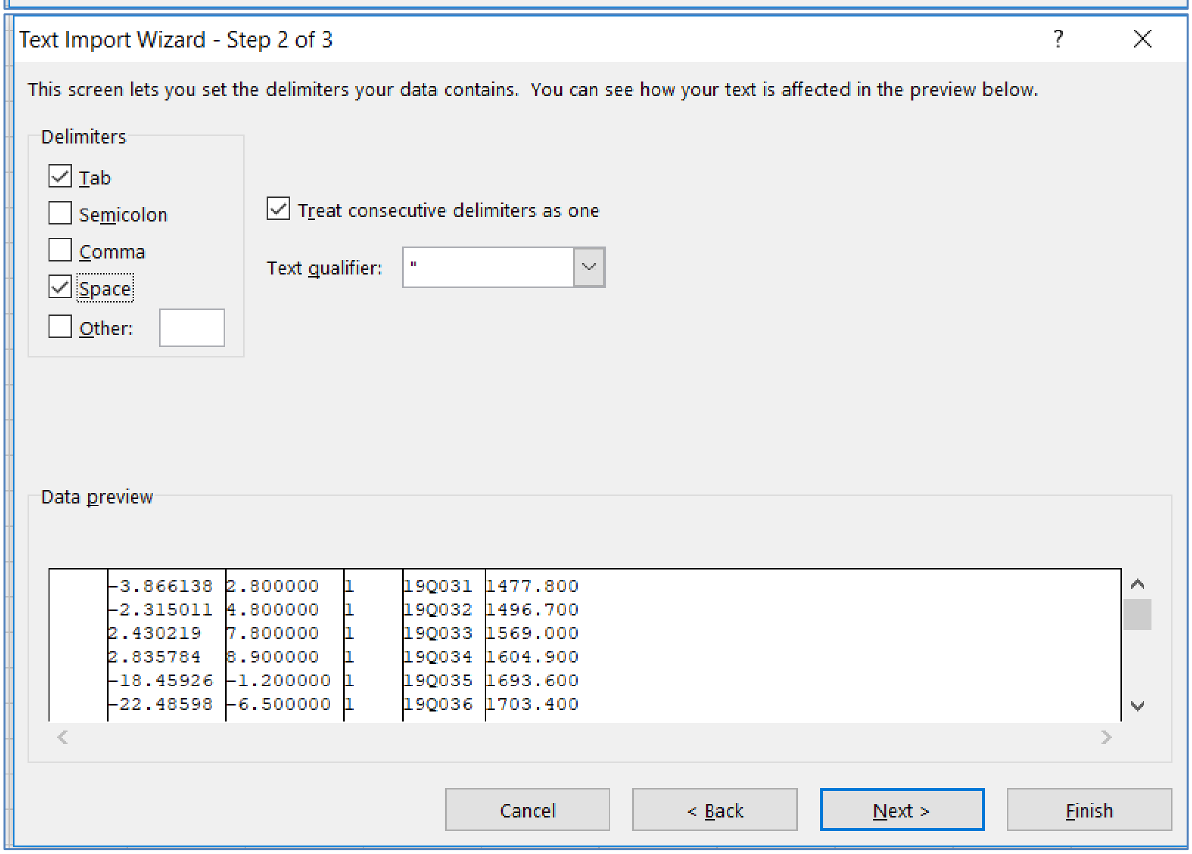


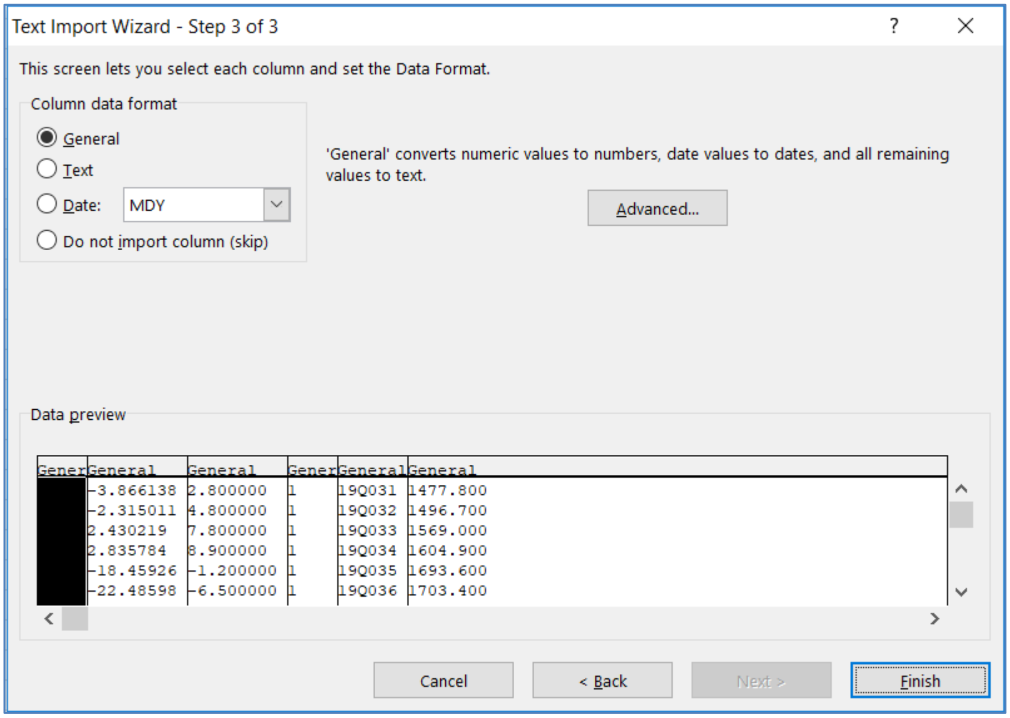
Excel opens the “m2k_obs._os” file via the “From Text” option in the Get External Data section of the DATA menu to import as a space-delimited file.

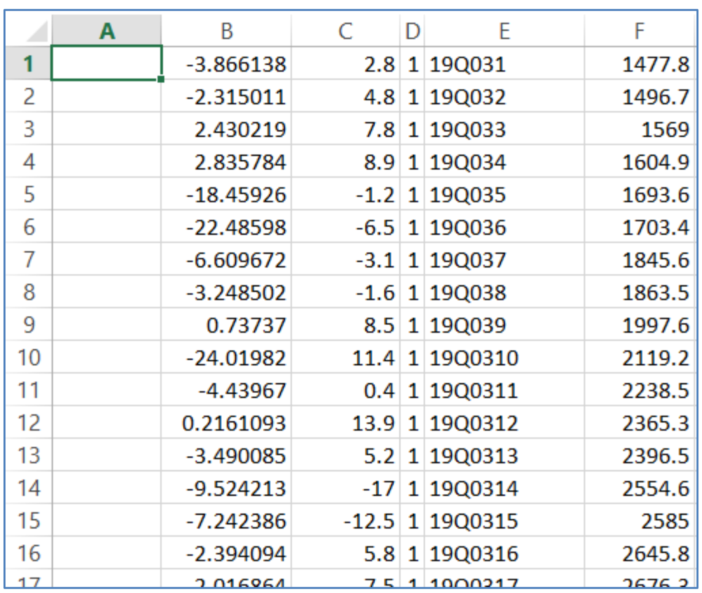





Text Import Wizard - Step 1 of 3
The Text Wizard has determined that your data is Fixed Width.
If this is correct, choose Next, or choose the data type that best describes your data.
Original data type
Choose the file type that best describes your data:
Delimited - Characters such as commas or tabs separate each field.
Fixed width - Fields are aligned in columns with spaces between each field.
Start import at row: 1
File origin: 437 : OEM United States
My data has headers.
Preview of file P:\Projects\5073_MPWSP\Model\Model Archive Nov 2016\Calibrated\m2k_obs._os.
1 -3.866138 2.800000 1 19Q031 1477.800
2 -2.315011 4.800000 1 19Q032 1496.700
3 2.430219 7.800000 1 19Q033 1569.000
4 2.835784 8.900000 1 19Q034 1604.900
5 -18.45926 -1.200000 1 19Q035 1693.600
6 -22.48598 -6.500000 1 19Q036 1703.400
Cancel
< Back
Next >
Finish


Text Import Wizard - Step 2 of 3
This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.
Delimiters
Tab
Semicolon
Comma
Space
Other:
Treat consecutive delimiters as one
Text qualifier: "
Data preview
-3.866138 2.800000 1 19Q031 1477.800
-2.315011 4.800000 1 19Q032 1496.700
2.430219 7.800000 1 19Q033 1569.000
2.835784 8.900000 1 19Q034 1604.900
-18.45926 -1.200000 1 19Q035 1693.600
-22.48598 -6.500000 1 19Q036 1703.400
Cancel
< Back
Next >
Finish





	A	B	C	D	E	F
1		-3.866138	2.8	1	19Q031	1477.8
2		-2.315011	4.8	1	19Q032	1496.7
3		2.430219	7.8	1	19Q033	1569
4		2.835784	8.9	1	19Q034	1604.9
5		-18.45926	-1.2	1	19Q035	1693.6
6		-22.48598	-6.5	1	19Q036	1703.4
7		-6.609672	-3.1	1	19Q037	1845.6
8		-3.248502	-1.6	1	19Q038	1863.5
9		0.73737	8.5	1	19Q039	1997.6
10		-24.01982	11.4	1	19Q0310	2119.2
11		-4.43967	0.4	1	19Q0311	2238.5
12		0.2161093	13.9	1	19Q0312	2365.3
13		-3.490085	5.2	1	19Q0313	2396.5
14		-9.524213	-17	1	19Q0314	2554.6
15		-7.242386	-12.5	1	19Q0315	2585
16		-2.394094	5.8	1	19Q0316	2645.8
17		2.016864	7.5	1	19Q0317	2676.3

Model-calculated water level.

Reported measured water level.

As shown in these screenshots, the MODFLOW m2k_obs._os output file is imported into Excel exactly as previewed.

This page intentionally left blank

EXHIBIT C

SWRCB Letter on Proposed Decision

This page intentionally left blank

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

September 4, 2018

Via Electronic Mail

John Edward Forsythe, AICP
Senior Environmental Planner
California Public Utilities Commission
Energy Division
Infrastructure Permitting and CEQA Section
300 Capitol Mall, Suite 518
Sacramento, CA 95814
John.Forsythe@cpuc.ca.gov

Dear Mr. Forsythe:

APPLICATION 12-04-019: COMMENTS ON PROPOSED DECISION OF ADMINISTRATIVE LAW JUDGES (ALJ's) HAGA, HOUCK, AND WEATHERFORD

The State Water Resources Control Board (State Water Board) appreciates this opportunity to provide comments to the California Public Utilities Commission (Commission) on the proposed decision, issued August 13, 2018, in the proceeding on the above-referenced application by California-American Water Company (Cal-Am) for its proposed Monterey Peninsula Water Supply Project (MPWSP).

The State Water Board is not a party to the proceeding before the Commission but has been, and will continue to be, involved in various related matters within its purview. Of particular focus in this comment letter, the State Water Board is strongly supportive of, and has in fact ordered, Cal-Am's diligent action to, no later than December 31, 2021, limit its diversion of Carmel River water to volumes for which it has a valid basis of right. When last considering modifying its cease and desist order against Cal-Am, the State Water Board articulated that its "interest is in ending unlawful diversions from the Carmel River, rather than in supporting a particular facility." (State Water Board Order WR 2016-0016, p. 16.)

The following comments and suggested revisions are focused primarily on clarifying certain technical points related to the proposed decision's description of the State Water Board's actions and requirements. Suggested textual edits are in quotation marks, with suggested deletions in strikethrough and suggested additions in bold and underline.

1. Page (p.) 5:

   "The SWRCB concluded that although Cal-Am had been diverting **<u>an average of</u>** 14,106 acre-feet per year (afy) from the Carmel River, it ha~~s~~**<u>d</u>**

a legal right to only 3,376 afy from the Carmel River system, including surface water and water **flowing in the subterranean stream** pumped from the Carmel Valley wells. Thus, SWRCB ordered Cal-Am to replace what SWRCB determined to be unlawful diversions of **about** 10,730 afy from the Carmel River ~~with~~**through obtaining additional rights to the Carmel River or** other sources **of water,** and through other actions, such as conservation to offset 20 percent of demand."

2. P. 7, footnote (fn.) 7:

   "[7] SWRCB ~~Cease and Desist~~ Order No. WR 2009-0060 (Oct. ~~27~~**20**, 2009) (*Hereafter* SWRCB's Cease and Desist Order or CDO)."

3. P. 7, fn. 8:

   "[8] SWRCB~~'s~~ Draft ~~Cease and Desist~~ Order No. WR 2009-00xx (July 27, 2009)."

4. Pages (pp.) 7-8:

   "The CDO was **adopted by the SWRCB on October 20, 2009, and was** ~~issued~~ **distributed to the service list** on October 27, 2009**.** ~~and~~ **The adopted CDO maintained the December 31, 2016 compliance deadline from its earlier drafts, and** states in no uncertain terms that Cal-Am can and must reduce its unlawful diversions from the Carmel River without further delay. The SWRCB ~~presents a range of options for~~**ordered** Cal-Am to begin complying immediately with the CDO, including reducing its ~~system losses~~**diversions from the Carmel River** by five (5) percent or 549 afy starting in October 2009~~,~~**; further reducing diversions from the Carmel River in subsequent years through additional water savings from** ~~anticipating that approximately 41 afy of additional savings can be obtained as properties are retrofitted, and conservation measures are installed, reducing use of potable water for outdoor irrigation by approximately 12 afy, imposing additional~~ water demand management programs **implemented** ~~(~~in conjunction with Monterey Peninsula Water Management District (WD)~~),~~**;** and prohibiting new service connections **or certain increased uses of water at existing service connections**.[9] On July 19, 2016, the SWRCB adopted Order WR 2016-0016 (Revised CDO),[10] which ~~amends~~**partially supersedes** Orders 95-10[11] and 2009-0060.[12] Order 2016-0016 extends the date by which Cal-Am must terminate all unlawful diversions from the Carmel River from December 31, 2016, to December 31, 2021. The Revised CDO set an initial diversion limit from the Carmel River of 8,310 afy for Water Year 2015-2016 (October 1, 2015-September 30, 2016) and orders Cal-Am to terminate all unlawful diversions from the Carmel River ~~in excess of 3,376 afy~~ no later than December 31, 2021.[13]"

5. P. 8, fn. 10: We suggest deleting this footnote in its entirety and renumbering remaining footnotes accordingly. If the Commission wishes to maintain this footnote, please refer to Order WR 2016-00**16**.

   Order WR 2016-0016 was introduced earlier in the body of text on p. 8 corresponding to this footnote ("Revised CDO") but is referred to by other terms elsewhere in the Commission's proposed order. (See, e.g., pp. 8 [in sentence directly following first reference], 38, 62, 79, 112, 121, and Findings of Fact beginning at p. 148.) Whichever term the Commission chooses, we recommend consistent references to this order throughout its decision.

6. P. 8, fn. 11: Order WR 95-10 was introduced in the body of text on p. 5 ("Order 95-10") but is referred to by other terms elsewhere in the proposed order. (See, e.g. Findings of Fact, pp. 148 & 179.) If the Commission wishes to also cite, at some point in its decision, the full title as it appears on the cover page of Order WR 95-10, it is "Order on Four Complaints Filed Against The California-American Water Company." Whichever term the Commission chooses, we recommend consistent references to this order throughout its decision.

7. P. 8, fn. 12: Order WR 2009-0060 was introduced earlier in p. 7, fn. 7 ("SWRCB's Cease and Desist Order or CDO") but is referred to by other terms elsewhere in the proposed order. Whichever term the Commission chooses, we recommend consistent references to this order throughout its decision.

8. P. 11, section 1.2.: "SWRCB" shorthand was already introduced on p. 5. Whichever term the Commission chooses for the State Water Resources Control Board, we recommend consistent references throughout its decision. (See also pp. 38, 62, 72-73, "Findings of Fact" beginning at p. 148 [unless Findings of Fact and Conclusions of Law ordinarily do not utilize the shorthand from earlier in the decision].)

9. P. 18:

   > "[. . .] adequate sources of potable water well before the onset of the provisions of the [~~1995~~**2009**] CDO."

   [Note: In the proposed decision's in-text quotation of D.12-07-008, the "onset of the provisions of the CDO" refers to the December 31, 2016 compliance deadline in Order WR 2009-0060.]

10. P. 22:

    > "In order to calculate the demand to be served, Cal-Am must consider and balance the requirements of the CDO, this Commission's requirements, and the ~~Department of Public Health's~~**SWRCB's** requirements."

[Note: The State Water Board assumed the drinking water regulatory functions of the Department of Public Health as of July 1, 2014. (See Health & Saf. Code, § 116271.)]

11. P. 38, fn. 111: We request that the citation to the State Water Board's orders occur after the first sentence, not after the sentences which follow and include proposed conclusions regarding the proceeding before the Commission:

"The SWRCB has already extended the CDO deadline for Cal-Am to reduce pumping from the Carmel River, and the effective diversion limit would be immediately reduced without Commission action by September 30, 2018. ***See*, SWRCB Order WR 2016-0016 at 21.** The extensive and exhaustive [. . . .] as a whole. ~~*See,* SWRCB Order WR 2009-0060, Cease and Desist Order, *modified by* SWRCB Order WR 2016-0016, Order Amending in Part Requirements of State Water Board Order WR 2009-0060.~~"

[Note: The Commission may, if it wishes, utilize a different term for Order WR 2016-0016, e.g. "Revised CDO at 21."]

12. Pp. 72-73

"In the ~~State Water Resources Control Board~~**SWRCB**'s "Final Review of California-American Water Company's Monterey Peninsula Water Supply Project" (SWRCB Report) issued on July 31, 2013, the ~~State Water Resources Control Board~~**SWRCB** advised that extracting **sea**water from the ocean does not require water rights**.** ~~and that~~ **SWRCB also stated that the aquifers into which** Cal-Am **proposes to construct slant wells and extract water** ~~would draw ocean from the Basin~~ **have a** landward ~~area of~~**gradient of groundwater flow that would likely result in the proposed wells' primarily extracting seawater**. However, as acknowledged in the ~~State Water Resources Control Board~~**SWRCB** Report and evaluated in detail in the FEIR/EIS, a portion of the project source water is expected to be brackish water, a combination of ocean water and fresh water originating from the inland aquifers of the **Salinas Valley Groundwater** Basin. In order for Cal-Am to possess appropriative rights to the ~~fresh~~**brackish** water under a "developed water" legal basis, whereby the project essentially creates a new water source, Cal-Am would need to be able to demonstrate that ~~any withdrawal of Basin water that is not ocean water~~ **its extraction and beneficial use of the water source** would not injure or harm other ~~existing Basin~~ **legal users of** water ~~rights holders~~. There is no permit for ~~such~~ appropriative **ground**water rights**;** ~~so~~ the project would have to be implemented **by Cal-Am** in a manner that meets the ~~criteria that would create the~~ **requirements for an** appropriative **ground**water right**, including establishing that that the project water source is surplus to the needs of groundwater users in the Salinas Valley Groundwater Basin and that operating the project will not injure other lawful users of water**."

[Note: Salinas Valley Groundwater Basin is referenced later in proposed decision as "SVGB," without that acronym being introduced. First reference to Salinas Valley Groundwater Basin is on p. 10. Section 5.4 (pp. 72-74) uses the term "Basin," which is not previously introduced and may be confusing, especially in light of the discussion of the Seaside Basin elsewhere in the proposed decision.]

13. P. 112, fn. 305:

"[. . .] *See,* SWRCB Order WR ~~2009-0060~~**2016-0016** at 21."

14. P. 121, fn. 328:

"*See also,* SWRCB Order WR ~~2009-0060~~**2016-0016**, extending the deadline for Cal-Am to end all unlawful diversions from the Carmel River from December 31, 2016 to December 31, 2021. ~~The amending order (~~Order WR 2016-0016~~)~~ includes **intermediate** milestones for **developing the Cal-Am portions of the GWR project and for developing the MPWSP desalination facility, with the intent of having both projects operational by the end of 2021.** ~~reducing annually (by water year) the unlawful diversions by 1,000 acre feet by each of the following dates: October 1, 2018 (2018-19), October 1, 2019 (2019-2020), October 1, 2020 (October 1, 2020-21), and October 1, 2021-December 31, 2021.~~ **To both incentivize timely progress on the projects and to more gradually terminate Cal-Am's unlawful Carmel River diversions by the compliance deadline in the event timely progress on the projects is not made, each failure to achieve a milestone will result in a reduction of Cal-Am's effective diversion limit by up to 1,000 afy.**"

15. Findings of Fact, pp 148-174:

"5. In 1995, the State Water Resources Control Board issued its Order No. WR 95-10, which concluded that although Cal-Am had been diverting **an average of** 14,106 afy from the Carmel River, it ha~~s~~**d** a legal right to only 3,376 afy from the Carmel River system, including surface water and water **flowing in a subterranean stream** pumped from the Carmel Valley wells.

[. . . .]

7. The State Water Resources Control Board ordered Cal-Am to replace what State Water Resources Control Board determined to be unlawful diversions of **about** 10,730 afy from the Carmel River with ~~with~~**through obtaining additional rights to the Carmel River or** other sources **of water,** and through other actions, such as conservation to offset 20 percent of demand.

8. On October 2~~7~~**0**, 2009, the State Water Resources Control Board iss**u**ed Order WR 2009-0060, which ordered Cal-Am to cease and desist

unlawful diversions of water from the Carmel River by December 31, 2016.

9. On July 19, 2016, the State Water Resources Control Board issued its Order Amending in Part Requirements of State Water Board Order WR 2009-0060, extending the deadline for ending all unlawful diversions from the Carmel River from December 31, 2016 to December 31, 2021. The amending order (Order WR 2016-0016) includes **intermediate** milestones for ~~reducing annually (by water year) the unlawful diversions by 1,000 acre feet by each of the following dates: October 1, 2018 (2018-19), October 1, 2019 (2019-2020), October 1, 2020 (October 1, 2020-21), October 1, 2021-December 31, 2021~~ **developing the Cal-Am portions of the GWR project and for developing the MPWSP desalination facility, with the intent of having both projects operational by the end of 2021**. **To both incentivize timely progress on the projects and to gradually terminate Cal-Am's unlawful Carmel River diversions by the compliance deadline in the event timely progress is not made on the projects, each failure to achieve a milestone will result in a reduction of Cal-Am's effective diversion limit by up to 1,000 afy.**

[. . . .]

23. Construction and operation of the MPWSP is necessary to ensure Cal-Am ~~remains~~ **operates** within its legal water rights which requires ~~reduction in~~ **cessation of** its **unlawful** diversions from the Carmel River by December 31, 2021, in compliance with the cease and desist order issued by the SWRCB, as well as required reductions to other constrained water supply sources such as the Seaside Basin.

[. . . .]

59. The SWRCB prepared, at the Commission's request, a draft report on water rights that was circulated for public comments, and then issued ~~as~~ its July 31, 2013 "Final Review of California-American Water Company's Monterey Peninsula Water Supply Project" ~~or SWRCB Report~~. This report determined that extracting **sea**water from the ocean does not require water rights and **that** Cal-Am could draw ocean water from the landward area of the **Salinas Valley Groundwater** Basin **under certain circumstances**.

60. A portion of the MPWSP source water is expected to be brackish water, a combination of ocean water and fresh water originating from the inland aquifers of the **Salinas Valley Groundwater** Basin.

61. In order for Cal-Am to possess appropriative rights to ~~fresh~~**brackish** water under a "developed water" legal basis whereby the MPWSP essentially creates a new water source, Cal-Am would need to be able to demonstrate that ~~any withdrawal~~ **its extraction and beneficial use of the water source** ~~of Basin water that is not ocean water and~~ would not injure or harm other ~~existing Basin~~ **legal users of** water ~~rights holders~~.

62. There is no permit for ~~such~~ an appropriative **groundwater** right. Cal-Am cannot obtain a water rights permit ~~before~~**for** MPWSP implementation.

[. . . .]

111. Based on the mandatory cumulative annual reductions, the estimated operational yield from the ASR project and the estimated afy supplied by the Sand City desalination plant, the 2009 Cease and Desist Order found that the total amount diverted **by Cal-Am** from the Carmel River was not to exceed Cal-Am's water rights of 3,376 afy by the end of December 20~~21~~**16**. **The 2016 Revised Cease and Desist Order extended the compliance deadline to the end of December 2021 and acknowledged that Cal-Am may, under certain circumstances, divert additional volumes of water from the Carmel River under water rights permits or under water transfers from other rights holders.**"

[Note: The proposed decision may not have explicitly discussed the findings in section 111 previously. The existing sentence appears to be based on Order WR 2009-0060, p. 64. For the suggested additional sentence regarding potential lawful diversions above 3,376 afy, see Order WR 2016-0016, p. 10.]

Again, thank you for this opportunity for the State Water Board to provide comments on the proposed order. State Water Board staff will be available to further discuss or clarify these comments, to the extent permitted by procedural rules governing this proceeding before the Commission.

Sincerely,

Michael A.M. Lauffer
Chief Counsel

cc:

[all via email only]

Application 12-04-019 Service List
(https://ia.cpuc.ca.gov/servicelists/A1204019_80356.htm)

Steven Westhoff, OCC

EXHIBIT B

August 15, 2018

John Forsythe
Senior Environmental Planner; CEQA Lead
California Public Utilities Commission
550 Kearny Street, Suite 800
San Francisco, CA 94108
MPWSP-EIR@esassoc.com

Paul E. Michel
Superintendent; NEPA Lead
Monterey Bay National Marine Sanctuary
99 Pacific Street, Bldg 455A
Monterey, CA 93940
montereybay@noaa.com

SUBJECT: HWG COMMENTS ON TECHNICAL APPENDICES/ATTACHMENTS TO LETTERS SUBMITTED BY MCWD AND CITY OF MARINA TO THE CPUC AND MBNMS ON APRIL 19, 20018

Dear Mr. Forsythe and Mr. Michel,

This letter has been prepared by the Hydrogeologic Working Group (HWG) to provide comments on various technical appendices/attachments referenced by Marina Coast Water District (MCWD) and the City of Marina (Marina) in April 2018 comment letters submitted on the Final Environmental Impact Report and Final Environmental Impact Statement (FEIR/EIS) in Application No. 12-04-019 (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).

The HWG has reviewed the Final Airborne Electromagnetics (AEM) Report (Final AEM Report) dated March 15, 2018 (but not made available to us until late April 2018) and several Technical Memos (TM) and letters dated April 2018 (by Hopkins Groundwater Consultants (HGC), Aqua Geo Frameworks (AGF), EKI, GeoHydros, and Jacobson James) providing additional comments on the FEIR/EIS and, to some extent, on the HWG Final Technical Report (2017). The vast majority of these recent comments provided by MCWD and Marina groundwater consultants repeat previous comments on the Draft EIR/EIS (DEIR/EIS) and HWG Final Technical Report. The HWG previously responded to comments on the HWG Final Technical Report in January 2018, and we refer the reader to that document (HWG, 2018). The California Public Utilities Commission's environmental consultant, ESA, also responded to comments on the DEIR/EIS in great detail in the March 2018 FEIR/EIS (ESA, 2018). The fact that MCWD/Marina groundwater consultants do not agree with the FEIR/EIS responses to their DEIR/EIS comments does not make the FEIR/EIS responses wrong and does not make the FEIR/EIS inadequate.

Nonetheless, the HWG has reviewed the relevant technical reports, TMs, and letters referenced above and is providing both an Executive Summary and detailed comments related to our assessment of these documents.

EXECUTIVE SUMMARY

This letter responds to comments raised in the Final AEM Report, and technical comments on the FIER/EIS submitted by MCWD's and Marina's consultants.

As a preface to our comments, the HWG notes that the AEM study overall does not provide significant new and validated technical data or interpretations that require changes to previous HWG interpretations or conclusions. The potential presence of lower salinity water in the inland perched/mounded aquifers or upper portion of a sea water intrusion wedge is not new information and is already considered and accounted for in FEIR/EIS analyses and previous work documented by the HWG. The HWG has previously demonstrated that groundwater in the inland perched/mounded aquifers (most properly referred to as the "A" Aquifer in the Fort Ord area and the 35-Foot Aquifer in the Monterey Peninsula Landfill area, but often incorporated under the term "Dune Sand Aquifer" by others) is hydraulically isolated from aquifers to be screened in the proposed MPWSP wells. Thus, pumping of MPWSP wells will have essentially no impacts on groundwater levels or quality in the perched/mounded aquifer system. MCWD's own consultant, Hopkins Groundwater Consultants, concurs with this opinion in its April 17, 2018 letter to MCWD that states, "…pumping of the proposed MPWSP wells will not impact the water on top of the semi-perching aquitard layer…" (page 22).

Although the HWG has many detailed comments on the Final AEM Report that are provided in the Detailed Comments section of this letter, key comments are summarized below:

- The Final AEM Report represents biased and poor science using data, assumptions, and methodologies that are not documented, lack justification, are poorly calibrated and non-unique, and result in misleading interpretations and conclusions, as documented by HWG in this letter;
- The Final AEM Report does not provide the raw AEM data, details of the inversion process, QA/QC methods and procedures, formulas utilized, or methods/formulas for conversion of AEM data to lithologic/water quality conclusions. Thus, the results, interpretations, and conclusions of the AEM study cannot be validated by others, and does not allow for sufficient peer review. Furthermore, there has been no academic peer review even though the study is being promoted as a Stanford University work product;
- There are many aspects of the Preliminary AEM Study (July 2017) and related public presentation of preliminary AEM results (August 2017) that were misleading to the public and basin stakeholders. Furthermore, the Final AEM Report results and presentation still include misinformation and many of the same undocumented/unsupported (and non-unique)

hydrogeologic and water quality interpretations that continue to mislead the public and basin stakeholders;

- The Final AEM Report (and AGF) claim the use of 318 control points to calibrate the AEM data. In reality, the Final AEM Report uses only 7 control points (from MPWSP monitoring well boreholes) to calibrate AEM data. This fact is readily apparent in the Final AEM Report and was confirmed by Ian Gottschalk during his April 2018 presentation at a MCWD Board Meeting. The result is that the vast majority of the AEM study data and resultant hydrostratigraphic and water quality interpretations are not calibrated or "ground-truthed"; hence, there are several different interpretations of this AEM data that can be considered equally valid (i.e., non-unique);
- A majority of the comments provided by other MCWD/Marina groundwater consultants rely heavily on the flawed and misleading Final AEM Report to support their own statements and conclusions, which are also addressed by the HWG in this letter.

Many of the comments by MCWD/Marina groundwater consultants (HGC, AGF, EKI, GeoHydros, Jacobson James) are either unsupported statements/claims and/or are comprised of inaccurate/misleading statements. We highlight a few of the more important issues in this Executive Summary in the bullets below and provide our detailed comments in the sections following the Executive Summary.

- It is important to note that the Preliminary and Final AEM Report interpretations and conclusions are based on significant input by AGF and HGC. The involvement of these consultants is apparent from the list of authors on the document (includes AGF staff) and the public presentation (MCWD Board Meeting, April 2018), where Ian Gottschalk acknowledges the important contributions from Curtis Hopkins and the fact that Mr. Hopkins was "only a phone call away" for any hydrogeologic input needed;
- The Final AEM Report (and MCWD/Marina consultant TMs/Letters) utilizes an improper standard of 3,000 mg/L total dissolved solids (TDS) to define fresh water, whereas the standard definition of fresh water is less than 1,000 mg/L TDS (Todd, 1980; Marella/USGS, 1993). A large proportion of groundwater inland of the proposed MPWSP site with TDS between 1,000 and 3,000 mg/L has chloride exceeding MCLs (and the 500 mg/L standard to define seawater intrusion) and/or has nitrate exceeding the MCL;
- The Final AEM Report (and MCWD/Marina Consultant TMs/Letters) does not attempt to delineate areas of fresh water. Instead, they attempt to delineate areas of brackish water with TDS up to 3,000 mg/L that include chloride exceeding 500 mg/L;
- The Final AEM Report (and MCWD/Marina groundwater consultant TMs/Letters) makes many unsupported and undocumented claims/conclusions and/or make interpretations/conclusions that are in conflict with MPWSP borehole data that has been verified by other MPWSP data (e.g., groundwater levels, pumping tests, water quality). One example is the claim that gaps

exist in the 180/400-Foot Aquitard in the MPWSP vicinity. This claim is based on previous studies that don't incorporate the latest MPWSP borehole/well data, and uncalibrated/flawed AEM data. In reality, an abundance of data collected since 2015 demonstrate that gaps in the 180/400-Foot Aquitard are not present in the MPWSP area;

- The analysis of capture zones provided by various MCWD/Marina groundwater consultants do not account for the ocean as a recharge boundary, which invalidates the entirety of their capture zone comments;
- While the capture zone created by the MPWSP would not capture all seawater currently entering the basin due to the inland gradient, it does significantly decrease the amount of seawater that would be entering the basin without the project. In short, the MPWSP would have a beneficial impact on seawater intrusion that would not be realized under the "no project" alternative, as documented in the FEIR/EIS.
- Many MCWD/Marina consultant comments are made on the FEIR groundwater model's representation of the perched/mounded aquifer portion of the Dune Sand Aquifer, but it is important to understand that any FEIR/EIS model-based prediction of MPWSP impacts to the perched/mounded aquifers are overestimated because pumping from proposed MPWSP wells will not impact the inland perched/mounded aquifers, as acknowledged by HGC at the top of page 22 of HGC's April 17, 2018 letter to MCWD.

These Executive Summary comments are intended just to highlight some of the major points in our Detailed Comments section below. The detailed comments provide further support for the key comments listed above. In addition, the Detailed Comments section provides many additional review comments on the Final AEM Report along with responses to many other MCWD/Marina Consultant comments on the FEIR/EIS (and the HWG Final Report).

Comments on Final AEM Report dated March 15, 2018 (and made publicly available on April 23, 2018)

As a preface to the initial comments provided below, the HWG would note that the importance of the AEM study to actual EIR/EIS issues that need to be addressed has been grossly over exaggerated in the public forum. Whether or not isolated pockets of less saline water exist within the zone of sea water intrusion defined by Monterey County Water Resources Agency, it has little relevance or importance to the MPWSP's environmental analysis.

First, it is important to note the vast majority of the purported "fresh water" pockets (inappropriately defined as water with TDS up to 3,000 mg/L that is well beyond potable limits), occur in the perched/mounded water portion of the shallow aquifer or in the upper portion of the sea water wedge within the 180-FTE Aquifer. Perched water will clearly not be impacted by the project because it is hydraulically disconnected from the aquifers that will be pumped by MPWSP wells. A sea water wedge naturally contains less saline water in the upper portion of the aquifer, and any attempt to pump from the upper less saline portion of the sea water wedge will quickly result in a salted in and unusable production well.

Second, to the extent any actual "fresh water" pockets do exist at some inland locations as suggested in portions of the Final AEM Report, those pockets resulted from aquifer heterogeneities (and not some purported conservation/reclamation effort) and any attempt to develop a water supply from such "fresh water" pockets will quickly result in salted in wells from the surrounding saline water.

Third, as demonstrated in previous HWG work products, to the extent one was to conduct a realistic and unbiased evaluation of the AEM data, it is apparent the AEM data merely supports the existing data and hydrogeologic conceptual model (HCM) already provided by the HWG (2017).

In light of the above overview discussion, the more detailed comments provided below by the HWG should not be interpreted as attaching more importance to the AEM study than is warranted in assessment of the MPWSP's potential environmental impacts. With that being said, there are many technical issues to comment on in the Final AEM Report including, but not limited to, the following:

1. For this AEM study, the artificial signal was shown schematically in the Stanford April 2018 MCWD presentation to be generated by a wire loop suspended from a helicopter, to which a current was applied. The same loop was then used to measure an induced current due to the earth resistivity properties of the subsurface. No further description was provided in the Final AEM Report, so the details and quantification of AEM data collection remain unclear. The actual instrument operator is not named, unless it is SkyTEM, named in Asch (2018) as the type of antenna that was used. Therefore, the documentation of this phase of the study is not adequate to judge its validity.

2. With respect to the measurement of volts (or other measured signal units) and QA/QC of the data collection instrumentation: as described in the Stanford MCWD presentation, there was apparently a measurement of the induced current in the suspended wire loop (perhaps in amperes instead of volts). Although no other details are provided in the Stanford presentation or Final AEM Study, Asch (2018) stated: "AGF (Aqua Geo Frameworks) performed 'in the field' Quality Assurance on the data acquisition vendor", but this process and the QA results, are not documented or explained. Therefore, documentation of this phase of the study is not adequate to judge its validity.
3. With respect to the conversion of volts (or other measured signal units) to some earth material property: Asch (2018) stated: "AGF then processed, edited, and numerically inverted the acquired data." This numerical inversion presumably resulted in the values of ohm-m (resistivity) used in the Final AEM Report, but the process is not further explained. Thus, the documentation of this phase of the study is not adequate to judge its validity.
4. There is a question of validity and uniqueness regarding further interpretation of the earth material property into other earth material properties. The Final AEM Report has discussion of the interpretation of bulk resistivity data in terms of lithologic variation and groundwater chemistry (expressed as total dissolved solids, TDS), for which interpretation utilized downhole data from MPWSP borings and monitoring wells. The Final AEM Report noted "a monotonic relationship does not exist for the relationship between resistivity and lithology in this study area, due to the complicating factor of changing water quality. As a result, the relationship between resistivity and lithology tends to be much more site-specific." This means the distinction between lithologic type and groundwater chemistry is not unique, but subject to interpretation. Previous reports and earlier comments by HWG (2017, January 2018, this letter) and the FEIR/EIS (March 2018) provide further comments on the non-unique aspect of AEM data interpretation in the Stanford/AGF/HGC AEM study.
5. The Final AEM Report uses outdated or incorrect terminology to describe the hydrogeology in the MPWSP vicinity. For example, lack of recognition of the "180-FTE" Aquifer and "FO-SVA" Aquitard demonstrates the Stanford/AGF/HGC AEM study team have not incorporated the most up-to-date hydrogeologic information documented by the HWG (2017). The use of a flawed hydrogeologic conceptual model in the Final AEM Report contributes to a flawed hydrogeologic interpretation of AEM data.
6. The Final AEM Report document made available to the public and HWG members does not include the actual AEM data, the equations and calculations used to convert from raw AEM data to inverted AEM data, a detailed description of how AEM data inversion and interpolation was done, or a description of QA/QC methods and procedures used during field data acquisition and during data interpretation. Therefore, public agencies, HWG members, and other stakeholders are not able to conduct a complete review of the AEM data collection and interpretation or validate conclusions that have been presented in the Final AEM Report. Therefore, the HWG

can only address the Preliminary and Final AEM Reports along with two public presentations of results by Stanford/HGC August 2017 and April 2018 to provide the comments in this letter. The HWG may provide additional comments in the future if the missing data and documentation are made available for review.

7. Based on review of the Final AEM Report, comments provided by other MCWD/Marina hydrogeologists, and public presentations of AEM results, it is clear that much of the work related to collection, processing, analysis, underlying assumptions, and interpretation of AEM data was either done by or directly influenced by AGF and HGC (consultants employed by MCWD, who paid for the AEM study). Thus, the Final AEM Report should not be considered as an independent and unbiased work product developed solely by Stanford University, regardless of whether or not Stanford University staff are listed as the primary authors.

8. To the extent that anyone might consider the Final AEM Report to be a work product of an academic institution (i.e., Stanford University), it is clear the work has not been subject to standard academic peer review.

9. The Final AEM Report description of project vicinity and regional hydrostratigraphy (pages 7-11) and hydrostratigraphic cross-sections (pages 40-55) do not incorporate use of the MPWSP monitoring well borehole lithology/geophysics data or the comprehensive hydrogeologic conceptual model prepared by the HWG using all available data and presented in the Task 2 Report and HWG Final Report (2017). Instead, the authors developed their own hydrogeologic model by using older reports and cherry picking available data to fit their desired interpretation of the AEM data. The only Final AEM Report references to work products resulting from HWG efforts are a 2014 report and one weekly monitoring report out of 148 weekly reports made public. The 2014 report was subsequently updated with the significant data collection efforts that occurred from 2015 to 2017, which included drilling, coring, and geophysical logging of 24 boreholes for construction of 24 monitoring wells, pumping tests using the test slant well and monitoring well network, collection of groundwater level and groundwater quality data for the test slant well and 24 monitoring wells between 2015 and 2017, and analysis/syntheses of all the above data along with available surrounding data (e.g., Monterey Peninsula Landfill, Fort Ord, DWR well logs, previous hydrogeologic studies, etc.) to develop a comprehensive HCM (HWG, 2017).

10. In general, the Final AEM Report relies heavily on old reports (e.g., MCFCWCD, 1960; Kennedy Jenks, 2004) and HGC (2016) to provide the basis for their hydrogeologic understanding of the project area and surrounding vicinity, and does not utilize the most recent and comprehensive synthesis of all available hydrogeologic data prepared by the HWG (2017). Use of the most up-to-date HCM would result in a more accurate and reliable interpretation of AEM data.

11. The Final AEM Study (along with AGF comments) claim the use of data from 318 boreholes in this study, yet only seven of those boreholes were used for AEM data calibration and ground-truthing. A major consequence of insufficient AEM data calibration is non-unique hydrostratigraphic and water quality interpretations.

12. It is important to note that even the limited calibration of AEM data to seven MPWSP borehole geophysical logs has inherent uncertainties for multiple reasons. First, the MPWSP monitoring well borehole geophysics data were collected in 2015 (at the end of a dry period), whereas the AEM data were collected in May 2017 immediately after one of the wettest winter/spring rainfall seasons on record. Therefore, water quality conditions in the vadose zone and shallow aquifers were potentially very different between the borehole geophysics data and AEM data, and adjustments to compensate for this discrepancy creates significant uncertainty at best (this point was acknowledged by Ian Gottschalk in his public presentation to the MCWD Board in April 2018). Second, the Final AEM study completely ignores the borehole geophysical log associated with MW-3, which is provided in the 2014 GEOSCIENCE TM (E-log of CX-B2 in Appendix E) that is referenced in the Final AEM Report. Third, the Final AEM Report acknowledges that AEM data cannot capture the important detail of borehole geophysical logs (e.g., page 18) that show the variability in lithology and water quality with depth; instead the AEM data can only average those properties over large vertical distances (typically 20 to 30 feet). This could easily contribute to misinterpretation of stratigraphy, including not detecting significant clay layers.

13. Given that the AEM data collection effort represents a single snapshot in time (May 2017) with maximum input of fresh water from rainfall percolation to the vadose zone and shallow aquifer after a record wet year, it should be noted that any assessment of purported "fresh water" pockets from this AEM data will be heavily biased towards maximum wet year conditions and not representative of average groundwater quality conditions in these zones during the more common average and dry years.

14. The definitions of water quality based on total dissolved solids (TDS) concentrations on page 6 of the Final AEM Report are very confusing and misleading to the reader. The Final AEM Report defines four water quality groupings, the most important of which have overlap (TDS from 0 to 1,000 mg/L and 0 to 3,000 mg/L). It is clear that the only grouping that potentially consists of potable drinking water (i.e., fresh water) is the 0 to 1,000 mg/L TDS grouping (Marella, 1993; Todd, 1980; California MCL). The Final AEM Report misleads the reader with confusing terms such as "source of drinking water", "water of potential beneficial use", and "water of limited beneficial use", derived in part from an obscure 30-year old EPA reference. It is clear that groundwater with TDS in any of these other three groupings (i.e., those with groundwater TDS greater than 1,000 mg/L) would require expensive water treatment in order to be served to customers. The bottom line is that the Final AEM Report discussion of purported pockets of "fresh water" is largely composed of water unfit for human consumption and agricultural

irrigation. Figure 1 in this comment letter was prepared with publicly and readily available data. The Figure shows wells with measured TDS concentrations above the recommended maximum contaminant level for TDS for public drinking water.

15. There are many aspects of the Final AEM Report discussion of hydrostratigraphy that are misleading and/or inaccurate. For example, the authors attempt to equate the Salinas Valley Aquitard (SVA) with the Fort Ord Salinas Valley Aquitard (FO-SVA) as being one continuous unit. These two hydrostratigraphic units are distinct from one another and occur at significantly different elevations, as demonstrated in the HWG HCM (2017). Another example is the reference to mounding of groundwater in the 180-FTE Aquifer near the coast at the bottom of page 7 of the Final AEM Report, for which no map or evidence is provided in the Final AEM Report. In fact, the HWG Report (2017) demonstrates such mounding does not occur in the 180-FTE Aquifer, but the AEM study neglects to utilize data and information presented in the HWG Final Report. A third issue is the use of terminology, applicable only several miles south-southeast of the CEMEX site in the Fort Ord area, involving an Upper 180-Foot Aquifer, Intermediate 180-Foot Aquitard, and Lower 180-Foot Aquifer. This hydrostratigraphic layering does not carry over to the project area and areas inland of the CEMEX property, where the 180-FTE Aquifer is comprised of one aquifer unit. There are many other flaws and inaccuracies in the description of hydrostratigraphy in the Final AEM Report that are too numerous to list here, all of which contribute to flawed interpretations of AEM data in the Final AEM Report.

16. Figures 1 and 2 and pages 5 and 14 of the Final AEM Report claim to show an outline (in light blue) of a portion of the Dune Sand Aquifer. This is not correct as the area encompassed by the light blue line extends into the Perched "A" Aquifer area of Salinas Valley where the Dune Sand Aquifer does not exist. In addition, much of the area inland of MW-7 is more appropriately termed the "A" Aquifer and the 35-Foot Aquifer because they are perched on the FO-SVA clay layer.

17. The description of ancillary data on pages 9 and 10 of the Final AEM Report is very misleading. This section of the Final AEM Report references use of lithology data from 318 well locations, but does not provide a map of these locations, which is standard professional practice. Subsequent sections of the report only use (and continually refer back to) seven MPWSP monitoring well borehole geophysical logs for ground-truthing of AEM data (the geophysical log associated with the MPWSP MW-3 monitoring well location is not utilized for some reason even though the geophysical log near MW-3 is provided in the 2014 report that is referenced). The only other use of the "318 well locations" is that approximately 20 lithologic logs (presumably from water well drillers reports) are shown on the four cross-sections on pages 52-55. These 20 lithologic logs were not used for ground-truthing AEM data, such as partially described for the seven MPWSP monitoring well sites; therefore, the key component of the study (i.e., resistivity) was not calibrated for most of the AEM study area. In summary, the Final AEM Report authors partially document use of only seven of the 318 well locations for ground-truthing (i.e.,

calibration) of AEM data. This fact (i.e., the use of only seven well locations for AEM data calibration) was confirmed in the public presentation made by Ian Gottschalk in April 2018 to the MCWD Board during questioning by one of the Board members. The use of only 7 data points for AEM data calibration represents a major flaw in the overall AEM data analysis because it renders the interpretations unreliable (non-unique) beyond the immediate vicinity of the MPWSP wells due to a high degree of uncertainty in postulated hydrostratigraphy and water quality interpretations and conclusions.

18. Page 9 of the Final AEM Report states, "Much of the analysis in this report relies specifically on data collected between 2014 and 2015 as part of the assessment phase of the Monterey Peninsula Water Supply Project (MPWSP)." HWG comments are: a) This text acknowledges that the borehole and monitoring wells installed by Cal Am and data collected from those wells represents the highest quality data available in the project area and vicinity, and provides the only calibration data for the AEM study; and b) 2014 and 2015 comprised a period of substantially different rainfall conditions (dry) relative to the May 2017 AEM data collection period (very wet), which creates uncertainty in use of these borehole data for calibration of AEM data.

19. On page 12 of the Final AEM Report several statements are made about timing of data collection activities associated with MPWSP borehole drilling and well construction. These statements are incorrect: the geophysical log for MW-3 is available to study authors in the Task 1 TM (GEOSCIENCE, 2014) that was also included as an appendix in the Final HWG Report (2017), geophysical logging was conducted immediately upon completion of pilot borehole drilling, the initial water quality samples were collected about three weeks after completion of well development, and pressure transducers were installed on average 26 days after well completion.

20. The AEM study has been presented to the public (see video of April 2018 MCWD Board Meeting) as providing geophysical imaging across the study area to a depth of 1,000 feet. However, on page 13 of the Final AEM Report the depth of investigation (DOI) for AEM data is described as being from 50 meters below ground surface (mbgs) near the coast to 150-200 mbgs at inland locations (this DOI restriction is related to the difficulty the AEM tool has in "seeing" through low resistivity zones). This is equivalent to a DOI of 164 feet to 492-656 feet below ground surface (fbgs), not nearly the 1,000 feet represented to the public by the MCWD General Manager at the MCWD Board meeting. Given a 180/400-Foot Aquitard depth range of 200 to 350 fbgs, the DOI is inadequate to fully image the 180-FTE Aquifer and does not even reach the top of the 180/400-Foot Aquitard or 400-Foot Aquifer near the coast (which is the most important location with respect to potential impacts of the proposed MPWSP slant well pumping). Related to DOI, it is interesting to compare AEM cross-section C-C' on page 15 to the Figure 14 cross-section on page 44. While the cross-section on page 15 clearly shows a DOI limited to no more than about 50 to 100 meters, the Figure 14 cross-section shows AEM imaging

to depths ranging from 150 to 200 meters for the same general area as shown on page 15. This apparent discrepancy of the DOI in this area is not explained in the Final AEM Report.

21. It is important to note that the MPWSP monitoring well depths range from about 330 to 440 feet bgs, or a maximum of approximately 50 feet into the top of the 400-Foot Aquifer. Given that the MPWSP wells are the only calibration/validation points used in the AEM study, the interpretation of AEM data in the 400-Foot Aquifer is effectively uncalibrated even near MPWSP boreholes. As noted above, the AEM DOI does not even reach the 400-Foot Aquifer near the coast, which limits AEM calibration efforts even further.
22. Page 18 of the Final AEM Report states, "While the borehole resistivity in MW-1 measures some sudden jumps in resistivity, (e.g., at 40 mbgs), the resistivity measurements from the nearest AEM sounding trace out an average resistivity." The authors fail to acknowledge that AEM cannot detect vertical stratification of salinity in the aquifer over short distances in a seawater wedge. This adds a level of complexity and uncertainty that is not described or accounted for in the AEM report.
23. Page 20 of the Final AEM Report states in reference to water quality trends at MW-4S, "This trend is interpreted as a result of fresher water in the Dune Sand Aquifer flowing toward the coast…This groundwater gradient may be due in part to pumping from the coast Test Slant Well of the MPWSP. During pumping, the Test Slant Well creates a depression in the groundwater potential, drawing groundwater in its direction." These AEM study interpretations are incorrect because a) extremely high rainfall recharging the shallow aquifer in the area surrounding MW-4 accounts for changes in water quality, and b) previous HWG documents demonstrate that Test Slant Well pumping had no effect on water levels at MW-4S.
24. On page 20, the authors state, "…the decline in water conductivity in the shallow screen of MW-4 did not cease after the winter of 2016/2017…the wet winter of 2016/2017 does not appear to be the dominant cause of changing groundwater conductivity." HWG review of shallow water levels and conductivity show the wet winter resulted in higher groundwater levels that correspond with decreased conductivity. The high groundwater levels have been slow to dissipate and conductivity has remained relatively low, indicating that infiltration of rainfall is the dominant cause.
25. Page 20 of the Final AEM Report states, "Water level measurements in the Fort Ord area by Ahtna Environmental (2017) show that Salinas Valley Aquitard thins out toward the coast at a distance in the vicinity of MW-4. This is reflected by the very thin clay layer found in MW-4 at a depth of approximately 38 mbgs." HWG review indicates the depth of 38 mbgs is well below the base of the Dune Sand Aquifer so it cannot be the FO-SVA. Furthermore, the SVA does not even exist south of the Salinas River, although a different aquitard known as the FO-SVA is present inland of MW-4 and MW-7 in portions of the area south of Salinas River.

26. In the first paragraph on page 22, the Final AEM Report incorrectly refers to the SVA and Upper vs. Lower 180-Foot Aquifer. This stratigraphy is incorrect; as explained in the HWG Final Report, the area is underlain by the FO-SVA aquitard and the 180-FTE Aquifer (a single unit without Upper and Lower designations).
27. The middle paragraph on page 22 the Final AEM Report concludes the observations described may suggest a slight degradation of water quality within the 180-Foot FTE Aquifer over time. However, an alternative explanation may be a salinity stratification and increasing salinity with depth.
28. Several points are important to note on the profiles on pages 19 to 29 of the Final AEM Report with respect to calibration of AEM data to MPWSP borehole geophysics and lithologic logs. First, AEM data are averaged over approximately 25 to 30 foot thickness intervals below depths of 160 feet. The authors acknowledge that the AEM data effectively cannot see many of the changes in lithology with depth (this would apply to water quality as well), and only provide a single average resistivity value over each 25 to 30 foot interval. This fact has major implications to the use of AEM data to accurately define clay layers and aquitards. Aquitard definition is even further challenged by the fact that monitoring wells are not screened in aquitards and thus aquitard water quality is unknown for calibration purposes. In reality, the AEM data has major limitations that create non-uniqueness and considerable uncertainty in hydrostratigraphy and water quality interpretations as applied in the Marina area by AEM study authors.
29. The text on pages 32 and 33 of the Final AEM Report describes attempts to map the water table in the AEM study. HWG comments include the following: a) the AEM study only used MPWSP wells to map the shallow water table, but should also have used data from Monterey Peninsula Landfill and Fort Ord to greatly expand their database of shallow aquifer groundwater levels; b) while the authors note their water table mapping is a source of uncertainty, the level of uncertainty is much higher than implied in their discussion – especially since the AEM study neglected to use so much of the available data.
30. On pages 32-34, the Final AEM report authors attempt to eliminate the unsaturated zone from the imaging they showed the public in the August 2017 presentation of AEM results (which were a dark blue color produced by high resistivity that is always characteristic of an unsaturated zone). However, the Final AEM Report fails to distinguish between the perched water table and the regional Dune Sand Aquifer water table. This is another important distinction that needs to be made given the lack of potential impacts from the MPWSP on a perched water table and the tendency for shallow perched water to have lower salinity immediately after a record rainfall year.
31. Figure 12 on page 36 of the Final AEM Report helps demonstrate the challenges of making water quality interpretations with AEM data. Given that any definition of fresh water would have to be less than 1,000 mg/L TDS (at a maximum, and 500 mg/L would be a better representation of

fresh water TDS (Marella, 1993)), the range of resistivity values that clearly indicate fresh water (according to the chart in Figure 12) are 55 to 75 ohm-m. The range of resistivity values that most clearly indicate TDS greater than 10,000 mg/L (according to the chart in Figure 12) is less than 3 ohm-m. Therefore, resistivity readings between 3 and 55 to 75 ohm-m have potential TDS values in the range of 1,000 to 10,000 mg/L, which by standard water quality definitions would be considered brackish water. However, there are a wide range of lithology/water quality combinations that can produce bulk resistivity between 3 and 55 to 75 ohm-m, and insufficient calibration wells to make the lithology/water quality distinctions. The Final AEM Report use a range of resistivity values from 20 to 75 ohm-m to represent a purported "drinking water source" and claims this range is conservative (i.e., underestimates extent of "drinking water sources"). However, this is not a conservative range of resistivity values to define fresh or potable water, and includes a considerable amount of brackish water.

32. The Final AEM Report appears to cherry pick available data to suit a desired outcome. For example, the first full paragraph on page 37 describes how data were removed that don't fit certain assumptions with an attempt to justify the actions as removing "outliers". The authors also cherry pick the use of the MPWSP monitoring well borehole and water quality data, choosing not to incorporate this data in their hydrogeologic setting discussion or their hydrostratigraphic profile interpretations.

33. Pages 36-37 of the Final AEM Report state in reference to Figure 12, "Because of the low percentage of AEM resistivity measurements corresponding to this range, we focus primarily on sources of drinking water in this report, rather than on drinking water." The HWG notes there are significant uncertainties in all water quality ranges since the control points represent a low percentage of the entire area over which interpretations are offered. Therefore, the AEM study is either unable to identify groundwater with TDS less than 1,000 mg/L (i.e., fresh water) or there is very little fresh water to be mapped within the zone of sea water intrusion mapped by MCWRA.

34. Page 38 of the Final AEM Report states, "The two resistivity modes, with peaks near 1.5 and 30 ohm-m, represent sediment saturated with water of high TDS concentration, and water of low TDS concentration, respectively." HWG review indicates this conclusion is much too simplistic. Water quality can change significantly over very short ranges, with the upper portion of the seawater intrusion wedge being significantly lower in TDS. The pumped water quality sample and the single point conductivity measurements are a general indication of water quality. However, detailed vertical conductivity measurements in the well screen are necessary to accurately correlate vertical distribution of resistivity with lithologic and pore water quality changes.

35. To some degree the Final AEM Report authors acknowledge the challenges they face and the considerable uncertainty in their interpretation of AEM data. For example, the authors state on page 38: "we find…that clay-related lithologies in this region have a wide span of resistivity

values…"; and "The bimodal nature of these resistivity values demonstrates the site-specific nature of relating resistivity measurements to lithology; in this case due to the complicating factor of the change in salinity of the pore water." These statements reinforce the uncertainty and non-uniqueness in interpreting AEM data when seven control points of limited depths are the only calibration data used in the study. These statements show that, much beyond the control points provided by MPWSP, the vertical and lateral interpretation of hydrostratigraphy and water quality from AEM data is speculation.

36. The hydrostratigraphic modeling described on pages 40 to 55 is based to a large extent on two previous studies: Kennedy Jenks (KJ) (2004) and GEOSCIENCE (2014). Neither of these studies incorporates data from the MPWSP monitoring wells (water quality) and associated boreholes (lithology and geophysics data). None of the MPWSP monitoring wells are shown on the hydrostratigraphic profiles. The use of GEOSCIENCE (2014) is most curious in that an updated and far more comprehensive hydrogeologic conceptual model developed by the HWG with all available data (including MPWSP monitoring well data) was made available in 2017. With respect to Kennedy Jenks (2004), the authors neglect to mention the possible gap in the 180/400-Foot Aquitard shown on KJ cross-section B-B' can now be updated using MPWSP wells that fall on or near this cross-section line and clearly show the potential gap in the aquitard in the MPWSP vicinity suggested in the KJ report actually does not exist. The MCWRA Report (2017) also relies on the KJ report to show this potential aquitard gap area; however, the HWG does recognize that KJ and MCWRA did not have access to the HWG updated HCM at the time of their studies, unlike the AEM Final Report authors who had more than sufficient time to incorporate this information into the Final AEM Report.

37. Page 42 of the Final AEM Report states, "…the NMGWM does not include the SVA south of the Salinas River…" as if this is an incorrect conceptualization of the hydrogeologic model. As stated elsewhere and documented in HWG (2017), the SVA is not present south of the Salinas River in the MPWSP vicinity.

38. Page 43 of the Final AEM Report states, "The post-AEM model maps the Salinas Valley Aquitard beyond the edge of the Salinas Valley basin, and also maps the Salinas Valley Aquitard as an undulating, but generally continuous, aquitard with a nearly flat dip." This description of the SVA is incorrect, as documented by review of all available data described by the HWG (2017).

39. The Final AEM Report volume estimates of "Potential Drinking Water" on pages 56 to 63 are flawed for a number of reasons including: a) unreasonable definitions of "potential drinking water" that results in volume estimates primarily composed of brackish water; b) use of porosity values instead of specific yield values; c) in part because of b, use of unreasonably high assumed values of porosity; d) no mention of the fact that potential "production" wells screened in the perched/mounded aquifers would typically have wells yields less than 10 to 20 gpm; e) lack of recognition that even if a fresh water pocket did exist within the salt water intruded zone, it could not be developed for supply by a well without rapid salting in from nearby or vertically

proximate saline water; and f) most importantly, all the technical flaws in the study described above render these volume estimates completely unreliable and meaningless.

40. Figure 15 (AEM interpretation of the 180/400-Foot Aquitard) on page 46 of the Final AEM Report is incorrect, and does not provide the geologic information to support this interpretation. Figure 15 should show the geologic cross-sections and borehole control points that were used to support this interpretation. For example, the 180/400 ft aquitard is not shown to exist in the Marina area even though the USGS deep well log located at the MCWD treatment plant shows the aquitard is clearly present (Hanson, et.al., 2002). Similarly, all the MPWSP boreholes show the aquitard is present. None of these key data points are shown on Figure 15. Many other well logs are also available that show the aquitard is present in the MPWSP vicinity, as documented in HWG (2017).

41. On page 48, the Final AEM Report states, "While the relationship between resistivity and TDS and lithology is complex, as discussed earlier, we are confident that resistivity values greater than 20 ohm-m indicate the presence of sediments saturated with a source of drinking water, and resistivity values less than 3 ohm-m indicate the presence of water of limited beneficial use." The HWG notes this statement is based on extremely limited control points for calibration/validation and does not include the significant transition of salinity over short vertical distances in the seawater intrusion wedge. It also demonstrates that the goal of the AEM study was not to define fresh water.

42. On page 49, the Final AEM Report states, "At the eastern edge of the Dune Sand Aquifer, shown in Cross-section 1, a source drinking water has been identified, as well as within the Upper 180-Foot Aquifer, extending partially into the Lower 180-Foot Aquifer, which, north of the Salinas River, is not generally hydraulically separated from the Upper 180-Foot Aquifer." It is questionable whether this area actually falls within this category (TDS up to 3,000 mg/L). Furthermore, it is important to consider the implications of potentially pumping and treating groundwater at such a location. The appropriate practice has been to stop pumping from the inland portions of these aquifers to slow down sea water intrusion.

43. On page 49, the Final AEM Report states, "Near the coast in the region of Cross-section 2, the depth of investigation of the AEM data is at its shallowest, near 50 mbgs…" The HWG notes that the AEM data does not reach the 180/400-Foot aquitard at the coast even though Figure 15 displays a gap in the aquitard along the coast.

44. On page 50, the Final AEM Report states, "…the vertical migration of water of limited beneficial use is apparent. Small, isolated sources of drinking water exist within the 180-Foot Aquifer as well." The HWG notes the presence of a significant clay layer on log 4B01 in the middle of the aquitard gap shown on the profile – thus, the lithologic data appears to conflict with AEM data interpretation.

45. With regard to Figures 18-21 in the Final AEM Report in general and the claimed pockets of "Potential Drinking Water", the HWG notes these pockets have brackish water quality that likely represent the upper portion of the underlying seawater wedge. More importantly, this water would require treatment, and any pumping of this water would result in further degradation of the aquifer. Therefore, these aquifers have not and should not be pumped at inland locations.
46. On page 57, the Final AEM Report states, "Volume estimates are reported as cubic meters of subsurface. To calculate the volume of water in any water-saturated sediment requires knowledge of the porosity of the sediment. Without knowing at least the average porosity of each aquifer, reliable groundwater volumes are difficult to estimate." We note that after saying groundwater volumes are difficult to estimate, the authors proceed to provide the unreliable estimates of groundwater volumes. It is not clear why would the authors would provide an estimate of a volume that cannot be substantiated?
47. Regarding Figures 22-25 on pages 58-61 of the Final AEM Report, the HWG notes the following: These figures combine many unrelated things. As already reported (HWG 2017), water in the Dune Sand Aquifer represents rainfall recharge, is limited, and cannot be developed due to limited aquifer thickness. Less saline water in the inland 180-FTE Aquifer is likely the upper portion of the seawater wedge. This inland water should not be pumped (even if there actually were fresh water present) because it will further degrade the aquifer.
48. Regarding Table 5 on page 62 of the Final AEM Report, the HWG notes the following: The information in this table is not and cannot be substantiated with the current data base. But more importantly, the volumes of inland groundwater cannot be pumped because they will cause degradation to the aquifers. Groundwater is not pumped from any portion of the Dune Sand Aquifer or the 180-Ft Aquifer because of minimal aquifer thickness and/or the seawater intrusion already caused by MCWD and Fort Ord coastal pumping and agricultural pumping further inland.
49. Overall, the Final AEM Report provides numerous hydrogeologic opinions; however, none of the authors show the proper licensure or certifications to legally offer these opinions in California. If the hydrogeologic opinions were prepared by someone else, the person with California license/certification credentials should be listed as a co-author.

Comments on Aqua Geo Frameworks (AGF) Technical Memo to MCWD dated April 16, 2018

1. On page 1, Summary Item 1, AGF states that concerns stated in FEIR/EIS Response to Comments regarding the Preliminary AEM study results and presentation to the public in August 2017 were addressed in the Final AEM Report dated March 15, 2018 and made public in late April 2018. Notwithstanding the fact that many concerns expressed in the FEIR/EIS remain valid; the statements, presentations, and videos put out in public based on preliminary AEM study results

were (and remain) very misleading to the public, water agencies, and stakeholders, many of whom likely still base their understanding on the presentation of preliminary AEM results.

2. On page 2, Summary Item 9, AGF claims 318 boreholes were used as “control points” in the Final AEM Report, which provide “…a high level of confidence in the survey.” As explained elsewhere in these HWG comments, only 7 of the 318 boreholes were used as control points for calibration of AEM data. This is woefully inadequate for the AEM study area and leaves AEM data open to many non-unique interpretations (i.e., there is a very high level of uncertainty in the interpretation of AEM data). In addition, the 311 other borehole lithologic logs purported to be used in the AEM study are not provided anywhere in the documentation of the AEM study.

3. On page 3, Summary Item 10, AGF claims “…the 180/400 Foot Aquitard is not continuous across the survey area.” The HWG notes it is important to recognize that the survey area extends many miles beyond the area of interest (i.e., MPWSP area) and no specific areas with potential aquitard gaps are identified in this comment. Notwithstanding the questionable methodology and uncertainty regarding AEM interpretations discussed elsewhere in this HWG submittal, available data from MPWSP boreholes and wells (lithologic logs, geophysical logs, water quality data, groundwater level fluctuations, pumping test data) show a continuous aquitard is present in the MPWSP area. Potential gaps in the aquitard outside of the MPWSP area are irrelevant to assessment of potential water quality impacts from implementation of the MPWSP.

4. In Section 2.3 on page 4, AGF notes the Final AEM Report defines “potential drinking water” as “TDS less than or equal to 3,000 mg/L”. Given this basis for AEM study results, AEM study authors and others (e.g., HGC, EKI, Jacobson James, AGF) go on to equate groundwater with TDS up to 3,000 mg/L with “fresh water”. Examination of MPWSP monitoring network water quality data for wells with TDS between 1,000 and 4,000 mg/L TDS (see table below) demonstrates that groundwater with TDS between about 1,200 and 1,300 mg/L exceeds the chloride recommended MCL (250 mg/L) and/or the nitrate primary MCL (10 mg/L for nitrate as N), and groundwater with TDS exceeding 1,500 mg/L also contains chloride greater than 600 mg/L (the temporary highest chloride MCL). Thus, the “potential drinking water” purportedly defined in the Final AEM Report actually is not potential drinking water because it is unfit for human consumption and agricultural irrigation (see attached **Figure 1**).

Summary of MPWSP Monitoring Network Water Quality Data for Monitoring Wells with TDS Between 1,000 and 4,000 mg/L

Well I.D.	Sampling Date	TDS (mg/L)	Chloride (mg/L)	Nitrate (as N) (mg/L)
MW-7S	8/3/15	1,200	387	44
MW-8S	7/28/15	1,223	247	26
MW-5S	7/28/15	1,311	284	57
MW-6D	7/28/15	1,840	883	0.7
MW-5D	7/27/15	2,617	1,159	0.7
MW-9S	7/28/15	2,997	1,038	<0.9
MW-8D	7/28/15	3,796	1,901	0.9
MW-7M	8/2/15	3,832	1,739	3.3

Note: Table modified from HWG January 2018 Response to HWG Report Comments by inclusion of nitrate data.

5. The AGF TM provides several comments on the Final HWG Report discussion of preliminary AEM study results, including saying that HWG did not provide formulas or conversion factors for AEM data. However, the conversion factors, details/methods for data inversion, etc. should be provided by the authors of the AEM study, and not independent reviewers of the AEM study. In general, other AGF comments on the HWG study in their April 2018 TM were already addressed in our January 2017 Response to HWG Report Comments submittal (HWG, 2018).

6. On page 15 AGF notes that AEM study authors did not make the conversion from bulk resistivity to groundwater resistivity/conductivity using local data, or even data from California. Instead, the Final AEM Report authors relied on data from Florida, where the hydrogeology is completely different – consisting of karstic limestone aquifers with solution cavities in the rock. Thus, while claiming use of 318 boreholes in the Final AEM Report (although in reality only 7 of 318 could be used for AEM data calibration), it appears that the key conversion from bulk resistivity to TDS is dependent on using data from Florida. As an important note: A definition of fresh water taken from one of the USGS reports cited in the AGF-referenced Florida study is as follows: "Freshwater - Water that contains less than 1,000 milligrams per liter (mg/L) of dissolved solids; generally, more than 500 mg/L is considered undesirable for drinking and many industrial uses. Generally, fresh water is considered potable." (Marella/USGS, 1993). This definition of fresh water is inconsistent with descriptions of fresh water in the Final AEM Report and other TMs reviewed in subsequent sections of this comment letter.

7. Notwithstanding all the technical issues and flaws in the AEM study pointed out in the HWG Final Report and this letter, it is important to note that sea water intrusion in general is a non-uniform process due to aquifer sediment heterogeneities and will tend to result in localized areas of higher and lower salinity. However, it is clear that within the sea water intruded areas of the aquifers mapped by MCWRA, pumping of a new or existing production well within this

area will immediately or quickly produce water with elevated salinity that is unfit for human consumption or agricultural irrigation.

8. Notwithstanding the technical issues and flaws in the AEM study listed in other sections of this letter, we note with respect to AGF Figure 16 on page 27 the following: a) the map only includes the upper portion of the 180-Foot Aquifer, which will tend to have less saline water than the lower portion of the aquifer due to sea water wedge dynamics; b) a larger proportion, perhaps the majority, of blue areas in the figure are inland of the sea water intrusion front mapped by MCWRA and would be expected to be comprised of less saline water; c) this map displays purported water with TDS up to 3,000 mg/L, which does not equate to fresh water and hence is not comprised of drinking water.

Comments on Hopkins Groundwater Consultants Letter to MCWD dated April 17, 2018

The Hopkins Groundwater Consultants (HGC) April 17, 2018 Letter makes many unsupported/undocumented claims/opinions, and misleads the public and decision makers with unsupported hypothetical hydrogeologic claims and opinions. For example, HGC frequently refers to the "Cal-Am HWG", even though the HWG is a separate entity that includes two members that represent agricultural interests in the Salinas Valley who have been and continue to focus on identifying potential MPWSP impacts and protecting agricultural water rights and interests. The HWG further illustrates these points and others with our comments below.

1. A large portion of the comments included in HGC's letter rely upon AEM study results. HWG review of the Final AEM Report (see comments above) documents many flaws that result in unreliable (and non-unique) interpretations and conclusions presented in that study. Thus, HGC cannot rely on the Final AEM Report to support its statements.
2. Footnote 1 on pages 1 and 2 attempts to justify HGC's use of the term "North Marina Subarea", but it is a term made up and defined by HGC and not recognized by DWR.
3. On pages 1 and 2 (and elsewhere) HGC refers to "unique groundwater conditions" and "unique recharge conditions" in the MPWSP vicinity. In reality, there is nothing unique about perched aquifers or rainfall recharge to perched aquifers, some of which may ultimately migrate down to underlying aquifers. Such geologic and recharge conditions are common throughout California and elsewhere. Those conditions in the MPWSP vicinity have been proven to have essentially no effect on historical seawater intrusion. It is also irrelevant to the MPWSP potential impacts assessment, because those conditions will not change in the future with implementation of the MPWSP.
4. HGC's letter makes liberal use of the term "fresh water" without defining the term. While it is clear HGC would like to equate fresh water to 3,000 mg/L TDS using references to terms such as "potentially suitable for beneficial use"; in reality, the accepted upper limit to definition of fresh water is 500 to 1,000 mg/L (e.g., Todd, 1980; California Recommended MCL; Marella/USGS, 1993).

5. HGC states on page 2, "Data provided by both the monitoring wells for the MPWSP test slant well and the recent AEM study reveal that a significant amount of fresh water exists…south of the Salinas River." The HWG notes that this statement is categorically false. Fresh water is not produced and cannot be produced from the MPWSP area. The native "fresh water" TDS concentration was less than 500 mg/L. TDS concentrations above this level are directly associated with the sea water intrusion wedge and/or (to a much lesser degree) with agricultural return water (mostly as demonstrated by high nitrates in shallow/perched aquifers). The AEM study did not and cannot accurately delineate "fresh water" in the area beyond the specific Cal Am monitoring wells. In fact, the AEM study did not even attempt to delineate fresh water; rather, it attempted to delineate brackish water with TDS up to 3,000 mg/L. Figure 1 (attached to this letter) was prepared with publicly and readily available data. The Figure shows wells with measured TDS concentrations above the recommended maximum contaminant level for TDS for public drinking water, in other words, water that is no longer considered "fresh" water. These wells include some wells abandoned by MCWD due to high TDS concentrations.

6. On pages 1 and 2, HGC states the, "…AEM study provided a clear understanding that the borehole and monitoring well data provided by the MPWSP are not isolated anomalies as argued by the California American Water Company." The HWG notes the AEM study does not come close to providing a clear understanding, and in fact, the AEM data is only (somewhat) calibrated in the areas adjacent to the MPWSP monitoring wells.

7. On page 2, HGC states, "The AEM study and data further confirm this enhanced recharge condition does not exist in the main portion of the 180/400 Foot Aquifer Subbasin north of the Salinas River."; and restates this claim in a different way in the bullet at the bottom of page 2. These statements contain the same unsupported claims on recharge, but now adds "enhanced" to the description. However, data from the MPWSP monitoring wells do not show influence of recharge from the perched/mounded portion of the Dune Sand Aquifer in either groundwater levels or water quality in the 180-FTE Aquifer. The recharge mechanisms that have been operating historically will not change in the future after implementation of the MPWSP.

8. HGC makes a statement at the bottom of page 2 that FEIR conclusions regarding potential MPWSP impacts "conflicts with best available information and science.", To the contrary, the Final AEM Study (see HWG comments above), interpretations of AEM data used by HGC, and HGC comments in general conflict with the best available information and science. For example, claims of "holes" in the 180/400-Foot aquitard in the project vicinity is in complete opposition to the recent and highest quality borehole/geophysical data collected from MPWSP monitoring wells, local groundwater levels and fluctuations, and pumping test data.

9. On pages 2 and 3 HGC claims that the FEIR/EIS, "…fails to recognize or address that the groundwater recharge for the aquifers in this area of the basin is enhanced…" However, HGC does not provide any supporting data or analysis for the enhanced groundwater recharge claim. In fact, data from the MPWSP monitoring wells do not show influence of recharge from the

perched/mounded portion of the Dune Sand Aquifer in either groundwater levels or water quality in the 180-FTE Aquifer.

10. In the third bullet on page 3 HGC states, “The groundwater gradient in the shallow Dune Sand Aquifer is predominantly towards the coast…” The HWG provided groundwater elevation contour maps for the perched/mounded portion of the Dune Sand Aquifer (i.e., “A” Aquifer and 35-Foot Aquifer) that show a significant portion of the groundwater flow towards the north and east. Assuming that HGC is not referring to the perched/mounded aquifers (“A” Aquifer and 35-Foot Aquifer), the HWG Final Report (2017) demonstrates inland flow in the regional Dune Sand Aquifer (with exception of localized flow towards the test slant well during pumping).

11. In the fourth bullet on page 3, HGC states, “…the best available science demonstrates the FEIR/EIS’s conclusion that this additional seawater intrusion will be limited to the MPWSP’s capture zone…is inaccurate.” HGC’s statement is unsupported and, in fact, HGC’s later discussion of capture zones is flawed in that it omits the ocean recharge boundary, and fails to mention the fact that inland flow paths outside the MPWSP capture zone occur with or without the MPWSP.

12. The first paragraph on page 4 states, “The FEIR/EIS’s inadequate consideration of these important issues appears to be a result of unsupported assumptions based on sparse historical data which the AEM study and other information discussed below now are shown to be inaccurate.”; and, “…demonstrates that the FEIR/EIS’s conclusions regarding the MPWSP’s potential impacts to groundwater resources are not accurate…” To the contrary, the FEIR/EIS has based its conclusions on extensive historical and recently collected data, unlike HGC (and others) who offer sweeping unsupported statements. The FEIR has responded to all technical comments, regardless of whether or not the comments are supported by valid data/analyses. The AEM study is misused and misinterpreted by HGC and others. "Significant" or even small volumes of "fresh water" are not documented to be present in the MPWSP vicinity, as the AEM study does not even attempt to delineate fresh water. There is no documented support for unusual or significant recharge from the shallow aquifer system. Sea water intrusion has occurred in the 180-FTE Aquifer for many years despite purported shallow aquifer recharge. These and other statements on “important issues” by HGC and others are simply false and/or unsupported by valid data.

13. On page 4, HGC states that the Final AEM Study Report, “…indicates the presence of a large fresh water lens that is wedge shaped and located in the shallower aquifers in the North Marina Subarea. As stated elsewhere in this letter by the HWG, this statement is false. The AEM study does not delineate "fresh" water. It delineates brackish water associated with the sea water intrusion wedge.

14. At the bottom of page 4 and top of page 5, HGC misrepresents HWG's previous opinion based on preliminary AEM results. The preliminary data showed the presence of a sea water intrusion wedge as documented in MPWSP (and other) data, and mostly brackish water in the mounded/perched inland aquifers. Certain claims made in the Final AEM Report were not made by Stanford/AGF/HGC or others in presenting the preliminary AEM results. As previously anticipated by the HWG, the Stanford/AGF/HGC team needed to justify the expense of the surface geophysics project; hence, the new claim of "holes" in the 180/400-Foot Aquitard implied to be in the MPWSP vicinity. The HWG does not agree with the biased and non-unique interpretation of AEM data provided in the Final AEM Report.

15. On page 5 HGC states, "However, the HWG and FEIR/EIS's assertion that these data show only saline water and not the high volume of fresh and slightly brackish groundwater in Dune Sand and upper 180-FTE Aquifers in the project area is contrary not only to the AEM study, but available information from the MPWSP monitoring wells and the best available science." To the contrary, the AEM study does not show a high volume or any volume of fresh water, but rather is focused on showing brackish water that is a part of the sea water intrusion wedge. The best available science results from the construction of control points (monitoring wells) that have allowed the collection of actual past, present, and future water level and water quality data.

16. On page 6 HGC describes a "wedge of fresh water" being delineated by AEM data. This statement appears to describe a sea water intrusion wedge that contains brackish water (not fresh water) in the upper portion of the wedge. These AEM profiles are also misleading in that they neglect to show the geology of the area.

17. At the top of page 7 HGC states, "The borehole geophysical data from the MPWSP monitoring wells located inland of the CEMEX site confirm the AEM data findings." and then refers to HGC's Plate 1. First, the HWG notes that the monitoring wells do not "confirm" AEM data findings, but rather are needed to calibrate AEM data. Second, Plate 1 demonstrates that when HGC (and others) use terms such as "Source of Drinking Water Quality" and "sources of drinking water" those terms actually refer to groundwater containing chloride in excess of the 500 mg/L standard use by MCWRA and others to define the area of sea water intrusion. Elsewhere, HGC (and others) transition from the terms cited above to "fresh water" without ever defining what they mean by fresh water. In reality, the chloride levels in fresh water are on the order of 50 mg/L or less, not in excess of 500 to 1,000 mg/L as defined by HGC and others.

18. HGC states on page 8, "…the final AEM study report supports our prior comments that the HWG's estimates regarding the ocean water percentage (OWP) are likely understated." The HWG notes this statement by HGC suggests the percentage of ocean water extracted by proposed MPWSP slant wells may be greater than calculated in the HWG Final Report.

19. On page 8 HGC states, "…the life of the Project does not account for the fresh water shown in the AEM report." As stated elsewhere, the AEM report does not delineate fresh water; instead, the AEM report attempts to delineate zones of brackish water (i.e., TDS up to 3,000 mg/L that also contains chloride greater than 1,000 mg/L).
20. On page 9 HGC states, "The FEIR/EIS's groundwater analyses continue to use the State recommended levels for drinking water constituents…" and suggest this is somehow the wrong approach. HGC (and others) use their own newly created standards to define fresh and potable water as groundwater with TDS up to 3,000 mg/L and chloride in excess of 1,000 mg/L. There is a good reason the recommended MCLs are 500 mg/L for TDS and 250 mg/L for chloride – at these constituent levels the water tastes salty and consumers will not want to drink water with concentrations over the recommended MCLs, particularly as it approaches the upper limit MCLs of 1,000 mg/L and 500 mg/L for TDS and chloride, respectively. MCWD serves its customers water with TDS concentrations averaging about 400 mg/L and never exceeding 600 mg/L.
21. The potential presence of somewhat less saline water in the inland perched/mounded aquifer or the upper portion of the sea water wedge in the 180-FTE Aquifer is not new information uncovered by the AEM study - this was already known or suspected from previous investigations. However, even this less saline water typically does not meet the definition of fresh/potable water due to elevated TDS (e.g., between 1,000 and 3,000 mg/L) or nitrate in excess of the MCL. To the extent that a pocket exists without elevated TDS, chloride, or nitrate, it cannot be developed for water supply due to limited pumping capacity (perched/mounded aquifer) or because pumping a well perforated in such a pocket will quickly draw in nearby or vertically proximate saline water (180-FTE Aquifer); as illustrated in a report prepared for MCWD (Staal, Gardner & Dunne, 1991).
22. HGC's letter on page 4 states, "The AEM data clearly indicate salt water mounded in the vicinity of the CEMEX site that does not continue inland or further south along the coast where additional intake facilities are proposed to be located." However, data from MCWD's own monitoring wells (Fugro West, 1996) show highly saline water in the aquifer screened by the MPWSP test slant well approximately 0.9 miles south of the test slant well. This real-world data is in direct contrast to the interpreted AEM data and Hopkin's statement above.
23. HGC's letter on page 5 refers to, "…the high volume of fresh and slightly brackish groundwater…" in the project vicinity. As stated above, HGC does not define terms such as "fresh" or "slightly brackish", but clearly HGC is lumping these distinct categories together to make it impossible to distinguish potentially useable fresh/potable water (typically defined as no greater than 1,000 mg/L TDS and often as less than 500 mg/L) from unusable brackish water (typically defined as 1,000 mg/L to 10,000 mg/L or more). The Final AEM Report further blurs the line between fresh/potable water and unusable brackish/saline water by using 3,000 mg/L as a cutoff in maps and volume calculations for terms such as "potential drinking water source."

24. Figure 2 on page 6 presents three small AEM profiles at a scale that is impossible to see any details. The figure legend only states "Resistivity" and thus does not define what resistivity is actually shown in the figures (i.e., bulk vs. groundwater). The associated text makes reference to "fresh water" but neither defines the term relative to TDS nor does HGC define "fresh" in terms of the resistivity scale on the figure. We can only assume HGC's definition of "fresh water" is up to 3,000 mg/L TDS based on other text in the HGC letter and the Final AEM Study, which should be kept in mind regarding all HGC references to "fresh water" compared to standard definitions of fresh water being no more than 500 to 1,000 mg/L for TDS.
25. The first paragraph on page 7 provides a good example of how HGC utilizes confusing terms from obscure references such as "Source of Drinking Water Quality" derived from EPA 1988 in one sentence and then switches to the term "fresh water" in the next sentence. Again, the reader needs to be aware that HGC is redefining the term "fresh water" to be groundwater with TDS of 3,000 mg/L, chloride exceeding 1,000 mg/L, and nitrate in excess of 10 mg/L as N, all far in excess of their respective California MCLs and unable to be served to the public as drinking water or used for irrigation.
26. It is interesting to note on page 7 that while HGC criticizes the HWG for not developing a regression analysis of AEM data vs. water quality, AGF on page 15 of their letter states they have not yet done a regression analysis with data from the Marina area and uses an example of such an analysis done in a completely different hydrogeologic environment in Florida. One would think the project team that collected, interpreted, and made conclusions on water quality from AEM data would be the ones responsible for developing a regression analysis. It is surprising this critical step of converting bulk resistivity to salinity was not documented by the AGF/HGC/Stanford geophysics team prior to presenting preliminary and even final AEM results.
27. HGC makes reference to "slowed or reversed seawater intrusion" in the MPWSP area due to recharge from the perched/mounded aquifer. HGC provides no data or evidence of a reduction in sea water intrusion – such a statement requires historical and recent data such as documented by MCWRA. The latest available MCWRA seawater intrusion maps for 2015 show historical and ongoing encroachment of seawater intrusion.
28. HGC make reference on page 7 to, "…recharge and accumulation of a substantial amount of fresh water in the Dune Sand Aquifer and the 180-FTE Aquifer" inland of the MPWSP project area. Keeping in mind HGC's definition of "fresh water" being 3,000 mg/L TDS without regard to elevated chlorides and nitrate associated with that water, we note that calculations of this purported "substantial" amount of "fresh water" flowing from the perched/mound aquifer to underlying aquifers in the MPWSP vicinity are not provided by HGC.
29. One of HGC's repeated major points (perhaps its primary claim) in this and many of HGC's previous documents is stated in the last sentence on page 7, "…failure to disclose that recharge and accumulation of a substantial amount of fresh water in the Dune Sand Aquifer and 180-FTE

Aquifer…must be corrected…". Notwithstanding HGC's attempts at redefining fresh water to be comprised of water requiring desalination, HGC fails to provide any analyses to support the claim that the project could impact such waters even if they did exist in the MPWSP area. As stated elsewhere by HWG, HGC's statement here only potentially applies to water quality impacts that are limited to flow lines in the MPWSP capture zone that originate from the ocean. Such flowlines do not intersect any fresh water. In fact, the groundwater basin benefits from the proposed MPWSP in multiple ways: a) reduced sea water intrusion inland of the capture zone, b) reduced pumping in the basin via delivery of treated water for irrigation per the return water formula in the Return Water Settlement Agreement; and c) providing an example of the type of project that can ultimately bring the groundwater basin to sustainability under the Sustainable Groundwater Management Act (SGMA).

30. HGC states on page 9 that a municipal system can serve water to the public on a temporary basis (if approved by the State) up to 1,500 mg/L, and that, "Sometimes the temporary period lasts for many years…" HGC provides no supporting evidence or examples to support this statement. Regardless, TDS up to 1,500 is less than half of the 3,000 mg/L TDS definition HGC uses to define fresh water in this letter and the Final AEM Report. In reality, it is extremely rare for a public water system to serve water with TDS exceeding 800 mg/L (e.g., Central Arizona Salinity Study, 2006), as the water is too salty for customers to drink and most will have to buy bottled water instead.

31. HGC admits on page 10 that the AEM study uses a "…source of drinking water standard with a TDS concentration of up to 3,000 mg/L…for quantification analyses." Thus, it is important to recognize that all the interpretations and conclusions regarding "fresh" water and "sources of drinking water" in the AEM study represent water that is neither fresh or suitable for drinking according to applicable definitions and standards in California. These estimates in the AEM study are primarily composed of unpotable brackish water, as indicated by HGC's references to "…large volume of fresh/slightly brackish water in the aquifer system…".

32. HGC's paragraph in the middle of page 10 describes overall basin recharge, implying there is some unaccounted for recharge in the MPWSP vicinity. However, the overall recharge estimate of 117,000 AFY for the Pressure Subarea of the Salinas River Groundwater Basin includes precipitation and stream recharge (Brown and Caldwell, 2015). There is no evidence of additional recharge in the MPWSP vicinity, nor does HGC provide any such data or evidence.

33. At the bottom of page 10/top of page 11, HGC continues to use confusing and undefined terms. On the one hand HGC discusses purported "fresh water dominated areas" and in the next sentence continues the discussion with "fresh water and slightly brackish water." So called "slightly brackish water" comprises the vast majority of HGC's purported "fresh water dominated areas." Water purveyors cannot and do not serve "slightly brackish water" to their customers – it must first be desalinated as proposed in the MPWSP.

34. In the first paragraph on page 10, HGC states, “The DEIR/EIS’s focus on the groundwater quality objectives and failure to discuss this standard does not sufficiently inform the public or the decisionmakers of the potential impacts of producing groundwater for the project that is potentially suitable for municipal or domestic uses either through treatment or blending.” The “standard” used in the AEM study (TDS up to 3,000 mg/L) and by HGC (and others) is not appropriate for fresh water or drinking water. The inland brackish water delineated by the Final AEM study would require treatment for use and would, if pumped, exacerbate sea water intrusion in these areas caused by historical/current pumping.

35. On page 10, HGC states, “The FEIR/EIS fails to disclose the fresh water wedge containing a source of drinking water indicates significant fresh water recharge is occurring…and is a resource for future beneficial uses to be considered by groundwater basin management.” This statement is incorrect, because there is no fresh water wedge. The fresh water referenced in the statement is the brackish water portion of a sea water intrusion wedge caused by historical inland pumping. This brackish water cannot be developed in these inland areas without treatment and further exacerbation of sea water intrusion.

36. In the middle of page 10, HGC makes reference to “…the presence of the large volume of fresh/slightly brackish water in the aquifer system…indicates a source of greater localized recharge, that if enhanced, could be key to future basin management efforts…”. This is another example of an unsupported and baseless statement. The location of fresh water is not delineated and cannot be delineated with the AEM study methodology and control points. No data is provided by HGC and there is no basis to support rainfall recharge in this area being any greater than would normally be expected for the local hydrogeologic setting, and rainfall recharge is already accounted for in previous studies.

37. On page 10, HGC states the, “…HWG Report and response to comments repeatedly tries to explain away the fresh water/slightly brackish groundwater (source of drinking water) found in the shallow aquifer units located inland of the proposed MPWSP intake location at the CEMEX site.” The HWG Final Report notes the presence of this brackish “source of drinking water”; this water would require treatment if it were to be developed. Unlike the MPWSP, resumed pumping of inland wells in the brackish water areas would lower inland water levels substantially and further exacerbate sea water intrusion.

38. At the bottom of page 10 and used as an example of the claim in the comment directly above, HGC attempts to critique the HWG Report discussion of sea water intrusion chemical signatures in MW-1S/M, MW-3S/M, MW-4S/M, MW-6M(L), MW-7S/M, MW-8S/M, and MW-9S/M with reference to MW-5S(P). However, HGC fails to mention that MW-5S(P) is in the hydraulically disconnected perched/mounded aquifer where one would not expect the source of high salinity to be from seawater intrusion. In addition, while the source of high nitrate in MW-5S(P) that contributes to making this perched/mounded groundwater non-potable (along with elevated TDS and chloride) is not from sea water, it is an agricultural area and nitrate can be present in

locations where groundwater is impacted by seawater intrusion (i.e., presence of nitrate does not equate to lack of seawater intrusion).

39. On page 10, HGC makes reference to Table 2 (on page 11) and states, "…Monitoring Data show numerous locations where fresh water and slightly brackish water is present." The HWG notes the data provided in Table 2 was developed by Cal Am and made publicly available some time ago. TDS data for the shallow aquifers indicates potentially fresh water at one location (MW-6S) approximately four miles inland. TDS data for the 180-FTE Aquifer indicates potentially fresh water at one location about two miles inland (MW-5M) and is addressed in the HWG Final Report. The remaining shallow to intermediate depth monitoring wells indicate brackish to saline groundwater. The MCWRA mapping correctly depicts the areas of overall sea water intrusion. Installation and pumping of wells in these inland "locations where freshwater and slightly brackish water" are present will result in saline wells after a short pumping duration and further degradation of the aquifer.

40. HGC makes the statement on page 12 that "…the entire area is not intruded by seawater. A substantial portion of the shallower aquifers…" are being "…recharged with freshwater." While it is true that percolating rainfall generally represents freshwater recharge; this recharging rainfall mixes with saline water when it hits the perched or regional water table and the resulting groundwater has elevated salinity that makes it unusable and non-potable. The FEIR/EIS, HWG documents, and other previous studies account for rainfall recharge in their analyses, and there is no new and previously unaccounted for data/information provided by HGC or the AEM study. Furthermore, HGC appears to misunderstand how sea water intrusion manifests itself and attributes presence of less saline water as an indication of recharge; however, the highest salinity will occur in the lower portions of a seawater intrusion wedge and along preferential flow paths to the major inland pumping wells causing sea water intrusion. The salinity may be less in the upper portion and along the edges of the sea water intrusion area, but these areas are still part of the zone of sea water intrusion and pumping from these areas will greatly exacerbate further seawater intrusion. The HWG has correctly identified and documented the chemical signatures of sea water intrusion in the Final HWG Report.

41. On page 12 HGC states, "These data correlate very well with the AEM survey data shown in Figure 4…and define a large freshwater wedge…" HWG notes again here that HGC is referring to brackish water as fresh water, and is referring to the less saline portion of the sea water intrusion wedge as a fresh water wedge. The Final AEM Report does not delineate fresh water and there is no fresh water wedge. Figure 4 actually confirms the presence of brackish water over the top and along the edges of a sea water intrusion wedge, as would be expected. As stated previously, the Final AEM Report has no control points beyond the seven MPWSP boreholes used in the study. Furthermore, we note the title of Figure 4 "Coastal Fresh Water Conditions" is misleading and misrepresents actual groundwater quality conditions, because it does not depict fresh water. In addition, HGC provides no data or support for the flow arrows

depicted on Figure 4. Lastly, HGC has returned to using the misleading legend first used in the August 2017 preliminary AEM study results public presentation using “Log Resistivity” and labeled with “Saline” and “Fresh” to imply groundwater resistivity is being depicted in the profile when it clearly is not; instead the figure is showing bulk resistivity representative of the both the sediments and pore water salinity.

42. On page 13 HGC states, “While the recharge sources of this freshwater…are still under investigation, its presence indicates there is still much to be understood about these coastal conditions that appear to be retarding the movement of seawater into the aquifer system.” In this example, “freshwater” is inaccurate because the AEM study does not delineate fresh water, and it is clear from actual data (e.g., MCWRA 2015 sea water intrusion maps) that sea water intrusion movement inland has not been retarded.

43. HGC Table 3 on page 13, derived from the AEM study, is very misleading in that it does not define the term “Source of Drinking Water”. Notwithstanding all the technical flaws of the AEM study listed in the previous section of these comments, it is clear the volumes presented in the table represent brackish water and non-potable water. The table appears to imply this brackish/non-potable water is a developable resource; however, it can only be utilized with treatment similar to that proposed for the MPWSP. Furthermore, if groundwater extraction were to occur in the areas shown, it will result is exacerbation of sea water intrusion from pumping wells at inland locations.

44. It should be pointed out that one of HGC’s major claims throughout this and previous comments is that a considerable amount of “fresh water” exists within the area of seawater intrusion. However, it must be noted that MPWSP monitoring wells clearly show groundwater exceeding approximately 1,500 mg/L TDS also have chlorides exceeding 500 mg/L, which is the standard applied by MCWRA to map sea water intrusion. Thus, HGC is making an apples to oranges comparison when he uses the AEM study results to claim a lack of seawater intrusion in small pockets of the sea water intruded area mapped by MCWRA. Regarding this point, it should also be noted that MCWRA does not map seawater intrusion in the shallow aquifers because the shallow aquifers have never been developed for water supply; thus, HGC’s implication of previously incorrectly mapped “fresh water” in shallow aquifers is wrong.

45. On pages 14-16 (and using Figures 5-7), HGC attempts to characterize groundwater gradients and flow directions without constructing groundwater contour maps. The discussion provided here by HGC is not accurate. In the past, HGC has combined data from wells screened in different aquifers on one groundwater elevation contour map, which resulted in inaccurate depictions of groundwater flow directions. Since that was pointed out previously by HWG, HGC has apparently resorted to not using groundwater elevation contour maps in discussions of groundwater gradients and flow directions. The HWG refer the reader to Appendix E of the HWG Final Report (2017) for groundwater contour maps of the various aquifers, from which groundwater gradients and flow directions for each aquifer can be properly understood.

46. At the bottom of page 16, HGC states, "The result is an increase in freshwater in the cumulative water quality samples collected from MW-4S and the reduction in specific conductance values in the well at the probe depth in the middle of the well screen." The HWG notes again HGC's use of the term "freshwater" in reference to brackish water. The HWG Final Report has clearly documented the above average rainfall in 2015/2016 and the very wet year of 2016/2017 having resulted in a reduction in conductivity values in MW-4S. This condition was anticipated when considering climatic conditions over the life of the MPWSP and it is fortunate that the test slant well testing period captured data during very wet years to illustrate how the project will operate under such conditions.
47. On page 17, HGC states, "Some of the groundwater on top of the aquitard likely percolates through the aquitard layer into the underlying Dune Sand/180-FTE-Aquifers as shown in Figure 1." The HWG notes that this statement is not supported by Figure 1 or any other data, and represents yet another unsupported and undocumented statement/claim by HGC.
48. On page 17, HGC further states, "The remainder of the perched groundwater does not stagnate on top of the aquitard completely disconnected from the underlying aquifer zones, rather it flows laterally to where the aquitard layer ends and where it can flow downward and recharge the Dune Sand and 180-FTE Aquifers…" The HWG notes historical and recent landfill reports show that much of the perched aquifer zone inland of the MPWSP flows in the opposite direction (northeast) to an area along the bluffs along the Salinas River. The portion of the perched water that may migrate west towards the coast has no bearing on the impacts of MPWSP pumping as analyzed by the FEIR/EIS. To the extent this migration of perched water does occur, it will continue on the same way with or without MPWSP pumping, because the aquifers screened by proposed MPWSP slant wells are hydraulically disconnected from inland perched/mounded aquifers.
49. Tables 4 and 5 on pages 18 and 19 and the associated discussion in the text regarding seasonal and annual rainfall improperly uses a calendar year basis instead of the standard California practice of water years to quantify rainfall and streamflow (https://www.water.ca.gov/LegacyFiles/waterconditions/docs/2017/Water%20Year%202017.pdf). The water year runs from October to September, which is important because virtually all rainfall occurs between November and April. The 2016-2017 water year is recognized as being one of the wettest on record. NOAA stated, "The 2016-2017 water year was an incredibly wet year for much of California." (https://www.climate.gov/file/ca-water-year-2017png). This was particularly valuable for the MPWSP because the time frame of test slant well operation started at the end of a drought and was followed by an above normal rainfall year and then a record wet year. Overall, the time period for test slant well operation included well above normal rainfall, meaning that results were conservative (lower net contribution of ocean water than average) in terms of test slant well water quality. Even the Final AEM Report states, "The especially wet winter of 2016/2017 supplied more recharge to the Dune Sand Aquifer than

normal winters…" (p. 20). However, HGC uses calendar years to tabulate rainfall and describes 2016 and 2017 as "normal" rainfall years. This characterization of rainfall by HGC is not only incorrect in terms of standard hydrogeologic practice in California, but grossly misrepresents the data. Therefore, all of the discussion on pages 18-20 related to Table 4 are invalid due to this misrepresentation of the data.

50. It is unclear what HGC is referring to in Figure 8 and associated discussion on page 20. However, it is quite clear from the figure that a slight reduction in test slant well EC corresponds to heavy seasonal rainfall that occurred in late 2016/early 2017. HGC tries to argue otherwise but data do not support HGC's argument. Furthermore, once the rainfall from the record wet year enters the aquifer system, there will be a time lag for the water to be removed via test slant well pumping, so it is not surprising at all to see a residual slight reduction in EC following the record wet-year rainy season.

51. With respect to HGC's discussion of CEMEX activities and potential impacts on test slant well water quality on pages 21-22, it continues to ignore the actual data and CEMEX operations reported in the HWG Final Report (2017). HGC tries to argue the opposite of what the data and logic would dictate with respect to potential CEMEX impacts on water quality, which are explained in detail in the HWG Final Report (2017). The reader is referred to the actual data, information, and logic presented in the HWG Final Report for comparison to unsupported speculation provided by HGC on this topic in HGC's April 2018 letter and in HGC's previous documents.

52. With respect to CEMEX operations, HGC states the following on page 21, "…the HWG and FEIR/EIS's dismissal of our comments on this point are not consistent with the best available information or science." The HWG's correction of HGC's interpretation of CEMEX impacts in the HWG Final Report (2017) was needed to correct HGC's misunderstanding of CEMEX operations. The test slant well pumping lasted nearly three years with GEOSCIENCE field staff and HWG members becoming quite familiar with operational details of the CEMEX facility. HGC made assumptions and inferences from aerial photos, which turned out to be incorrect.

53. On page 22, HGC states, "the recharge…in the vicinity of MW-7S elevated groundwater levels…and creates a seaward groundwater gradient…" HGC refers to its Figure 4 on page 12 as evidence of this statement, but the arrows drawn on Figure 4 to purportedly represent groundwater flow directions are not supported by any actual data. Therefore, at best the arrows can only be illustrative of HGC's conceptual interpretation since they are not based on actual groundwater levels in the aquifers. The HWG Final Report provides groundwater contour maps based on actual data, which show landward gradients for aquifers screened by the test slant well and no recharge impacts on the underlying aquifer from the perched aquifers. HGC does not provide groundwater elevation contours to support HGC's opinion. Furthermore, even with the increase in groundwater levels at MW-7S after a record wet year, data indicate ongoing

seawater intrusion in the 180-FTE Aquifer. Therefore, the brackish water recharge from the perched aquifers is not inhibiting sea water intrusion.

54. On page 22, HGC states, "…the FEIR/EIS fails to address the evidence that the TSW water quality will change and become fresher when the CEMEX operations are terminated…" This statement is incorrect as documented in the HWG Final Report. Dredge pond salinity is similar to groundwater salinity along the coastline (both are very near seawater salinity), including beneath the percolation ponds near the test slant well. However, the CEMEX well water is approximately half of sea water salinity and is used to wash sand during CEMEX operations followed by discharge of this water to the percolation ponds, thereby lowering the overall salinity of water percolating in the ponds. The net effect of the percolation pond water is to lower salinity in the test slant well. Again, this operation is described in detail in the HWG Final Report.

55. HGC makes a key acknowledgement at the top of page 22 stating, "…pumping of the proposed MPWSP wells will not impact the water on top of the semi-perching aquitard layer…" This reference is to what HGC and others are calling the "Dune Sand Aquifer" inland of MW-7 (but more appropriately referred to as the "A" Aquifer and 35-Foot Aquifer). HGC's statement corresponds to what has been stated by HWG for quite some time, and this acknowledgement negates many of HGC's other arguments presented here and in previous documents (e.g., that the MPWSP will somehow negatively impact purported fresh water pockets in the Dune Sand Aquifer).

56. In discussing capture zones as described in the FEIR/EIS on page 22, HGC states, "By omission, the conceptual illustration without the flow paths that by pass the area of production indicate that the MPWSP would act as a seawater intrusion barrier and only affect the area within the capture zone. The Project, as designed, is not a seawater intrusion barrier…" This statement essentially acknowledges the capture zone discussion and its implications as stated by both the FEIR/EIS and the HWG are correct; HGC's only point is that FEIR/EIS did not discuss flow paths just outside of the capture zone that continue beyond the capture zone. However, these flow paths outside the capture zone would continue inland anyway along the entire coastline without the MPWSP; thus, the project is not impacting the ultimate fate of these flow paths. On the other hand, all the flow paths within the capture zone will be captured by MPWSP wells and will no longer continue inland as they do without the MPWSP. Hence, there is an overall reduction in net sea water intrusion that occurs with implementation of the MPWSP. Similar conclusions were reached in a study done for a proposed MCWD desalination facility (Hydrometrics, 2006). Therefore, the FEIR/EIS has analyzed the capture zone dynamics correctly. In fact, the MPWSP capture zone will act as a sea water intrusion barrier, whether or not it was designed to do so.

57. In Figures 11, 12, and 13 on pages 24-26 HGC presents graphics with flow paths that clearly appear to be computer-generated. Such flow paths are heavily dependent on many variables and assumptions along with the computer program used to generate the flow paths. HGC does

not document important details of the methodology, values assigned to key variables, and assumptions that went into this analysis. This contrasts with the level of documentation provided in the HWG Final Report (e.g., Appendix H). Nonetheless, it is clear that HGC's figures and associated discussion are inaccurate because they don't account for the ocean as a recharge boundary.

58. Notwithstanding the comment above about the overall validity of HGC's Figures 11-13, some important technical points need to be made about these figures. First, Figure 11 (along with Figure 12 and 13) is labeled "Approximate Portion of Capture Zone in Ocean." This label fails to recognize the remaining portion of the capture zone is comprised of flow lines originating from the ocean (i.e., the entire capture zone is comprised of flow lines from the ocean). Second, Figure 12 fails to note that an extremely high percentage of water entering MPWSP wells still originates from the ocean under a flat gradient scenario, and that the size of capture areas from the ocean vs. inland does not equate to the proportion of water entering MPWSP wells from the ocean vs. inland. Third, HGC's Figure 13 is extremely misleading because it completely ignores the ocean being a massive recharge boundary and draws a capture zone for a purported seaward gradient as if the ocean doesn't exist above and adjacent to MPWSP intake wells. In fact, HGC's Figure 13 shows no flow lines originating from the ocean, which is where a majority of the water will still come from even under a seaward gradient.

59. With respect to HGC's (and others) comment regarding capture zones for the MPWSP, reference can be made to another study of capture zones completed for an MCWD proposed desalination facility (Hydrometrics, 2006). This study delineates capture zones for a variety of gradients for vertical pumping wells located 800 feet from the shoreline (i.e., screens much further from ocean compared to proposed MPWSP wells). Conclusions from the study include: a) for the inland gradient condition, "All pathlines begin at the ocean indicating that source all water flowing into the extraction wells is the ocean."; b) for the flat gradient condition, "All water extracted by the project wells is still captured from the ocean."; c) for the oceanward gradient, results of the study indicate a majority of water extracted by the wells still comes from the ocean; d) in addition, for the inland gradient, study results showed, "The project wells have a net beneficial impact on seawater intrusion because they capture intrusion that would otherwise flow inland."; and e) even for the flat gradient case, "The interception of seawater and reduced area of seawater intrusion are beneficial impacts of the project on seawater intrusion."

60. It should be recognized that HGC's Figure 14 on page 27 does not show the same areas in the top and bottom graphics in the figure; this is easy to see from the size of the ocean in each figure plus the different lengths/widths of each figure. The different areas and sizes of the figures make the model vs. observed levels appear more different than is really the case.

61. At the bottom of page 28 HGC makes the statement, “The primary cause of groundwater conditions in the Subbasin that has led to seawater intrusion is groundwater production.” While we generally concur with this statement, we note the statement does not include pumping at the ocean shoreline. It is pumping further inland such as at former MCWD and Fort Ord production well locations, along with other inland municipal/domestic and agricultural pumping, that caused and sustains sea water intrusion. Now HGC and others are suggesting that purported “freshwater/slightly brackish water” allegedly present in pockets within the sea water intrusion zone could be developed for potable water supplies. HGC does not acknowledge that installation and pumping of a well within these zones will immediately or very quickly result in highly saline water flowing into the wells from the surrounding area of the sea water intruded aquifer. In effect, HGC is proposing to do the very thing that caused sea water intrusion in the first place (over pumping wells at inland locations).

62. On page 29 HGC alleges that the FEIR/EIS failed to evaluate cumulative effects of SGMA projects on the basin. While this is more appropriately an FEIR/EIS team response item, our understanding is that EIRs are only required to address reasonably foreseeable projects in the cumulative analysis. As the Groundwater Sustainability Plan (GSP) effort is just underway, currently unknown SGMA projects likely don’t qualify as reasonably foreseeable. That being said, it seems clear that the MPWSP is one example of a potential SGMA project that could be important in helping the basin become sustainable. Meanwhile, the recommendation by HGC to pump brackish water (TDS up to 3,000 mg/L), either within or at the leading edge of the sea water intrusion zone, would cause further degradation of groundwater quality and is contrary to the intent of SGMA.

63. On pages 29 and 30 HGC refers to a MCWRA report’s recommendation suggesting a moratorium on pumping from 180-Foot and 400-Foot Aquifer wells within a certain area; however, this MCWRA report is not evaluating wells screened at the ocean shoreline (such as proposed MPWSP slant wells) in its evaluation and recommendations. The MPWSP will comply with the MCWRA recommendations, and it will result in an additional source of potable water without further degrading the underlying aquifers.

64. At the top of page 31, HGC has a headline that states, “The FEIR/EIS’s analysis of the MPWSP’s impacts on groundwater quality within the slant well pumping area of influence must be revised.” HGC’s summary points in this section and in the conclusion section have been addressed in the responses above.

65. On page 31 HGC refers to TDS in MW-4S being below 3,000 mg/L. However, a review of all the available TDS data for MW-4S from 2015 to 2018 reveals TDS has never been less than about 8,000 mg/L (Table 2 in Monthly Monitoring Report). Thus, HGC’s statement is simply not accurate. We also note that TDS in MW-7S exceeds the fresh water upper limit for TDS.

66. While HGC's discussion of SGMA and groundwater dependent ecosystem (GDE) issues is generally irrelevant to the FEIR/EIS, we note there is no indication a significant decrease in groundwater levels would occur beneath the Salinas River related to implementation of the MPWSP.

Comments on Jacobson James & Associates TM for City of Marina dated April 16, 2018

1. On pages 2 and 3 Jacobson James repeat their DEIR/EIS comments from a year ago and then express disagreement with the answers provided to those questions in the FEIR/EIS. Mere disagreement with the FEIR/EIS conclusions does not make the FEIR/EIS inadequate.
2. On page 4 Jacobson James refers to so called "chloride islands" in the 400-Foot Aquifer based on 2015 MCWRA mapping, and goes on to discuss potential gaps in the 180/400-Foot Aquitard. In this discussion, Jacobson James fails to mention the "chloride islands" shown on MCWRA maps are located four to seven miles inland from the CEMEX site and very far outside of the potential zone of water quality impacts related to ocean sourced groundwater flow paths for the MPWSP. In addition, we understand that rigorous review by MCWRA revealed the chloride islands are primarily associated with wells perforated in both aquifers as opposed to gaps in the aquitard.
3. On page 4, Jacobson James makes the statement, "Data gaps were identified in the understanding of the nature, continuity and competence of the aquitard overlying the deeper aquifer system"; however, the referenced MCWRA report does not say this. Even if the report did say this, having a data gap is not evidence of a discontinuity in the aquitard above the Deep Aquifer. If the potential implied gaps did exist in the aquitard above the Deep Aquifer, problems with increasing salinity in the Deep Aquifer would have occurred long ago. It is also noteworthy that Deep Aquifer geophysical and lithologic logs in the project vicinity show hundreds of feet of clay overlying the Deep Aquifer zones (e.g., Hanson, et.al., 2002; MCWD wells 10, 11, and 12).
4. Sections 2.2, 2.3, and 3.1 on pages 4 through 10 attempt to use AEM results to support various statements. We refer the reader to our comments above on the AEM Final Report. In addition, many of these arguments mirror HGC's Letter and we also refer the reader to our comments above on the HGC Letter.
5. On page 8 Jacobson James makes the statement that groundwater with TDS of 1,000 to 1,500 mg/L, "…may be, and frequently is, used by municipal water supply systems in California." No examples or documentation to support this statement are provided. To the contrary, groundwater in Arizona with TDS exceeding 800 mg/L is subject to desalination before being served to customers (Central Arizona Salinity Study, 2006). Indeed, it is rare for water purveyors to serve customers water with TDS exceeding 800 mg/L, as this requires customers to purchase bottled water due to taste issues. Furthermore, the California recommended MCL for TDS is 500 mg/L, with an upper limit TDS MCL of 1,000 mg/L.

6. Many of the statements and claims made by Jacobson James are similar to those presented by HGC (e.g., discussion of “recharge of fresh water” on page 9), and we refer the reader to our responses above to HGC comments.

7. On page 9 Jacobson James first bullet towards the bottom of the page discusses the 180-Foot Aquifer and references water quality trends in MW-4S (“groundwater in the shallow zone of monitoring well MW-4”) as supporting evidence. However, MW-4S is located in the Dune Sand Aquifer and not the 180-FTE Aquifer. Furthermore, MW-4M is located in the 180-FTE Aquifer and shows the opposite trend as MW-4S, thereby negating the argument being made here.

8. On page 9 the second bullet towards the bottom expresses concern that the MPWSP will extract water from a purported “fresh water wedge”. Presumably they are referring to the less saline upper portion of a sea water intrusion wedge. Regardless, while there is no evidence that MPWSP pumping will impact any true fresh water zones, it is interesting that MCWD and its consultants are proposing to develop purported “fresh water” pockets despite saying that doing so “may remove a potential barrier to further inland migration of the saline water wedge.”

9. In the bullet at top of page 10 Jacobson James make the statement, “As saline water is drawn into the area surrounding the slant wells in the 180-Foot Aquifer, the heavier saline water could migrate through the gap in the 180/400-Foot Aquitard…” This statement is wholly unsupported. The actual data from borehole drilling, lithologic logging, geophysical logging, groundwater level fluctuations, and pumping test data all lead to the conclusion that no aquitard gap is present in this area. It is interesting that the only data available to calibrate the AEM data (MPWSP boreholes and monitoring wells) shows the opposite conclusion compared to the AEM data, indicating that the AEM calibration approach and methods need to be revisited. Also, it is important to note that even in the best case scenario of unbiased interpretation of AEM data with sufficient calibration data points, AEM data is merely one of multiple tools that could be used by the hydrogeologist. AEM data does not replace or substitute for more reliable data obtained by borehole drilling and monitoring well construction, and it certainly does not make sense to rely upon AEM data interpretations that are at odds with physical borehole data that served as the only AEM data calibration points.

10. Figure 3 and the associated discussion on page 11 are invalid, because the figure does not account for the ocean being a recharge boundary. The capture zones shown on Figure 3 assume the ocean does not exist. Thus, the discussion and conclusions regarding capture zones under different gradient scenarios must be disregarded.

11. The discussion regarding particle tracking at the top of page 12 states that particles (representing sea water intrusion) outside the capture zone of MPWSP wells will continue inland. However, these same particles would continue inland without implementation of the MPWSP project. Therefore, the net effect of implementing the MPWSP is reduced sea water

intrusion due to the fact that particles within the MPWSP well capture zone will not be allowed to continue flowing inland as they currently do without the MPWSP.

12. Jacobson James discusses in Section 3.3 on pages 12-13 potential for impacts from MPWSP on the Deep Aquifer system, in part, claiming the aquitard overlying the Deep Aquifer is not well characterized. However, geophysical and lithologic logs are available for three MCWD wells screened in the Deep Aquifer, the USGS nested Deep Aquifer monitoring well near the coast in Marina, and for other Deep Aquifer wells in the region. These logs for Deep Aquifer wells in the Marina area show hundreds of feet of clay separating the 400-Foot Aquifer from the Deep Aquifers. In addition, implementation of the MPWSP will result in a reduced vertical gradient and less potential for vertical migration of saline groundwater. Competence of the aquitard is also demonstrated by the fact that many years of heavy pumping from the Deep Aquifers by MCWD wells, which has resulted in Deep Aquifer groundwater levels more than 50 feet lower than groundwater levels in the 400-Foot Aquifer, has not yet resulted in migration of saline water from the overlying seawater intruded 400-Foot Aquifer.

13. On page 13 Jacobson James make the statement, "As shown by Dr. Knight's work and the recent MCWRA report, vertical migration of degraded water in the aquifer system occurs through preferential pathways where aquitards are thin or absent." First, we refer the reader to our comments above on the AEM study. Second, we note that in the MPWSP area, claims of gaps in the aquitard are clearly not valid as demonstrated by borehole drilling, lithologic logs, borehole geophysical logs, groundwater level fluctuations, and pumping test data. Third, there will be a reduced vertical gradient for vertical flow with implementation of the MPWSP. Fourth, potential for gaps in the aquitard are irrelevant to the MPWSP project outside of the area where flow paths from the ocean enter MPWSP wells.

14. On Section 3.5 on pages 13 through 16, Jacobson James make several comments regarding the groundwater modeling work conducted for the DEIR/EIS. These model comments have been addressed previously - most notably in the FEIR/EIS. Some additional responses to these types of groundwater model comments were also provided by GeoSyntec (August 2017), the HWG Response to Final HWG Report Comments (January 2018), and in other portions of the current HWG submittal (e.g., potential gaps in the 180/400-Foot Aquitard).

Response to EKI Memo dated April 17, 2018

Based on review of EKI's April 17, 2018 Memo, the HWG has the following comments:

1. EKI's memo suffers from the same blending of ill-defined terms as the HGC's Letter and other documents prepared by MCWD and City of Marina consultants. For example, on page 2 EKI essentially defines fresh water as up to 3,000 mg/L TDS. EKI mentions the MPWSP monitoring wells but fails to point out that TDS greater than 1,500 is associated with chlorides in excess of 500 mg/L and TDS of 3,000 is associated with chlorides exceeding 1,000 mg/L. Thus, EKI (along

with HGC and others) attempt to claim a portion of the sea water intruded zone defined by MCWRA using a 500 mg/L chloride threshold as “fresh water” by defining fresh water to contain chlorides up to double the standard used by MCWRA to define sea water intrusion in the first place.

2. EKI claims in summary point 1 on page 2 that the Final EIR/EIS, “Mischaracterizes water quality and hydrogeologic conditions within the Dune Sand Aquifer and 180-Foot Aquifer in the vicinity of the Project.” While this is a vague statement lacking any specific examples, we note the FEIR/EIS relied on the same MPWSP water quality data being used as control points for the AEM study and is the most recent site specific data for the Dune Sand Aquifer, 180-FTE Aquifer and the 400-FT Aquifer as evidenced in usage in the AEM study. EKI is relying on same MPWSP data, and have provided no new data to support its opinion.
3. EKI claims in summary point 2 the FEIR/EIS, “Fails to acknowledge that slant well capture zones will extend into areas where Total Dissolved Solids (“TDS”) concentrations in groundwater are less than 3,000 milligrams per liter (“mg/L”), which are considered suitable, or potentially suitable, for municipal or domestic water supply under the provisions of SWRCB Resolution No. 88-63;” The HWG notes MPWSP water quality data and other data (including MCWRA sea water intrusion maps) are available to assess the distribution of water quality, and are incorporated into the FEIR/EIS. EKI notes (Footnote 1 on page 3) the conditions associated with the definitions of "suitable" or "potentially suitable" for municipal or domestic water supply". However, EKI fails to note that extraction and treatment of such water at the inland locations mapped by the AEM study will generate additional seawater intrusion and harm the basin. Pumping in these aquifers was halted decades ago because of sea water intrusion. Pumping at the coast by projects such as the MPWSP and the former regional project supported by MCWD will serve to neutralize or reverse sea water intrusion in the well capture zone.
4. EKI claims in summary point 3 the FEIR/EIS, “Fails to demonstrate that the Project will not affect groundwater water quality outside of the capture zone of the slant wells…” The HWG notes for many years the flow in the 180-FTE Aquifer has been in an inland direction. As documented in the FEIR/EIS and HWG Final Report, the MPWSP will result in a net reduction in sea water intrusion by capturing and treating saline/brackish water through the MPWSP slant well system. The opinion that MPWSP pumping will lead to inland flow of saline water outside of the capture zone is inaccurate, because this inland flow of saline groundwater occurs without the MPWSP.
5. EKI claims in summary point 4 the FEIR/EIS, “Fails to assess groundwater quality impacts from the cumulative effects of slant well extraction and foreseeable decreases in inland hydraulic gradients, which are causing ongoing saltwater intrusion and must be addressed under the Sustainable Groundwater Management Act (SGMA) over the next 20 years.” The HWG notes that the SGMA Groundwater Sustainability Plan will most likely document the causes of historical seawater intrusion as inland pumping by MCWD and others in the 180-FTE Aquifer and the 400-Foot Aquifer and will most likely document that the Deep Aquifer now being used by

MCWD is potentially being overdrafted. A significant reduction in inland pumping and/or a series of injection wells or extraction wells will likely be required as SGMA projects to mitigate on-going sea water intrusion. Other basins have elected to build seawater barriers while adding imported water or recycled water to the basin to increase basin safe yield. The MPWSP will serve to increase local water supply as well as provide some mitigation for sea water intrusion, thereby contributing to long-term basin sustainability under SGMA.

6. EKI, like HGC and others, relies heavily on AEM results – please see HWG comments on the AEM study above.

7. At the bottom of pages 2 and 4, EKI states MW-4S TDS concentrations have declined to less than 3,000 mg/L in recent months. Yet examination of Table 2 in MPWSP test slant well monthly monitoring reports shows that TDS has not dropped below approximately 8,000 mg/L. However, it is clear that MW-4S TDS concentrations have been impacted by significantly wetter than normal rainfall conditions in the 2015-16 and 2016-2017 water years.

8. On page 4, EKI makes claims about groundwater flow paths outside of the capture zone with no supporting calculations or documentation. As discuss above, EKI fails to acknowledge that these flow lines outside the capture zone would occur and continue inland without implementation of the MPWSP. EKI also fails to note there will be a net reduction of sea water intrusion with implementation of the MPWSP due to capture of flow paths within the capture zone that would continue inland without the project. The FEIR/EIS correctly documents the net benefit of the MPWSP in this regard.

9. EKI's discussion on pages 5 and 6 of capture zones under various gradients is misleading and incorrect. EKI fails to recognize the ocean remains a massive recharge boundary under any gradient condition and still provides the vast majority of water to the MPWSP wells. In addition, the only portion of the capture zone that will become more saline is that portion containing flow lines originating from the ocean. These two fundamental concepts are ignored by EKI and result in an extremely flawed discussion of capture zones. Again, no actual data or analyses are provided to support EKI's flawed conclusions.

10. Regarding EKI Figure 5, the HWG notes this figure and associated text on page 4 do not describe that flowlines in the 180-FTE Aquifer are currently and historically inland because of inland pumping without any MPWSP pumping, and that flowlines outside the MPWSP capture zone will continue inland with or without the MPWSP. However, the inland gradient will be halted within the MPWSP capture zone and provide some mitigation of sea water intrusion.

Response to GeoHydros' Letter to MCWD dated April 17, 2018

Based on review of GeoHydros' April 17, 2018 Letter, the HWG has the following comments:

1. On page 1 of the cover letter GeoHydros states, "Contrary to the Final EIR-EIS's suggestion, however, we did not alter or create a separate model. We simply ran the model provided by the California Public Utilities Commission (CPUC)." First, it is important to note that GeoHydros did alter the model by adding slant wells and assigning pumping to the model that was not included in the CPUC model version of NMGWM^{2016}, and GeoHydros did not provide documentation of this modification to the model or make their modified model files available for review by others. Second, in his evidentiary testimony on November 3, 2017, Curtis Hopkins noted that GeoHydros added slant wells to the model and it was, "…very difficult to do that with the way that the model is currently set up." (page 4874, lines 1-3). However, there is no way for others to verify the model modifications (which apparently were quite challenging for GeoHydros to implement) and validate results obtained by GeoHydros because of the lack of documentation and lack of model files being made available to others for review.
2. On page 1 of the cover letter GeoHydros denies their modified version of NMGWM^{2016} was flawed in regard to providing a comparison to superposition results reported in the DEIR/EIS, as explained in the FEIR/EIR response to DEIR/EIS comments. In addition, the first paragraph on page 3 of Summary states, "GeoHydros did not make a mistake in our application of the NMGWM^{2016}." However, GeoHydros' did not report making the necessary changes to NMGWM^{2016} needed to properly represent stream-aquifer interaction for comparison to superposition model results. Applications of NMGWM have historically obtained input data related to stream-aquifer interaction from SVIGSM; however, as the superposition model did not involve use of SVIGSM input the stream-aquifer interaction model feature was directly added to the superposition model. Therefore, the comparison described by GeoHydros' in their March 27, 2017 letter of their modified version of NMGWM^{2016} drawdown contours to superposition model drawdown contours is not valid.
3. Page 2 of the cover letter and page 3 under Summary make reference to, "…the Hydrologic Working Group's original version of the NMGWM…" It should be noted the NMGWM was not a HWG work product.
4. Much of page 3 under Summary is devoted to claims regarding the NMGWM not adequately representing perched groundwater conditions. It is important to note here that perched aquifers are typically not represented in groundwater models, because they are hydraulically disconnected from the regional aquifer system as is the case in this model. To the extent the perched aquifers are represented in the NMGWM and superposition models, MPWSP impacts in the perched aquifers will be overpredicted (i.e., actual project impacts will be less than predicted by model). In fact, there will be no impacts in the perched aquifers, as is

acknowledged by HGC on page 22 of its April 17, 2018 letter to MCWD, "…pumping of the proposed MPWSP wells will not impact the water on top of the semi-perching aquitard layer…"

5. Page 4 under Summary states that application of particle tracking to evaluate net impacts to water quality is a flawed methodology, and some other unspecified "technology" must be used. On the contrary, particle tracking is a standard approach and commonly used technology to evaluate water quality issues and is appropriate for its purpose in the DEIR/EIS. This same technology was used by Hydrometrics (2006) to evaluate a potential desalination facility for supplemental water supply for MCWD. This study revealed very similar conclusions as stated in the FEIR/EIS, and simulated well screens several hundred feet further inland than the proposed MPWSP slant well screens.

6. On page 10 regarding GH-31, GeoHydros states that, "…water budget analyses we performed and reported are valid…" Notwithstanding the lack of properly accounting for groundwater – surface water interaction and lack of proper model documentation by GeoHydros, it should be noted that other MCWD consultants have misreported GeoHydros' water budget analyses. For example, in Curtis Hopkins evidentiary testimony on November 3, 2017, he stated the GeoHydros' water budget model results showed the proposed MPWSP would extract 22% groundwater from the Dune Sand Aquifer and 3.5% groundwater from the 180-FTE Aquifer during the initial time step. When asked the duration of the initial time step, Mr. Hopkins testified, "…the first year." (p. 4877, line 3). In fact, Table 3 of GeoHydros March 27, 2017 DEIR/EIS model comment letter from which Hopkins obtained the water budget numbers shows the cited groundwater percentages are for one month of MPWSP well pumping and not one year, which is a major difference. The MPWSP well groundwater percentages simulated by GeoHydros after one year are 3.6% for the Dune Sand Aquifer and 4.9% for the 180-Foot Aquifer.

Comments on Hydrogeologic Conditions at Armstrong Ranch Property

MCWD and their consultants have often made reference to a potential water supply project at the Armstrong Ranch property in public forums. The Armstrong Ranch property is located approximately 2.5 miles inland and east of the proposed MPWSP wells and ocean shoreline (see attached Figure 2) and the Monterey Peninsula Landfill borders Armstrong Ranch to the north. Groundwater sources adjacent to landfills all across the State have been degraded and subject to monitoring and clean-ups. Therefore, we do not recommend construction of a recharge project adjacent to a landfill. Ground surface elevations vary across the Armstrong Ranch property but generally range from about 100 to 160 feet above mean sea level (MSL). The land surface slopes steeply on the east side of the property towards the Salinas River to a surface elevation of approximately 10 to 20 feet MSL within about 700 to 1,000 feet of the eastern edge of the property. The FO-SVA Aquitard is present beneath the property with the perched/mounded aquifer known as the 35-Foot Aquifer above the FO-SVA. The top elevation of the FO-SVA is variable but generally is approximately 10 to 20 feet MSL. Available data indicate perched/mounded aquifer groundwater levels beneath the property likely range from approximately 25 to 40 feet MSL with a groundwater flow direction towards the Salinas River to the northeast and east.

Our understanding of the hypothetical project at Armstrong Ranch is that water would be diverted from the Salinas River, and treated to comply with the surface water treatment rule requirements for delivery to the MCWD system. When surplus supply is available this water would be banked in an engineered subsurface storage facility (stored in the shallow perched/mounded aquifer beneath Armstrong Ranch) to be recovered when needed. A deep slurry wall would be constructed on the north and east sides of Armstrong Ranch and tied into the SVA Aquitard to retain the water in the perched/mounded shallow aquifer, and numerous recovery wells would be installed to pump out the stored water. Although only limited details of the hypothetical Armstrong Ranch project have been made available to the HWG, there are many constraints that would likely preclude development of a water supply project at Armstrong Ranch including:

- Presence of poor quality water beneath the adjacent landfill;
- Limited groundwater storage above the 35-ft Aquifer.
- The water supply project cannot operate without a ½ mile long and very deep (100-150 feet) slurry wall, which would be difficult to construct and extremely expensive;
- Low transmissivity of the perched/mounded aquifer sediments means low recovery rates;
- Low recovery rates require numerous recovery wells and associated infrastructure;
- Some of the recharged water will be lost to seeps and evaporation;
- Clean recharge water derived from the river will mix with native groundwater and be contaminated with high nitrate from agricultural fields. Treatment of this water for potable use will require an additional treatment system;
- There will likely be a very low total net recovery of stored water;
- Considering the costs of the slurry wall, recovery wells, and treatment processes, the water will likely cost more than ocean desalination;
- Seismicity of the area and potential for earthquakes would result in liquefaction damage if ground water is less than 50 feet from the surface. The damage includes differential settlement, quick conditions, and large-scale lateral spreading, resulting in damage to nearby structures, the proposed slurry wall, and landfill grading and infrastructure;
- Damage to the slurry wall or gaps included during construction could lead to contamination by landfill leachate or seepage flow to the landfill.

In addition to the constraints listed above, the HWG notes the location of Armstrong Ranch (2.5 miles inland of the proposed MPWSP wells) and plans for use of the perched/mounded aquifer to store water will preclude the Armstrong Ranch from any potential impacts related to implementation of the MPWSP. Even though a recharge project at Armstrong Ranch is both highly speculative and not recommended for the reasons listed above, the MPWSP will not prevent MCWD from utilizing the "Dune Sand Aquifer" (more specifically, the perched/mounded aquifer known as the 35-Foot Aquifer) for storage and/or augmentation of groundwater supplies and the MPWSP will have no impact on a surface water recharge project at Armstrong Ranch.

Comments on Other Related Documents

Dr. Rosemary Knight provided comments in a brief letter to MCWD dated April 24, 2018. All of Dr. Knight's main points in her letter were addressed in the previous HWG Response to HWG Final Report comments (January 2018) and/or in responses to other documents described above in this letter.

Sincerely,

The Hydrogeologic Working Group (Dennis Williams, Tim Durbin, Martin Feeney, Peter Leffler)

Dennis Williams

Tim Durbin

Martin Feeney

Peter Leffler

Attachments

Table 1. Wells with TDS above the Secondary Maximum Contaminant Level for TDS, City of Marina Area, California

Figure 1. AEM Study Results and Water Quality Conditions

Figure 2. Fatal Flaws of Armstrong Ranch Recharge Project

References

Brown and Caldwell, State of the Salinas River Groundwater Basin, Prepared for Monterey County Resource Management Agency, 2015.

ESA, 2018, CalAm Monterey Peninsula Water Supply Project, Final Environmental Impact Report/Environmental Impact Statement, SCH# 2006101004, prepared for California Public Utilities Commission and Monterey Bay National Marine Sanctuary, March 2018.

Fugro West, Marina Coast Water District (District) Seawater Desalination Project, Establishment of Monitoring Well Network, 1996.

Geosyntec, Review of MCWD Comments on RDEIR, Monterey Peninsula Water Supply Project Subsurface Intakes and Groundwater Modeling, Draft Technical Memorandum, Prepared for Monterey Peninsula Regional Water Authority, August 30, 2017.

Hanson, R.T., Everett, R.R., Newhouse, M.W., Crawford, S.V., Pimentel, M.I., and G.A. Smith, Geohydrology of a Deep-Aquifer System Monitoring-Well Site at Marina, Monterey County, California, USGS, Water-Resources Investigations Report 02-4003, 2002.

Hydrogeologic Working Group, Hydrogeologic Investigation Technical Report, November 6, 2017.

Hydrogeologic Working Group, Memorandum Responding to Comments on HWG Hydrogeologic Investigation Technical Report, January 4, 2018.

Hydrometrics, Preliminary Modeling Results for the MCWD Desalination Intake, Draft Technical Memorandum, Prepared for Martin Feeney, 2006.

Marella, Richard L., Public-Supply Water Use in Florida, 1990, USGS Open-File Report 93-134, 1993.

Staal, Gardner & Dunne, Groundwater Quality Assessment – District Well No. 5, prepared for Marina County Water District, 1991.

Todd, David K., Groundwater Hydrology, John Wiley & Sons, New York, 1980.

U.S. Bureau of Reclamation, Central Arizona Salinity Study, Phase II – Brackish Groundwater, September 2006.

Table 1 - Wells with TDS above the Secondary Maximum Contaminant Level for TDS, City of Marina Area, California			
WELL NAME	LATITUDE	LONGITUDE	DATE OF LAST SAMPLE
MW-11	36.8008664	-121.7805541	6/2/2016
MW-6	36.8007825	-121.7828251	6/2/2016
2701109-001	36.715638	-121.719083	6/3/2013
13S02E30J001M	36.7659	-121.7833	9/26/1983
13S02E30H001M	36.7695	-121.7833	8/30/1985
MW-10	36.7997236	-121.7778498	6/2/2016
14S02E05F001M	36.7408	-121.7744	7/31/1952
MW-5	36.801733	-121.7828437	6/2/2016
DW	36.70351757	-121.7320606	1/27/2014
SAN JON 1	36.7025606	-121.6996457	6/29/2017
CCGC_0544	36.73588335	-121.7114371	4/6/2015
MW-1	36.6819651	-121.6645922	9/23/2008
14S02E06D002M	36.7444	-121.7969	8/4/1971
13S02E19H001M	36.7839	-121.7833	6/29/1977
13S02E31G004M	36.7552	-121.7878	8/11/1971
14S02E15C001M	36.7157	-121.7384	6/14/1977
13S02E29E001M	36.7695	-121.7789	7/11/1951
S-3	36.6742929	-121.6494666	5/12/2009
S-4	36.6743631	-121.6495969	5/12/2009
13S02E30Q002M	36.7623	-121.7878	8/4/1971
14S01E13J002M	36.7085	-121.8014	6/30/1977
13S02E31D002M	36.7588	-121.7969	8/28/1980
14S02E10P001M	36.7192	-121.7384	6/14/1977
S-5	36.6743079	-121.6496337	5/12/2009
CCGC_0037	36.72836849	-121.7522712	10/22/2013
MW-2	36.68119	-121.6650002	9/24/2008
13S02E32E003M	36.7552	-121.7789	8/4/1982
DOM_BERTEL	36.77099816	-121.780048	12/11/2013
CCGC_0616	36.67735408	-121.7349756	8/25/2015
S-MS-SV21	36.76547222	-121.72875	11/5/2012
15S03E06A003M	36.6582	-121.6752	8/8/1983
13S02E19R001M	36.7767	-121.7833	8/9/1979
CCGC_0652	36.74610356	-121.7475509	5/3/2016
USGS-364542121471501	36.7616238	-121.7885618	8/11/1971
DOM WELL	36.67430403	-121.6868073	6/8/2015
MW-2	36.6844958	-121.6530174	5/13/2009
USGS-364606121471201	36.7682903	-121.7877285	8/4/1971
CCGC_0650	36.74469054	-121.7251469	5/3/2016
13S02E29R001M	36.7623	-121.7653	8/10/1979
13S02E17H003M	36.7983	-121.7653	10/16/1981
14S02E36H001M	36.669	-121.6932	9/5/1984
DOM_M_HILL	36.75554299	-121.7867927	12/11/2013
CCGC_0537	36.6985007	-121.6940101	4/6/2015

Table 1 - Wells with TDS above the Secondary Maximum Contaminant Level for TDS, City of Marina Area, California			
WELL NAME	LATITUDE	LONGITUDE	DATE OF LAST SAMPLE
DW	36.71178299	-121.7179412	9/18/2014
13S02E29H001M	36.7695	-121.7653	8/15/1983
13S02E20R001M	36.7767	-121.7653	8/8/1955
MW2	36.76291365	-121.7432028	3/15/2011
14S02E36R001M	36.6618	-121.6932	8/21/1985
14S02E36R0D1M	36.6618	-121.6932	8/21/1985
CCGC_0649	36.7269072	-121.7327053	5/3/2016
RUSSELL-1	36.7413954	-121.6909452	5/4/2017
15S03E05K003M	36.651	-121.6617	8/23/1956
14S03E31J002M	36.6654	-121.6752	6/19/1951
CCGC_0632	36.71099748	-121.6808944	8/27/2015
14S02E05R002M	36.7336	-121.7653	6/18/1959
MW-8	36.8011692	-121.7777545	6/1/2016
MW1	36.76294188	-121.7431872	6/13/2012
R12 W20	36.68386344	-121.7036837	10/14/2013
13S02E29M002M	36.7659	-121.7789	7/26/1983
14S03E31F001M	36.669	-121.6843	8/16/1979
13S02E31M001M	36.7516	-121.7969	6/21/1951
13S02E32J001M	36.7516	-121.7653	6/18/1958
DOM_QB	36.72713532	-121.7219791	12/11/2013
WELL	36.68329509	-121.6755349	6/13/2013
P-2	36.6816033	-121.6644824	9/24/2008
USGS-364050121411201	36.6805147	-121.6877246	8/5/1971
USGS-364615121455301	36.7707902	-121.7657832	8/4/1971
CCGC_0585	36.70546431	-121.6976755	6/24/2015
15S03E06L001M	36.651	-121.6843	6/19/1951
RSSLLSMWL	36.75078463	-121.6906892	12/20/2012
13S02E31G005M	36.7552	-121.7878	4/12/1976
14S02E36E001M	36.669	-121.7068	8/14/1980
AW 1	36.71161478	-121.7146638	9/18/2014
13S02E29E002M	36.7695	-121.7789	6/8/1950
DW	36.65332936	-121.7307876	9/15/2014
AG_GARIN4	36.68723574	-121.7004377	6/17/2014
MW-12	36.8009107	-121.7752809	6/2/2016
13S02E18Q001M	36.7911	-121.7878	8/17/1954
13S02E32E004M	36.7552	-121.7789	8/4/1971
CCGC_0068	36.67693873	-121.7026389	10/22/2013
13S02E30A001M	36.7731	-121.7833	8/11/1972
DOM_SANJON	36.71721985	-121.7017684	12/11/2013
DOM_NIELSE	36.75192414	-121.7324072	12/11/2013
AG_VAUGHN3	36.6858327	-121.7048724	6/17/2014
S-MS-SV07	36.73241667	-121.7798611	11/8/2012
MW-1	36.8029962	-121.7813052	6/1/2016

Table 1 - Wells with TDS above the Secondary Maximum Contaminant Level for TDS, City of Marina Area, California			
WELL NAME	LATITUDE	LONGITUDE	DATE OF LAST SAMPLE
MW3	36.76292241	-121.7431535	6/13/2012
MW4	36.76298669	-121.7431753	3/15/2011
MW6	36.76322771	-121.7428292	3/15/2011
R19 WD	36.77539428	-121.7820062	10/15/2014
CCGC_0110	36.64271264	-121.6877203	3/10/2014
14S02E04L001M	36.7372	-121.7564	8/23/1956
14S02E08D001M	36.73	-121.7789	6/21/1951
MW-4	36.6847757	-121.6529464	5/13/2009
2710005-004	36.755434	-121.74379	1/16/2018
15S03E05N001M	36.6474	-121.6708	9/20/1984
15S02E01A001M	36.6582	-121.6932	6/20/1958
13S02E31P003M	36.748	-121.7924	9/15/1951
14S02E03R001M	36.7336	-121.7293	8/5/1982
2702180-001	36.696111	-121.700722	7/5/2017
AG_MCDOUG3	36.66147117	-121.7074383	6/17/2014
MSMB-17	36.75547222	-121.7438333	8/20/2014
15S02E01Q001M	36.6474	-121.6977	8/13/1982
14S03E30F002M	36.6834	-121.6843	7/12/1951
2710010-025	36.679535	-121.66564	1/6/2011
CCGC_0031	36.67174076	-121.706301	10/22/2013
14S02E25F001M	36.6834	-121.7023	8/9/1972
14S02E36F001M	36.669	-121.7023	7/12/1951
14S03E29L004M	36.6798	-121.6663	8/30/1984
14S03E30N001M	36.6762	-121.6888	6/20/1977
15S03E07P001M	36.6331	-121.6843	7/4/1951
13S01E36J001M	36.7516	-121.8014	8/22/1986
AG_JACOB	36.64912118	-121.6979074	10/1/2014
CCGC_0404	36.70737126	-121.675932	8/7/2014
AG_WELL55B	36.74163929	-121.7664453	3/13/2013
USGS-364153121412501	36.6980144	-121.6913359	8/6/1971
AG_WELL95A	36.73482958	-121.7625632	3/13/2013
13S02E16D001M	36.8019	-121.7609	9/19/1984
13S02E16P001M	36.7911	-121.7564	9/19/1984
R28W1ACSIP	36.71346337	-121.7070774	10/14/2013
AW	36.69772766	-121.7169063	4/30/2014
AW 1	36.71046202	-121.7039792	7/6/2015
CCGC_0131	36.6873949	-121.6725548	3/13/2014
15S03E08C002M	36.6439	-121.6663	6/19/1951
DOM_OCBAR8	36.68153008	-121.7058882	6/17/2014
USGS-364243121475301	36.7119025	-121.7991175	9/1/1971
2701466-004	36.758201	-121.80102	8/28/2002
DOLAN_WELL	36.79711708	-121.750337	12/12/2017
14S02E36L001M	36.6654	-121.7023	7/11/1951

Table 1 - Wells with TDS above the Secondary Maximum Contaminant Level for TDS, City of Marina Area, California			
WELL NAME	LATITUDE	LONGITUDE	DATE OF LAST SAMPLE
2702456-001	36.705409	-121.769215	9/27/2017
2710010-002	36.678492	-121.652991	1/17/2002
15S03E18B001M	36.6295	-121.6797	8/22/1986
14S02E18D001M	36.7157	-121.7969	7/29/1966
AW 3	36.6609357	-121.7256348	7/6/2015
WELL 1	36.76384547	-121.7180056	3/7/2017
15S03E08C001M	36.6439	-121.6663	9/9/1986
R20-W1CSIP	36.77810067	-121.7858196	10/10/2013
15S03E07C001M	36.6439	-121.6843	7/14/1951
2710010-023	36.670208	-121.67952	6/28/2016
13S02E17H001M	36.7983	-121.7653	7/12/1966
14S02E24J002M	36.6941	-121.6932	7/26/1951
AW 1	36.6520102	-121.7170116	9/18/2014
MW-5	36.6848235	-121.6533023	5/13/2009
MW-7	36.6852172	-121.6539236	5/13/2009
14S02E10R001M	36.7192	-121.7293	8/22/1984
14S02E25D003M	36.687	-121.7068	8/9/1983
15S03E07D001M	36.6439	-121.6888	8/13/1963
S-MS-SV20	36.68822222	-121.6872222	11/5/2012
14S03E18J001M	36.7085	-121.6752	8/6/1971
14S02E24J001M	36.6941	-121.6932	6/14/1977
CCGC_0118	36.68566967	-121.7013839	3/11/2014
14S03E30G001M	36.6834	-121.6797	7/5/1951
MW9	36.76292445	-121.743662	3/15/2011
2710010-009	36.661127	-121.660679	2/18/2015
DM WELL 3	36.68182291	-121.6726911	5/30/2014
AG WELL 1	36.68531802	-121.6906701	5/27/2014
MW-7	36.8024545	-121.7802045	6/1/2016
14S03E30F001M	36.6834	-121.6843	6/17/1977
MW-9	36.7992574	-121.7750654	6/2/2016
15S03E07N001M	36.6331	-121.6888	8/15/1979
15S02E01K001M	36.651	-121.6977	7/24/1951
14S02E14J001M	36.7085	-121.7113	7/18/1978
14S02E25D001M	36.687	-121.7068	8/9/1972
13S02E29Q001M	36.7623	-121.7698	7/25/1952
USGS-363841121401401	36.644682	-121.6716127	8/6/1971
14S03E30E001M	36.6834	-121.6888	7/9/1986
15S03E08N001M	36.6331	-121.6708	7/21/1950
14S02E26J001M	36.6798	-121.7113	6/7/1950
14S03E30R001M	36.6762	-121.6752	8/5/1971
CCGC_0114	36.63239229	-121.679796	3/11/2014
CCGC_0617	36.6661431	-121.7399465	8/25/2015
2702453-001	36.712722	-121.769111	8/10/2015

Table 1 - Wells with TDS above the Secondary Maximum Contaminant Level for TDS, City of Marina Area, California

WELL NAME	LATITUDE	LONGITUDE	DATE OF LAST SAMPLE
13S02E31M002M	36.7516	-121.7969	8/22/1963
CCGC_0183	36.67591679	-121.6809274	3/13/2014
AW 1	36.63572791	-121.683318	9/18/2014
2710010-028	36.691018	-121.664268	8/13/2014
2710010-030	36.688262	-121.665903	11/29/2017
14S02E11D001M	36.73	-121.7249	9/11/1980
USGS-364315121444001	36.7207914	-121.7455044	9/2/1971
15S02E02Q001M	36.6474	-121.7158	8/10/1972
MON162	36.6992013	-121.6694012	6/15/2011
USGS-364648121470201	36.7799566	-121.7849507	8/4/1971
DOM_MOLERA	36.75003284	-121.7733896	10/1/2014
14S03E29G001M	36.6834	-121.6617	7/5/1951
CCGC_0120	36.69843736	-121.7073582	3/11/2014
CCGC_0618	36.72474725	-121.7468068	8/25/2015
2701153-001	36.735472	-121.68475	11/21/2017
14S03E29Q001M	36.6762	-121.6617	7/24/1990
13S02E19J001M	36.7803	-121.7833	3/24/1971
ESP-1	36.7396825	-121.6918467	10/6/2017
DOM_DESAN	36.78286368	-121.772012	12/11/2013
14S02E23P001M	36.6905	-121.7204	9/5/1984
14S02E26A001M	36.687	-121.7113	7/18/1962
CCGC_0543	36.68466783	-121.7262798	4/6/2015
13S02E19Q003M	36.7767	-121.7878	8/22/1986
AW 2	36.66844423	-121.7398116	9/15/2014
13S02E29C002M	36.7731	-121.7744	8/28/1980
13S02E29D003M	36.7731	-121.7789	9/26/1983
13S02E29P003M	36.7623	-121.7744	9/26/1983
14S02E24L001M	36.6941	-121.7023	6/20/1951
14S02E13P001M	36.7049	-121.7023	8/12/1969
14S02E26P001M	36.6762	-121.7204	8/11/1986
14S02E25B001M	36.687	-121.6977	7/12/1962
USGS-364248121402801	36.7132921	-121.6755022	8/6/1971
CCGC_0549	36.69961491	-121.7381187	4/7/2015
14S02E03F001M	36.7408	-121.7384	8/17/1982
15S02E02J001M	36.651	-121.7113	6/14/1977
USGS-364043121405001	36.6785703	-121.6816133	8/5/1971
CCGC_0069	36.65266885	-121.6771164	10/21/2013
14S03E30G002M	36.6834	-121.6797	6/20/1951
14S02E25A001M	36.687	-121.6932	7/25/1951
USGS-364657121465601	36.7824566	-121.783284	8/4/1971
USGS-364232121420901	36.7088475	-121.7035586	8/11/1971
13S02E14R001M	36.7911	-121.7113	6/19/1957
15S03E08N003M	36.6331	-121.6708	8/8/1984

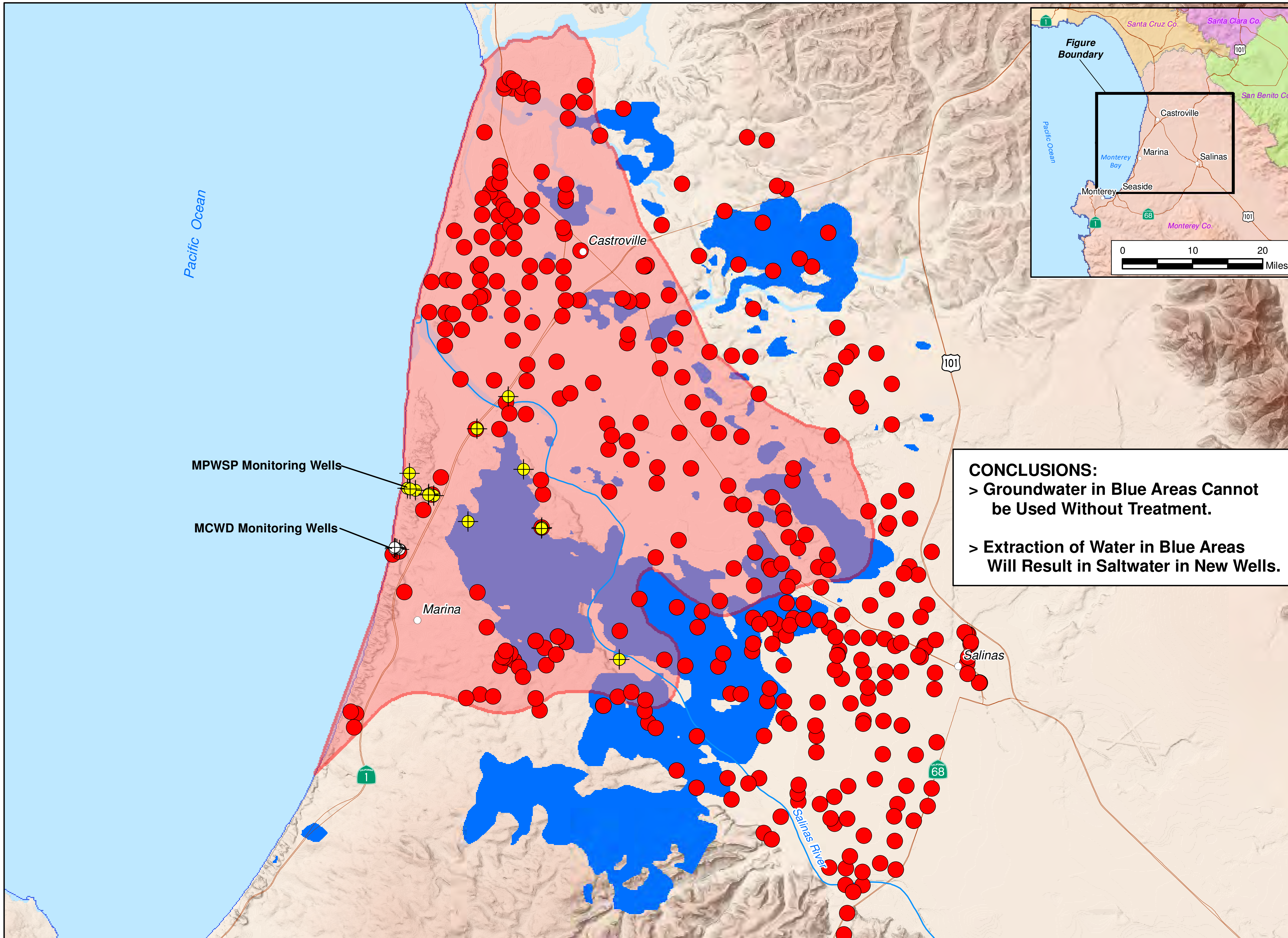
Table 1 - Wells with TDS above the Secondary Maximum Contaminant Level for TDS, City of Marina Area, California			
WELL NAME	**LATITUDE**	**LONGITUDE**	**DATE OF LAST SAMPLE**
15S03E18C002M	36.6295	-121.6843	8/8/1980
AW 2	36.7136811	-121.7512644	7/6/2015
2710010-026	36.69746	-121.66701	8/15/2017
USGS-364505121473801	36.7513463	-121.7949509	8/4/1971
USGS-364628121464801	36.7744012	-121.7810616	8/11/1971
13S02E30L001M	36.7659	-121.7924	6/18/1958
2710010-012	36.682486	-121.671045	11/20/1995
R12 W1	36.68148334	-121.7111457	10/14/2013
2710010-011	36.682695	-121.65221	3/19/2002
13S02E33H003M	36.7552	-121.7473	8/13/1979
2702482-001	36.745635	-121.686646	3/24/2005
13S02E31A001M	36.7588	-121.7833	9/24/1986
15S03E07G001M	36.6403	-121.6797	7/22/1985
USGS-364531121473801	36.7585683	-121.794951	8/4/1971
14S02E05L001M	36.7372	-121.7744	6/3/1953
14S02E23J001M	36.6941	-121.7113	8/20/1973
USGS-363741121405201	36.6280155	-121.6821685	8/12/1971
2710010-010	36.683075	-121.652175	4/18/2012
15S02E12C001M	36.6439	-121.7023	8/9/1972
14S02E24P001M	36.6905	-121.7023	7/4/1951
DOM_GT	36.74400615	-121.7190396	12/11/2013
14S02E24Q001M	36.6905	-121.6977	8/22/1984
CCGC_0546	36.64693026	-121.6917555	4/7/2015
14S03E32B001M	36.6726	-121.6617	8/19/1975
R12_W13	36.68568575	-121.7095327	4/14/2016
CCGC_0475	36.6889077	-121.7319986	8/28/2014
CCGC_0070	36.69048814	-121.7422076	10/21/2013
14S03E28N003M	36.6762	-121.6528	4/4/1989
13S02E29C004M	36.7731	-121.7744	8/9/1979
AG WELL 1	36.67035059	-121.716883	5/22/2014
13S02E31B001M	36.7588	-121.7878	9/28/1951
13S02E32C002M	36.7588	-121.7744	8/4/1982
DOM WELL	36.68819268	-121.7252478	12/11/2012
DOM_WELL4	36.76387117	-121.6980145	4/21/2014
14S03E28M002M	36.6798	-121.6528	8/27/1991
14S03E07A001M	36.73	-121.6752	8/4/1982
DOM_BOGGIA	36.73898337	-121.7323061	10/1/2014
14S03E29N002M	36.6762	-121.6708	2/7/1984
14S03E28N001M	36.6762	-121.6528	9/13/1991
AG WELL	36.78062066	-121.7056781	6/17/2013
13S02E31N002M	36.748	-121.7969	7/17/1962
RSSLLBGWL	36.73380676	-121.6837618	5/17/2013
13S02E33R001M	36.748	-121.7473	8/13/1973

Table 1 - Wells with TDS above the Secondary Maximum Contaminant Level for TDS, City of Marina Area, California			
WELL NAME	**LATITUDE**	**LONGITUDE**	**DATE OF LAST SAMPLE**
CCGC_0533	36.67015212	-121.7436487	4/6/2015
AG_WELL_C	36.77770617	-121.7652239	8/1/2013
14S02E09K001M	36.7228	-121.7518	9/30/1963
USGS-363855121411301	36.6485707	-121.6880022	8/6/1971
14S03E17D001M	36.7157	-121.6708	8/20/1982
13S02E16E001M	36.7983	-121.7609	8/6/1962
2710010-027	36.665445	-121.680636	2/27/2017
14S03E19Q002M	36.6905	-121.6797	8/21/1973
USGS-364521121445301	36.7557907	-121.7491158	8/13/1973
14S03E28M003M	36.6798	-121.6528	5/6/1980
USGS-364515121472201	36.754124	-121.7905063	8/4/1971
14S03E19J002M	36.6941	-121.6752	7/5/1951
13S02E31K002M	36.7516	-121.7878	9/27/1977
13S02E30B001M	36.7731	-121.7878	9/28/1951
AG_WELL4	36.77138195	-121.6938671	10/11/2013
HOME IRR	36.63932129	-121.6712851	12/12/2017
SALINAS2	36.74393944	-121.7139741	2/5/2016
AG_DOLAN	36.66401303	-121.693652	10/1/2014
14S02E28H002M	36.6834	-121.7473	8/11/1982
USGS-364045121430501	36.6791256	-121.7191145	8/5/1971
AG_HAYMORE	36.73557039	-121.6848122	12/11/2013
AG_WELL5	36.7731492	-121.7116744	10/11/2013
14S02E06L001M	36.7372	-121.7924	8/22/1986
CCGC_0012	36.67036779	-121.7140052	10/21/2013
2710010-017	36.664555	-121.670204	5/4/2016
14S03E31B001M	36.6726	-121.6797	8/13/1980
CCGC_0651	36.74742695	-121.7345279	5/3/2016
13S02E30Q001M	36.7623	-121.7878	12/7/1951
13S02E33E001M	36.7552	-121.7609	6/24/1958
13S02E30B080M	36.7731	-121.7878	7/21/1950
CCGC_0598	36.70966524	-121.6695399	6/30/2015
13S02E20J001M	36.7803	-121.7653	9/4/1980
2150_ELKHO	36.79168257	-121.7165879	6/6/2017
CCGC_0441	36.63440959	-121.6750499	8/14/2014
14S03E31A001M	36.6726	-121.6752	7/11/1951
S-MS-SV08	36.66427778	-121.7008056	11/5/2012
13S02E20P002M	36.7767	-121.7744	8/10/1982
14S02E07G001M	36.7264	-121.7878	6/21/1951
14S03E31A002M	36.6726	-121.6752	6/19/1951
13S02E32M001M	36.7516	-121.7789	9/24/1986
14S02E23A001M	36.7013	-121.7113	8/13/1973
14S02E06J003M	36.7372	-121.7833	8/10/1982
WELL 1	36.78108563	-121.7339373	3/7/2017

Table 1 - Wells with TDS above the Secondary Maximum Contaminant Level for TDS, City of Marina Area, California			
WELL NAME	**LATITUDE**	**LONGITUDE**	**DATE OF LAST SAMPLE**
MSMB-24	36.78127778	-121.7080833	8/9/2005
CCGC_0547	36.67942963	-121.6880587	4/7/2015
13S02E17J001M	36.7947	-121.7653	7/21/1978
DOM_PRESTO	36.75502477	-121.7644451	12/11/2013
14S03E20E001M	36.6977	-121.6708	7/5/1951
14S02E08C002M	36.73	-121.7744	6/4/1953
AW 3	36.65142519	-121.6685096	9/18/2014
MSMB-26	36.66458333	-121.6702778	8/14/2014
2710003-004	36.771998	-121.739058	6/25/2014
13S02E28M001M	36.7659	-121.7609	7/13/1973
13S02E32A001M	36.7588	-121.7653	8/9/1979
2710019-003	36.775435	-121.722126	9/1/2016
S-MS-SV19	36.66472222	-121.6807222	10/30/2012
14S02E24P002M	36.6905	-121.7023	8/19/1982
AG_JON_G	36.7198562	-121.7015053	12/11/2013
CCGC_0038	36.7287958	-121.7432501	10/22/2013
AG_WELL1	36.75439927	-121.7136557	4/21/2014
14S02E24E001M	36.6977	-121.7068	8/22/1980
AG_BLANCO	36.67935436	-121.6882249	10/1/2014
14S02E11G001M	36.7264	-121.7158	9/29/1983
15S03E05C002M	36.6582	-121.6663	8/27/1991
14S02E27R001M	36.6762	-121.7293	5/21/1953
R5 W2	36.69899432	-121.7040065	10/14/2013
CCGC_0405	36.70122764	-121.6917468	8/7/2014
TERAJI IRR	36.64712472	-121.6626011	12/12/2017
AG_WELL3	36.7655054	-121.7014319	4/21/2014
2700998-001	36.726533	-121.781484	12/27/2010
USGS-364445121441601	36.745791	-121.7388377	8/11/1971
DOMESTIC	36.74601352	-121.7785263	6/19/2015
DOM_WELL5	36.76277485	-121.7085314	4/21/2014
13S02E31P001M	36.748	-121.7924	7/14/1981
RUSSELL-2	36.74446249	-121.688077	5/4/2017
14S02E17B002M	36.7157	-121.7698	9/24/1984
CCGC_0036	36.72584667	-121.7509616	10/22/2013
CCGC_0584	36.7271574	-121.691314	6/24/2015
2701452-002	36.769444	-121.795277	12/16/2015
2710005-005	36.756792	-121.736584	2/1/2016
2710010-020	36.702584	-121.663499	1/26/2016
2710017-011	36.69861	-121.809377	7/15/2008
USGS-364157121482703	36.6992778	-121.8076667	6/24/2000
MW-02-07-180	36.66377303	-121.8180968	9/21/2006
MP-BW-37-368	36.67834143	-121.7780154	12/14/2006
MP-BW-37-398	36.67834143	-121.7780154	6/20/2007

Table 1 - Wells with TDS above the Secondary Maximum Contaminant Level for TDS, City of Marina Area, California			
WELL NAME	**LATITUDE**	**LONGITUDE**	**DATE OF LAST SAMPLE**
MP-BW-31-362	36.67775465	-121.7767549	12/18/2006
MP-BW-31-407	36.67775465	-121.7767549	9/24/2007
MP-BW-39-350	36.6806924	-121.7699904	3/12/2008
MP-BW-30-397	36.67685263	-121.7782165	9/26/2006
MP-BW-39-395	36.6806924	-121.7699904	3/12/2008
MP-BW-39-330	36.6806924	-121.7699904	3/12/2008
MP-BW-32-412	36.67629805	-121.7756606	3/19/2007
MP-BW-32-366	36.67629805	-121.7756606	9/20/2006
MP-BW-33-397	36.67486768	-121.7742562	9/22/2006
2710017-006	36.675	-121.779444	2/14/1990
MP-BW-34-422	36.67548352	-121.7669314	9/19/2006
MP-BW-33-352	36.67486768	-121.7742562	9/22/2006
AIRFIELD	36.6792166	-121.7674641	9/21/2006
MP-BW-38-368	36.68174287	-121.7639842	12/13/2006
MP-BW-38-353	36.68174287	-121.7639842	9/19/2007
MP-BW-30-342	36.67685263	-121.7782165	3/14/2007
MP-BW-38-341	36.68174287	-121.7639842	9/20/2006
MP-BW-40-353	36.68064591	-121.76177	12/14/2006
MP-BW-35-402	36.67781756	-121.7642699	3/12/2008
MP-BW-40-375	36.68064591	-121.76177	9/20/2006
MP-BW-39-310	36.6806924	-121.7699904	9/22/2006
2710017-003	36.683333	-121.783333	12/22/1982
MP-BW-31-522	36.67775465	-121.7767549	9/21/2006
MP-BW-35-366	36.67781756	-121.7642699	12/3/2007
MP-BW-40-400	36.68064591	-121.76177	12/14/2006
MP-BW-34-357	36.67548352	-121.7669314	9/19/2006
MP-BW-40-333	36.68064591	-121.76177	3/17/2008
MP-BW-37-328	36.67834143	-121.7780154	3/15/2007
MP-BW-31-332	36.67775465	-121.7767549	3/10/2008
MP-BW-38-418	36.68174287	-121.7639842	9/19/2007
2710017-007	36.668671	-121.784609	1/5/1987
MP-BW-38-327	36.68174287	-121.7639842	3/17/2008
2710017-020	36.667778	-121.788333	5/16/1983
MP-BW-35-312	36.67781756	-121.7642699	3/14/2007
2710017-022	36.668333	-121.781111	5/16/1983
MP-BW-32-332	36.67629805	-121.7756606	3/11/2008
MP-BW-37-460	36.67834143	-121.7780154	9/21/2007
MP-BW-32-522	36.67629805	-121.7756606	6/20/2007
MP-BW-31-457	36.67775465	-121.7767549	3/10/2008
MP-BW-35-467	36.67781756	-121.7642699	9/21/2007
MCWD-08A	36.67710074	-121.7788366	9/22/2006
CCGC_0615	36.66362508	-121.7388406	8/25/2015
15S02E12E002M	36.6403	-121.7068	8/13/1980

Table 1 - Wells with TDS above the Secondary Maximum Contaminant Level for TDS, City of Marina Area, California			
WELL NAME	**LATITUDE**	**LONGITUDE**	**DATE OF LAST SAMPLE**
CCGC_0132	36.66248661	-121.73686	3/13/2014
AG WELL	36.73884959	-121.6755758	4/4/2014
14S01E24Q002M	36.6905	-121.8059	7/12/1962
MP-BW-33-317	36.67486768	-121.7742562	12/15/2006
MP-BW-42-345	36.66815458	-121.7695319	9/19/2006
2710017-030	36.649722	-121.725278	4/2/1990
MP-BW-41-353	36.66566357	-121.7683894	9/25/2006
MW-02-02-180	36.66411217	-121.8195186	9/21/2006
CCGC_0108	36.65218865	-121.7085023	3/10/2014
15S03E18P001M	36.6187	-121.6843	8/19/1983
2710012-006	36.623333	-121.683611	8/19/1983
2710017-027	36.666976	-121.751214	7/24/2012
14S02E33H001M	36.669	-121.7473	8/12/1969
FO-30	36.66699999	-121.7511518	3/20/2007
WELL	36.74540989	-121.6798816	6/14/2016
MP-BW-46-200	36.67278768	-121.7730827	9/25/2006
MW-02-04-180	36.66075977	-121.8184794	9/21/2006
MP-BW-42-314	36.66815458	-121.7695319	6/21/2007
MP-BW-30-537	36.67685263	-121.7782165	3/18/2008
2701740-001	36.638916	-121.704583	12/10/2013
USGS-364157121482701	36.6992778	-121.8076667	6/25/2000
MP-BW-37-193	36.67834143	-121.7780154	9/21/2007
2710017-009	36.67701	-121.778812	10/7/1992
2710017-010	36.690876	-121.786121	3/4/1991
MP-BW-37-178	36.67834143	-121.7780154	9/21/2006



EXPLANATION

Well with TDS Above Recommended Secondary Maximum Contaminant Level (MCL) for Drinking Water (500 mg/L) (Calif. State Water Resources Control Board)

See Table I for List of Wells

Area of Inferred "Source of Drinking Water" (After Figure 23, Gottschalk & Knight, 2018)

Area of Saltwater Intrusion in 180-FT Aquifer (2017 Salinas Valley Groundwater Level Contours & Seawater Intrusion Maps, MCWRA 2018)

MPWSP Monitoring Wells

MCWD Monitoring Wells

Note:
AEM: Aerial Electromagnetic Survey

N

0 1 2

Miles

AEM STUDY RESULTS AND WATER QUALITY CONDITIONS

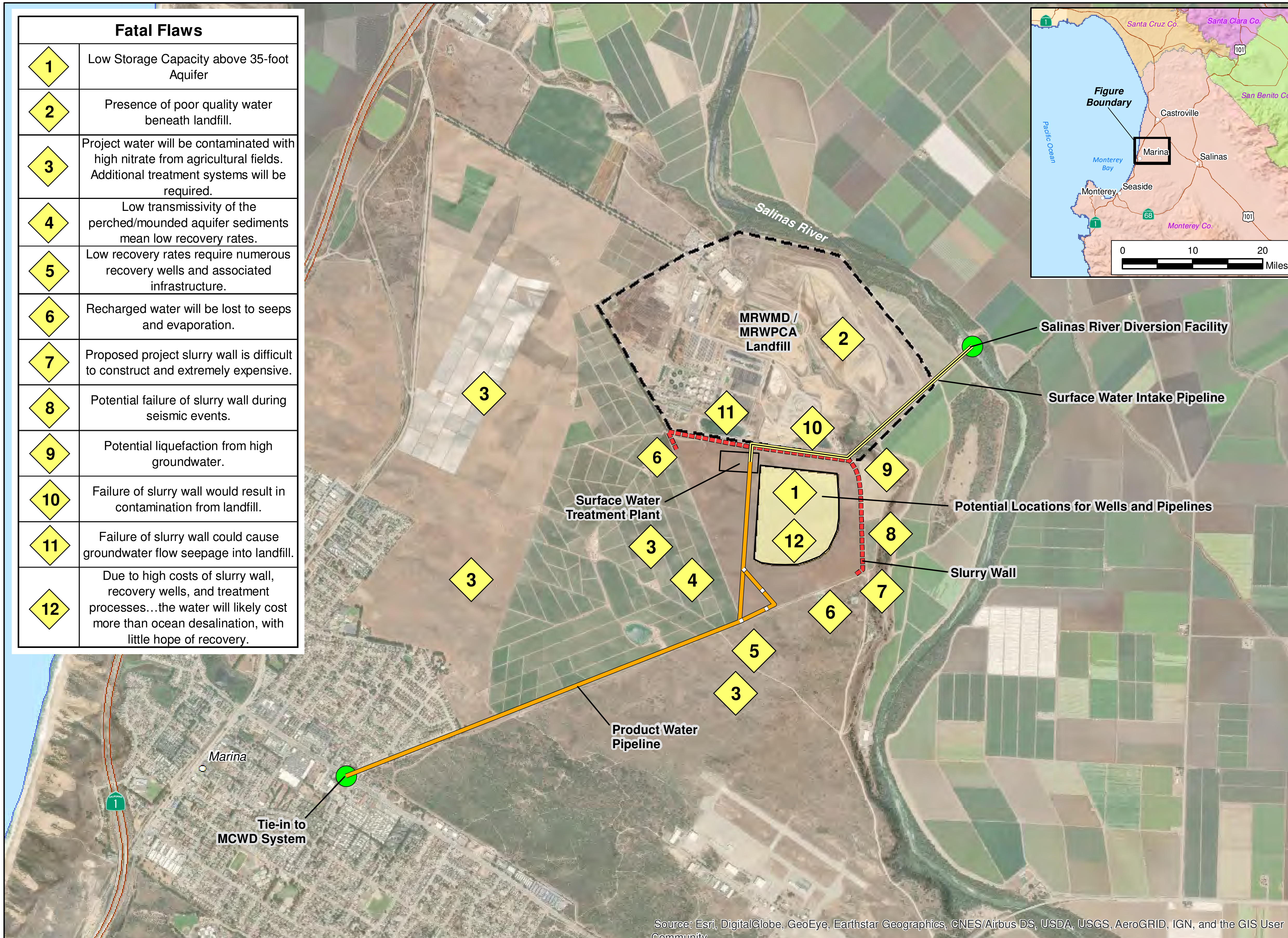
13-Aug-18

HYDROGEOLOGIC WORKING GROUP

MONTEREY PENINSULA WATER SUPPLY PROJECT

FIGURE 1

Fatal Flaws	
1	Low Storage Capacity above 35-foot Aquifer
2	Presence of poor quality water beneath landfill.
3	Project water will be contaminated with high nitrate from agricultural fields. Additional treatment systems will be required.
4	Low transmissivity of the perched/mounded aquifer sediments mean low recovery rates.
5	Low recovery rates require numerous recovery wells and associated infrastructure.
6	Recharged water will be lost to seeps and evaporation.
7	Proposed project slurry wall is difficult to construct and extremely expensive.
8	Potential failure of slurry wall during seismic events.
9	Potential liquefaction from high groundwater.
10	Failure of slurry wall would result in contamination from landfill.
11	Failure of slurry wall could cause groundwater flow seepage into landfill.
12	Due to high costs of slurry wall, recovery wells, and treatment processes…the water will likely cost more than ocean desalination, with little hope of recovery.



EXPLANATION

1 — Yellow Caution Sign Indicates Potential Project Fatal Flaws

Limit of Landfill and Wastewater Treatment Plant Facilities

Armstrong Ranch Project Concept

- Surface Water Intake Pipeline
- Pipeline Alignment
- Pipeline Alignment, Alternative
- Slurry Wall
- Potential Locations for Wells and\ Pipelines
- Surface Water Treatment Plant

Armstrong Ranch Project
Design from:
Armstrong Ranch & 3-Party MOU Presentation by MCWD, undated. Slide 7 -
Title: Salinas River Surface Water Project.

N

0 2,000 4,000
Feet

FATAL FLAWS OF ARMSTRONG RANCH RECHARGE PROJECT

13-Aug-18

HYDROGEOLOGIC WORKING GROUP
MONTEREY PENINSULA WATER SUPPLY PROJECT

FIGURE 2

EXHIBIT C

January 25, 2019

Honorable Mayor, Members of the City Council, and Members of the Planning Commission
211 Hillcrest Avenue
Marina, CA 93933
Attn: Christy Hopper, Planning Services Manager
chopper@cityofmarina.org; planning@cityofmarina.org

SUBJECT: 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

Dear Mayor Delgado, and Members of the City Council and Planning Commission:

This letter provides the responses of the HWG to technical presentations (and associated letters/memorandum) prepared by Hopkins Groundwater Consultants (HGC), EKI, and the Marina Coast Water District (MCWD) for the City of Marina Public Workshop on January 8, 2019. The first section provides a general overview and summary of our responses, the second section provides more detailed specific responses (marked as **HWG Response**) to issues raised by HGC/EKI/MCWD, and the third section provides additional discussion of some of the major topics discussed in the presentations and letters/memo. The comments raised by MCWD, HGC, and EKI either were raised and addressed in the California Public Utilities Commission (CPUC) proceedings or could have been. Further, MCWD and it consultants raise nothing new of significance that affects the analyses of the Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS) or the CPUC's conclusions.

Overview/Summary

There are numerous inaccuracies and statements that are unsupported by data in the City of Marina Public Workshop January 8, 2019 presentations and supporting documents. Each issue is addressed below; however, as an overview the MCWD team of HGC, EKI, and the MCWD either repeats issues that have been previously addressed by the EIR Team and/or HWG documents or misrepresents and/or misinterprets data that has been made publicly available by CalAm prior to and since the test slant well testing period. The MCWD team states that analyses for the EIR/EIS prepared for the Monterey Peninsula Water Supply Project (EIR) depended on a landward gradient as a basis for the EIR analysis and conclusions. This is incorrect. The MCWD team state that a seaward gradient in the Dune Sand Aquifer (DSA) has developed in 2018, that this is new data, that the EIR did not consider a seaward gradient, and the implications of a seaward gradient require a supplemental EIR. This also is incorrect. EIR groundwater modeling did not rely on any specific gradient, whether seaward, landward, or flat. However, the EIR and HWG have responded to comments on potential gradient changes and use of gradients in EIR groundwater modeling in numerous places (e.g., CPUC, March 2018, Forsythe, et.al., September 12, 2018; HWG, January 4, 2018; HWG, August 15, 2018). Although the current but not new issues raised by the MCWD team have been addressed previously, the following sections will again provide a response.

Responses to Presentations and Letters/Memorandum

1. HGC Presentation
   A. Characterization of rainfall during the 2015-2018 test slant well (TSW) operating period
      1. Data towards end of the 2015-2018 period reflect groundwater level response to changing climate, as reflected in "new" data (i.e., 2018 data). **HWG Response:** *This statement conveniently ignores half the period of record for the TSW pumping period of which data has been made available for public review. Higher groundwater levels are not a response to climate change, but rather a response to normal fluctuations in climatic conditions.*
      2. Classification of 2015-2018 years as very dry to normal. **HWG Response:** *This is a very inaccurate characterization of rainfall over the 2015 to 2018 period – see previous HWG documents/rebuttal (e.g.., HWG, January 4, 2018, p. 4; HWG, November 6, 2017, p. 46) including erroneous use of calendar years instead of water years by HGC. The precipitation data developed by PRISM from the Marina Precipitation Data (Marina 0.8 SSE station identified as Station US1CAMT0041 and Station US1CAMT0021) indicated that 2016/2017 was the seventh wettest year since 1895. Therefore, 2016-17 was a very wet year (Oct. 2016 to Sep. 2017).*
      3. Normal/wet years produce seaward gradient in DSA that was not evaluated in EIR. **HWG Response:** *Examining the data from the* ***entire*** *Monterey Peninsula Water Supply Project (MPWSP) monitoring network, and for the period throughout the long-term pumping period, there is no clear seaward gradient over the project area in the DSA during this period (2015-2018). Furthermore, available water level and water quality data collectively show historical/current sea water intrusion in the Dune Sand Aquifer area encompassed by MW-1S, MW-3S, MW-4S, MW-7S, MW-8S, and MW-9S (see Additional Discussion section at end of document). While there may be localized and seasonal variations in Dune Sand Aquifer hydraulic gradients, the net result has been and continues to be sea water intrusion within the area encompassed by the MPWSP monitoring well network listed above.*
   B. Monitoring well water level data
      1. Shoreline monitoring well water level data since end of TSW pumping test show little response to increased rainfall. **HWG Response:** *We would not expect shallow monitoring wells near the shoreline to show much, if any, response to rainfall because water levels at these locations (e.g., MW-1S, MW-3S) are constrained by sea level and tidal fluctuations.*
      2. Mounding of water levels from CEMEX operations during TSW pumping test interval. **HWG Response:** *This issue has been addressed multiple times in previous HWG submittals/rebuttals (e.g., HWG, November 6, 2017, pp.49-53; HWG, August 15, 2018, pp.30-31).*
      3. Inland monitoring well water level data show recovery to "normal" levels that are well above sea level. **HWG Response:** *See Item 1.A.1 above. Also, note that MW-8S is inland but has maintained low groundwater elevation consistent with an inland gradient.*
      4. Groundwater contour maps for DSA using Spring 2018 and Fall 2018 data. **HWG Response:** *Review of 2018 monitoring data show similar levels as 2017 data,*

reflecting in part rainfall recharge from the historic wet conditions during the 2016/2017 Water Year. It should also be noted that groundwater elevations remain lower at MW-8S than at MW-3S and MW-4S, which is consistent with 2014-2015 and 2015-16 conditions and showing an inland gradient in this area. Even if temporary flat/seaward gradients were to occur, the long-term net average is more important in defining the capture zones. The speculative and hypothetical occurrence of longer term flat to seaward gradients are addressed elsewhere in this response. Overall, there is no new data related to groundwater levels or gradients that would change the conclusions of the FEIR. It should also be noted that historical annual rainfall charts (see EKI presentation) show many more below average than above average rainfall years – this is due to extremely wet years skewing the arithmetic average. The significance of this fact is that first half of 2015-2018 monitoring period will be more representative of long-term average climatic conditions.

5. Seaward gradient has changed water quality at MW-4S. **HWG Response:** *This issue has been addressed in previous HWG documents/rebuttal (e.g., HWG, August 15, 2018, pp. 11, 29, 33, 38). As reported earlier, conductivity measurements at a fixed point in the well screen is not representative of the water quality in the entire aquifer. Groundwater quality samples from MW-4S have been collected and continue to be collected and reported. It is important to note that collection of groundwater quality samples from the well in spring 2018 continue to show TDS concentrations at about 8,000 mg/L, which is a better indication of overall salinity in the DSA at MW-4S compared to in-situ probe conductivity readings that only reflect salinity at a specific depth in the well. The lab-based salinity in 2018 has not changed significantly from 2017 data. Overall, there is no new data related to water quality at MW-4S that would result in different conclusions in the FEIR.*

C. Occurrence of freshwater
   1. Recharge of freshwater from rainfall/river to DSA contributes to underlying 180-Foot Aquifer. **HWG Response:** *See previous HWG documents/rebuttal (e.g., HWG, August 15, 2018, p. 19), and note: 1) Any such condition that has occurred historically has not prevented sea water intrusion, 2) Any such condition that has occurred historically will continue to occur with implementation of MPWSP. It should also be noted that even if some of this purported recharge were captured by MPWSP slant wells, the slant well capture zone would prevent any sea water intrusion from occurring in the area of captured recharge. In addition, the captured recharge would be returned to the basin in proportion to its fresh water component.*
   2. New data substantiate AEM study findings of freshwater in DSA and upper 180-FT Aquifer. **HWG Response:** *See previous HWG documents/rebuttal (e.g., HWG, August 15, 2018, pp. 5-16), and note: 1) Standard used for freshwater in AEM study of 3,000 or 10,000 mg/L TDS constitutes brackish or saline water by any reasonable definition of fresh water, 2) The term "freshwater wedge" really means "sea water wedge", 3) Note reference only to "upper" 180-Foot Aquifer meaning even HGC admit lower 180-Foot Aquifer has sea water intrusion (i.e., a sea water wedge), 4) What HGC classifies as the Dune Sand Aquifer is really the perched/mounded aquifer inland of*

MW-7 and we would not expect it to have sea water intrusion (although it has other WQ impacts and low yield issues that make it unusable for water supply). It is also interesting to note that the "fresh" areas in the AEM study (2017) essentially are underlain by the newly developed irrigated fields (2016-2018). Note that water used to irrigate the fields is pumped from the Deep Aquifer and not the Dune Sand Aquifer or 180-Foot Aquifer, since water from these shallow aquifers cannot be pumped from the inland areas due to brackishness and without exacerbating sea water intrusion.

D. Conclusions
   1. New data show change in coastal conditions (return to normal conditions), which is important to groundwater management efforts mandated by law. **HWG Response:** *It is inaccurate to say 2018 represents "normal conditions" and 2015-16 were an aberration or will no longer occur – in fact, 2015-2016 conditions will be more common based on review of historical rainfall and with future climate change.*
   2. New groundwater model runs incorporating new data are required to evaluate nature/magnitude of MPWSP groundwater impacts. **HWG Response:** *There is no "new" data of significance in terms of changing the EIR analysis. See previous HWG submittals/rebuttal (e.g., HWG, August 15, 2018, p. 32) and EIR Team (Forsythe, et.al., September 12, 2018, pp. 16-17), but work done by Hydrometrics for MCWD under differing background gradient conditions shows sea water remains the primary source of water for intake wells (Hydrometrics, 2006).*
   3. Need to further evaluate feasible MPWSP alternatives and mitigation. **HWG Response:** *There is no new information to require such evaluation.*

2. EKI Presentation
   A. Slant wells draw groundwater from Dune Sand Aquifer and 180-Foot Aquifer as well as sea water. **HWG Response:** *This statement has had previous rebuttal responses and obfuscates what will actually happen, which is that MPWSP intake wells will induce sea water to flow from sea bed to the slant well intake screens through the DSA and 180-Foot Aquifer. The vast majority of the sea water extracted by intake wells will follow a direct path from the sea bed to the intake well screens. A much smaller portion of sea water follows a circuitous path outlined by the capture zone boundaries on much longer time frames. Under hypothetical net flat/seaward gradients, the vast majority of intake water still comes from the ocean, but a few flow paths come from inland under hypothetical seaward gradients. These inland flow paths will be long travel time flow paths due to the small gradient from inland under these hypothetical conditions (Hydrometrics, 2006). Even with respect to considering the minor contribution from inland flow paths under these hypothetical seaward gradient conditions, there is a net benefit to the basin by pulling the sea water intrusion front closer to the ocean.*
   B. EKI acknowledges there were landward gradients in DSA and 180-Foot Aquifer based on 2015 and 2016 data.
   C. EKI shows a capture zone for a seaward groundwater gradient that show zero contribution from the ocean. **HWG Response:** *See previous rebuttal, and note this graphic is inaccurate and ignores that fact that the ocean is a major recharge boundary.*

The vast majority of intake water will still be derived from the ocean, and the minor contribution from inland will serve to move the sea water intrusion front closer to ocean and benefit the basin.

D. CPUC approval based on assumption of landward gradients. **HWG Response:** *This statement is incorrect. The conclusions of the EIR's analysis were not predicated on landward gradients. As described elsewhere above, it is important to note the distinction between the net long-term gradients versus seasonal or year to year fluctuations in water levels and gradients. SGMA does not require seaward gradients or mitigation/restoration of past sea water intrusion (i.e., January 2015 is considered the benchmark, and restoration of basin to pre-2015 conditions is not required). Even assuming net flat/seaward hydraulic gradients are achieved at some future date note that: 1) Most intake water will still come from ocean, and the minor contribution of inland flow paths brings the sea water intrusion front closer to ocean and benefits the basin; 2) MPWSP slant wells will continue to act as a barrier to sea water intrusion further inland; 3) water quality impacts only occur along ocean water flow paths to intake wells (not entire capture zone in hypothetical case of seaward gradients).*

E. Fall 2018 groundwater level data confirm seaward gradients in the Dune Sand Aquifer under normal (non-drought) hydrologic conditions (showing transect using MW-1S, MW-3S, MW-4S, and MW-7S). **HWG Response:** *The Fall 2018 data, similar to Fall 2017 data, indicates that the Dune Sand Aquifer gradient is landward between the CEMEX monitoring wells and MW-8S, and locally seaward between the CEMEX monitoring wells and MW-7S. This is not new information (e.g., HWG, August 15, 2018, pp. 30-31). See also responses to HGC above, including the record wet year in 2016-2017. Use of the selected transect ignores the lower groundwater elevation at MW-8S, which has a lower elevation than MW-4S. We also note that EKI is essentially saying a very wet year is part of "normal hydrologic conditions", which is definitely not the case (see HWG, August 15, 2018, pp. 8, 29-31). In addition, it is important to consider vertical gradients near MW-7S given the conceptual model of groundwater flow from perched/mound aquifer above the FO-SVA migrating down into underlying 180-Foot Aquifer and flowing inland within that aquifer.*

F. Annual precipitation chart showing 4-year drought prior to 2015-2018 TSW operating period. **HWG Response:** *See previous rebuttal above (Item 1.A2) on the general topic of characterization of rainfall during 2015 to 2018 period. However, note that the chart in the presentation is based on Calendar Year precipitation but should be based on hydrologic Water Year (Oct. 1 to Sep. 30). This difference in Calendar Year vs. Water Year selectively mischaracterizes the 2016-2017 Water Year, which was very wet. Also, previous documents/rebuttal demonstrates 2015-2018 was an overall above average rainfall period (e.g.., HWG, January 4, 2018, p. 4; HWG, November 6, 2017, p. 46). In addition, EKI's chart shows that over the time period from 1983 to 2018 (36 years), there were 23 below average rainfall years and 13 above average rainfall years. Our further review of PRISM-based precipitation data for the Marina station shows that 62% of water years have below (arithmetic) average precipitation since 1895. The higher proportion of dry years occurs because extremely wet years (such as 2016-2017) tend to skew the arithmetic average rainfall to be higher. Thus, below average rainfall years are* *more common and long-term average conditions are better approximated by below average rainfall years such as occurred in 2014-2015.*

G. Charts showing drop in salinity in groundwater from MW-4S and MW-7S, and 2018 levels being below the "5,000 uS/cm Beneficial Use Standard". **HWG Response:** *See previous responses (Item 1.B5). However, note the following: 1) The results shown here are for conductivity measured by in-situ probes at a specific depth interval in a well that typically do not reflect overall salinity in the well screen interval; this issue is partially resolved by periodic collection of water quality samples for lab analysis and quantification in terms of both specific conductivity and TDS (in general, such data are more representative and have been showing considerably higher salinity in these wells); 2) Decreased salinity in some shallow wells (depending on site-specific geologic conditions) may be expected after very wet rainfall years and there will be some lag in concentrations going back up to more representative conditions as the fresher percolating precipitation is blended into and/or migrates out of the shallow aquifer system. Also, note that the definition of a 5,000 uS/cm beneficial use standard provides water with TDS in excess of 3,000 mg/L, which is clearly brackish water by any reasonable standard (typically greater than 1,000 mg/L or greater than 1,500 uS/cm is considered brackish water).*

H. Requirements of SGMA to achieve basin sustainability by 2040. **HWG Response:** *Like other issues discussed above and below, this is addressed in the EIR (e.g., CPUC, March 2018, pp. 8.2-31 to 8.2-36; Forsythe, et.al., September 12, 2018, pp.18-19) and also previous HWG rebuttal (e.g., HWG, August 15, 2018, pp. 33, 37). Some of discussion above also addresses this issue (e.g., hypothetical occurrence of long-term net flat hydraulic gradients). Part of previous rebuttal points out that MPWSP will actually be the equivalent of a potential implementation project under SGMA as a barrier to sea water intrusion.*

I. CPUC approval was based on assumption of landward gradients. New information regarding seaward gradients in DSA and requirements for SGMA compliance by 2040 contradicts CPUC's finding that seaward gradients will not be achieved during Project lifetime (60 years). **HWG Response:** *The overall discussion (in Forsythe, et.al., September 12, 2018) associated with the quote cited by EKI as part of the CPUC findings also addresses the possibility of flat and seaward hydraulic gradients. In addition, much of discussion above addresses these issues from a technical standpoint. EKI has not provided new information that affects the EIR's conclusions or the CPUC's findings.*

J. Recommendation to withhold slant well permits until additional modeling is completed to assess groundwater impacts from cumulative effects of slant well extraction and seaward gradients. **HWG Response:** *Responses to this recommendation are provided above. However, the bottom line is that there is no new information that requires additional modeling; and points brought up have been addressed both in EIR process and through HWG documents and comments/responses to HWG documents.*

3. MCWD Presentation

A. Historical maps lack data south of Salinas River. **HWG Response:** *MCWRA maps do map sea water intrusion south of Salinas River.*

B. No map is provided for the Dune Sand Aquifer. **HWG Response:** *Cal Am provided ongoing weekly and monthly water quality data for the MPWSP monitoring network. City of Marina and MCWD hydrogeology consultants have used the data to create misleading maps of sea water intrusion (or purported lack thereof) in the Dune Sand Aquifer and 180-Foot Aquifer.*

C. MCWD stated that sea water intrusion that is occurring is caused by over pumping and the goal of sustainable groundwater management is to address over pumping. **HWG Response:** *It should be noted that historical and current sea water intrusion has been and is caused by pumping from wells far inland of the proposed MPWSP slant wells. Furthermore, MPWSP slant wells will serve as a barrier to future sea water intrusion and could serve as a SGMA project to mitigate sea water intrusion.*

D. Current Conditions Summary

   1. Assumptions on maps have incorrect and/or missing data. **HWG Response:** *No specific maps are referenced and no examples or evidence are provided to support this statement. If anything, data/maps/analysis prepared by MCWD hydrogeologic consultants are selective and biased in the use of data (and therefore, are incorrect or missing data). The HWG and EIR Team provided access to data and model files used in the analyses.*

   2. AEM study confirmed unique recharge conditions south of Salinas River. **HWG Response:** *Previous HWG report/rebuttals and EIR Team addressed this issue; there is nothing unique about recharge south of Salinas River.*

   3. AEM confirmed sources of drinking water. **HWG Response:** *Previous HWG report/rebuttals and EIR Team addressed this issue; also, thresholds of 3,000 mg/L or 10,000 mg/L for TDS do not constitute drinking water.*

   4. Challenge is to manage basin through groundwater sustainability plans. **HWG Response:** *Previous HWG report/rebuttals and FEIR addressed this issue. The MPWSP will not hamper SGMA efforts to achieve basin sustainability and, if anything, will help reduce/mitigate sea water intrusion and provide an additional source of water to the local water supply.*

E. DSA gradient is actually seaward and 180-Foot Aquifer will become seaward during life of project due to SGMA. **HWG Response:** *See responses above; and note the following: 1) Importance of net long-term gradient vs. short-term fluctuations; 2) SGMA does not require a seaward gradient, and would likely be fortunate if it can approach a flat gradient; alternatively, sea water intrusion is sometimes addressed via a coastal barrier, which is how the MPWSP will function. Thus, future gradients 20+ years from now are hypothetical and speculative.*

F. Predicted capture zones impact is less than if seaward gradients were used. **HWG Response:** *This is addressed in responses above, and note: 1) Seaward gradients are not required under SGMA and are hypothetical/speculative; 2) under a hypothetical seaward gradient, water quality impacts are limited to ocean water flow paths and will not encompass remainder of capture zone, plus drawing water from inland will improve sea water intrusion by pulling the sea water intrusion front back towards ocean.*

G. MPWSP pulls in significant amount of "good" groundwater from Dune Sand Aquifer and 180-Foot Aquifer. **HWG Response:** *This statement is true only if "significant amount"* *equals less than 10 percent and the definition of "good" groundwater includes brackish water.*

H. Impacts related to capture zones.

1. Capture zone underestimates impacts by ignoring the seaward flow of Dune Sand Aquifer. **HWG Response:** *This is addressed in responses above.*

2. Inflowing saline water not captured by slant wells is drawn further inland, inducing saltwater intrusion inside and outside of the capture zone. **HWG Response:** *This is a false and very misleading statement because saline water flowing inland outside of capture zone occurs without the project. Furthermore, ocean water flowing inland without the project that is within the width of the capture zone will no longer flow further inland with implementation of the project; therefore, the MPWSP will result in a net benefit to basin sea water intrusion. The MPWSP will not cause more saline water to flow further inland than under current conditions.*

I. MPWSP is supplied entirely by coastal groundwater aquifers and sea water that is pulled into the groundwater basin to replace pumped out groundwater. **HWG Response:** *Note the following: 1) the proportion of sea water vs. "coastal groundwater" is about 90 percent to 10 percent; 2) coastal groundwater is best characterized as saline or brackish water.*

J. MCWD Service Needs

1. MCWD expects population and required groundwater supplies to more than double between 2015 and 2035, and MCWD supply plans are groundwater dependent. **HWG Response:** *Note the following: 1) the MPWSP will not have any significant impact on MCWD water supplies since the primary MPWSP intake source is from the ocean with approximately 10 percent or less from brackish/saline water sources; 2) it seems irresponsible and unrealistic for MCWD to think they can double their extraction of fresh groundwater (defined as TDS less than 1,000 mg/L) from the groundwater basin without inducing further sea water intrusion (including in the Deep Aquifer from which much of their pumping currently occurs), and likely would have to go back to an ocean water desalination project like that to which they previously sought approvals.*

2. Model and other analyses did not use MCWD's Urban Water Management Plan. **HWG Response:** *It is not clear what specific information should have been incorporated that was not.*

3. Model and other analyses did not use Ford Ord Base Reuse Plan. **HWG Response:** *It is not clear what specific information should have been incorporated that was not. Fort Ord groundwater studies/data were incorporated into HWG analyses provided to the CPUC.*

4. Model and other analyses did not analyze/recognize MCWD's water supply projects/programs. **HWG Response:** *It is not clear what specific information should have been incorporated that was not.*

K. Summary and Conclusions

1. Seaward flow of groundwater in Dune Sand Aquifer underestimates capture zone impacts. **HWG Response:** *See responses above.*

2. MPWSP will capture “good” groundwater, cause sea water intrusion, and will destroy health of basin. **HWG Response:** *See responses above; MPWSP will be neutral or help improve health of basin. It should also be noted that the basin is not “healthy”, given it has sea water intrusion from the coast extending inland to the City of Salinas.*
3. MPWSP defeats groundwater sustainability efforts and eliminates planned water projects that depend on a healthy basin. **HWG Response:** *See responses above; MPWSP will be neutral or help improve basin.*
4. MPWSP destroys other water management efforts. **HWG Response:** *No specific examples were provided, but this is an inaccurate statement.*

4. Other Comments in Letters/Memo
    - *A.* HGC Letter (Hopkins Groundwater Consultants, January 7, 2019)
        1. The Letter states, “…the seaward gradient that was created between MW-7S and MW-4S has caused migration of the freshwater/salt water interface to move toward the shoreline in the Dune Sand Aquifer. The result is an increase in freshwater…from MW-4S as indicated by the reduction in specific conductance values (from approximately 11,000 to 2,000 micro-siemens per centimeter) in the well at the probe depth in the middle of the screen.” (page 4). **HWG Response:** *No evidence is provided by HGC for movement of the freshwater/salt water interface in the Dune Sand Aquifer. As described elsewhere in this response, lab TDS data for MW-4S (which is more representative of overall aquifer water quality) remains elevated at approximately 8,000 mg/L. This is not new information that affects the EIR’s conclusions.*
        2. The Letter states, “As a result of the seaward gradient that exists in the Dune Sand Aquifer, the project will capture much of the freshwater that is presently recharging the underlying aquifers.” (page 6). **HWG Response:** *This issue has been addressed multiple times in this response document and in previous documents provided to the CPUC.*
        3. The Letter states the effects of a seaward gradient in the Dune Sand Aquifer were not simulated in the $NMGWM^{2016}$ (page 6). **HWG Response:** *This statement is irrelevant to the EIR analysis because the groundwater modeling conducted by the EIR Team does not rely on use of a particular background regional hydraulic gradient.*
        4. The Letter states there is a potential datum error in Monterey Peninsula Landfill groundwater elevation data. (pages 6 and 7). **HWG Response:** *This issue is still under investigation at time of this submittal. However, it doesn’t change the groundwater elevations for MPWSP monitoring network wells and associated groundwater contours and gradients derived from that data.*
    - *B.* EKI Memo (EKI, January 8, 2019)
        1. Measured groundwater elevation data used by EKI in Figures 3 and 4 were “corrected for density” (page 3). **HWG Response:** *Measured groundwater elevation data does not need to be (and should not be) corrected for density, which is already reflected in measured data.*
        2. The memo states, “…estimated TDS concentrations in groundwater at well MW-4S (1,177 mg/L) and well MW-7S (558 mg/L) in the fall 2018 are less than 4% of TDS concentrations in sea water and are well below 3,000 mg/L.” (page 3). **HWG**

Response: *Lab TDS data show TDS of 8,300 mg/L for MW-4S and 1,310 mg/L for MW-7S in Spring 2018. TDS at both locations are well above recommended and maximum drinking water standards of 500 mg/L and 1,000 mg/L, despite recent influences from a record wet year in 2016-17.*

3. The memo states, "The data presented from Fall 2015 and Spring 2016 were used by the Project to support the FEIR/EIS modeling effort, which assumed that landward gradients are consistently present in these wells near the coast." (page 3), and "new data obtained in 2018, demonstrate that this critical modeling assumption is incorrect…" (page 4). **HWG Response:** *As explained elsewhere in this response document and previous EIR Team documents, groundwater modeling conducted for the EIR does not utilize specific background regional gradients because it is superposition modeling.*

4. The memo refers to release of draft chapters 1 through 4 of Salinas Basin GSP, and states, "SVBGSA's articulation of its basin-wide approach in these recent documents and agreements with DWR directly contradicts CPUC's finding that seaward gradients will not be achieved under SGMA during the Project's lifetime because basin-wide efforts are not being employed." (pages 5 to 7). **HWG Response:** *Based on our Initial review of Draft GSP Chapters 1 through 4, the document makes no reference to establishing seaward gradients in the future as part of the GSP process.*

C. Remy/Moose/Manley Letter (Remy/Moose/Manley, January 8, 2019)

1. In reference to the FEIR, the Letter states, "…its modeling and analysis substantially underestimated the MPWSP's potential groundwater impacts." (page 1). **HWG Response:** *If anything, the FEIR may have overestimated potential groundwater impacts, particularly in the Dune Sand Aquifer, because the model assumes pumping impacts could occur in the perched/mounded aquifer (which is effectively not possible due to its hydraulic disconnection from the Dune Sand Aquifer).*

2. The Letter states, "…significant new information that became available after the CPUC certified the Final EIR and approved the MPWSP…Based on this new information, CEQA mandates the City prepare a subsequent or supplemental EIR." (pages 1 and 2). **HWG Response:** *The CPUC certified the FEIR in September 2018. Weekly and monthly MPWSP monitoring reports were made available on its website through the end of October 2018. As discussed throughout this response letter, no significant new information or substantial change in circumstances that alters the FEIR analysis has become available since FEIR certification.*

Additional Discussion and Summary of Major Topics Raised by HGC/EKI/MCWD

1. Salt Water Intrusion in Dune Sand Aquifer

A. Water quality data provides evidence of historical/current sea water intrusion

1. See discussion in HWG Report (November 6, 2017), pp. 73-74:

"Three of the MPWSP monitoring wells demonstrate the presence of elevated calcium and chloride that is typical of early to middle stage sea water intrusion, including MW-6M (L), MW-7S, and MW-7M. Other MPWSP monitoring wells demonstrate later stage sea water intrusion dominated by elevated sodium and chloride, including MW-1S, MW-1M, MW-3S, MW-3M, MW-4S, MW-4M, MW-8S, MW-8M, MW-9S, and MW-9M. Stiff diagrams are included in Appendix F."

2. Review of 2015 to 2018 monitoring well water quality data (chloride and TDS). Slight increases in chloride/TDS concentrations were observed in monitoring wells MW-3S, MW-7S, and MW-8S between 2015-2018, whereas slight to modest declines in chloride/TDS concentrations were observed in MW-4S and MW-9S during this time period. These results indicate no consistent trend of increasing or decreasing regional chloride/TDS concentrations in the Dune Sand Aquifer over the 2015-2018 time period.
3. Overall, monitoring well water quality data demonstrate significant historical/current sea water intrusion in the Dune Sand Aquifer. These water quality conditions demonstrate that the net average historical/current hydraulic gradients must be inland to result in the observed water quality at these well locations. This evaluation of water quality data as evidence of sea water intrusion in the Dune Sand Aquifer can be looked at somewhat independently from groundwater level data to derive conclusions regarding historical/current sea water intrusion in the Dune Sand Aquifer.

B. 2018 Monitoring Well Groundwater Level and Water Quality Data

1. The 2018 monitoring well data generally reflect a continuation of levels/concentrations observed during 2017, and the data/information presented at the City of Marina January 2019 Workshop are not new information. For example, HGC has commented on numerous occasions regarding higher water levels being observed in MW-4S and MW-7S beginning in the 2016-17 water year, and purported implications regarding landward vs. seaward gradients (see HGC, 2016, pp. 5-6; HGC, 2017a, pp. 1-2, 5-8; HGC, 2017b, p. 23-23, 32-33; HGC, 2018, pp. 14-28). All of this information was submitted to the CPUC for consideration as part of the EIR/EIS analysis.

C. Potential Occurrence of Flat and/or Seaward Hydraulic Gradients

1. HGC and EKI have previously presented information and comments regarding potential for flat and/or seaward hydraulic gradients on numerous occasions (see HGC references above in Item 1.B.1; EKI, 3/28/17; 4/17/18). The data/information presented in January 2019 City of Marina Workshop repeats data/information presented in these previous documents dating back to at least January 2016.
2. The HWG has addressed this topic in previous submittals including: HWG, January 4, 2018; HWG, August 15, 2018.
3. This topic was addressed in the EIR, including in responses to comments, and by the EIR Team in previous submittals including: September 12, 2018.
4. Various HWG and EIR documents (and HGC, 2016) reference a previous study performed for a proposed MCWD desalination project (Hydrometrics, 2006). This study modeled two vertical wells located 800 feet from the coast as intakes for source water for a proposed desalination plant. These modeling study results are more conservative (i.e., demonstrate greater impacts to inland areas) than would occur with the proposed MPWSP slant wells, which have screens closer to the ocean shoreline and sea bed. Nonetheless, the study demonstrates that under flat gradient conditions all water flowing into the wells is ultimately sourced from the ocean. Furthermore, the study shows that, even under seaward gradient conditions, the vast majority of flowlines to the wells originate from the ocean and the ocean sourced flow lines have much shorter travel times to the intake wells than inland flowlines. The study further demonstrates that the intake wells have an overall neutral to beneficial impact on inland sea water intrusion.

5. Overall, the potential for current/future flat to seaward gradients has been addressed previously by both the HWG and the EIR Team. It is important to note that capture zones under any gradient scenario must reflect the ocean as a recharge boundary to provide an accurate representation of site conditions (most of the capture zone analyses and related discussion presented by Marina/MCWD hydrogeologists ignores the presence of the ocean as a recharge boundary).

D. Monterey Peninsula Landfill Monitoring Well Datum

1. Initially, water levels at the Monterey Peninsula Landfill were converted to the NAVD88 datum used by MPWSP monitoring well network to allow for incorporation of additional groundwater level data in the region. However, discussions with the engineers[1] that provide quarterly monitoring reports for the landfill note that there is no certainty as to the datum that was used to develop the monitoring well reference point elevations. There has been some discussion between the landfill site engineer and the landfill survey company that the datum may be close to NAVD88.

2. It remains possible that a correction in the landfill monitoring well datum is needed, and would result in higher elevations at those locations. If so, it may have some implications for Dune Sand Aquifer gradients. In fact, if the landfill monitoring well datum is NAVD88 as postulated by the landfill staff, then the recent higher groundwater levels at MW-7S would indicate a groundwater divide with a landward gradient towards the landfill. In either case, it won't change local Dune Sand Aquifer levels/gradients closer to coast in CEMEX and surrounding areas encompassed by monitoring wells MW-3S, 4S, 7S, 8S, and 9S, which has been considered in the EIR analysis.

[1] Personal communication with Mr. Richard Mitchell, RMC Geoscience.

Sincerely,

The Hydrogeologic Working Group (Dennis Williams, Tim Durbin, Martin Feeney, Peter Leffler)

Dennis Williams

Tim Durbin

Martin Feeney

Peter Leffler

References

EKI, *Comments Regarding California America Water Monterey Peninsula Water Supply Project Draft Environmental Impact Report/Environmental Impact Statement, Released 13 January 2017*, prepared for Marina Coast Water District, March 28, 2017.

EKI, *Response to California America Water Monterey Peninsula Water Supply Project Final Environmental Impact Report/Environmental Impact Statement, Released March 2018*, Memorandum prepared for Marina Coast Water District, April 17, 2018.

EKI, *New Information Contradicting Conclusions by the California Public Utilities Commission Regarding California American Water Monterey Peninsula Water Supply Project*, Marina Coast Water District, California, prepared for Marina Coast Water District, January 8, 2019.

CPUC, *CalAm Monterey Peninsula Water Supply Project, Final Environmental Impact Report/Environmental Impact Statement, SCH# 2006101004*, March 2018.

Hopkins Groundwater Consultants, *Cal-Am's Return Water Proposal for Monterey Peninsula Water Supply Project*, prepared for Marina Coast Water District, January 22, 2016.

Hopkins Groundwater Consultants, *CalAm Monterey Peninsula Water Supply Project, Draft Environmental Impact Report/Environmental Impact Statement, prepared for California Public Utilities Commission and Monterey Bay National Marine Sanctuary, January 2017*, prepared for Marina Coast Water District, March 29, 2017a.

Hopkins Groundwater Consultants, Monterey Peninsula Water Supply Project Return Water, prepared for Marina Coast Water District, September 29, 2017b.

Hopkins Groundwater Consultants, *CALAM Monterey Peninsula Water Supply Project Final Environmental Impact Report/Environmental Impact Statement SCH# 20061012004*, March 2018, prepared for Marina Coast Water District, April 17, 2018.

Hopkins Groundwater Consultants, *New Information For Consideration by California Public Utilities Commission Regarding CALAM Monterey Peninsula Water Supply Project*, prepared for Marina Coast Water District, January 7, 2019.

The Hydrogeologic Working Group, *HWG Hydrogeologic Investigation Technical Report*, November 6, 2017.

The Hydrogeologic Working Group, *Memorandum Responding to Comments on HWG Hydrogeologic Investigation Technical Report*, January 4, 2018.

The Hydrogeologic Working Group, *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.

Hydrometrics, *Preliminary Modeling Results for the MCWD Desalination Intake*, Draft Technical Memorandum, Prepared for Martin Feeney, 2006.

John E. Forsythe – Energy Division, MPWSP CEQA/NEPA Team, CPUC Legal Division, *Responses to Comments Received After Publication of MPWSP Final EIR/EIS*, Memorandum prepared for CPUC Commissioners and ALJs, September 12, 2018.

Remy/Moose/Manley LLP, *Monterey Peninsula Water Supply Project Coastal Development Permit*, prepared on behalf of Marina Coast Water District for Honorable Mayor, City Council and Planning Commission Members, City of Marina, January 8, 2019.

EXHIBIT D

April 12, 2019

Honorable Mayor, Members of the City Council, and Members of the Planning Commission
211 Hillcrest Avenue
Marina, CA 93933
Attn: Christy Hopper, Planning Services Manager and Deborah Mall, Deputy City Attorney
chopper@cityofmarina.org; planning@cityofmarina.org; attys@wellingtonlaw.com

SUBJECT: 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

Dear Mayor Delgado, and Members of the City Council and Planning Commission:

This letter provides the responses of the Hydrogeologic Working Group (HWG) to Remy Moose Manley (RMM) Letter attachments prepared by three Marina Coast Water District (MCWD) consultants: Hopkins Groundwater Consultants (HGC), EKI, and the Aqua Geo Frameworks (AGF) for the City of Marina Planning Commission Hearing Agenda Item #6a on February 14, 2019. The comments raised by HGC, EKI, and AGF either were raised and addressed in the California Public Utilities Commission (CPUC) proceedings or could have been. Further, MCWD consultants raise nothing new of significance that affects the analyses of the Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS) or the CPUC's conclusions.

EXECUTIVE SUMMARY

The technical comments in the letters/technical memorandums (TMs) from HGC, EKI, and AGF submitted during the February 14, 2019 City of Marina hearing center around three main topic areas: Dune Sand Aquifer (DSA) hydraulic gradients, the aerial electromagnetic (AEM) study results, and the Sustainable Groundwater Management Act (SGMA) and associated Groundwater Sustainability Plan (GSP). Our high-level summary comments on materials and information presented by MCWD consultants are provided below, with a detailed comment response section following this Executive Summary.

HWG summary responses to comments made in the February 14 submittal of MCWD consultant comments related to DSA gradients are:

- The HWG already addressed most of the February 14 information and comments about potential for seaward DSA gradients in our January 25, 2019 response to MCWD/consultant presentations/letters/TMs provided at the January 8, 2019 meeting;
- Groundwater level data collected in the Monterey Peninsula Water Supply Project (MPWSP) wells in 2018 are not new and different compared to previous groundwater level data;

- Contrary to MCWD consultant characterization of calendar or water years as very dry to normal based on use of a single City of Salinas climate station, HWG review of six other nearby climate stations shows water years 2015/2016 combined were above normal rainfall and water years 2017/2018 combined were well above normal rainfall;
- Net long-term hydraulic gradients are more important than seasonal and year-to-year fluctuations; previous geochemical analyses documented historical/current seawater intrusion impacts in the Dune Sand and 180-(FTE) aquifers;
- Even under a hypothetical future scenario of reversed (seaward) gradients, groundwater quality impacts from seawater flowing to MPWSP wells within the capture zone (i.e., ocean water replacing existing brackish water) will be equal to or reduced in inland extent compared to the historical/current landward gradient scenario;

HWG responses to comments made in the February 14 submittal of MCWD consultant comments related to the AEM study are:

- The HWG already addressed most of the February 14 information and comments about the AEM study in our January 25, 2019 response to MCWD/consultant presentations/letters/TMs provided at the January 8, 2019 meeting and our March 6, 2019 response to Dr. Knight's letter;
- The AEM study conducted in the Marina area did not identify or quantify occurrence of fresh water;
- A total dissolved solids (TDS) value of 3,000 milligrams per liter (mg/L) correlates to a chloride value greater than 1,000 mg/L in the Marina area; thus, no comparison of AEM study results should be made with Monterey County Water Resources Agency (MCWRA) seawater intrusion mapping, which uses 500 mg/L as its threshold;
- There are major challenges and uncertainty in trying to interpret inverted AEM data simultaneously for both lithology and salinity;
- While the AEM study makes an attempt to resolve inverted AEM data relative to salinity (with mixed results), there was essentially no attempt to develop and apply AEM data correlations to lithology;
- The AEM study only uses seven boreholes (within the Marina AEM flight line area) with lithologic logs, borehole geophysical logs, and water quality data for calibration of inverted AEM data, which is insufficient to calibrate the AEM data;
- The AEM study depth of investigation was limited to 50 meters (165 feet) near the coast (i.e., did not reach the 180/400-Foot Aquitard and 400-Foot Aquifer);
- HWG review indicates that attempts by AGF (and others) to correlate inverted AEM resistivities to chloride and/or TDS to demonstrate occurrence of claimed gaps in the 180/400-foot Aquitard are incorrect and not valid;

- In general, the MPWSP will reduce any potential flow from the 180-FTE Aquifer to 400-Foot Aquifer because heads will be reduced in the 180-FTE Aquifer but not at all (or very minimal) in the 400-Foot Aquifer.
- The Fort Ord monitoring data is not "new" as it has been collected from the same wells for many years, remains consistent over time, and is not located in the potential MPWSP impact area.

HWG responses to comments made in the February 14 submittal of MCWD consultant comments related to SGMA are:

- The HWG already addressed most of the February 14 information and comments about SGMA in our January 25, 2019 response to MCWD/consultant presentations/letters/TMs provided at the January 8, 2019 meeting;
- MCWD consultant claims that SGMA requires reversal of hydraulic gradients <u>are incorrect</u>;
- A groundwater extraction barrier is a viable solution to the seawater intrusion issue discussed in the GSP; in addition, expansion of the partial seawater intrusion barrier that would be created with implementation of the proposed MPWSP project also remains an option.

HWG responses to comments made in the February 14 submittal of MCWD consultant comments related to other topics not covered above include:

- Claims that the MPWSP will somehow harm or destroy existing MCWD sources of groundwater <u>are completely invalid</u>, as the MPWSP will not extract water from the 400-Foot and Deep Aquifers;
- Most of the comments by MCWD consultants are tied to their hypothesis that a significant body of usable potable/fresh groundwater exists inland of the CEMEX property and MPSWP project location, which would be impacted by the proposed MPWSP project. This is simply not the case (both the existence of said developable fresh water bodies and impacts to claimed hypothetical fresh water from the proposed MPWSP) as documented repeatedly by the HWG in various reports and letters, and also as documented by the MCWRA and the CPUC EIR Team in various other documents.

More specific and detailed responses to MCWD's consultant comments submitted at the February 14 City of Marina hearing are provided below.

Detailed Responses to Attachments

1. HGC Letter (February 14, 2019)

    A. HGC refers to the belief of others that the area south of Salinas River was fully intruded with seawater (Page 2).

       HWG Response: *This has been stated by HGC and responded to previously; but again, no one stated previously (or believed) that this area was fully intruded with sea water as it* *only takes a very small percentage of seawater (approximately 2%) to render groundwater non-potable and unusable. Therefore, claims of the area not being fully intruded or having only a small percentage of sea water (e.g., 5%) are misleading and meaningless, because it indicates that the water has salinity levels rendering it non-potable and unusable due to sea water intrusion.*

B. HGC refers to the area south of Salinas River as having hydrogeologic conditions very different from the area north of Salinas River (Footnote 1: Pages 1 and 2).

HWG Response: *As described in detail in the HWG Report (November 2017), while there are some differences in geologic depositional environments the aquifers and aquitards are continuous/connected beneath the Salinas River and there are no hydraulic barriers to horizontal groundwater flow. Also, the proposed project does not pump 27,000 AFY; but rather the proposed project pumps approximately 17,400 AFY.*

C. HGC makes various comments on the groundwater model used in the Final Environmental Impact Report (FEIR) (Page 2).

HWG Response: *These comments present no new information and were addressed in the FEIR.*

D. Comments about changes in Dune Sand Aquifer groundwater gradients (Page 3).

HWG Response: *This issue was addressed in our January 25, 2019 letter. Also, we note that HGC admit they raised the same issue previously in comments on the EIR/EIS; so again, none of this constitutes new information.*

E. HGC makes comments about HWG members (Footnote 2, Page 3).

1. HGC states that, "…HWG members have varied throughout project development and field testing and over the course of the EIR study process."

   HWG Response: *This statement is completely inaccurate; the HWG members have remained the same throughout the HWG's existence.*

2. HGC states with regard to Mr. Feeney and Mr. Durbin, "It may be that this affiliation and perhaps even anticipation of continued or future work with Cal-Am has influenced the perspective of the HWG on this project."

   HWG Response: *Whereas we have serious concerns and disagreement with the professional opinions of the consultant team for MCWD, we would never impugn their motivation for their opinion. California Code Title 16 Division 29, 3000-3067 Section 3065 presents Professional Standards and Code of Professional Conduct. We* *quote " A licensee shall not falsely or maliciously attempt to injure, impugn, or injure the professional reputation or business of others." HGC's comment suggests that our motivations are informed by economic consideration. We find this counter to the Code of Ethics and offensive.*

Mr. Durbin and Mr. Feeney are not beholden to Cal-Am in any way. Hydrogeologic consultants work for many different clients over their lifetimes, and it is a violation of professional ethics to impugn their reputation by implying they are biased if they ever worked for Cal Am. Mr. Feeney has done considerable work for MCWD in the past, so one could argue Mr. Feeney is biased towards MCWD's interests as well. Mr. Durbin previously opposed Cal Am near the beginning of this very same process prior to all the additional field data collected and analyses performed by HWG over the last five years, which are the basis for his current opinions. Furthermore, Mr. Durbin is in the process of closing his business and planning his retirement, which should suggest no interest in future work with CalAm.

F. HGC characterizes rainfall over the 2013 to 2018 time period as very dry to normal (Pages 6 to 8).

HWG Response: *There are six climate stations in the MPWSP vicinity for comparison to the station used by HGC, as summarized in **Table 1**. As is apparent from review of **Table 1**, HGC has cherry-picked the climate station with the least rainfall compared to normal during the 2015 to 2019 period. Review of all stations shows that the combination of water years 2015 and 2016 were slightly above normal and the combination of water years 2017 and 2018 were well above normal. Water year 2017 was clearly one of the wettest on record. Thus, various statements about 2018 water levels representing average conditions and previous years being drought conditions are inaccurate. In fact, the entire 2015 to 2018 period is cumulatively well above average for rainfall.*

G. HGC makes comments about the southern boundary of (NMGWM)^{2016} domain (Page 9).

HWG Response: Groundwater model comments were previously addressed in the FEIR. The HWG notes that these comments are not relevant to the superposition version of the *NMGWM^{2016} used by the CPUC EIR Team. Furthermore, what is occurring in the perched/mounded aquifer at the southern end of the groundwater model domain (approximately four miles from proposed MPWSP intake wells) has no material impact on model results relative to predicted project impacts.*

H. HGC makes reference to a unique source of recharge (Pages 11-12).

HWG Response: *This argument has been made many times before by HGC and has been previously responded to by HWG (HWG, August 2018; HWG, January 2019). Again, there is nothing unique about recharge to the perched/mounded aquifer and such recharge is accounted for in HWG analyses.*

I. HGC makes comments about fresh water being present in the project vicinity (Pages 13-15).

HWG Response: *This argument has been made many times before by HGC and has been responded to by HWG (HWG, August 2018). The AEM study utilizes an improper standard of 3,000 mg/L TDS to define fresh water (i.e., source of drinking water), whereas the standard definition of freshwater is less than 1,000 mg/L TDS. Therefore, the AEM study does not delineate fresh water, but rather attempts to delineate areas of brackish water. In addition to our previous responses, we note that <u>even other AEM studies define fresh water as TDS < 1,000 mg/L</u>, brackish water as 1,000 to 10,000 mg/L, and saline water as TDS > 10,000 mg/L (Levi, et. al., 2008).*

J. Figure 4 (Page 13).

1. Top portion of Figure 4. HGC shows an AEM profile from the Preliminary AEM Report, for which the HWG had overlaid the stratigraphy in its November 2017 report. HGC added arrows showing his interpretation of hypothetical groundwater flow paths.

   HWG Response: *HGC shows an outdated (and subsequently modified AEM profile due to previous HWG comments) AEM profile that displays the unsaturated zone as containing lower salinity groundwater. HGC carries this error further showing a groundwater flow arrow in the unsaturated zone on this profile. Using the information on the incorrect figure, showing the darker blue color representing higher inverted apparent resistivity in the unsaturated zone, provides support to the HGC's opinion as to the magnitude of freshwater recharge to the underlying 180-FTE Aquifer. In fact, it is interesting to note that the perched/mounded aquifer saturated zone in this profile has groundwater of lower inverted apparent resistivity (i.e., implication being it is more saline, although as is true for the entire AEM study, it is difficult to distinguish salinity from lithology) than is present in topmost portion of the underlying 180-FTE. Once the unsaturated zone is eliminated from this figure (see same profile provided in Final AEM Report), it is apparent that mixing of groundwater from the perched/mounded aquifer cannot account for lower salinity groundwater in the topmost portion of the underlying 180-FTE Aquifer. In reality, the explanation is that there is a seawater intrusion wedge in the underlying 180-FTE with lower salinity groundwater overlying higher salinity groundwater within the aquifer, which is exactly what would be expected in a sea water intruded area.*

2. Top portion of Figure 4. HGC shows an arrow pointing downward across the 180/400-Foot Aquitard in the vicinity of MW-7. (Page 13).

   HWG Response: *There are a few important points to discuss here, some of which are illustrated on the attached **Figure 1**. First is that the depth of investigation (DOI) near the coast was limited and did not extend to or through the 180/400-Foot Aquitard or into the underlying 400-Foot Aquifer (see page 13 and Figures 4 and 5 from Final AEM Report). Therefore, the inverted apparent bulk resistivity shown for 180/400-Foot Aquitard and 400-Foot Aquifer west of MW-7 (to the left of MW-7 on the figure) is unknown and should not even be shown on this profile (i.e., the AEM imaging of the 400-Foot Aquifer west of MW-7 is invalid). Second, we note that even attempts to extend apparent inverted bulk resistivity below the DOI in MW-1 and MW-4 (Figures 4 and 5 of Final AEM Report) do not match particularly well with the lower borehole resistivity (implying higher salinity, although not accounting for lithology) in the top of the 400-Foot Aquifer. Third, there is no calibration of AEM data to the 400-Foot Aquifer in this area even where MPWSP borehole data and well data are available. This is due to a combination of the limited DOI west of MW-7 and the fact that MPWSP borehole well data only penetrate the upper 50 feet of the 400-Foot Aquifer throughout the area. Finally, review of field/lab based TDS/chloride concentrations in the upper portion of the 400-Foot Aquifer (MW-1D, MW-3D, MW-4D, MW-7D) show highest salinity at the coast and gradually decreasing salinity inland (from about 31,000 mg/L TDS and 17,000 mg/L chloride at the coast to about 27,700 mg/L TDS and 13,700 mg/L chloride at MW-7D). These water quality data from MPWSP monitoring wells in the 400-Foot Aquifer stand in direct opposition to interpreted AEM data for the 400-Foot Aquifer (shown in HGC Figure 4), which shows lower salinity at the coast and increasing salinity inland to MW-7D and further inland (see attached **Figure 1**). From a practical perspective, this (AEM data interpretation) can't be correct because salinity would not be greater further inland and away from the coast when seawater is clearly entering the aquifer from the seabed. Thus, monitoring well data proves the inverted AEM data interpretation is flawed and invalid in the 400-Foot Aquifer where HGC shows a flow arrow crossing the 180/400-Foot Aquitard in Figure 4.*

3. Lower portion of Figure 4. HGC circles two areas of purported gaps in the Fort-Ord Salinas Valley Aquitard (FO-SVA) (i.e., clay layer beneath perched/mounded aquifer), and one area of purported gap in the 180/400-Foot Aquitard. (Page 13).

   HWG Response: *Although this particular cross-section actually lacks sufficient data to fully define the presence/absence of a gap in the perched/mounded aquitard in the area circled by HGC on the upper western portion of the section (as demonstrated by question marks), neither the HWG nor anyone else ever claimed* *there was necessarily a continuous clay layer underlying the entire perched/mounded aquifer. In terms of the lower western portion of the section circled by HGC for the 180/400 Aquitard, review of available data does not indicate a gap in the aquitard based on consideration of all available lithology, water level, pumping test, and water quality data. As noted by HWG before, regardless of potential for gaps in the 180/400-Foot Aquitard, the reduction of heads in the 180-FTE from pumping of the proposed MPWSP will actually decrease downward vertical flow from the 180-FTE to underlying 400-Foot Aquifer due to a lower vertical downward gradient.*

K. Comments about HGC accounting for the ocean as a recharge boundary (Page 14).

HWG Response: *HGC refers here to the ocean as a recharge boundary only in the context of being the source of salinity for sea water intrusion under ambient conditions (i.e., not in relation to MPWSP pumping). Our comments on this topic have been with respect to the cone of depression and capture zones related to proposed MPWSP pumping, which remain unaddressed by HGC and other MCWD/Marina consultants.*

L. HGC states, "The rate of fresh water recharge appears to be approximately equal to the rate of seawater intrusion into the shallow aquifer zones. This balance has caused the denser salt water to move downward through the 180-400-Foot Aquitard into the 400-Foot Aquifer inland of the Project Area (see Figure 4)." (Page 14).

HWG Response: *Although HGC acknowledges here that seawater intrusion is occurring in the shallow aquifers, <u>no data or analysis is provided to support the statement that fresh water recharge is equal to the rate of seawater intrusion</u>. Furthermore, as demonstrated elsewhere (see items 1.J.2 and 3.F.7), HGC's groundwater flow arrow* across the 180/400-Foot Aquitard <u>is based upon inaccurate</u> AEM data interpretation.

M. Discussion of MW-7 and Figure 5 (Pages 14-15).

1. HGC refers to previous HWG statements about MW-7 borehole data that were in the HWG Technical Report (November 2017), regarding comparison of water quality in MW-7S to AEM resistivity values at elevation -20 meters in the Stanford AEM profile (from their August 2017 public presentation) that included a resistivity scale/legend where resistivity values were labeled "Saline" and "Fresh".

   HWG Response: *First, HWG notes that at the time of preparation of our Technical Report, the only available AEM information for HWG review was from the Stanford presentation on Preliminary AEM results (i.e., despite its earlier date of June 16, 2017, the Preliminary AEM Report had not yet been made available for HWG/public review). Regardless of whether the log resistivity value is closer to 1.5 or 2 ohm-m,* *the associated TDS value of approximately 215 mg/L (compared to the 68 mg/L stated previously) makes no material difference to the point of that discussion in the HWG Technical Report, i.e., that the profile in the Stanford Preliminary AEM Results presentation misrepresented (and implied) the resistivity scale as being groundwater resistivity by its labeling using the words "Saline" and "Fresh".*

2. HGC states borehole geophysics indicates groundwater quality in the unscreened zone from 95 to 125 feet below ground surface (bgs) must be of lower TDS (less than 1,200 mg/L) than MW-7S zone screened from 60 to 80 feet bgs.

   HWG Response: *We note that there is no available water quality data to document the actual water quality of this unscreened zone; thus, HGC's comment is speculation to begin with. In fact, this is one of our points about the challenge of calibrating inverted AEM data to zones between screened monitoring well intervals. Also, the 95 to 125 foot depth interval is within the upper portion of the 180-FTE and it would not be surprising if this zone were of lower salinity due to it being part of a sea water intrusion wedge.*

3. HGC states, "The groundwater elevations observed in MW-7S at over 8 feet above mean sea level (NAVD88) are sufficient to impede salt water intrusion to depths of up to 200 feet."

   HWG Response: *First, it is clear from monitoring reports that sea water intrusion already exists in MW-7M at depths much shallower than 200 feet. Second, given that groundwater elevations in MW-7M are below sea level, it is clear that heads in MW-7S are* irrelevant to and won't prevent sea water intrusion in the 180-FTE.

N. HGC states, "…the groundwater recharge for the aquifers in this area of the basin is enhanced by inflow from the semi-perched DSA and recharge from the Salinas River, which along with pumping restrictions, has either slowed or reversed seawater intrusion in the shallower aquifers in the project area." (Page 16).

HWG Response: *This statement is not new and has been addressed by HWG before. First, it is important to note that essentially nothing has changed about local recharge from the time before seawater intrusion began until today, and nothing will change regarding recharge in the future related to proposed MPWSP pumping. The fact that local recharge is insufficient to prevent or slow sea water intrusion is well established fact based on historic/current sea water intrusion.*

O. HGC states, "While the DSA is not directly a major source of groundwater to historical production wells, it is locally a major source of freshwater supply to the underlying aquifers from which most wells produce." (Page 16).

HWG Response: *First, as stated above – there will be no impacts to natural recharge mechanisms related to the proposed project. Second, as evaluated in the FEIR, there are no production wells in the underlying 180-FTE Aquifer anywhere near the MPWSP. Third, the whole concept expressed here* *<u>is one of several red herrings put forth by HGC</u>. HGC keeps raising issues that are of* *<u>no practical significance</u>* *to the proposed MPWSP project, and neglects to acknowledge that MCWD can pursue the same projects (even if any patches of truly fresh water really did exist) with or without the MPWSP.*

2. EKI Memo (February 13, 2019)

   A. EKI claims that their memo, "…provides critical new and existing information that demonstrates substantial changes to the Final Environmental Impact Report/Environmental Impact Statement…" are needed. (Page 1)

   HWG Response: *The HWG and CPUC EIR Team have separately addressed EKI comments in previous documents. EKI repeats many of their previously responded to comments in this February 2019 memo. Nonetheless, HWG provides a few additional responses to comments below.*

   B. Under Item 2, EKI makes several statements regarding Fort Ord data and groundwater levels/quality in the shallow aquifers.

   1. EKI states that, "…HWG…characterize all groundwater within the vicinity of the Project as brackish…because of seawater intrusion…They dismiss the findings of the…AEM Study…which shows that significant quantities of water with less than 3,000 milligrams per liter…TDS exist in the Dune Sand Aquifer and Upper-180 Foot Aquifer." (Page 3).

   HWG Responses: *EKI fails to mention that by only attempting to characterize groundwater with up to 3,000 mg/L TDS, the AEM study only attempts to define areas of brackish water with TDS up to 3,000 mg/L. Given that brackish water is generally defined as groundwater with TDS between 1,000 and 10,000 mg/L TDS, and notwithstanding all previous HWG comments about the uncertainty of what was actually quantified in the AEM study, even if one accepted the volumes of water quantified in the AEM study as actually being below 3,000 mg/L TDS, all the AEM study does is quantify brackish water. Thus, the AEM study does not provide evidence at odds with how EKI claims the HWG has characterized the MPWSP project vicinity.*

   2. EKI claims HWG does not consider that groundwater in the DSA and upper portion of 180-Foot Aquifer provides a) natural recharge, b) protective groundwater elevations

that serves to limit seawater intrusion, and the potential impact of the proposed MPWSP on items a) and b) above. (Page 3).

HWG Response: *The HWG has previously and continues to acknowledge that natural recharge occurs to the Dune Sand and other shallow aquifers in the project area, and in fact, directly incorporates such natural recharge in our analyses. While the details of how the claimed protective groundwater elevations actually protect against seawater intrusion are not explained by EKI, the reality is that all available hydrogeologic data (including the AEM study) demonstrate historical and ongoing sea water intrusion in the MPWSP project area. Thus, without the MPWSP project, sea water intrusion has been and is occurring in spite of natural recharge and the purported protective barrier provided by the recharge. As stated by HWG before, the proposed MPWSP will not impact natural recharge mechanisms and will act as a partial extraction barrier to ongoing seawater intrusion further inland of the proposed slant wells.*

3. EKI cites "new" Fort Ord monitoring data from December 2018 to support AEM study results showing areas of groundwater with TDS less than 3,000 mg/L. (Pages 3 to 5).

HWG Response: *EKI does not provide the actual referenced Fort Ord monitoring data or map of labeled well locations, so there is no actual data for the HWG to review. However, the Fort Ord monitoring data is not "new" as it has been collected from the same wells for many years; thus, EKI could have and to some degree has referred to Fort Ord monitoring data in previous documents during the EIR process. In addition, the Fort Ord monitoring data is not located in the potential MPWSP project impact area.*

4. EKI provides a diagram of the conceptual site model for Former Fort Ord on page 4.

HWG Response: *As has been noted by HWG before, there are significant differences in the hydrogeology between Fort Ord and the MPWSP project vicinity. One important difference is the lack of the Intermediate 180-Foot Aquitard in the MPWSP project vicinity.*

5. EKI states, "The new data from Fort Ord indicates that seepage from the Dune Sand Aquifer near Monterey Bay (where water levels are above sea level) into the underlying 180-Foot Aquifer (where water levels are below sea level) has effectively stopped seawater intrusion in the Upper 180-Foot Aquifer and limits seawater intrusion within the lower 180-Foot Aquifer and 400-Foot Aquifer in the southern portion of Fort Ord." (Page 5).

HWG Response: *Some of the key issues to note in this EKI statement are: 1) the Fort Ord data presented by EKI is not "new" for reasons cited about in item 2.B.3, 2) the* *presence/absence of sea water intrusion is related to many more factors than cited above by EKI, and 3) the southern Fort Ord area is far removed from and irrelevant to the MPWSP area.*

6. EKI states, "This natural barrier appears to be undermined north of Fort Ord through groundwater extraction and/or discharges of seawater into the DSA at the CEMEX Plant, and would likely be further disturbed by the Project." (Page 5).

HWG Response: *This is an example of a completely unsupported statement/conclusion. No evidence is provided for this statement. Seawater intrusion has been occurring in the MPWSP Project vicinity for 60+ years. In fact, the well (14S-1E-013J2) at the CEMEX plant, which was drilled in 1968, originally produced from the 180 and 400-ft aquifers. In 1969 the well became too salty to use as wash water so the perforations in the 180-ft zone were sealed. Subsequently, in the early 1980's the 400-ft zone became salty. Yet EKI apparently suggests it is all due to wash water percolation and extraction of minor amounts of groundwater from the 400-Foot Aquifer at the CEMEX plant. There is no data or evidence provided to support this EKI statement/conclusion.*

7. EKI states, "The HWG…claims that there is no hydraulic connection between the Dune Sand Aquifer and the Upper 180-Foot Aquifer and the water 'spills' over the edge of the Salinas Valley Aquitard. Yet they provide no data to support their hypothesis." EKI goes on to make claims about the Fort Ord data being relevant to this discussion, and that if the groundwater is spilling over the FO-SVA Aquitard from the perched/mounded Aquifer into the underlying aquifer it would be more saline because no protective head would exist. EKI concludes, "…the new data demonstrate that the HWG's hypothesis is incorrect." (Page 5).

HWG Response: *This is an interesting comment by EKI <u>in that it completely undermines HGC's hypothesis about shallow groundwater flow in the area</u>. EKI appears to be stating that groundwater in the perched/mounded aquifer is not spilling over the edge of the FO-SVA Aquitard, whereas this is what HGC is claiming. In addition, EKI confuses and mischaracterizes previous HWG work and comments due to improper use of terminology (e.g., EKI's use of "Dune Sand Aquifer" here should be referred to as the perched/mounded Aquifer or A Aquifer; EKI's use of "Salinas Valley Aquitard" here should refer to Fort-Ord Salinas Valley Aquitard (FO-SVA); also, EKI reference to a formal "Upper 180-Foot Aquifer" here implies the existence of an intermediate 180-Ft Aquitard that is not present in the MPWSP vicinity). While EKI does not provide any actual data or analysis to support their claim that HWG's hydrogeologic conceptual model (HCM) regarding the perched/mounded aquifer is incorrect, the HWG published all the data and analyses supporting our HCM in our Technical Report (November 2017). EKI also neglect* *to mention that the proportion of water spilling over the edge of the FO-SVA Aquitard is so small compared to the total volume and rate of groundwater movement in the underlying aquifer that it would not be expected to substantially alter water quality or head of the underlying aquifer (for example; in addition to differences in water levels, note differences in nitrate in MW-7S and MW-7M). Furthermore, the water quality of the underlying aquifer along the edge of the FO-SVA aquifer would be expected to have lower salinity in the upper portion (compared to lower portion) of the aquifer related to the dynamics of sea water intrusion and the occurrence of a sea water wedge.*

8. EKI repeats their previous comments/discussion from January 2019 regarding purported seaward gradients and relationship to capture zones (Pages 5 and 6).

HWG Response: *The HWG addressed these issues in our January 25, 2019 letter.*

C. Under Section 3, EKI states, "…the Project will reduce freshwater recharge to the Basin and will degrade water quality…" (page 6).

HWG Response: *This is a repeat of previous statements made by EKI and/or others and has repeatedly been addressed by the HWG. To summarize, the proposed MPWSP will not impact recharge to the basin and water quality impacts will be limited to flow paths direct from the ocean to MPWSP slant wells (which would encompass an equal or smaller inland extent if groundwater gradients were somehow reversed).*

Under Section 4, EKI repeats several comments about SGMA. Although generally addressed previously by HWG and CPUC, a few additional comments are provided below.

1. EKI states, "In order to avoid undesirable results related to seawater intrusion…historical landward groundwater gradients will need to be reversed…or an injection barrier will need to be constructed." (Page 8).

HWG Response: *SGMA does not require gradients to be reversed, or the currently sea water intruded area to be restored (relative to January 2015 conditions). EKI also neglects to mention that an extraction barrier is probably a more likely solution to the sea water intrusion barrier problem in Salinas Valley, as an injection barrier would require a source of water to inject and all wastewater is already being utilized for the OneWater project.*

2. EKI states, "Seawater intrusion is caused by landward (i.e., inland) hydraulic gradients, and as long as those gradients persist then seawater intrusion will continue to worsen." (Page 8).

HWG Response: *The HWG notes that in this statement EKI acknowledges that there are current inland hydraulic gradients in the proposed MPWSP area causing sea water intrusion.*

3. EKI states in discussing hypothetical flat gradients that capture zones would, "extend radially outward until recharge matches rates of groundwater extraction…" (Pages 8 and 9).

HWG Response: *EKI ignores the effect of the ocean as a recharge boundary adjacent to the proposed MPWSP wells in describing groundwater flow under a flat gradient; therefore, their description is inaccurate and incomplete.*

4. EKI states, "…the HWG argues that the Project will aid in stopping salt water intrusion as it will stop some salt water from entering the basin while landward gradients exist. This conclusion is incorrect. In order to be an effective barrier to salt water intrusion, the Project's slant wells would need to extend along the entire coastline of the Monterey and 180/400 Foot Subbasin, which is not being proposed." (Page 9)

HWG Response: *The HWG (as well as CPUC EIR Team) only said that incoming salt water within the MPWSP capture zone will be prevented from moving further inland, and never stated incoming sea water outside the MPWSP capture zone would be prevented from continuing further inland like it is doing now without the MPWSP. However, EKI is correct that additional extraction wells could potentially be added north and south of the MPWSP capture zone as part of SGMA and the Salinas Valley Groundwater Basin GSP to provide a more effective regional barrier to sea water intrusion as a future project.*

5. EKI states, "…while the TDS concentrations of spring 2018 samples, collected by pumping/purging the wells, are greater than those estimated from EC measured in the in-situ probes under ambient non-pumped conditions, this only reinforces the fact that relatively fresher water exists in the upper portion of the water column, as measured by the probes, than in the deeper portions of the well screen." (Page 12).

HWG Response: *The HWG generally agrees here with EKI that less saline water will tend to be present in the upper portion of a given aquifer compared to groundwater with higher salinity in the lower portion of an aquifer. This is called a seawater wedge.*

6. EKI states, "In its 25 January 2019 letter, HWG…claims that recent data are only representative of very wet conditions. However, review of hydrologic conditions shows that current conditions are more representative of average non-drought conditions than those evaluated in the FEIR/EIS." (Page 13).

HWG Response: *As explained elsewhere in this letter in our response to HGC (Item 1.F), review of multiple climate stations shows that HGC/EKI cherry-picked the one station showing much lower rainfall totals over the 2015-2018 period (than the six other nearby stations) and that review of rainfall data from five other local stations and a second Salinas station all show above average rainfall for both two-year periods (2015/2016 and 2017/2018) and well as for the entire four year period from 2015 to 2018. A departure from mean rainfall graph for the Marina station is provided in the attached* ***Figure 2****. This graph demonstrates that the period from 2015 to 2018 was an upward trending wet period.* ***Figure 2*** *also illustrates that 60 percent of years since 1961 have had cumulatively below average rainfall, and therefore this represents a more normal condition.*

D. In their conclusions, EKI makes reference to, "inland hydraulic gradients, which are causing ongoing seawater intrusion…" (Page 14).

HWG Response: *The HWG notes that when it serves to make a certain point EKI claims there are currently inland hydraulic gradients, and when it serves best to make a different point EKI claims there are currently seaward hydraulic gradients.*

3. AGF Technical Memorandum (February 11, 2019)

A. The Preface section item 4 recommends that MCWD conduct annual AEM investigations (Page 1).

HWG Response: *This seems like a conflict of interest as AGF appears to be asking MCWD for an annual contract to perform ongoing consultant services, which requires them to promote the value of the AEM study conducted in 2017 in discrediting the HWG, MCWRA, and the CPUC EIR Team. Regardless, the HWG acknowledges that periodically repeating certain types of geophysical measurements (e.g., borehole induction logging) can be useful in complex geophysical settings such as Marina. Thus, it is possible repeated AEM surveys that incorporate the range of potential baseline conditions (i.e., dry and average years, in addition to wet years), are conducted with consistent flight paths, equipment, and methodologies, and that have independent and public review of all field data, inversions, calibration to field data, and hydrogeologic interpretations could potentially be useful.*

B. In the Introduction, AGF states that, "…AGF is working in collaboration with Stanford University to map the subsurface geology and determine the aquifer properties in the investigation area using ground truth from existing boreholes and monitoring wells." (Page 2).

HWG Response: *It is not clear from the Final AEM Report how AEM data was converted/interpreted to "map the subsurface geology" or "determine the aquifer properties". While the Final AEM Report does make some attempt to correlate AEM data to salinity (our comments on this are provided elsewhere), it is not clear how the AEM data was converted/correlated and applied to map lithology (which is necessary to map subsurface geology). In fact, it is not possible to uniquely correlate AEM data to both lithology and salinity in settings with variable salinity and variable lithology as occurs in the MPWSP area. Furthermore, the Final AEM report makes no reference to converting/correlating AEM data to aquifer properties, which typically include hydraulic conductivity, transmissivity, specific yield, specific storage, and porosity. In fact, when the volumes of brackish water are being quantified in the Final AEM Report, the authors state, "Without knowing at least the average porosity of each aquifer, reliable groundwater volumes are difficult to estimate."*

C. In the Introduction, AGF states that, "AGF designed the airborne survey, oversaw the AEM data acquisition in mid-May, performed 'in the field' Quality Assurance on the data acquisition vendor, and then processed, edited, and numerically inverted the acquired data…AGF advised Stanford with the interpretation and integration of the AEM inversion results." (Page 2).

HWG Response: *Given AGF's description of its broad and extensive role stated above and the additional involvement of HGC as the AEM study hydrogeologist, it is difficult to understand what independent role Stanford personnel had in this AEM study with respect to data collection or interpretation. These AGF statements suggest this is really more of a MCWD consultant study than a Stanford study.*

D. Under Item 1 AGF states, "HWG does not state what is 'very misleading' about the August 2017 presentation. They just make the statement." (Page 2).

HWG Response: *HWG have pointed a few of the misleading aspects of this presentation previously, for example:*

1. *Presentation graphics, profiles, and animations showed the unsaturated zone as dark blue high resistivity, and included it as part of the fresh water in the area (HWG, November 2017; HWG, January 2018).*
2. *Presentation graphics and profiles label bulk resistivity as "saline" and "fresh" implying a direct correlation to water quality. (reproduced as Figure 3-9 of HWG Technical Report, November 2017; HWG, January 2018).*
3. *By labeling the blue color as "fresh" on the bulk resistivity scale, subsequent profiles and animations showing bulk resistivity colored blue in the unsaturated zone*

throughout the profiles/animations and upper portion of saturated zone in some areas gave the impression to the public of abundant "fresh" water when, in fact, the blue color showed water in the unsaturated zone and primarily brackish water in the saturated zone (HWG, November 2017; HWG, January 2018).

4. *Presentation graphics and profiles show a clear sea water intrusion wedge in the 180-FTE Aquifer, which is supported by MPWSP MW data. However, this is discussed as a freshwater zone/wedge (HWG, January 2018).*

5. *AEM profiles showed imaging to depths of 170 meters (about 560 feet) adjacent to the ocean shoreline with high salinity in the subsurface throughout the column. The subsequent Final AEM Report acknowledged the depth of investigation along the coast was limited to 50 meters (about 165 feet). This is important for multiple reasons, including that AEM imaging of the 400-Foot Aquifer near the coast is the primary basis for the AGF claim of a 180/400-Foot Aquitard gap further inland (HWG, August 2018).*

6. *There was no acknowledgment of the great uncertainty (and non-uniqueness) in hydrogeologic interpretations (and still isn't to this day) based on AEM data impacted by both lithologic and salinity variations (HWG, January 2018).*

7. *There was insufficient acknowledgement of this being a one-time snapshot study conducted immediately at the conclusion of one of the wettest years on record (HWG, January 2018).*

8. *There was inadequate acknowledgement that the AEM study used only 7 boreholes with lithologic logs, borehole geophysical logs, and water quality data during the August 2017 presentation. However, Mr. Gottschalk did acknowledge this fact after his subsequent April 2018 presentation when questioned about it by a Board member (HWG January 2018; HWG August 2018).*

9. *The presentation had no significant discussion of the uncertainty in trying to interpret inverted AEM data in terms of both lithology and salinity simultaneously (HWG, August 2018).*

E. Under Item 2, AGF make several points about the purported use of 318 control points in the AEM study.

1. AGF makes reference to use of "Every borehole of the 318 available", but only "if they were in reasonable proximity to an AEM flight line." (Page 4)

   HWG Response: *This statement leaves unclear how many of the purported 318 boreholes were actually used in any capacity. In fact, review of AGF Figures 1 and 2 shows, in part, how misleading this claim is because although Figure 1 (same as Figure 12 from AGF April 2018 TM) shows only the area of AEM flight lines, Figure 2* *shows that a large portion and possibly the majority of the 318 boreholes appear to be outside of the AEM flight line area. For the one limited profile example provided in AGF Figure 2, it is not clear how these boreholes were used for AEM data calibration given that no borehole geophysical logs are shown, no water quality data are shown, some boreholes are very limited in depth, and there are several different borehole lithologies for a given AEM inverted resistivity color. In fact, it appears quite likely that no other borehole geophysical logs or water quality data within the AEM flight line area were used in the analysis aside from MPWSP monitoring wells. At the very least, any other such data (borehole geophysical logs or water quality data) are not documented sufficiently for review by anyone in the Final AEM Report because it was not released for public review with the Report or provided to the CPUC.*

2. AGF states, "Statements by HWG stating that only 7 of the 318 boreholes were used and that "there is a very high level of uncertainty in the interpretation of AEM data" are not based on fact. More of these plots can be provided upon request to MCWD." (Page 4)

   HWG Response: *All such plots similar to AGF Figure 2 should have been entered into the EIR and CPUC record and made available for HWG, EIR Team, and public review at the time the AEM Report was submitted into the EIR and CPUC record. Our point about the uncertainty in the inverted AEM data interpretation is well illustrated on AGF Figure 2. In particular, as we note above, is the fact that several different borehole lithologies occur for a given AEM inverted resistivity color. While this is true of all three (or five if you count the shallow boreholes) boreholes, quick examination of the second borehole from the left side of the cross-section (borehole I.D.'s are illegible) illustrates this point well.*

3. AGF states their Figure 2 provides an, "…example of preliminary inversion results from 21 May 2017 showing use of the 318 boreholes…" (Page 4).

   HWG Response: *This statement raises further questions about whether or not the AEM data interpretation is still preliminary as of February 2019. The HWG notes that the profile in* ***Figure 2*** *shows 5 boreholes, of which two are very shallow and of little use. Furthermore, this particular AEM profile line appears to be the longest one in the survey and extends over a distance of approximately 60,000 feet (11 miles), an average of one borehole every 12,000 to 20,000 feet. None of the three boreholes shown (five including two very shallow boreholes) are near the potential project impact area. Furthermore, it is curious that MPWSP MW-1 is not shown on the profile that goes right through it and would represent the one potential true* *calibration point given it has detailed lithologic data logged by a geologist, borehole geophysical logs, and water quality data from three different depth intervals.*

4. **Figure 2** shows AEM inversion data for a depth in excess of 300 meters (about 1,000 feet) near the coast. (Page 5)

   HWG Response: *It is not clear why an AEM study with a stated depth of investigation of 50 meters near the coast (page 13 of Final AEM Report) is showing AEM imaging in excess of 300 meters along the coast.*

5. Stanford graduate student Ian Gottschalk acknowledged in his Final AEM study presentation in Marina (April 16, 2018) when questioned by a Board member that the AEM study was only calibrated to the seven MPWSP boreholes.

   HWG Response: It is not clear how public statements by Mr. Gottschalk are consistent with AGF claims of calibrating inverted AEM data to 318 boreholes.

F. Under Item 3 AGF makes several statements and attempts to provide additional analyses of inverted AEM data to justify previous comments about aquitard gaps (Pages 4 through 19).

1. AGF states, "The question brought up by HWG concerns what is the nature of the 180ft/400ft Aquitard in the vicinity of the MPWSP area of activity."

   HWG Response: *The majority of the AGF response here is devoted to a belated attempt to justify some of their previous comments. This analysis could have been and should have been presented with submittal of the AEM Report into the CPUC proceedings for HWG, CPUC EIR Team, and public review at that time. Thus, while it certainly doesn't constitute new information since the data was collected in May 2017 and the Final AEM Report issued in March 2018, the HWG offers some responses below to AGF's belated attempt to justify some of their previous comments.*

2. AGF notes that the chloride concentrations were calculated based on a study conducted in Florida (Page 4).

   HWG Response: *As already comment on in HWG's August 15, 2018 letter, it remains unclear how AGF and the AEM study team can justify use of a formula and conversion factors from a study conducted in a completely different hydrogeologic setting in Florida.*

3. AGF provides a series of figures (Figures 3 to 16) related to "AEM-to-chlorine concentration conversion". (Pages 6 to 19).

   HWG Response: *Several of these AGF figures are discussed in more detail below. However, it is apparent the profiles in these figures are uncalibrated to field data. In fact, the figures are not even calibrated to the readily available data from the MPWSP boreholes. See further discussion in items 3.F.6 through 3.F.8 below.*

4. AGF states, "…the reader must keep the nature of the basic geology in the area (Dune Sand material, 180 ft aquifer, 180 ft/400 ft aquifer) in mind when examining the 2D profiles of chloride concentrations." (Pages 6 to 7).

   HWG Response: *The discussion by AGF here is essentially saying that the reader must have a preconceived notion of the geology/stratigraphy in mind when viewing the AEM profiles of chloride concentrations because the AEM data does not provide lithology information due to interference from salinity variations.*

5. AGF states, "At a depth of 30 m in borehole MW-8, clay is shown to have a resistivity of 6-8 ohm-m…Resistivities of 6-8 ohm-m correspond to chloride concentrations of about 2,729 mg/L to about 1,813 mg/L per Fitterman and Prinos (2011)…" (Page 8).

   HWG Response: *There is no monitoring well screen in the referenced clay layer in MW-8, so there is no way to verify or validate the AGF estimated chloride concentration of 1,813 to 2,729 mg/L derived from the Florida equation and resistivities of 6-8 ohm-m. However, taken at face value, such a chloride concentration is indicative of a TDS concentration well in excess of 3,000 mg/L. The underlying coarse-grained zone comprising the 180-FT Aquifer has borehole resistivities ranging from about 1 to 20 ohm-m and associated measured chloride concentrations on the order of 10,000 mg/L (and TDS of about 21,000 mg/L) based on collected water quality samples. Without prior knowledge of the distribution of lithologies, the clay resistivity range of 6-8 ohm-m is fully encompassed within the coarse-grained material resistivity range of 1 to 20 ohm-m, indicating there would be no way to distinguish lithology from these AEM data away from a MPWSP boring/monitoring well with any reasonable confidence or certainty.*

6. With regard to **Figures 6 through 8** showing AEM flight lines along the coast through CEMEX property, AGF states, "The depth to top of the likely clay zone (tan-colored zone) on L200202 is about 120 m…, for L200301 the depth is about -135 m…, and for L200501 the depth is about 119 m…" (Page 8).

HWG Response: *The Final AEM Report (page 13) states that the DOI near the coast is limited to no more than 50 meters, which is considerably shallower than the depth of imaging discussed by AGF in this comment.*

7. Following up on the sentence above, in reference to AEM flight lines shown in **Figures 6, 7, and 8** (about 800 to 1,800 feet inland from coast) AGF states, "These depths suggest that the saltwater intrusion is contained in the Dune Sand Aquifer, the 180 ft Aquifer, and part of the 180 ft/400 ft Aquitard, but not down into the 400 ft Aquifer." A subsequent paragraph states in reference to the AEM flight line in Figure 10 (about 4,000 feet inland), "…it appears that the high chloride concentration zones have moved deeper, and interpreted to be very likely into the 400 ft aquifer." AGF then states in a following paragraph that the Figure 11 AEM flight line (about 5,000 feet inland), "…is interpreted as being very apparent that the high chloride concentration materials are now within the 400 ft Aquifer." AGF concludes by saying based on the above interpretation of inverted AEM data that, "…there is a gap in the 180 ft/400 ft Aquitard just east of the MPWSP activity area. " (i.e., about 4,000 to 5,000 feet inland) (Page 8).

   HWG Response: *The aquitard gap analysis by AGF summarized above is entirely predicated on not having seawater intrusion in the 400 foot aquifer extending perpendicular from the coast to a point between approximately 4,000 to 5,000 feet inland, where seawater intrusion into the 400-Foot Aquifer suddenly begins in the 400-Foot Aquifer (i.e., high chloride concentrations are not present from coast to about 4,000 to 5,000 feet inland). MPWSP monitoring wells MW-1D and MW-3D are screened in the upper 50 feet of the 400-Ft Aquifer (approximately 300 and 1,000 feet from the coast) and have TDS concentrations of 30,700 to 31,800 mg/L (and 16,600 to 16,900 mg/L chloride). MPWSP monitoring wells MW-4D and MW-7D are screened in the upper 50 feet of the 400-Ft Aquifer (approximately 2,500 and 5,800 feet from the coast) and have TDS concentrations of about 29,000 (15,000 mg/L chloride) and 27,700 mg/L (13,700 mg/L chloride), respectively (**Table 2**). These field and lab determined salinity data show the upper 50 feet of the 400-FT Aquifer is heavily intruded at least from the coast to MW-7, and likely well beyond. This field/lab data is in direct contrast to the inverted and interpreted AEM data depicted and discussed by AGF on pages 8 through 19. While AGF describes saltwater intrusion not being present in the 400-Ft Aquifer between the coast and a point well inland of the CEMEX property, field water quality data shows close to seawater concentrations of TDS and chloride in the very same area that AGF claims AEM data shows not be intruded by seawater (see attached **Figure 1**). Because lithology cannot be determined using the inverted AEM data due to salinity variation, the claim of an aquitard gap here is solely based on interpreted water quality being low salinity near the coast in the 400-Ft Aquifer and suddenly showing high salinity* *water only at a point well inland of the CEMEX property. Thus, the entire discussion on pages 8-19 using Figures 6 to 16 is clearly invalid and wrong. It also demonstrates that even the limited borehole data with lithologic/geophysical logs and water quality data (i.e., the MPWSP boreholes/monitoring wells) that were available for use by AGF were not used to constrain/calibrate their inverted AEM data interpretations.*

8. AGF states with regard to its Figure 11, "The depth to the 1,000-3,000 mg/L [chloride] material is about 218 m (715 ft) and there are clearly two different zones of high concentrations with a clay zone in between just north of the MPWSP activity area. In fact, what is clear from L2012201 in Figure 11 is that there is indeed no aquitard material in line with the MPWSP activity area; i.e., there is a gap in the 180 ft/400 ft Aquitard just east of the MPWSP activity area." (Page 8).

***HWG Response**: Figure 11 and the other associated figures described in item 3.F.7 are clearly inaccurate. This is demonstrated by review of available MPWSP monitoring well data in this area as summarized in the attached **Table 2**. These data show chloride concentrations ranging from approximately 17,000 mg/L at the coast to 14,000 mg/L about 6,000 feet inland within the upper portion of the 400-Ft Aquifer. These actual field/lab measured values far exceed the estimated chloride concentrations by AGF, which appear to range from about 3,000-5,000 mg/L near the coast (where actual values are about 17,000 mg/L) to about 7,000-10,000 mg/L at distances of 4,000 to 5,000 feet inland (where actual values are about 14,000 mg/L) of the coast. In the color-coding scheme used by AGF, the actual field-measured chloride values for AGF Figures 6 through 11 all fall well within the dark brown color band range (chloride 10,000 to 19,000 mg/L), yet all of these AGF figures show the 400-ft Aquifer within the much lower chloride concentration yellow color band with an AEM estimated chloride concentration of 3,000 to 10,000 mg/L. Clearly, actual field-based chloride data were not used to calibrate or constrain AGF's analysis of AEM data, not even from the seven boreholes that are otherwise claimed to have been used for calibration of inverted AEM resistivity values.*

G. Under Item 4 in response to HWG comments about AEM study authors and consultants (HGC, EKI, Jacobson James, AGF) defining fresh water as containing TDS up to 3,000 mg/L AGF states, "Nowhere within the Final AEM Report dated March 15, 2018 is there an equivalency made between TDS up to 3,000 mg/L and fresh water." (Page 20).

HWG Response: *First, we note that AGF acknowledges here that the AEM study conducted in Marina does not delineate fresh water. Second, we note that the terms fresh and fresh water are used throughout the Preliminary AEM Report, appearing no less than seven times on page 1 alone and approximately 40 times in the 15-page report* *overall. After HWG pointed out this incorrect, inaccurate, and misleading use of the terms fresh and fresh water, the Final AEM Report mostly switched to use of the term "source of drinking water", which is used throughout the report. As any hydrogeologist or non-hydrogeologist would associate a "source of drinking water" with fresh water, this is merely an attempt to mislead the reader into thinking the AEM study defines zones of fresh water without saying it directly as was done in the Preliminary AEM Report. Meanwhile, MCWD and consultants writing letters/TMs on behalf of MCWD/Marina to oppose the MPWSP continue to use the terms fresh, fresh water, and source of drinking water quite liberally to support their claims, including in reference to results of the AEM study.*

H. Under Item 5, AGF makes several comments, which largely repeat previous comments made by AGF, regarding HWG conversion of TDS to electrical conductivity (EC) and HWG translation of AEM resistivities to TDS (Pages 20 to 21).

HWG Response: *The HWG previously responded to and addressed comments repeated here by AGF in previous documents (HWG, January 4, 2018; HWG, August 15, 2018). However, some additional responses are provided below.*

1. AGF states that in, "…the Final AEM Report dated March 15, 2018, there are several discussions and presentations of data to support the correlation of measured/inverted resistivities to TDS and chloride concentrations." (Page 20).

   HWG Response: *The Final AEM Report states, "the Monterey County Water Resources Agency uses chloride concentrations to map saltwater intrusion in the Northern Salinas Valley, since high chloride concentrations are indicative of seawater." However, the Final AEM Report does not provide any attempt to correlate measured/inverted resistivities to chloride concentrations as claimed in this AGF comment. This is interesting in that interpretation of AEM data in the Final AEM Report itself and as used/referenced by other consultants is used to discredit seawater intrusion mapping done by MCWRA. Yet, they can't even compare AEM results to MCWRA mapping because the Final AEM Report only attempts to delineate TDS up to 3,000 mg/L (brackish water) and greater than 10,000 mg/L (saline water), while the MCWRA agency mapping is based on chloride concentrations. Furthermore, the chloride threshold of 500 mg/L used by MCWRA as being indicative of sea water intrusion, which is about 10 times greater than background levels in fresh water, does not correlate to a TDS level of 3,000 mg/L in the Marina area (500 mg/L chloride equates to a TDS concentration much lower than 3,000 mg/L in the Marina area). Thus, Final AEM Report maps showing MCWRA mapping of salt water intrusion (e.g., Figures 2, 23, 24, 25) overlaid by* *claimed pockets of fresh water (i.e., low TDS groundwater, source of drinking water) is inaccurate and misleading, not to mention it is an apples to oranges comparison.*

2. AGF refers to a previous comment they made about HWG use of Stanford preliminary AEM results presentation slide 22, where the color coded scale labeled log resistivity was changed to log resistivity of groundwater (Page 21).

   HWG Response*: The legend in Figure 3-10 labeled "Log Resistivity (ohm-m) of Groundwater" correlates to the groundwater resistivity/conductivity from water quality samples collected from the various wells screens for MW-1, MW-4, MW-6, and MW-7 depicted in the figure. The three screened intervals for each monitoring well in the figure are color-coded to correlate to the legend. The color-coding outside of the monitoring wells reflects bulk resistivity provided in the Stanford profile shown on Figure 3-9, and does not correlate to the legend. The main point being made here by HWG really has nothing to do with the labeling of the legend, as described in the following paragraph from the HWG Technical Report associated with Figure 3-10:*

   "An overlay of the geology on the Stanford profile showing the perched and regional water tables is provided in Figure 3-10. This overlay shows that the shallow, dark blue areas in the Marina uplands represent the unsaturated zone above the perched water table. Figure 3-10 also shows a seawater wedge in the 180-Foot Aquifer with lower salinity water in the shallow portion of the 180-Foot Aquifer inland of MW-7 underlain by high salinity water in the lower portion of the aquifer. The 400-Foot Aquifer is indicated to be seawater intruded throughout this profile. The observations and interpretations related to the Stanford profile described above are consistent with MPWSP monitoring well data and the hydrogeologic conceptual model developed by the HWG."

   AGF has ignored the main points being made by HWG here, and instead focused only on what they had thought was mislabeling of the legend (which in reality was just a misunderstanding on AGF's part of how HWG used the legend in Figure 3-10).

3. AGF tries to make a point about the HWG previously converting an electrical conductivity value of 100 uS/cm to a TDS value of 68 mg/L, stating no conversion formula was provided and that AGF did an online search showing conversions could range from 51 to 64 mg/L TDS. The comment also states AGF isn't clear if HWG was converting the bulk resistivity or groundwater resistivity. (Page 21).

   HWG Response: *Overall, whether the TDS value is 68 mg/L or slightly lower is not material to the HWG discussion being referenced in this comment by AGF. The conversion formula was based on initial comparison of lab TDS to conductivity values provided in the monthly monitoring reports, which accounted for temperature dependence, etc. Further description of the HWG evaluation of the relationship was* *provided in publicly available monthly monitoring reports since 2015 as described below:*

A plot of TDS:EC ratio versus EC has been provided in all of the weekly Monitoring reports since the first baseline report was issued in February/March 2015 until the test pumping ended in February 2018. The TDS:EC ratio plot has been provided in all monthly reports since test pumping was completed. The initial TDS:EC ratio versus EC plot was produced from the water quality data collected from zone testing in the exploratory boreholes. However, with on-going collection of samples from the monitoring well network and the test slant well, the plot was updated in November 2015 using data from 133 groundwater quality samples from the period February 2015 through November 2015. The slope of the line for the plot was y = 0.69x - 220.28. The plot was again updated using data from 323 groundwater quality samples collected from the monitoring network and test slant well from February 2015 through December 2017. The slope of the line for the plot was y = 0.69x - 297.73. As is apparent, the TDS:EC ratio versus EC plot results will vary slightly depending on the size of the "x" values. For an EC of 24,000 us/cm the calculated TDS will result in an EC:TDS ratio of about 0.68. For an EC of 5,000 us/cm the calculated TDS will result in an EC:TDs ratio of about 0.65. The use of either ratio value gives essentially the same TDS result for the purposes of the AEM results discussion provided in the HWG Technical Report.

4. AGF repeats a previous comment related to borehole MW-7 resistivities (Page 21).

   HWG Response: *AGF misunderstood the point being made by the HWG in the discussion of MW-7 on page 57 of the HWG Technical Report (November 2017). The point of the HWG discussion was to illustrate that the figure from Stanford's Preliminary AEM Results presentation (reproduced as Figure 3-9) in the HWG Report incorrectly applied the terms "fresh" and "saline" to the Log Resistivity scale in their profile. Stanford's labeling of the scale implied that resistivity shown in the profile represented groundwater resistivity/conductivity. The HWG was merely demonstrating that the Stanford resistivity scale does not correspond to water quality; hence, the use of the terms "fresh" and "saline" on the scale was misleading and inappropriate.*

I. Under Item 6, AGF revisits a previous comment made by HWG that noted the April 2018 AGF TM makes reference to use of a study from Florida to convert AEM bulk resistivity to groundwater conductivity (Pages 22 to 24).

1. AGF states, "Absolutely nowhere in the AGF Tech Memo of 16 April 2018, let alone on page 15, is it stated that the analysis of the water quality in the Final AEM Report by Stanford 'relied on data from Florida'." (Page 22).

   HWG Response: *AGF devotes two full pages (pages 15 and 16) in their April 2018 TM to discussion of utilizing data from Florida to show how they made a conversion of bulk resistivity to groundwater conductivity for the Marina area AEM study. They do this despite stating, "We recognize that there will be a difference in the character of the electrical conductivity of the saline water in southern Florida and in the Monterey Bay." AGF also state, "To get an a more accurate analysis we would compile local borehole water sampling results…and compare with the bulk AEM resistivity." So essentially, after the Final AEM Report was published in March 2018, the coauthors state they could have done a more accurate analysis if only they had calibrated to local borehole data instead of data from Florida to convert bulk resistivity to groundwater conductivity.*

2. AGF states, "…the Final AEM report documents which data was used for the conversions applied in the report including borehole water quality and geophysical logs from Seaside Basin Water Master Sentinel and MPWSP wells." (Page 22).

   HWG Response: *It is important to note a few key aspects of Final AEM Report use of data from the four Seaside Basin Water Master (SBWM) Sentinel wells: 1) the seaside wells are located about five miles south of the MPWSP project area; 2) hydrogeologic conditions in the Seaside Basin and zones screened in the Seaside Sentinel wells are substantially different from the 180/400 groundwater subbasin where proposed MPWSP wells are located; in fact, there is an entirely separate groundwater basin (Monterey Subbasin) located in between the subbasin where MPWSP wells are located and the subbasin (Seaside) where the Seaside Sentinel wells are located; 3) The shallowest screens in the SBWM Sentinel wells are at depths of 1,100 feet in the northern most well and 800 feet in the southern most well; thus, they are screened at much greater depths and in different geologic formations than the MPWSP wells; 4) the water quality data from SBWM Sentinel wells reflects cross-flow between screen intervals; these wells were really more designed for use as induction log conduits; 5) an AEM survey was not conducted in the Seaside Subbasin; thus, the correlation of resistivities to freshwater and saltwater is not based on AEM data; and 6) the SBWM Sentinel wells have no water quality data from shallower zones and thus no such data for calibration in the Marina area AEM study.*

3. Regarding use of data from Florida, AGF goes on to state, "The reason for AGF using the Florida data is that the water quality data local to the AEM investigation area was not available to work with." (Page 22).

   HWG Response: *This is a curious statement by AGF given that, at a minimum, detailed water quality data (along with borehole lithologic and geophysical logs) were available for AGF's use from the 24 MPWSP monitoring wells and was made publicly available long before the Final AEM Report was completed.*

4. AGF states, "Usually, in order to make the conversion from bulk resistivity to groundwater resistivity/conductivity, a comparison table and regression analysis is carefully developed consisting of sampled groundwater conductivities and TDS's and AEM resistivities at the same locations and depths, if possible. In order to make a reasonable approximation, a search and examination of the published literature for a similar analysis at a similar site resulted in finding a USGS Open-File Report…describing salt water intruding into the Everglades in southern Florida." (Page 22).

   HWG Response: *The hydrogeology in the southern Florida Everglades couldn't be more different than the hydrogeology in the Marina area. Description of the Florida Everglades as a "similar site" is very inaccurate and misleading. As described above, given that the required data (i.e., "groundwater conductivities and TDS's and AEM resistivities") were available from 24 MPWSP monitoring wells (at a minimum), it is unclear why resorting to a study for an entirely different hydrogeologic environment 3,000 miles away was necessary. Regardless of how AEM study coauthors used or didn't use the Florida equation in the Final AEM Report, the bottom line is that AGF's usual methodology of developing a regression analysis using local data apparently wasn't done and is not presented in the Final AEM Report.*

5. With regard to the Marina AEM study, AGF Item 6.4 states they were, "…using the Florida conversion relationship between the AEM data and the groundwater conductivity because we don't yet have the local relation for the Marina area….", and "…the Marina AEM resistivity to groundwater resistivity relationship hasn't been defined…" (Pages 23 and 24).

   HWG Response: *These statements by AGF just reinforce our responses above that as of the date of the current AGF TM (February 8, 2019), they have no "local relation for the Marina area" to convert bulk resistivity to TDS. Furthermore, the comparison of applying the Florida formula to one data point in MPWSP MW-7 is far from adequate to justify use of the Florida formula in the Marina area.*

J. Under Item 7, AGF takes issue with a couple previous HWG statements (Page 25).

1. AGF states that a previous HWG statement regarding "…technical issues and flaws in the AEM study" is lacking in "specifics that can be responded to".

   HWG Response: *This is a peculiar statement by AGF given that our specific comments regarding AEM study technical issues and flaws are described in great detail in multiple documents to which AGF has generated multiple documents trying to respond to HWG comments on the AEM study. Please refer to the Detailed Comments section of our August 15, 2018 letter for specifics.*

2. AGF misinterprets the HWG statement, "it is clear that within the sea water intruded areas of the aquifers mapped by MCWRA, pumping of a new or existing production well within this area will immediately or quickly produce water with elevated salinity that is unfit for human consumption or agricultural irrigation" by stating the following, "This can only be interpreted as saying that pumping 'within the sea water intruded areas of the aquifers mapped by MCWRA' will be acquiring fresher water that is originally not high in salinity and that will then 'immediately or quickly' become more saline." (Page 25).

   HWG Response: *Pumping a well that immediately produces high salinity water unfit for human consumption in no way implies it initially produces fresh water.*

K. AGF's main point under their Item 8 is that the Final AEM Report uses the word "potential" in front of the term "drinking water" in the text of the Final AEM Report (Page 25).

HWG Response: *On pages 56-57 of the Final AEM Report, the authors refer to "drinking water" and "sources of drinking water" without prefacing the word/term with "potential" on 24 occasions. Furthermore, many figures in the Final AEM Report are titled "Source of Drinking Water" with no use of the word "Potential" (e.g., Figure 22, Figure 23, Figure 24, Figure 25). Regardless, the term "potential drinking water" is actually meaningless, because one can say that any non-potable water (which the identified waters are) is a potential source of drinking water, even sea water; it is only a matter of how much treatment is required (e.g., desalination).*

L. Under Item 9, AGF states that if the HWG does not respond to a given point made by AGF in their TMs, it must mean HWG agrees with AGF's point (Page 26).

HWG Response: *With all the voluminous pages of insufficiently supported and inaccurate conclusions and statements made by consultants working for MCWD and Marina, it is not the responsibility of the HWG to respond to and counter each and every incorrect/unsupported statement made by those consultants. If this were the case, it* *would be nearly impossible for the HWG to publish any response documents in a sufficiently timely manner. Furthermore, if the same logic were applied in reverse, there are many more unanswered points/comments/responses made by HWG to MCWD/Marina consultant documents. In no way does a lack of HWG response automatically imply agreement with a given statement made by MCWD/Marina consultants.*

Responses to Selected Meeting Transcript Statements

4. Planning Commission Meeting on February 14, 2019

A. On page 63 of the meeting transcript the EKI states, "…this is data from the AEM study…The blue here is the area of freshwater within the dune sand aquifer as well as the 180-foot aquifer that was mapped by the AEM study."

HWG Response: *This is another example of AEM study results being misrepresented as fresh water, whereas the AEM study only attempted to define areas of brackish water with TDS up to 3,000 mg/L. In fact, MCWD consultants are at odds with each other on this point as AGF states (page 20 of their April 11, 2018 Memo), "Nowhere within the Final AEM Report dated March 15, 2018 is there an equivalency made between TDS up to 3,000 mg/L and fresh water."*

B. On pages 64-65 of the meeting transcript EKI states, "You have the water that infiltrates into what's known as the A aquifer at Fort Ord. It's the same as the dune aquifer – the dune sand aquifer."

HWG Response: *This is an example of EKI's use of misleading terminology. The "A" Aquifer at Fort Ord is not equivalent to the Dune Sand Aquifer in the MPWSP vicinity. As described in detail in the HWG Technical Report, the "A" Aquifer at Fort Ord is a part of the perched/mounded aquifer in the MPWSP vicinity (which is hydraulically disconnected from the DSA located oceanward of the perched/mounded aquifer).*

C. On page 66 of the meeting transcript EKI states, "So you can see that there's a much larger impact once the gradient flattens and/or reverses."

HWG Response: *In trying to correlate this statement with EKI's presentation, it appears that EKI is referring to slide 8 of 18, which shows hypothetical capture zones under a landward gradient (top right of slide) and a seaward gradient (bottom right of slide). The hypothetical landward gradient figure on the top right is generally correct. However, the hypothetical seaward gradient figure on the bottom right is very inaccurate and misleading because it completely ignores the ocean recharge boundary. It also appears that slide 9 of 18 was referred to in EKI's statement above, which shows figures from Hydrometrics TM for a landward gradient (top right) and seaward gradient* *(bottom right). What is important to note here are the following points: a) these figures are for vertical intake wells located several hundred feet inland of the shoreline; b) the flow paths sourced from the ocean (which represent the potential project impact relative to increasing existing brackish water TDS concentrations) extend inland approximately the same distance for both a landward and seaward gradient. Therefore, the potential impact area is not "much larger" as claimed by EKI when considering the source of potential impacts is ocean-sourced flow paths to the proposed MPWSP slant wells (i.e., the potential impact area is not the entire capture zone under flat/reversed gradients).*

D. On page 67 of the meeting transcript EKI states the following in reference to a cumulative departure rainfall graph, "This is the data from – starting about 1980 at the CEMEX station…the Cal-Am study happened at the very bottom of that dry period."

HWG Response: *While we address the broader misrepresentation of rainfall data from 2015 to 2018 elsewhere in our detailed comments above (Item 1.F), we add the following comments to this discussion by EKI at the meeting: a) there is no CEMEX rainfall station, so we assume EKI is referring here to the same Salinas Airport station mentioned elsewhere in MCWD consultant letters/TMs; b) EKI's graph shows the bottom of the recent drought occurred in 2013, which does not correspond to the period of test slant well (TSW) operation and MPWSP monitoring well (MW) data collection; c) the period of TSW operation and MW data collection from 2015 to 2018 is indicated to be a wet period (as evidence by upward trend in cumulative departure line) even for the climate station EKI relies on to misrepresent rainfall over this period along the coast (as explained above in item 1.F).*

E. On pages 72-73, AGF states, "Here's some comments on your work by HWG, and what's going on? And I went through their EIR very carefully, and I found a lot of inconsistencies and comments without specifics."

HWG Response: *It is unclear to what document AGF is referring since AGF does not specify the document being discussed. Therefore, HWG are unable to provide a response to this particular comment referring to work by HWG.*

F. On page 74 AGF states, "We try to give you a good story to try to understand what is going on in a given area. So it's many more wells than this seven."

HWG Response: *After the above statement, AGF goes on to describe how they used two of the seven MPWSP boreholes in their AEM study. There is no description of how any other wells were used (beyond the seven MPWSP boreholes) except to show a few lithologic logs plotted on an AEM resistivity profile (for which there is no apparent correlation or calibration of AEM data to the lithology shown). While looking at AEM* *data alone may seemingly tell a good story, it is important that the story supplement and reflect the reality of borehole lithology, borehole geophysics, and borehole water quality (as opposed to being at odds with borehole data).*

G. On page 75 of the meeting transcript, AGF refers to a short interval on the well log for MPWSP MW-7 located between two screened zones and states, "If I was a farmer, and I wanted to find freshwater, this is where I'm going to go."

HWG Response: *As noted elsewhere, the water quality of this zone is speculation on the part of AGF because there is no water quality data to verify or validate TDS concentrations. However, a more important point to be made here is that water flowing to a well screening a portion of an aquifer flows both laterally and vertically to the well screen. A local example of this is documented for MCWD Well No. 5, which initially showed groundwater in the well with electrical conductivity of about 500 uS/cm that subsequently increased to over 13,000 uS/cm within just a few hours of pumping (Staal, Gardner and Dunne, 1991). We do know that the water quality immediately above and below the referenced depth interval has non-potable TDS concentrations, and we know pumping of a well screened only in the referenced depth interval will quickly draw in saline water from above and/or below to become unusable even if we accepted the speculative and hypothetical premise of this zone initially containing TDS concentrations below 1,000 mg/L. Finally, the most important point to be made here is that if it were indeed a viable fresh water zone as claimed by AGF, the farmer he refers to is smart enough to find it and utilize it (and to the best of our knowledge, local farmers are pumping only from the Deep Aquifer in the zone of sea water intrusion that encompasses MPWSP MW-7).*

H. On page 76, AGF goes through a lengthy explanation of how they normally would compile local groundwater quality data to compare with AEM data, and develop a regression relationship between formation resistivity and water resistivity. After the above description of what they would normally do, AGF then explains (at bottom of page 76/top of page 77) that they actually used data and formulas from Florida.

HWG Response: *After the above lengthy explanation, AGF stated that HWG said you can't use Florida data/formulas for the coast of California. AGF's response to HWG was, "And I'm saying, well, maybe that's true." Regardless of the subsequent attempt to justify their use of the Florida data/formula by applying the Florida equation to one data point (which is obviously nowhere near adequate to justify use of the Florida formula along Monterey Bay), AGF has already made HWG's main point here regarding the uncertainty of this particular analysis.*

I. On pages 78-79, AGF is essentially summarizing data presented in pages 4 through 19 of their TM regarding a claimed gap in the 180/400-Foot Aquitard about 5,000 feet inland of the coast (this is addressed above in detailed comments Items 1.J.2 and 3.F.6 through 3.F.8, and shown to be an invalid interpretation). In referring to the CPUC EIR Team not using AGF's interpretation of an aquitard gap at this location, AGF states, "And data that doesn't match their agenda was somehow not used, not available."

HWG Response: *Here again, as was the case with HGC trying to impugn the integrity of Mr. Feeney and Mr. Durbin, it appears AGF is trying to do the same thing with the CPUC EIR Team. We would refer to reader to the response to HGC on this topic in detailed comments item 1.E.2.*

J. On page 80, AGF makes reference to the peer review of the 2015 DEIR groundwater model performed by Lawrence Berkeley National Lab (LBNL), and implies that LBNL comments were not addressed.

HWG Response: *The implication here is incorrect; the CPUC EIR Team independent groundwater modelers (HydroFocus) made modifications to the model based on LBNL and their own peer review. These modifications are incorporated in the FEIR.*

K. On page 83 of the meeting transcript, HGC paraphrases an HWG comment regarding hydraulic gradients as follows, "Why are you just looking at the end data? Why don't you compare it with the data in the middle? Well, the well is pumping. We don't have static conditions, so you can't see what the actual gradient is. It's one that is induced by the pumping well."

HWG Response: *HGC neglects to mention that the test slant well was not pumping between early June and late October of 2015 and between early March and early May of 2016. Due to TSW pumping water level impacts being limited to wells MW-1S/M and MW-3S/M and the quick recovery of water levels upon turning the pump off due to the adjacent ocean recharge boundary, static water level conditions existed for essentially the entire time the TSW pump was off, thereby allowing plenty of time for late Spring to Fall 2015 and late Winter to Spring 2016 static groundwater level data collection.*

L. On pages 92-95 of the meeting transcript, there is a question and answer sequence between a Commissioner and AGF (Mr. Asch). The Commissioner is referring to the LBNL peer review and asking Mr. Asch (who is a California geophysicist (GP), but not a California PG/CHG or groundwater modeler) about LBNL's review of the 2015 DEIR groundwater model. The Q&A appears to question the thoroughness of the LBNL peer review, and centers around the distinction between LBNL peer reviewing the model just to see if they get the same results using the same inputs as the consultants who created the model vs. also evaluating the model inputs themselves. The implication of the Q&A from both parties is that LBNL only peer reviewed the model to confirm that when they run the model with the same model inputs used by the consultants they get the same results.

HWG Response: *HWG review of the LBNL peer review report notes at the top of page 22 of the LBNL peer review report they state, "Having reported on our groundwater modeling review above, we turn now to a review of the conceptual model of the hydrostratigraphic units in the vicinity of the CEMEX site." LBNL then proceeds to document their review of the hydrogeologic conceptual model for the MPWSP vicinity used as model input on pages 22 through 28. Thus, Mr. Asch did not correctly answer the Commissioner's questions regarding the completeness of the LBNL review. The HWG also notes that LBNL peer review comments were addressed in the revised and updated groundwater model developed by independent CPUC EIR Team hydrogeologists (HydroFocus). In a public meeting held in Carmel on September 1, 2016, LBNL presented results of their peer review and HydroFocus described how they were incorporating and addressing LBNL peer review comments in the EIR.*

M. On pages 134 to 137, a MCWD Board member (speaking as a private citizen) refers to researchers and Ph.Ds as not having an agenda and, "just trying to get the science right." He then goes on to say with regard to researchers/Ph.D.s, "I'd be really upset if my science was called into question…"

HWG Response: *Again, the implication here seems to be that the CPUC EIR Team and/or the HWG have a particular "agenda" behind their science, which appear to be further attempts to impugn the integrity of the HWG and others. Furthermore, the speaker basically states that if you are a researcher and/or have a Ph.D., your science should not be subjected to peer review and/or criticism by others (or at least others who are not researchers and/or Ph.D.s). There are many points that HWG could make here, but many of them are documented in other reports/letters prepared by HWG. Thus, we limit our comments here to the following: 1) the Marina area AEM study was conducted by a team of MCWD consultants along with Stanford, and MCWD consultants have acknowledged doing the bulk of the work; 2) in the HWG's opinion, the AEM study has been used (primarily by MCWD consultants) to discredit the HWG, Monterey County Water Resources Agency, and the CPUC EIR Team based on flawed and/or inaccurate interpretations of the inverted AEM data; 3) because of these two points above, it is well within the rights of the HWG and the expectations of fellow scientists that the HWG would comment on the uncertainties and inaccuracies of the inverted AEM data hydrogeologic interpretations presented in the Final AEM Report and especially as* *further expounded upon by the MCWD GM and MCWD consultants. We would further note that two members of the HWG hold Ph.D.s, Dennis Williams and Barry Keller. Dr. Keller has a Ph.D. in geophysics. Dr. Williams has served as Research Professor and Instructor for the University of Southern California and was a primary author for the well-known hydrogeology textbook "Handbook of Groundwater Development". In addition, Mr. Durbin worked for the United States Geological Survey (USGS) for several years conducting groundwater research resulting in many USGS publications. The only "agenda" the HWG has is to get the science right for the MPWSP.*

N. Meeting transcript statements not responded to above by HWG.

HWG Response: *Just to be clear, the fact that HWG has responded above only to selected statements made at the public hearing (and has not commented on the majority of the statements made by various speakers) should not be inferred by others in any way to mean that HWG agrees with those statements/comments.*

Sincerely,

The Hydrogeologic Working Group (Dennis Williams, Tim Durbin, Martin Feeney, Peter Leffler)

Dennis Williams

Tim Durbin

Martin Feeney

Peter Leffler

Attachments:

Table 1	Monterey Bay Precipitation Station Summary
Table 2	Summary of MPWSP Monitoring Well Chloride and TDS Concentrations Relative to AGF Chloride Profile Figures
Figure 1	Comparison of AEM Profile with Field/Lab Based Chloride Concentrations
Figure 2	Annual Precipitation and Cumulative Departure from Mean Annual Precipitation in Marina, CA (1961-2018)

REFERENCES

Aqua Geo Frameworks (AGF), *Response to Comments on Aqua Geo Frameworks (AGF) Technical Memo to MCWD dated April 16, 2018 in HWG Comments on Technical Appendices/Attachments to Letters Submitted by MCWD and City of Marina to the CPUC and MBNMS on April 19, 2018, Dated August 15, 2018*, February 11, 2019.

California Public Utilities Commission (CPUC), *CalAm Monterey Peninsula Water Supply Project, Final Environmental Impact Report/Environmental Impact Statement, SCH# 2006101004*, March 2018.

EKI Environment & Water, *Inadequate Assessment of Potential Groundwater Impacts, Monterey Peninsula Water Supply Project, Marina Coast Water District, California (EKI B60094.09*), February 13, 2019.

Hopkins Groundwater Consultants (HGC), *Response to Comments for Consideration by City of Marina Planning Commission Regarding CALAM Monterey Peninsula Water Supply Project*, February 14, 2019.

The Hydrogeologic Working Group (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.

Staal, Gardner, and Dunne, *Ground Water Quality Assessment – District Well No. 5*, Letter Report prepared for Marina County Water District, 1991.

LIST OF ACRONYMS & ABBREVIATIONS

AEM	Aerial Electromagnetics
AGF	Aqua Geo Frameworks
bgs	below ground surface
Cal Am or CalAm	California American Water Company
CPUC	California Public Utilities Commission
DSA	Dune Sand Aquifer
DEIR	Draft Environmental Impact Report
DOI	depth of investigation
EC	Electrical Conductivity
EIR	Environmental Impact Report
EIR/EIS	Final Environmental Impact Report/Environmental Impact Statement
FEIR	Final Environmental Impact Report
FO-SVA	Ford Ord Salinas Valley Aquitard
GM	General Manager
GSP	Groundwater Sustainability Plan
HCM	Hydrogeologic Conceptual Model
HGC	Hopkins Groundwater Consultants
HWG	Hydrologic Working Group
LBNC	Lawrence Berkeley National Lab
MCWD	Marina Coast Water District
MCWRA	Monterey County Water Resources Agency
mg/L	Milligrams per Liter

LIST OF ACRONYMS & ABBREVIATIONS (CONT.)

MPWSP	Monterey Peninsula Water Supply Project
MW	Monitoring Well
RMM	Remy Moose Manley
SBWM	Seaside Basin Water Master
SGMA	Sustainable Groundwater Management Act
TDS	Total Dissolved Solids
TM	Technical Memorandum
TSW	test slant well
USGS	United States Geological Survey
180-FTE Aquifer	180-Foot Equivalent Aquifer

Tables

Table 1: Monterey Bay Precipitation Station Summary

Precipitation Station	Water Year Percent of Normal					Combined Water Years Percent of Normal		
	2015	2016	2017	2018	2019[a]	2015/2016	2017/18	2015-2018
Santa Cruz	75	111	174	67	111	93	120	107
Watsonville	84	125	185	69	119	105	127	116
Marina	87	131	162	79	NA	109	121	115
Monterey	81	109	NA	80	131	95	NA	NA
Carmel	89	133	138	75	187	111	107	109
Average	83	122	166	74	137	103	119	112

Salinas Precipitation Stations

WRCC Salinas	87	121	138	72	NA	104	105	105
HGC/EKI Salinas	77	104	128	55	NA	91	92	91
HGC/EKI Percent Difference Compared to Average	-7	-15	-23	-26	NA	-11	-23	-19

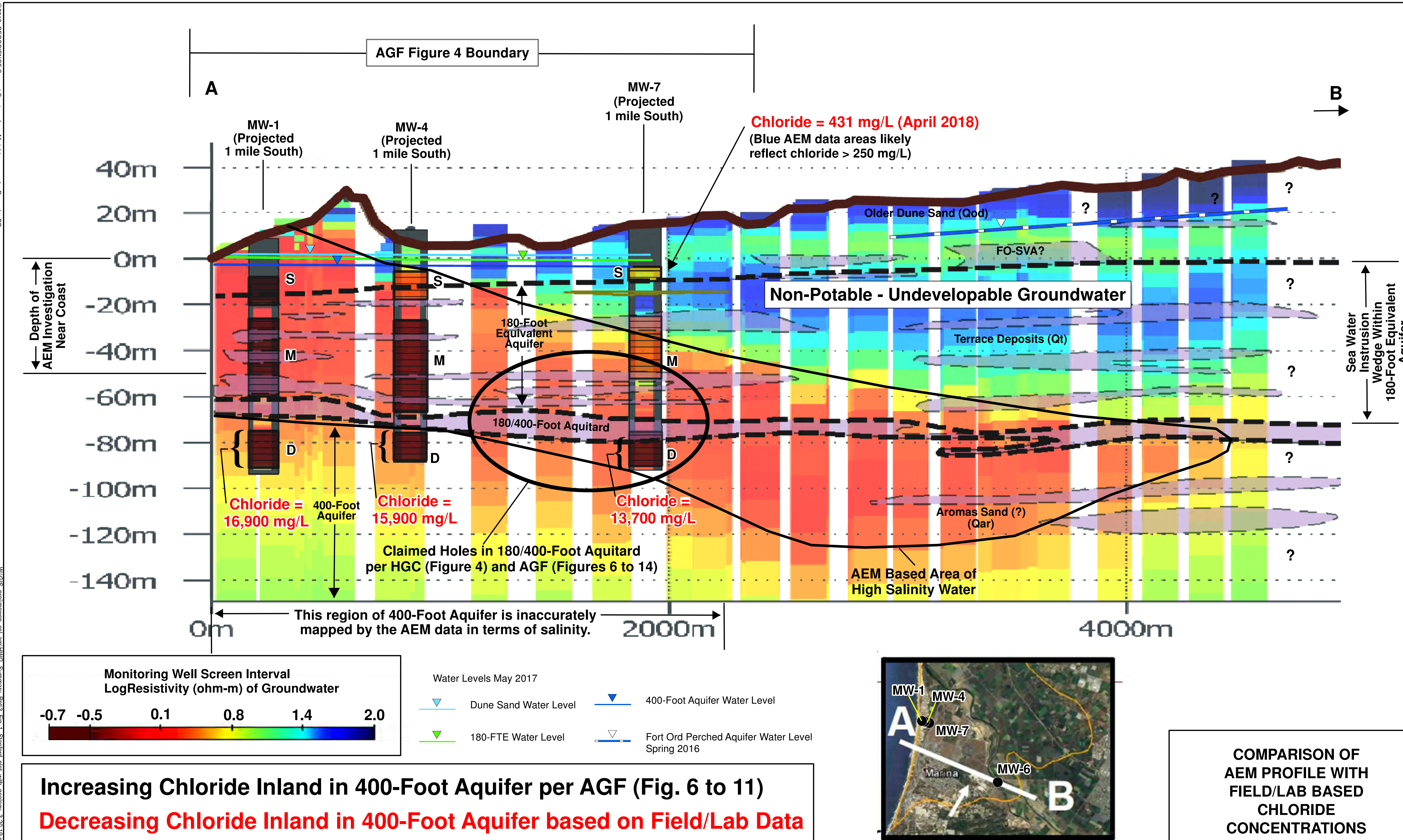
Notes:

a: Through End of February 2019.

Table 2: Summary of MPWSP Monitoring Well Chloride and TDS Values Relative to AGF Chloride Profile Figures

<table>
<tr><th>MPWSP MW ID/AGF Figure No.</th><th>Distance Inland (feet)</th><th>400-Ft Aquifer Chloride/TDS (mg/L)</th><th>AGF TM/AEM Study Interpretation</th><th>HWG Comments</th></tr>
<tr><td>MW-1D</td><td>300</td><td>16,900/30,700</td><td rowspan="4">"…salt water intrusion is…not down into the 400 ft Aquifer."</td><td rowspan="4">Available MPWSP data from MW-1D and MW-3D show nearly complete seawater intrusion in 400-Ft Aquifer at coast.</td></tr>
<tr><td>NA/Figure 6</td><td>800</td><td>NA</td></tr>
<tr><td>MW-3D</td><td>1,000</td><td>16,600/31,800</td></tr>
<tr><td>NA/Figure 8</td><td>1,800</td><td>NA</td></tr>
<tr><td>MW-4D</td><td>2,500</td><td>14,967/28,833</td><td></td><td rowspan="2">Available MPWSP from MW-4D located closer to ocean than this AGF profile line show very high chloride levels and heavy seawater intrusion in 400-Ft Aquifer.</td></tr>
<tr><td>NA/Figure 9</td><td>3,000</td><td>NA</td><td>High chloride concentration water is in the 180/400 ft Aquitard but has not reached the 400 ft Aquifer.</td></tr>
<tr><td>NA/Figure 10</td><td>4,000</td><td>NA</td><td>"…high chloride concentration zones have moved deeper, …very likely into the 400 ft aquifer."</td><td></td></tr>
<tr><td>NA/Figure 11</td><td>5,000</td><td>NA</td><td>"…very apparent that high chloride concentration materials are now within the 400 ft aquifer."</td><td rowspan="2">Available data from MW-7D show very high chloride concentrations in 400-Ft Aquifer, but lower than MPWSP monitoring wells closer to ocean.</td></tr>
<tr><td>MW-7D</td><td>5,800</td><td>13,700/27,700</td><td></td></tr>
</table>

Figures



W:GIS_proj/mcwsp_cal_am/HWG_Summary_Rpt/3_Fig_1_Stanford_plot_with_geology_3-20-19.mxd

19-Mar-19

COMPARISON OF AEM PROFILE WITH FIELD/LAB BASED CHLORIDE CONCENTRATIONS

FIGURE 1

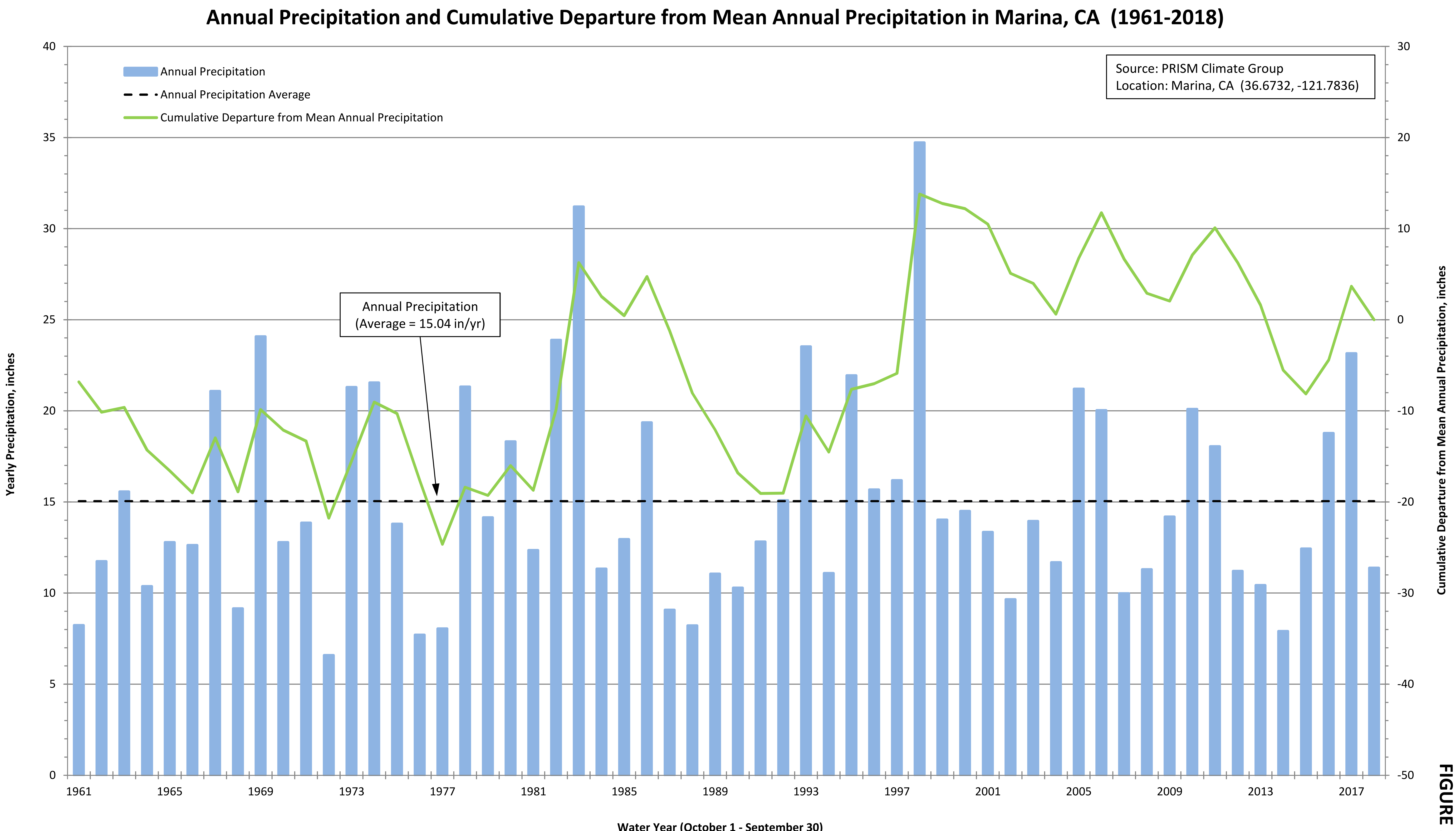

Annual Precipitation and Cumulative Departure from Mean Annual Precipitation in Marina, CA (1961-2018)
Annual Precipitation
Annual Precipitation Average
Cumulative Departure from Mean Annual Precipitation
Source: PRISM Climate Group
Location: Marina, CA (36.6732, -121.7836)
Annual Precipitation
(Average = 15.04 in/yr)
Yearly Precipitation, inches
Cumulative Departure from Mean Annual Precipitation, inches
Water Year (October 1 - September 30)
40
35
30
25
20
15
10
5
0
30
20
10
0
-10
-20
-30
-40
-50
1961
1965
1969
1973
1977
1981
1985
1989
1993
1997
2001
2005
2009
2013
2017

FIGURE 2

EXHIBIT E

2013051094

Notice of Preparation

To: State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

From: Monterey One Water
5 Harris Court, Building D
Monterey, CA 93940

Subject: Notice of Preparation of a Draft Environmental Impact Report

Monterey One Water will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the potential environmental effects are contained in the attached materials. A copy of the Initial Study (☐ is ☒ is not) attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

Please send your response to Rachel Gaudoin at the address shown above. We will need the name for a contact person in your agency.

Project Title: Expanded Pure Water Monterey Project

Project Applicant, if any: Monterey One Water

Date May 14, 2019

Signature RGaudoin

Title PUBLIC OUTREACH COORDINATOR

Telephone 831-645-4623

Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

Pure Water Monterey
A Groundwater Replenishment Project

Notice of Preparation of a Supplemental Environmental Impact Report and Public Scoping Meeting Notice

To: California Office of Planning and Research; Responsible and Trustee Agencies; County Clerks; and Other Interested Parties

Subject: Notice of Preparation of a Supplemental Environmental Impact Report and Public Scoping Meeting Notice

Project: Expanded Pure Water Monterey Groundwater Replenishment Project

Lead Agency: Monterey One Water

Date: May 15, 2019

This Notice of Preparation (NOP) has been prepared to notify agencies and interested parties that Monterey One Water (M1W), formerly Monterey Regional Water Pollution Control Agency, as the Lead Agency is beginning preparation of a Supplemental Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) for the proposed expansion of the Pure Water Monterey Groundwater Replenishment Project (Expanded PWM/GWR Project). M1W, in conjunction with the Monterey Peninsula Water Management District (MPWMD), is proposing an expansion of the capacity of the PWM/GWR Project which is currently under construction. The PWM/GWR Project's Advanced Water Purification Facility would be expanded from the current 5 million gallons per day (mgd) plant to up to a 7.6 mgd maximum capacity plant to enable an increase in groundwater replenishment from 4 mgd to up to 7.6 mgd. The proposed Expanded PWM/GWR Project also includes associated conveyance, injection and extraction facilities, as described below.

The proposed Expanded PWM/GWR Project would reduce discharges of secondary effluent to Monterey Bay and would replenish the Seaside Groundwater Basin with approximately 2,250 AFY of additional purified recycled water. Combined with the existing PWM/GWR Project yield this expansion would result in a total water supply yield of approximately 5,750 AFY to replace existing water supplies for California American Water Company's (CalAm) Monterey District service area and enable CalAm to comply with the State Board's Cease and Desist Order (Orders 95-10, 2016-0016) as amended. At this time, the Expanded PWM/GWR Project is considered a "back-up plan" to the Monterey Peninsula Water Supply Project (MPWSP), CalAm's planned 6.4 mgd desalination project. The Expanded PWM/GWR Project would be implemented in the event that the MPWSP encounters obstacles that prevent timely, feasible implementation.

This Notice of Preparation (NOP) includes a brief description of the Expanded PWM/GWR Project and the environmental topics to be addressed in the Supplemental EIR. The proposed expansion would constitute a change to the previously approved PWM/GWR Project. Therefore, the Supplemental EIR will evaluate whether any new or substantially more severe impacts on the environment would result from the project changes, compared to the environmental impacts disclosed in the previously certified PWM/GWR Project EIR and Addenda. The Supplemental EIR also will incorporate the applicable mitigation measures that were identified in the previously certified EIR and Addenda.

M1W is soliciting comments from all interested persons, responsible and trustee agencies and organizations as to the scope and content of the Supplemental EIR and the environmental information to be analyzed in connection with the proposed Expanded PWR/GWR Project. The Final EIR for the PWM/GWR Project was certified in October 2015. Addenda to that EIR were approved in June 2016 (Addendum No. 1), February 2017 (Addendum No. 2), and October 2017 (Addendum No. 3). The Final EIR and Addenda to the EIR can be found at the following link http://purewatermonterey.org/reports-docs/.

In accordance with CEQA, agencies and the public are requested to review the description of the Expanded PWM/GWR Project provided in this NOP and provide comments on environmental issues related to the commenting agencies' statutory responsibilities. The Supplemental EIR will be used by M1W, MPWMD and other Responsible Agencies when considering approval of the Expanded PWM/GWR Project.

Location: The Expanded PWM/GWR Project would be located within northern Monterey County and would include facilities located within the City of Seaside and portions of the unincorporated Monterey County, as shown in Figures 2 and 3. The Expanded PWM/GWR Project would increase the amount of purified recycled water available to replenish the Seaside Groundwater Basin, replacing existing water supplies for CalAm's Monterey District service area and enabling CalAm to comply with the State Board's Cease and Desist Order as amended. The NOP is available at http://www.purewatermonterey.org and at M1W's offices, located at 5 Harris Court, Building D Monterey, CA 93940.

Comments on the NOP must be received by M1W no later than 30 days after publication of this NOP. The NOP has been made available for public review on May 15, 2019.

Comments on this NOP must be received no later than **June 14, 2019** at 5 PM. Please send your comments, including a return address, contact name, and email to this address:

Mail: Monterey One Water Email: purewatermontereyinfo@my1water.org
Attn: Rachel Gaudoin
5 Harris Court, Building D, Monterey, CA 93940

Public Scoping Meeting: A public meeting will be held to receive public comments and suggestions on the scope of the Supplemental EIR. The scoping meeting will be open to the public on the following date in the following location:

Wednesday, June 5, 2019 at 5:30 p.m.
Oldemeyer Center: Blackhorse Meeting Room
986 Hilby Avenue, Seaside, CA 93955

Expanded Pure Water Monterey Groundwater Replenishment Project

Notice of Preparation

Introduction and Background

Monterey One Water (M1W, formerly the Monterey Regional Water Pollution Control Agency or MRWPCA), in partnership with the Monterey Peninsula Water Management District (MPWMD), is proposing an expanded Pure Water Monterey Groundwater Replenishment Project (Expanded PWM/GWR Project) to create a reliable source of water supply to replace existing water supply sources for the Monterey Peninsula in northern Monterey County. **Figure 1** below shows M1W's existing infrastructure and service area. The Expanded PWM/GWR Project would increase the amount of purified recycled water produced by the PWM/GWR Project that is currently under construction.

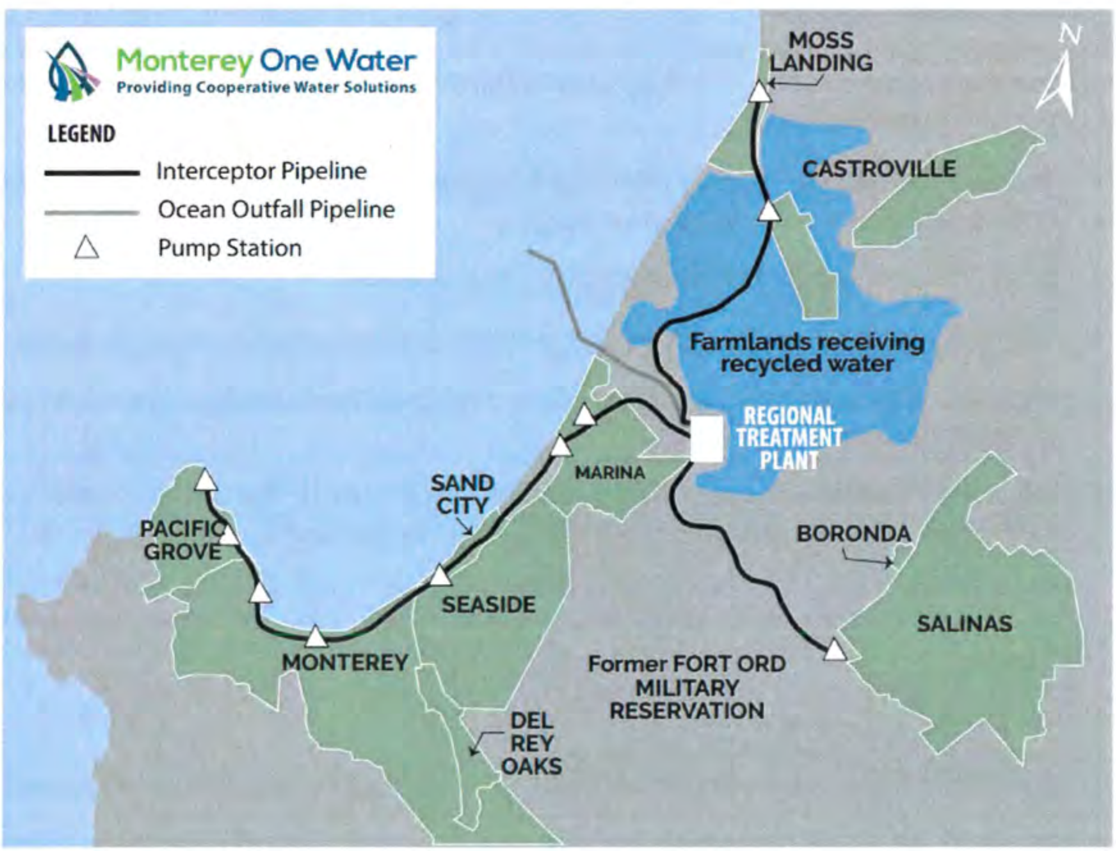


Figure 1. M1W Service Area

As approved, the PWM/GWR Project will create a reliable source of water supply by taking highly-treated water from the Advanced Water Purification Facility (AWPF)[1] and recharging the Seaside Groundwater Basin with the treated water using a series of shallow and deep injection wells. Once injected into the Seaside Groundwater Basin, treated water will mix with the groundwater present in the aquifers and be stored for future extraction and use. The primary purpose of the approved PWM/GWR Project is to provide 3,500 acre-feet per year (AFY) of high quality replacement water to California American Water Company (CalAm) for delivery to its customers in the Monterey District service area; thereby enabling CalAm to reduce its diversions from the Carmel River system by this same amount[2]. CalAm is under a state order to secure replacement water supplies by December 2021.[3] (Please refer to discussion below for a full description of the approved PWM/GWR Project). **Figure 2** shows the approved PWM/GWR Project facility locations.

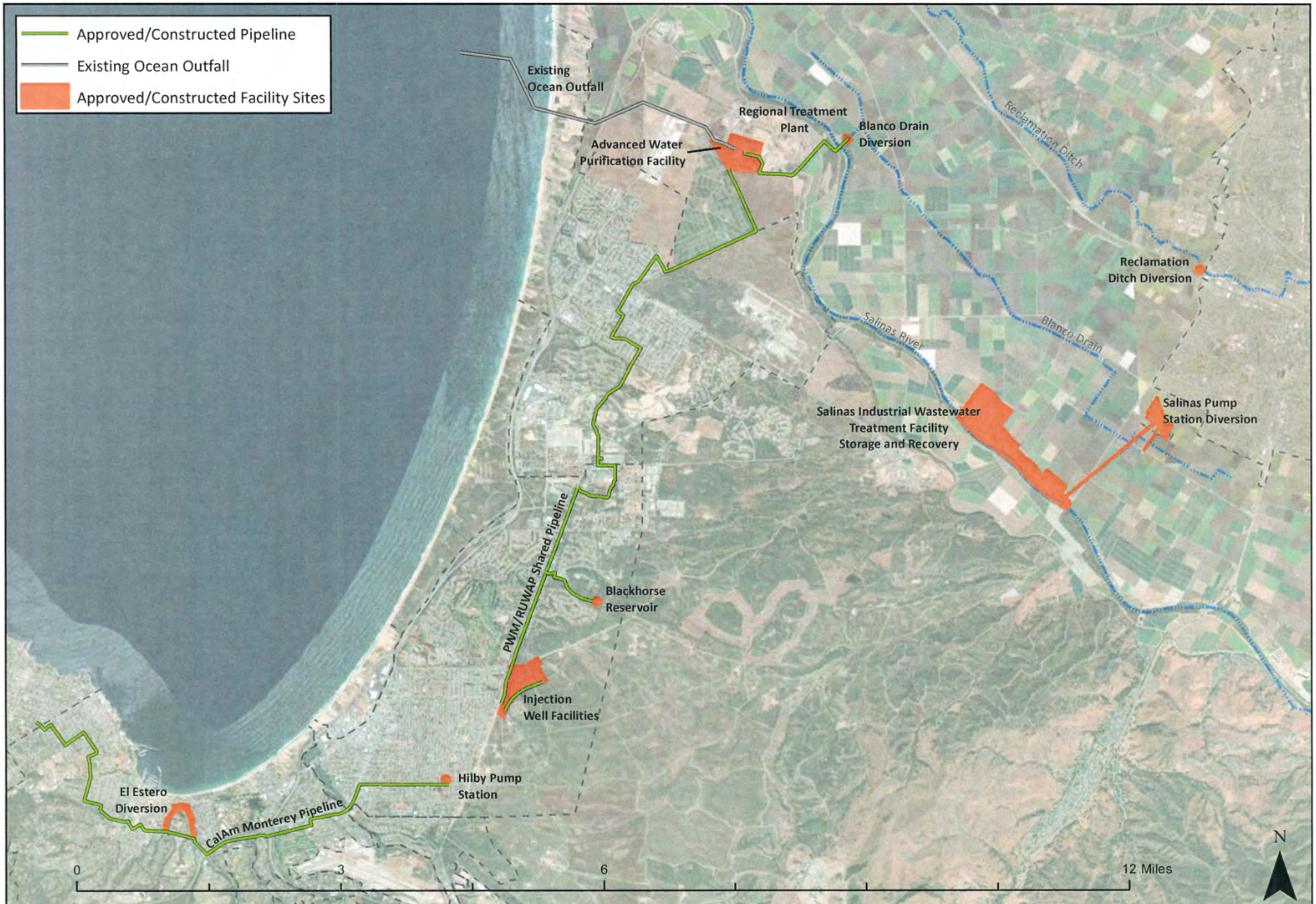
The Expanded PWM/GWR Project would increase the AWPF peak capacity from the current 5 million gallons per day (mgd) to 7.6 mgd and increase recharge of the Seaside Groundwater Basin with high quality purified water by an additional 2,250 AFY (for a total PWM/GWR Project yield of 5,750 AFY). At this time, the Expanded PWM/GWR Project is considered a "back-up plan" to the MPWSP, CalAm's planned 6.4 mgd desalination project. The Expanded PWM/GWR Project would be implemented in the event that the MPWSP encounters obstacles that prevent its timely, feasible implementation. The Expanded PWM/GWR Project would include the following new or modified M1W facilities:

- improvements to the existing PWM/GWR Project AWPF (adding equipment, pipelines, and storage within the existing plant site);
- up to 2 miles of new purified water conveyance pipelines;
- one new injection well at a new eastern wellfield area and associated infrastructure;
- relocation of one approved injection well site and associated infrastructure to the eastern wellfield area; and
- relocation of previously approved monitoring well sites to the area between a new eastern injection well area and extraction wells along General Jim Moore Boulevard.

[1] Also referred to as the Advanced Water Treatment Facility (AWTF).

[2] The approved PWM/GWR Project also includes a drought reserve component to support crop irrigation during dry years. Under this component, an extra 200 AFY of advanced treated water will be injected in the Seaside Groundwater Basin during normal and wet years, up to a total of 1,000 AF, to create a "banked reserve." During drought years, M1W will reduce the amount of water injected into the Seaside Groundwater Basin in order to increase production of recycled water for crop irrigation. CalAm will be able to extract the banked water in the Seaside Groundwater Basin to make up the difference to its supplies, such that its extractions and deliveries will not fall below 3,500 AFY.

[3] The State Water Resources Control Board's Cease and Desist Order 95-10 required the reduction of CalAm pumping from the Carmel River; Order 2016-16 extended the time period for withdrawals above legal limits from the Carmel River through 2021.



Partners for Pure Water Solutions

Monterey One Water

Monterey Peninsula Water Management District

Prepared by Denise Duffy and Associates

Approved Pure Water Monterey Project Overview Map

2

May 2019

In order for CalAm to pump additional groundwater injected by the Expanded PWM/GWR Project into the Seaside Groundwater Basin and deliver it to meet its system demands, the following CalAm potable water system improvements would be required:

- two (2) new extraction wells, plus two (2) new extraction wells for system redundancy and associated infrastructure;
- wellhead disinfection (chlorination) treatment systems at the existing Paralta Well and two new extraction wells; and
- potable and raw water pipelines along General Jim Moore Boulevard and at the Seaside Middle School site.

In addition, one or more future urban storm water to sanitary sewer diversions (such as planned sanitary sewer diversion projects in Seaside and Monterey) may provide additional source water for the Expanded PWM/GWR Project. The locations of the above-described facilities are shown on **Figure 3.** These additional source waters are not necessary to achieve the Expanded PWM/GWR Project's recycled water yield objective of an additional 2,250 AFY of replacement supplies, nor would these additional source waters increase the Expanded PWM/GWR Project yield above 2,250 AFY. Rather, these additional source waters, if they come to fruition, would provide greater supply reliability for the Expanded PWM/GWR Project.

Monterey One Water

M1W was established in 1979 under a Joint Powers Authority agreement between the City of Monterey, the City of Pacific Grove and the Seaside County Sanitation District. M1W currently operates the regional wastewater treatment plant, including a water recycling facility (collectively, known as the Regional Treatment Plant or RTP), a non-potable water distribution system known as the Castroville Seawater Intrusion Project (CSIP), sewage collection pipelines, and wastewater pump stations. M1W's RTP is located two miles north of the City of Marina, on the south side of the Salinas River, and has a permitted capacity to treat 29.6 mgd of wastewater effluent. At the RTP, water is treated to meet Title 22 California Code of Regulations (CCR) Standards (tertiary filtration and disinfection) for unrestricted agricultural irrigation use, and the remainder is treated to meet secondary effluent water quality standards and the California Ocean Plan in M1W's National Pollutant Discharge Elimination System (NPDES) permit for ocean discharge. Commencing in 2019 with the startup and operation of the PWM/GWR Project, a portion of secondary effluent flows will be treated to Title 17 and Title 22 CCR at the AWPF for groundwater replenishment of the Seaside Groundwater Basin (Please refer to the below discussion for more detail on the PWM/GWR Project under construction).

Partners for Pure Water Solutions

Monterey One Water

Monterey Peninsula Water Management District

Prepared by Denise Duffy and Associates

Expanded Pure Water Monterey Project Overview Map

3

May 2019

Seaside Groundwater Basin

The Seaside Groundwater Basin underlies an approximately 19- square-mile area underlying the Cities of Seaside, Sand City, and Del Rey Oaks, California State University Monterey Bay to the north, and open space overlying the former Fort Ord from the City of Seaside Boundary east to approximately Laguna Seca raceway, adjacent to Monterey Bay. A steep decline in groundwater elevation since 1995 in the northern coastal portion of the basin, where most of the groundwater production occurs, has coincided with increased extraction in that area after the State Water Resources Control Board required CalAm to reduce its Carmel River diversions, and instead maximize its pumping in the Seaside Groundwater Basin. Historical and persistent low groundwater elevations caused by pumping have led to concerns that seawater intrusion may threaten the Seaside Groundwater Basin's groundwater resources. In 2006, an adjudication process (CalAm v. City of Seaside et al., Case No. M66343) led to the issuance of a court decision that created the Seaside Groundwater Basin Watermaster (Watermaster). The Watermaster consists of nine representatives, one representative from each: CalAm, City of Seaside, Sand City, City of Monterey, City of Del Rey Oaks, MPWMD and Monterey County Water Resources Agency, and two representatives from landowner groups. The Watermaster has evaluated water levels in the basin and has determined that while seawater intrusion does not appear to be occurring at present, current water levels are lower than those required to protect against seawater intrusion. Water levels were found to be below sea level in both the Paso Robles (the shallower aquifer) and the Santa Margarita aquifers of the Seaside Groundwater Basin in 2012; therefore, it is recognized that recharge into both aquifers would be beneficial for protection against seawater intrusion.

State Orders to Reduce Carmel River Diversions

The 255-square-mile Carmel River Basin is bounded by the Santa Lucia Mountains to the south and the Sierra del Salinas to the north. The Carmel Valley aquifer, which underlies the alluvial portion of the Carmel River downstream of San Clemente Dam, is about six square-miles and is approximately 16 miles long. In the summer and fall, the alluvial aquifer is drawn down by CalAm and private pumpers. Historically, this combined pumping has resulted in dewatering of the lower six miles of the river for several months in most years and up to nine miles in dry and critically dry years.

In 1995, the State Water Resources Control Board issued Order No. WR 95-10, which found that CalAm was diverting more water from the Carmel River Basin than it was legally entitled to divert. The State Water Resources Control Board ordered CalAm, instead, to maximize diversions (to the extent feasible) from the Seaside Groundwater Basin and endeavor to secure a legal replacement supply. In addition, a subsequent Cease and Desist Order (SWRCB Order No. 2009-0060) issued in 2009 required CalAm to secure replacement water supplies for its Monterey District service area and reduce its Carmel River diversions to 3,376 AFY by the 2016-17 timeframe. In July 2016, the State Water Resources Control Board issued Order 2016-0016, amending the Cease and Desist Order by extending the time period for unauthorized withdrawals from the Carmel River through December 31, 2021.

CalAm, working with local agencies, has proposed construction and operation of a CalAm owned and operated desalination project (known as the Monterey Peninsula Water Supply Project or MPWSP)[4] to provide a part of the replacement water needed to comply with the Cease and Desist Order as amended and the Seaside Groundwater Basin Adjudication, in conjunction with the PWM/GWR Project. The California Public Utilities Commission, as the CEQA lead agency for the MPWSP, published the Final EIR/EIS in March 2018, and approved the MPWSP in September 2018.

Approved PWM/GWR Project Facilities and CEQA Documentation

Previously Approved Pure Water Monterey Groundwater Replenishment Project

On October 8, 2015, the Board of Directors of M1W approved the PWM/GWR Project as modified by the Alternative Monterey Pipeline and the Regional Urban Water Augmentation Project[5] (RUWAP) alignment for the product water conveyance system and certified the Final EIR (PWM/GWR EIR) (State Clearinghouse No. 2013051094). The stated primary objective of the PWM/GWR Project was to replenish the Seaside Groundwater Basin with 3,500 AFY of purified recycled water to replace a portion of CalAm's water supply as required by State Water Resources Control Board orders. The originally approved PWM/GWR Project included a 4 mgd capacity AWPF for treatment and production of purified recycled water that will be conveyed for injection into the Seaside Groundwater Basin using a series of shallow and deep injection wells. The injected water will then mix with the existing groundwater and be stored for urban use by CalAm, thus enabling a reduction in Carmel River system diversions by the same amount. CalAm will recover the groundwater at existing wells (indirect potable reuse). PWM/GWR Project product water conveyance facilities include ten miles of pipeline from the AWPF to injection wells in the Seaside Groundwater Basin.

Previously Approved Pure Water Monterey Groundwater Replenishment Project Expansion

On October 30, 2017, the Board of Directors of M1W approved modifications to the PWM/GWR Project to increase the operational capacity (peak or maximum product water flowrate) of the approved AWPF from 4.0 mgd to 5.0 mgd. This expanded capacity is achieved by using redundancies in the AWPF design and the purpose of the expansion is to enable delivery of 600 AFY of purified recycled water to Marina Coast Water District (MCWD) for urban landscape irrigation by MCWD customers. The additional recycled water delivery is a component of the approved RUWAP, an urban recycled water project developed by MCWD. The source water for the capacity expansion is entirely from contractual rights to the return of its municipal wastewater in addition to a portion of M1W's summer water allocation per the Amended and Restated Water Recycling Agreement. In April 2016 (amended in October 2017), M1W Board of Directors approved joint (shared) use of product water storage and conveyance facilities,

[4] CalAm submitted Application A.12-04-019 (*Application of CAW for Approval of the Monterey Peninsula Water Supply Project*) to the California Public Utilities Commission.

[5] The RUWAP is a recycled water project developed by MCWD in cooperation with M1W. RUWAP was originally developed to help MCWD meet the overall needs of its service area, delivering tertiary-treated and disinfected recycled water produced at the existing Salinas Valley Reclamation Plant ("SVRP") to urban users in the MCWD service area and former Fort Ord.

including Blackhorse Reservoir, with MCWD for the RUWAP and the PWM/GWR Projects (PWM/GWR EIR Addendum No. 3)[6].

Previously Approved PWM/GWR Project Overview

Figure 2 includes a map of the previously approved PWM/GWR Project. The previously approved PWM/GWR Project components identified above include[7]:

Source Water Diversion and Storage Sites

These facilities include source water diversion, conveyance, and storage facilities at Blanco Drain, Reclamation Ditch, the Salinas Pump Station, Salinas Industrial Wastewater Treatment Facility (SIWTF) and associated conveyance system. The PWM/GWR project also includes diversion structures and pipelines that have not been funded or constructed, including at the western edge of Lake El Estero and at Tembladero Slough.[8] The approved and funded facilities under construction will enable new source waters to be diverted into the existing municipal wastewater collection system and to the RTP to supplement the existing incoming wastewater flows.

Treatment Facilities at the Regional Treatment Plant

These include the AWPF and pump station facilities at the RTP that provide treatment and production of purified recycled water. The AWPF will include a state-of-the-art treatment system that uses multiple membrane barriers to purify the water, product water stabilization to prevent pipe corrosion due to water purity, a pump station, and a brine and wastewater mixing facility. The water treated by the AWPF will meet or exceed federal and state drinking water standards, including those set forth in Titles 17 and 22. The approved PWM/GWR Project also includes modifications to the Salinas Valley Reclamation Plant to improve delivery of recycled water to agricultural users, although this component has not been funded.

Product Water Conveyance

These facilities include the Product Water Conveyance Pipeline and Blackhorse Reservoir shared by the PWM/GWR and RUWAP projects and appurtenant facilities to transport the purified recycled water from the AWPF to the Seaside Groundwater Basin for injection.

Injection Well Facilities

The injection facilities include new wells (eight in total, four in the shallow and four in the deep aquifers), back-flush facilities, pipelines, electricity/power distribution facilities, and electrical/motor control buildings.

---

[6] Note: the combined RUWAP-PWM conveyance system, also termed the Shared Product Water Conveyance Facilities, was also approved by MCWD in March 2016 (RUWAP Addendum No. 3).

[7] Source: Resolution October 2015, Monterey Regional Water Pollution Control Agency Board (now M1W) as modified by October 2017 Approvals (including Addendum No 3 to the PWM EIR and Addendum No. 3 to the RUWAP EIR).

[8] The Tembladero Slough diversion is no longer being pursued as part of the PWM/GWR Project due conditions imposed by the State Water Resources Control Board in water rights permits for the Blanco Drain and the Reclamation Ditch source water diversions.

CalAm Distribution System

CalAm distribution facilities necessary for water delivery from the Seaside Groundwater Basin and CalAm water distribution system improvements (Monterey Pipeline and Hilby Pump Station) to deliver the extracted groundwater to CalAm customers.

As approved, the PWM/GWR Project will provide the following benefits when it is fully operational:

Replenishment of the Seaside Groundwater Basin

The PWM/GWR Project will replenish the Seaside Groundwater Basin with 3,500 AFY of purified recycled water to replace a portion of CalAm's water supply as required by state orders, including State Regional Water Resources Control Board (State Water Board) Order WR 2009-0060, as amended by Order WR 2016-0016. This will enable CalAm to reduce its diversions from the Carmel River system by up to 3,500 AFY by injecting the same amount of purified recycled water into the Seaside Groundwater Basin. The PWM/GWR Project also includes a drought reserve program that provides a total of 200 AFY (up to 1,000 AF total) of water to the Seaside Groundwater Basin.[9]

Additional Recycled Water for Agricultural Irrigation in Northern Salinas Valley

The approved PWM/GWR Project included diverting and using additional new source waters and improving the existing water recycling facility at the RTP (the Salinas Valley Reclamation Plant) to produce additional recycled water for use in the CSIP's agricultural irrigation system. It is anticipated that in normal and wet years, thousands of acre-feet of additional recycled water supply could be created for agricultural irrigation purposes.

Existing Environmental Compliance and Permits

The PWM/GWR Project has undergone substantial environmental review and regulatory compliance. Key environmental review documents and permitting approvals include the following:

- The certified PWM/GWR Project EIR prepared to support project approvals and meet the requirements of the Clean Water State Revolving Fund loan program that is partially funded through the U.S. Environmental Protection Agency (certified October 8, 2015; available at: www.purewatermonterey.org) and Addenda by responsible agencies, and by M1W, the lead agency. Addendum No. 1 (2016) and Addendum No. 2 (2017) to the PWM/GWR EIR were approved by the MPWMD (related to the Monterey Pipeline and Hilby Pump Station) and Addendum No. 3 to the PWM/GWR EIR was approved by the M1W in October 2017 (related to Shared Conveyance Facilities and Increased Capacity at the AWPF).

[9] The Expanded PWM/GWR Project will not change either of the two groundwater banking programs (drought reserve and operational reserve) that are part of the approved PWM/GWR Project. The drought reserve would build a water storage account of up to 1,000 acre-feet (AF) of water in the Seaside Basin during normal and wet years. The extra recharge during normal and wet years would be offset by an increase in CSIP deliveries and a corresponding decrease in Seaside Groundwater Basin injection by up to 1,000 AFY during dry years, during which CalAm will continue to pump 3,500 AFY by using some of the drought reserve account. .

- Letter of concurrence from the State Historic Preservation Office completing the NHPA Section 106 process (April 19, 2016);
- U.S. Fish and Wildlife Service Biological Opinion for compliance with Endangered Species Act (ESA) Section 7 Consultation (December 20, 2016);
- Letter of concurrence from the National Oceanic and Atmospheric Administration National Marine Fisheries Service (December 5, 2016);
- Clean Water Section 404 Authorization to Fill Waters of the U.S. from the U.S. Army Corps of Engineers for the Blanco Drain and Reclamation Ditch Diversions (Source Waters components) (January 18, 2017);
- Clean Water Section 401 Water Quality Certification from the SWRCB for the Blanco Drain and Reclamation Ditch Diversions (March 30, 2017);
- California Fish and Game Code Section 1602 Lake and Streambed Alteration Agreement for the Blanco Drain and Reclamation Ditch Diversions (June 8, 2017);
- SWRCB Water Rights Permits 21376 and 21377 for the diversion of surface waters from Blanco Drain and Reclamation Ditch (March 17, 2017);
- Clean Water State Revolving Fund (CWSRF) CEQA findings and a Notice of Determination (January 2017);
- State Lands Commission, Land Lease Approval (April 2017);
- U.S. Bureau of Reclamation, Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) Pure Water Monterey Groundwater Replenishment Project (June 20, 2017);
- National Pollutant Discharge Elimination System Permit / Waste Discharge Requirements Reissuance for the Monterey One Water Regional Wastewater Treatment Plant and Advanced Water Purification Facility Discharge to the Pacific Ocean (December 6, 2018); and
- National Oceanic and Atmospheric Administration, Monterey Bay National Marine Sanctuary, EA and FONSI for the Authorization of the National Pollutant Discharge Elimination System Permit for the Monterey One Water Regional Wastewater Treatment Plant and Advanced Water Purification Facility (April 1, 2019).

In addition, private and local agency permits and approvals (including easements, right of entry agreements, land lease/sales, and encroachment permits), have been secured for the PWM/GWR Project. Entities include: CalAm, Cities of Seaside, Marina, Salinas; Fort Ord Reuse Authority; Marina Coast Water District; Monterey Bay Air Resources Board; Monterey County Health Department; Environmental Health Division; Monterey County Resource Management Agency; Monterey County Water Resources Agency; Monterey Peninsula Water Management

District;[10] Monterey Peninsula Airport District/Airport Land Use Commission; Monterey Regional Waste Management District; Pacific Gas and Electric; Seaside Groundwater Basin Watermaster; and local landowners.

Expanded PWM/GWR Project Description

Environmental documentation previously completed divided the PWM/GWR Project into the following components, as described in this document: Source Water Diversion and Storage Sites, Treatment Facilities at the Regional Treatment Plant, Product Water Conveyance, Injection Well Facilities, and CalAm Distribution System. To increase the amount of water available to CalAm under the Expanded PWM/GWR Project, several changes to these PWM/GWR Project Components would be required. See **Figure 3**. The following describes the proposed changes under this Expanded PWM/GWR Project:

Changes to Source Water Diversion and Storage Sites
No new source water diversion and storage sites are necessary to achieve the Expanded PWM/GWR Project's recycled water yield objective of an additional 2,250 AFY of replacement supplies. The Expanded PWM/GWR Project is designed to utilize existing M1W contractual rights to source waters and wastewaters.

However, one or more future urban storm water to sanitary sewer diversions (such as planned sanitary sewer diversion projects in Seaside and Monterey) may provide additional source water for the Expanded PWM/GWR Project. These additional source waters would not increase the Expanded PWM/GWR Project yield above 2,250 AFY. Rather, these additional source waters, if they come to fruition, would provide greater supply reliability for the Expanded PWM/GWR Project.

- The City of Seaside's proposed 90-inch Storm Water Diversion and Trash Capture Project would involve the installation and operation of a diversion structure on the 90-inch storm drain to divert dry weather and wet weather flows to hydrodynamic separators designed to remove sediment and debris from the water prior to diversion to the sanitary sewer. .
- Additional urban storm water to sanitary sewer diversion projects have been described in the Monterey Peninsula Water Recovery Study (see Appendix D of http://montereysea.org/stormwater-resource-plan/). The diversion project (the "diversion to sanitary sewer" portion) that was the top-ranked project from that study would be located near Hartnell Gulch.

Changes to Treatment Facilities at the Regional Treatment Plant
Modifications to the Advanced Water Purification Facility. The design and physical features of the AWPF currently under construction (the PWM/GWR Project as approved) allow operation of the AWPF at a peak capacity of 5.0 mgd. Expanding the AWPF to produce up to 7.6 mgd will require installation of additional treatment and pumping equipment, chemical storage, pipelines

[10] MPWMD approved the Hilby Pump Station and changes to the Monterey Pipeline through the required Water Distribution System permit, using the PWM/GWR EIR and Addenda No. 1 and 2.

and facility appurtenances within the 3.5-acre existing building area. The AWPF would be designed to produce a seasonal peak of 7.6 mgd.

Changes to Product Water Conveyance

The Expanded PWM/GWR Project would require an additional Product Water Conveyance pipeline and, potentially, an additional booster pump station. To serve new injection well sites, the Expanded PWM/GWR Project would require the addition of up to 2 miles of 16-inch diameter pipeline and appurtenances. The pipeline would be located within existing unpaved and paved roads from the Marina Coast Water District's Blackhorse Reservoir to a new injection well site located in the area on the south side of Eucalyptus Road near the eastern boundary of the City of Seaside. See **Figure 4** for the location of this new purified recycled water pipeline that would carry water from the Blackhorse Reserve to the new eastern injection well facilities area.

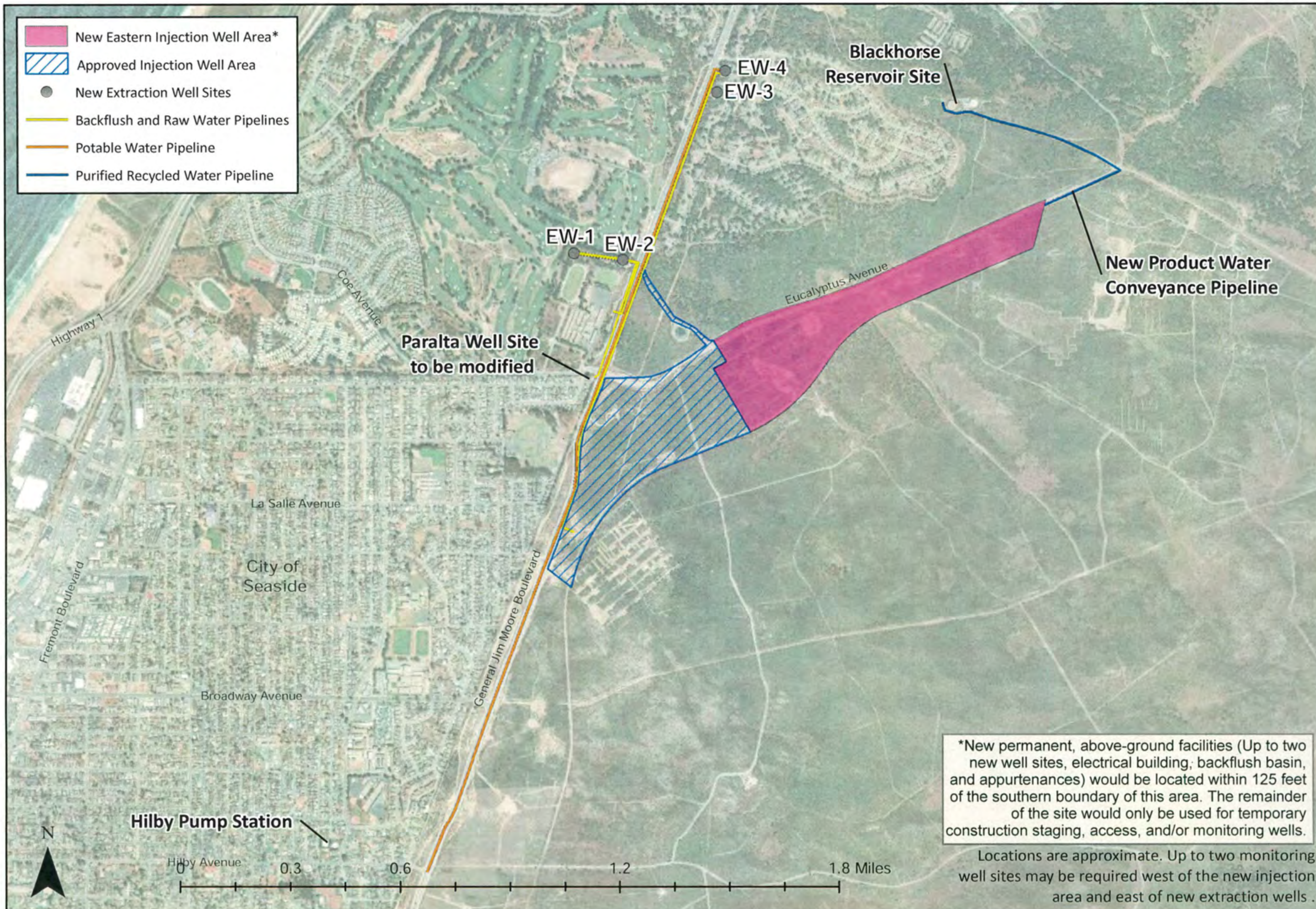
In addition, a new booster pump station may be required to accommodate the additional water produced by the AWPF. Due to friction losses in the conveyance pipeline, the conveyance system may not have enough energy to enable adequate injection of purified recycled water at certain well sites (for example those at the highest elevations) without additional pumping. Therefore, a small booster pump station may be required to boost the flows to one or more potential injection well sites within the original injection well facilities area. If needed, this pump station would be within the boundaries of the previously approved injection well facilities construction areas.

Changes to Injection Well Facilities

Modifications to Injection Well Facilities. The approved PWM/GWR Project includes subsurface groundwater recharge facilities, including shallow (or vadose zone) and deep injection wells located within the Seaside Groundwater Basin in the area shown on **Figure 2**, the Approved Injection Well Facilities Area. The existing vadose zone wells inject water into the unsaturated soils overlying the uppermost aquifer (the unconfined Paso Robles Aquifer), and the deeper wells inject into the confined Santa Margarita Aquifer. Final project design and project permitting have resulted in minor modifications to the layout of the Injection Well Facilities site and have provided information to the team to refine the locations of the remaining two (2) deep wells originally planned. The PWM/GWR Project EIR evaluated four clusters of injection well facilities, each with one deep injection well and one shallow injection well. For an Expanded PWM/GWR Project, M1W would construct the remaining two (2) of the four (4) planned deep injection wells. However, for the Expanded PWM/GWR Project one of those planned deep injection well sites would be relocated farther to the northeast to the new Eastern Injection Well Area, and one additional new deep injection well would be constructed in the new Eastern Injection Well Area. No new vadose zone wells are proposed compared to the approved PWM/GWR Project that included four (4) new vadose zone wells. With the expansion, the total number of injection wells (8) will be no more than with the Approved PWM/GWR Project.[11] Each well would be equipped with associated backwash pumps and appurtenances. Under the approved PWM/GWR Project,

[11] The Approved PWM/GWR Project included analysis of eight (8) total injection wells: four (4) shallow and four (4) deep. The Expanded PWM/GWR Project may require eight (8) total injection wells with up to five (5) deep injection wells and up to three (3) shallow injection wells.

monitoring wells were proposed to be installed between the new deep injection well site and nearest downgradient extraction well. Although the locations of these monitoring wells are not shown on **Figure 3** and **Figure 4**, they would be located in the area between General Jim Moore Boulevard and the eastern injection wellfield area shown. This location would be different from the location for the monitoring wells under the approved PWM/GWR Project. A new electrical building and percolation basin for backwash water disposal (percolation into the vadose zone) would be included at a central location within the eastern Injection Well Facilities Area. The Expanded PWM/GWR Project would potentially include increasing the capacity of the approved percolation basin.



Partners for Pure Water Solutions

Monterey One Water

Monterey Peninsula Water Management District

Prepared by Denise Duffy and Associates

Expanded Pure Water Monterey Project
Injection and Extraction Facilities Map

4

May 2019

Changes to CalAm Distribution System

Extraction Wells. For CalAm to utilize the additional purified recycled water produced by the Expanded PWM/GWR Project, additional potable water extraction wells, wellhead treatment and pipelines would be required.[12] See **Figure 4** for proposed locations of the new CalAm facilities. To reliably meet the proposed yield of the Expanded PWM/GWR Project, CalAm would construct and operate two (2) new extraction wells, plus two additional extraction wells to provide system redundancy/back-up. Collectively these new extraction wells are identified as Extraction Wells 1 through 4. Extraction Wells 1 and 2 would be located just north of Seaside Middle School. The Blackhorse Golf Course is located to the north and west of Extraction Well sites 1 and 2. Extraction Wells 3 and 4 would be located just to the east of General Jim Moore Boulevard, near the southeast corner of the intersection of General Jim Moore Boulevard and Ardennes Circle on U.S. Army-owned property in the Fitch Park neighborhood of the Ord Military Community. Extraction Wells 3 and 4 would be designed consistent with the Aquifer Storage and Recover (ASR) Wells 5 and 6 as analyzed in previous environmental documentation prepared for the MPWSP; however, these wells would only include the capability to extract and treat groundwater, and would not include any above-ground facilities needed to enable injection. Extraction Wells 3 and 4 would be constructed to provide additional system extraction redundancy only. Each extraction well would include a well pump and motor, chlorination dosing equipment, and associated electrical equipment, which would be contained on an approximately 100 square foot concrete pad. CalAm may elect to install emergency generators at one or more extraction well sites, depending upon their need for system reliability. No new extraction wells were proposed or approved as part of the PWM/GWR Project, thus these extraction wells were not included in the construction areas of the PWM/GWR Project approved on October 8, 2015.

Potable and Raw Water Pipelines. In addition, for the Expanded PWM/GWR Project CalAm would construct and operate new potable and raw water pipelines to convey the water from the new extraction wells to treatment facilities (including new wellhead chlorination system at the existing CalAm Paralta Well) and to the existing CalAm distribution system. An up to 36-inch pipeline that would be up to approximately 2 ½ miles in length would be installed in the General Jim Moore Boulevard right of way. The pipeline would begin at Extraction Well 4 (the northern most extraction well) and connect to the existing ASR pipe network at ASR Wells 1 and 2 (Santa Margarita site). From that point, water would be distributed to CalAm customers throughout the region. This new potable water pipeline was not included in the approved PWM/GWR Project.

Potential Environmental Impacts

M1W, as the CEQA Lead Agency, proposes to prepare a focused Supplemental EIR to support the approval of changes to the PWM/GWR Project. The Supplemental EIR on the Expanded PWM/GWR Project will evaluate potential environmental effects associated with construction, operation, and maintenance activities. When M1W decides whether to approve the changes to the project, the M1W Board must consider the previous EIR as revised by the Supplemental EIR.

[12] The approved PWM/GWR Project assumed extraction would occur using existing potable wells, disinfection treatment processes, and distribution systems (after the injected water meets regulatory-required residence time with groundwater in the Seaside Basin).

Therefore, the M1W Board will ultimately consider the Supplemental EIR in combination with the previous PWM/GWR EIR, which was certified in October 2015, and the adopted Addenda (refer to Approved PWM/GWR Project Facilities and CEQA Documentation, above).

The Supplemental EIR is intended to serve as a supplement to the previously adopted 2015 Final EIR, impacts and conditions presented in the previous EIR will serve as the primary base of comparison for the analysis. Elements of the prior analysis that are unchanged will not be repeated in the Supplemental EIR.

The Supplemental EIR for the Expanded PWM/GWR Project will assess the following issues of potential environmental effects focusing only on the revised project components as discussed above:

Aesthetics Resources

Expanded project facilities would predominantly be underground or located on existing water and wastewater facility sites. Those facilities that are not located on existing water and wastewater facility sites would be designed to visually blend into the environment through use of vegetative screening and/or appropriate materials and colors. The Supplemental EIR will evaluate visual/aesthetic impacts related to the Expanded PWM/GWR Project's limited above-ground facilities, including visual character, scenic vistas, and new sources of light and glare.

Agricultural and Forest Resources

There are no agricultural for forest resources within the Expanded PWM/GWR Project sites where components would be constructed. The evaluation of agricultural and forest resources as addressed in the 2015 Final EIR will not be updated in the Supplemental EIR.

Air Quality and Greenhouse Gas Emissions

The project site is located within the Monterey Bay Air Resources District (formerly the Monterey Bay Unified Air Pollution Control District). Construction of the expanded facilities would generate emissions from construction equipment exhaust, earth movement, construction workers' commutes, and material hauling. Operation of pump stations, wells, and treatment facilities would require use of electricity, which would generate greenhouse gas emissions. The Supplemental EIR will evaluate construction- and operation-related emissions of criteria air pollutants and greenhouse gas emissions from these expanded facilities and expanded operations.

Biological Resources

The Supplemental EIR will evaluate potential impacts of the expanded project facilities on terrestrial special-status animal and plant species, sensitive habitats, mature native trees, and migratory birds that may occur in the Expanded PWM/GWR Project area. The Supplemental EIR will also address potential impacts to marine resources from the expanded project and compliance with the California Ocean Plan water quality objectives.

Cultural Resources

Construction of new expanded facilities both above and below-ground could encounter previously unknown archaeological or paleontological resources during ground disturbance and excavation. The Supplemental EIR will assess if there are any potential effects of the Expanded PWM/GWR Project on cultural resources, including archaeological, paleontological, and Native American resources, and Tribal cultural resources.

Geology, Soils, and Seismicity

Construction and operation of the Expanded PWM/GWR Project will occur in a seismically active region. The Supplemental EIR will focus on new or expanded areas of ground-disturbing activities, soils and seismic hazards, and potential for soil erosion from the expanded facilities.

Hazards and Hazardous Materials

Construction of the Expanded PWM/GWR Project facilities would require excavation of the existing ground surface, which could uncover contaminated soils or hazardous substances that pose a substantial hazard to human health or the environment. The Supplemental EIR will focus evaluation on the potential for hazardous materials to be encountered during construction of the expanded facilities. The analysis will also consider the proper handling, storage, and use of hazardous chemicals that may be used during construction and operation of the expanded facilities.

Hydrology and Water Quality

Through the use of groundwater modeling and hydrogeologic analyses, the Supplemental EIR will evaluate changes in local groundwater quality, storage, and levels within the groundwater basins as a whole and their subbasins, as appropriate. The Supplemental EIR will describe the recharge, storage, and recovery capacities of the Seaside Groundwater Basin and describe potential impacts of recharge and extraction activities at the Expanded PWM/GWR Project locations. Potential effects on the seawater/freshwater interface (i.e., seawater intrusion) will also be evaluated. The Expanded PWM/GWR Project would be designed to comply with California Department of Public Health and Regional Water Quality Control Board standards and requirements to protect public health and water quality.

Construction and operation of the Expanded PWM/GWR Project could affect surface water quality and hydrologic systems/processes in the construction areas. Potential impacts to be evaluated include alteration of drainage patterns and increase in stormwater flows due to increase in the amount of impervious surfaces, and degradation of surface water quality as a result of erosion and sedimentation, hazardous materials release during construction, and construction dewatering discharges. The Expanded PWM/GWR Project would be designed to comply with standard construction and operational requirements, the California Ocean Plan, and permits under the National Pollutant Discharge Elimination System and Waste Discharge Requirements.

Land Use Planning

Implementation of the Expanded PWM/GWR Project includes construction and operation of new facilities and water supply infrastructure within the same planning jurisdictions as evaluated in the PWM/GWR EIR. The Supplemental EIR will focus on the proposed expanded facilities and determinations of consistency with established plans, policies, and regulations, as well as compatibility with the existing and future land use patterns in the area, including adjacent land uses. Because most conveyance facilities will be underground, and because the proposed treatment facilities would be located at the existing AWPF site at the M1W Regional Treatment Plant, significant effects on land use patterns are not anticipated.

Mineral Resources

The PWM/GWR EIR addressed local mineral resources; the evaluation of these resources as addressed in the 2015 Final EIR will not need to be updated in the Supplemental EIR.

Noise and Vibration

Implementation of the Expanded PWM/GWR Project would require construction and operation of expanded facilities that would potentially generate additional noise and vibration. The Supplemental EIR will focus on the potential noise sources and evaluate the proximity of sensitive receptors to the Expanded PWM/GWR Project components to assess whether the facilities would comply with local noise policies and ordinances.

Population and Housing

Implementation of the Expanded PWM/GWR Project would enhance the reliability of the water supply within the Monterey Peninsula area. The project would provide replacement water rather than new water to serve growth. The Supplemental EIR will identify current population and employment projections and identify local planning jurisdictions with the authority to approve growth and mitigate secondary effects of growth.

Public Services and Recreation

Implementation of the Expanded PWM/GWR Project would be unlikely to affect demand for public services, or to require new or expanded facilities for public service providers. The 2015 EIR previously assessed the potential for impacts on police and fire protection services, schools, parks and recreational facilities. This evaluation will not need to be updated in the Supplemental EIR.

Water Supply and Wastewater Systems

Implementation of the Expanded PWM/GWR Project would enhance the reliability of the water supply within the Monterey Peninsula area. The Supplemental EIR will address the Expanded PWM/GWR Project's effect on water supplies. Implementation of the Expanded PWM/GWR Project is not expected to have a new adverse impact related to wastewater treatment facilities.

Transportation and Traffic

The Supplemental EIR will generally describe the types of construction activities that would be generated by the Expanded PWM/GWR Project focusing on temporary increases in traffic volumes along local and regional roadways from construction of expanded facilities.

Utilities, Service Systems, and Energy

Implementation of the Expanded PWM/GWR Project would result in increased use of pump stations, extraction wells, conveyance and treatment facilities, which would increase the amount of electricity use required locally to achieve regional water supply goals. The Supplemental EIR will evaluate energy consumption from the expanded facilities and compare the proposed energy use with energy demands in the 2015 EIR.

Cumulative and Growth Inducing Impacts

The Supplemental EIR also will evaluate potential growth-inducing impacts that could result from implementation of the Expanded PWM/GWR Project. The Supplemental EIR will address whether the Expanded PWM/GWR Project would have impacts that are individually limited, but cumulatively considerable when combined with the impacts of other past, present and reasonably foreseeable future projects (i.e., cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects).

Monterey One Water
Providing Cooperative Water Solutions

AGENDA
Recycled Water Committee (RWC)

Ron Stefani (Chair)
John M. Phillips, John Gaglioti, Nick Smith and Tyller Williamson

Thursday, April 18, 2019

Meeting Location:
Monterey One Water (M1W) Administrative Office
Conference Room
5 Harris Court, Bldg D, Monterey, CA 93940

---

1. **CALL TO ORDER**

2. **ROLL CALL**

3. **PUBLIC COMMENTS**
   Anyone wishing to address the Committee on matters not appearing on the Agenda may do so now. Comments on any other matter listed on the Agenda are welcome at the time the matter is being considered y the Committee.

4. **CONSIDER APPROVAL OF RWC MINUTES OF MARCH 14, 2019**

5. **UPDATE ON CPUC WATER PROCEEDINGS (A.12-04-019), MONTEREY PENINSULA REGIONAL WATER AUTHORITY, AND TECHNICAL ADVISORY COMMITTEE**

6. **UPDATE ON GROUNDWATER REPLENISHMENT (GWR) PROJECT AND URBAN RECLAMATION PROJECTS**

7. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH COVELLO, A PSOMAS COMPANY, FOR CONSTRUCTION MANAGEMENT FOR THE BLANCO DRAIN AND RECLAMATION DITCH DIVERSION FACILITIES PROJECT FOR A NOT-TO-EXCEED COST OF $150,000**

8. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH E2 CONSULTING ENGINEERS FOR ENGINEERING SERVICES DURING CONSTRUCTION (ESDC) FOR THE BLANCO DRAIN AND RECLAMATION DITCH DIVERSION FACILITIES PROJECT FOR A NOT-TO-EXCEED COST OF $65,000**

9. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH SCHAAF & WHEELER FOR ENGINEERING AND HYDROLOGIC SERVICES FOR THE PURE WATER MONTEREY PROJECT EXPANSION FOR A NOT-TO-EXCEED COST OF $12,000**

10. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH TODD GROUNDWATER FOR HYDROGEOLOGIC SUPPORT AND GROUNDWATER MODELING SERVICES FOR THE PURE WATER MONTEREY PROJECT EXPANSION (BACK-UP PLAN) FOR A NOT-TO-EXCEED COST OF $58,500**

11. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH PERKINS COIE FOR CEQA LEGAL SERVICES SUPPORT FOR THE PURE WATER MONTEREY PROJECT EXPANSION ((BACK-UP PLAN) FOR A NOT-TO-EXCEED COST OF $40,000**

12. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH DENISE DUFFY & ASSOCIATES FOR THE INITIAL ENVIRONMENTAL REVIEW AND SCOPING OF THE PURE WATER MONTEREY PROJECT EXPANSION (BACK-UP PLAN) FOR A NOT-TO-EXCEED ADDITIONAL COST OF $25,534**

13. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH KENNEDY JENKS FOR DESIGN SERVICES FOR THE POTENTIAL PURE WATER MONTEREY PROJECT EXPANSION (BACK-UP PLAN) FOR A NOT-TO-EXCEED COST OF $20,000**

14. **CONSIDER RECOMMENDING APPROVAL OF AN AMENDMENT TO THE CONTRACT WITH GHD FOR ADDITIONAL PROGRAM MANAGEMENT SERVICES FOR THE PURE WATER MONTEREY PROJECT FOR A NOT-TO-EXCEED COST OF $372,560**

15. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH LARRY WALKER & ASSOCIATES FOR ADDITIONAL REGULATORY SERVICES FOR THE PURE WATER MONTEREY GROUNDWATER REPLENISHMENT PROJECT FOR A NOT-TO-EXCEED COST OF $130,511**

16. **STAFF REPORTS**

17. **COMMITTEE MEMBER COMMENTS/REPORTS**

18. **RECESS TO CLOSED SESSION**
    As permitted by Government Code Section 54956 et seq. the Committee may adjourn to a closed session to consider specific matters dealing with pending or threatened litigation, certain personnel matters, or certain property negotiation matters.

    A. Significant Exposure to Litigation
       Pursuant to Government Code §54956.9(d)(2) or (3)
       One Potential Case

19. **POSSIBLE ACTION ON CLOSED SESSION**

20. **ADJOURNMENT**

* * * * * *

This Committee Meeting Notice and Agenda was posted at:

Monterey One Water
5 Harris Court, Building D
Monterey, CA 93940

POSTED: Friday, April 12, 2019

BY: ______________________________
Board Clerk

Monterey One Water
Providing Cooperative Water Solutions

ACTION MINUTES **DRAFT**

RECYCLED WATER COMMITTEE

Thursday, April 18, 2019
3:00 pm to 4:42 pm

5 Harris Court, Building D
Monterey, California

AGENDA

1. **CALL TO ORDER**
2. **ROLL CALL**
3. **PUBLIC COMMENTS**
4. **CONSIDER APPROVAL OF RWC MINUTES OF MARCH 14, 2019**
5. **UPDATE ON CPUC WATER PROCEEDINGS (A.12-04-019), MONTEREY PENINSULA REGIONAL WATER AUTHORITY, AND TECHNICAL ADVISORY COMMITTEE**
6. **UPDATE ON GROUNDWATER REPLENISHMENT (GWR) PROJECT AND URBAN RECLAMATION PROJECTS**
7. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH COVELLO, A PSOMAS COMPANY, FOR CONSTRUCTION MANAGEMENT FOR THE BLANCO DRAIN AND RECLAMATION DITCH DIVERSION FACILITIES PROJECT FOR A NOT-TO-EXCEED COST OF $150,000**
8. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH E2 CONSULTING ENGINEERS FOR ENGINEERING SERVICES DURING CONSTRUCTION (ESDC) FOR THE BLANCO DRAIN AND RECLAMATION DITCH DIVERSION FACILITIES PROJECT FOR A NOT-TO-EXCEED COST OF $65,000**
9. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH SCHAAF & WHEELER FOR ENGINEERING AND HYDROLOGIC SERVICES FOR THE PURE WATER MONTEREY PROJECT EXPANSION FOR A NOT-TO-EXCEED COST OF $12,000**
10. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH TODD GROUNDWATER FOR HYDROGEOLOGIC SUPPORT AND**

Ayes: Stefani, Gaglioti, Smith, Williamson

Noes: None

Absent: Phillips

8. <u>CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH E2 CONSULTING ENGINEERS FOR ENGINEERING SERVICES DURING CONSTRUCTION (ESDC) FOR THE BLANCO DRAIN AND RECLAMATION DITCH DIVERSION FACILITIES PROJECT FOR A NOT-TO-EXCEED COST OF $65,000</u>

Associate Engineer Kouretas presented this item and answered questions from the Committee.

<u>ACTION TAKEN</u>: It was moved by Member Gaglioti, seconded by Member Williamson, to approve a contract amendment with E2 Consulting Engineers for engineering services during construction (ESDC) for the Blanco Drain and Reclamation Ditch Diversion Facilities project for a not-to-exceed cost of $65,000, and carried by the following vote:

Ayes: Stefani, Gaglioti, Smith, Williamson

Noes: None

Absent: Phillips

9. <u>CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH SCHAAF & WHEELER FOR ENGINEERING AND HYDROLOGIC SERVICES FOR THE PURE WATER MONTEREY PROJECT EXPANSION FOR A NOT-TO-EXCEED COST OF $12,000</u>

Principal Engineer Holden presented this item and answered questions from the Committee.

<u>ACTION TAKEN</u>: It was moved by Member Smith seconded by Member Gaglioti, to approve a contract amendment with Schaaf & Wheeler for Engineering and Hydrologic Services for the Pure Water Monterey Project Expansion for a not-to-exceed cost of $12,000, and carried by the following vote:

Ayes: Stefani, Gaglioti, Smith, Williamson

Noes: None

Absent: Phillips

10. <u>CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH TODD GROUNDWATER FOR HYDROGEOLOGIC SUPPORT AND</u>

GROUNDWATER MODELING SERVICES FOR THE PURE WATER MONTEREY PROJECT EXPANSION (BACK-UP PLAN) FOR A NOT-TO-EXCEED COST OF $58,500

Principal Engineer Holden presented this item and answered questions from the Committee.

Member Williamson left the room at 4:25 pm

ACTION TAKEN: It was moved by Member Gaglioti seconded by Member Smith, to approve a Contract Amendment with Todd Groundwater for Hydrogeologic Support and Groundwater Modeling Services for the Pure Water Monterey Project Expansion (Back-Up Plan) for a not-to-exceed cost of $58,500, and carried by the following vote:

Ayes: Stefani, Gaglioti, Smith,

Noes: None

Absent: Phillips, Williamson

Abstain: None

Member Williamson returned and was seated at 4:30 pm

11. CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH PERKINS COIE FOR CEQA LEGAL SERVICES SUPPORT FOR THE PURE WATER MONTEREY PROJECT EXPANSION (BACK-UP PLAN) FOR A NOT-TO-EXCEED COST OF $40,000

Principal Engineer Holden presented this item.

ACTION TAKEN: It was moved by Member Williamson seconded by Member Gaglioti, to approve a contract amendment with Perkins Coie for CEQA Legal Services Support for the Pure Water Monterey Project Expansion (Back-Up Plan) for a not-to-exceed cost of $40,000, and carried by the following vote:

Ayes: Stefani, Gaglioti, Smith, Williamson

Noes: None

Absent: Phillips

12. CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH DENISE DUFFY & ASSOCIATES FOR THE INITIAL ENVIRONMENTAL REVIEW AND SCOPING OF THE PURE WATER MONTEREY PROJECT EXPANSION (BACK-UP PLAN) FOR A NOT-TO-EXCEED ADDITIONAL COST OF $25,534

Principal Engineer Holden presented this item.

ACTION TAKEN: It was moved by Member Smith, seconded by Member Gaglioti, to approve a contract amendment with Denise Duffy & Associates for the Initial Environmental Review and Scoping of the Pure Water Monterey Project Expansion (Back-Up Plan) for a not-to-exceed additional cost of $25,534, and carried by the following vote:

Ayes: Stefani, Gaglioti, Smith, Williamson
Noes: None
Absent: Phillips

13. **CONSIDER RECOMMENDING APPROVAL OF A CONTRACT AMENDMENT WITH KENNEDY JENKS FOR DESIGN SERVICES FOR THE POTENTIAL PURE WATER MONTEREY PROJECT EXPANSION (BACK-UP PLAN) FOR A NOT-TO-EXCEED COST OF $20,000**

Principal Engineer Holden presented this item and answered questions from the Committee.

ACTION TAKEN: It was moved by Member Williamson, seconded by Member Gaglioti, to approve a Contract Amendment with Kennedy Jenks for Design Services for the Potential Pure Water Monterey Project Expansion (Back-Up Plan) for a not-to-exceed Cost of $20,000, and carried by the following vote:

Ayes: Stefani, Gaglioti, Smith, Williamson
Noes: None
Absent: Phillips

14. **CONSIDER RECOMMENDING APPROVAL OF AN AMENDMENT TO THE CONTRACT WITH GHD FOR ADDITIONAL PROGRAM MANAGEMENT SERVICES FOR THE PURE WATER MONTEREY PROJECT FOR A NOT-TO-EXCEED COST OF $372,560**

Assistant General Manager McNarie presented this item and answered questions from the Committee.

ACTION TAKEN: It was moved by Member Wiliamson, seconded by Member Gaglioti, to approve an amendment to the Contract with GHD for Additional Program Management Services for the Pure Water Monterey Project for a not-to-exceed cost of $372,560, and carried by the following vote:

Ayes: Stefani, Gaglioti, Smith, Williamson
Noes: None
Absent: Phillips

Monterey One Water
Providing Cooperative Water Solutions

AGENDA

Regular Meeting
Board of Directors

Monday, April 29, 2019

5:00 PM - Closed Session
(Regular Session will Start at 6:00 PM)

Meeting Location:
Monterey One Water (M1W) Administrative Office
Board Room
5 Harris Court, Bldg D, Monterey, CA 93940

BOARD OF DIRECTORS

[Note: M1W Board Members are appointed from their respective Joint Powers Authority (JPA) jurisdictions]

Ron Stefani, Chair	Castroville Community Services District
Mary Ann Carbone, Vice Chair	Sand City
Linda Grier	Boronda County Sanitation District
John M. Phillips	County of Monterey
John Gaglioti	Del Rey Oaks
Thomas P. Moore	Marina Coast Water District
Tyller Williamson	Monterey
Nick Smith	Pacific Grove
Gloria De La Rosa	Salinas
Jason Campbell	Seaside
VACANT	United States Army - Ex-Officio
Paul A. Sciuto	General Manager

You are invited to visit our Website @ www.montereyonewater.org to access a description of Monterey One Water and its Mission Statement.

NOTE: All enclosures and staff materials regarding the following agenda items are available for public review on Tuesday, April 23, 2019 through Monday, April 29, 2019, at the Monterey One Water's Administrative Office in Monterey at Ryan Ranch, M1W Regional Treatment Plant, and at the public libraries located in Castroville, Marina, Monterey, Pacific Grove, Salinas, and Seaside.

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Board Clerk, Chayito Ibarra at (831) 645-4603 or chayito@my1water.org. Notification 30 hours prior to the meeting will enable the Agency to make reasonable arrangements to ensure accessibility to this meeting. Later requests will be accommodated to the extent feasible.

1. CALL TO ORDER

2. ROLL CALL

3. CLOSED SESSION

As permitted by Government Code Section 54956 et seq., the Board may adjourn to a Closed or Executive Session to consider specific matters dealing with pending or potential litigation, certain personnel matters, real property negotiations, or confer with the MRWPCA's Meyers-Milias-Brown representative.

A. Significant Exposure to Litigation
Pursuant to Government Code §54956.9(d)(2) or (3)
One Potential Case

B. Conference with Labor Negotiator
Pursuant to Government Code §54957.6
Agency Negotiator: Paul A. Sciuto, General Manager
Employee Organizations:
General Employees Association (GEA)
Mid-Management Employees Group (MMEG)
Management Employees Group (MEG)
Operations Employees' Bargaining Group (OEBG)

4. RECONVENE OPEN SESSION AT 6:00 PM

5. ANNOUNCEMENTS FROM CLOSED SESSION

The Board will report out on any reportable action taken during Closed Session, and may take additional action in Open Session, as appropriate.

6. PLEDGE OF ALLEGIANCE

7. PUBLIC COMMENTS

Anyone wishing to address the Board on matters not appearing on the Agenda may do so now for not more than three (3) minutes. Comments on any other matter listed on the Agenda are welcome at the time the matter is being considered by the Board.

8. CONSENT AGENDA

The Consent Agenda consists of routine items for which Board approval can be taken with a single motion and vote. A Board Member may request that any item be placed on the Regular Agenda for separate consideration.

A. Consider Approval of Board Minutes for Regular Board Meeting of March 25, 2019

B. Receive Schedule of Cash and Investments as of February 2019

C. Receive Check Register for March 2019

D. Receive WDR and NPDES Reports; Plant and Community Influent Flows; and Effluent Water Quality for March 2019

E. Receive Budget Adjustment Report for April 2019

F. Receive Interim Financial Report for March 2019

G. Consider Approval of a Contract Amendment with Covello, A Psomas Company, for Construction Management for the Blanco Drain and Reclamation Ditch Diversion Facilities Project for a Not-To-Exceed Cost of $150,000

H. Consider Approval of a Contract Amendment with E2 Consulting Engineers for Engineering Services During Construction (ESDC) for the Blanco Drain and Reclamation Ditch Diversion Facilities Project for a Not-to-Exceed cost of $65,000

I. Consider Approval of a Contract Amendment with Schaaf & Wheeler for Engineering and Hydrologic Services for the Pure Water Monterey Project Expansion (Back-Up Plan) for a Not-to-Exceed Cost of $12,000

J. Consider Approval of a Contract Amendment with Denise Duffy & Associates for the Initial Environmental Review and Scoping of the Pure Water Monterey Project Expansion (Back-Up Plan) for a Not-to-Exceed cost of $25,534

K. Consider Approval of a Contract Amendment with Kennedy Jenks for Design Services for the Potential Pure Water Monterey Project Expansion (Back-Up Plan) for a Not-to-Exceed cost of $20,000

L. Consider Approval of a Contract Amendment with Perkins Coie for California Environmental Quality Act (CEQA) Legal Services Support for the Pure Water Monterey Project Expansion (Back-Up Plan) for a Not-to-Exceed cost of $40,000

M. Consider Approval of a Contract Amendment with Todd Groundwater for Hydrogeologic Support and Groundwater Modeling Services for the Pure Water Monterey Project Expansion (Back-Up Plan) for a Not-to-Exceed cost of $58,500

N. Consider Approval of a Contract Amendment with Larry Walker & Associates for Additional Regulatory Services for the Pure Water Monterey Groundwater Replenishment Project for a Not-to-Exceed cost of $130,511

9. COMMITTEE REPORTS

Committee Reports provide an opportunity for the Board to receive a report from the Committee Chair, review Committee's draft minutes, ask questions, and receive Public Comments on any of the Informational Items considered at the Committee Meeting. The Committee's recommendations for Board Action Items are presented under Action Items which follows this agenda item.

A. BUDGET/PERSONNEL COMMITTEE (BPC) – APRIL 12, 2019 CANCELLED

B. RECYCLED WATER COMMITTEE (RWC) – APRIL 18, 2019
1. Receive RWC Draft Minutes of April 18, 2019

10. ACTION ITEMS

Action Items consist of business which requires a vote by the Board. These items are acted upon in the following sequence: (1) Staff Reports; (2) Board Questions to Staff; (3) Public Comments; and, (4) Board Discussion and Action.

A. Consider Award of Contract to KCK, Inc., for Repair of Chlorine Scrubber Fiberglass Tank for a Not-to-Exceed cost of $93,870.07

Staff Recommendation: That the Board of Directors Award Contract to KCK Inc., for Repair of Chlorine Scrubber Fiberglass Tank and authorize payment in the amount of $93,870.07 to cover the total cost of repairs.

B. Consider Recertification of M1W's Sanitary Sewer System Management Plan (SSMP).

Staff Recommendation: That the Board of Directors recommend recertification of M1W's updated Sanitary Sewer System Management Plan (SSMP), Dated April 2019.

C. Consider Approval of an Amendment to the Contract with GHD for Additional Program Management Services for the Pure Water Monterey Project for a Not-to-Exceed Cost of $498,160.

RWC Recommendation: That the Board of Directors approve an amendment to the contract with GHD for a Not-to-Exceed cost of $498,160 for continued Program Management Services and initiation of the Fiscal Sustainability Plan for the PWM Project for a Total Contract Amount of $1,503,40

D. Consider Approval of an Increase to the Ford Hall Company Inc. Purchase Order for the Automated Weir Wolf Cleaning System in the Not to Exceed Amount of $36,501.18

Staff Recommendation: That the Board of Directors Approve an increase to the Ford Hall Company Inc. Automated Weir Wolf Cleaning System Purchase Order in the amount of $36,501.18 for a total Purchase Order amount of $122,846.18 and approve a budget transfer of $28,000 from Account #35-7675 (Sludge Collection Equipment & Repair).

11. INFORMATIONAL ITEMS

Informational Items are normally provided in the form of a written report or update and may not require Board action. Staff will not usually make a presentation on these items. However, the Board may wish to ask questions or discuss an Informational Item, or request action on a certain item.

A. Pure Water Monterey Update

12. STAFF REPORTS

Staff Reports include items for which verbal reports/presentations will be provided. If a specific presentation is planned, it will be listed and summary information may be included with the Agenda. Brief oral reports may be provided for items arising after Agenda preparation. The Board may wish to ask questions or discuss a staff report, but no action is appropriate other than referral to staff, or request that a matter be set as a future Agenda item.

13. BOARD MEMBER COMMENTS/REPORTS

Board Members may ask a question for clarification, make a brief announcement or make a brief comment or report on his or her own activities within the jurisdiction of the Agency. No discussion or action is appropriate other than referral to staff for consideration or setting a matter as a future agenda item.

14. ADJOURNMENT

Next Board Meetings:

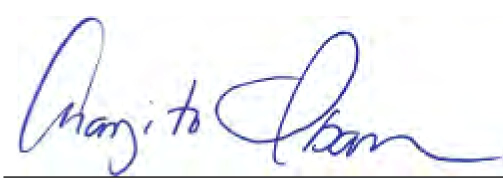
- Regular Board Meeting, Thursday, May 23, 2019

* * * * * *

This Agenda was posted at:

Monterey One Water
5 Harris Court, Building D
Monterey, CA 93940

POSTED: Tuesday, April 23, 2019

BY: 

Board Clerk

DRAFT

ACTION MINUTES

Regular Meeting
Monterey One Water
Board of Directors

April 29, 2019

1. **CALL TO ORDER**
The Regular Meeting of the Board of Directors of the Monterey One Water was called to Order by Acting Chair Stefani at 5:10 p.m., on Monday, April 29, 2019 in the Board Room of the Monterey One Water Administrative Office located at 5 Harris Court, Building D, Monterey, California.

2. **ROLL CALL**

BOARD MEMBERS PRESENT:

Ron Stefani, Chair	Castroville Community Services District
Mary Ann Carbone, Vice Chair	Sand City
John M. Phillips	County of Monterey
John Gaglioti	Del Rey Oaks
Thomas P. Moore [arrived at 5:20 pm]	Marina Coast Water District
Tyller Williamson	Monterey
Nick Smith	Pacific Grove
Gloria De La Rosa	Salinas
Jason Campbell	Seaside

BOARD MEMBERS ABSENT:

Linda Grier	Boronda County Sanitation District

M1W STAFF PRESENT:

Paul A. Sciuto	General Manager
Rob Wellington	Legal Counsel
Tamsen McNarie	Assistant General Manager
Fred Marsh	Business Services Manager/CFO
Alma Garcia	Administrative Support Specialist
Bob Holden	Principal Engineer
Rachel Gaudoin	Public Outreach Coordinator
Mike McCullough	Government Affairs Administrator
Jennifer Gonzalez	Engineering Manager
Jose O. Guzman	Operations Supervisor
Dave Lindow	Pure Water Monterey Program Manager
Yohana Vargas	Contracts Administrator

M. Consider Approval of a Contract Amendment with Todd Groundwater for Hydrogeologic Support and Groundwater Modeling Services for the Pure Water Monterey Project Expansion (Back-Up Plan) for a Not-to-Exceed Cost of $58,500

N. Consider Approval of a Contract Amendment with Larry Walker & Associates for Additional Regulatory Services for the Pure Water Monterey Groundwater Replenishment Project for a Not-To-Exceed Cost of $130,511

9. COMMITTEE REPORTS

A. BUDGET/PERSONNEL COMMITTEE (BPC) – APRIL 12, 2019 (Cancelled)

B. RECYCLED WATER COMMITTEE (RWC) – APRIL 18, 2019
1. Receive RWC Draft Minutes of April 18, 2019

ACTION TAKEN: It was moved by Member Phillips, seconded by Member Gaglioti, to receive the RWC Draft Minutes of April 18, 2019, and carried by the following vote:

Ayes: Stefani, Carbone, Phillips, Gaglioti, Moore, Williamson, Smith, De La Rosa, Campbell

Noes: None

Absent: Grier

10. ACTION ITEMS

A. Consider Award of Contract to KCK, Inc., for Repair of Chlorine Scrubber Fiberglass Tank for a Not-To-Exceed Cost of $93,870.07
Engineering Manager Gonzalez presented this item and explained that due to minor leaks being identified on the chlorine scrubber during the annual maintenance of the Salinas Valley Reclamation Project (SVRP) several fiberglass flanges needed to be replaced. Ms. Gonzalez explained that as a result of a 2015 OSHA inspection and subsequent settlement, M1W is required to immediately repair any identified leaks associated with the chlorine scrubber.

Ms. Gonzalez stated that the work was completed in February and the Monterey County Water Resources Agency approved the expenditure prior to the work being done. She apologized for staff not bringing this item to the Board for approval prior to the work being done but due to not having any redundancy for the chlorine scrubber, if it were to go down during the irrigation

EXHIBIT F

SEASIDE GROUNDWATER BASIN

2018
BASIN MANAGEMENT ACTION PLAN (BMAP)

MONTGOMERY & ASSOCIATES

Presented to the Seaside Basin Technical Advisory Committee

December 12, 2018

BACKGROUND & SCOPE

- Update of the 2009 BMAP
- Contents include:
  - Description of State of the Basin
  - Groundwater Storage
  - Groundwater Budget
  - Review of Natural Safe Yield
  - Supplemental Supplies
  - Management Actions
  - Recommendations

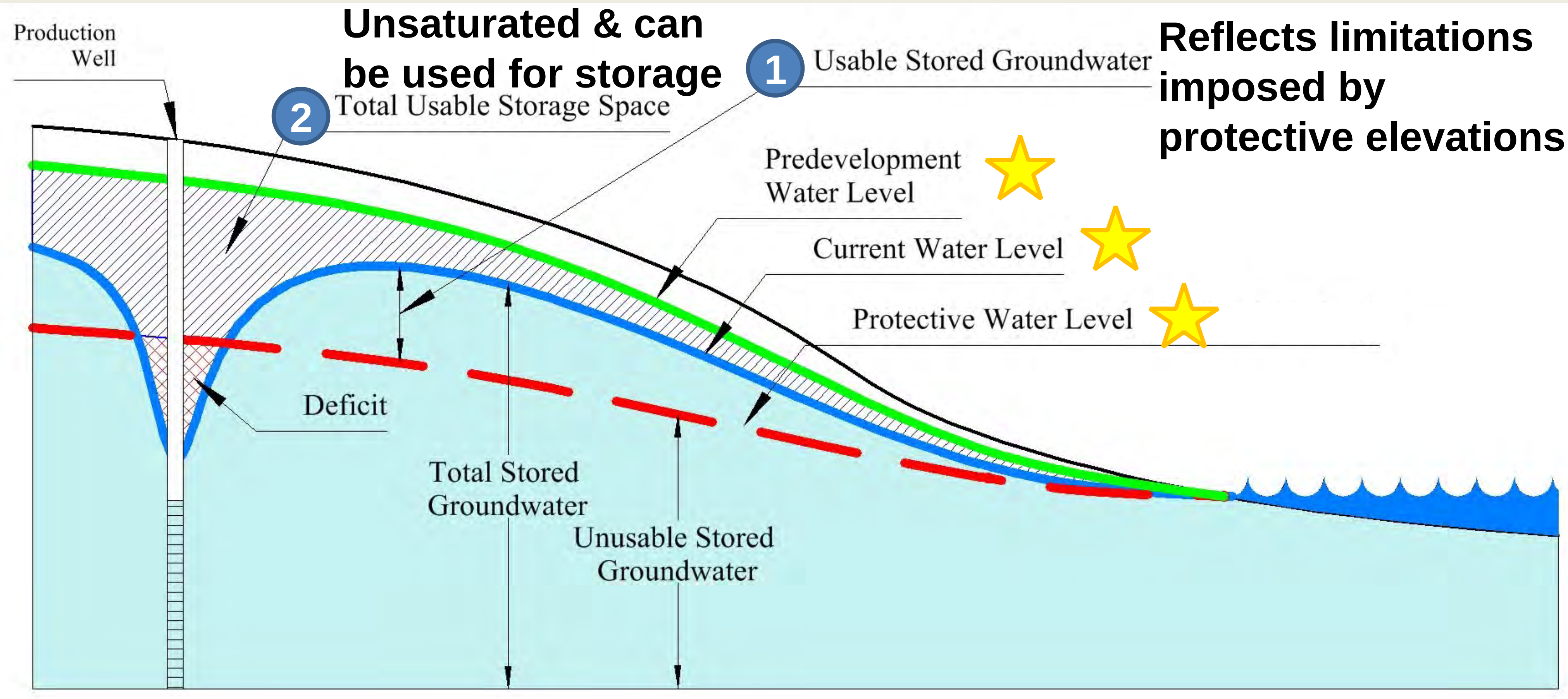
MONTGOMERY & ASSOCIATES

STATE OF THE BASIN

- Groundwater levels continue to decline, except in Southern Coastal Subarea and in shallow coastal wells
- All of the Northern Coastal Subarea levels are below sea level
- Protective elevation are not met in any of the 3 monitoring wells with deep aquifer protective elevations
- Protective elevation are not met in 2 of the 3 monitoring wells with shallow aquifer protective elevations

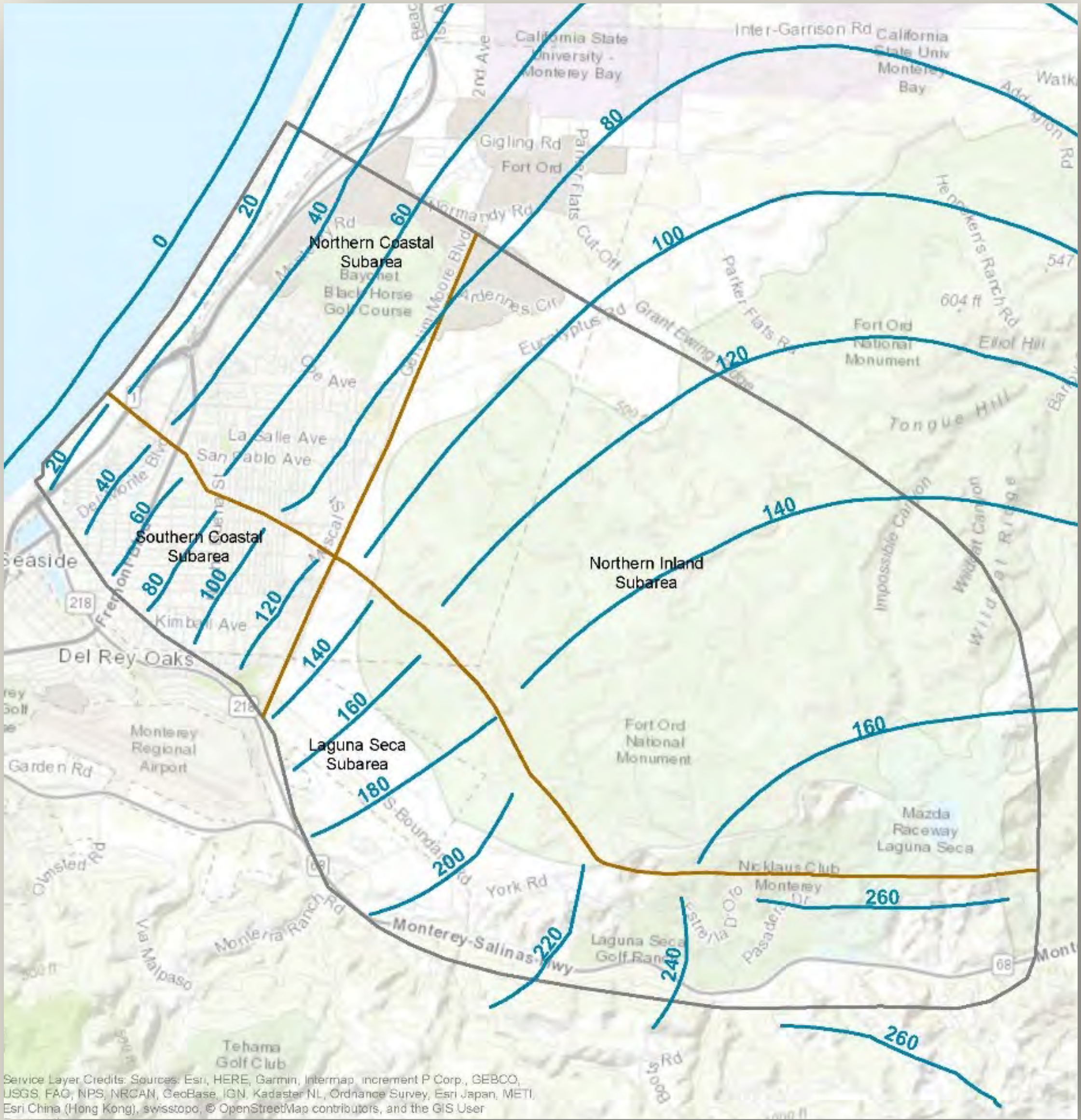
MONTGOMERY & ASSOCIATES

GROUNDWATER STORAGE



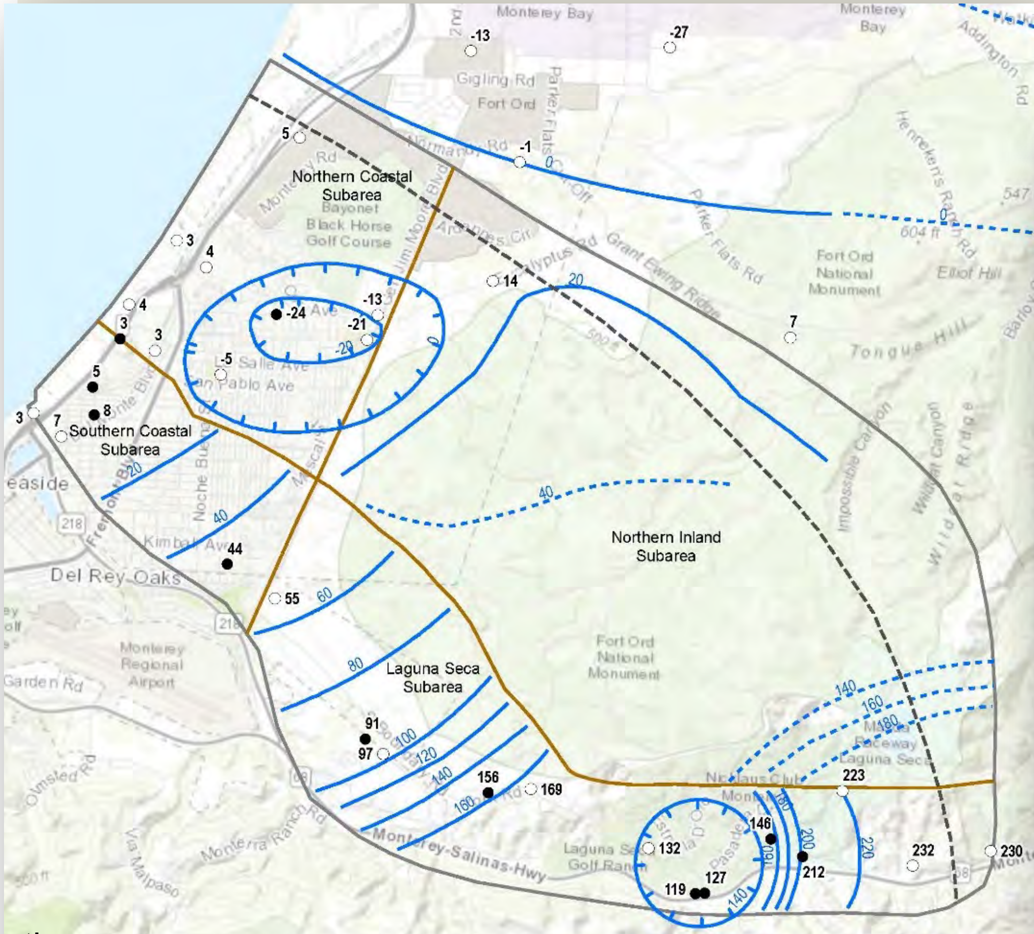
MONTGOMERY & ASSOCIATES

PRE-DEVELOPMENT GROUNDWATER ELEVATION

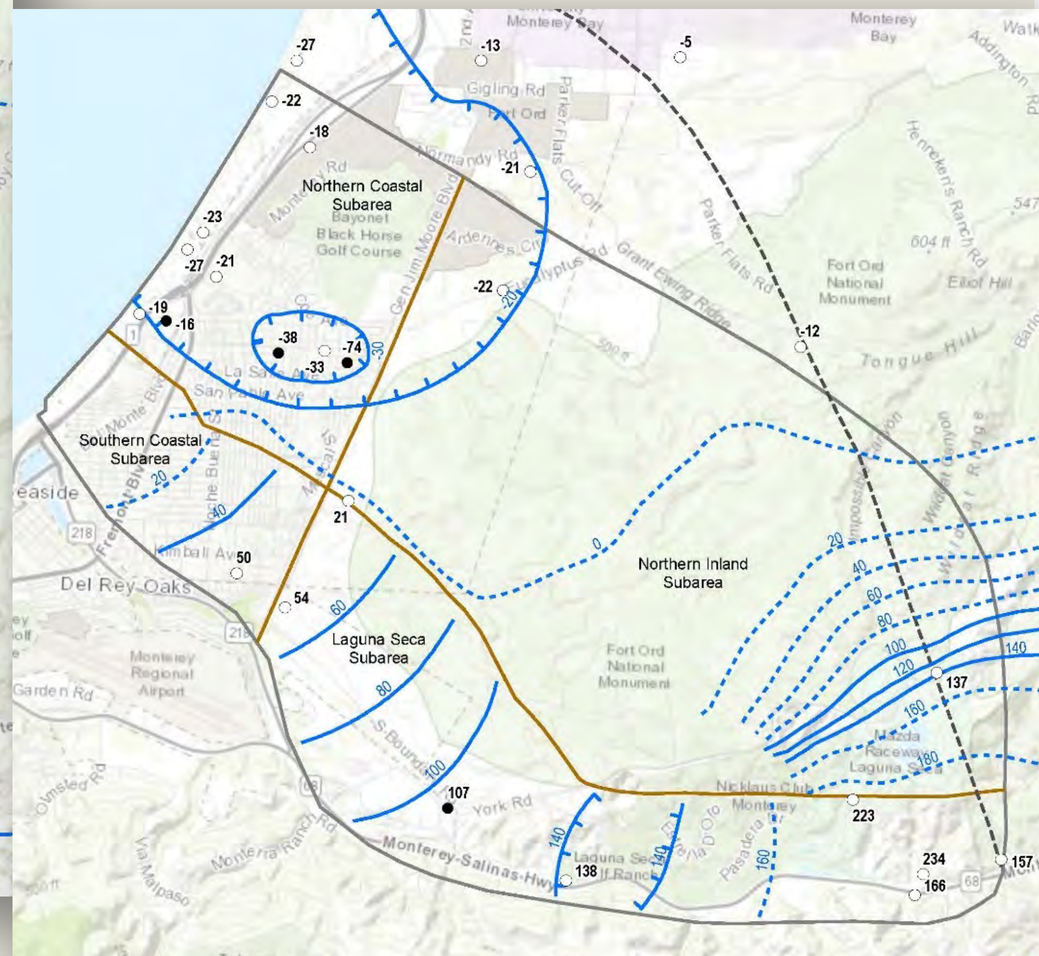


MONTGOMERY & ASSOCIATES

CURRENT GROUNDWATER ELEVATIONS



4th Quarter – Shallow 2017

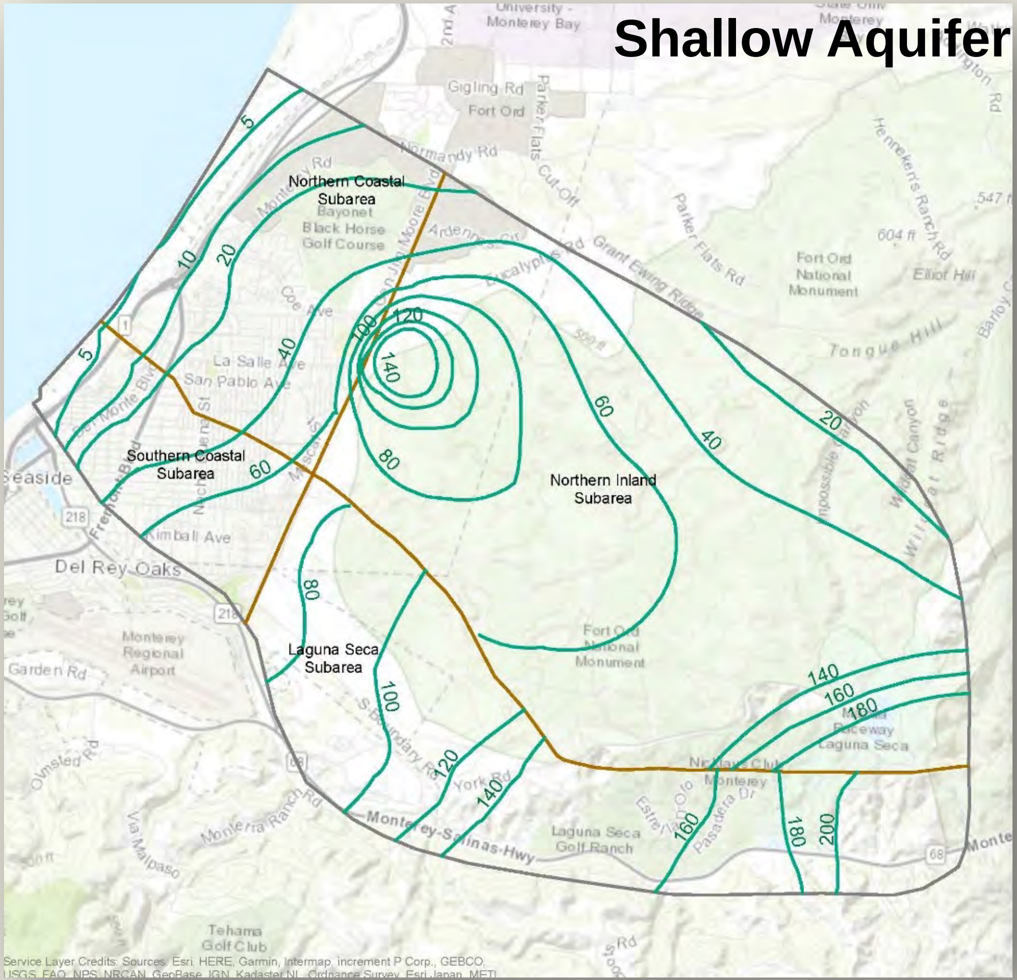


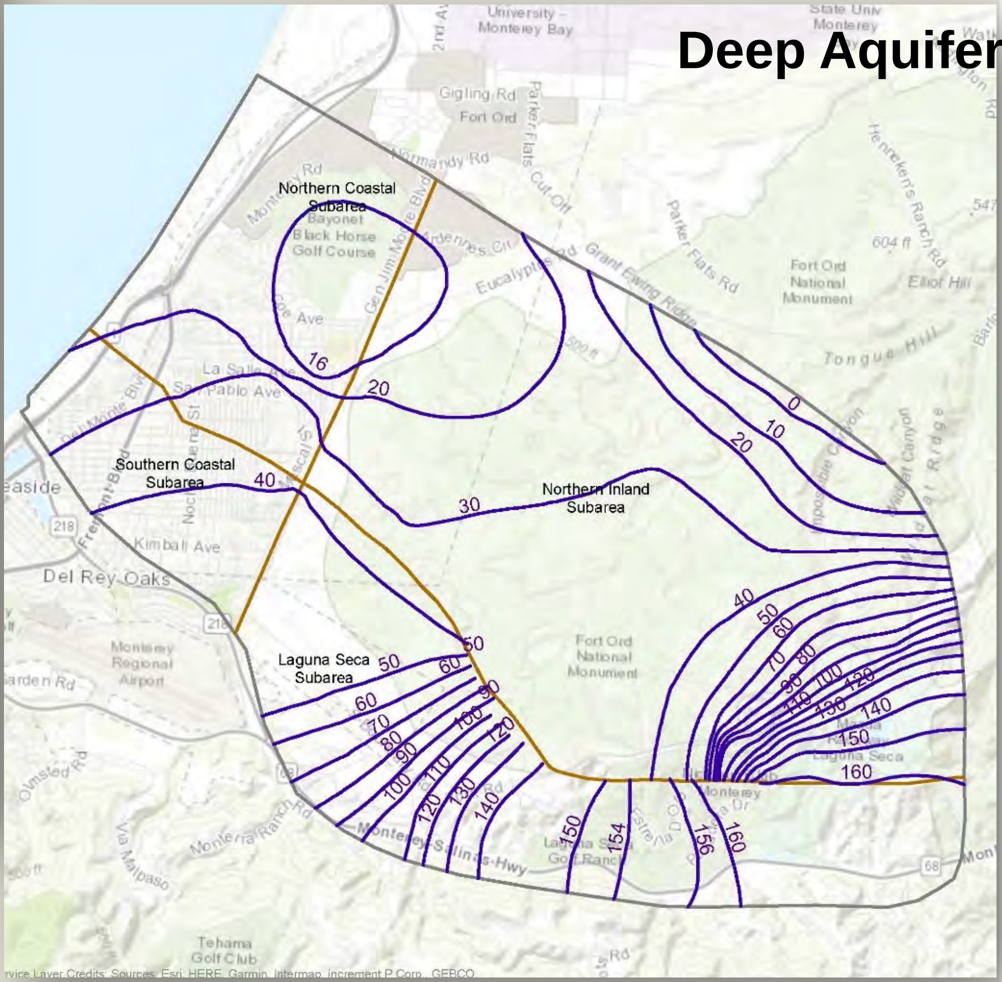
4th Quarter – Deep 2017

MONTGOMERY & ASSOCIATES

PROTECTIVE GROUNDWATER ELEVATIONS

Simulated assuming Pure Water Monterey and reducing Northern Coastal pumping by 1,800 AFY





MONTGOMERY & ASSOCIATES

STORAGE EFFICIENCY

- The percentage of usable stored groundwater in the Basin that can be recovered at a later date
- Inefficiency happens when stored groundwater flows out of the Basin to adjacent basins, the ocean, or when groundwater is consumed by vegetation
- Depends on location and method of storage
  - ASR may cause groundwater to mound and flow north out of the Basin
  - Surface percolation may take a many years to reach the water table and may leave the Basin as outflow
- Recommended that the Watermaster evaluate the project specific storage efficiencies and include these in the producer’s Storage and Recovery Agreement.

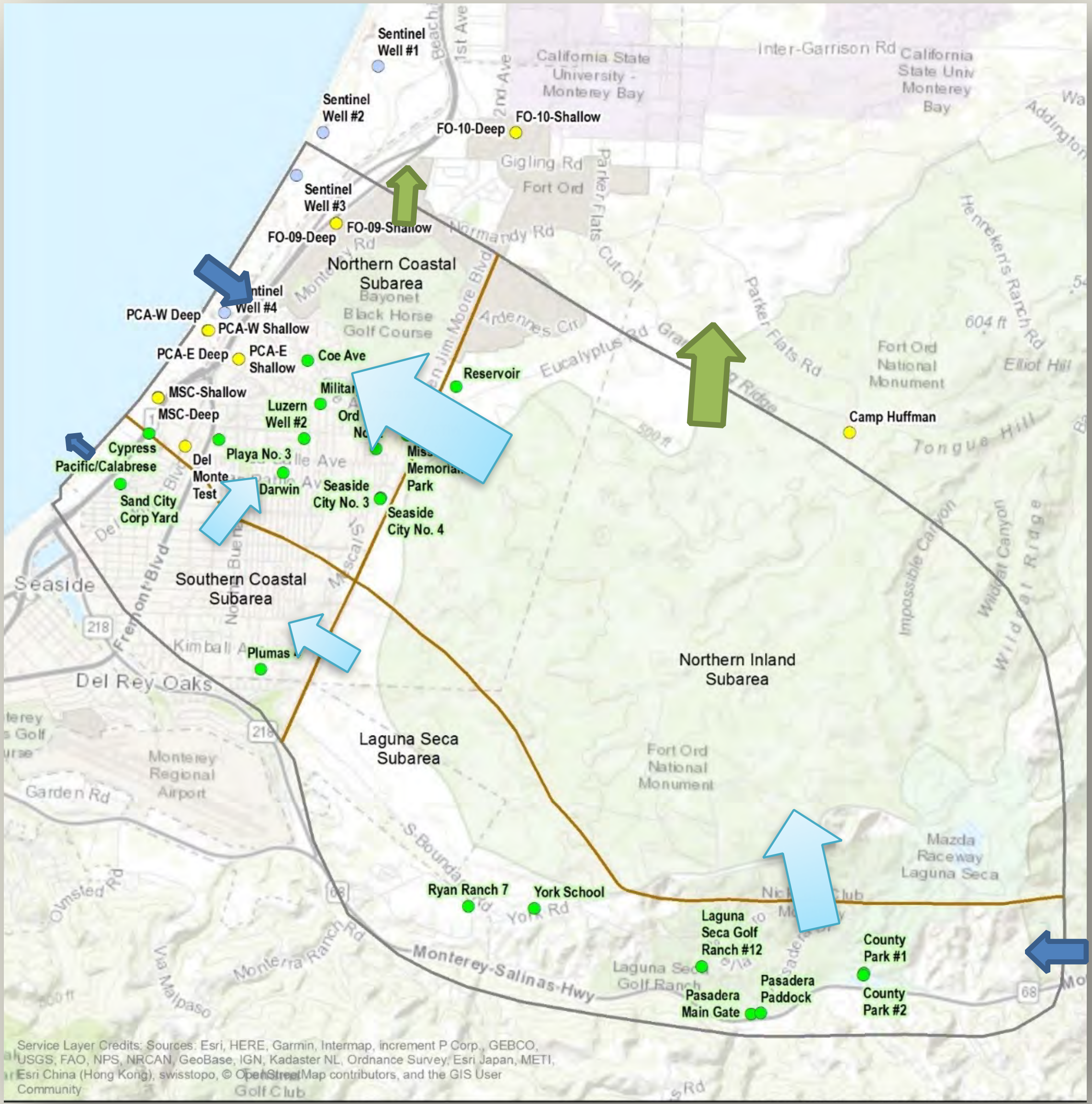
MONTGOMERY & ASSOCIATES

GROUNDWATER (1988 – 2017) BUDGET

Recharge Source	Northern Coastal Subarea	Northern Inland Subarea	Southern Coastal Subarea	Laguna Seca Subarea	Total
	Acre-feet per Year				
Basin Inflows					
Percolation from streams	***0***	***0***	***0***	***0***	***0***
Deep Percolation					
Rainfall	***510***	***1,670***	***130***	***900***	***3,210***
Irrigation & System Losses	***150***	***20***	***100***	***10***	***280***
Injection wells	***260***	***0***	***0***	***0***	***260***
Groundwater inflow					
From adjacent subareas	***2,900***	***1,520***	***520***	***360***	***5,300***
From adjacent basins	***130***	***400***	***50***	***770***	***1,350***
From offshore area	***490***	***0***	***10***	***0***	***500***
Total inflows	***4,440***	***3,610***	***810***	***2,040***	***10,900***
Basin Outflows					
Wells	***3,660***	***70***	***170***	***680***	***4,580***
Groundwater outflow					
To adjacent subareas of the Basin	***290***	***2,710***	***550***	***1,750***	***5,300***
To adjacent basins	***280***	***1,310***	***70***	***490***	***2,150***
To offshore area	***260***	***0***	***60***	***0***	***320***
Total outflows	***4,490***	***4,090***	***850***	***2,920***	***12,350***
Storage Change					
Based on Inflows-Outflows	***-50***	***-480***	***-40***	***-880***	***-1,450***

MONTGOMERY & ASSOCIATES

SUBSURFACE FLOWS BETWEEN SUBAREAS, OCEAN & OTHER BASINS



MONTGOMERY & ASSOCIATES

CHANGE IN GROUNDWATER IN STORAGE (1988 – 2017)

Basin Inflows
5,600 AFY

-

Basin Outflows
7,050 AFY

= Change in Storage
Loss of 1,450 AFY

43,500 AF loss of groundwater in storage over 30 years

MONTGOMERY
& ASSOCIATES

NATURAL SAFE YIELD

- Decision established initial Natural Safe Yield = 3,000 AFY

- Using 1988 – 2017 model output, Natural Safe Yield estimated as
  - Coastal and Northern Inland Subareas = 2,500 AFY
  - Laguna Seca Subarea = -190 AFY
  - Basin total = 2,310 AFY

- Laguna Seca Subarea Natural Safe Yield has been studied in the past
  - Even if all wells stop pumping in the subarea, groundwater levels the very eastern portion of the subarea do not stabilize
  - Pumping in Corral de Tierra subbasin of the Monterey subbasin of the Salinas Valley Basin having an effect in the Seaside Basin

SUPPLEMENTAL SUPPLIES
BEING CONSIDERED

- Monterey Peninsula Water Supply Project (MPWSP)
  - 6.4 MGD Desalination Plant
  - Pure Water Monterey Project (3,500 AFY high quality purified water for recharge)
- Regional Urban Water Augmentation Project (RUWAP) - recycled water distribution from the M1W Advanced Wastewater Purification Facility
- DeepWater Desal
- Various projects in the planning stage to increase source water to the M1W Advanced Wastewater Purification Facility

MONTGOMERY
& ASSOCIATES

SUPPLEMENTAL SUPPLIES

- Implemented since 2009 BMAP:
  - Sand City Water Supply Project – desalination plant with beach wells
  - Pacific Grove Wastewater Reuse Project – recycled water irrigation at golf course and cemetery
  - Carmel River Water Aquifer Storage and Recovery Project – Phases 1 and 2
- Various alternatives no longer being considered

MONTGOMERY
& ASSOCIATES

MANAGEMENT ACTIONS

Purpose of management actions

- Raise groundwater levels before supplemental supplies become available
- Optimize existing natural recharge and basin storage capacity
- Manage and reduce the near-term threat of seawater intrusion

1. Increase groundwater recharge
   - Enhanced Storm Water Recharge within the City of Seaside
   - Modeling shows injection as a recharge mechanism is more effective than in-lieu recharge for raising groundwater levels

MONTGOMERY & ASSOCIATES

MANAGEMENT ACTIONS

2. Decrease groundwater demand
   - Water conservation
   - Recycled water for Laguna Seca golf courses

3. Operational management
   - Redistribute pumping amongst existing wells
   - Install new Southern Coastal Subarea production wells to shift pumping from Northern Coastal Subarea – use model to optimize locations
   - Install new Northern Inland Subarea production wells to shift pumping from Northern Coastal Subarea – modeled to have limited benefit
   - Coordinate with neighboring Sustainability Management Planning agencies

MONTGOMERY & ASSOCIATES

RECOMMENDATIONS

1. **Encourage implementation of selected management actions**
   - **Install new Southern Coastal Subarea production wells**
   - **Recycled water for Laguna Seca golf courses**
   - **Water conservation**
   - **Coordination with the Salinas Valley Basin Groundwater Sustainability Agency (Laguna Seca Subarea management)**
   - **Enhanced storm water recharge within the City of Seaside**

2. **Groundwater modeling to determine a combination of management actions and supplemental supply projects that achieve protective groundwater elevations at the coast**

MONTGOMERY & ASSOCIATES

QUESTIONS?

MONTGOMERY
& ASSOCIATES

EXHIBIT G

STATE OF CALIFORNIA—NATURAL RESOURCES AGENCY GAVIN NEWSOM, *GOVERNOR*

CALIFORNIA COASTAL COMMISSION

CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060
PHONE: (831) 427-4863
FAX: (831) 427-4877
WEB: WWW.COASTAL.CA.GOV

March 14, 2019

David J.R. Mack, Senior Planner
City of Marina
211 Hillcrest Avenue
Marina, CA 93933

Subject: City of Marina Planning Commission Action on City CDP Application Number CD 2018-01 (Cal-Am Water Supply Project)

Dear Mr. Mack:

The purpose of this letter is to clarify several points related to the above-referenced matter that we believe are inaccurately stated in correspondence we have seen and/or received from the City (including a memo from yourself dated March 12, 2019), and to clarify for the record the next steps related to potential appeal of the City of Marina Planning Commission's (PC) denial of a City coastal development permit (CDP) for California-American Water's Water Supply Project.

First, the PC action is not a *final City action* ready to be reported to the Coastal Commission. That final City action occurs either after the required appeal period for an appeal of the PC decision to the City Council (CC) has concluded without such an appeal, or, if there is such an appeal, after the CC makes a final decision on it. Please do not submit a final local action notice (FLAN) until after the CC appeal period has concluded without an appeal, or until after the CC renders a final action on the CDP on appeal if one is submitted, whichever is applicable. After one of those things occur, the City's action becomes final, and the City has a duty to submit the FLAN to the Coastal Commission within the five-calendar-day time frame specified in the Local Coastal Program. If the City sends a FLAN before the City's action is final, as described above, we will send it back as deficient, and will not begin the Coastal Commission's CDP appeal period until we receive a non-deficient FLAN.

Second, a FLAN is required by the Commission's regulations to be sent via first-class mail to the Coastal Commission and persons who specifically requested it (e.g., California-American Water). The City is welcome to send courtesy copies of the FLAN through other means, such as e-mail, but receipt by the Commission of such alternate notice does not trigger our review of same or the Commission's appeal period for the City's CDP action. When we receive a valid (i.e., non-deficient) FLAN of the City's final CDP action (including not only in terms of the action's finality, as discussed above, but also in terms of it including all other necessary components (e.g., final adopted City findings, etc.)), the Commission's ten-working-day appeal period for same will start on the day after receipt, and will close at 5pm on the 10th working day after receipt.

Third, please note that because the City charges a fee for appeals of PC CDP decisions to the CC, an aggrieved party is not required to exhaust local appeals (i.e., in this case through the CC), and can choose to appeal directly to the Coastal Commission. Thus, Cal-Am or any other aggrieved party in this case can appeal the PC's decision directly to the Coastal Commission without an appeal to the CC, if they so choose.

If you have any questions, please do not hesitate to contact me at (831) 427-4863.

Sincerely,

Mike Watson

Mike Watson
Coastal Planner
Central Coast District Office
Californian Coastal Commission

cc: Ian Crooks, California-American Water

EXHIBIT H

From:	Kahn, Kevin@Coastal <Kevin.Kahn@coastal.ca.gov>
Sent:	Tuesday, May 14, 2019 3:21 PM
To:	'Christine Hopper'
Cc:	David Mack; Ainsworth, John@Coastal; Schwartz, Noaki@Coastal
Subject:	RE: FLAN - MPWSP - 05/10/19

Hello Christy,

Thank you for sending the City's final local action notice for the Cal-Am coastal permit (FLAN), which we received via first-class mail yesterday afternoon. We note that it indicates that the City Planning Commission's decision denying the subject coastal permit is not appealable to the Coastal Commission. However, as we've indicated to you in the past (including in our letter dated March 14, 2019), pursuant to Coastal Act Section 30603(a)(5), and pursuant to the LCP which cross-references Section 30603's appealability criteria, *any* decision, approval or denial, of a major public works project (a designation for which this project qualifies) is appealable to the Coastal Commission. The LCP provision that the City interprets as only allowing appeals of Planning Commission *approvals* cannot take precedence over, and must be read consistent with, this statutory provision. Thus, the City's FLAN is inaccurate on this point. To correct this deficiency, we are designating the City's action as appealable and are beginning our 10 working-day appeal clock (i.e., today is day 1 of the appeal period, and the appeal period will close at 5pm on Tuesday May 28th).

We would also note that, in addition to the clear Section 30603 statutory requirements on this point, the LCP also provides for the Coastal Commission's Executive Director to make a determination regarding appealability designations in situations such as this. As described on page 13 of the LCP's Implementation Plan section describing "Grounds for Appeal": "Appeals to the Coastal Commission must follow at least one local action on the application. If Marina charges a local appeal fee, Coastal Development Permits approved by the Planning Commission may be appealed directly to the State. Whether an appeal and appellant meet these criteria will be determined by the Executive Director of the State Coastal Commission during the first two (2) working days after the ten (10) working days required for notification of the decision from the local jurisdiction to the State." Here, the Commission's Executive Director has determined that the Planning Commission's action on Cal-Am's CDP may be appealed to the Commission, which is consistent with this LCP direction because these criteria are satisfied (in addition to the fact that the Section 30603 criteria are likewise triggered here).

Please also note that, as described in our March 14 letter, because the City charges a fee for appeals of Planning Commission CDP decisions to the City Council, an aggrieved party is not required to have exhausted local appeals (i.e., in this case, by completing an appeal to the City Council) in order to appeal the City's decision on the coastal permit for this project to the Coastal Commission.

If you have any questions, please don't hesitate to contact me.

Kevin Kahn
District Supervisor
Central Coast District Office
California Coastal Commission
725 Front Street, Suite 300
Santa Cruz, CA 95060
(831) 427-4863

From: Christine Hopper [mailto:chopper@cityofmarina.org]
Sent: Friday, May 10, 2019 3:23 PM

To: Watson, Michael@Coastal; Kahn, Kevin@Coastal
Cc: David Mack
Subject: FLAN - MPWSP - 05/10/19

Mike and Kevin,

The link to the FLAN for the Monterey Peninsula Water Supply project is: https://cityofmarina-my.sharepoint.com/:f:/g/personal/chopper_cityofmarina_org/Epc4c0bJf71LgZMoNcvDVaMBArTQ2s2Mx5Q4aoLq5TxzhQ?e=QYr3Lw

The hard copy is being sent First Class Certified Mail today. Please let me know if you have trouble viewing.

Sincerely,

Christy Hopper
Planning Services Manager

City of Marina
211 HILLCREST AVENUE
MARINA, CA 93933

(831) 884-1238 – direct
(831) 884-1220 - office
(831) 384-0425 – fax

Christy Hopper
Planning Services Manager

City of Marina
211 HILLCREST AVENUE
MARINA, CA 93933

(831) 884-1238 – direct
(831) 884-1220 - office
(831) 384-0425 – fax

EXHIBIT I

STATE OF CALIFORNIA - NATURAL RESOURCES AGENCY

GAVIN NEWSOM, *GOVERNOR*

CALIFORNIA COASTAL COMMISSION

CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CALIFORNIA 95060-4508
(831) 427-4863 FAX (831) 427-4877

WWW.COASTAL.CA.GOV

COMMISSION NOTIFICATION OF APPEAL

May 30, 2019

To: Fred Aegerter, Community Development Director
City of Marina Community Development Department
211 Hillcrest Ave.
Marina, CA 93933

From: Katie Butler

Re: **Commission Appeal No. A-3-MRA-19-0034**

Please be advised that the coastal development permit decision described below has been appealed to the California Coastal Commission pursuant to Public Resources Code Sections 30603 and 30625. Therefore, the decision has been stayed pending Commission action on the appeal pursuant to the Public Resources Code Section 30623.

LOCAL PERMIT #:	**CDP2018-01**
APPLICANT:	**California-American Water Company, Attn: Ian Crooks**
DESCRIPTION:	Appeal of City of Marina Planning Commission's denial of CDP 2018-01 for the components of the Monterey Peninsula Water Supply Project in the City's jurisdiction, including seven slant wells and related infrastructure and transmission pipeline improvements.
LOCATION:	100 Lapis Rd, Marina, Ca 93933 (APN(s): 009321007000)
LOCAL DECISION:	Denial
APPELLANTS:	Castroville Community Services District, California-American Water Company, Brian LeNeve, Coastal Commissioners Howell and Uranga
DATE APPEALS FILED:	05/22/2019

The Commission appeal number assigned to this appeal is A-3-MRA-19-0034. The Commission hearing date has not been scheduled at this time. Within 5 working days of receipt of this Commission Notification of Appeal, copies of all relevant documents and materials used in the City of Marina's consideration of this coastal development permit must be delivered to the Central Coast District Office of the Coastal Commission (California Administrative Code Section 13112). Please include copies of plans, relevant photographs, staff reports and related documents, findings (if not already forwarded), all correspondence,

COMMISSION NOTIFICATION OF APPEAL

and a list, with addresses, of all who provided verbal testimony.

A Commission staff report and notice of the hearing will be forwarded to you prior to the hearing. If you have any questions, please contact Katie Butler at the Central Coast District Office.

cc: Castroville Community Services District, Attn: Eric Tynan
California-American Water Company, Attn: Ian Crooks
Latham & Watkins LLP, Attn: DJ Moore
Brian LeNeve

EXHIBIT J

and provide you with some additional information.

First, let me just say that the -- the source of the water, the wells, are not within the County's jurisdiction. So we are -- are not the -- the body to decide the water rights or pumping within those wells.

We're here to talk about the desalinization component of that larger project that includes the wells.

That -- there has been some reference to new information that would require subsequent environmental review.

Staff has included, in the findings and evidence, some information that responds to some of that information that is not new, and Water Resources is going to speak a little bit more to the information about the groundwater component of it.

There's also been some allegations about the agreement between Monterey County Water Resources Agency and Cal-Am that I'll let counsel speak to.

And I would like to say that one of the last speakers did talk about, potentially, having harm on certain individuals within the community as being a component of the use permit. We have included findings in evidence that -- with the evidence supporting a conclusion that there wouldn't be significant impacts to residents and visitors within the neighborhoods.

The environmentally-sensitive habitat issue has been addressed, and there are findings in evidence with respect to the environmentally-sensitive habitat. I believe that the criteria and thresholds that were described were not -- not the correct thresholds when talking about permitting of development within environmentally-sensitive habitat.

And, as I mentioned in my presentation, this is not a mapped environmentally-sensitive habitat area, the desalinization plant, but there could be sensitive species on site, and mitigations have been applied to reduce those impacts.

Finally, before I turn it over to Water Resources, a variance is not required. This site is over 45 acres in size. That's nearly 2 million square feet, and five percent of that would be nearly 40,000 square feet. And the -- the buildings that are proposed that would count towards the coverage are somewhere around 60,000 square feet.

So there's -- even if you included the -- the basins where water will be reclaimed or stored, it still would not be over the coverage limitation requiring a variance.

And, after I turn it over to Water Resources, if there's any further questions, I'll be happy to answer them.

So I'm going to call Tamara Voss up to speak.

CHAIR GETZELMAN: Thank you.

MS. TAMARA VOSS: Good afternoon. My name is Tamara Voss. I'm an associate hydrologist with the Monterey County Water Resources Agency, and, basically, I'm up here today to speak to the potential for new information that's come out.

It's our understanding that people are making the assumption that what they're referring to in that case is the -- the AEM, or the airborne electromagnetic work, that's been done. This is the SkyTem that Rosemary Knight, Dr. Rosemary Knight, at Stanford and her graduate student, Ian Gottschalk, performed and then evaluated.

And just to speak to that a little bit. It's important to note that that resistivity -- so, basically, it's -- you're -- trying not to get into the science too far. Happy to answer any questions if you do have them. Basically, they, you know, ping an -- an electric signal down. It bounces back. You capture resistivity on that. Resistivity can be converted to conductivity. It's just an inverse proportional thing. And, from there, you can calculate total dissolved solids, or TDS or total dissolved salts, depending which way you want to refer to it as. This is a range. It's not a straight conversion factor. Anywhere between 0.55 and 0.7 -- 0.70. As water becomes more and more salty, that conversion kind of is an Acetodic -- it's not linear. And, basically, what you're looking at is this resistivity is the bulk resistivity of the -- the signal pinging through the ground and returning that captures, both, the geology or the lithology as well is the water in the pore water, P-O-R-E.

And so the -- the one point that was not picked out well in the data that the SkyTem or the AEM work did is: You can overlap the range of resistivity, convert it to conductivity. In course-grain salts that have high salinity waters in them or clay silts with freshwater, you can't determine between those until you do further work, and the gold standard of that further work is to do a water collection in a laboratory analysis.

There's been seawater intruded in that area in, both, the P180 and the 400 since 1975, and we've continued with decades 1ong of analysis that continue to support that. This water is beyond brackish. It is saline. There -- doesn't mean it's salt -- it's -- it's ocean water, but it is, by no means, freshwater. The conductivity for freshwater, or the TDS for freshwater, is considered to be less than 1,000 milligrams per liter TDS. Brackish water is 1,000 -- or 3,000 to 10,000, and, over 10,000, you're in saline water.

There were several other items that were brought up that have already been addressed.

But, if there's any more questions relating to the science or the math, I'd be happy to answer your questions.

Thank you.

CHAIR GETZELMAN: Thank you very much.

Commissioners any questions?

No.

Okay. County counsel would like to address us.

MS. WENDY STRIMLING: I just wanted to address, I guess, three points.

First of all, it was brought up that there is a petition for supreme court review. The City of Marina and the Marina Coast Water District have petitioned for California Supreme Court review of the PUC decision that -- the reason they petition to the supreme court is because supreme court has original jurisdiction over PUC decisions.

The supreme court hasn't decided whether or not to grant review yet. So the supreme court may not grant review, in which case that CPUC decision would stand. But, even if the supreme court does grant review, it doesn't prohibit the County, as a responsible agency, from acting. In fact, as has been stated, under the Public

Resources Code, as a responsible agency, even if there is pending litigation, we are required, as responsible agency, to assume that the EIR is valid; that the project does comply with the provisions of CEQA. And then the -- if we do approve the project, it constitutes permission for the applicant to proceed with the project at the applicant's risk pending final determination of the litigation.

So we're, basically, cannot refuse to make a decision because of the lit -- because of this potential for pending litigation.

Second of all there, though, the question has arisen, if the City of Marina and Marina Coast Water District stated there -- in their -- they are saying there may be significant new information, which they think would merit a subsequent EIR, my understanding of the facts are that the -- their planning commission denied the slant well permit, and that is on appeal to the city council. The city council hasn't yet had that hearing. So the city council hasn't yet decided if there is a need for a subsequent EIR.

So, if the city council were to decide that there's a subsequent EIR is required, based on substantial new information, at that point, per CEQA, no other responsible agency shall grant an approval for the project

CHAIR GETZELMAN: Yeah. No -- we're going to get there.

Unless you have -- do you have something more to add to this? Because I was just going to ask for the vote unless you have something to add.

COMMISSIONER MENDOZA: No.

CHAIR GETZELMAN: Okay. Very good.

All right. So I think we've discussed this enough now.

Let's have --

COMMISSIONER MONSALVE: I have a quick question.

CHAIR GETZELMAN: Okey dokey.

COMMISSIONER MONSALVE: Could Mr. Spencer repeat for us the numbers that he broke down regarding square footage just to clarify that discrepancy in testimony when it was given.

CHAIR GETZELMAN: Sure.

Can you do that for us, Mr. Spencer.

MR. SPENCER: Yes. So the project site is slightly over 45 acres in size. At 45 acres times 4,000 -- 43,560-square feet per acre, you are looking at 1.96 million square feet. Five percent of 1.96 million square feet is 39,204-square feet.

So -- no?

MR. SWANSON: It's 90- -- I'm sorry. It's

98,000, approximately, 98,000.

MR. SPENCER: 98,000-square feet. Okay. Thank you for correcting that.

98,000-square feet.

There are a total of -- using the description, 3,299-square foot filter building, a 26,002-square foot reverse osmosis building. A 9,200 square -- 76 -- sorry. Thank you.

6,276-square foot administration building, seven filter vessels totalling 540-square feet, two filtered water tanks, at, approximately, 2,000-square feet. So we'll say that's 4,000. A 7,080-square foot pump pad, which is not, actually, structure, and two treated water tanks totalling 8,000-square feet, which would be another, approximately, 16,000-square feet. And a 1,269-square foot cal flow containment basin.

So all of those together total, approximately, 60,000-square feet, actually, under 60,000-square feet, which is under the five-percent lot coverage at a 45 -- on a 45-acre property.

CHAIR GETZELMAN: Thank you very much, Mr. Spencer. All right.

COMMISSIONER AMBRIZ: Through the Chair.

CHAIR GETZELMAN: Yes, ma'am.

COMMISSIONER AMBRIZ: And I wonder if -- if the applicant, or the applicant representative, have any idea of what impact on the residents is going to be, in terms of cost for water.

CHAIR GETZELMAN: All righty.

Do you guys have -- excuse me. Do you have that? Mr. Lombardo, do you have any idea what the cost -- I'm not sure exactly what -- Commissioner Ambriz, which costs are you referring to?

COMMISSIONER AMBRIZ: So, obviously, this plant is -- is going to have to be paid by someone; right? So we know that cost is probably going to be transferred to the ratepayers. So I'm wondering if that's going to increase or how it's going to be funded, the plant.

MR. LOMBARDO: Yeah. And, Mr. Crooks may have more specific numbers. But I just, in general, can you tell that -- that the rates that the customers are paying now are based on the existing system, which is the wells and the -- and the -- well, one dam left.

So the new system costs a lot more to produce water, because you use a lot of electricity to desalinate water, and all of these plants are new and expensive.

In addition, unfortunately, what makes any desalinization plant more expensive in Monterey Bay is the fact that you can't just put a pipe -- like someone talked about a plant in San Diego and what it cost to produce

The power lines, if you go to the site, emerge out of the earth, go to one, two, three power lines, and then they go back down into the earth.

So, in that whole area, we were mandated, I think, in 1990s, as residents, from all the way from Highway 1 out to Rancho San Carlos Road, to put our power underground at our own expense. Okay. So we all did that. But, magically, Cal-Am didn't put their power underground. In fact, theirs came out of the ground and went back over and went back under the ground. And I was given the argument that, well, that's a high-power line. We can't put that underground. Well, excuse me. It's coming out of the ground and going overhead and back under the ground. So that argument does not hold water.

And I am, personally, tired of having Davi Tree Surgery come through every year and top my trees because there's a fire hazard. And so all of that logic goes out the window, as far as I'm concerned.

And I'd like to see them put that power under the ground since how they're going to be going underground anyway. The power serves two newly-constructed houses that are not even privy to Cal-Am Water. They're running a pump.

So the power that's coming to there is merely for their own electric usage, and I'm sure they're using the electricity to pump the water out of the ground for their own private well.

So I recommend that you look into that matter a little bit deeper and, please, if you were living there, use that logic. Would you want these power lines coming out of the ground right next to your house and going back underground? I don't think so.

So I'd recommend you go out and take a look at the site and then make your own assessment.

Thank you.

CHAIR GETZELMAN: Thank you, sir.

Any additional testimony?

Nope. Seeing none.

Mr. Lombardo, is there anything you'd like to address in what you heard?

Oh. Excuse me. I'm sorry.

MR. IAN CROOKS: No problem. Mr. -- Mr. Ian Crooks with Cal-Am.

First, with the diesel -- or the power generator at the site, there seems to be some confusion.

So this is just a project description that was in the EIR. It's a portable generator in the event of an emergency. That's where we -- we tow them from our storage yards in the back of a truck to the pump station in the event of an extended outage. It would be hooked up by a power cable and turned on.

So that would be the only event. There's no permanent generator there.

In regards to Mr. Ambrose concerns about the power, I was unaware of his statements about the requirements of the local residents to bury power. I don't know the history -- and maybe Mr. Ambrose does -- about how or why PG&E decided to put the power feed to our well site that's there now up on poles. I'm not sure why that happened. But we will commit to work with PG&E to figure out how to get that buried. I can't commit that it's absolutely feasible. It's a PG&E owner -- owned facility. So they have to commit to do it. But we will commit to work with them, even fund it, if necessary. But there's also a technical challenge with it as well that I'm not maybe be fully aware of; could be septic fields or other utilities in the way to prevent that. There may be easement issues. I'm not sure. But I'd be glad to work with Mr. Ambrose and PG&E. We'll try to figure it out.

CHAIR GETZELMAN: Thank you very much. We appreciate your --

COMMISSIONER DIEHL: Through the Chair, may I ask a question?

CHAIR GETZELMAN: -- flexibility.

Yes, Commissioner Diehl.

COMMISSIONER DIEHL: Would one of you mind staying up there.

With respect to the discussion of screening, have you any objection to that as proposed by the person who spoke, that the screening should be specified to -- to screen the pump station?

MR. IAN CROOKS: No. The outline that I presented was the general area that I even talked to Mr. Ambrose about the screening; looked like the same general area.

COMMISSIONER DIEHL: I appreciate that. Thank you.

MR. IAN CROOKS: Thank you.

CHAIR GETZELMAN: Okay. Very good. Thank you, sir.

All righty then. Staff, do I have anything you'd like to comment on that you heard?

MR. SPENCER: Briefly. Mr. Chair, thank you. Just briefly.

There -- there's a statement in the staff report that there would be a portable 50-kilowatt diesel-powered generator stored on site in the event of a power outage. I don't know if that has changed from being transported onto the site only when needed or if it will be kept there. But it wouldn't be -- need to be maintained like a

EXHIBIT K

STANFORD UNIVERSITY

Department of Geophysics
Stanford University
Stanford, CA 94305-2215

R. Knight -Tel.: (650) 736-1487
R. Knight -Fax: (650) 725-7344
rknight@stanford.edu

February 14, 2019

Dear Mr. Williams, Mr. Durbin, Mr. Feeney and Mr. Leffler,

I am writing in regard to your letter with the following subject:
"HWG Comments on Technical Appendices/Attachments to Letters Submitted by MCWD and City of Marina to the CPUC And MBNMS on April 19, 20018."
This letter was dated 15 August 2018 and sent to John Forsythe with the California Public Utilities Commission and Paul Michel with the Monterey Bay National Marine Sanctuary. A copy of your letter was recently received by Marina Coast Water District (MCWD), and forwarded to me. I feel it is important that I respond to comments made in the letter as the City of Marina's Planning Commission will soon be making a decision on a Coastal Development Permit, and your letter raises concerns about our study that provides information related to that requested permit.

The above referenced letter grossly misrepresents the work that I and my graduate student, Ian Gottschalk, completed in collaboration with Ted Asch, Jim Cannia and Jared Abraham from Aqua Geo Frameworks (AGF). The AGF team was responsible for data acquisition, processing and inversion to obtain the electrical resistivity model. We, at Stanford, worked with AGF in developing the interpretation. I disagree with your position, take this very seriously, and have informed the Office of the General Counsel at Stanford University. I expect you to correct the statements made in your letter, or I intend to take the necessary steps to set the record straight.

I will deal with the comments made under the Executive Summary. The comments are bold and in italics. My response follows each comment.

The Final AEM Report represents biased and poor science using data, assumptions, and methodologies that are not documented, lack justification, are poorly calibrated and non- unique, and result in misleading interpretations and conclusions, as documented by HWG in this letter.

This highly critical statement indicates a lack of awareness of the extensive literature on the airborne electromagnetic (AEM) method, going back decades, that clearly justifies the data acquired, the assumptions and the methodologies. As was stated in the Final AEM Report "The data were processed and inverted by Aqua Geo Frameworks (AGF), and the resulting resistivity models provided to Stanford." All of the details of the data, assumptions and methodologies for those steps in the process are contained in two publically available reports provided to Marina Coast Water District (MCWD). The first report (May 22, 2017) contains preliminary profiles of electrical resistivity (no data). The second report (June 22, 2017) contains all the data, raw and processed. This second report is referenced in the first report from Stanford, “Preliminary Interpretation of SkyTEM Data Acquired in the Marina Coast Water District”, on Page 4 where the flight lines for the data acquisition are shown: “From the AGF “QA/QC and Preliminary Laterally Constrained Inversions Report from the Airborne Electromagnetic Survey of Selected Areas Within the Marina Coast Water District.” The two reports include detailed discussion of the methods used to QA/QC the data, the processing applied to the data, and the approach to inversion of the data to obtain the resistivity models. All of these methodologies are described in the peer-reviewed literature, and have been adopted by geophysicists – in the research community and private sector – throughout the world. Given the detailed discussion of these issues in the AGF reports, this information was not repeated in the Final AEM Report.

“*Poorly calibrated*” – The company responsible for data acquisition invests heavily in ensuring that they operate a calibrated system. The calibration procedures are documented in the AGF report and described in Attachment 1.

“*Non-unique*” – Non-uniqueness is an inherent part of using imaging to derive information about a remotely sensed region. It exists in all forms of imaging, including medical imaging. It is dealt with, and acknowledged, in the way the data are inverted and interpreted. MRI is “non-unique” but I do not see the medical profession dismiss MRI results because of this fundamental property of the method.

“*misleading interpretations and conclusions*” – There was certainly no intent to “mislead” in writing this report. We attempt to make clear in the figures, included throughout the AEM Final Report, the differences between the information contained in AEM data and that contained in borehole data by comparing the AEM measurements to measurements made in wells. These are included to demonstrate to the reader the information content of the AEM data, noting, as examples, on page 20:

“Differences between the resistivity values in the two models largely depend on the difference in resolution between the two measurements, where the thickness of the AEM resistivity model is 3 m at the surface, and increases linearly to over 20 m by 300 mbgs.”

And on page 24:

“The resistivity measured in MW-6 represents the resistivity in the area immediately surrounding the borehole, which in this area may change very quickly over a short lateral extent. The AEM measurements, on the other hand, represent the average resistivity over a larger lateral extent.”

The AEM method cannot resolve some of the details seen in the well data. But our informed opinion is that the information provided by the AEM method is critical information that provides a larger scale perspective, making it possible to understand the continuity of features, something impossible to achieve with the limited sampling of well data.

The Final AEM Report does not provide the raw AEM data, details of the inversion process, QA/QC methods and procedures, formulas utilized, or methods/formulas for conversion of AEM data to lithologic/water quality conclusions. Thus, the results, interpretations, and conclusions of the AEM study cannot be validated by others, and does not allow for sufficient peer review. Furthermore, there has been no academic peer review even though the study is being promoted as a Stanford University work product;

“*does not provide the raw AEM data, details of the inversion process, QA/QC methods and procedures*” This statement, while strictly correct, is certainly misleading. As stated above, all of these details were not in the Final AEM Report, but are contained in two publicly available reports provided to MCWD.

"*does not provide…formulas utilized, or methods/formulas for conversion of AEM data to lithologic/water quality conclusions.*" This is not factual. On pages 32-33 the workflow is described for how we identified the saturated zone from the unsaturated zone in the AEM data. On pages 35-39 we describe how we chose the resistivity thresholds which define our transform to maps AEM resistivity values to locations of the subsurface saturated with a source of drinking water or with water of limited beneficial use. This method is clearly laid out and includes a discussion on the benefits and limitations of the method.

"*Furthermore, there has been no academic peer review even though the study is being promoted as a Stanford University work product.*" Not everything done at Stanford is published. In this particular case, the lack of peer review irrelevant. All that was done was to apply, in a very straightforward way, existing and well-established technology and methodologies. We are now preparing a publication based on this work to submit – as a case history - to the journal Geophysics. The "case history" section of the journal is for papers that contain no new science, but interesting applications of **proven methods** (i.e. methods not needing peer review).

The Final AEM Report (and AGF) claim the use of 318 control points to calibrate the AEM data. In reality, the Final AEM Report uses only 7 control points (from MPWSP monitoring well boreholes) to calibrate AEM data. This fact is readily apparent in the Final AEM Report and was confirmed by Ian Gottschalk during his April 2018 presentation at a MCWD Board Meeting. The result is that the vast majority of the AEM study data and resultant hydrostratigraphic and water quality interpretations are not calibrated or "ground-truthed"; hence, there are several different interpretations of this AEM data that can be considered equally valid (i.e., non-unique)

"*The Final AEM Report (and AGF) claim the use of 318 control points to calibrate the AEM data. In reality, the Final AEM Report uses only 7 control points (from MPWSP monitoring well boreholes) to calibrate AEM data.*" All boreholes that were available and that were within a reasonable distance from an AEM flight line were utilized. The only mention of the number 318 is when we describe our database on Page 9:

"We have assembled from the region of interest a database that includes 318 well locations and corresponding lithology information…"

"Calibrate the AEM data" is language not used in our report. If this statement refers to constraining the inversion, we did not use any "control points" from well data. If this statement refers to calibrating the resistivity-salinity transform (i.e. the histogram thresholding), we did this using 21 water quality measurements (from 7 wells clusters x 3 wells per cluster) partnered with the corresponding 2,000+ geophysical resistivity measurements. These measurements (*far* more than 7 control points) were used to build the histogram for the resistivity-salinity transform. This is described on Page 35 of the report:

"[W]ithin [each] screened interval, there were approximately 60 to 425 resistivity measurements made with a vertical sampling interval of 15 cm, as the geophysical log was moved through the borehole. In Figure 12 we show the histogram of all the borehole resistivity measurements from the seven MPWSP wells."

If the statement is referring to the hydrostratigraphic model building, it is very clear in the report that we use far more than 7 control points. Page 40-41 of the report:

"The boundaries between units for the pre-AEM model were delineated by using the boundaries interpreted from cross-sections in previously published reports, and by using lithology data assembled in our lithology database."

It is important to note that the Preliminary and Final AEM Report interpretations and conclusions are based on significant input by AGF and HGC. The involvement of these consultants is apparent from the list of authors on the document (includes AGF staff) and the public presentation (MCWD Board Meeting, April 2018), where Ian Gottschalk acknowledges the important contributions from Curtis Hopkins and the fact that Mr. Hopkins was "only a phone call away" for any hydrogeologic input needed;

This was done in full collaboration with AGF, as is evident from their co-authorship on the report, so I would expect "significant input by AGF" – that is what co-authorship means. Regarding HGC, yes, Ian Gottschalk did speak with Curtis Hopkins regarding where well data could be acquired, including well extraction data, water level data, and lithology information. Furthermore Mr. Hopkins informed Ian Gottschalk about the hydrogeology of the area, including the naming of hydrostratigraphic units, typical porosity values in regional sediments, and typical fluctuations in groundwater levels.

The Final AEM Report (and MCWD/Marina consultant TMs/Letters) utilizes an improper standard of 3,000 mg/L total dissolved solids (TDS) to define fresh water, whereas the standard definition of fresh water is less than 1,000 mg/L TDS (Todd, 1980; Marella/USGS, 1993). A large proportion of groundwater inland of the proposed MPWSP site with TDS between 1,000 and 3,000 mg/L has chloride exceeding MCLs (and the 500 mg/L standard to define seawater intrusion) and/or has nitrate exceeding the MCL;

This is addressed in the first section of the paper after the introduction, named "Definitions of Water Quality". Firstly, we do not define fresh water anywhere in the report, as HWG alleges. We give the name "source of drinking water" to water with TDS concentrations 0-3,000 mg/L based on Title 22, Article 16, State Water Resources Control Board, 2006; SWRCB Resolution 88-63. The standard of 3,000 mg/L is of great interest to groundwater managers, since water with TDS concentrations below that threshold must be treated differently according to the State Water Resource Control Board.

The Final AEM Report (and MCWD/Marina Consultant TMs/Letters) does not attempt to delineate areas of fresh water. Instead, they attempt to delineate areas of brackish water with TDS up to 3,000 mg/L that include chloride exceeding 500 mg/L;

Again, as said above, water with TDS values up to 3,000 mg/L are of particular interest to groundwater managers because such water is managed differently under the law.

The Final AEM Report (and MCWD/Marina groundwater consultant TMs/Letters) makes many unsupported and undocumented claims/conclusions and/or make interpretations/conclusions that are in conflict with MPWSP borehole data that has been verified by other MPWSP data (e.g., groundwater levels, pumping tests, water quality). One example is the claim that gaps exist in the 180/400-Foot Aquitard in the MPWSP vicinity. This claim is based on previous studies that don't incorporate the latest MPWSP borehole/well data, and uncalibrated/flawed AEM data. In reality, an abundance of data collected since 2015 demonstrate that gaps in the 180/400-Foot Aquitard are not present in the MPWSP area;

Our methodology was to take two hydrostratigraphic starting models, each based on a different set of starting data, and use the AEM resistivity data to update the interpretation of each model. According to previous hydrogeologic reports (one of which was used as the basis for one starting model), the existence of the 180/400-Foot Aquitard is questionable in the region of the MPWSP wells. In addition, some MPWSP lithology and water level data near the coast (e.g. from MW-7) suggest that there is hydraulic connection between the 180-Foot Aquifer and the 400-Foot Aquifer in some locations near the MPWSP.

"and uncalibrated/flawed AEM data" I will close with this final example of a statement that is factually inaccurate, for all the reasons already given above. Statements such as this, throughout your letter, not only mischaracterize our work, but the work of geophysical professionals who are currently employing this same method, this same form of data to map groundwater systems throughout the world.

As noted at the start, I take the mischaracterization of our work contained in your letter very seriously and ask that you expeditiously take steps to make corrections.

Sincerely

Rosemary Knight
George L. Harrington Professor of Earth Sciences

Cc: John Forsythe, Senior Environmental Planner; CEQA Lead California Public Utilities Commission MPWSP-EIR@esassoc.com
Paul E. Michel Superintendent, NEPA Lead Monterey Bay National Marine Sanctuary montereybay@noaa.com

Attachment 1
Provided by Ted Asch, Jim Cannia and Jared Abraham from Aqua Geo Frameworks (AGF) from the 22 May 2017 QA/QC report provided to MCWD
February 8, 2019

1. Test Site Calibration in Denmark
All SkyTEM systems are calibrated to a specific ground test site in Lyngby, Denmark prior to being used for production work (HydroGeophysics Group Aarhus University, 2010; HydroGeophysics Group Aarhus University, 2011; Foged et al., 2013). The calibration process involves acquiring data with the system hovering at different altitudes, from 5 m to 50 m, over the Lyngby site. Acquired data are processed and a scale factor (time and amplitude) is applied so that the inversion process produces the model that approximates the known geology at Lyngby.

2. System Ground Tests
Ground tests included checking for system operation including the following sub-systems: 1) transmitter (Tx) current amplitude and stability including waveform recording of both high moment (HM) and low moment (LM); 2) receiver (Rx) functionality for both Z and X-components, 3) laser altimeter operation; 4) GPS operation; 5) tilt meter/attitude sensor operation and calibration; 6) navigation and wireless communication; 7) airborne magnetometer operation; 8) base station magnetometer stability and field strength stability; and 9) DGPS base station operation.

3. System Airborne Tests
Airborne tests are conducted to establish and confirm the minimum primary field signal level, otherwise known as the "null" position, of both the Z and X Rx components. This is done by mechanically moving the Rx's to locate the best null position by multiple flights. At the time of the establishment of the nulls the system is flown to a high level to eliminate the earth response. At that altitude, typically 1,000 meters above ground level (AGL), only the background noise of the system and the helicopter is received. That is checked against the designed system noise level and used as a calibration point. In addition to the calibrations and the nulls, the system is operated to ensure the mechanical stability of the system and that all acquisition systems are functional. Additional overflight passes are performed in order to adjust the length of the supporting tow ropes to control the angle of the system at acquisition production speeds.

Any problem with calibration would be immediately apparent in the real-time QA/QC that takes place every day while the data are being acquired. QA/QC are documented in the AGF report and involve:

1. Flight Height
The system height was specified at 30 meters; however, due to safety and other judgments by the pilot the flight heights will deviate. The goal is to maintain a height as low as possible in the window from 25 to 50 m AGL. In the MCWD data set the average height was 41.2 m with a minimum of 19.5 m and a maximum of 139.7 m. The maximum flight heights were encountered over large powerlines. Those data were removed from the dataset before inversion due to EM coupling and did not impact the final product.

2. Flight Speed
Speed determines the distance between ground samples. The critical factor in the flight speed is to maintain a speed where the system is as level as possible. This may require that the pilot speed up in the

downwind direction or slowdown in the up-wind direction. The pilot uses the readout display of the system tilt angles to help maintain this speed. For the MCWD survey the ropes suspending the system beneath the helicopter needed to be adjusted due to the slower speeds that were required to maintain a safe operation in the MCWD area allowing the pilot to avoid infrastructure and obstacles. The average ground speed of the survey was 67.7 km/hr with a minimum ground speed of 0.5 km/hr and a maximum ground speed of 113.7 km/hr.

3. System Angles

System angles are critical to ensure that quality data are submitted to the inversion. The system's Tx initial current at time-off of 0.0 sec is the image of the size of the loop on the surface. If the system is tilted, that image will be less than the original size of the TX. Inversion algorithms can account for ±10 degrees of angle in calculating the effective Tx size. To this end, it is important to keep the Tx frame within ±10 degrees. The position of the Rx is also impacted by the angle of the system and any deviation from perpendicular has an impact by including off perpendicular components. As noted, algorithms can account for ±10 degrees in the Rx angle. Both the X-Angle (in the direction of flight) and the Y-Angle (perpendicular to the direction of flight) were checked for the MCWD survey. When the system is flown over obstacles or while turning around at the end of a line, the angles can be higher than the ±10 degrees. These flight line edges were cut out of the survey data set prior to inversion. During the MCWD survey, both angles were within acceptable ranges. The X-angle averaged approximately -1.29 degrees with a minimum of -15.08 degrees and a maximum of 18.31 degrees. The Y-angle tilt averaged about -0.71 degrees with a minimum of -28.15 degrees and a maximum of 26.64 degrees.

4. Transmitter Current

The SkyTEM system utilizes a dual-moment system (High (HM) and Low (LM)) and two different Tx current and waveforms. These waveforms are recorded before and after the survey to ensure that that no changes have occurred during the survey. The LM Tx source is used to highlight the very near surface geology and the HM current source is used to get more electromagnetic power at depth in order to characterize the deeper geologic units.

The current should be stable throughout the survey, but changes in the temperature can impact the resistance of the Tx wire and circuit by either increasing or lowering the peak current output. The peak current is recorded during acquisition of each sounding and is used to adjust the Tx waveform in the inversion. For the MCWD survey the LM current mean was 8.77 amp with a minimum current of 8.71 amp and a maximum current of 8.82 amp. For the HM, the mean was 115.73 amp with a minimum current of 111.21 amp and a maximum current of 117.28 amp. Both of the moments showed stability in the current and provided no problems in the inversion.

5. Power Line Noise Intensity

The SkyTEM system is configured to provide an estimate of the amplitude of the powerline noise intensity (PLNI) of the 60 Hz signals. The PLNI is produced by performing a spectral frequency content analysis on the raw received Z-component SkyTEM data. For every HM data block, a Fourier Transform (FT) is performed on the latest usable time gate data. The FT is evaluated at the local power line transmission frequency (60 Hz) yielding the amplitude spectral density of the local power line noise. The PLNI map is useful when investigating the impacts of powerlines on the data quality. The 60 Hz powerline signals have little impact on the Rx signal due to time-gating and proper filtering. However, the conductive wires that are used to transmit the power do cause EM coupling impacts on the data and those data were removed prior to inversion.

6. Magnetics

As part of the SkyTEM system a Total Field magnetometer is included in the data acquisition package. The magnetic field is sensitive to anthropogenic features that contain ferrous metal and is therefore used in the electromagnetic decoupling process.

7. Ground-Truthing the AEM Inversion Results with Borehole Logs

Once initial inversions were produced, they were compared to the available 318 geophysical and lithological borehole logs included in the Stanford database. Those logs located within approximately 100 m of the flight line were overlain on the inversion results on 2D profiles.

References

Foged, Nikolaj, Esben Auken, Anders Vest Christiansen, and Kurt Ingvard Sorensen, 2013, "Test-site calibration and validation of airborne and ground based TEM systems." *Geophysics* 78, No.2: E95-E106.

HydroGeophysics Group, Aarhus University, 2010, "Validation of the SkyTEM system at the extended TEM test site." Aarhus, Denmark.

HydroGeophysics Group, Aarhus University, 2011, "Guide for processing and inversion of SkyTEM data in Aarhus Workbench, Version 2.0.".

EXHIBIT L

BIOLOGY CONSULTANTS

(Only the Companies Listed Below are Approved)

COMPANY NAME	*SPECIALTIES*	*ADDRESS*	*TELEPHONE*	*WEBSITE*
AECOM	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology Marine Biology San Joaquin Kit Fox Biologist	1362 Pacific Ave. Santa Cruz, CA 95060	Office: 408-297-9585 Fax: 408-297-6962	www.aecom.com
Albion Environmental, Inc.	Avian Biology	1414 Soquel Ave., Ste. #205 Santa Cruz, CA 95062	Office: 831-469-9128 Fax: 831-469-9137 Cell: 831-345-7504 Direct: 831-469-1876 Cell: 831-431-3301	www.albionenvironmental.com cconvisser@albionenvironmental.com Precolonial Archaeology: sdoro@albionenvironmental.com Historical Archaeology: dross@albionenvironmental.com Wildlife Management: smenzel@albionenvironmental.com
Arcadis Design & Consultancy	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander San Joaquin Kit Fox Wetlands Habitat Restoration	735 Tank Farm Rd, Ste 150 San Luis Obispo, CA 93401	Direct: 805-478-0727	Mary.Carroll@arcadis.com
BioResource Consultants, Inc.	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology Wetland Wildlife	PO Box 1539 Ojai, CA 93024	805-646-9006	www.biorc.com
Biosearch Associates	Avian Biology CA Red-Legged Frog CA Tiger Salamander Biology San Joaquin Kit Fox Wildlife	PO Box 1220 Santa Cruz, CA 95061	831-662-3938	markallaback@sbcglobal.net

Biotic Resources Group	Botany	2551 S. Rodeo Gulch Rd. #12 Soquel, CA 95073	Office: 831-476-4803 Fax: 831-475-2257	brg@cruzio.com
Bryan Mori Biological Consulting Services	Avian Biology CA Red-Legged Frog CA Tiger Salamander Biology San Joaquin Kit Fox Wildlife	1016 Brewington Ave. Watsonville, CA 95076	831-728-1043	Moris4wildlife@earthlink.net
California Ecological Analytics	San Joaquin Kit Fox Wildlife	684 Paradise Rd. Prunedale, CA 93907	831-461-4351	rob@calecoanalytics.com
Coast Range Biological LLC	Botany Wetland	PO Box 1238 Santa Cruz, CA 95061	Office/Fax: 831-426-6226 Cell: 831-345-4690	coastrange@sbcglobal.net
Denise Duffy & Associates, Inc.	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology Marine Biology Wetland Wildlife	947 Cass St., Ste. #5 Monterey, CA 93940	831-373-4341 Fax: 831-373-1417	info@ddaplanning.com www.ddaplanning.com
Ecological Concerns Inc.	Biology Habitat Mitigation & Monitoring Tree Survey Wetland Wildlife	609 Pacific Ave, Ste 101 Santa Cruz, CA 95060 Mailing: 125 Walk Circle, Santa Cruz, CA 95060	831-459-0656 Fax: 831-457-1607	jrigney@ecologicalconcerns.com www.ecologicalconcerns.com
ECORP Consulting, Inc	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology Marine Biology San Joaquin Kit Fox Wetland Wildlife	2525 Warren Drive Rocklin, CA 95677	916-782-9100 Fax: 916-782-9134	www.ecorpconsulting.com

EcoSynthesis	Avian Biology Botany CA Red-Legged Frog Wetland Wildlife	16173 Lancaster Plc. Truckee, CA 96161	530-582-6812	www.ecosynthesis.com ajuncosa@ecosynthesis.com
Ecosystems West	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology Marine Biology San Joaquin Kit Fox Wetland Wildlife	180 7th Ave., Ste. 201, Santa Cruz, CA 95062	831-429-6730 Fax: 831-429-8742	www.ecosystemswest.com
Ed Mercurio, Biological Consultant	Avian Biology Botany Wildlife San Joaquin Kit Fox	637 Carmelita Dr, Unit 20 Salinas, CA 93901	831-206-0737	Ed_mercurio@yahoo.com
EMC Planning Group	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology Marine Biology San Joaquin Kit Fox Wetland Wildlife	301 Lighthouse Ave. Ste. C, Monterey, CA 93940	831-649-1799 Fax: 831-649-8399	wissler@emcplanning.com www.emcplanning.com
Environmental Planning Specialists, Inc. (EPS)	Air Quality Remediation Ecosystem Services	400 Northridge Rd, Ste 400 Atlanta, GA 30350	404-315-9113 Fax: 404-315-8509	Tommy Sweat - Sr. Principal tsweat@envplanning.com Santosh Chandru – Associate schandru@envplanning.com www.envplanning.com
Fred Ballerini	Avian Biology Botany	P.O. Box 1023 Pacific Grove, CA 93950	831-333-9009	fred@fredballerini.com

Garcia and Associates (GANDA)	Arborist Aquatic Resources Biology Botany CA Tiger Salamander Biology CEQA & NEPA Habitat Restoration Rare plant surveys San Joaquin kit fox Wetland	435 Lincoln Way Loomis, CA 95603	530-823-3151	
HT Harvey & Associates	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology Marine Biology San Joaquin Kit Fox Wetland Wildlife	7815 N. Palm Ave., Ste. #310 Fresno, CA 93711	559-476-3160 Fax: 559-476-3170	www.harveyecology.com
ICF Jones and Stokes	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology San Joaquin Kit Fox Wetland Wildlife	630 K St., Ste. #400 Sacramento, CA 95814	916-737-3000	www.icf.com
Jeffrey B. Froke, Ph.D.	Avian Biology Botany CA Red-Legged Frog Wildlife	3158 Bird Rock Rd. Pebble Beach, CA 93953	831-224-8595 Fax: 831-649-3764	jbfroke@mac.com

Kevin Merk Associates, LLC	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology Restoration Ecology San Joaquin Kit Fox Wetland Wildlife	P.O. Box 318 San Luis Obispo, CA 93406	Office: 805-748-5837	kmerk@kevinmerkassociates.com www.kevinmerkassociates.com
Kittleson Environmental Consulting	Avian Biology CA Red-Legged Frog Wildlife	3284 Malibu Dr. Santa Cruz, CA 95062	831-251-0215 Fax: 831-479-0138	garykit@pacbell.net
LSA Associates, Inc	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology San Joaquin Kit Fox Wildlife	285 South St., Ste. P San Luis Obispo, CA 93401	805-782-0745 Fax: 805-782-0796	www.lsa.net
Michael Baker International	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology San Joaquin Kit Fox Wetland Wildlife	60 Garden Ct., Ste. #230 Monterey, CA 93940	831-644-9174 Fax: 866-828-6762	www.mbakerintl.com
Nicole Nedeff	Botany Wetland Wildlife	11630 McCarthy Rd. Carmel Valley, CA 93924	831-659-4252	nikki@ventanaview.net
Padre Associates, Inc.	Avian Biology Botany CA Red-Legged Frog San Joaquin Kit Fox Wetland Wildlife	369 Pacific St. San Luis Obispo, CA 93401	805-786-2650 Fax: 805-786-2651	aberry@padreinc.com
Rana Creek Habitat Restoration	Botany Ecological Restoration Wetlands	27875 Berwick Drive, Carmel, CA 93923	Office: 831-659-3820 Fax: 831-646-2106	paul@ranacreekdesign.com jwandke@ranacreekdesign.com www.ranacreekdesign.com

Regan Biological and Horticultural Consulting	Botany Herpetology Native Plant Horticulture Wildlife	8 Aliso Rd., Carmel Valley, CA	Cell: 831-747-7756 Office/Fax: 831-659-1991	patrick@reganbhc.com www.reganbhc.com
Rincon Consultants, Inc.	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology San Joaquin Kit Fox Wetland Wildlife	437 Figueroa St., Ste. #203 Monterey, CA 93940	831-333-0310 Fax: 333-0340	info@rinconconsultants.com www.rinconconsultants.com
SWCA	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology San Joaquin Kit Fox Wetland Wildlife	1422 Monterey St., Ste. C200 San Luis Obispo, CA 93401	805-543-7095 Fax: 805-543-2367	bhenry@swca.com www.swca.com
Sycamore Environmental Consultants, Inc.	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology San Joaquin Kit Fox Wetland Wildlife	6355 Riverside Blvd., Ste. C Sacramento, CA 95831	916-427-0703 Fax: 916-427-2175	Jeffery.Little@SycamoreEnv.com www.sycamoreenv.com
Terra-Verde	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology San Joaquin Kit Fox Wetland Wildlife	3765 S. Higuera St., Ste. #102 San Luis Obispo, CA 93401	3765 S. Higuera St., Ste. #102 San Luis Obispo, CA 93401	bdugas@terraverdeweb.com

Tetra Tech, Inc.	Avian Biology Botany CA Red-Legged Frog Wetland Wildlife	5383 Hollister Ave., Ste. #130 Santa Barbara, CA 93111	805-681-3100 Fax: 805-681-3108	Jeff.mathieu@tetratech.com
Thompson Wildland Management (TWM)	Avian Biology CA Red-Legged Frog Wildlife Vegetation Assessments	57 Via Del Rey Monterey, CA 93940	Office (831) 372-3796 Fax: (831) 277-1419	Direct Email: thompsonwrm@gmail.com Website: www.wildlandmanagement.com
Vern L. Yadon	Birds Botany Mammals	1119 Buena Vista Pacific Grove, CA 93950	Office: 831-373-1070 Fax: None	vernyadon@gmail.com
WRA Environmental Consultants	Botany CA Red-Legged Frog CA Tiger Salamander Biology Wetland Wildlife	2169-G E. Francisco Blvd., San Rafael, CA 94901	415-454-8868 Fax: 415-454-0129	info@wra-ca.com www.wra-ca.com
Zander Associates	Avian Biology Botany CA Red-Legged Frog CA Tiger Salamander Biology Wetland Wildlife	1653 Solano Ave. #255 Berkeley, CA 94707	415-897-8781 Fax: 415-814-4125	leslie@zanderassociates.com